☐ **Executed Contract File**
☐ **Contractor**
☐ **Finance**
☐ **City Clerk**
☐ **Surety**
☐ **Granting Agency**
☐ Project Manager
☐ CM/Inspector
☐ Design Professional
☐ _____

City of Kansas City, Missouri
Water Services Department
Kenneth C. Morgan P.E., Director

Project Manual

PROJECT/CONTRACT NO. 80XX0001/1805

ADA COMPLIANCE FOR VARIOUS KC WATER BUILDINGS BLUE RIVER WTP, ADMINISTRATION BUILDING

BIDDER/ADDRESS

Company:
Contact:
Address:
Phone:
Fax No.:
Email:

Project Manager: Bon Marie Gardner
Phone: 816-513-0354
Email: bon.marie.gardner@kcmo.org

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CERTIFICATION PAGE

Project Number: 80XX0001 / Contract Number: 1805

Project Title: ADA Compliance for various KC Water Buildings - Blue River WTP, Administration Building

---

I am responsible for the following specifications and drawings:

Drawings:
G000
G001
G002
G003
AD100
A100
A500
A501
A502
A510
A600

Specifications:

_____ (SEAL)

I am responsible for the following specifications and drawings:

Drawings:
G-001E, G-002E, G-003E, ECA-1E, AD-100E, AD-200E, A-100E, A-200E, A-201E, A-300E, A-301E, A-400E, A-401E, A-600E

Specifications:
011000, 015000, 024119, 040120, 045110, 055200, 061011, 062023, 072113, 076100, 079200, 081416, 084113, 084413, 085619, 087100, 088100, 092116, 093000, 099100, 101400, 102100, 102800, 104400, 105113, 122100, 140120

10/28/2025

_____ (SEAL)

I am responsible for the following specifications and drawings:

Drawings: E000, E001, E101, E102, E501

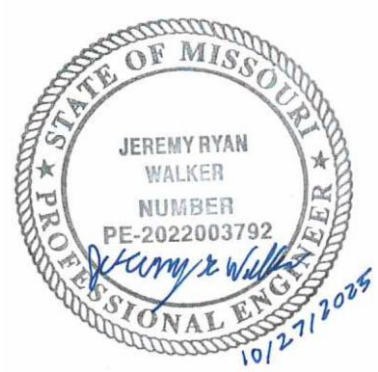
Specifications: 260526, 260533, 262729, 26816, 265100

_____ (SEAL)

I am responsible for the following specifications and drawings:

Drawings: M000, M001, M101, P000, P001, P101

Specifications: 230593, 230713, 233113, 233300, 233700, 233713, 220517, 220518, 220523.12, 220523.14, 220529, 220719, 221116, 221119, 221316, 221319, 221319.13, 224213.13, 224213.16, 224216.13, 224216.16, 224223, 224223, 224713



_____ (SEAL)

I certify under penalty of law that the document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted, and that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

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Project Title: ADA Compliance for various KC Water Buildings – Blue River WTP, Administration Building

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END OF SECTION

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LIST OF DRAWINGS

Project Number: 80XX0001 / Contract Number: 1805

Project Title: ADA Compliance for various KC Water Buildings – Blue River WTP, Administration Building

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INVITATION TO BID

Project Number: 80XX0001 / Contract Number: 1805

Project Title: ADA Compliance for various KC Water Buildings – Blue River WTP, Administration Building

The Water Services Department of Kansas City, Missouri will receive sealed Bids until **2:00 PM**, **on Tuesday, December 9, 2025** at 4800 East 63rd Street, Kansas City, MO 64130 for **Project/Contract Number: 80XX0001/1805 – ADA Compliance for various KC Water Buildings – Blue River WTP, Administration Building**. Bids will be opened after that time.

City desires that Minority Business Enterprises (MBE) and Women's Business Enterprises (WBE) have a maximum opportunity to participate in the performance of City contracts. The goals for this specific Project are **(11%) MBE** participation and **(11%) WBE** participation.

Bidding Documents will be available online to all interested parties at the Kansas City, Missouri Plan Room, http://www.kcmoplanroom.org. All addenda will be posted at this location. Any document or plan may be viewed or downloaded from this location.

Bidders are requested to attend the **Mandatory**, Pre-Bid Conference at **10:00 AM on Tuesday, November 18, 2025, in the Brush Creek Conference Room** at 4800 East 63rd Street, Kansas City, MO 64130.

Senior Project Manager: Bon Marie Gardner
Phone Number: (816) 513-0354
E-mail: bon.marie.gardner@kcmo.org

Senior Procurement Officer: Marzella Newman-Buckner
Phone Number: (816) 513-0319
E-mail: Marzella.newman-buckner@kcmo.org

View all procurement and contracting opportunities at http://www.kcmo.org

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INSTRUCTIONS TO BIDDERS

Project Number: 80XX0001 / Contract Number: 1805

Project Title: ADA Compliance for various KC Water Buildings – Blue River WTP, Administration Building

1. Sealed Bids for **Project/Contract Number: 80XX0001/1805 – ADA Compliance for various KC Water Buildings – Blue River WTP, Administration Building** will be received by the Water Services Department at 4800 East 63rd Street, Kansas City, MO 64130 until **2:00 P.M., December 9, 2025**; at which time bidding will be closed.

   a. All Bids will be opened and read aloud. The Bid Envelope must contain all required submissions to be included with the Bid. No Bid may be withdrawn for a period of ninety (90) days after the Bid is opened. Bid security shall likewise continue for the same ninety (90) days unless earlier released by the City. The successful Bidder shall comply with all Bidding and contract requirements. Bids, once opened and read, may not be withdrawn without forfeiture of the Bid security.

   b. All Bids shall be addressed to the Manager of Procurement, Delois Moore at the Water Department, shall state on the outside of the sealed Bid envelope "Bid Enclosed", title and Project number, and shall be deposited in the locked Bid box. All Bids must comply with the Bidding Requirements of Kansas City, Missouri (CITY).

2. Consideration of Bids

   a. The City will determine the lowest, responsive and responsible Bid. The City may reject any or all bids. If the City rejects all Bids, the City may: (1) resolicit Bids following the City's normal solicitation procedure; or (2) solicit Bids only from those Bidders that submitted a Bid pursuant to the original solicitation; or (3) use an expedited Bid submission schedule with or without readvertising or issuing any other public notice when the City determines that the delay from the normal City solicitation procedure would not be in the City's best interests.

   b. Alternates. If this solicitation includes Bid Alternates, the City, in its sole discretion, may include any, all or none of the Alternates in determining the lowest, responsive and responsible Bid. In determining lowest, responsive and responsible Bid, the City may include the Alternates in any combination and in any order or priority or choose none of the Alternates. The City may make this determination at any time after Bid Closing and prior to Contract award. The City will act in the best interest of the City in determining whether to include any, all or none of the Alternates and the combination and priority of any Alternates selected. If additional funding becomes available after Contract award, City may add any or all of the Alternates to the Contract by change order.

3. Evidence of Competency to Perform. Each bidder shall furnish with the bid satisfactory evidence of Bidder's competency to perform the proposed work. Such evidence of competency shall consist of the following:

   a. Completed Form 00410.01 Experience Reference Summary for three projects of similar scope performed within the past 5 years including the name, address and telephone number of the contact person having knowledge of the project and the dollar value of the project.

   b. Statement that, during the three (3) years immediately preceding the date of the Bid, Bidder has received no written notices of violations of any federal or state prevailing wage statute in which prevailing wage penalties were assessed against the Bidder or Bidder has been found in such but has made restitution to affected workmen and complied with any statutory penalty; and a

statement that Bidder is current on payment of Federal and State income tax withholdings and unemployment insurance payments

c. Statement that Bidder participates in a training program that facilitates entry into the construction industry and which may include an on-the-job or in-house training program. By submitting its Bid, Bidder is agreeing to timely submit during the 48 hours after Bid opening an affidavit of describing such program and Bidder's participation.

d. Identify the following Key Personnel proposed for the Project. (**NOTE:** Key Personnel must be committed to the Project for its duration, and may not be removed or substituted without the City's prior written consent.)

   (1) GC Project Manager

   (2) On-Site Field Superintendent

   (3) QC/QA Manager

   (4) Safety Officer

e. For each of the Key Personnel, provide the following background information.

   (1) Years of employment with current employer

   (2) City of residence

   (3) Identify any other projects this person will be involved with concurrently with the Project, and state the time commitment for the Project and each other project

   (4) Discuss professional registrations, education, certifications, and credentials held by this person that are applicable to the Project

f. Discuss generally the tasks involved in the Project.

g. Illustrate clearly and concisely Bidder's understanding of the technical elements that must be addressed for successful completion of the Project.

h. Submit a bid schedule with anticipated milestones for the Project using Microsoft Project 2007 or later format.

i. Describe key issues that might affect the Project schedule and how Bidder proposes to address them.

j. Summary of the Project Safety Plan for the Project.

   (1) Describe how Bidder proposes to address any unique safety issues for the Project

   (2) Describe your safety record and environmental compliance record along with your Firm's OSHA reportable accident rates on recent comparable size projects

   (3) Statement of Bidder's Experience Modification Ratio (EMR)

k. Discuss Bidder's understanding of the traffic control required for the Project, if applicable, and how traffic control will impact the Project schedule. Discuss any major traffic control issues that need to be addressed and Bidder's proposed solutions.

l. Identify any other special issues or problems that are likely to be encountered. Outline the manner in which Bidder suggests resolving them.

m. Outline key community relations issues and how they might be resolved.

n. Describe any difficulties Bidder anticipates encountering in serving the City, in light of the City's status as a municipality and public entity. Explain how Bidder plans to manage them.

o. Summary of Bidder's Quality Assurance/Quality Control Plan for this project

p. Statement regarding all work performed two (2) years immediately preceding the date of the Bid, that contains either (a) a contract by contract listing of any written notices of violations of any

federal, state or local DBE/MBE/WBE Program and any damages assessed; or (b) a statement that there have been no such written notices of violations or such penalties assessed; and a statement that Program requirements have been met.

q. Statement that the Bidder has not been rescinded or debarred from any bidding, contractual, procurement, or other such programs by federal, state or local entities.

r. Statement that Bidder is current on payment of Federal and State income tax withholdings and unemployment insurance payments

s. Statement of Bidder's litigation and/or arbitration history over the past five (5) years including final ruling.

t. Statement of Bidder's bond history over the past five (5) years including any incidences of failure to perform.

u. MBE / WBE past project performance and compliance with participation goals in comparable size commercial projects

v. Other.

4. Waiver of Bid Requirements The City Manager or his delegate at any time may waive any requirements imposed by this solicitation or by any City regulation when failure to grant the waiver will result in an increased cost to the City and the requirement waived would be waived for all Bidders for this solicitation and it is in the best interest of the City to grant the waiver. The City Council at any time may waive any requirements imposed in this solicitation by the City's Code of Ordinances when it finds failure to grant the waiver will result in an increased cost to the City and the waived requirement would be waived for all Bidders for this solicitation and it is in the best interest of the City to grant the waiver. The City reserves the right to waive any irregularities and/or formalities as deemed appropriate.

5. Late Bids Bids and modifications of Bids received after the exact hour and date specified for receipt will not be considered unless: (1) the Bid is sent via the U.S. Postal Service, common carrier or contract carrier, by a delivery method that guarantees the Bid will be delivered to the City prior to the submission deadline; or (2) if the Bid is submitted by mail, common carrier or contract carrier it is determined by the City that the late receipt was due solely to an error by the U.S Postal Service, common carrier or contract carrier; or (3) the Bid is timely delivered to the City but is at a different City location than that specified in this IFB; or (4) the City extends the time after the deadline for a force majeure event that could potentially affect any or all Bidders meeting the deadline.

6. Interpretations and Addenda All questions about the meaning or intent of the Bidding Documents may be directed to the Project Manager listed at the end of these Instructions to Bidders. Interpretations or clarifications considered necessary by the Project Manager in response to such questions will be issued by Addenda to all parties recorded as having received the Bidding Documents. Questions received less than ten (10) days prior to the date for opening of Bids may not be answered. Only answers issued by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect. Addenda may also be issued to modify the Bidding Documents as deemed advisable by the City.

7. Bid Security Requirements All Bids submitted must be accompanied by a Bid deposit in the amount of five percent (5%) of the base Bid which shall be in the form of a Bid Bond (on the form provided in these Bidding Documents), Cashier's Check, Letter of Credit, Certificate of Deposit or other instrument approved in advance by the City. Prior to submittal of the Bid the City Treasurer must approve both the financial institution and text of a Letter of Credit. A Cashier's Check or a Certificate of Deposit shall be payable to the City Treasurer.

8. Forfeiture of Security If a Bidder fails or refuses to execute the Contract when requested by the City, any Bid security given to the City shall immediately become due and payable and forfeited to the City as liquidated damages.

9. Mistake in Bid Security By submitting a Bid, Bidder is agreeing to correct any mistakes on a Bid security submission when requested by the City. When such a mistake occurs and a Bidder fails or

refuses to correct the mistake or execute the Contract when requested by the City, any Bid security shall be forfeited to the City and the Bidder shall also be subject to debarment and damages.

10. Bids that Exceed the Engineer's Estimate The City may offer the apparent lowest, responsive and responsible Bidders the option of performing the Work for the Engineer's estimate for the Project with no changes to the Bid requirements or scope of the Project if the Bid is not more than five percent higher than the Engineer's estimate.

11. Post Bid Required Submissions The successful Bidder will be required to submit the following documents with the signed copies of the Bid Form/Contract or within the timeframes specified in the Notice of Intent to Contract letter. Copies of the City's forms that the successful Bidder will be required to sign are bound into this Project Manual for information:

a. Properly signed, dated, and sealed Performance and Maintenance Bond and Payment Bond;

b. Properly completed certificates of insurance;

c. Copies of licenses required by the City to do the Work;

d. A copy of CONTRACTOR's current Certificate of Good Standing or Fictitious Name Registration from the Missouri Secretary of State, or other acceptable proof; and

12. Indemnification – City of Kansas City. The contract documents contains a requirement that Contractor shall indemnify, defend and hold harmless the City and any of its agencies, officials, officers, or employees from and against all claims, damages, liability, losses, costs, and expenses, including reasonable attorneys' fees, arising out of or resulting from any acts or omissions in connection with the contract, caused in whole or in part by Contractor, its employees, agents, or Subcontractors, or caused by others for whom Contractor is liable, including negligent acts or omissions of the City, its agencies, officials, officers, or employees. The contract requires Contractor to obtain specified limits of insurance to insure the indemnity obligation. Contractor has the opportunity to recover the cost of the required insurance in the Contract Price by including the cost of that insurance in the Bid amount.

13. City's Buy American and Missouri Preference Policies It is the policy of the City that any manufactured goods or commodities used or supplied in the performance of any City contract or any subcontract thereto shall be manufactured or produced in the United States whenever possible. When Bids offer quality, price, conformity with specifications, term of delivery and other conditions imposed in the specifications that are equal, the City shall select the Bid that uses manufactured goods or commodities that are manufactured or produced in the United States. The City shall give preference to all commodities manufactured, produced, or grown within the State of Missouri and to all firms, corporations, or individuals doing business as Missouri firms, corporations or individuals, when quality is equal or better and delivered price is the same or less. It is the bidder's responsibility to claim these preferences.

14. Affirmative Action It is the policy of the City that any person or entity entering into a contract with the City, will employ applicants and treat employees equally without regard to their race, color, sex, religion, national origin or ancestry, disability, sexual orientation, gender identity or age. Bidder will be required to comply with the City's Affirmative Action ordinance if Bidder is awarded a contract from the City totaling more than $300,000.00. If you have any questions regarding the City's Affirmative Action requirements, please contact CREO KC at (816) 513-1836 or visit the City's website at www.kcmo.gov.

15. Tax Clearance Bidder will be required to furnish to CITY sufficient proof from City's Commissioner of Revenue, verifying that Bidder is in compliance with the license and tax ordinances administered by City's Revenue Division as a precondition to CITY making its first payment under any CONTRACT over $160,000.00. Bidder will also be required to obtain proof of City tax compliance from all of its Subcontractors prior to the Subcontractors performing any Work.

16. Substitutions or "Or-Equal" Items The procedure for submission of substitutions or "or-equal" items is set forth in the General Conditions and Supplementary Conditions.

17. Prevailing Wage Requirements The successful Bidder shall pay the prevailing hourly rate of wages as determined by the Missouri Annual Wage Order and/or Federal Wage Determination set forth in the Project Manual. In case of a conflict between Missouri and Federal wage rates, the higher rate shall apply.

Successful Bidder shall be required to use City's Internet web based Prevailing Wage Reporting System provided by City and protocols included in that software during the term of this Contract. When requested by the City, Bidder shall submit user applications to City's provided Prevailing Wage Reporting System for all applicable personnel and shall require subcontractors to submit same.

18. Contract Information Management System. Successful Bidder shall be required to use City's Internet web based Contract Information Management System/Project Management Communications Tool provided by City and protocols included in that software during the term of this Contract. Bidder/Proposer shall submit user applications to City's provided Contract Information Management System for all personnel, subcontractors or suppliers as applicable.

19. MBE/WBE Program Requirements City desires that Minority Business Enterprises (MBE) and Women's Business Enterprises (WBE) have a maximum opportunity to participate in the performance of City contracts. The goals for this specific Project are (11%) MBE participation and (11%) WBE participation. The City's CREO KC Forms and CREO KC Instructions for Construction Projects are incorporated into these Bidding Documents and the Contract Documents. The MBE/WBE Directory is available on the City's website at www.kcmo.gov. Please call the Civil Rights and Equal Opportunity Department at (816) 513-1836 for assistance.

Successful Bidder shall be required to use City's Internet web based MBE/WBE Program Reporting System provided by City and protocols included in that software during the term of this Contract. When requested by the City, Bidder shall submit user applications to City's provided MBE/WBE Program Reporting System for all applicable personnel and shall require subcontractors/subconsultants to submit same.

20. Waiver of MBE/WBE Requirements The City Council may waive any and all MBE/WBE requirements imposed by any Bidding Document or the MBE/WBE Ordinance and Contract with the lowest, responsive and responsible Bidder if the City Council determines a waiver is in the best interests of the City.

21. Forfeiture of Bid Bond for Failure to Make MBE/WBE Submissions By submitting its Bid, Bidder is agreeing to the following: (1) Bidder has made by Bid opening a good faith effort to meet the MBE/WBE goals established for the Project; or Bidder will continue to make during the 48 hours after Bid opening a good faith effort to meet the MBE/WBE goals established for the Project; and (2) Bidder will timely submit its 00450 CREO KC Construction Contractor Utilization Plan/Request for Waiver (CREO KC Form 8) and 00450.01 Letter of Intent to Subcontract for each MBE/WBE listed on the 00450 CREO KC Construction Contractor Utilization Plan/Request for Waiver; and (3) Bidder will submit documentation of its good faith efforts to meet the MBE/WBE goals when requested by the City. Failure to meet these requirements in good faith will result in Bidder being debarred and forfeiting its Bid Bond.

22. Workforce Program Requirements. City desires that minorities and women have a maximum opportunity to practice their trades on city construction projects. The minimum company-wide goals are a ten percent (10%) minority workforce and two percent (2%) women workforce. The City's CREO KC Forms and CREO KC Instructions for Construction Projects are incorporated into these Bidding Documents and the Contract Documents.

Successful Bidder shall be required to use City's Internet web based Workforce Program Reporting System provided by City and protocols included in that software during the term of this Contract. When requested by the City, Bidder shall submit user applications to City's provided Workforce Program Reporting System for all applicable personnel and shall require subcontractors to submit same.

23. Subcontractors, Suppliers and Others

a. If the Contract Documents require the identity of certain Subcontractors, Suppliers and other persons and organizations (including those who are to furnish the principal items of material and equipment) to be submitted to City, the apparent lowest, responsive and responsible Bidder, and any other Bidder so requested, shall submit to City a list of all such Subcontractors, Suppliers and other persons and organizations proposed for those portions of the Work for which such identification is required. An experience statement shall accompany such list with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier or organization if requested by City.

If City has reasonable objection to any proposed Subcontractor, Supplier or other person or organization, City may request the apparent lowest, responsive and responsible Bidder to submit an acceptable substitute without an increase in Bid price.

b. By submitting its Bid, Bidder agrees that it has read and understands all the provisions of General Condition No. 6.07, Concerning Subcontractors, Suppliers and Others, and that it will comply with all those provisions including but not limited to mandatory mediation of disputes and the prohibition against paid-if-paid and paid-when-paid contract clauses. It is the City's expectation that all Subcontractors and Suppliers will be treated fairly and in good faith by the successful Bidders and that the successful Bidder will make all reasonable efforts to resolve contract disputes with a Subcontractor or Supplier in a prompt and fair manner. If the City is notified by a Subcontractor or Supplier of a contract claim with the successful Bidder, City will notify the successful Bidder and will request prompt resolution of the claim. City will provide any such Subcontractor or Supplier information regarding mandatory mediation as well as a copy of the Payment Bond. City may notify the Surety that City has taken cognizance of such claim.

c. In accordance with the Missouri Prompt Payment Act, City reserves the right to withhold payment(s) in good faith from the successful Bidder due to: i)the successful Bidder's failure to comply with any material provision of the contract; ii)third party claims filed or reasonable evidence that a claim will be filed; iii)the successful Bidder's failure to make timely payments for labor, equipment or materials; or iv)for damage to a Subcontractor or Supplier.

d. By submitting its Bid, Bidder agrees it will not deny any Subcontractor subcontracting opportunities solely because the Subcontractor is not a signatory to collective bargaining agreements with organized labor.

e. The provisions of GC 6.07 are a material term of the Contract with the City and failure by the successful Bidder to comply with the provisions of this section will be taken into consideration by City in making the determination of lowest, responsive and responsible bidder in any subsequent City contracts.

24. Pre-Bid Conference The Water Services Department will hold a Pre-Bid conference on **Tuesday, November 18, 2025, at 10AM in the Brush Creek Conference Room,** located at 4800 East 63rd Street, Kansas City, Missouri 64130. Attendance at the pre-Bid conference is **MANDATORY** for all Bidders on this Project. For this Project, the City shall not contract with a Bidder who has not attended the entire pre-Bid conference for this Project.

25. **On-Site Inspection** The Project Site will be available for inspection by Bidders. Bidders visiting the Project Site shall be responsible for their own safety. The Project Site shall be available for inspection by appointment from 8 AM to 2PM each day Monday through Friday (holidays excepted). Bidders may contact the following individual from the Water Department for an appointment.

Contact: Carey Robinson

Phone: (816) 694-2223

Email: carey.robinson@kcmo.org

26. Signatures Each copy of the Bid Form/Contract must be signed and properly dated by the following, as applicable:

Limited Liability Company:

□ a member of the limited liability Company authorized to sign on behalf of the company.

Partnership:

□ a partner authorized to sign on behalf of the partnership.

Sole Proprietor:

□ the proprietor.

Joint Venture:

□ the parties to the Joint Venture authorized to sign on behalf of each party to the Joint Venture, or a person authorized by each party to the Joint Venture to sign on behalf of all parties to the Joint Venture.

Corporation:

□ a corporate office authorized to sign on behalf of the corporation. Corporation's seal must be attached to the signature.

27. Forward all questions in writing to the following Senior Project Manager and Senior Procurement Officer. Questions received less than **seven (7)** days prior to the Bid Date may not be answered. Interpretations or clarifications considered necessary by the Project Manager in response to such questions will be issued by Addenda to all Bidders. Oral or other interpretations or clarifications shall be without legal effect, even if made at a Pre-Bid Meeting.

Bon Marie Gardner, Senior Project Manager
Water Services Department
4800 East 63rd Street
Kansas City, MO 64130
(816) 513-0354
Email: bon.marie.gardner@kcmo.org

Marzella Newman-Buckner, Senior Procurement Officer
General Services Department
4800 East 63rd Street
Kansas City, MO 64130
(816) 513-0319
E-mail: Marzella.newman-buckner@kcmo.org

For persons with disabilities needing reasonable accommodations please contact Daniel O'Conner at 816-513-1824 or Cowan Byers at 816-513-1802. If you need to use the Relay Missouri Center call 1-800-RELAY-MO (1-800-735-2966).

Bidder: _____

BID FORM/CONTRACT

Project /Contract Number:80XX0001/1805

Project Title: ADA Compliance for various KC Water Buildings- Blue River WTP, Administration Building

1. Bidder, having examined the Bidding Documents, related documents and the Site of the Work, and being familiar with all the conditions affecting the construction of the proposed Work, including Laws and Regulations and the availability of materials and supplies, agrees, if this Bid is selected by CITY, this Bid Form/Contract will become the Contract between Bidder and CITY for Bidder to furnish all labor and materials, equipment and services necessary for the proper completion of the Work in accordance with the Contract Documents, including general construction work at the price(s) stated below, which stated sums include fees and all other charges applicable to materials, appliances, labor and all things subject to and upon which other charges may be levied.
2. Bidder agrees the Contract Documents will comprise the entire agreement between CITY and Bidder. The Contract Documents are identified in the General Conditions and are incorporated into and made part hereof this Bid Form/Contract by reference.
3. Bidder agrees that if this Bid Form/Contract is executed by CITY, Bidder's offer is accepted and this Bid Form/Contract that incorporates all other Contract Documents shall constitute the Contract between the parties. Bidder authorizes the CITY to fill in the Contract Price on this Bid Form/Contract in accordance with Bidder's Bid. Bidder agrees that this Bid Form/Contract may be executed in one or more counterparts, each of which will be deemed an original copy of this Bid Form/Contract and all of which, when taken together, will be deemed to constitute one and the same Bid Form/Contract. This Bid Form/Contract shall be effective upon the execution of counterparts by both parties, notwithstanding that both parties may not sign the same counterpart. The parties' signatures transmitted by facsimile or by other electronic means shall be proof of the execution of this Bid Form/Contract and shall be acceptable in a court of law. A copy of this Bid Form/Contract shall constitute an original and shall be acceptable in a court of law.
4. The Bid Price(s) shall be shown in numeric figures only.

   TOTAL BID IN NUMERIC FIGURES $_____
5. The undersigned Bidder has given CITY'S Project Manager written notice of all conflicts, errors or discrepancies that it has discovered in the Contract Documents and the written resolution thereof by the Project Manager or by the DESIGN PROFESSIONAL is acceptable to Bidder.
6. The undersigned Bidder agrees that this Bid shall remain subject to selection by CITY, and may not be withdrawn for ninety (90) days after the day Bids are opened.
7. The undersigned Bidder certifies that this Bid contains no modifications, deviations, riders or qualifications.
8. The undersigned Bidder acknowledges receipt of the following addenda listed by number and date appearing on each addendum:

Addendum Number	Dated	Addendum Number	Dated
(_____)	(_____)	(_____)	(_____)
(_____)	(_____)	(_____)	(_____)

(_____) (_____) (_____) (_____)

(_____) (_____) (_____) (_____)

(_____) (_____) (_____) (_____)

(_____) (_____) (_____) (_____)

(_____) (_____) (_____) (_____)

9. By submitting its bid, Bidder is agreeing to meet or exceed the minimum employment goals of 10% minority and 2% women during the term of its contract with the City, or request a waiver of the goals. If a waiver is requested, Bidder must establish good faith efforts towards meeting the goals as set forth in the CREO-KC Instructions for Construction Contracts and the City's Workforce Ordinance. Should Bidder fail to meet or exceed the minimum employment goals or otherwise establish that Bidder is entitled to a waiver under circumstances in which Bidder has previously failed to meet or exceed the goals on one or more occasions with the twenty-four month period immediately preceding the completion of the Work under this Bid Form/Contract, Bidder may be suspended from participating, either as a contractor or subcontractor, on any future contract with the City for a period ranging from thirty days to six months as further specified in the Contract Documents.

10. By submitting its bid, Bidder warrants that if its bid should exceed $300,000.00 and Bidder employs fifty (50) or more people, Bidder has an affirmative action program in place and will maintain the affirmative action program in place for the duration of its contract with the City. Bidder further warrants that it will comply with the affirmative action requirements contained in the General Conditions as incorporated by reference into this Bid Form/Contract.

11. Section 12 through Section 15 constitutes the Affidavit of Intended Utilization required to be submitted by Bidders.

12. By submitting its bid, Bidder is agreeing to the following: (1) Bidder has made by bid opening a good faith effort to meet the MBE/WBE/DBE goals established for the project; or Bidder will continue to make during the 48 hours after bid opening a good faith effort to meet the MBE/WBE/DBE goals established for the project; and (2) Bidder will timely submit its **00450 CREO-KC 08 Contractor Utilization Plan/Request for Waiver** and **00450.01 Letter of Intent to Subcontract** for each MBE/WBE listed on the 00450 CREO-KC 08 Construction Contractor Utilization Plan/Request for Waiver;; and (3) Bidder will submit documentation of its good faith efforts to meet the MBE/WBE/DBE goals when requested by the City. Failure to meet these requirements in good faith will result in Bidder forfeiting its bid bond.

PROJECT GOALS: **__11_____% MBE __11_____% WBE _____ % DBE**

BIDDER PARTICIPATION: **_____% MBE _____% WBE _____ % DBE**

13. To the best of Bidder's knowledge, the following are names of certified MBEs and/or WBEs with whom Bidder, or Bidder's subcontractors, presently intend to contract with if awarded the Contract on the above project: ***(*All firms must currently be certified by Kansas City, Missouri Civil Rights and Equal Opportunity Department*)***

    A. Name of M/WBE Firm _____
    Address _____
    Telephone No. _____
    I.R.S. No. _____
    Area/Scope of work _____

Subcontract amount _____

B. Name of M/WBE Firm _____
Address _____
Telephone No. _____
I.R.S. No. _____
Area/Scope of work _____
Subcontract amount _____

C. Name of M/WBE Firm _____
Address _____
Telephone No. _____
I.R.S. No. _____
Area/Scope of work _____
Subcontract amount _____

D. Name of M/WBE Firm _____
Address _____
Telephone No. _____
I.R.S. No. _____
Area/Scope of work _____
Subcontract amount _____

E. Name of M/WBE Firm _____
Address _____
Telephone No. _____
I.R.S. No. _____
Area/Scope of work _____
Subcontract amount _____

F. Name of M/WBE Firm _____
Address _____
Telephone No. _____
I.R.S. No. _____
Area/Scope of work _____
Subcontract amount _____

(List additional MBE/WBEs, if any, on additional pages and attach to this form)

14. By submitting its bid, Bidder is agreeing it will identify and timely submit within 48 Hours after Bid opening those MBE/WBE subcontractors with dollar amounts and scopes of work, which apply to or exceed the MBE/WBE goals for the Project on the **00450 CREO-KC 08 Contractor Utilization Plan/Request for Waiver.**

15. Bidder agrees that failure to meet or exceed the MBE/WBE Goals for the above project will require the Director of Human Relations to recommend disapproval of the bid unless the Director of Civil Rights and Equal Opportunity finds the Bidder established good faith efforts towards meeting the goals as set forth in the CREO-KC Forms and Instructions for Construction Projects and the City's MBE/WBE Ordinance.

Business Entity Type:

(__) Missouri Corporation
(__) Foreign Corporation
(__) Fictitious Name Registration
(__) Sole Proprietor
(__) Limited Liability Company
(__) Partnership
(__) Joint Venture
(__) Other: (Specify)_____

BIDDER
Legal name & address of Bidder, person firm, partnership, corporation, or association submitting Bid:

_____
Phone No: _____
Cell No: _____
Facsimile No: _____
Bidder's E-Mail: _____

_____
Federal ID. No. _____

I hereby certify that I have authority to execute this document on behalf of Bidder, person, firm, partnership, corporation or association submitting Bid.

By: _____
(Signature)

_____
(Print Name)

Title:_____

Date:_____

(Attach corporate seal if applicable)

NOTARY

Subscribed and sworn to before me this _____ day of _____, 20__.

My Commission Expires: _____ _____

Bidder: _____

ACCEPTANCE OF BID

CITY, by executing this Bid Form/Contract, hereby accepts Bidder's Bid and this Bid Form/Contract that incorporates all other Contract Documents shall constitute the Contract between the Parties.

CITY shall pay CONTRACTOR for completion of the Work in accordance with the Contract Documents a maximum amount of _____ Dollars, ($ _____). The Contract Price includes:

By executing this Bid Form/Contract, CITY accepts Bidder's offer for the Contract Price stated above and this Bid Form/Contract that incorporates all other Contract Documents shall constitute the Contract between the parties

_____

City of Kansas City, Missouri (OWNER or City)

Approved as to form:

_____

Assistant City Attorney

I hereby certify that there is a balance, otherwise unencumbered, to the credit of the appropriation to which the foregoing expenditure is to be charged, and a cash balance, otherwise unencumbered, in the treasury, to the credit of the fund from which payment is to be made, each sufficient to meet the obligation hereby incurred.

_____

Director of Finance (Date)

CITY OF FOUNTAINS
HEART OF THE NATION

KANSAS CITY
MISSOURI

EXPERIENCE AND REFERENCE SUMMARY

Project Number: 80XX0001 / Contract Number: 1805

Project Title: ADA Compliance for various KC Water Buildings – Blue River WTP, Administration Building

Firm's Legal Name	
Mailing Address	
Contact – Name & Email	
Contact – Phone & Fax	

NO.	PROJECT & LOCATION	OWNER NAME & ADDRESS CONTACT & PHONE NUMBER	PROJECT DURATION & DATE COMPLETED	$ VALUE
1.				
2.				
3.				
4				
5				
6				
7				
9				
10				

CITY OF FOUNTAINS
HEART OF THE NATION

KANSAS CITY
MISSOURI

BID BOND

Project Number: 80XX0001 / Contract Number: 1805

Project Title: ADA Compliance for various KC Water Buildings – Blue River WTP, Administration Building

Bond Number _____

KNOW ALL MEN BY THESE PRESENTS: That _____ of _____, as Principal, and _____ as Surety, hereby bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents unto KANSAS CITY, MISSOURI, a constitutionally chartered municipal corporation, as Obligee, in the sum of

_____Dollars ($_____), lawful money of the United States.

WHEREAS, Principal is herewith submitting its Bid to enter into a contract with Kansas City for the above referenced project,

NOW, THEREFORE the condition of this obligation is such that if the Principal is awarded the contract the Principal will, within the time required, enter into a contract and give a good and sufficient surety bonds to secure the performance of the terms and conditions of the contract and for the prompt payment of all labor and material furnished in the prosecution thereof as required by the contract documents, then this obligation shall be void; otherwise the Principal and Surety will immediately pay unto the Obligee the full amount of this bond as liquidated damages for failure to fulfill the conditions of this obligation, but in no event shall the Surety's liability exceed the penal sum hereof.

Signed, sealed and delivered this _____ day of _____. _____.

BIDDER AND PRINCIPAL

Name, address and facsimile number of Bidder and Principal

_____

_____

_____

_____

I hereby certify that I have authority to execute this document on behalf of Bidder and Principal.

By: _____

Title:_____

(Attach corporate seal if applicable)

SURETY

Name, address and facsimile number of Surety:

_____

_____

_____

_____

I hereby certify that (1) I have authority to execute this document on behalf of Surety; (2) Surety has an A.M. Best rating of A- or better; (3) Surety is named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (most current revision) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury; and (4) Surety is duly licensed to issue bonds in the State of Missouri and in the jurisdiction in which the Project is located.

By:_____

Title:_____

Date:_____

(Attach seal and Power of Attorney)

CREO KC INSTRUCTIONS

FOR CONSTRUCTION CONTRACTS

PART A. ECONOMIC EQUITY & INCLUSION GOALS--MBE/WBE PROGRAM

I. City's Economic Equity & Inclusion Goals--MBE/WBE Program.

A. The City has adopted an Economic Equity & Inclusion Goals--Minority/Women Business Enterprise ("MBE/WBE") Program (Sections 3-421 through 3-469, Code of Ordinances) (the "Program") to implement the City's policy of supporting the fullest possible participation in City contracts and change orders of firms owned and controlled by minorities and women. Each construction contract may have an MBE and/or WBE goal for participation. An MBE or WBE goal is a numerical objective the City has set for the contract that may be awarded pursuant to these bid specifications. Goals are stated as a percentage of contract dollars. For example, if an MBE goal for a contract is 10% and a Bidder submits a bid of $100,000, the goal for MBE participation would equal $10,000. The specific MBE/WBE goals on this contract are set forth elsewhere in the bid specifications.

B. These Civil Rights & Equal Opportunity Department ("CREO KC") Forms & Instructions are part of the BIDDING DOCUMENTS and CONTRACT DOCUMENTS as defined in the General Conditions. By submitting a Bid, the Bidder agrees, as a material term of the contract, to carry out the City's MBE/WBE Program by making good faith efforts to include certified MBE/WBEs in the contract work to the extent of the goals listed for the contract and to the fullest extent consistent with submitting the lowest and best bid to the City. Bidder agrees that the Program is incorporated into this document and agrees to follow the Program. Although it is not a requirement that a Bidder in fact meet or exceed both the MBE and WBE Goals, it is a requirement for approval of the Bid that a Bidder objectively demonstrate to the City that good faith efforts have been made to meet the Goals. Bidders must attempt to meet both the MBE and WBE goals and request a waiver if either is not met.

C. The following CREO KC Forms are attached and must be used for MBE/WBE submittals:

1. Contractor Utilization Plan/Request for Waiver (CREO KC Form 8); and
2. Letter of Intent to Subcontract (CREO KC Form 00450.01); and
3. Timetable for MBE/WBE Utilization (CREO KC Form 10); and
4. Request for Modification or Substitution (CREO KC Form 11); and
5. Contractor Affidavit for Final Payment (Form 01290.14); and
6. Subcontractor Affidavit for Final Payment (Form 01290.15).

Warning: The City only gives MBE/WBE credit for a Bidder's use of City certified MBE/WBEs. A certified MBE/WBE firm is a firm that has been certified by the City's Civil Rights & Equal Opportunity Department as such. An MBE/WBE firm must be certified before the date on which the contractor utilization plan is due. Certified MBEs and WBEs are listed in the M/W/DBE Kansas City Mo. Online Directory, which is available on the City's website at www.kcmo.org. Before a Bidder submits a bid, Bidder

should contact CREO KC and consult the directory to make sure any firm proposed for use for MBE/WBE participation has been certified.

II. Required Submissions Following Bid Opening.

A. Bidder must submit the following documents within forty-eight (48) hours of bid opening:

1. **Contractor Utilization Plan/Request for Waiver (CREO KC Form 8).** This form states a Bidder's plan to use specific certified MBE/WBEs in the performance of the contract and includes the following:

   a. The work to be performed by each MBE/WBE and the amounts each is to be paid for the work; and

   b. The name, address, race or ethnic origin, gender and employer identification number or social security number of each MBE/WBE that will perform the work.

   c. An automatic request for waiver in the event Bidder has not met or exceeded the MBE and/or WBE goals for the contract but believes that it has made good faith efforts to meet or exceed the goals and desires a waiver of the goals. If a waiver is requested, CREO KC will examine the Bidder's documentation of good faith efforts and make a recommendation to grant or deny the waiver. CREO KC will recommend a waiver be granted only if the Bidder has made good faith efforts to obtain MBE/WBE participation.

2. **Letter(s) of Intent to Subcontract (CREO KC Form 00450.01)**. A letter must be provided from each MBE/WBE listed on the Contractor Utilization Plan. These letters verify that the MBE/WBE has agreed to execute a formal agreement for the work and indicate the scope of work to be performed and the price agreed upon for the work.

III. Required Submission when Requested by City.

A. Bidder must submit the following documents when requested by City:

1. **Timetable for MBE/WBE Utilization (CREO KC Form 10).**

2. **Documentation of good faith efforts.**

IV. Required Monthly Submissions during term of Contract.

A. Bidder must submit the following report on a monthly basis if awarded the contract:

1. **M/WBE Monthly Utilization Report.** This report must be submitted to the Director by the 15th of each month. Failure to submit timely reports may result in delays in processing of current and future contract approvals and payment applications. The method of submission of this report is through the B2GNow Diversity Management System (B2GNow).

V. Required Submittals for Final Contract Payment.

A. Contractor must submit the following documents with its request for final payment under

the contract:

1. **Contractor Affidavit for Final Payment (Form 01290.14)**
2. **Subcontractor Affidavit(s) for Final Payment (Form 01290.15)**
3. **Final B2GNow Monthly Contract Audit Report with all payment audits confirmed.**

VI. Additional Submittals.

A. Contractor may be required to make additional submittals during the term of the Contract, including **Request for Modification or Substitution (CREO KC Form 11)**. Refer to Section IX, Modification of the Contractor Utilization Plan or Substitution of an MBE/WBE, for additional instructions on when this form must be submitted.

VII. MBE/WBE Participation Credit.

A. The following shall be credited towards achieving the goals:

1. The total contract dollar amount that a prime contractor has paid or is obligated to pay to a subcontractor that is a certified MBE or WBE, except as otherwise expressly provided for herein.
2. The total contract dollar amount that a prime contractor that is a certified MBE or WBE performed itself.
3. Sixty percent (60%) of the total dollar amount paid or to be paid by a prime contractor to obtain supplies or goods from a supplier who is a certified MBE or WBE.
4. Ten percent (10%) of the total dollar amount paid or to be paid by a prime contractor to obtain supplies or goods from a supply broker who is a certified MBE or WBE.
5. One hundred percent (100%) of the total dollar amount paid or to be paid by a prime contractor to a manufacturer of construction supplies who is a certified MBE or WBE.
6. Subcontractor participation with a lower tier MBE/WBE subcontractor using one of the above methods of participation.

B. **NO CREDIT**, however, will be given for the following:

1. Participation in a contract by a MBE or WBE that does not perform a commercially useful function as defined by the Program; and
2. Any portion of the value of the contract that an MBE or WBE subcontractor subcontracts back to the prime contractor or any other contractor who is not a qualified MBE/WBE; and
3. Materials and supplies used on the contract unless the MBE/WBE is responsible for negotiating the price, determining quality and quantity, ordering the materials and installing (where applicable) and paying for material itself; and
4. Work performed by an MBE or WBE in a scope of work other than that in which the MBE or WBE is currently certified.

VIII. Methods for Securing Participation of MBE/WBEs and Good Faith Efforts.

A. A bidder is required to make good faith efforts to achieve the MBE/WBE goals. Good faith efforts are efforts that, given all relevant circumstances, a Bidder actively and aggressively seeking to meet the goals can reasonably be expected to make. Good faith efforts must be made before the Bidder submits a Contractor Utilization Plan, in other words, within 48 hours of bid opening. However, efforts made to increase participation of MBEs and WBEs following submission of the CUP can be considered as evidence of good faith efforts to meet the goals.

B. In evaluating good faith efforts, the Director of CREO KC will consider whether the Bidder has performed the following, along with any other relevant factors:

1. Advertised for at least 15 calendar days prior to the bid or proposal due date opportunities to participate in the contract in general circulation media, trade and professional association publications, small and minority business media, and publications of minority and women's business organizations which are included in a list along with their current contact information identified on the directory as the list of publications available to publish such advertisements, which list shall be updated by CREO KC no less than every three (3) month.

2. Sent written notices at least fifteen (15) calendar days prior to the bid or proposal due date containing the information required in section (9) below, by certified mail, e-mail, or facsimile, to at least 80% of MBEs and WBEs which are included in a list along with their contact information identified on the directory as the list of organizations available to receive such notices, which list shall be updated by CREO KC no less than every three (3) months.

3. Sent written notices, containing the information required by section (9) below, by certified mail, e-mail or facsimile, to at least 80% of MBEs and WBEs listed on the directory certified in the applicable scopes of work for the particular bid soliciting their participation in the contract at least 15 calendar days prior to the bid or proposal due date.

4. Attempted to identify portions of the work for qualified MBE and/or WBE participation in order to increase the likelihood of meeting the goals, including breaking down contracts into economically feasible units that take into consideration the capacity of available MBE/WBEs appearing on the CREO KC directory.

5. At any time prior to submission of the CUP or submittal of a request for modification of a CUP, requested assistance in achieving the goals from the Director and acted on the Director's recommendations.

6. Conferred with certified MBEs and WBEs which inquired about or responded to the bid solicitation and explained to such MBEs and WBEs the scope and requirements of the work for which their bids or proposals were solicited, and if not all certified MBEs and WBEs in the particular scopes listed on the directory have inquired about or responded to the bid solicitation for each scope of work, then contact by certified mail, e-mail or telephone the greater of ten (10) or 80% of additional certified MBEs and WBEs in the particular scopes of work listed on the directory and offer to confer with such MBEs and WBEs for such particular scope of work and request such MBEs

and WBEs to submit a proposal.

7. Attempted to negotiate in good faith with certified MBEs and WBEs which responded to the bid solicitation or those certified MBEs and WBEs that were conferred with as contemplated in section (6) above, and other qualified MBEs and WBEs, at the option of the bidder, proposer, or contractor, as applicable, to perform specific subcontracts, not rejecting them as unqualified without sound reasons based on a thorough investigation of their capabilities by the bidder, proposer, or contractor; in the event an MBE or WBE is the low bid, but rejected as unqualified, the bidder, proposer, or contractor and the director or board, as applicable, shall provide sound reasons for rejecting such MBE or WBE.
8. Attended pre-bid meeting when such meetings were indicated in the solicitation of bids or otherwise by the bidder, proposer, or contractor, as applicable or by the director provided the director provides written direction to the bidder, proposer, or contractor at the time the goals are recommended.
9. Written notices and advertisements to be provided pursuant to sections (1), (2) and (3) above shall include the following information:
    a. The bid due date;
    b. The name of the project;
    c. The address or general location of the project;
    d. The location of plans and specifications for viewing;
    e. Contact information of the prime contractor;
    f. A general description of the scopes of work that are the subject of the solicitation;
    g. The goals established for the applicable contract, and if the goals are still subject to board approval, then a statement that the goals as stated are preliminary and are subject to board approval;
    h. If the project or any portion of the project is subject to prevailing wage then a statement that all or a portion of the project will be subject to prevailing wage, as applicable; and if only a portion of the scopes are subject to prevailing wage, then identification of such scopes provided that such scopes are known as of the time of bid solicitation;
    i. The date and time of any pre-bid meeting(s), if any, which have been scheduled by the bidder, proposer, contractor or developer as of the bid solicitation; and

    Any other information deemed relevant by the bidder, proposer, contractor or developer, as applicable, or the director to the extent the director provides written direction to the bidder, proposer, contractor or developer of such additional information at the time the goals are recommended by the director. 8. Within five (5) working days after drawing the bid specifications, sent certified letters, verifiable e-mails or proof of facsimiles to certified MBEs and WBEs listed in the M/W/DBE Kansas City Mo. Online Directory.

C. A Bidder may be required to give the City documentation to prove that it made good faith efforts. The Bidder will be contacted by the City with further instructions about when this documentation must be submitted.

IX. Modification of the Contractor Utilization Plan or Substitution of an MBE/WBE.

A. After bid opening, a Bidder or Contractor may need to substitute an MBE and/or WBE or request that the amount of MBE/WBE participation listed in its Contractor Utilization Plan be modified. Bidder or Contractor must file a **Request for Modification or Substitution (CREO KC Form 11) prior to actual substitution and within a reasonable time after learning that a modification or substitution is necessary.** The Director may approve substitutions or modifications and upon approval, the modifications and substitutions will become an amendment to the Contractor Utilization Plan. Modifications or substitutions may be approved when:

1. The Director finds that the Bidder or Contractor made and provided evidence of good faith efforts to substitute the MBE/WBE listed on the Contractor Utilization Plan with other certified MBE/WBEs for the scope of work or any other scope of work in the contract; and
2. The Bidder or Contractor has not attempted intentionally to evade the requirements of the program and it is in the best interests of the City to allow a modification or substitution; and
3. The Director also finds one of the following:
    a. The listed MBE/WBE is non-responsive or cannot perform; or
    b. The listed MBE/WBE has increased its previously quoted price to the bidder, proposer or contractor without a corresponding change in the scope of the work; or
    c. The listed MBE/WBE has committed a material default or breach of its contract with the contractor; or
    d. Requirements of the scope of work of the contract have changed and render subcontracting not feasible or not feasible at the levels required by the goals established for the contract; or
    e. The listed MBE/WBE is unacceptable to the contracting department; or
    f. The listed MBE/WBE thereafter had its certification revoked; or

B. A modification shall not be made unless the modification or substitution has first been requested and approved by the Director. Once a modification has been made, a Construction Contractor Employee Identification Report (CREO KC Form 0485.04) for the newly approved subcontractor must be submitted at least ten (10) days prior to the approved subcontractor commencing work on a City contract.

X. Appeals.

A. In conformance with the Act, appeals may be made to the City Fairness in Construction Board or Fairness in Professional Services and Goods Board on the following:

1. The grant or denial of a Request for Waiver;
2. Substitution for an MBE/WBE listed on a Contractor Utilization Plan;
3. Modification of the percentage of MBE/WBE participation on a Contractor Utilization Plan;
4. Liquidated Damages;
5. The amount of MBE/WBE credit the Contractor may receive for MBE/WBE participation identified in the contractor utilization plan.

B. Any appeal must be filed in writing with the Director within fifteen (15) calendar days of notice of the determination. Mailing, faxing, personal delivery or posting at CREO KC of determinations shall constitute notice. The appeal shall state with specificity why the Bidder or Contractor believes the determination is incorrect

C. Failure to file a timely appeal shall constitute a waiver of a Bidder's or Contractor's right to appeal such determination and such person shall be estopped to deny the validity of any determination which could have been timely appealed.

XI. Access to Documents and Records.

A. By submitting a Bid, each Bidder agrees to permit the City, its duly authorized agents or employees, access at all reasonable times to all books and business records of Bidder as may be necessary to ascertain compliance with the requirements of this document and the Act, within ten (10) calendar days of the date of the written request.

B. All Bidders agree to cooperate with the contracting department and CREO KC in studies and surveys regarding the MBE/WBE program.

XII. Miscellaneous.

A. A Bidder or Contractor shall bear the burden of proof with regard to all issues on appeal.

B. In the event of any conflict between this document and the Program, the provisions of the Program shall control. The terms used in this document are defined in the Program.

C. Oral representations are not binding on the City.

D. The City Council may waive the requirements of this document and the Program and award the contract to the lowest and best bidder if the City Council determines a waiver is in the best interests of the City.

E. The Director may grant extensions of time to Bidders to submit Letters of Intent to Subcontract (CREO KC Form 00450.01).

XIII. Liquidated Damages – Economic Equity & Inclusion Goals--MBE/WBE Program.

A. If Contractor fails to achieve the MBE/WBE goals stated in its Contractor Utilization Plan, as amended, the City will sustain damages, the exact extent of which would be difficult or impossible to ascertain. Therefore, in order to liquidate those damages, the monetary difference between either (1) the amount of the MBE/WBE goals set forth in the Contractor Utilization Plan, as amended, or (2) the goals established (whichever is lower) and the amount actually paid to qualified MBEs and WBEs for performing a commercially useful function will be deducted from the Contractor's payments as

liquidated damages. In determining the amount actually paid to qualified MBEs and WBEs, no credit will be given for the portion of participation that was not approved by the Director, unless the Director determines that the Contractor acted in good faith. No deduction for liquidated damages will be made when, for reasons beyond the control of the Contractor, the MBE/WBE participation stated in the Contractor Utilization Plan, as amended and approved by the Director is not met.

PART B. CONSTRUCTION EMPLOYMENT PROGRAM REQUIREMENTS

IMPORTANT: This Part B is applicable to City construction contracts estimated by the City prior to solicitation as: (1) requiring more than 800 construction labor hours and (2) valued in excess of $300,000.00. This program is distinguished from the M/WBE Program in that it is based on workforce hours of the Bidder and *all* its participating subcontractors rather than the actual contract value of work. The instructions herein detail the specifics related to this program. This program is in *addition* to the M/WBE program.

I. City's Construction Employment Program.

A. The City has adopted a Construction Employment Program (Sections 3-501 through 3-525, Code of Ordinances) (the "Workforce Program" or "Program") to implement the City's policy of supporting the fullest possible utilization of minority and women workers in the construction industry.

B. The minimum workforce goals are currently set by ordinance at 10% for minorities and 2% for women. These goals are separate from M/WBE goals. Public recognition may be provided if the bidder achieves at least twice the minimum participation.

C. Construction contracts subject to the Workforce Program and the company-wide and project-specific workforce goals ("workforce goals") are those contracts to construct, reconstruct, improve, enlarge or alter any fixed work that is estimated by the City prior to solicitation to: (1) require more than 800 construction labor hours, (2) has estimated costs that exceed $300,000.00, and (3) involve the expenditure of public funds.

D. The successful bidder may meet company-wide goals by counting the bidder's utilization of minorities and women throughout the Kansas City metropolitan statistical area. In addition, the successful Bidder is responsible to ensure that it and its subcontractors cumulatively make good faith efforts to meet project-specific goals for utilization of minorities and women.

E. These Civil Rights & Equal Opportunity Department ("CREO KC") Forms & Instructions are part of the BIDDING DOCUMENTS and CONTRACT DOCUMENTS as defined in the General Conditions. By submitting a Bid, the Bidder agrees, as a material term of the contract, to carry out the City's Construction Employment Program by making good faith efforts to utilize minority and women workers to the fullest extent consistent with submitting the lowest and best bid to the City. Bidder agrees that the Program is incorporated into this document and agrees to follow the Program. Although it is not a requirement that a Bidder in fact meet or exceed the construction employment goals to receive approval from CREO KC, a Bidder not doing so is required to

objectively demonstrate to CREO KC that good faith efforts have been made.

F. The following reports are to be used for Construction Employment Program submittals:

1. Project Workforce Monthly Report
2. Company-Wide Workforce Monthly Report

II. Required Submissions.

A. Within forty-eight (48) hours after bid opening, the construction contractor shall submit the **Construction Employee Identification Report** (CREO KC Form 00485.04) and shall include: the name, home address, job title, sex and race/ethnicity of each person working for the Prime. The individuals to be listed on the form are those which the construction contractor *anticipates* will be performing construction labor hours creditable towards the minimum workforce goals applicable to the construction contractor individually.

The following circumstances also require the submission of a Construction Employee Identification Report:

a. Prior to contract execution for those City construction contracts awarded pursuant to a request for proposals (RFP), the construction contractor shall submit a **Construction Employee Identification Report** (CREO KC Form 00485.04).

b. At least ten (10) days prior to the date upon which any subcontractor is to commence work under a City construction contract, the Prime shall submit a **Construction Employee Identification Report** (CREO KC Form 00485.04) for the subcontractor.

B. The CREO KC Director has established the B2GNow Diversity Management System ("B2GNOW") (an online reporting tool) as the preferred method for fulfilling reporting requirements of the Workforce Program. The CREO KC Director will allow paper submission in lieu of on-line submission if the on-line submission process presents a hardship to the contractor.

C. Bidder must submit the following documents through B2GNow on a monthly basis if awarded the contract:

1. **Project Workforce Monthly Report.** This report is contract specific. This report must be submitted to the Director by the 15th of each month for the Contractor and each subcontractor. It will be utilized to report the Contractor's own workforce compliance data with regard to the City's construction contract. Failure to submit timely reports may result in delays in processing of current and future contract approvals and payment applications.

2. **Company-Wide Workforce Monthly Report.** This report is not contract specific; it is used to report on the utilization of women and minorities, by trade, company-wide. This report must be submitted to the Director by the 15th of each month. It will be utilized to report the Contractor's own workforce compliance data with regard to

every contract (both privately and publicly funded) that the Contractor has in progress throughout the Kansas City Metropolitan Statistical Area. Failure to submit timely reports may result in delays in processing of current and future contract approvals and payment applications.

III. Submittal Required for Final Contract Payment.

A. The final Project Workforce Monthly Report(s) and Company-Wide Workforce Monthly Report must be submitted before final payment will be made and/or retainage released. Contractor shall note the submittal of the final reports by notation in the box entitled "Final Report"

IV. Methods for Securing Workforce Participation and Good Faith Efforts.

A. A bidder is required to make good faith efforts to achieve the construction employment goals and ensure its subcontractors are making good faith efforts to achieve the construction employment goals. If a Bidder or its subcontractors will be unable to secure enough minority and female participation to meet or exceed the construction employment goals, a bidder must, within a reasonable time after so learning, request a waiver or modification of the goals by the Director of CREO KC. The Director will request evidence of the Bidder's and its' subcontractors' good faith efforts to meet the goals. The Director will examine the Bidder's request and the Bidder's documentation of good faith efforts for itself and its subcontractors. The Director will examine the Bidder's request and the Bidder's documentation of good faith efforts and grant or deny a waiver or modification. The Director will grant a waiver or modification only if the Bidder has made good faith efforts to secure minority and female participation.

IMPORTANT: The Bidder's subcontractors on a city construction contract must meet the workforce goals collectively. The bidder is responsible to ensure the subcontractors make good faith efforts to meet the workforce goals. Bidders are required to include language in its subcontracts that ensure the subcontractors make good faith efforts to meet or exceed the workforce goals.

B. In evaluating good faith efforts, the Director will consider whether the Bidder and its subcontractors have performed the following:

1. For those bidders that are not signatories to a collective bargaining agreement with organized labor:

    a. Requested in writing the assistance of the Director with respect to efforts to promote the utilization of minorities and women in the workforce and acted upon the Director's recommendations; and

    b. Advertised in minority or women trade association newsletters and/or minority or women owned media at least 15 calendar days prior to the utilization of any construction services on the city construction contract and used terminology that sufficiently describes the work available, the pay scale, the application process, and anything else that one might reasonably be expected to be informed of relevant to the position being advertised; and

    c. Maintained copies of each advertisement and a log identifying the publication and date of publication; and

d. Conducted real and substantial recruitment efforts, both oral and written, targeting resident, minority and women community-based organization, schools with a significant minority student population, and training organizations serving the recruitment area; and

e. Established and maintained a current list of resident, minority and women recruitment sources, providing written notification to the recruitment sources of available employment opportunities, and maintained records of the notices submitted to the organizations and any responses thereto; and

f. Maintained a current file for the time period of the city construction contract with the name, address, and telephone number of each resident, minority and woman job applicant, the source of the referral, whether or not the person was hired, and in the event that the applicant was not hired, the reason therefore; and

g. Promoted the retention of minorities and women in its workforce with the goals of achieving sufficient annual hours for minorities and women to qualify for applicable benefits; and

h. Required by written contract that all subcontractors comply with the above efforts.

2. For those bidders that are signatories to collective bargaining agreements with organized labor:

a. Requested in writing from each labor union representing crafts to be employed that:

i. the labor union make efforts to promote the utilization of residents of the City, minorities and women in the workforce; and

ii. the labor union identify any residents of the City, minorities and women in its membership eligible for employment; and

b. Collaborated with labor unions in promoting mentoring programs for journeypersons intended to assist minorities and women in increasing retention with the goals of achieving sufficient annual hours to qualify for applicable benefits; and

c. Maintained a current file with the name, address, and telephone number of each resident, minority and women worker identified by the labor union, whether or not the person was hired, and in the event the person was not hired, the reason therefore.

d. To the extent the good-faith efforts applicable to bidders that are signatories to collective bargaining agreements with organized labor conflict with the procedures implemented by the bidder in order to comply with the relevant bargaining agreement, the bidder shall substitute other procedures as may be approved by the Director in writing, in order to accomplish the purpose and intent of this section.

C. In the event workforce goals are not met or there is anticipation that goals will not be

met, a Bidder will be required to give the City documentation to prove that it and/or it's subcontractors made good faith efforts. The Bidder will be contacted by the City with further instructions about when this documentation must be submitted.

V. Access to Documents and Records.

A. By submitting a Bid, each Bidder agrees to permit the City, its duly authorized agents or employees, access at all reasonable times to all books and business records of Bidder as may be necessary to ascertain compliance with the requirements of this document and the Program, within ten (10) days of the date of the written request. Each bidder further agrees to require, if awarded the contract, that every subcontractor permit the City the same access to documents and records.

B. All Bidders agree to cooperate with the contracting department and CREO KC in studies and surveys regarding the construction employment program.

VI. Appeals.

A. In conformance with the Program, appeals may be made to the Construction Workforce Board on the following:

1. Determinations by the Director that a contractor did not meet the construction employment goals and did not make a good faith effort to meet the goals;
2. Recommendations by the Director to assess liquidated damages;
3. Recommendation by the Director that a contractor be declared ineligible to receive any city construction contract for a period of time up to one year.

B. Any appeal must be filed in writing with the Director within ten (10) working days of notice of the recommendation or determination. The appeal shall state with specificity why the Bidder or Contractor believes the recommendation or determination is incorrect.

C. Failure to file a timely appeal shall constitute a waiver of a Bidder's or Contractor's right to appeal such determination or recommendation and such person shall be estopped to deny the validity of any order, determination, recommendation or action of CREO KC which could have been timely appealed.

VII. Miscellaneous.

A. A Bidder or Contractor shall bear the burden of proof with regard to all issues on appeal.

B. The successful bidder may be required to meet with the Director of CREO KC or the Director's designee for the purpose of discussing the construction employment program, the bidder's efforts to realize the goals, and any other problems and/or issues affecting the realization of the goals or the program in general.

C. In the event of any conflict between this document and the Program, the provisions of the Program shall control. The terms used in this document are defined in the Program.

D. Oral representations are not binding on the City.

VIII. Failure to Meet Workforce Goals

A. If Contractor or its subcontractors fail to achieve the construction employment goals or make good faith efforts to achieve those goals without having previously obtained a

waiver or modification of those goals, the City will sustain damages, the exact extent of which would be difficult or impossible to ascertain. These damages are magnified if the failure to abide by the requirements of the Workforce Program is recurring. Therefore, if the directory finds that the contractor or subcontractor have not met, or made good faith efforts to meet, the construction employment goals for any quarter, the director may:

1. Assess liquidated damages against the construction contractor, as specified in the city construction contract;
2. Require the contractor to attend mandatory training, as specified in the construction contract;
3. Declare the contractor ineligible to receive any city construction contract or participate as a subcontractor under any city construction contract for a period of time up to six months, as specified in the construction contract.

IX. First Source Program

A. The City has established a labor force recruiting program intended to assist contractors in identifying, interviewing and hiring qualified job applicants residing in Kansas City, Missouri. While the contractor awarded a City construction contract is not prohibited from hiring persons residing outside Kansas City, Missouri, the recruiting resource provided for herein (the "First Source Program") must be utilized by the contractor subject to the construction employment goals as set forth in this **PART B, CONSTRUCTION EMPLOYMENT PROGRAM REQUIREMENTS**.

B. The City utilizes the services of the Full Employment Council, Inc., to administer the First Source Program. The contractor shall contact the Full Employment Council within 48 hours of contract award, regardless of whether the contractor has any hiring needs at that time, and within 48 hours following any job vacancy which the contractor reasonably anticipates filling during the term of the City construction contract. The contractor shall comply with the First Source Program requirements as implemented by the Full Employment Council unless otherwise excused in writing by the Director of CREO KC for good cause shown. To ensure compliance with the First Source Program, the contractor shall contact those persons at the Full Employment Council responsible for administering the program, which may be identified by visiting their website at www.feckc.org and clicking on the link for KCMO First Source Hiring Program. The contractor shall not hire any individual to provide construction services on a City construction contract unless the contractor has met the requirements of the First Source Program.

C. The contractor shall require that its subcontractors utilize the First Source Program to the same extent that the contractor is required to do so, and shall incorporate the requirements of this Section IX into every subcontract. Every subcontractor shall be required to contact the Full Employment Council within 48 hours of subcontract award, regardless of whether the subcontractor has any hiring needs at that time, and within 48 hours following any job vacancy which the subcontractor reasonably anticipates filling during the term of their subcontract on a City construction project.

AFFIDAVIT OF INTENDED UTILIZATION

(This Form must be submitted with your Bid/Proposal)

_____
(Department Project)

_____
(Bidder/Proposer)

STATE OF _____)
) ss
COUNTY OF _____)

I, _____, of lawful age and upon my oath state as follows:

1. This Affidavit is made for the purpose of complying with the provisions of the Civil Rights & Equal Opportunity Department's submittal requirements in the bid/proposal specifications on the above project and is given on behalf of the Bidder/Proposer listed below.

2. Bidder/Proposer assures that it presently intends to utilize the following MBE/WBE participation in the above project if awarded the Contract:

PROJECT GOALS: _____% MBE _____% WBE

BIDDER/PROPOSER PARTICIPATION: _____% MBE _____% WBE

3. To the best of Bidder's/Proposer's knowledge, the following are the names of certified MBEs or WBEs with whom Bidder/Proposer, or Bidder's/Proposer's subcontractors, presently intend to contract if awarded the Contract on the above project: ***(All firms must <u>currently</u> be certified by Kansas City, Missouri Dept. Of Civil Rights & Equal Opportunity)***

a. Name of M/WBE Firm _____
Address _____
Telephone No. _____
I.R.S. No. _____
Area/Scope of work _____
Subcontract amount _____

b. Name of M/WBE Firm _____
Address _____
Telephone No. _____
I.R.S. No. _____
Area/Scope of work _____
Subcontract amount _____

c. Name of M/WBE Firm _____
Address _____
Telephone No. _____
I.R.S. No. _____
Area/Scope of work _____
Subcontract amount _____

(List additional MBE/WBEs, if any, on additional pages and attach to this form)

4. Bidder/Proposer will identify before contract award, those MBE/WBE subcontractors with dollar amounts and scopes of work which apply to or exceed the MBE/WBE goals for the Project on the ***Contractor Utilization Plan/Request for Waiver (CREO KC 08)***.

5. Bidder/Proposer agrees that failure to meet or exceed the MBE/WBE Goals for the above project will automatically render this bid/proposal non-responsive if Bidder/Proposer fails to establish good faith efforts towards meeting the goals as set forth in the CREO KC Forms and Instructions.

6. If applicable, Bidder/Proposer assures that it will meet or exceed the minimum employment goals of 10% minority and 2% women during the term of its contract with City, or request a waiver of the goals. **NOTE**: **This paragraph is applicable ONLY if you are submitting a bid/proposal on a construction contract that was estimated by the City, prior to solicitation, as requiring more than 800 construction labor hours and costing in excess of $300,000.00.**

7. I am authorized to make this Affidavit on behalf of the Bidder/Proposer named below as:

_____ of _____
(Title) (Name of Bidder/Proposer)

Dated: _____ By: _____
(Affiant)

Subscribed and sworn to before me this _____ day of _____, 20____.

My Commission Expires: _____ _____
Notary Public

CONTRACTOR UTILIZATION PLAN/REQUEST FOR WAIVER

Project Number _____

Project Title _____

_____ _____
(Department Project) Department

_____
(Bidder/Proposer)

STATE OF_____)
) ss
COUNTY OF_____)

I,_____, of lawful age and upon my oath state as follows:

1. This Affidavit is made for the purpose of complying with the provisions of the MBE/WBE submittal requirements on the above project and the MBE/WBE Program and is given on behalf of the Bidder/Proposer listed below. It sets out the Bidder/Proposer's plan to utilize MBE and/or WBE contractors on the project.

2. The project target goals are_____**% MBE** and_____**% WBE.**

3. Bidder/Proposer assures that it will utilize a minimum of the following percentages of MBE/WBE participation in the above project:

   - **BIDDER/PROPOSER PARTICIPATION:_____% MBE_____% WBE**

   - **POST-BID/POST-RFP ESTIMATED BUDGET: $_____**

4. The following are the M/WBE subcontractors whose utilization Bidder/Proposer warrants will meet or exceed the above-listed Bidder/Proposer Participation. Bidder/Proposer warrants that it will utilize the M/WBE subcontractors to provide the goods/services described in the applicable Letter(s) of Intent to Subcontract, copies of which shall collectively be deemed incorporated herein). ***(All firms must currently be certified by Kansas City, Missouri)***

   - Name of M/WBE Firm _____
     Address_____
     Telephone No. _____
     I.R.S. No. _____

Name of M/WBE Firm _____
Address _____
Telephone No. _____
I.R.S. No. _____

Name of M/WBE Firm _____
Address _____
Telephone No. _____
I.R.S. No. _____

Name of M/WBE Firm _____
Address _____
Telephone No. _____
I.R.S. No. _____

Name of M/WBE Firm _____
Address _____
Telephone No. _____
I.R.S. No. _____

Name of M/WBE Firm _____
Address _____
Telephone No. _____
I.R.S. No. _____

(List additional M/WBEs, if any, on additional page and attach to this form)

4. The following is a breakdown of the percentage of the total contract amount that Bidder/Proposer agrees to pay to each listed M/WBE:

MBE/WBE BREAKDOWN SHEET

MBE FIRMS:

Name of MBE Firm	Supplier/Broker/Contractor	Subcontract Amount*	Weighted Value**	% of Total Contract

TOTAL MBE $ / TOTAL MBE %: $_____ _____%

WBE FIRMS:

Name of WBE Firm	Supplier/Broker/Contractor	Subcontract Amount*	Weighted Value**	% of Total Contract

TOTAL WBE $ / TOTAL WBE %: $_____ _____%

*"Subcontract Amount" refers to the dollar amount that Bidder/Proposer has agreed to pay each M/WBE subcontractor as of the date of contracting and is indicated here solely for the purpose of calculating the percentage that this sum represents in proportion to the total contract amount. Any contract amendments and/or change orders changing the total contract amount may alter the amount due an M/WBE under their subcontract for purposes of meeting or exceeding the Bidder/Proposer participation.

**"Weighted Value" means the portion of the subcontract amount that will be credited towards meeting the Bidder/Proposer participation. See CREO KC Forms and Instructions for allowable credit and special instructions for suppliers.

5. Bidder/Proposer acknowledges that the monetary amount to be paid each listed M/WBE for their work, and which is approved herein, is an amount corresponding to the percentage of the total contract amount allocable to each listed M/WBE as calculated in the MBE/WBE Breakdown Sheet. Bidder/Proposer further acknowledges that this amount may be higher than the subcontract amount listed therein as change orders and/or amendments changing the total contract amount may correspondingly increase the amount of compensation due an M/WBE for purposes of meeting or exceeding the Bidder/Proposer participation

6. Bidder/Proposer acknowledges that it is responsible for considering the effect that any change orders and/or amendments changing the total contract amount may have on its ability to meet or exceed the Bidder/Proposer participation. Bidder/Proposer further acknowledges that it is responsible for submitting a Request for Modification or Substitution if it will be unable to meet or exceed the Bidder/Proposer participation set forth herein.

7. If Bidder/Proposer has not achieved both the M/WBE goal(s) set for this Project, Bidder/Proposer hereby requests a waiver of the MBE and/or WBE goal(s) that Bidder/Proposer has failed to achieve

8. Bidder/Proposer will present documentation of its good faith efforts, a narrative summary detailing its efforts and the reasons its efforts were unsuccessful when requested by the City.

9. I hereby certify that I am authorized to make this Affidavit on behalf of the Bidder/Proposer named below and who shall abide by the terms set forth herein:

Bidder/Proposer primary contact: _____
Address: _____
_____
Phone Number: _____
Facsimile number: _____
E-mail Address: _____

By: _____
Title: _____
Date: _____
(Attach corporate seal if applicable)

Subscribed and sworn to before me this_____day of_____, 20____.

My Commission Expires: _____ _____
Notary Public

LETTER OF INTENT TO SUBCONTRACT

Check one:
Original LOI: ☐
Updated LOI: ☐

Project Name/Title _____

Project Location/Number _____

PART I: Prime Contractor_____agrees to enter into a contractual agreement with M/W/DBE Subcontractor_____who will provide the following goods/services in connection with the above-reference contract: [Insert a brief narrative describing goods/services to be provided. Broad Categorizations (e.g., "electrical," "plumbing," etc.) or the listing of NAICS Codes in which M/W/DBE Subcontractor is certified are insufficient and may result in denial of this Letter of Intent to Subcontract.]

_____

_____

_____

for an estimated amount of $_____(or_____% of the total estimated contract value.)

M/WBE Vendor type:

☐ Subcontractor/manufacturer (counts as 100% of contract value towards goals)
☐ Supplier (counts as 60% of the total dollar amount paid or to be paid by a prime contractor for supplies or goods towards goals)
☐ Broker (counts as 10% of the total dollar amount paid or to be paid by a prime contractor for supplies or goods towards goals)

M/W/DBE Subcontractor is, to the best of Prime Contractor's knowledge, currently certified with the City of Kansas City's Civil Rights & Equal Opportunity Department to perform in the capacities indicated herein. Prime Contractor agrees to utilize M/W/DBE Subcontractor in the capacities indicated herein, and M/W/DBE Subcontractor agrees to work on the above-referenced contract in the capacities indicated herein, contingent upon award of the contract to Prime Contractor.

PART 2: This section is to be completed by the M/W/DBE subcontractor listed above. Please attach additional sheets as needed for more than one intended sub-tier contract. **IMPORTANT: Falsification of this document will result in denial and other remedies available under City Code.**

Select one:

☐ The M/W/DBE Subcontractor listed above **IS NOT** subcontracting any portions of the above-stated scope of work(s). (Continue to Part 3.)

☐ The M/W/DBE Subcontractor listed above **IS** subcontracting certain portions of the above stated scope of work(s) to:

(1) Company name: _____

Full address: _____
Street number and name City, State and Zip Code

Primary contact: _____
Name Phone

a) This subcontractor is (select one): ☐MBE ☐WBE ☐DBE ☐N/A

i: If this subcontractor is an M/W/DBE certified with the City of Kansas City, Missouri, a separate Letter of Intent must be attached to this document.

ii. If this subcontractor is NOT a certified M/W/DBE certified with the City of Kansas City, Missouri, the firm must still be listed for reporting purposes but a Letter of Intent is not required.

b) Scope of work to be performed: _____

c) The dollar value of this agreement is: _____

PART 3:

NOTE: SIGNATURES AND NOTARIZATIONS REQUIRED FOR NEW LETTERS OF INTENT (LOI); SIGNATURES ONLY FOR UPDATED LOI (ADDING VALUE TO EXISTING CONTRACT).

PRIME CONTRACTOR BUSINESS NAME: _____

_____ _____

Signature: Prime Contractor Print Name

_____ _____

Title Date

State of)

County of)

I,_____, state that the above and foregoing is based on my best knowledge and belief.

Subscribed and sworn to before me, a notary public, on this day of_____, 20_____

My Commission Expires: _____ _____

Notary Public

STAMP:

MWDBE SUBCONTRACTOR BUSINESS NAME: _____

_____ _____

Signature: Subcontractor Print Name

_____ _____

Title Date

State of)

County of)

I,_____, state that the above and foregoing is based on my best knowledge and belief.

Subscribed and sworn to before me, a notary public, on this day of_____, 20_____

My Commission Expires: _____ _____

Notary Public

STAMP:

TIMETABLE FOR MBE/WBE UTILIZATION

(This form should be submitted to the City after contract award.)

I, _____, acting in my capacity as _____
(Name) *(Position with Firm)*
of _____, with the submittal of this Timetable, certify that
(Name of Firm)
the following timetable for MBE/WBE utilization in the fulfillment of this contract is correct and true to the best of my knowledge.

ALLOTTED TIME FOR THE COMPLETION OF THIS CONTRACT
(Check one only)

15 days	___	75 days	___	135 days	___
30 days	___	90 days	___	150 days	___
45 days	___	105 days	___	165 days	___
60 days	☐	120 days	☐	180 days	☐

Other _____ (Specify)

Throughout _____ Beginning 1/3 _____
Middle 1/3 _____ Final 1/3 _____
Beginning 1/3 _____% Middle 1/3 _____% Final 1/3 _____%

PLEASE NOTE: Any changes in this timetable require approval of the Civil Rights & Equal Opportunity Department in advance of the change.

If you have any questions regarding the completion of this form, please contact the Civil Rights & Equal Opportunity Department at: (816) 513-1836**.**

_____
(Signature)

_____
(Position with Firm)

_____
(Date)

REQUEST FOR MODIFICATION OR SUBSTITUTION

*(This Form **must** be submitted to CREO KC to request substitutions for an MBE/WBE listed in the Contractor Utilization Plan or for modification of the amount of MBE/WBE participation listed in the Contractor Utilization Plan. This Form shall be an amendment to the Contractor Utilization Plan.)*

BIDDER/PROPOSER/CONTRACTOR: _____
ADDRESS: _____
PROJECT NUMBER OR TITLE: _____
AMENDMENT/CHANGE ORDER NO: (if applicable) _____

Project Goals:	_____% MBE	_____% WBE
Contractor Utilization Plan:	_____% MBE	_____% WBE

1. I am the duly authorized representative of the above Bidder/Contractor/Proposer and am authorized to request this substitution or modification on behalf of the Bidder/Contractor/Proposer.

2. I hereby request that the Director of CREO KC recommend or approve: (check appropriate space(s))

   a. ☐ A substitution of the certified MBE/WBE firm _____,
   (Name of new firm)
   to perform _____,
   (Scope of work to be performed by new firm)

   for the MBE/WBE firm _____ which is currently
   (Name of old firm)
   listed on the Bidder's/Contractor's/Proposer's Contractor Utilization Plan to

   perform the following scope of work: _____.
   (Scope of work of old firm)

   b. ☐ A modification of the amount of MBE/WBE participation currently listed on the Bidder's/Contractor's/Proposer's Contractor Utilization Plan from

   _____ % MBE_____% WBE *(Fill in % of MBE/WBE Participation currently listed on Contractor Utilization Plan)*

   TO

   _____% MBE _____% WBE *(Fill in New % of MBE/WBE Participation requested for Contractor Utilization Plan)*

   c. Attach 00450.01 Letter of Intent to Subcontract letter for each new MBE/WBE to be added.
   d. Attach a copy of the most recent 00485.01 or on-line M/WBE Monthly Utilization Report

3. Bidder/Contractor/Proposer states that a substitution or modification is necessary because: (check applicable reason(s))

☐ The MBE/WBE listed on the Contractor Utilization Plan is non-responsive or cannot perform.

☐ The MBE/WBE listed on the Contractor Utilization Plan has increased its previously quoted price without a corresponding change in the scope of work.

☐ The MBE/WBE listed on the Contractor Utilization Plan has committed a material default or breach of its contract.

___ Requirements of the scope of work of the contract have changed and make subcontracting not feasible or not feasible at the levels required by the goals established for the contract.

___ The MBE/WBE listed on the Contractor Utilization Plan is unacceptable to the City contracting department.

___ Bidder/Contractor/Proposer has not attempted intentionally to evade the requirements of the Act and it is in the best interests of the City to allow a modification or substitution.

4. The following is a narrative summary of the Bidder's/Contractor's/Proposer's good faith efforts exhausted in attempts to substitute the MBE/WBE firm named above which is currently listed on the Contractor Utilization Plan with other qualified, certified MBE/WBE firms for the listed scope of work or any other scope of work in the project:

5. Bidder/Proposer/Contractor will present documentation when requested by the City to evidence its good faith efforts.

Dated:_____ _____
(Bidder/Proposer/Contractor)

_____
By: (Authorized Representative)

CREO KC MONTHLY REPORTING INSTRUCTIONS

M/WBE Monthly Utilization Report Instructions

1. MBE/WBE Reporting applies to Contracts that have approved MBE/WBE goals assigned.
2. The City will utilize a web-based MBE/WBE Reporting System in the administration of this Contract. This web-based application database is a collaboration tool selected and provided by the City, which will allow Contractors and Consultants/Subcontractors and Subconsultants to enter data and report on compliance.

Prevailing Wage Certified Payroll Report Instructions

1. Prevailing Wage Certified Payroll Report applies to Contracts that include Prevailing Wage or Davis Bacon Provisions.
2. This web-based application database is provided by the City for reporting certified payrolls and other related prevailing wage data.
3. Computer Requirements: Minimum Intel Pentium® 4 Processor 2.4 GHz or equivalent processor with 512MB of RAM; recommended Centrino Duo® Processors 1.6 GHz or equivalent with 2GB of RAM, or higher.
    a. Computer Operation System: Windows XP, Windows Vista, or Windows 7
    b. Web Browser: Google Chrome
    c. Connection Speed/Minimum Bandwidth: DSL, ADSL or T1 Line for transferring a minimum of 3 Mbps Downstream and 512 Kbps Upstream
4. City will assist Contractor in providing training of personnel and Subcontractor's personnel.
5. Contractor and Subcontractors shall have the responsibility for visiting the web site and entering data in on timely basis, and as necessary to be in compliance with Prevailing Wage Requirements included in their contracts.

Workforce Monthly Report Instructions

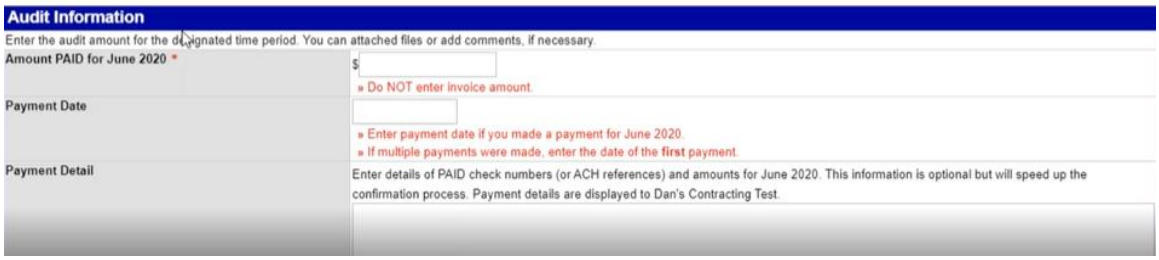
1. Workforce Monthly Reporting only applies to Construction Contracts greater than $300,000 and greater than 800 projected labor hours.
2. The City will utilize a web-based Reporting System in the administration of this Contract. This web-based application database is a collaboration tool selected and provided by the City, which will allow Contractors and Subcontractors to enter data and report on Workforce compliance.

M/WBE Monthly Compliance Audit Online Reporting Instructions

PRIME INSTRUCTIONS:

The Prime's responsibility is to report payments made to subcontractors for the prior month.

1. Log into B2GNow Diversity Management System (B2GNow)
2. On the Dashboard, click Contract Audits.
3. Select the specific audit that needs to be completed. Any and all money that changed hands during the month of the audit must be reported to the specific audit month.
4. To complete audit select Report 1 Subcontractor Payment. Under the actions column, select Submit Response for the specific subcontractor that needs reporting or select the Submit ALL Incomplete Records button to go to all the subcontractors to report amounts. Under the audit information answer the following questions:

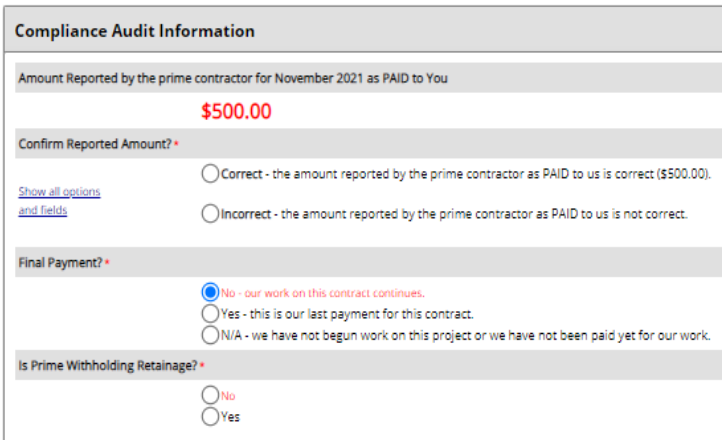


Once information has been entered, select review and save. Complete same steps for all subcontractors. If there were subcontractors that did not receive a payment for the specific audit month, click the Mark Remaining Subcontractors as Zero button to mark remaining subcontractors as 0.

SUBCONTRACTOR INSTRUCTIONS:

The responsibility of the Subcontractor is to confirm payment received for specific audit month.

1. Log in to B2GNow Diversity Management System (B2GNow)
2. On the Dashboard, select Contract Audits.
3. Select the specific audit that needs to be completed.
4. To complete audit, select Confirm Payment Received. There will be two options: correct or incorrect. Select correct if payment was in fact received OR if payment was not received or amount was different select incorrect. Answer all questions and select save to complete.



NOTE: Complete one M/WBE report per project.

An email notice will be sent from our organization monthly to notify Prime & Subcontractor users of incomplete audits.

Project-Specific Workforce Monthly Report

Human Relations Department - City of Kansas City Missouri

Report Date:		Reporting Period:		Project Description:	
Project Name:		Contractor:		Contract Awarded Date:	
City Project Number:		Contractor Address:		City Contract Number:	
Project Address:				City Vendor ID:	
		Contact Person/Phone:		Contractor Report ☐	Subcontractor Report ☐
E-mail Address:				Final Cumulative Report:	☐ Yes ☐ No

Report the total monthly hours of work performed by all workers on the City Construction Contract. Enter the total hours on all lines and in all columns. Reported workforce hours should be based on payroll records.

JOB CATEGORIES	OVERALL TOTAL (Sum of all Columns, A thru F Male & Female)	A Total Hours White Employees		B Total Hours Black Employees		C Total Hours Hispanic Employees		D Total Hours Asian/Pacific Islander		E Total Hours Native American Employee		F Total Hours Other/Unknown Race Employee		G KCMO Resident Hours
		M	F	M	F	M	F	M	F	M	F	M	F	Total #
Foreman/Supervisor														
Asbestos Worker Journeyman														
Asbestos Worker Apprentice														
Boilermaker Journeyman														
Boilermaker Apprentice														
Bricklayer Journeyman														
Bricklayer Apprentice														
Carpenter Journeyman														
Carpenter Apprentice														
Cement Mason Journeyman														
Cement Mason Apprentice														
Electrician Journeyman														
Electrician Apprentice														
Elevator Constructor Journeyman														
Elevator Constructor Apprentice														
Glazier Journeyman														
Glazier Apprentice														
Iron Worker Journeyman														
Iron Worker Apprentice														
Laborer Journeyman														
Laborer Apprentice														
Operating Engineer Journeyman														
Operating Engineer Apprentice														
Painter Journeyman														
Painter Apprentice														
Pipe Fitter/Plumber Journeyman														
Pipe Fitter/Plumber Apprentice														
Plasterer Journeyman														
Plasterer Apprentice														
Roofer Journeyman														
Roofer Apprentice														
Sheet Metal Journeyman														
Sheet Metal Apprentice														
Sprinkler Fitter														
Sprinkler Fitter Apprentice														
Truck Driver Journeyman														
Truck Driver Apprentice														
Welder Journeyman														
Welder Apprentice														
Other														
Monthly Total Hours														-
Total % of Monthly Hrs.														

Contractor shall submit report by the 15th of each month.

Report Submitted By: _____

Phillip Yelder, Director Human Relations Department
414 E. 12th Street, 4th Floor Kansas City, MO 64106
Phone: 816-513-1836 Email HRDcontractcompliance@kcmo.org

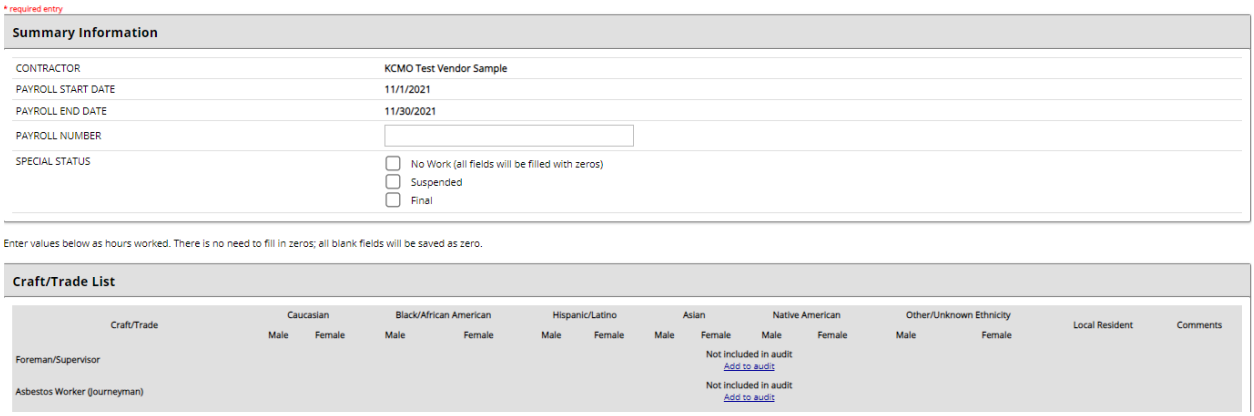
Date: _____

Workforce Monthly Report Forms only apply to Construction Contracts greater than $300,000.00 with greater than 800 projected labor hours.

Workforce Monthly Report Instructions

(Instructions for online reporting)

Completing a Workforce Audit:
To report your workforce hours:
1. Log into B2GNow Diversity Management System (B2GNow)
2. Click on the red underlined number of 'Incomplete audits' under Workforce Audits
3. Click View for the incomplete audit that needs to be completed.
4. Click Fill in Audit
5. Complete the form including the Payroll Number. Select Add to Audit to report hours worked for specific Craft/Trade.


* required entry

Summary Information

CONTRACTOR	KCMO Test Vendor Sample
PAYROLL START DATE	11/1/2021
PAYROLL END DATE	11/30/2021
PAYROLL NUMBER	
SPECIAL STATUS	☐ No Work (all fields will be filled with zeros) ☐ Suspended ☐ Final

Enter values below as hours worked. There is no need to fill in zeros; all blank fields will be saved as zero.

Craft/Trade List

Craft/Trade	Caucasian		Black/African American		Hispanic/Latino		Asian		Native American		Other/Unknown Ethnicity		Local Resident	Comments
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female		
Foreman/Supervisor								Not included in audit Add to audit						
Asbestos Worker (Journeyman)								Not included in audit Add to audit						

6. Scroll down and select review once hours have been reported.
7. Save and Certify to submit OR Save but Certify Later (to save a draft of your audit response). Audit must be certified for the workforce audit to be submitted for review. If there is an audit where no work was performed, and have 0 hours to report, select the Mark as No Work Audit button on step 4 to report 0 hours for all your employees. Select Certify & Release to Organization to complete. Mark Final for Special Status if the audit being completed is the last month of work, this will notify the system to stop generating monthly audits.

NOTE: If subcontractor has completed Workforce Audit, Prime MUST either accept audit and release to the organization or reject audit back to Subcontractor for correction.

An email notice will be sent from our organization monthly to notify Prime & Subcontractor users of incomplete audits.

Company-Wide Workforce Monthly Report

Human Relations Department - City of Kansas City, Missouri

Report Date:		Reporting Period:		Contract Awarded Date:	
Contractor:				City Vendor ID:	
Contact Person/Phone:		Contractor Address:		Contractor Report ☐	Subcontractor Report ☐
E-mail Address:		Have you hired any new construction workers this month?	☐ Yes ☐ No	#:	Final Cumulative Report: ☐ Yes ☐ No

Report total of all hours of work performed company-wide on all projects in the KCMO Metropolitan Statistical Area (MSA). Enter the total hours on all lines and in all columns. Workforce hours should be based on payroll records.

JOB CATEGORIES	OVERALL TOTAL (Sum of all Columns, A thru F Male & Female)	A Total Hours White Employees		B Total Hours Black Employees		C Total Hours Hispanic Employees		D Total Hours Asian/Pacific Islander		E Total Hours Native American Employee		F Total Hours Other/Unknown Race Employee		G KCMO Resident Hours
		M	F	M	F	M	F	M	F	M	F	M	F	Total #
Foreman/Supervisor														
Asbestos Worker Journeyman														
Asbestos Worker Apprentice														
Boilermaker Journeyman														
Boilermaker Apprentice														
Bricklayer Journeyman														
Bricklayer Apprentice														
Carpenter Journeyman														
Carpenter Apprentice														
Cement Mason														
Cement Mason Apprentice														
Electrician Journeyman														
Electrician Apprentice														
Elevator Constructor Journeyman														
Elevator Constructor Apprentice														
Glazier Journeyman														
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Iron Worker Journeyman														
Iron Worker Apprentice														
Laborer Journeyman														
Laborer Apprentice														
Operating Engineer Journeyman														
Operating Engineer Apprentice														
Painter Journeyman														
Painter Apprentice														
Pipe Fitter/Plumber Journeyman														
Pipe Fitter/Plumber Apprentice														
Plasterer Journeyman														
Plasterer Apprentice														
Roofer Journeyman														
Roofer Apprentice														
Sheet Metal Journeyman														
Sheet Metal Apprentice														
Sprinkler Fitter														
Sprinkler Fitter Apprentice														
Truck Driver Journeyman														
Truck Driver Apprentice														
Welder Journeyman														
Welder Apprentice														
Other														
Total Monthly Hours														-
Total % of Hours														

Contractor shall submit report by the 15th of each month.

Phillip Yelder, Director Human Relations Department
414 E. 12th Street, 4th Floor, Kansas City, MO 64106
Phone: 816-513-1836 Email HRDcontractcompliance@kcmo.org

Report Submitted By: _____

Date: _____

City of Kansas City, Missouri
Civil Rights & Equal Opportunity Department
Construction Contractor Employee Identification Report

Company Name: _____ **Prime's Name:** _____

Company Address: _____ **KCMO Project Name:** _____

Company City, State, Zip: _____ **KCMO Project Number:** _____

Name of Person Completing Report: _____ **Today's Date:** _____

Phone Number: _____

Email: _____ **City Department:** _____

Instructions:

1) Each applicable Prime Contractors **must complete this form for its company within 48 hours of bid opening**
2) The Civil Rights & Equal Opportunity Department strongly recommends usage of the electronic version of this form. This form may be obtained by visiting www.kcmo.gov website. The website is enabled with a "search" function on the Home page on the right corner. Select the magnifying glass and type in the search field "Contract Central". Select the first result, then click on the link to Standard City Contract Forms. Scroll down to Construction Contractor Employee Identification Report and click the link to open this document. Complete the fields in the Employee section; the Official Use Only section will automatically populate. NOTE: This form can be printed and attached to other required Bid documents.
3) All subcontractors shall be required to complete this form and submit to the Prime Contractor. For each subcontractor, the Prime must submit this form to City at least at least (10) days prior to the date the subcontractor shall commence work under a city construction contract.
4) Complete this form if you are the Prime contractor on a City construction project estimated over **$300,000 & over 800 man hours.**
5) Complete this form with data from your **current construction workforce** (no office personnel).
6) Prime contractor is responsible to ensure subcontractor completes this form as required in #3 above.

Official Use Only

Females		*KCMO Resident*
African American	0	0
Asian/Pacific Islander American	0	0
Caucasian American	0	0
Hispanic/Latino American	0	0
Native American	0	0
Other	0	0
	0	0

Males		*KCMO Resident*
African American	0	0
Asian/Pacific Islander American	0	0
Caucasian American	0	0
Hispanic/Latino American	0	0
Native American	0	0
Other	0	0
	0	0

Number of KCMO Residents	0
Number of Journeyman	0
Number of Apprentice	0

	Journeyman	*Apprentice*
Foreman/Supervisor	0	--
Asbestos Worker	0	0
Boilermaker	0	0
Bricklayer	0	0
Carpenter	0	0
Cement Mason	0	0
Electrician	0	0
Elevator Constructor	0	0
Glazier	0	0
Iron Worker	0	0
Laborer	0	0
	0	0

	Journeyman	*Apprentice*
Operating Engineer	0	0
Painter	0	0
Pipe Fitter/Plumber	0	0
Plasterer	0	0
Roofer	0	0
Sheet Metal	0	0
Sprinkler Fitter	0	0
Truck Driver	0	0
Welder	0	0
Other	0	--
	0	0

Company Name: 0 KCMO Project Name: 0 KCMO Project Number: 0

	Name		Job Title (*use drop down menu*)	Address	City	State	Zip Code	KCMO Resident	Gender	Ethnicity
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Company Name: 0 KCMO Project Name: 0 KCMO Project Number: 0

	Name		Job Title (*use drop down menu*)	Address	City	State	Zip Code	KCMO Resident	Gender	Ethnicity
	Last	First								
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Company Name: 0 KCMO Project Name: 0 KCMO Project Number: 0

	Name		Job Title (*use drop down menu*)	Address	City	State	Zip Code	KCMO Resident	Gender	Ethnicity
	Last	First								
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Company Name: 0 KCMO Project Name: 0 KCMO Project Number: 0

	Name		Job Title (*use drop down menu*)	Address	City	State	Zip Code	KCMO Resident	Gender	Ethnicity
	Last	First								
81										
82										
83										

AFFIDAVIT OF TRAINING PROGRAM

This form must be submitted with 48 hours of Bid Opening

Bidder _____

Project Title and Number _____

STATE OF MISSOURI)
) ss:
COUNTY OF _____)

After being duly sworn the person whose name and signature appears below hereby states under penalty of perjury that:

1. I am the duly authorized officer of the business indicated above ("Bidder") and I make this affidavit on behalf of Bidder.
2. Bidder certifies that it presently participates in a training program that facilitates entry into the construction industry and which may include an on-the-job or in-house training program, further described as follows:

(attach additional pages, if necessary)

3. If requested by the City, Bidder agrees to provide City further documentation of, or other information about, this training program within 48 hours of the request.
4. Bidder acknowledges that failure to submit this form to the City within 48 hours of the Bid Opening will automatically render its bid non-responsive.

I am authorized to make this Affidavit on behalf of the Bidder named below as:

_____ of _____
(Title) (Name of Bidder)

Dated: _____ By: _____
(Affiant)

Subscribed and sworn to before me this _____ day of _____, 20____.

My Commission Expires: _____ _____
Notary Public

AFFIRMATIVE ACTION PROGRAM AFFIDAVIT

(required for any contractor with 50 or more employees and
a contract with the City of Kansas City, Missouri, in excess of $300,000.00)

STATE OF _____)
) ss
COUNTY OF _____)

On this _____ day of _____, 20___, before me appeared _____, personally known by me or otherwise proven to be the person whose name is subscribed on this affidavit and who, being duly sworn, stated as follows:

I am of sound mind, capable of making this affidavit, and personally swear or affirm that the statements made herein are truthful to the best of my knowledge. I am the _____ (title) of _____ (business entity) and I am duly authorized, directed or empowered to act with full authority on behalf of the business entity in making this affidavit.

I hereby swear or affirm that [*enter business entity name*] has an affirmative action program (the "Program") in place and will maintain the Program for the duration of its contract with the City of Kansas City, Missouri ("City") as required by Chapter 3 of the City's Code of Ordinances.

I hereby additionally swear or affirm that attached hereto is a true copy of the Program.

I hereby additionally swear or affirm that the business entity shall not discriminate against any employee or applicant for employment because of race, color, sex, religion, national origin or ancestry, disability, sexual orientation, gender identity or age in a manner prohibited by Chapter 3 of the City's Code of Ordinances.

I acknowledge that I am signing this affidavit as the free act and deed of the business entity and that I am not doing so under duress.

_____
Affiant's signature

Subscribed and sworn to before me this _____ day of _____, 20____.

_____
Notary Public

My Commission expires:

Civil Rights and Equal Opportunity Department
Civil Rights and Wage Assurances

Non-discrimination in Employment. Contractor shall not discriminate against any employee or candidate for employment on the basis of an individual's race, hair texture or hair style associated with an individual's race, color, sex, religion, national origin, or ancestry, disability, sexual orientation, gender identity, age, or in any other manner prohibited by Chapter 38 of the City Code. Contractor shall not engage in any discrimination as prohibited by Chapter 3 of the City Code.

Ban the Box in Hiring and Promotion.

(a) Pursuant to Section 38-104, City Code Ordinances, Contractor shall not base a hiring or promotional decision on an applicant's criminal history or sentence related thereto, unless the employer can demonstrate that the employment-related decision was based on all information available including consideration of the frequency, recentness and severity of a criminal record and that the record was reasonably related to the duties and responsibilities of the position.

(b) Notwithstanding subsection (a), Contractor may inquire about an applicant's criminal history after it has been determined that the individual is otherwise qualified for the position, and only after the applicant has been interviewed for the position. Any such inquiry may be made of all applicants who are within the final selection pool of candidates from which a job will be filled.

(c) This provision shall not apply to positions where employers are required to exclude applicants with certain criminal convictions from employment due to local, state or federal law or regulation.

Title VI of the Civil Rights Act of 1964. Title VI of the Civil Rights Act of 1964 requires that no person in the United States shall, on the grounds of race, color, or national or origin (including limited English proficient individuals), be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance. The City of Kansas City, Missouri requires compliance with the requirements of Title VI in all of its programs and activities regardless of the funding source.
Contractor shall not discriminate on the grounds of race, color, or national or origin (including limited English proficient individuals).

Quality Services Assurance Act. If this Contract exceeds $160,000.00, Contractor certifies Contractor will pay all employees who will work on this Contract in the city limits of Kansas City, Missouri at least $15.00 per hour in compliance with the City's Quality Services Assurance Act,

Section 3-66, Code of Ordinances or City has granted Contractor an exemption pursuant to the Quality Services Assurance Act.

Anti-Discrimination Against Israel. If this Contract exceeds $100,000.00 and Contractor employs at least ten employees, pursuant to Section 34.600, RSMo., by executing this Contract, Contractor certifies it is not currently engaged in and shall not, for the duration of this contract, engage in a boycott of goods or services from the State of Israel; companies doing business in or with Israel or authorized by, licensed by, or organized under the laws of the State of Israel; or persons or entities doing business in the State of Israel.

Affirmative Action. If this Contract exceeds $300,000.00 and Contractor employs fifty (50) or more people, Contractor shall comply with City's Affirmative Action requirements in accordance with the provisions of Chapter 3 of City's Code, the rules and regulations relating to those sections, and any additions or amendments thereto; in executing any Contract subject to said provisions, Contractor warrants that it has an affirmative action program in place and will maintain the affirmative action program in place for the duration of the Contract. Contractor shall not discriminate against any employee or applicant for employment because of race, color, sex, religion, national origin or ancestry, disability, sexual orientation, gender identity or age in a manner prohibited by Chapter 3 of City's Code. Contractor shall:

(a) Execute and submit the City of Kansas City, Missouri CREO Affirmative Action Program Affidavit warranting that the Contractor has an affirmative action program in place and will maintain the affirmative action program in place for the duration of the Contract.

(b) Submit, in print or electronic format, a copy of Contractor's current certificate of compliance to the City's Civil Rights and Equal Opportunity Department (CREO) prior to receiving the first payment under the Contract, unless a copy has already been submitted to CREO at any point within the previous two (2) calendar years. If, and only if, Contractor does not possess a current certification of compliance, Contractor shall submit, in print or electronic format, a copy of its affirmative action program to CREO prior to receiving the first payment under the Contract, unless a copy has already been submitted to CREO at any point within the previous two (2) calendar years.

(c) Require any Subcontractor awarded a subcontract exceeding $300,000.00 to affirm that Subcontractor has an affirmative action program in place and will maintain the affirmative action program in place for the duration of the subcontract.

(d) Obtain from any Subcontractor awarded a subcontract exceeding $300,000.00 a copy of the Subcontractor's current certificate of compliance and tender a copy of the same, in print or

electronic format, to CREO within thirty (30) days from the date the subcontract is executed. If, and only if, Subcontractor does not possess a current certificate of compliance, Contractor shall obtain a copy of the Subcontractor's affirmative action program and tender a copy of the same, in print or electronic format, to CREO within thirty (30) days from the date the subcontract is executed.

City has the right to take action as directed by City's Civil Rights and Equal Opportunity Department to enforce this provision. If Contractor fails, refuses or neglects to comply with the provisions of Chapter 3 of City's Code, then such failure shall be deemed a total breach of this Contract and this Contract may be terminated, cancelled or suspended, in whole or in part, and Contractor may be declared ineligible for any further contracts funded by City for a period of one (1) year. This is a material term of this Contract.

Compliance with Laws. Contractor shall comply with all federal, state and local laws, ordinances and regulations applicable to the work and this Agreement. Contractor shall maintain in effect all the licenses, permissions, authorizations, consents and permits that it needs to carry out its obligations under this Agreement.

Prevailing Wage. If the Agreement exceeds $75,000.00 and any of the Services performed by Contractor includes construction, reconstruction, improvement, enlargement, alteration, painting and decorating, or major repair, that is subject to the Missouri Prevailing Wage Law (Section 290.210, RSMo – 290.340, RSMo), Contractor shall immediately notify the City prior to performing Services so the parties can execute an agreement that incorporates, the appropriate Wage Order. Contractor shall comply with all requirements of Section 290.210, RSMo – 290.340, RSMo even if Contractor fails to notify
the City.

CITY OF FOUNTAINS
HEART OF THE NATION

KANSAS CITY
MISSOURI

Pre Contract Bidder's Certification

Project Number: 80XX0001 / Contract Number: 1805

Project Title: ADA Compliance for various KC Water Buildings – Blue River WTP, Administration Building

STATE OF)
) SS
COUNTY OF)

Before me, the undersigned authority, personally appeared, who, being by me duly sworn deposed as follows:

I am authorized to make this affidavit on behalf of the named Bidder. I am of sound mind, capable of making this affidavit, and personally acquainted with the facts herein stated:

A. Bidder is current on payment of its Federal and State Income tax withholding and unemployment insurance payments, either in Missouri for companies doing business in Missouri, or in the state in which Bidder has its principal office; and

B. Bidder declares one of the following, regarding all work performed two (2) years immediately preceding the date of the Bid (check one):

☐ Contract by contract listing of all of Bidder's written notices of violations of any Federal or State prevailing wage statute in which prevailing wage penalties were assessed against the Bidder or paid by the Bidder (Complete and attach additional sheets if necessary):

1. _____
2. _____
3. _____

☐ There have been no written notices of violations of any Federal or State prevailing wage statute in which prevailing wage penalties were assessed against the Bidder or paid by the Bidder.

C. Bidder is currently in good standing with the Missouri Secretary of State or Bidder has filed a Registration of Fictitious Name with the Missouri Secretary of State.

_____
(Bidder's Name) (Date)

Signature of Person Making This Affidavit

In witness whereof, I have hereunto subscribed my name and affixed my official seal this ___day of , 20__.

CITY OF FOUNTAINS
HEART OF THE NATION

KANSAS CITY
MISSOURI

CONTRACT REQUIRED SUBMISSIONS

Project Number: 80XX0001 / Contract Number: 1805

Project Title: ADA Compliance for various KC Water Buildings – Blue River WTP, Administration Building

These instructions are to assist Contractor in providing all necessary documents to enter into a contract with the City.

MISSOURI SECRETARY OF STATE BUSINESS ENTITY REGISTRATION

- ☐ For a corporation, current Certificate of Good Standing from the Missouri Secretary of State ((816) 889-2925 or (816) 889-2926 or a web site print-out, dated no more than ninety (90) days before the date furnished to the City – One Copy.
- ☐ For a business that is not a corporation and not doing business in the exact name of the proprietor, a copy from the Secretary of State, ((816) 889-2925 or (816) 889-2926 of the filed Registration of Fictitious Name dated no more than ninety (90) days before the date furnished to the City – One Copy.

EMPLOYEE ELIGIBILITY VERIFICATION AFFIDAVIT [Required if the contract exceeds $5,000.00]

- ☐ 00515.01 Employee Eligibility Verification Affidavit – One Executed Affidavit
- ☐ First and last pages of the E-Verify Program Memorandum of Understanding that your company has received from the U.S. Department of Homeland Security verifying enrollment in the program. For assistance, contact E-Verify Operations at 888-464-4218 – One Copy.

SUBCONTRACTORS LISTING [Applicable form provided]

- ☐ Non-Construction Subcontractors List – One Copy
- ☐ 01290.09 Subcontractors & Major Material Suppliers List – One Copy

PAYMENT BONDS (If applicable)

- ☐ Each copy of the Payment bond must be signed and properly dated by the following, as applicable:

  Corporation - A corporate officer authorized to sign on behalf of the corporation and the signature must be attested by a witness to the signature; OR

  Limited Liability Company - A member of the limited liability company authorized to sign on behalf of the company and a witness to the signature must attest the signature; OR

  Partnership - A partner authorized to sign on behalf of the partnership and the signature must be attested by a witness to the signature; OR

  Sole Proprietor - By the proprietor and the signature must be attested by a witness to the signature; OR

  Joint Venture - The parties to the Joint Venture authorized to sign on behalf of each party to the Joint Venture, or a person authorized by each party to the Joint Venture to sign on behalf of all parties to the Joint Venture; AND

  Surety - A person authorized by the Surety to sign on behalf of the Surety. A power of attorney issued by the Surety Company authorizing its representative to sign the Agreement must be attached to the Agreement and each copy.

PERFORMANCE AND MAINTENANCE BOND (If applicable)

- ☐ As applicable, each copy of the Performance and Maintenance bond must be signed and properly dated by:

  Corporation - A corporate officer authorized to sign on behalf of the corporation and the signature must be attested by a witness to the signature; OR

  Limited Liability Company - A member of the limited liability company authorized to sign on behalf of the company and a witness to the signature must attest the signature; OR

  Partnership - A partner authorized to sign on behalf of the partnership and the signature must be attested by a witness to the signature; OR

  Sole Proprietor - By the proprietor and the signature must be attested by a witness to the signature; OR

  Joint Venture - The parties to the Joint Venture authorized to sign on behalf of each party to the Joint Venture, or a person authorized by each party to the Joint Venture to sign on behalf of all parties to the Joint Venture; AND

  Surety - A person authorized by the Surety to sign on behalf of the Surety. A power of attorney issued by the Surety Company authorizing its representative to sign the Agreement must be attached to the Agreement and each copy.

CERTIFICATES OF INSURANCE [Sample form provided] - If you have any questions regarding requirements for insurance certificates, please contact the City's Risk Management Office, 816 513-1299.

- ☐ Provide a certificate of insurance for all insurance that may be required in the contract such as:

  Commercial General Liability
  Workers' Compensation and Employers' Liability
  Commercial Automobile Liability
  Railroad Protective Liability
  Environmental Liability
  Asbestos Liability
  Longshoremen's Insurance
  Property Insurance

- ☐ List the NAIC Number (National Association of Insurance Commissioners) or A.M. Best Number for each Insurer listed on the Certificate of Insurance.

- ☐ Certificate "Kansas City, Missouri" must named as an Additional Insured.

- ☐ Check the insurance requirements of the Contract. If Contract Documents require that other entities be included as additional insureds, each entity shall be listed on the certificate(s).

- ☐ Description of Operations must include Project/Contract Number and Project/Contract Title/Description as contained in the Contract Documents. The Certificate Holder and address block shall be completed as follows:

  Kansas City, Missouri
  [Name of applicable City Department]
  [Name of Contract Administrator, Buyer, or Project Manager]
  [Department Address]
  Kansas City, Missouri **[Zip Code]**

- ☐ If your insurance agent prepares an ACORD form, the automobile insurance must be "any auto" or better for acceptance by the City.

AFFIRMATIVE ACTION REQUIREMENTS

- ☐ Proposed Affirmative Action Program or a copy of a Certificate of Affirmative Action Compliance – One copy.

PRE-CONTRACT BIDDER'S CERTIFICATION (Prevailing Wage Contracts; Form provided)

- ☐ Submit form 00490 - Bidder's Pre-Contract Certification (provided).

HEALTH AND SAFETY PLAN (If applicable)

- ☐ Bidder's Health and Safety Plan – One copy or one CD Rom.

EMPLOYEE ELIGIBILITY VERIFICATION AFFIDAVIT

(Required for any contract with the City of Kansas City, Missouri in excess of $5,000.00)

STATE OF _____)
) ss
COUNTY OF _____)

On this _____ day of _____, 20___, before me appeared _____, personally known by me or otherwise proven to be the person whose name is subscribed on this affidavit and who, being duly sworn, stated as follows:

I am of sound mind, capable of making this affidavit, and personally swear or affirm that the statements made herein are truthful to the best of my knowledge. I am the _____ (title) of _____ (business entity) and I am duly authorized, directed or empowered to act with full authority on behalf of the business entity in making this affidavit.

I hereby swear or affirm that the business entity does not knowingly employ any person in connection with the contracted services who does not have the legal right or authorization under federal law to work in the United States as defined in 8 U.S.C. § 1324a(h)(3).

I hereby additionally swear or affirm that the business entity is enrolled in an electronic verification of work program operated by the United States Department of Homeland Security (E-Verify) or an equivalent federal work authorization program operated by the United States Department of Homeland Security to verify information of newly hired employees, under the Immigration Reform and Control Act of 1986, and that the business entity will participate in said program with respect to any person hired by the business entity to perform any work in connection with the contracted services. I have attached hereto documentation sufficient to establish the business entity's enrollment and participation in the required electronic verification of work program.

I am aware and recognize that unless certain contractual requirements are satisfied and affidavits obtained as provided in Section 285.530, RSMo, the business entity may face liability for violations committed by its subcontractors, notwithstanding the fact that the business entity may itself be compliant.

I acknowledge that I am signing this affidavit as the free act and deed of the business entity and that I am not doing so under duress.

_____
Affiant's signature

Subscribed and sworn to before me this _____ day of _____, 20____.

_____
Notary Public

My Commission expires:

Company ID Number:

THE E-VERIFY
MEMORANDUM OF UNDERSTANDING
FOR EMPLOYERS

ARTICLE I
PURPOSE AND AUTHORITY

The parties to this agreement are the Department of Homeland Security (DHS) and the _____ (Employer). The purpose of this agreement is to set forth terms and conditions which the Employer will follow while participating in E-Verify.

E-Verify is a program that electronically confirms an employee's eligibility to work in the United States after completion of Form I-9, Employment Eligibility Verification (Form I-9). This Memorandum of Understanding (MOU) explains certain features of the E-Verify program and describes specific responsibilities of the Employer, the Social Security Administration (SSA), and DHS.

Authority for the E-Verify program is found in Title IV, Subtitle A, of the Illegal Immigration Reform and Immigrant Responsibility Act of 1996 (IIRIRA), Pub. L. 104-208, 110 Stat. 3009, as amended (8 U.S.C. § 1324a note). The Federal Acquisition Regulation (FAR) Subpart 22.18, "Employment Eligibility Verification" and Executive Order 12989, as amended, provide authority for Federal contractors and subcontractors (Federal contractor) to use E-Verify to verify the employment eligibility of certain employees working on Federal contracts.

ARTICLE II
RESPONSIBILITIES

A. RESPONSIBILITIES OF THE EMPLOYER

1. The Employer agrees to display the following notices supplied by DHS in a prominent place that is clearly visible to prospective employees and all employees who are to be verified through the system:

   a. Notice of E-Verify Participation

   b. Notice of Right to Work

2. The Employer agrees to provide to the SSA and DHS the names, titles, addresses, and telephone numbers of the Employer representatives to be contacted about E-Verify. The Employer also agrees to keep such information current by providing updated information to SSA and DHS whenever the representatives' contact information changes.

3. The Employer agrees to grant E-Verify access only to current employees who need E-Verify access. Employers must promptly terminate an employee's E-Verify access if the employer is separated from the company or no longer needs access to E-Verify.

4. The Employer agrees to become familiar with and comply with the most recent version of the E-Verify User Manual.

5. The Employer agrees that any Employer Representative who will create E-Verify cases will complete the E-Verify Tutorial before that individual creates any cases.

a. The Employer agrees that all Employer representatives will take the refresher tutorials when prompted by E-Verify in order to continue using E-Verify. Failure to complete a refresher tutorial will prevent the Employer Representative from continued use of E-Verify.

6. The Employer agrees to comply with current Form I-9 procedures, with two exceptions:

a. If an employee presents a "List B" identity document, the Employer agrees to only accept "List B" documents that contain a photo. (List B documents identified in 8 C.F.R. § 274a.2(b)(1)(B)) can be presented during the Form I-9 process to establish identity.) If an employee objects to the photo requirement for religious reasons, the Employer should contact E-Verify at 888-464-4218.

b. If an employee presents a DHS Form I-551 (Permanent Resident Card), Form I-766 (Employment Authorization Document), or U.S. Passport or Passport Card to complete Form I-9, the Employer agrees to make a photocopy of the document and to retain the photocopy with the employee's Form I-9. The Employer will use the photocopy to verify the photo and to assist DHS with its review of photo mismatches that employees contest. DHS may in the future designate other documents that activate the photo screening tool.

Note: Subject only to the exceptions noted previously in this paragraph, employees still retain the right to present any List A, or List B and List C, document(s) to complete the Form I-9.

7. The Employer agrees to record the case verification number on the employee's Form I-9 or to print the screen containing the case verification number and attach it to the employee's Form I-9.

8. The Employer agrees that, although it participates in E-Verify, the Employer has a responsibility to complete, retain, and make available for inspection Forms I-9 that relate to its employees, or from other requirements of applicable regulations or laws, including the obligation to comply with the antidiscrimination requirements of section 274B of the INA with respect to Form I-9 procedures.

a. The following modified requirements are the only exceptions to an Employer's obligation to not employ unauthorized workers and comply with the anti-discrimination provision of the INA: (1) List B identity documents must have photos, as described in paragraph 6 above; (2) When an Employer confirms the identity and employment eligibility of newly hired employee using E-Verify procedures, the Employer establishes a rebuttable presumption that it has not violated section 274A(a)(1)(A) of the Immigration and Nationality Act (INA) with respect to the hiring of that employee; (3) If the Employer receives a final nonconfirmation for an employee, but continues to employ that person, the Employer must notify DHS and the Employer is subject to a civil money penalty between $550 and $1,100 for each failure to notify DHS of continued employment following a final nonconfirmation; (4) If the Employer continues to employ an employee after receiving a final nonconfirmation, then the Employer is subject to a rebuttable presumption that it has knowingly

employed an unauthorized alien in violation of section 274A(a)(1)(A); and (5) no E-Verify participant is civilly or criminally liable under any law for any action taken in good faith based on information provided through the E-Verify.

b. DHS reserves the right to conduct Form I-9 compliance inspections, as well as any other enforcement or compliance activity authorized by law, including site visits, to ensure proper use of E-Verify.

9. The Employer is strictly prohibited from creating an E-Verify case before the employee has been hired, meaning that a firm offer of employment was extended and accepted and Form I-9 was completed. The Employer agrees to create an E-Verify case for new employees within three Employer business days after each employee has been hired (after both Sections 1 and 2 of Form I-9 have been completed), and to complete as many steps of the E-Verify process as are necessary according to the E-Verify User Manual. If E-Verify is temporarily unavailable, the three-day time period will be extended until it is again operational in order to accommodate the Employer's attempting, in good faith, to make inquiries during the period of unavailability.

10. The Employer agrees not to use E-Verify for pre-employment screening of job applicants, in support of any unlawful employment practice, or for any other use that this MOU or the E-Verify User Manual does not authorize.

11. The Employer must use E-Verify for all new employees. The Employer will not verify selectively and will not verify employees hired before the effective date of this MOU. Employers who are Federal contractors may qualify for exceptions to this requirement as described in Article II.B of this MOU.

12. The Employer agrees to follow appropriate procedures (see Article III below) regarding tentative nonconfirmations. The Employer must promptly notify employees in private of the finding and provide them with the notice and letter containing information specific to the employee's E-Verify case. The Employer agrees to provide both the English and the translated notice and letter for employees with limited English proficiency to employees. The Employer agrees to provide written referral instructions to employees and instruct affected employees to bring the English copy of the letter to the SSA. The Employer must allow employees to contest the finding, and not take adverse action against employees if they choose to contest the finding, while their case is still pending. Further, when employees contest a tentative nonconfirmation based upon a photo mismatch, the Employer must take additional steps (see Article III.B. below) to contact DHS with information necessary to resolve the challenge.

13. The Employer agrees not to take any adverse action against an employee based upon the employee's perceived employment eligibility status while SSA or DHS is processing the verification request unless the Employer obtains knowledge (as defined in 8 C.F.R. § 274a.1(l)) that the employee is not work authorized. The Employer understands that an initial inability of the SSA or DHS automated verification system to verify work authorization, a tentative nonconfirmation, a case in continuance (indicating the need for additional time for the government to resolve a case), or the finding of a photo mismatch, does not establish, and should not be interpreted as, evidence that the employee is not work authorized. In any of such cases, the employee must be provided a full and fair opportunity to contest the finding, and if he or she does so, the employee may not be terminated or suffer any adverse employment consequences based upon the employee's perceived employment eligibility status

(including denying, reducing, or extending work hours, delaying or preventing training, requiring an employee to work in poorer conditions, withholding pay, refusing to assign the employee to a Federal contract or other assignment, or otherwise assuming that he or she is unauthorized to work) until and unless secondary verification by SSA or DHS has been completed and a final nonconfirmation has been issued. If the employee does not choose to contest a tentative nonconfirmation or a photo mismatch or if a secondary verification is completed and a final nonconfirmation is issued, then the Employer can find the employee is not work authorized and terminate the employee's employment. Employers or employees with questions about a final nonconfirmation may call E-Verify at 1-888-464-4218 (customer service) or 1-888-897-7781 (worker hotline).

14. The Employer agrees to comply with Title VII of the Civil Rights Act of 1964 and section 274B of the INA as applicable by not discriminating unlawfully against any individual in hiring, firing, employment eligibility verification, or recruitment or referral practices because of his or her national origin or citizenship status, or by committing discriminatory documentary practices. The Employer understands that such illegal practices can include selective verification or use of E-Verify except as provided in part D below, or discharging or refusing to hire employees because they appear or sound "foreign" or have received tentative nonconfirmations. The Employer further understands that any violation of the immigration-related unfair employment practices provisions in section 274B of the INA could subject the Employer to civil penalties, back pay awards, and other sanctions, and violations of Title VII could subject the Employer to back pay awards, compensatory and punitive damages. Violations of either section 274B of the INA or Title VII may also lead to the termination of its participation in E-Verify. If the Employer has any questions relating to the anti-discrimination provision, it should contact OSC at 1-800-255-8155 or 1-800-237-2515 (TDD).

15. The Employer agrees that it will use the information it receives from E-Verify only to confirm the employment eligibility of employees as authorized by this MOU. The Employer agrees that it will safeguard this information, and means of access to it (such as PINS and passwords), to ensure that it is not used for any other purpose and as necessary to protect its confidentiality, including ensuring that it is not disseminated to any person other than employees of the Employer who are authorized to perform the Employer's responsibilities under this MOU, except for such dissemination as may be authorized in advance by SSA or DHS for legitimate purposes.

16. The Employer agrees to notify DHS immediately in the event of a breach of personal information. Breaches are defined as loss of control or unauthorized access to E-Verify personal data. All suspected or confirmed breaches should be reported by calling 1-888-464-4218 or via email at E-Verify@dhs.gov. Please use "Privacy Incident – Password" in the subject line of your email when sending a breach report to E-Verify.

17. The Employer acknowledges that the information it receives from SSA is governed by the Privacy Act (5 U.S.C. § 552a(i)(1) and (3)) and the Social Security Act (42 U.S.C. 1306(a)). Any person who obtains this information under false pretenses or uses it for any purpose other than as provided for in this MOU may be subject to criminal penalties.

18. The Employer agrees to cooperate with DHS and SSA in their compliance monitoring and evaluation of E-Verify, which includes permitting DHS, SSA, their contractors and other agents, upon

reasonable notice, to review Forms I-9 and other employment records and to interview it and its employees regarding the Employer's use of E-Verify, and to respond in a prompt and accurate manner to DHS requests for information relating to their participation in E-Verify.

19. The Employer shall not make any false or unauthorized claims or references about its participation in E-Verify on its website, in advertising materials, or other media. The Employer shall not describe its services as federally-approved, federally-certified, or federally-recognized, or use language with a similar intent on its website or other materials provided to the public. Entering into this MOU does not mean that E-Verify endorses or authorizes your E-Verify services and any claim to that effect is false.

20. The Employer shall not state in its website or other public documents that any language used therein has been provided or approved by DHS, USCIS or the Verification Division, without first obtaining the prior written consent of DHS.

21. The Employer agrees that E-Verify trademarks and logos may be used only under license by DHS/USCIS (see M-795 (Web)) and, other than pursuant to the specific terms of such license, may not be used in any manner that might imply that the Employer's services, products, websites, or publications are sponsored by, endorsed by, licensed by, or affiliated with DHS, USCIS, or E-Verify.

22. The Employer understands that if it uses E-Verify procedures for any purpose other than as authorized by this MOU, the Employer may be subject to appropriate legal action and termination of its participation in E-Verify according to this MOU.

B. RESPONSIBILITIES OF FEDERAL CONTRACTORS

1. If the Employer is a Federal contractor with the FAR E-Verify clause subject to the employment verification terms in Subpart 22.18 of the FAR, it will become familiar with and comply with the most current version of the E-Verify User Manual for Federal Contractors as well as the E-Verify Supplemental Guide for Federal Contractors.

2. In addition to the responsibilities of every employer outlined in this MOU, the Employer understands that if it is a Federal contractor subject to the employment verification terms in Subpart 22.18 of the FAR it must verify the employment eligibility of any "employee assigned to the contract" (as defined in FAR 22.1801). Once an employee has been verified through E-Verify by the Employer, the Employer may not create a second case for the employee through E-Verify.

a. An Employer that is not enrolled in E-Verify as a Federal contractor at the time of a contract award must enroll as a Federal contractor in the E-Verify program within 30 calendar days of contract award and, within 90 days of enrollment, begin to verify employment eligibility of new hires using E-Verify. The Employer must verify those employees who are working in the United States, whether or not they are assigned to the contract. Once the Employer begins verifying new hires, such verification of new hires must be initiated within three business days after the hire date. Once enrolled in E-Verify as a Federal contractor, the Employer must begin verification of employees assigned to the contract within 90 calendar days after the date of enrollment or within 30 days of an employee's assignment to the contract, whichever date is later.

b. Employers enrolled in E-Verify as a Federal contractor for 90 days or more at the time of a contract award must use E-Verify to begin verification of employment eligibility for new hires of the Employer who are working in the United States, whether or not assigned to the contract, within three business days after the date of hire. If the Employer is enrolled in E-Verify as a Federal contractor for 90 calendar days or less at the time of contract award, the Employer must, within 90 days of enrollment, begin to use E-Verify to initiate verification of new hires of the contractor who are working in the United States, whether or not assigned to the contract. Such verification of new hires must be initiated within three business days after the date of hire. An Employer enrolled as a Federal contractor in E-Verify must begin verification of each employee assigned to the contract within 90 calendar days after date of contract award or within 30 days after assignment to the contract, whichever is later.

c. Federal contractors that are institutions of higher education (as defined at 20 U.S.C. 1001(a)), state or local governments, governments of Federally recognized Indian tribes, or sureties performing under a takeover agreement entered into with a Federal agency under a performance bond may choose to only verify new and existing employees assigned to the Federal contract. Such Federal contractors may, however, elect to verify all new hires, and/or all existing employees hired after November 6, 1986. Employers in this category must begin verification of employees assigned to the contract within 90 calendar days after the date of enrollment or within 30 days of an employee's assignment to the contract, whichever date is later.

d. Upon enrollment, Employers who are Federal contractors may elect to verify employment eligibility of all existing employees working in the United States who were hired after November 6, 1986, instead of verifying only those employees assigned to a covered Federal contract. After enrollment, Employers must elect to verify existing staff following DHS procedures and begin E-Verify verification of all existing employees within 180 days after the election.

e. The Employer may use a previously completed Form I-9 as the basis for creating an E-Verify case for an employee assigned to a contract as long as:

i. That Form I-9 is complete (including the SSN) and complies with Article II.A.6,

ii. The employee's work authorization has not expired, and

iii. The Employer has reviewed the Form I-9 information either in person or in communications with the employee to ensure that the employee's Section 1, Form I-9 attestation has not changed (including, but not limited to, a lawful permanent resident alien having become a naturalized U.S. citizen).

f. The Employer shall complete a new Form I-9 consistent with Article II.A.6 or update the previous Form I-9 to provide the necessary information if:

i. The Employer cannot determine that Form I-9 complies with Article II.A.6,

ii. The employee's basis for work authorization as attested in Section 1 has expired or changed, or

iii. The Form I-9 contains no SSN or is otherwise incomplete.

Note: If Section 1 of Form I-9 is otherwise valid and up-to-date and the form otherwise complies with

Article II.C.5, but reflects documentation (such as a U.S. passport or Form I-551) that expired after completing Form I-9, the Employer shall not require the production of additional documentation, or use the photo screening tool described in Article II.A.5, subject to any additional or superseding instructions that may be provided on this subject in the E-Verify User Manual.

g. The Employer agrees not to require a second verification using E-Verify of any assigned employee who has previously been verified as a newly hired employee under this MOU or to authorize verification of any existing employee by any Employer that is not a Federal contractor based on this Article.

3. The Employer understands that if it is a Federal contractor, its compliance with this MOU is a performance requirement under the terms of the Federal contract or subcontract, and the Employer consents to the release of information relating to compliance with its verification responsibilities under this MOU to contracting officers or other officials authorized to review the Employer's compliance with Federal contracting requirements.

C. RESPONSIBILITIES OF SSA

1. SSA agrees to allow DHS to compare data provided by the Employer against SSA's database. SSA sends DHS confirmation that the data sent either matches or does not match the information in SSA's database.

2. SSA agrees to safeguard the information the Employer provides through E-Verify procedures. SSA also agrees to limit access to such information, as is appropriate by law, to individuals responsible for the verification of Social Security numbers or responsible for evaluation of E-Verify or such other persons or entities who may be authorized by SSA as governed by the Privacy Act (5 U.S.C. § 552a), the Social Security Act (42 U.S.C. 1306(a)), and SSA regulations (20 CFR Part 401).

3. SSA agrees to provide case results from its database within three Federal Government work days of the initial inquiry. E-Verify provides the information to the Employer.

4. SSA agrees to update SSA records as necessary if the employee who contests the SSA tentative nonconfirmation visits an SSA field office and provides the required evidence. If the employee visits an SSA field office within the eight Federal Government work days from the date of referral to SSA, SSA agrees to update SSA records, if appropriate, within the eight-day period unless SSA determines that more than eight days may be necessary. In such cases, SSA will provide additional instructions to the employee. If the employee does not visit SSA in the time allowed, E-Verify may provide a final nonconfirmation to the employer.

Note: If an Employer experiences technical problems, or has a policy question, the employer should contact E-Verify at 1-888-464-4218.

D. RESPONSIBILITIES OF DHS

1. DHS agrees to provide the Employer with selected data from DHS databases to enable the Employer to conduct, to the extent authorized by this MOU:

a. Automated verification checks on alien employees by electronic means, and

b. Photo verification checks (when available) on employees.

2. DHS agrees to assist the Employer with operational problems associated with the Employer's participation in E-Verify. DHS agrees to provide the Employer names, titles, addresses, and telephone numbers of DHS representatives to be contacted during the E-Verify process.

3. DHS agrees to provide to the Employer with access to E-Verify training materials as well as an E-Verify User Manual that contain instructions on E-Verify policies, procedures, and requirements for both SSA and DHS, including restrictions on the use of E-Verify.

4. DHS agrees to train Employers on all important changes made to E-Verify through the use of mandatory refresher tutorials and updates to the E-Verify User Manual. Even without changes to E-Verify, DHS reserves the right to require employers to take mandatory refresher tutorials.

5. DHS agrees to provide to the Employer a notice, which indicates the Employer's participation in E-Verify. DHS also agrees to provide to the Employer anti-discrimination notices issued by the Office of Special Counsel for Immigration-Related Unfair Employment Practices (OSC), Civil Rights Division, U.S. Department of Justice.

6. DHS agrees to issue each of the Employer's E-Verify users a unique user identification number and password that permits them to log in to E-Verify.

7. DHS agrees to safeguard the information the Employer provides, and to limit access to such information to individuals responsible for the verification process, for evaluation of E-Verify, or to such other persons or entities as may be authorized by applicable law. Information will be used only to verify the accuracy of Social Security numbers and employment eligibility, to enforce the INA and Federal criminal laws, and to administer Federal contracting requirements.

8. DHS agrees to provide a means of automated verification that provides (in conjunction with SSA verification procedures) confirmation or tentative nonconfirmation of employees' employment eligibility within three Federal Government work days of the initial inquiry.

9. DHS agrees to provide a means of secondary verification (including updating DHS records) for employees who contest DHS tentative nonconfirmations and photo mismatch tentative nonconfirmations. This provides final confirmation or nonconfirmation of the employees' employment eligibility within 10 Federal Government work days of the date of referral to DHS, unless DHS determines that more than 10 days may be necessary. In such cases, DHS will provide additional verification instructions.

ARTICLE III

REFERRAL OF INDIVIDUALS TO SSA AND DHS

A. REFERRAL TO SSA

1. If the Employer receives a tentative nonconfirmation issued by SSA, the Employer must print the notice as directed by E-Verify. The Employer must promptly notify employees in private of the finding and provide them with the notice and letter containing information specific to the employee's E-Verify

case. The Employer also agrees to provide both the English and the translated notice and letter for employees with limited English proficiency to employees. The Employer agrees to provide written referral instructions to employees and instruct affected employees to bring the English copy of the letter to the SSA. The Employer must allow employees to contest the finding, and not take adverse action against employees if they choose to contest the finding, while their case is still pending.

2. The Employer agrees to obtain the employee's response about whether he or she will contest the tentative nonconfirmation as soon as possible after the Employer receives the tentative nonconfirmation. Only the employee may determine whether he or she will contest the tentative nonconfirmation.

3. After a tentative nonconfirmation, the Employer will refer employees to SSA field offices only as directed by E-Verify. The Employer must record the case verification number, review the employee information submitted to E-Verify to identify any errors, and find out whether the employee contests the tentative nonconfirmation. The Employer will transmit the Social Security number, or any other corrected employee information that SSA requests, to SSA for verification again if this review indicates a need to do so.

4. The Employer will instruct the employee to visit an SSA office within eight Federal Government work days. SSA will electronically transmit the result of the referral to the Employer within 10 Federal Government work days of the referral unless it determines that more than 10 days is necessary.

5. While waiting for case results, the Employer agrees to check the E-Verify system regularly for case updates.

6. The Employer agrees not to ask the employee to obtain a printout from the Social Security Administration number database (the Numident) or other written verification of the SSN from the SSA.

B. REFERRAL TO DHS

1. If the Employer receives a tentative nonconfirmation issued by DHS, the Employer must promptly notify employees in private of the finding and provide them with the notice and letter containing information specific to the employee's E-Verify case. The Employer also agrees to provide both the English and the translated notice and letter for employees with limited English proficiency to employees. The Employer must allow employees to contest the finding, and not take adverse action against employees if they choose to contest the finding, while their case is still pending.

2. The Employer agrees to obtain the employee's response about whether he or she will contest the tentative nonconfirmation as soon as possible after the Employer receives the tentative nonconfirmation. Only the employee may determine whether he or she will contest the tentative nonconfirmation.

3. The Employer agrees to refer individuals to DHS only when the employee chooses to contest a tentative nonconfirmation.

4. If the employee contests a tentative nonconfirmation issued by DHS, the Employer will instruct the

employee to contact DHS through its toll-free hotline (as found on the referral letter) within eight Federal Government work days.

5. If the Employer finds a photo mismatch, the Employer must provide the photo mismatch tentative nonconfirmation notice and follow the instructions outlined in paragraph 1 of this section for tentative nonconfirmations, generally.

6. The Employer agrees that if an employee contests a tentative nonconfirmation based upon a photo mismatch, the Employer will send a copy of the employee's Form I-551, Form I-766, U.S. Passport, or passport card to DHS for review by:

a. Scanning and uploading the document, or

b. Sending a photocopy of the document by express mail (furnished and paid for by the employer).

7. The Employer understands that if it cannot determine whether there is a photo match/mismatch, the Employer must forward the employee's documentation to DHS as described in the preceding paragraph. The Employer agrees to resolve the case as specified by the DHS representative who will determine the photo match or mismatch.

8. DHS will electronically transmit the result of the referral to the Employer within 10 Federal Government work days of the referral unless it determines that more than 10 days is necessary.

9. While waiting for case results, the Employer agrees to check the E-Verify system regularly for case updates.

ARTICLE IV
SERVICE PROVISIONS

A. NO SERVICE FEES

1. SSA and DHS will not charge the Employer for verification services performed under this MOU. The Employer is responsible for providing equipment needed to make inquiries. To access E-Verify, an Employer will need a personal computer with Internet access.

ARTICLE V
MODIFICATION AND TERMINATION

A. MODIFICATION

1. This MOU is effective upon the signature of all parties and shall continue in effect for as long as the SSA and DHS operates the E-Verify program unless modified in writing by the mutual consent of all parties.

2. Any and all E-Verify system enhancements by DHS or SSA, including but not limited to E-Verify checking against additional data sources and instituting new verification policies or procedures, will be covered under this MOU and will not cause the need for a supplemental MOU that outlines these changes.

B. TERMINATION

1. The Employer may terminate this MOU and its participation in E-Verify at any time upon 30 days prior written notice to the other parties.

2. Notwithstanding Article V, part A of this MOU, DHS may terminate this MOU, and thereby the Employer's participation in E-Verify, with or without notice at any time if deemed necessary because of the requirements of law or policy, or upon a determination by SSA or DHS that there has been a breach of system integrity or security by the Employer, or a failure on the part of the Employer to comply with established E-Verify procedures and/or legal requirements. The Employer understands that if it is a Federal contractor, termination of this MOU by any party for any reason may negatively affect the performance of its contractual responsibilities. Similarly, the Employer understands that if it is in a state where E-Verify is mandatory, termination of this by any party MOU may negatively affect the Employer's business.

3. An Employer that is a Federal contractor may terminate this MOU when the Federal contract that requires its participation in E-Verify is terminated or completed. In such cases, the Federal contractor must provide written notice to DHS. If an Employer that is a Federal contractor fails to provide such notice, then that Employer will remain an E-Verify participant, will remain bound by the terms of this MOU that apply to non-Federal contractor participants, and will be required to use the E-Verify procedures to verify the employment eligibility of all newly hired employees.

4. The Employer agrees that E-Verify is not liable for any losses, financial or otherwise, if the Employer is terminated from E-Verify.

ARTICLE VI
PARTIES

A. Some or all SSA and DHS responsibilities under this MOU may be performed by contractor(s), and SSA and DHS may adjust verification responsibilities between each other as necessary. By separate agreement with DHS, SSA has agreed to perform its responsibilities as described in this MOU.

B. Nothing in this MOU is intended, or should be construed, to create any right or benefit, substantive or procedural, enforceable at law by any third party against the United States, its agencies, officers, or employees, or against the Employer, its agents, officers, or employees.

C. The Employer may not assign, directly or indirectly, whether by operation of law, change of control or merger, all or any part of its rights or obligations under this MOU without the prior written consent of DHS, which consent shall not be unreasonably withheld or delayed. Any attempt to sublicense, assign, or transfer any of the rights, duties, or obligations herein is void.

D. Each party shall be solely responsible for defending any claim or action against it arising out of or related to E-Verify or this MOU, whether civil or criminal, and for any liability wherefrom, including (but not limited to) any dispute between the Employer and any other person or entity regarding the applicability of Section 403(d) of IIRIRA to any action taken or allegedly taken by the Employer.

E. The Employer understands that its participation in E-Verify is not confidential information and may be disclosed as authorized or required by law and DHS or SSA policy, including but not limited to,

Congressional oversight, E-Verify publicity and media inquiries, determinations of compliance with Federal contractual requirements, and responses to inquiries under the Freedom of Information Act (FOIA).

F. The individuals whose signatures appear below represent that they are authorized to enter into this MOU on behalf of the Employer and DHS respectively. The Employer understands that any inaccurate statement, representation, data or other information provided to DHS may subject the Employer, its subcontractors, its employees, or its representatives to: (1) prosecution for false statements pursuant to 18 U.S.C. 1001 and/or; (2) immediate termination of its MOU and/or; (3) possible debarment or suspension.

G. The foregoing constitutes the full agreement on this subject between DHS and the Employer.

To be accepted as an E-Verify participant, you should only sign the Employer's Section of the signature page. If you have any questions, contact E-Verify at 1-888-464-4218.

Company ID Number:

Approved by:

Employer	
Name (Please Type or Print)	Title
Signature	Date
Department of Homeland Security – Verification Division	
Name (Please Type or Print)	Title
Signature	Date

Company ID Number:

Information Required for the E-Verify Program **Information relating to your Company:**	
Company Name	
Company Facility Address	
Company Alternate Address	
County or Parish	
Employer Identification Number	
North American Industry Classification Systems Code	
Parent Company	
Number of Employees	
Number of Sites Verified for	

Company ID Number:

Are you verifying for more than 1 site? If yes, please provide the number of sites verified for in each State:

Company ID Number:

Information relating to the Program Administrator(s) for your Company on policy questions or operational problems:

Company ID Number:

Reset Form Print Form

Form **5060**

Missouri Department of Revenue
Project Exemption Certificate

This form is to be completed and given to your contractor.

Exempt Entity and Project Information

Name of Exempt Entity Issuing the Certificate			Missouri Tax Exemption Number
Address	City	State	ZIP Code
E-mail Address			
Project Number	Project Begin Date (MM/DD/YYYY)		Estimated Project End Date (MM/DD/YYYY)
	___ ___ / ___ ___ / ___ ___ ___ ___		___ ___ / ___ ___ / ___ ___ ___ ___
Description of Project			
Project Location			Certificate Expiration Date (MM/DD/YYYY)
			___ ___ / ___ ___ / ___ ___ ___ ___

Provide a signed copy of this certificate, along with a copy of the exempt entity's Missouri Sales and Use Tax Exemption Letter to each contractor or subcontractor who will be purchasing tangible personal property for use in this project. It is the responsibility of the exempt entity to ensure the validity of the information on the certificate. The exempt entity must issue a new certificate if any of the information changes.

Signature of Authorized Exempt Entity	Printed Name of Authorized Exempt Entity	Date (MM/DD/YYYY)
		___ ___ / ___ ___ / ___ ___ ___ ___

Contractor

The Missouri exempt entity named above hereby authorizes the purchase, without sales tax, of tangible personal property to be incorporated or consumed in the construction project identified herein and no other, pursuant to **Section 144.062, RSMo.** Under penalties of perjury, I declare that the above information and any attached supplement is true, complete, and correct.

Name of Purchasing Contractor	Signature of Contractor	Date (MM/DD/YYYY)
		___ ___ / ___ ___ / ___ ___ ___ ___

Address	City	State	ZIP Code

Subcontractor

Contractors - Present this to your supplier in order to purchase the necessary materials tax exempt. Complete the Subcontractor portion if extending the certificate to your subcontractor. The contractor must sign the form in the space provided below.

Name of Purchasing Subcontractor			
Address	City	State	ZIP Code

Signature of Contractor	Contractor's Printed Name	Date (MM/DD/YYYY)
		___ ___ / ___ ___ / ___ ___ ___ ___

Taxation Division
P.O Box 358
Jefferson City, MO 65105-0358

Phone: (573) 751-2836
Fax: (573) 522-1271
E-mail: salestaxexemptions@dor.mo.gov

Visit **http://dor.mo.gov/business/sales/sales-use-exemptions.php** for additional information.

State of Missouri

EXEMPTION FROM MISSOURI SALES AND USE TAX ON PURCHASES

Issued to:

CITY OF KANSAS CITY
414 E 12TH ST 3RD FLOOR
KANSAS CITY MO 64106

Missouri Tax ID Number: 12490466

Effective Date: 07/11/2002

Your application for sales/use tax exempt status has been approved pursuant to Section 144.030.1, RSMo. This letter is issued as documentation of your exempt status.

Purchases by your Agency are not subject to sales or use tax if within the conduct of your Agency's exempt functions and activities. When purchasing with this exemption, furnish all sellers or vendors a copy of this letter. This exemption may not be used by individuals making personal purchases.

A contractor may purchase and pay for construction materials exempt from sales tax when fulfilling a contract with your Agency only if your Agency issues a project exemption certificate and the contractor makes purchases in compliance with the provisions of Section 144.062, RSMo.

Sales by your Agency are subject to all applicable state and local sales taxes. If you engage in the business of selling tangible personal property or taxable services at retail, you must obtain a Missouri Retail Sales Tax License and collect and remit sales tax.

This is a continuing exemption subject to legislative changes and review by the Director of Revenue. If your Agency ceases to qualify as an exempt entity, this exemption will cease to be valid. This exemption is not assignable or transferable. It is an exemption from sales and use taxes only and is not an exemption from real or personal property tax.

Any alteration to this exemption letter renders it invalid.

If you have any questions regarding the use of this letter, please contact the Division of Taxation and Collection, P.O. Box 3300, Jefferson City, MO 65105-3300, phone 573-751-2836.

(DI6030)

CITY OF FOUNTAINS
HEART OF THE NATION

KANSAS CITY
MISSOURI

PERFORMANCE AND MAINTENANCE BOND

Project Number: 80XX0001 / Contract Number: 1805

Project Title: ADA Compliance for various KC Water Buildings – Blue River WTP, Administration Building

KNOW ALL MEN BY THESE PRESENTS: That _____, as PRINCIPAL (CONTRACTOR), and _____, (SURETY), licensed to do business as such in the State of Missouri, hereby bind themselves and their respective heirs, executors, administrators, successors, and assigns unto Kansas City, Missouri, a constitutionally chartered municipal corporation, (OWNER), as obligee, in the penal sum of _____ Dollars ($ _____) for the payment whereof CONTRACTOR and SURETY bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS,

CONTRACTOR has entered into a Contract with OWNER for 80XX0001/1805 ADA Compliance for various KC Water Buildings. Blue River WTP Administration Bldg. which Contract, including any present or future amendment thereto, is incorporated herein by reference and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if CONTRACTOR shall promptly and faithfully perform said Contract including all duly authorized changes thereto, and including any maintenance requirements contained therein, according to all the terms thereof, including those under which CONTRACTOR agrees to pay legally required wage rates including the prevailing hourly rate of wages in the locality, as determined by the Department of Labor and Industrial Relations or by final judicial determination, for each craft or type of workman required to execute the Contract and, further, shall defend, indemnify, and hold harmless OWNER from all damages, including but not limited to, liquidated damages, loss and expense occasioned by any failure whatsoever of said CONTRACTOR and SURETY to fully comply with and carry out each and every requirement of the Contract, then this obligation shall be void; otherwise, it shall remain in full force and effect.

WAIVER. That SURETY, for value received, hereby expressly agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the Work to be performed thereunder, shall in any way affect the obligations of this Bond; and it does hereby waive notice of any such change, extension of time, or alteration or addition to the terms of the Contract or the Work to be performed thereunder.

IN WITNESS WHEREOF, the above parties have executed this instrument the ____ day of _____, 20__.

CONTRACTOR
Name, address and facsimile number of Contractor

_____
_____
_____
_____

I hereby certify that I have authority to execute this document on behalf of Contractor.

By: _____
Title: _____

(Attach corporate seal if applicable)

SURETY
Name, address and facsimile number of Surety:

_____
_____
_____
_____

I hereby certify that (1) I have authority to execute this document on behalf of Surety; (2) Surety has an A.M. Best rating of A-, V, or better; (3) Surety is named in the current list of "Companies Holding Certificates of Authority as Acceptable Reinsuring Companies: as published in Circular 570 (most current revision) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury; and (4) Surety is duly licensed to issue bonds in the State of Missouri and in the jurisdiction in which the Project is located.

By:_____
Title:_____
Date:_____

(Attach seal and Power of Attorney)

CITY OF FOUNTAINS
HEART OF THE NATION

KANSAS CITY
MISSOURI

PAYMENT BOND

Project/Contract Numbers: 80XX0001 /1805

Project Title: ADA Compliance for various KC Water Buildings- Blue River WTP, Administration Building

---

KNOW ALL MEN BY THESE PRESENTS: That _____, as PRINCIPAL (CONTRACTOR), and_____, (SURETY), licensed to do business as such in the State of Missouri, hereby bind themselves and their respective heirs, executors, administrators, successors, and assigns unto Kansas City, Missouri, a constitutionally chartered municipal corporation, (OWNER), as obligee, in the penal sum of _____ Dollars ($_____) for the payment whereof CONTRACTOR and SURETY bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS,

CONTRACTOR has entered into a contract with OWNER for **Project/Contract 80XX0001/1805 ADA Compliance for various KC Water Buildings Blue River WTP Administration Building**, which Contract, including any present or future amendment thereto, is incorporated herein by reference and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if in connection with the Contract, including all duly authorized modifications thereto, prompt payment shall be made to all laborers, subcontractors, teamsters, truck drivers, owners or other suppliers or for equipment employed on the job, and other claimants, for all labor performed in such work whether done for CONTRACTOR, a subcontractor, SURETY, a completion contractor or otherwise (at the full wage rates required by any law of the United States or of the State of Missouri, where applicable), for services furnished and consumed, for repairs on machinery, for equipment, tools, materials, lubricants, oil, gasoline, water, gas, power, light, heat, oil, telephone service, grain, hay, feed, coal, coke, groceries and foodstuffs, either consumed, rented, used or reasonably required for use in connection with the construction of the work or in the performance of the Contract and all insurance premiums, both for compensation and for all other kinds of insurance on the work, for sales taxes and for royalties in connection with, or incidental to, the completion of the Contract, in all instances whether the claim be directly against CONTRACTOR, against SURETY or its completion contractor, through a subcontractor or otherwise, and, further, if CONTRACTOR shall defend, indemnify and hold harmless OWNER from all such claims, demands or suits by any such person or entity, then this obligation shall be void; otherwise, it shall remain in full force and effect.

Any conditions legally required to be included in a Payment Bond on this Contract, including but not limited to those set out in §107.170 RSMo.are included herein by reference.

SURETY agrees that, in the event that CONTRACTOR fails to make payment of the obligations covered by this Bond, it will do so and, further, that within forty-five (45) days of receiving, at the address given below, a claim hereunder stating the amount claimed and the basis for the claim in reasonable detail, it (a) will send an answer to the claimant, with a copy to OWNER stating the amounts that are undisputed and the basis for challenging any amounts that are disputed, and (b) will pay any amounts that are undisputed. The amount of this Bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder.

While this Bond is in force, it may be sued on at the instance of any party to whom any such payment is due, in the name of OWNER to the use for such party. OWNER shall not be liable for the payment of any costs or expenses of any such suit.

No suit shall be commenced or pursued hereunder other than in a state court of competent jurisdiction in Jackson, Clay or Platte County, Missouri, or in the United States District Court for the Western District of

Missouri.

WAIVER. That SURETY, for value received, hereby expressly agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the Work to be performed thereunder, shall in any way affect the obligations of this Bond; and it does hereby waive notice of any such change, extension of time, or alteration or addition to the terms of the Contract or the Work to be performed thereunder.

IN WITNESS WHEREOF, the above parties have executed this instrument the _____ day of_____ _____, 20____.

CONTRACTOR
Name, address and facsimile number of Contractor

_____
_____
_____
_____

I hereby certify that I have authority to execute this document on behalf of Contractor.

By: _____
Title:_____

(Attach corporate seal if applicable)

SURETY
Name, address and facsimile number of Surety:

_____
_____
_____
_____

I hereby certify that (1) I have authority to execute this document on behalf of Surety; (2) Surety has an A.M. Best rating of A-. or better; (3) Surety is named in the current list of “Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies” as published in Circular 570 (most current revision) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury; and(4) Surety is duly licensed to issue bonds in the State of Missouri and in the jurisdiction in which the Project is located.

By:_____
Title:_____
Date:_____

(Attach seal and Power of Attorney)

ACORD®

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME:	
AGENT NAME AND ADDRESS	PHONE (A/C, No, Ext):	FAX (A/C, No):
	E-MAIL ADDRESS:	
	INSURER(S) AFFORDING COVERAGE	NAIC #
	INSURER A : ABC INSURANCE COMPANY	
INSURED	INSURER B :	
CONTRACTOR NAME AND ADDRESS	INSURER C :	
	INSURER D :	
	INSURER E :	
	INSURER F :	

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	GENERAL LIABILITY ☑ COMMERCIAL GENERAL LIABILITY ☐ CLAIMS-MADE ☑ OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: ☐ POLICY ☑ PRO-JECT ☐ LOC	Y	Y	POLICY NUMBER	1/1/2011	1/1/2012	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 1,000,000 $ 50,000 $ 10,000 $ 1,000,000 $ 2,000,000 $ 2,000,000
A	AUTOMOBILE LIABILITY ☑ ANY AUTO ALL OWNED AUTOS ☐ SCHEDULED AUTOS ☑ HIRED AUTOS ☑ NON-OWNED AUTOS	Y	Y	POLICY NUMBER	1/1/2011	1/1/2012	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ 1,000,000 $ $ $
A	☑ UMBRELLA LIAB ☑ OCCUR EXCESS LIAB ☐ CLAIMS-MADE DED ☑ RETENTION $ 10,000	Y	Y	POLICY NUMBER	1/1/2011	1/1/2012	EACH OCCURRENCE AGGREGATE	$ 2,000,000 $ 2,000,000
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y/N: N (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	N/A	Y	POLICY NUMBER	1/1/2011	1/1/2012	☑ WC STATU-TORY LIMITS ☐ OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$ 1,000,000 $ 1,000,000 $ 1,000,000
A	Leased/Rented/Equip. Owned Equipment Builders Risk/Installation Floater	N/A	Y	POLICY NUMBER	1/1/2011	1/1/2012	Limit; Deductible Limit; Deductible Limit; Deductible	

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

Project No. _____ [Title]. Certholder (City) and _____ (Design Professional) and any other entities named in 00800 SCs are named as primary, noncontributing Additional Insureds including products and completed operations, excluding workers compensation, employers liability and professional liability. Waiver of subrogation applies as allowed by law. [The policies required above shall contain no exclusions for work expressly within the subcontractors scope of work.]

CERTIFICATE HOLDER

City of Kansas City, Missouri

_____ [Department]

_____ [Address]

Kansas City, MO _____ [Zip]

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

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AUTHORIZATION TO RELEASE
A
REVENUE CLEARANCE LETTER

Revenue Division
414 East 12th Street, 2nd floor, Room 202 W
Kansas City, MO 64106 Phone (816) 513-1135 Fax (816) 513-1077 email: revenue@kcmo.org

I authorize the City of Kansas City, Missouri, Finance Department, Revenue Division, to release a Revenue Clearance Letter for:

Name of Taxpayer: _____ Tax I.D.#_____
(PRINT)

Address: _____

Check this box and the City will send the Clearance Letter to you or the contractor designated.

☐ **I authorize the City to provide a copy of the Taxpayer's Revenue Clearance Letter to the following:**

NAME *(PRINT)*	**BUSINESS NAME**	**TITLE**

ADDRESS	**CITY, STATE, ZIP CODE**

PHONE NUMBER	**FAX NUMBER**	**E-MAIL ADDRESS**

☐ **I authorize the City to provide the Taxpayer's Revenue Clearance Letter to all City Departments and to publish on the City's internet/intranet website that the Taxpayer is in compliance with the tax ordinances administered by the City's Commissioner of Revenue.**

Please send my 1st Revenue Clearance Letter to: _____
(Print Name of City Department/Contact Person/E-mail/Fax Number)

This authorization shall expire one (1) year from the date of the signature.

The City, Commissioner of Revenue and the Revenue Division personnel (hereinafter "the City"), are hereby held harmless from any and all liability relating to unauthorized disclosure of confidential tax information resulting from release of information under all applicable confidentiality laws including federal, state, or local including any damages sustained by wrongful transmission of confidential tax information to any other person.

UNDER PENALTIES OF PERJURY, I DECLARE THAT I HAVE EXAMINED THIS AUTHORIZATION, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT IS TRUE, CORRECT AND COMPLETE.

I hereby certify that I am the Taxpayer named herein or that I have the authority to execute this authorization and hold harmless agreement on behalf of the Taxpayer.

NAME *(PRINT)*	**TITLE** *(IF APPLICABLE)*	
SIGNATURE	**PHONE NUMBER**	**DATE**

A FACSIMILE OF THIS DOCUMENT SHALL CONSTITUTE AN ORIGINAL

KANSAS CITY
MISSOURI

Finance Department

Revenue Division

414 E 12th St. 1st Floor
Kansas City, MO 64106-2786

DO NOT MAIL
atL003

Phone: (816) 513-1120
Fax: (816) 513-1264
Email: revenue@kcmo.org
Website: kcmo.gov/tax

Letter Id: L0000143555
Date: 07-Feb-2024
Taxpayer Id: 0000161779

EXAMPLE TAXPAYER
414 E 12TH ST
KANSAS CITY MO 64106-2702

TAX CLEARANCE STATUS: APPROVED

As of this date, this notice is to inform you that EXAMPLE TAXPAYER is current with all taxes and license fees with the City of Kansas City, Mo., Finance Department/ Revenue Division.

Please note this could change if we perform a full review of your accounts in the future. We will let you know if we need to review your accounts. You will need to pay any amounts that are found due at that time.

Eric Davison
Commissioner of Revenue

Visit kcmo.gov/quicktax to view the status of your account and for online filing.

CITY OF FOUNTAINS
HEART OF THE NATION

KANSAS CITY
MISSOURI

GENERAL CONDITIONS
TABLE OF CONTENTS

ARTICLE 1 DEFINITIONS AND TERMINOLOGY

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1.01 Defined Terms

A. Wherever used in these General Conditions or in the other Contract Documents, the following terms have the meanings indicated which are applicable to both the singular and plural thereof:

1. Addenda - Written or graphic instruments issued prior to the opening of Bids that clarify, correct or change the Bidding Requirements or the Contract Documents.

2. Agreement—The written Contract between CITY and CONTRACTOR governing the Work to be performed; other Contract Documents are attached to the Agreement and made a part thereof as provided therein.

3. Application for Payment—The form accepted by CITY's Representative which is to be used by CONTRACTOR in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. Asbestos - Any material that contains more than one percent (1%) Asbestos and is friable or is releasing Asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

5. Bid- The offer or proposal of the Bidder submitted on the Bid Form/Contract setting forth the prices for the Work to be performed. A Bidder's Bid becomes a Contract with CITY if the CITY executes the Bid Form/Contract submitted by Bidder. If the CITY executes the Bid Form/Contract submitted by Bidder, the term "Bidder" shall mean CONTRACTOR.

6. Bidder- One who submits a Bid directly to CITY, as distinct from a sub-bidder who submits a bid to a Bidder. If the CITY executes the Bid Form/Contract submitted by Bidder, the term "Bidder" shall mean CONTRACTOR in both the Bidding Documents and Contract Documents unless the context clearly indicates otherwise.

7. Bidding Documents- The advertisement or Invitation to Bid, Instructions to Bidders, the Bid Form/Contract, and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids).

8. Bidding Requirements- The advertisement or invitation to bid, Instructions to Bidders, Bid security, and the Bid Form/Contract with any supplements.

9. Bonds- Payment Bond and Performance and Maintenance Bond and other instruments of security.

10. Calendar Day- Any day shown on the calendar, including Saturdays, Sundays, and holidays.

11. Change Order- A written document issued by CITY that authorizes an addition, deletion or revision in the Work, or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Contract.

12. CITY/OWNER- Kansas City, Missouri, a constitutionally chartered municipal corporation, with which CONTRACTOR has entered into the Contract and for whom the Work is to be provided**.**

13. CITY's Representative- Person or agency designated to act for the Director as provided in these Contract Documents.

14. Consultant- Person, firm or corporation having a contract with CITY or DESIGN PROFESSIONAL to furnish services as an independent professional associate or Consultant with respect to the Project and who's identified as such in the Supplementary Conditions.

The Consultant(s) is identified and their seals affixed on the Certification Page(s). The certifications describe the respective responsibilities for the Drawings and Specifications prepared by the Consultant(s) and are incorporated into this Contract.

15. Contract- The entire and integrated written agreement between CITY and CONTRACTOR concerning the Work that incorporates all Contract Documents. The Bid Form/Contract submitted by Bidder is the Contract between CITY and CONTRACTOR upon execution by CITY. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

16. Contract Documents- The Contract Documents establish the rights and obligations of the parties and include the Contract, Addenda (which pertain to the Contract Documents), CONTRACTOR's Bid Form/Contract (including documentation accompanying the Bid and any post Bid documentation submitted prior to the Notice of Intent to Contract), the Construction Project Instructions, the Contractor's Utilization Plan/Request for Waiver, the Notice to Proceed, the Bonds, these General Conditions, the Supplementary Conditions, the Specifications and the Drawings as the same are more specifically identified in the Project Manual and the certification page(s) of the DESIGN PROFESSIONAL and Consultant(s), together with approved project baseline schedule and amendments thereto and all Written Amendments, Change Orders, Work Change Directives, and DESIGN PROFESSIONAL's written interpretations and clarifications issued on or after the Effective Date of the Contract, and approved Shop Drawings. Reports and drawings of subsurface and physical conditions are not Contract Documents. Only printed or hard copies of the items listed in this Paragraph are Contract Documents. Files in electronic media format of text, data, graphics, and the like that may be furnished by CITY to CONTRACTOR are not Contract Documents, except project schedules submitted by CONTRACTOR and approved by CITY.

17. Contract Price- The money payable by CITY to CONTRACTOR for completion of the Work in accordance with the Contract Documents as stated in the Agreement.

18. Contract Times- The number of days or the dates stated in the Supplementary Conditions: (a) to achieve Substantial Completion, and (b) to complete the Work so that it is ready for final payment as evidenced by CITY's Representative's written recommendation of final payment.

19. CONTRACTOR- The person, firm, partnership, company, corporation or association licensed or otherwise authorized by law to do business in Missouri, with whom CITY has entered into the Agreement.

20. Day– Shall constitute a Calendar Day.

21. DESIGN PROFESSIONAL- Architect, Engineer or other licensed professional who is either employed by or has contracted with CITY to serve in a design capacity and whose Consultants, members, partners, employees or agents have prepared and sealed the Drawings and Specifications.

The DESIGN PROFESSIONAL(s) is identified and their seals affixed on the Certification Page(s). The certifications describe the respective responsibilities for the Drawings and Specifications prepared by the DESIGN PROFESSIONAL and are incorporated into this Contract.

22. DESIGN PROFESSIONAL's Project Representative- The authorized representative of DESIGN PROFESSIONAL who may be assigned to the Site or any part thereof.

23. Director- The term Director shall mean the duly appointed executive officer of a department of City who is empowered by the City Charter or by the City Council to enter into a contract on behalf of City, or to grant a permit for improvements to land owned by City. A Director is authorized to delegate this authority to a City employee so designated in writing.

24. Drawings- The drawings which graphically show the scope, extent and character of the Work to be furnished and performed by CONTRACTOR and which have been prepared by DESIGN PROFESSIONAL and are included in the Contract Documents. Shop Drawings are not Drawings as so defined.

25. Effective Date of the Contract- The date indicated in the Contract on which it becomes effective, but if no such date is indicated it means the date on which the Contract is fully executed by CITY.

26. General Requirements- Sections of Division 1 of the Specifications. The General Requirements pertain to all sections of the Specifications.

27. Hazardous Environmental Condition- The presence at the Site of Asbestos, Lead-Based Paint, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto in connection with the Work.

28. Hazardous Waste- The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

29. Laws or Regulations- Any and all applicable laws, rules, regulations, ordinances, codes and orders of any and all governmental bodies, agencies, authorities and courts having jurisdiction.

30. Lead-Based Paint- Any paint, varnish, stain, or other applied coating that has one (1) mg or more of lead per square centimeter. The terms “leaded paint” and “lead-containing paint” are synonymous with Lead-Based Paint.

31. Liens- Liens, charges, security interests or encumbrances upon real property or personal property.

32. Milestone- A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

33. Notice of Intent to Contract- The written notice by CITY to the apparent successful Bidder stating that upon compliance by that apparent successful Bidder with the conditions in the Bid Documents enumerated, within the time specified, and upon enactment of an appropriate ordinance or resolution, CITY will sign and deliver the Contract.

34. Notice to Proceed- A written notice given by CITY to CONTRACTOR fixing the date on which the Contract Times will commence to run and on which CONTRACTOR shall start to perform CONTRACTOR’s obligations under the Contract Documents.

35. Partial Utilization- Use by CITY of a substantially completed part of the Work for the purpose for which it is intended (or a related purpose) prior to Substantial Completion of all the Work.

36. PCBs- Polychlorinated biphenyls.

37. Petroleum- Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Wastes and crude oils.

38. Project- The total construction of which the Work to be provided under the Contract Documents may be the whole, or a part as indicated elsewhere in the Contract Documents.

39. Project Manual- The documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual may be issued in one or more volumes and is contained in the table(s) of contents.

40. Radioactive Material- Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

41. Samples- Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

42. Shop Drawings- All drawings, diagrams, illustrations, schedules and other data or information which are specifically prepared or assembled by or for CONTRACTOR and submitted by CONTRACTOR to illustrate some portion of the Work.

43. Site- Lands or areas indicated in the Contract Documents as being furnished by CITY upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by CITY which are designated for the use of CONTRACTOR.

44. Specifications- Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work and certain administrative details applicable thereto.

45. Subcontractor- Any individual, firm, partnership, company, corporation or association licensed or otherwise authorized by law to do business in Missouri, to whom CONTRACTOR, with written notification to CITY, has entered into an agreement to perform a part of the Work.

46. Substantial Completion- When Work (or a specified part thereof) has progressed to the point where, in the opinion of DESIGN PROFESSIONAL as evidenced by DESIGN PROFESSIONAL's definitive certificate of Substantial Completion, it is sufficiently complete, in accordance with the Contract Documents, so that the Work (or specified part) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

47. Supplementary Conditions- The part of the Contract Documents which amends and/or supplements these General Conditions.

48. Supplier- A manufacturer, fabricator, supplier, distributor, materialman or vendor having a direct contract with CONTRACTOR or with any Subcontractor to furnish materials or equipment to be incorporated into the Work by CONTRACTOR or any Subcontractor.

49. Underground Facilities- All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such facilities or attachments, and any encasements containing such facilities which have been installed underground to furnish any of the following services or materials: electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

50. Unit Price Work- Work to be paid for on the basis of unit prices.

51. Work- The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work includes and is the result of performing or furnishing labor, and furnishing and incorporating material and equipment into the construction, and furnishing documents, all as required by the Contract Documents.

52. Work Change Directive- A written directive to CONTRACTOR, issued on or after the Effective Date of the Contract, signed by CITY and recommended by DESIGN PROFESSIONAL, ordering an addition, deletion or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed, or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times, but is evidence that the parties expect that the change directed or

documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

53. Work Day - Any day during which the CONTRACTOR is able to work a period of six (6) hours or more. Days that are not Work Days are days during which the CONTRACTOR is unable to work for a period of six (6) hours by reason of strikes, boycotts, labor disputes, embargoes, unusual delays in transportation or shortage of material, acts of God, acts of the public enemy, acts of superior governmental authority, weather conditions, riots, rebellion, sabotage, or any other circumstances for which CONTRACTOR is not responsible or which is not within its control. Saturdays, Sundays, and holidays on which the CONTRACTOR's forces engage in Work requiring the presence of an inspector, will be considered as Work Days.

54. Written Amendment- A written statement modifying the Contract Documents, signed by CITY and CONTRACTOR on or after the Effective Date of the Contract and normally dealing with the non-engineering or non-technical rather than strictly construction-related aspects of the Contract Documents.

1.02 Terminology

A. Intent of Certain Terms or Adjectives

1. Whenever in the Contract Documents the terms "as ordered," "as directed," "as required," "as allowed," "as approved," or terms of like effect or import are used, or the adjectives "reasonable," "suitable," "acceptable," "proper" or "satisfactory" or adjectives of like effect or import are used to describe a requirement, direction, review or judgment of DESIGN PROFESSIONAL as to the Work, it is intended that such requirement, direction, review or judgment will be solely to evaluate, in general, the completed Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective shall not be effective to assign to DESIGN PROFESSIONAL any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.08 or any other provision of the Contract Documents.

B. Defective

1. The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty or deficient, in that it does not conform to the Contract Documents, or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents, or has been damaged prior to CITY 's Representative's recommendation of final payment (unless responsibility for the protection thereof has been assumed by CITY at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

C. Furnish, Install, Perform, Provide

1. The word "furnish," when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words "perform" or "provide," when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

4. When “furnish,” “install,” “perform,” or “provide” is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of CONTRACTOR, “provide” is implied.

D. Unless stated otherwise in the Contract Documents, words and phrases which have a well-known technical or construction industry or trade meanings are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 PRELIMINARY MATTERS

2.01 Delivery of Bonds

A. CONTRACTOR shall deliver to CITY such Bonds as CONTRACTOR may be required to furnish.

2.02 Evidence of Insurance

A. CONTRACTOR shall deliver to CITY certificates of insurance or other evidence of insurance that CITY may request, which CONTRACTOR is required to purchase and maintain in accordance with Article 5 or any other applicable provision in the Contract Documents.

2.03 Copies of Documents

A. CITY shall furnish to CONTRACTOR one (1) copy of the Drawings and Specifications, including addenda.

2.04 Commencement of Contract Times; Notice to Proceed

A. The Contract Times will commence to run on the date indicated in the Notice to Proceed.

2.05 Starting the Work

A. CONTRACTOR shall start to perform the Work on the date when the Contract Times commence to run, but no Work shall be done at the Site prior to the date on which the Contract Times commence to run, unless otherwise indicated in the Notice to Proceed.

2.06 Before Starting Construction

A. CONTRACTOR's Review of Contract Documents: Before undertaking each part of the Work, CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon and all applicable field measurements. CONTRACTOR shall promptly report in writing to DESIGN PROFESSIONAL any conflict, error, ambiguity or discrepancy which CONTRACTOR may discover and shall obtain a written interpretation or clarification from DESIGN PROFESSIONAL before proceeding with any Work affected thereby. CONTRACTOR shall not be liable to CITY or DESIGN PROFESSIONAL for failure to report any conflict, error, ambiguity or discrepancy in the Contract Documents, unless CONTRACTOR knew or reasonably should have known thereof.

B. Preliminary Schedules: Within ten (10) days after the Effective Date of the Contract, or on such later date as CITY's Representative shall provide in writing, CONTRACTOR shall submit to CITY's Representative for review:

1. Preliminary Project Schedule: CONTRACTOR shall submit a proposed project schedule for CITY’s acceptance. The proposed project schedule shall include a detailed and comprehensive construction schedule utilizing a critical path method diagram network that (a) shows all major procurement and construction elements and phases of the Project; (b) breaks down each element or phase by trade; (c) shows early and late starts so that all float time will be accurately identified; (d) all other activities necessary for the timely completion of the Project in accordance with the scheduled dates for Substantial and Final Completion; and (e) highlights the project’s critical path. CITY’s acceptance is expressly limited to CITY’s acknowledgement that, based upon CITY’s limited review, the dates of Substantial

Completion and Milestone dates are acceptable. After final acceptance of the preliminary project schedule by the CITY, it shall be considered the project baseline schedule pursuant to Paragraph 2.07(B).

2. Preliminary schedule of Shop Drawings and Sample submittals which will list each required submittal and the times for submitting, reviewing and processing such submittal; and

3. Preliminary 01290.02 Schedule of Values for all of the Work which will include quantities and prices of items which when added together equals the Contract Price and will subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

C. Preconstruction Conference: Before any Work at the Site may be started, a conference attended by CONTRACTOR, DESIGN PROFESSIONAL and others, as appropriate, will be scheduled by CITY's Representative to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.06 B, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, maintaining required records, Claims process, dispute resolution or any other applicable provisions of the Contract Documents.

2.07 Acceptable Schedules

A. Acceptable schedule: The Contractor shall update and submit to the CITY for review the preliminary schedule within seven (7) Calendar Days after the Notice to Proceed.

1. The CITY shall review and make any necessary comments and/or adjustments to the updated preliminary schedule. The Contractor shall incorporate the CITY's comments and resubmit the updated preliminary schedule within seven (7) Calendar Days from receipt of the CITY's comments.

B. Project Baseline Schedule: The accepted updated preliminary schedule shall be considered the project baseline schedule and shall be used by the CONTRACTOR for planning, scheduling, managing, and executing the Work. The project baseline schedule shall not be changed without the written consent of CITY. The project baseline schedule may be further modified by the Supplemental Conditions.

C. CONTRACTOR's schedule of values will be acceptable to CITY's Representative as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 CONTRACT DOCUMENTS : INTENT, AMENDING, REUSE

3.01 Intent

A. The Contract Documents comprise the entire Contract between CITY and CONTRACTOR concerning the Work.

B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any Work, materials or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be furnished and performed whether or not specifically called for at no additional cost to CITY. Clarifications and interpretations of the Contract Documents shall be issued by DESIGN PROFESSIONAL as provided in Paragraph 9.03.

C. Correlation and intent of documents: The Drawings and Specifications are intended to supplement each other. Any Work shown on the Drawings and not mentioned in the Specifications (or vice versa) shall be as binding and shall be completed the same as if mentioned or shown on both. In the event of conflicts or discrepancies among the Contract Documents, interpretations will be based on the following priorities:

1. Change Orders and Written Amendments
2. Project Baseline Schedule Requirements
3. Approved Shop Drawings
4 Addenda, with those of later date having precedence over those of earlier date
5. The Supplementary Conditions
6. The General Conditions
7. Drawings and Specifications

D. In the case of an inconsistency between Drawings and Specifications, the requirements of the Specifications shall govern. If Drawings are in conflict, larger scale details shall govern over smaller or no-scale Drawings. If Specification sections are in conflict with each other, the conflict shall be resolved by DESIGN PROFESSIONAL in accordance with reasonable interpretation of such documents.

E. The general character of the detailed Work is shown on the Drawings, but minor modifications may be made in the full size or scale details. Where the word “similar” occurs on the Drawings, it shall be used in its general sense and not as meaning identical, and all details shall be worked out in relation to their location and their connection to the other parts of the Work. Where on any Drawings a portion of the Work is drawn out and the remainder is indicated in outline, the parts drawn out shall apply also to all other like portions of the Work. Where ornaments or other details are indicated by starting only, such details shall be continued throughout the courses or parts in which they occur and shall also apply to all other similar parts in the Work, unless otherwise indicated.

3.02 Reference to Standards and Specifications of Technical Societies

A. Reference to standards, specifications, manuals or codes of any technical society, organization or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the latest standard, specification, manual, code or Laws or Regulations in effect at the time of opening of Bids (or on the date of CONTRACTOR’s proposal if there are no Bids), except as may be otherwise specifically stated in the Contract Documents.

1. No provision of any such standard, specification, manual, code or instruction of Supplier shall be effective to change the duties or responsibilities of CITY, CONTRACTOR or DESIGN PROFESSIONAL, or any of their Subcontractors, Consultants, agents, or employees from those set forth in the Contract Documents, nor shall it be effective to assign to CITY or DESIGN PROFESSIONAL or any of their Consultants, agents or employees any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.03 Reporting and Resolving Discrepancies

A. Reporting Discrepancies: If, during the performance of the Work, CONTRACTOR discovers any conflict, error, ambiguity or discrepancy within the Contract Documents or between the Contract Documents and any provision of any Laws or Regulations applicable to the performance of the Work or of any standard, specification, manual, code or any instruction of any Supplier referred to in Paragraph 6.07, CONTRACTOR shall report it immediately to DESIGN PROFESSIONAL in writing. CONTRACTOR shall not proceed with the Work affected thereby (except in an emergency as authorized by Paragraph 6.17) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04; provided, however, that CONTRACTOR shall not be liable to CITY or DESIGN PROFESSIONAL for failure to report any such conflict, error, ambiguity or discrepancy unless CONTRACTOR knew or reasonably should have known thereof.

B. Resolving Discrepancies. The provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity or discrepancy between the provisions of the Contract Documents and:

1. the provisions of any standard, specification, manual, code or instruction (whether or not specifically incorporated by reference in the Contract Documents); or

2. the provisions of any Laws or Regulations applicable to the performance of the Work.

3.04 Amending and Supplementing Contract Documents

A. The Contract Documents may be amended to provide for additions, deletions and revisions in the Work or to modify the terms and conditions thereof in one or more of the following ways:

1. a Written Amendment or

2. a Change Order (pursuant to Article 10), whether pursuant to a Work Change Directive or otherwise.

B. The requirements of the Contract Documents may be supplemented and minor variations and deviations in the Work may be authorized, in one or more of the following ways

1. DESIGN PROFESSIONAL's approval of a Shop Drawing or Sample (pursuant to Paragraph 6.18), or

2. DESIGN PROFESSIONAL's written interpretation or clarification (pursuant to Paragraph 9.03).

3.05 Reuse of Documents

A. CONTRACTOR and any Subcontractor or Supplier or other person or organization performing or furnishing any of the Work under this Contract:

1. shall not have or acquire any title to or ownership rights in any of the Drawings, Specifications or other documents (or copies of any thereof) prepared by or bearing the seal of DESIGN PROFESSIONAL or Consultant, and

2. shall not reuse any of such Drawings, Specifications, other documents or copies thereof on extensions of the Project or any other project without written consent of CITY, and of DESIGN PROFESSIONAL or Consultant, as applicable, and specific written verification or adaptation by DESIGN PROFESSIONAL or Consultant.

This prohibition will survive final payment, completion, and acceptance of the Work, or termination or completion of the Contract. Nothing herein shall preclude CONTRACTOR from retaining copies of the Contract Documents for record purposes.

ARTICLE 4 AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; REFERENCE POINTS

4.01 Availability of Lands

A. CITY shall furnish the Site. CITY shall identify any encumbrances or restrictions not of general application but specifically related to use of lands so furnished with which CONTRACTOR will have to comply in performing the Work. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by CITY, unless otherwise provided in the Contract Documents. If CONTRACTOR and CITY are unable to agree on entitlement to or the amount or extent of any adjustments in the Contract Price or the Contract Times or both as a result of any delay in CITY's furnishing these lands, rights-of-way or easements, CONTRACTOR may make a Claim as provided in Article 16. CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.02 Subsurface and Physical Conditions

A. Reports and Drawings: Reference is made to the Supplementary Conditions for identification of:

1. Subsurface Conditions: Those reports of explorations and tests of subsurface conditions at or contiguous to the Site that have been utilized by DESIGN PROFESSIONAL in preparing the Contract Documents; and

2. Physical Conditions: Those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) that have been utilized by DESIGN PROFESSIONAL in preparing the Contract Documents.

B. Limited Reliance by CONTRACTOR on Technical Data Authorized: CONTRACTOR may rely upon the general accuracy of the technical data contained in reports and drawings of subsurface or physical conditions, but such reports and drawings are not Contract Documents. The technical data is identified in the Supplementary Conditions. Except for reliance on such technical data, CONTRACTOR may not rely upon or make any Claim against CITY, DESIGN PROFESSIONAL or any Consultant with respect to:

1. the completeness of such reports and drawings for CONTRACTOR's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by CONTRACTOR and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings, or

3. any CONTRACTOR interpretation of or conclusion drawn from any technical data or any such other data, interpretations, opinions or information.

4.03 Differing Subsurface or Physical Conditions

A. Notice of Differing Subsurface or Physical Conditions. If CONTRACTOR believes that any subsurface or physical condition at or contiguous to the Site that is uncovered or revealed either:

1. is of such a nature as to establish that any technical data on which CONTRACTOR is entitled to rely as provided in Paragraphs 4.02 A and 4.02 B is materially inaccurate; or

2. is of such a nature as to require a change in the Contract Documents; or

3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents; then CONTRACTOR shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.17), notify CITY and DESIGN PROFESSIONAL in writing about such condition(s). CONTRACTOR shall not further disturb such conditions or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. DESIGN PROFESSIONAL's Review: After receipt of notice as required by Paragraph 4.03 A, DESIGN PROFESSIONAL will promptly review the pertinent conditions, determine the necessity for CITY to obtain additional exploration or tests with respect thereto and notify CITY in writing (with a copy to CONTRACTOR) of DESIGN PROFESSIONAL's findings and conclusions.

C. Possible Contract Documents Change: If CITY concludes that a change in the Contract Documents is required as a result of a condition that meets one or more of the categories in Paragraph 4.03 A, a Work Change Directive or a Change Order will be issued as provided in Article 10 to reflect and document the consequences of such change.

D. Possible Price or Times Adjustments: An equitable adjustment in the Contract Price or in the Contract Times, or both, will be allowed to the extent that the existence of a subsurface or physical condition causes an increase or decrease in CONTRACTOR's cost of, or time required for, performance of the Work; subject, however, to the following:

1. the condition must meet any one or more of the categories described in Paragraphs 4.03 A.1 through 4.03 A.4, inclusive;

2. a change in the Contract Documents pursuant to Paragraph 4.03 C will not be an automatic authorization of, nor a condition precedent to, entitlement to any such adjustments;

3. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.06 and 11.04; and

4. CONTRACTOR shall not be entitled to any adjustment in the Contract Price or Contract Times if;

a. CONTRACTOR knew, or by the exercise of ordinary care could have known, of such conditions at the time CONTRACTOR made a final commitment to CITY with respect to Contract Price and Contract Times by the submission of a Bid; or

b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for CONTRACTOR prior to CONTRACTOR's making such final commitment; or

c. CONTRACTOR failed to give the written notice as required by Paragraph 4.03 A.

E. If CITY and CONTRACTOR are unable to agree on entitlement to, or magnitude of, an equitable adjustment in the Contract Price pursuant to Article 11 and/or Contract Times pursuant to Article 12, a Claim may be made therefore as provided in Article 16. However, CITY, DESIGN PROFESSIONAL and Consultants shall not be liable to CONTRACTOR for any costs, losses or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all other dispute resolution costs) sustained by CONTRACTOR on or in connection with any other project or anticipated project.

4.04. Physical Conditions – Underground Facilities

A. Shown or Indicated: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to CITY or DESIGN PROFESSIONAL by the owners of such Underground Facilities or by others.

1**.** CITY and DESIGN PROFESSIONAL shall not be responsible for the accuracy or completeness of any such information or data; and

2. The cost of all of the following will be included in the Contract Price and CONTRACTOR shall have full responsibility for:

a. reviewing and checking all such information and data,

b. locating all Underground Facilities shown or indicated in the Contract Documents,

c. coordination of the Work with the owners of such Underground Facilities during construction, and

d. the safety and protection of all such Underground Facilities as provided in Paragraph 6.14 and repairing any damage thereto resulting from the Work.

B. Not Shown or Indicated: If an Underground Facility is uncovered or revealed at or contiguous to the Site, and was not shown or indicated in the Contract Documents, or was

shown or indicated incorrectly in the Contract Documents, CONTRACTOR shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.17), identify the owner of such Underground Facility and give written notice to that owner and to CITY and DESIGN PROFESSIONAL.

C. DESIGN PROFESSIONAL's Review: After receipt of notice as required by Paragraph 4.04 B, DESIGN PROFESSIONAL will promptly review the consequences of the existence of the Underground Facility and notify CITY in writing (with a copy to CONTRACTOR) of DESIGN PROFESSIONAL's findings and conclusions.

D. Possible Contract Documents Change: If CITY concludes that a change in the Contract Documents is required as a result of the existence of an Underground Facility that either was not shown, or was shown incorrectly, in the Contract Documents, a Work Change Directive or Change Order will be issued as provided in Article 10 to reflect and document the consequences of such change.

E. Possible Price or Times Adjustments: An equitable adjustment in the Contract Price or in the Contract Times, or both, will be allowed to the extent that the existence of the Underground Facility causes an increase or decrease in CONTRACTOR's cost of, or time required for, performance of the Work; subject, however, to the following:

1. a change in the Contract documents pursuant to Paragraph 4.04 D will not be an automatic authorization of, nor a condition precedent to, entitlement to any such adjustments;

2. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.06 and 11.04; and

3. CONTRACTOR shall not be entitled to any adjustment in the Contract Price or Contract Times if;

a. CONTRACTOR knew, or by the exercise of ordinary care could have known, of the existence of the Underground Facility at the time CONTRACTOR made a final commitment to CITY with respect to Contract Price and Contract Times by the submission of a Bid; or

b. the existence of the Underground Facility could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for CONTRACTOR prior to CONTRACTOR's making such final commitment; or

c. CONTRACTOR failed to give the written notice as required by Paragraph 4.04 B.

F. If CITY and CONTRACTOR are unable to agree on entitlement to, or magnitude of, an equitable adjustment in the Contract Price pursuant to Article 11 and/or Contract Times pursuant Article 12, a Claim may be made therefore as provided in Article 16. However, CITY, DESIGN PROFESSIONAL and Consultants shall not be liable to CONTRACTOR for any costs, losses or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all other dispute resolution costs) sustained by CONTRACTOR on or in connection with any other project or anticipated project.

4.05 Reference Points

A. CITY shall provide engineering surveys to establish reference points for construction that in DESIGN PROFESSIONAL's judgment are necessary to enable CONTRACTOR to proceed with the Work. CONTRACTOR shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of CITY. CONTRACTOR shall report to DESIGN PROFESSIONAL whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be

responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.06 Asbestos, Lead-Based Paint, PCBs, Petroleum, Hazardous Waste or Radioactive Material

A. Reports and Drawings: Reference is made to the Supplementary Conditions for the identification of those reports and drawings relating to a Hazardous Environmental Condition identified at the Site, if any, that have been utilized by the DESIGN PROFESSIONAL in the preparation of the Contract Documents.

B. Limited Reliance by CONTRACTOR on Technical Data Authorized: CONTRACTOR may rely upon the general accuracy of the technical data contained in reports and drawings relating to a Hazardous Environmental Condition at the Site, but such reports and drawings are not Contract Documents. Such technical data is identified in the Supplementary Conditions. Except for such reliance on such technical data, CONTRACTOR may not rely upon or make any Claim against CITY, DESIGN PROFESSIONAL or any Consultant with respect to:

1. the completeness of such reports and drawings for CONTRACTOR's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by CONTRACTOR and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or

3. any CONTRACTOR interpretation of or conclusion drawn from any technical data or any such other data, interpretations, opinions or information.

C. CONTRACTOR shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. CONTRACTOR shall be responsible for all Hazardous Environmental Conditions created with any materials brought to the Site by CONTRACTOR, Subcontractors, Suppliers, or anyone else for whom CONTRACTOR is responsible. CONTRACTOR shall not be entitled to an extension of the Contract Times or an increase in the Contract Price if CONTRACTOR, Subcontractor, Supplier or anyone for whom CONTRACTOR is responsible created any Hazardous Environmental Condition at the Site or in connection with the Work.

D. If CONTRACTOR encounters a Hazardous Environmental Condition at the Site or if CONTRACTOR or anyone for whom CONTRACTOR is responsible creates a Hazardous Environmental Condition at the Site, CONTRACTOR shall immediately:

1. secure or otherwise isolate such condition;

2. stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6. 15); and

3. notify CITY and DESIGN PROFESSIONAL (and promptly thereafter confirm such notice in writing). CITY shall promptly consult with DESIGN PROFESSIONAL concerning the necessity for CITY to retain a qualified expert to evaluate such condition or take corrective action, if any.

E. CONTRACTOR shall neither resume Work nor be required to resume Work in connection with such condition or in any affected area until after CITY has obtained any required permits related thereto and delivered to CONTRACTOR written notice:

1. specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or

2. specifying any special conditions under which such Work may be resumed safely. If CITY and CONTRACTOR cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price pursuant to Article 11and/or Contract Times to

pursuant to Article 12 as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by CONTRACTOR, a Claim may be made therefore as provided in Article 16.

F. If after receipt of written notice as required in Paragraph 4.06 E, CONTRACTOR does not agree to resume Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under special conditions specified in the notice, then CITY may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If CITY and CONTRACTOR cannot agree as to entitlement to or magnitude of an equitable adjustment in Contract Price pursuant to Article 11and/or Contract Times pursuant to Article 12 as a result of deleting such portion of the Work, then a Claim may be made therefore as provided in Article 16. CITY may have such deleted portion of the Work performed by CITY's own forces or others in accordance with Article 7.

G. The provisions of Paragraphs 4.02, 4.03, and 4.04 are not intended to apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

H. All materials used, whether new or salvaged, shall be asbestos-free materials. CONTRACTOR shall immediately call to the attention of the CITY's Representative any specified material or product which the CONTRACTOR knows or suspects to contain asbestos, whether new or salvaged.

ARTICLE 5 BONDS AND INSURANCE

5.01 Performance, Payment and Other Bonds

A. CONTRACTOR shall furnish Performance and Maintenance and Payment Bonds, each in an amount at least equal to the Contract Price, as set out in the Contract Documents, as security for the faithful performance and payment of all CONTRACTOR's obligations under the Contract Documents. These Bonds shall remain in effect at least until one (1) year after the date when final payment of the Contract becomes due, except as provided otherwise by Laws or Regulations or by the Contract Documents. CONTRACTOR shall also furnish such other Bonds as are required by the Supplementary Conditions.

B. All Bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations. A certified copy of the agent's authority to act must accompany all Bonds signed by an agent.

C. If the surety on any Bond furnished by CONTRACTOR is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirement of Paragraph 5.01 B, CONTRACTOR shall within twenty (20) days thereafter substitute another Bond and surety, both of which must be acceptable to CITY.

5.02 Licensed Sureties and Insurers

A. All Bonds and insurance required by the Contract Documents to be purchased and maintained by CITY or CONTRACTOR shall be obtained from surety or insurance companies that are duly licensed in the State of Missouri and in the jurisdiction in which the Project is located, if not in Missouri, to issue Bonds or insurance policies for the limits and coverages so required. All surety and insurance companies shall hold an A.M. Best rating of A-, V, or better.

5.03 Certificates of Insurance

A. CONTRACTOR shall deliver to CITY and DESIGN PROFESSIONAL, prior to the start of any Work at the Project Site, properly completed certificates of insurance or other evidence that the required insurance is in full force and effect, in a form acceptable to CITY. The receipt or acceptance of a certificate of insurance that does not incorporate the required terms and coverage shall not constitute a waiver by the City of the insurance requirements contained in the Contract Documents.

B. All policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained by CONTRACTOR in accordance with Paragraphs 5.04 and 5.06 will contain waiver provisions in accordance with Paragraph 5.07 A. The certificates of insurance will contain a provision stating that should any of the policies described in the certificate be cancelled before the expiration date thereof, notice will be delivered in accordance with the policy provisions.

C. If the coverage afforded is cancelled or changed or its renewal is refused, CONTRACTOR shall give at least thirty (30) days prior written notice to CITY and to each other additional insured to whom a certificate of insurance has been issued.

5.04 CONTRACTOR's Liability Insurance

A. CONTRACTOR shall purchase and maintain such liability and other insurance as is appropriate for the Work being performed and furnished, and will provide protection from claims set forth below which may arise out of or result from CONTRACTOR's performance and furnishing of the Work and CONTRACTOR's other obligations under the Contract Documents, whether it is to be performed or furnished by CONTRACTOR, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform or furnish any of the Work, or by anyone for whose acts any of them may be liable:

1. claims under workers' compensation, disability benefits and other similar employee benefit acts;

2. claims for damages because of bodily injury, occupational sickness or disease, or death of CONTRACTOR's employees;

3. claims for damages because of bodily injury, sickness or disease, or death of any person other than CONTRACTOR's employees;

4. claims for damages insured by customary personal injury liability coverage;

5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefore; and

6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

B. The policies of insurance so required by Paragraph 5.04 A, to be purchased and maintained shall:

1. with respect to insurance required by Paragraphs 5.04 A.3 through 5.04 A.5 inclusive, include as additional insureds (subject to any customary exclusion for professional liability) CITY, DESIGN PROFESSIONAL, Consultants and any other individuals or entities identified in the Supplementary Conditions to be listed as additional insureds, and include coverage for the respective officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;

2. include at least the specific coverages and be written for not less than the limits of liability provided in Paragraph 5.04 C or required by Laws or Regulations, whichever is greater;

3. include completed operations insurance;

4. include contractual liability insurance covering CONTRACTOR's indemnity obligations;

5. remain in effect at least until final payment and at all times thereafter when CONTRACTOR may be correcting, removing or replacing defective Work in accordance with Paragraphs 13.06 and 13.07;

6. with respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two (2) years after final payment (and CONTRACTOR shall furnish CITY and each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued evidence satisfactory to CITY and any such additional insured of continuation of such insurance);

7. contain a cross-liability or severability of interest clause or endorsement. Insurance covering the specified additional insureds shall be primary insurance, and all other insurance carried by the additional insureds shall be excess insurance;

8. with respect to commercial automobile liability, commercial general liability, and umbrella liability insurance, CONTRACTOR shall require its insurance carrier(s) to waive all rights of subrogation against CITY, and CITY's officers, directors, partners, employees and agents; and

9. contain a provision or endorsement that the costs of providing the insureds a defense and appeal, including attorneys' fees, as insureds, shall be supplementary and shall not be included as part of the policy limits but shall remain the insurer's responsibility.

C. Specific policies of insurance required by this Paragraph 5.04 shall include:

1. Workers' Compensation and Employers' Liability Insurance. This insurance shall protect CONTRACTOR against all claims under applicable state workers''' compensation laws, including coverage as necessary for the benefits provided under the United States Longshoremen's and Harbor Workers' Act and the Jones Act. CONTRACTOR shall also be protected against claims for injury, disease, or death of employees which, for any reason, may not fall within the provisions of workers' compensation laws. This policy shall include an "all states" or "other states" endorsement. The liability limits shall be not less than:

Workers' Compensation: Statutory

Employers' liability: $1,000,000 each occurrence

2. Commercial Automobile Liability Insurance. This insurance shall be occurrence type written in comprehensive form and shall protect CONTRACTOR, and CITY, DESIGN PROFESSIONAL and Consultants against all claims for injuries to members of the public and damage to property of others arising from the use of motor vehicles, either on or off the Project Site, whether they are owned, non-owned, or hired.

   The liability limits shall be not less than: $2,000,000

3. Commercial General Liability Insurance. This insurance shall be occurrence type written in comprehensive form acceptable to CITY. This insurance shall protect CONTRACTOR, and CITY, DESIGN PROFESSIONAL and Consultants as additional insureds, against claims arising from injuries, sickness, disease, or death of any person or damage to property arising out of performance of the Work. The policy shall also include coverage for personal injury liability; contractual liability; completed operations and products liability; and for blasting, explosion, and collapse of buildings; and damage to underground property. The liability limits for bodily injury and property damage shall be not less than:

$2,000,000 combined single limit for each occurrence

$2,000,000 general aggregate.

4. The insurer's costs of providing the insureds a defense and appeal as additional insureds, including attorney's fees, shall be supplementary and shall not be included as part of the policy limits but shall remain the insurer's separate responsibility.

5.05 CITY's Liability Insurance

A. In addition to the insurance required to be provided by CONTRACTOR under Paragraph 5.04, CITY, at CITY's option, may purchase and maintain at CITY's expense liability insurance

that will protect CITY against claims which may arise from operations under the Contract Documents.

5.06 Property Insurance

A. Unless otherwise provided in the Supplementary Conditions, CONTRACTOR shall purchase and maintain property insurance on the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws or Regulations). This insurance shall:

1. include the interests of CITY, CONTRACTOR, Subcontractors, and any other persons or entities identified in the Supplementary Conditions, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured;

2. be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, tornado, collapse, debris removal, demolition occasioned by enforcement of Laws or Regulations, water damage, damage caused by frost and freezing, and acts of God;

3. be maintained in effect until final payment is made unless otherwise agreed to in writing by CITY with thirty (30) days written notice to each other additional insured to whom a certificate of insurance has been issued.

B. CITY shall not be responsible for purchasing and maintaining any property insurance to protect the interests of CONTRACTOR, Subcontractors or others involved in the Work to the extent of any deductible amounts. The risk of loss within the deductible amounts will be borne by CONTRACTOR, Subcontractor or others suffering any such loss and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

5.07 Waiver of Rights

A. CITY and CONTRACTOR intend that all policies purchased in accordance with Paragraphs 5.04 and 5.06 will protect CITY, CONTRACTOR, DESIGN PROFESSIONAL Consultants, Subcontractors, and all other persons or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds in such policies and will provide primary coverage for all losses and damages caused by the perils covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or additional insureds thereunder. CITY and CONTRACTOR waive all rights against each other and their respective officers, directors, partners, employees and agents for all losses and damages caused by, arising out of or resulting from any of the perils covered by such policies and any other property insurance applicable to the Work, but only to the extent of insurance coverage; and, in addition, waive all such rights against DESIGN PROFESSIONAL, Consultants, Subcontractors, and all other persons or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, and other consultants and subcontractors of any and each of them) under such policies for losses and damages so caused and covered by insurance. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by CITY as trustee or otherwise payable under any policy so issued. None of the above waivers shall apply if specifically in conflict with Laws and Regulations.

5.08 Receipt and Application of Insurance Proceeds

A. Any insured loss under the property insurance will be adjusted with CITY and made payable to CITY as fiduciary for the insureds, as their interests may appear, subject to the requirements of any indentures of indebtedness entered into by CITY.

B. CITY as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object to CITY's exercise of this power in writing within fifteen (15) days after the occurrence of loss. If such objection is made, CITY as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, CITY as fiduciary shall adjust and settle the loss with the insurers.

5.09 Partial Utilization – Property Insurance

A. If CITY finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, such use or occupancy may be accomplished in accordance with Paragraph 14.05; provided that no such use or occupancy shall commence before the insurers providing the property insurance have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6 CONTRACTOR'S RESPONSIBILITIES

6.01 Indemnification

A. For purposes of this Paragraph 6.01 only, the following terms shall have the meanings listed:

1. Claims means all claims, damages, liability, losses, costs and expenses, including court costs and reasonable attorneys'" fees, including attorney's fees incurred by the City in the enforcement of this indemnity obligation.

2. CONTRACTOR'S Agents means CONTRACTOR's officers, employees, sub-consultants, subcontractors, successors, assigns, invitees, and other agents.

3. CITY means CITY, its Program Manager/Construction Advisor and any of their agents, officials, officers, employees and program managers or construction advisors.

B. CONTRACTOR's obligations under this Paragraph with respect to indemnification for acts or omissions, including negligence, of CITY, shall be limited to the coverage and limits of insurance that CONTRACTOR is required to procure and maintain under this Contract. CONTRACTOR affirms that it has had the opportunity to recover the costs of the liability insurance required in this Contract in its contract price.

C. CONTRACTOR shall defend, indemnify and hold harmless CITY from and against all Claims arising out of or resulting from all acts or omissions in connection with this Contract caused in whole or in part by CONTRACTOR or CONTRACTOR's Agents, regardless of whether or not caused in part by any act or omission, including negligence, of OWNER.

D. In any and all Claims against CITY, DESIGN PROFESSIONAL, CONSULTANT, or any of their respective agents, officers, directors or employees by any employee (or the survivor or personal representative of such employee) of CONTRACTOR, any Subcontractor, any Supplier, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.01 C shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for CONTRACTOR or any such Subcontractor, Supplier or other person or organization under workers' compensation acts, disability benefit acts or other employee benefit acts.

E. The indemnification obligations of CONTRACTOR under Paragraph 6.01 C shall not extend to liability arising out of, resulting from, or caused by the professional negligence, errors or omissions of DESIGN PROFESSIONAL, CONSULTANT, or any of their respective agents, officers, directors or employees.

6.02 Supervision and Superintendence

A. CONTRACTOR shall supervise, inspect and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences and procedures of construction, but CONTRACTOR shall not be responsible for the negligence of others in the design or specification of a specific means, method, technique, sequence or procedure of construction which is shown or indicated in and expressly required by the Contract Documents. CONTRACTOR shall be responsible to see that the completed Work complies accurately with the Contract Documents.

B. At all times during the progress of the Work, CONTRACTOR shall assign a competent resident superintendent of the Work, who shall not be replaced without written request to and approval by CITY except under extraordinary circumstances. The superintendent will be CONTRACTOR's representative at the Site and shall have authority to act on behalf of CONTRACTOR. All communications given to or received from the superintendent shall be binding on CONTRACTOR.

C. If it is determined to be in the best interest of the Work, CONTRACTOR shall replace the project manager, resident superintendent or any other employee of the CONTRACTOR, Subcontractors, Suppliers or other persons or organizations performing or furnishing any of the Work on the project upon written request by the CITY.

6.03 Services, Working Hours, Labor, Materials and Equipment

A. CONTRACTOR shall provide competent, suitably qualified personnel to survey, lay out and construct or perform the Work as required by the Contract Documents. CONTRACTOR shall at all times maintain good discipline and order at the Site. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise indicated in the Contract Documents, all Work at the Site shall be performed during regular working hours. CONTRACTOR shall not permit overtime work or the performance of Work on Saturday, Sunday or any legal holiday without CITY's written consent given after prior written notice to DESIGN PROFESSIONAL.

B. Unless otherwise specified in Division 1, General Requirements, CONTRACTOR shall furnish and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up and completion of the Work.

C. All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. All warranties and guarantees specifically called for by the Specifications shall expressly run to the benefit of CITY. If required by DESIGN PROFESSIONAL, CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment. All materials and equipment shall be stored, applied, installed, connected, erected, used, cleaned and conditioned in accordance with instructions of the applicable Supplier, except as otherwise provided in the Contract Documents.

D. It is the policy of the CITY that any manufactured goods or commodities used or supplied in the performance of this Contract and any subcontract hereto shall be manufactured or produced in the United States whenever possible.

6.04 Progress Schedule

A. CONTRACTOR shall adhere to the progress schedule established in accordance with Article 2 as it may be adjusted from time to time as provided below:

1. CONTRACTOR shall provide, at least once every thirty (30) calendar days, updated information on the project schedule, including thirty (30) day look ahead schedules, projected variances per event category and per Subcontractor, identification of all variances and calculation of the number of Days difference between the as-built critical path and the project schedule critical path

2. CONTRACTOR shall, with each application for payment, provide completed monthly updated status report for the previous month on the project schedule and updated information indicating as-built and as-planned conditions. The updated information on the project schedule shall not modify any Milestone dates in the project schedule that CITY has previously approved. The updated information required is a condition precedent to payment pursuant to paragraph 14.02 and shall include at a minimum:

a. a concise statement of the outlook for meeting project schedule dates and the reasons for any change in outlook from the previous report;

b. a review of any significant technical problems encountered during the month;

c. an explanation of any corrective action taken or proposed; and

d. a summary of any Claims anticipated by CONTRACTOR with respect to the Work, including the anticipated costs and schedule impacts of any such Claims.

6.05 Recovery Schedules

A. If the CONTRACTOR should:

1. fail, refuse or neglect to supply a sufficient number of workers or to deliver the materials or equipment with such promptness as to prevent the delay in the progress of the Work;

2. fail in any respect to commence and diligently prosecute the Work in accordance with the approved baseline project schedule in order to achieve substantial completion;

3. fail to commence, prosecute, finish, deliver or install the different portions of the Work on time as specified in the approved baseline project schedule; or

4. fail in the performance of any of the material covenants of the Contract Documents;

CITY shall have the right to direct the CONTRACTOR, upon seven (7) calendar days notice, to prepare a written recovery plan, for CITY's approval, to accelerate the Work in order to conform to the approved baseline project schedule, including, without limitation, providing additional labor or expediting delivery of materials, performing overtime or re-sequencing the Work without adjustments to the Contract value. Upon CITY's approval of the recovery plan, CONTRACTOR shall accelerate the Work in accordance with the plan.

B. Proposed recovery schedules shall be submitted to the CITY as a separate project plan for review and approval by CITY prior to incorporation into the approved baseline schedule. The recovery schedule shall be submitted in a format compatible with the baseline schedule format. Each proposed revision shall be submitted as a separate schedule, with the following minimum requirements:

1. A critical path method diagram showing revised and affected activities or Milestones.

2. An activity report for all revised and affected activities or Milestones.

C. Upon acceptance of the recovery schedule by CITY, data shall be added or revised for all new or revised activities and incorporated into the approved baseline project schedule.

6.06 Substitutes and "Or-Equal" Items

A. Materials or equipment: Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance and quality required. Unless the specification or description contains, or is followed by, words reading that no like, equivalent or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to CITY for review by CITY's Representative under the following circumstances:

1. "Or-Equal": If, prior to receipt of Bids, Bidder proposes an item of material or equipment as functionally equal to that named and sufficiently similar so that no change in related Work will be required, CITY's Representative may request DESIGN PROFESSIONAL to consider it as an "or-equal" item. DESIGN PROFESSIONAL will review and recommend the acceptance, or rejection, of the proposed item to the CITY's Representative. For the purposes of this Paragraph, a proposed item of material or equipment will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment DESIGN PROFESSIONAL determines that:

(1) it is at least equal in quality, durability, appearance, strength, and design characteristics; and

(2) it will reliably perform at least equally well the function imposed by the design concept of the completed Project as a functioning whole; and

b. Bidder certifies that:

(1) there is no increase in cost to the CITY; and

(2) it will conform substantially, even with deviations, to the detailed requirements of the item named in the Contract Documents.

If the CITY's Representative approves the proposed item, it may be accepted by CITY.

2. Substitute Items: If CONTRACTOR proposes an item of material or equipment as a substitute item, then CONTRACTOR shall submit sufficient information as provided below to allow CITY's Representative to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefore. The procedure for review by the CITY's Representative will include the following as supplemented in the General Requirements and as CITY's Representative may determine is appropriate under the circumstances:

a. Requests for review of proposed substitute items of material or equipment will not be accepted by CITY's Representative from anyone other than CONTRACTOR.

b. If CONTRACTOR wishes to furnish or use a substitute item of material or equipment, CONTRACTOR shall first make written application to CITY's Representative for acceptance thereof.

c. In the application, CONTRACTOR shall certify that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar in substance to that specified and be suited to the same use as that specified. The application will state the extent, if any, to which the evaluation and acceptance of the proposed substitute will impact CONTRACTOR's achievement of Substantial Completion, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with CITY for work on the Project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty.

d. All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs or credits that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which will be considered by CITY's Representative in evaluating the proposed substitute. CITY's Representative may require CONTRACTOR to furnish additional data about the proposed substitute.

If the CITY's Representative approves the proposed item, CITY may accept it.

B. Substitute Construction Methods or Procedures: If a specific means, method, technique, sequence or procedure of construction is shown or indicated in and expressly required by the Contract Documents, CONTRACTOR may furnish or utilize a substitute means, method, technique, sequence or procedure of construction acceptable to DESIGN PROFESSIONAL. CONTRACTOR shall notify CITY and submit sufficient information to allow DESIGN PROFESSIONAL, in DESIGN PROFESSIONAL's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents.

C. Expenses: Bidder shall provide all data in support of any "or equal" at Bidder's expense, and CONTRACTOR shall provide all data in support of any proposed substitute at CONTRACTOR's expense.

D. Evaluation: DESIGN PROFESSIONAL and CITY's Representative will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.06 A, and 6.06 B. CITY will be the sole judge of acceptability. No "or-equal" or substitute will be ordered, installed or utilized without CITY's prior written acceptance which will be evidenced by either a Change Order or an approved Shop Drawing. CITY may require CONTRACTOR to furnish at CONTRACTOR's expense, a special performance guarantee or other surety with respect to any "or-equal' substitute. DESIGN PROFESSIONAL will record time required by DESIGN PROFESSIONAL and Consultants in evaluating substitutes proposed or submitted by CONTRACTOR pursuant to Paragraphs 6.06 A and 6.06 B and in making changes in the Contract Documents (or in the provisions of any other direct contract with CITY for work on the Project) occasioned thereby. Whether or not CITY accepts a substitute so proposed or submitted by CONTRACTOR, CONTRACTOR shall reimburse CITY for the reasonable charges of DESIGN PROFESSIONAL and Consultants for evaluating each such proposed substitute.

6.07 Concerning Subcontractors, Suppliers and Others

A. CONTRACTOR shall not employ or retain any Subcontractor, Supplier or other person or organization (including those acceptable to CITY as indicated in Paragraph 6.07 B), whether initially or as a substitute, against whom CITY has a reasonable objection, including but not limited to debarment by City or another governmental entity or decertification of the Subcontractor from the City's Minority and Women's Business Enterprise Program as a result of the Subcontractor's failure to comply with any of the requirements of the provisions of Chapter 3 of the City's Code as determined by the Director of the Civil Rights and Equal Opportunity Department. Contractor shall insert this provision in any subcontractor agreement associated with this Contract. CONTRACTOR shall not be required to employ any Subcontractor, Supplier or other person or organization to furnish or perform any of the Work against whom CONTRACTOR has reasonable objection. CONTRACTOR shall submit required information for all Subcontractors on Form 01290.09 - Subcontractor and Major Material Suppliers List, provided in these Contract Documents, prior to Subcontractor beginning Work at the Site.

B. The Supplementary Conditions require the identity of certain Subcontractors, Suppliers or other persons or organizations (including those who are to furnish the principal items of materials or equipment) to be submitted to CITY on or before the date specified in the Supplementary Conditions, for acceptance by CITY. If CONTRACTOR has submitted a list

thereof in accordance with the Supplementary Conditions, CITY may accept (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Contract Documents) any such Subcontractor, Supplier or other person or organization so identified, or may reject same on the basis of reasonable objection after due investigation, in which case CONTRACTOR shall submit an acceptable replacement for the rejected Subcontractor, Supplier or other person or organization. The Contract Price will be adjusted by the difference in the cost occasioned by such substitution, and an appropriate Change Order will be issued or Written Amendment signed. No acceptance by CITY of any such Subcontractor, Supplier or other person or organization shall constitute a waiver of any right of CITY or DESIGN PROFESSIONAL to reject defective Work.

C. CONTRACTOR shall be fully responsible to CITY for all acts and omissions of the Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR just as CONTRACTOR is responsible for CONTRACTOR's own acts and omissions. Nothing in the Contract Documents shall create for the benefit of any such Subcontractor, Supplier or other person or organization any contractual relationship between CITY or DESIGN PROFESSIONAL and any such Subcontractor, Supplier or other person or organization, nor shall it create any obligation on the part of CITY or DESIGN PROFESSIONAL to pay or to see to the payment of any moneys due any such Subcontractor, Supplier or other person or organization except as may otherwise be required by Laws or Regulations.

D. CONTRACTOR shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR.

E. CONTRACTOR shall contractually require all Subcontractors, Suppliers and such other persons and organizations performing or furnishing any of the Work to communicate with CITY and DESIGN PROFESSIONAL through CONTRACTOR.

F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control CONTRACTOR in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

G. All Work performed for CONTRACTOR by a Subcontractor or Supplier shall be pursuant to an appropriate written agreement between CONTRACTOR and the Subcontractor or Supplier that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of CITY. Whenever any such agreement is with a Subcontractor or Supplier who is listed as an additional insured on the property insurance provided in Paragraph 5.06, the agreement between the CONTRACTOR and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against CITY, CONTRACTOR, DESIGN PROFESSIONAL, Consultants and all other additional insureds for all losses and damages caused by, arising out of or resulting from any perils, to the extent covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, CONTRACTOR will obtain the same.

H. Except as otherwise provided in this subsection H and in accordance with the provisions of subsection C hereof, the agreement between CONTRACTOR and the Subcontractor or Supplier referred to in subsection G, shall provide that the CONTRACTOR and the Subcontractor or Supplier agree not to request CITY or CITY's Representative to intervene in or facilitate the resolution of claims or contract disputes arising out of or related to the agreement between CONTRACTOR and the Subcontractor or Supplier. Furthermore, the Contracts between CONTRACTOR and Subcontractors or Suppliers shall provide that all unresolved claims and disputes between CONTRACTOR and the Subcontractor or Supplier that remain unresolved after thirty (30) calendar days from the notice of claim, shall be subject to mediation as a condition precedent to the institution of legal proceedings by either party. Any such mediation shall be conducted in accordance with the CITY's Code Section 3-467.

I. CONTRACTOR shall not insert any provision in any subcontractor agreement associated with this Contract that explicitly states or implies that the subcontractor shall only be paid for work performed if or when the general CONTRACTOR is paid by the CITY . Contractor's compliance with this provision is a material term of this Contract.

J. CONTRACTORS shall not deny any Subcontractor subcontracting opportunities solely because the Subcontractor is not a signatory to collective bargaining agreements with organized labor.

6.08 Patent Fees and Royalties

A. CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation into the Work of any invention, design, process, product or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product or device is specified in the Contract Documents for use in the performance of the Work, and if to the actual knowledge of CITY or DESIGN PROFESSIONAL its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by CITY in the Contract Documents. To the fullest extent permitted by Laws or Regulations, CONTRACTOR shall defend, indemnify and hold harmless CITY, DESIGN PROFESSIONAL, Consultants and the officers, directors, employees, agents and other consultants of each and any of them from and against all claims, costs, losses and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or resulting from any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation into the Work of any invention, design, process, product or device not specified in the Contract Documents.

6.09 Permits

A. Unless otherwise provided in the Supplementary Conditions, CONTRACTOR shall obtain and pay for all construction permits and licenses. CITY shall assist CONTRACTOR, when necessary, in obtaining such permits and licenses. CONTRACTOR shall pay all governmental charges and inspection fees necessary for the prosecution of the Work, which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Contract. CONTRACTOR shall pay all charges of utility owners for connections to the Work.

B. CONTRACTOR, at its own expense, shall comply with all Federal, State and local laws and regulations, including, but not limited to the Missouri Clean Water Law (Chapter 644 RSMo) together with any accompanying regulation(s) contained in the Missouri Code of State Regulations (CSR Title 10), as well as any implementing permits, together with any CITY Provisions during the life of this Contract including but not limited to:

1. Approvals and permits as required for construction or land disturbance activities.

2. Compliance with the State of Missouri – Department of Natural Resources ("MDNR") Missouri State Operating Permit ("Land Disturbance Permit"), MO-R100006 for all construction or land disturbance activity.

3. Development and implementation of a Storm Water Pollution Prevention Plan (SWPPP).

(a) Contractor shall not commence land disturbance activity until the initial SWPPP has been finalized.

(b) Preparation and submittal of all applications, documentation and exhibits required to obtain MDNR approvals for uninterrupted Work at the Site.

(c) Amending/Updating SWPPP.

(d) Site Inspections and submittal of Inspection Reports

(e) Proper Operation and Maintenance to achieve compliance with the terms of the Permit.

(f) Maintenance of required records in accordance with MDNR requirements and requirements included in Article 6 of these Contract Documents.

4. In addition to requirements of Article 6, Contractor shall also provide record access to Missouri Department of Natural Resources (MDNR).

5. Failure to control erosion and water pollution is a permit violation. CONTRACTOR shall have 24 hours after receiving notice of the violation to correct the problem. If the CONTRACTOR fails to correct the problem after the time prescribed, the City will hire a remediation expert to fix the problem. In such an event, the CONTRACTOR shall be liable to the City for the remediation costs plus a 10% mark-up of the total contract price. If the CONTRACTOR receives three (3) notices of violation of the erosion control plan and the City's MS4 permit, the Director may issue a stop work order and delay any payment until control measures are properly functioning and stream damage has been mitigated. In such an event, any delay to the project schedule will result in liquidated damages assessed against the CONTRACTOR.

6.10 Compliance with Laws and Regulations

A. CONTRACTOR shall comply with all federal, state and local laws, ordinances and regulations applicable to the work and this Contract. CONTRACTOR shall give all notices and comply with all Laws or Regulations applicable to furnishing and performing the Work. Except where otherwise expressly required by applicable Laws or Regulations, neither CITY nor DESIGN PROFESSIONAL shall be responsible for monitoring CONTRACTOR's compliance with any Laws or Regulations. The Laws or Regulations included in this Paragraph shall include, but not be limited to, those set forth in the Supplementary Conditions.

B. **Failure to Comply**. If CONTRACTOR performs any Work in violation of applicable Laws or Regulations, CONTRACTOR shall bear all claims, costs, losses and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) caused by, arising out of or resulting therefrom; however, it shall not be CONTRACTOR's primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws or Regulations, but this shall not relieve CONTRACTOR of CONTRACTOR's obligations under Paragraph 3.03.

C. **Conflicts of Interest**. The provisions of City's Code Sections 2-2001 and 3-301, prohibiting City officers and employees from having a financial or personal interest in any contract with City, and Code Sections 3-307, and 3-309, imposing sanctions for violations, shall apply to this Contract. CONTRACTOR certifies that no officer or employee of City has, or will have, a direct or indirect financial or personal interest in this Contract, and that no officer or employee of City, or member of such officer's or employee's immediate family, either has negotiated, or has or will have an arrangement concerning employment to perform services on behalf of CONTRACTOR on this Contract.

D. **Licenses and Permits**. CONTRACTOR, at its own expense, shall secure or cause to be secured all licenses and permits from public or private sources necessary for the fulfillment of its obligations under this Contract. All references in this Contract to the "Code" shall mean City's Code of Ordinances, including any amendments thereto or re-codification thereof unless the context clearly indicates otherwise. CONTRACTOR shall obtain copies of all necessary licenses and permits from Subcontractors required for the Work before Subcontractors begin Work at the Site. CONTRACTOR shall retain such evidence in its files and make available to CITY within ten (10) days after CITY's written request.

E. Americans with Disabilities Act. CONTRACTOR agrees to comply, during the course of this Contract, with all provisions of Title II of the 2010 ADA Standards for Accessible Design as amended from time to time.

F. Affirmative Action. If the Contract Price exceeds $300,000.00 and CONTRACTOR employs fifty (50) or more people, CONTRACTOR shall comply with City's Affirmative Action requirements in accordance with the provisions of Chapter 3 of City's Code, the rules and regulations relating to those sections, and any additions or amendments thereto. CONTRACTOR shall not discriminate against any employee or applicant for employment because of race, color, sex, religion, national origin or ancestry, disability, sexual orientation, gender identity or age in a manner prohibited by Chapter 3 of City's Code.

CONTRACTOR shall:

1. Submit, in print or electronic format, a copy of CONTRACTOR'S current certificate of compliance to the City's Civil Rights and Equal Opportunity Department (CREO) prior to receiving the first payment under the contract, unless a copy has already been submitted to CREO at any point within the previous two calendar years. If, and only if, CONTRACTOR does not possess a current certification of compliance, CONTRACTOR shall submit, in print or electronic format, a copy of its affirmative action program to CREO prior to receiving the first payment under the contract, unless a copy has already been submitted to CREO at any point within the previous two calendar years.

2. Require any Subcontractor awarded a subcontract exceeding $300,000.00 to affirm that Subcontractor has an affirmative action program in place and will maintain the affirmative action program in place for the duration of the subcontract.

3. Obtain from any Subcontractor awarded a subcontract exceeding $300,000.00 a copy of the Subcontractor's current certificate of compliance and tender a copy of the same, in print or electronic format, to CREO within thirty (30) days from the date the subcontract is executed. If, and only if, Subcontractor does not possess a current certificate of compliance, CONTRACTOR shall obtain a copy of the Subcontractor's affirmative action program and tender a copy of the same, in print or electronic format, to CREO within thirty (30) days from the date the subcontract is executed.

City has the right to take action as directed by City's Civil Rights and Equal Opportunity Department to enforce this provision. If CONTRACTOR fails, refuses or neglects to comply with the provisions of Chapter 3 of City's Code, then such failure shall be deemed a total breach of this Contract and this Contract may be terminated, canceled or suspended, in whole or in part, and CONTRACTOR may be declared ineligible for any further contracts funded by City for a period of one (1) year. This is a material term of this Contract.

G. **Minority and Women Business Enterprises and Workforce**. City is committed to ensuring that minorities and women participate to the maximum extent possible in the performance of City's construction contracts. If minority and women business enterprise (M/WBE) goals have been set for this Contract, CONTRACTOR agrees to comply with all requirements of City's Minority and Women's Business Enterprise Program as enacted in City's Code, Sections 3-421 through 3-469 and as hereinafter amended. CONTRACTOR shall meet or exceed both the MBE and WBE goals set forth in its Contractor Utilization Plan/Request for Waiver. If workforce utilization goals are applicable to this Contract, CONTRACTOR agrees to comply with all requirements of City's Construction Employment Program as enacted in City's Code, Sections 3-501 through 3-527 and as hereinafter amended. CONTRACTOR shall meet or exceed the construction employment goals unless the same shall have been waived in the manner provided by law. CONTRACTOR's compliance with this provision is a material part of this Contract.

H. **Records.**

1. For purposes of this section:

(a) "City" shall mean the City Auditor, the City's Internal Auditor, the City's Director of Civil Rights and Equal Opportunity, the City Manager, the City department administering this Contract and their delegates and agents.

(b) “Record” shall mean any document, book, paper, photograph, map, sound recordings or other material, regardless of physical form or characteristics, made or received in connection with this Contract and all Contract amendments and renewals.

2. CONTRACTOR shall maintain and retain all Records for a term of five (5) years that shall begin after the expiration or termination of this Contract and all Contract amendments. City shall have a right to examine or audit all Records and CONTRACTOR shall provide access to City of all records upon ten (10) days written notice from the City.

I. Prevailing Wage.

1. CONTRACTOR shall comply and require its Subcontractors to comply with;

a. sections 290.210 to 290.340, RSMO the State of Missouri Prevailing Wage Law (the “Law”); and

b. 8 CSR 30-3.010 to 8 CSR 30-3.060, the Prevailing Wage Law Rules (the “Rules”); and

c. the Annual Wage Order (Wage Order) issued by the State of Missouri’s Department of Labor and Industrial Relations; and

d. any applicable Annual Incremental Wage Increase (Wage Increase) to the Annual Wage Order.

2. The Law, Rules, Annual Wage Order and any Wage Increase are incorporated into and made part hereof this Contract and shall be collectively referred to in this Section as the “Prevailing Wage Requirements.”

3. CONTRACTOR shall pay and require its Subcontractors to pay to all workers performing work under this Contract not less than the prevailing hourly rate of wages for the class or type of work performed by the worker in accordance with the Law, Rules, Wage Order and any applicable Wage Increase. CONTRACTOR shall take whatever steps are necessary to insure that the prevailing hourly wage rates are paid and that all workers for CONTRACTOR and each of its Subcontractors are paid for the class or type of work performed by the worker in accordance with the Prevailing Wage Requirements. If CONTRACTOR shall fail to start to perform CONTRACTOR’s obligations under the Contract Documents within sixty (60) days from the Effective Date of the Contract, CONTRACTOR and each of its subcontractors shall be obligated to pay all workers in accordance with any new Wage Order, as subsequently amended by any applicable Wage Increase, issued by the Department of Labor and Industrial Relations within the aforementioned sixty (60) day period. The new Wage Order and any applicable Wage Increase shall govern notwithstanding the fact that the Wage Order being replaced might be physically attached or incorporated in the Contract Documents.

4. Prior to each of its Subcontractors beginning Work on the Site, CONTRACTOR shall require each Subcontractor to complete CITY’s Form 00490 entitled “Pre-contract Certification” that sets forth the Subcontractor’s prevailing wage and tax compliance history for the two (2) years prior to the bid. CONTRACTOR shall retain one (1) year and make the Pre-contract Certifications available to CITY within five (5) days after written request.

5. CONTRACTOR shall:

a. Keep and require each of its Subcontractors engaged in the construction of public works in performance of the Contract to keep full and accurate records on City’s “Daily Labor Force Report” Form indicating the worker’s name, occupational title or classification group & skill and the workers’ hours. City shall furnish blank copies of the Daily Labor Force Report Form to Contractor for its use and for distribution to Subcontractors. Contractor shall submit its and its Subcontractors Daily Labor Force Reports to City each day; and

b. Submit, and require each of its Subcontractors engaged in the construction of public works in performance of the Contract to submit electronically, in a format prescribed by the City, Certified Payroll Report Information indicating the worker's name, address, social security number, occupation(s), craft(s) of every worker employed in connection with the public work together with the number of hours worked by each worker and the actual wages paid in connection with the Project and other pertinent information as requested by the City; and

c. Submit, and require each of its Subcontractors engaged in the construction of public works in performance of the Contract to submit, electronically, in format prescribed by the City, a Payroll Certification. The Payroll Certification must be signed by the employee or agent who pays or supervises the payment of the workers employed under the Contract for the Contractor and each Subcontractor; and

d. The Daily Labor Force Report, documents used to compile information for the Certified Payroll Report, and Payroll Certification are collectively referred to in this Section as the "Records."

6. CONTRACTOR shall submit its and its Subcontractors Daily Labor Force Reports to CITY each day. CONTRACTOR shall make all of CONTRACTOR's and Subcontractors' Records open to inspection by any authorized representatives of OWNER and the Missouri Department of Labor and Industrial Relations at any reasonable time and as often as they may be necessary and such Records shall not be destroyed or removed from the State of Missouri for a period of one (1) year following the completion of the public work in connection with which the Records are made. CONTRACTOR shall have its and its Subcontractors Certified Payroll Reports and Payroll Certifications available at the CONTRACTOR's office and shall provide the Records to the City electronically at City's sole discretion. In addition, all Records shall be considered a public record and CONTRACTOR shall provide the Records to the CITY in the format required by the CITY within three (3) working days of any request by CITY at the CONTRACTOR's cost. CITY, in its sole discretion, may require CONTRACTOR to send any of the Records directly to the person who requested the Record at CONTRACTOR's expense.

7. CONTRACTOR shall post and keep posted a clearly legible statement of all prevailing hourly wage rates to be paid to all workers employed by CONTRACTOR and each of its Subcontractors in the performance of this Contract in a prominent and easily accessible place at the Site of the Work by all workers.

8. If the Contract Price exceeds $250,000.00, CONTRACTOR shall and shall require each Subcontractor engaged in any construction of public works to have its name, acceptable abbreviation or recognizable logo and the name of the city and state of the mailing address of the principal office of the company, on each motor vehicle and motorized self-propelled piece of equipment which is used in connection with the Project during the time the CONTRACTOR or Subcontractor is engaged on the project. The sign shall be legible from a distance of twenty (20') feet, but the size of the lettering need not be larger than two (2") inches. In cases where equipment is leased or where affixing a legible sign to the equipment is impractical, the CONTRACTOR may place a temporary stationary sign, with the information required pursuant to this section, at the main entrance of the Project in place of affixing the required information on the equipment so long as such sign is not in violation of any state or federal statute, rule or regulation. Motor vehicles which are required to have similar information affixed thereto pursuant to requirements of a regulatory agency of the state or federal government are exempt from the provisions of this subsection.

9. CONTRACTOR must correct any errors in CONTRACTOR's or any Subcontractors' Records, or CONTRACTOR's or any Subcontractors' violations of the Law, Rules, Annual Wage Order and any Wage Increase within fourteen (14) calendar days after notice from CITY.

10. CONTRACTOR shall and shall require its Subcontractors to cooperate with the CITY and the Department of Labor and Industrial Relations in the enforcement of this Section, the Law, Rules, Annual Wage Order and any Wage Increase. Contractor shall and shall require its Subcontractors to permit CITY and the Department of Labor and Industrial Relations to interview any and all workers during working hours on the Project at CONTRACTOR's sole cost and expense.

11. CONTRACTOR shall file with CITY, upon completion of the Project and prior to final payment therefore, affidavits from CONTRACTOR and each of its Subcontractors, stating that each has fully complied with the provisions and requirements of the Missouri Prevailing Wage Law. CITY shall not make final payment until the affidavits, in proper form and order, from CONTRACTOR and each of its Subcontractors, are filed by CONTRACTOR.

12. CONTRACTOR shall forfeit as a statutory penalty to the CITY one hundred dollars ($100.00) for each worker employed, for each calendar day, or portion thereof, such worker is paid less than the prevailing hourly rates for any work done under this Contract, by CONTRACTOR or by any of CONTRACTOR's Subcontractors. If CONTRACTOR or any of its Subcontractors have violated any section(s) of 290.210 to 290.340, RSMo, in the course of the execution of the Contract, CITY shall when making payments to the CONTRACTOR becoming due under this Contract, withhold and retain therefrom all sums and amounts due and owing as a result of any violation of sections 290.210 to 290.340, RSMo.

J. **Prevailing Wage Damages**. CONTRACTOR acknowledges and agrees that, based on the experience of CITY, violations of the Missouri Prevailing Wage Act, whether by CONTRACTOR or its Subcontractors, commonly result in additional costs to CITY. CONTRACTOR agrees that additional costs to CITY for any particular violation are difficult to establish and include but are not limited to: costs of construction delays, additional work for CITY, additional interest expenses, investigations, and the cost of establishing and maintaining a special division working under the City Manager to monitor prevailing wage compliance.

1. In the event of the failure by CONTRACTOR or any of its Subcontractors to pay wages as provided in the Missouri Prevailing Wage Act, CITY shall be entitled to deduct from the Contract Price, and shall retain as liquidated damages, one hundred dollars ($100.00) per day, per worker who is paid less than the prevailing hourly rate of wages, to approximate the additional costs. The sum shall be deducted, paid or owed whether or not the Contract Times have expired.

2. CITY shall give written notice to CONTRACTOR setting forth the workers, who have been underpaid, the amount of the statutory penalty and the amount of the liquidated damages as provided for in this Subparagraph J**.** CONTRACTOR shall have fourteen (14) calendar days to respond, which time may be extended by CITY upon written request. If CONTRACTOR fails to respond within the specified time, the CITY's original notice shall be deemed final. If CONTRACTOR responds to CITY's notice, CITY will furnish CONTRACTOR a final decision in writing within five (5) days of completing any investigation.

K. **Missouri Secretary of State Business Entity Registration**. CONTRACTOR shall obtain from all Subcontractors for the Project, a copy of their current certificate of good standing or fictitious name registration from the Missouri Secretary of State before they begin work on the Site. CONTRACTOR shall retain such documents in its files and make available to CITY within ten (10) days after written request.

L. **Tropical Hardwoods**. The provisions of Code Section 2-1872, restricting the use of tropical hardwoods, shall apply to this Contract.

M. **Preference for Missouri Products**. Pursuant to Section 71.140 RSMo., preference shall be given to materials, products, supplies and all other articles produced, manufactured, made or grown within the State of Missouri.

N. **Guidelines for Open Excavations**.

1. CONTRACTOR shall restore required excavations to the level of the adjacent surfaces as soon as practicable. Unsupervised open excavations on public properties are discouraged at all times. If CONTRACTOR, in performance of the Work, makes or causes to be made any excavation in, upon, under, through or adjoining any street, sidewalk, alley, park, boulevard, parkway or any other public properties, and shall leave any part or portion thereof open, CONTRACTOR shall provide effective protection to the public.

2. CONTRACTOR shall protect and secure all excavations in roadways in compliance with existing federal, state and local codes and standards, including, but not limited to the most current edition of the Manual of Uniform Traffic Control Devices. CONTRACTOR shall protect and secure all unsupervised excavations not within roadways, either by covering or fencing.

a. Covering. A protective cover that can sustain the weight of persons or of objects that are placed upon it may be installed over an unsupervised excavation. The cover shall be secured to the ground to prevent movement. Protective covers shall have no opening(s) or protuberance(s) of sufficient size to cause a fall and/or injury. Advance warning devices shall be installed as necessary.

b. Fencing. Fencing to prevent entry may be installed surrounding an unsupervised excavation not protectively covered in its entirety. The fencing shall be a minimum of 42” in height. The fencing shall be constructed in such a manner that it is adequately secured and will remain upright at all times under normal Site conditions. All protective coverings and fences over and around excavations shall be inspected at least daily to assure integrity. Protective coverings and/or fences in heavily trafficked areas shall be inspected more often as necessary.

O. **Notification of Utilities**. CONTRACTOR shall adhere to the provisions of Sections 319.010 et seq., RSMo., which requires that a person or firm making an excavation in any public street, road or alley, right of way dedicated to public use, utility easement of record, or within any private street or private property do so only after giving notice to, and obtaining information from, owners of Underground Facilities. The 24-hour, toll-free accident prevention hotline number in Missouri is 1-800-344-7483 (1-800-Digrite).

P. Employee Eligibility Verification. CONTRACTOR shall adhere to the provisions of Sections 285.525 et seq., RSMo., which requires that for any contract exceeding five thousand dollars ($5,000.00), CONTRACTOR shall execute and submit an affidavit, in a form prescribed by CITY, affirming that CONTRACTOR does not knowingly employ any person in connection with the contracted services who does not have the legal right or authorization under federal law to work in the United States as defined in 8 U.S.C.§ 1324a(h)(3). CONTRACTOR shall attach to the affidavit documentation sufficient to establish CONTRACTOR’S enrollment and participation in an electronic verification of work program operated by the United States Department of Homeland Security (E-Verify) or an equivalent federal work authorization program operated by the United States Department of Homeland Security to verify information of newly hired employees, under the Immigration Reform and Control Act of 1986. CONTRACTOR may obtain additional information about E-Verify and enroll at https://e-verify.uscis.gov/enroll/StartPage.aspx?JS=YES. For those Contractors enrolled in E-Verify, the first and last pages of the E-Verify Memorandum of Understanding that CONTRACTOR will obtain upon successfully enrolling in the program shall constitute sufficient documentation for purposes of complying with this Section. CONTRACTOR shall submit the affidavit and attachments to CITY prior to execution of the Contract, or at any point during the term of the Contract if requested by City.

Q. **OSHA 10-Hour Training Requirement**. CONTRACTOR and any subcontractor working under this Contract shall require every employee on the Site to complete a ten-hour construction safety program which meets the requirements of Section 292.675, RSMo, except for those employees who shall have previously completed the required program and hold documentation to that effect. CONTRACTOR shall remove or require the removal of any

person from the Site who is subject to this requirement and who does not complete or is unable to produce documentation of their successful completion of the required program within the time limitations prescribed by Section 292.675, RSMo. CONTRACTOR shall forfeit the sum of two thousand five hundred dollars ($2,500.00), in addition to one hundred dollars ($100.00) per employee each calendar day, or portion thereof, the employee(s) shall continue to be employed without having completed the required program within the time limitations prescribed by Section 292.675, RSMo. CITY shall be entitled to withhold and retain any amounts due and owing hereunder when making payment to CONTRACTOR.

R. Clean Air Act and Clean Water Act. CONTRACTOR shall comply with requirements of the Clean Air Act (42 U.S.C. 7401 *et seq*.); Clean Water Act (33 U.S.C. 1251 *et seq*.), Missouri Clean Water Law (Chapter 644 RSMo), Code of Federal regulations (Title 40: Protection of Environment, Title 33: Navigation and Navigable Waters) and the rules of the Missouri Code of State Regulations (CSR Title 10).

S. Contract information Management System. If applicable, CONTRACTOR shall comply with CITY's Contract Information Management System requirements. CONTRACTOR shall use CITY's Internet web based Contract Information Management System/Project Management Communications Tool provided by CITY and protocols included in that software during the term of this Contract. CONTRACTOR shall maintain user applications to CITY's provided system for all personnel, subcontractors or suppliers as applicable and shall require subcontractors/subconsultants to maintain same.

T. Anti-Discrimination Against Israel. If this Contract exceeds $100,000.00 and CONTRACTOR employs at least ten employees, pursuant to Section 34.600, RSMo., by executing this Contract, CONTRACTOR certifies it is not currently engaged in and shall not, for the duration of this contract, engage in a boycott of goods or services from the State of Israel; companies doing business in or with Israel or authorized by, licensed by, or organized under the laws of the State of Israel; or persons or entities doing business in the State of Israel.

U. Ban the Box in Hiring and Promotion

a. Pursuant to Section 38-104, City Code Ordinances, CONTRACTOR shall not base a hiring or promotional decision on an applicant's criminal history or sentence related thereto, unless the employer can demonstrate that the employment-related decision was based on all information available including consideration of the frequency, recentness and severity of a criminal record and that the record was reasonably related to the duties and responsibilities of the position.

b. Notwithstanding subsection (a), CONTRACTOR may inquire about an applicant's criminal history after it has been determined that the individual is otherwise qualified for the position, and only after the applicant has been interviewed for the position. Any such inquiry may be made of all applicants who are within the final selection pool of candidates from which a job will be filled.

c. This provision shall not apply to positions where employers are required to exclude applicants with certain criminal convictions from employment due to local, state or federal law or regulation.

V. Title VI of the Civil Rights Act of 1964

a. Title VI of the Civil Rights Act of 1964 requires that no person in the United States shall, on the grounds of race, color, or national or origin (including limited English proficient individuals), be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance. The City of Kansas City, Missouri requires compliance with the requirements of Title VI in all of its programs and activities regardless of the funding source.

b. CONTRACTOR shall not discriminate on the grounds of race, color, or national or origin (including limited English proficient individuals).

W. Non-discrimination in Employment

CONTRACTOR shall not discriminate against any employee or candidate for employment on the basis of an individual's race, hair texture or hair style associated with an individual's race, color, sex, religion, national origin, or ancestry, disability, sexual orientation, gender identity or age in a manner prohibited by Chapter 38 of the City Code. CONTRACTOR shall not engage in any discrimination as prohibited by Chapter 3 of the City Code.

X. Quality Services Assurance Act

If this Contract exceeds $160,000.00, CONTRACTOR certifies that CONTRACTOR will pay all employees who will work on this Contract in the city limits of Kansas City, Missouri at least $15.00 per hour in compliance with the City's Quality Services Assurance Act, Section 3-66, Code of Ordinances unless City has granted CONTRACTOR an exemption pursuant to the Quality Services Assurance Act.

6.11 Taxes

A. CONTRACTOR shall pay all sales, consumer, use and other similar taxes required to be paid by CONTRACTOR in accordance with the Laws or Regulations of the place of the Project which are applicable during the performance of the Work.

B. **Tax Compliance**.

1. As a condition precedent to CITY making its first payment to CONTRACTOR under this Contract, CONTRACTOR shall furnish to CITY sufficient proof from City's Commissioner of Revenue, dated not more than one (1) year prior to the date provided to CITY, verifying that CONTRACTOR is in compliance with the license and tax ordinances administered by City's Revenue Division of the Finance Department.

2. As a condition precedent to Subcontractors performing any Work under this Contract, CONTRACTOR shall obtain from Subcontractor sufficient proof from City's Commissioner of Revenue, dated not more than one (1) year before the date Subcontractor begins Work, verifying that the Subcontractor is in compliance with the license and tax ordinances administered by City's Revenue Division of the Finance Department. CONTRACTOR shall retain such documentation in its files and make available to CITY within ten (10) days after a written request.

3. As a condition precedent to CITY making final payment under this Contract, if this Contract is longer than one (1) year and exceeds the dollar threshold established by ordinance and included in the Supplementary Conditions, CONTRACTOR shall furnish to CITY sufficient proof from City's Commissioner of Revenue, dated not more than one (1) year before the filing of a final Application for Payment, verifying that CONTRACTOR is in compliance with the license and tax ordinances administered by City's Revenue Division of the Finance Department.

4. If this Contract is longer than one (1) year and exceeds the dollar threshold established by ordinance and included in the Supplementary Conditions, CONTRACTOR shall obtain from Subcontractors sufficient proof from City's Commissioner of Revenue, dated not more than one (1) year before the date of CONTRACTOR's final payment to the Subcontractor, that the Subcontractor was or is in compliance with the license and tax ordinances administered by City's Revenue Division of the Finance Department. CONTRACTOR shall retain such documentation in its files and make available to CITY within ten (10) days after written request.

5. If, at the time of final payment to CONTRACTOR, CONTRACTOR is unable to obtain from all its Subcontractors, if any, and furnish to CITY sufficient proof from City's Commissioner of Revenue that all its Subcontractors are in compliance with the license and tax ordinances administered by City's Revenue Division of the Finance Department, CITY may approve final payment to CONTRACTOR if CITY determines that CONTRACTOR has made a good faith effort to furnish evidence or that there are other extenuating circumstances which make it impossible for CONTRACTOR to furnish sufficient proof.

C. **Missouri Sales Tax Exemption**. Pursuant to Section 144.062, RSMo, CITY is a Missouri exempt entity and tangible personal property to be incorporated or consumed in the construction of this Project may be purchased without sales tax. CITY shall furnish CONTRACTOR a Missouri Project Exemption Certificate for Sales Tax at the time of issuance of the Notice to Proceed.

6.12 Use of Site and Other Areas

A. CONTRACTOR shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas identified in and permitted by the Contract Documents and other areas permitted by Laws or Regulations. CONTRACTOR shall not unreasonably encumber the Site and the other areas with construction equipment or other materials or equipment. CONTRACTOR shall assume full responsibility for any damage to the Site or the other areas, or to the owner or occupant thereof, or of any adjacent land or areas, resulting from the performance of the Work.

B. Should any claim be made by any such owner or occupant because of the performance of the Work, CONTRACTOR shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law. In case of a failure on the part of the CONTRACTOR to restore such property or to make good such damage or injuries, the CITY may, upon forty-eight (48) hours written notice to the CONTRACTOR, repair, rebuild or otherwise restore such property as the CITY may deem necessary, and the cost thereof will be deducted from any moneys due or which may become due the CONTRACTOR under this Contract.

C. CONTRACTOR shall, to the fullest extent permitted by Laws or Regulations, defend, indemnify and hold harmless CITY, DESIGN PROFESSIONAL, Consultants and the officers, directors, employees, agents and other consultants of each and any of them from and against all claims, costs, losses and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or resulting from any claim or action, legal or equitable, brought by any such owner or occupant against CITY, DESIGN PROFESSIONAL or any other party indemnified hereunder to the extent caused by or based upon CONTRACTOR's performance of the Work.

D. During the progress of the Work, CONTRACTOR shall keep the Site and the other areas free from accumulations of waste materials, rubbish and other debris resulting from the Work. At the completion of the Work CONTRACTOR shall remove all waste materials, rubbish and debris from Site and other areas as well as all tools, appliances, construction equipment and machinery and surplus materials. CONTRACTOR shall leave the Site clean and ready for utilization or occupancy by CITY at Substantial Completion of the Work. CONTRACTOR shall restore to all property not designated for alteration by the Contract Documents to its pre-Work condition.

E. CONTRACTOR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall CONTRACTOR subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.13 Record Documents

A. CONTRACTOR shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, the Contract, Written Amendments, Change Orders, Work

Change Directives, and written interpretations and clarifications in good order and annotated to show all changes made during construction. These record documents, together with all approved Samples and a counterpart of all approved Shop Drawings, will be available to CITY and DESIGN PROFESSIONAL for reference. Upon completion of the Work, these record documents, Samples and Shop Drawings will be delivered to DESIGN PROFESSIONAL for CITY.

6.14 Safety and Protection

A. CONTRACTOR shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. CONTRACTOR shall comply with all applicable Laws or Regulations relating to the safety of persons or property to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for safety and protection. CONTRACTOR shall deliver to CITY a copy of CONTRACTOR'S Health and Safety Plan as provided in the Notice of Intent to Contract.

B. CONTRACTOR shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation and replacement of their property. All damage, injury or loss to any property referred to in Paragraph 6.14 B.2 or 6.14 B.3 caused, directly or indirectly, in whole or in part, by CONTRACTOR, any Subcontractor, Supplier or any other person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, shall be remedied by CONTRACTOR (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of CITY, DESIGN PROFESSIONAL, Consultant, or anyone employed by any of them or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of CONTRACTOR, Subcontractor, Supplier or other person or organization directly or indirectly employed by any of them). CONTRACTOR's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and DESIGN PROFESSIONAL has issued a notice to CONTRACTOR in accordance with Paragraph 14.07 that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion). CONTRACTOR shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities and Underground Facilities not designated for removal, relocation or replacement in the course of the Work.

6.15 Safety Representative

A. In accordance with OSHA standards, CONTRACTOR shall designate a qualified and experienced safety representative whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs. CONTRACTOR's safety representative shall remain at the Site whenever there is Work in progress and shall immediately notify CITY of any emergencies or accidents occurring at the Site

6.16 Hazard Communication Programs

A. CONTRACTOR shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

6.17 Emergencies

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, CONTRACTOR, without special instruction or authorization from CITY or DESIGN PROFESSIONAL, is obligated to act to prevent threatened damage, injury or loss. CONTRACTOR shall give CITY and DESIGN PROFESSIONAL prompt written notice if CONTRACTOR believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If CITY determines that a change in the Contract Documents is required because of the action taken by CONTRACTOR in response to an emergency, a Work Change Directive or Change Order will be issued.

B. A change in the Contract Documents pursuant to Paragraph 6.15 A will not be an automatic authorization of, nor a condition precedent to, entitlement to adjustment in the Contract Price or Contract Times. If CITY and CONTRACTOR are unable to agree on entitlement to, or magnitude of, an equitable adjustment in the Contract Price or Contract Times, a Claim may be made therefore as provided in Article 16. However, OWNER, DESIGN PROFESSIONAL and Consultants shall not be liable to CONTRACTOR for any costs, losses or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all other dispute resolution costs) sustained by CONTRACTOR on or in connection with any other project or anticipated project.

6.18 Shop Drawings and Samples

A. CONTRACTOR shall submit Shop Drawings to DESIGN PROFESSIONAL for review and approval in accordance with the accepted schedule of Shop Drawings and Sample submittals (see Paragraph 2.07). All submittals shall be identified as DESIGN PROFESSIONAL may require and in the number of copies specified in the General Requirements. The data shown on the Shop Drawings shall be complete with respect to quantities, dimensions, specified performance and design criteria, materials and similar data to show DESIGN PROFESSIONAL the services, materials and equipment CONTRACTOR proposes to provide and to enable DESIGN PROFESSIONAL to review the information for the limited purposes required by Paragraph 6.18 D.

B. CONTRACTOR shall also submit Samples to DESIGN PROFESSIONAL for review and approval in accordance with said accepted schedule of Shop Drawings and Sample submittals. Each Sample shall be identified clearly as to material, Supplier, pertinent data such as catalog numbers and the use for which intended and otherwise as DESIGN PROFESSIONAL may require to enable DESIGN PROFESSIONAL to review the submittal for the limited purposes required by Paragraph 6.18 D. The numbers of each Sample to be submitted will be as specified in the Specifications.

C. **Submittal Procedures**:

1. Before submitting each Shop Drawing or Sample, CONTRACTOR shall have determined and verified:

a. all field measurements, quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar information with respect thereto;

b. all materials with respect to intended use, fabrication, shipping, handling, storage, assembly and installation pertaining to the performance of the Work;

c. all information relative to means, methods, techniques, sequences and procedures of construction and safety precautions and programs incident thereto; and

d. CONTRACTOR shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.

2. Each submittal shall bear a stamp or specific written indication that CONTRACTOR has satisfied CONTRACTOR's obligations under the Contract Documents with respect to CONTRACTOR's review and approval of that submittal.

3. At the time of each submission, CONTRACTOR shall give DESIGN PROFESSIONAL specific written notice of such variations, if any, that the Shop Drawing or Sample submitted may have from the requirements of the Contract Documents, the notice to be in a written communication separate from the submittal, and, in addition, shall cause a specific notation to be made on each Shop Drawing and Sample submitted to DESIGN PROFESSIONAL for review and approval of each such variation.

D. **DESIGN PROFESSIONAL's Review**:

1. DESIGN PROFESSIONAL will review and approve Shop Drawings and Samples in accordance with the schedule of Shop Drawings and Sample submittals accepted by DESIGN PROFESSIONAL as required by Paragraph 2.06. DESIGN PROFESSIONAL's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation into the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. DESIGN PROFESSIONAL's review and approval will not extend to means, methods, techniques, sequences or procedures of construction (except where a particular means, method, technique, sequence or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

3. DESIGN PROFESSIONAL's review and approval of Shop Drawings or Samples shall not relieve CONTRACTOR from responsibility for any variation from the requirements of the Contract Documents unless CONTRACTOR has in writing called DESIGN PROFESSIONAL's attention to each such variation at the time of submission as required by Paragraph 6.18 C.3, and DESIGN PROFESSIONAL has given written approval of each such variation by specific written notation thereof incorporated into or accompanying the Shop Drawing or Sample approval; nor will any approval by DESIGN PROFESSIONAL relieve CONTRACTOR from responsibility for complying with the requirements of Paragraph 6.18 C.1.

E. Where a Shop Drawing or Sample is required by the Contract Documents or the schedule of Shop Drawings and Sample submissions accepted by DESIGN PROFESSIONAL as required by Paragraph 2.06, any related Work performed prior to DESIGN PROFESSIONAL's review and approval of the pertinent submittal will be at the sole expense and responsibility of CONTRACTOR.

F. CONTRACTOR shall make corrections required by DESIGN PROFESSIONAL and shall return the required number of corrected copies of Shop Drawings and submit as required new Samples for review and approval. CONTRACTOR shall direct specific attention in writing to revisions other than the corrections called for by DESIGN PROFESSIONAL on previous submittals.

6.19 Continuing the Work

A. CONTRACTOR shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with CITY No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as CITY and CONTRACTOR may otherwise agree in writing.

6.20 CONTRACTOR's General Warranty and Guarantee

A. CONTRACTOR warrants and guarantees to CITY, DESIGN PROFESSIONAL and Consultants that all Work will be in accordance with the Contract Documents and will not be

defective. CONTRACTOR's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification or improper maintenance or operation by persons other than CONTRACTOR, Subcontractors, Suppliers or any other individual or entity for whom CONTRACTOR is responsible; or

2. normal wear and tear under normal usage.

B. CONTRACTOR's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of CONTRACTOR's obligation to perform the Work in accordance with the Contract Documents:

1. observations by DESIGN PROFESSIONAL;

2. recommendation of any progress or final payment by DESIGN PROFESSIONAL;

3. the issuance of a certificate of Substantial Completion or any payment related thereto by CITY to CONTRACTOR;

4. use or occupancy of the Work or any part thereof by OWNER;

5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by DESIGN PROFESSIONAL;

6. any inspection, test or approval by others; or

7. any correction of defective Work by CITY.

C. Nonconforming Work is rejected unless expressly accepted in writing by the CITY's Representative.

ARTICLE 7 OTHER WORK

7.01 Related Work at Site

A. CITY may perform other work related to the Project at the Site by CITY's own forces, or let other direct contracts therefore, or have other work performed by utility owners. If such other work is to be performed and such fact was not noted in the Contract Documents, then:

1. Written notice thereof will be given to CONTRACTOR prior to starting any such other work, and

2. CONTRACTOR may make a Claim therefore as provided in Article 16 if CONTRACTOR believes that such performance involves additional expense to CONTRACTOR or requires additional time and the parties are unable to agree as to the amount or extent thereof.

B. CONTRACTOR shall afford each other contractor who is a party to such a direct contract, and each utility owner (and CITY, if CITY is performing the additional work with CITY's employees) proper and safe access to the Site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work and shall properly connect and coordinate the Work with theirs. Unless otherwise provided in the Contract Documents, CONTRACTOR shall do all cutting, fitting and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. CONTRACTOR shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of CITY and the others whose work will be affected. The duties and responsibilities of CONTRACTOR under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of CONTRACTOR in said direct contracts between CITY and such utility owners and other contractors.

C. If the proper execution or results of any part of CONTRACTOR's Work depends upon work performed by others under this Article 7, CONTRACTOR shall inspect such other work and promptly report to CITY and DESIGN PROFESSIONAL in writing any delays, defects or deficiencies in such other work that render it unavailable or unsuitable for the proper execution or results of CONTRACTOR's Work. CONTRACTOR's failure to report same will constitute an acceptance of such other work as fit and proper for integration with CONTRACTOR's Work, except for latent or non-apparent defects and deficiencies in such other work.

7.02 Coordination

A. If CITY contracts with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:

1. the person, firm or corporation who will have authority and responsibility for coordination of the activities among the various prime contractors will be identified;
2. the specific matters to be covered by such authority and responsibility will be itemized; and
3. the extent of such authority and responsibilities will be provided.

B. Unless otherwise provided in the Supplementary Conditions, CITY shall have sole authority and responsibility in respect of such coordination.

ARTICLE 8 CITY'S RESPONSIBILITIES

8.01 Communications to CONTRACTOR

A. Except as otherwise provided in these General Conditions, CITY shall issue all communications to CONTRACTOR.

8.02 Replacement of DESIGN PROFESSIONAL

A. In case of termination of the employment of DESIGN PROFESSIONAL, CITY shall appoint a DESIGN PROFESSIONAL whose status under the Contract Documents shall be that of the former DESIGN PROFESSIONAL.

8.03 Furnish Data and Prompt Payment

A. CITY shall promptly furnish the data required of OWNER under the Contract Documents and shall make payments to CONTRACTOR when they are due.

8.04 Lands and Easements; Reports and Tests

A. CITY's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to CITY's duty to identify and make available to CONTRACTOR copies of reports of explorations and tests of subsurface conditions at the Site and drawings of physical conditions in existing structures at or contiguous to the Site that have been utilized by DESIGN PROFESSIONAL in preparing the Contract Documents.

8.05 Insurance

A. CITY's responsibilities, if any, for purchasing and maintaining liability and property insurance are set forth in Article 5 and the Supplementary Conditions.

8.06 Change Orders

A. CITY is obligated to execute Change Orders as indicated in Paragraph 10.03.

8.07 Inspections, Tests and Approvals

A. CITY's responsibility for certain inspections, tests and approvals is set forth in Paragraph 13.02 F.

8.08 Limitations on CITY's Responsibilities

A. The CITY shall not supervise, direct or have control or authority over, nor be responsible for, CONTRACTOR's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws or Regulations applicable to the furnishing or performance of the Work. CITY will not be responsible for CONTRACTOR's failure to perform or furnish the Work in accordance with the Contract Documents.

8.09 Undisclosed Hazardous Environmental Condition

A. CITY's responsibility for an undisclosed Hazardous Environmental Condition uncovered or revealed at the Site is set forth in Paragraph 4.06.

8.10 Evidence of Financial Arrangements

A. CITY will furnish CONTRACTOR reasonable evidence that financial arrangements have been made to satisfy OWNER's obligations under the Contract.

8.11 CITY's Representative

A. CITY will provide a representative during the construction period. The duties, responsibilities and the limitations of authority of the CITY '"s Representative during construction are set forth in the Contract Documents.

8.12 Visits to Site

A. CITY's Representative will make visits to the Site at intervals appropriate to the various stages of construction as CITY's Representative deems necessary in order to observe the progress that has been made and the quality of the various aspects of CONTRACTOR's executed Work. Based on information obtained during such visits and observations, CITY's Representative will endeavor to determine, in general, if the Work is proceeding in accordance with the Contract Documents. CITY's Representative will not be required to make exhaustive or continuous on-Site inspections to check the quality or quantity of the Work.

ARTICLE 9 DESIGN PROFESSIONAL's STATUS DURING CONSTRUCTION

9.01 General Scope of DESIGN PROFESSIONAL's Duties

A. DESIGN PROFESSIONAL's efforts will be directed toward providing for CITY a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of visits to the Site and on-Site observations, DESIGN PROFESSIONAL will keep CITY informed of the progress of the Work and will endeavor to guard CITY against defective Work. DESIGN PROFESSIONAL's visits to the Site and on-Site observations are subject to all the limitations on DESIGN PROFESSIONAL's authority and responsibility set forth in Paragraph 9.08.

9.02 Resident Project Representative

A. If CITY and DESIGN PROFESSIONAL agree, DESIGN PROFESSIONAL will furnish a resident Project representative to assist DESIGN PROFESSIONAL in providing more extensive observation of the Work. The responsibilities, authority and limitations thereon of any such resident Project representative and assistants will be as provided in Paragraph 9.08 and in the Supplementary Conditions.

9.03 Clarifications and Interpretations

A. DESIGN PROFESSIONAL will issue with reasonable promptness written clarifications or interpretations (which may be in the form of Drawings) of the requirements of the Drawings and Specifications prepared by the DESIGN PROFESSIONAL as DESIGN PROFESSIONAL may determine necessary, which shall be consistent with the intent of and reasonably inferable from the Contract Documents. Such written clarifications and interpretations will be binding on CITY and CONTRACTOR. If CITY or CONTRACTOR believes that a written clarification or

interpretation justifies an adjustment in the Contract Price pursuant to Article 11 and/ or the Contract Times pursuant to Article 12 and the parties are unable to agree to the amount or extent thereof, if any, a Claim may be made therefore as provided in Article 16.

9.04 Rejecting Defective Work

A. DESIGN PROFESSIONAL will have authority to disapprove or reject Work which DESIGN PROFESSIONAL believes to be defective, that DESIGN PROFESSIONAL believes will not produce a completed Project that conforms to the Contract Documents, or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. DESIGN PROFESSIONAL will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04 B, whether or not the Work is fabricated, installed or completed.

9.05 Shop Drawings, Change Orders and Payments

A. In connection with DESIGN PROFESSIONAL's authority as to Shop Drawings and Samples, see Paragraph 6.18.

B. In connection with DESIGN PROFESSIONAL's authority as to Change Orders, see Article 10.

C. In connection with DESIGN PROFESSIONAL's authority as to Applications for Payment, see Article 14.

9.06 Determinations for Unit Prices

A. DESIGN PROFESSIONAL will initially determine the actual quantities and classifications of Unit Price Work performed by CONTRACTOR. DESIGN PROFESSIONAL will review with CONTRACTOR the DESIGN PROFESSIONAL's preliminary determinations on such matters before rendering a written opinion thereon (by recommendation of an Application for Payment or otherwise to the CITY). CITY reserves the right to make a final determination of the actual quantities and classifications of Unit Price Work in reviewing an Application for Payment. Within ten (10) days after the date of receipt of any such decision, CONTRACTOR may deliver to CITY and to DESIGN PROFESSIONAL written notice of intention to appeal CITY's decision pursuant to Article 16.

9.07 Decisions on Requirements of Contract Documents and Acceptability of Work

A. DESIGN PROFESSIONAL will be the initial interpreter of the requirements of the Drawings and Specifications prepared by DESIGN PROFESSIONAL and judge of the acceptability of the Work thereunder.

B. When functioning as interpreter and judge under this Paragraph 9.07, DESIGN PROFESSIONAL will not show partiality to OWNER or CONTRACTOR.

C. Claims, disputes and other matters relating to the acceptability of the Work, quantities and classifications of Unit Price Work, or the interpretation of the requirements of the Contract Documents pertaining to the performance and furnishing of the Work will be referred initially to CITY's Representative in writing with a request for a formal decision in accordance with Article 16.

9.08 Limitations on DESIGN PROFESSIONAL's Authority and Responsibilities

A. Neither DESIGN PROFESSIONAL's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by DESIGN PROFESSIONAL in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise or performance of any authority or responsibility by DESIGN PROFESSIONAL shall create, impose or give rise to any duty owed by DESIGN PROFESSIONAL to CONTRACTOR, any Subcontractor, any Supplier, any other person or organization, or to any surety for or employee or agent of any of them.

B. DESIGN PROFESSIONAL will not supervise, direct, control or have authority over or be responsible for CONTRACTOR's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws or Regulations applicable to the furnishing or performance of the Work. DESIGN PROFESSIONAL will not be responsible for CONTRACTOR's failure to perform or furnish the Work in accordance with the Contract Documents.

C. DESIGN PROFESSIONAL will not be responsible for the acts or omissions of CONTRACTOR or of any Subcontractor, any Supplier, or of any other person or organization performing or furnishing any of the Work.

D. DESIGN PROFESSIONAL's review of the final Application for Payment and accompanying documentation, and all maintenance and operating instructions, schedules, guarantees, Bonds and certificates of inspection, tests and approvals and other documentation required to be delivered by Paragraph 14.07 will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests and approvals, that the results certified indicate compliance with, the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 9.08 shall also apply to DESIGN PROFESSIONAL's Consultants, resident Project representative and assistants as identified in the Supplementary Conditions.

ARTICLE 10 CHANGES IN THE WORK

10.01 Authorized Changes in the Work

A. Without invalidating the Contract and without notice to any surety, CITY may, at any time or from time to time, order additions, deletions or revisions in the Work. Such additions, deletions or revisions will be authorized by a Written Amendment, a Change Order, or a Work Change Directive. Upon receipt of any such document, CONTRACTOR shall promptly proceed with the Work involved that will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

B. If CITY and CONTRACTOR are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price pursuant to Article 11 or an adjustment of the Contract Times pursuant to Article 12 or both that should be allowed as a result of a Work Change Directive, a Claim may be made therefore as provided in Article 16.

10.02 Unauthorized Changes in the Work

A. CONTRACTOR shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified or supplemented as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.17 or in the case of uncovering Work as provided in Paragraph 13.04.

10.03 Signing of Change Orders

A. CITY and CONTRACTOR, and DESIGN PROFESSIONAL shall sign appropriate Change Orders covering:

1. changes in the Work which are:

    a. ordered by CITY pursuant to Paragraph 10.01 A; or

    b. required because of acceptance of defective Work under Paragraph 13.08 or correcting defective Work under Paragraph 13.09; or

    c. agreed to by the parties;

2. changes in the Contract Price or Contract Times or both which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and

3. changes in the Contract Price or Contract Times or both which embody the substance of any written decision recommended by DESIGN PROFESSIONAL and approved by CITY pursuant to Paragraph 9.06, provided that, in lieu of signing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws or Regulations, but during any such appeal, CONTRACTOR shall carry on the Work and adhere to the progress schedule as provided in Paragraph 6.19.

10.04 Notification to Surety

A. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times or both) is required by the provisions of any Bond to be given to a surety, the giving of any such notice will be CONTRACTOR's responsibility, and the amount of each applicable Bond will be adjusted accordingly.

ARTICLE 11 CHANGE OF CONTRACT PRICE

11.01 Change of Contract Price

A. The Contract Price constitutes the total compensation (subject to authorized adjustments) payable to CONTRACTOR for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by CONTRACTOR shall be at CONTRACTOR's expense without change in the Contract Price.

B. The Contract Price may only be changed by a Change Order. Any request for an adjustment in the Contract Price shall be based on written notice delivered within fourteen (14) calendar days after occurrence of the event giving rise to the request or within fourteen (14) calendar days after first recognition of the conditions giving rise to the request. Prior notice is not required for requests or claims relating to an emergency endangering life or property as described in Paragraph 6.16. Thereafter, the CONTRACTOR shall submit written documentation of its request, including appropriate supporting documentation, within ten (10) calendar days after giving notice, unless the CITY grants an extension based on good cause shown by the CONTRACTOR that such additional time is warranted.

C. The value of any Work covered by a Change Order or of any request for an adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by Unit Prices contained in the Contract Documents, by application of such Unit Prices to the quantities of the items involved (subject to the provisions of Paragraph 11.04); or

2. where the Work involved is not covered by Unit Prices contained in the Contract Documents, by a mutually agreed lump sum; or

3. where the Work involved is not covered by Unit Prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 11.01 C.2, on the basis of the Cost of the Work (determined as provided in Paragraphs 11.02 A and B) plus a CONTRACTOR's fee for overhead and profit (determined as provided in Paragraph 11.01 D).

D. The CONTRACTOR's fee allowed to CONTRACTOR for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or

2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. for costs incurred under Paragraphs 11.02 A.1 and 11.02 A.2, the CONTRACTOR's fee shall be ten percent (10%);

b. for costs incurred under Paragraph 11.02 A.3, the CONTRACTOR's fee shall be five percent (5%);

c. where one or more tiers of subcontracts are on the basis of the Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.01 D.2 and 11.02 A.1 through A.3 is that the Subcontractor who actually performs or furnishes the Work, at whatever tier, will be a paid a fee of ten percent (10%) of the costs incurred by such Subcontractor under Paragraphs 11.02 A.1 and 11.02 A.2 and that any higher tier Subcontractor and CONTRACTOR will each be paid a fee of five percent (5%) of the amount paid to the next lower tier Subcontractor;

d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.02 A.4, 11.02 A.5 and 11.02 B;

e. the amount of credit to be allowed by CONTRACTOR to CITY for any change which results in a net decrease in cost will be the amount of the actual net decrease in costs plus a deduction in CONTRACTOR's fee by an amount equal to five percent (5%) of such net decrease; and

f. when both additions and credits are involved in any one change, the adjustment in CONTRACTOR's fee shall be computed on the basis of the net change in accordance with Paragraphs 11.01 D.2.a through 11.01 D.2.e, inclusive.

E. Whenever the Cost of the Work is to be determined pursuant to Paragraphs 11.02 A and B, CONTRACTOR shall establish and maintain records thereof in accordance with generally accepted accounting practices and submit in form acceptable to CITY an itemized cost breakdown together with supporting data.

11.02 Cost of the Work

A. The term "Cost of the Work" means the sum of all costs necessarily incurred and paid by CONTRACTOR in the proper performance of the Work. When the value of any Work covered by a Change Order or when a request for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to CONTRACTOR will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the request. Except as otherwise agreed to in writing by CITY, costs covered by Change Orders or requests shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items and shall not include any costs itemized in 11.02 B:

1. Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the Work, using occupational titles and job classifications agreed upon by CITY and CONTRACTOR. Such employees shall include, without limitation, job Site superintendents, foremen and other personnel employed full time at the Site. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits which shall include social security contributions, unemployment, excise and payroll taxes, workers'" compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing the Work after regular working hours, on Saturdays, Sundays or legal holidays, shall be included in the above to the extent authorized by OWNER.

2. Cost of all materials and equipment furnished and incorporated into the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to CONTRACTOR unless CITY deposits funds with CONTRACTOR with which to make payments, in which case the cash discounts shall accrue to CITY. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to CITY, and CONTRACTOR shall make provisions so that they may be obtained.

3. Payments made by CONTRACTOR to Subcontractors for Work performed or furnished by Subcontractors. If required by CITY, CONTRACTOR shall obtain competitive bids from Subcontractors acceptable to OWNER and CONTRACTOR and shall deliver such bids to CITY who will then determine, with the advice of DESIGN PROFESSIONAL, which bids, if any, will be accepted. If any subcontract provides that the Subcontractor is to be paid on the basis of the Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as CONTRACTOR's Cost of the Work and fee as provided in Paragraphs 11.01 D and E and 11.02 A and B. All subcontracts shall be subject to the other provisions of the Contract Documents insofar as applicable.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys and accountants) employed for services specifically related to the Work when such services are approved in advance by CITY in writing.

5. Other costs including the following:

a. The proportion of necessary transportation, travel and subsistence expenses of CONTRACTOR's employees incurred in discharge of duties connected with the Work.

b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office and temporary facilities at the Site and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value of such items used but not consumed which remain the property of CONTRACTOR.

c. Rentals of all construction equipment and machinery and the parts thereof whether rented from CONTRACTOR or others in accordance with rental agreements approved by CITY with the advice of DESIGN PROFESSIONAL, and the costs of transportation, loading, unloading, installation, assembly, dismantling and removal thereof, all in accordance with the terms of said rental agreements. The rental of any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for the Work.

d. Applicable sales, consumer, use or similar taxes related to the Work**,** and for which CONTRACTOR is liable, imposed by Laws or Regulations.

e. Deposits lost for causes other than negligence of CONTRACTOR, any Subcontractor or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses required to perform the Work.

f. Losses and damages (and related expenses) caused by damage to the Work**,** not compensated by insurance or otherwise, sustained by CONTRACTOR in connection with the performance and furnishing of the Work (except losses and damages within the deductible amounts of property insurance established by CITY in accordance with Article 5), provided they have resulted from causes other than the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of CITY. No such losses, damages and expenses shall be included in the Cost of the Work for the purpose of determining CONTRACTOR's fee. If, however, any such loss or damage requires reconstruction and CONTRACTOR is placed in charge thereof, CONTRACTOR shall be paid for those services a fee proportionate to that stated in Paragraph 11.01 D.2.

g. The cost of utilities, fuel and sanitary facilities at the Site.

h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, expressage and similar petty cash items in connection with the Work.

i. Cost of premiums for additional or increased Bonds, or for insurance required because of approved changes in the Work.

B. Costs excluded: The term “Cost of the Work” shall not include any of the following:

1. Payroll costs and other compensation of CONTRACTOR’s officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks and other personnel employed by CONTRACTOR whether at the Site or in CONTRACTOR’s principal or a branch office for general administration of the Work (if not specifically included in the agreed upon occupational titles and job classifications referred to in Paragraph 11.02 A.1 or specifically covered by Paragraph 11.02 A.4), all of which are to be considered administrative costs covered by the CONTRACTOR’s fee.

2. Expenses of CONTRACTOR’s principal and branch offices other than CONTRACTOR’s office at the Site.

3. Any part of CONTRACTOR’s capital expenses, including interest on CONTRACTOR’s capital employed for the Work and charges against CONTRACTOR for delinquent payments.

4. Costs due to the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials, or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 11.02 A.

11.03 Cash Allowances

A. It is understood that CONTRACTOR has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be furnished and performed for such sums as may be acceptable to CITY. CONTRACTOR agrees that:

1. the allowances include the cost to CONTRACTOR (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

2. CONTRACTOR’s costs for unloading and handling on the Site, labor, installation costs, overhead, profit and other expenses contemplated for the allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

B. Prior to final payment, an appropriate Change Order will be issued by CITY to reflect actual amounts due CONTRACTOR on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.04 Unit Price Work

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the established unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Contract. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by CONTRACTOR will be made in accordance with Paragraph 9.06.

B. Each unit price will be deemed to include an amount considered by CONTRACTOR to be adequate to cover CONTRACTOR’s overhead and profit for each separately identified item.

C. CITY or CONTRACTOR may negotiate an adjustment of the price per unit of Unit Price Work stated in the Contract if:

1. the quantity of any item of Unit Price Work performed by CONTRACTOR differs by twenty percent (20%) or more from the estimated quantity of such item indicated in the Contract; and

2. there is no corresponding adjustment with respect to any other item of Work; and

3. CONTRACTOR believes that CONTRACTOR is entitled to an increase in Contract Price as a result of having incurred additional expense or CITY believes that CITY is entitled to a decrease in Contract Price.

11.05 Dispute Resolution

A. If CITY and CONTRACTOR are unable to agree on entitlement to, or magnitude of, an equitable adjustment in the Contract Price in accordance with Article 11 within fourteen (14) calendar days from the receipt of supporting documentation of the request pursuant to 11.01.B., unless the CITY grants an extension based on good cause shown by the CONTRACTOR that such additional time is warranted, then a Claim for such adjustment may be made pursuant to Article 16.

ARTICLE 12 CONTRACT TIMES

12.01 Time of the Essence

A. All times stated in the Contract Documents are of the essence of the Contract.

12.02 Change of Contract Times

A. The Contract Times (or Milestones) may only be changed by a Change Order. Any request for an adjustment in the Contract Times shall be based on written notice delivered within fourteen (14) calendar days after occurrence of the event giving rise to the request or within fourteen (14) calendar days after first recognition of the conditions giving rise to the request. Thereafter, the CONTRACTOR shall submit written documentation of its requests, including appropriate supporting documentation, within ten (10) days after giving notice, unless the CITY grants an extension based on good cause shown by the CONTRACTOR that such additional time is warranted.

12.03 Proof Required To Justify an Extension of Time For Excusable and Compensable Delays

A. In support of any request for an extension of the Contract Times pursuant to this Article, CONTRACTOR must demonstrate to the reasonable satisfaction of the CITY that the critical path of the approved baseline project schedule was delayed. CONTRACTOR shall be entitled to an increase in contract time for the number of days that the critical path was delayed solely as a result of the compensable or excusable event. A compensable or excusable event includes, but is not limited to:

1. unreasonable delay of issuance of Notice to Proceed by CITY;
2. CITY's unreasonable delay of delivery furnished materials, equipment, or work;
3. unreasonable delay responding to shop drawings and submittals;
4. CITY's unreasonable delay in issuing a Change Order;
5. an order by the CITY to stop the Work where the CONTRACTOR was not at fault; and
6. other reasonable grounds as determined by the City in its sole discretion.

B. CONTRACTOR shall compare the critical path of the approved baseline project schedule to the actual critical path of the Work, identifying the specific impact of the compensable or excusable event.

C. CONTRACTOR shall submit to the CITY a written time impact analysis illustrating the influence of each compensable or excusable event on the date of Substantial Completion. The

time impact analysis shall demonstrate the time impact based on the date of the delay in time and the event time computations or all affected activities.

D. If the critical path of the Work is delayed by "Force Majeure", the CONTRACTOR shall be entitled only to an extension of the Contract Times for the number of days of delay to the critical path. For purposes of this paragraph, "Force Majeure" shall mean fire, tornado, flood, earthquake, war, act of terrorism, civil disturbance, or labor strikes away from the project site.

E. Extensions of contract time pursuant to the this section will be granted only to the extent that the time adjustments exceed the total float time available when the event causing the delay occurred.

12.04 Delays Within CONTRACTOR's Control

A. The Contract Times (or Milestones) will not be extended due to delays within the control of CONTRACTOR. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of CONTRACTOR.

12.05 Delays Beyond the CITY's and CONTRACTOR's Control

A. Where CONTRACTOR is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of both CITY and CONTRACTOR, an extension of the Contract Times (or Milestones) in an amount equal to the time lost due to such delay shall be CONTRACTOR's sole and exclusive remedy for such delay.

12.06 Delay Damages

A. In no event shall CITY be liable to CONTRACTOR, any Subcontractor, any Supplier, any other person or organization, or to any surety for or employee or agent of any of them, for damages arising out of or resulting from:

1. delays caused by or within the control of CONTRACTOR, or

2. delays beyond the control of CITY or CONTRACTOR including but not limited to fires, floods, epidemics, abnormal weather conditions, acts of God or acts or neglect by utility owners or other contractors performing other work as contemplated by Article 7.

B. Nothing in this Paragraph 12.06 bars a change in Contract Price pursuant to this Article 12 to compensate CONTRACTOR due to delay, interference, or disruption directly attributable to actions or inaction of CITY, DESIGN PROFESSIONAL, Consultant or anyone for whom CITY, DESIGN PROFESSIONAL or Consultant is responsible.

12.07 Dispute Resolution

A. If CITY and CONTRACTOR are unable to agree on entitlement to, or magnitude of, an equitable adjustment in the Contract Time in accordance with Article 12 within fourteen (14) calendar days from the receipt of supporting documentation of the request pursuant to 12.02, unless the CITY grants an extension based on good cause shown by the CONTRACTOR that such additional time is warranted, then a Claim for such adjustment may be made pursuant to Article 16.

ARTICLE 13 TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 Access to Work

A. CITY, DESIGN PROFESSIONAL, Consultants, other representatives and personnel of CITY, independent testing laboratories and governmental agencies with jurisdictional interests will have access to the Site and Work at reasonable times for their observation, inspecting and testing. CONTRACTOR shall provide them proper and safe conditions for such access and advise them of CONTRACTOR's Site safety procedures and programs so that they may comply therewith as applicable.

13.02 Tests and Inspections

A. CONTRACTOR shall give DESIGN PROFESSIONAL and CITY's Representative timely notice of readiness of the Work for all required inspections, tests or approvals, and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

B. If any Work (or the work of others at the Site) that is to be inspected, tested or approved is covered by CONTRACTOR without written approval required by Paragraphs 13.02 D or 13.02 E, it must, if requested by CITY's Representative, be uncovered for observation.

C. Uncovering Work as provided in Paragraph 13.02 B, shall be at CONTRACTOR's expense unless CONTRACTOR has given DESIGN PROFESSIONAL and CITY's Representative timely notice of CONTRACTOR's intention to cover the same and DESIGN PROFESSIONAL and CITY's Representative have not acted with reasonable promptness in response to such notice.

D. If Laws or Regulations of any public body (including City) having jurisdiction require any Work (or part thereof) specifically to be inspected, tested or approved by an employee or other representative of such public body, CONTRACTOR shall assume full responsibility for arranging and obtaining such inspections, tests or approvals, pay all costs in connection therewith, and furnish DESIGN PROFESSIONAL and CITY's Representative the required certificates of inspection or approval.

E. CONTRACTOR shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests or approvals required for CITY's and DESIGN PROFESSIONAL's acceptance of materials or equipment to be incorporated into the Work, or acceptance of materials, mix designs, or equipment submitted for approval prior to CONTRACTOR's purchase thereof for incorporation into the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to CITY and DESIGN PROFESSIONAL.

F. CITY shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:

1. for inspections, tests or approvals covered by Paragraph 13.02 D and E;

2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04 B shall be paid as provided in said Paragraph 13.04 B; and

3. as otherwise specifically provided in the Contract Documents.

13.03 Notice of Defects

A. Prompt notice of all defective Work of which either CITY or DESIGN PROFESSIONAL has actual knowledge will be given to CONTRACTOR. Defective Work may be rejected, corrected or accepted as provided in this Article 13.

13.04 Uncovering Work

A. If any Work (or the work of others at the Site) is covered contrary to the written request of DESIGN PROFESSIONAL or CITY's Representative, it must, if requested by CITY's Representative, be uncovered for DESIGN PROFESSIONAL's or CITY's Representative's observation and replaced at CONTRACTOR's expense.

B. If CITY considers it necessary or advisable that covered Work be observed by DESIGN PROFESSIONAL or CITY's Representative or be inspected or tested by others, CONTRACTOR, at CITY's request, shall uncover, expose or otherwise make available for observation, inspection or testing as may be required, that portion of the Work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is defective, CONTRACTOR shall pay all costs, losses and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) caused by, arising out of or resulting from such uncovering, exposure, observation, inspection and testing and of satisfactory replacement or reconstruction

(including but not limited to all costs of repair or replacement of work of others); and CITY shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, CITY may make a Claim therefore as provided in Article 16. If, however, such Work is not found to be defective, CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Times (or Milestones), or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement and reconstruction. If the parties are unable to agree as to the amount or extent thereof, CONTRACTOR may make a Claim therefore as provided in Article 16.

13.05 CITY May Stop the Work

A. If the Work is defective, or CONTRACTOR fails to supply sufficient skilled workers or suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, CITY may order CONTRACTOR to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of CITY to stop the Work shall not give rise to any duty on the part of CITY to exercise this right for the benefit of CONTRACTOR, any Subcontractor, Supplier, other individual or entity or any surety or employee or agent of any of them.

13.06 Correction or Removal of Defective Work

A. If required by CITY, CONTRACTOR shall promptly, as directed, either correct all defective Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by either DESIGN PROFESSIONAL or CITY's Representative, remove it and replace it with Work that is not defective. CONTRACTOR shall pay all costs, losses and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) caused by or resulting from such correction or removal (including but not limited to all costs of repair or replacement of work of others).

13.07 Correction Period

A. If within one (1) year after the date of Substantial Completion, or such longer period of time as may be prescribed by Laws or Regulations, by the terms of any applicable special guarantee required by the Contract Documents, or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for CONTRACTOR's use by CITY or permitted by Laws and Regulations as contemplated in Paragraph 6.10 is found to be defective, CONTRACTOR shall promptly, without cost to CITY and in accordance with CITY's written instructions:

1. correct the repair of damages to such land or areas; or

2. correct such defective Work, or if it has been rejected by CITY, remove it from the Site and replace it with Work that is not defective; and

3. satisfactorily correct or remove and replace any damage to other Work or to the work of others or damage to other lands or areas resulting therefrom. If CONTRACTOR does not promptly comply with the terms of such instructions, or in the event of an emergency where delay by CONTRACTOR would cause serious risk of loss or damage, CITY may have the defective Work corrected or the rejected Work removed and replaced, and all costs, losses and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) caused by or resulting from such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by CONTRACTOR.

B. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications or by Written Amendment.

C. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder

with respect to such Work will be extended for an additional period of one (1) year, or such longer period of time as may be prescribed within Paragraph 13.07 A, after such correction or removal and replacement has been satisfactorily completed.

D. CONTRACTOR's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for or waiver of the provisions of any applicable statute of limitation or repose.

13.08 Acceptance of Defective Work

A. If, instead of requiring correction or removal and replacement of defective Work, CITY prefers to accept it, CITY may do so. CONTRACTOR shall pay all costs, losses and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to CITY's evaluation of and determination to accept such defective Work and shall pay OWNER for the diminished value of the Work. If any such acceptance occurs prior to DESIGN PROFESSIONAL's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions into the Contract Documents with respect to the Work and, due to the diminished value of the Work, CITY shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, CITY may make a Claim therefore as provided in Article 16. If the acceptance of defective Work occurs after such recommendation, an appropriate amount shall be paid by CONTRACTOR to CITY.

13.09 CITY May Correct Defective Work

A. If CONTRACTOR fails within a reasonable time after written notice from DESIGN PROFESSIONAL or CITY's Representative to correct defective Work or to remove and replace rejected Work as required by CITY in accordance with Paragraph 13.06, or if CONTRACTOR fails to perform the Work in accordance with the Contract Documents, or if CONTRACTOR fails to comply with any other provision of the Contract Documents, CITY may, after seven (7) days written notice to CONTRACTOR, correct and remedy any such deficiency.

B. CITY shall proceed expeditiously when exercising the rights and remedies under this Paragraph 13.09. In connection with such corrective and remedial action, CITY may exclude CONTRACTOR from all or part of the Site; take possession of all or part of the Work and suspend CONTRACTOR's services related thereto; take possession of CONTRACTOR's tools, appliances, construction equipment and machinery at the Site; and incorporate into the Work all materials and equipment stored at the Site or for which CITY has paid CONTRACTOR but which are stored elsewhere. CONTRACTOR shall allow CITY, CITY's Representative, agents and employees, CITY's other contractors, DESIGN PROFESSIONAL and Consultants access to the Site to enable CITY to exercise the rights and remedies under this Paragraph 13.09.

C. All costs, losses and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by CITY in exercising such rights and remedies will be charged against CONTRACTOR and a Change Order will be issued incorporating the necessary revisions into the Contract Documents with respect to the Work; and CITY shall be entitled to an appropriate decrease in the Contract Price. If CITY and CONTRACTOR are unable to agree as to the amount thereof, CITY may make a Claim therefore as provided in Article 16. Such Claims for costs, losses and damages will include but not be limited to all costs of repair or replacement of work of others destroyed or damaged by correction, removal and replacement of CONTRACTOR's defective or rejected Work.

D. CONTRACTOR shall not be allowed an extension of the Contract Times (or Milestones) because of any delay in the performance of the Work attributable to the exercise by CITY of CITY's rights and remedies under Paragraphs 13.06 and 13.09.

ARTICLE 14 PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 Schedule of Values

A. 01290.02 Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into form 01290.01 Application for Payment acceptable to DESIGN PROFESSIONAL and CITY. Progress payments for Unit Price Work will be based on the number of units completed.

14.02 Application for Progress Payments

A. Application for Payment

1. At least twenty (20) days before the date stipulated in the Supplementary Conditions for each progress payment (but not more often than once a month), CONTRACTOR shall submit to DESIGN PROFESSIONAL for review an Application for Payment filled out and signed by CONTRACTOR covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated into the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, paid invoice or other documentation warranting that CITY has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance and other arrangements to protect CITY"'s interest therein, all of which will be subject to CITY's approval.

2. Beginning with the second Application for Payment, each Application shall include:

a. an affidavit of CONTRACTOR stating that all previous progress payments received for the Work have been applied to discharge CONTRACTOR's legitimate obligations associated with prior Applications for Payment, and

b. a copy of the most recent 00485.01 M/WBE Monthly Utilization Report CONTRACTOR has submitted to the CITY's Civil Rights and Equal Opportunity Department.

c. a copy of the most recent 00485.02 Project Workforce Monthly Report and 00485.03 Company-Wide Workforce Monthly Report CONTRACTOR has submitted to the OWNER's Civil Rights and Equal Opportunity Department.

d. an update to the approved schedule pursuant to paragraphs 6.04 and 6.05.

3. The amount of retainage with respect to progress payments will be stated in the Supplementary Conditions.

B. Review of Applications

1. DESIGN PROFESSIONAL will, within ten (10) days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to CITY, or return the Application to CONTRACTOR indicating in writing DESIGN PROFESSIONAL's reasons for refusing to recommend payment. In the latter case, CONTRACTOR shall make the necessary corrections and resubmit the Application.

a. After presentation of the Application for Payment to CITY, and if CITY's Representative agrees with DESIGN PROFESSIONAL's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02 B.4) become due and will be paid by CITY to CONTRACTOR, subject to the provisions of Laws or Regulations.

b. No payment shall be approved until the CONTRACTOR has submitted with the Application accompanying documentation as required by the Contract Documents, including, but not limited to, the documentation required by paragraphs 6.04 and 6.05.

2. DESIGN PROFESSIONAL's recommendation of any payment requested in an Application for Payment will constitute a representation by DESIGN PROFESSIONAL to CITY, based on DESIGN PROFESSIONAL's observations of the executed Work as an experienced and qualified DESIGN PROFESSIONAL and on DESIGN PROFESSIONAL's

review of the Application for Payment and the accompanying data and schedules, that to the best of DESIGN PROFESSIONAL's knowledge, information and belief:

a. the Work has progressed to the point indicated;

b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under Paragraph 9.06, and to any other qualifications stated in the recommendation); and

c. the conditions precedent to CONTRACTOR being entitled to such payment appear to have been fulfilled in so far as it is DESIGN PROFESSIONAL's responsibility to observe the Work.

3. DESIGN PROFESSIONAL's recommendation of any payment, including final payment, shall not mean that DESIGN PROFESSIONAL is responsible for CONTRACTOR's means, methods, techniques, sequence or procedures of construction, safety precautions and programs incident thereto, or any failure of CONTRACTOR to comply with Laws or Regulations applicable to the furnishing or performance of Work.

4. DESIGN PROFESSIONAL may refuse to recommend the whole or any part of any payment if, in DESIGN PROFESSIONAL's opinion, it would be incorrect to make the representations to CITY referred to in Paragraph 14.02 B.2. DESIGN PROFESSIONAL may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously recommended, to such extent as may be necessary in DESIGN PROFESSIONAL's opinion to protect CITY from loss because:

a. the Work is defective, or completed Work has been damaged requiring correction or replacement;

b. the Contract Price has been reduced by Written Amendment or Change Orders;

c. CITY has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or

d. DESIGN PROFESSIONAL has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.

C. Reduction in Payment

1. CITY may refuse to make payment of the full amount recommended by DESIGN PROFESSIONAL because:

a. Claims have been made by third parties against CITY on account of CONTRACTOR's performance or furnishing of the Work; or

b. Claims have been made by CITY against CONTRACTOR in connection with the Work, except where CONTRACTOR has delivered a specific Bond satisfactory to CITY to secure the satisfaction and discharge of such Claims;

c. there are other items entitling CITY to a set-off against the amount recommended; or

d. CITY has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02 B.4.a through c or 15.02 A.1 through 4; but CITY must give CONTRACTOR written notice (with a copy to DESIGN PROFESSIONAL) stating the reasons for such action and promptly pay CONTRACTOR the amount so withheld, or any adjustment thereto agreed to by CITY and CONTRACTOR, when CONTRACTOR corrects to CITY's satisfaction the reasons for such action; or

e. CITY has made a different determination of the actual quantities and classifications of Unit Price Work.

14.03 CONTRACTOR's Warranty of Title

A. CONTRACTOR warrants and guarantees that title to all Work, materials and equipment covered by any Application for Payment, whether incorporated into the Project or not, will pass to CITY no later than the time of payment, free and clear of all Liens.

14.04 Substantial Completion

A. When CONTRACTOR considers the entire Work ready for its intended use CONTRACTOR shall notify CITY and DESIGN PROFESSIONAL in writing that the entire Work is substantially complete (except for items specifically listed by CONTRACTOR as incomplete) and request that CITY issue a certificate of Substantial Completion. Within a reasonable time thereafter, CITY, together with CONTRACTOR and DESIGN PROFESSIONAL, shall make an inspection of the Work to determine the status of completion. If DESIGN PROFESSIONAL does not consider the Work substantially complete, DESIGN PROFESSIONAL will notify CONTRACTOR and CITY in writing giving the reasons therefore. If DESIGN PROFESSIONAL considers the Work substantially complete, DESIGN PROFESSIONAL will prepare and deliver to CITY a recommended certificate of Substantial Completion that shall establish the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. CITY shall have seven (7) days after receipt of the recommended certificate during which to make written objection to DESIGN PROFESSIONAL as to any provisions of the certificate or attached list. At the time of delivery of the recommended certificate of Substantial Completion, DESIGN PROFESSIONAL will deliver to CITY and CONTRACTOR a written recommendation as to division of responsibilities pending final payment between CITY and CONTRACTOR with respect to security, operation, safety, protection of the Work, maintenance, heat, utilities, insurance and warranties and guarantees.

B. CITY shall have the right to exclude CONTRACTOR from the Site after the date of Substantial Completion, but CITY shall allow CONTRACTOR reasonable access to complete or correct items on the tentative list.

14.05 Partial Utilization

A. Use by CITY at CITY's option of any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which CITY, DESIGN PROFESSIONAL and CONTRACTOR agree constitutes a separately functioning and usable part of the Work that can be used by CITY for its intended purpose without significant interference with CONTRACTOR's performance of the remainder of the Work, may be accomplished prior to Substantial Completion of all the Work subject to the following:

1. CITY at any time may request CONTRACTOR in writing to permit CITY to use any such part of the Work which CITY believes to be ready for its intended use and substantially complete. If CONTRACTOR agrees that such part of the Work is substantially complete, CONTRACTOR will certify to CITY and DESIGN PROFESSIONAL that such part of the Work is substantially complete and request CITY to issue a certificate of Substantial Completion for that part of the Work. CONTRACTOR at any time may notify CITY and DESIGN PROFESSIONAL in writing that CONTRACTOR considers any such part of the Work ready for its intended use and substantially complete and request CITY to issue a certificate of Substantial Completion for that part of the Work. Within a reasonable time after either such request, CITY, together with CONTRACTOR and DESIGN PROFESSIONAL, shall make an inspection of that part of the Work to determine its status of completion. If DESIGN PROFESSIONAL does not consider that part of the Work to be substantially complete, DESIGN PROFESSIONAL will notify CITY and CONTRACTOR in writing, giving the reasons therefore. If DESIGN PROFESSIONAL considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

2. No occupancy or separate operation of part of the Work will be accomplished prior to compliance with the requirements of Paragraph 5.09 with respect to property insurance.

14.06 Final Inspection

A. Upon written notice from CONTRACTOR that the entire Work or an agreed portion thereof is complete, DESIGN PROFESSIONAL will make a final inspection with CITY and CONTRACTOR and will notify CONTRACTOR in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. CONTRACTOR shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 Final Payment

A. Application for Payment

1. After CONTRACTOR has completed all corrections required by Paragraph 14.06 to the satisfaction of DESIGN PROFESSIONAL and CITY's Representative and delivered in accordance with the Contract Documents all maintenance and operating instructions, schedules, guarantees, Bonds, certificates or other evidence of insurance required by Paragraph 5.04, certificates of inspection, marked-up record documents (as provided in Paragraph 6.13) and other documents, CONTRACTOR may make application for final payment following the procedure for progress payments.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:

a. all documentation required by the Contract Documents, including but not limited to the evidence of insurance required by Subparagraph 5.04 B.7; and

b. 01290.14 "Contractor Affidavit for Final Payment" from CONTRACTOR and 01290.15 "Subcontractor Affidavit for Final Payment" from all Subcontractors, regardless of tier.

B. Review of Application and Acceptance

1. If, on the basis of DESIGN PROFESSIONAL's and CITY's Representative's observation of the Work during construction and final inspection, and DESIGN PROFESSIONAL's and CITY's Representative's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, DESIGN PROFESSIONAL and CITY's Representative are satisfied that the Work has been completed and CONTRACTOR's other obligations under the Contract Documents have been fulfilled, DESIGN PROFESSIONAL will, within ten (10) days after receipt of the final Application for Payment, indicate in writing DESIGN PROFESSIONAL's and CITY's Representative's recommendation of payment and present the Application to CITY for payment. At the same time DESIGN PROFESSIONAL will also give written notice to CITY and CONTRACTOR that the Work is acceptable subject to the provisions of Paragraph 14.09.

2. Otherwise, DESIGN PROFESSIONAL will return the Application to CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment, in which case CONTRACTOR shall make the necessary corrections and resubmit the Application to DESIGN PROFESSIONAL. After the presentation to CITY of the Application and accompanying documentation, in appropriate form and substance, including applicable federal and state prevailing wage provisions, and with DESIGN PROFESSIONAL's recommendation and notice of acceptability, the amount recommended by DESIGN PROFESSIONAL will become due and will be paid by CITY to CONTRACTOR in accordance with Laws and Regulations.

14.08 Final Completion Delayed

A. If, through no fault of CONTRACTOR, final completion of the Work is significantly delayed and if DESIGN PROFESSIONAL so recommends and CITY concurs, CITY shall, upon

receipt of CONTRACTOR's final Application for Payment and recommendation of DESIGN PROFESSIONAL, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by CITY for Work not fully completed or corrected is less than the retainage stipulated in the Supplementary Conditions, and if Bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by CONTRACTOR to DESIGN PROFESSIONAL with the Application for Payment. Payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 Waiver of Claims

A. The making and acceptance of final payment will constitute:

1. a waiver of all claims by CITY against CONTRACTOR, except claims previously made in writing and still unsettled, or claims arising from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from CONTRACTOR's continuing obligations under the Contract Documents; and

2. a waiver of all Claims by CONTRACTOR against CITY other than those previously made in writing pursuant to Paragraphs 16.02 and 16.03 and still unsettled.

14.10 Completion of Work by CITY

A. If CITY must complete the Work, all costs and charges incurred by CITY, together with the cost of completing the Work under the Contract, will be deducted from any monies due or which may become due CONTRACTOR. If such expense exceeds the sum which would have been payable under the Contract, then CONTRACTOR and the surety shall be liable and shall pay to CITY the amount of such excess.

ARTICLE 15 SUSPENSION OF WORK AND TERMINATION

15.01 CITY May Suspend Work

A. Notwithstanding any other provision of this Contract, at any time and without cause, and at is sole and absolute discretion, CITY, may suspend the Work or any portion of the Work by written notice to CONTRACTOR, which will initially fix the date on which Work will be resumed. CONTRACTOR shall resume the Work on the date so fixed in the notice unless the date is changed by a subsequent written notice from CITY. CONTRACTOR may be allowed an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any suspension if CONTRACTOR makes a Claim therefore in accordance with Article 16.

B. CONTRACTOR will not be allowed an adjustment in the Contract Price or an extension of the Contract Times if CITY suspends the Work because CONTRACTOR's acts or omissions create or cause an emergency that CITY believes affects the safety or protection of persons, the Work, or property at the Site or adjacent thereto. CITY may order CONTRACTOR to stop the Work, or any portion thereof, until the cause for such order has been adequately addressed by CONTRACTOR; however, this right of CITY to stop the Work shall not give rise to any duty on the part of CITY to exercise this right for the benefit of CONTRACTOR, any Subcontractor, Supplier, other individual or entity or any surety or employee or agent of any of them.

15.02 CITY May Terminate for Default

A. CONTRACTOR may be deemed in default and CITY may terminate the services of CONTRACTOR upon the occurrence of any one or more of the following events:

1. CONTRACTOR fails to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the progress schedule established under Paragraph 2.06 and 2.07 as adjusted from time to time pursuant to Paragraphs 6.04, 6.05, 12.02 and 12.03);

2. CONTRACTOR abandons the Work or declares its intention to abandon the Work;

3. CONTRACTOR assigns or attempts to assign its rights or obligations under this Contract or any part thereof to any third party without the prior written consent of CITY;

4. CONTRACTOR fails to make prompt payment duly owing to any subcontractor for Work completed in accordance to the Contract Documents or material supplier for materials delivered for incorporation into the Work within thirty (30) calendar days after payment was due;

5. CONTRACTOR fails to achieve the required dates of substantial and final completion;

6. CONTRACTOR disregards Laws or Regulations of any public body having jurisdiction;

7. CONTRACTOR disregards the authority of DESIGN PROFESSIONAL or OWNER; or

8. CONTRACTOR otherwise violates in any substantial way any provisions of the Contract Documents.

B. CITY may, after giving CONTRACTOR (and the surety) seven (7) days written notice and to the extent permitted by Laws or Regulations, terminate the services of CONTRACTOR, exclude CONTRACTOR from the Site and take possession of the Work and of all CONTRACTOR's tools, appliances, construction equipment and machinery at the Site and use the same to the full extent they could be used by CONTRACTOR (without liability to CONTRACTOR for trespass or conversion), incorporate into the Work all materials and equipment stored at the Site or for which CITY has paid CONTRACTOR but which are stored elsewhere, and finish the Work as CITY may deem expedient. In such case, CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds all costs, losses and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by CITY arising out of or resulting from completing the Work, such excess may be paid to CONTRACTOR. If such costs, losses and damages exceed such unpaid balance, CONTRACTOR shall pay the difference to CITY within fourteen (14) calendar days of CITY'S demand for payment. When exercising any rights or remedies under this Paragraph CITY shall not be required to competitively bid this work unless required by law.

C. Where CONTRACTOR's services have been so terminated by CITY, the termination will not affect any rights or remedies of CITY against CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys due CONTRACTOR by CITY will not release CONTRACTOR from liability.

D. If, after a default termination, it is determined that the CONTRACTOR was not in default, the rights and obligations of the parties shall be the same as if the termination had been issued for the convenience of the CITY. The CITY shall then be liable to CONTRACTOR for only those costs enumerated in paragraph 15.03.

15.03 CITY May Terminate for Convenience

A. Notwithstanding any other provision of this Contract, upon seven (7) calendar days written notice to CONTRACTOR, CITY may, at its sole and absolute discretion, without cause and without prejudice to any other right or remedy of CITY, elect to terminate the Contract. In such case, CONTRACTOR shall, with thirty (30) calendar days of receiving notice of termination under this paragraph, submit to CITY its statement of costs and expenses and shall be paid:

1. for completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. for expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;

3. for all costs, losses and damages incurred in settlement of terminated contracts with Subcontractors, Suppliers and others; and

4. for reasonable expenses directly attributable to termination if approved in advance by CITY.

B. CONTRACTOR shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

C. CONTRACTOR waives any costs not submitted to CITY pursuant to paragraph 15.03.A.

D. CITY shall, within thirty (30) calendar days after receipt of CONTRACTOR's statement, pay CONTRACTOR all amounts it determines are properly determined.

ARTICLE 16 CLAIMS AND DISPUTES

16.01 Definition

A. A Claim is a demand or assertion by the CONTRACTOR seeking, as a matter of right, the adjustment of Contract price and/or times with respect to the terms of the Contract.

16.02 Written Notice and Burden of Proof

A. Claims must be made by written notice pursuant to Paragraph 17.01. The written notice shall clearly indicate that the CONTRACTOR is making a claim. The responsibility to substantiate Claims shall rest with the CONTRACTOR. No Claim may be made under this Contract except as provided in this Article.

B. Certification of Claim: The written notice of Claim shall include the following statement signed by the CONTRACTOR's representative: "The CONTRACTOR certifies that all statements made and the facts set out in this claim are true and correct and that no false records have been submitted in support of this claim." **Strict compliance with this paragraph shall be a condition precedent to the creation, existence or validity of any Claim**.

16.03 Time Limits on Claims

A. The CONTRACTOR must give notice to the CITY within fourteen (14) calendar days after the denial of a request for or failure to reach an agreement on a change in Contract Price and/or change in Contract Time pursuant to Article 11 and Article 12 respectively. After the fourteen (14) day period for making Claims has expired, the Claim shall be considered waived.

B. The CONTRACTOR shall submit the Claim to the CITY's Representative.

16.04 Continuing Contract Performance

A. Pending final resolution of a Claim, unless otherwise agreed in writing, the CONTRACTOR shall proceed diligently with performance of the Work and the CITY shall continue to make payments in accordance with the Contract Documents. The CITY may, but is not obligated to, notify the Surety of the nature and amount of the Claim.

16.05 Injury or Damage to Person or Property

A. If either party to the Contract suffers injury or damage to person or property because of an act or omission of the other party, of any of the other party's employees or agents, or of others for whose acts that party is legally liable, written notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding thirty (30) days after first observance. The notice shall provide sufficient detail to enable the other party to investigate the matter.

16.06 Initial Resolution of Claims and Disputes

A. After the CONTRACTOR has submitted the Claim to the CITY's Representative, the CITY'S Representative and CONTRACTOR'S Representative shall conduct a settlement conference within fourteen (14) calendar days from the date of receipt of the Claim. If the Claim is not settled within seven (7) calendar days following the date of the settlement conference, the CITY'S Representative and the CONTRACTOR's Representative shall state, in writing, following the conclusion of the seven (7) calendar day period, their respective position as to the matters in dispute.

B. The CITY'S and CONTRACTOR'S statement of positions shall state all known factual grounds for each party's position. If the dispute remains unresolved at the end of the seven (7) calendar days from submission of the parties' written position statements, the CONTRACTOR shall have the right to proceed with the pursuit of Claims pursuant to paragraph 16.07.

C. If a Claim has been resolved, the OWNER will prepare or obtain appropriate documentation.

16.07 Final Resolution of Claims and Disputes

A. All administrative procedures set forth in this contract must first be exhausted before suit is filed.

B. If the CITY'S Representative and the CONTRACTOR'S Representative are unable to resolve the dispute pursuant to 16.06, the parties must submit their statements of position to the Director, who shall review the Claim and make a decision within fourteen (14) calendar days.

C. Absent fraud, gross mistake or bad faith, the Director's decision shall be final and binding on CITY and CONTRACTOR within fourteen (14) calendar days after issuance. The CONTRACTOR shall give written notice to the CITY stating its intent to submit its Claim to a court of law pursuant to paragraph 17.05.A. within thirty (30) calendar days after notice of Director's decision.

D. The time frames for the Director's decision and for CONTRACTOR'S written notice of intent may be tolled by participation in voluntary mediation. Mediator selection and the procedures to be employed in voluntary mediation shall be mutually acceptable to the parties. Costs of the mediator shall be shared equally among the parties participating in the mediation. In no event shall any time frame be tolled more than 30 days for mediation. However, mediation may be employed at any time at the discretion and mutual agreement of the parties.

E. If the dispute is not resolved during voluntary mediation, The CONTRACTOR agrees that it will file no suit based on facts or evidentiary materials that were not presented for consideration to the CITY during the mediation process or of which the CONTRACTOR had knowledge and failed to present during the administrative procedures.

ARTICLE 17 MISCELLANEOUS

17.01 Giving Notice

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be given by personal delivery, by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice or by confirmed electronic facsimile transmission. Notice is effective on the date of personal delivery, deposit of registered or certified mail, postage prepaid, or confirmed electronic facsimile transmission.

17.02 Computation of Times

A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last calendar day of such period. If the last day of such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.03 Cumulative Remedies

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the

warranties, guarantees and obligations imposed upon CONTRACTOR and all of the rights and remedies available to CITY and DESIGN PROFESSIONAL hereunder are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee or by other provisions of the Contract Documents, and the provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply.

17.04 Survival of Obligations

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract.

17.05 Controlling Law

A. This Contract shall be construed and governed in accordance with the laws of the State of Missouri without giving effect to Missouri's choice of law provisions. The CITY and CONTRACTOR: (1) shall submit exclusively to the jurisdiction of the state and federal courts located in Jackson County, Missouri and no other; (2) shall waive any and all objections to jurisdiction and venue; and (3) shall not raise forum non conveniens as an objection to the location of any litigation.

CITY OF FOUNTAINS
HEART OF THE NATION

KANSAS CITY
MISSOURI

SUPPLEMENTARY CONDITIONS

Project Number: 80XX0001 / Contract Number: 1805

Project Title: ADA Compliance for various KC Water Buildings –
Blue River WTP, Administration Building

These Supplementary Conditions amend or supplement the General Conditions of the Construction Contract and other provisions of the Contract Documents as indicated below. All provisions that are not so amended or supplemented remain in full force and effect.

SC-2.03 A. Article 2, Paragraph 2.03, Copies of Documents, is amended by deleting Paragraph 2.03 A and replacing it with the following:

A. CITY shall furnish to CONTRACTOR up to **three (3)** copies of the Drawings and Specifications, including Addenda.

In the preparation of the Contract Documents, no reports of explorations and tests of subsurface conditions at or contiguous to the Site of the Work were utilized.

In the preparation of the Contract Documents, no drawings of physical conditions in or relating to existing surface or subsurface structures which are at or contiguous to the Site of the Work were utilized.

SC-4.06 Article 4, Paragraph 4.06, Asbestos, Lead-Based Paint, PCBs, Petroleum Waste or Radioactive Material, Subparagraphs A and B are supplemented as follows:

In the preparation of the Contract Documents, no reports of explorations and tests of any Hazardous Environmental Condition(s) at the Site of the Work were utilized.

SC- 5.01 A. Article 5, Paragraph 5.01, Performance, Payment and Other Bonds, Subparagraph A, second sentence, is revised as follows:

These Bonds shall remain in effect at least until **three (3) years** after the date when final payment becomes due, except as provided otherwise by Laws or Regulations or by the Contract Documents. CONTRACTOR shall furnish the following additional Bonds, which shall remain in effect as statedabove.

SC-5.03 A. Article 5, Paragraph 5.03 Certificates of Insurance, Subparagraph A is amended by adding the following Subparagraph 1:

1. CONTRACTOR shall obtain evidence that all Subcontractors have in force the required coverage in the amounts required by these Contract Documents, and evidence that each is current on its unemployment insurance payments before Subcontractors begin Work at the Site. CONTRACTOR shall retain such evidence in its files and make available to CITY within ten (10) days after written request.

SC-5.06 A. Article 5, Paragraph 5.06, Property Insurance, is amended by deleting Subparagraph A and inserting the following:

A. CONTRACTOR shall not be required to purchase and maintain property insurance on the Work at the Site.

SC-6.06 A.1 Article 6, Paragraph 6.06 Substitutes and "Or-Equal" Items, Paragraph A is amended by adding the following at the end of Paragraph A.1:

Proposed "or-equal" items must be submitted to CITY at least 10 days prior to Bid date at the following address:

KC Water Department
4800 East 63rd Street
Kansas City, Missouri 64130
Attn: Bon Marie Gardner, Senior Project Manager

Only Bidders may submit proposed "or-equal" items and such items must require no change in related Work. Acceptance by CITY of any proposed "or-equal" items will be made by Addendum only.

SC-6.06 A.2. Article 6, Paragraph 6.06 Substitutes and "Or-Equal" Items, Paragraph A is amended by adding the following at the end of Paragraph A.2:

Proposed substitute items must be submitted to CITY's Representative not later than 30 days prior to the time the item is to be incorporated into the Work. Only CONTRACTOR may submit proposed substitute items, and such items must be submitted to CITY's Representative on the standard City form 01630 - Substitution Request. Acceptance by CITY of any proposed substitute item will be made by Change Order.

SC-6.10. Article 6, Paragraph 6.10, Compliance with Laws and Regulations, is amended by adding the following new Subparagraphs immediately following Subparagraph 6.10 I 2:

a. CONTRACTOR will be required to comply with wage rates as follows:

County – Jackson,

Work Type:

Federal – Building
State – Building

Article 6, Paragraph 6.10, Compliance with Laws and Regulations, is amended by adding the following new Subparagraph 6.10 T:

Contract Information Management System. CONTRACTOR shall comply with CITY's Contract Information Management System requirements. CONTRACTOR shall use CITY's Internet web based Contract Information Management System/Project Management Communications Tool provided by CITY and protocols included in that software during the term of this Contract. CONTRACTOR shall maintain user applications to CITY's provided system for all personnel, subcontractors or suppliers as applicable.

SC-6.11. Article 6, Paragraph 6.11, Taxes, is amended by adding the following sentence to Subparagraph 6.11 B:

B. Tax Compliance. The following subparagraphs apply if the Contract is over $150,000.00.

SC-12.01 Article 12, Paragraph 12.01, Time of the Essence is amended by adding the following new Subparagraphs immediately following Subparagraph 12.01 A:

B. Starting and Completion

1. The Work to be performed under this Contract shall begin on the date specified in the written Notice to Proceed issued by the Director of Water Services, and the Work

shall be substantially complete, in accordance with Paragraph 14.04, within **305 Calendar Days** thereafter. Once the Work starts, CONTRACTOR shall continuously pursue completion of the Work.

2. The Work shall be completed and ready for final payment in accordance with Paragraph 14.07 within **60 Calendar Days** after the date of Substantial Completion of the Work.

C. Liquidated Damages

1. If the Work is not substantially completed, in accordance with Paragraph 14.04, within the period stated in Paragraph 12.01 B.1, CONTRACTOR shall pay to CITY the amount of **Three Hundred Dollars ($300)** as liquidated damages and not as a penalty for each Calendar Day until the Work is substantially complete. The amount of liquidated damages shall be deducted from any payments due or to become due CONTRACTOR.

2. If the Work is not completed and ready for final payment in accordance with Paragraph 14.07, within the period stated in Paragraph 12.01 B.2, CONTRACTOR shall pay to CITY the amount of **One Hundred Dollars ($100)** as liquidated damages and not as a penalty for each Calendar Day until the Work is completed and ready for final payment. The amount of liquidated damages shall be deducted from any payments due or to become due CONTRACTOR.

SC-13.07 Article 13, Paragraph 13.07, Correction Period, Subparagraph A is amended as follows:

The correction period set forth in Paragraph 13.07 A shall be **three (3) years** instead of one (1) year, which longer period of time shall also be applicable to the correction period set forth in Paragraph 13.07 C. All other provisions of Paragraph 13.07 remain unchanged except as necessary to accommodate the revised length of the correction period.

SC-14.02 A. Article 14, Paragraph 14.02, Application for Progress Payments, is amended by deleting Subparagraph A and adding the following:

A.

SC-14.02 A. Article 14, Paragraph 14.02, Application for Progress Payments, Subparagraph A is amended by deleting Item 3 and adding the following:

3. CITY shall make payments to CONTRACTOR monthly on or about the 20th day of each month. Payments to CONTRACTOR will be made on the basis of ninety-five percent (95%) of the value of the Work satisfactorily completed plus ninety-five percent (95%) of the value of properly stored and insured, unused materials on hand on the Site of the Work. CITY shall retain five percent (5%) of each partial payment until completion and acceptance of the Work covered by the Contract and final payment is due. All Work covered by a payment becomes CITY's property, provided that the Work paid for remains the sole responsibility of CONTRACTOR until all terms and conditions of the Contract have been met.

SC-14.04. Article 14, Paragraph 14.04, Substantial Completion, Subparagraph A is supplemented as follows:

A. To be considered substantially complete, the following items of the Work must be operational and ready for CITY's continuous use as intended:

1. Site work and concrete work completed
2. Plumbing and mechanical work completed
3. Electrical, instrumentation, and controls completed
4. Architectural work and finishes installed
5. Windows replacement completed

B. Items of work, which may be completed after the Work is accepted as Substantially Complete, include the following:
   1. Architectural work and finishes touched up
   2. All outstanding punch list items from substantial completion walkthrough completed
   3. Final cleanup completed

SC-14.05 Article 14, Paragraph 14.05, Partial Utilization is amended by adding the following new Subparagraph A.3. immediately following Subparagraph 14.05 A.2:

3. CITY at any time may make a written request to CONTRACTOR to permit CITY to take over operation of any part of the Work although it is not substantially complete. A copy of the request will be sent to DESIGN PROFESSIONAL, and within a reasonable time thereafter CITY, CONTRACTOR and DESIGN PROFESSIONAL shall make an inspection of that part of the Work to determine its status of completion and will prepare a list of the items remaining to be completed or corrected thereon before final payment. If CONTRACTOR does not make written objection to CITY and DESIGN PROFESSIONAL that such part of the Work is not ready for separate operation by CITY, DESIGN PROFESSIONAL will finalize the list of items to be completed or corrected and will deliver such lists to CITY and CONTRACTOR. DESIGN PROFESSIONAL will also make a written recommendation as to the division of responsibilities pending final payment between CITY and CONTRACTOR with respect to security, operation, safety, maintenance, utilities, insurance, warranties and guarantees for that part of the Work, which recommendation will become binding upon CITY and CONTRACTOR at the time when CITY takes over such operation (unless they shall have otherwise agreed in writing and so informed DESIGN PROFESSIONAL). During such operation and prior to Substantial Completion of such part of the Work, CITY shall allow CONTRACTOR reasonable access to complete or correct items on said list and to complete other related Work.

SECTION 00830

PREVAILING WAGE

1. Annual Wage Order No. 32
2. **0830.03 Division of Labor Standards Rules & Regulations** are incorporated into and made part of this Contract and are available at http://s1.sos.mo.gov/cmsimages/adrules/csr/current/8csr/8c30-3.pdf.

Missouri
Division of Labor Standards
WAGE AND HOUR SECTION

MIKE KEHOE, Governor

Annual Wage Order No. 32

Section 048
JACKSON COUNTY

In accordance with Section 290.262 RSMo 2000, within thirty (30) days after a certified copy of this Annual Wage Order has been filed with the Secretary of State as indicated below, any person who may be affected by this Annual Wage Order may object by filing an objection in triplicate with the Labor and Industrial Relations Commission, P.O. Box 599, Jefferson City, MO 65102-0599. Such objections must set forth in writing the specific grounds of objection. Each objection shall certify that a copy has been furnished to the Division of Labor Standards, P.O. Box 449, Jefferson City, MO 65102-0449 pursuant to 8 CSR 20-5.010(1). A certified copy of the Annual Wage Order has been filed with the Secretary of State of Missouri.

Original Signed by
Logan Hobbs, Director
Division of Labor Standards

Filed With Secretary of State: **March 10, 2025**

Last Date Objections May Be Filed: **April 9, 2025**

Prepared by Missouri Department of Labor and Industrial Relations

Building Construction Rates for
JACKSON County

Section 048

OCCUPATIONAL TITLE	**Prevailing Hourly Rate
Asbestos Worker	$72.10
Boilermaker	$40.77*
Bricklayer-Stone Mason	$64.45
Carpenter	$67.13
Lather	
Linoleum Layer	
Millwright	
Pile Driver	
Cement Mason	$56.83
Plasterer	
Communication Technician	$63.26
Electrician (Inside Wireman)	$74.98
Electrician Outside Lineman	$71.73
Lineman Operator	
Lineman - Tree Trimmer	
Groundman	
Groundman - Tree Trimmer	
Elevator Constructor	$96.07
Glazier	$59.60
Ironworker	$72.22
Laborer	$52.24
General Laborer	
First Semi-Skilled	
Second Semi-Skilled	
Mason	$54.18
Marble Mason	
Marble Finisher	
Terrazzo Worker	
Terrazzo Finisher	
Tile Setter	
Tile Finisher	
Operating Engineer	$66.32
Group I	
Group II	
Group III	
Group III-A	
Group IV	
Group V	
Painter	$40.77*
Plumber	$82.92
Pipe Fitter	
Roofer	$61.71
Sheet Metal Worker	$78.84
Sprinkler Fitter	$71.59
Truck Driver	$55.76
Truck Control Service Driver	
Group I	
Group II	
Group III	
Group IV	

*The Division of Labor Standards received fewer than 1,000 reportable hours for this occupational title. The public works contracting minimum wage is established for this occupational title using data provided by Missouri Economic Research and Information Center.
**The Prevailing Hourly Rate includes any applicable fringe benefit amounts for each occupational title as defined in RSMo Section 290.210.

Heavy Construction Rates for
JACKSON County

Section 048

OCCUPATIONAL TITLE	**Prevailing Hourly Rate
Carpenter	$67.20
Millwright	
Pile Driver	
Electrician (Outside Lineman)	$84.00
Lineman Operator	
Lineman - Tree Trimmer	
Groundman	
Groundman - Tree Trimmer	
Laborer	$53.06
General Laborer	
Skilled Laborer	
Operating Engineer	$61.77
Group I	
Group II	
Group III	
Group IV	
Truck Driver	$52.79
Truck Control Service Driver	
Group I	
Group II	
Group III	
Group IV	

Use Heavy Construction Rates on Highway and Heavy construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(3).

Use Building Construction Rates on Building construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(2).

If a worker is performing work on a heavy construction project within an occupational title that is not listed on the Heavy Construction Rate Sheet, use the rate for that occupational title as shown on the Building Construction Rate Sheet.

*The Division of Labor Standards received fewer than 1,000 reportable hours for this occupational title. Public works contracting minimum wage is established for this occupational title using data provided by Missouri Economic Research and Information Center.

**The Prevailing Hourly Rate includes any applicable fringe benefit amounts for each occupational title.

OVERTIME
and
HOLIDAYS

OVERTIME

For all work performed on a Sunday or a holiday, not less than twice (2x) the prevailing hourly rate of wages for work of a similar character in the locality in which the work is performed or the public works contracting minimum wage, whichever is applicable, shall be paid to all workers employed by or on behalf of any public body engaged in the construction of public works, exclusive of maintenance work.

For all overtime work performed, not less than one and one-half (1½) the prevailing hourly rate of wages for work of a similar character in the locality in which the work is performed or the public works contracting minimum wage, whichever is applicable, shall be paid to all workers employed by or on behalf of any public body engaged in the construction of public works, exclusive of maintenance work or contractual obligation. For purposes of this subdivision, **"overtime work"** shall include work that exceeds ten hours in one day and work in excess of forty hours in one calendar week; and

A thirty-minute lunch period on each calendar day shall be allowed for each worker on a public works project, provided that such time shall not be considered as time worked.

HOLIDAYS

January first;
The last Monday in May;
July fourth;
The first Monday in September;
November eleventh;
The fourth Thursday in November; and
December twenty-fifth;

If any holiday falls on a Sunday, the following Monday shall be considered a holiday.

CITY OF FOUNTAINS
HEART OF THE NATION

KANSAS CITY
MISSOURI

ADDENDUM NUMBER 1

Project Number: 80XX0001 / Contract Number: 1805

Project Title: ADA Compliance for various KC Water Buildings
Blue River WTP, Administration Building

ISSUE DATE: **November 20, 2025**

Bidders are hereby notified that the Bidding and Contract Documents for the above project, for which Bids are to be received on **December 9, 2025**, are amended as follows:

Information to Bidders The following is provided to Bidders for information only:

Reference Drawings included:

1. Sewage Improvements - Big Blue River Sewage Treatment Plant, Contract No.7, Sheets: Cover–96, D-1062.32, 1962
2. Sewage Improvements – Big Blue River Sewage Treatment Plant, Contract No. 7, Sheets: 97-190, D-1062.32, 1962
3. Wastewater SCADA System Improvements, D-1352.02, 5/1/2020

Q1.	What type of Fire Alarm System is in the building?
A1.	**The current Fire Alarm System is a Honeywell Notifier NFS-640.**
Q2.	The keynotes do not specifically mention that the toilet partitions and the wall partitions that are dashed are to be demolished. Also the lockers in this area, are they to be removed as well?
A2.	**Please refer to the attached Drawing Sheet AD100. All dashed items on AD100 are to be demolished, including toilet partitions, wall partitions, and lockers. Refer to AD100. Keynotes have been added and a demolition legend has been added for clarity.**
Q3.	Is there testing required for the glazing system?
A3.	**No, but other tests are required. Please refer to the specifications.**

Drawings:

Changes included within this Addendum have been clouded in the drawings and tagged as **ADD01,** delta **1**, and an issuances date of **11/19/2025**.

ARCHITECTURE

- ADD #01.01 – ALL SHEETS

REVISE Title Block on all sheets to provide the address of 7300 Hawthorne Rd. WW Facility #701.

- ADD #01.02 - SHEET G001
  REVISE code list to include the applicable code ICC/ANSI A117.1-2009, Accessibility Usability Code on plan sheet G001.
- ADD #01.03 - SHEET G001A
  ADD sheet G001A to locate the ECA information on a separate sheet.
- ADD #1.04 - ECA-1E
  ADDED sheet ECA-1E to locate the ECA information on a separate sheet.
- ADD #01.04 - SHEET G-003E
  REVISE the code list on G-003E to match all codes included on G001.
- ADD #01.05 – SHEET A-600E
  REVISE A-600E to include a note demonstrating compliance with 1010.1.9.10 below the door schedule. Door hardware has not been changed as specification has previously indicated panic devices in hardware sets.
- ADD #01.06 – SHEET A500
  REVISE Drawing 01/A500 to show dimensions complying with Figure 604.3 ICC A117.1-2009
- ADD #01.07 – SHEET A501
  ADD Detail 13/A501 to show accessible locker room bench compliance requirements with section 903.1 ICC A117.1-2009. Renumbered details on sheet for consistent numbering strategy.
  REVISE detail 16/A501 to tag the new detail 13/A501.
- ADD #01.08 – SHEET A502
  REVISE Drawing 04/A502 to show dimensions complying with Figure 604.3 ICC A117.1-2009
- ADD #01.09 – SHEET A510
  ADD Elevations 05/A510 and 06/A510 to show compliance with the handrail extension with section 505.10.3 ICC A117.1-2009.
  REVISE Enlarged Plans 01/A510 and 04/A510 to more clearly show wall returns.
- ADD #01.10 – SHEET AD100
  REVISE 01/AD100 to clarify demolition scope through additional keynotes and demolition legend.

MECHANICAL

- ADD #01.11 – SHEET M101
  REVISE Line weights for drawing legibility.

PLUMBING

- ADD #01.12 – SHEET P000
  ADD Minimum Pipe Insulation Thickness Table to demonstrate compliance with C404.4 2021 IECC.

ELECTRICAL

ALL REVISED SHEETS:

G000
G-003E
G001A

ECA-1E
AD100
A500
A501
A502
A510
M101
P000
A-600E

NOTE: Bidders must acknowledge receipt of this Addendum by listing the number and date, where provided, on the Bid Form - Document 00410.

ADA COMPLIANCE FOR VARIOUS KC WATER BUILDINGS

Blue River Wastewater Treatment Plant, Admin. Bldg.

7300 Hawthorn Rd

Kansas City, Jackson County, MO 64120

CONTRACT NO. 1805 PROJECT NO. 80XX0001

KCWATER

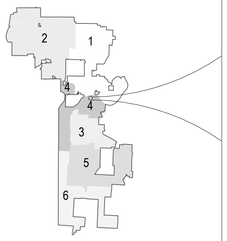
ENGINEERING
4800 E. 63RD STREET
KANSAS CITY, MISSOURI 64130

UTILITY CONTACTS

AT&T TELEPHONE COMPANY	1-816-275-2721
CENTURYLINK	1-800-283-4237
COMCAST	1-866-641-1625
CONSOLIDATED	1-800-283-4237
CONSOLIDATED	913-322-9953
GOOGLE FIBER NOC	1-866-954-1572, OR 1-877-454-6959
KANSAS CITY, MO. PARKS AND RECREATION	311
KANSAS CITY, MO. PUBLIC WORKS DEPARTMENT	
NEIGHBORHOODS	816-513-9871
STREET LIGHTING	816-513-9871
STREET RESURFACING	816-513-9871
TRAFFIC ENGINEERING	816-513-9871
KANSAS CITY, MO. WATER SERVICES DEPARTMENT	
OVERFLOW CONTROL PROGRAM	311, OR 816-513-0209
SANITARY SEWERS	311, OR 816-513-0209
STORM WATER	311, OR 816-513-0209
WATER	311, OR 816-513-0209
KC FIBER / LINK CITY	816-564-9994
KCP&L	816-701-7800
LEVEL 3	913-645-5032
MAGELLAN MIDSTREAM PARTNERS	1-800-720-2417
MISSOURI DEPARTMENT OF TRANSPORTATION	1-888-275-6636
NORTH KANSAS CITY SCHOOL DISTRICT	816-413-5075
SOUTHERN STAR CENTRAL	913-422-6321
SPECTRUM	1-866-967-7611
SPIRE ENERGY	1-314-776-9517
SPRINT	913-488-8489
UNITE PRIVATE NETWORK	1-866-963-4237
UTILITY LOCATION MARKING	1-800-DIG-RITE
VEOLIA ENERGY (TRIGEN)	816-889-4977
VERIZON COMMUNICATIONS, INC.	1-800-624-9675
ZAYO	816-591-0282

MISSOURI ONE CALL SYSTEM

1-800-344-7483
1-800-(DIG-RITE)
(811)



NORTH

LOCATION MAP
NOT TO SCALE

DENOTES AREA OF WORK

SLATTERY DESIGN + ARCHITECTURE

EAE

MO Certificate of Authority: #2016000414
80XX0001

DRAWING INDEX

INTERIOR SET

GENERAL
- G000 COVER
- G001 CODE PLAN
- G-003E LIFE SAFETY PLAN AND CODE ANALYSIS
- G001A ECA
- ECA-1E ECA
- G002 GENERAL NOTES & CODE INFORMATION
- G003 SYMBOLS & ABBREVIATIONS

ARCHITECTURE
- AD100 DEMOLITION FLOOR PLANS
- A100 OVERALL FLOOR PLANS
- A500 ENLARGED PLANS & FINISHES
- A501 INTERIOR ELEVATIONS & DETAILS
- A502 INTERIOR ELEVATIONS & DETAILS
- A510 VERTICAL CIRCULATION
- A600 SCHEDULES & ELEVATIONS

MECHANICAL
- M000 LEGEND AND SYMBOLS
- M001 FLOOR PLAN - LEVEL 01 - DEMO - MECHANICAL
- M002 FLOOR PLAN - LEVEL 01 - MECHANICAL

PLUMBING
- P000 PLUMBING GENERAL NOTES AND SYMBOLS
- P001 FLOOR PLAN - LEVEL 01 - DEMO - PLUMBING
- P101 FLOOR PLAN - LEVEL 01 - PLUMBING

ELECTRICAL
- E000 ELECTRICAL GENERAL NOTES AND SYMBOLS
- E001 FLOOR PLAN - LEVEL 01 - DEMO - ELECTRICAL
- E101 FLOOR PLAN - LEVEL 01 - ELECTRICAL
- E102 FLOOR PLAN - LEVEL 01 - LIGHTING AND FIRE ALARM
- E501 ELECTRICAL SCHEDULES AND DETAILS

EXTERIOR SET

GENERAL
- G-001E GENERAL NOTES
- G-002E ACCESSIBILITY DETAILS

DEMOLITION
- AD-100E DEMOLITION FLOOR PLAN
- AD-200E DEMOLITION ELEVATIONS AND SECTIONS

ARCHITECTURE
- A-100E ARCHITECTURAL FLOOR PLANS
- A-200E EXTERIOR ELEVATIONS
- A-201E INTERIOR ELEVATIONS AND SECTIONS
- A-300E WALL SECTIONS
- A-301E WALL SECTIONS
- A-400E WINDOW TYPES & DETAILS
- A-401E WINDOW TYPES & DETAILS
- A-600E DOOR, WINDOW & LOUVER SCHEDULE AND DETAILS

△	DATE	DESCRIPTION
1	ADD01	11/19/2025

APPROVED BY: _____

INTERIM DEPUTY DIRECTOR DATE
FOR KENNETH MORGAN, P.E., DIRECTOR WATER SERVICES DEPARTMENT

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STATE OF MISSOURI
AMY J. SLATTERY
NUMBER A-2007019930
ARCHITECT
11-19-2025

AMY SLATTERY - ARCHITECT - MO # 2007019930

BID/PERMIT SET

FOR WSD USE:

KANSAS CITY, MISSOURI, WATER SERVICES DEPARTMENT
7300 HAWTHORNE RD. WW FACILITY #701

BLUE RIVER WASTEWATER TREATMENT PLANT, ADMIN. BLDG.

COVER

GENERAL

DRAWN BY	CHECKED BY	MAP NO.	RANGE	TWP	SEC
LAF	AJS	S011	33	50	25

CONTRACTOR | DATE COMPLETED

CONTRACT NO.	DRAWING SUBMITTED	FAC/MME/WO#	DRAWING NO.
1805	9/10/2025	701	D1059.05

PROJECT NO. 80XX0001 G000 SHEET 01 OF 37

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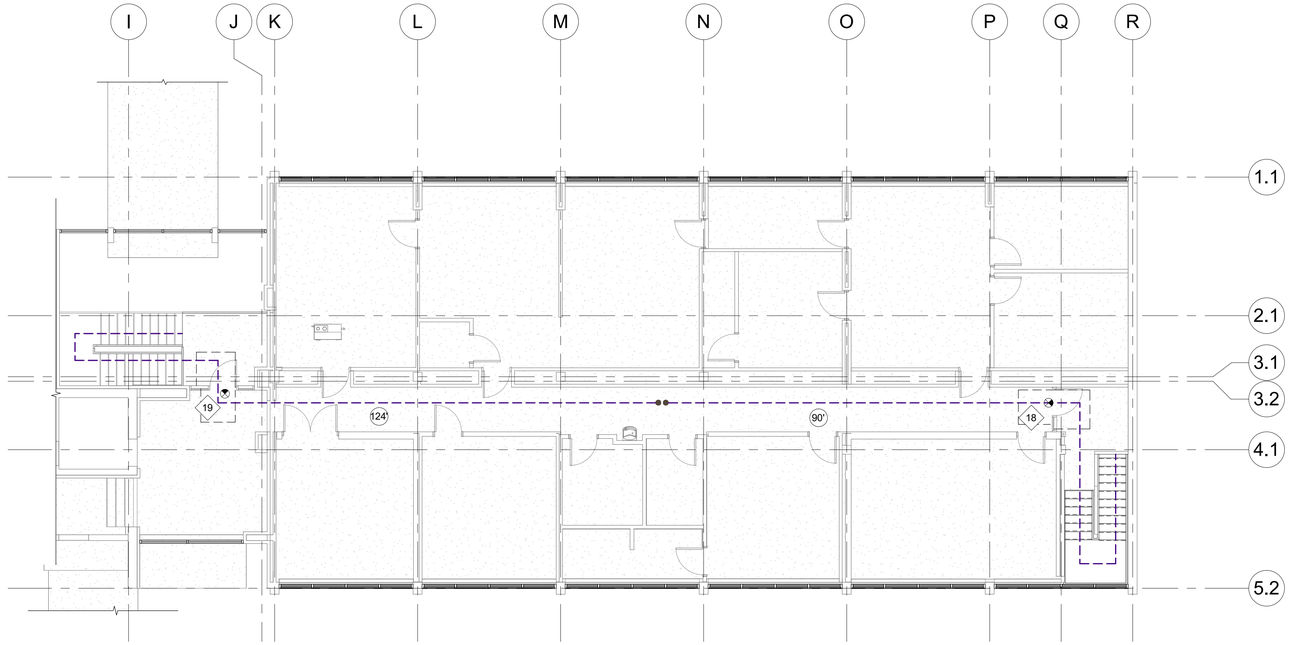
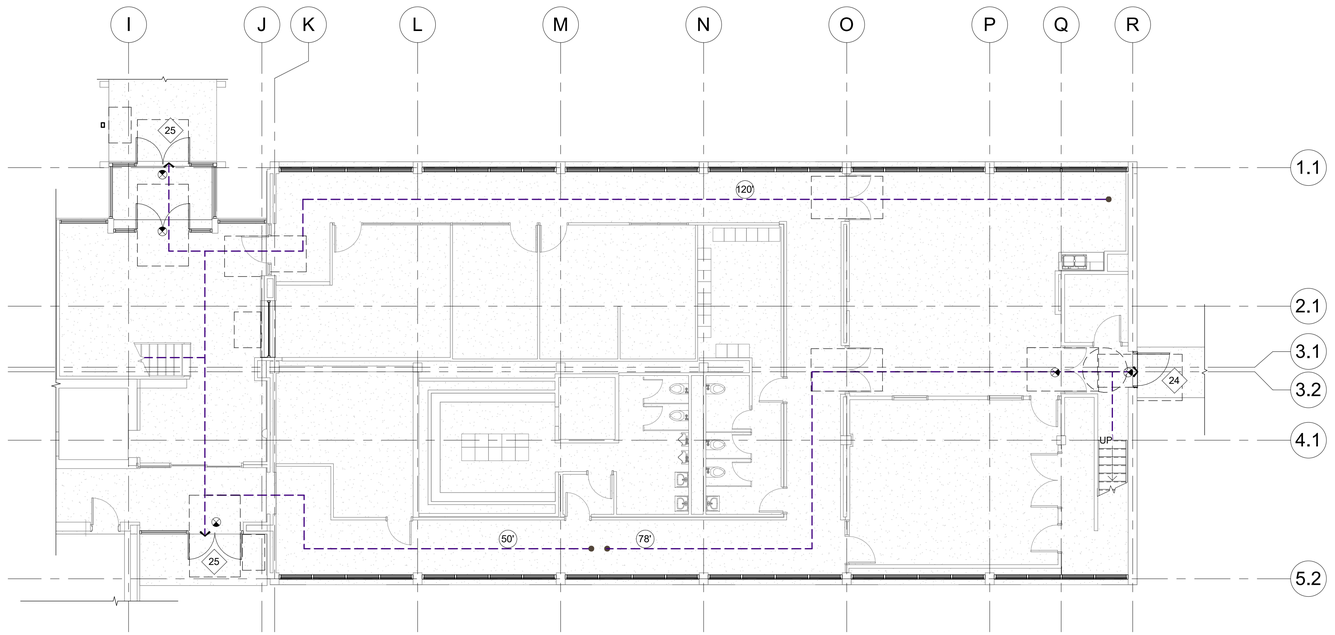


2 A-200E **SECOND LEVEL - LIFE SAFETY PLAN**
1/8" = 1'-0"



1 A-200E **FIRST FLOOR - LIFE SAFETY PLAN**
1/8" = 1'-0"

CODE ANALYSIS

PROJECT NAME ADMIN BUILDING WINDOW REPLACEMENT PROJECT
LOCATION BLUE RIVER WASTEWATER TREATMENT PLANT
DESCRIPTION REPLACEMENT OF CURTAIN WALL, STOREFRONT, EXTERIOR DOORS & INTERIOR LOBBY WINDOW.

3

APPLICABLE CODES
CITY OF KANSAS CITY MUNICIPAL CODE
CHAPTER 88 - KCMO ZONING & DEVELOPMENT CODE
2018 INTERNATIONAL BUILDING CODE (IBC) , WITH KCMO AMENDMENTS
2018 INTERNATIONAL EXISTING BUILDING CODE (IBEC)
2018 INTERNATIONAL FUEL GAS CODE (IFGC)
2018 INTERNATONAL MECHANICAL CODE (IMC)
2018 INTERNATIONAL PRIVATE SEWAGE DISPOSAL CODE
2018 UNIFORM PLUMBING CODE, WITH LOCAL AMENDMENTS
NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 70, WITH KCMO AMENDMENTS
2017 NATIONAL ELECTRICAL CODE (NEC), WITH KCMO AMENDMENTS
2018 INTERNATIONAL FIRE CODE (IFC)
2021 INTERNATIONAL ENERGY CONSERVATION CODE (IECC), WITH KCMO AMENDMENTS

ACCESSIBILITY
2009 A117.1 KANSAS CITY ACCESSIBILITY CODE
2017 AMERICAN NATIONAL STANDARD INSTITUTE (ANSI A117.1)
2010 ADA STANDARDS OF ACCESSIBLE DESIGN

*NOTE:
ALL TABLE AND SECTION REFERENCES ARE FROM IBC UNLESS NOTED OTHERWISE AS IECC.
DESIGNATION OF "(UNCHANGED)" REFERS TO BUILDING ELEMENTS NOT AFFECTED BY THIS RENOVATION PROJECT.

BUILDING CLASSIFICATION
OCCUPANCY (SECTION 304): BUSINESS GROUP B - CIVIC ADMINISTRATION (UNCHANGED)
CONSTRUCTION (SECTION 602.2): TYPE II-B (UNCHANGED)

BUILDING HEIGHTS AND AREAS
ALLOWABLE HEIGHT IN FEET: 75 FEET ABOVE GRADE
TABLE 504.3 ACTUAL: 29 FEET ABOVE GRADE (UNCHANGED)

ALLOWABLE NUMBER OF STORIES: 4 STORIES
TABLE 504.4 ACTUAL STORIES: 2 (UNCHANGED)

ALLOWABLE AREA: 69,000 SQUARE FEET/FLOOR
TABLE 506.2 ACTUAL: 5,582 SQUARE FEET/FLOOR (UNCHANGED)

REQUIRED SEPARATION: NONE REQUIRED
TABLE 508.4

FIRE RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS (TABLE 601): 0 HOURS

OCCUPANCY AND EXITING
OCCUPANT LOAD: 150 GSF PER OCCUPANT IN BUSINESS AREAS
SECTION 1004.5 37 OCCUPANTS PER FLOOR = 74 TOTAL OCCUPANTS (UNCHANGED)

MEANS OF EGRESS: EGRESS WIDTH REQUIRED: 74 x 0.2 = 15"
SECTION 1005.3.2 ACTUAL EGRESS WIDTH PROVIDED: 34" MINIMUM PER EXIT (UNCHANGED)

MINIMUM NUMBER OF EXITS: REQUIRED: 2
TABLE 1006.3.2 PROVIDED: 3 (UNCHANGED)

EXIT ACCESS TRAVEL DISTANCE: B OCCUPANCY WITHOUT SPRINKLER: 200 FEET
TABLE 1017.2 ACTUAL: 124 FEET (UNCHANGED)

REFER TO ECA-1E FOR ENERGY CODE ANALYSIS INFORMATION. 2

LIFE SAFETY LEGEND

PATH OF EGRESS TRAVEL
CLEAR FLOOR SPACE
CUMULATIVE OCCUPANT LOAD AT EXIT (EXISTING)
EXIT SIGN SYMBOL (EXISTING)
EXIT DISTANCE (EXISTING)

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LICENSED ARCHITECT SEAL

STATE OF MISSOURI
AMANDA L. AUGUSTINE NUMBER
ARCHITECT
10-24-25

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0 1"
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3	10-24-25	City Comments		
2	9-26-25	City Comments		
1	9-22-25	City Comments		

ENVIRONMENTAL ADVISORS AND ENGINEERS, INC.
19211 W. 64TH TERRACE
SHAWNEE, KANSAS 66218
913/ 599-4326

KANSAS CITY, MISSOURI, WATER SERVICES DEPARTMENT
7300 HAWTHORNE RD. WW FACILITY #701 1

ADMINISTRATION BUILDING WINDOW REPLACEMENT

LIFE SAFETY PLAN AND CODE ANALYSIS

GENERAL

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AH / SM	AA	S011	33	50	25
CONTRACTOR			DATE COMPLETED		
CONTRACT NO.	DRAWING SUBMITTED	FAC/MWE/WO#	DRAWING NO.		
1805	9/10/25	701	D1059.05		
PROJECT NO.	G-003E	SHEET 03 OF 37			
80XX0001					

PROJECT NO:80XX0001

ENERGY CODE ANALYSIS

ENERGY CODE METHOD (PER IECC)
- THIS PROJECT IS EXEMPT FROM THE REQUIREMENTS OF 2021 IECC CHAPTER 5 FOR ALTERATIONS BASED ON THE PROJECT SCOPE.
- ECA SHEET NOT PROVIDED, NOT REQ'D. ADDITIONAL PLANS, DETAILS, AND REFERENCES OUTLINED IN KCMO IB171-CE ARE NOT REQ'D DUE TO PROJECT SCOPE AS NOTED. APPLICABLE IECC SECTIONS: C503, C403, C404, C408.
APPLICABLE KCMO LOCAL AMENDMENT / REFERENCE: IB171-CE PURPOSE, PARAGRAPH 2.

THERMAL ENVELOPE AND FENESTRATION: (ALTERATION SCOPE)
SEE G001-E FOR EXTERIOR SCOPE IN SEPARATE PACKAGE UNDER SAME PERMIT.
ROOF REPLACEMENT NOT IN PROJECT SCOPE.

LIGHTING SYSTEM: (ALTERATION SCOPE)
EXISTING BUILDING WITH LESS THAN 10% OF LUMINAIRES IN THE SPACE TO BE REPLACED, AND DOES NOT INCREASE INTERIOR LIGHTING POWER.

PLUMBING: (ALTERATION SCOPE)
NO NEW WATER HEATER. EXISTING TO REMAIN.

HEATING AND COOLING SYSTEM: (ALTERATION SCOPE)
NO HEATING AND COOLING SYSTEM UPGRADES. EXISTING TO REMAIN.

1

SLATTERY
DESIGN + ARCHITECTURE

MO Certificate of Authority: #2016000414

△	DATE	DESCRIPTION
1	11/19/2025	ADD01

STATE OF MISSOURI
AMY J. SLATTERY
NUMBER A-2007019930
ARCHITECT
11.19.2025

AMY SLATTERY - ARCHITECT - MO # 2007019930

BID/PERMIT SET

FOR WSD USE:

1

KANSAS CITY, MISSOURI, WATER SERVICES DEPARTMENT
7300 HAWTHORNE RD. WW FACILITY #701

BLUE RIVER WASTEWATER TREATMENT PLANT, ADMIN. BLDG.

ECA

GENERAL

DRAWN BY	CHECKED BY	MAP NO.	RANGE	TWP.	SEC.
LAF	AJS	S011	33	50	25
CONTRACTOR			DATE COMPLETED		

CONTRACT NO.	DRAWING SUBMITTED	FAC/WME/WO#	DRAWING NO.
1805	09/26/25	701	D1059.05

PROJECT NO. 80XX0001

G001A

SHEET 04 OF 37

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2

ENERGY CODE ANALYSIS (ECA)
SUMMARY:

PER THE 2021 IECC SECTION 401.2.1, COMMERCIAL BUILDINGS SHALL COMPLY USING THE PERSCRIPTIVE OR TOTAL BUILDING PERFORMANCE METHOD, EXCEPT ADDITIONS, ALTERATIONS, REPAIRS AND CHANGES OF OCCUPANCY TO EXISTING BUILDINGS COMPLYING WITH CHAPTER 5.

THE EXTERIOR PORTION OF THIS PROJECT FALLS UNDER THE CHAPTER 5 EXISTING BUIDLINGS ALTERATIONS CODE REQUIREMENTS. THE WORK INCLUDES THE REPLACEMENT OF CURTAINWALL AND STOREFRONT GLAZING IN PLACE OF WHERE GLAZING ALREADY EXISTED.

THE FOLLOWING INFORMATION SHOWS COMPLIANCE WITH C503.2 ALTERATION TO BUILDING ENVELOPE.

PER C503.2 BUILDING ENVELOPE, NEW BUILDING ENVELOPE ASSEMBLIES THAT ARE PART OF THE ALTERATION SHALL COMPLY WITH SECTIONS C402.1 THROUGH C402.5.

C401.3 THERMAL ENVELOPE CERTIFICATE: THIS PROJECT IS EXEMPT FROM THIS REQUIREMENT.

C503.2 EXCEPTION: WHERE THE EXISTING BUILDING EXCEEDS THE FENESTRATION AREA LIMITATIONS OF SECTION C402.4.1 PRIOR TO ALTERATION, THE BUILDING IS EXEMPT FROM SECTION C402.4.1 PROVIDED THAT THERE IS NOT AN INCREASE IN FENESTRATION AREA.

EXISTING ABOVE GRADE WALL AREA: 7526 SF (UNCHANGED)
EXISTING FENESTRATION AREA: 2718 SF = 36% (UNCHANGED)

C503.2.2.1 APPLICATION TO REPLACEMENT OF FENESTRATION PRODUCTS STATES THAT ALL REPLACEMENT GLAZING SHALL MEET THE APPLICABLE U-VALUE AND SHGC REQUIREMENTS OF TABLE C402.4:

FIXED FENESTRATION MAXIMUM U-FACTOR: CLIMATE ZONE '4 EXCEPT MARINE': 0.36 MAX.
ACTUAL FIXED FENESTRATION U-FACTOR: 0.29

MAXIMUM SHGC FOR FIXED FENESTRATIONS: 0.36
ACTUAL FIXED FENESTRATION SHGC: 0.22

C502, C503.2.1, C503.2.3, C503.3, C503.4, C503.5, C504, AND C505 DO NOT RELATE TO THE SCOPE OF THIS PROJECT.

REFER TO DEMO AND NEW PLANS AND ELEVATIONS ON THE FOLLOWING SHEETS FOR THERMAL ENVELOPE ALTERATION LOCATIONS:
AD-100E, AD-200E, A-100E, A-200E

REFER TO WALL SECTIONS AND WINDOW TYPES AND DETAILS ON THE FOLLOWING SHEETS FOR FOUNDATION, WALL, AND ROOF THERMAL ENVELOPE BOUNDARIES:
A-300E, A-301E, A-400E, A-401E, A-600E

NO.	DATE	DESCRIPTION	BY	APP'D
2	9-26-25	City Comments		
1	9-22-25	City Comments		

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AND ENGINEERS, INC.
19211 W. 64TH TERRACE
SHAWNEE, KANSAS 66218
913/ 599-4326

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STATE OF MISSOURI
AMANDA L. AUGUSTINE
NUMBER
ARCHITECT
9-26-25

FOR WSD USE:

KANSAS CITY, MISSOURI, WATER SERVICES DEPARTMENT
7300 HAWTHORNE RD. WW FACILITY #701 1

ADMINISTRATION BUILDING WINDOW REPLACEMENT

2

ECA

GENERAL

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

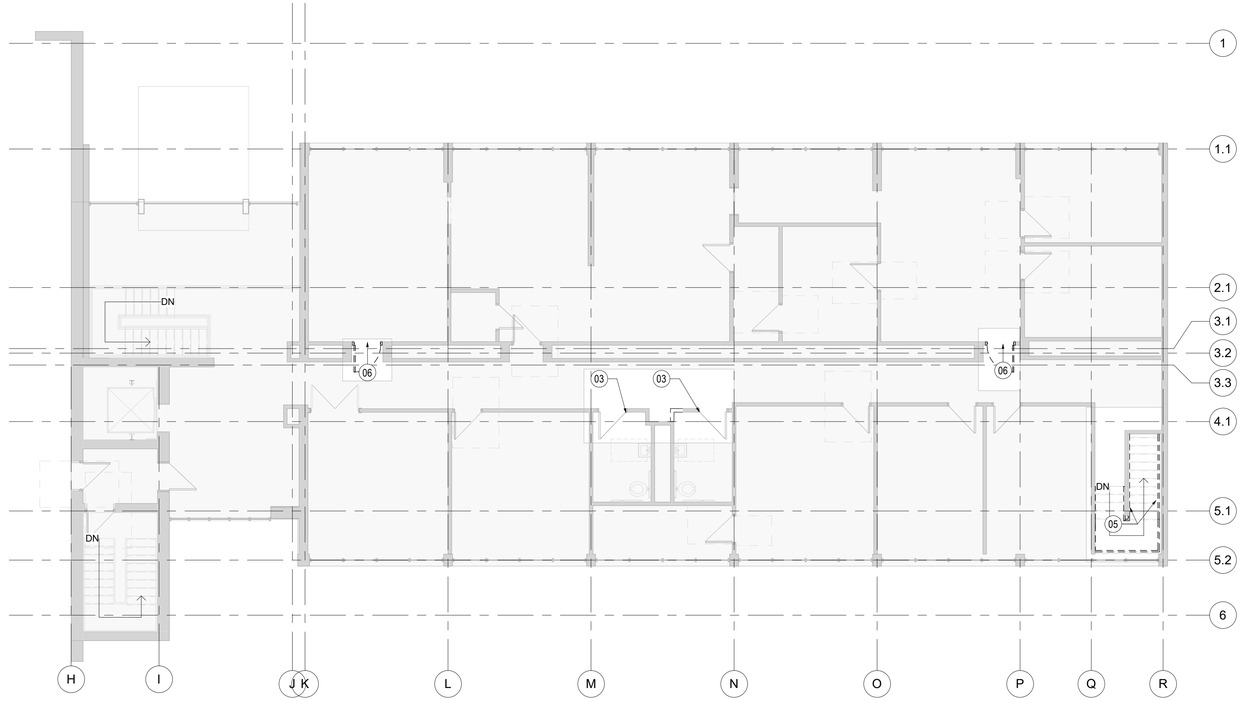
DRAWN BY	CHECKED BY	MAP NO.	RANGE	TWP	SEC
AH / SM	AA	S011	33	50	25

CONTRACTOR	DATE COMPLETED

CONTRACT NO.	DRAWING SUBMITTED	FAC/MWE/WO#	DRAWING NO.
1805	9/10/25	701	D1059.05

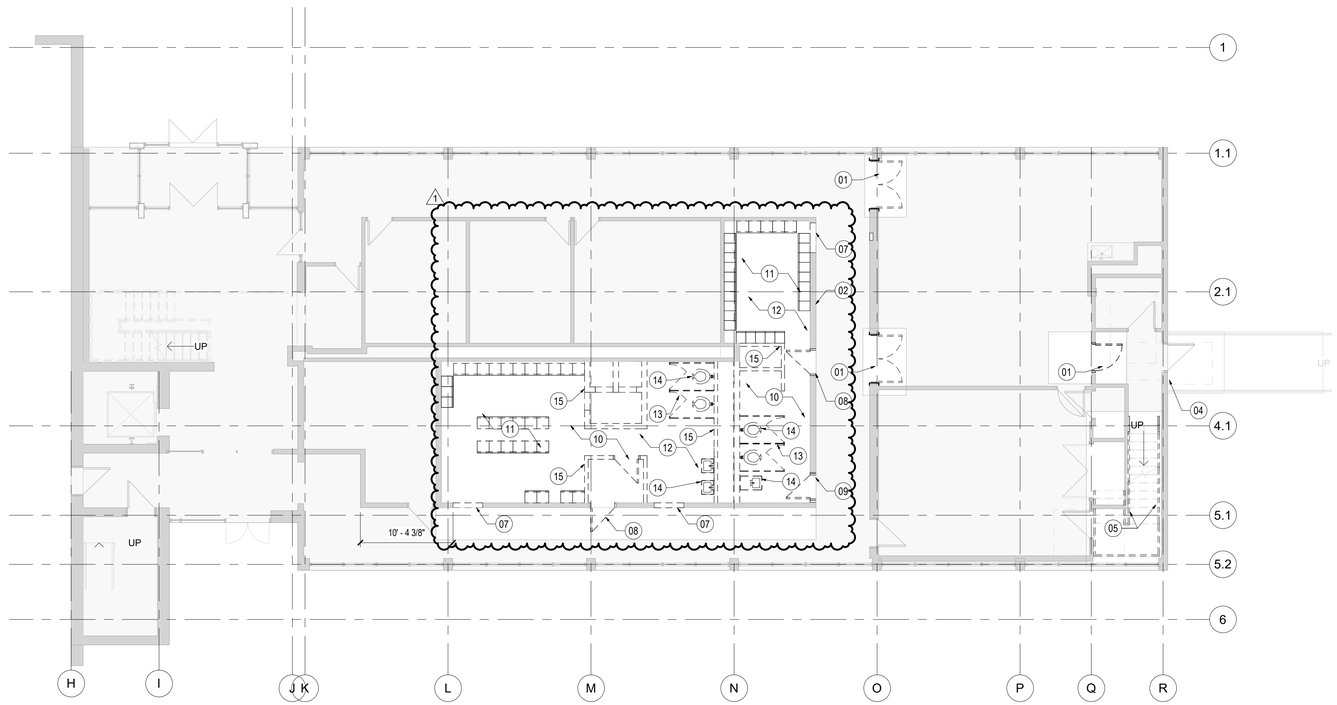
PROJECT NO. 80XX0001

ECA-1E 2



02 DEMOLITION PLAN - LEVEL 02

RE: 06 / A510 | 1/8" = 1'-0" | 0' 2' 4' 8' 16'



01 DEMOLITION PLAN - LEVEL 01

RE: 01 / A501 | 1/8" = 1'-0" | 0' 2' 4' 8' 16'

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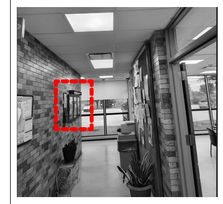
11/19/2025 4:30:05 PM

SLATTERY
DESIGN + ARCHITECTURE

MO Certificate of Authority: #2016000414

SHEET NOTES

01 DOOR LEAFS REMOVED. EXISTING DOOR FRAME TO BE PATCHED, PAINTED, AND REPAIRED AS NECESSARY.
02 DEMO LIGHT FIXTURE AND ASSOCIATED ELECTRICAL BACK TO SOURCE.
03 DEMO BOLT LOCK.
04 DEMO EXISTING CALL BUTTON AND ASSOCIATED ELECTRICAL TO SOURCE. PATCH HOLE AS REQ'D.
05 DEMO EXISTING RAILINGS.
06 DEMO EXISTING DOOR AND FRAME.
07 DEMO WALL AND PREP FOR NEW DOOR.
08 DEMO EXISTING DOOR AND PREP FOR WALL INFILL.
09 DEMO EXISTING DOOR AND PREP FOR NEW DOOR.
10 DEMO EXISTING CEILING AND PREP FOR NEW.
11 DEMO ALL LOCKERS IN ROOM.
12 DEMO EXISTING FLOORING AND PREP FOR NEW.
13 DEMO TOILET PARTITIONS.
14 DEMO FIXTURES RE: PLUMBING.
15 DEMO WALL PARTITIONS



NOTE 02: LIGHT FIXTURE TO BE REMOVED.

DEMO LEGEND

EXISTING WALL TO BE REMOVED
EXISTING WALL TO REMAIN

GENERAL NOTES

△	DATE	DESCRIPTION
1	11/19/2025	ADD01

NOT FOR CONSTRUCTION

AMY SLATTERY - ARCHITECT - MO # 2007019930

PERMIT REVISION #3

FOR WSD USE:

KANSAS CITY, MISSOURI, WATER SERVICES DEPARTMENT
7300 HAWTHORNE RD. WW FACILITY #701

BLUE RIVER WASTEWATER TREATMENT PLANT, ADMIN. BLDG.

DEMOLITION FLOOR PLANS

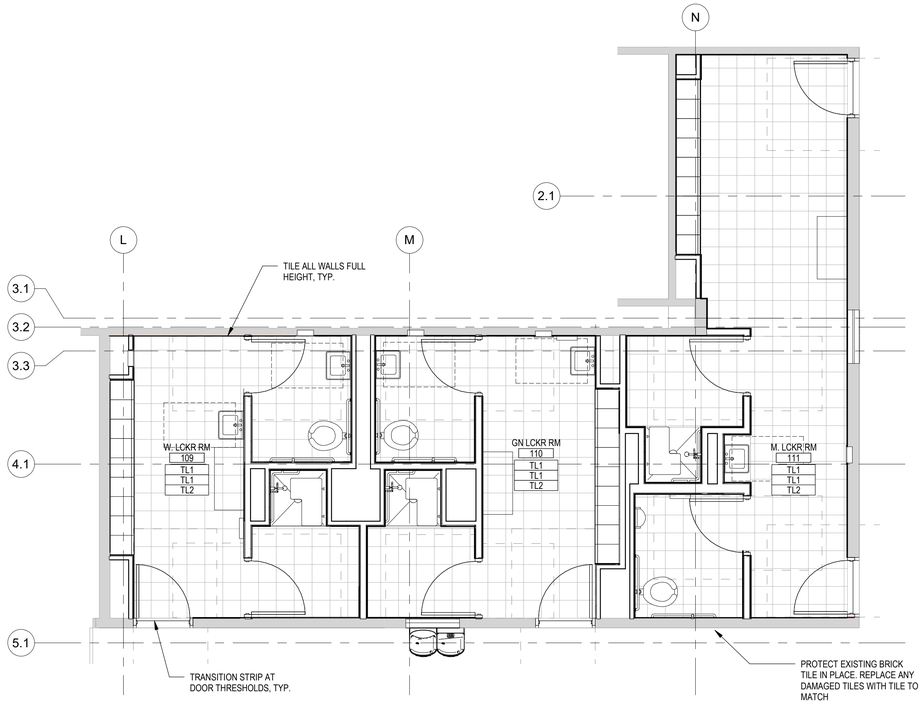
ARCHITECTURE

DRAWN BY	CHECKED BY	MAP NO.	RANGE	TWP	SEC
LAF	AJS	S011	33	50	25

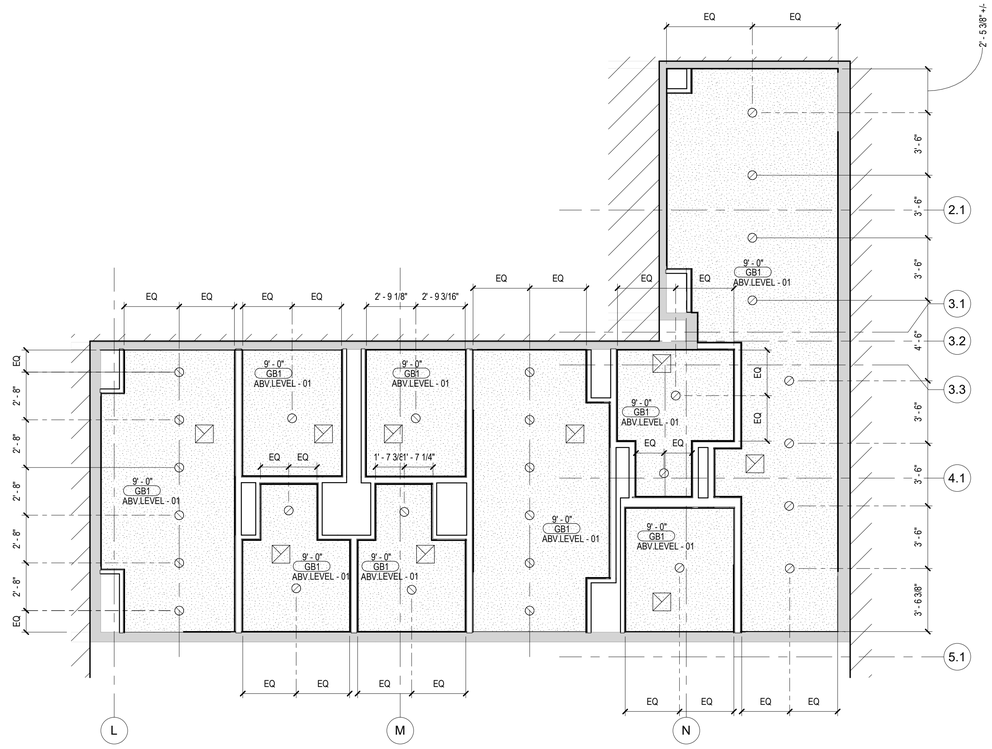
CONTRACTOR	DATE COMPLETED

CONTRACT NO.	DRAWING SUBMITTED	FAC/WME/WO#	DRAWING NO.
1805	9/10/2025	701	D1059.05

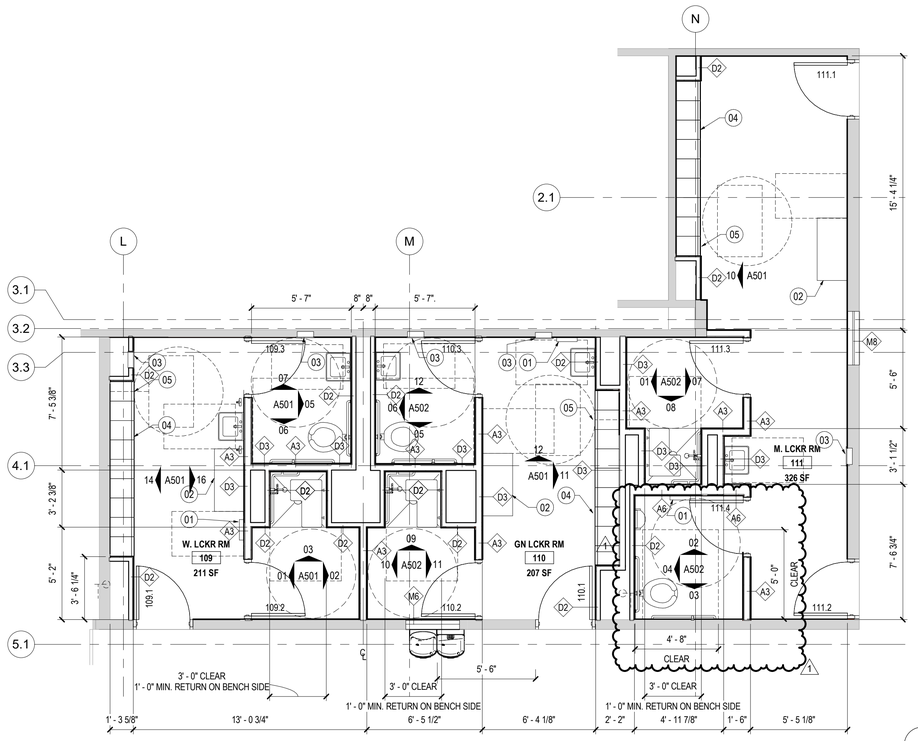
PROJECT NO. 80XX0001 | **AD100** | SHEET OF 37



02 FINISH PLAN - RESTROOMS & LOCKER ROOMS
RE: 01 / A100 | 1/4" = 1'-0" | 0' 1' 2' 4' 8'



03 ENLARGED RCP - LEVEL 01
RE: 01 / A501 | 1/4" = 1'-0" | 0' 2' 4' 8' 16'



01 ENLARGED PLAN - RESTROOMS & LOCKER ROOMS
RE: 01 / A100 | 1/4" = 1'-0" | 0' 1' 2' 4' 8'

FINISH & MATERIAL INDEX

CODE	DESCRIPTION	SECTION	BASIS OF DESIGN/MANUFACTURER	MODEL/COLOR	SIZE	REMARKS
DIVISION 08: OPENINGS						
AP01	ACCESS PANELS	08 31 13	FACE OF DOOR FLUSH WITH FRAME; WITH CONCEALED FLANGE FOR GYPSUM BOARD INSTALLATION AND CONCEALED HINGE.	TO BE PAINTED COLOR OF WALL OR CEILING IT IS LOCATED IN	24 X 24 IN	DOOR AND FRAME: NOMINAL 0.060 INCH, 16 GAUGE, FACTORY PRIMED WITH CAM LATCH, SCREWDRIVER OPERATED.
DIVISION 09: FINISHES						
PA01	PAINT	09 91 00	SHERWIN WILLIAMS	PURE WHITE SW 7005	-	REFER TO SPEC FOR FINISH
TL1	FLOOR TILE	09 30 00	DALTILE	DEFEND, STONE LOOK, COMPOSER VR11 MB	12-IN X 24-IN	1/8-IN GROUT JOINTS, USE 3-IN X 24-IN BULLNOSE WHEN SPEC'D AS WALL BASE. GROUT COLOR TO BE SELECTED BY ARCHITECT FROM FULL RANGE.
TL2	WALL TILE	09 30 00	DALTILE	COLOR WHEEL CLASSIC, ARCTIC WHITE 0190	4-IN X 4-IN	STRAIGHT BOND (FIELD TILE), GROUT COLOR TO BE SELECTED BY ARCHITECT FROM FULL RANGE.
DIVISION 12: FURNISHINGS						
LK01	LOCKERS	10 51 13	LYON	TO BE SELECTED BY ARCHITECT FROM MANUFACTURER'S STANDARDS	RE: ELEVATIONS	-

SLATTERY
DESIGN + ARCHITECTURE

MO Certificate of Authority: #2016000414

SHEET NOTES

01 NEW SHARPS DISPOSAL PLACED AT ADA COMPLIANT HEIGHT, RE: G002.
02 PROVIDE ADA COMPLIANT BENCH W/ CLEAR FLOOR SPACE, (10 51 13).
03 NEW PAPER TOWEL DISPENSER PLACED AT ADA COMPLIANT HEIGHT, RE: G002.
04 NEW LOCKERS (10 51 13).
05 NEW ACCESSIBLE LOCKER (10 51 13).

ROOM FINISH TAG
ROOM NAME
ROOM #
FLOOR FINISH
BASE FINISH
PRIMARY WALL FINISH
INTERIOR FINISH MATERIALS
INTERIOR ROOM FINISH REMARKS

FINISH NOTES
EX00 — ACCENT WALL FINISH/COLOR DESIGNATED WITH DASHED LINES AND FINISH NOTE
EX00 — CORNER GUARD DESIGNATED WITH LINES AND FINISH NOTE

09 30 00 FLOORING TILE, FC01
09 29 00 GYPSUM CEILING PA01

FINISH LEGEND

01 ARCHITECTURAL ELEVATION 100'-0"
02 DIMENSIONS SHOWN ON THE FLOOR PLAN ARE TO THE FACE OF GYP UNLESS NOTED OTHERWISE (U.N.O.)
03 WALL THICKNESSES ARE ACTUAL DIMENSIONS.
04 COORDINATE FINAL LOCATION OF ALL CEILING MOUNTED DEVICES AND MEP EQUIPMENT WITH ARCHITECT. CENTER AND ALIGN WHERE POSSIBLE.
05 PROVIDE MINIMUM (2) 24X24 CEILING ACCESS PANELS (AP01) EACH ROOM. LOCATIONS TO BE COORDINATED WITH FINAL INSTALLATION.

GENERAL NOTES

△	DATE	DESCRIPTION
1	11/19/2025	ADD01

STATE OF MISSOURI
AMY J. SLATTERY
NUMBER A-2007019930
ARCHITECT
11.19.2025
AMY SLATTERY - ARCHITECT - MO # 2007019930

BID/PERMIT SET

FOR WSD USE:

KANSAS CITY, MISSOURI, WATER SERVICES DEPARTMENT
7300 HAWTHORNE RD. WW FACILITY #701

BLUE RIVER WASTEWATER TREATMENT PLANT, ADMIN. BLDG.

ENLARGED PLANS & FINISHES

ARCHITECTURE

DRAWN BY	CHECKED BY	MAP NO.	RANGE	TWP	SEC
LAF	AJS	S011	33	50	25
CONTRACTOR			DATE COMPLETED		
CONTRACT NO.	DRAWING SUBMITTED	FAC/WME/WO#	DRAWING NO.		
1805	09/10/2025	701	D1059.05		
PROJECT NO.					
80XX0001	A500	SHEET	10 OF 37		

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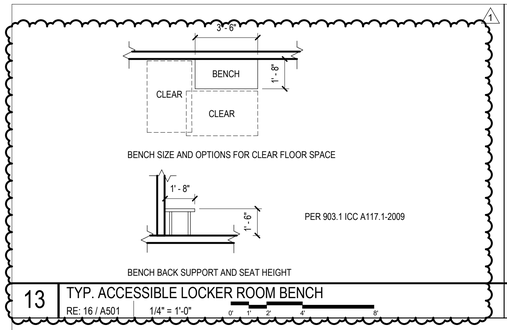
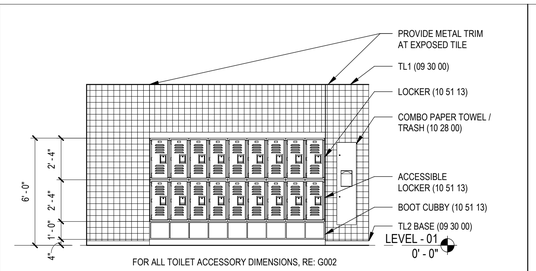
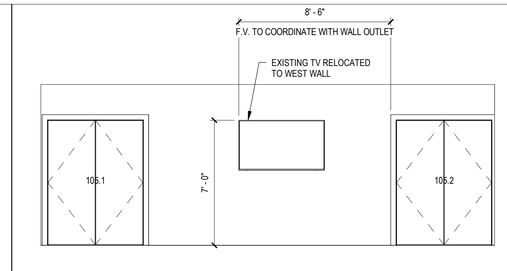
11/17/2025 9:58:54 AM



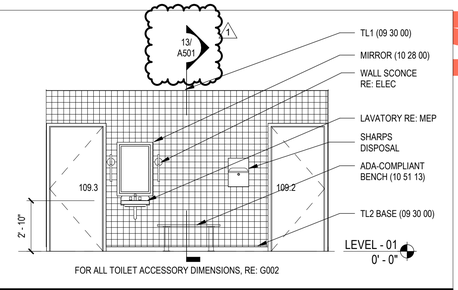
13 TYP. ACCESSIBLE LOCKER ROOM BENCH
RE: 16 / A501 | 1/4" = 1'-0"



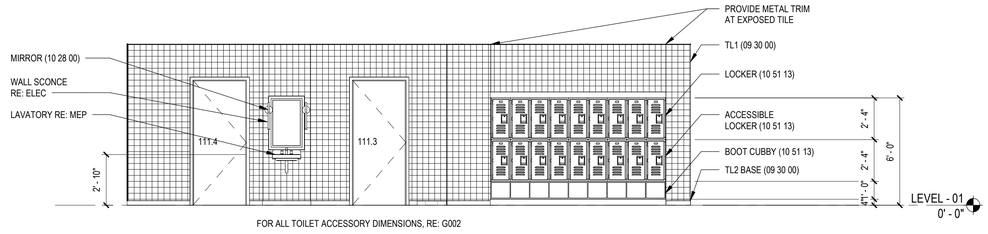
14 INTERIOR ELEVATION - WOMENS LOCKER WEST WALL
RE: A01 / A000 | 1/4" = 1'-0"



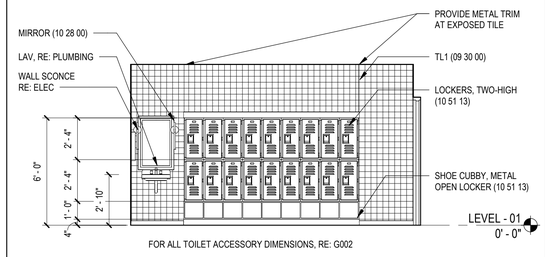
15 INTERIOR ELEVATION - BREAK ROOM TV MOUNT
RE: A01 / A000 | 1/4" = 1'-0"



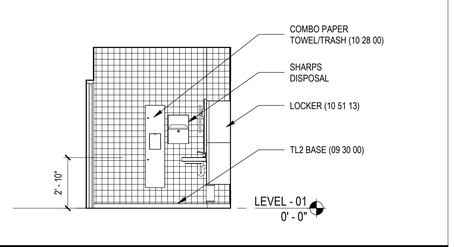
16 INTERIOR ELEVATION - WOMENS LOCKER EAST WALL
RE: A01 / A000 | 1/4" = 1'-0"



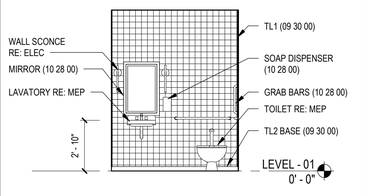
10 INTERIOR ELEVATION - MENS LOCKER WEST WALL
RE: A01 / A000 | 1/4" = 1'-0"



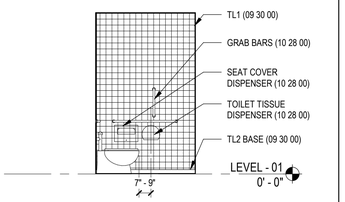
11 INTERIOR ELEVATION - GENDER NEUTRAL LOCKER EAST WALL
RE: 01 / A500 | 1/4" = 1'-0"



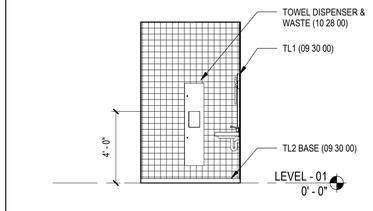
12 INTERIOR ELEVATION - GENDER NEUTRAL LOCKER NORTH WALL
RE: 01 / A500 | 1/4" = 1'-0"



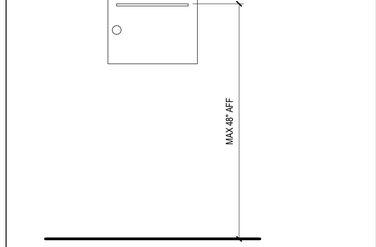
05 TYP. WC WET WALL
RE: 01 / A500 | 1/4" = 1'-0"



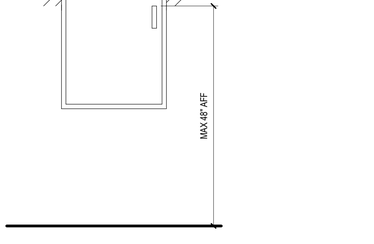
06 TYP. WC SIDE WALL
RE: 01 / A500 | 1/4" = 1'-0"



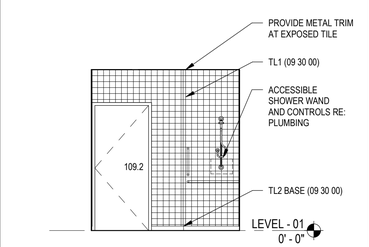
07 TYP. WC OPPOSITE WALL
RE: 01 / A500 | 1/4" = 1'-0"



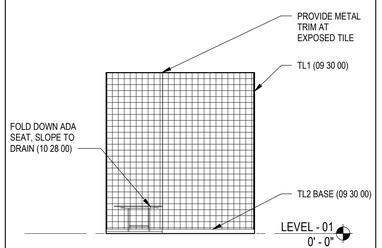
08 TYP SUGGESTION BOX HEIGHT
RE: 01 / A100 | 1 1/2" = 1'-0"



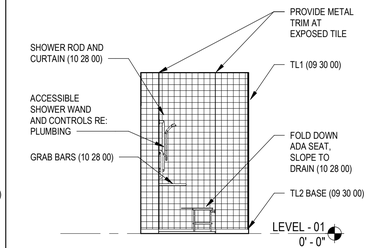
09 TYP F.E.C. HEIGHT
RE: 01 / A100 | 1 1/2" = 1'-0"



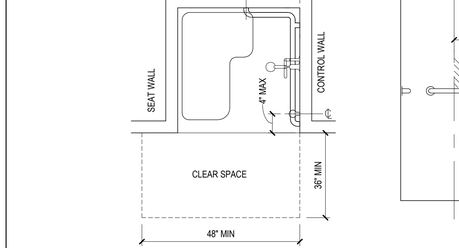
01 W LCKR SHOWER ENTRY WALL
RE: 01 / A500 | 1/4" = 1'-0"



02 WOMENS SHOWER SIDE WALL
RE: 01 / A500 | 1/4" = 1'-0"



03 W LCKR SHOWER BACK WALL
RE: 01 / A500 | 1/4" = 1'-0"



04 ADA TRANSFER SHOWER DETAILS
1/2" = 1'-0"

SLATTERY
DESIGN + ARCHITECTURE

MO Certificate of Authority: #2016000414

SHEET NOTES

GENERAL NOTES

△	DATE	DESCRIPTION
1	11/19/2025	ADD01

STATE OF MISSOURI
AMY J. SLATTERY
NUMBER A-2007019930
ARCHITECT
11.19.2025
AMY SLATTERY - ARCHITECT - MO # 2007019930

BID/PERMIT SET

FOR WSD USE:

KANSAS CITY, MISSOURI, WATER SERVICES DEPARTMENT
7300 HAWTHORNE RD. WW FACILITY #701

BLUE RIVER WASTEWATER TREATMENT PLANT, ADMIN. BLDG.

INTERIOR ELEVATIONS & DETAILS

ARCHITECTURE

DRAWN BY	CHECKED BY	MAP NO.	RANGE	TWP	SEC
LAF	AJS	S011	33	50	25
CONTRACTOR			DATE COMPLETED		
CONTRACT NO.	DRAWING SUBMITTED	FAC/WME/WO#	DRAWING NO.		
1805	9/10/2025	701	D1059.05		
PROJECT NO.					
80XX0001	A501	SHEET	11 OF 37		

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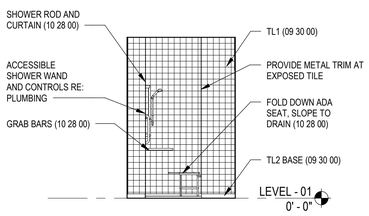
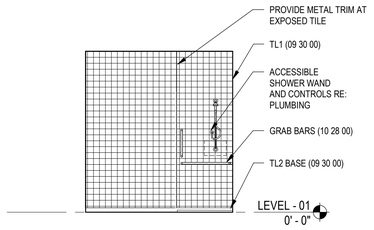
11/17/2025 9:58:56 AM



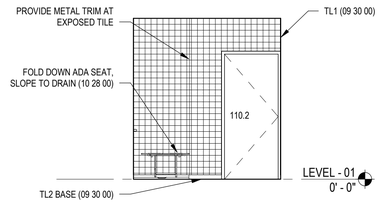
REFERENCE ADA TRANSFER SHOWER DETAILS ON A501 FOR DIMENSIONS AND GRAB BAR, AND CONTROL LOCATIONS.

09 GN LCKR SHOWER BACK WALL
RE: A01 / A000 | 1/4" = 1'-0" | 0' 1' 2' 4' 8'



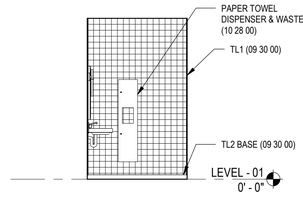
REFERENCE ADA TRANSFER SHOWER DETAILS ON A501 FOR DIMENSIONS AND GRAB BAR, AND CONTROL LOCATIONS.

10 GN LCKR SHOWER SIDE WALL
RE: A01 / A000 | 1/4" = 1'-0" | 0' 1' 2' 4' 8'

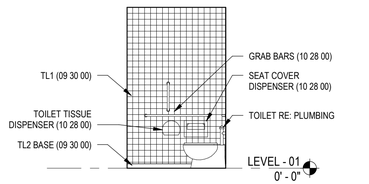


REFERENCE ADA TRANSFER SHOWER DETAILS ON A501 FOR DIMENSIONS AND GRAB BAR, AND CONTROL LOCATIONS.

11 GN SHOWER ENTRY WALL
RE: A01 / A000 | 1/4" = 1'-0" | 0' 1' 2' 4' 8'

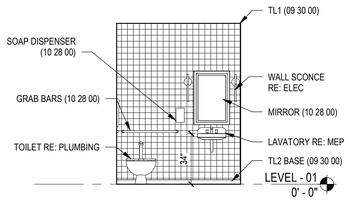


12 GN WC OPPOSITE WALL
RE: A01 / A000 | 1/4" = 1'-0" | 0' 1' 2' 4' 8'



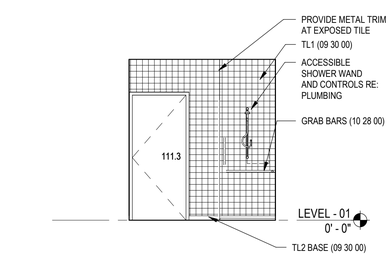
FOR ALL TOILET ACCESSORY DIMENSIONS, RE: G002

05 GN WC SIDE WALL
RE: A01 / A000 | 1/4" = 1'-0" | 0' 1' 2' 4' 8'



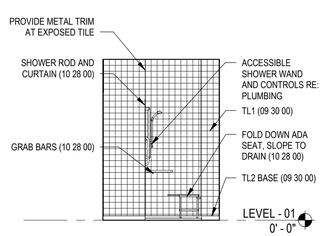
FOR ALL TOILET ACCESSORY DIMENSIONS, RE: G002

06 GN WC WET WALL
RE: A01 / A000 | 1/4" = 1'-0" | 0' 1' 2' 4' 8'



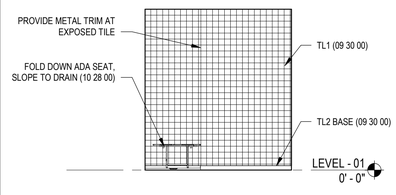
REFERENCE ADA TRANSFER SHOWER DETAILS ON A501 FOR DIMENSIONS AND GRAB BAR, AND CONTROL LOCATIONS.

07 M LCKR SHOWER ENTRY WALL
RE: A01 / A000 | 1/4" = 1'-0" | 0' 1' 2' 4' 8'



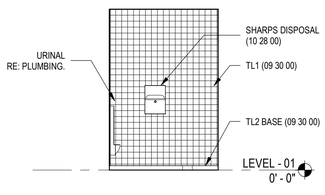
REFERENCE ADA TRANSFER SHOWER DETAILS ON A501 FOR DIMENSIONS AND GRAB BAR, AND CONTROL LOCATIONS.

08 M. LCKR SHOWER BACK WALL
RE: A01 / A000 | 1/4" = 1'-0" | 0' 1' 2' 4' 8'



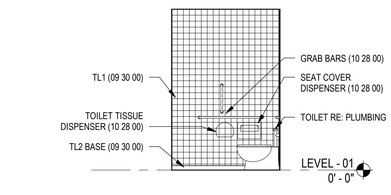
REFERENCE ADA TRANSFER SHOWER DETAILS ON A501 FOR DIMENSIONS AND GRAB BAR, AND CONTROL LOCATIONS.

01 M. LCKR SHOWER SIDE WALL
RE: A01 / A000 | 1/4" = 1'-0" | 0' 1' 2' 4' 8'



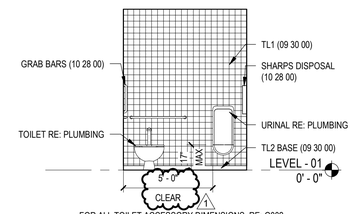
FOR ALL TOILET ACCESSORY DIMENSIONS, RE: G002

02 M. LCKR WC OPPOSITE WALL
RE: A01 / A000 | 1/4" = 1'-0" | 0' 1' 2' 4' 8'



FOR ALL TOILET ACCESSORY DIMENSIONS, RE: G002

03 M. LCKR WC SIDE WALL
RE: A01 / A000 | 1/4" = 1'-0" | 0' 1' 2' 4' 8'



FOR ALL TOILET ACCESSORY DIMENSIONS, RE: G002

COMPLY WITH ICC A117.1-2009 1

04 M. LCKR WC WET WALL
RE: A01 / A000 | 1/4" = 1'-0" | 0' 1' 2' 4' 8'

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11/17/2025 9:58:58 AM

SLATTERY DESIGN + ARCHITECTURE

MO Certificate of Authority: #2016000414

△	DATE	DESCRIPTION
1	11/19/2025	ADD01

KANSAS CITY, MISSOURI, WATER SERVICES DEPARTMENT

7300 HAWTHORNE RD. WW FACILITY #701

BLUE RIVER WASTEWATER TREATMENT PLANT, ADMIN. BLDG.

INTERIOR ELEVATIONS & DETAILS

STATE OF MISSOURI
AMY J. SLATTERY
NUMBER A-2007019930
ARCHITECT
11.19.2025

AMY SLATTERY - ARCHITECT - MO # 2007019930

BID/PERMIT SET

FOR WSD USE:

ARCHITECTURE

DRAWN BY	CHECKED BY	MAP NO.	RANGE	TWP	SEC
Author	Checker	S011	33	50	25

CONTRACTOR | DATE COMPLETED

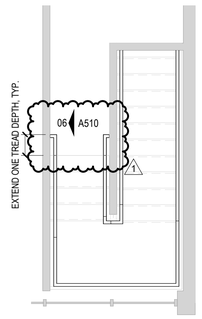
CONTRACT NO.	DRAWING SUBMITTED	FAC/WME/WO#	DRAWING NO.
1805	09/10/25	701	D1059.05

PROJECT NO. 80XX0001

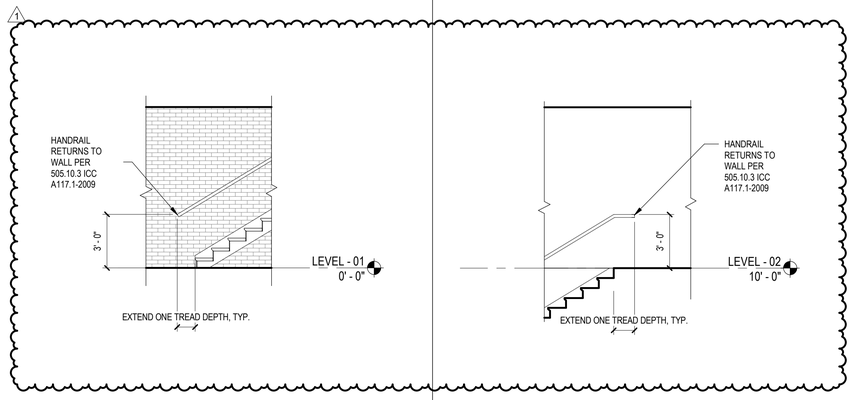
A502 SHEET 12 OF 37

SLATTERY
DESIGN + ARCHITECTURE

MO Certificate of Authority: #2016000414

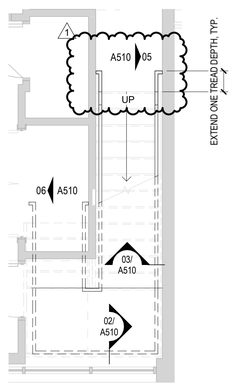


04 ENLARGED PLAN - EAST STAIR 214
RE: 02 / A100 | 1/4" = 1'-0" | 0' 1' 2' 4' 8'

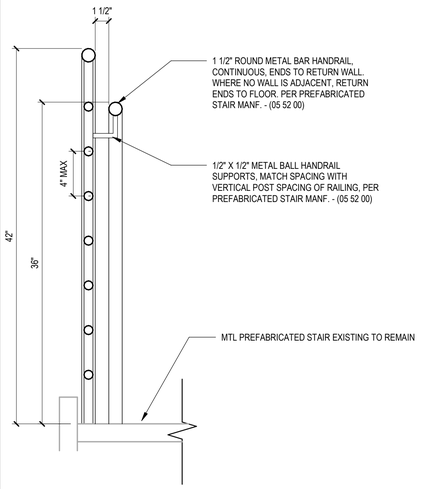


05 INTERIOR ELEVATION - HANDRAIL AT BASE OF STAIRS, TYP.
RE: A01 / A000 | 1/4" = 1'-0" | 0' 1' 2' 4' 8'

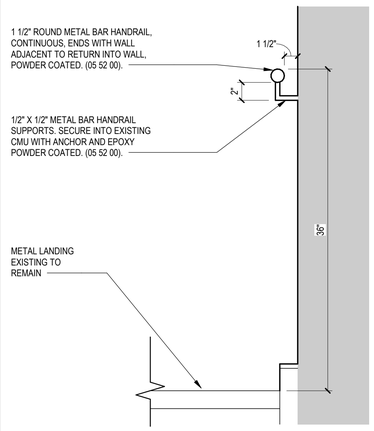
06 INTERIOR ELEVATION - HANDRAIL AT TOP OF STAIRS, TYP.
RE: A01 / A000 | 1/4" = 1'-0" | 0' 1' 2' 4' 8'



01 ENLARGED PLAN - EAST STAIR 114
RE: 01 / A100 | 1/4" = 1'-0" | 0' 1' 2' 4' 8'



02 TYP STAIR HANDRAIL
RE: 01 / A510 | 1 1/2" = 1'-0" | 0' 3" 6" 1'



03 TYP STAIR WALL MOUNTED HANDRAIL
RE: 01 / A100 | 1 1/2" = 1'-0" | 0' 3" 6" 1'

△	DATE	DESCRIPTION
1	11/19/2025	ADD01

STATE OF MISSOURI
AMY J. SLATTERY
NUMBER A-2007019930
ARCHITECT
11.19.2025

AMY SLATTERY - ARCHITECT - MO # 2007019930

BID/PERMIT SET

FOR WSD USE:

KANSAS CITY, MISSOURI, WATER SERVICES DEPARTMENT
7300 HAWTHORNE RD. WW FACILITY #701

BLUE RIVER WASTEWATER TREATMENT PLANT, ADMIN. BLDG.

VERTICAL CIRCULATION

ARCHITECTURE

DRAWN BY	CHECKED BY	MAP NO.	RANGE	TWP	SEC
LAF	AJS	S011	33	50	25
CONTRACTOR			DATE COMPLETED		
CONTRACT NO.	DRAWING SUBMITTED	FAC/WME/WO#	DRAWING NO.		
1805	9/10/2025	701	D1059.05		
PROJECT NO.					
80XX0001	**A510**	SHEET	13 OF 37		

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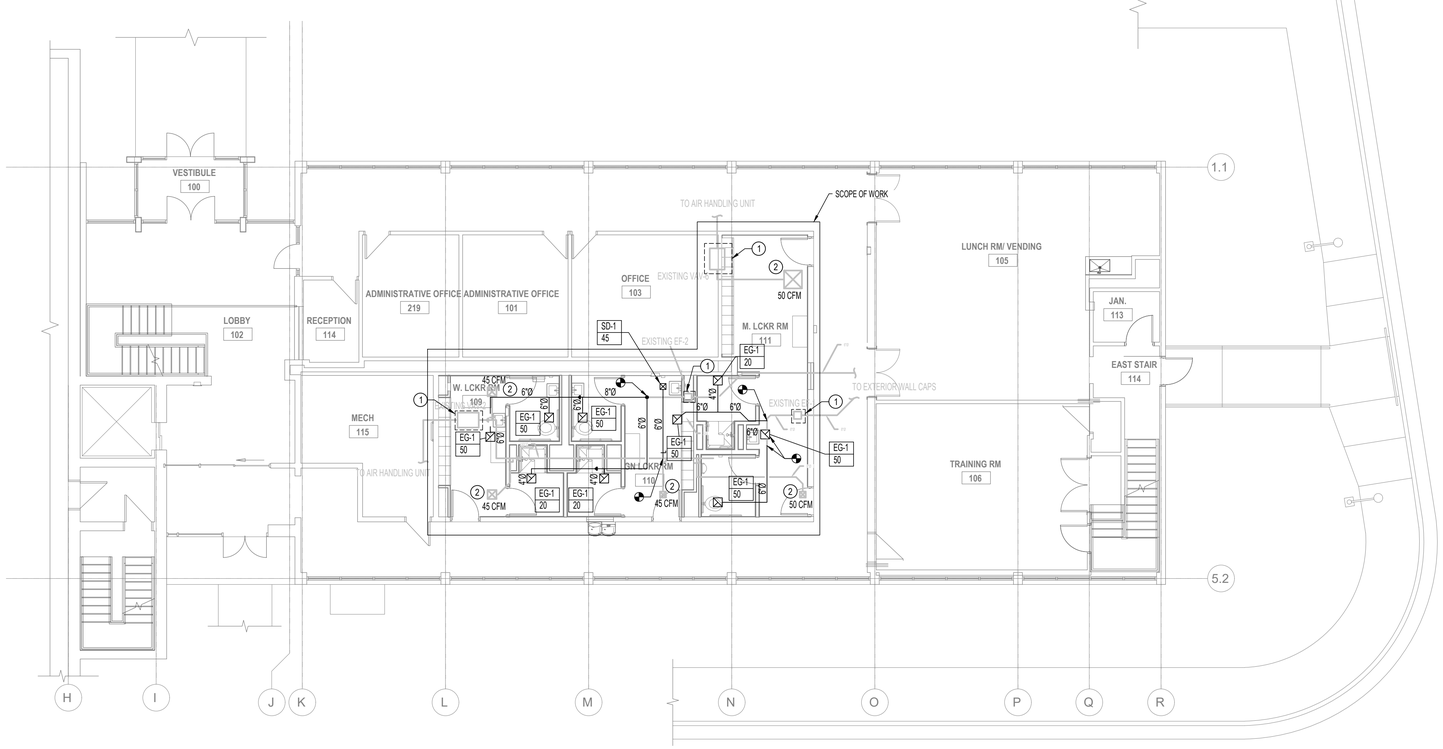
11/17/2025 9:58:59 AM



A01 FLOOR PLAN - LEVEL 01

1/8" = 1'-0"

0' 2' 4' 8' 16'

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Independence, Missouri 64055
816.350.1473
www.CUSTOMENGR.COM
MISSOURI CERTIFICATE OF AUTHORITY #000239

SHEET NOTES

1. PROVIDE 2'X2' ACCESS PANEL FOR EXISTING HVAC EQUIPMENT IN HARD CEILING. COORDINATE WITH ARCHITECT.
2. EXISTING AIR TERMINAL TO REMAIN. BALANCE TO AIRFLOW AS INDICATED ON THE DRAWING.

GENERAL NOTES

1. EXISTING HVAC, PLENUMS, DUCTWORK, MAY BE REUSED WHEN IN GOOD CONDITION, APPROPRIATELY SIZED, AND IN COMPLIANCE WITH SPECIFICATION ON SHEET M-000, MANUFACTURER'S INSTALLATION INSTRUCTION, AND GOVERNING CODES AND REGULATIONS UNLESS OTHERWISE NOTED.

△ DATE	DESCRIPTION

STATE OF MISSOURI
JEREMY RYAN WALKER
NUMBER PE-2022003792
PROFESSIONAL ENGINEER
10/24/2025

JEREMY R WALKER - ENGINEER - MO # PE-2022003792

PERMIT REVISION #3

FOR WSD USE:

KANSAS CITY, MISSOURI, WATER SERVICES DEPARTMENT

7300 HAWTHORNE RD. WW FACILITY #701

BLUE RIVER WASTEWATER TREATMENT PLANT, ADMIN. BLDG.

FLOOR PLAN - LEVEL 01

MECHANICAL

DRAWN BY	CHECKED BY	MAP NO.	RANGE	TWP	SEC
JRW	JRW	S011	33	50	25
CONTRACTOR			DATE COMPLETED		
CONTRACT NO.	DRAWING SUBMITTED	FAC/WME/WO#		DRAWING NO.	
1805	9/22/2025	701		D10549.05	
PROJECT NO.					
80XX0001	M101	SHEET	17 OF 37		

PLUMBING FIXTURE AND CONNECTION SCHEDULE

FIXTURE DESIGNATION	TYPE	WASTE (SOIL) SIZE-IN	TRAP SIZE (IN)	VENT SIZE (IN)	CW SIZE (IN)	HW SIZE (IN)	EQUAL TO MANUFACTURER	NAME/MODEL NUMBER	DESCRIPTION (PROVIDE CARRIERS, STOP VALVES, P-TRAPS, ADA INSULATION AS APPLICABLE)
EDF	ELECTRIC DRINKING FOUNTAIN	2	1-1/4	1-1/2	1/2	-	ELKAY	EZSTLG8WSSK	WALL HUNG, BI-LEVEL ADA REFRIGERATED STAINLESS DRINKING FOUNTAIN WITH BOTTLE FILLER. 120V, 360W. PROVIDE WITH ELKAY LKAPREZL CANE APRON.
FCO	FLOOR CLEANOUT	FULL SIZE	-	-	-	-	ZURN	ZN1400	
FD	EMERGENCY FLOOR DRAIN	PER PLANS	FULL SIZE	-	-	-	SIOUX CHIEF	833-225DNR	ROUND ADJUSTABLE, CAST OR DUCTILE IRON, CLAMPING COLLAR, SEEPAGE OPENINGS, LIGHT DUTY NICKEL BRONZE STRAINER, NO HUB
L	LAVATORY (ADA)	2	1-1/2	1-1/2	1/2	1/2	AMERICAN STANDARD	0356.421	PROVIDE SLOAN BASYS EFX-675-SOL-BDT-CP-0.5GPM-MLM-IR-FCT, DECK MOUNTED CHROME FINISH FAUCET, 0.5 GPM, SOLAR/BATTERY FAUCET
SH	SHOWER (ADA)	2	2	1-1/2	1/2	1/2	FREEDOM SHOWERS	APF3838BFPANRRF	36"X36" WHITE SHOWER BASE. PROVIDE SYMMONS TEMPTROL C-96-300-B30-V-X-1.5 POLISHED CHROME SHOWER VALVE WITH 1.5 GPM RESTRICTER, ADA, PRESSURE BALANCE MIXING VALVE WITH INTEGRAL STOPS
U	URINAL (ADA)	2	-	1-1/2	3/4	-	AMERICAN STANDARD	6590.001	WALL HUNG, WHITE ULTRA HIGH EFFICIENCY, LOW CONSUMPTION. PROVIDE WITH SLOAN SOLIS 8186-0.125-OR 0.125 GPF FLUSH VALVE (SOLAR/BATTERY SENSOR)
W	WATER CLOSET (ADA)	4	-	2	1/2	-	AMERICAN STANDARD	2257.101	WALL MOUNT, WHITE, WITH AMERICAN STANDARD #5905.100 SEAT, ZURN ZN1202 SERIES CARRIER, AND SLOAN SOLIS 8111-1.28-OR 1.28 GPF FLUSH VALVE (SOLAR/BATTERY SENSOR)

3

MINIMUM PIPE INSULATION THICKNESS (IN INCHES)[a,c]

FLUID OPERATING TEMPERATURE RANGE AND USAGE (°F)	INSULATION CONDUCTIVITY		NOMINAL PIPE OR TUBE SIZE (INCHES)				
	CONDUCTIVITY BTU X IN/(H x FT² x °F)[b]	MEAN RATING TEMPERATURE, °F	< 1	1 TO < 1 1/2	1 1/2 TO < 4	4 TO < 8	> 8
> 350	0.32-0.34	250	4.5	5.0	5.0	5.0	5.0
251-350	0.29-0.32	200	3.0	4.0	4.5	4.5	4.5
201-250	0.27-0.30	150	2.5	2.5	2.5	3.0	3.0
141-200	0.25-0.29	125	1.5	1.5	2.0	2.0	2.0
105-140	0.21-0.28	100	1.0	1.0	1.5	1.5	1.5
40-60	0.21-0.27	75	0.5	0.5	1.0	1.0	1.0
< 40	0.20-0.26	50	0.5	1.0	1.0	1.0	1.5

a. FOR PIPING SMALLER THAN 1 1/2 INCHES AND LOCATED IN PARTITIONS WITHIN CONDITIONED SPACES, REDUCTION OF THESE THICKNESSES BY 1 INCH SHALL BE PERMITTED (BEFORE THICKNESS ADJUSTMENT REQUIRED IN NOTE B) BUT NOT TO A THICKNESS LESS THAN 1 INCH.

b. FOR INSULATION OUTSIDE THE STATED CONDUCTIVITY RANGE, THE MINIMUM THICKNESS (T) SHALL BE DETERMINED AS FOLLOWS:

$$T=r[(1 + t/r)^{K/k}-1]$$

WHERE:
T = MINIMUM INSULATION THICKNESS.
r = ACTUAL OUTSIDE RADIUS OF PIPE.
t = INSULATION THICKNESS LISTED IN THE TABLE FOR APPLICABLE FLUID TEMPERATURE AND PIPE SIZE.
K = CONDUCTIVITY OF ALTERNATE MATERIAL AT MEAN RATING TEMPERATURE INDICATED FOR THE APPLICABLE FLUID TEMPERATURE (BTU × IN/H × FT^2× °F).
k = THE UPPER VALUE OF THE CONDUCTIVITY RANGE LISTED IN THE TABLE FOR THE APPLICABLE FLUID TEMPERATURE.

c. FOR DIRECT-BURIED HEATING AND HOT WATER SYSTEM PIPING, REDUCTION OF THESE THICKNESSES BY 1 1/2 INCHES SHALL BE PERMITTED (BEFORE THICKNESS ADJUSTMENT REQUIRED IN NOTE B) BUT NOT TO THICKNESSES LESS THAN 1 INCH.

3

GENERAL PLUMBING NOTES

1. PROVIDE ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY FOR THE COMPLETE INSTALLATION OF THE PLUMBING SYSTEMS INDICATED.
2. OBTAIN ALL PERMITS, FEES, LICENSES, INSPECTIONS, AND CERTIFICATES OF COMPLIANCE OR APPROVAL AS REQUIRED BY THE AUTHORITIES.
3. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE LAWS, CODES, AND REGULATION SO THE GOVERNMENTAL BODIES HAVING JURISDICTION OVER THE SITE.
4. COORDINATE ALL WORK WITH OTHER TRADES AND EXISTING CONDITIONS AS NECESSARY TO INSTALL ALL NEW PLUMBING SYSTEMS WITHIN THE CONFINES OF THE SPACES AVAILABLE AND WITHOUT INTERFERENCES.
5. PLANS ARE INTENDED TO INDICATE THE GENERAL SCOPE OF WORK. DETAILS OF INSTALLATION COVERED BY CODE AND OTHER MINOR ITEMS NOT SHOWN SHALL BE INSTALLED IN ACCORDANCE WITH LOCAL CODES AND ACCEPTABLE INDUSTRY STANDARDS. ALL MECHANICAL EQUIPMENT AND MATERIALS SHALL BE INSTALLED IN ACCORDANCE WITH LOCAL CODES AND MANUFACTURER'S INSTRUCTIONS. CONTRACTOR SHALL SITE VERIFY EXISTING CONDITIONS.
6. DURING CONSTRUCTION, ALL FIXTURES, EQUIPMENT, PIPE, ETC. SHALL BE COVERED, PLUGGED, OR CAPPED AS REQUIRED TO KEEP CLEAN AND UNDAMAGED. ALL DAMAGED ITEMS SHALL BE RESTORED TO ORIGINAL CONDITION OR REPLACED. ALL PROTECTIVE COVERINGS SHALL BE REMOVED BEFORE FINAL ACCEPTANCE.
7. PROVIDE ALL CUTTING AND PATCHING OF WALLS, FLOORS, CEILINGS, AND ROOFS AS NEEDED TO INSTALL MECHANICAL SYSTEMS. PATCHING WORK SHALL INCLUDE METHODS AND MATERIALS NEEDED FOR AFFECTED SURFACES TO MATCH ADJACENT AREAS. SEAL AROUND ALL EXTERIOR WALL PENETRATIONS WEATHERTIGHT.
8. COORDINATE ALL ROOFING WORK WITH OWNER OR RESPONSIBLE PARTY, SO THAT EXISTING ROOF WARRANTY (IF ANY) WILL BE MAINTAINED.
9. FIELD SUPPORT ALL MECHANICAL SYSTEM EQUIPMENT AND MATERIALS FROM STRUCTURE.
10. CONTRACTOR SHALL GUARANTEE ALL WORK AND MATERIALS AGAINST DEFECTS FOR A PERIOD OF ONE YEAR FROM FINAL ACCEPTANCE.
11. SPECIFIC MODELS ARE SPECIFIED TO ESTABLISH QUALITY ONLY. SUBSTITUTIONS MAY BE MADE WITH ENGINEER'S APPROVAL.
12. ARCHITECTURAL DRAWING DIMENSIONS SHALL GOVERN IN ALL CASES. COORDINATE ENGINEERING DRAWINGS WITH ARCHITECTURAL DRAWINGS FOR ALL EQUIPMENT LAYOUTS AND LOCATIONS.
13. CONTRACTOR IS TO INCLUDE COSTS FOR ALL PERMITS, INSPECTIONS, TAPS, METERS & FUEL ASSOCIATED WITH HIS WORK.
14. ALL SYSTEMS SHALL BE COMPLETE AND OPERABLE IN EVERY WAY.
15. CONTRACTOR IS RESPONSIBLE FOR REVIEWING AND UNDERSTANDING ALL DRAWINGS AND ASPECTS OF PROJECT SCOPE AND FOR INCLUDING IN HIS BID ALL WORK ASSOCIATED WITH HIS TRADE, REGARDLESS OF WHICH SHEET IT IS SHOWN ON.

ABBREVIATIONS

Ø	DIAMETER	HWR	HOT WATER RETURN
°	DEGREE	IN	INCH
ADD	ADDENDUM	INV	INVERT
AFF	ABOVE FINISHED FLOOR	MAX	MAXIMUM
ALT	ALTERNATE	MBH	ONE THOUSAND BTU PER HOUR
AP	ACCESS PANEL	MCF	ONE THOUSAND CUBIC FEET
ARCH	ARCHITECT/ARCHITECTURAL	MECH	MECHANICAL
BFF	BELOW FINISHED FLOOR	MFR	MANUFACTURER
BTU	BRITISH THERMAL UNITS	MIN	MINIMUM
BTUH	BRITISH THERMAL UNITS PER HOUR	NIC	NOT IN CONTRACT
CAP	CAPACITY	NTS	NOT TO SCALE
CFM	CUBIC FEET PER MINUTE	PLBG	PLUMBING
CLG	CEILING	PRESS	PRESSURE
CO	CLEANOUT	PSI	POUNDS PER SQUARE INCH
CW	COLD WATER	PSIG	POUNDS PER SQUARE INCH GAUGE
DIA	DIAMETER	REC	RECESSED
DN	DOWN	RM	ROOM
EA	EACH	RPM	REVOLUTIONS PER MINUTE
EDF	ELECTRIC DRINKING FOUNTAIN	S	SANITARY
ELEC	ELECTRICAL	SF	SQUARE FOOT
EQUIP	EQUIPMENT	TEMP	TEMPERATURE
EXIST	EXISTING	TYP	TYPICAL
°F	DEGREES FAHRENHEIT	UG	UNDERGROUND
FCO	FLOOR CLEAN OUT	V	VENT
FD	FLOOR DRAIN	VTR	VENT THROUGH ROOF
FT	FOOT/FEET	WCO	WALL CLEAN OUT
GAL	GALLON		
GC	GENERAL CONTRACTOR		
GPM	GALLONS PER MINUTE		
HW	HOT WATER		

PLUMBING SYMBOLS

	CONNECT TO EXISTING
3	KEYNOTE
	ITEM TO BE DEMOLISHED
	PIPING TO BE DEMOLISHED
2"	PIPE SIZE TAG
E(XX)	EXISTING PIPE TAG
CW	DOMESTIC COLD WATER PIPING
HW	HOT WATER PIPING
S	SANITARY PIPING BELOW FLOOR
S	SANITARY PIPING ABOVE FLOOR
V	VENT PIPING
	CUT-OFF VALVE
	PIPE UP, TEE FROM BELOW AND PIPE DOWN
FCO	FLOOR CLEANOUT
WCO	WALL CLEANOUT
2" FD	FLOOR DRAIN
W	WATER CLOSET
L	LAVATORY
SH	SHOWER
SK	KITCHEN SINK
EDF	ELECTRIC DRINKING FOUNTAIN

SLATTERY
DESIGN + ARCHITECTURE

MO Certificate of Authority: #2016000414

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12760 EAST 40 HIGHWAY
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MISSOURI CERTIFICATE OF AUTHORITY #000239

△	DATE	DESCRIPTION
3	10/24/2025	PERMIT REVISION #3

JEREMY RYAN WALKER NUMBER PE-2022003792
STATE OF MISSOURI
PROFESSIONAL ENGINEER
10/24/2025

JEREMY R WALKER - ENGINEER - MO # PE-2022003792

PERMIT REVISION #3

FOR WSD USE:

KANSAS CITY, MISSOURI, WATER SERVICES DEPARTMENT
7300 HAWTHORNE RD. WW FACILITY #701

BLUE RIVER WASTEWATER TREATMENT PLANT, ADMIN. BLDG.

PLUMBING GENERAL NOTES AND SYMBOLS

PLUMBING

DRAWN BY	CHECKED BY	MAP NO.	RANGE	TWP	SEC
SLT	JRW	S011	33	50	25

CONTRACTOR	DATE COMPLETED

CONTRACT NO.	DRAWING SUBMITTED	FAC/WME/WO#	DRAWING NO.
1805	9/22/2025	701	D10549.05

PROJECT NO. 80XX0001

P000

SHEET 18 OF 37

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DOOR SCHEDULE

DOOR NUMBER	ROOM NAME	SIZE		DOOR			FRAME			DETAILS			HARDWARE SET
		HEIGHT	WIDTH	TYPE	MATERIAL	FINISH	TYPE	MATERIAL	FINISH	HEAD	JAMB	THRESHOLD	
100.1	VESTIBULE	7' - 0"	6' - 0"	GF	ALUM	CLEAR	--	ALUM	SPEC	3/A-600	2/A-600	1/A-600	1.0
100.2	LOBBY	7' - 0"	6' - 0"	GF	ALUM	CLEAR	--	ALUM	SPEC	3/A-600	2/A-600	1/A-600	2.0
114.1	EAST STAIR	7' - 2"	3' - 8"	F	ALUM	CLEAR	--	ALUM	SPEC	9/A-600	8/A-600	7/A-600	3.0
145.1	SOUTH EXIT	7' - 0"	6' - 0"	GF	ALUM	CLEAR	F1 --	ALUM	SPEC	3/A-600	2/A-600	1/A-600	1.0

NOTE: ALL NEW EXIT DOORS INCLUDED IN THE SCOPE OF THIS PROJECT CONTAIN PANIC HARDWARE WITH CAPABILITY TO RELEASE ELECTRONIC LOCKS AND COMPLY WITH IBC CHAPTER 10, SECTION 1010.1.9.10 (3)

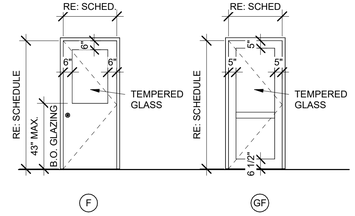
LOUVER SCHEDULE

LOUVER NUMBER	ROUGH OPENING					DETAIL		
	HEIGHT RANGE	WIDTH	TYPE	PERFORMANCE	MATERIAL	FINISH	HEAD	JAMB	SILL
L1	2'-10" - 4'-7"	3' - 5 1/4"	1	SPEC	ALUM	SPEC	6/A-300	5/A-400	6/A-300
L2	4'-8" - 6'-5"	3' - 6 1/2"	1	SPEC	ALUM	SPEC	6/A-300	5/A-400	6/A-300
L3	4'-8" - 6'-5"	3' - 6 1/2"	1	SPEC	ALUM	SPEC	6/A-300	5/A-400	6/A-300
L4	2'-10" - 4'-7"	3' - 5 1/4"	1	SPEC	ALUM	SPEC	6/A-300	5/A-400	6/A-300

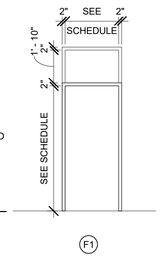
WINDOW TYPE SCHEDULE

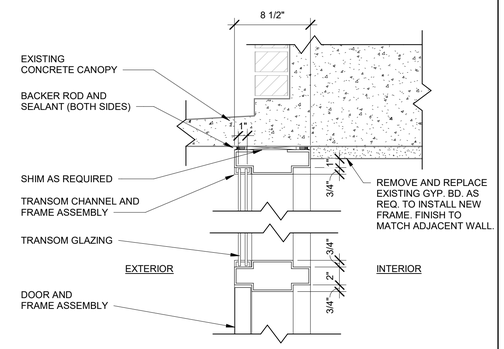
WINDOW TYPE	COUNT	HEIGHT	LENGTH	SYSTEM	MULLION MATERIAL	FINISH	DETAILS		
							HEAD	JAMB	SILL / THRESHOLD
A	10	27' - 5 3/8"	15' - 0"	ULTRA THERMAL CURTAIN WALL SYSTEM WITH 2-1/2" x 6" MULLIONS AND 1" INFILL.	ALUM	FRAME/VERTICAL MULLIONS: CLEAR; HORIZONTAL MULLIONS: BLACK	4/A-300	6/A-400	5/A-300
A1	2	27' - 5 3/8"	15' - 0"	ULTRA THERMAL CURTAIN WALL SYSTEM WITH 2-1/2" x 6" MULLIONS AND 1" INFILL.	ALUM	FRAME/VERTICAL MULLIONS: CLEAR; HORIZONTAL MULLIONS: BLACK	4/A-300	6/A-400	5/A-300
B	2	22' - 10"	5' - 4 3/4"	ULTRA THERMAL STOREFRONT FRAMING SYSTEM WITH 2" x 4-1/2" MULLIONS AND 1" INFILL.	ALUM	CLEAR ANODIC	5/A-301	10/A-401	3/A-301
C	1	8' - 4"	11' - 8"	ULTRA THERMAL STOREFRONT FRAMING SYSTEM WITH 2" x 4-1/2" MULLIONS AND 1" INFILL.	ALUM	CLEAR ANODIC	4/A-301	4/A-600	3/A-301
D	2	8' - 4"	6' - 0"	ULTRA THERMAL STOREFRONT FRAMING SYSTEM WITH 2" x 4-1/2" MULLIONS AND 1" INFILL.	ALUM	CLEAR ANODIC	4/A-301	4 & 5/A-600	3/A-301
E	1	8' - 4"	11' - 0"	ULTRA THERMAL STOREFRONT FRAMING SYSTEM WITH 2" x 4-1/2" MULLIONS AND 1" INFILL.	ALUM	CLEAR ANODIC	4/A-301	5/A-600	3/A-301
F	1	14' - 0"	11' - 0"	ULTRA THERMAL STOREFRONT FRAMING SYSTEM WITH 2" x 4-1/2" MULLIONS AND 1" INFILL.	ALUM	CLEAR ANODIC	5/A-301	5/A-600	3/A-301
G	1	9' - 4 1/2"	11' - 7"	ULTRA THERMAL STOREFRONT FRAMING SYSTEM WITH 2" x 4-1/2" MULLIONS AND 1" INFILL.	ALUM	CLEAR ANODIC	7/A-301	2/A-600	6/A-301
H	1	13' - 0"	11' - 7"	ULTRA THERMAL STOREFRONT FRAMING SYSTEM WITH 2" x 4-1/2" MULLIONS AND 1" INFILL.	ALUM	CLEAR ANODIC	8/A-301	5/A-600	7/A301
J	1	9' - 2"	4' - 0"	ULTRA THERMAL STOREFRONT FRAMING SYSTEM WITH 2" x 4-1/2" MULLIONS AND 1" INFILL.	ALUM	CLEAR ANODIC	9/A-600	8/A-600	7/A-600
K	1	5' - 1 1/2"	6' - 4"	INTERIOR NON-THERMAL FRAMING SYSTEM WITH 1-3/4" x 4" MULLIONS AND 1/4" GLAZING. UPPER AND LOWER TRACK WITH NYLON WHEELS, PULL HANDLE AND LOCKING MECHANISM FOR SLIDING PANELS.	ALUM	CLEAR ANODIC/SATIN	6/A-201	3/A-201	5/A-201

DOOR TYPES

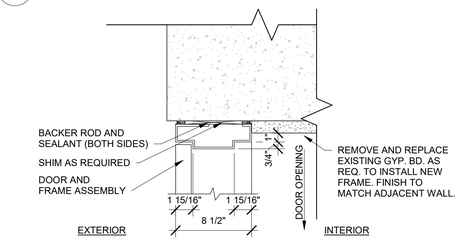


DOOR FRAME TYPES

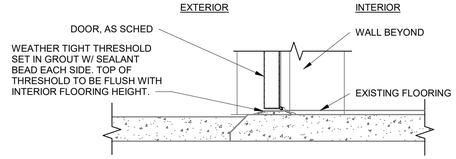




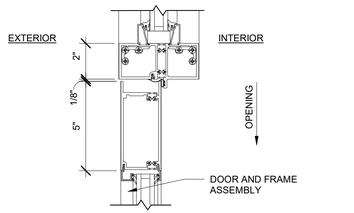
9 HM TRANSOM AND DOOR HEAD
1 1/2" = 1'-0"



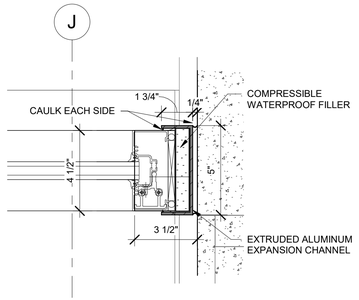
8 HM DOOR JAMB
1 1/2" = 1'-0"

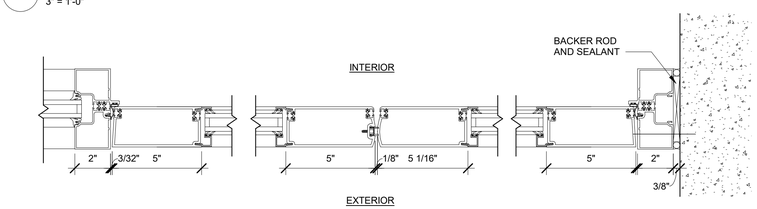


7 HM DOOR THRESHOLD
1 1/2" = 1'-0"

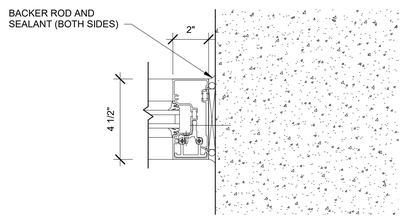


3 STOREFRONT DOOR HEAD
3" = 1'-0"



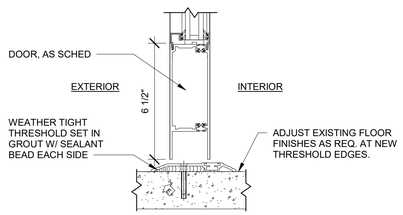


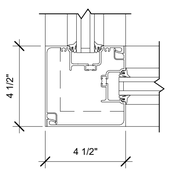
6 STOREFRONT EXPANSION JOINT
A-401E 3" = 1'-0"



2 STOREFRONT DOOR JAMB
3" = 1'-0"

5 STOREFRONT MULLION JAMB
3" = 1'-0"





1 STOREFRONT DOOR THRESHOLD
3" = 1'-0"

4 STOREFRONT CORNER MULLION
3" = 1'-0"

THE PROFESSIONAL WHOSE SIGNATURE AND PERSONAL SEAL APPEARS HEREON ASSUMES RESPONSIBILITY ONLY FOR WHAT APPEARS ON THIS PAGE, AND DISCLAIMS (PURSUANT TO SECTION 327.411 RSMO) ANY RESPONSIBILITY FOR ALL OTHER PLANS, SPECIFICATIONS, ESTIMATES, REPORTS, OR OTHER DOCUMENTS OR INSTRUMENTS NOT SEALED BY THE UNDERSIGNED PROFESSIONAL RELATING TO OR INTENDED TO BE USED FOR ANY PART OR PARTS OF THE PROJECT TO WHICH THIS PAGE REFERS.

LICENSED ARCHITECT SEAL

STATE OF MISSOURI
AMANDA L. AUGUSTINE
NUMBER
ARCHITECT
10-24-25

FOR WSD USE:

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

NO.	DATE	DESCRIPTION	BY	APPD
3	10-24-25	City Comments		
1	9-22-25	City Comments		

ENVIRONMENTAL ADVISORS AND ENGINEERS, INC.
19211 W. 64TH TERRACE
SHAWNEE, KANSAS 66218
913/ 599-4326

KANSAS CITY, MISSOURI, WATER SERVICES DEPARTMENT
7300 HAWTHORNE RD. WW FACILITY #701 (1)

ADMINISTRATION BUILDING WINDOW REPLACEMENT

DOOR, WINDOW & LOUVER SCHEDULE AND DETAILS

ARCHITECTURE

DRAWN BY	CHECKED BY	MAP NO.	RANGE	TWP	SEC
AH / SM	AA	S011	33	50	25
CONTRACTOR			DATE COMPLETED		
CONTRACT NO.	DRAWING SUBMITTED	FAC/MWE/WO#	DRAWING NO.		
1805	9/10/25	701	D1059.05		
PROJECT NO.					
80XX0001	A-600E	SHEET 37 OF 37			

PLANS FOR

SEWERAGE IMPROVEMENTS

POLLUTION CONTROL DEPARTMENT

KANSAS CITY, MISSOURI

CONTRACT NO.7

BIG BLUE RIVER SEWAGE TREATMENT PLANT

SLUDGE PROCESSING FACILITIES

BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS
KANSAS CITY, MISSOURI

PROJECT NO. 3292 D7

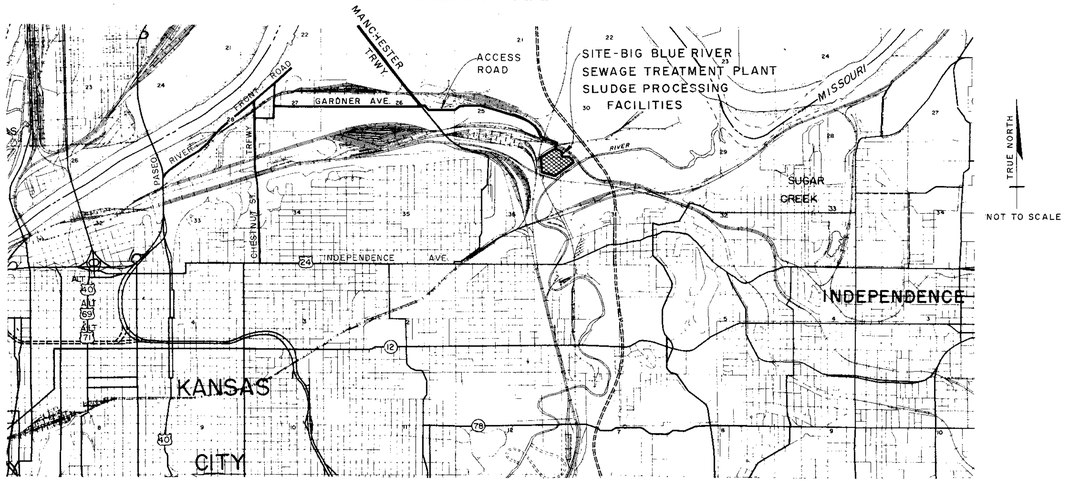
1964

PROCESSED

1062.32

KANSAS CITY, MISSOURI

VICINITY MAP



CONTRACT NO.7 SLUDGE PROCESSING FACILITIES

LIST OF DRAWINGS

1 SLUDGE PROCESSING FACILITIES - SITE BOUNDARIES AND BASE LINES
2 SLUDGE PROCESSING FACILITIES - APPROXIMATE BORING LOCATIONS
3 SLUDGE PROCESSING FACILITIES - CONTRACT AREAS AND BOUNDARIES
4 SLUDGE PROCESSING FACILITIES - SITE PLAN
5 SLUDGE PROCESSING FACILITIES - GENERAL LAYOUT

6 SLUDGE PROCESSING BUILDING - ELEVATIONS
7 SLUDGE PROCESSING BUILDING - ELEVATIONS
8 SLUDGE PROCESSING BUILDING - ELEVATIONS
9 SLUDGE PROCESSING BUILDING - BASEMENT FLOOR ARRANGEMENT PLAN
10 SLUDGE PROCESSING BUILDING - GROUND FLOOR ARRANGEMENT PLAN
11 SLUDGE PROCESSING BUILDING - INTERMEDIATE FLOOR ARRANGEMENT PLAN
12 SLUDGE PROCESSING BUILDING - FILTER FLOOR ARRANGEMENT PLAN
13 SLUDGE PROCESSING BUILDING - FAN FLOOR AND ROOF ARRANGEMENT PLANS

14 SLUDGE PROCESSING BUILDING - BASEMENT FLOOR PLAN
15 SLUDGE PROCESSING BUILDING - BASEMENT FLOOR PLAN
16 SLUDGE PROCESSING BUILDING - BASEMENT FLOOR PLAN
17 SLUDGE PROCESSING BUILDING - GROUND FLOOR PLAN
18 SLUDGE PROCESSING BUILDING - GROUND FLOOR PLAN
19 SLUDGE PROCESSING BUILDING - GROUND FLOOR PLAN
20 SLUDGE PROCESSING BUILDING - INTERMEDIATE FLOOR PLAN
21 SLUDGE PROCESSING BUILDING - INTERMEDIATE FLOOR PLAN
22 SLUDGE PROCESSING BUILDING - LABORATORY FLOOR PLAN
23 SLUDGE PROCESSING BUILDING - FILTER FLOOR
24 SLUDGE PROCESSING BUILDING - FILTER FLOOR
25 SLUDGE PROCESSING BUILDING - ADMINISTRATION WING ROOF PLAN
26 SLUDGE PROCESSING BUILDING - FAN FLOOR PLAN
27 SLUDGE PROCESSING BUILDING - FAN FLOOR PLAN
28 SLUDGE PROCESSING BUILDING - ROOF PLAN
29 SLUDGE PROCESSING BUILDING - ROOF PLAN

30 SLUDGE PROCESSING BUILDING - BUILDING SECTION
31 SLUDGE PROCESSING BUILDING - BUILDING SECTION
32 SLUDGE PROCESSING BUILDING - BUILDING SECTION
33 SLUDGE PROCESSING BUILDING - BUILDING SECTIONS
34 SLUDGE PROCESSING BUILDING - BUILDING SECTIONS AND DETAILS
35 SLUDGE PROCESSING BUILDING - BUILDING SECTIONS AND DETAILS
36 SLUDGE PROCESSING BUILDING - BUILDING SECTIONS AND DETAILS
37 SLUDGE PROCESSING BUILDING - ARCHITECTURAL DETAILS
38 SLUDGE PROCESSING BUILDING - ARCHITECTURAL WALL SECTIONS
39 SLUDGE PROCESSING BUILDING - ARCHITECTURAL WALL SECTIONS
40 SLUDGE PROCESSING BUILDING - ARCHITECTURAL WALL SECTIONS AND DETAILS
41 SLUDGE PROCESSING BUILDING - ENTRANCE LOBBY DETAILS
42 SLUDGE PROCESSING BUILDING - ENTRANCE DOORS AND WALL DETAILS

43 SLUDGE PROCESSING BUILDING - CURTAIN WALL DETAILS
44 SLUDGE PROCESSING BUILDING - DETAILS OF STAIR SP-5
45 SLUDGE PROCESSING BUILDING - STAIR DETAILS
46 SLUDGE PROCESSING BUILDING - WASHROOM AND TOILET DETAILS
47 SLUDGE PROCESSING BUILDING - WASHROOM AND ARCHITECTURAL DETAILS
48 SLUDGE PROCESSING BUILDING - LABORATORY DETAILS
49 SLUDGE PROCESSING BUILDING - REFLECTED CEILING PLANS
50 SLUDGE PROCESSING BUILDING - CONTROL ROOM ARCHITECTURAL DETAILS
51 SLUDGE PROCESSING BUILDING - CONTROL ROOM ARCHITECTURAL DETAILS
52 SLUDGE PROCESSING BUILDING - FREIGHT ELEVATOR SECTIONS
53 SLUDGE PROCESSING BUILDING - DOOR SCHEDULE AND DETAILS
54 SLUDGE PROCESSING BUILDING - DOOR DETAILS
55 SLUDGE PROCESSING BUILDING - DOOR DETAILS
56 SLUDGE PROCESSING BUILDING - ARCHITECTURAL DETAILS
57 SLUDGE PROCESSING BUILDING - PILING AND FOOTING PLAN
58 SLUDGE PROCESSING BUILDING - PILING AND FOOTING PLAN
59 SLUDGE PROCESSING BUILDING - ADMINISTRATION WING PILING PLAN
60 SLUDGE PROCESSING BUILDING - STRUCTURAL CONCRETE PLAN
61 SLUDGE PROCESSING BUILDING - STRUCTURAL CONCRETE PLAN
62 SLUDGE PROCESSING BUILDING - STRUCTURAL CONCRETE SECTIONS
63 SLUDGE PROCESSING BUILDING - STRUCTURAL CONCRETE SECTIONS
64 SLUDGE PROCESSING BUILDING - STRUCTURAL CONCRETE SECTIONS
65 SLUDGE PROCESSING BUILDING - STRUCTURAL CONCRETE SECTIONS
66 SLUDGE PROCESSING BUILDING - STRUCTURAL CONCRETE SECTIONS
67 SLUDGE PROCESSING BUILDING - STRUCTURAL CONCRETE SECTIONS AND DETAILS
68 SLUDGE PROCESSING BUILDING - STRUCTURAL CONCRETE SCHEDULES
69 SLUDGE PROCESSING BUILDING - STRUCTURAL STEEL PLANS
70 SLUDGE PROCESSING BUILDING - STRUCTURAL STEEL PLANS
71 SLUDGE PROCESSING BUILDING - STRUCTURAL STEEL PLANS
72 SLUDGE PROCESSING BUILDING - STRUCTURAL STEEL PLANS AND DETAILS
73 SLUDGE PROCESSING BUILDING - STRUCTURAL STEEL ELEVATIONS
74 SLUDGE PROCESSING BUILDING - STRUCTURAL STEEL ELEVATIONS
75 SLUDGE PROCESSING BUILDING - STRUCTURAL STEEL BRACING DETAILS
76 SLUDGE PROCESSING BUILDING - STRUCTURAL STEEL SCHEDULES AND DETAILS
77 SLUDGE PROCESSING BUILDING - STRUCTURAL STEEL DETAILS
78 SLUDGE PROCESSING BUILDING - STAIR DETAILS
79 SLUDGE PROCESSING BUILDING - STAIR DETAILS
80 SLUDGE PROCESSING BUILDING - STAIR AND LOUVER DETAILS
81 SLUDGE PROCESSING BUILDING - VACUUM EQUIPMENT LAYOUT
82 SLUDGE PROCESSING BUILDING - FILTER AND CONVEYOR PLANS
83 SLUDGE PROCESSING BUILDING - FILTER AND CONVEYOR SECTIONS
84 SLUDGE PROCESSING BUILDING - FILTER AND CONVEYOR SECTIONS
85 SLUDGE PROCESSING BUILDING - POLYMER EQUIPMENT LAYOUT
86 SLUDGE PROCESSING BUILDING - PUMP LAYOUTS AND SECTIONS
87 SLUDGE PROCESSING BUILDING - PIPING SECTIONS

88 SLUDGE HOLDING TANKS - ELEVATIONS
89 SLUDGE HOLDING TANKS - FOUNDATION AND PILING PLAN
90 SLUDGE HOLDING TANKS - FLOOR PLAN
91 SLUDGE HOLDING TANKS - FLOOR PLAN
92 SLUDGE HOLDING TANKS - ROOF AND SECTIONAL PLANS
93 SLUDGE HOLDING TANKS - ROOF PLAN
94 SLUDGE HOLDING TANKS - SECTION
95 SLUDGE HOLDING TANKS - SECTIONS
96 SLUDGE HOLDING TANKS - SECTIONS
97 SLUDGE HOLDING TANKS - SECTIONS
98 SLUDGE HOLDING TANKS - ARCHITECTURAL PANEL DETAILS
99 SLUDGE HOLDING TANKS - STAIR AND STEEL DETAILS
100 CORRIDOR - PLANS AND SECTIONS
101 CORRIDOR - SECTIONS AND DETAILS
102 SLUDGE THICKENER - ELEVATIONS
103 SLUDGE THICKENER - PILING PLAN AND DETAILS
104 SLUDGE THICKENER INLET BUILDING - FLOOR PLANS
105 SLUDGE THICKENER INLET BUILDING - SECTIONS
106 SLUDGE THICKENER PUMPING STATION - FLOOR PLANS
107 SLUDGE THICKENER PUMPING STATION - SECTIONS
108 SLUDGE THICKENER PUMPING STATION - SECTIONS
109 SLUDGE THICKENER - STAIR AND STEEL DETAILS
110 TUNNEL - PLAN AND SECTIONS
111 SLUDGE HOUSE NO. 1 - FLOOR PLANS
112 SLUDGE HOUSE NO. 2 - FLOOR PLANS
113 SLUDGE HOUSE - SECTIONS AND DETAILS
114 CHIMNEY
115 MISCELLANEOUS PIPING DETAILS
116 MISCELLANEOUS DETAILS
117 ARCHITECTURAL DETAILS
118 CONCRETE DETAILS
119 STANDARD CONCRETE DETAILS
120 STANDARD ARCHITECTURALS DETAILS
121 SLUDGE AND SCUM PIPING SCHEMATIC
122 FILTRATION PIPING SCHEMATIC
123 SETTLED SEWAGE EFFLUENT AND SERVICE WATER SCHEMATICS
124 POTABLE WATER SCHEMATICS
125 PLUMBING SCHEMATICS
126 NATURAL GAS PIPING SCHEMATICS

HEATING AND AIR CONDITIONING

127 SLUDGE PROCESSING BUILDING - GROUND FLOOR HEATING AND VENTILATING
128 SLUDGE PROCESSING BUILDING - GROUND FLOOR HEATING AND VENTILATING
129 SLUDGE PROCESSING BUILDING - INTERMEDIATE FLOOR HEATING AND VENTILATING
130 SLUDGE PROCESSING BUILDING - INTERMEDIATE FLOOR HEATING AND VENTILATING
131 SLUDGE PROCESSING BUILDING - SECTIONS HEATING AND VENTILATING
132 SLUDGE PROCESSING BUILDING - SECTIONS HEATING AND VENTILATING
133 SLUDGE PROCESSING BUILDING - CONTROL ROOM AIR CONDITIONING
134 SLUDGE PROCESSING BUILDING - CONTROL ROOM SECTIONS
135 SLUDGE PROCESSING BUILDING - ROOF PLAN HEATING AND VENTILATING
136 SLUDGE PROCESSING BUILDING - TEMPERATURE CONTROL
137 SLUDGE PROCESSING BUILDING - ADMINISTRATION WING HEATING AND AIR CONDITIONING
138 SLUDGE PROCESSING BUILDING - ADMINISTRATION WING HEATING AND AIR CONDITIONING
139 SLUDGE PROCESSING BUILDING - ADMINISTRATION WING HEATING AND AIR CONDITIONING
140 SLUDGE PROCESSING BUILDING - ADMINISTRATION WING HEATING AND AIR CONDITIONING
141 SLUDGE THICKENER BUILDINGS, SLUDGE HOLDING TANKS AND CORRIDOR HEATING AND AIR CONDITIONING
142 SLUDGE PROCESSING BUILDING - ADMINISTRATION WING VENTILATION DETAILS
143 MISCELLANEOUS HEATING AND AIR CONDITIONING DETAILS
144 MISCELLANEOUS HEATING AND AIR CONDITIONING DETAILS

ELECTRICAL

145 ELECTRICAL LEGEND AND DETAILS
146 MAIN POWER - ELECTRICAL ONE-LINE
147 SLUDGE HOUSES AND SLUDGE THICKENER PUMPING STATION - ELECTRICAL ONE-LINE
148 SLUDGE HOLDING TANKS - ELECTRICAL ONE-LINE
149 CONTROL AND INSTRUMENTATION - ELECTRICAL ONE-LINE
150 SLUDGE PROCESSING BUILDING - FILTERS - ELECTRICAL ONE-LINE
151 SLUDGE PROCESSING BUILDING - FILTERS - ELECTRICAL ONE-LINE
152 SLUDGE PROCESSING BUILDING - FILTERS - ELECTRICAL ONE-LINE
153 SLUDGE PROCESSING BUILDING - INCINERATORS - ELECTRICAL ONE-LINE
154 SLUDGE PROCESSING BUILDING - INCINERATORS - ELECTRICAL ONE-LINE
155 SLUDGE PROCESSING BUILDING - INCINERATORS AND AUXILIARIES
156 SLUDGE PROCESSING BUILDING - PLANT AUXILIARIES - ELECTRICAL ONE-LINE
157 SLUDGE PROCESSING BUILDING - PLANT AUXILIARIES - ELECTRICAL ONE-LINE
158 TELEPHONE AND PAGING - RISER DIAGRAMS AND DETAILS
159 MISCELLANEOUS - ELECTRICAL SCHEMATICS
160 MISCELLANEOUS - ELECTRICAL SCHEMATICS
161 MISCELLANEOUS - ELECTRICAL SCHEMATICS
162 MISCELLANEOUS - ELECTRICAL DETAILS
163 SLUDGE PROCESSING BUILDING - GROUND FLOOR PLAN - ELECTRICAL
164 SLUDGE PROCESSING BUILDING - LABORATORY FLOOR PLAN - ELECTRICAL
165 SLUDGE PROCESSING BUILDING - BASEMENT FLOOR PLAN - ELECTRICAL
166 SLUDGE PROCESSING BUILDING - BASEMENT FLOOR PLAN - ELECTRICAL
167 SLUDGE PROCESSING BUILDING - GROUND FLOOR PLAN - ELECTRICAL
168 SLUDGE PROCESSING BUILDING - GROUND FLOOR PLAN - ELECTRICAL
169 SLUDGE PROCESSING BUILDING - INTERMEDIATE FLOOR PLAN - ELECTRICAL
170 SLUDGE PROCESSING BUILDING - INTERMEDIATE FLOOR PLAN - ELECTRICAL
171 SLUDGE PROCESSING BUILDING - FILTER FLOOR PLAN - ELECTRICAL
172 SLUDGE PROCESSING BUILDING - FILTER FLOOR PLAN - ELECTRICAL
173 SLUDGE PROCESSING BUILDING - FAN FLOOR PLAN - ELECTRICAL
174 SLUDGE PROCESSING BUILDING - FAN FLOOR PLAN - ELECTRICAL
175 SLUDGE PROCESSING BUILDING - ROOF PLAN - ELECTRICAL
176 SLUDGE HOUSE PLANS - ELECTRICAL
177 SLUDGE THICKENER INLET BUILDING, TUNNEL AND CORRIDOR PLANS - ELECTRICAL
178 SLUDGE THICKENER PUMPING STATION PLANS - ELECTRICAL
179 SLUDGE HOLDING TANKS PLAN - ELECTRICAL
180 SLUDGE HOLDING TANKS PLANS - ELECTRICAL
181 PAGING SYSTEM - CONNECTION DIAGRAM AND SCHEMATICS
182 PAGING SYSTEM - CONNECTION DIAGRAM AND SCHEMATICS
183 PAGING SYSTEM - CIRCUIT SCHEDULE AND DETAILS
184 INSTRUMENT CONNECTIONS AND TUBING
185 COMPRESSED AIR PIPING SCHEMATICS

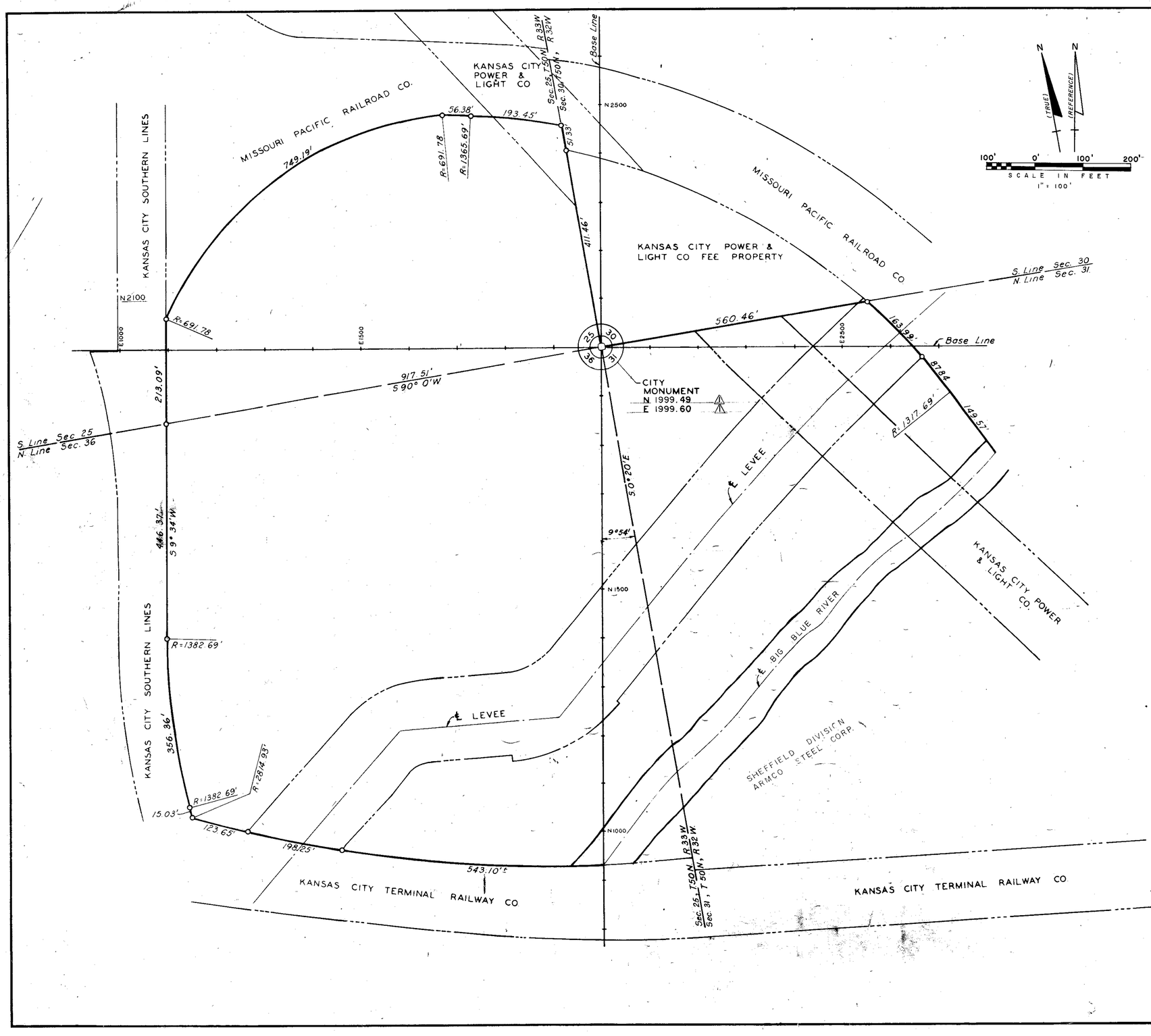
YARD WORK

186 GRADED YARD PIPING TABLE
187 MANHOLE AND CATCH BASIN DETAILS
188 DRIVE AND YARD PIPING DETAILS
189 SLUDGE PROCESSING AREA DRIVES AND ASH DISPOSAL LINE
190 MISCELLANEOUS YARD DETAILS

PROJECT NO. 3292D7

MICROFILMED

1062.32



Notes:

1. U.S.C. & G.S. B.M.# AA-218 on S.E. abutment Missouri Pacific Railroad Bridge. Elev. 742.699'
2. Burns & McDonnell B.M.# 216 at S.W. ℄ Exist. Blue River Trunk Sewer Gate Chamber. Elev. 742.11'

NO.	DATE	REVISION	BY	CK'D
1	11-1-66	Conform to construction records.	RLM	ACP

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING FACILITIES
SITE BOUNDARIES AND BASE LINES

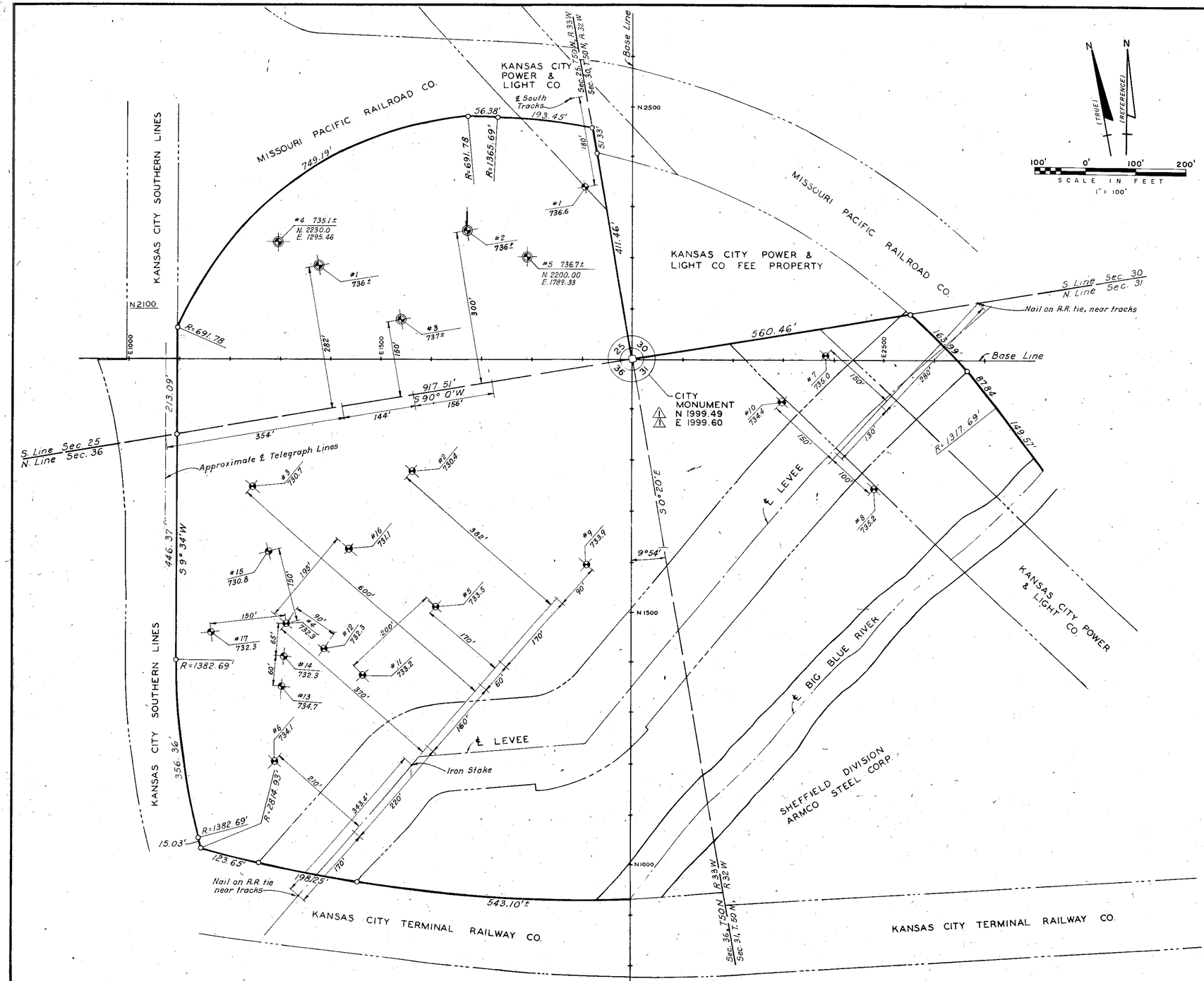
BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED A.C.P. CHECKED L.E.W.
DETAILED S.S. APPROVED
DATE 2-9-66

SHEET 1 OF 190

MICROFILMED PROJECT 1062.32



LEGEND

- PROPERTY LINE (DISTANCE / IRON PIN)
- SECTION LINE
- BASE LINE (N1500)
- PERMANENT RIGHT-OF-WAY OR EASEMENT LINE
- CENTERLINE
- DIMENSION OR REFERENCE LINE
- SECTION CORNER (25, 30, 36, 31)

HOLE NUMBER / APPROX. ELEV. U.S.G.S. — APPROXIMATE BORING LOCATION - POLLUTION ABATEMENT PROJECTS 61-1D5 & 61-1D6

HOLE NUMBER / APPROX. ELEV. U.S.G.S. — APPROXIMATE BORING LOCATION - POLLUTION ABATEMENT PROJECT 3292 D 7

Notes:

1. U.S.C. & G.S. B.M. # AA-218 on S.E. abutment Missouri Pacific Railroad Bridge. Elev. 742.699'
2. Burns & McDonnell B.M. # 216 at S.W. ℄ Exist. Blue River Trunk Sewer Gate Chamber. Elev. 742.11', City Monument T.B.M. Elev. 736.00'
3. Hole Elevations shown indicate approximate original existing ground surface but are not guaranteed.
4. Boring locations shown are not guaranteed.

NO.	DATE	REVISION	BY	CK'D
1	11-1-66	Conform to construction records	RLM	ACP

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING FACILITIES
APPROXIMATE BORING LOCATIONS

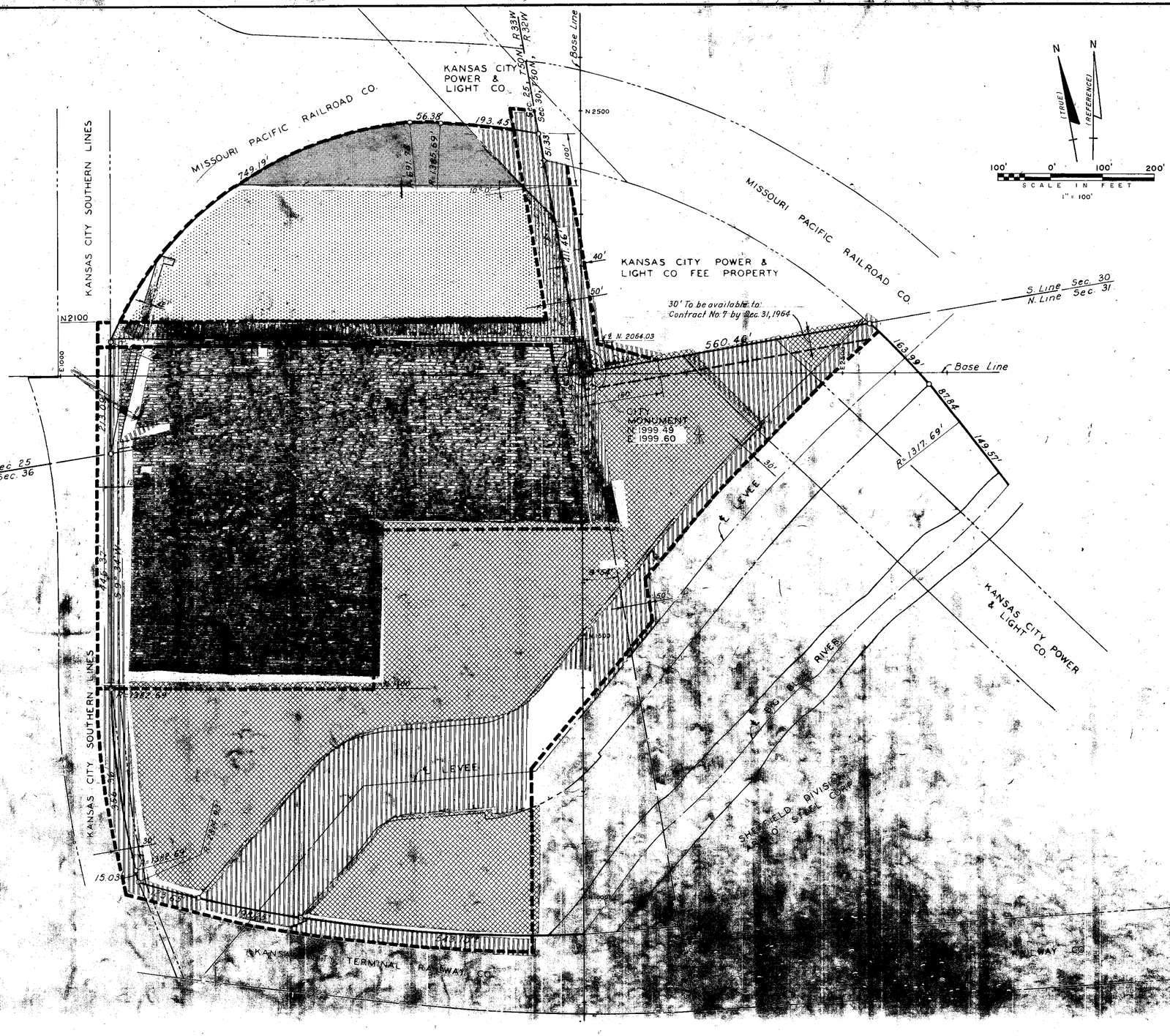
BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED A.C.P. DETAILED S.S. CHECKED L.E.W. APPROVED [signature] DATE 9-8-66

SHEET 2 OF 190

1062.32



N (TRUE) N (REFERENCE)

100' 0' 100' 200'
SCALE IN FEET
1" = 100'

LEGEND

- PROPERTY LINE (DISTANCE, IRON PIN)
- SECTION LINE
- BASE LINE (N1500)
- PERMANENT RIGHT-OF-WAY OR EASEMENT LINE
- CENTERLINE
- DIMENSION OR REFERENCE LINE
- SECTION CORNER (25, 30, 36, 31)
- CONTRACT BOUNDARY LINE
- CONTRACT NO. 5 - *This area reserved for other contractors.*
- CONTRACT NO. 5, 6 & 7 RESTRICTED - *The work to be performed in restricted areas under contract No. 7 shall be done in accordance with the provisions of contract documents*
- CONTRACT NO. 6 - *This area reserved for other contractors.*
- CONTRACT NO. 7
- COMMON ACCESS CORRIDOR FOR ALL CONTRACTS - *The work to be performed in this area under contract No. 7 shall be accomplished in accordance with the provisions of the contract documents.*
- CONTRACT NO. 7A STORAGE AREA

Notes:

1. *U.S.C. & G.S. B.M. # AA-218 on S.E. abutment Missouri Pacific Railroad Bridge. Elev. 742.699'*
2. *Burns & McDonnell B.M. # 216 at S.W. ℄ Exist. Blue River Trunk Sewer Gate Chamber. Elev. 742.11' City Monument T.B.M. Elev. 736.00*
3. *No operations permitted in that portion of the site bounded by property lines, contract boundary lines, and the ℄ of Big Blue River except on written order of the owner.*

NO.	DATE	REVISION	BY	CK'D
1	11-1-66	Conform to construction records	RLM	A.C.P.

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING FACILITIES
CONTRACT AREAS AND BOUNDARIES

BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED A.C.P. DETAILED S.S. CHECKED L.E.W. APPROVED [signature] DATE 2-4-66

SHEET 3 OF 190

1062.32

NOTES:

1. Elevations shown on walks are to the high points. Slope walks ¼" to drain.
2. For location of walks not shown See Sheet 4.
3. Section designation for all sheets:
   - 3/8 — Section Number / Sheet Number where section is shown

N (TRUE) N (REFERENCE)

SCALE IN FEET 50 0 50 100
1" = 50'

MISSOURI PACIFIC RAILROAD CO.

KANSAS CITY SOUTHERN LINES

KANSAS CITY POWER & LIGHT CO. FEE PROPERTY

Grading limits

2-15'-0" Gates

Fence (This Contract)

Curb height transition from 6" to 0" at face of walk slab

Warped Curb

℄ East Drive See Plan & Profile Sh. 189

Flagpole

SLUDGE THICKENER INLET BUILDING

℄ Tunnel, E. 1340.0

SLUDGE THICKENER PUMPING STATION

SLUDGE THICKENER BASIN

N. 2192.00

WEST CORRIDOR

EAST CORRIDOR

SLUDGE PROCESSING BUILDING (ADMINISTRATION WING)

FILTERS AND INCINERATORS

SLUDGE HOLDING TANK NO. 1

SLUDGE HOLDING TANK NO. 2

4' Conc. Walk

℄ E. 1223.25

N. 2132.50

N. 2100

Warped Curb and Transition

℄ Central Drive, See Plan & Profile Sh. 189

Street Light By Others

Power Pole By Others

THIS CONTRACT

BY OTHERS

Begin Fence

Cooling Tower

SHIMNEY

Fence (This Contract)

Street Light By Others

(Line G-1), For continuation, See sheet 5

Rt. N. 2080.0 - Sta. G+00 on East Drive & Central Drive

E. 1960.66

Valve manhole

CITY MONUMENT
N. 1999.49 E. 1999.60

M.H.#1C

M.H.#1B

M.H.#1A

21" (Line S-1)

Sec. 30 T50N R32W
Sec. 31 T50N R32W

E. 2500

Existing 8" water line

Existing 30" storm sewer

6" Ash disposal line

6" Ash disposal line For continuation See Sh. 189

6" C.I. Ash Influent line.

6" C.I.P. Ash disposal line For continuation See sheets 5 & 189

Influent structure

ASH LAGOON NO. 1
Bottom El. 732.0

Outlet structure

6" C.I. Influent Line

Junction box

Top of berm El. 738.00 (Typ.)

6" Gravel surface

ASH LAGOON NO. 2

Influent structure

SLUDGE HOUSE NO. 2

SLUDGE HOUSE NO. 1

Sec. 25 T50N R33W
Sec. 36 T50N R33W

Sec. 31 T50N R32W
Sec. 36 T50N R33W

EXISTING EAST BOTTOMS LEVEE

NO	DATE	REVISION	BY	CK'D.
2	7-2-73	Conform to const. records per Contract 7E.	W.J.O.	A.C.P.
1	11-1-66	Conform to construction records	RLM	ACP

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING FACILITIES
SITE PLAN

BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED D.R.G. CHECKED L.E.W.
DETAILED D.R.G. S.S. APPROVED
TRACED S.S. DATE 2-4-64

SHEET 4 OF 190

MICROFILMED

1062.32

#2292 190

N (TRUE) N (REFERENCE)

30 0 30 60
SCALE IN FEET
1" = 30'

LEGEND

- F.H. Fire Hydrant
- M.H. Manhole
- C.B. Catch Basin
- D.I. Drop Inlet
- Concrete Pavement
- Sewer or Drain Line (12" or smaller)
- Sewer or Drain Line (15" or larger)
- Water Line
- Gas Line
- Gravel Surface
- Sewer or Drain Line By Others (12" or smaller)
- Sewer or Drain Line By Others (15" or larger)
- Water Line By Others
- Gas Line By Others

SLUDGE THICKENER INLET BUILDING

SLUDGE THICKENER PUMPING STATION

SLUDGE THICKENER BASIN

WEST CORRIDOR

EAST CORRIDOR

SLUDGE PROCESSING BUILDING (ADMINISTRATION WING)

SLUDGE HOLDING TANK NO. 1

SLUDGE HOLDING TANK NO. 2

TUNNEL

CHIMNEY

Cooling Tower

Fuel Oil Tanks

Gravel Surface

4" Concrete pavement

10" Concrete pavement

Concrete walk

Flagpole

Property line & Section line

Gas line By Others

Provide 2" wood plug or connect to force main by others

12" C.I.P. Sludge force main

3/4" Water service to building

16" Wye N.2216.25 ; E.1255.25 ℄ El. 737.5

45° Bends ℄ El. 736.0 Conc. blocking A = 2 Sq. Ft.

8" C.I.P. Settled sewage line

4' Conc. walk

12" Supply & return heating water, anchor at Building & Tunnel

16" C.I.P. Overflow

6" C.I.P. Water line, connect to valve

Δ = 41°26'; 45° Bend: N.2106.38 ; E.1145.35 ℄ El. 736.86

12" (Line S-10)

8" (Line S-9)

22½° Bend 45° Wye & Cleanout

8" C.I.P.

4' Conc. walk

12" (Line S-8)

15" (Line S-7)

12" C.I. 45° Bend & wye. Plug wye

10" Conc. pavement

10" C.I.P.

12" C.I. 45° Bend & wye. Plug wye

Special M.H. "A" See detail Sh. 187

24" (Line S-6)

8" C.I.P. Water line connect to valve

Gas line, By Others

6" Natural gas, connect to valve

Water line, By Others

6" C.I. Ash Influent Line

Valve manhole

6" C.I.P. Ash disposal line - for continuation and details, see sheets 4, 187 & 189

24" Concrete spigot pipe or connect to sewer by by others of E.1965.92

Connect to plate or valve

For continuation of 21" (Line S-1), See Sh. 4

(North 1999.49)

Sec. 25, T.50N., R.32W.
Sec. 36, T.50N., R.32W.

35'

N 1936 E 1935

N 1936 E 1635

Note: Fence not shown See Sheet 4

ASH LAGOON NO. 1
Bottom El. 723.0

PRIMARY SETTLING No. 3

Sludge Holding

Pond

NO.	DATE	REVISION	BY	CK'D
3	7-2-73	Conform to const. records per Contract 7E	WJD	A.C.P.
2	11-1-66	Conform to construction records	RLM	A.C.P.
1	5-20-64	Revised size Nat. Gas inlet	WJD	ACP

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING FACILITIES
GENERAL LAYOUT

BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

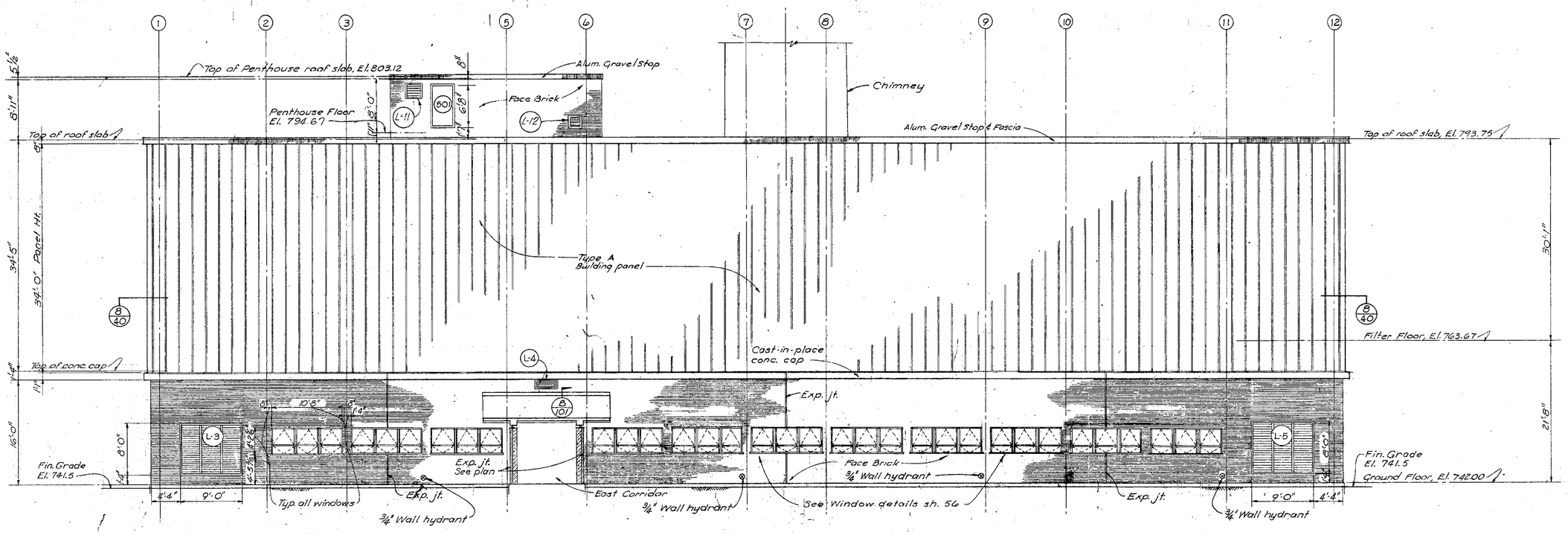
P.C.D. CONTRACT 7

DESIGNED D.R.G. CHECKED L.E.W.
DETAILED D.R.G., S.S. APPROVED 7/7/64
TRACED S.S. DATE 5-4-64

SHEET 5 OF 190

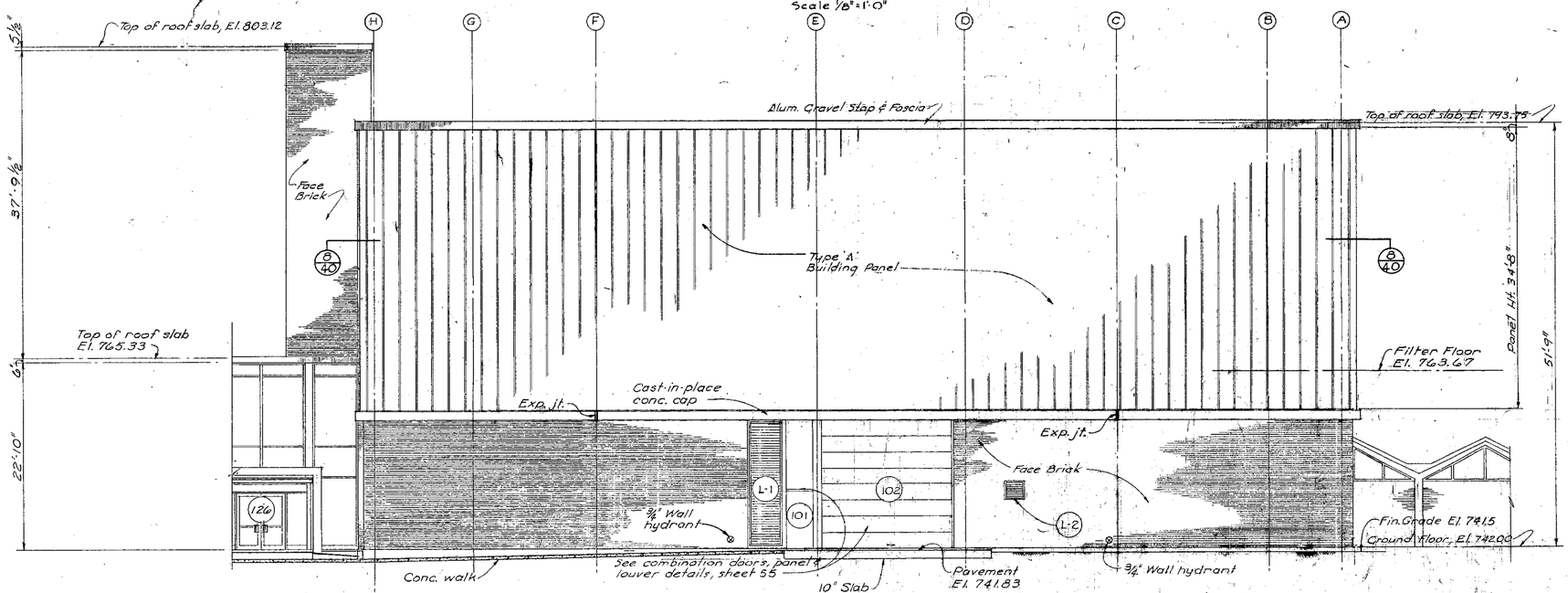
MICROFILMED

1062.32



WEST ELEVATION

Scale 1/8"=1'-0"



NORTH ELEVATION

Scale 1/8"=1'-0"

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
ELEVATIONS

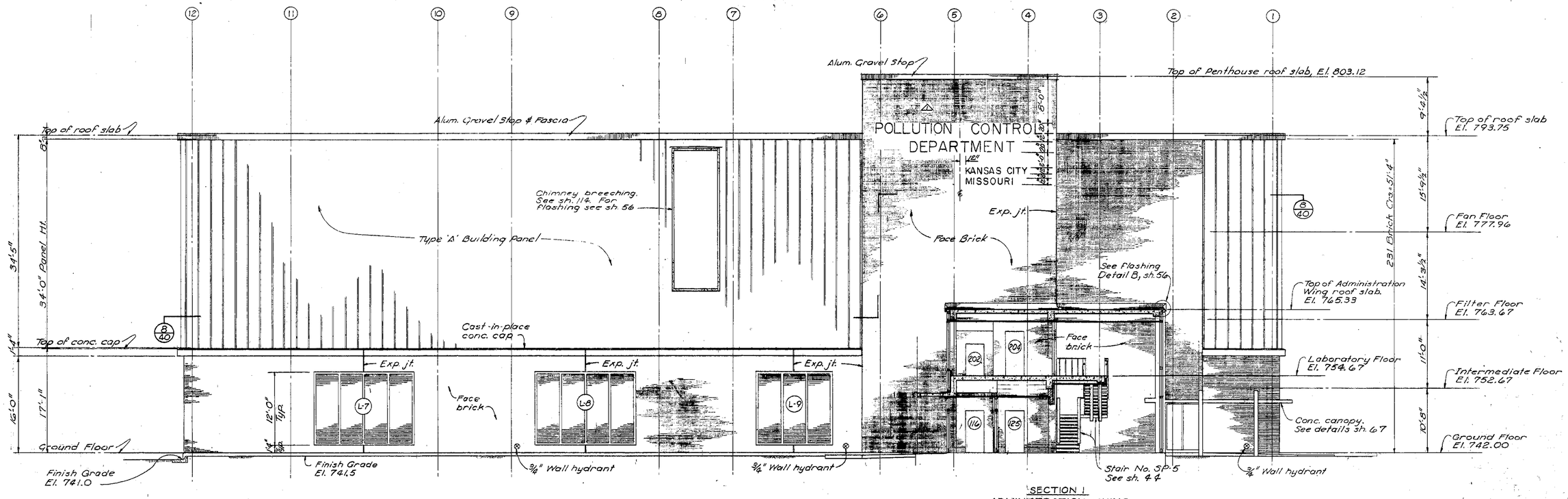
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED MDM CHECKED VEA, LEW
DETAILED MDM APPROVED
DATE 7-8-64

SHEET 6 OF 190

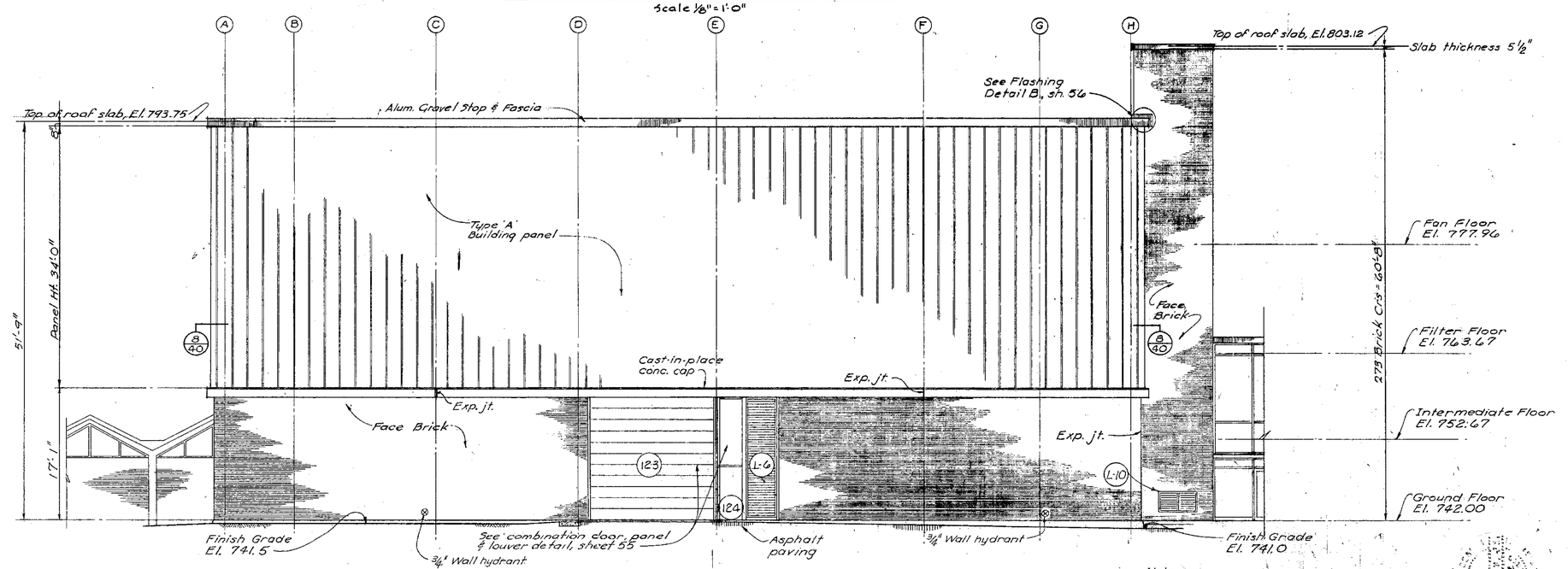
PROJECT 1062.32



EAST ELEVATION

Scale 1/8" = 1'-0"

SECTION I
ADMINISTRATION WING



SOUTH ELEVATION

Scale 1/8" = 1'-0"

Note:
Chimney not shown.

Note:
⚠ Letters to be cast letters equal to Livers Bronze Co. - #300 Kabel. Letters shall be cast from #214 Aluminum Ingot, sides filed & ground smooth. Finish to be Satin Alumilite, with 1" space projected mounting.

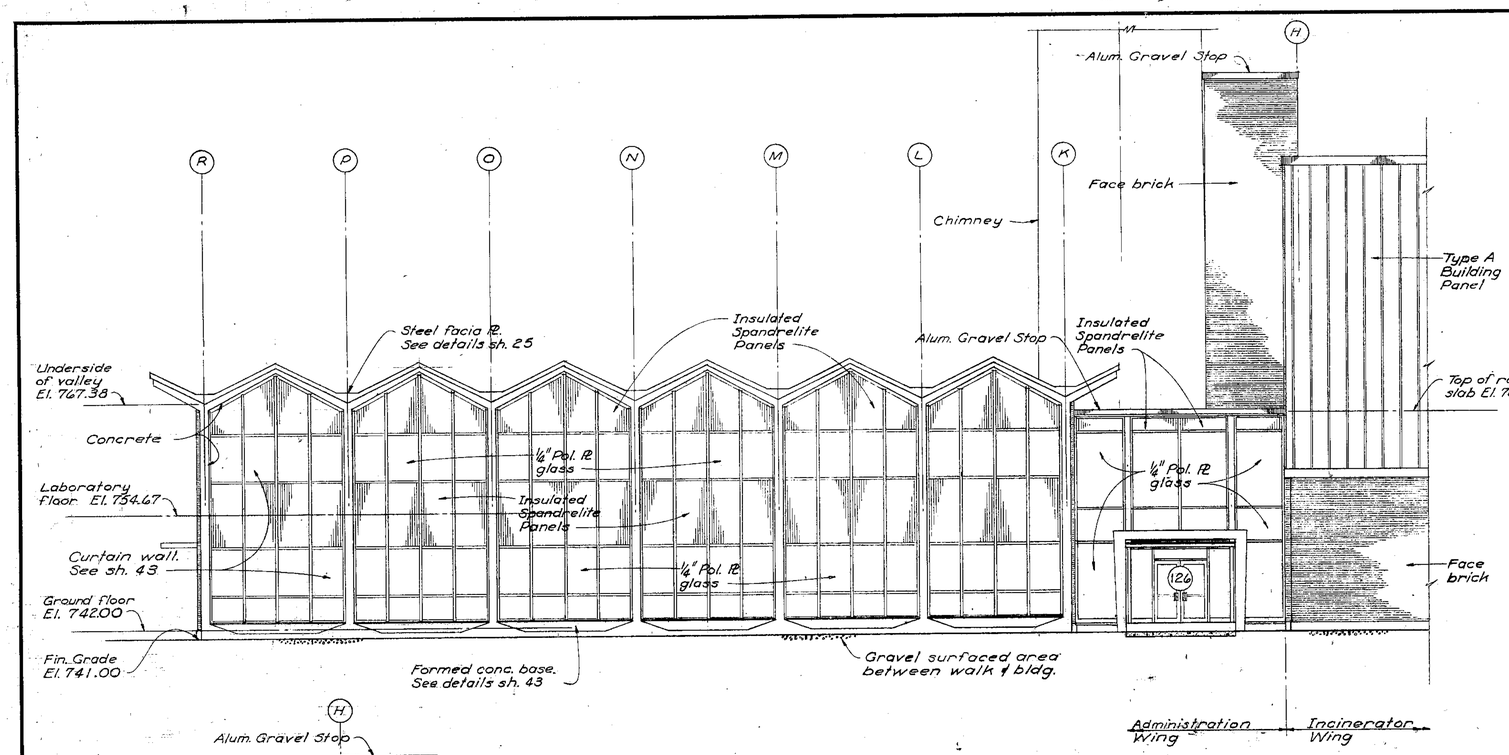
⚠	11-7-69	Aluminum Lettering	MAJ

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
ELEVATIONS

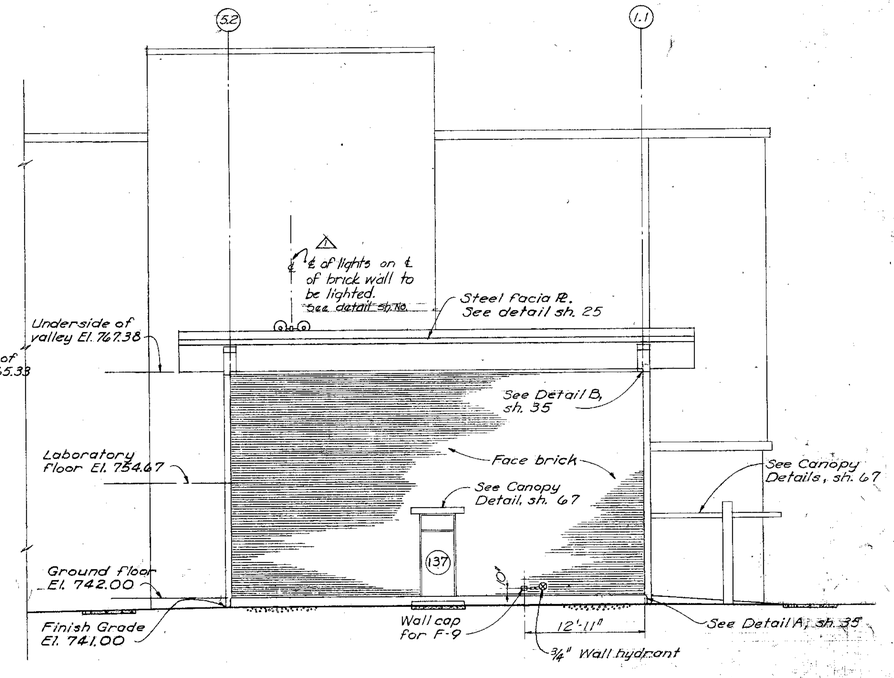
BLACK & VEATCH AND BURNS & MCDONNELL CONSULTING ENGINEERS, KANSAS CITY, MO.	P.C.D. CONTRACT 7
DESIGNED MDM DETAILED MDM CHECKED VEA, LEW APPROVED DATE 7-5-68	SHEET 7 OF 190

1062.32



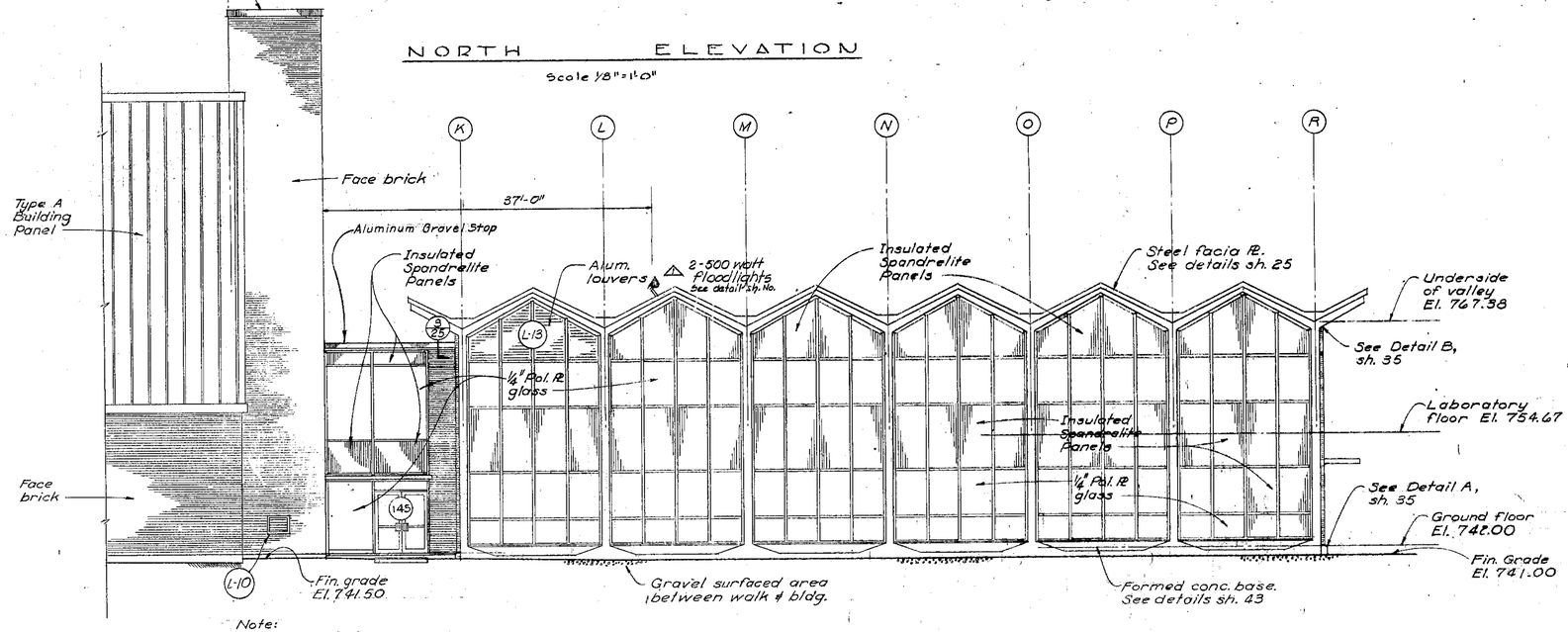
NORTH ELEVATION

Scale 1/8"=1'-0"



EAST ELEVATION

Scale: 1/8"=1'-0"



SOUTH ELEVATION

Scale 1/8"=1'-0"

△ 11-7-63	Sign lighting	MAJ

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING ELEVATIONS

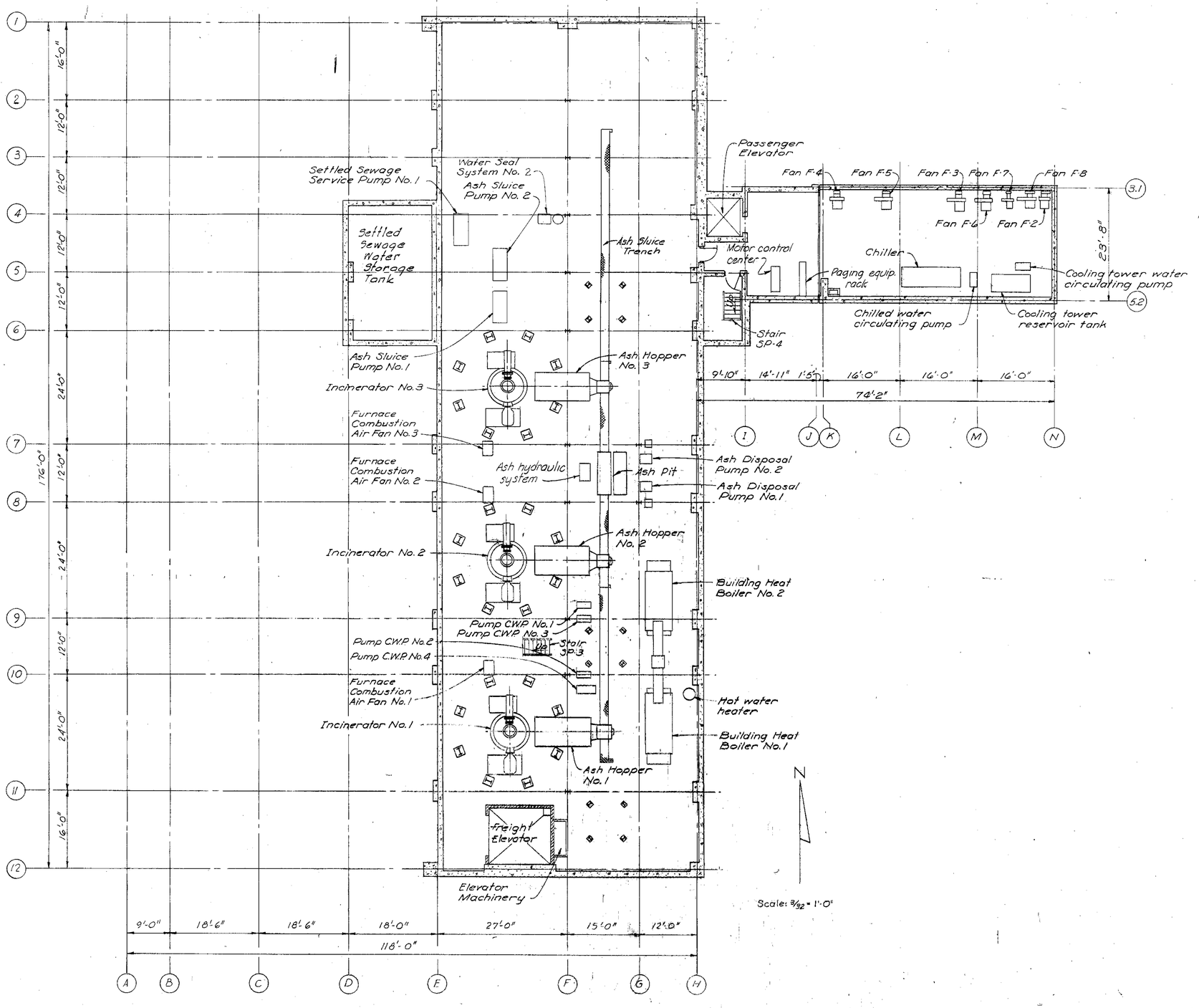
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED M.D.M. CHECKED L.E.W.
DETAILED M.D.M. APPROVED
DATE 2-4-64

SHEET 8 OF 190

MICROFILMED PROJECT 5282 1062.32



BASEMENT FLOOR PLAN - EL. 731.00

Scale: 3/32" = 1'-0"

Scale: 3/32" = 1'-0"

MATERIAL LEGEND

- Concrete
- Concrete block
- Common brick
- Face brick
- Glazed face brick or tile.

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
BASEMENT FLOOR ARRANGEMENT PLAN

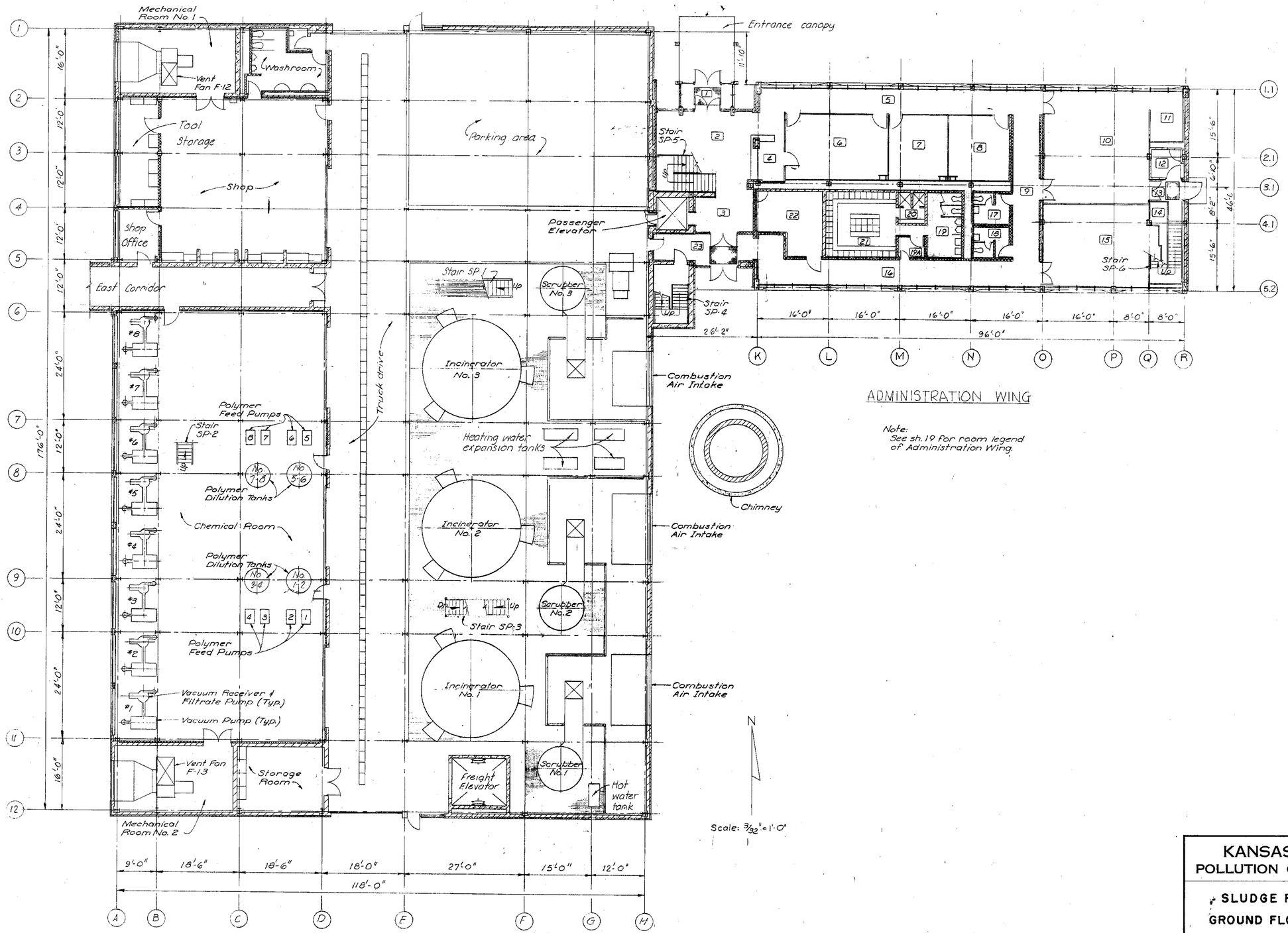
BLACK & VEATCH AND BURNS & MCDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED ACP CHECKED LEW
DETAILED A.D.L.W.D. DES APPROVED
DATE 2-9-62

SHEET 9 OF 190

1062.32



GROUND FLOOR PLAN EL 742.00

ADMINISTRATION WING

Note:
See sh. 19 for room legend of Administration Wing.

Scale: 3/32" = 1'-0"

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
GROUND FLOOR ARRANGEMENT PLAN

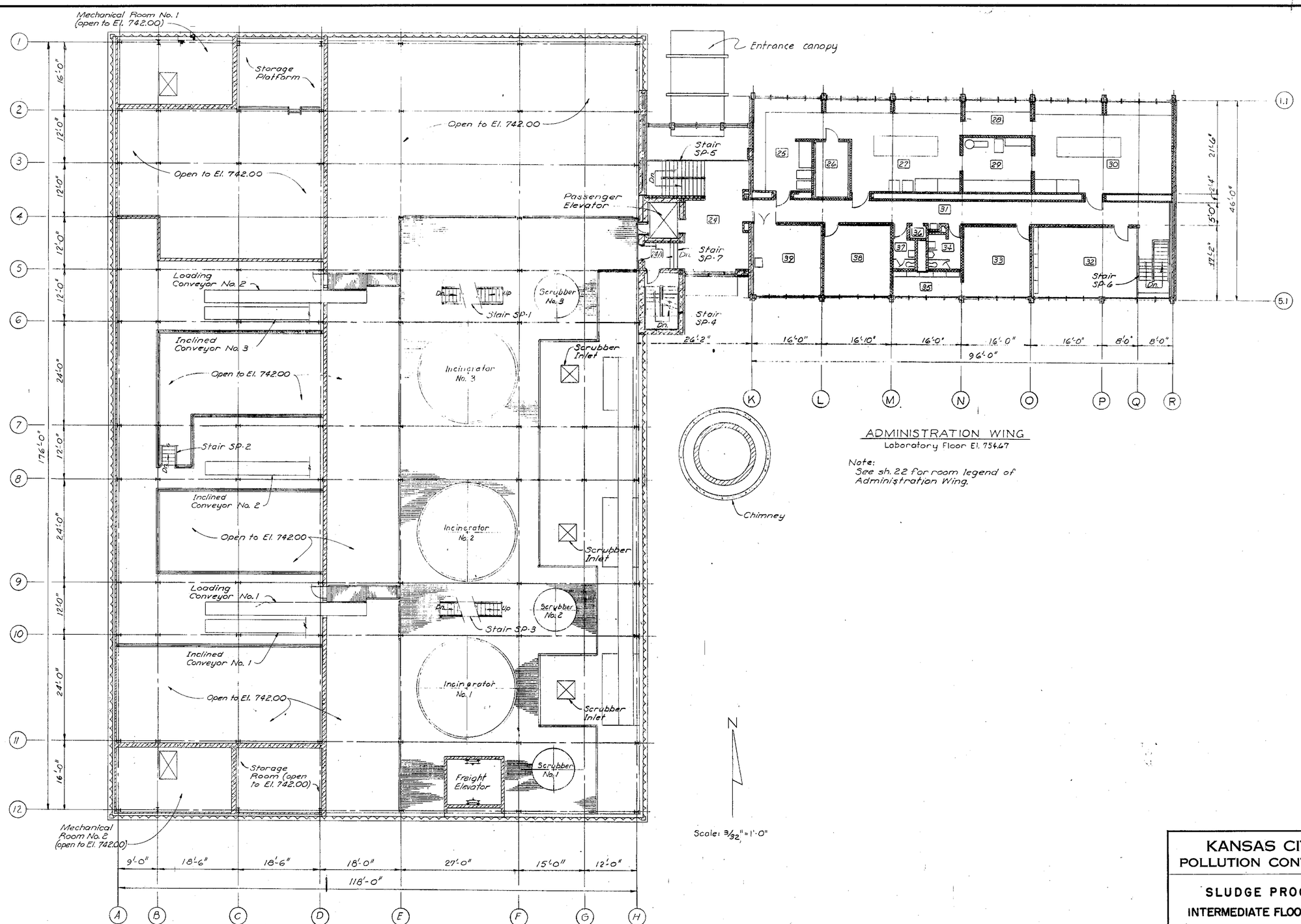
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED ACP CHECKED LEW
DETAILED A.D. LWD DES APPROVED
DATE 2-2-64

SHEET 10 OF 190

1062.32



INTERMEDIATE FLOOR PLAN – EL. 752.67

ADMINISTRATION WING
Laboratory Floor El. 754.67

Note:
See sh. 22 for room legend of Administration Wing.

Scale: 3/32" = 1'-0"

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
INTERMEDIATE FLOOR ARRANGEMENT PLAN

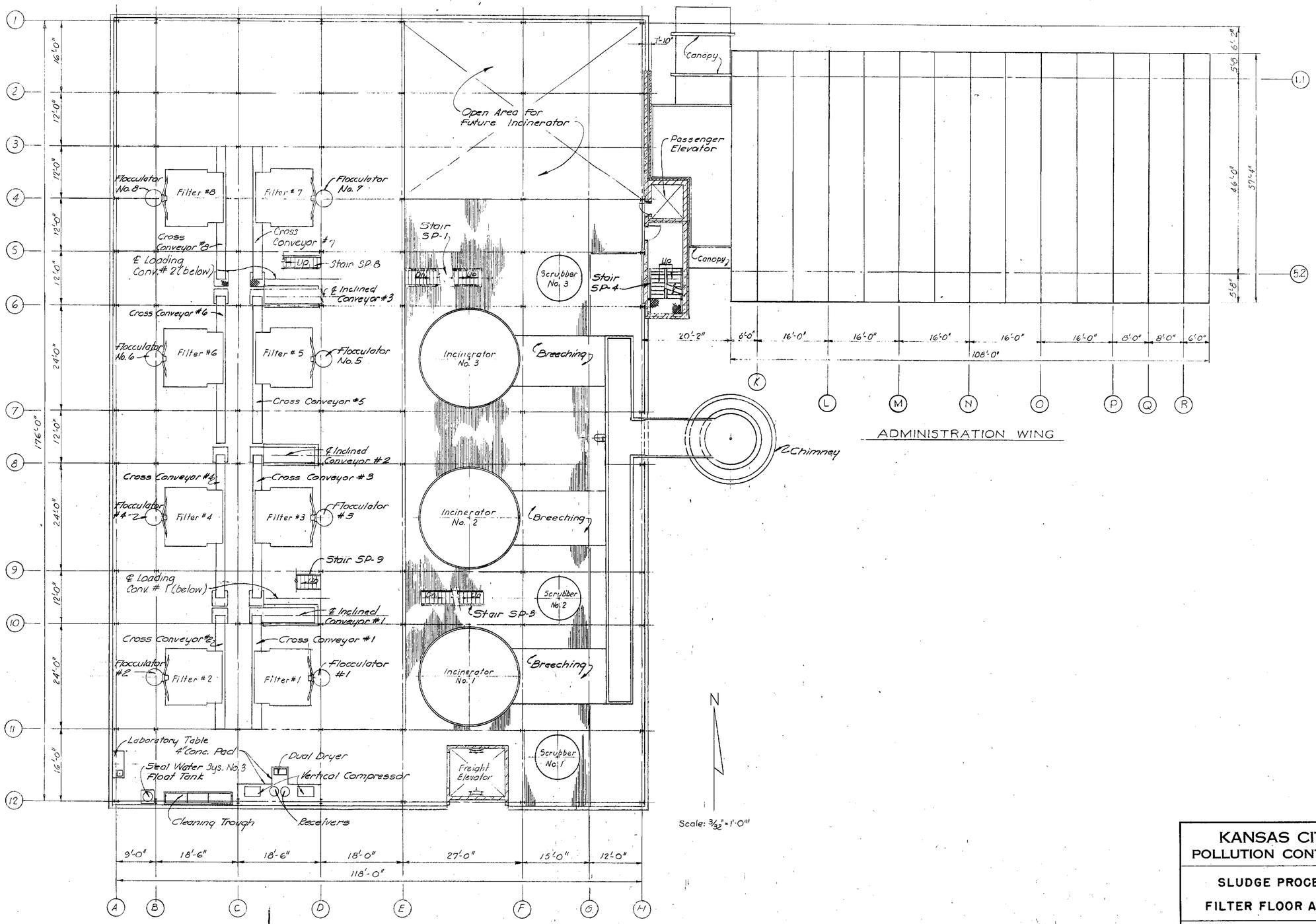
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED ACP
DETAILED A.D. DES.
CHECKED LEW
APPROVED
DATE 2-4-60

SHEET 11 OF 190

1062.32



FILTER FLOOR PLAN - El. 763.67

Scale: 3/32" = 1'-0"

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
FILTER FLOOR ARRANGEMENT PLAN

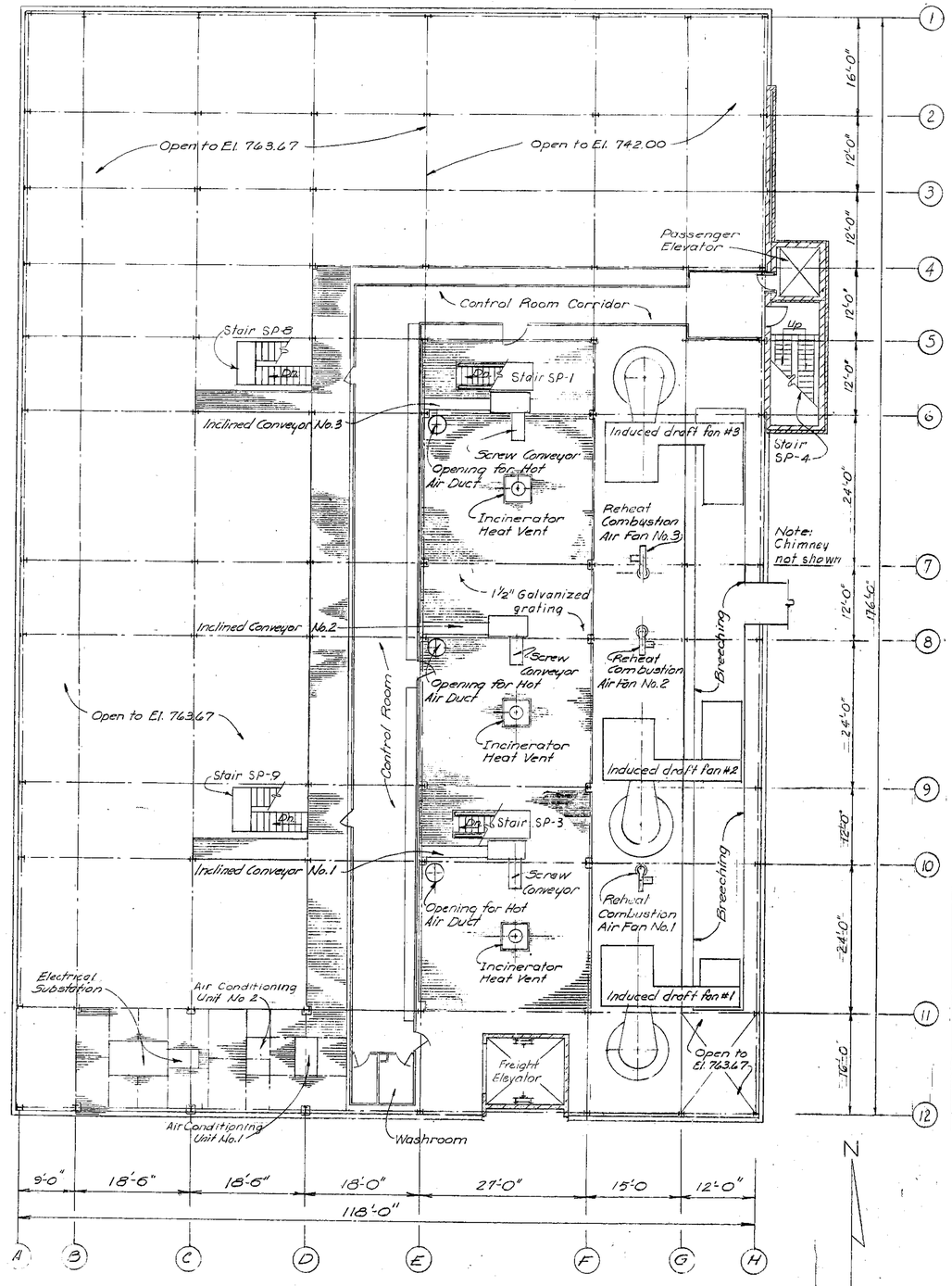
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

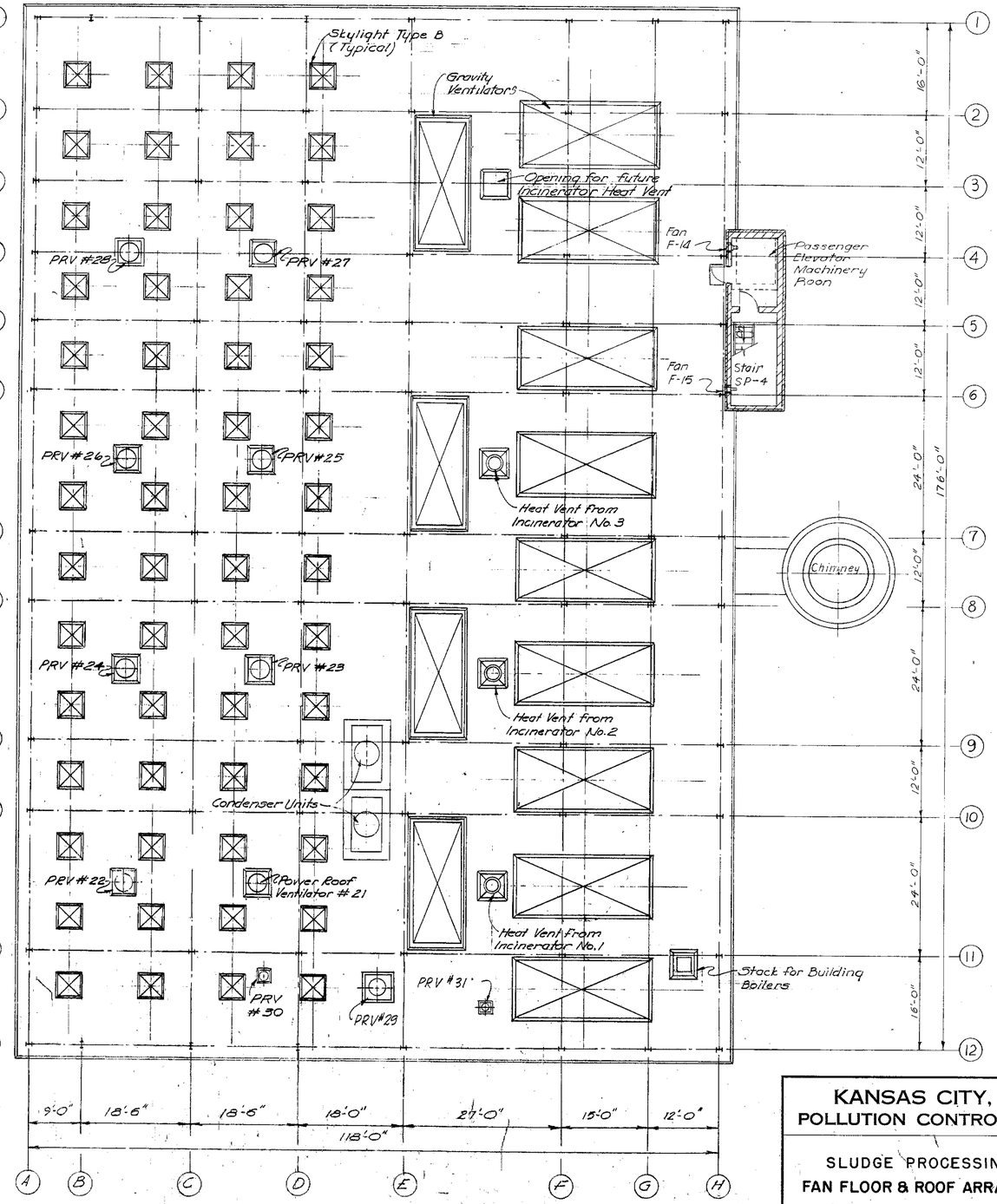
DESIGNED A.C.P. DETAILED A.D. Y.W.D. CHECKED E.E.W. APPROVED DATE 2-9-60

SHEET 12 OF 190

MICROFILMED PROJECT 3299/062.32



FAN FLOOR PLAN EL. 777.96
Scale: 3/32" = 1'-0"



ROOF FLOOR PLAN EL 798.15
Scale: 3/32" = 1'-0"

N

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
FAN FLOOR & ROOF ARRANGEMENT PLANS

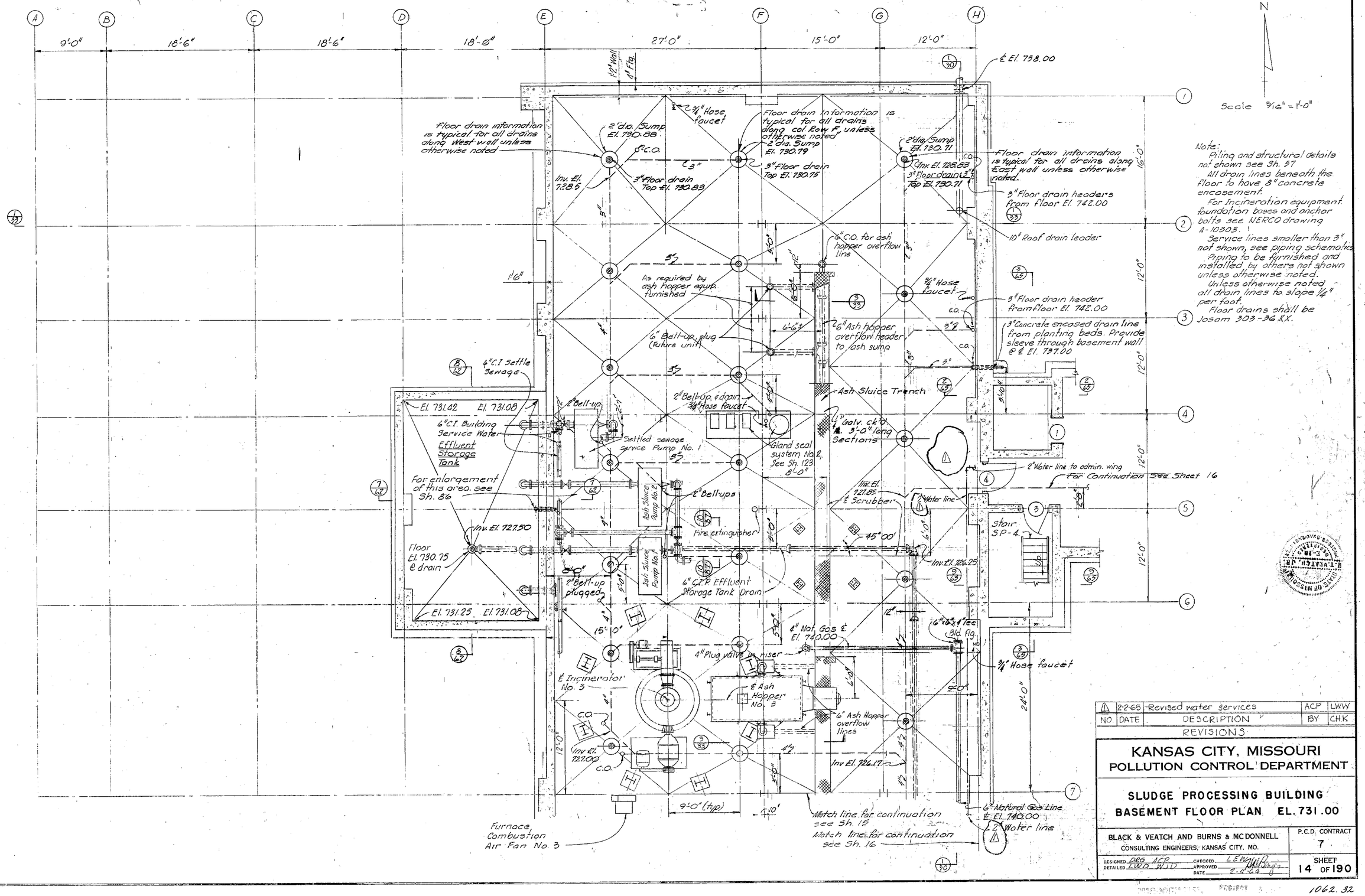
BLACK & VEATCH AND BURNS & MCDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED ACP CHECKED LFW
DETAILED LWD, A.D. APPROVED
DATE 2-4-64

SHEET 13 OF 190

1062.32



NO.	DATE	DESCRIPTION	BY	CHK
1	2-2-65	Revised water services	ACP	LWW

REVISIONS

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
BASEMENT FLOOR PLAN EL. 731.00

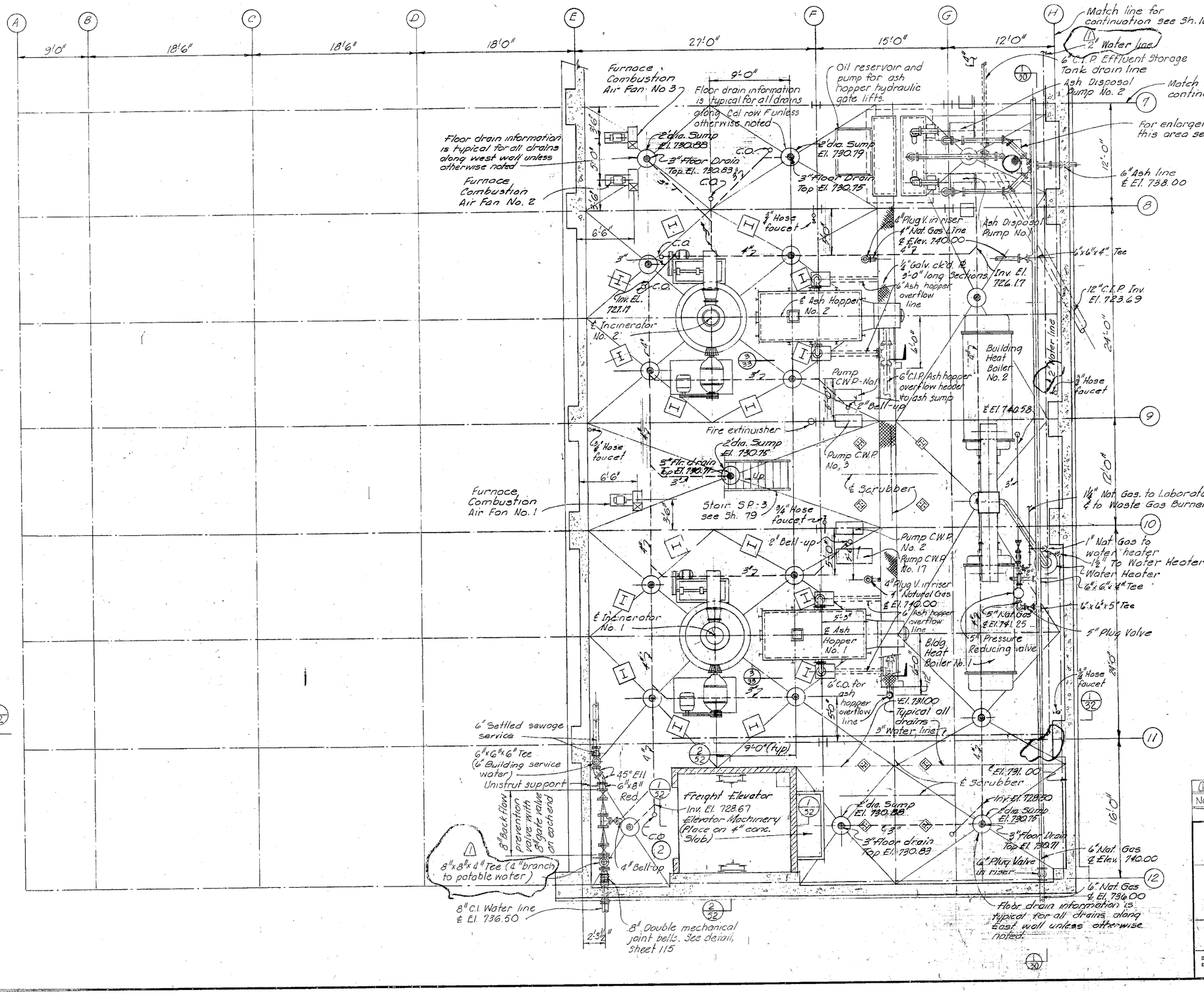
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED DEG ACP CHECKED LEWWiP
DETAILED LWD WJD APPROVED
DATE 2-2-65

SHEET 14 OF 190

1062.32



NO.	DATE	DESCRIPTION	BY	CHK
1	2-2-65	Revised water services	ACP	LWW

REVISIONS

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
BASEMENT FLOOR PLAN EL. 731.00

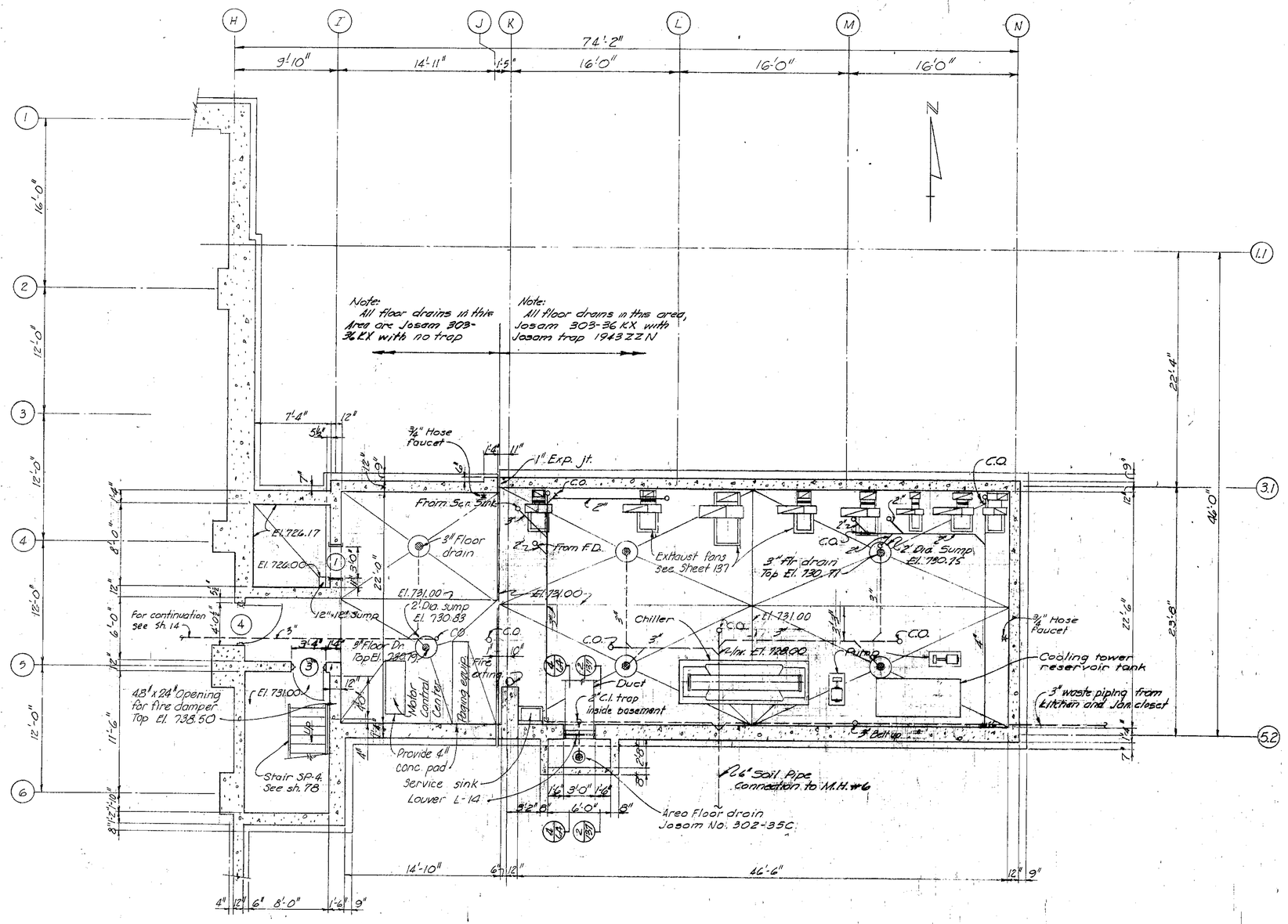
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED DEG ACP CHECKED LEW WJD
DETAILED LWD WJD APPROVED
DATE 2-2-64

SHEET 15 OF 190

MICROFILMED PROJECT 1062.32



ADMINISTRATION WING BASEMENT FLOOR PLAN

Scale: 3/16" = 1'-0"

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
BASEMENT FLOOR PLAN EL. 731.00

BLACK & VEATCH AND BURNS & MC DONNELL CONSULTING ENGINEERS, KANSAS CITY, MO.	P.C.D. CONTRACT 7
DESIGNED ACP CHECKED LEW APPROVED DATE 2-8-68 DETAILED WJD LWD	SHEET 16 OF 190

PROJECT 1062.32

MECHANICAL ROOM NO. 1
TOOL STORAGE
SHOP
SHOP OFFICE
Floor El. 742.00
Concrete slab El. 742.00
Scrubber No. 3
Incinerator No. 3
Electrical Substation No. 3
For continuation see Sheet 47
For continuation of drain line see Sheet 61
For continuation see Sh 18
For continuation see Sh 19
Scale: 3/16"=1'0"

Notes:
Piling and structural details not shown see Sh. 57.
All drain lines beneath the floor, and installed against earth, to have 8" concrete encasement.
For Incinerator details see NERCO shop drawings.
Service lines smaller than 3" not shown, see piping schematic.
Piping to be furnished and installed by others not shown unless otherwise noted.
Heating and ventilating equipment and ducts not shown.
For details of wash room and janitor closet see sheet 47.
Floor drains this sheet to be Josam 303:36KX with Josam trap 1943 ZZN where noted by trap symbol on plans.
Shelving part numbers on this sheet refer to catalogue's 100K & 600H of Lyon Metal Products Inc.
Unless otherwise noted by elevations on this sheet all drain lines to slope 1/4" per foot.
Grating to be field measured after incinerators and scrubbers are installed and all piping and equipment openings have been determined.
Vacuum header, vacuum vent line and sludge lines not shown between column row Ⓐ & Ⓒ, for details see Intermediate Floor Plan, Sh. 20.

NO	DATE	REVISION	BY	CHK
1	9-23-64	Changed Door 111 & 114 opng. size	PCA	ACP

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
GROUND FLOOR PLAN EL. 742.00

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

DESIGNED ___ CHECKED ___
DETAILED ___ APPROVED ___
DATE ___

P.C.D. CONTRACT 7

SHEET 17 OF 136

MICROFILMED

1062.32

Scale : 3/16" = 1'-0"

Notes:
Piling and structural details not shown see Sh. 57.
All drain lines beneath the floor, and installed against earth, to have 3" concrete encasement.
For Incinerator details see NERCO shop drawings.
Service lines smaller than 3" not shown, see piping schematic.
Piping to be furnished and installed by others not shown unless otherwise noted.
Heating and ventilating equipment and ducts not shown.
Floor drains this sheet to be Josam 303-36 KX with Josam trap 1943 ZZN where noted by trap symbol on plans.
Shelving part numbers on this sheet refer to catalogue's 100K & 600H of Lyon Metal Products Inc.
Unless otherwise noted by elevations on this sheet all drain lines to slope 1/4" per foot.
Grating to be field measured after incinerators and scrubbers are installed and all piping and equipment openings have been determined.
Vacuum header, vacuum vent line and sludge lines not shown between column row Ⓐ & Ⓑ. For details see Intermediate Floor Plan, Sh. 21.
Bin type sections in Storage Room shall be as manufactured by Lyon Metal Products, Inc., and shown in their catalogue #100.

NO.	DATE	REVISION	BY	CHK
2	2-2-65	Revised water services	ACP	LWW
1	9-23-64	Change Door 118 & 120 opng size	PCA	ACP

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
GROUND FLOOR PLAN EL. 742.00

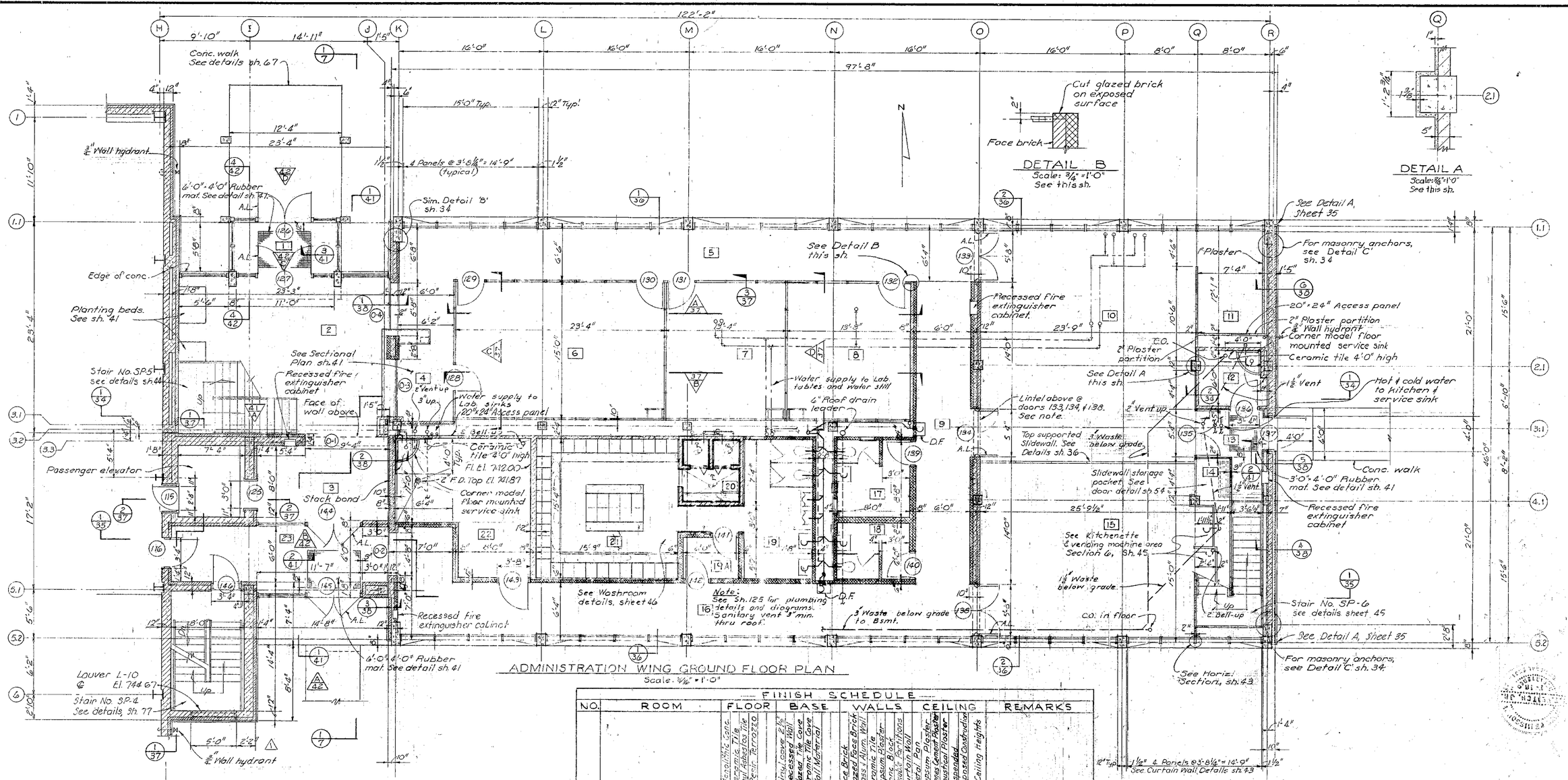
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED ACP CHECKED LEW
DETAILED ACP LWC APPROVED
DATE

SHEET 18 OF 190

MICROFILMED 1062.32



ADMINISTRATION WING GROUND FLOOR PLAN

Scale: 3/16" = 1'-0"

Notes: All face brick to be running stretcher bond unless otherwise noted.
All glazed face brick to be stack bond unless otherwise indicated.
● Face brick west wall of Corridor 16 & 5.
⊗ Glazed brick, running stretcher bond. See Aluminum entrance details, sheet 42
⊖ 1'-1" Ceromic Tile 4'-0" high in service sink area, rooms 12 & 22. See Detail E sh. 35 for wall & lintel conditions above ceiling @ doors 133, 134 & 138. All glazed tile cove to be 5 1/2" - 8" 4.D Series.
◎ Gypsum plaster border @ ceiling, see sh. 49. Glazed brick in Rooms 2 & 4 shall be soldier stack & running bond as shown on sh. 41 Omit vinyl cove base on west wall of room 2 - Lobby.
(0-1) Wall openings noted in plan which require steel lintels. See Lintel Schedule sh. 76.

FINISH SCHEDULE

NO.	ROOM	FLOOR: Monolithic Conc.	Ceramic Tile	Vinyl Asbestos Tile	Terrazzo	BASE: Vinyl cove 2 1/2"	Recessed Wall	Cleared Tile Core	Ceramic Tile Core	Wall Material	WALLS: Face Brick	Glazed Face Brick	Glass Fiber Wall	Ceramic Tile	Gypsum Plaster	Concrete Block	Movable Partitions	Curtain Wall	CEILING: Metal Pan	Gypsum Plaster	Keene's Cement Plaster	Acoustical Plaster	Suspended Construction	Exposed Construction	Ceiling Heights	REMARKS
1	Vestibule	○																								See Details Sh. 42
2	Lobby		○			○					○													○		See Details Sh. 41
3	Elevator Lobby		○			○					○													○	9'3"	
4	Reception Room		○			○					●													○	9'0"	See Details sh. 41
5	Corridor		○			○					●													○	9'0"	
6	Clerical Office		○			○																		○	9'0"	See Wall Details sh. 37
7	Office		○			○																		○	9'0"	See Wall Details sh. 37
8	Office		○			○																		○	9'0"	See Wall Details sh. 37
9	Corridor		○			○																		○	9'0"	
10	Meeting Room		○			○																		○	9'0"	
11	Chair Storage		○			○																		○	9'0"	
12	Storage		○			○																		○	9'0"	
13	Vestibule		○			○																		○	10'0"	
14	Wall Storage Pocket		○			○																		○	9'0"	See Details sh. 36 & 54
15	Lunch Room		○			○																		○	9'0"	
16	Corridor		○			○																		○	9'0"	
17	Ladies Toilet		○			○																		○	7'-11"	See Details sh. 46
18	Mens Toilet		○			○																		○	7'-11"	See Details sh. 46
19	Wash Room		○			○																		○	7'-11"	See Details sh. 46
19A	Shower Room		○			○																		○	7'-11"	See Details sh. 46
21	Locker Room		○			○																		○	7'-11"	See Details sh. 46
22	Mens Toilet		○			○																		○	7'-11"	See Details sh. 46
23	Equipment Room		○			○																		○	9'0"	
24	Mechanical Room		○			○																		○	9'0"	

NO.	DATE	REVISION	BY	CK'D
1	5-20-64	Rev. Louver L-10	W.J.D.	A.C.P.

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
GROUND FLOOR PLAN EL. 742.00

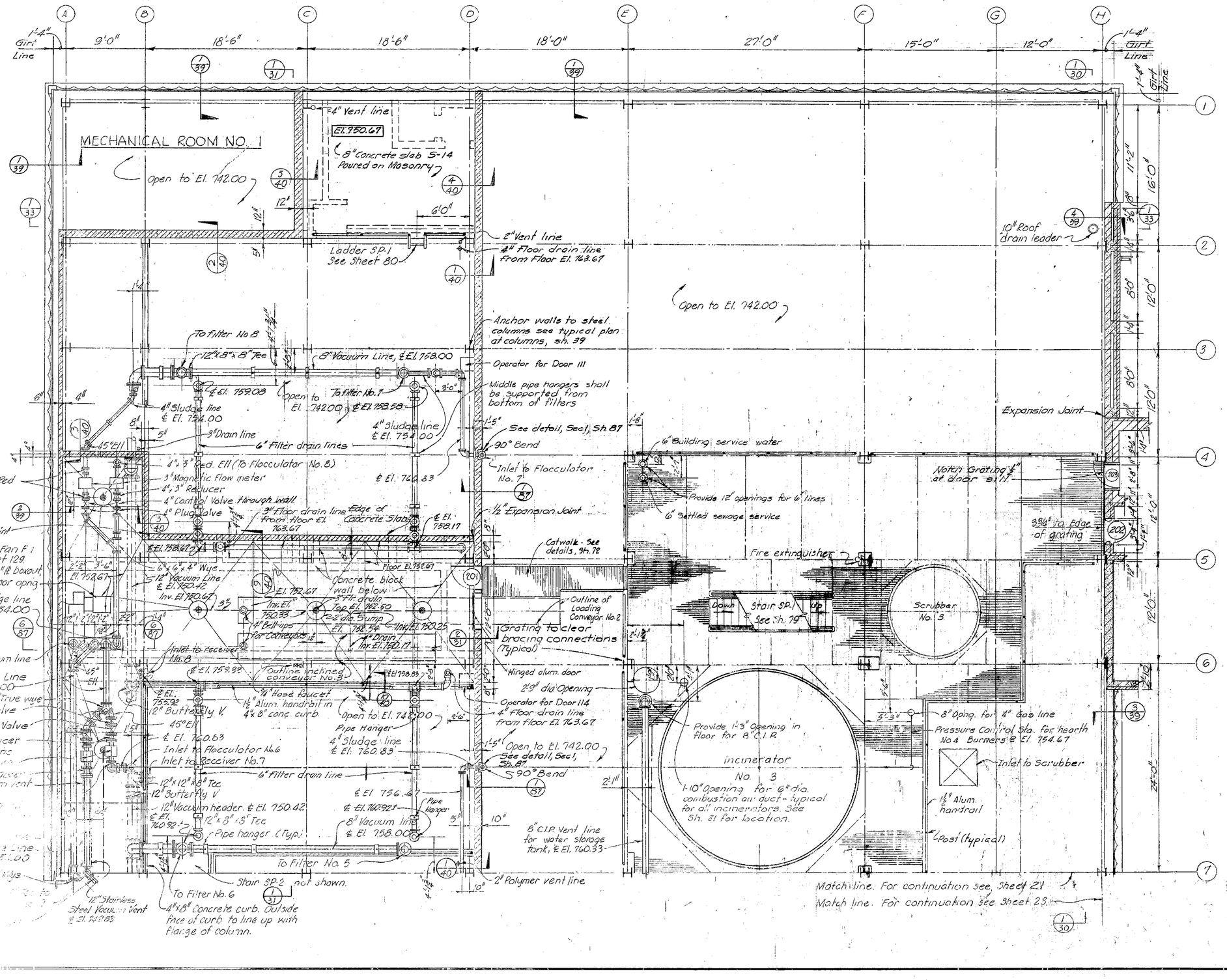
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS. KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED MJM CHECKED J.E.W.
DETAILED J.W. APPROVED
DATE

SHEET 19 OF 190

1062.32



N

Scale: 3/16" = 1'-0"

Note:
For incinerator details see NEBCO shop drawings.
Service lines smaller than 3" not shown, see piping schematics.
Piping to be furnished and installed by others not shown unless otherwise noted.
Heating and Ventilating equipment and ducts not shown.
Floor drains this sheet to be Josam 303-36 KX.
Unless otherwise noted by elevations on this sheet all drain lines to be sloped ¼" per foot.
Grating to be field measured after incinerators are installed and all piping and equipment openings have been determined.
Concrete slabs this level between column row A & B to be S-15 and all other concrete this level to be S-16 unless otherwise noted.

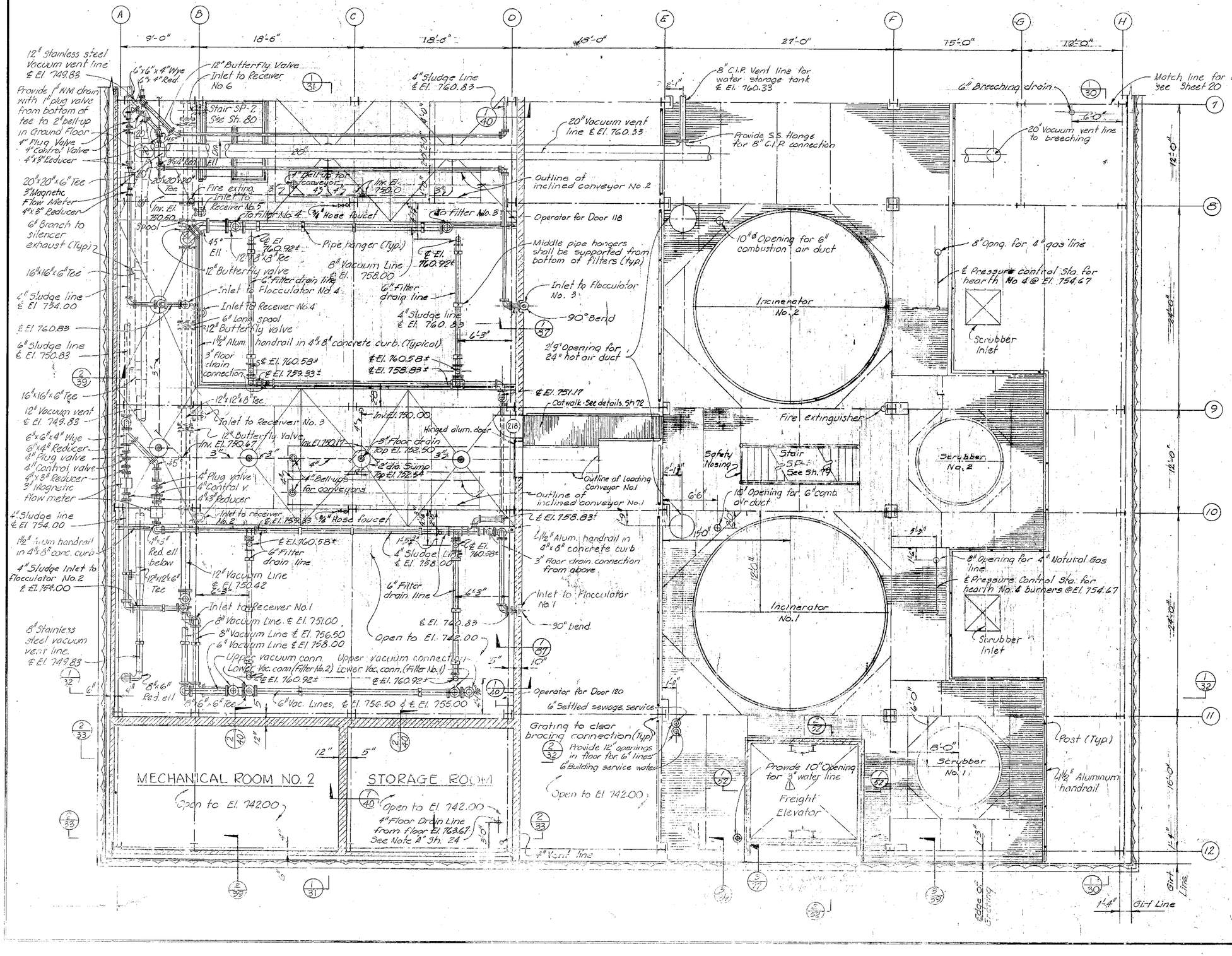
KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
INTERMEDIATE FLOOR PLAN EL. 752.67

BLACK & VEATCH AND BURNS & MCDONNELL CONSULTING ENGINEERS, KANSAS CITY, MO.	P.C.D. CONTRACT 7
DESIGNED ACP DETAILED LWD CGC CHECKED LEW APPROVED DATE 2-2-64	SHEET 20 OF 190

MICROFILMED

1062.32



Note:
For incinerator details see NERCO shop drawings.
Service lines smaller than 3" not shown, see piping schematics Heating and Ventilating equipment and ducts not shown.
Floor drains this sheet to be Josam 303-36KX.
Unless otherwise noted by elevations on this sheet all drain lines to slope ¼" per foot.
Grating to be field measured after incinerators are installed and all piping and equipment openings have been determined.
Concrete slabs this level between column row A&B to be S-15 and all other concrete slabs this level to be S-16 unless otherwise noted.
Piping to be furnished and installed by others not shown unless otherwise noted.

NO.	DATE	DESCRIPTION	BY	CHK
1	2-2-65	Revise water services	ACP	LWW

REVISIONS

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
INTERMEDIATE FLOOR PLAN EL. 752.67

BLACK & VEATCH AND BURNS & MCDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED ACP DETAILED LWD CGC ACP CHECKED LEW APPROVED DATE 2-8-65

SHEET 21 OF 190

1067.32

Note:
All laboratory waste piping to be acid resistant from laboratory fixture to first frequently flushed line.
Water, air and vacuum lines not shown. Location to be routed behind wall cabinets and below floor subject to Engineer's approval.

Concrete Canopy See Details Sh. 67

Glass & alum. wall

Curtain wall. See details sh. 43

For masonry anchors see Detail A Sh. 34

For masonry anchors see Detail B Sh. 34

Canopy. See details, sheet 61 & 67

Stair No. SP-5 See Details Sh. 44

Stair No. SP-7 See Details sh. 36

Stair No. SP-6 See Details Sh. 45

Stair No. SP-4 See Details Sh. 77

Indicates waste piping below floor

Recessed Fire extinguisher cabinet

Water supply to Lab. sinks

Service sink 2" F.D. Top El. 754.54 3" Cl. 5' trap

Floor El. 754.67

Sinks

C.O. in Floor

Tile wall above

2351 Center Table

Fume hoods

Emergency eye wash

Sterilizer

Towel cabinet & waste receptacle

24"x24" Access panel in ceiling

Note: See Sh. 125 for plumbing details and diagrams. Sanitary vents 3" min. thru roof.

5 ea. #3800 Bin Units. See note.

4 ea. #3800 Bin Units

See Washroom details sh. 46

Curtain wall. See details sh. 48

Masonry anchors. Similar Detail B sheet 34

For masonry anchors, see Detail D Sh. 34

ADMINISTRATION WING LABORATORY FLOOR PLAN

Scale: 3/16" = 1'-0"

Incinerator Wing — Administration Wing

Notes: All face brick to be running stretcher bond unless otherwise noted.
All glazed face brick to be stack bond unless otherwise noted.
● East wall of corridor to be metal lath & plaster
⊗ Glazed tile cove to be 5⅓" x 8" 40 Series where indicated. All glazed tile to be stack bond.
⊖ Glazed face brick, running stretcher bond.
Bin Units in rooms 32 & 35 to be as manufactured by Lyon Metal Products Inc.; Kansas City, Mo. and as shown in their catalog # 100 K.
(08) Opening numbers noted in plan which require steel lintels for masonry. See Lintel Schedule sh. 76.

FINISH SCHEDULE

NO.	ROOM	FLOOR: Monolithic Concrete	FLOOR: Vinyl Asbestos Tile	FLOOR: Ceramic Tile	FLOOR: Resin Terrazzo	BASE: Glazed Tile Cove	BASE: Vinyl Cove Base	BASE: Wall Material	WALLS: Face Brick	WALLS: Concrete Block	WALLS: Glazed Tile 4"x12"	WALLS: Glazed Face Brick	WALLS: Gypsum Plaster	WALLS: Curtain wall	WALLS: Glass & Alum. wall	WALLS: Solid conc. block or brick	CEILING: Acoustical Plaster	CEILING: Gypsum Plaster	CEILING: Keenes Cement Plaster	CEILING: Suspended	CEILING: Exposed Construction	Ceiling Heights	REMARKS
24	Lobby			○			○			○											○	8'-8"	
25	Laboratory Preparation	○				○				○			○								○	9'-0"	See Details Sh. 46
26	Incubator																						See Details Sh. 47
27	Laboratory	○				○				○			○								○	9'-0"	See Details Sh. 46
28	Balance & Instruments	○				○				○			○								○	9'-0"	" " " "
29	Wash Up Room	○				○				○			○								○	9'-0"	" " " "
30	Industrial Waste Lab.	○				○				○			○								○	9'-0"	" " " "
31	Corridor			○		○										●					○	9'-0"	
32	Records & Storage	○				○															○	9'-0"	
33	Office	○				○															○	9'-0"	
34	Mens Toilet			○		⊗															○	7'-11¼"	See Details Sh. 46
35	Files & Storage	○				⊗															○	9'-0"	
36	Emergency Shower			○		⊗															○	7'-11¼"	
37	Ladies Toilet			○		⊗															○	7'-11¼"	See Details Sh. 46
38	Office	○				○															○	9'-0"	
38	Mechanical Room	○					○			○											○		
24A	Exit Lobby			○			○			○											○	9'-4"	See Sect'l sh. 35
	Stairwell	○					○			○											○		
	Elevator shaft	○					○									○					○		See Sect'l's sh. 37

NO.	DATE	DISCRIPTION	BY	CHK
4	11-1-66	Conform to construction records	RLM	ACP

REVISIONS

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING

LABORATORY FLOOR PLAN EL. 754.67

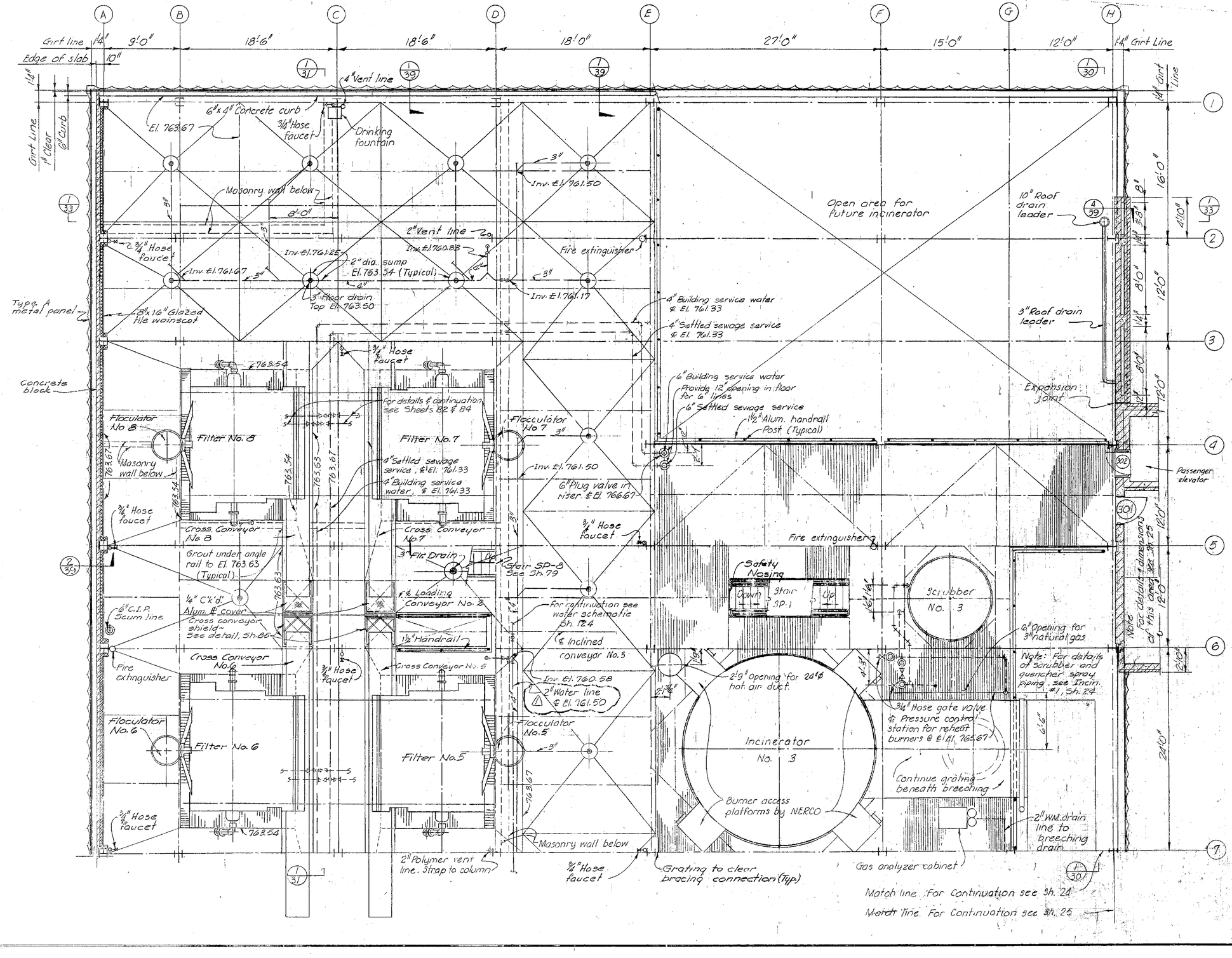
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED MCM DETAILED MCM CHECKED LEW APPROVED DATE 7-29-66

SHEET 22 OF 190

1062.32


A
B
C
D
E
F
G
H
Grirt line
Edge of slab
9'-0"
18'-6"
18'-6"
18'-0"
27'-0"
15'-0"
12'-0"
Grirt Line
1" clear
6" curb
6"x4" Concrete curb
El. 763.67
3/4" Hose faucet
Drinking fountain
4" Vent line
Masonry wall below
8'-0"
2" Vent line
2 3/4" Hose faucet
Inv. El. 761.67
Inv. El. 761.25
2" dia. sump El. 763.54 (Typical)
Inv. El. 760.88
Fire extinguisher
3" Floor drain Top El. 763.50
Inv. El. 761.17
Inv. El. 761.50
Open area for future incinerator
10" Roof drain leader
3" Roof drain leader
Expansion joint
Passenger elevator
Type A metal panel
8"x16" Glazed tile wainscot
Concrete block
4" Building service water @ El. 761.33
4" Settled sewage service @ El. 761.33
6" Building service water
Provide 12" opening in floor for 6" lines
6" Settled sewage service
1 1/2" Alum. handrail Post (Typical)
Floculator No. 8
Filter No. 8
Filter No. 7
Floculator No. 7
for details & continuation see Sheets 82 & 84
4" Settled sewage service, @ El. 761.33
4" Building service water, @ El. 761.33
6" Plug valve in riser @ El. 766.67
Inv. El. 761.50
3/4" Hose faucet
Masonry wall below
Cross Conveyor No. 8
Cross Conveyor No. 7
3" Flr. Drain
Stair SP-8 See Sh. 79
Fire extinguisher
Safety Nosing
Down
Stair SP-1
Up
Scrubber No. 3
Grout under angle rail to El. 763.63 (Typical)
1/4" C'k'd. Alum. # cover
Cross conveyor shield - See detail, Sh. 85
6" C.I.P. Scum line
F & Loading Conveyor No. 8
1 1/2" Handrail
For continuation see water schematic Sh. 124
& Inclined conveyor No. 3
Cross Conveyor No. 6
Cross Conveyor No. 5
Inv. El. 760.58
2" Water line @ El. 761.50
2'9" Opening for 24"ø hot air duct
6" Opening for 3" natural gas
Note: For details of scrubber and quencher spray piping, see Incin. #1, Sh. 24
Floculator No. 6
Filter No. 6
Filter No. 5
Floculator No. 5
Incinerator No. 3
3/4" Hose gate valve & Pressure control station for reheat burners @ El El. 764.67
Continue grating beneath breeching
Burner access platforms by NERCO
2" WM. drain line to breeching drain
Gas analyzer cabinet
2" Polymer vent line. Strap to column
Grating to clear bracing connection (Typ)
Match line. For Continuation see Sh. 24
Match line. For Continuation see Sh. 25
Note: For details & dimensions of this area see Sh. 25
763.54
763.63
763.67
763.54
763.54
763.54
763.67
763.67
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763.54
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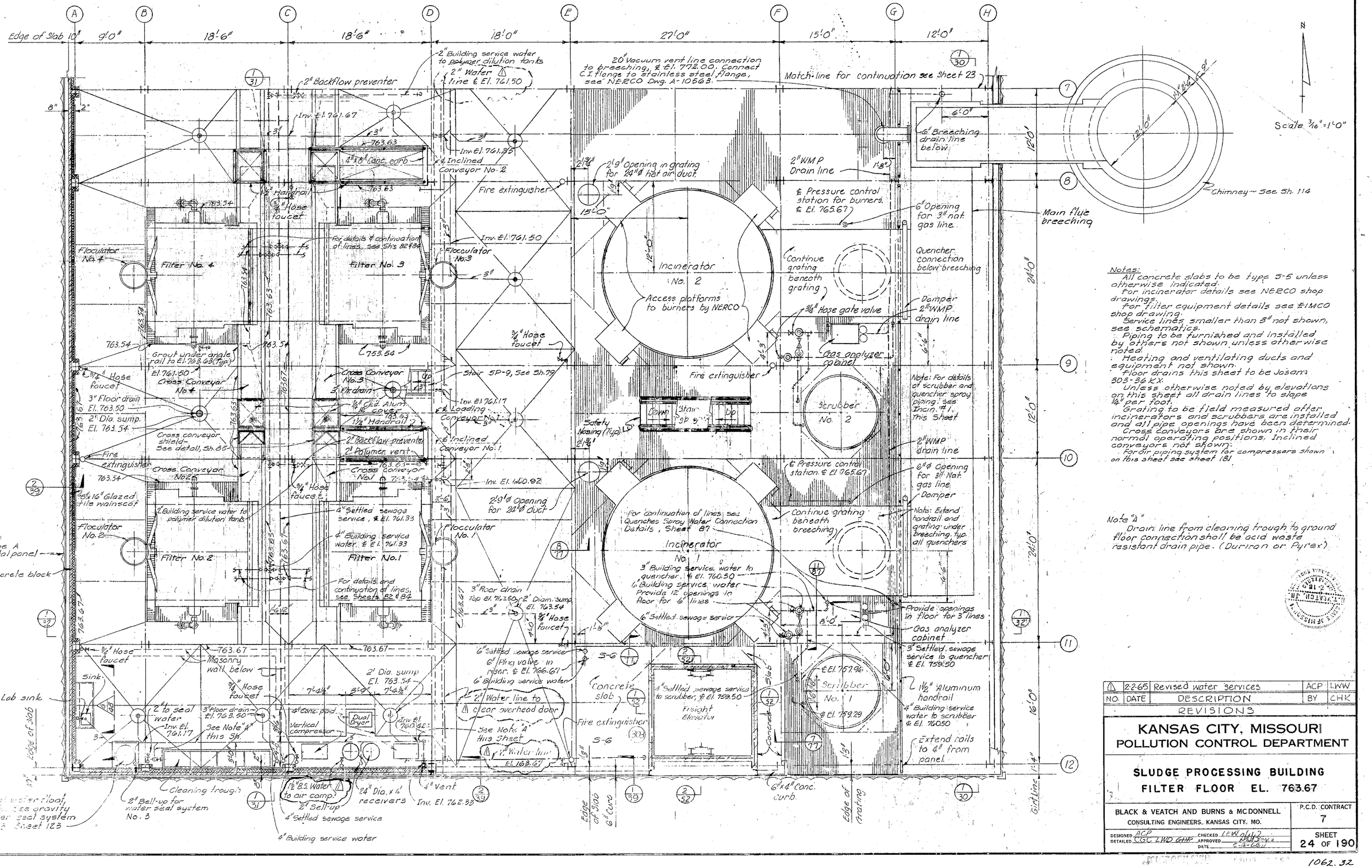
763.54



NO.	DATE	DESCRIPTION	BY	CHK
1	2-2-65	Revised water services	ACP	LWW

REVISIONS

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
FILTER FLOOR EL. 763.67

BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED ACP CHECKED LEW 2/4/65
DETAILED CGC LWD GHP APPROVED
DATE 2-4-65

SHEET 24 OF 190

1062.32

108'-0"

2'0" 18'-2" 6'-0" 16'-0" 16'-0" 16'-0" 16'-0" 16'-0" 16'-0" 6'-0"

8'-0" Typ. 8'-0" Typ.

H K L M N O P Q R

1 11 2 3 4 5 52 6

10" Roof drain leader

2" Roof Drain see Detail F Sh. 34

Canopy - For details see sheet 67

Edge of Col. Arm

4"

2'-0"

3'-8"

Open area

Type A Roofing

See sh. 66 for structural roof plan this area.

10'-0"

3" Roof drain leader

3" Roof drain

Passenger elevator

Fascia Pt

Landing El. 763.67

Canopy

Note: Stair sp. 4 not shown

Cut 2" from 10WF girt as shown

Match line for continuation see Sheet 23

+ 8" Conc. Fill @ edge of roof - Typ.

Valleys of V-shaped folded plate roof

Peaks of V-shaped folded plate roof

Edge of Col. Arm

Concrete beam below

3" Vent, 1½" dn.

2'0" Typ. all vents

3" Vent

Concrete beam below

Concrete Col. Arm

Concrete beam below

3" Vent. See sh. 34 for typ. plumbing vent detail at roof.

1'-4" 5'-2"

Fascia Pt

1¼"ø Tie rod See Section 1, Sh. 65

+2½" Concrete Fill @ Drain - Typ.

3" Roof drain leader

4" Roof drain leader

4" Vent

3" Vent, 1¼" dn.

4" Roof drain leader

1¼"ø Tie rod

3" Roof drain leader

3" Vent, 1¼" dn.

3" Vent, 2" dn.

3" Roof drains, Josam No. 443, 7 req'd See Detail E, sh. 34

3" Vent, 1¼" dn.

Type B Roofing

8" Block wall below to underside of slab

3" Vent, 2" dn.

4" Vent

1¼"ø Tie rod See Section 1, Sheet 65

Concrete Fill - Typ.

Concrete Col. Arm. See Details sh. 101

Fascia Pt

Note: Provide 30 - 2"x12"-12'-0" long wood planks below roof for access above ceiling to be located in the field as req'd.

ADMINISTRATION WING ROOF PLAN

Scale: 3/16" = 1'-0"

Built-up roofing

Alum. joint cover

Alum. gravel stop Flashing cap - Alcoa Section 79587

Anchor 12 @ joint

Alum. gravel stop: Alcoa Section 79588

Alum. pitch dam - 1"x1"x.025"

⅜"ø x 9⅛" Long bolts @ 2'-8" ctrs.

2"x8" Nailer

1½" Rigid insulation

Conc. brick or common brick on edge

Face brick

ALUMINUM GRAVEL STOP SECTION 3

Scale: 3"=1'-0"

See shs. 84 42

2'-8"

¼" Steel facia Pt

All joints to be butt welded & ground smooth

PARTIAL ELEVATION

No Scale

Type B roofing

Column arm beyond

SECTION 1

Scale: 3"=1'-0"

See this sh.

Type B roofing

Sec 2

Sec 2A

Varies See Portfolio Elev. this sh.

¼" Steel facia Pt

⅛" x 1" x 6" long stl. straps @ 1'-6" ctrs staggered.

SECTION 2 + 2A

Scale: 3"=1'-0"

See this sh.

FASCIA PLATE DETAILS

N

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
ADMINISTRATION WING ROOF PLAN

BLACK & VEATCH 'AND BURNS & MCDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED DRG MDM CHECKED LEW
DETAILED DRG BDL DES APPROVED
DATE 2-4-66

SHEET 25 OF 190

1062.32

Girt Line 1'4" 9'-0" 18'-6" 18'-6" 18'-0" 27'-0" 15'-0" 12'-0 1'4" Girt line

A B C D E F G H

1/31 1/39 1/30

4" Vent line

2" Vent line

2" Vent line

Open

Open

Open

10" Roof drain leader

Expansion joint

Passenger Elevator

6" Settled sewage service @ El. 774.58

Tee with blind flange

6" Building service water @ El. 774.58

Tee with blind flange

See Sheet 30 for Control Details

6" Settled sewage service scum connection. @ El. 773.25

Provide 12" opening in floor for 6" line

Place 6" Plug valve in riser @ El. 780.96

Stair SP-1 See Sh. 79

Stair SP-8 See details, Sh. 79

Down

Up

Down

Stair SP-4 See Sh. 78

Scrubber No. 3

Fire extinguisher

2'-1¾" dia. Inclined Conveyor No. 3

Fire extinguisher 1½" Alum. pipe handrail

1½" Galv. grating

2'-2½" dia. opening for 24" flat air duct

Provide opening for conveyor discharge

See NERCO DWG A-10451

Induced Draft Fan No. 3

2" Plug valve in drain

6" dia. opening for 2" fan drain

Inv. El. 775.08

Breeching

2" Fan drain line

4" ø Opening

Incinerator No. 3

Combustion air fan for reheat burners on incinerator No. 3. (Fan & ducts by NERCO. anchor bolts furn. and installed by Cont. 7)

Grating to clear bracing connection (Typical)

2" Polymer vent line

10WF Girt

Type A Panels

6" C.I.P. Scum line

6" Control joints

Motor centers

S-12 S-13 S-5 S-6 S-7

Match line. For continuation see Sheet 27

Match line. For continuation see Sheet 25

N

Scale: 3/16"=1'-0"

Note:
For incinerator details see NERCO shop drawings.
Service lines smaller than 3" not shown, see piping schematics.
Piping to be furnished and installed by others not shown unless otherwise noted.
Heating and Ventilating equipment and ducts not shown.
Floor drains this sheet to be Josam 303-36EX.
Unless otherwise noted by elevations on this sheet all drain lines to slope ¼" per foot.
Grating to be field measured after incinerators and all piping and equipment openings have been determined.

1 2 3 4 5 6 7

16'-0" 12'-0" 12'-0" 12'-0" 20'-4" 21'0"

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
FAN FLOOR PLAN EL. 777.96

BLACK & VEATCH AND BURNS & MC DONNELL CONSULTING ENGINEERS, KANSAS CITY, MO.	P.C.D. CONTRACT 7
DESIGNED ACP DETAILED LWD CGC CHECKED LEW APPROVED DATE 2-6-64	SHEET 26 OF 190

MICROFILMED

1062.32

A B C D E F G H

9'-0" 18'-6" 18'-6" 18'-0" 27'-0" 15'-0" 12'-0" 20'-0"

1 2 7 8 9 10 11 12

Scale: 3/16"=1'-0"

Open

Stair SP-9 See details, Sheet 79

Down

Fire extinguisher

2" Polymer vent line

1½" Aluminum pipe handrail Post (Typical)

1½" Galv. grating

Open

2000 KVA Substation

Air Cond. Unit #2

Air Cond. Unit #1

4" Building service water ℄ El. 774.58

4" Settled sewage service ℄ El. 774.58

4" Settled sewage service ℄ El. 773.50

2" Drain line for Air Conditioning unit (trap line as shown)

4" Vent

4" Drain line for continuation see Sh. 47

4" vent thru roof.

Edge of grating

Edge of slab

Grit line

Match line. For continuation see Sh. 26

2" Fan drain line

Inv. El. 774.58

3-6 3-6 3-6

14"Ø Combust. air pipe

6" Breeching drain line

Chimney

12'-0"

24'-0"

12'-0"

16'-0"

24'-8"

Motor Centers & Control Panels

5-12

2'-1¾" x 8" Inclined Conveyor No. 2

2'-9" dia. Opening for 24"Ø hot air duct

8" Slurry Conveyor

Provide opn'g in grating for conveyor discb.

Incinerator No. 2

See NERCO DWG. A-10451

5-7

Combustion air fan for Incin. No. 2

Induced Draft Fan No. 2

6" dia. Opening for 2" Fan drain

2" Plug V

Inv. El. 775.25

1½" Aluminum Pipe Handrail

Breeching

2" Fan drain line

Scrubber No. 2

1'-5" Dia. 14"Ø air

4" Dia. opening for air pipe

opening for duct

2'-9" dia. opening for 24"Ø hot air duct

Run kick 12" around corner

6" Settled sewage service ℄ El. 774.58

6" Building service ℄ El. 774.58

Incinerator No. 1

See NERCO DWG. A-10451

Combustion air fan for reheat burners for Incinerator No. 1

Induced Draft Fan No. 1

Inv. El. 775.92

6" dia. Opening for 2" Fan drain

Grating to clear bracing connections (Typical)

Concrete slab

Drinking fountain

Service Sink

Water closet

Urinal

Concrete slab

6"x4" Conc. curb

Freight Elevator

Scrubber No. 1

Open

Note:

For incinerator details see NERCO shop drawings.

Service lines smaller than 3" not shown, see piping schematics.

Piping to be furnished and installed by others not shown unless otherwise noted.

Heating and ventilating equipment and ducts not shown.

Floor drains this sheet to be Josam 303-96 K X

Unless otherwise noted by elevations on this sheet all drain lines to slope ¼" per foot

Grating to be field measured after incinerators are installed and all piping and equipment have been determined.

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
FAN FLOOR PLAN EL. 777.96

BLACK & VEATCH AND BURNS & MCDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

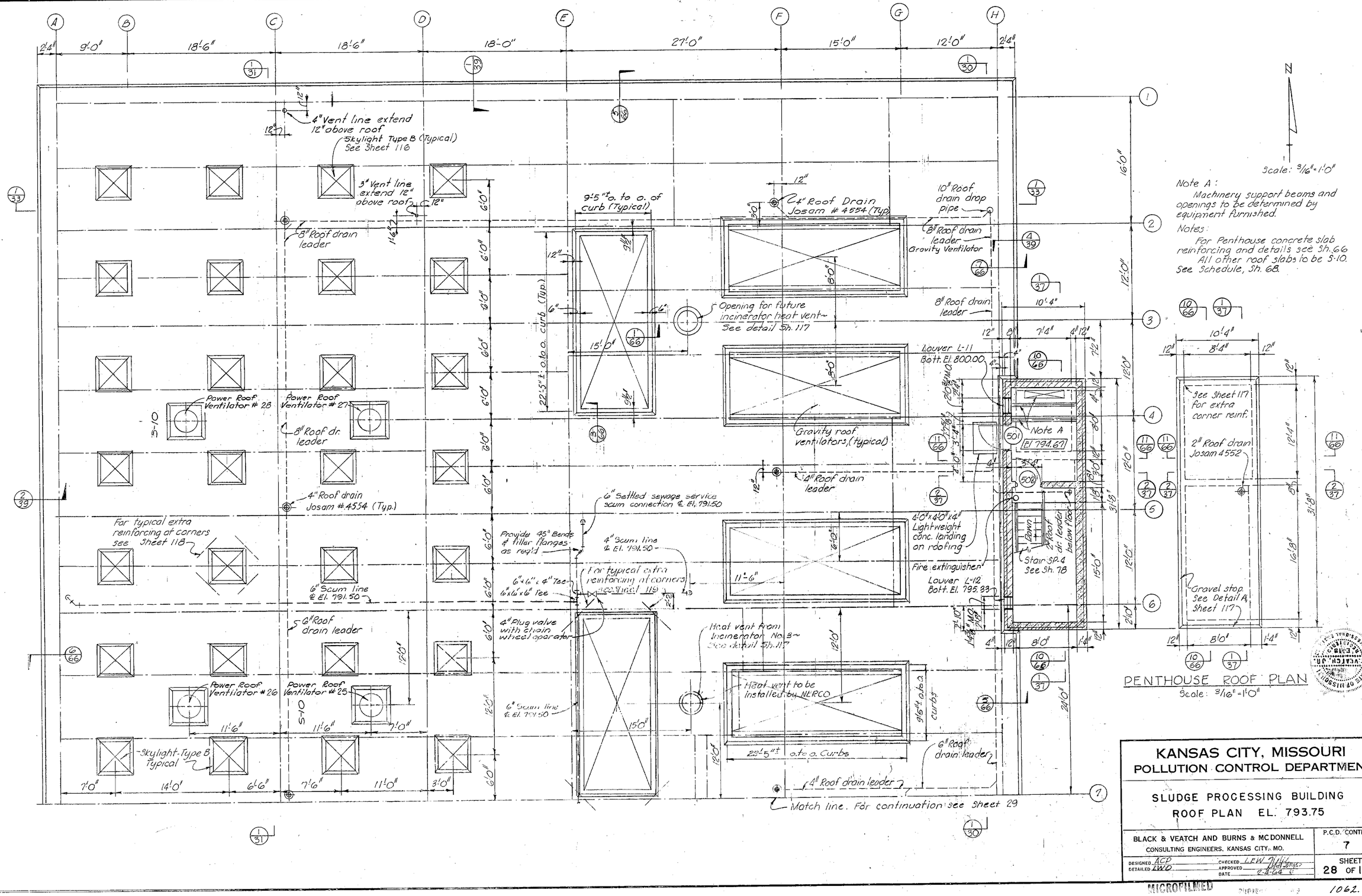
P.C.D. CONTRACT 7

DESIGNED ACP DETAILED GC LWD CHECKED LEW APPROVED DATE 7-4-64

SHEET 27 OF 190

MICROFILMED

1062.32



Note A:
Machinery support beams and openings to be determined by equipment furnished.

Notes:
For Penthouse concrete slab reinforcing and details see Sh. 66
All other roof slabs to be S-10.
See Schedule, Sh. 68.

PENTHOUSE ROOF PLAN
Scale: 3/16"=1'-0"

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
ROOF PLAN EL. 793.75

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED ACP
DETAILED LWD
CHECKED LFW
APPROVED
DATE 2-3-64

SHEET 28 OF 190

MICROFILMED

1062.32

A B C D E F G H

9'-0" 18'-6" 18'-6" 18'-0" 27'-0" 15'-0" 12'-0" 20'-0"

1 2 3 4 5 6 7 8 9 10 11 12

Match line. For continuation see Sh. 28

Skylight type B (Typ.)

6" Scum line & El. 791.50

4" Scum line & El. 791.50

6"x4"x4" Tee

4" Plug valve with chain wheel oper.

4" Scum line & El. 791.50

Gravity Ventilator

11'-6" 10'-6" 6'0"

Provide 3" sleeve for 1" vent pipe from natural gas system header serving units 1, 2 & 3

Chimney See Sheet 114

Heat vent to be installed by NERCO.

3'-9"

24" Heat vent Incinerator No. 2 ~ See detail Sh. 117

5" Roof drain leader

Power Roof Ventilator #24

Power Roof Ventilator #23

5" Roof drain leader

6" Thick light-weight concrete pad on roofing Reinforce with #5 @ 12" each way

4" Roof drain Josam #4554

4" Roof drain leader

4" Roof drain leader

4" Scum line & El. 791.50

11'-6" 4'0"

Condenser Units

Power Roof Ventilator #22

Power Roof Ventilator #21

11'-6" 11'-6" 7'0"

24" Heat vent from Incinerator No. 1 ~ See detail Sh. 117

For extra reinforcing see Sh. 118.

For extra reinf. See Sheet 118.

4" Roof drain leader

4" Roof drain Josam #4554 (Typ.)

12" 12"

Skylight, Type B (Typical) See curb detail, Sh. 116

Power Roof Ventilator No. 30

Power Roof Ventilator No. 29

Power Roof Ventilator No. 31

9'-4" c. to c. curbs (Typ.)

22'-5" c. to c. curbs (Typical).

Stack for building boilers. See Details, Sh. 117

Gravity ventilator (Typical)

4'-0"

7'0" 14'0" 6'6" 7'6" 5'0" 6'0" 3'0" 7'8" 7'-4" 12'6"

12" 6'6"

4" Vent extend 12" above roof

Notes:
All structural concrete roof slabs to be S-10. See Schedule, Sheet 68.

Scale: 3/16"=1'0"

NO	DATE	DESCRIPTION	BY	CHK
1	11-1-66	Conform to construction records	RLM	ACP

REVISIONS

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
ROOF PLAN EL. 793.75

BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED ACP DETAILED LWD CHECKED LEW APPROVED DATE 2-8-66

SHEET 29 OF 190

MICROFILMED

1062.32

12 11 10 9 8 7 6 5 4 3 2 1

Boiler flue. See detail, Sh. 117

Condenser units for Control Room Air Conditioning

Gravity Roof Ventilator 7

Incinerator No.3 Heat Vent

Top of Roof Slab El. 793.75

Stock bond concrete blocks

Hoist Rail

Electric hoist

Sludge Feeder

5#" Scum Line

Roof Drain Leader

Breeching to Chimney

6" Scum Line

Induced Draft Fan No.1

Ind. Draft Fan No.2

Ind. Draft Fan No.3

Control Room Corridor

20" Vacuum Vent

Incinerator Breeching

Fan Floor El. 777.96

16'-5"

Flocculator No.7

6" C.I. Breeching drain line

Settled sewage service scum connection

Filter No.7

1½" Aluminum Handrail

Filter Floor El. 763.67

14'-3"

Quencher

Quencher

Quencher

Scrubber No.1

Incinerator No. 1

Scrubber No.2

Incinerator No. 2

Stock bond concrete blocks

Incinerator No. 3

Scrubber No. 3

1½" Alum Handrail

Stock bond concrete blocks

For wall details See Sec. 3 Sh. 39

Intermediate Flr. El. 752.67

11'-0"

For wall details See Sec. 3 Sh. 39

C.O.

C.O.

Boiler Stack

Scrubber Inlet

1½" Aluminum Handrail (Typical)

Scrubber Inlet

Heating water expansion tanks

Scrubber Inlet

Electrical Sub-Station No.3

Settled Sewage Service line

Building service water line

Cast-in-place concrete wearing surface

Height of Opening 12'-0"

10'-6"

Hot water tank

Ground Floor El 742.00

C.O.

Dampers

C.O.

Ash Hopper

6" Ash Discharge Line

Ash Hopper

Elevator Drive Unit

Building Heating Boiler No. 1

Building Heating Boiler No. 2

6" Natural Gas Line & El. 740.00

¢ Ash Sluice Water Pumps

¢ Settled sewage service pump

Prestressed concrete units

11'-0"

Basement Floor El. 731.00

¢ Ash disposal Pumps Suction lines

Pump base

Sluice water line by NERCO

Settled sewage service line

Building service water line

For piling and structural concrete see sheets 57 & 58

4" Floor drain & 6" water storage drain. 8" min conc encasement.

Note:
Heating and Ventilating equipment and ducts not shown.
Pipe hangers and supports not shown
See Sheet 86 for enlargement of layouts of disposal pumps and ash sluice pumps
Service lines smaller than 3" not shown
Piping to be furnished and installed by trades not shown unless otherwise noted.

SECTION 1
Scale: 3/16" = 1'-0"
See Sh. 17, 18, 20, 21, 23, 24 26, 27, 28 & 29

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
BUILDING SECTION

BLACK & VEATCH AND BURNS & MCDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT

DESIGNED ACP DETAILED LWD WLD CHECKED LEW APPROVED DATE 9-29-64

SHEET 30 OF 190

MICROFILMED

1062.32

12 11 10 9 8 7 6 5 4 3 2 1

Skylight, type B See detail, Sh. 116

Power Roof Ventilator

Roof Slab El. 793.75

1½" Insulation and Roofing not shown

Note: Electrical Equip. and Conduits not shown

For wall details see Section 1, Sh. 39

El. 777.96

8" Filter No. 2

8" Inclined Conveyor No. 1

8" Loading Conveyor No. 1 (Not shown)

Note: Portable cross conveyor shields not shown - See plan, Sh. 23 & 24.

8" Filter No. 4

8" Inclined Conveyor No. 2

15'-9½"

14'-2½"

Fan Floor El. 777.96

8" Filter No. 6

8" Inclined Conveyor No. 5

8" Loading Conveyor No. 2

8" Filter No. 8

for wall details See Sec. 1, Sh. 39

Stock Band 8"x16" Glazed Tile (Typical)

Filter Media wash trough

Air Compressor and Dryer

Cross Conveyor No. 2

Cross Conveyor No. 4

Cross Conveyor No. 6

Cross Conveyor No. 8

Concrete Cap

Face Brick

Concrete Block

1'-5

6" Vacuum Line to Filters

8" Vacuum Line

6" Drain line

4" Inlet to Flocculator No. 1

4" Inlet to Flocculator No. 2

12" Vacuum header

Sludge piping

6" Drain line

4" Inlet to Flocculator No. 4

12" Vacuum line

24" Vacuum vent

Filter Floor El. 763.67

Intermediate Floor El. 752.67

6" Drain

6" Drain line

12" Vacuum line

Drinking fountain

Stock Band Concrete Block

#1 #2 #3 #4 #5 #6 #7 #8

Stair to Basement

12" Vacuum Header

CORRIDOR

109

Metal Screen Partition See Sh. 56

109

1'-3

See sheet 81 for enlargement of vacuum equipment

Floor drain 8" min. conc. encasement

Filtrate drain line 8" min. conc. encasement

Ground Flr. El. 742.00

8" Settled sewage line

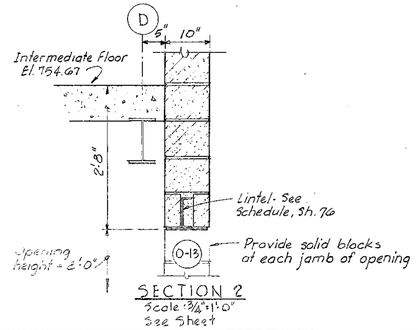
Shelves not shown. See Sheet 57 & 58 for details of piling and structural concrete dimensions

Drinking fountain

SECTION 1

Scale: 3/16"=1'-0"

See Sheets 19, 18, 20, 21, 23 24, 26, 27, 28, & 29



SECTION 2

Scale: 3/4"=1'-0"

See Sheet

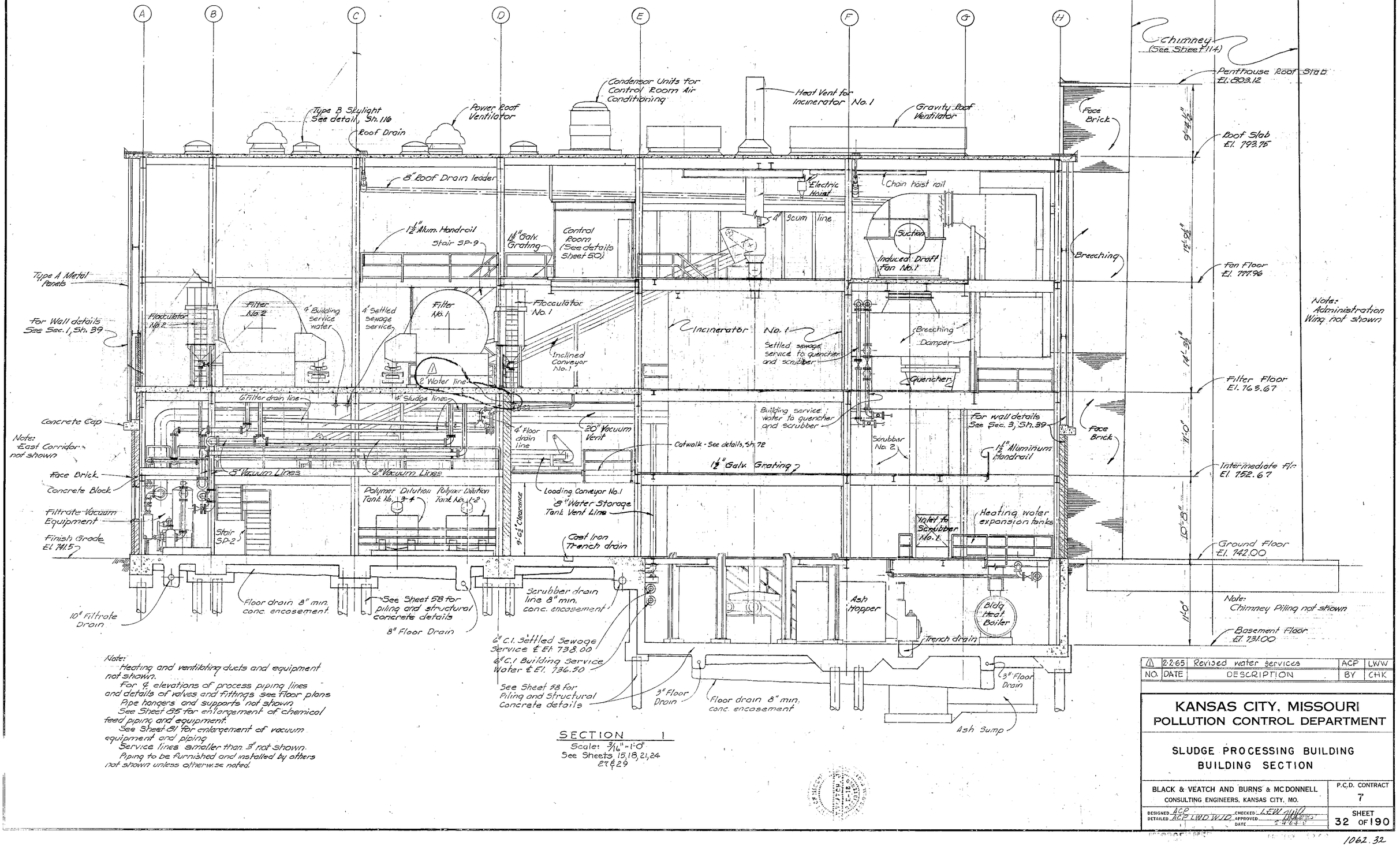
Note:
Heating and ventilating ducts and equipment not shown.
For ℄ elevations of process piping lines and details of valves and fittings see floor plans.
Pipe hangers and supports not shown.
Service lines smaller than 3" not shown, see piping schematic.

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
BUILDING SECTION

BLACK & VEATCH AND BURNS & MC DONNELL CONSULTING ENGINEERS, KANSAS CITY, MO.	P.C.D. CONTRACT 7
DESIGNED ACP DETAILED LWD GHP CHECKED LEW APPROVED DATE 7-3-64	SHEET 31 OF 190

1062.32



Note:
Heating and ventilating ducts and equipment not shown.
For ℄ elevations of process piping lines and details of valves and fittings see floor plans
Pipe hangers and supports not shown
See Sheet 85 for enlargement of chemical feed piping and equipment.
See Sheet 81 for enlargement of vacuum equipment and piping
Service lines smaller than 3" not shown.
Piping to be furnished and installed by others not shown unless otherwise noted.

SECTION 1
Scale: 3/16" = 1'-0"
See Sheets 15, 18, 21, 24 27 & 29

NO.	DATE	DESCRIPTION	BY	CHK
1	2-2-65	Revised water services	ACP	LWW

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
BUILDING SECTION

BLACK & VEATCH AND BURNS & MC DONNELL
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P.C.D. CONTRACT 7

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SHEET 32 OF 190

1062.32

A B C D E F G H

Roof Drain Josam No. 4554 (Typ)

Type B skylight See detail, Sh. 116

4" Concrete slab with 1½" insulation and roofing

Roof Slab El. 793.75

15'-9½"

Roof drain leader for sizes see Roof Plans Sheets 28 & 29

Type A metal panel interior sheet surface

Pipe hangers (Typical) Strap leader to wall or column

Type A metal panels

Fan Floor El. 777.96

14'-3½"

For wall details See Sec. 2, Sh. 39

Drinking fountain

8" Concrete slab

1½" Aluminum Handrail

For wall details See Sec. 4, Sh. 39

2" Face Brick

Filter Floor El. 763.67

Concrete cap

Operator for door 102 Provide special mounting bracket

Concrete Block

11'-0"

Stack Bond Concrete Block

Stack Bond Concrete Block

8" dia. Sch. 80

Face Brick

102

Intermediate Floor El. 752.67

Concrete Block

Vent fan F-12

8'x8' Glazed Tile

103

101

L-1

Stack Bond Concrete Block

10'-8"

Finish Grade El. 741.5

Ground Floor El. 742.00

See sheet 57 for piling and structural concrete details

Toilet Partition

3" Floor Drain 8" min. conc. encasement

Cast iron trench drain

Precast Prestressed concrete units

Cast-in-place concrete wearing surface

10" Roof Drain

3" Drain line from Ground Floor drainage system

Finish Grade El. 741.5

11'-0"

Basement Floor El. 731.00

Filter Floor El. 763.67 at high points.

Notes:
Heating and Ventilating ducts not shown.

Type A Panels

Stack Bond Concrete Block

Stack Bond Concrete Block

2" Concrete Block wall

3" Floor Drain

See Sheet 57 for piling and structural concrete details

3" Floor Drain 8" min. conc. encasement.

Face Brick

Concrete Block

21'-8"

SECTION 1

Scale: 3/16" = 1'-0"

See Sheets 17, 20, 23, 26, 28

121

Ground Floor El. 742.00

Finish Grade El. 741.5

See Sheet 58 for piling and structural concrete details

8" Floor Drain 8" min. conc. encasement

3" Floor Drain 8" min conc encasement

10" Filtrate drain 8" min. conc. encasement

SECTION 2

Scale: 3/16" = 1'-0"

See Sh 18, 21, 24, 27 & 29

6'-6" ±

Contractor shall walk 6" C.I.P. into sleeve provided in bottom of ash hopper overflow box.

Overflow box by others

6" C.I.P. Ash hopper overflow line

½" Galv. checkered PL - Contract 7

Sluice liner plate - Contract 7A El. 731.00 @ high points

6" Ball & spigot bend

4" Line to slope 2" from ball & spigot bend to 6" header

Varies 1'-6" to 2'-0"

8" Min. conc. encasement

6" C.I.P. ash hopper overflow header & Elevation varies from El. 767.50 @ Incinerator No. 1 & future incinerator to El. 727.00 @ ash sump walls

SECTION 3

Scale: 3/8" = 1'-0"

See Sheets 14 & 15

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
BUILDING SECTIONS

BLACK & VEATCH AND BURNS & MC DONNELL CONSULTING ENGINEERS, KANSAS CITY, MO.	P.C.D. CONTRACT 7
DESIGNED ACP DETAILED LND CHECKED LEW APPROVED DATE 2-6-69	SHEET 33 OF 190

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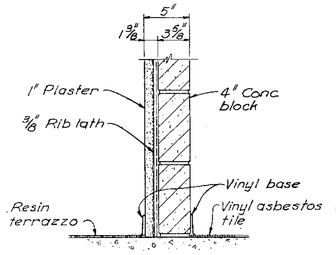
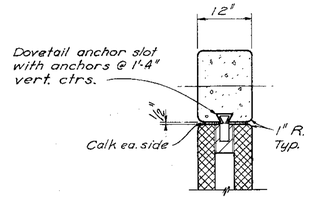
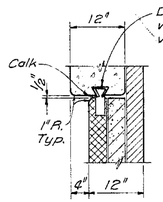


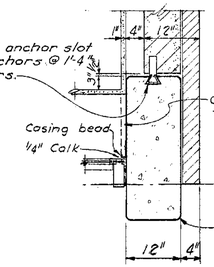
SECTION 2
Scale: 1½"=1'-0"
See sh. 19



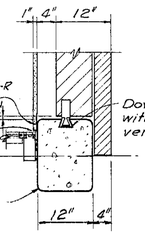
DETAIL A
Scale: ¾"=1'-0"
See sh. 22



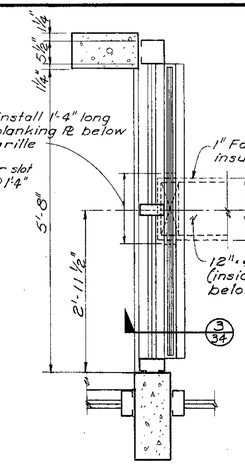
DETAIL B
Scale: ¾"=1'-0"
See sh. 19 & 22



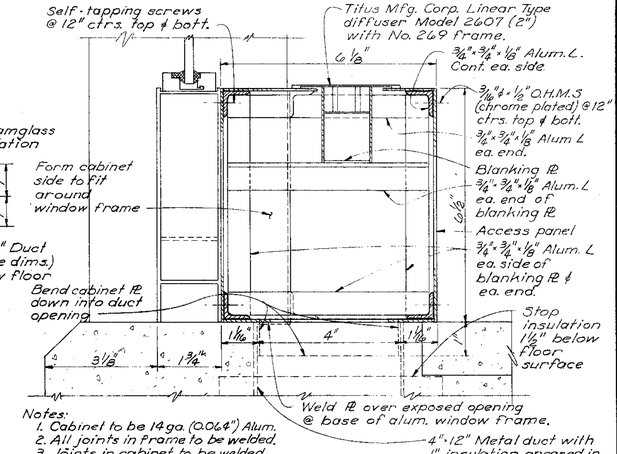
DETAIL C
Scale: ¾"=1'-0"
See sh. 19



DETAIL D
Scale: ¾"=1'-0"
See sh. 22



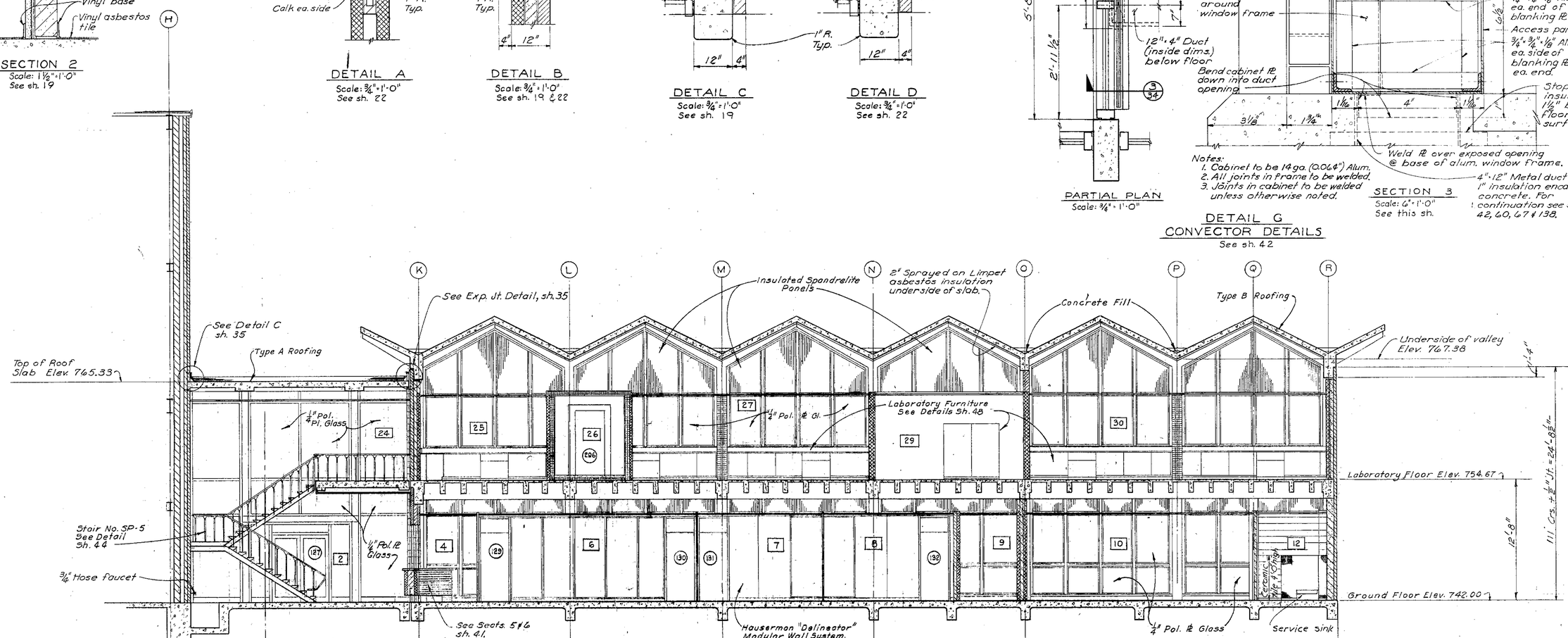
PARTIAL PLAN
Scale: ¾"=1'-0"



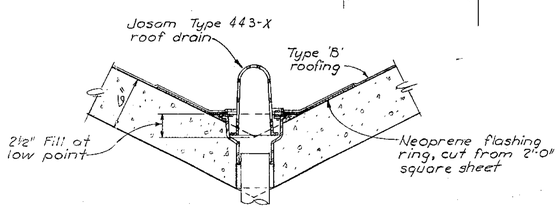
Notes:
1. Cabinet to be 14 ga. (0.064") Alum.
2. All joints in frame to be welded.
3. Joints in cabinet to be welded unless otherwise noted.

SECTION 3
Scale: 6"=1'-0"
See this sh.

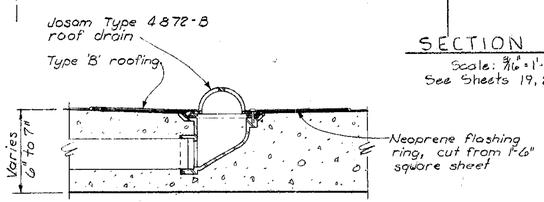
DETAIL G
CONVECTOR DETAILS
See sh. 42



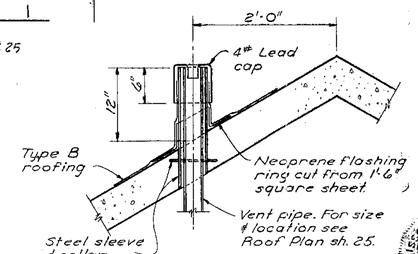
SECTION 1
Scale: 3/16"=1'-0"
See Sheets 19, 22 & 25



ROOF DRAIN DETAIL E
Not to Scale
See Sheet 25



ROOF DRAIN DETAIL F
Not to Scale
See Sheet 25



PLUMBING VENT DETAIL
Scale: 1"=1'-0"

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
BUILDING SECTIONS AND DETAILS

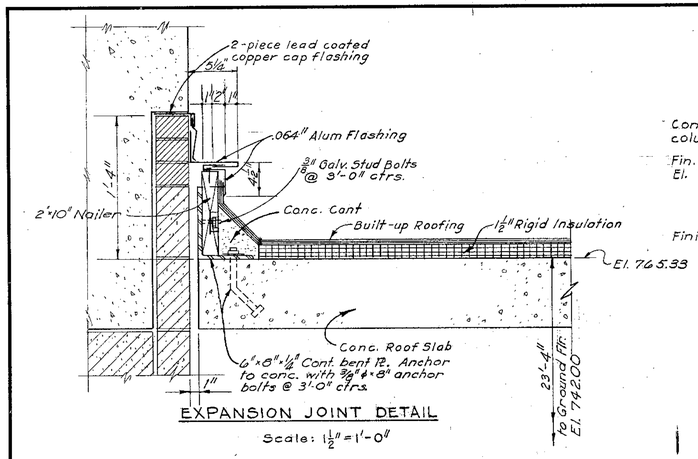
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED MDM ACP CHECKED LEW
DETAILED DRG BD APPROVED
DATE

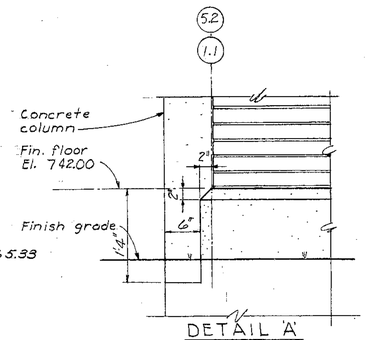
SHEET 34 OF 190

1062.32



EXPANSION JOINT DETAIL

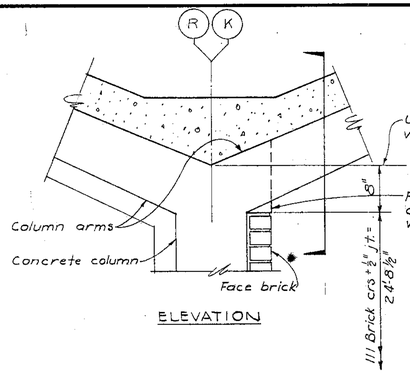
Scale: 1½" = 1'-0"



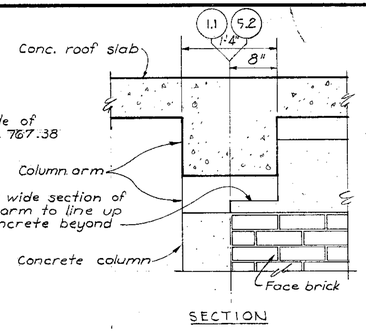
DETAIL 'A'

Scale: 1" = 1'-0"

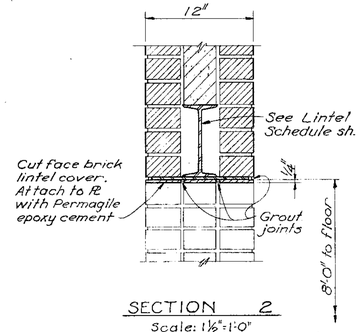
See Sh. 9 & 19



ELEVATION



SECTION



SECTION 2

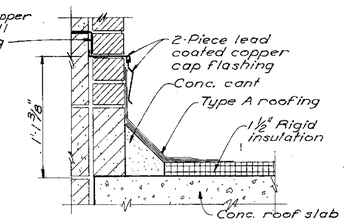
Scale: 1½" = 1'-0"

See sh. 38 & 41

DETAIL 'B'

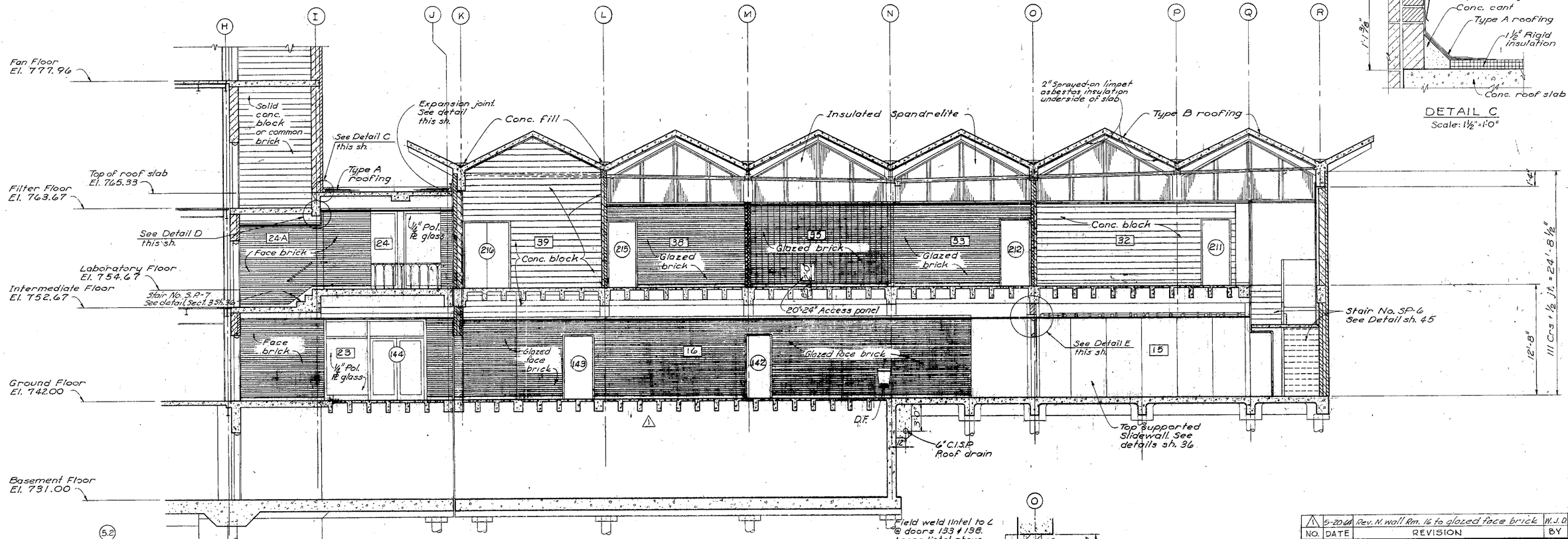
Scale: 1" = 1'-0"

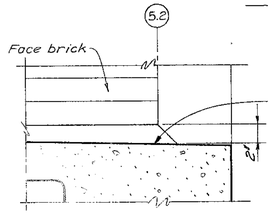
See Sheet 9



DETAIL C

Scale: 1½" = 1'-0"

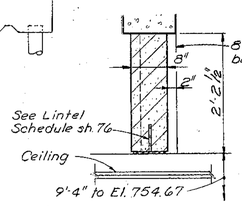




DETAIL F

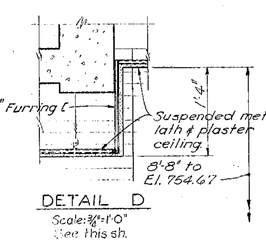
Scale: ½" = 1'-0"

See sh. 41



SECTION 3

Scale: ¾" = 1'-0" See sh. 22



DETAIL D

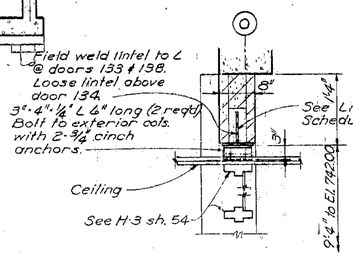
Scale: ¾" = 1'-0"

See this sh.

SECTION 1

Scale: ¾" = 1'-0"

See shs. 16, 19, 22 & 25



DETAIL E

Scale: ¾" = 1'-0"

See this sh.

NO.	DATE	REVISION	BY	CK'D
1	5-20-66	Rev. N. wall Rm. 16 to glazed face brick	W.J.D	A.C.P.

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
BUILDING SECTIONS AND DETAILS

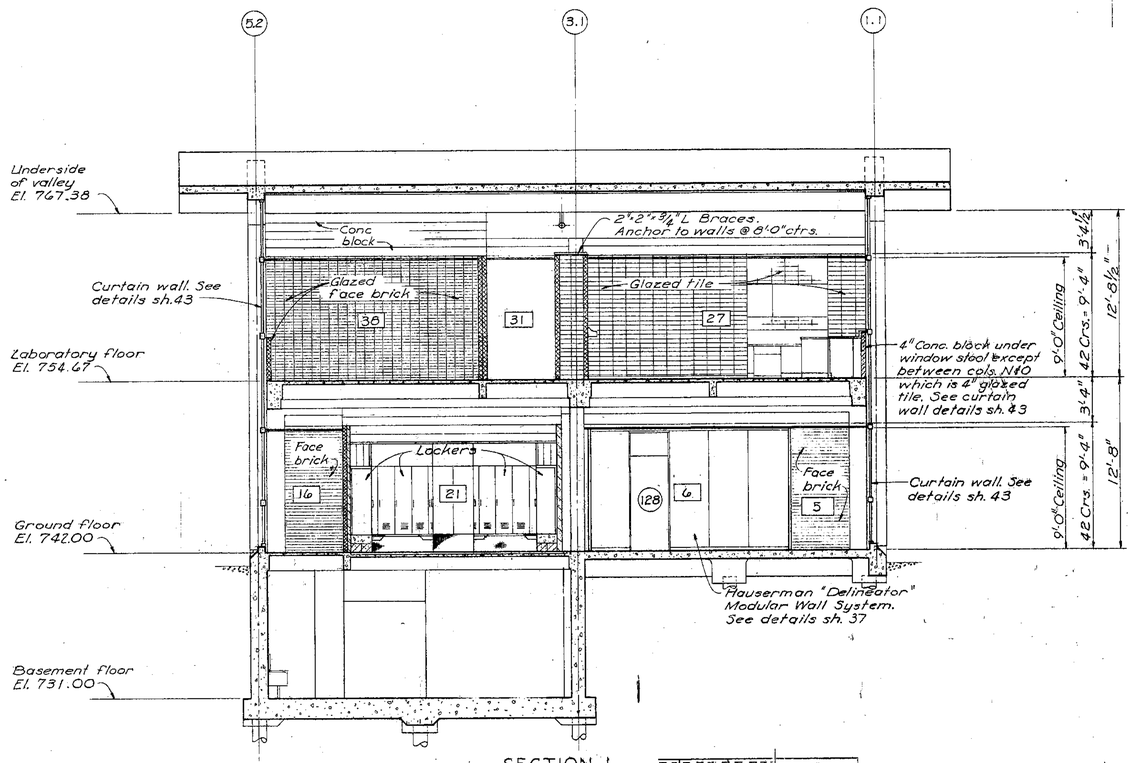
BLACK & VEATCH AND BURNS & MCDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

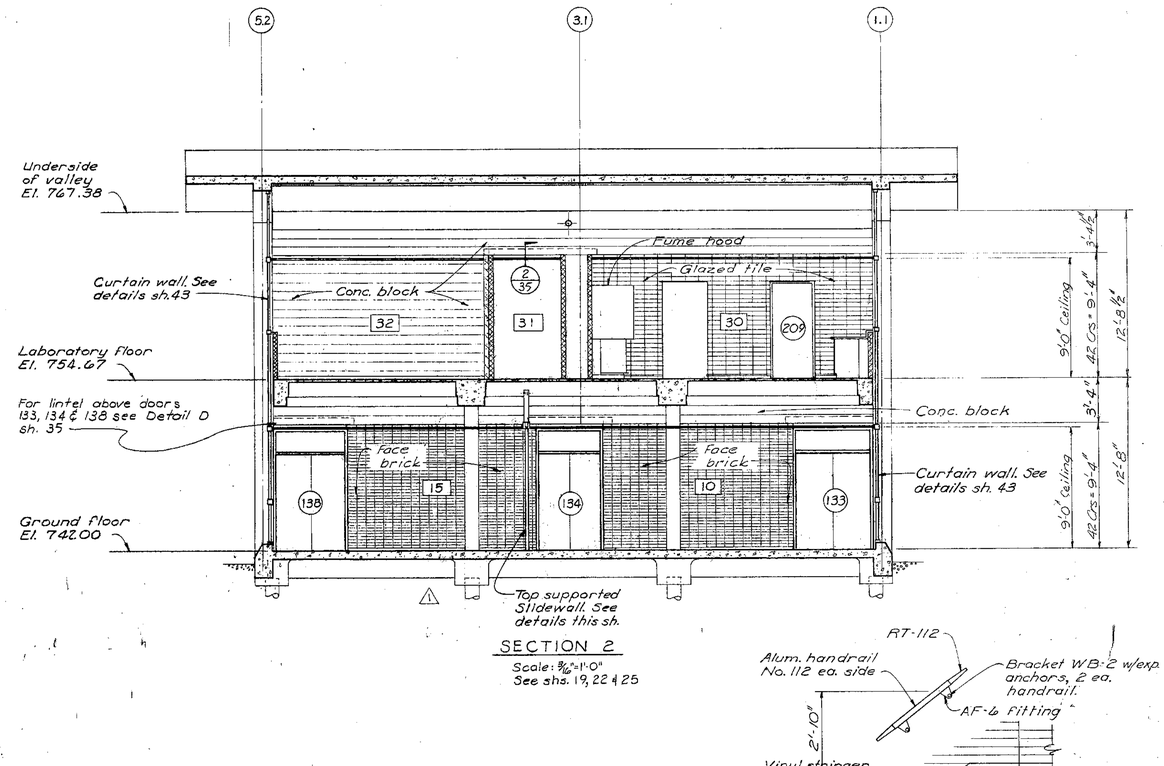
DESIGNED MDM CHECKED LEW
DETAILED JPC, LSF, BDL APPROVED
DATE 4-4-66

SHEET 35 OF 190

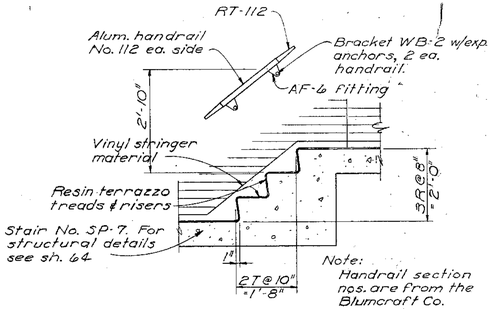
1062.32



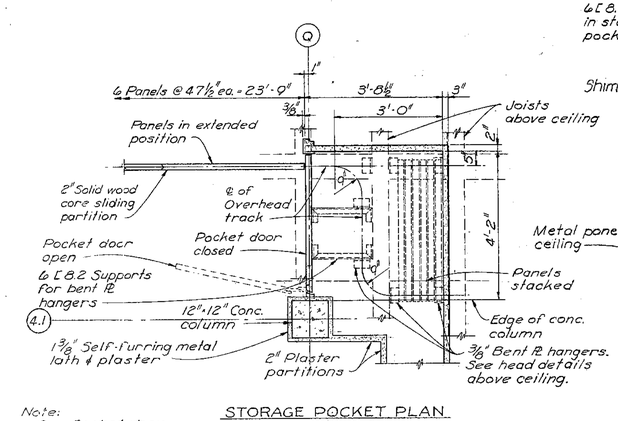
SECTION 1
Scale: 3/16" = 1'-0"
See shs. 16, 19, 22 & 25



SECTION 2
Scale: 3/16" = 1'-0"
See shs. 19, 22 & 25

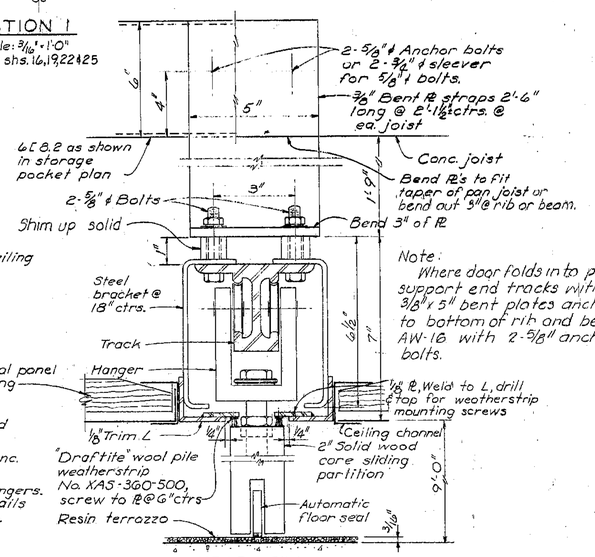


STAIR SP-7
SECTION 3
Scale: ½" = 1'-0"
See sh. 22



Note:
See Pocket door detail sh. 54.

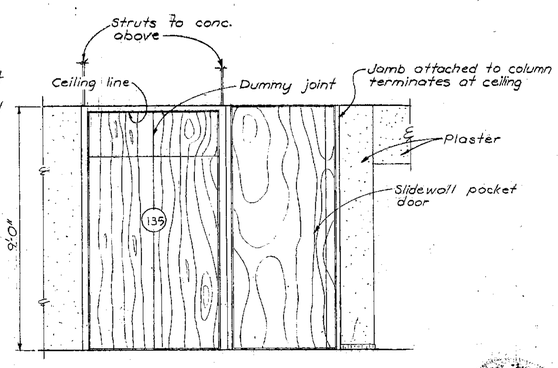
STORAGE POCKET PLAN
Scale: ½" = 1'-0"



Note:
Where door folds in to pocket support end tracks with 3/8" x 5" bent plates anchored to bottom of rib and beam AW-16 with 2-5/8" anchor bolts.

HEAD & SILL
No Scale

TOP SUPPORTED SLIDEWALL DETAILS



ELEVATION OF DOOR 135 AND SLIDEWALL POCKET DOOR
Scale: 3/8" = 1'-0"

NO.	DATE	REVISION	BY	CK'D
1	5-20-64	Rev. W. wall Rm 10&15 to face brick	W.J.D.	A.C.P.

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
BUILDING SECTIONS AND DETAILS

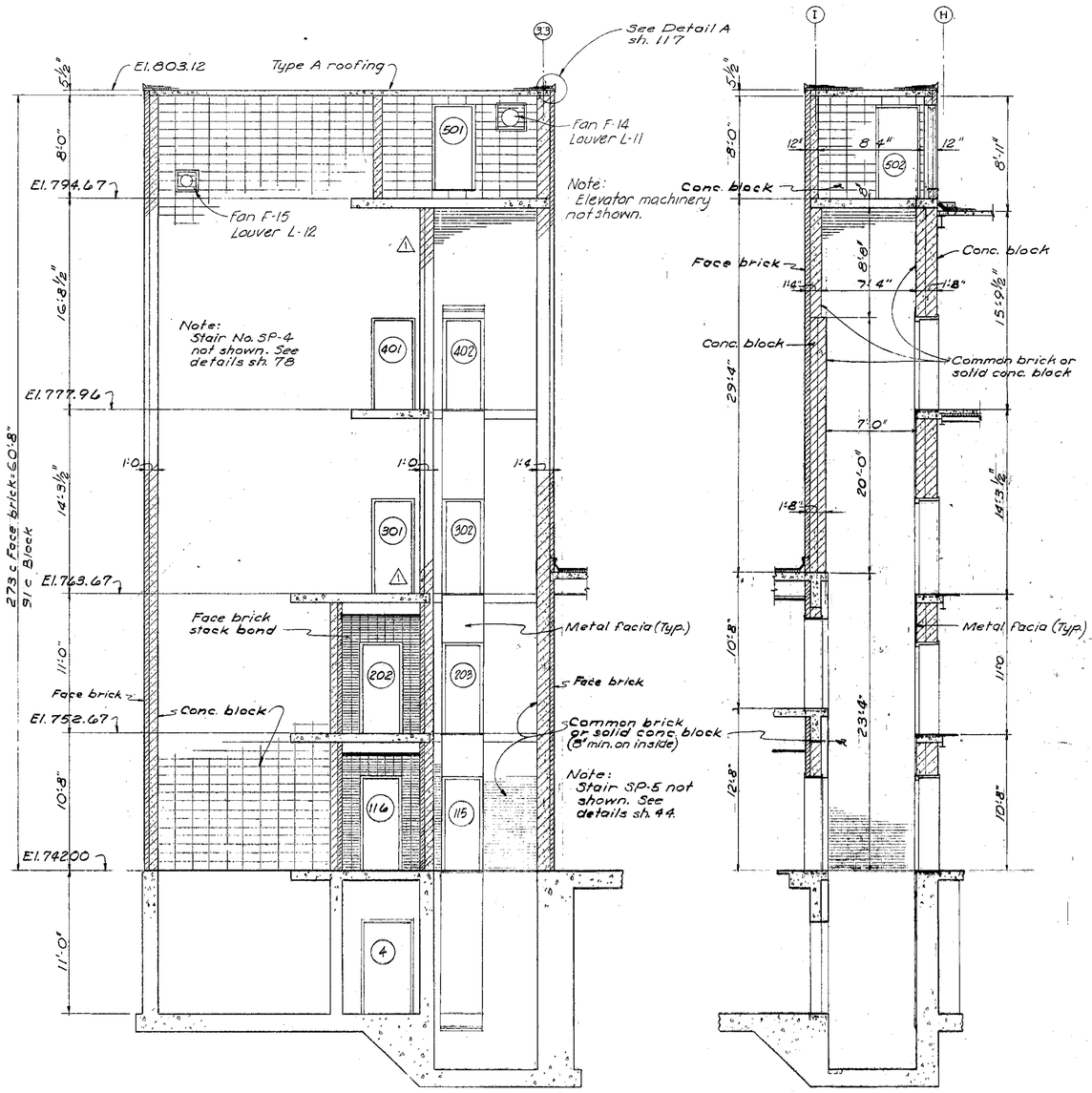
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED MDM ACP
DETAILED DRA
CHECKED LEW
APPROVED
DATE 5-4-64

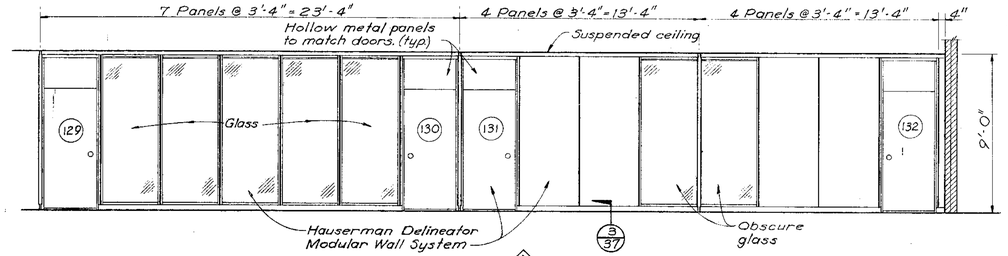
SHEET 36 OF 190

1062.32

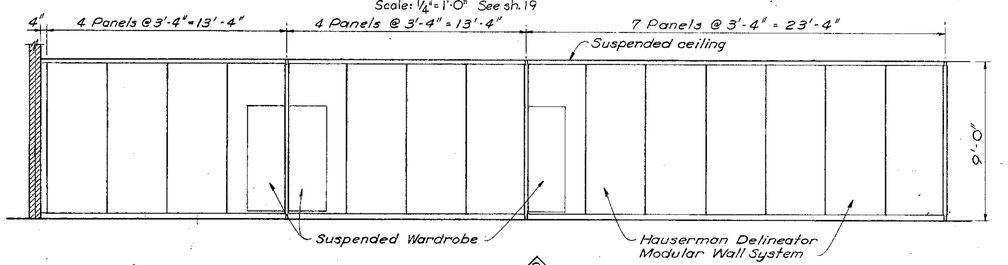


SECTION 1
Scale: 3/16"=1'-0"
See shs. 19 & 22

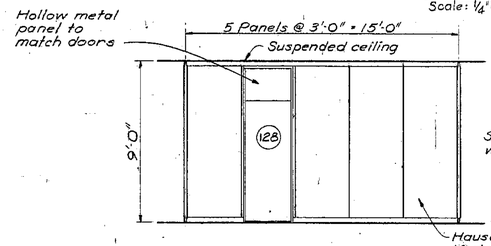
SECTION 2
Scale: 3/16"=1'-0"
See shs. 19 & 22



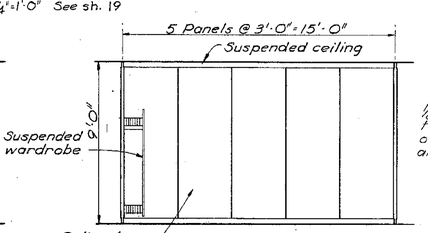
ELEVATION A/37
Scale: 1/4"=1'-0" See sh. 19



ELEVATION B/37
Scale: 1/4"=1'-0" See sh. 19

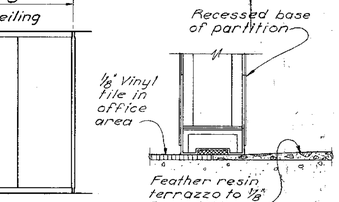


ELEVATION C/37
Scale: 1/4"=1'-0" See sh. 19

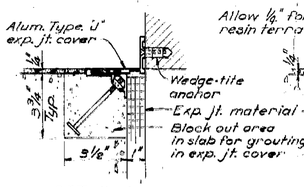


ELEVATION D/37
Scale: 1/4"=1'-0" See sh. 19

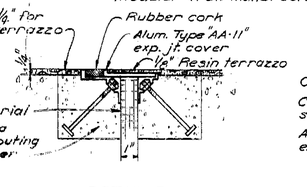
Note:
Doors to be furnished by
modular wall manufacturer.



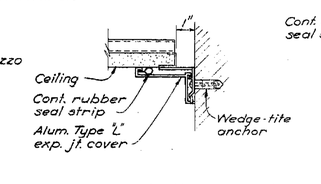
SECTION 3
½ Scale
See this sh.
& sh. 19



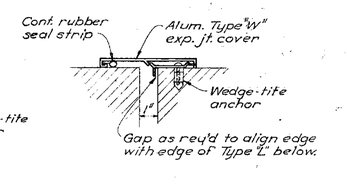
DETAIL A



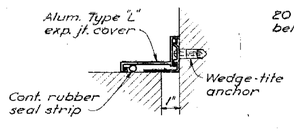
DETAIL B



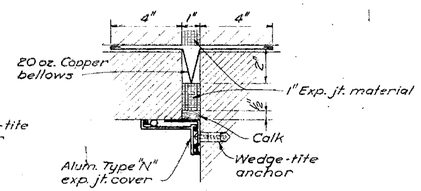
DETAIL C



DETAIL D



DETAIL E



DETAIL F

EXPANSION JOINT COVER DETAILS
Scale: 3"=1'-0"
See sh. 41

Note:
Alum. exp. jt. covers shall be as manufactured
by Architectural Art Mfg. Inc.; Wichita, Kan.

NO.	DATE	REVISION	BY	CK'D
1	5-20-64	Rev. interior wall Sec 1 to conc. block	W.J.D	A.C.P.

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
ARCHITECTURAL DETAILS

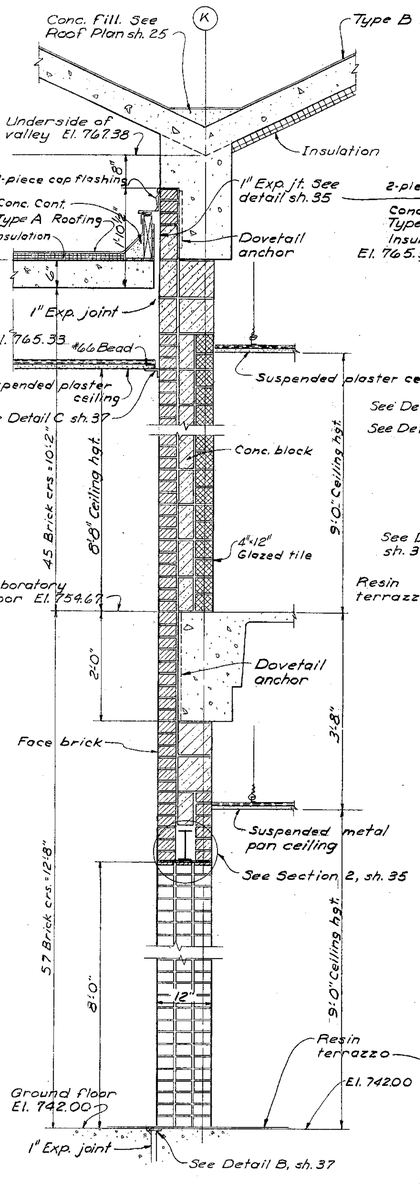
BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

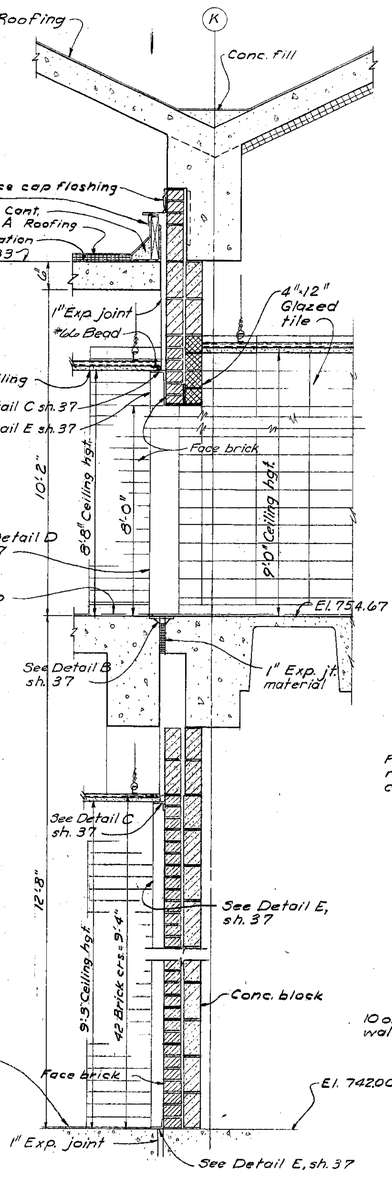
DESIGNED MDM ACP CHECKED LEW
DETAILED DES DC APPROVED
DATE 2-24-64

SHEET 37 OF 190

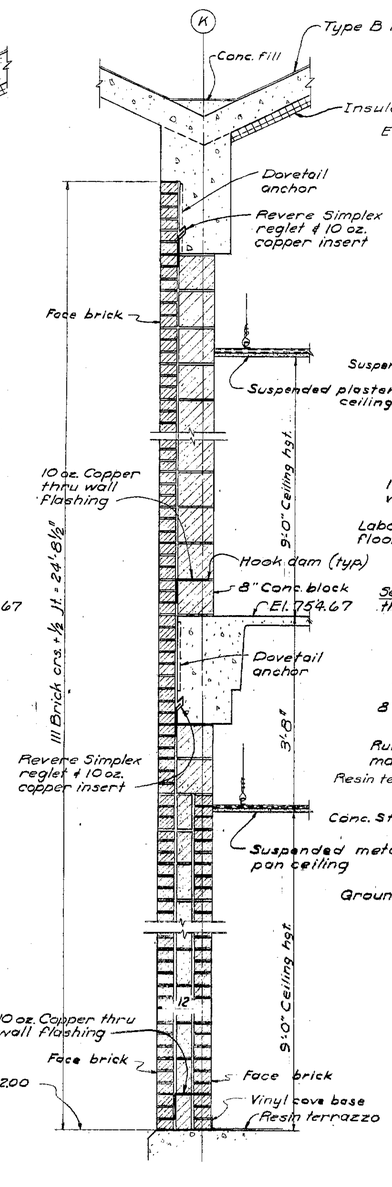
1062.32



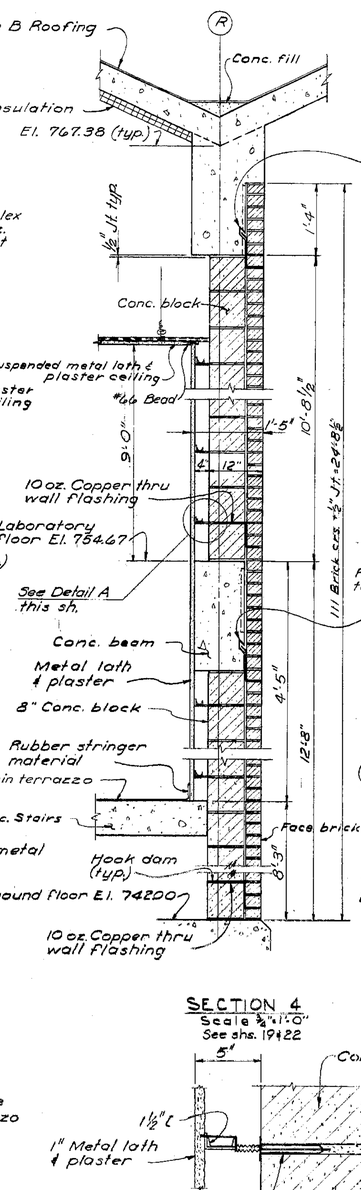
SECTION 1
Scale 3/4"=1'-0"
See shs. 19 & 22



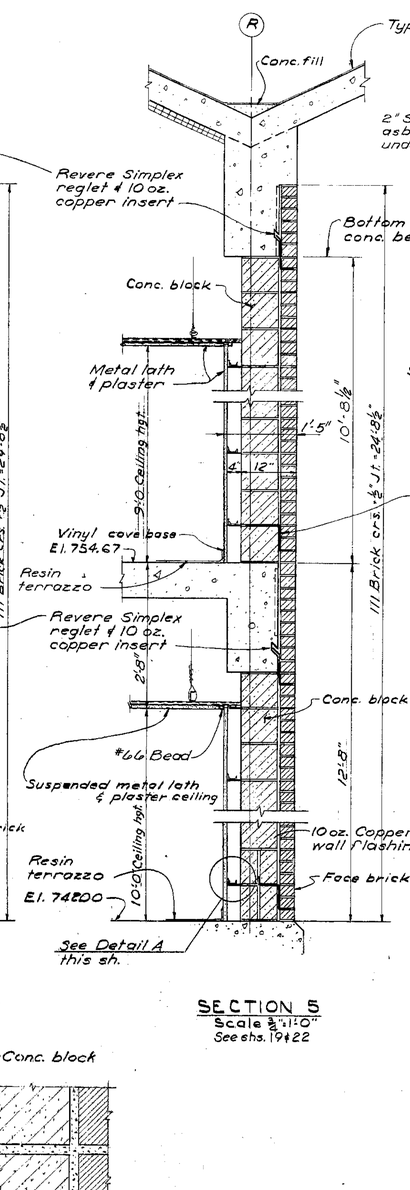
SECTION 2
Scale 3/4"=1'-0"
See shs. 19 & 22



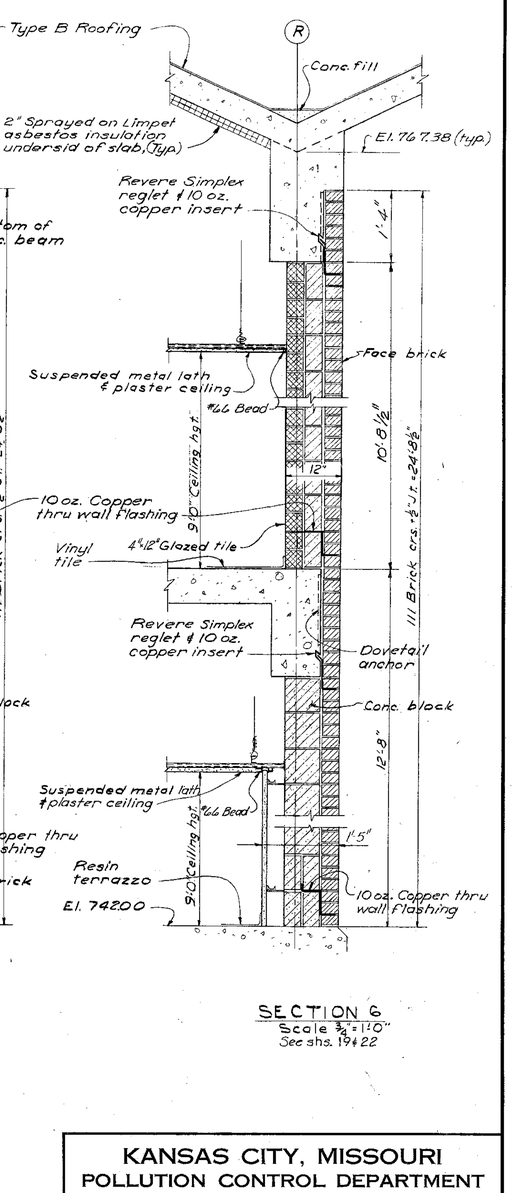
SECTION 3
Scale 3/4"=1'-0"
See shs. 19 & 22



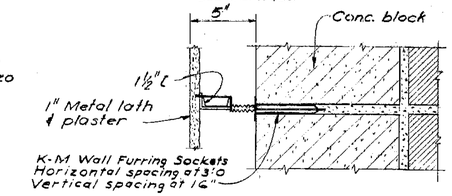
SECTION 4
Scale 3/4"=1'-0"
See shs. 19 & 22



SECTION 5
Scale 3/4"=1'-0"
See shs. 19 & 22



SECTION 6
Scale 3/4"=1'-0"
See shs. 19 & 22



DETAIL "A"
Scale: 3"=1'-0"
See this sh.

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
ARCHITECTURAL WALL SECTIONS

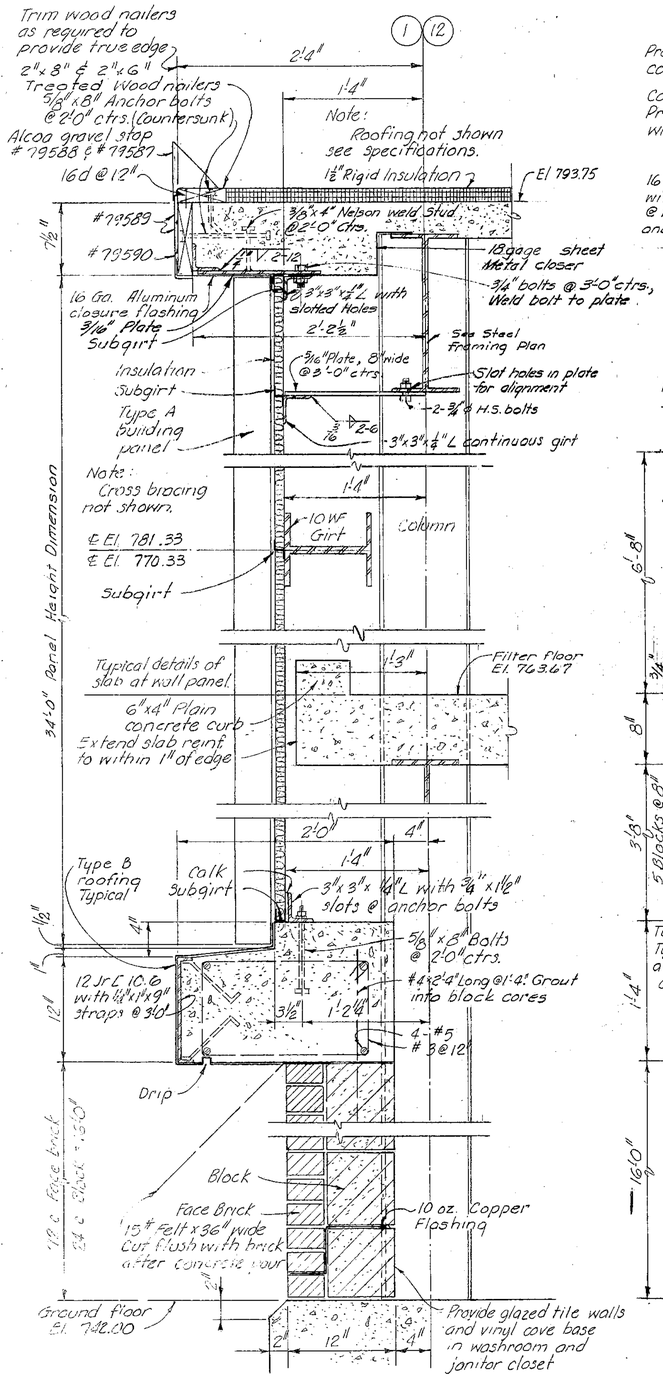
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

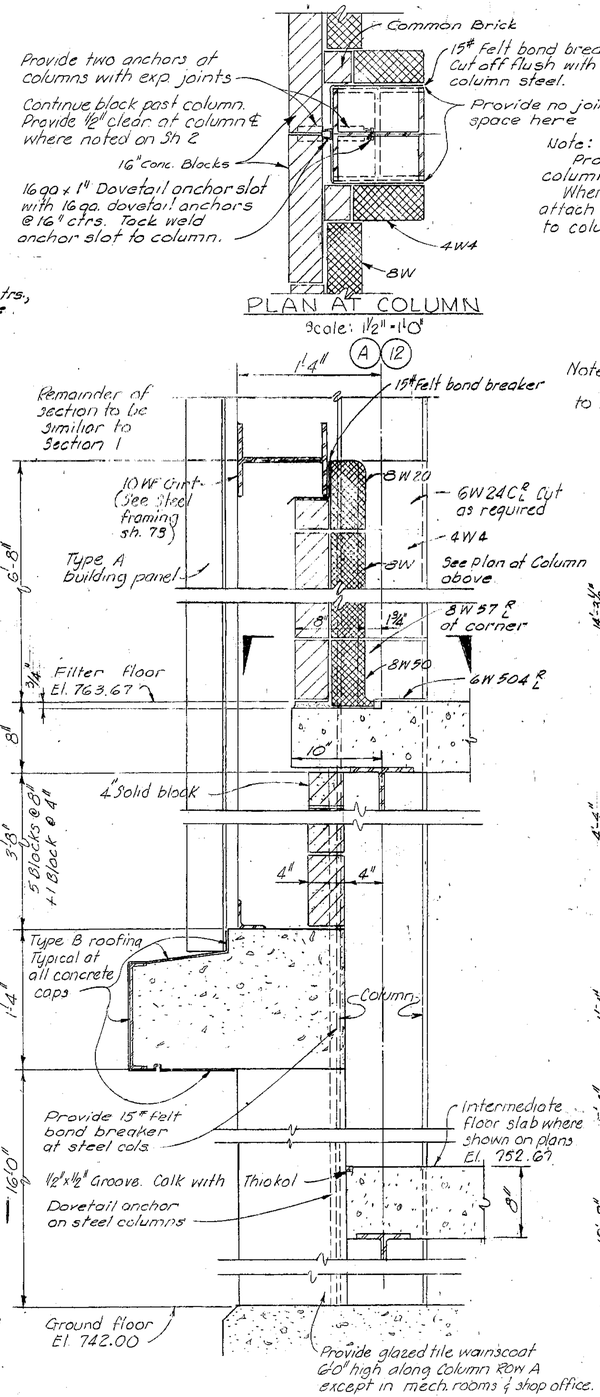
DESIGNED MDM
DETAILED DC
CHECKED LEW
APPROVED
DATE 2-4-64

SHEET 38 OF 190

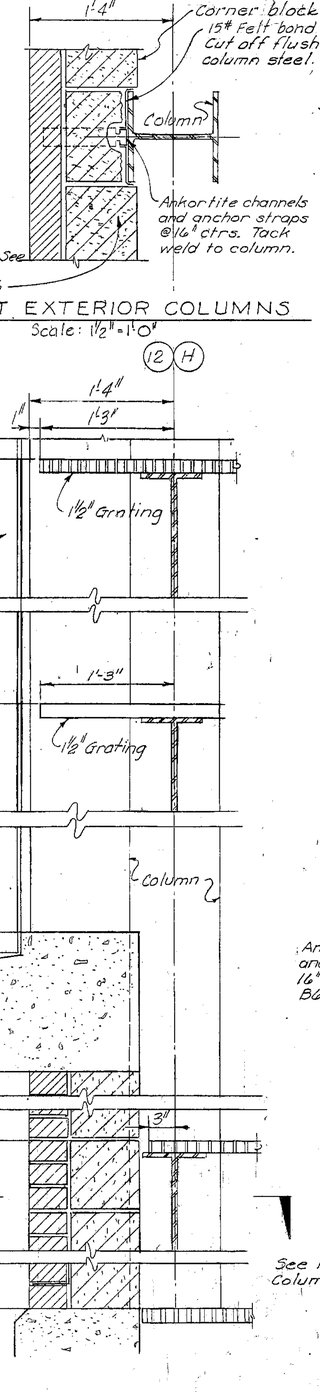
1062.32



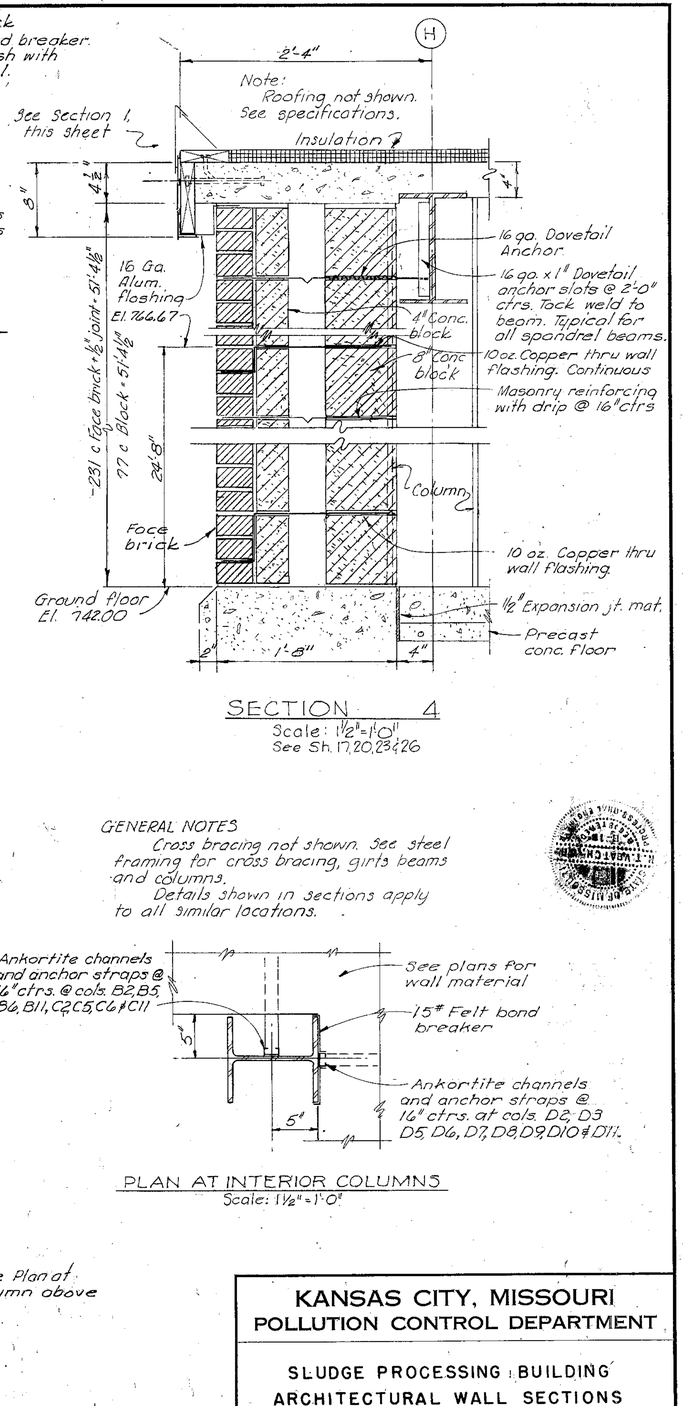
SECTION 1
Scale: 1½"=1'-0"
See Sh. 17,18,20 & 21



SECTION 2
Scale: 1½"=1'-0"
See Sh. 17,18,20 & 21



SECTION 3
Scale: 1½"=1'-0"
See Sh. 18,21,24 & 27



SECTION 4
Scale: 1½"=1'-0"
See Sh. 17,20,23 & 26

GENERAL NOTES
Cross bracing not shown. See steel framing for cross bracing, girts beams and columns.
Details shown in sections apply to all similar locations.

PLAN AT INTERIOR COLUMNS
Scale: 1½"=1'-0"

PLAN AT COLUMN
Scale: 1½"=1'-0"

PLAN AT EXTERIOR COLUMNS
Scale: 1½"=1'-0"

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
ARCHITECTURAL WALL SECTIONS

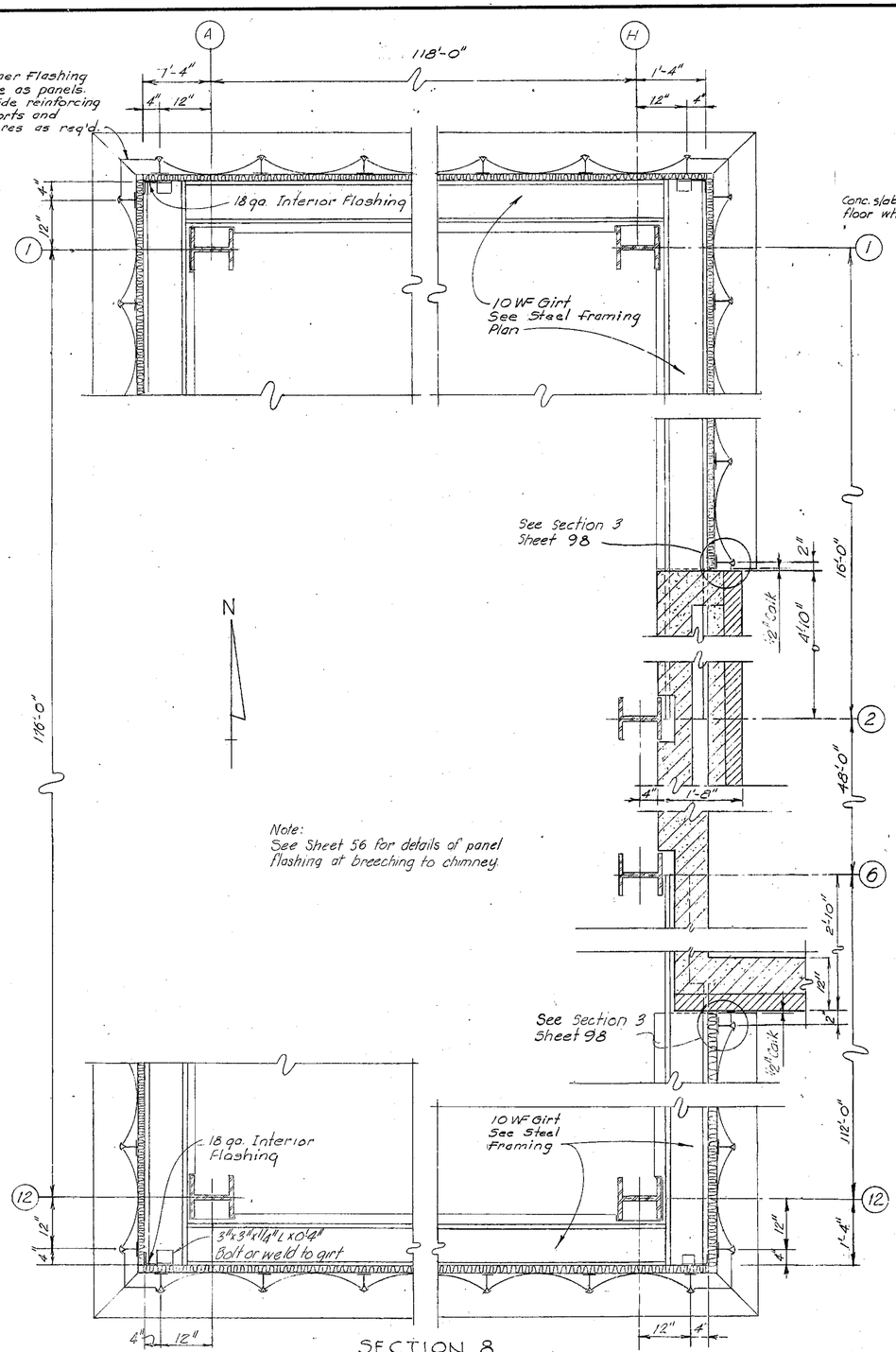
BLACK & VEATCH AND BURNS & MCDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED ACP DETAILED ACP LWD CHECKED VEA APPROVED [illegible] DATE 7-4-69

SHEET 39 OF 190

10623.32

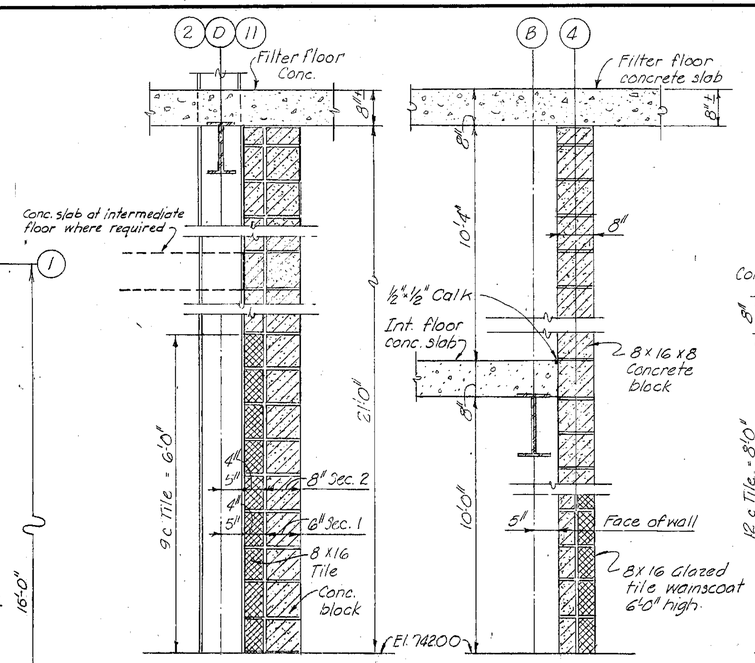


SECTION 8

SECTIONAL PLAN OF TYPE A1 PANEL

Scale: 3/4" = 1'-0"

See Sheet 6 & 7



SECTION 1 & 2

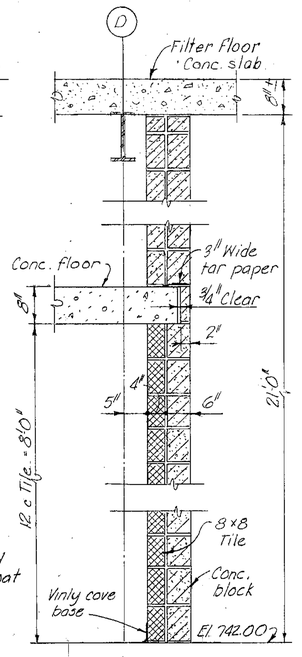
Scale: 3/4" = 1'-0"

See Sh. 17, 18, 20 & 21

SECTION 3

Scale: 3/4" = 1'-0"

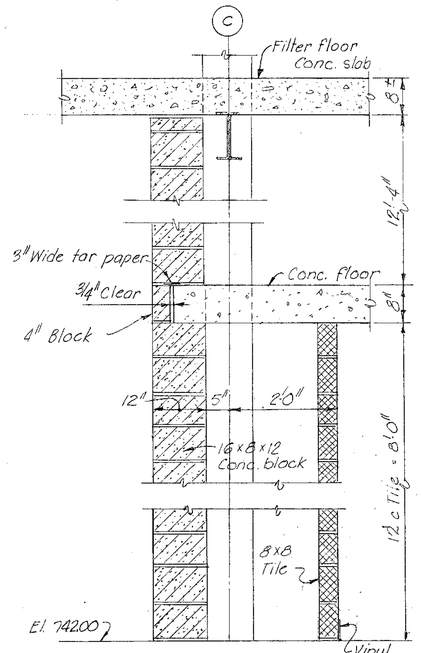
See Sh. 17 & 20



SECTION 4

Scale: 3/4" = 1'-0"

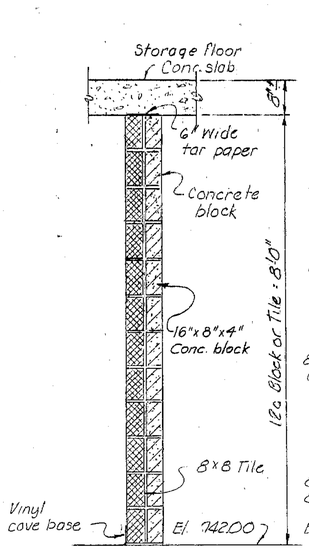
See Sh. 17 & 20



SECTION 5

Scale: 3/4" = 1'-0"

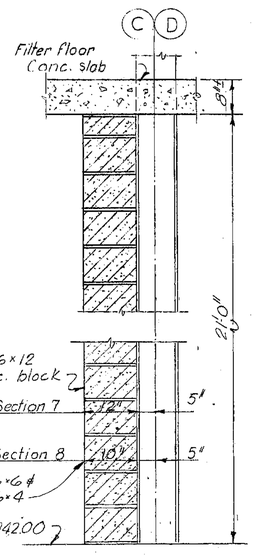
See Sh. 17 & 20



SECTION 6

Scale: 3/4" = 1'-0"

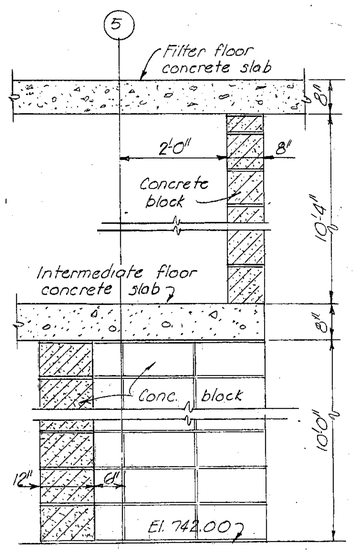
See Sheet 17



SECTION 7 & 8

Scale: 3/4" = 1'-0"

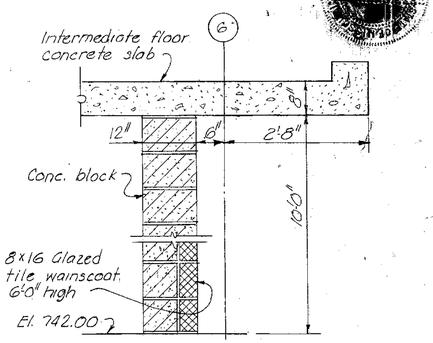
See Sheet 18



SECTION 9

Scale: 3/4" = 1'-0"

See Sh. 17 & 20



SECTION 10

Scale: 3/4" = 1'-0"

See Sheet 17

KANSAS CITY, MISSOURI

POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING

ARCHITECTURAL WALL SECTIONS AND DETAILS

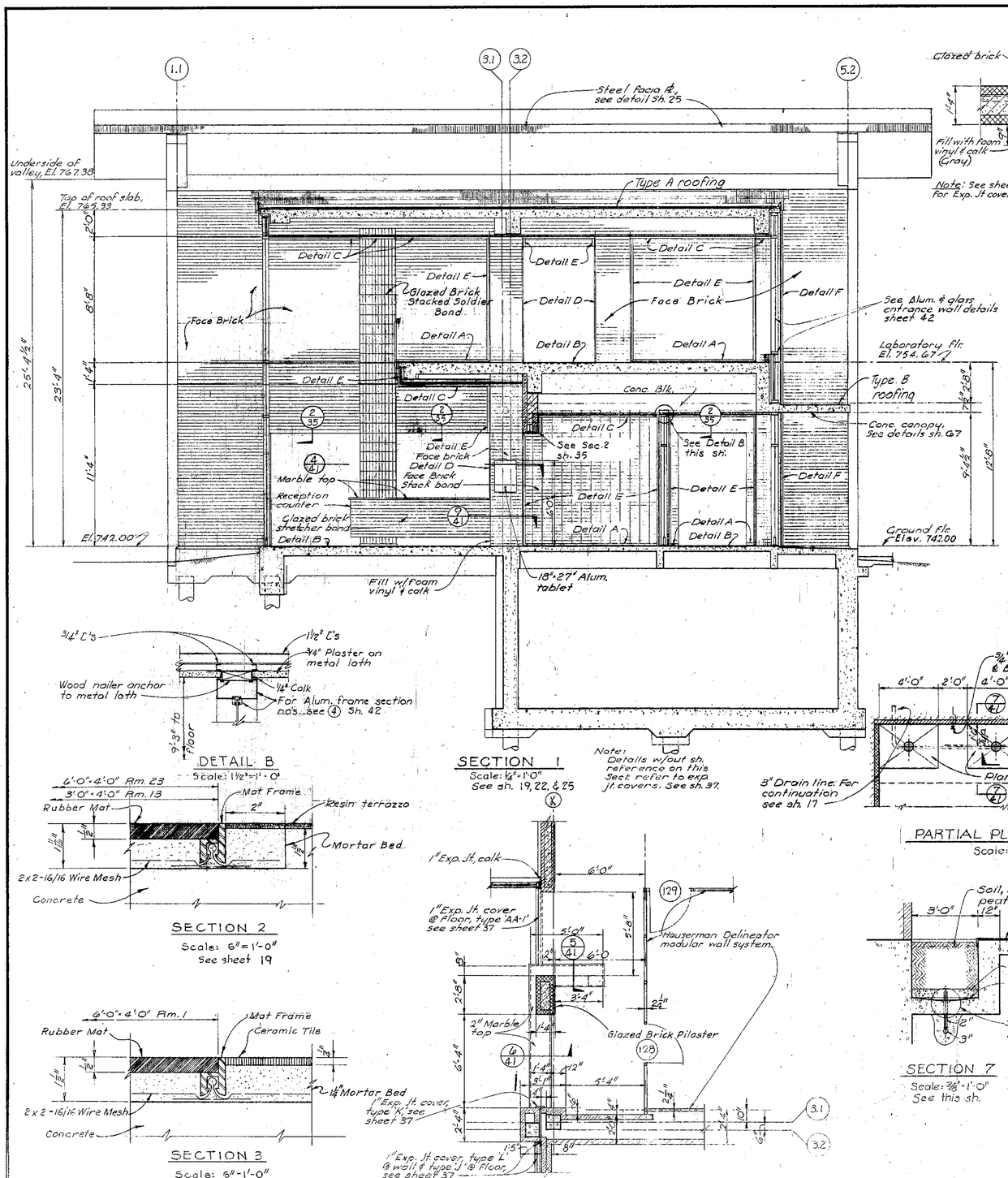
BLACK & VEATCH AND BURNS & MCDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

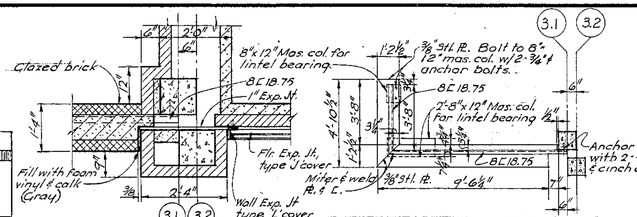
P.C.D. CONTRACT 7

DESIGNED ACP DETAILED LWD ACP CHECKED VEA APPROVED DATE 7-2-64

SHEET 40 OF 190

1062.82





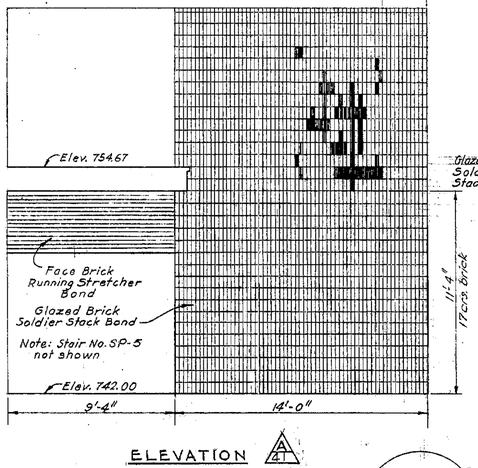
Note: See sheet 37 for Exp. Jt covers

SECTION 9

Scale ½"=1'-0"
See this sheet

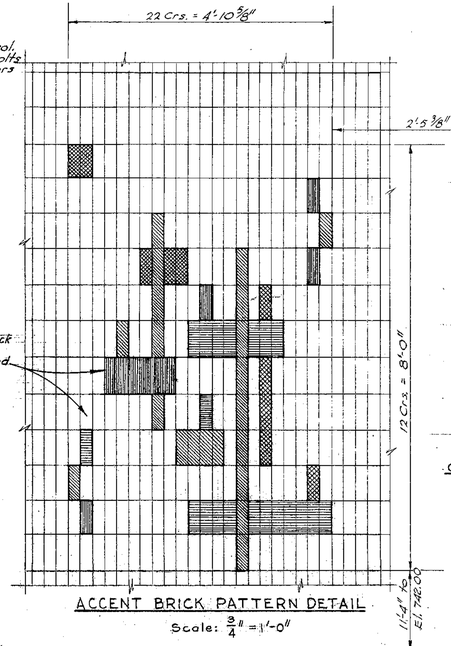
RECEPTION COUNTER FRAMING PLAN

Scale ¼"=1'-0"



ELEVATION A/41

Scale: ¼"=1'-0"
See sh. 19 & 22



ACCENT BRICK PATTERN DETAIL

Scale: ¾"=1'-0"

DETAIL B

Scale: 1½"=1'-0"

SECTION 2

Scale: 6"=1'-0"
See sheet 19

SECTION 3

Scale: 6"=1'-0"
See sheet 19

SECTION 1

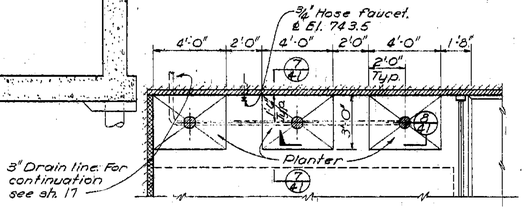
Scale: ½"=1'-0"
See sh. 19, 22, & 25

Note: Details w/out sh. reference on this Sect. refer to exp. jt. covers. See sh. 37.

SECTION 4

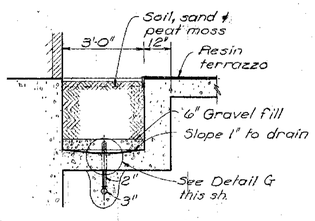
FLOOR PLAN ROOM NO. 4

Scale: ¼"=1'-0" (See this sheet)



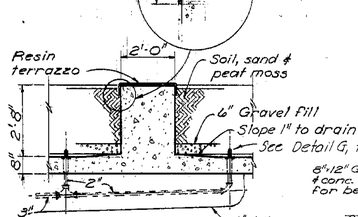
PARTIAL PLAN OF LOBBY

Scale: ¼"=1'-0"



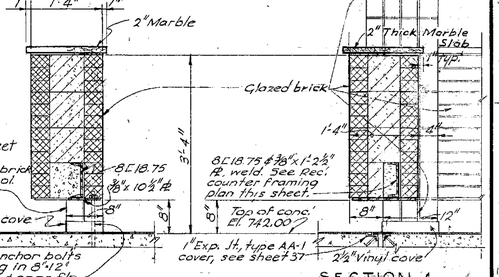
SECTION 7

Scale: ⅜"=1'-0"
See this sh.



SECTION 8

Scale: ⅜"=1'-0"
See this sh.

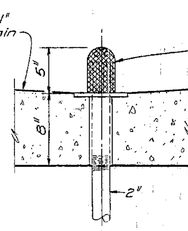


SECTION 5

Scale: ¾"=1'-0"
See this sh.

SECTION 6

Scale ¾"=1'-0"
See this sh.



DETAIL G

Scale: 1½"=1'-0"

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING

ENTRANCE LOBBY DETAILS

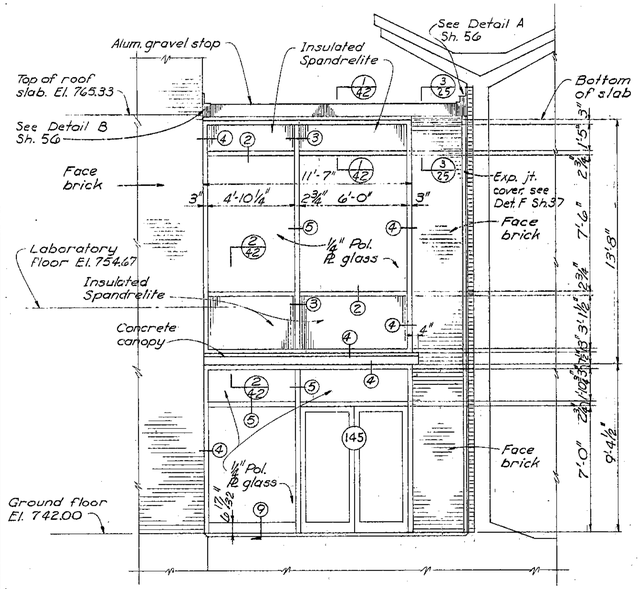
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED MDM CHECKED LEW
DETAILED MDM, LSF, SDL APPROVED
DATE

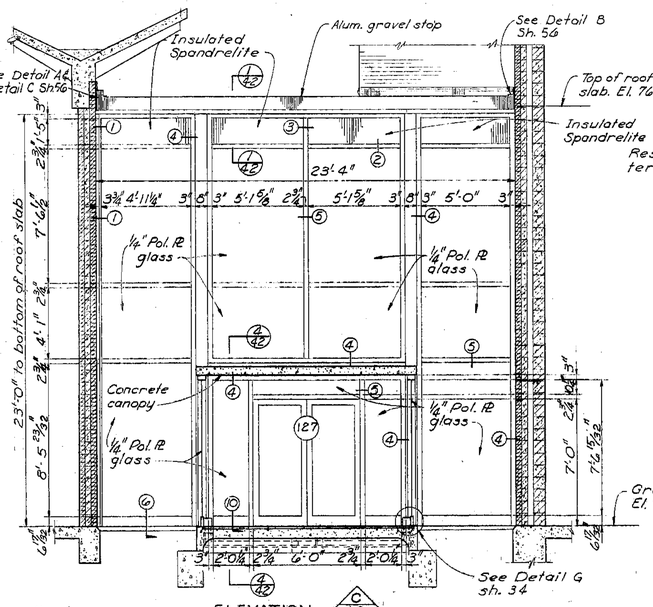
SHEET 41 OF 190

1062.32

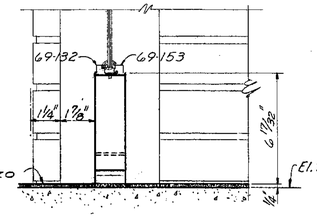


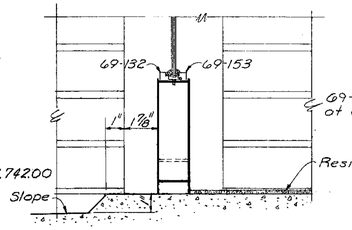
ELEVATION A / 42
Scale: 1/4" = 1'-0"
See Sh. 19 & 22

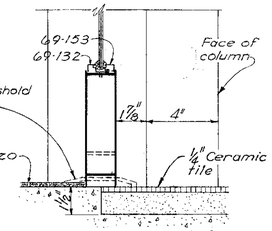
Note: All Pol. Pl. glass call outs on this sheet refer to I.P.C. "Solarbronze"

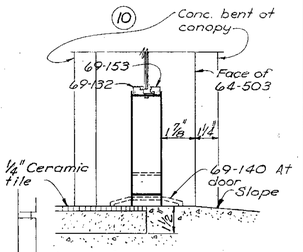


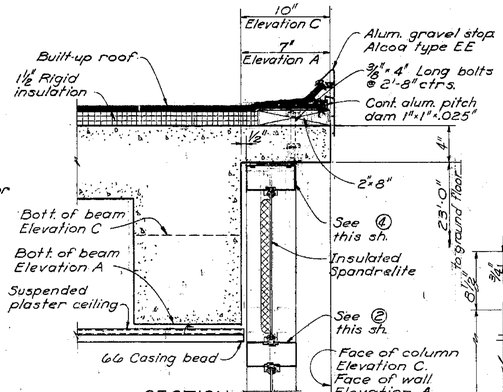
ELEVATION C / 42
Scale: 1/4" = 1'-0"
See Sh. 19 & 22



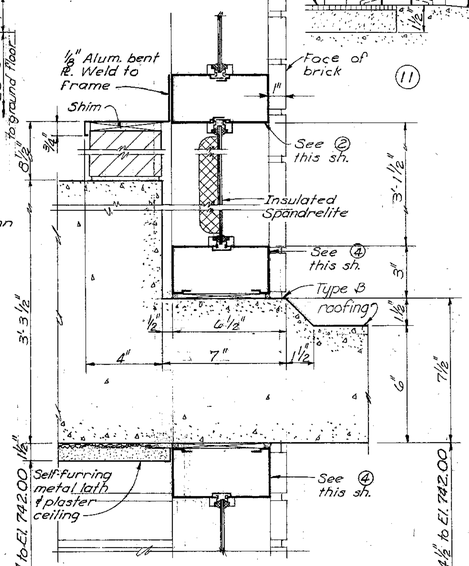




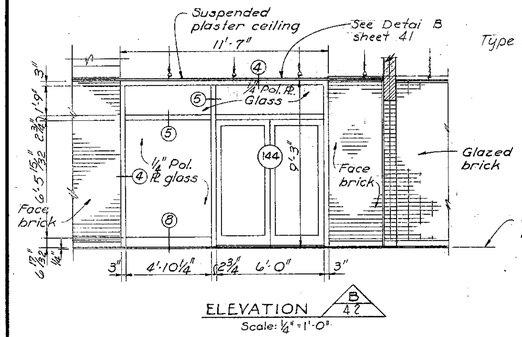




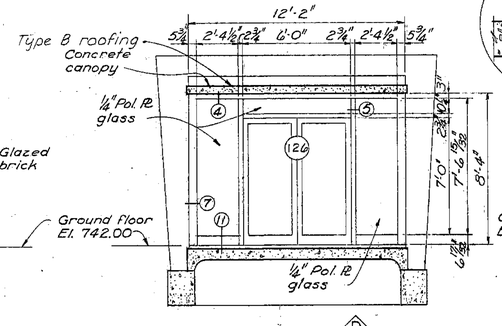
SECTION 1
Scale: 1 1/2" = 1'-0"
See this sh.



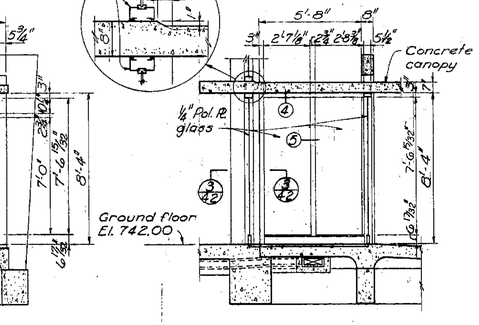
SECTION 2
Scale: 3" = 1'-0"
See this sh. & sh. 22



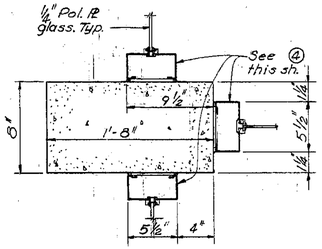
ELEVATION B / 42
Scale: 1/4" = 1'-0"
See Sh. 19



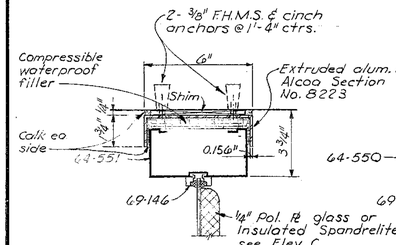
ELEVATION D / 42
Scale: 1/2" = 1'-0"
See Sh. 19



SECTION 4
Scale: 1/2" = 1'-0"
See this sh.



SECTION 3
Scale: 1 1/2" = 1'-0"
See this sh.



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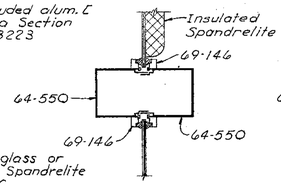

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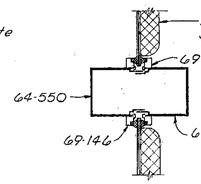

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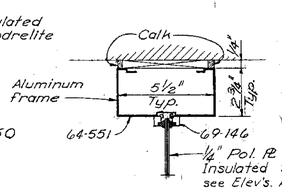

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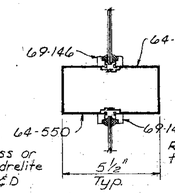

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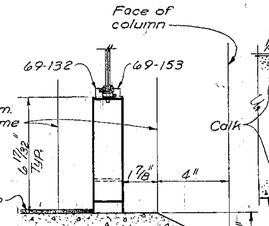

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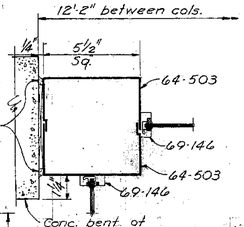


7

Note: The aluminum frame shown is the Narrow Line '550' manufactured by the Kawneer Co., Niles, Mich.

ALUMINUM FRAME SECTIONS
Scale: 3" = 1'-0"

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
ENTRANCE DOORS AND WALL DETAILS

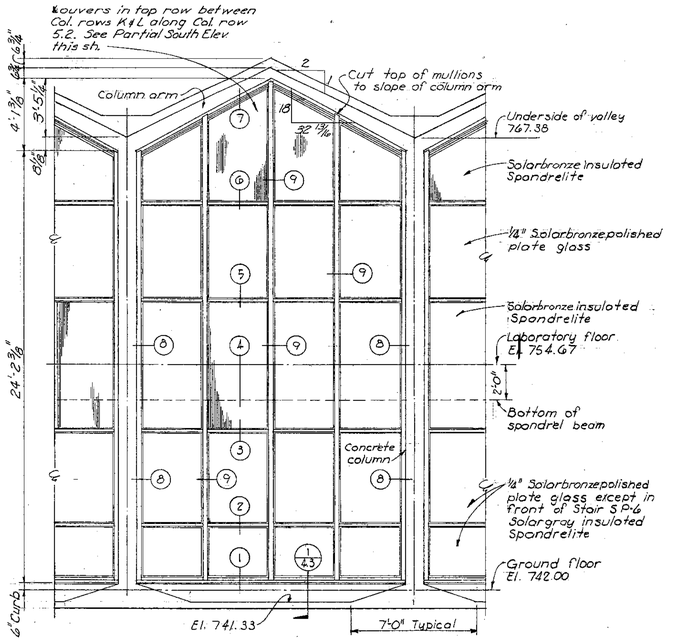
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED MDM CHECKED LEW
DETAILED DES APPROVED
DATE 7-24-60

SHEET 42 OF 190

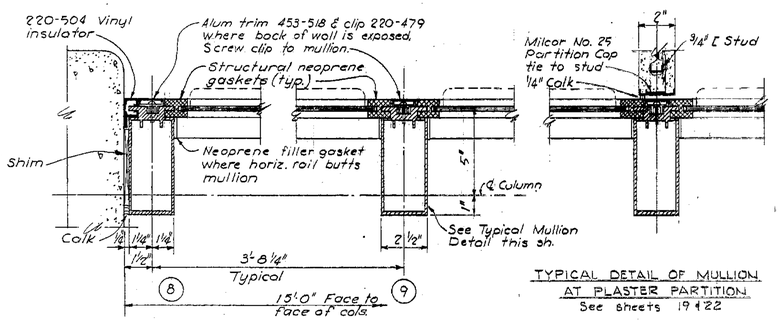
1062, 32



TYPICAL PARTIAL ELEVATION

Scale 1/4"=1'-0"

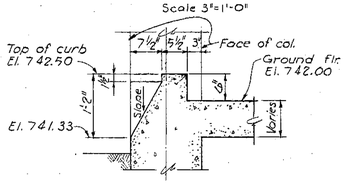
Note: Curtain wall design based on the Kawneer 'Zipperwall' system



TYPICAL DETAIL OF MULLION AT PLASTER PARTITION

See sheets 19 & 22

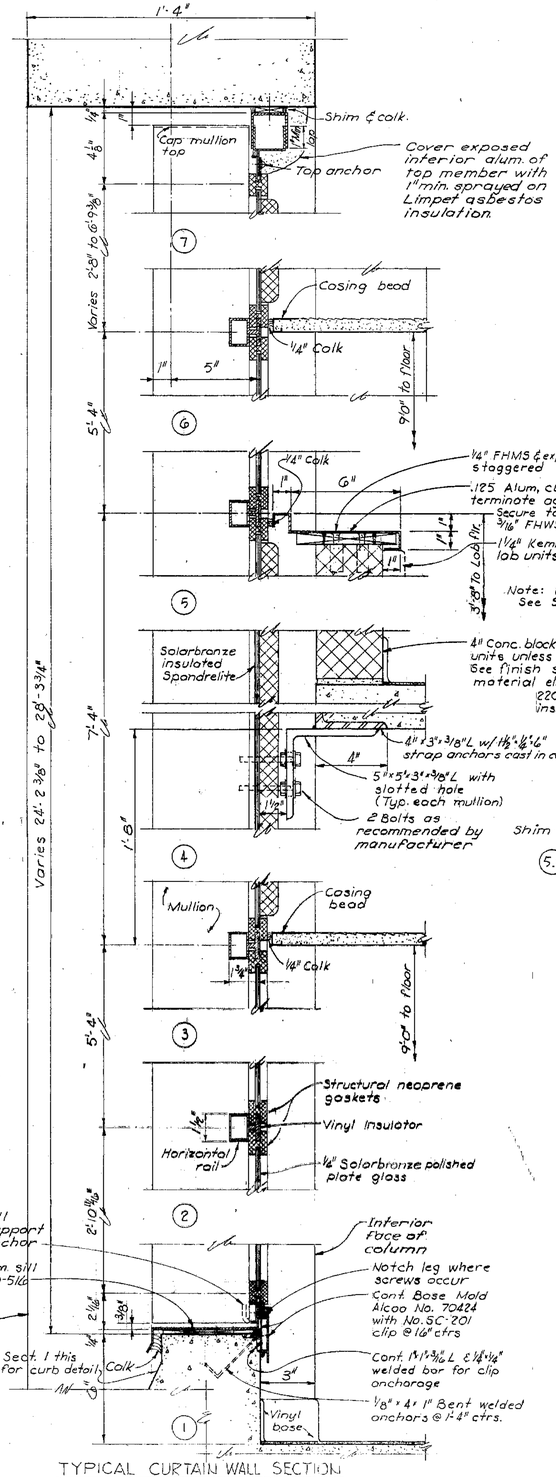
TYPICAL HORIZONTAL SECTIONS



SECTION 1

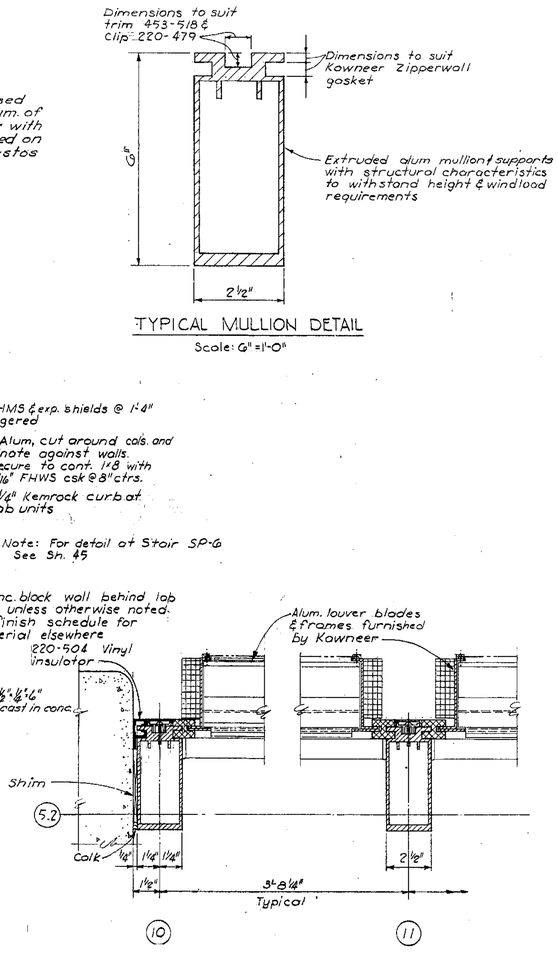
Scale 3/4"=1'-0"

See this sh.



TYPICAL CURTAIN WALL SECTION

Scale 3"=1'-0"

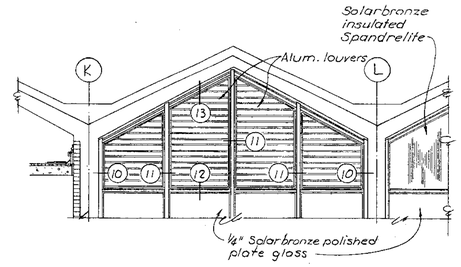


TYPICAL MULLION DETAIL

Scale: 6"=1'-0"

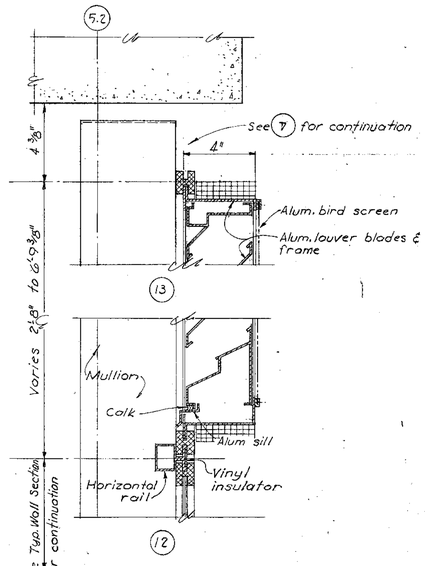
HORIZONTAL LOUVER SECTIONS

Scale 3"=1'-0"



PARTIAL SOUTH ELEVATION

Scale 1/4"=1'-0"



VERTICAL LOUVER SECTIONS

Scale: 3"=1'-0"

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
CURTAIN WALL DETAILS

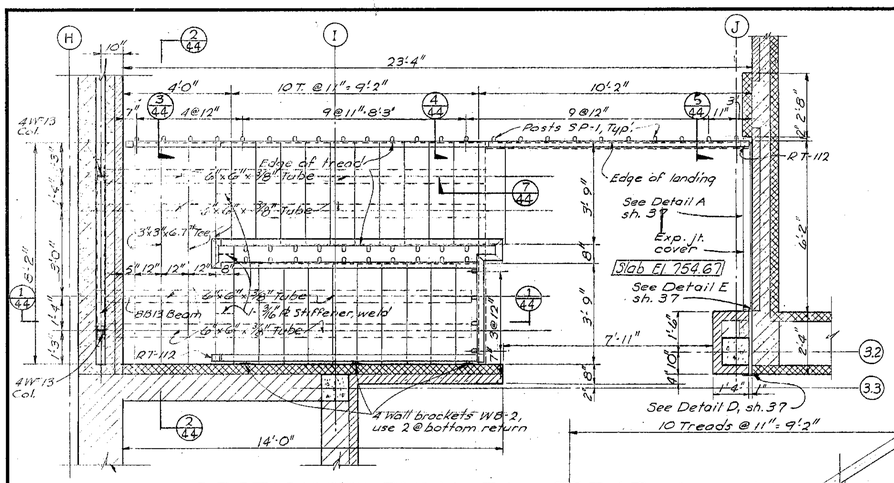
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

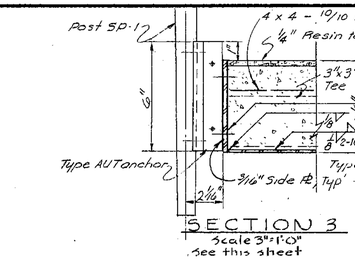
DESIGNED MDM DETAILED BDL CHECKED LEW APPROVED DATE 12-8-66

SHEET 43 OF 190

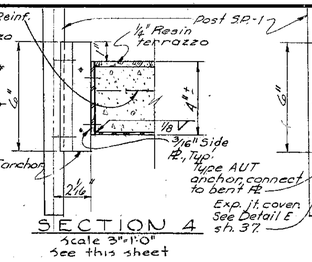
1062.82


H
I
J
23'-4"
4'-0"
10 T. @ 1'-1" = 9'-2"
10'-2"
9 @ 11" = 8'-3"
9 @ 12"
Posts SP-1, Typ.
Edge of tread
6"x6"x3/8" Tube
3"x3"x6.7# Tee
5" 12" 12" 8"
BB13 Beam
3/16" PL Stiffener, weld
6"x6"x3/8" Tube
PT-112
4W13 Col.
Edge of landing
See Detail A sh. 39
Exp. jt. cover
Slab El. 754.67
See Detail E sh. 37
See Detail D, sh. 37
4 Wall brackets WB-2, use 2 @ bottom return
10 Treads @ 11" = 9'-2"
14'-0"
3.2
3.3

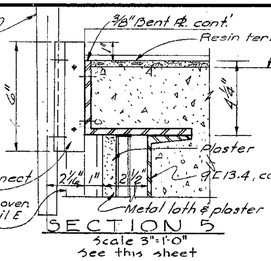
SECTIONAL PLAN - EL. 757.67
Scale 3/8" = 1'-0"



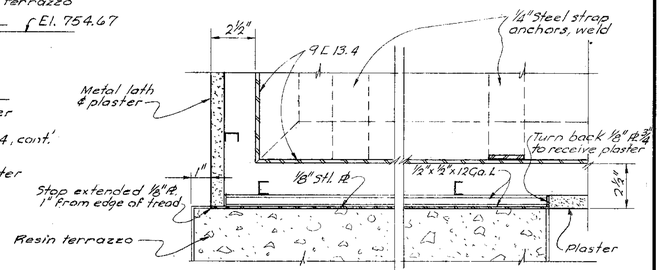
SECTION 3
Scale 3" = 1'-0"
See this sheet



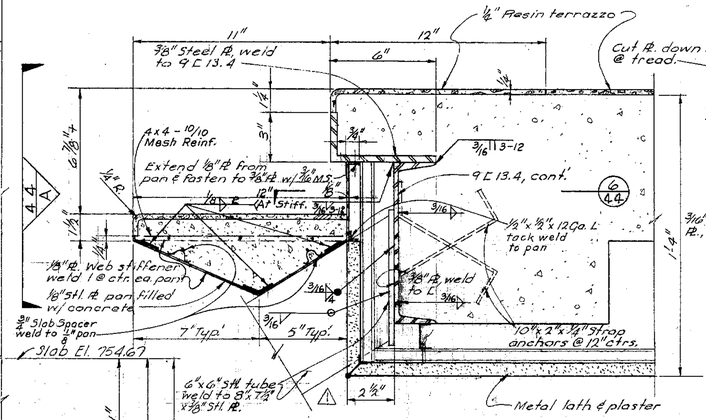
SECTION 4
Scale 3" = 1'-0"
See this sheet



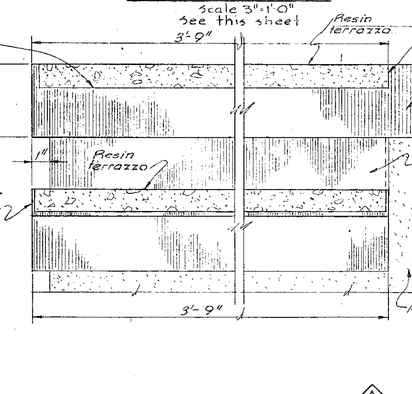
SECTION 5
Scale 3" = 1'-0"
See this sheet



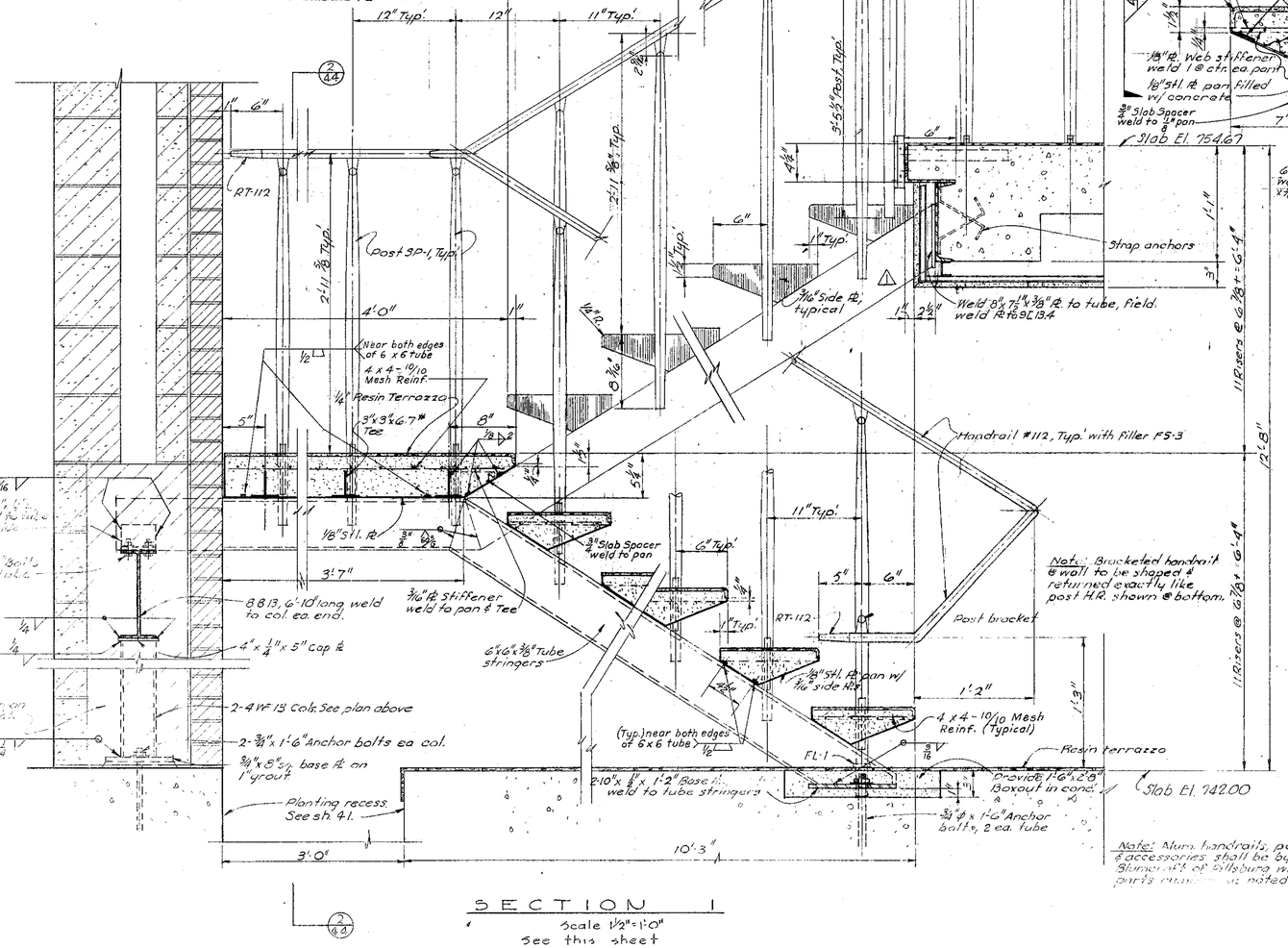
SECTION 6
Scale 3" = 1'-0"
See this sheet



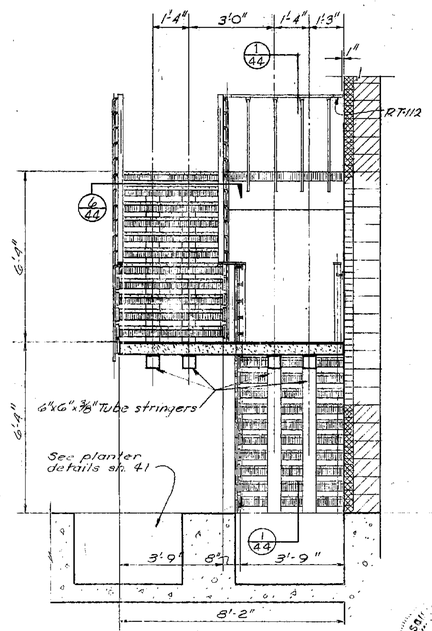
SECTION 7
Scale 3" = 1'-0"
See this sheet



ELEVATION A/44
Scale 3" = 1'-0"
See this sheet



SECTION 1
Scale 1½" = 1'-0"
See this sheet



SECTION 2
Scale 3/8" = 1'-0"
See this sheet

NO.	DATE	REVISION	BY	CK'D.
1	9-20-64	Added corner bead	W.J.D.	A.C.P.

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
DETAILS OF STAIR SP-5

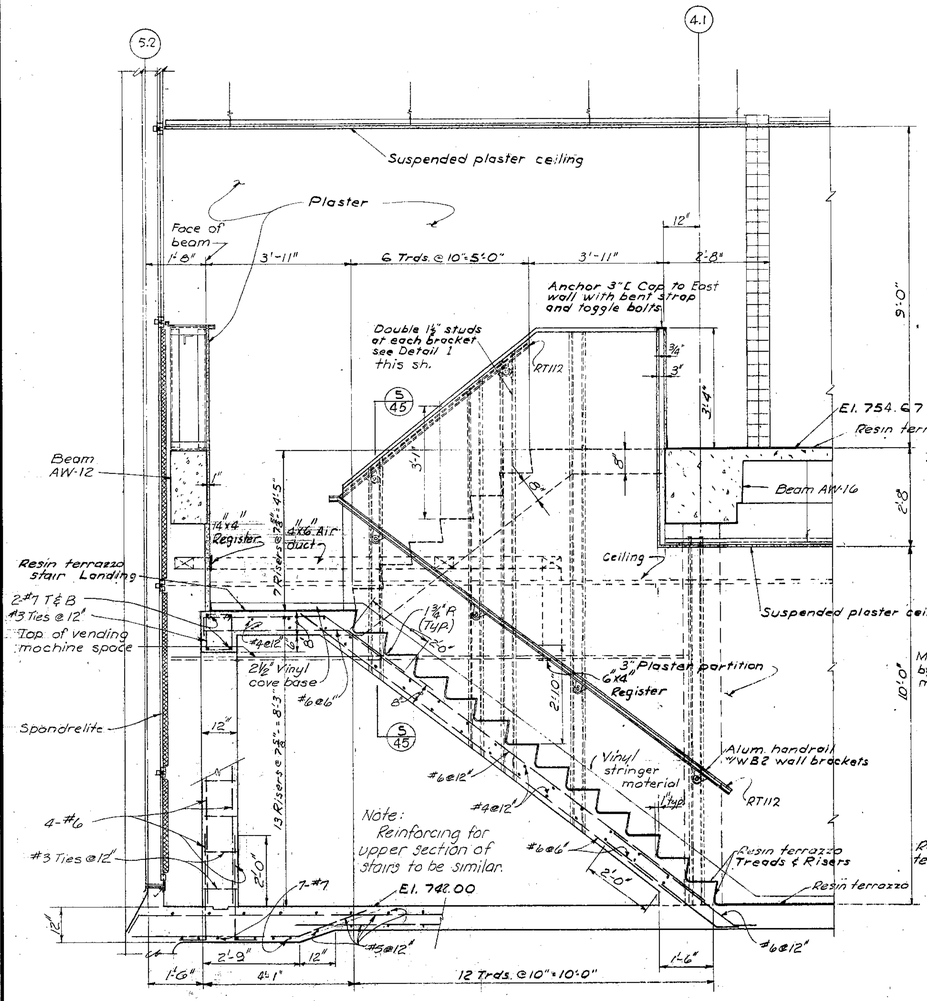
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

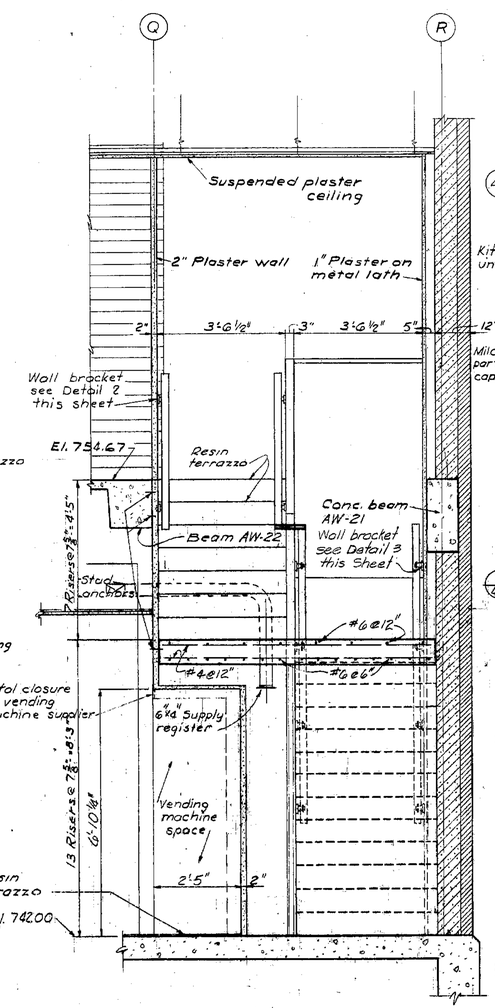
DESIGNED MDM CHECKED LEW
DETAILED MDM APPROVED
DATE 2-4-64

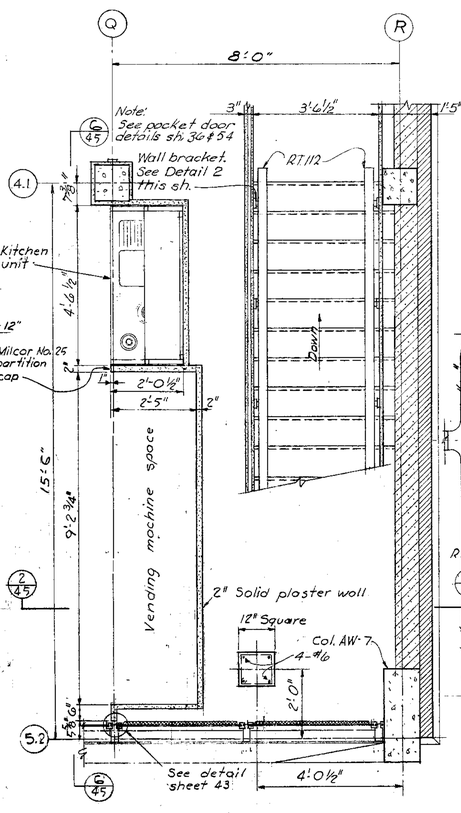
SHEET 44 OF 190

1062.32

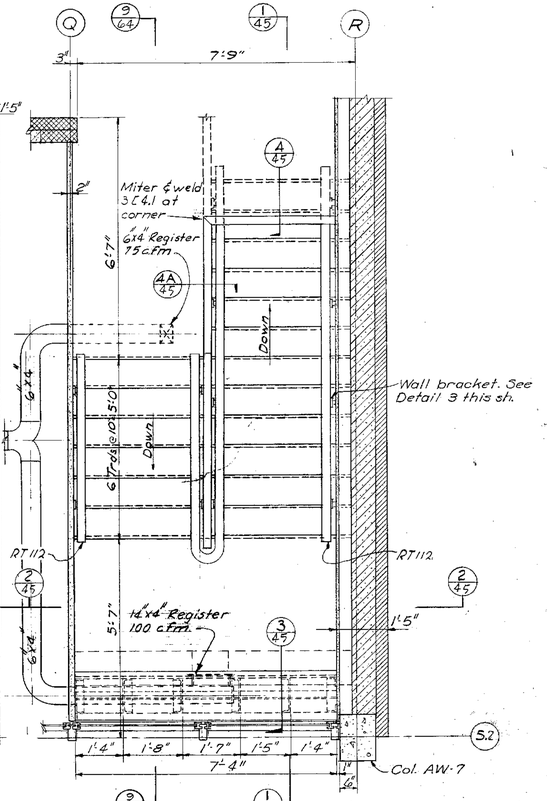


SECTION 1
Scale ½"=1'-0"
See this sh.

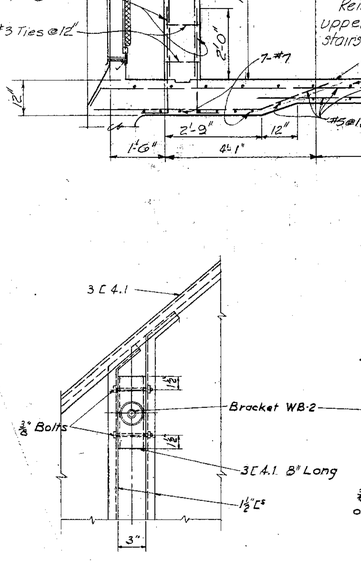




SECTIONAL PLAN @ El. 748.50
Scale ½"=1'-0"

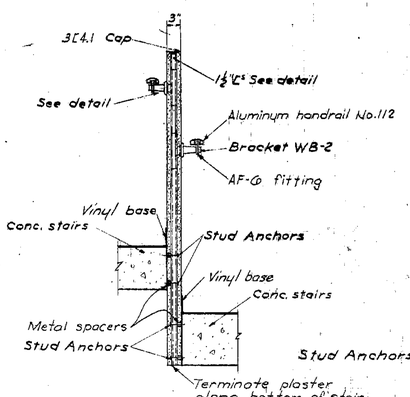


PLAN @ El. 758.33
Scale ½"=1'-0"

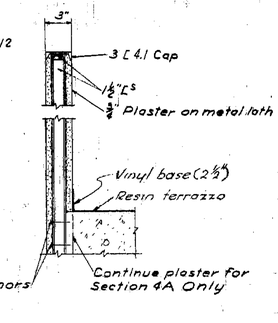


BRACKET & HANDRAIL CAP DETAIL 1
Scale: 1½"=1'-0"

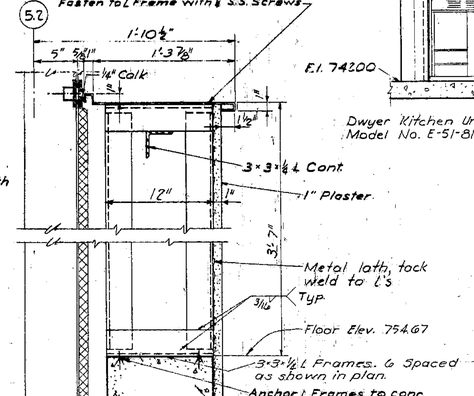
Note: Handrail section no's. on this sheet are from the Blumcraft catalogue.



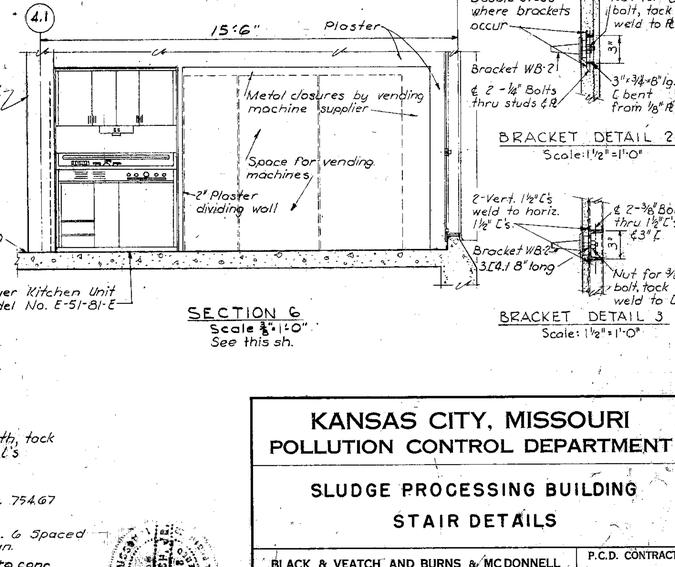
SECTION 5
Scale ¾"=1'-0"
See this sh.



SECTION 4 & 4A
Scale ½"=1'-0"
See this sh.



SECTION 3
Scale ½"=1'-0"
See this sh.



SECTION 6
Scale ¾"=1'-0"
See this sh.

BRACKET DETAIL 2
Scale: 1½"=1'-0"

BRACKET DETAIL 3
Scale: 1½"=1'-0"

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
STAIR DETAILS

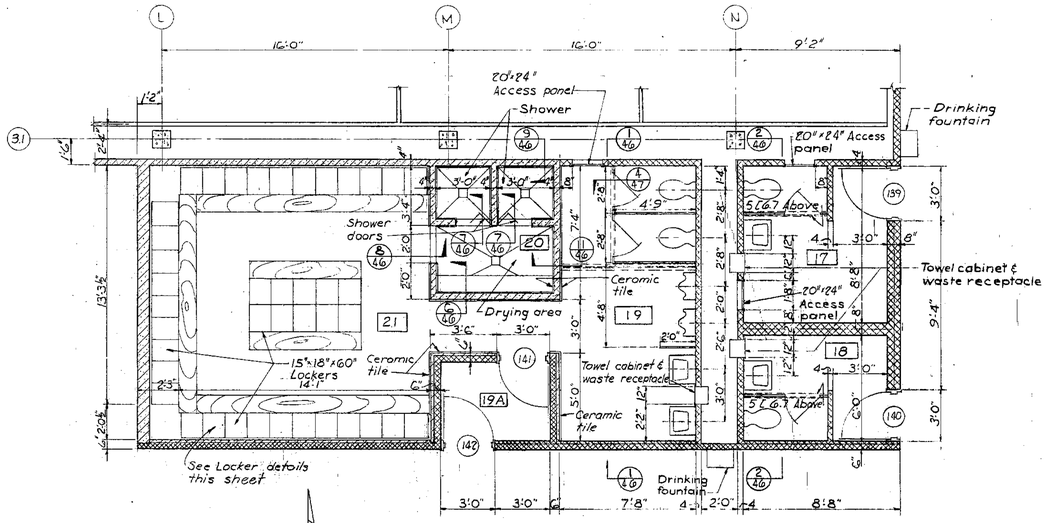
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED MDM CHECKED LEW
DETAILED D.C. BDL APPROVED
DATE 2-4-64

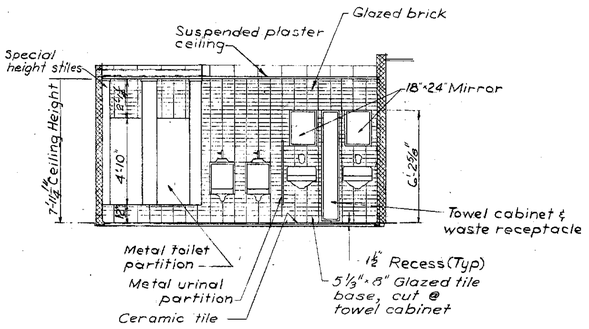
SHEET 45 OF 190

PROJECT 3282 1062.32

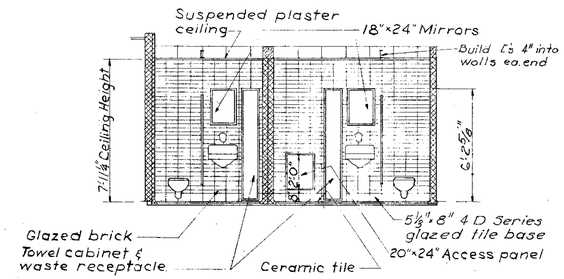


PLAN OF WASHROOM & TOILETS
GROUND FLOOR EL. 742.00
Scale ¼"=1'-0"

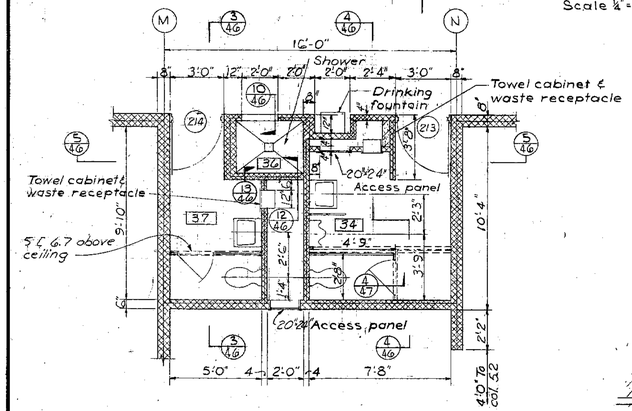
Note:
Head heights of all access panels to be 2'-8"



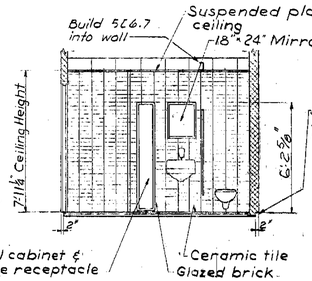
SECTION 1
Scale ¼"=1'-0"
See this sheet



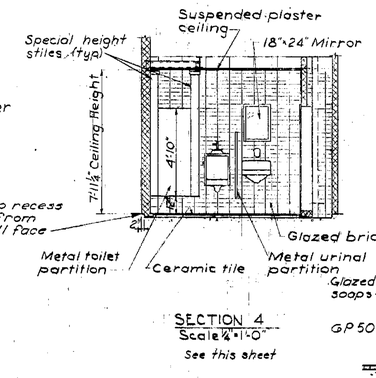
SECTION 2
Scale ¼"=1'-0"
See this sheet



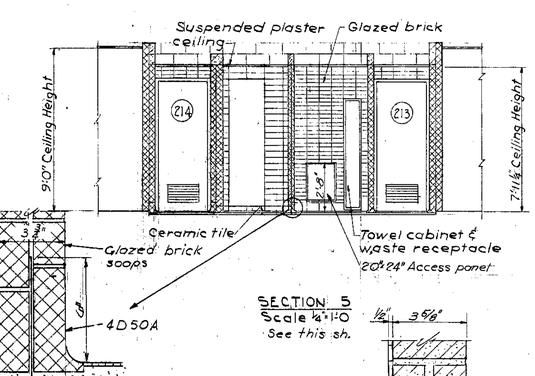
PLAN OF TOILETS AND EMERGENCY SHOWER
LABORATORY FLOOR EL. 754.67
Scale: ¼"=1'-0"



SECTION 3
Scale: ¼"=1'-0"
See this sh.

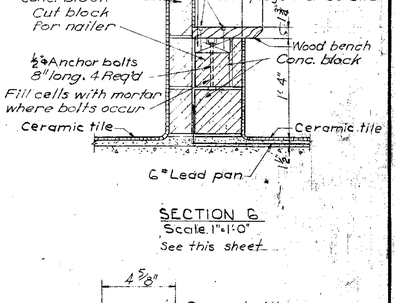


SECTION 4
Scale ¼"=1'-0"
See this sheet

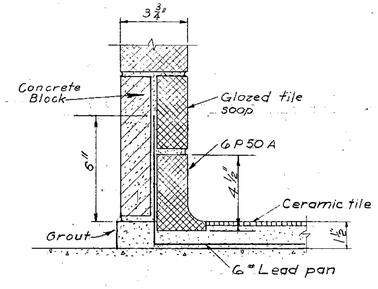


SECTION 5
Scale ¼"=1'-0"
See this sh.

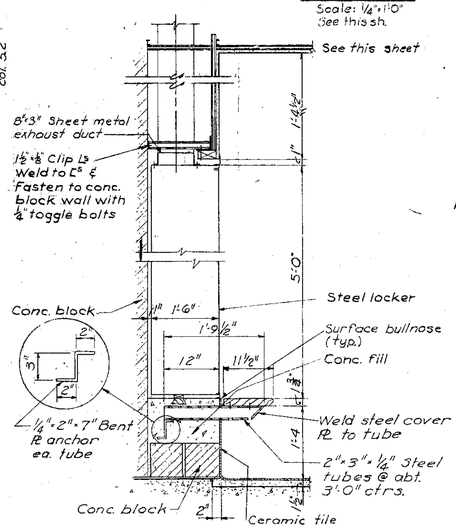
SECTION 6
Scale 1"=1'-0"
See this sheet



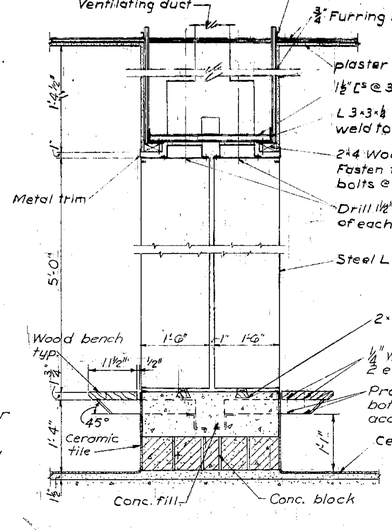
SECTION 7 & 8
Scale 3"=1'-0"
See this sheet



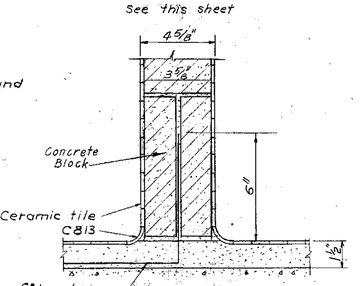
SECTION 12
Scale 3"=1'-0"
See this sheet



LOCKER DETAIL
Scale ¾"=1'-0"



LOCKER DETAIL
Scale ⅜"=1'-0"



SECTION 13
Scale: ½"=1'-0", See this sh.

SECTION 10
Scale 3"=1'-0"
See this sheet

SECTION 11
Scale 3"=1'-0" See this sheet

SECTION 9
Scale 3"=1'-0"
See this sheet

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
WASHROOM AND TOILET DETAILS

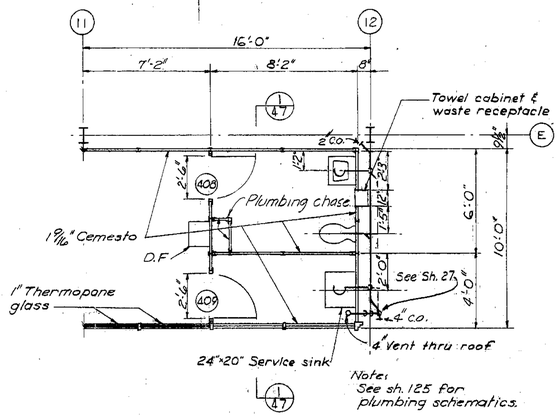
BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

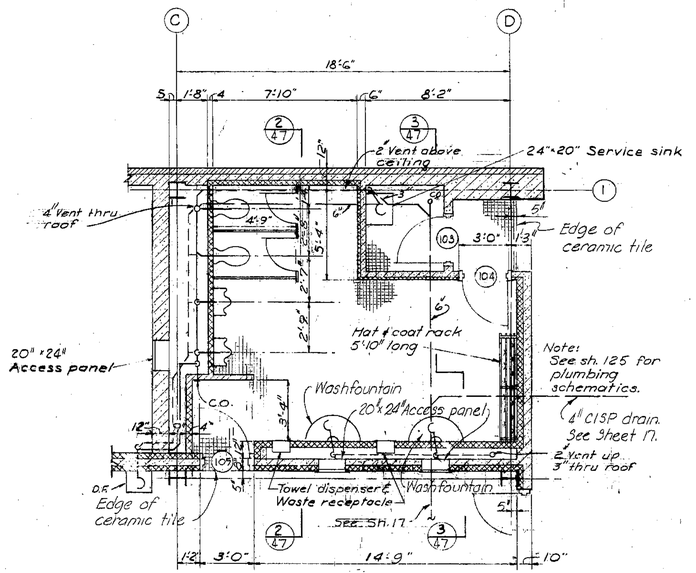
DESIGNED MDM CHECKED LEW
DETAILED DC BDL APPROVED
DATE 2-6-69

SHEET 46 OF 190

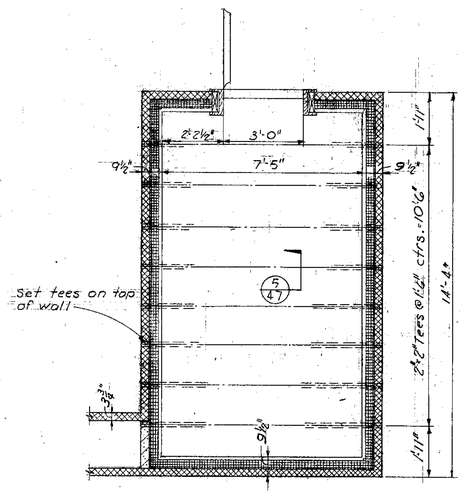
PROJECT 3282 1062.32



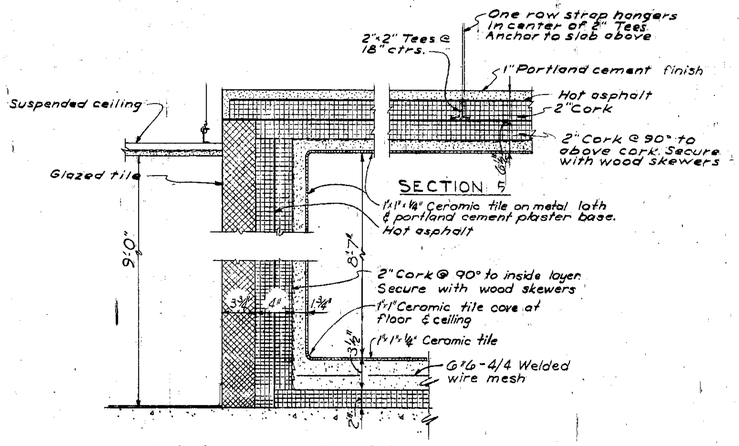
SECTIONAL PLAN
CONTROL ROOM WASH ROOM
Scale: 1/4"=1'-0"



SECTIONAL PLAN
GROUND FLOOR WASH ROOM
Scale: 1/4"=1'-0"



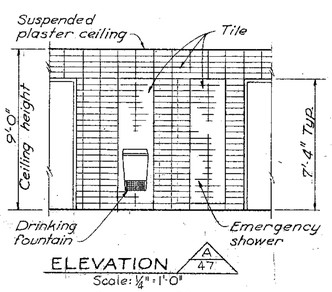
PLAN
Scale: 3/8" = 1'-0"



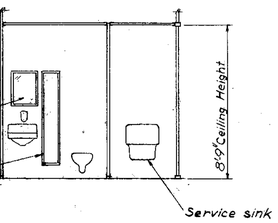
SECTION 5

TYPICAL WALL SECTION
Scale: 1½"=1'-0"

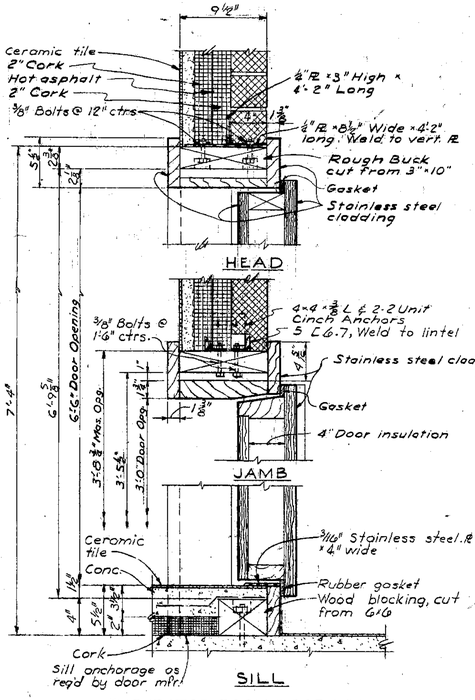
INCUBATOR ROOM DETAILS



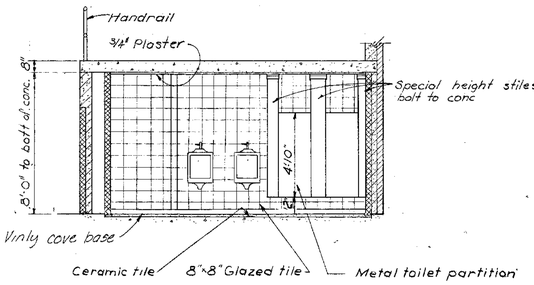
ELEVATION A/47
Scale: 1/4"=1'-0"
See Sheet 22



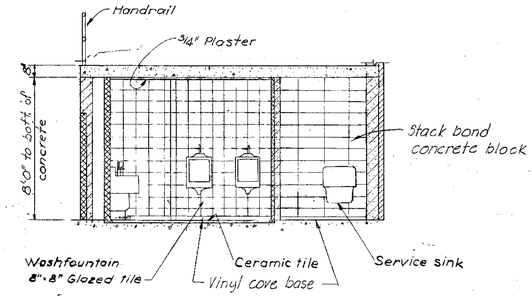
SECTION 1
Scale 1/4"=1'-0"
See this sh.



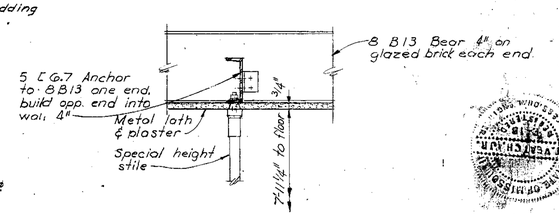
INCUBATOR ROOM DOOR DETAILS
Scale: 1½"=1'-0"



SECTION 2
Scale 1/4"=1'-0"
See this sh.



SECTION 3
Scale 1/4"=1'-0"
See this sh.



SECTION 4
Scale: 1½"=1'-0"
See this sh.

LOUIS WINSLOW ANDERSON REGISTERED PROFESSIONAL ENGINEER STATE OF MISSOURI

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
WASH ROOM AND ARCHITECTURAL DETAILS

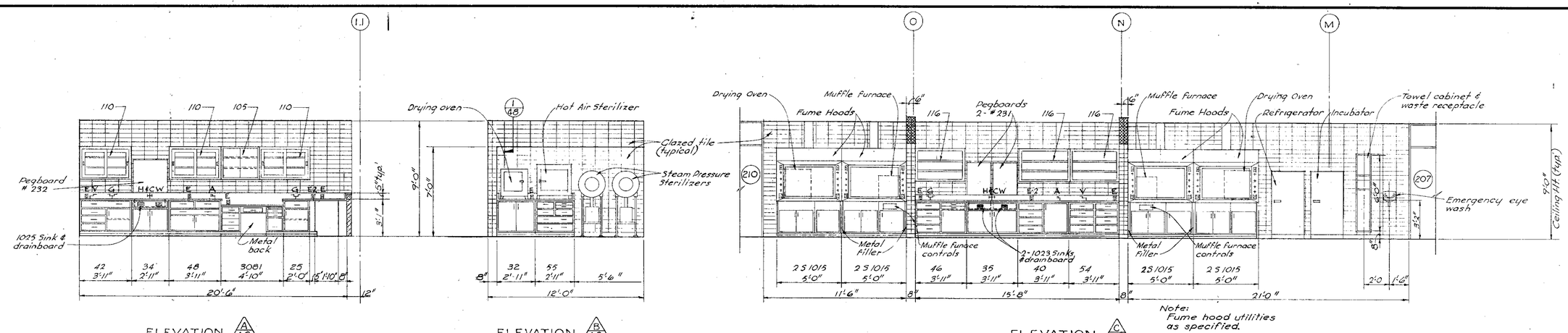
BLACK & VEATCH AND BURNS & MCDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED MDM CHECKED LEW
DETAILED BDL APPROVED
DATE 2-4-64

SHEET 47 OF 190

PROJECT 3291 1062.32

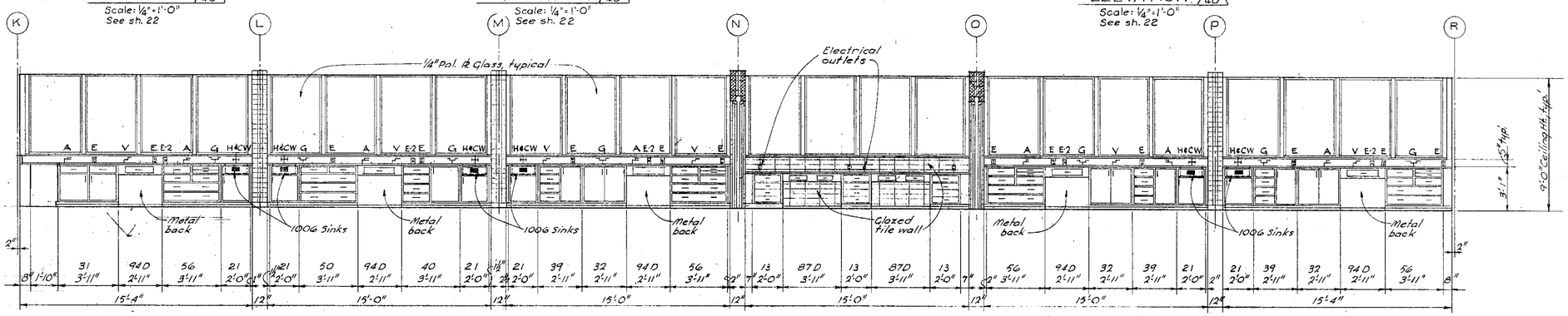


Note:
Fume hood utilities as specified.

ELEVATION A/48
Scale: 1/4"=1'-0"
See sh. 22

ELEVATION B/48
Scale: 1/4"=1'-0"
See sh. 22

ELEVATION C/48
Scale: 1/4"=1'-0"
See sh. 22

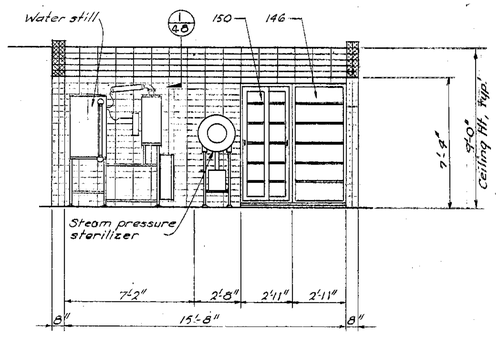


SYMBOL LEGEND

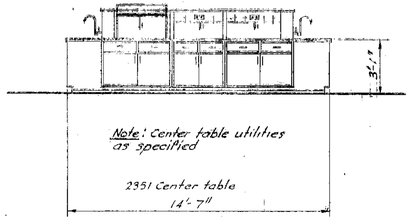
A	Air cock
V	Vacuum cock
G	Gas cock
H&CW	Hot & cold water faucet
E	Duplex 110 V.
E-2	Duplex 220 V.

Note: Catalog numbers shown on laboratory furniture for identification purposes are from the Kewaunee Mfg. Co. unless otherwise noted. Piping not shown.

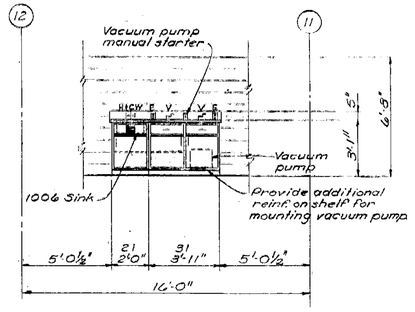
ELEVATION D/48
Scale: 1/4"=1'-0"
See sh. 22



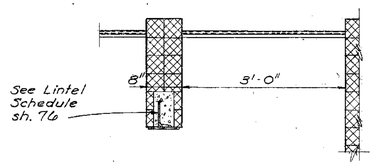
ELEVATION E/48
Scale: 1/4"=1'-0"
See sh. 22



ELEVATION F/48
Scale: 1/4"=1'-0"
See sh. 22



ELEVATION G/48
Scale: 1/4"=1'-0"
See sh. 24



SECTION 1
Scale: 3/4"=1'-0"
See this sh.

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
LABORATORY DETAILS

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

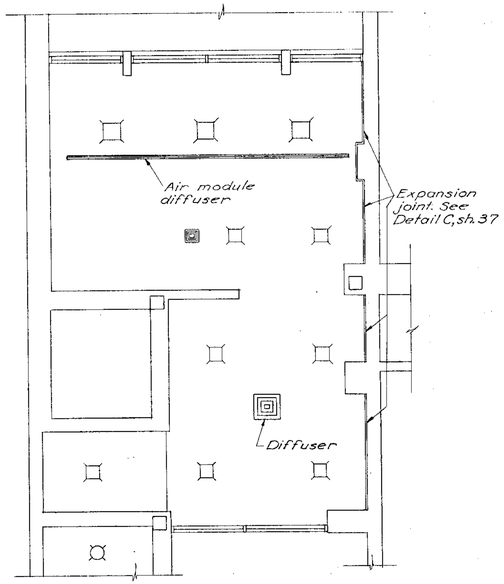
P.C.D. CONTRACT 7

DESIGNED M.D.M. DETAILED M.D.M. CHECKED L.E.W. APPROVED — DATE 2-2-68

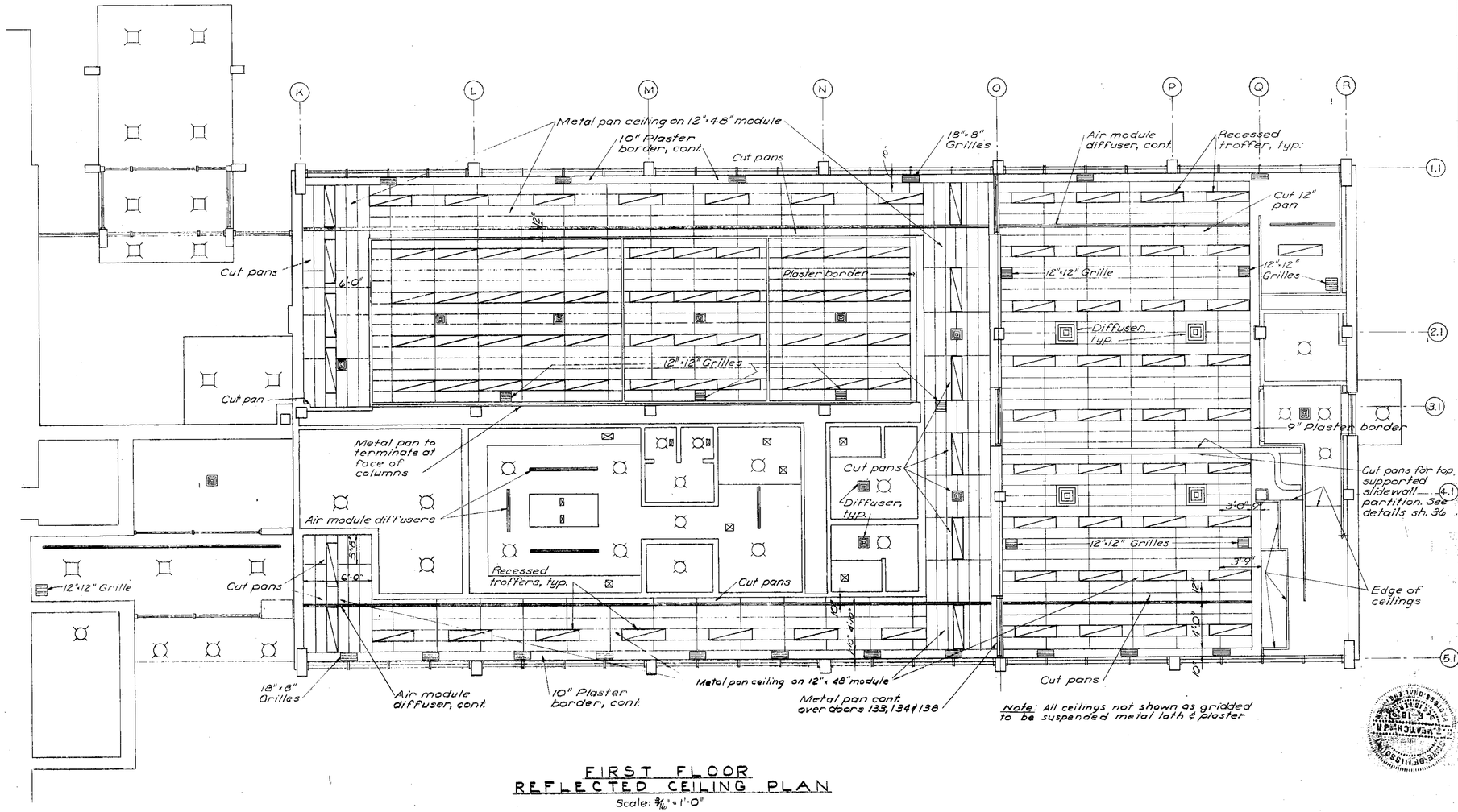
SHEET 48 OF 190

PROJECT 3292

1062.32



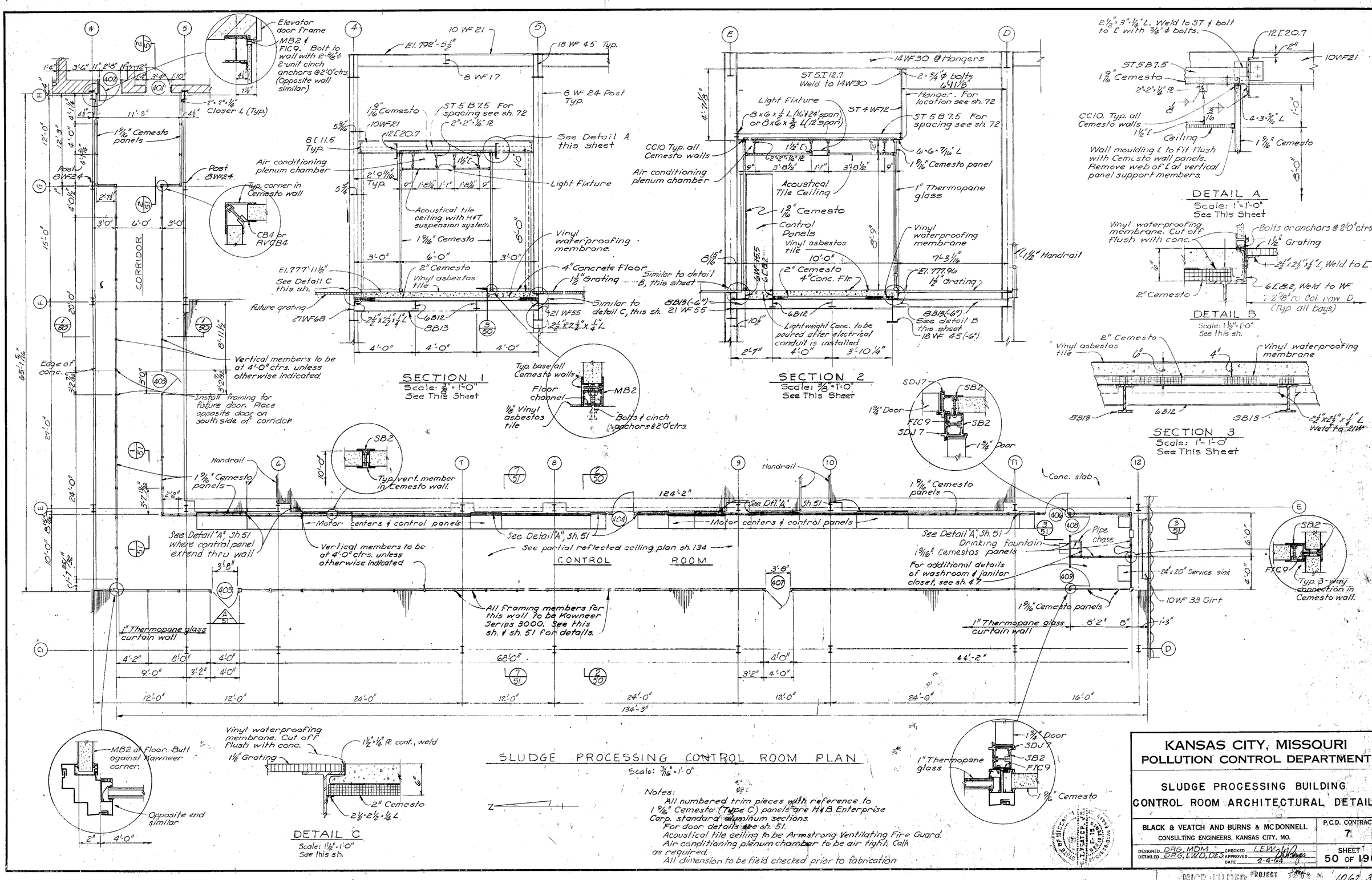
LABORATORY FLOOR
REFLECTED CEILING PLAN @ LOBBY
Scale: 3/16" = 1'-0"



FIRST FLOOR
REFLECTED CEILING PLAN
Scale: 3/16" = 1'-0"

KANSAS CITY, MISSOURI POLLUTION CONTROL DEPARTMENT	
SLUDGE PROCESSING BUILDING REFLECTED CEILING PLANS	
BLACK & VEATCH AND BURNS & McDONNELL CONSULTING ENGINEERS, KANSAS CITY, MO.	P.C.D. CONTRACT 7
DESIGNED MDM CHECKED LEW DETAILED DC, MDM APPROVED DATE 2-2-64	SHEET 49 OF 190

RECOMMENDED PROJECT 1062.32



KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
CONTROL ROOM ARCHITECTURAL DETAILS

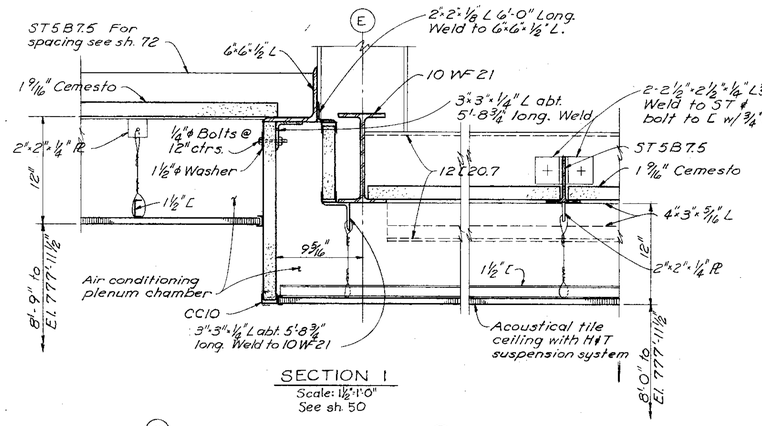
BLACK & VEATCH AND BURNS & MCDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

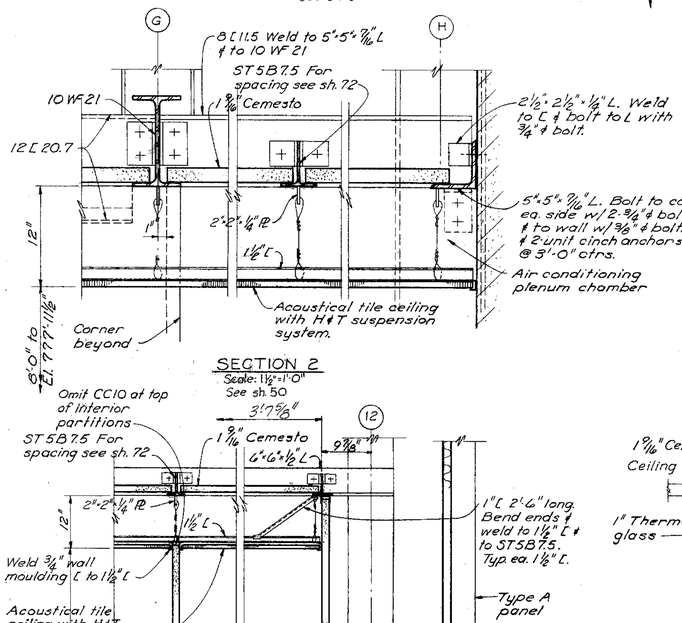
DESIGNED DRG, MDM CHECKED LEW
DETAILED DRG, LWO, DES APPROVED
DATE 2-4-64

SHEET 50 OF 190

MICROFILMED PROJECT 1062.32

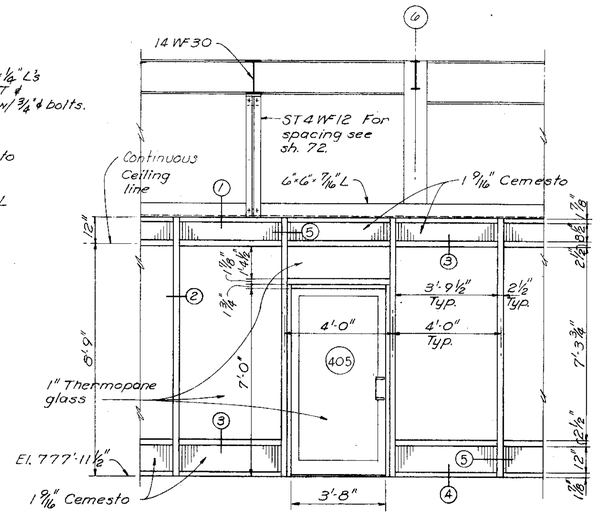


SECTION 1
Scale: 1½"=1'-0"
See sh. 50



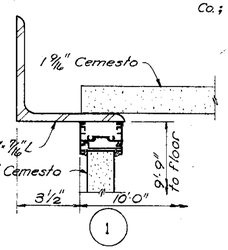
SECTION 2
Scale: 1½"=1'-0"
See sh. 50

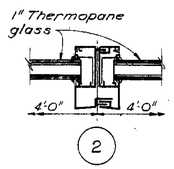
SECTION 3
Scale: ¾"=1'-0"
See sh. 50

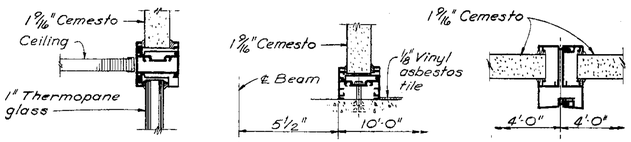


Note:
The alum. frame shown is the Series 3000 as manufactured by the Kawneer Co.; Niles, Mich.

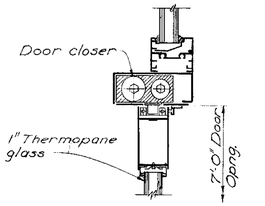
ELEVATION A 51
Scale: 3/8"=1'-0"
See sh. 50

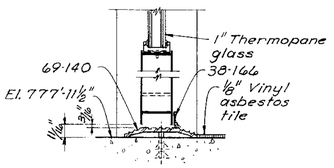






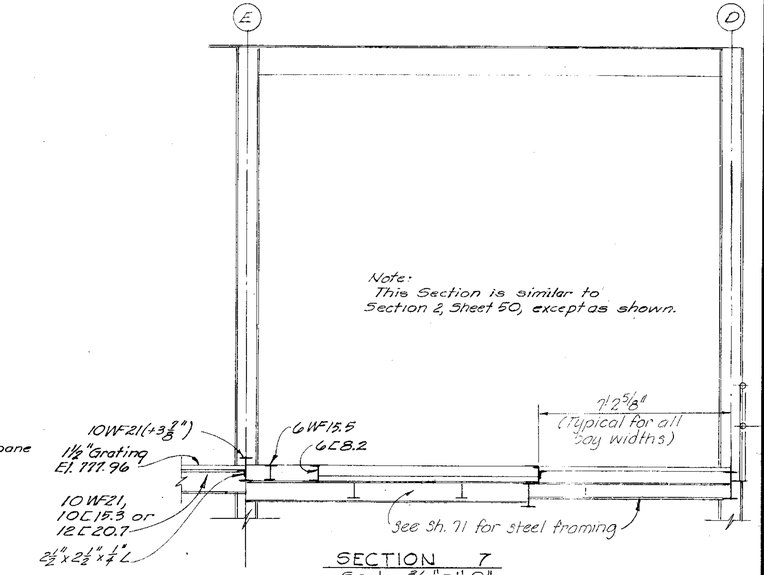
ALUM. FRAME SECTIONS
Scale: 3"=1'-0"
See this sh.



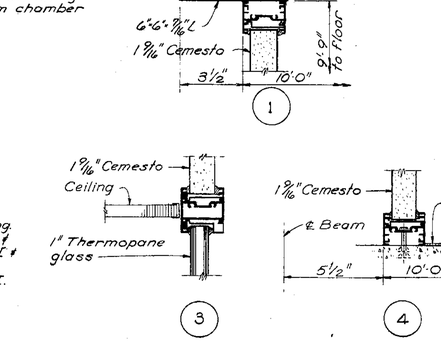


Note:
The alum. door shown is the Extra Duty 350 by the Kawneer Co.

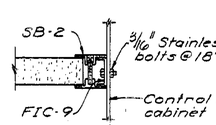
DOORS 405 & 407 DETAILS
Scale: 3"=1'-0"



SECTION 7
Scale 3/8"=1'-0"
See Sheet 50

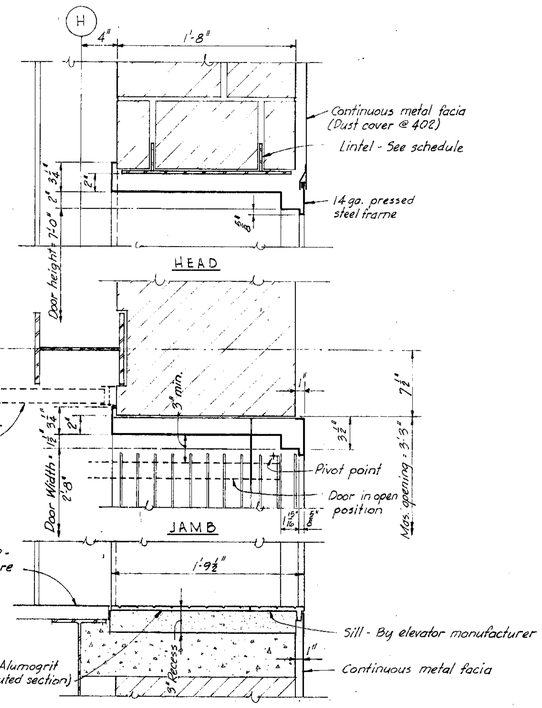


DOORS 403, 404, 406, 408 & 409 DETAILS
Scale: 3"=1'-0"



Note:
This detail is typical for all control panels that extend thru partition wall. Exact location of projecting panels to be determined by equipment furnished.

DETAIL A
Scale: 3"=1'-0"
See Sheet 50



PASSENGER ELEVATOR DOOR DETAILS
NO. 115, 203, 302 AND 402
Scale: 1½"=1'-0"

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
CONTROL ROOM ARCHITECTURAL DETAILS

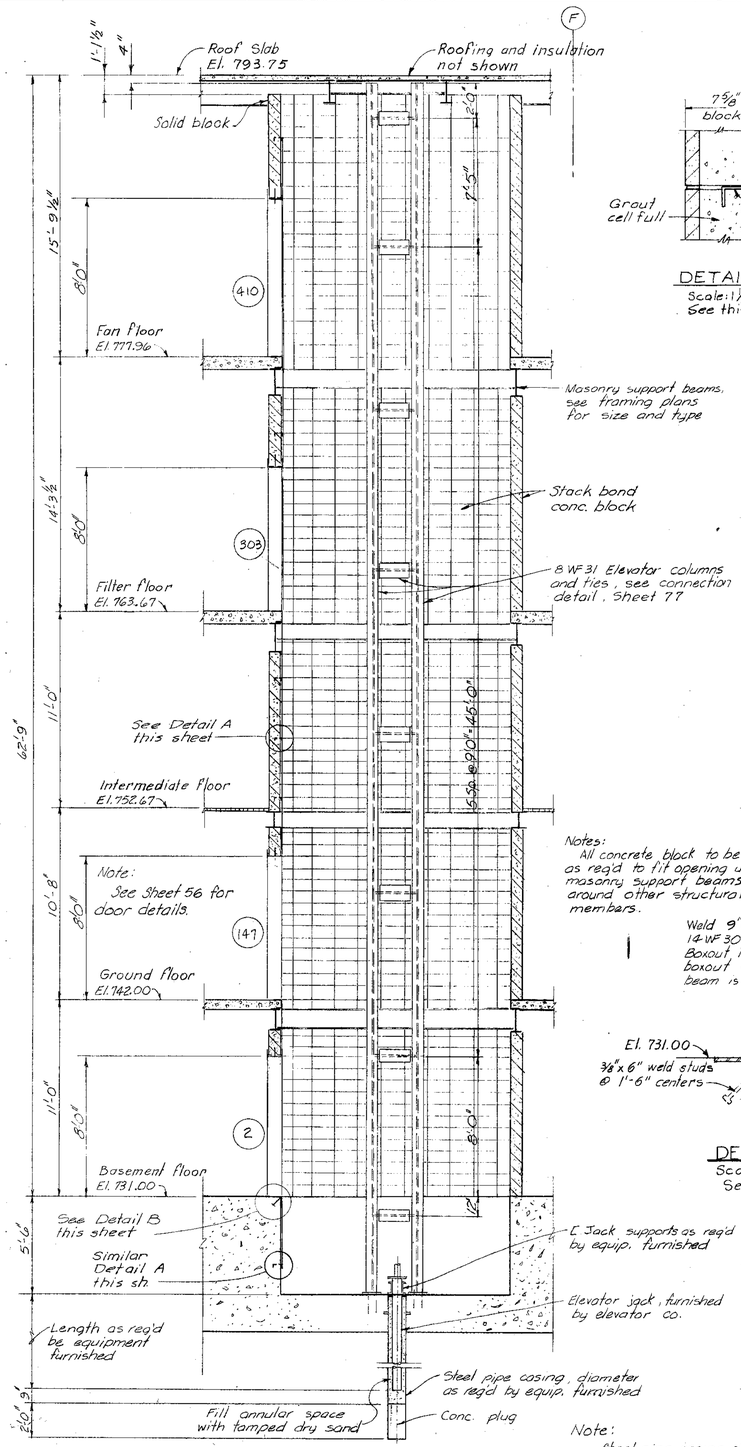
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

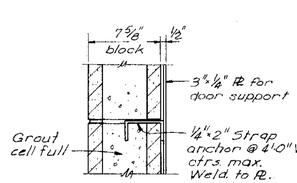
DESIGNED MDM CHECKED LEW
DETAILED DES APPROVED
DATE 2-4-64

SHEET 51 OF 190

1062.32



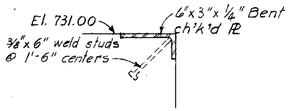
SECTION 1
Scale: ¼"=1'-0" See This Sh.



DETAIL A
Scale: 1½"=1'-0"
See this sh.

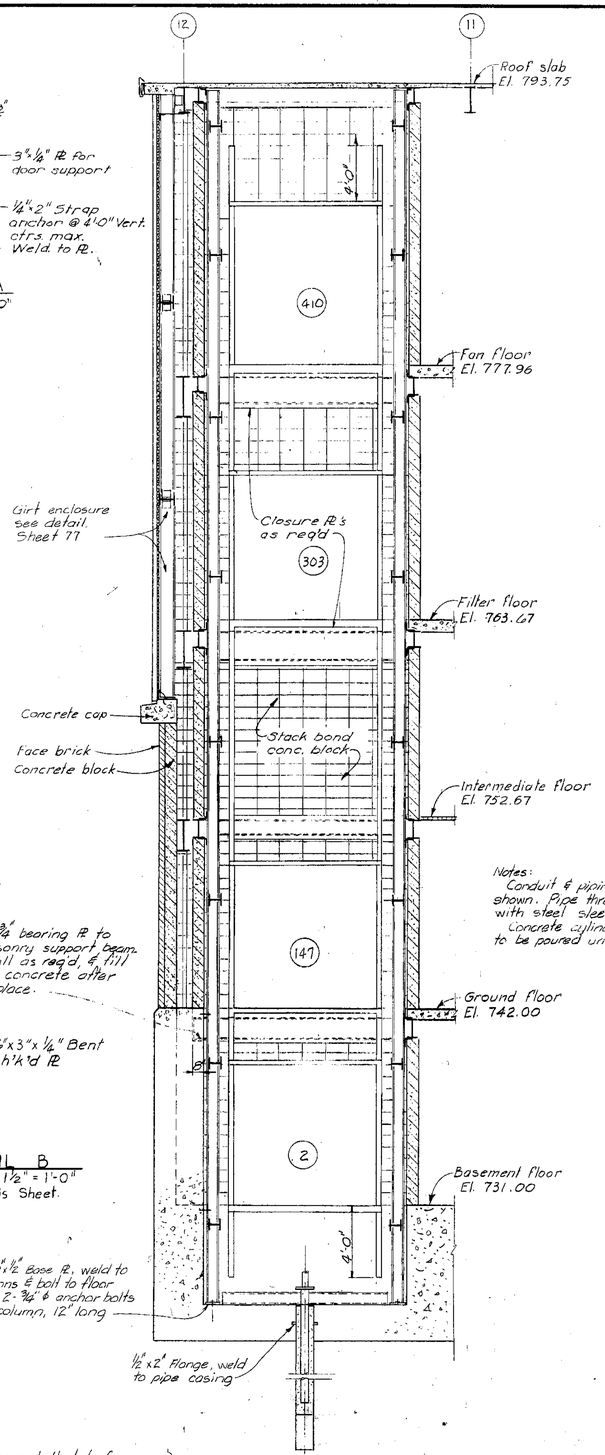
Notes:
All concrete block to be cut as req'd to fit opening under masonry support beams and around other structural members.

Weld 9"x8"x¾" bearing PL to 14-WF 30 masonry support beam. Bokout in wall as req'd, & fill bokout with concrete after beam is in place.



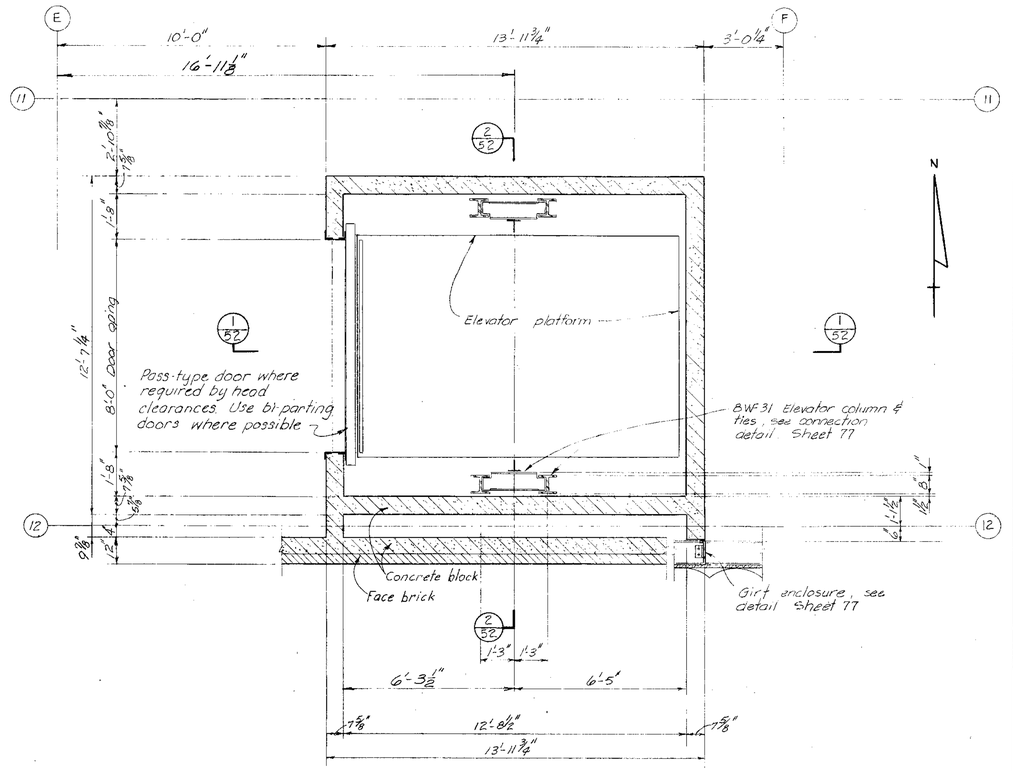
DETAIL B
Scale: 1½" = 1'-0"
See this Sheet.

Note:
Steel pipe casing shall be installed before pit concrete is poured or provide keyed bokout with metal waterstop and weld reinf.



SECTION 2
Scale: ¼"=1'-0" See This Sh.

Notes:
Conduit & piping to elevator not shown. Pipe thru walls to be provided with steel sleeves as req'd.
Concrete cylinder head support not to be poured until cylinder is in place.



SECTIONAL PLAN OF FREIGHT ELEVATOR
Scale: ⅜"=1'-0"

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
FREIGHT ELEVATOR SECTIONS

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED DRG DETAILED DRG CGC CHECKED LEW APPROVED DATE 2-26-71

SHEET 52 OF 190

PROJECT 3292 1062.32

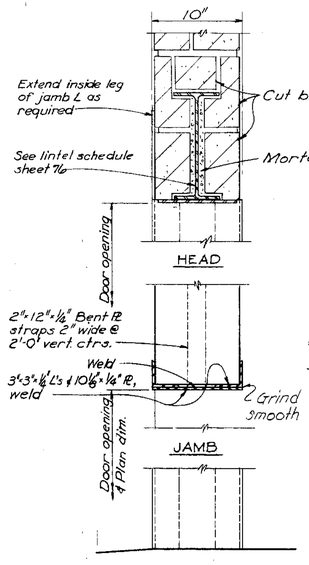
DOOR SCHEDULE

NO.	DOOR OPENING	MAS. OPENING	TYPE	ELEV.	HEAD	JAMB	SILL	REMARKS
1	3'-0" x 7'-2"	———	Elevator (Passenger)	—	—	—	—	See Details this sheet
2	8'-0" x 7'-4"	———	" " (Freight)	—	—	—	—	See Details sheet 56
• 3	3'-0" x 7'-2"	3'-4⅜" x 7'-4"	Hollow Metal	E-6	H-7	J-10	S-4	*
•• 4	3'-8" x 7'-2"	4'-0½" x 7'-4"	Hollow Metal	E-4	H-7	J-10	S-4	*
101	3'-0" x 7'-0"	———	Hollow Metal	E-4	—	—	—	See Details, sheet 55
102	16'-0" x 16'-0"	———	Steel Overhead	—	—	—	—	" " 55
103	2'-8" x 7'-2"	3'-0" x 7'-4"	Hollow Metal	E-3	H-2	J-7	S-3	
104	2'-8" x 7'-2"	3'-0" x 7'-4"	" "	E-3	H-2	J-7	S-7	
105	2'-8" x 7'-2"	3'-0" x 7'-4"	" "	E-3	H-1	J-3	S-7	
106	Pr. 3'-0" x 7'-2"	6'-4" x 7'-4"	" "	E-5	H-1	J-3	S-3	
107	3'-0" x 7'-2"	3'-4" x 7'-4"	" "	E-1	H-1	J-3	S-3	
108	3'-4" x 7'-2"	3'-8" Wide	" "	E-4	—	—	—	See Details, sheet 56
109	3'-0" x 7'-2"	3'-4" x 7'-4"	" "	E-1	H-2	J-7	S-3	
110	3'-0" x 7'-2"	3'-4" x 7'-4"	" "	E-1	H-1	J-3	S-3	
111	16'-0" x 16'-0"	16'-0" x 16'-0"	Steel Overhead	—	—	—	—	See Details this sheet
112	Pr. 3'-0" x 7'-2"	6'-4" x 7'-4"	Hollow Metal	E-2	H-2	J-7	S-3	
113	3'-0" x 7'-2"	3'-4" x 7'-4"	Hollow Metal	E-1	H-1	J-3	S-3	
114	16'-0" x 16'-0"	16'-0" x 16'-0"	Steel Overhead	—	—	—	—	See Details this sheet
•• 115	2'-8" x 7'-0"	———	Elevator (Passenger)	—	—	—	—	See Details, sheet 51
•• 116	3'-0" x 7'-2"	3'-4" x 7'-4"	Hollow Metal	E-6	H-1	J-3	S-4	*
117	3'-0" x 7'-2"	3'-4" x 7'-4"	Hollow Metal	E-4	H-1	J-3	S-3	
118	16'-0" x 16'-0"	16'-0" x 16'-0"	Steel Overhead	—	—	—	—	See Details this sheet
119	3'-0" x 7'-2"	3'-4" x 7'-4"	Hollow Metal	E-1	H-1	J-3	S-3	
120	16'-0" x 16'-0"	16'-0" x 16'-0"	Steel Overhead	—	—	—	—	See Details this sheet
121	Pr 3'-0" x 7'-2"	6'-4" x 7'-4"	Hollow Metal	E-5	H-1	J-3	S-3	
122	Pr 4'-0" x 7'-10"	8'-4" x 8'-0"	Hollow Metal	E-5	H-1	J-3	S-3	
123	16'-0" x 16'-0"	———	Steel Overhead	—	—	—	—	See Details, sheet 55
124	3'-0" x 7'-0"	———	Hollow Metal	E-4	—	—	—	" " 55
125	3'-0" x 7'-2"	———	Elevator (Passenger)	—	—	—	—	See Details this sheet
126	Pr 3'-0" x 7'-0"	———	Aluminum	—	—	—	—	" " "
127	Pr. 3'-0" x 7'-0"	———	"	—	—	—	—	" " "
128	2'-8" x 6'-10⅛"	———	Hollow Metal	E-4	—	—	S-2	See Details, sheet 37
129	3'-0" x 6'-10⅛"	———	" "	E-4	—	—	S-2	" " 37
130	3'-0" x 6'-10⅛"	———	" "	E-4	—	—	S-2	" " 37
131	3'-0" x 6'-10⅛"	———	" "	E-4	—	—	S-2	" " 37
132	3'-0" x 6'-10⅛"	———	" "	E-4	—	—	S-2	" " 37
133	Pr. 2'-8" x 7'-2"	5'-8" Wide	Wood	E-5	H-3	J-21 J-6	S-3	Fixed glass transom above
134	Pr. 2'-6" x 7'-2"	5'-4" Wide	" "	E-5	H-3	J-9	S-3	" " "
135	Pr. 2'-2" x 7'-2"	5'-4" Wide	" "	E-5	—	—	S-3	See details sh. 54 Wood panel above
136	3'-0" x 7'-2"	3'-4" x 7'-4"	" "	E-3	H-5	J-5	S-6	" " "
137	3'-8" x 7'-2"	4'-0 3/8" x 9'-2"	Hollow Metal	E-4	H-6	J-1	S-1	* Hollow metal panel above
138	Pr. 2'-8" x 7'-2"	5'-8" Wide	Wood	E-5	H-3	J-21 J-6	S-3	Fixed glass transom above
139	2'-8" x 7'-2"	3'-0" x 7'-4"	" "	E-3	H-2	J-7	S-4	
140	2'-8" x 7'-2"	3'-0" x 7'-4"	" "	E-3	H-2	J-7	S-4	
141	2'-8" x 7'-2"	3'-0" x 7'-4"	" "	E-3	H-4	J-8	S-3	
142	2'-8" x 7'-2"	3'-0" x 7'-4"	" "	E-3	H-4	J-8	S-4	
143	3'-4" x 7'-2"	3'-8" x 7'-4"	" "	E-4	H-4	J-8	S-4	
144	Pr. 3'-0" x 7'-0"	———	Aluminum	—	—	—	—	See Details this sheet
145	Pr. 3'-0" x 7'-0"	———	" "	—	—	—	—	" " "
• 146	3'-0" x 7'-2"	3'-4" x 7'-4"	Hollow metal	E-6	H-1	J-3	S-4	*
147	8'-0" x 7'-4"	———	Elevator (Freight)	—	—	—	—	See Details, Sheet 56
201	2'-8" x 6'-8"	———	Hollow metal					See Details, Sheet 55
•• 202	3'-0" x 7'-2"	3'-4" x 7'-4"	Hollow metal	E-6	H-1	J-3	S-4	*
•• 203	2'-8" x 7'-0"	———	Elevator (Passenger)	—	—	—	—	See Details, sheet 51
204	3'-0" x 7'-0"	———	" " "	—	—	—	—	See Details, this sheet
205	3'-0" x 7'-2"	3'-4" Wide	Wood	E-1	H-3	J-9	S-6	Fixed glass transom above
206	———	———	Incubator	—	—	—	—	See Details, sheet 47
207	3'-8" x 7'-2"	4'-0" Wide	Wood	E-1	H-3	J-9	S-6	Fixed glass transom above
208	3'-0" x 7'-2"	3'-4" x 7'-4"	Wood sliding	E-4	—	—	—	See Details this sheet
209	3'-0" x 7'-2" ÷	3'-4" x 7'-4"	" "	E-4	—	—	—	" "
210	3'-8" x 7'-2" ÷	4'-0" Wide	Wood	E-1	H-3	J-9	S-6	Fixed glass transom above
211	3'-0" x 7'-2"	3'-4" x 7'-4"	" "	E-4	H-2	J-7	S-6	
212	3'-0" x 7'-2"	3'-4" x 7'-4"	" "	E-1	H-2	J-7	S-6	
213	2'-8" x 7'-2"	3'-0" x 7'-4"	" "	E-3	H-2	J-7	S-4	
214	2'-8" x 7'-2"	3'-0" x 7'-4"	" "	E-3	H-2	J-7	S-4	
215	3'-0" x 7'-2"	3'-4" x 7'-4"	" "	E-1	H-2	J-7	S-6	
216	Pr 2'-6" x 7'-2"	5'-4" x 7'-4"	" "	E-5	H-2	J-7	S-4	
• 217	3'-0" x 7'-2"	3'-4" x 7'-4"	Hollow Metal	E-6	H-1	J-3	S-4	*
218	2'-8" x 6'-8"	———	Hollow Metal					See Details, Sheet 55
•• 301	3'-0" x 7'-2"	3'-4" x 7'-4"	Hollow Metal	E-6	H-1	J-3	S-4	*
•• 302	2'-8" x 7'-0"	———	Elevator (Passenger)	—	—	—	—	See Details sheet 51
303	8'-0" x 7'-4"	———	Elevator (Freight)	—	—	—	—	See Details, sheet 56
• 401	3'-0" x 7'-2"	3'-4" x 7'-4"	Hollow Metal	E-6	H-1	J-3	S-3	
•• 402	2'-8" x 7'-2"	———	Elevator (Passenger)	—	—	—	—	See Details, sheet 51
403	3'-0" x 7'-0"	———	Hollow Metal	E-1	—	—	—	* See Details sheet 51
404	3'-0" x 7'-0"	———	" "	E-1	—	—	—	* " "
405	3'-8" x 7'-0"	———	Aluminum	—	—	—	—	* " "
406	3'-0" x 7'-0"	———	Hollow Metal	E-1	—	—	—	* " "
407	3'-8" x 7'-0"	———	Aluminum	—	—	—	—	* " "
408	2'-6" x 7'-0"	———	Hollow Metal	E-4	—	—	—	" "
409	2'-6" x 7'-0"	———	" "	E-4	—	—	—	" "
410	8'-0" x 7'-4"	———	Elevator (Freight)	—	—	—	—	See Details, sheet 56
• 501	3'-0" x 6'-6"	3'-4 3/8" x 6'-8"	Hollow Metal	E-4	H-1	J-4	S-5	*
• 502	3'-0" x 7'-2"	3'-4" x 7'-4"	" "	E-4	H-2	J-7	S-3	
601	Pr 3'-0" x 7'-2"	6'-4 3/8" x 7'-4"	Hollow Metal	E-4	H-1	J-4	S-1	*
602	3'-0" x 7'-2"	3'-4" x 7'-4"	" "	E-4	H-1	J-3	S-3	
603	3'-0" x 7'-2"	———	" "	E-4	—	—	—	* See Details, sheet 98
604	3'-0" x 6'-6"	3'-4 3/8" x 6'-8"	" "	E-4	H-7	J-10	S-5	*
605	3'-0" x 7'-2"	3'-4 3/8" x 7'-4"	" "	E-4	H-1	J-4	S-1	*
606	3'-0" x 7'-10"	3'-4 3/8" x 8'-0"	" "	E-4	H-1	J-4	S-1	*

* Indicates doors to be weatherstripped

• Indicates "B" label fire doors

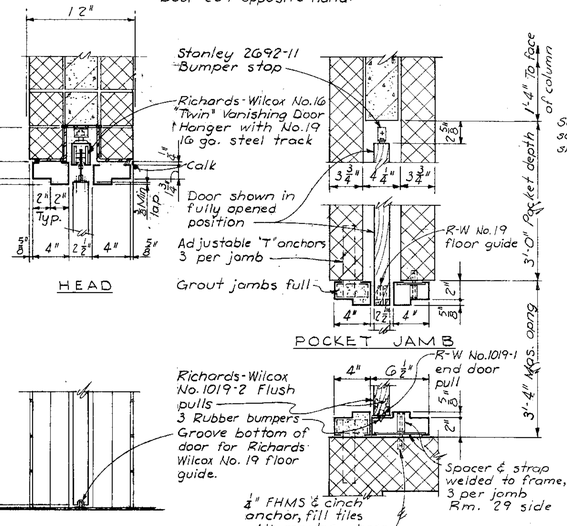
•• Indicates "A" label fire doors



OVERHEAD DOOR DETAILS

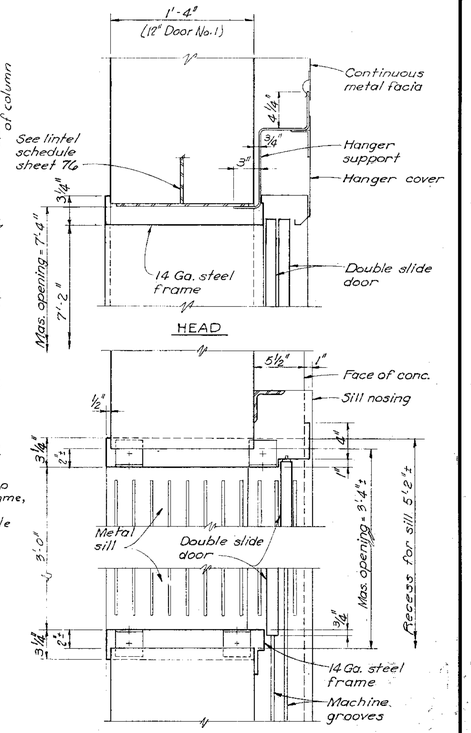
Scale: 1½"=1'-0"

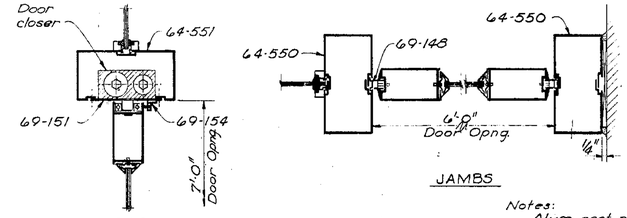
Note: Details drawn for Door 208, Door 209 opposite hand.



SLIDING DOOR DETAILS

Scale: 1½"=1'-0"

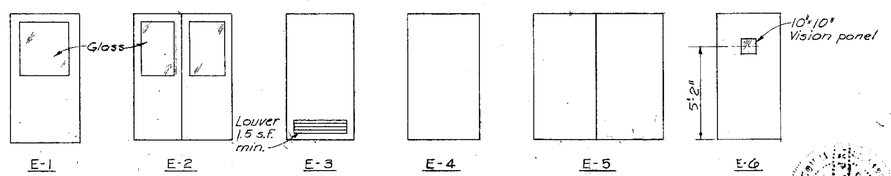




DOORS 126, 127, 144, & 145 DETAILS

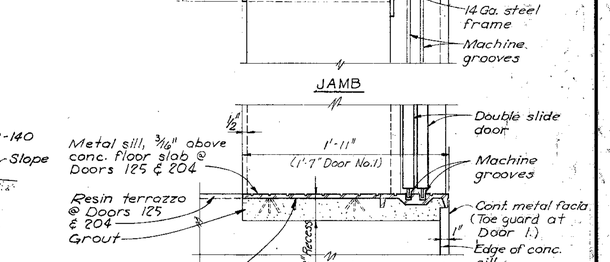
Scale: 3"=1'-0"

See Frame details sh. 42



DOOR ELEVATIONS

Not to Scale



PASSENGER ELEVATOR DOOR DETAILS

NO. 1, 125 AND 204

Scale: 1½"=1'-0"

Note: For details of elevator doors No. 115, 203, 302 & 402, see Sh. 51

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING

DOOR SCHEDULE AND DETAILS

BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

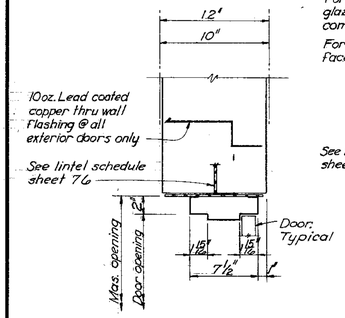
P.C.D. CONTRACT 7

DESIGNED MDM CHECKED LEW
DETAILED DES APPROVED
DATE 2-4-82

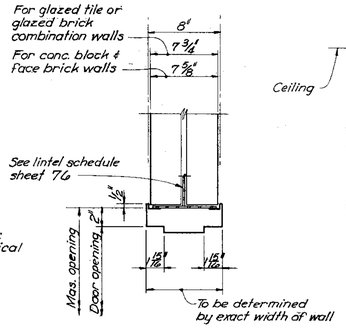
SHEET 53 OF 190

PROJECT 3292

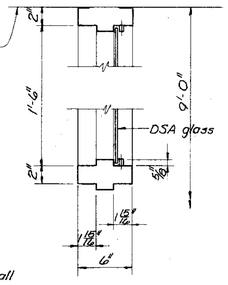
1062.32



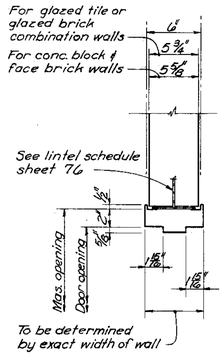
H-1



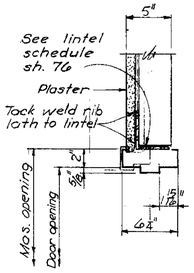
H-2



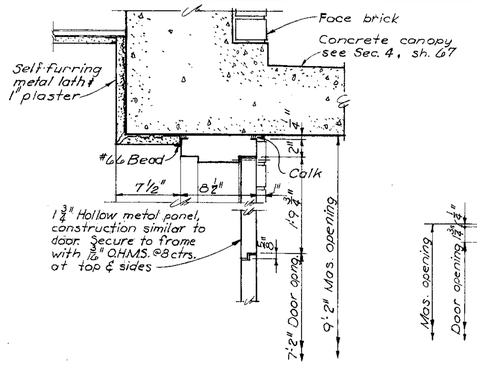
H-3



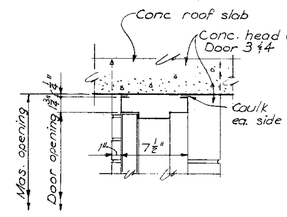
H-4



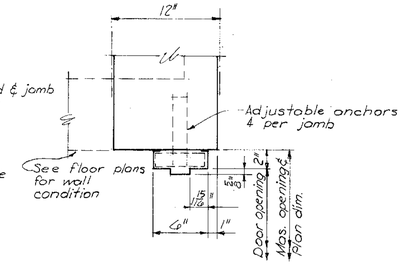
H-5



H-6

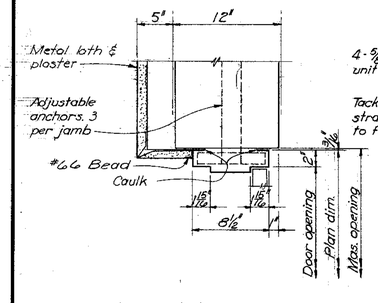


H-7

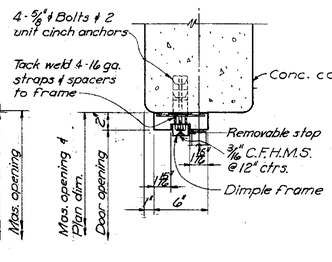


J-9

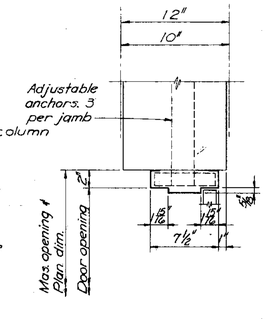
DOOR HEADS



J-1



J-2



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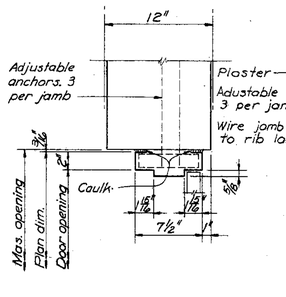

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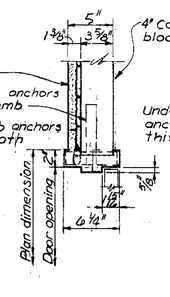

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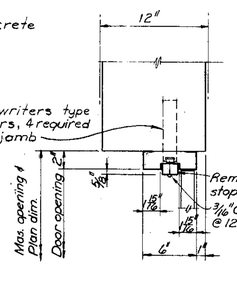

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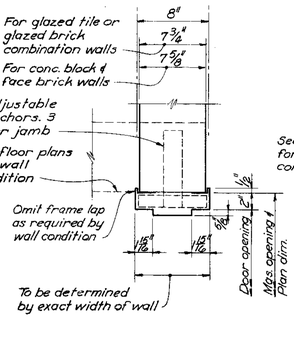

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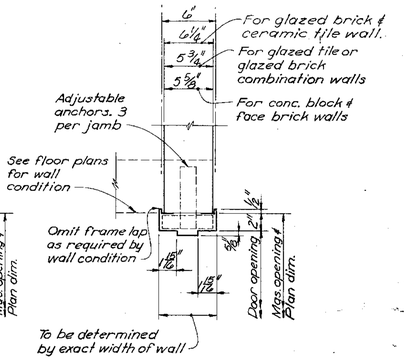
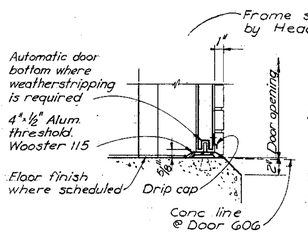


J-8

DOOR JAMBS



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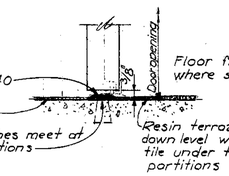

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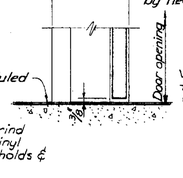

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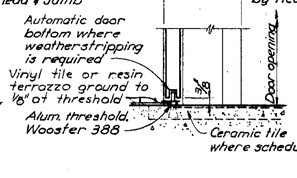

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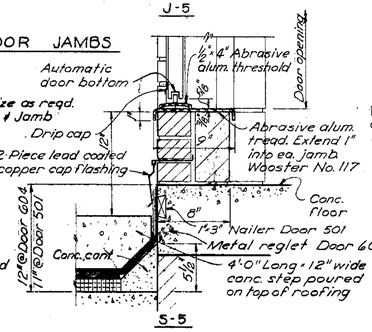

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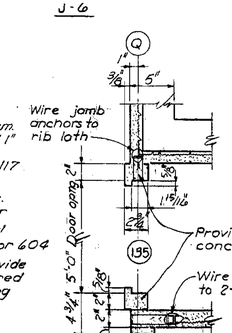
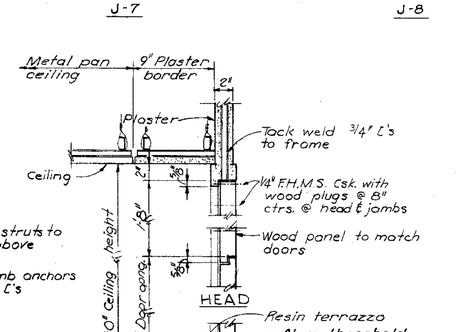
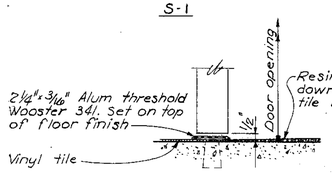


J-6



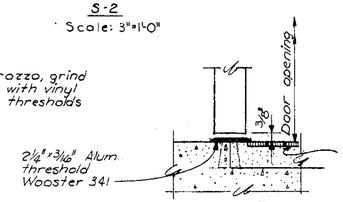
J-7 J-8

DOOR SILLS



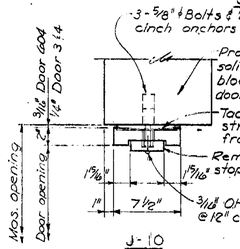
S-6
Scale: 3"=1'-0"

S-2
Scale: 3"=1'-0"



S-7
Scale: 3"=1'-0"

S-3



J-10

S-4

DOOR DETAILS

Scale: 1½" = 1'-0" unless noted otherwise

Notes:
See floor plans for wall conditions & materials
All glazed tile & glazed brick to have finished square edges at head & jambs
Fill all built in door jambs with mortar

DETAILS OF DOOR 135 AND SLIDEWALL POCKET DOOR JAMBS

Scale: 1½" = 1'-0"

Note: For an elevation of these doors see Sh. 36

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
DOOR DETAILS

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

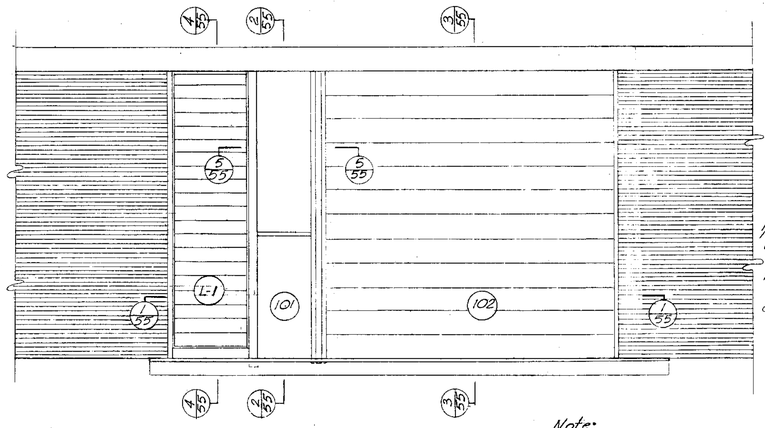
P.C.D. CONTRACT 7

DESIGNED MDM CHECKED LEW
DETAILED DES BDL APPROVED
DATE 2-6-64

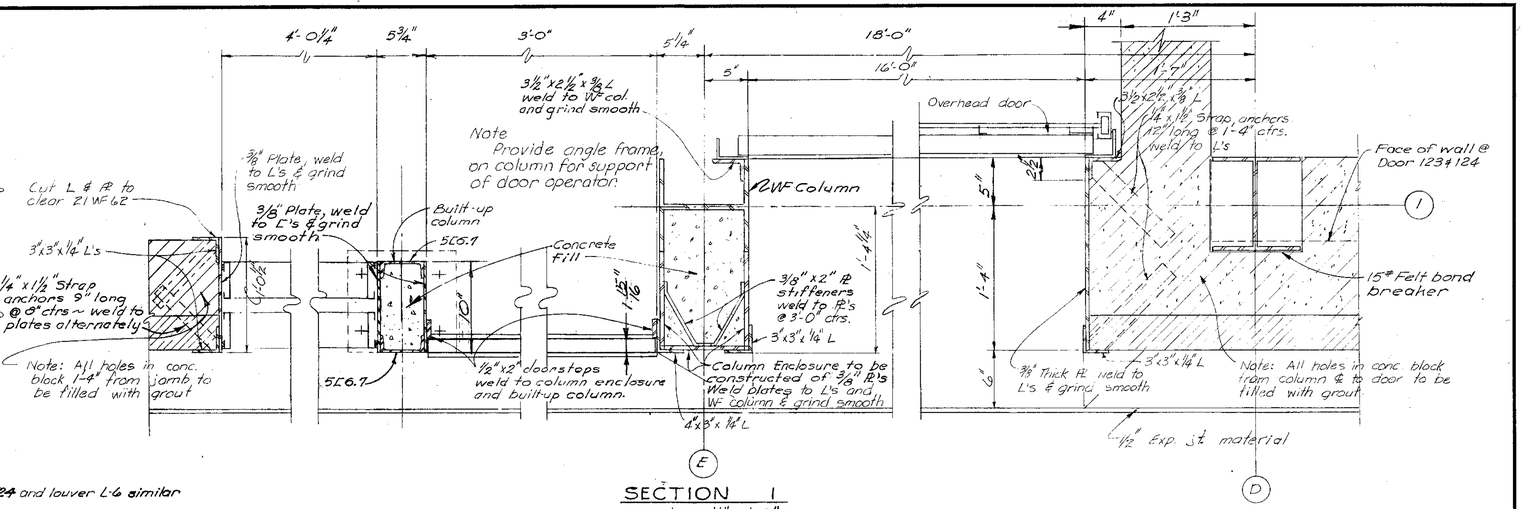
SHEET 54 OF 190

PROJECT 3288

1062.32

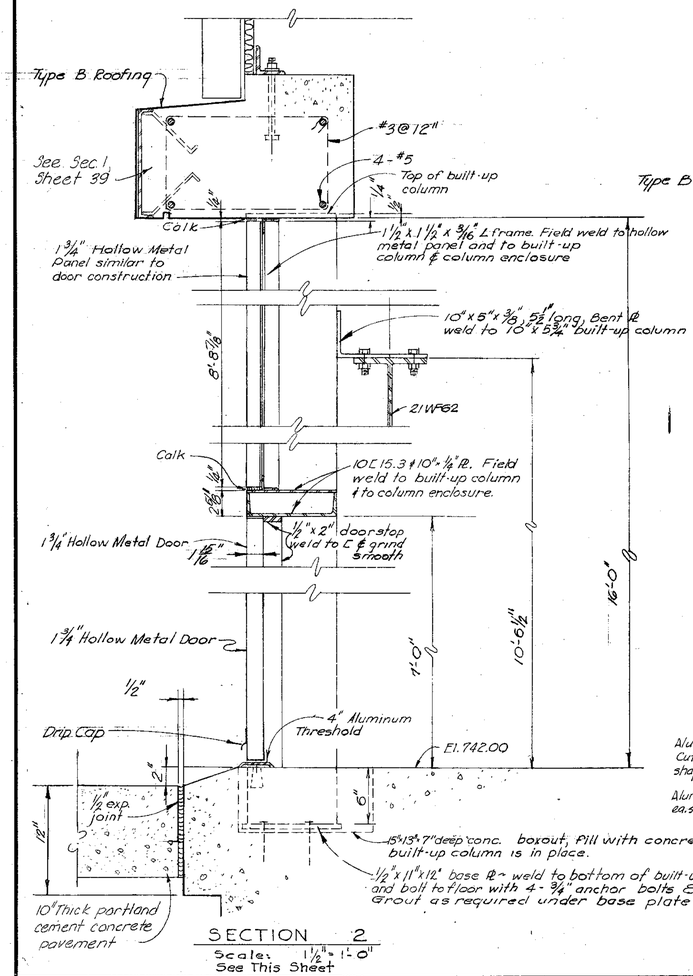


ELEVATION
Scale: 1/4" = 1'-0"

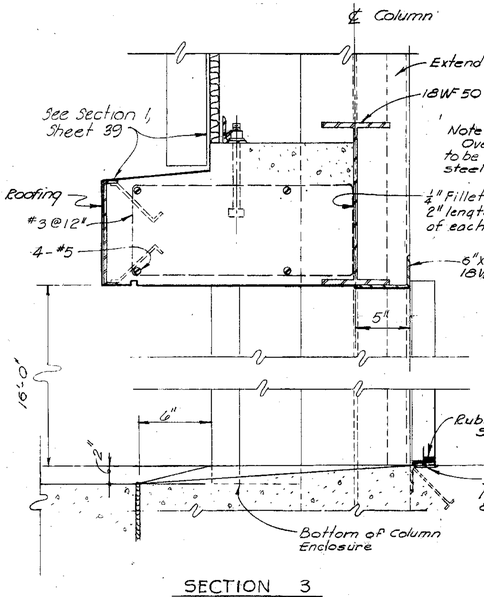


SECTION 1
Scale: 1 1/2" = 1'-0"
See This Sheet

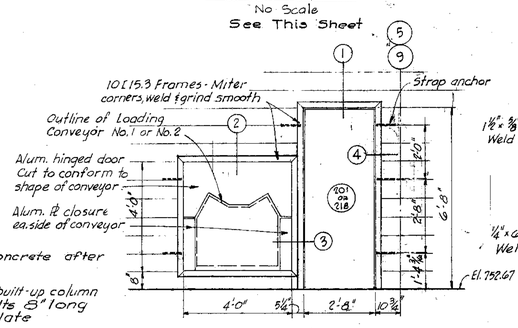
Note:
Details for doors 123 & 124 and louver L-6 similar to details shown



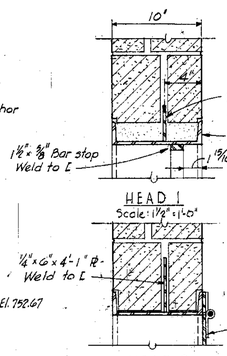
SECTION 2
Scale: 1 1/2" = 1'-0"
See This Sheet



SECTION 3
No Scale
See This Sheet

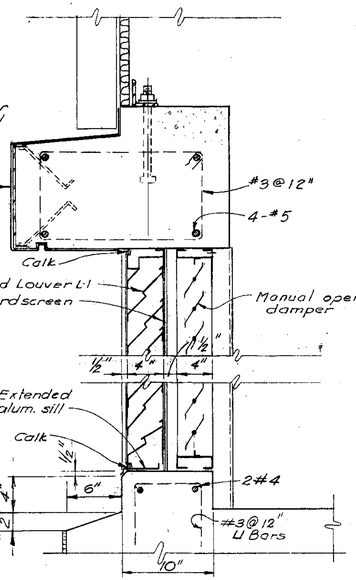


ELEVATION
Scale: 3/8" = 1'-0"

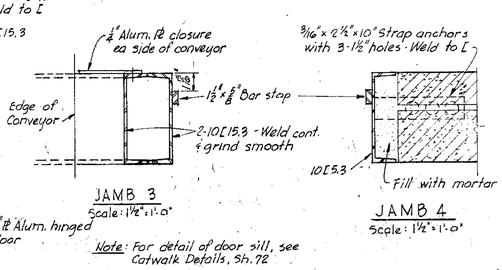


HEAD 1
Scale: 1 1/2" = 1'-0"

HEAD 2
Scale: 1 1/2" = 1'-0"



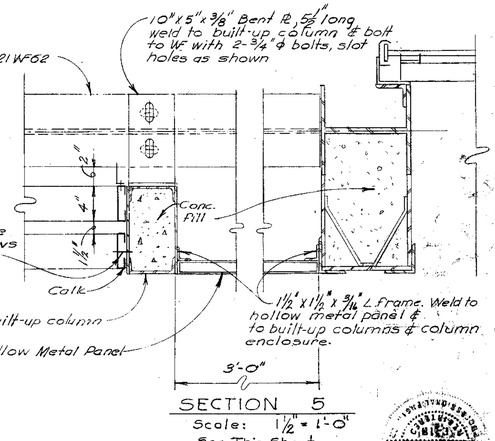
SECTION 4
Scale: 1 1/2" = 1'-0"
See This Sheet



JAMB 3
Scale: 1 1/2" = 1'-0"

JAMB 4
Scale: 1 1/2" = 1'-0"

Note: For detail of door sill, see Catwalk Details, Sh. 72



SECTION 5
Scale: 1 1/2" = 1'-0"
See This Sheet

DETAILS OF DOORS 201 & 218 AND CONVEYOR OPENINGS

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
DOOR DETAILS

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

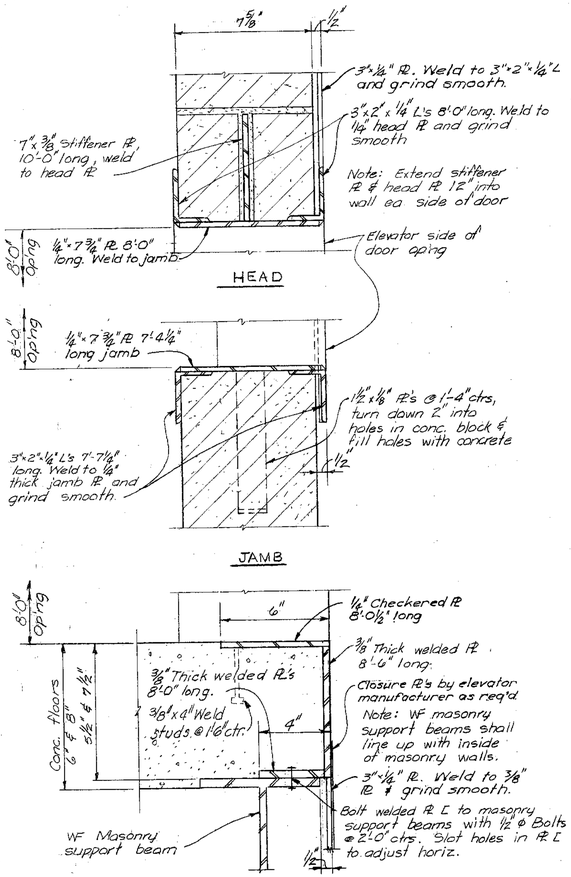
P.C.D. CONTRACT 7

DESIGNED DRG WEL CHECKED VEA
DETAILED LWD WEL APPROVED
DATE 2-6-63

SHEET 55 OF 190

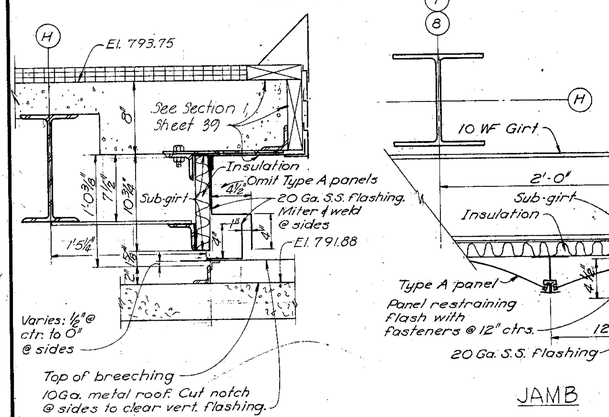
PROJECT 72 00 1062 32

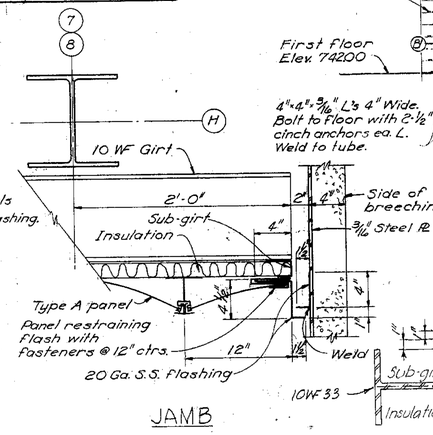
PHOENIX © 71103

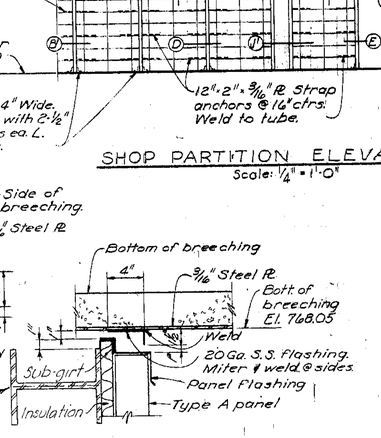


FREIGHT ELEVATOR DOOR DETAILS NO. 2, 147, 303 & 410

Scale: 3"=1'-0"

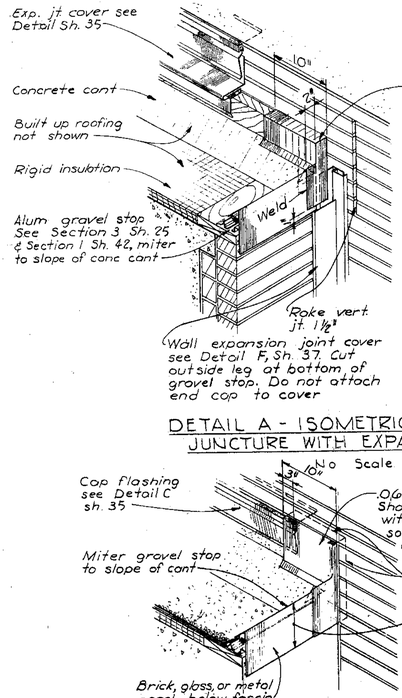


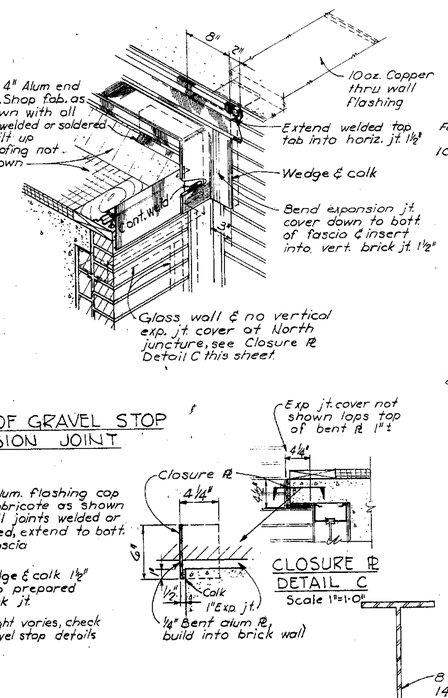




BREECHING FLASHING DETAILS

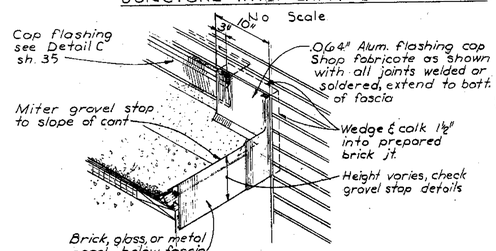
Scale: 1½"=1'-0"





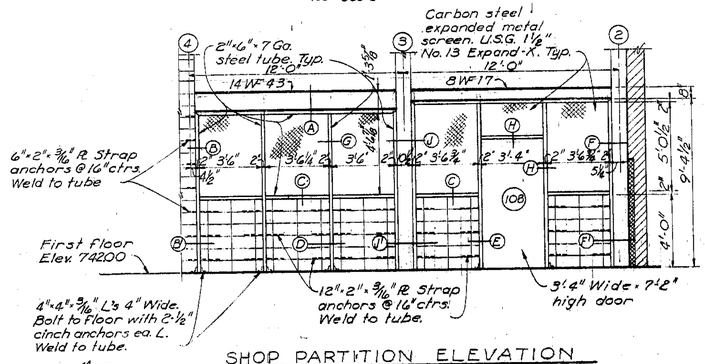
DETAIL A - ISOMETRIC OF GRAVEL STOP JUNCTURE WITH EXPANSION JOINT

No Scale



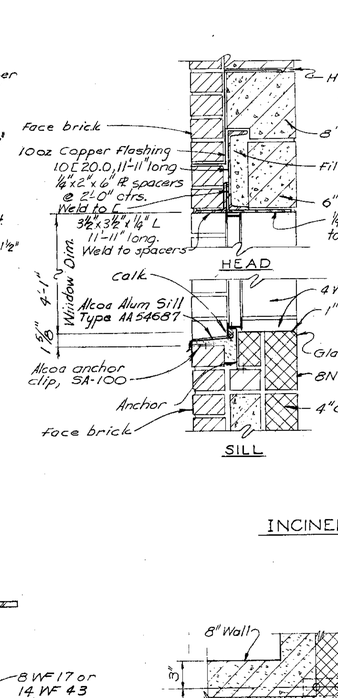
DETAIL B - ISOMETRIC OF GRAVEL STOP JUNCTURE WITH RISING WALL

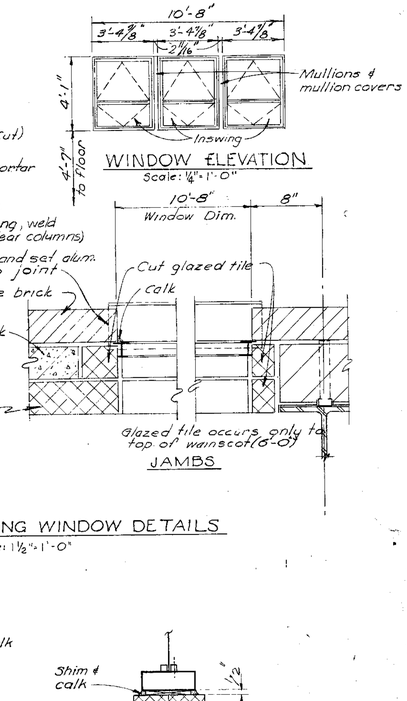
No Scale



SHOP PARTITION ELEVATION

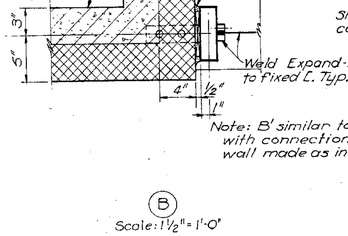
Scale: ¼"=1'-0"

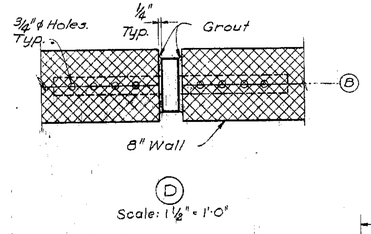


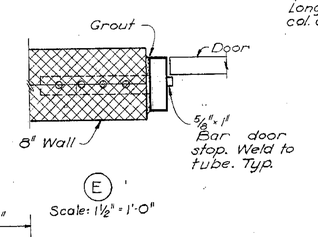


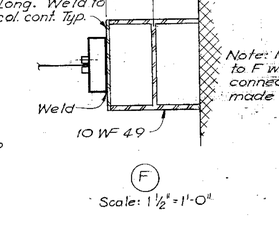
INCINERATOR WING WINDOW DETAILS

Scale: 1½"=1'-0"









KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
ARCHITECTURAL DETAILS

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED DRG MDM CHECKED LEW
DETAILED LWD DES APPROVED
DATE 7-4-04

SHEET 56 OF 190

PROJECT 3292 1062.32

BEAM SCHEDULE

BEAM	WIDTH	DEPTH	TOP BARS	BOTTOM BARS	STIRRUPS	REMARKS
SP-1	48"	31"	7 #11	7 #11	#3@18"	
SP-2	48"	35"	7 #11	7 #11	#3@18"	
SP-3	48"	20"	7 #7	7 #7		
SP-4	48"	22"	8 #8	8 #8		
SP-5	48"	29"	7 #10	7 #10	#3@18"	
SP-6	48"	22"	8 #8	8 #8		
SP-7	48"	25"	6 #10	6 #10	#3@18"	
SP-8	48"	27"	7 #9	7 #9	#3@18"	Top bars bent under trench drain
SP-9	48"	18"	6 #6	6 #6		
SP-10	48"	18"	6 #7	6 #7		
SP-11	48"	14"	5 #5	4 #4		
SP-12	36"	30"	7 #9	7 #9	#3@18"	Pile cap & beam to be continuous
SP-13	36"	25"	6 #9	6 #9	#3@18"	
SP-14	48"	27"	5 #10	5 #10	#3@18"	
SP-15	48"	25"	7 #9	7 #9	#3@18"	Top bars bent under trench drain
SP-16	36"	26"	6 #9	6 #9	#3@18"	
SP-17	72"	22"	15 #7	15 #7		
SP-18	36"	42"	4 #8	4 #8	#3@18"	
SP-19	48"	18"	8 #6	8 #6		
SP-20	36"	18"	6 #7	6 #7		
SP-21	36"	27"	5 #9	5 #9	#3@18"	
SP-22	48"	18"	8 #6	8 #6		
SP-23	48"	38"	8 #11	8 #11	#3@8"	
SP-24	48"	18"	7 #8	7 #8		
SP-25	72"	24"	14 #5	14 #5	#3@18" (In Pairs)	
SP-26	72"	24"	12 #8	12 #8	#3@18" (In Pairs)	
SP-27	72"	18"	13 #6	12 #6		
SP-28	48"	29"	6 #5	5 #5		

Continue top bars of same size past column & or lap 30d past column & each way. (All beams)
Bottom beam reinforcing stops at inside face of beam seat in pile cap. (SP-1 thru SP-11, SP-14, & SP-15)
Continue bottom bars of same size past column & or lap 30 d past column & each way (SP-12, SP-13, SP-15 thru SP-27)

Note:
At least 7 days shall elapse between abutting floor and wall pours
See NERCO shop drawing for details and location of scrubber and incinerator anchor bolts and concrete bases. (Anchor bolts and bases to be provided and installed by Contract 7.)
Omit wall above top of pilasters until steel framing is in place. (At columns F-1, H-1 thru H-12 & F-12)
Steel framing east of column line E at nominal El. 742.00 not shown.
Top of floor slopes to drains, see Sheet 17 for elevations.

Note:
All piling below basement floor, if poured in place concrete piles, to have 3#7 bars embedded full length and projecting 1'-6" into structural concrete above top of pile. If H piles, cap plates and anchors as shown in anchorage detail Sheet 63.

NO	DATE	DESCRIPTION	BY	CHK
A	11-1-66	Conform to construction records	R.L.M	A.C.P

REVISIONS

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING

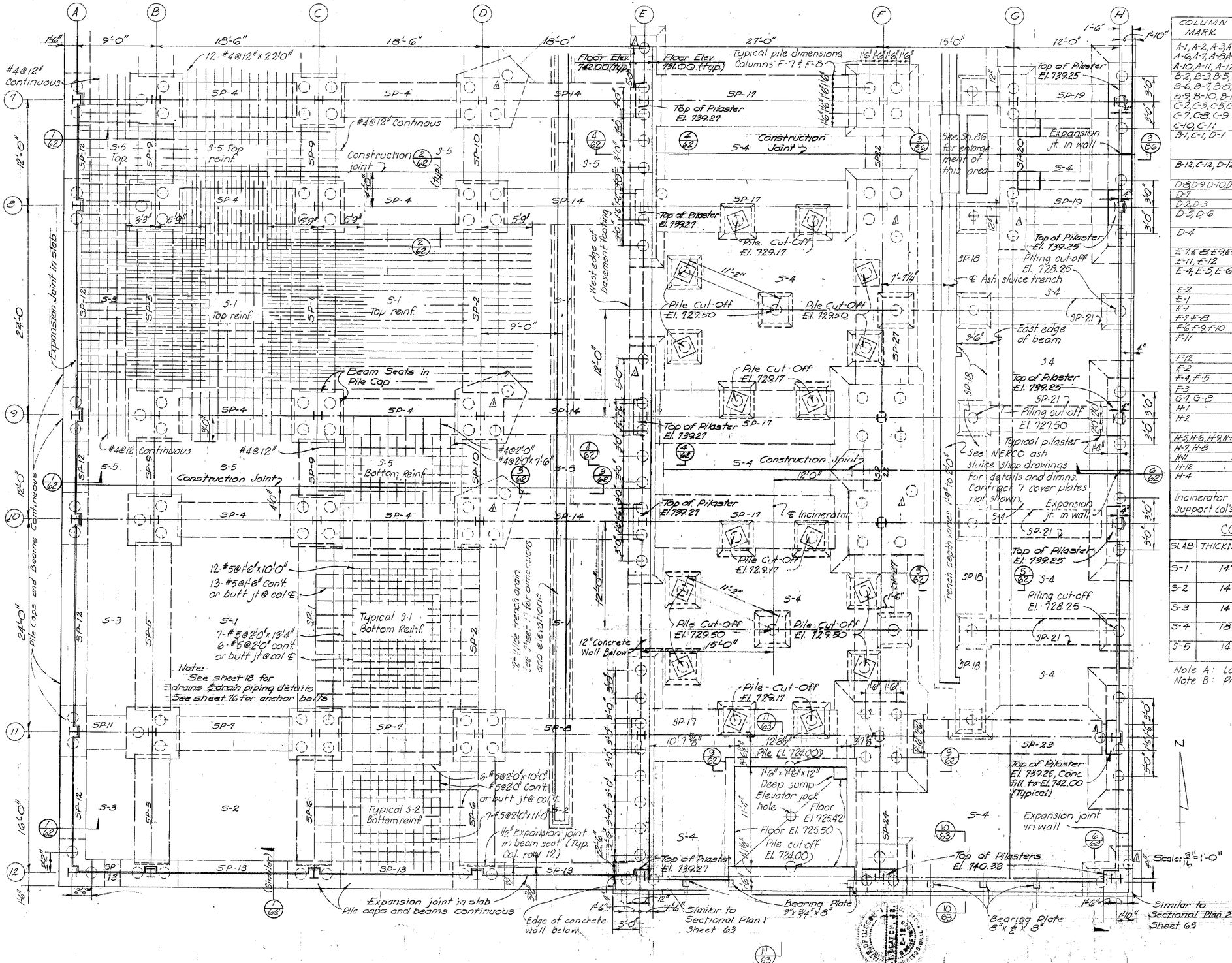
PILING AND FOOTING PLAN

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED RAM CHECKED VEA
DETAILED LWD APPROVED
DATE 2-8-66

SHEET 57 OF 190



PILE-CAP SCHEDULE

COLUMN MARK	TYPE	CAP DEPTH	REINFORCING STEEL	PILE CUT-OFF ELEV.
A-1, A-2, A-3, A-5 A-6, A-7, A-8, A-9 A-10, A-11, A-12	I	3'-0"	Pour caps monolithic with beams SP-12	738.33
B-2, B-3, B-5, B-6, B-7, B-8, B-9, B-10, B-11	I	2'-3"	9 #5 each way	739.08
C-2, C-3, C-5, C-6 C-7, C-8, C-9 C-10, C-11	I	2'-6"	11 #5 each way	738.83
B-1, C-1, D-1	I	2'-10"	12-#5 each way Pour caps monolithic with beams SP-16	738.50
B-12, C-12, D-12	I	2'-7"	Pour caps monolithic with beams SP-13	738.75
D-8, D-9, D-10, D-11	I	2'-9"	12 #5 each way	738.58
D-7	I	2'-5"	10 #5 each way	738.92
D-2, D-3	I	2'-1"	12 #4 each way	739.25
D-5, D-6	II	3'-0"	18 #6 Short way 10 #5 Long way	728.50
D-4	II	2'-3"	Floor steel of water storage tank	729.25
E-7, E-8, E-9, E-10 E-11, E-12	II	2'-5"	4 #6 Long way	729.08
E-4, E-5, E-6	II	3'-0"	18 #6 Short way 10 #5 Long way	728.50
E-2	II	2'-7"	4 #6 Long way	728.92
E-1	II	2'-9"	5 #6 Long way	728.33
F-1	II	2'-7"	4 #6 Long way	728.33
F-7, F-8	II	2'-7"	11 #5 Each way	728.92
F-6, F-9, F-10	II	3'-7"	15 #6 Each way	727.92
F-11	II	3'-10"	16 #6 Short way 13 #6 Long way	727.67
F-12	II	2'-1"	8 #5 Each way	729.42
F-2	II	3'-10"	15 #6 Each way	727.67
F-4, F-5	II	3'-7"	15 #6 Each way	727.92
F-3	II	2'-2"	7 # 7 Each way	729.33
G-7, G-8	II	2'-7"	5 # 6 Long way	728.92
H-1	II	2'-2"	10 #5 Each way	729.33
H-2	II	3'-10"	12 #6 Long way 18 #6 Short way	727.67
H-5, H-6, H-9, H-10	II	3'-6"	4 # 7 Long way	728.00
H-7, H-8	II	2'-1"	4 - #7 Long way	729.42
H-11	II	3'-9"	4 #8 Long way	727.75
H-12	II	2'-1"	4 #6 Long way	729.42
H-4	I	5'-3"	18 #8 Short way 11 #8 Long way	724.75
Incinerator support col's.	II	Varies	No additional reinf. required.	Varies see Plan Sheets 57 & 58

CONCRETE SLAB SCHEDULE NO. 1

SLAB	THICKNESS	EAST-WEST BARS		NORTH-SOUTH BARS		REMARKS
S-1	14"	#5@9" Bot. #4@10" Top		#5@12" Bot. #4@12" Top		Note A
S-2	14"	#5@12" Bot. #4@12" Top		#5@12" Bot. #4@12" Top		Note A
S-3	14"	#4@12" Bot. #4@10" Top		#4@12" Bot. #4@12" Top		Note A
S-4	18"	#5@12" Bot. #5@12" Top		#5@12" Bot. #5@12" Top		Note B
S-5	14"	#4@12" Bot. #4@12" Top		#4@12" Bot. #4@12" Top		Note A

Note A: Lap bars as shown in plans, Sh. 57 & 58.
Note B: Provide continuous mat, lap all bars 1'7" & stagger jts.

Note:
See Sheet 18 for drains and drain piping details.
See Sheet 16 for structural steel anchor bolt details.
Notes on Sheet 57 also apply to this Sheet.

NO	DATE	DESCRIPTION	BY	CHK
A	11-1-66	Conform to construction records	RLM	ACP

REVISIONS

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

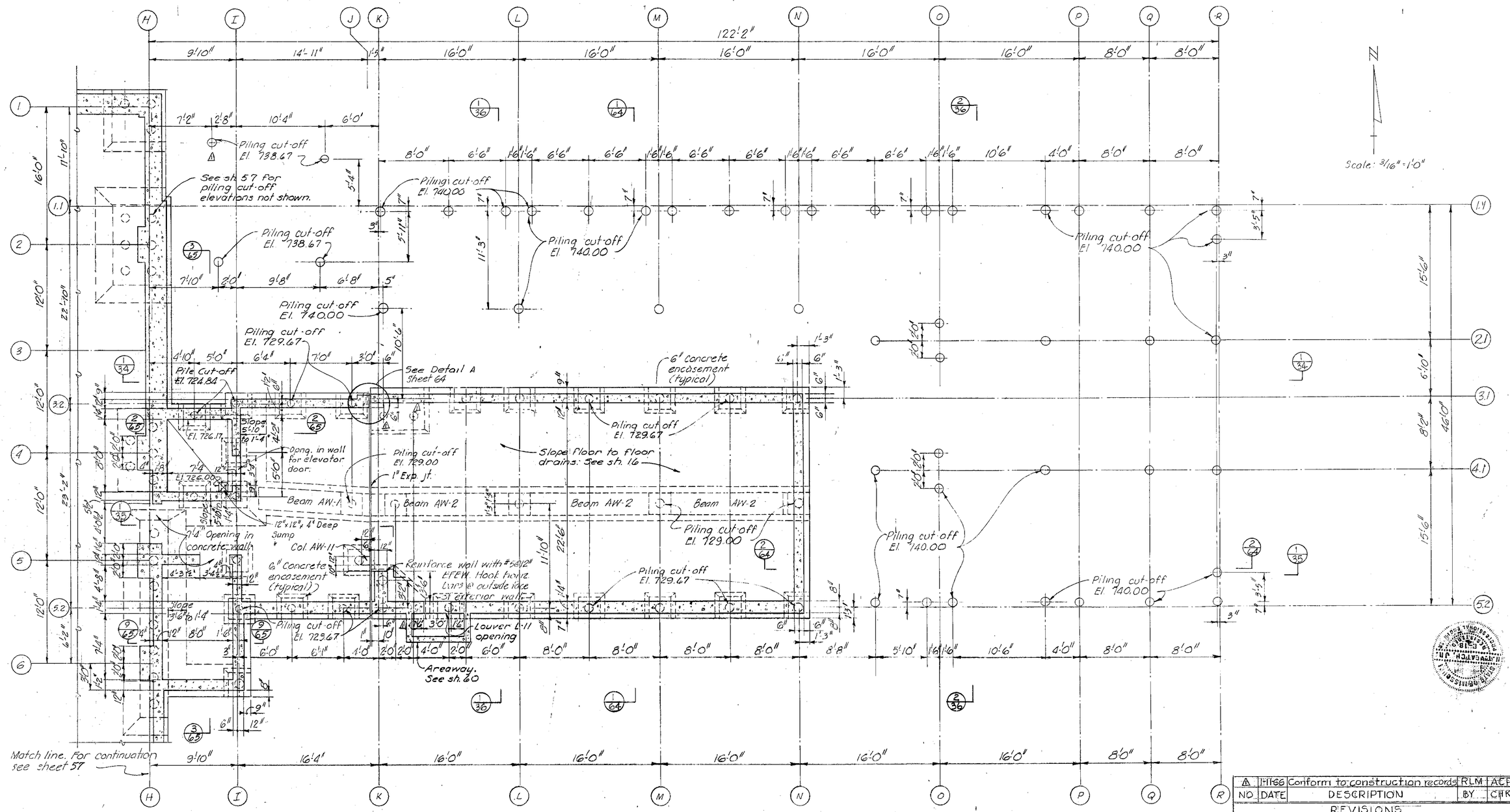
SLUDGE PROCESSING BUILDING
PILING AND FOOTING PLAN

BLACK & VEATCH AND BURNS & MCDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED RAM DETAILED LWD CHECKED VEA APPROVED DATE 7-5-66

SHEET 58 OF 190



ADMINISTRATION WING PILING AND FOOTING PLAN

Scale: 3/16" = 1'-0"

Note:
All piling cut-off below El. 731.00 shall be provided with tension connections. Embed 3.#6 bars, full length, in cast-in-place piles and extend 1'6" into structural concrete. If H piles are used cap plates and anchors as shown on Sheet 63 shall be provided.
At least 7 days shall elapse between abutting wall and floor pours.

NO	DATE	DESCRIPTION	BY	CHK
A	1-11-66	Conform to construction records	RLM	ACP

REVISIONS

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING

ADMINISTRATION WING PILING PLAN

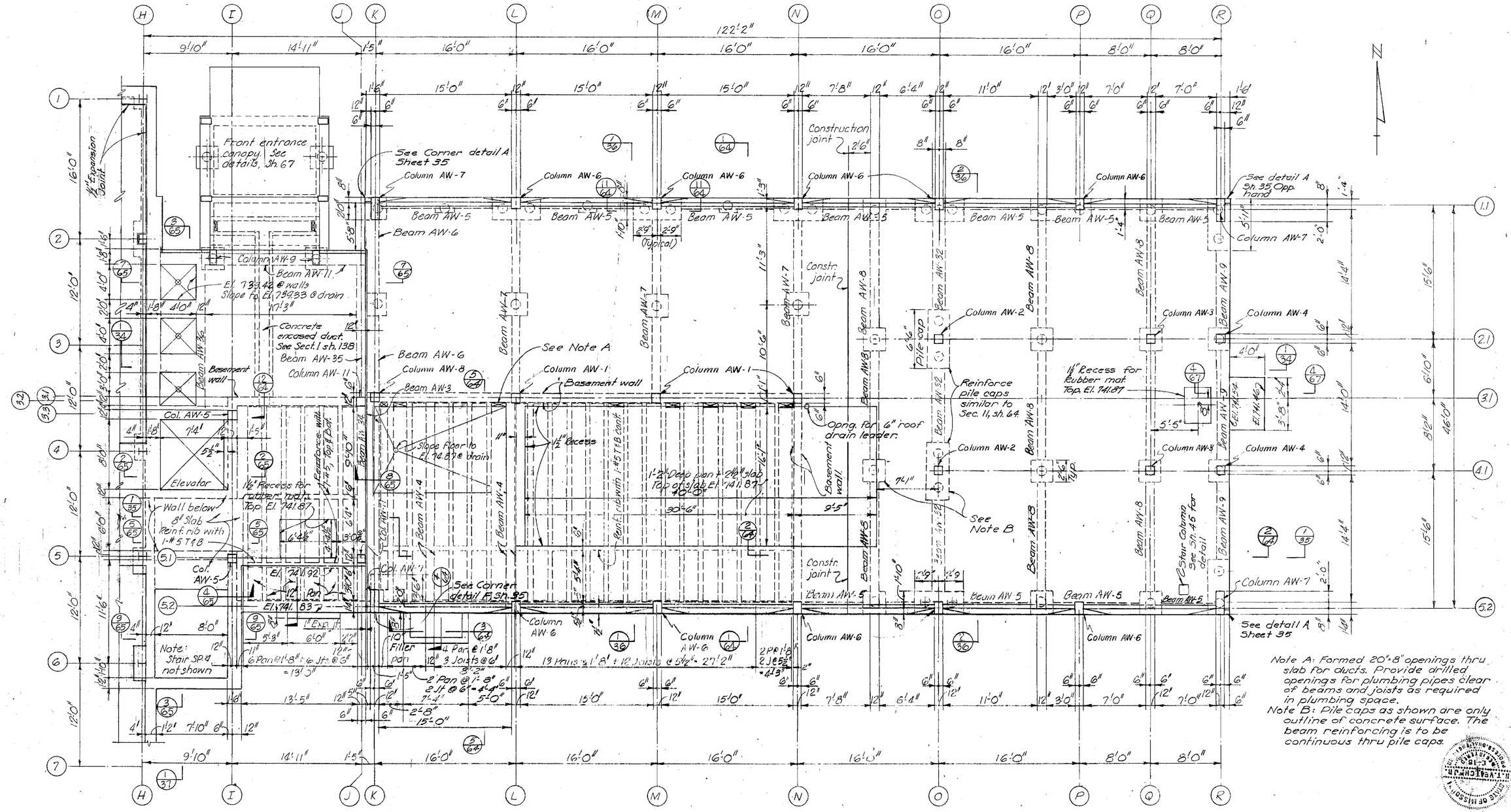
BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED ACP CHECKED LEW
DETAILED ACP APPROVED
DATE 2-4-66

SHEET 59 OF 190

PROJECT 3292 1062.32



ADMINISTRATION WING GROUND FLOOR PLAN

Scale: 3/16" = 1'-0"

Note:
Floor El. 742.00 unless otherwise noted.
Pan-joist floor to have 14" deep pans with 4" slab unless otherwise noted.
Sections noted on sheets 34, 35, 36, and 37 are architectural sections for reference only. For typical pile cap see detail sections, sh. 64.
At least 7 days shall elapse between abutting pours of slabs and beams.

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
STRUCTURAL CONCRETE PLAN

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED ACP
DETAILED ACP TWD
CHECKED PAM LEW
APPROVED
DATE 2-0-64

SHEET 60 OF 190

Note:
Front entrance canopy not shown. See Sheet 67

Note:
See Sh. 44 for details of Stair SP-5 and handrail supports

Note:
Masonry & steel framing not shown.

Note A:
Stair landing to be poured on masonry.

Note B:
Provide drilled openings thru floor slab for plumbing piping clear of beams & joists as reqd in the plumbing space.

Note:
Floor El. 754.67 unless otherwise noted pan joist floor to have 14" deep pans with 2" slab unless otherwise noted.
At least 7 days shall elapse between abutting pours of slabs and beams.

ADMINISTRATION WING LABORATORY FLOOR PLAN

Scale: 3/16" = 1'-0"

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
STRUCTURAL CONCRETE PLAN

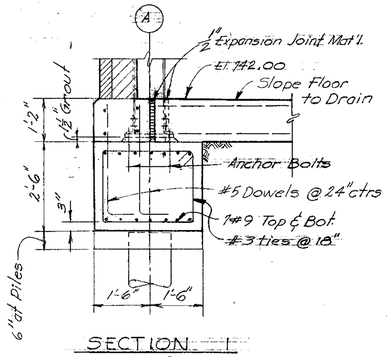
BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

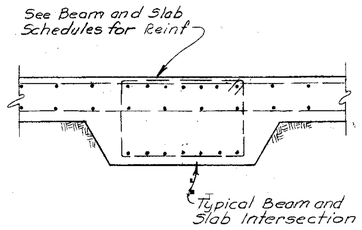
DESIGNED AGP CHECKED RAM LEWD
DETAILED JPC APPROVED
DATE 2-4-64

SHEET 61 OF 190

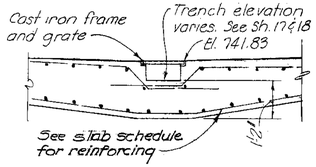
1062.32



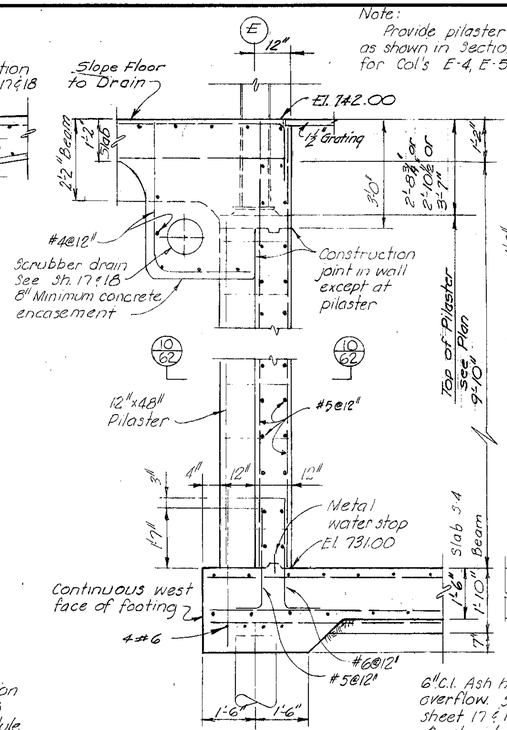
SECTION 1
Scale: 1/2" = 1'-0"
See Sheet 57 & 58



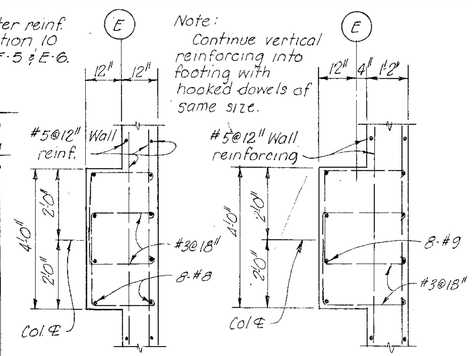
SECTION 2
Scale: 1/2" = 1'-0"
See Sheet 57 & 58



SECTION 3
Scale: 1/2" = 1'-0"
See Sheet 57 & 58

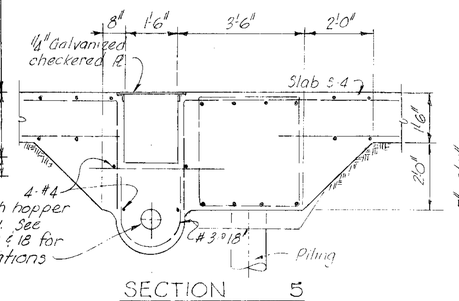


SECTION 4
Scale: 1/2" = 1'-0"
See Sh. 57 & 58

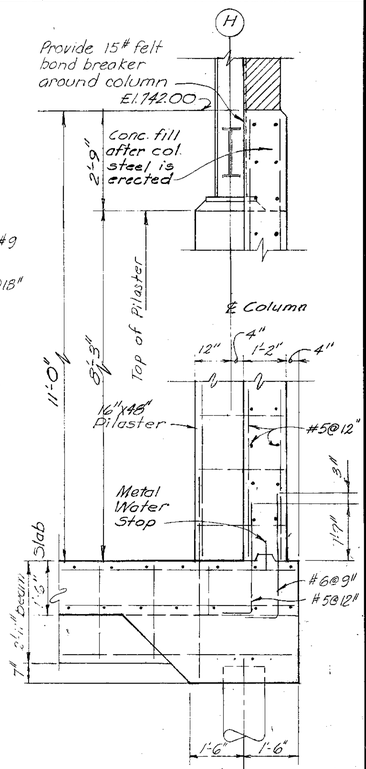


SECTION 10
Scale: 1/2" = 1'-0"
See this Sh.

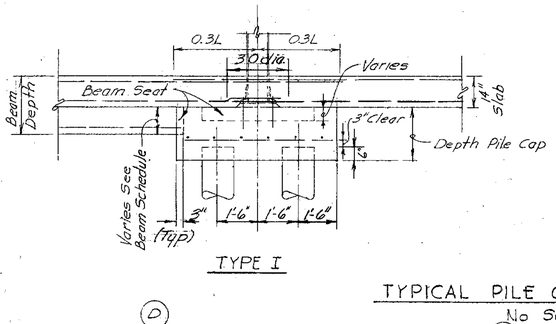
SECTION 11
Scale: 1/2" = 1'-0"
See this Sh.



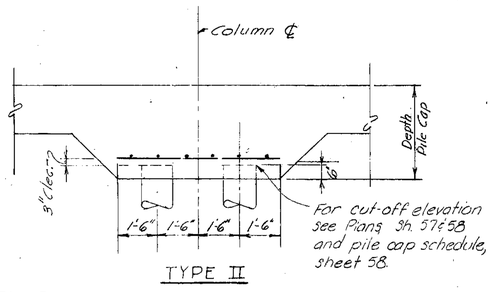
SECTION 5
Scale: 1/2" = 1'-0"
See Sh. 57 & 58



SECTION 6
Scale: 1/2" = 1'-0"
See Sh. 57 & 58



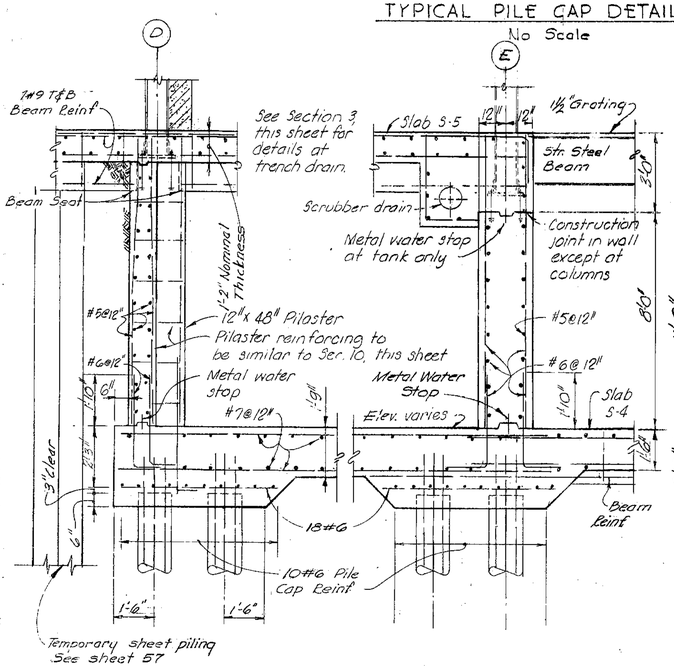
TYPE I



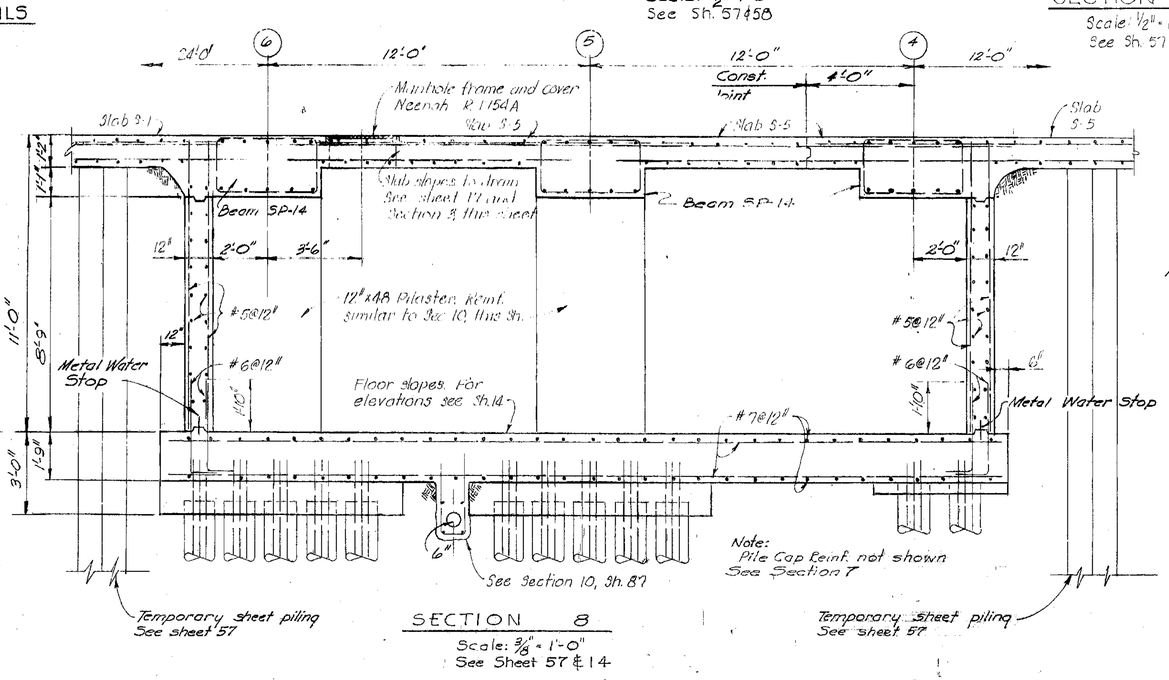
TYPE II

TYPICAL PILE CAP DETAILS

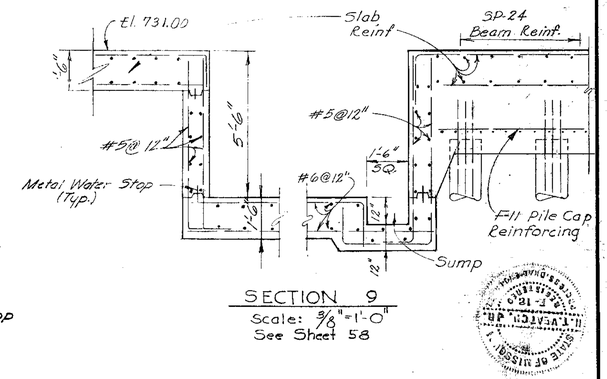
No Scale



SECTION 7
Scale: 3/8" = 1'-0"
See Sheet 57 & 14



SECTION 8
Scale: 3/8" = 1'-0"
See Sheet 57 & 14



SECTION 9
Scale: 3/8" = 1'-0"
See Sheet 58

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
STRUCTURAL CONCRETE SECTIONS

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

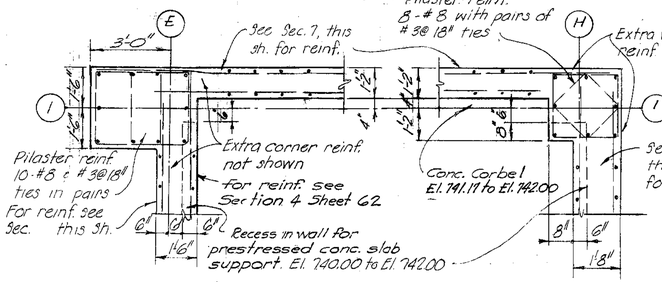
P.C.D. CONTRACT 7

DESIGNED RAM CHECKED VEA
DETAILED LWD APPROVED
DATE 2-4-64

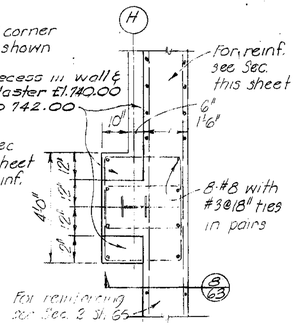
SHEET 62 OF 190

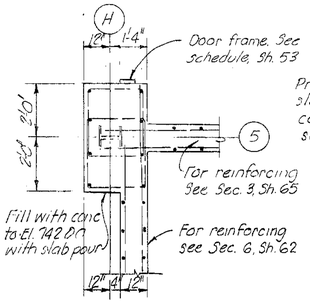
PROJECT 3292

1062 32

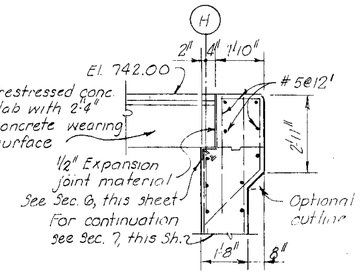


SECTIONAL PLAN 1
Scale: 3/8" = 1'-0"
See Sheet 57

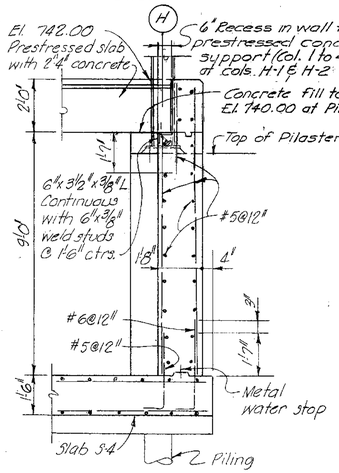




SECTIONAL PLAN 4
Scale: 3/8" = 1'-0"
See Sheet 57

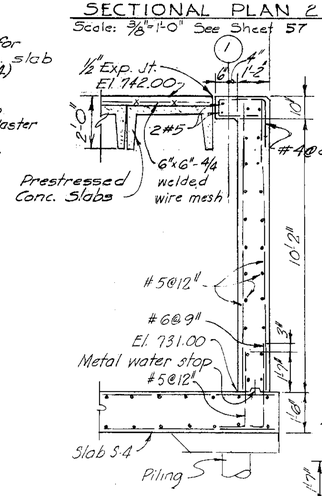


SECTION 5
Scale: 3/8" = 1'-0"
See Sheet 57



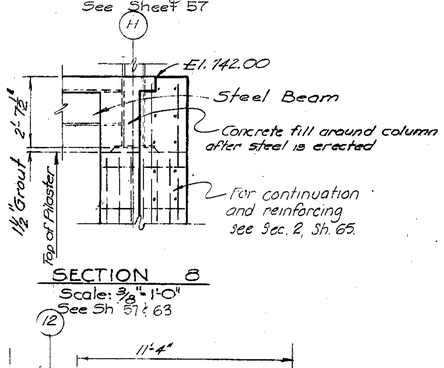
SECTION 6
Scale: 3/8" = 1'-0"
See Sheet 57

SECTIONAL PLAN 2
Scale: 3/8" = 1'-0" See Sheet 57

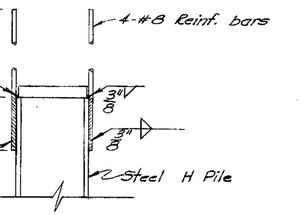


SECTION 7
Scale: 3/8" = 1'-0"
See Sheet 57

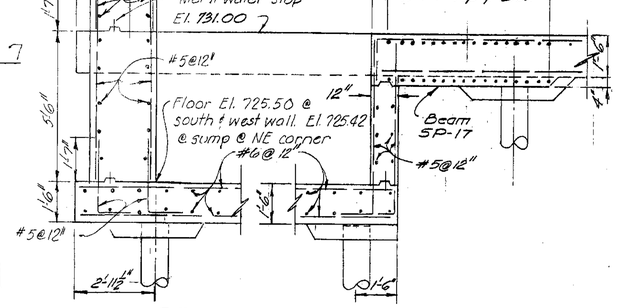
SECTIONAL PLAN 3
Scale: 3/8" = 1'-0"
See Sheet 57



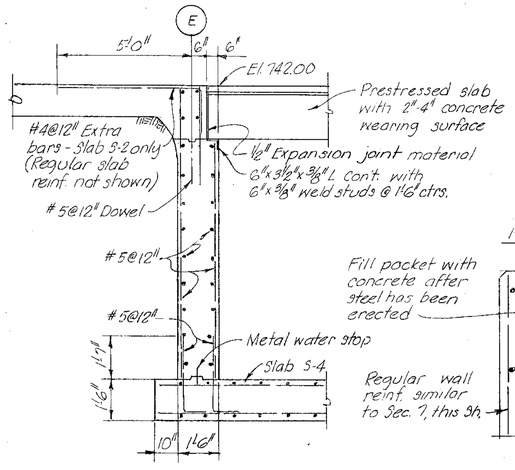
SECTION 8
Scale: 3/8" = 1'-0"
See Sh. 57 & 63



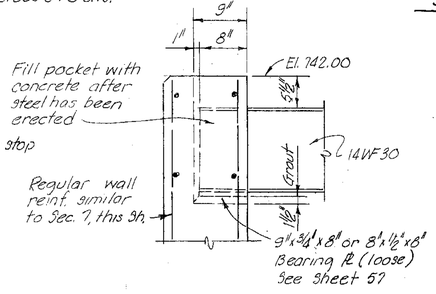
DETAIL OF H-PILE ANCHORAGE
Scale: 1 1/2" = 1'-0"



SECTION 11
Scale: 3/8" = 1'-0"
See Sheet 58



SECTION 9
Scale: 3/8" = 1'-0"
See Sheet 57



SECTION 10
Scale: 1" = 1'-0"
See Sheet 58

REGISTERED PROFESSIONAL ENGINEER
STATE OF MISSOURI
H. VEATCH JR.
E-16 0

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
STRUCTURAL CONCRETE SECTIONS

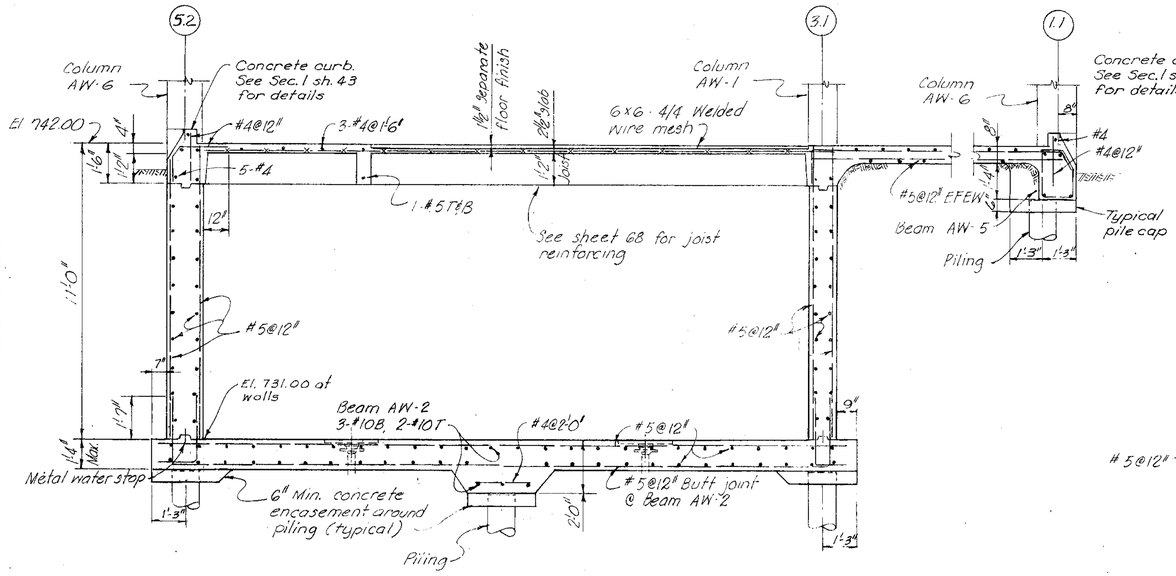
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

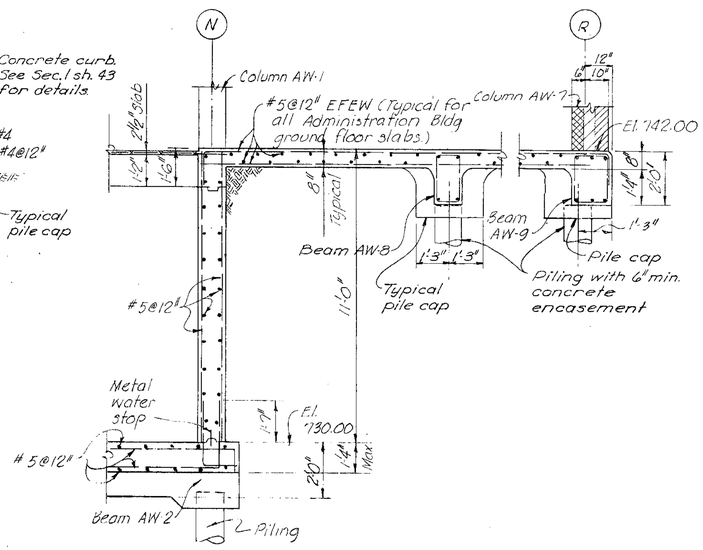
DESIGNED RAM DETAILED LWD CHECKED VEA APPROVED DATE 2-14-64

SHEET 63 OF 190

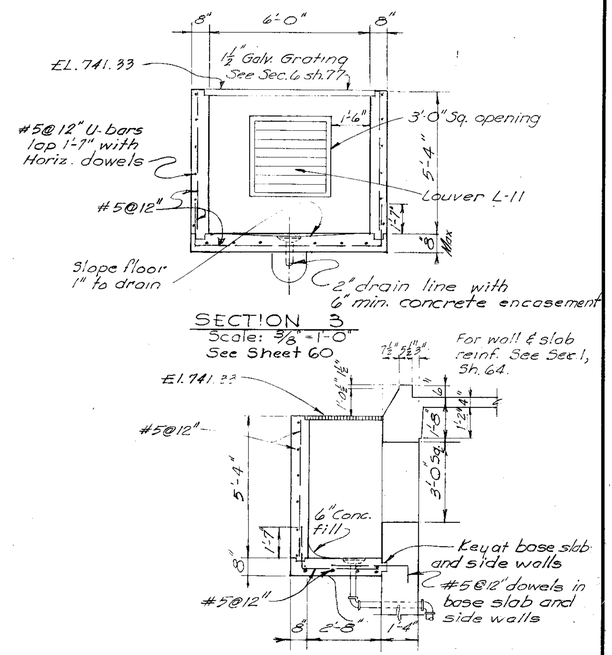
PROJECT 3292 1042 32



SECTION 1
Scale: 3/8"=1'-0"
See Sheet 59:60



SECTION 2
Scale: 3/8"=1'-0"
See Sheet 59:60

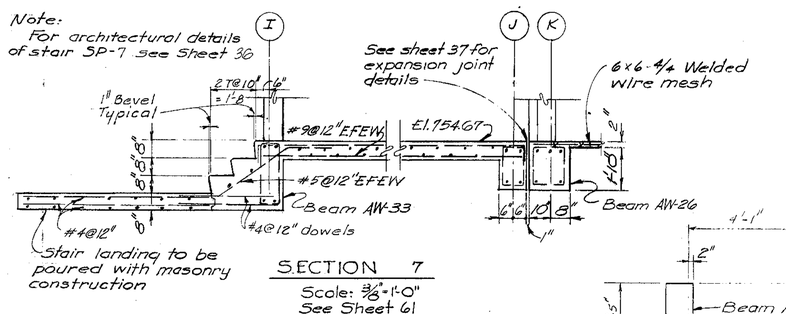


SECTION 3
Scale: 3/8"=1'-0"
See Sheet 60

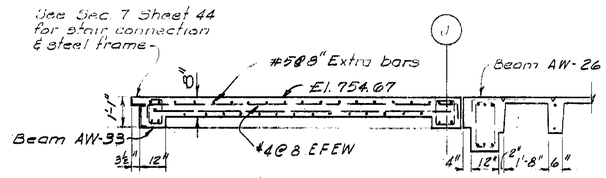
SECTION 4
Scale: 3/8"=1'-0"
See Sheet 60

SECTION 5
Scale: 3/8"=1'-0"
See Sheet 60

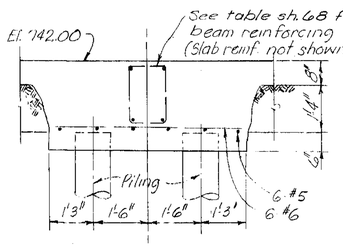
SECTION 6
Scale: 3/8"=1'-0"
See Sheet 61



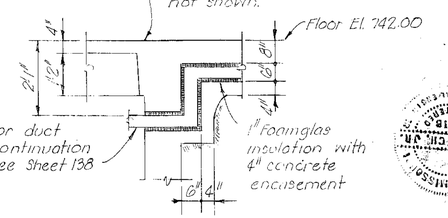
SECTION 7
Scale: 3/8"=1'-0"
See Sheet 61



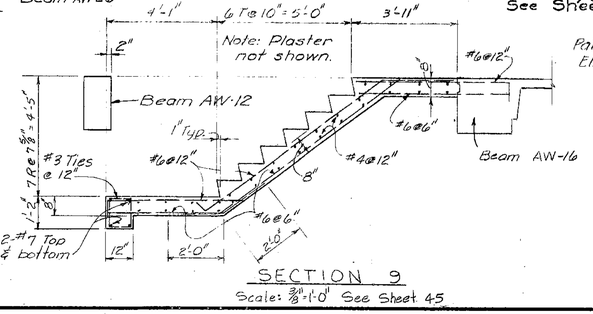
SECTION 8
Scale: 3/8"=1'-0"
See Sheet 61



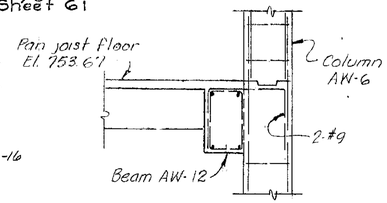
SECTION 11
Scale: ½"=1'-0"
See Sheet 60



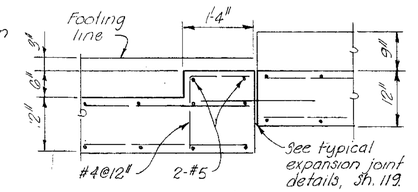
SECTION 12
Scale: ½"=1'-0"
See Sheet 60



SECTION 9
Scale: 3/8"=1'-0" See Sheet 45



SECTION 10
Scale: ½"=1'-0"
See Sheet 61



DETAIL A
Scale: 3/4"=1'-0"
See Sheet 59

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
STRUCTURAL CONCRETE SECTIONS

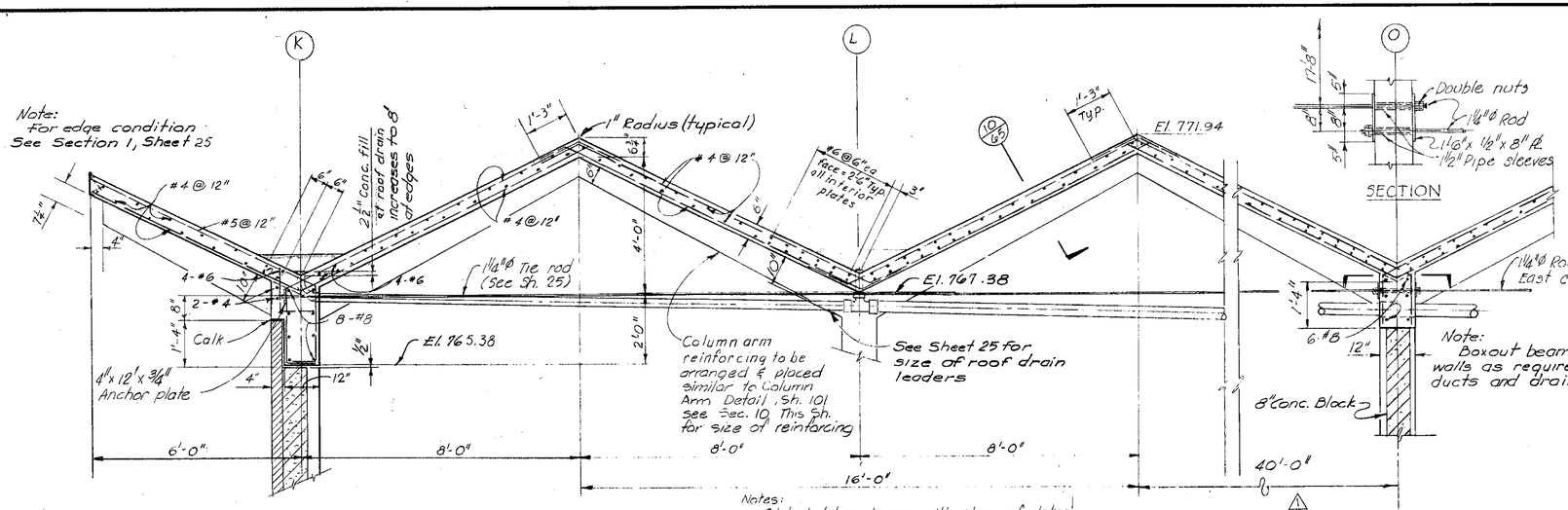
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

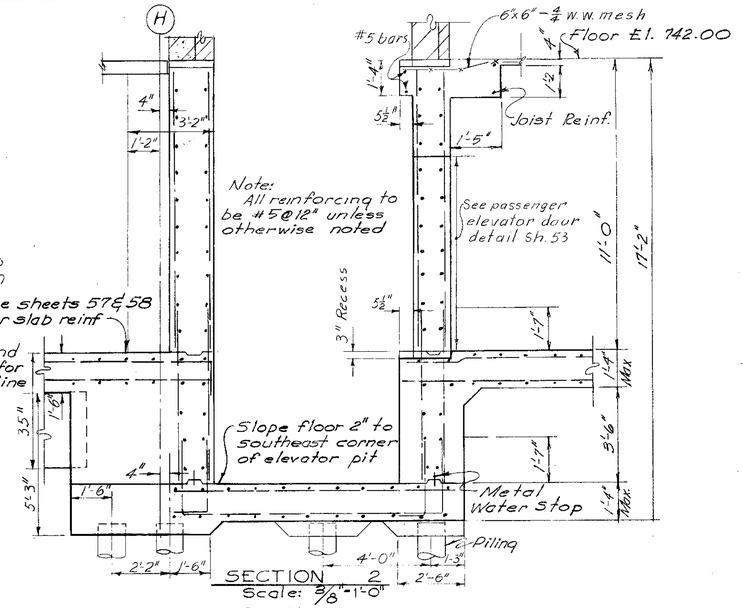
DESIGNED ACP CHECKED RAM/EW
DETAILED LWD APPROVED
DATE 2-5-64

SHEET 64 OF 190

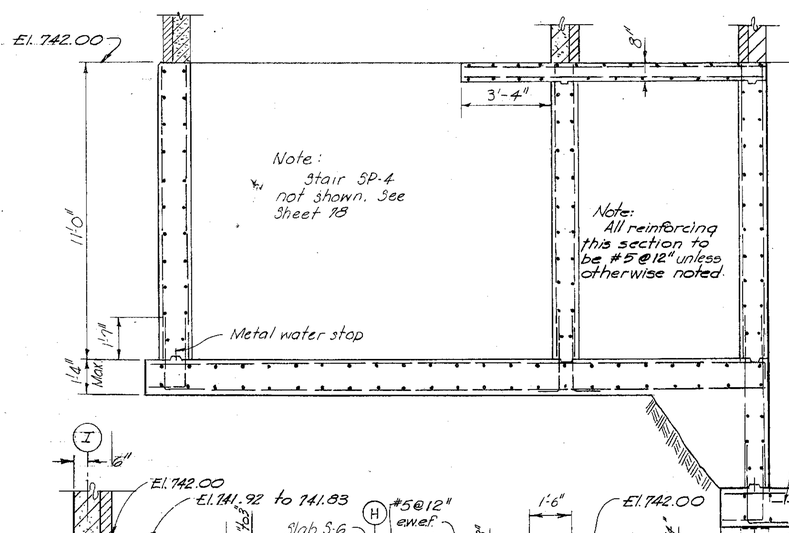
10G7 32



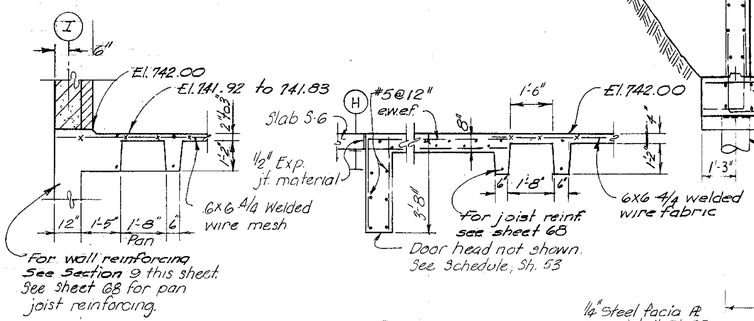
SECTION 1
Scale: ½"=1'-0"
See Sheet 25



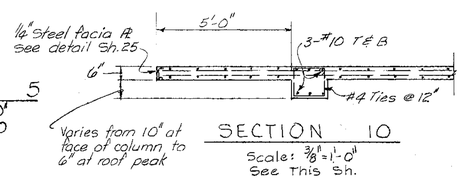
SECTION 2
Scale: ⅜"=1'-0"
See Sh. 59 & 60



SECTION 4
Scale: ⅜"=1'-0"
See Sheet 60

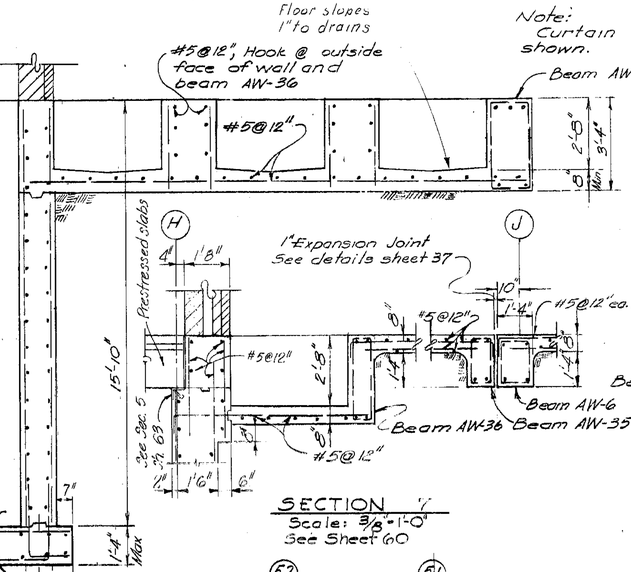


SECTION 3
Scale: ⅜"=1'-0"
See Sh. 59 & 60

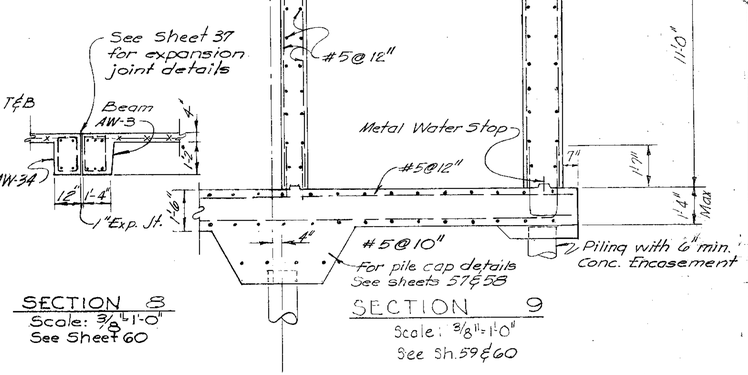


SECTION 5
Scale: ⅜"=1'-0"
See Sheet 60

SECTION 10
Scale: ⅜"=1'-0"
See This Sh.

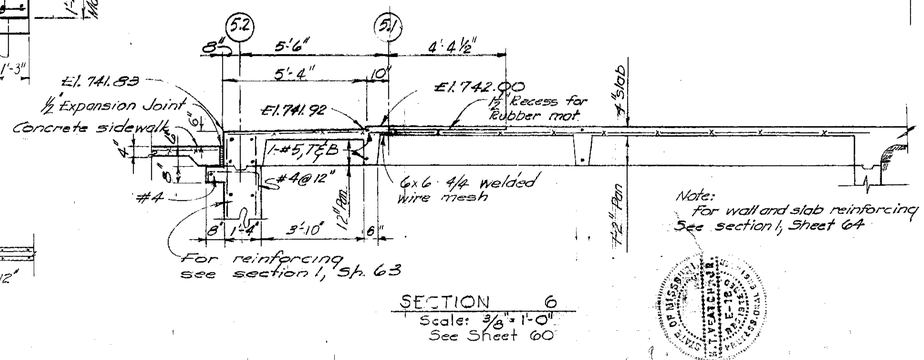


SECTION 7
Scale: ⅜"=1'-0"
See Sheet 60



SECTION 8
Scale: ⅜"=1'-0"
See Sheet 60

SECTION 9
Scale: ⅜"=1'-0"
See Sh. 59 & 60



SECTION 6
Scale: ⅜"=1'-0"
See Sheet 60

NO.	DATE	REVISION	BY	CK'D
1	5-27-64	Revised dimension	W.J.D.	A.C.P.

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
STRUCTURAL CONCRETE SECTIONS

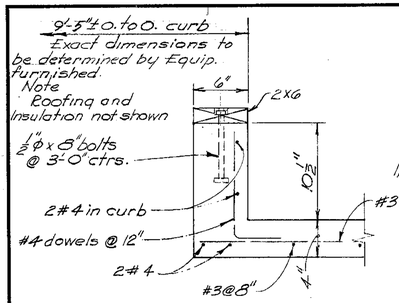
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

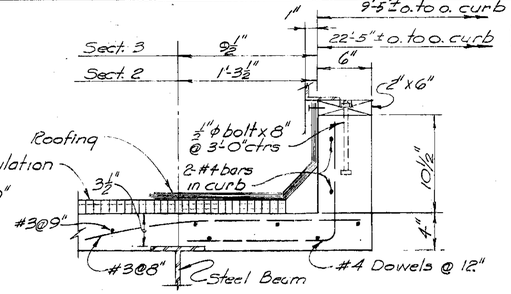
P.C.D. CONTRACT 7

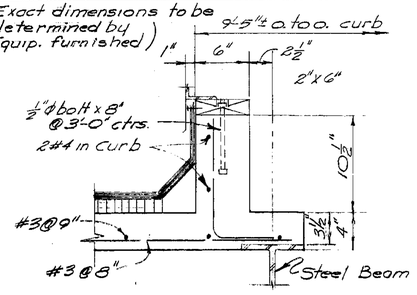
DESIGNED A.C.P. DRG. CHECKED R.A.M. L.F.W.
DETAILED A.D. A.C.P. L.W.D. APPROVED
DATE 2-4-64

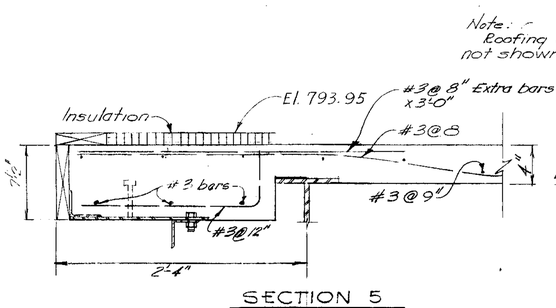
SHEET 65 OF 190

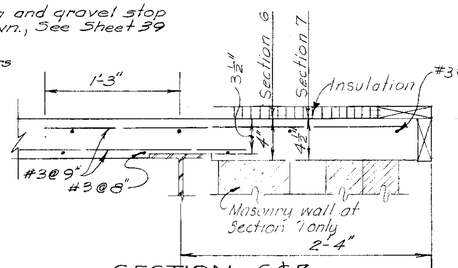
1062.32











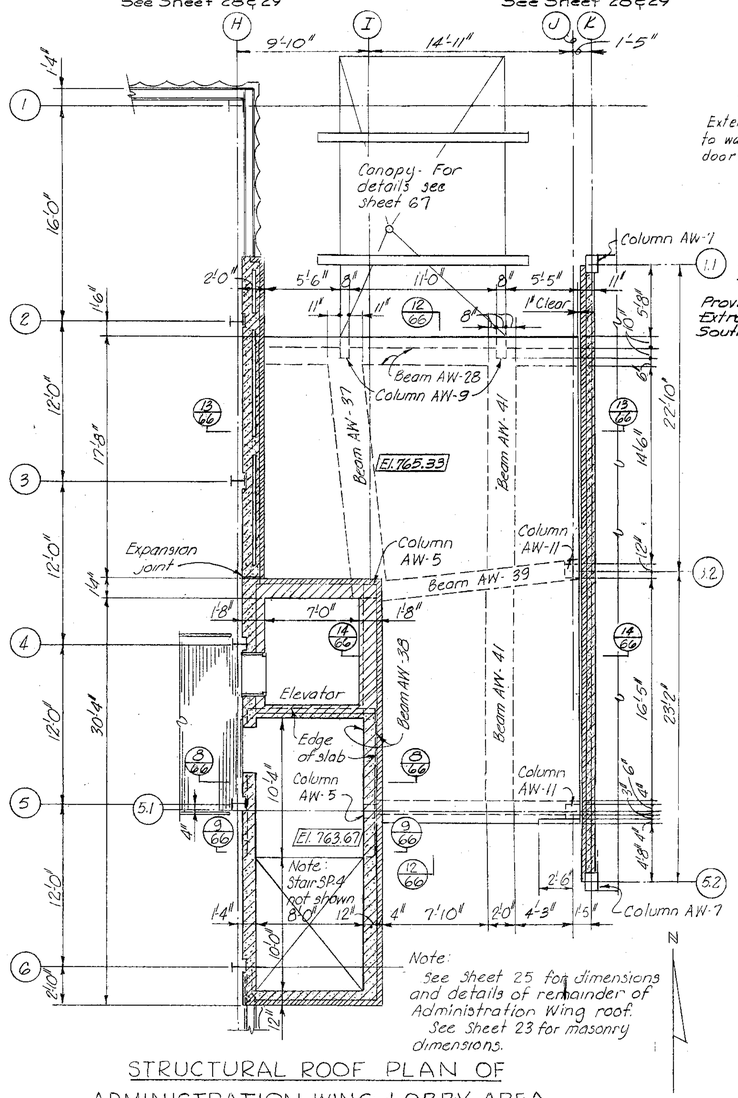
SECTION 1
Scale: 1½"=1'-0"
See Sheet 28 & 29

SECTION 2 & 3
Scale: 1½"=1'-0"
See Sheet 28 & 29

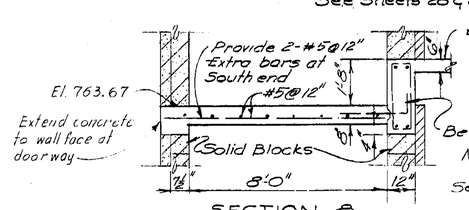
SECTION 4
Scale: 1½"=1'-0"
See Sheets 28 & 29

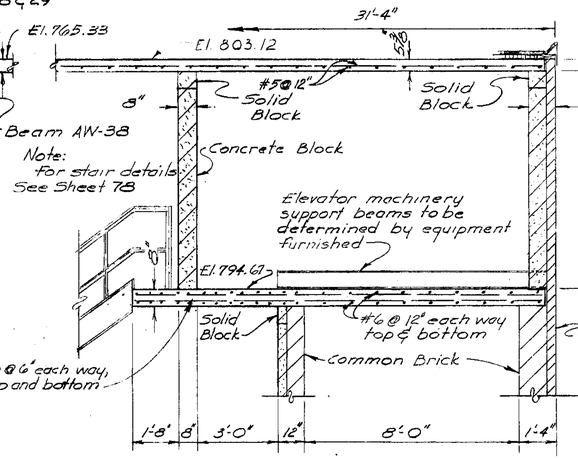
SECTION 5
Scale: 1½"=1'-0"
See Sheets 28 & 29

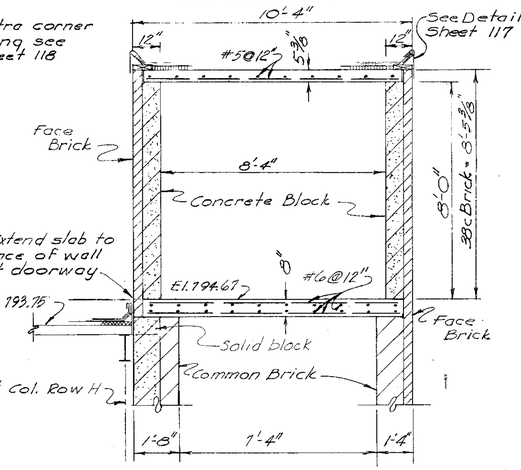
SECTION 6 & 7
Scale: 1½"=1'-0"
See Sheet 28



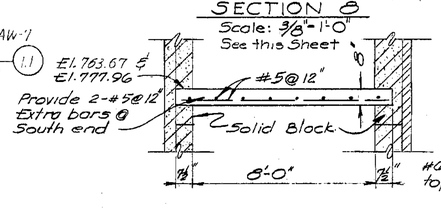
STRUCTURAL ROOF PLAN OF
ADMINISTRATION WING LOBBY AREA
Scale: 3/16"=1'-0"





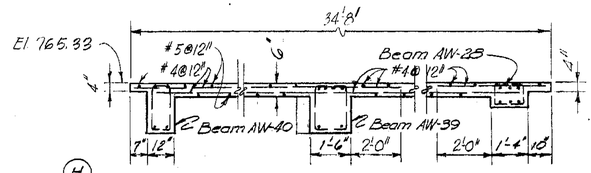


SECTION 8
Scale: 3/8"=1'-0"
See this Sheet



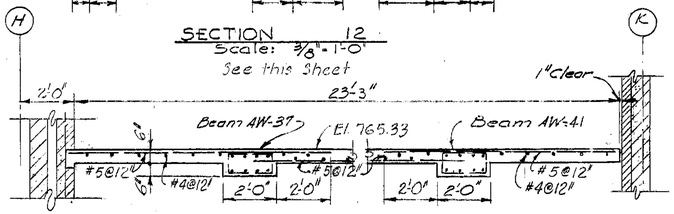
SECTION 9
Scale: 3/8"=1'-0"
See Sheet 61 & 78

SECTION 10
Scale: 3/8"=1'-0"
See Sheet 28



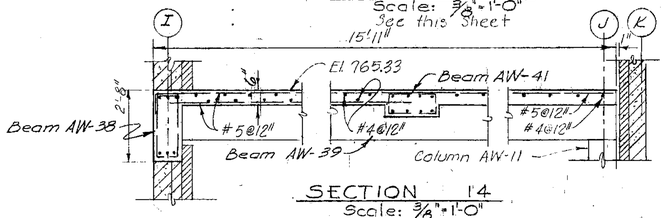
Note:
Roofing, flashing insulation and curtain wall not shown.

SECTION 12
Scale: 3/8"=1'-0"
See this Sheet



Note:
Roofing, insulation and flashing not shown.

SECTION 13
Scale: 3/8"=1'-0"
See this Sheet



SECTION 14
Scale: 3/8"=1'-0"
See this sheet

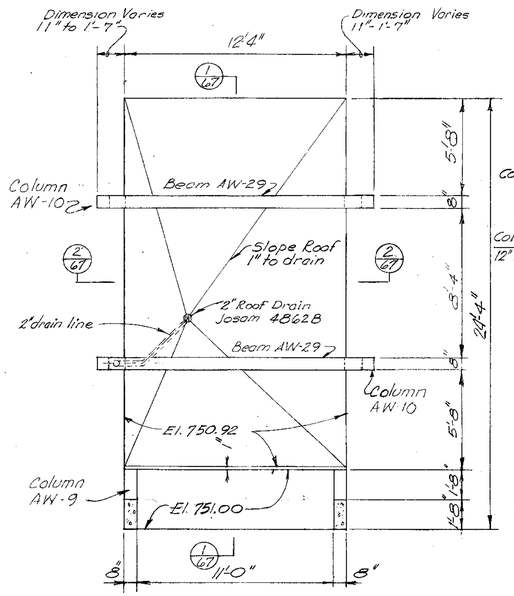
SECTION 11
Scale: 3/8"=1'-0"
See Sheet 28

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

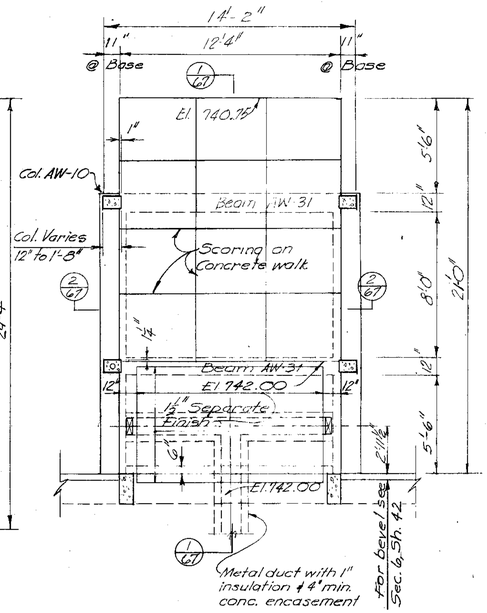
SLUDGE PROCESSING BUILDING
STRUCTURAL CONCRETE SECTIONS

BLACK & VEATCH AND BURNS & MC DONNELL CONSULTING ENGINEERS, KANSAS CITY, MO.	P.C.D. CONTRACT 7
DESIGNED ACP RAM CHECKED RAM ACP LEW DETAILED LWD CSC APPROVED DATE 2-24-64	SHEET 66 OF 190

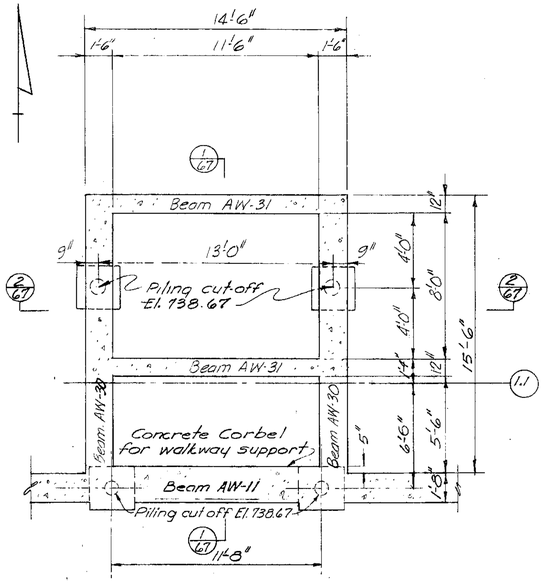
PROJECT 3298 1062.32



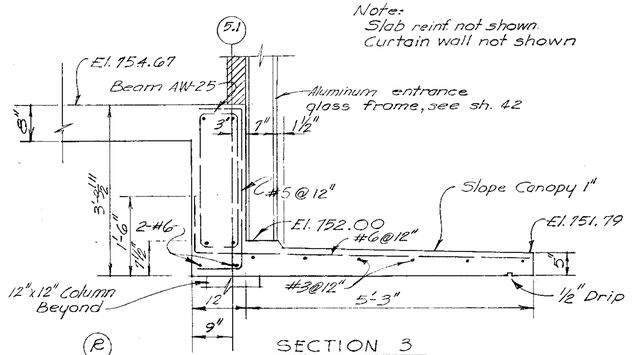
ROOF PLAN
Scale: 1/4" = 1'-0"



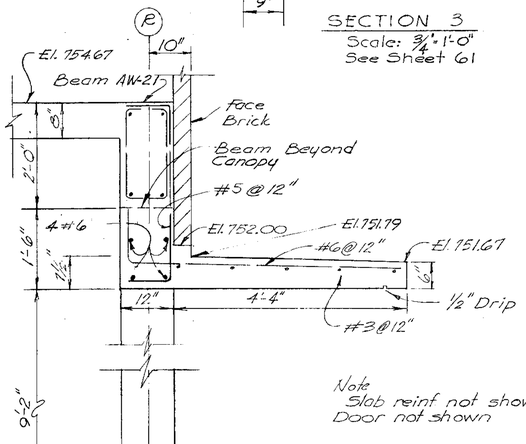
GROUND FLOOR PLAN
Scale: 1/4"=1'-0"



FOUNDATION PLAN
Scale: 1/4"=1'-0"

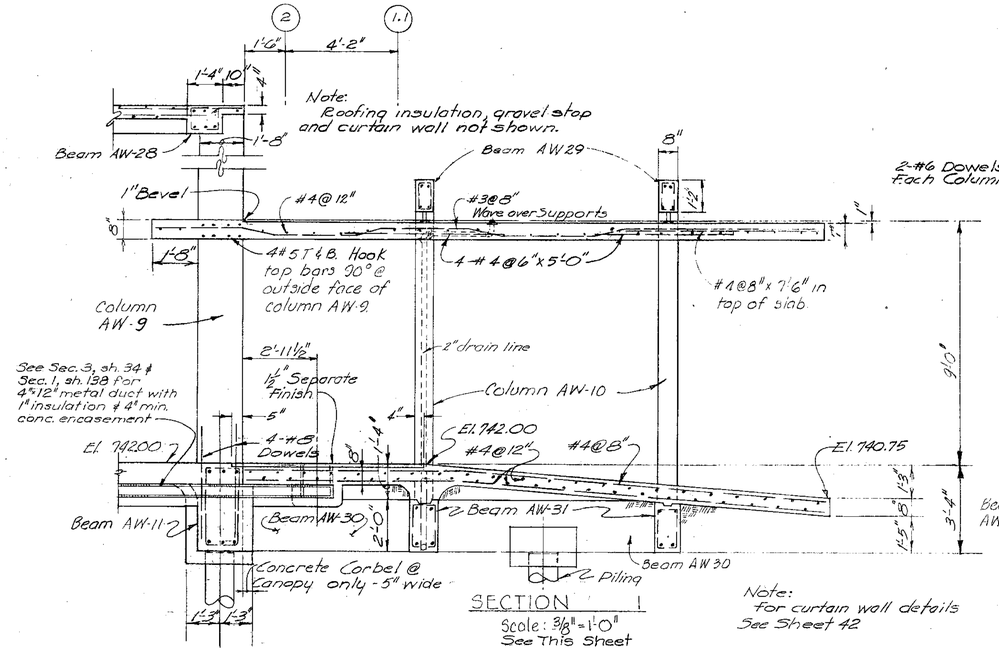


SECTION 3
Scale: 3/4"=1'-0"
See Sheet 61



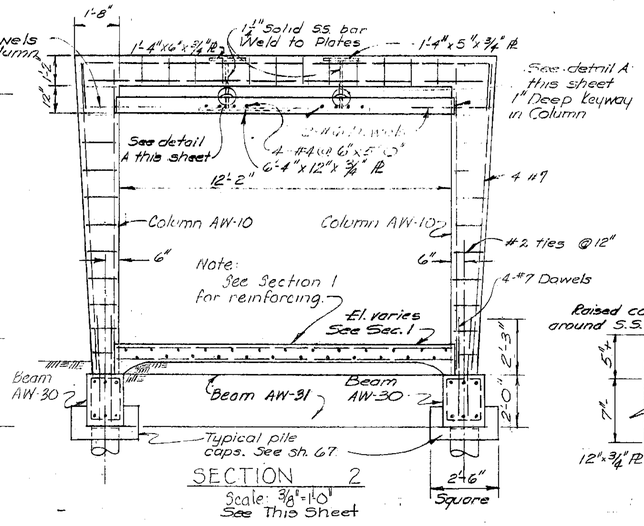
Note
Slab reinf not shown.
Door not shown

SECTION 4
Scale: 3/4"=1'-0"
See Sh. 60 & 61

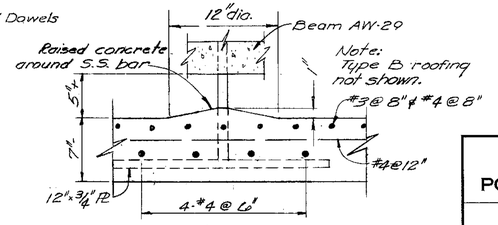


SECTION 1
Scale: 3/8"=1'-0"
See This Sheet

Note:
for curtain wall details
See Sheet 42



SECTION 2
Scale: 3/8"=1'-0"
See This Sheet



DETAIL A
Scale: 1½"=1'-0"
See this sheet

FRONT ENTRANCE CANOPY DETAILS

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
STRUCTURAL CONCRETE SECTIONS & DETAILS

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED ACP DETAILED ACP LWD CHECKED RAM APPROVED [illegible] DATE 2-24-64

SHEET 67 OF 190

PROJECT 1062.32

CONCRETE BEAM SCHEDULE NO. 2

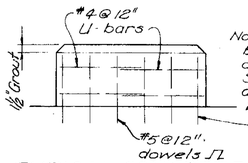
Beam	D	W	Top Bars	Bottom Bars	Side Bars 1/2 Ea. Face	Stirrups	Remarks
AW-1	2'-0"	2'-6"	2-#10	3-#11	–	–	Extend reinf to elevator shaft
AW-2	2'0"	2'6"	2-#10	3-#10	–	–	
AW-3	1'6"	1'4"	3-#8	3-#8	-	#3@12"	
AW-4	1'-6"	12"	2-#10	2-#10	–	#3@12"	
AW-5	2'0"	1'4"	2-#7	2-#7	–	#3@12"	
AW-6	2'0"	1'-4"	2-#7	2-#8	-	#3@12"	
AW-7	2'0"	12"	2-#7	2-#8	–	#3@12"	
AW-8	2'0"	12"	2-#9	2-#9	–	#3@12"	Reduce stirrup depth for recess
AW-9	2'0"	1'-6"	3-#7	3-#7	-	#3@12"	
AW-10	2'0"	12"	2-#9	2-#9	-	#3@12"	Reduce stirrup depth for recess
AW-11	3'4"	1'8"	3-#6	3-#6	–	#3@12"	
AW-12	2'0"	12"	2-#9	2-#9	-	#3@12"	
AW-13	2'0"	12"	2-#8	2-#8	-	#3@12"	
AW-14	2'0"	1'6"	3-#9	3-#9	-	#3@12"	
AW-15	2'0"	2'0"	4-#11	4-#11	-	#3@12"	
AW-16	2'0"	2'0"	2-#11	2-#11	–	#3@12"	Continue AW-16 reinforcing
AW-17	2'-0"	2'0"	4-#8	4-#8	–	#3@12"	
AW-18	2'0"	12"	2-#9	2-#9	–	#3@12"	
AW-19	2'0"	12"	2-#8	3-#7	-	#3@12"	
AW-20	2'0"	12"	2-#8	3-#7	-	#3@12"	
AW-21	2'0"	12"	2-#7	2-#7	-	#3@12"	
AW-22	1'4"	12"	2-#6	2-#7	-	#3@12"	
AW-23	2'-8"	12"	2-#10	2-#10	–	#3@12"	
AW-24	2'0"	12"	2-#10	2-#10	–	#3@12"	
AW-25	3'-3 1/2"	12	2-#9	2-#9	–	#3@12"	Extend to south face of D column
AW-26	2'-0"	12" to 1'4"	3-#8	3-#8	-	#3@12"	See Plans for varying width
AW-27	2'-0"	12"	2-#7	4-#9	-	#3@12"	
AW-28	12"	1'-4"	3-#6	3-#6	-	#3@12"	
AW-29	1'-2"	8"	2-#7	2-#7	-	#2@12"	
AW-30	2'0"	1'-6"	3-#10	3-#10	-	#3@12"	
AW-31	2'0"	12"	2-#7	2-#7	-	#3@12"	
AW-32	2'-0"	1'-4"	3-#8	3-#8	-	#3@12"	
AW-33	1'1"	12"	2-#8	2-#5	–	#3@12"	
AW-34	1'6"	12"	2-#7	2-#7	–	#3@12"	
AW-35	2'0"	12"	2-#7	2-#8	–	#3@12"	
AW-36	3'4"	12"	2-#9	2-#9	-	#3@12"	
AW-37	12"	2'6"	4-#9	4-#9	-	#3@12"	
AW-38	2'8"	12"	3-#9	3-#10	–	#2@12"	
AW-39	1'-10"	1'6"	4-#9	4-#9	–	#3@12"	
AW-40	1'-10"	12"	2-#9	2-#9	–	#3@12"	
AW-41	12"	2'0"	3-#9	3-#9	–	#3@12"	

CONCRETE COLUMN SCHEDULE NO. 1

Col.	T	W	Vertical Bars	Tie Bars	Remarks
AW-1	12"	12"	4-#6	#2@12"	
AW-2	12"	12"	4-#10	#2@12"	
AW-3	12"	12"	4-#7	#2@12"	
AW-4	12"	12"	4-#9	#2@12"	
AW-5	12"	12"	8-#9	#2@12"	
AW-6	1'4"	12"	6-#10	#2@12"	Second Floor
	1'4"	12"	10-#10	#2@12"	Ground Floor
AW-7	1'4"	12"	10-#10	#2@12"	Second Floor
	2'8"	12"	10-#10	#2@12"	Ground Floor
AW-8	12"	12"	4-#7	#2@12"	
AW-9	1'8"	8"	4-#8	#2@8"	
AW-10	12"	8"	4-#7	#2@12"	✳1
AW-11	12"	12"	4-#7	#2@12"	

✳1 T varies from 12" at bottom to 20" at top

TYPICAL COLUMN BAR AND TIE ARRANGEMENT DETAILS



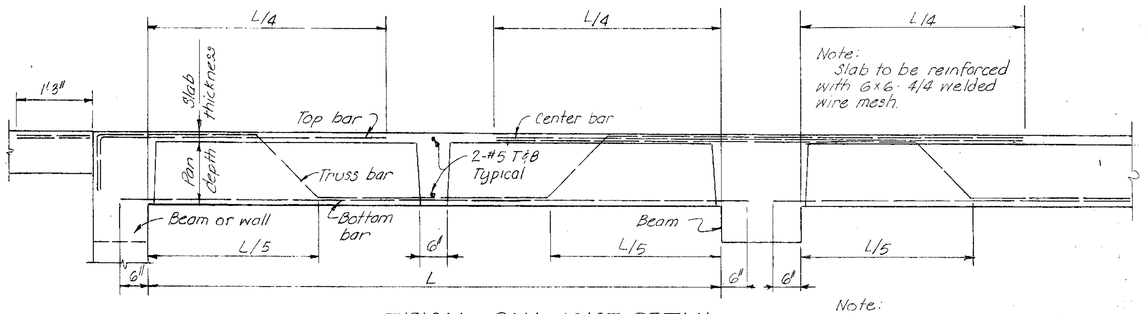
Note: Base dimensions to be determined by equipment. See Contract 7A & 7B shop drawings for specific base requirements.

TYPICAL CONCRETE BASE DETAIL
No Scale

CONCRETE SLAB SCHEDULE NO. 2

Slab	Thickness	East-West Bars	North-South Bars	Remarks
S-5	8"	#4@12" Bot. #4@12" Top	#4@12" Bot #4@12" Top	Filter Flr.
S-6	8"	#4@12" Bot #4@12" Top	#5@8" Bot #5@8" Top	Filter Flr.
S-7	6"	#5@7" Bot. #5@7" Top	#4@12" Bot #4@12" Top	Fan Flr. ✳
S-8	6"	#4@10" Bot #4@12" Top	#4@12" Bot #4@12" Top	Ground Flr.
S-9	6"	#4@12" Bot #4@12" Top	#4@12" Bot #4@12" Top	Ground Flr
S-10	4"	#3@9"	#3@8"	Roof ✳ ✳
S-11	6"	#4@12" Bot. #4@12" Top	#4@10" Bot #4@10" Top	Intermediate & Fan Floor
S-12	4"	#3@9"	#3@7"	Fan Flr ✳ ✳
S-13	4"	#3@7"	#3@9"	Fan Flr +
S-14	8"	#5@10" Bot. #4@12" Top	#5@10' Bot #4@12" Top	Storage Platform
S-15	8"	#4@12" T&B	#4@12" T&B	Interm. Flr.
S-16	8"	#5@12" T&B	#5@12" T&B	Interm. Flr.

✳ ✳ Wave N-S bars over supports
+ Wave E-W bars over supports
✳ Haunch slab to bottom flange of beam under Induced Draft Fan only.



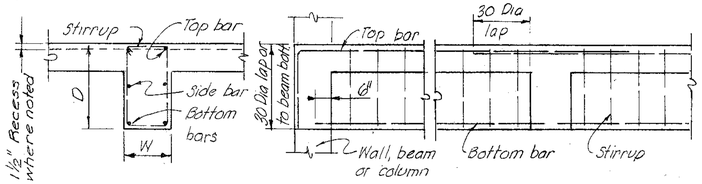
Note: Slab to be reinforced with 6x6 - 4/4 welded wire mesh.

TYPICAL PAN JOIST DETAIL

Note: All pan joists are located in the Administration wing.

PAN JOIST SCHEDULE

Location	Floor Elevation	Pan Depth	Slab Thick.	Top Bar	Truss Bar	Bott. Bar	Center Bar	Remarks
Ground floor	742.00	1'-2"	4"	#6	#5	#7	-	
Ground floor	741.87	1'-2"	2 1/2"	#6	#5	#7	-	Washroom area
Ground floor	Varies	12"	4"-5"	#6	#5	#7	-	Door 145 entrance
Laboratory floor	758.67	1'-2"	2"	#6	#5	#6	#4	Col. row K to O
Laboratory floor	758.67	1'-2"	2"	#5	#4	#5	#4	Col. row O to R
Laboratory floor	758.54	12"	2 1/2"	#6	#5	#6	#4	Washroom area



BEAM SECTION BEAM ELEVATION

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
STRUCTURAL CONCRETE SCHEDULES

BLACK & VEATCH AND BURNS & MCDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

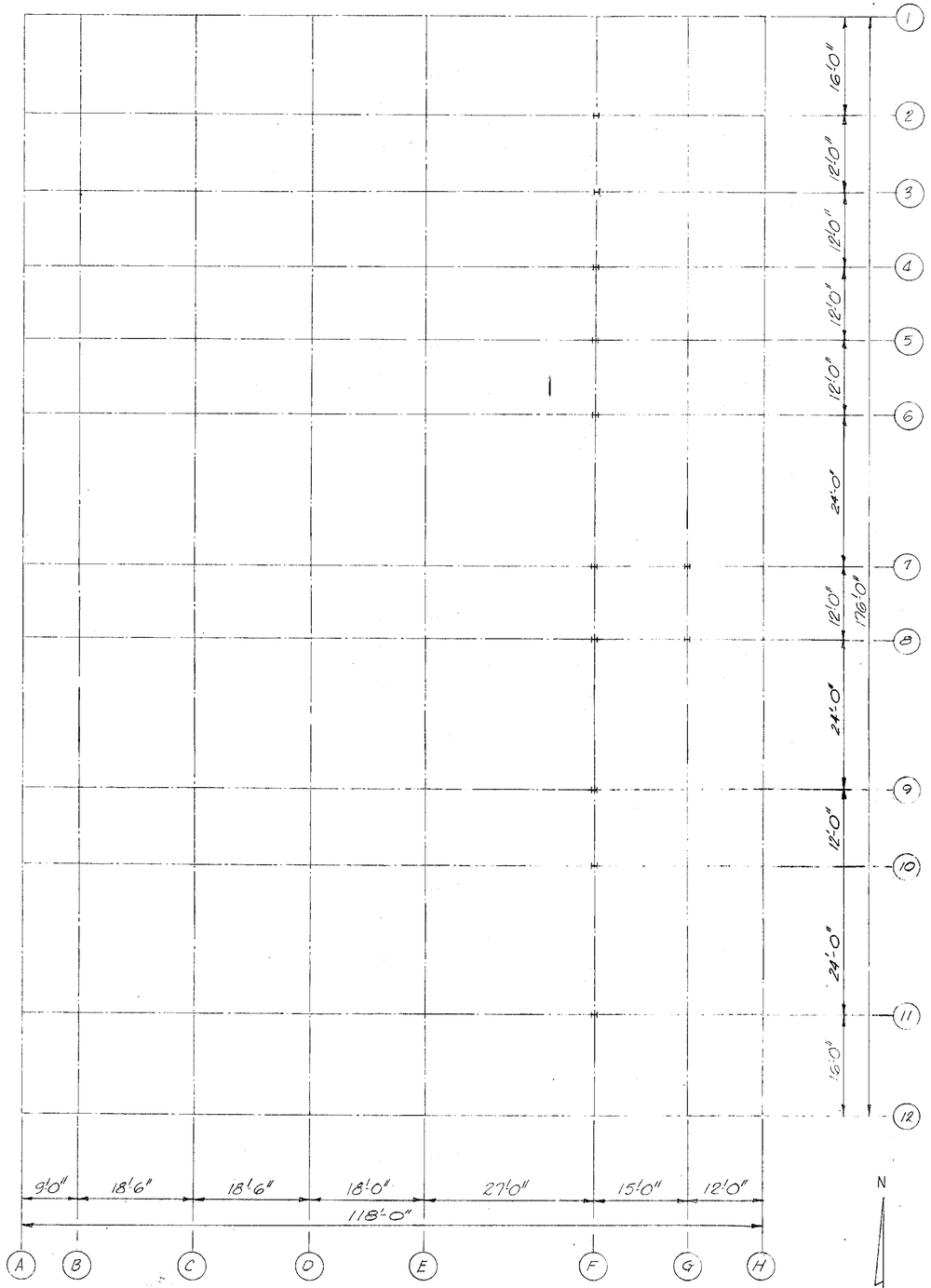
P.C.D. CONTRACT 7

DESIGNED ACP CHECKED RAW
DETAILED ACP LWD APPROVED
DATE 2-4-64

SHEET 68 OF 190

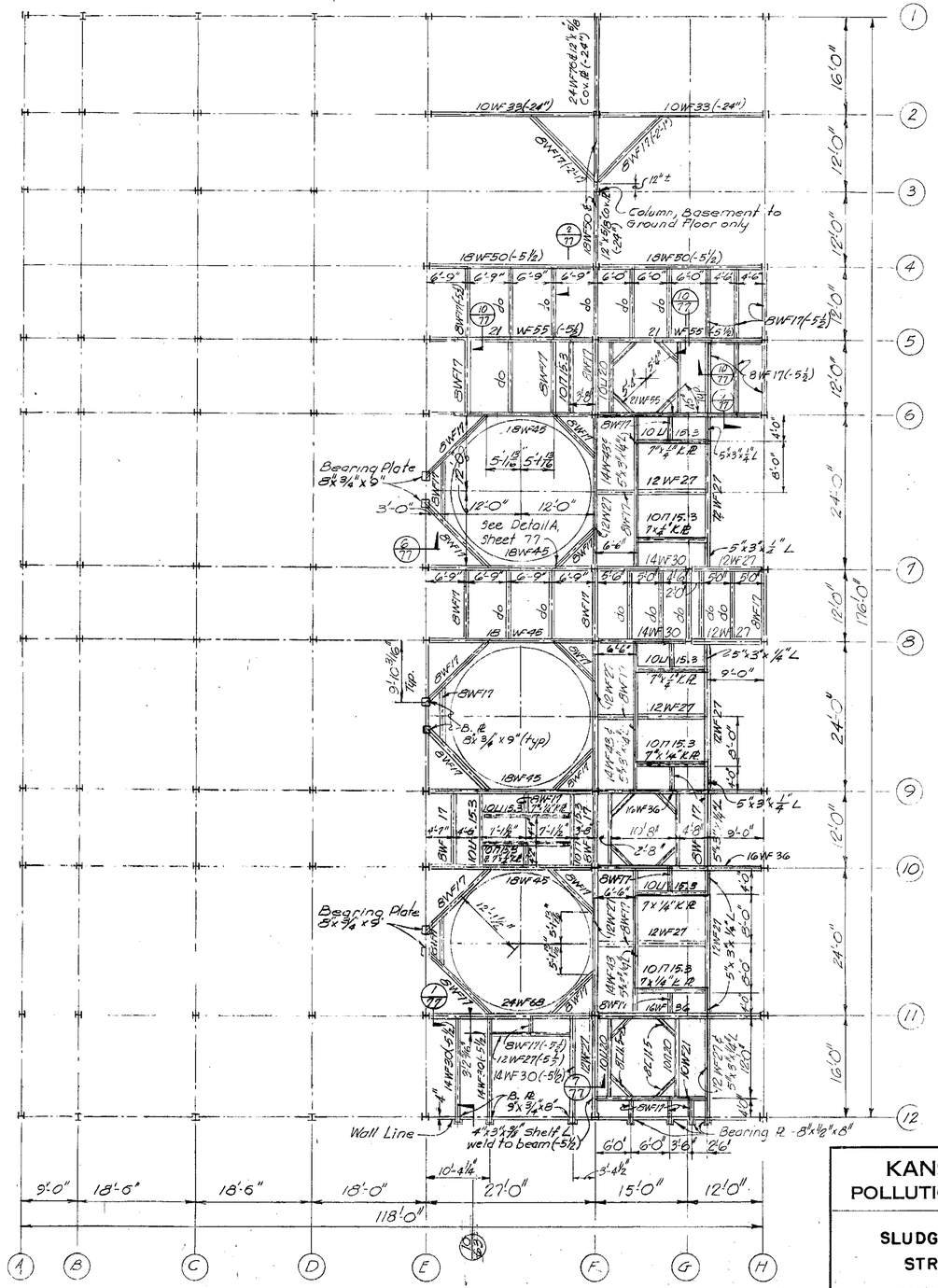
PRINTED IN U.S.A.

10/2.32



BASEMENT FLOOR PLAN EL 731.00

Scale: 3/32" = 1'0"



GROUND FLOOR PLAN EL. 742.00

Scale: 3/32" = 1'0"

GENERAL NOTES:

All beams shall be 1½" below floor elevation unless otherwise noted

Beams to be spaced equally between column lines unless otherwise noted.

Framing dimensions for all incinerators, scrubbers and quenchers to be the same.

Vertical bracing and girts not shown. See sheets 73 & 74

Dimensions are to ℄ of beams and to the back of channels

See sheet 76 for column schedule and details.

Where channels with kick plates frame into beams with kick angles the channel kick plate shall be coped and extended to the inside (grating) face of the upright leg of the angle.

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
STRUCTURAL STEEL PLANS

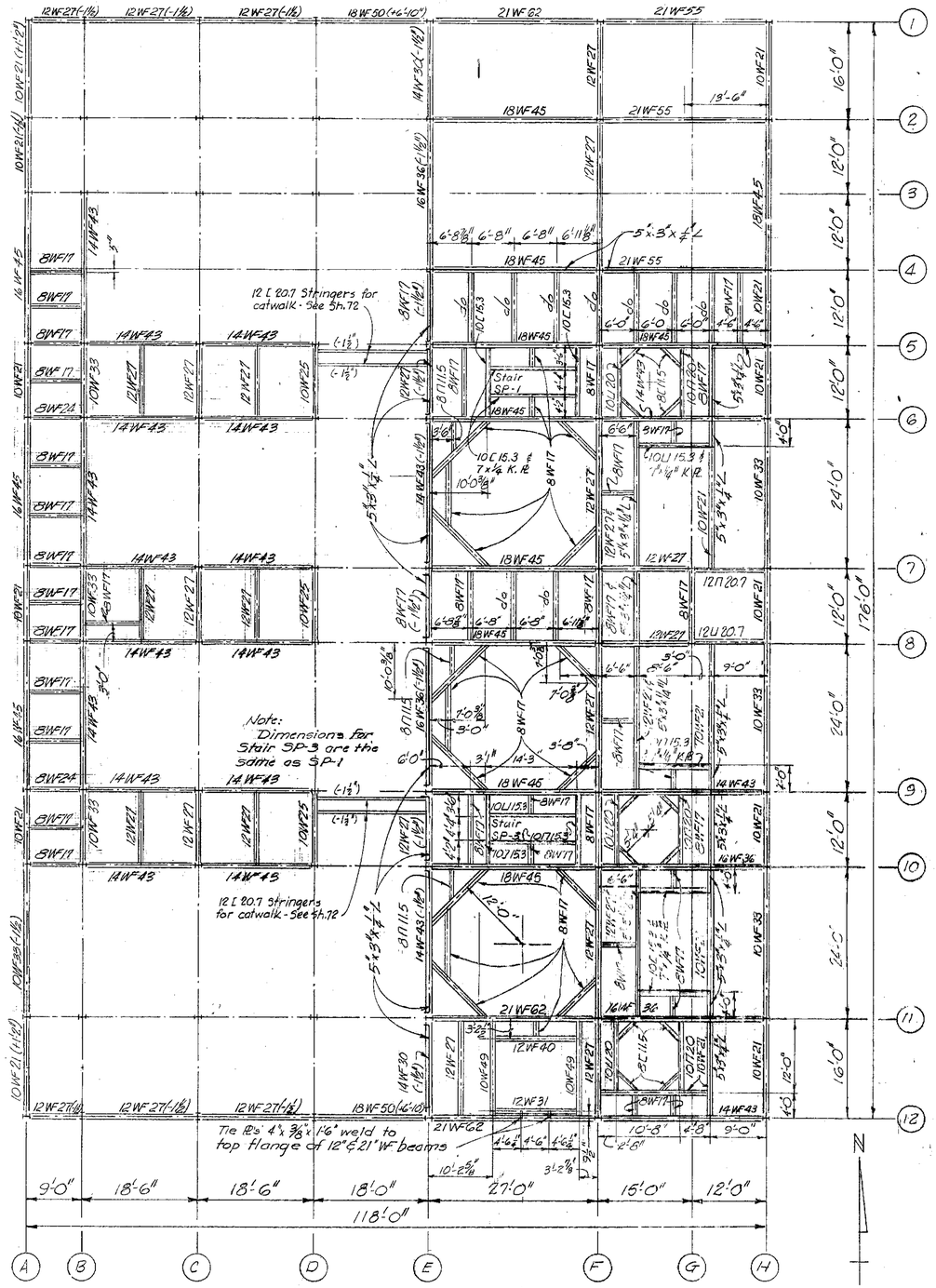
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED RAM ACP CHECKED ACP
DETAILED ACP LWD APPROVED
DATE 2-5-68

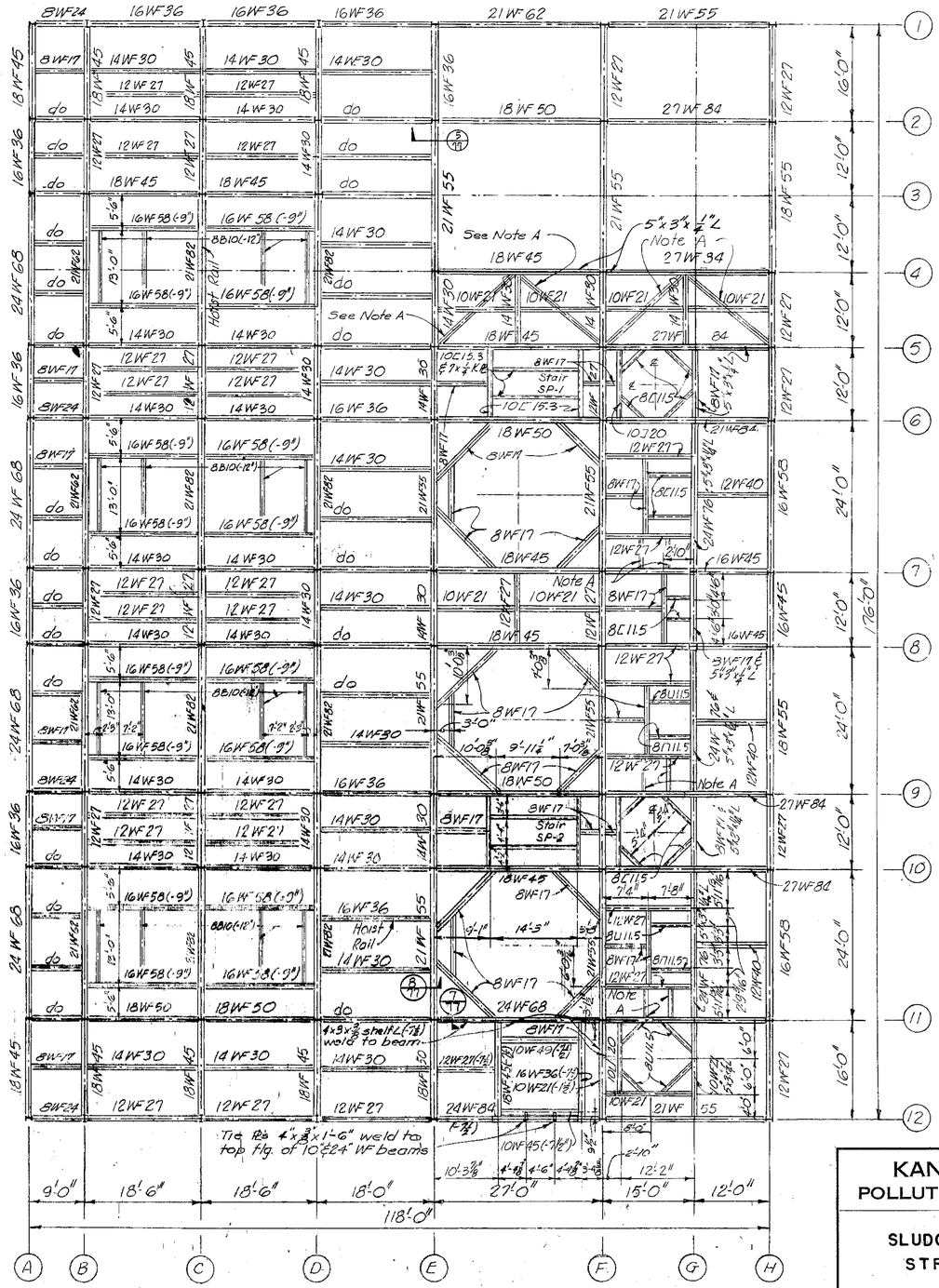
SHEET 69 OF 190

1062.32



INTERMEDIATE FLOOR PLAN EL. 752.67

Scale: 3/32"=1'-0"



FILTER FLOOR PLAN EL. 763.67

Scale: 3/32"=1'-0"

GENERAL NOTES:

Beams in and between Col A thru Col E shall be 1½" below floor elevation unless otherwise noted. All other beams shall be 1½" below floor elevation unless other wise noted.

Beams to be spaced equally between column lines unless otherwise noted.

Framing for Stair SP-1 and Stair SP-2 to be the same.

Framing dimensions for all incinerators, scrubbers, and quenchers to be the same.

Vertical bracing and girts not shown - see sheets 73, 74 & 75.

Dimensions are ℄ of beams and to the back of channels.

See Sheet 76 for column schedule and details.

Handrails not shown.

Where channels with kick plates frame into beams with kick angles the channel kick plate shall be coped and extended to the inside (grating) face of the upright leg of the angle.

West flange of Column row Ⓐ and north flange of Columns B-1, C-1 and D-1 to be punched for future beam conn.

Stiffners to be provided for all 16 WF 58 filter support beams. See detail, Sh. 84.

6 B16 Conveyor rails for each cross conveyor not shown. See details, Sh. 84.

Provide 2- Ls 2½"x2½"x½" at bottom of 10 WF 21 use 1-3½" H.S. in each angle.

Note A: Provide 8C11.5 supports for gas analyzer location to be determ. by equipment furn.

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
STRUCTURAL STEEL PLANS

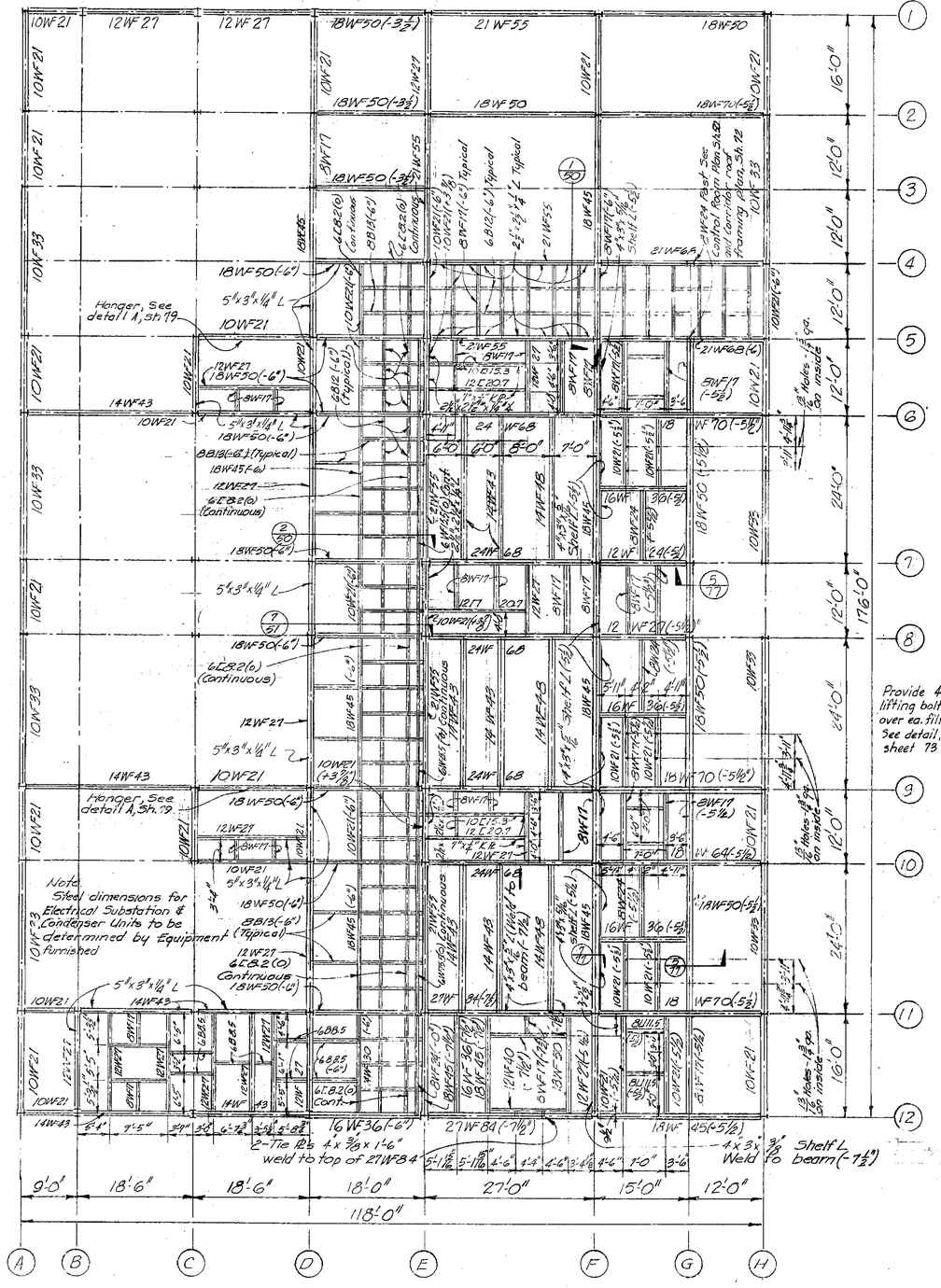
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED RAM ACP CHECKED ACP
DETAILED ACP LWD APPROVED
DATE

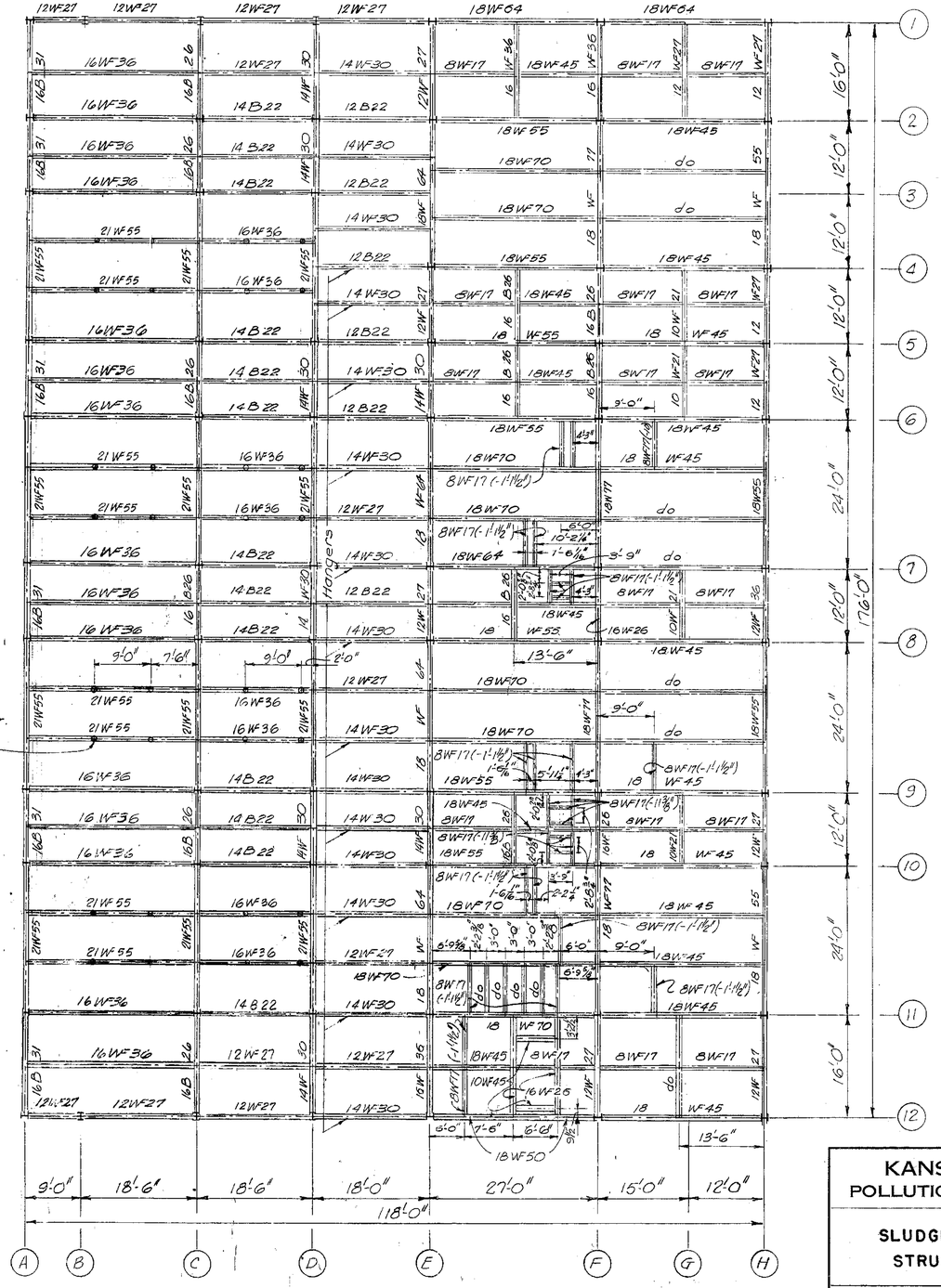
SHEET 70 OF 190

1062.32



FAN FLOOR PLAN EL. 777.96

Scale: 3/32"=1'-0"



ROOF PLAN EL. 793.75

Scale: 3/32"=1'-0"

GENERAL NOTES:

All Fan Floor Beams shall be 1½" below floor elevation unless otherwise noted.

All Roof Floor Beams shall be 3½" below roof elevation unless otherwise noted.

Beams to be spaced equally between column lines unless otherwise noted.

Framing dimensions for all incinerators, scrubbers, and quenchers to be the same.

Framing dimensions for stairs SP-1 and SP-2 to be the same.

Dimensions are to ℄ of beams and to the back of channels.

See Sheet 76 for column schedule and details.

See Sheet 72 for trolley rail layout and details.

West flange of Column row Ⓐ and north flange of columns B-1, C-1 and D-1 to be punched for future connections.

All hoist rail dimensions are approximate and shall be confirmed by the manufacturer of the system prior to the fabrication of the structural steel.

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
STRUCTURAL STEEL PLANS

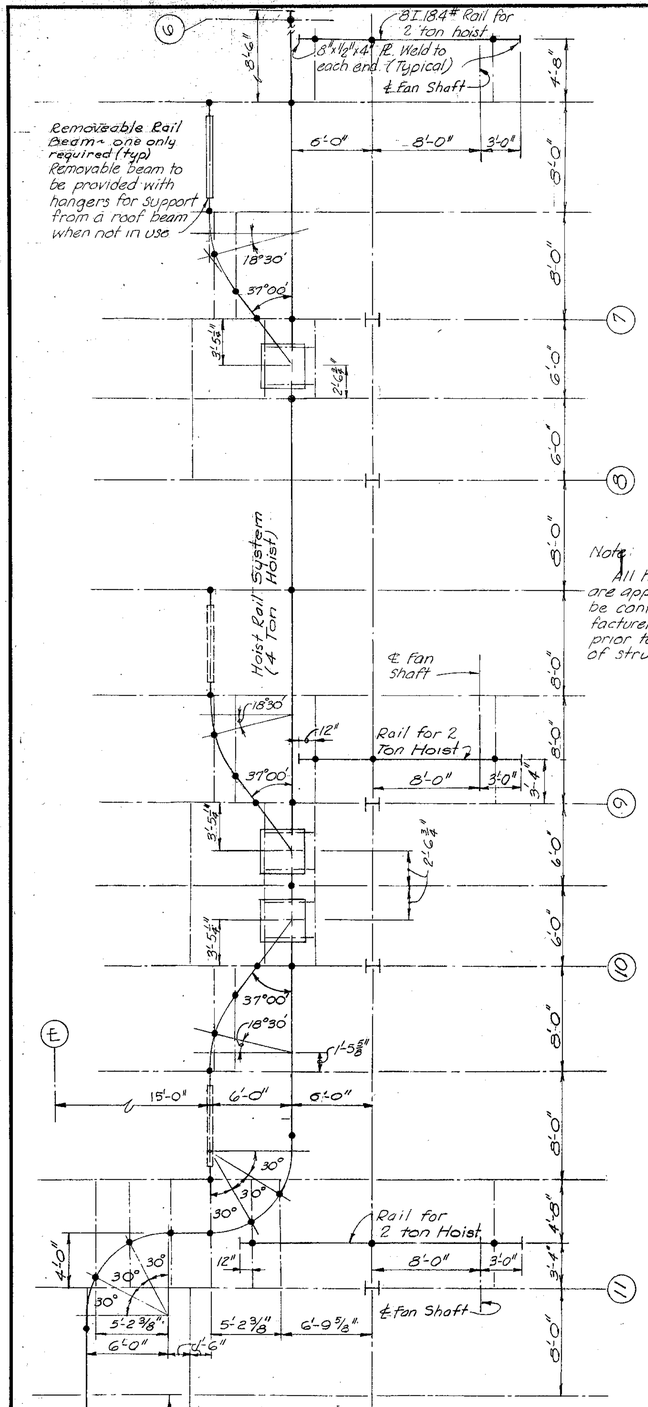
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED RAM ACP CHECKED ACP
DETAILED ACP LWD APPROVED
DATE 2-24-61

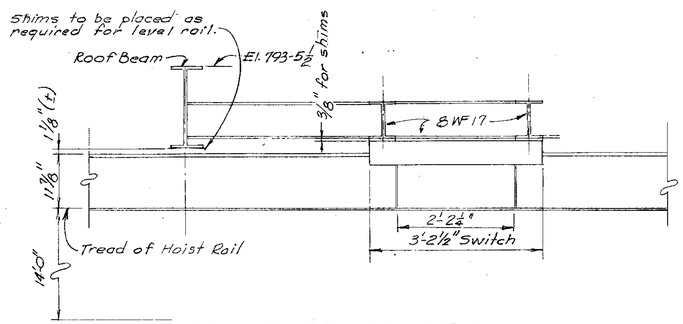
SHEET 71 OF 190

1062.32

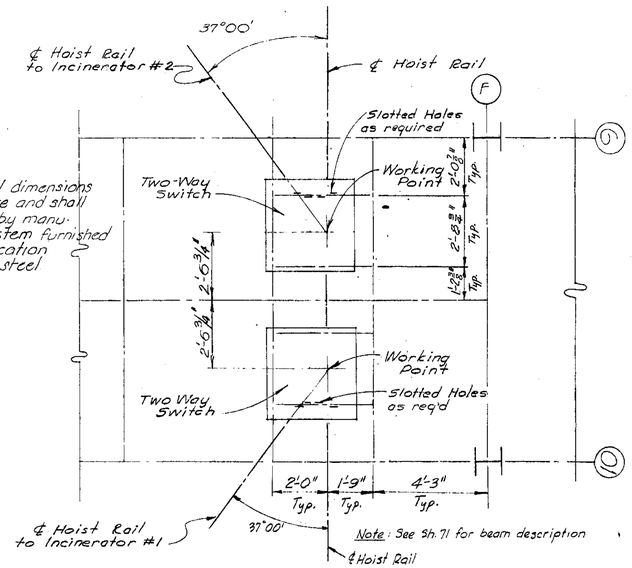


LAYOUT OF HOIST RAIL SYSTEM
Scale: 3/16" = 1'-0"

Notes: Support hoist rail system at all points marked thusly. —●— Min. radius of curved rail to be 6'-0"

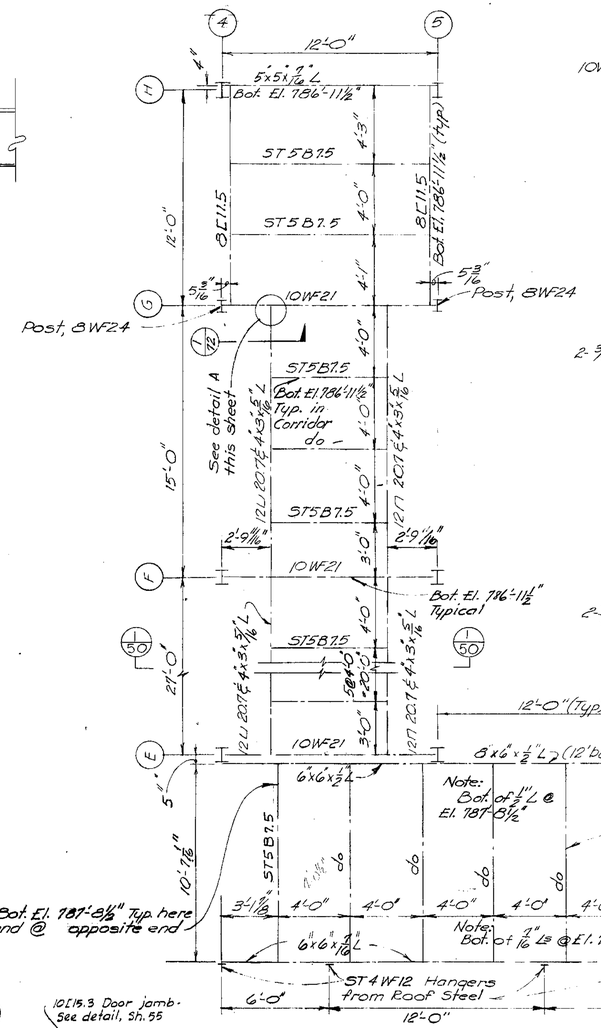


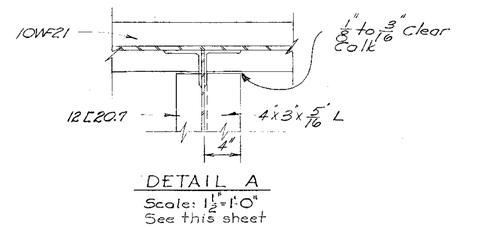
TYPICAL SWITCH CONNECTION
Scale: 3/4" = 1'-0"



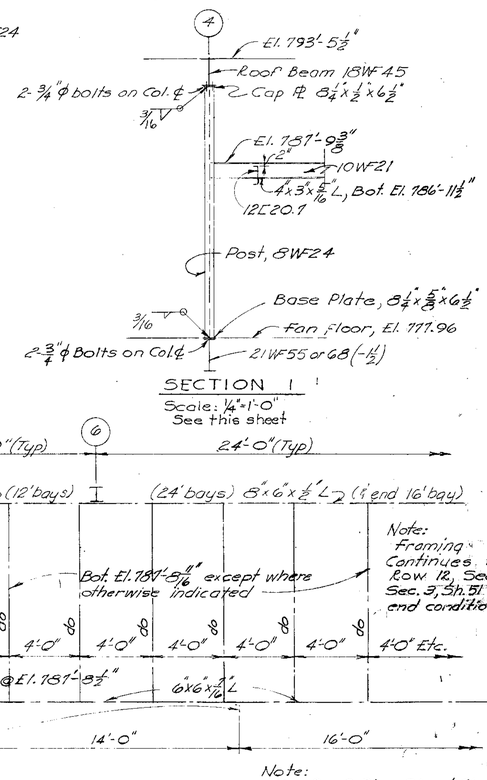
Note: See Sh. 71 for beam description

Note
All hoist rail dimensions are approximate and shall be confirmed by manufacturer of system furnished prior to fabrication of structural steel

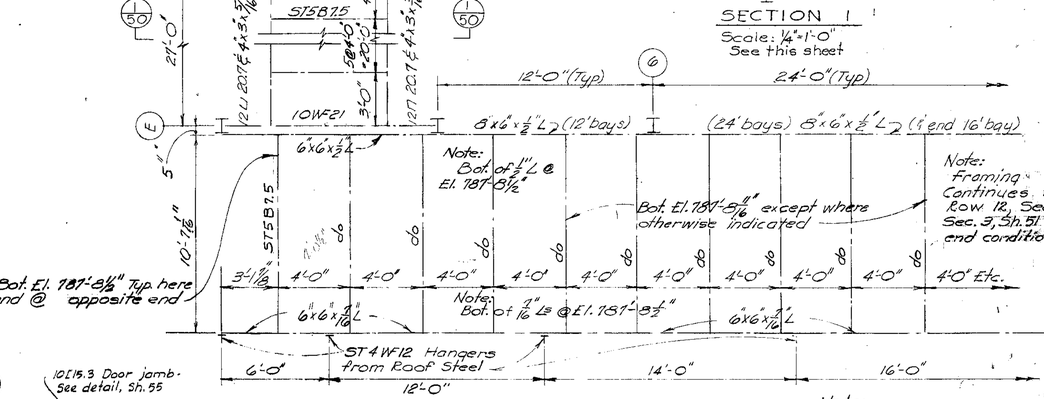




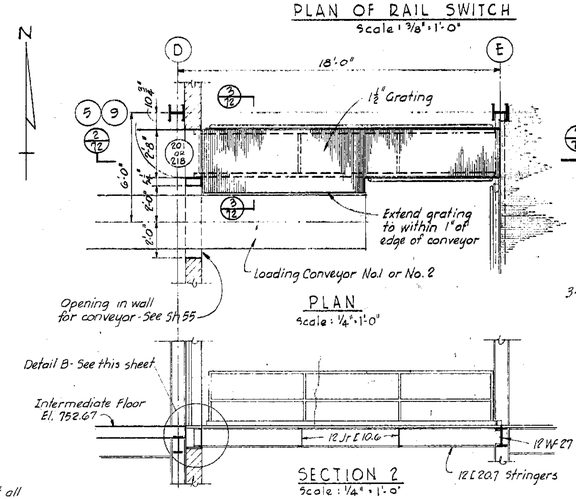
DETAIL A
Scale: 1½" = 1'-0"
See this sheet



SECTION 1
Scale: ¼" = 1'-0"
See this sheet

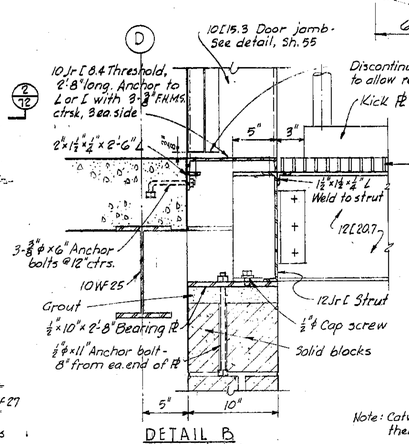


PLAN OF RAIL SWITCH
Scale: 3/8" = 1'-0"

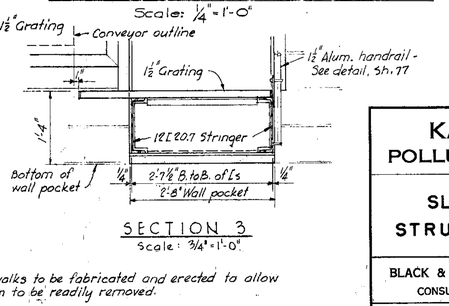


PLAN
Scale: ¼" = 1'-0"

SECTION 2
Scale: ¼" = 1'-0"



DETAIL B
Scale: 1½" = 1'-0"



SECTION 3
Scale: ¾" = 1'-0"

ROOF FRAMING OVER CORRIDOR AND CONTROL ROOM
Scale: ¼" = 1'-0"

Note: Catwalks to be fabricated and erected to allow them to be readily removed.

CATWALK DETAILS

Note: See Roof Plan, Sheet 71 Hanger Location.

STATE OF MISSOURI
N. T. VEATCH, JR.
E-1180

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
STRUCTURAL STEEL PLANS & DETAILS

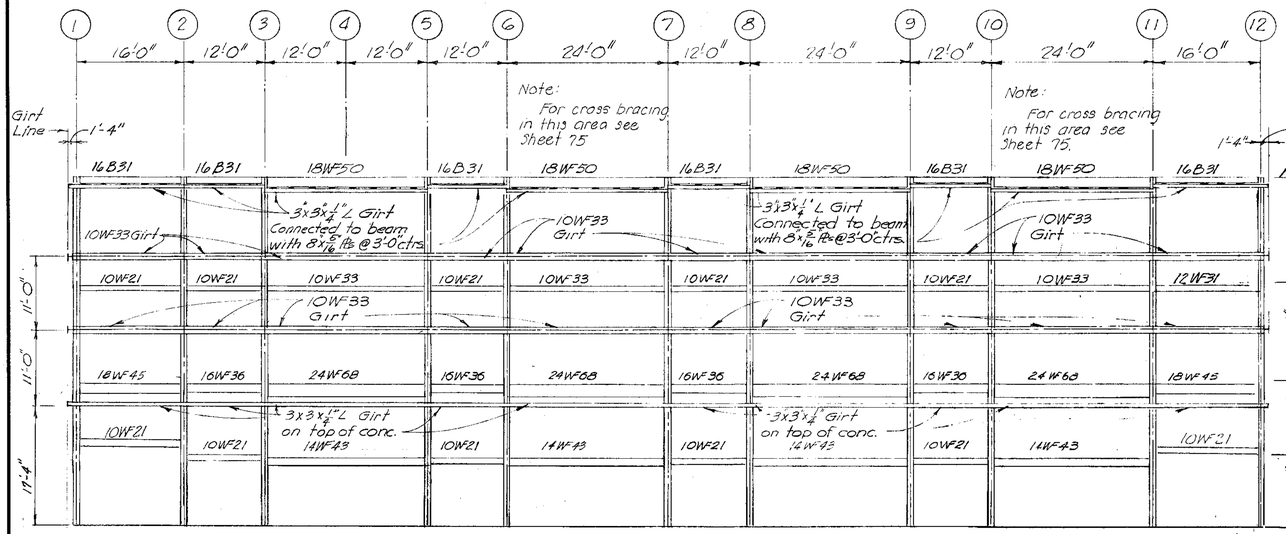
BLACK & VEATCH AND BURNS & MCDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

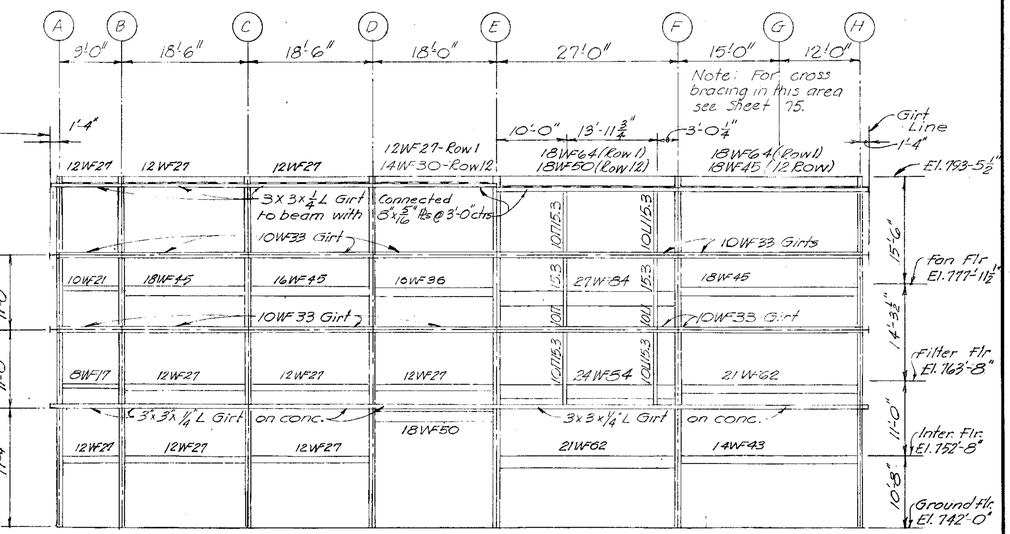
DESIGNED ACP WEL
DETAILED LWD WEL
CHECKED LEW
APPROVED
DATE 2-5-64

SHEET 72 OF 190

1062.32



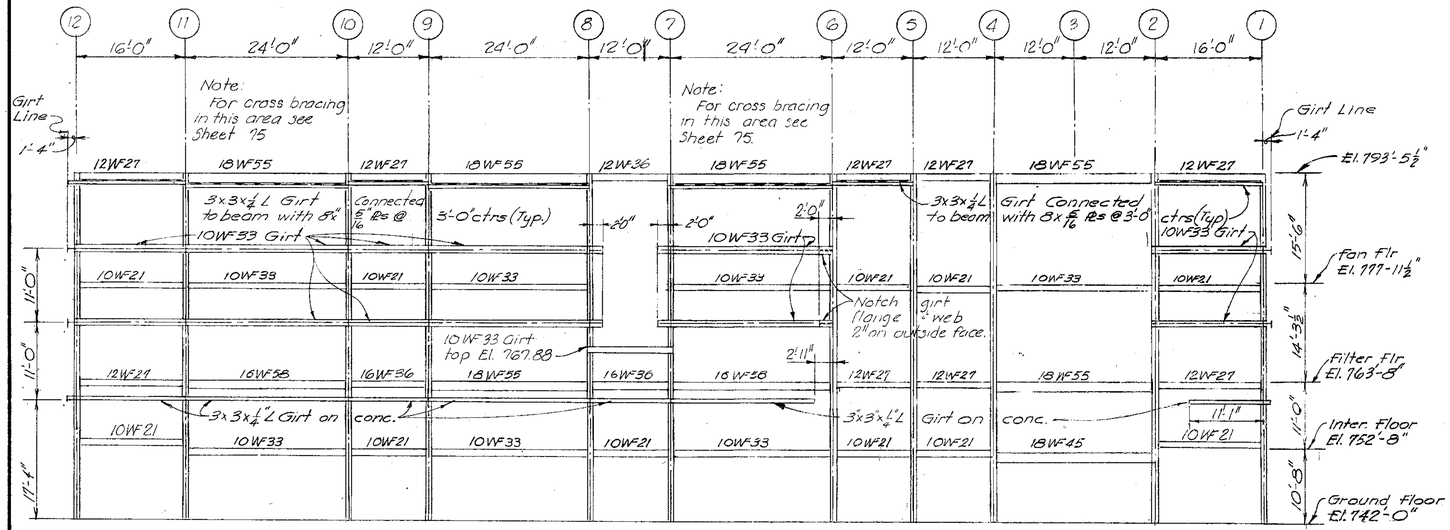
COLUMN ROW A - LOOKING EAST
Scale: 3/32" = 1'0"



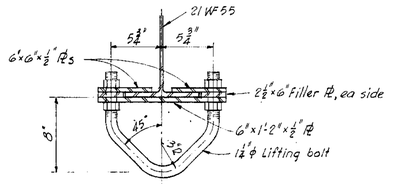
Note: Girts on Column Row (1) Similar.

COLUMN ROW 12 - LOOKING NORTH
Scale: 3/32" = 1'0"

Note: Column row 1 is opposite hand except for elevator closures



COLUMN ROW H - LOOKING WEST
Scale: 3/32" = 1'0"



FILTER LIFTING BOLT DETAIL
Scale: 1 1/2" = 1'-0"
Note: See Sheet 71 for location of lifting bolts.

GENERAL NOTES:

See Sheet 74 for girt connection details.

Provide 1-7/8" ϕ hole in web of 10" WF girts at mid span for drainage.

See sheet 39 for miscellaneous steel at gravel stop.

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
STRUCTURAL STEEL ELEVATIONS

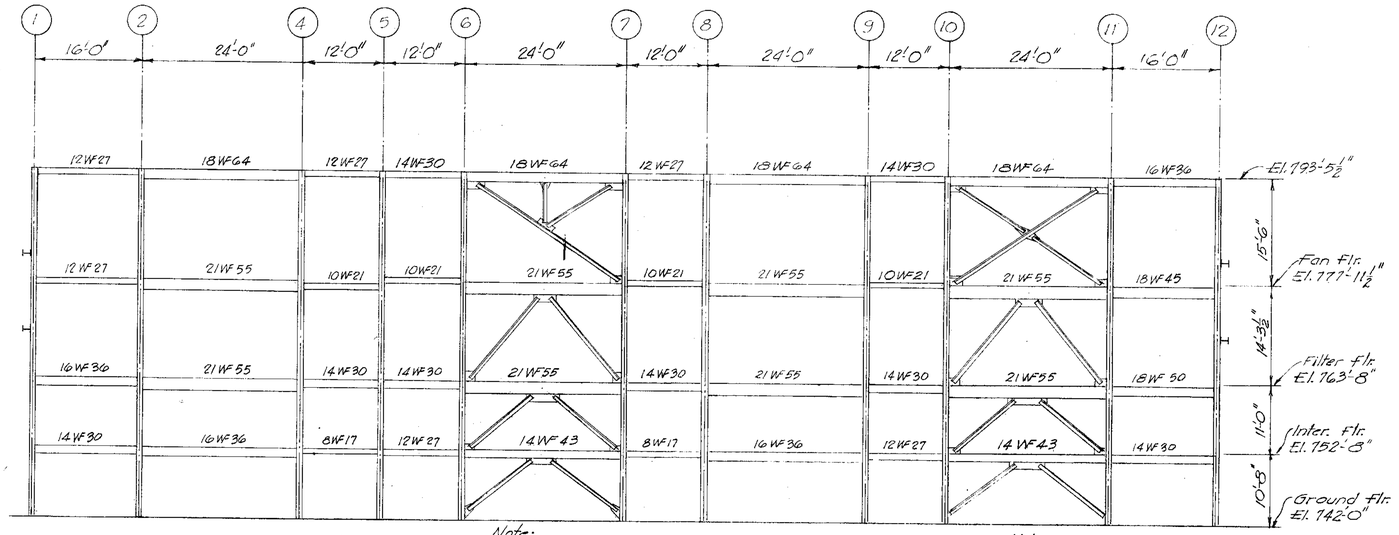
BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED RAM CHECKED ACP
DETAILED ACP LWD APPROVED
DATE 2-24-64

SHEET 73 OF 190

PROJECT 3282 101-2.32

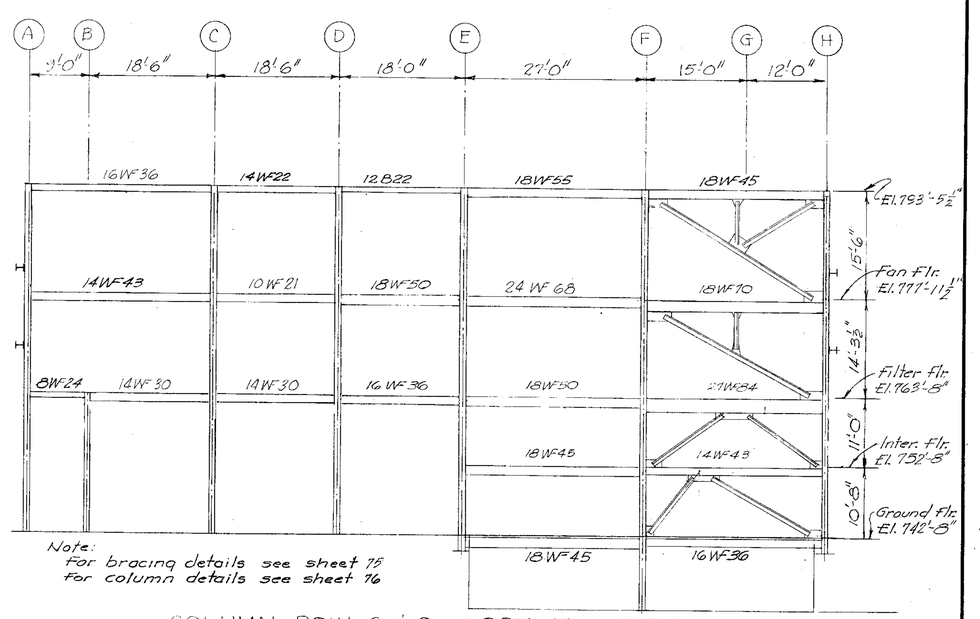


Note:
For bracing details see sheet 75
For column details see sheet 76

Note:
See sheet 39 for miscellaneous steel at gravel stop.

COLUMN ROW E - LOOKING EAST

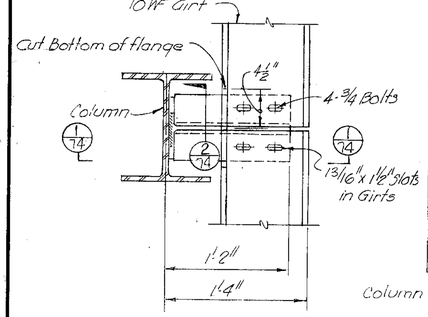
Scale: 3/32" = 1'-0"



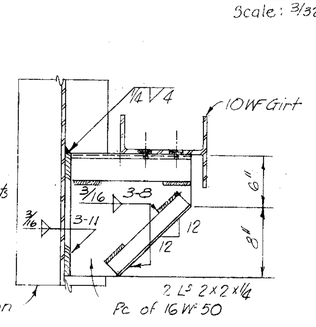
Note:
For bracing details see sheet 75
For column details see sheet 76

COLUMN ROW 6 & 9 - LOOKING NORTH

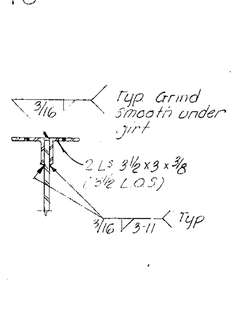
Scale: 3/32" = 1'-0"



PLAN



SECTION 1

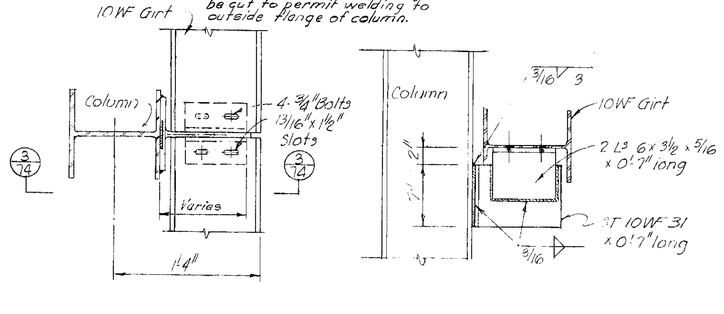


SECTION 2

GIRT CONNECTION TO COLUMN WEB

Scale: 1½" = 1'-0"

Note:
Flange of ST 10WF31 may have to be cut to permit welding to outside flange of column.

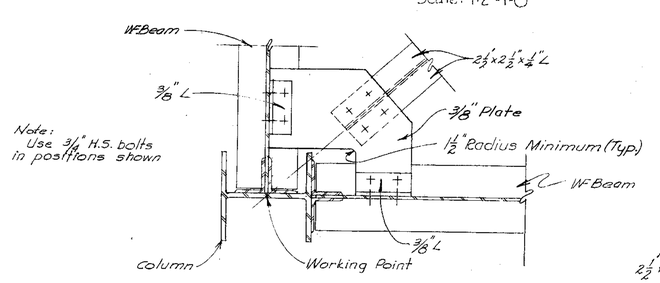


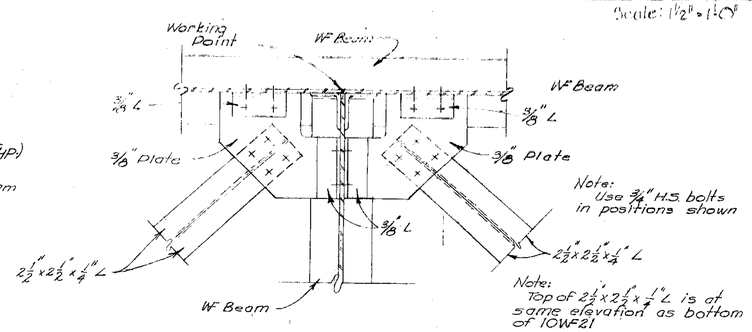
PLAN

SECTION 3

GIRT CONNECTION TO COLUMN FLANGE

Scale: 1½" = 1'-0"





TYPICAL HORIZONTAL BRACING DETAILS FOR FILTER FLOOR

No Scale
See Sheet

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
STRUCTURAL STEEL ELEVATIONS

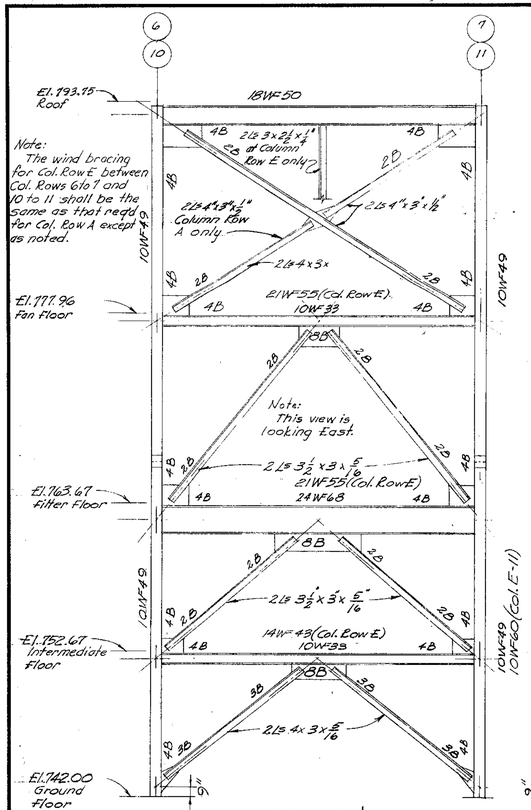
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

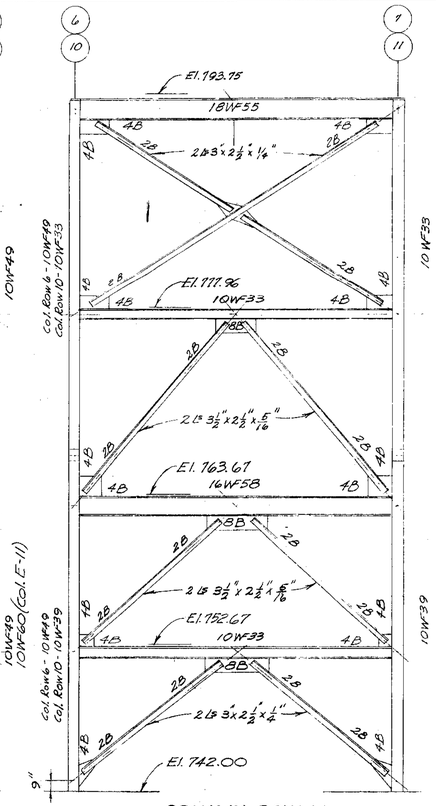
DESIGNED RAM CHECKED ACP
DETAILED ACP LWD APPROVED
DATE 2-26-69

SHEET 74 OF 190

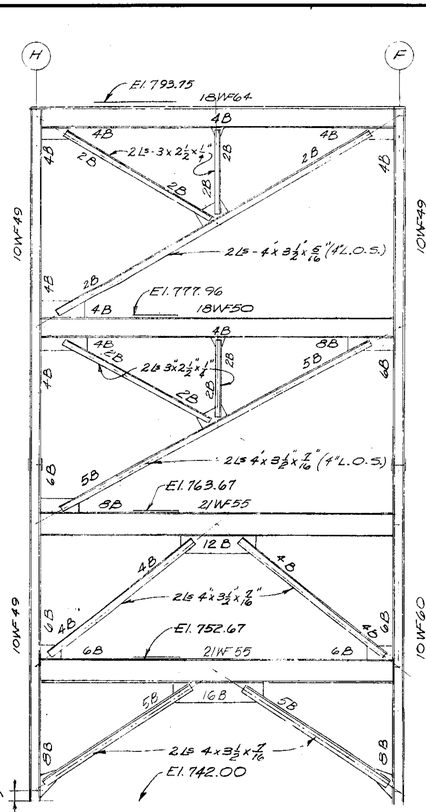
1062.32



COLUMN ROW A & E
Scale: 3/16" = 1'-0"

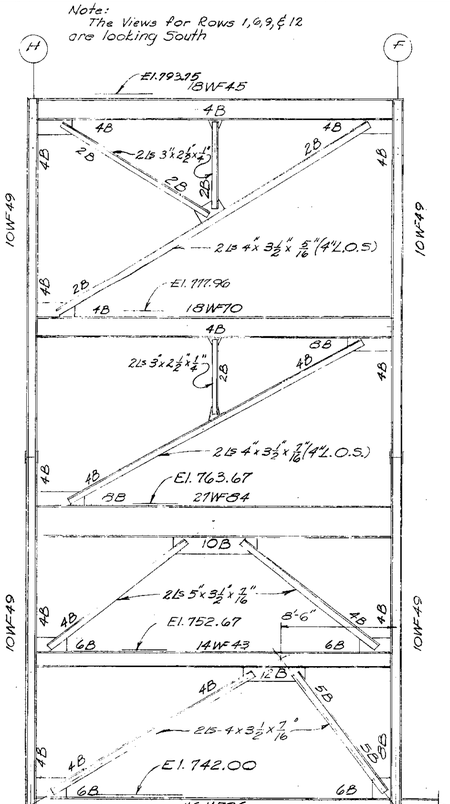


COLUMN ROW H
Scale: 3/16" = 1'-0"

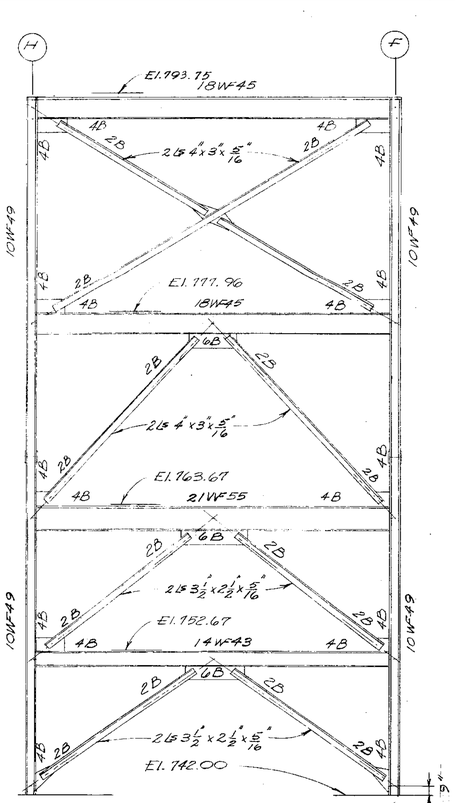


COLUMN ROW I
Scale: 3/16" = 1'-0"

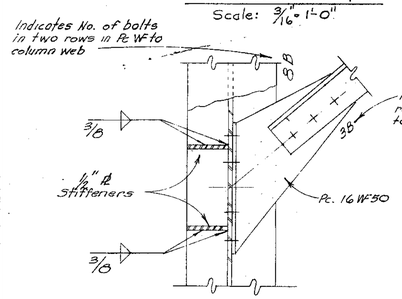
Note: The Views for Rows 1, 6, 9, & 12 are looking South

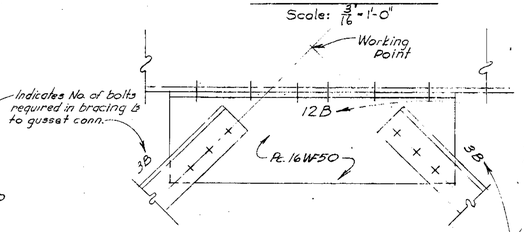


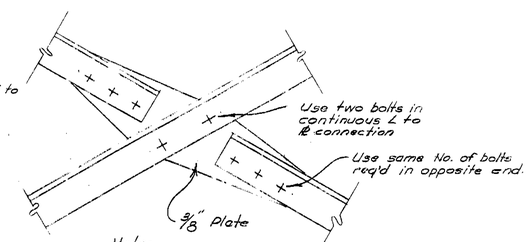
COLUMN ROW 6 & 9
Scale: 3/16" = 1'-0"



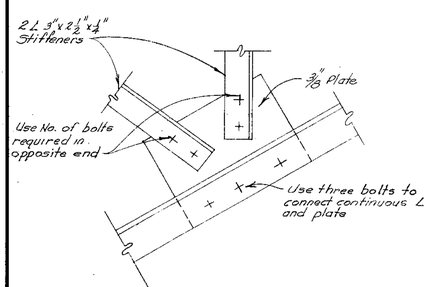
COLUMN ROW 12
Scale: 3/16" = 1'-0"

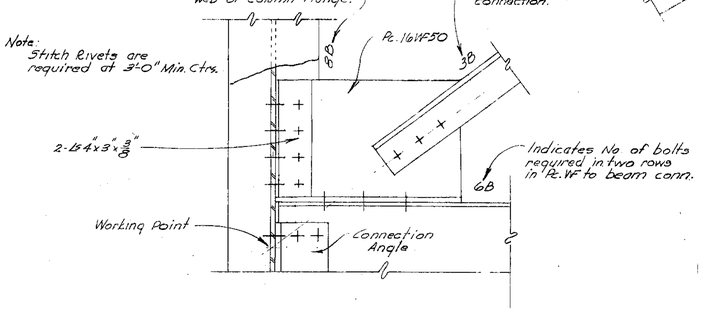






Note: Net section of plate to develop full bolt value.





TYPICAL VERTICAL WIND BRACING DETAILS
No. Scale

Note:
All wind bracing connections shall be friction type connections unless otherwise noted.
Stitch rivets are required at 3'-0" minimum centers.

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING

STRUCTURAL STEEL BRACING DETAILS

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

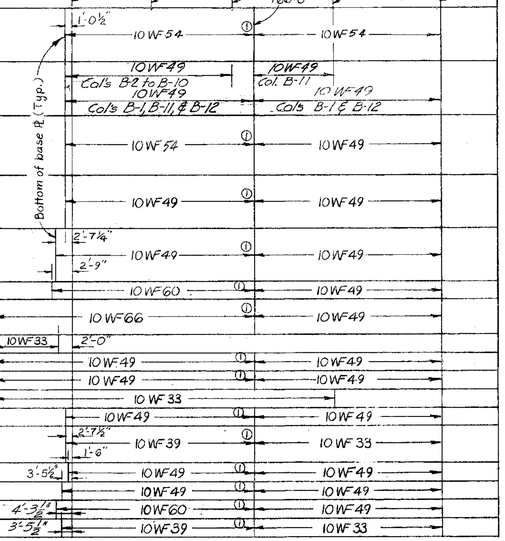
DESIGNED RAM CHECKED ACP
DETAILED LWD APPROVED
DATE 2-4-64

SHEET 75 OF 190

PROJECT 3298 1062.32

COLUMN SCHEDULE

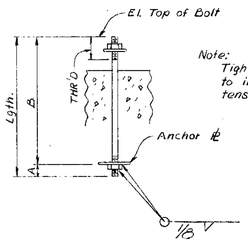
COL. MARK	TOP OF BOLT	BOLT No. & SIZE	BASE PL	BASE TYPE
A-1, A-2, A-3, A-5 A-6, A-7, A-8, A-9 A-10, A-11, A-12	741'-3¼"	4-1⅛"ϕ	14"x1'x1'-6"	A
B-1, B-2, B-3, B-5 B-6, B-7, B-8, B-9 B-10, B-11, B-12	741'-3¼"	4-1⅛"ϕ	14"x1'x1'-6"	A
C-1, C-2, C-3, C-5 C-6, C-7, C-8, C-9 C-10, C-11, C-12	741'-3½"	4-1⅛"ϕ	14"x1'x1'-6"	A
D-1, D-2, D-3, D-5 D-6, D-7, D-8, D-9 D-10, D-11, D-12	741'-3½"	4-1¼"ϕ	14"x1¼"x1'-6"	A
E-1, E-4, E-5 E-6, E-7, E-8, E-9 E-10, E-12	739'-8¾"	4-1¼"ϕ	14"x1¼"x1'-6"	A
E-11	739'-7¼"	4-1¼"ϕ	20"x1¾"x1'-9"	A
F-2, F-4, F-5 F-10, F-11	731'-6¾"	4-1¼"ϕ	21"x2"x1'-11"	A
F-3	731'-4¾"	2-1⅛"ϕ	12"x1"x1'-0"	B
F-6, F-9	731'-6"	4-1¼"ϕ	16"x1⅜"x1'-8"	A
F-7, F-8	731'-5½"	4-1¼"ϕ	14"x1¼"x1'-6"	A
G-7 G-8	731'-5½"	2-1¼"ϕ	12"x1"x1'-0"	C
H-1, H-6, H-9	739'-8¾"	4-1¼"ϕ	12"x1¼"x1'-6"	A
H-4, H-5, H-7, H-8, H-10, H-11	739'-8¾"	4-1¼"ϕ	12"x1¼"x1'-6"	A
F-12, H-12	740'-10"	4-1¼"ϕ	14"x1¼"x1'-6"	A
E-2	738'-11"	4-1¼"ϕ	14"x1¼"x1'-6"	A
F-1	738'-0⅜"	4-1¼"ϕ	20"x1⅜"x1'-9"	A
H-2	738'-11"	4-1¼"ϕ	12"x1¼"x1'-6"	A



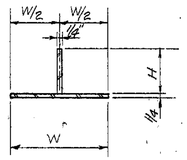
① Splice detail D

COLUMN ANCHOR BOLT SCHEDULE

COLUMN	DIA.	LGTH.	A	B	THR'D	ANCHOR PL	REMARKS
A-1, A-2, A-3, A-5 A-6, A-7, A-8, A-9 A-10, A-11, A-12, B-1, B-2, B-3, B-5 B-6, B-7, B-8, B-9 B-10, B-11, B-12 C-1, C-2, C-3, C-5 C-6, C-7, C-8, C-9 C-10, C-11, C-12 F-3	1⅛"ϕ	20"	2"	1'-6"	3¼"	4"x4"x½"	Galv. F-3 bolts
D-1, D-2, D-3, D-5 D-6, D-7, D-8, D-9 D-10, D-11, D-12 E-1, E-2, E-3, E-4 E-5, E-6, E-7, E-8 E-9, E-10, E-11, E-12 F-1, F-2, F-3, F-4 F-5, F-6, F-7, F-8 F-9, F-10, F-11, F-12 G-7, G-8 H-1, H-2, H-3 H-4 H-5, H-6, H-7, H-8 H-9, H-10, H-11 H-12	1¼"ϕ	22"	2"	1'-8"	3¾"	5"x5"x⅝"	Galv. F-2, F-4 F-5, F-6, F-7, F-8 F-9, F-10, F-11, G-7, G-8 bolts

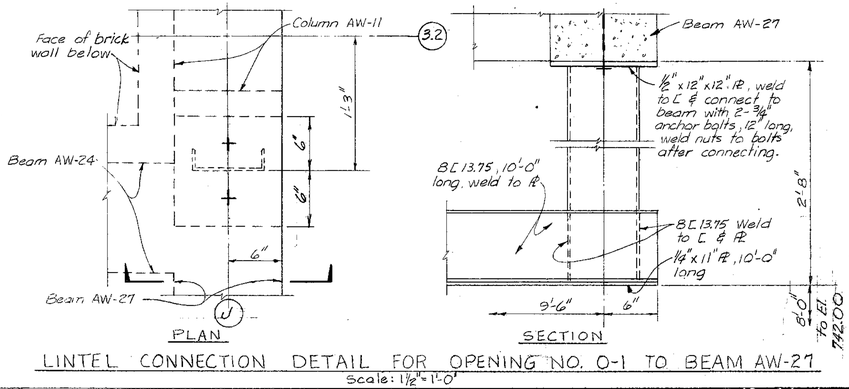


ANCHOR BOLT DETAIL
No Scale

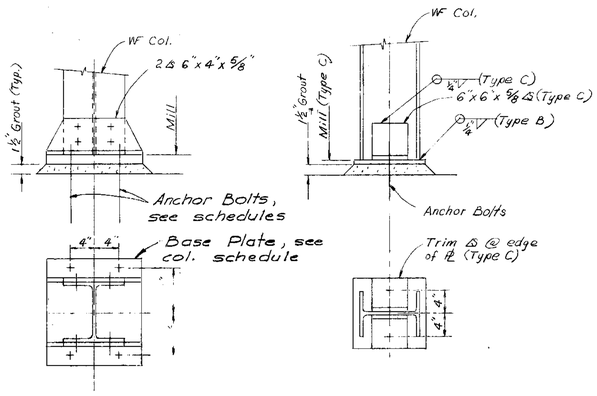


Notes;
"H" shall be 3" for 0 to 4'-0" masonry openings & 6" for 4'-0" to 6'-0" masonry openings.
"W" shall be 1" less than the masonry wall thickness.
Length of lintel shall be 1'-4" longer than the masonry opening.

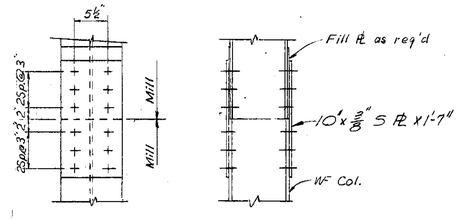
LINTEL DETAIL FOR DUCT OPENINGS & OTHER OPENINGS NOT SCHEDULED OR NOTED
No Scale



LINTEL CONNECTION DETAIL FOR OPENING NO. O-1 TO BEAM AW-27
Scale: 1½" = 1'-0"



TYPICAL COLUMN BASE DETAILS
No Scale



DETAIL D

TYPICAL COLUMN SPLICE
No Scale

LOUVER AND OPENING LINTEL SCHEDULE

NO.	TYPE	*DIMENSIONS	REMARKS
L-1			Lintel not required
L-2	A	11"x3"x 3'-4"	
L-3	C	11"x8 I 18.4 x 10'-4"	
L-4			Lintel not required
L-5	C	11"x8 I 18.4x10'-4"	
L-6			Lintel not required
L-7	C	11"x15I42.9x17'-4"	
L-8	C	11"x15I42.9x17'-4"	
L-9	C	11"x10I25.4x13'-4"	
L-10	A	11"x6'x 6'-0"	
L-11	A	11"x 8'x 3'-4"	
L-12	A	11"x 8'x 2'-8"	
L-13			Lintel not required
L-14			Lintel not required
L-15	A	11"x 3"x 3'-4"	
L-16	A	11" x 6'x 7'-4"	
L-17	A	11" x 6"x 6'-0"	
L-18	A	11" x 6" x 7'-4"	
L-19	A	11" x 6" x 4'-8"	
** O-1	G	11"x8C13.75 x10'-0"	See detail this Sh.
** O-2	A	11" x 6" x 6'-0"	
** O-3	A	11" x 8" x 7'-0"	
** O-4	A	11" x 6" x 7'-0"	
O-5	A	11" x 6" x 6'-4"	
O-6	G	7" x 8C11.5 x 12'-4"	
O-7	A	7" x 3" x 4'-8"	
O-8	A	7" x 3" x 4'-8"	
O-9	G	7" x 10C15.3 x 16'-8"	
O-10	A	7" x 8" x 8'-8"	
O-11	C	11" x 7I15.3 x 7'-4"	
O-12	G	9" x 7I 9.8 x 10'-4"	
O-13	B	9" x 6" x 6'-0"	

** Lintel shall have cut face brick cover - See Section 2, Sh. 35

DOOR LINTEL SCHEDULE

DOOR NO.	TYPE	*DIMENSIONS	REMARKS
1			Lintel not required
2			See details, Sh. 56
3			Lintel not required
101			See details, Sh. 55
102			See details, Sh. 55
103	A	7"x 3"x 4'-4"	
104	A	7"x 3"x 4'-4"	
105	A	11"x 3"x 4'-4"	
106	A	11"x 7"x 7'-8"	
107	B	9"x 3"x 4'-8"	
108	-		See details, Sh. 56
109	A	7"x 3"x 4'-8"	
110	B	11"x 3"x 4'-8"	
111	C	9"x12I31.8x20'-0"	See details, Sh. 53
112	A	7"x 7"x 7'-8"	
113	B	11"x 9"x 4'-8"	
114	C	9"x12I31.8x20'-0"	See details, Sh. 53
115	D	1'-7"x 3"x 4'-4"	
116	B	11" x 3"x 4'-8"	
117	B	9"x 3"x 4'-8"	
118	C	9"x12I31.8x20'-0"	See details, Sh. 53
119	B	9" x 3"x 4'-8"	
120	C	9"x12I31.8x20'-0"	See details, Sh. 53
121	B	11"x 7"x 7'-8"	
122	B	9"x 7"x 10'-0"	
123	-		See details, Sh. 55
124	-		See details, Sh. 55
125	D	1'-3"x 3"x 4'-4"	
126			Lintel not required
127			" " "
128			" " "
129			" " "
130			" " "
131			" " "
132			" " "
133	A	7"x 7"x 6'-4"	See Detail E, Sh. 35
134	A	7"x 7"x 6'-8"	" " " " "
135			Lintel not required
136	F	3/8"x 3"x 4'-8"	
137			Lintel not required
138	A	7"x 7"x 6'-4"	See Detail E, Sh. 35
139	A	7"x 3"x 5'-8"	
140	A	7"x 3"x 3'-8"	
141	A	7"x 3"x 3'-8"	
142	A	7"x 3"x 3'-8"	
143	A	7"x 3"x 5'-0"	
144			Lintel not required
145			Lintel not required
146	B	11"x 3"x 4'-4"	
147			See details, Sh. 56
148			Lintel not required
149			Lintel not required
150			Lintel not required
151			Lintel not required
152			Lintel not required
153			Lintel not required
154			Lintel not required
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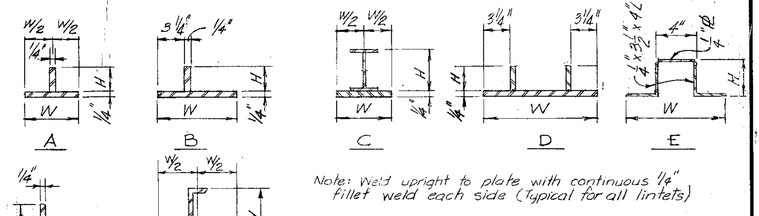
191			Lintel not required
192			Lintel not required
193			Lintel not required
194			Lintel not required
195			Lintel not required
196			Lintel not required
197			Lintel not required
198			Lintel not required
199			Lintel not required
200			Lintel not required
201			Lintel not required
202	B	11"x 3"x 4'-8"	
203	D	1'-7"x 3"x 4'-4"	
204	D	1'-3"x 3"x 4'-8"	
205			See details, Sh. 55
206			See details, Sh. 55
207			Lintel not required
208	E	10½"x4½"x 7'-0"	
209	E	10½"x4½"x 7'-0"	
210			Lintel not required
211	A	7"x 3"x 4'-4"	
212	A	7"x 3"x 4'-4"	
213	A	7"x 3"x 4'-0"	
214	A	7"x 3"x 4'-0"	
215	A	7"x 3"x 4'-4"	
216	A	7"x 7"x 6'-8"	
217	A	11"x 3"x 4'-8"	
301	B	11"x 3"x 4'-8"	
302	D	1'-7"x 3"x 4'-4"	
303			See details, Sh. 56
401	B	11"x 3"x 4'-8"	
402	D	1'-7"x 3"x 4'-4"	
403			Lintel not required
404			See details, Sh. 55
405			See details, Sh. 55
406			" " "
407			" " "
408			" " "
409			" " "
410			" " "
501	B	11"x 3"x 4'-8"	
502	A	7"x 3"x 4'-8"	
601	B	11"x 7"x 7'-8"	
602	B	11"x 3"x 4'-8"	
603			See details, Sh. 38
604			Lintel not required
605	B	11"x 3"x 4'-8"	
606	B	11"x 3"x 4'-8"	

* Dimensions = Width x Height of structural member x Length

Notes;
Lintels for Doors 111, 114, 118 & 120 shall be cambered ½".
All lintels shall bear on solid masonry units equally each end except as indicated.
See Window Details, Sh. 56 for window lintels.
All openings in 4" walls for towel cabinets & waste receptacles, fire extinguisher cabinets, shower stalls & access panels shall be Type F lintels, W=3½", H=3" and the length shall be 1'-4" longer than the masonry opening.
All openings in 12" (or thicker) walls for fire extinguisher cabinets shall be Type A lintels, W=7", H=3" and the length shall be 1'-4" longer than the masonry opening.



LINTEL TYPES
No Scale

Note: Weld upright to plate with continuous ¼" fillet weld each side (Typical for all lintels)

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING

STRUCTURAL STEEL SCHEDULES AND DETAILS

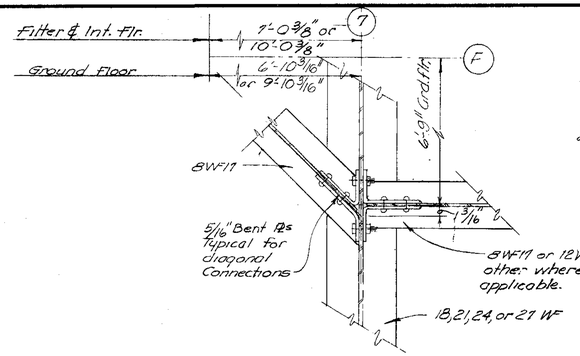
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

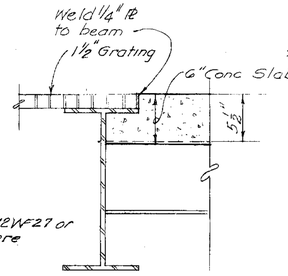
DESIGNED ACP DRG CHECKED LEW
DETAILED JPC LWD APPROVED
DATE 2-2-64

SHEET 76 OF 190

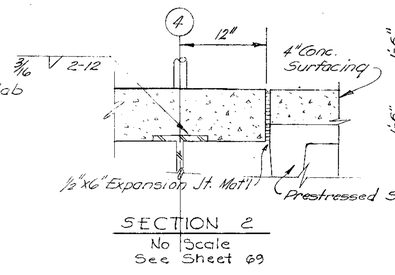
1062.32



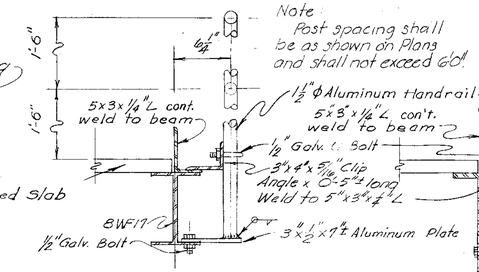
TYPICAL DETAIL A
Scale: 1½"=1'-0"
See Sheet 69, 70, & 71



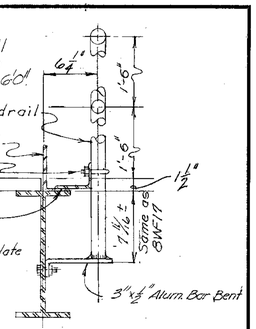
SECTION 1
Scale: 1½"=1'-0"
See Sheets 69 to 74



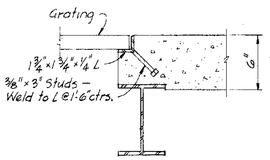
SECTION 2
No Scale
See Sheet 69



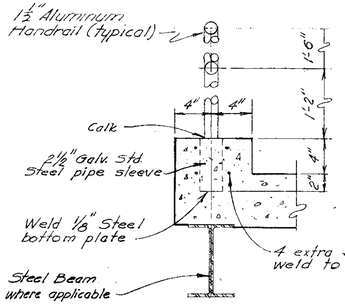
TYPICAL HANDRAIL CONNECTION
Scale: 1½"=1'-0"



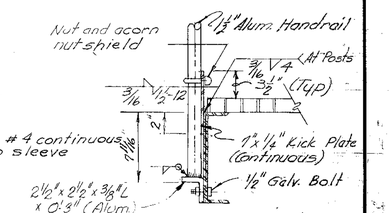
HANDRAIL CONNECTION FOR LARGER BEAMS
Scale: 1½"=1'-0"



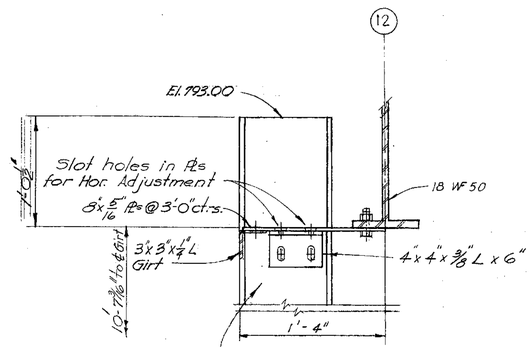
SECTION 10
No Scale
See Sh. 69



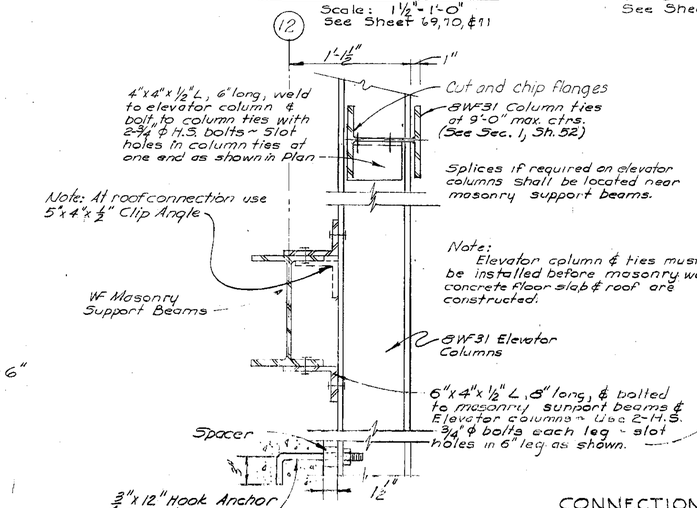
HANDRAIL IN CURB
Scale: 1½"=1'-0"



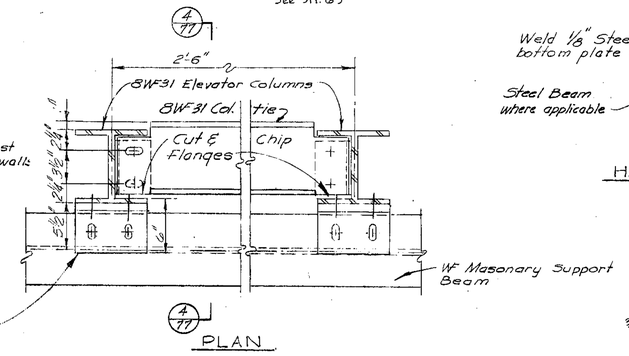
HANDRAIL AT CHANNEL
Scale: 1½"=1'-0"



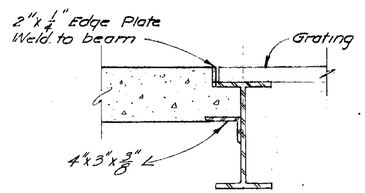
SECTION 3
GIRT ENCLOSURE DETAIL
Scale: 1½"=1'-0"
See Sheet 21



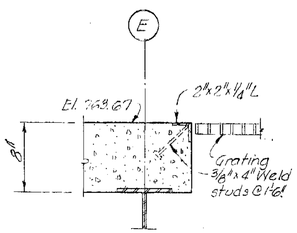
SECTION 4
Scale: 1½"=1'-0"



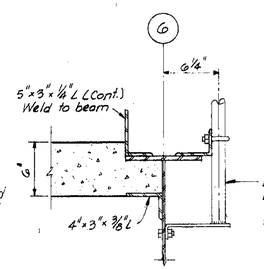
CONNECTION DETAILS FOR ELEVATOR COLUMNS & TIES
Scale: 1½"=1'-0"
See Sheet 52



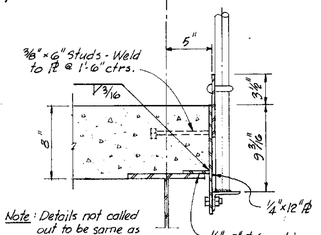
SECTION 7
No Scale
See Sheets 69 & 71



SECTION 8
Scale: 1½"=1'-0"
See Sheet 70

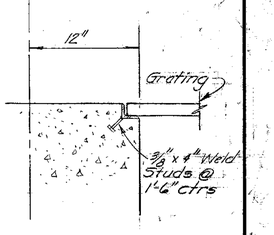


SECTION 9
Scale: 1½"=1'-0"
See Sheet 69



Note: Details not called out to be same as details of Handrail at Channel

SECTION 5
Scale: 1½"=1'-0"
See Sh. 70



SECTION 6
Scale: 1½"=1'-0"
See Sheet 69, 17, & 18

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
STRUCTURAL STEEL DETAILS

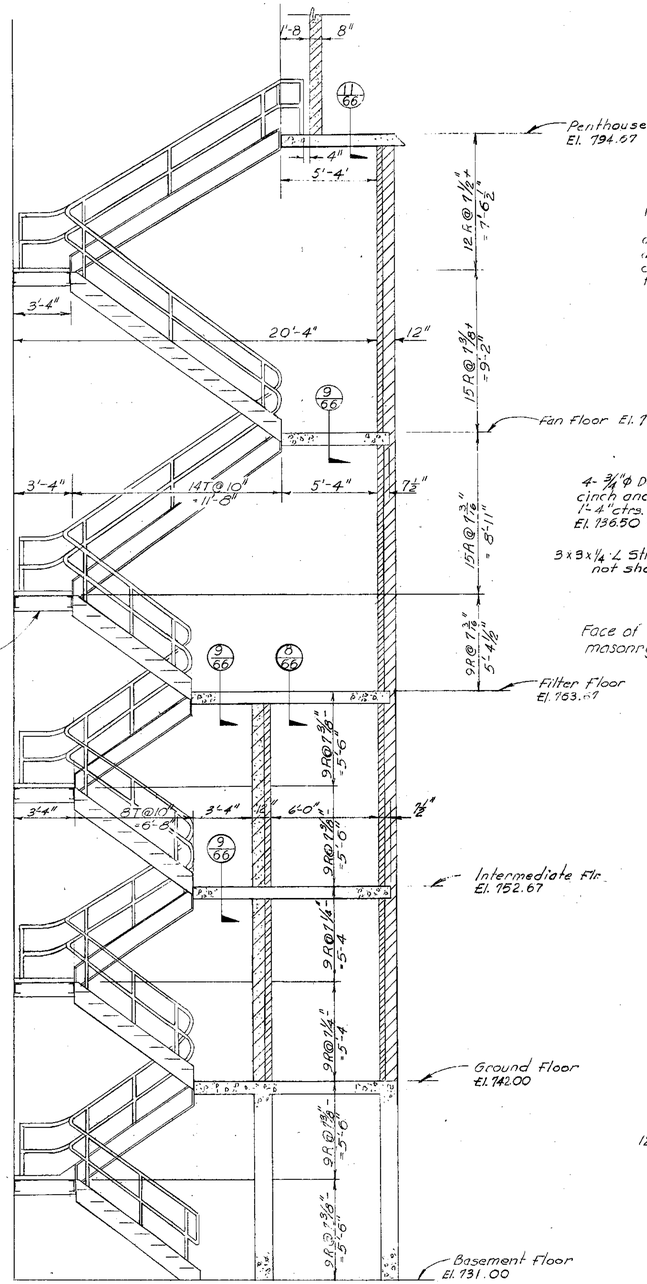
BLACK & VEATCH AND BURNS & MCDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

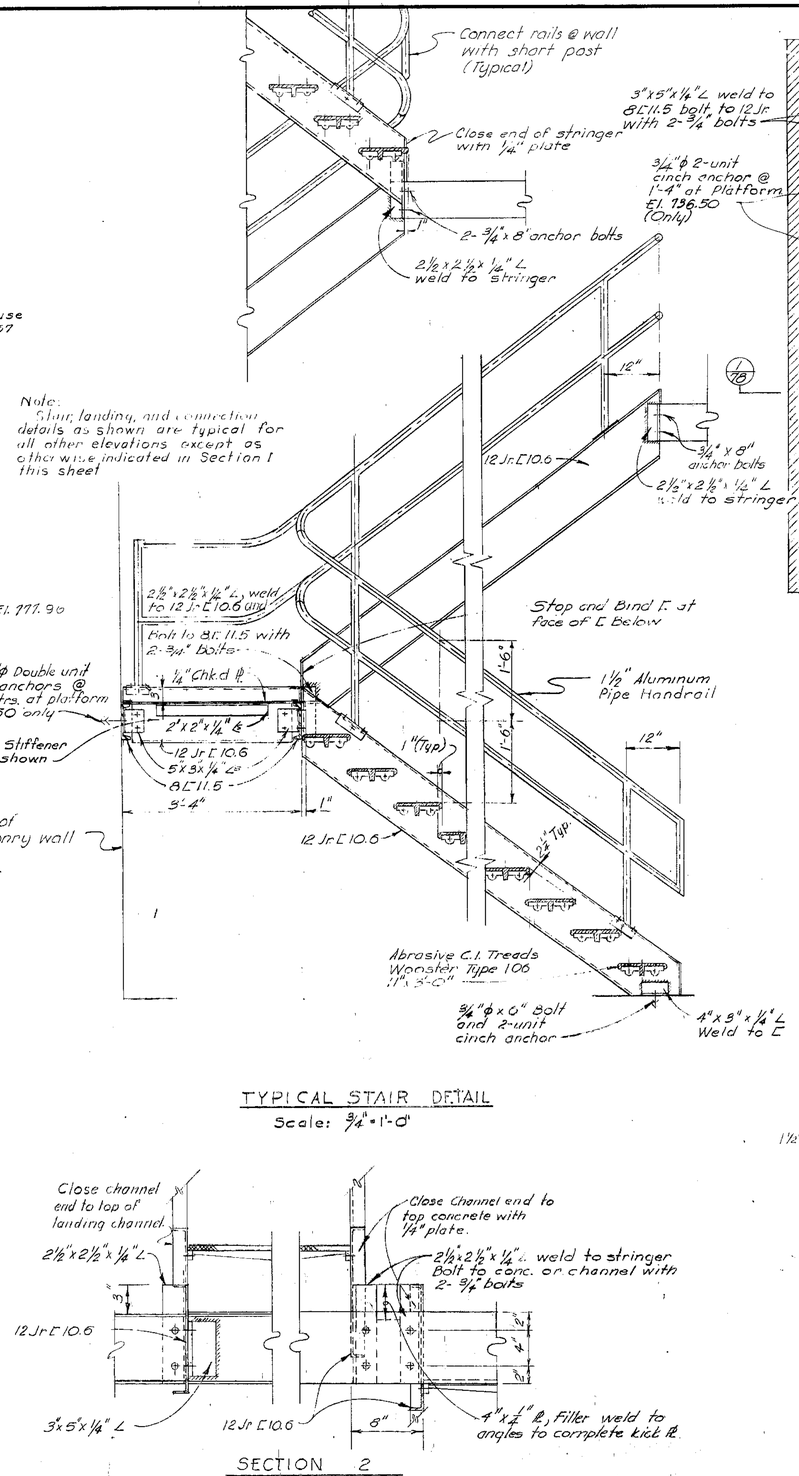
DESIGNED RAM LWD CHECKED LEW LWW
DETAILED LWD A.D. APPROVED
DATE 2-4-64

SHEET 77 OF 190

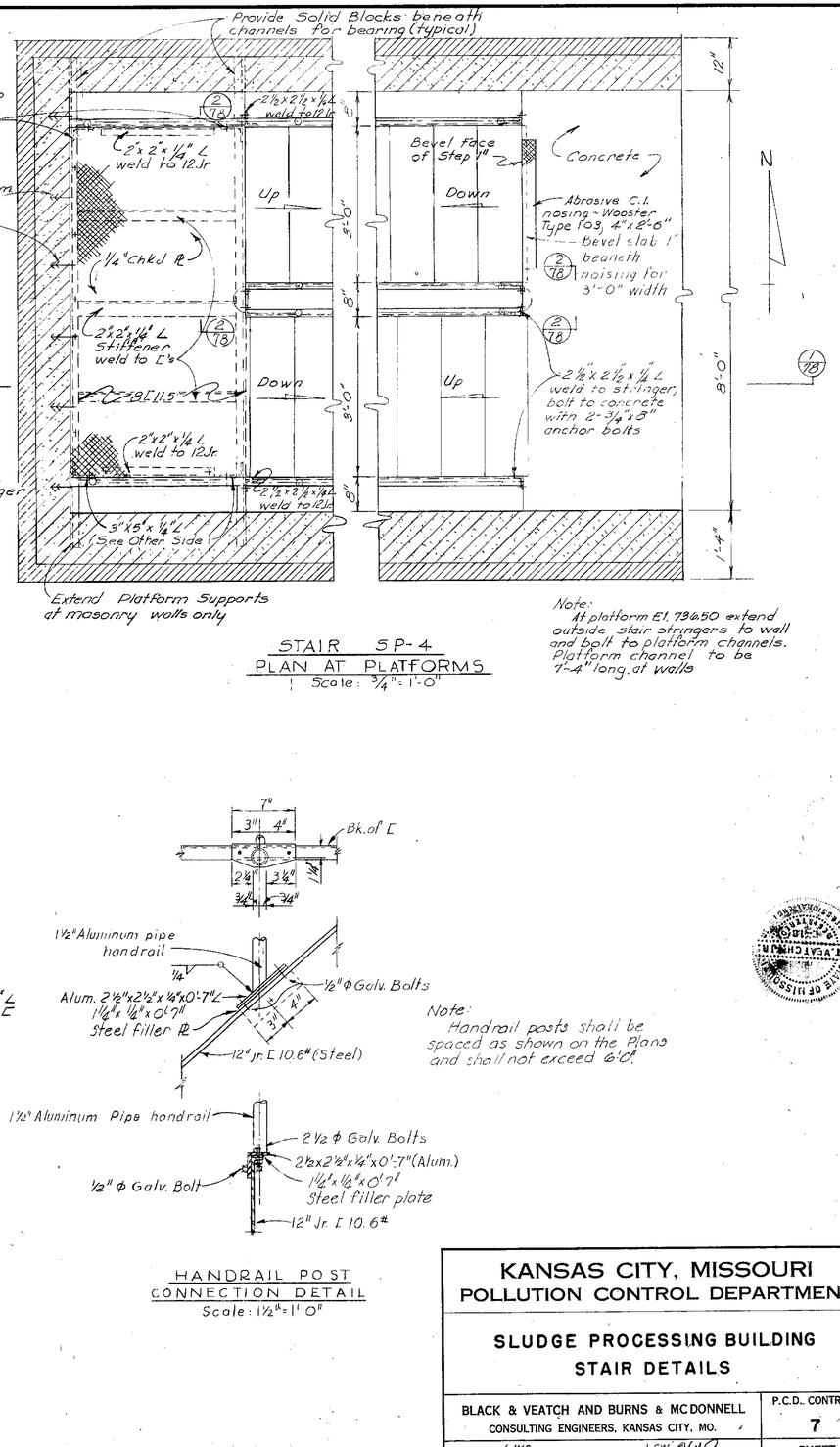
1062.32



SECTION 1
Scale: 1/4" = 1'-0" See this sheet



TYPICAL STAIR DETAIL
Scale: 3/4" = 1'-0"



Note:
At platform El. 736.50 extend outside stair stringers to wall and bolt to platform channels. Platform channel to be 7'-4" long at walls

STAIR SP-4
PLAN AT PLATFORMS
Scale: 3/4" = 1'-0"

SECTION 2
Scale: 1 1/2" = 1'-0"
See this sheet

HANDRAIL POST CONNECTION DETAIL
Scale: 1 1/2" = 1'-0"

Note:
Handrail posts shall be spaced as shown on the Plans and shall not exceed 6'-0"

REGISTERED ENGINEER
STATE OF MISSOURI
H. T. VEATCH JR.

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
STAIR DETAILS

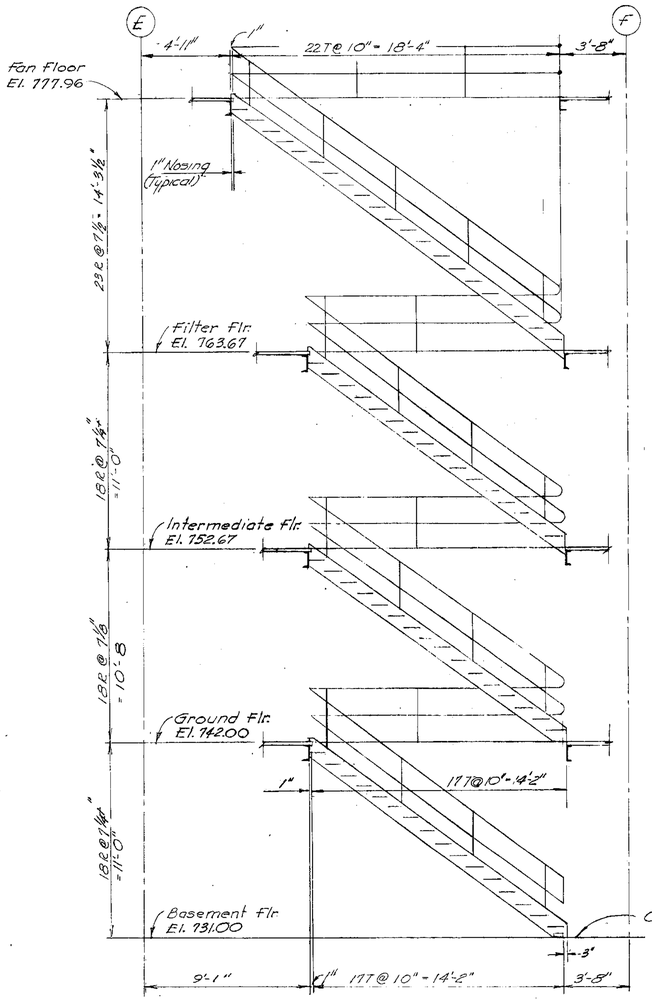
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED LWD DETAILED LWD CGC CHECKED LEW APPROVED DATE 2-6-70

SHEET 78 OF 190

DESIGN ID 91693
PROJECT 3288



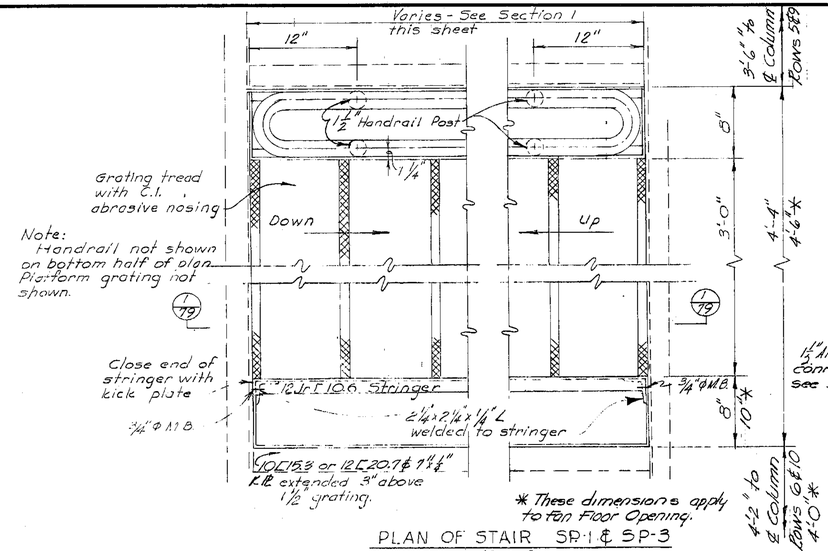
STAIR SP-3

SECTION 1

Scale: 1/4" = 1'-0"

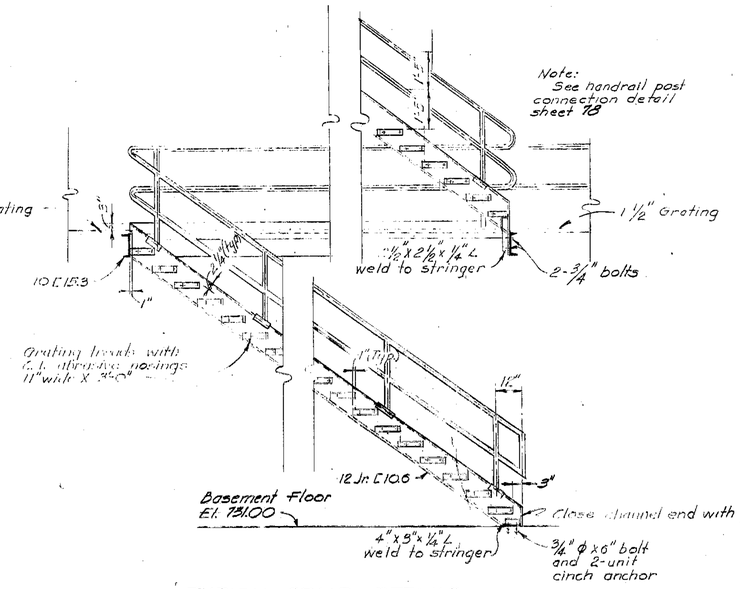
See this sheet

Note:
Details and dimensions of Stair SP-1 are the same except omit flight between Ground Floor and Basement Floor



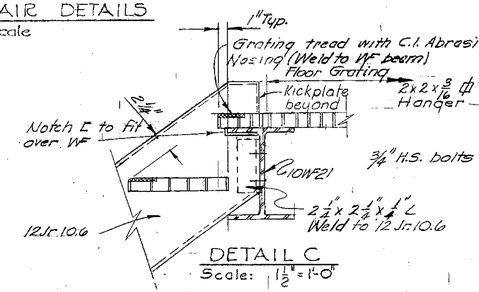
PLAN OF STAIR SP-1 & SP-3

Scale: 1½" = 1'-0"



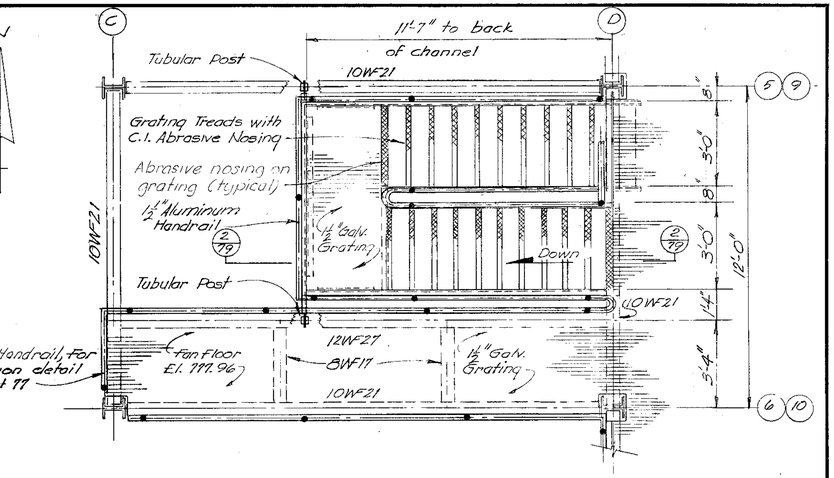
TYPICAL STAIR DETAILS

No Scale



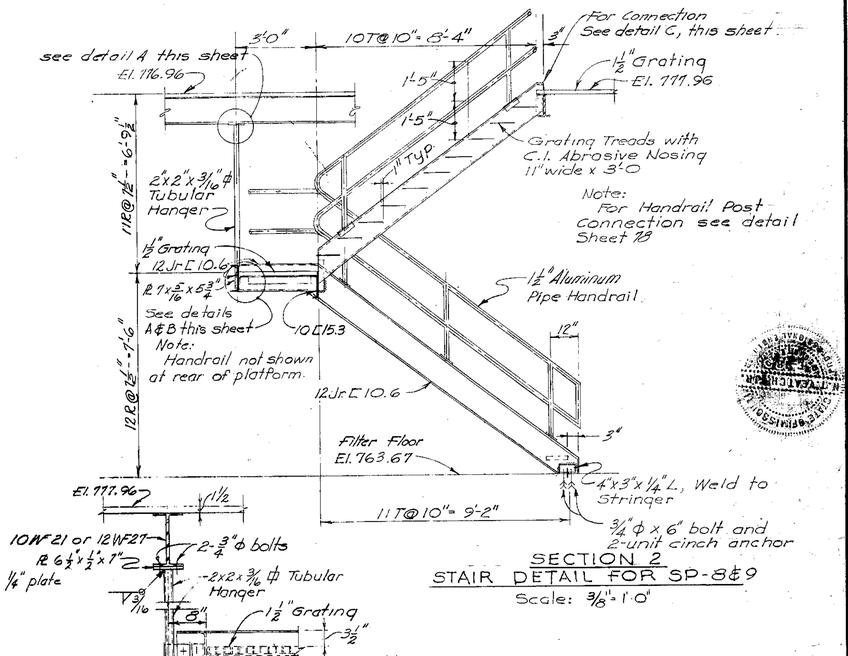
DETAIL C

Scale: 1½" = 1'-0"



PLAN DETAIL FOR STAIR SP-8&9

Scale: 3/8" = 1'-0"



SECTION 2

STAIR DETAIL FOR SP-8&9

Scale: 3/8" = 1'-0"

DETAIL A

Scale: 3/4" = 1'-0"

DETAIL B

Scale: 3" = 1'-0"

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
STAIR DETAILS

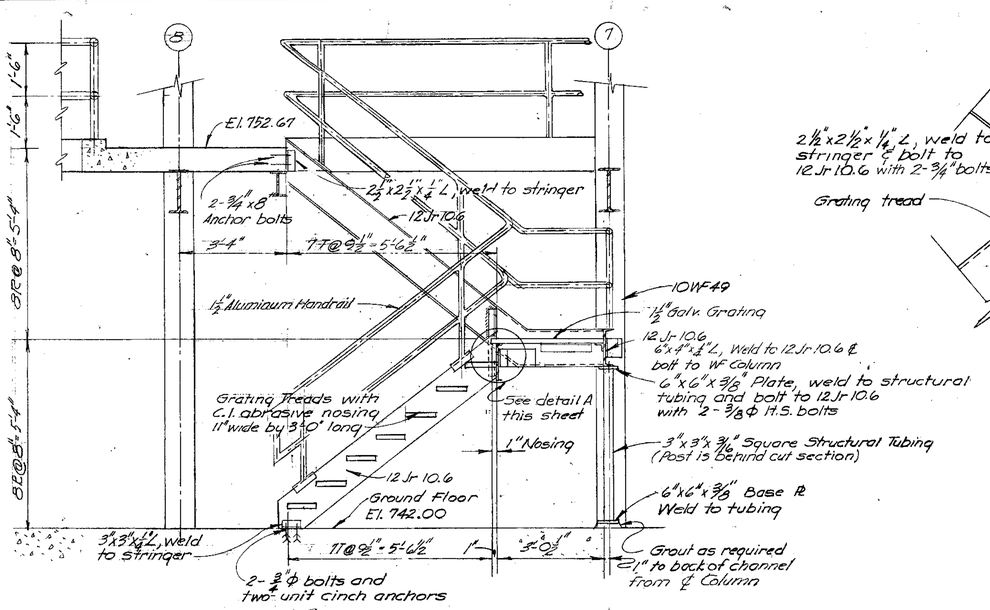
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED LWD CHECKED LEW
DETAILED LWD APPROVED
DATE 2-4-64

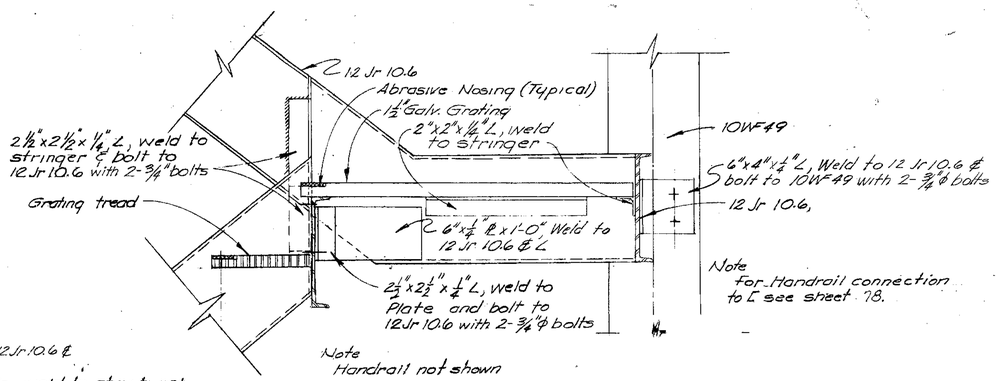
SHEET 79 OF 190

10L232

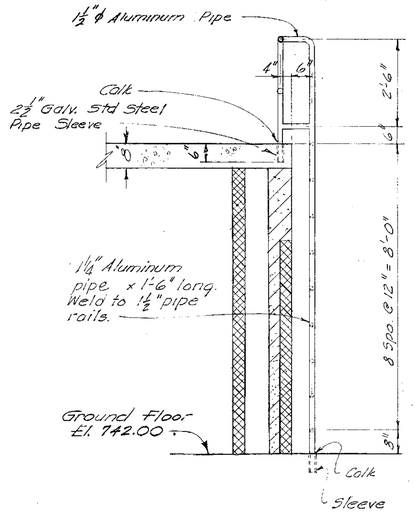


SECTION - 1
DETAIL OF STAIR SP-2

Scale: ½" = 1'-0"
See Sheets 18-21

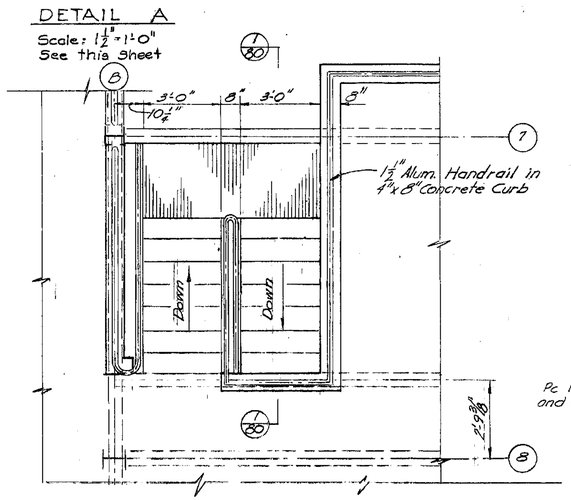


Note
Handrail not shown

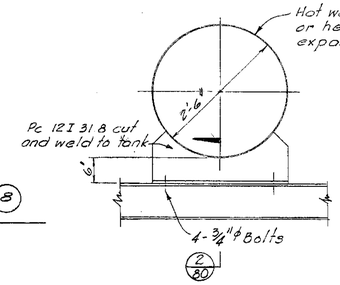


DETAIL OF LADDER SP-1
Scale ½" = 1'-0"
See Sh. 17 & 20

DETAIL A
Scale: 1½" = 1'-0"
See this Sheet



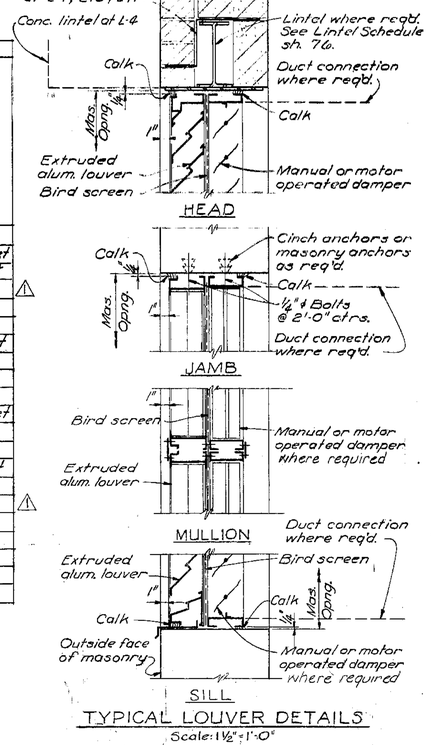
PLAN OF STAIR SP-2
Scale: ⅜" = 1'-0"
See detail this sheet



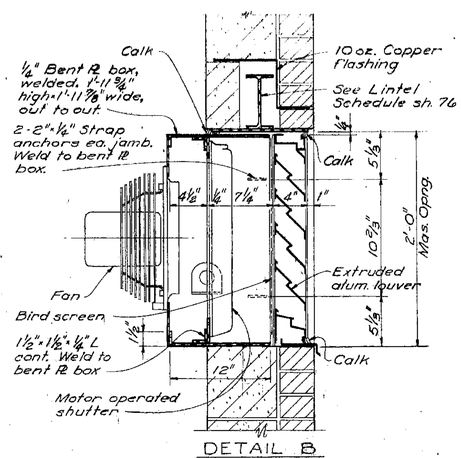
ELEVATION SECTION 2
TANK BASE DETAILS
Scale ¾" = 1'-0"
See Sheet 18

LOUVER SCHEDULE

Opening Number	Plan Dimension and Nominal Louver Size		Masonry or Concrete Opening		Fixed Weather Louver	Motor Operated Damper	Motor Operated Shutter	Manual damper	Duct Connection		Remarks
	No. of Units @ Width	Height	Width	Height							
L-1	1 @ 3'-11¾"	15'-7"	4'-0⅛"	15'-7⅛"	○			○			See details sh. 55
L-2	1 @ 2'-0"	2'-0"	2'-0⅜"	2'-0"	○		○				See detail B, this sheet
L-3	3 @ 3'-0" = 9'-0"	8'-0"	9'-0⅜"	8'-0"	○	○			○		See details, this sheet
L-4	1 @ 2'-8"	1'-4"	2'-8⅜"	1'-4"	○				○		" " " " "
L-5	3 @ 3'-0" = 9'-0"	8'-0"	9'-0⅜"	8'-0"	○	○			○		" " " " "
L-6	1 @ 3'-11¾"	15'-7"	4'-0⅛"	15'-7⅛"	○			○			See details sh. 55
L-7	4 @ 4'-0" = 16'-0"	12'-0"	16'-0⅜"	12'-0"	○	○			○		See details this sheet
L-8	4 @ 4'-0" = 16'-0"	12'-0"	16'-0⅜"	12'-0"	○	○			○		" " " "
L-9	3 @ 4'-0" = 12'-0"	12'-0"	12'-0⅜"	12'-0"	○	○			○		" " " "
L-10	2 @ 2'-6" = 5'-0"	2'-8"	5'-0⅜"	2'-8"	○	○					" " " "
L-11	1 @ 2'-0"	2'-0"	2'-0⅜"	2'-0"	○			○			See detail B this sheet
L-12	1 @ 1'-4"	1'-4"	1'-4⅜"	1'-4"	○			○			" " " "
L-13					○						See details sheet 43
L-14	1 @ 3'-0"	3'-0"	3'-0½"	3'-0½"	○	○			○		See details, this sheet
L-15	1 @ 2'-0"	2'-0"	2'-0⅜"	2'-0"	○	○					" " " "
L-16	2 @ 3'-0"	3'-4"	6'-0⅜"	3'-4"	○				○		" " " "
L-17	2 @ 2'-4" = 4'-8"	3'-4"	4'-8⅜"	3'-4"	○				○		" " " "
L-18	2 @ 3'-0" = 6'-0"	3'-4"	6'-0⅜"	3'-4"	○				○		" " " "
L-19	1 @ 3'-4"	2'-8"	3'-4⅜"	2'-8"	○	○					" " " "



TYPICAL LOUVER DETAILS
Scale: 1½" = 1'-0"



DETAIL B
Scale: 1½" = 1'-0"

NO	DATE	REVISION	BY	CK'D
1	5-20-64	Rev. Louver Schedule	W.J.O.	A.C.P.

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

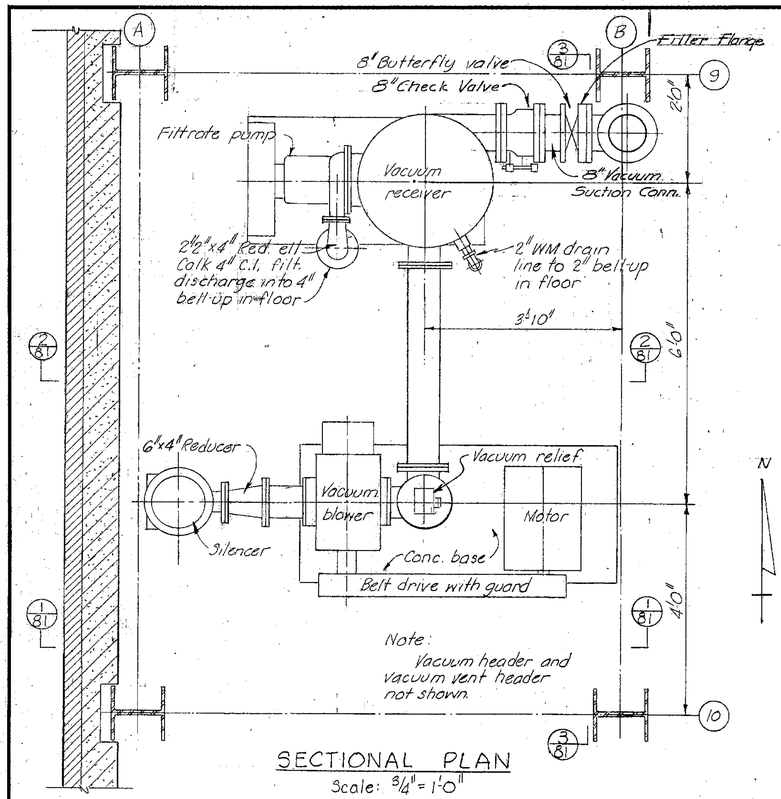
SLUDGE PROCESSING BUILDING
STAIR AND LOUVER DETAILS

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

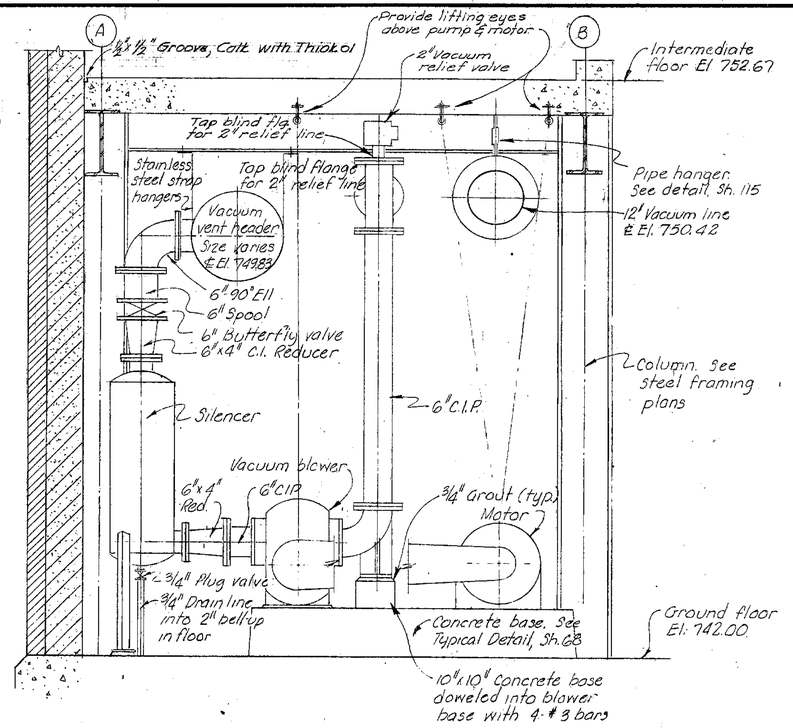
P.C.D. CONTRACT 7

DESIGNED LKD DETAILED LWD CHECKED LEW APPROVED [signature] DATE 2-4-64

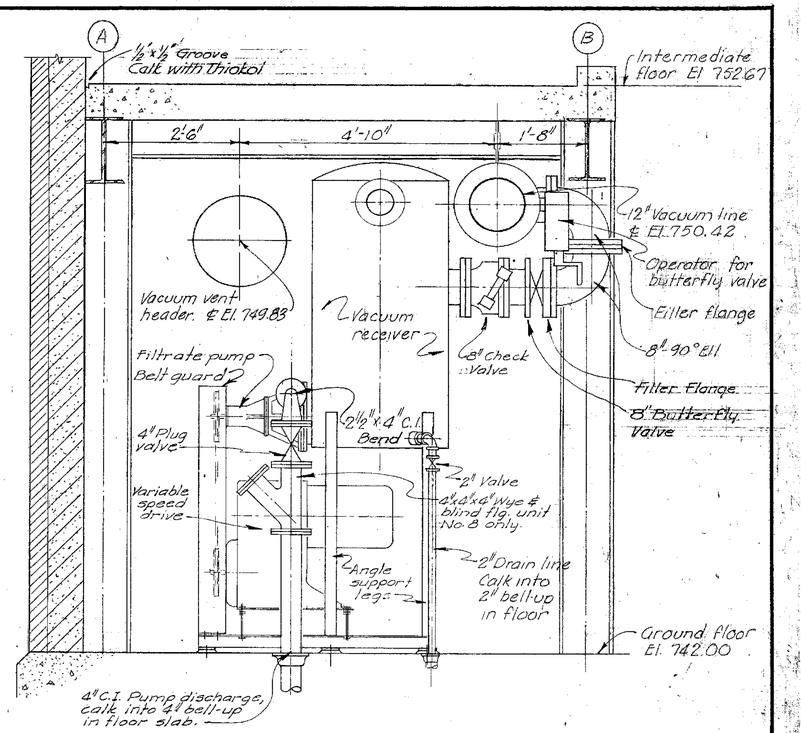
SHEET 80 OF 190



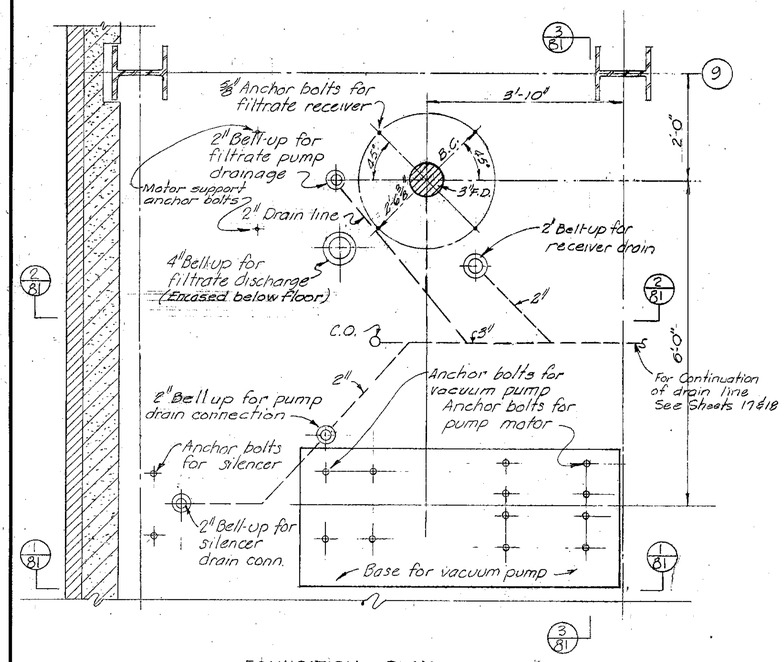
SECTIONAL PLAN
Scale: 3/4" = 1'-0"



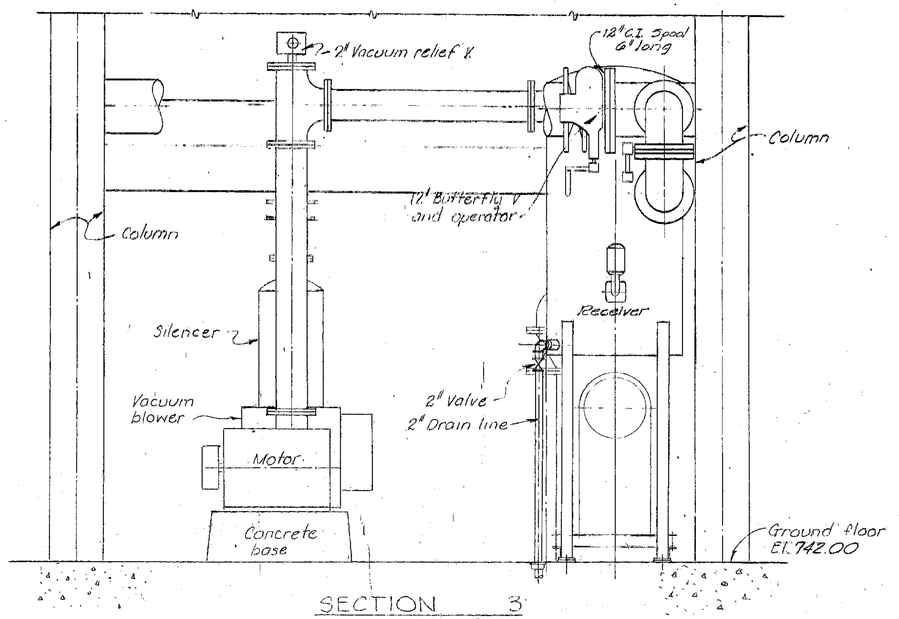
SECTION 1
Scale: 3/4" = 1'-0"
See this sheet



SECTION 2
Scale: 3/4" = 1'-0"
See this sheet



FOUNDATION PLAN
Scale: 3/4" = 1'-0"



SECTION 3
Scale: 3/4" = 1'-0"
See this sheet

Note

See Contract 7B shop drawings and specifications for equip. furnished, dimensions and anchor bolt details and requirements

Seal water piping to the filtrate pump and vacuum pump not shown. Location to be determined in the field subject to the Engineer's approval.

This layout is drawn for Vacuum Unit No. 3, details for other units are similar except for vacuum inlet piping for Unit No. 1 which is detailed on Section 4, Sheet 31 and Section 1, Sheet 32.

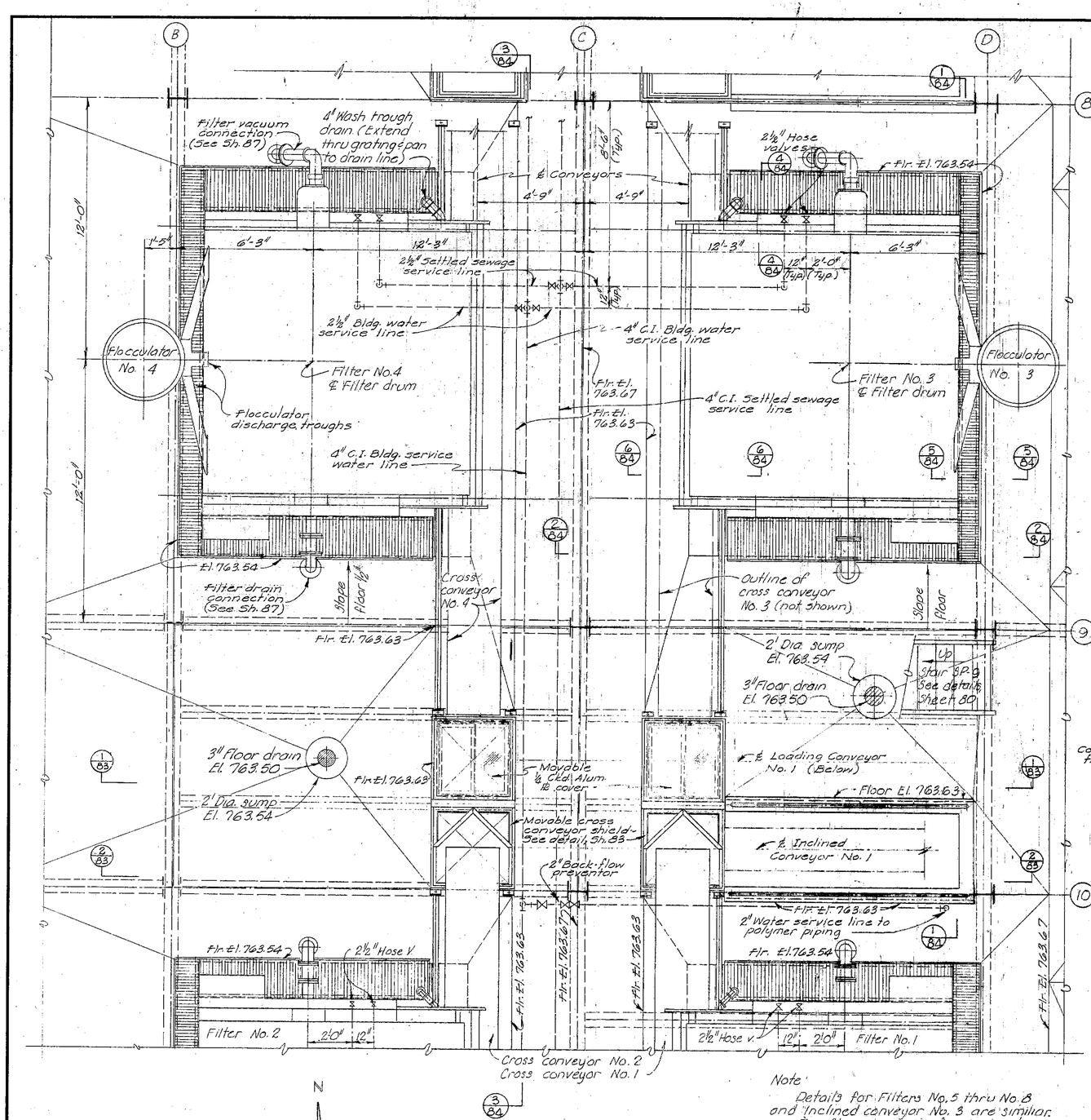
Provide 1" drain lines with 1" plug valves from bottom of 20"x20"x20" tee on vacuum vent and bottom of 12" vacuum header into a 2" bell-up in the ground floor drainage system.

APPROVED FOR CONSTRUCTION
DEC 31 1968
H. T. VEATCH
CITY ENGINEER
KANSAS CITY, MISSOURI

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
VACUUM EQUIPMENT LAYOUT

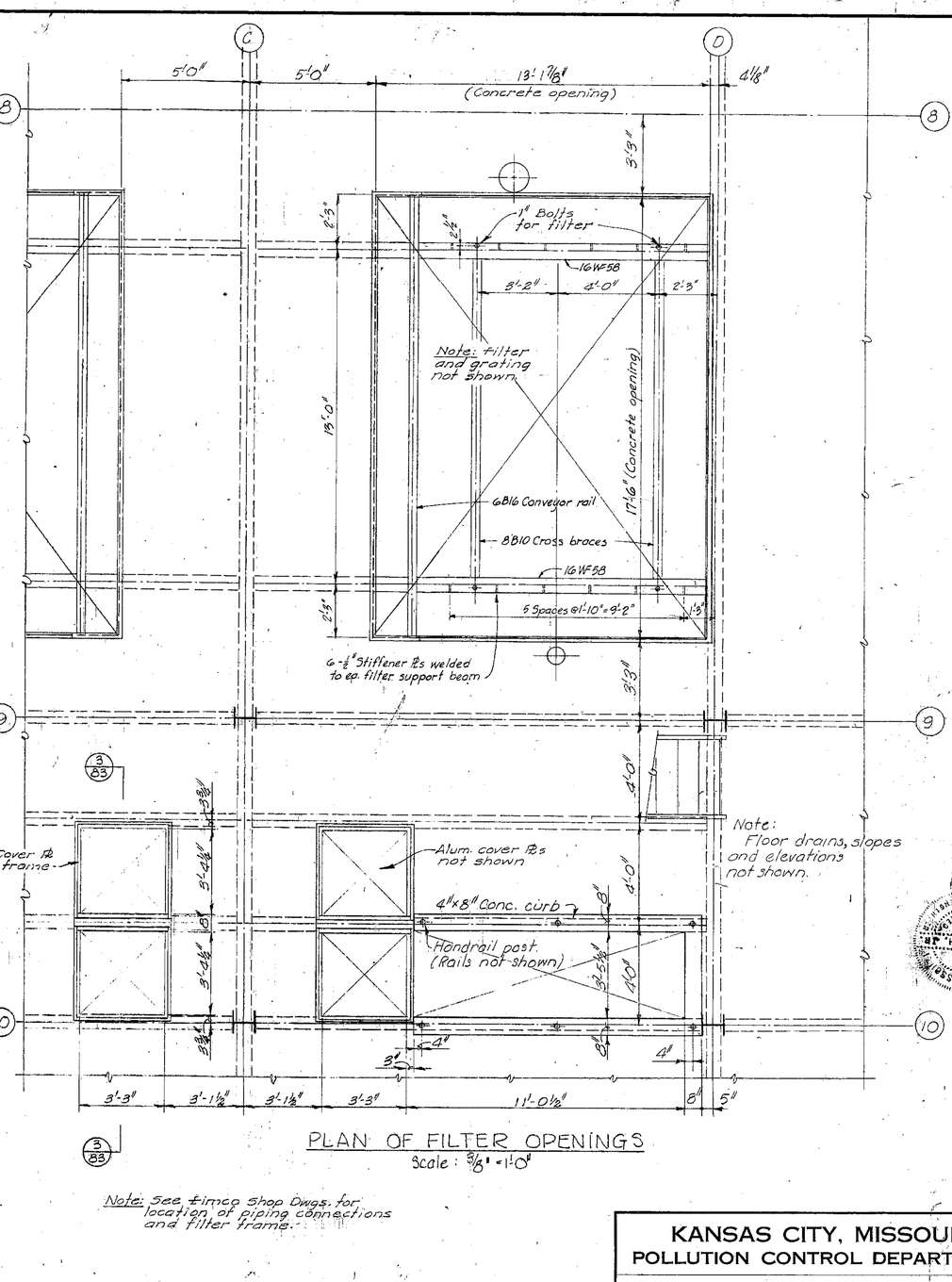
BLACK & VEATCH AND BURNS & MC DONNELL CONSULTING ENGINEERS, KANSAS CITY, MO.	P.C.D. CONTRACT 7
DESIGNED ACP DETAILED ACP CHECKED LEW APPROVED DATE 2-2-68	SHEET 81 OF 190



PLAN OF FILTERS

Scale: 3/8" = 1'0"

Note:
Details for Filters No. 5 thru No. 8 and Inclined conveyor No. 3 are similar.
For floor openings for Inclined conveyor No. 2 see Sheet 83.
For steel framing details see Sh. 70.
For wash water manifold connection to filters see Sh. 87.



PLAN OF FILTER OPENINGS

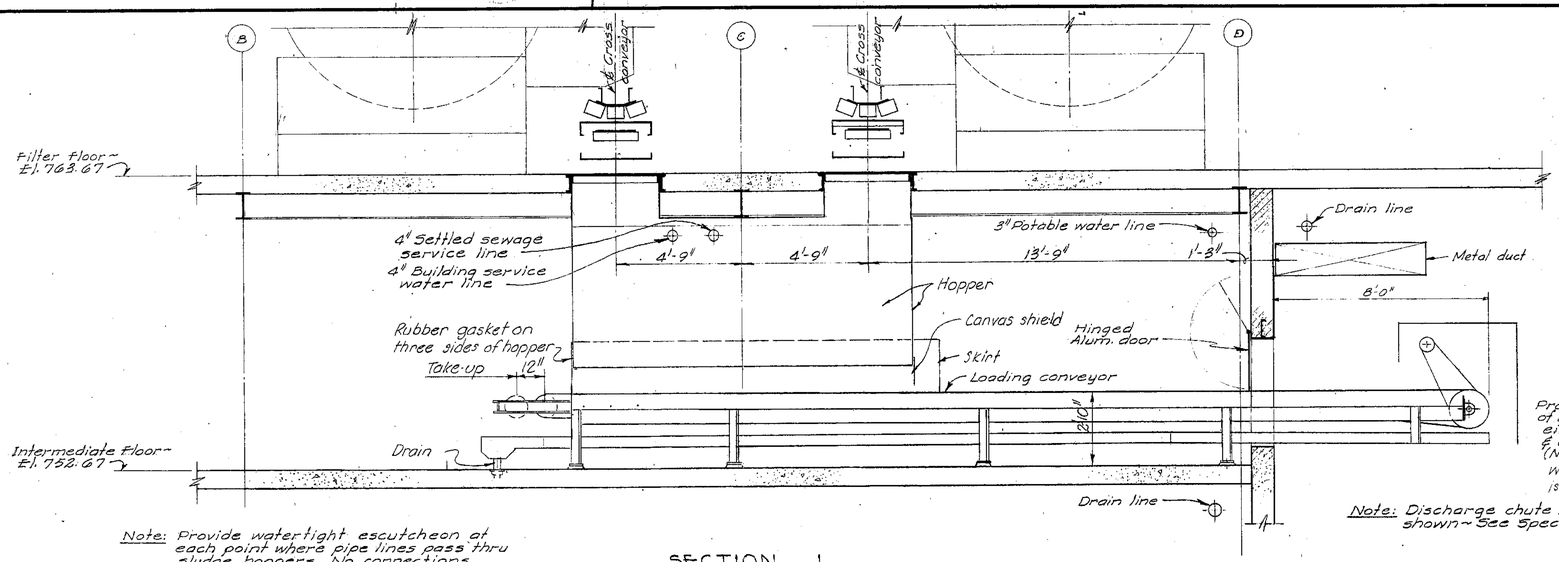
Scale: 3/8" = 1'0"

Note: See Simco Shop Dwgs. for location of piping connections and filter frame.

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

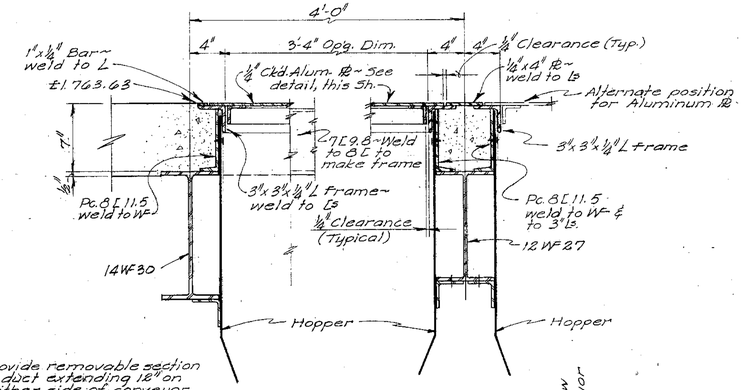
SLUDGE PROCESSING BUILDING
FILTER AND CONVEYOR PLANS

BLACK & VEATCH AND BURNS & MCDONNELL CONSULTING ENGINEERS, KANSAS CITY, MO.	P.C.D. CONTRACT 7
DESIGNED ACP GHP CHECKED LEW DETAILED ACP GHP APPROVED DATE 2460	SHEET 82 OF 190



Note: Provide watertight escutcheon at each point where pipe lines pass thru sludge hoppers. No connections are to be within the hoppers.

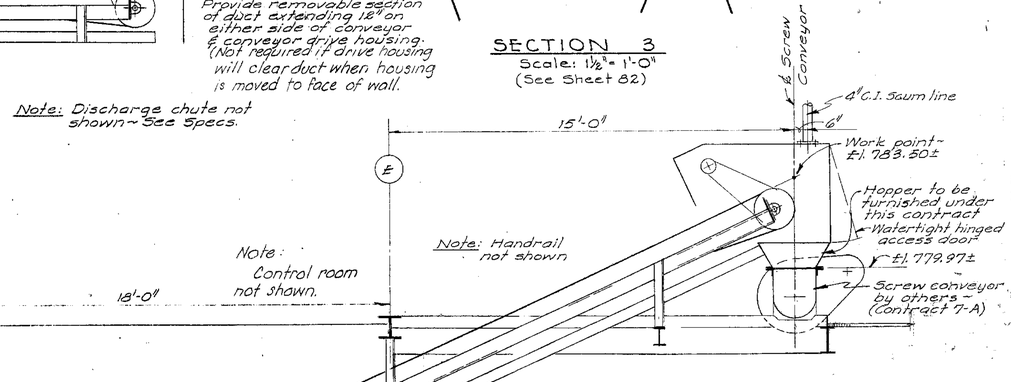
SECTION 1
Scale: 3/8" = 1'-0"
(See Sheet 82)

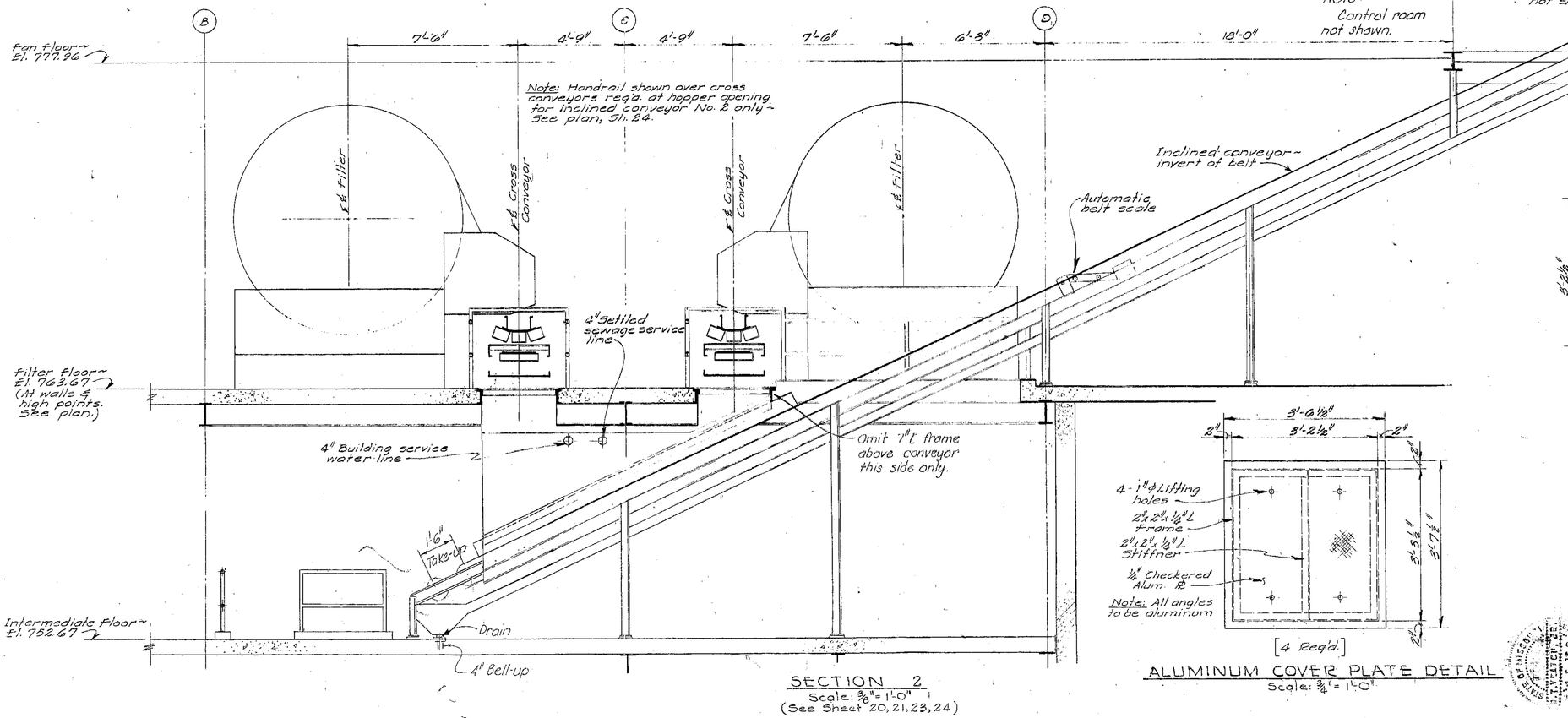


Provide removable section of duct extending 18" on either side of conveyor & conveyor grease housing. (Not required if drive housing will clear duct when housing is moved to face of wall.

SECTION 3
Scale: 1 1/2" = 1'-0"
(See Sheet 82)

Note: Discharge chute not shown ~ See Specs.

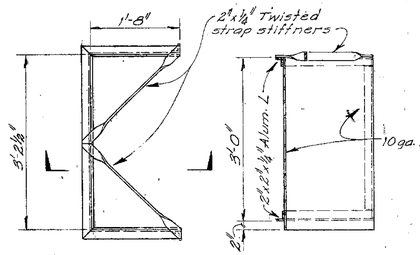




SECTION 2
Scale: 3/8" = 1'-0"
(See Sheet 20, 21, 23, 24)

[4 Req'd.]

ALUMINUM COVER PLATE DETAIL
Scale: 3/4" = 1'-0"



[4 Required]

CROSS CONVEYOR SHIELD
Scale: 3/4" = 1'-0"

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
FILTER AND CONVEYOR SECTIONS

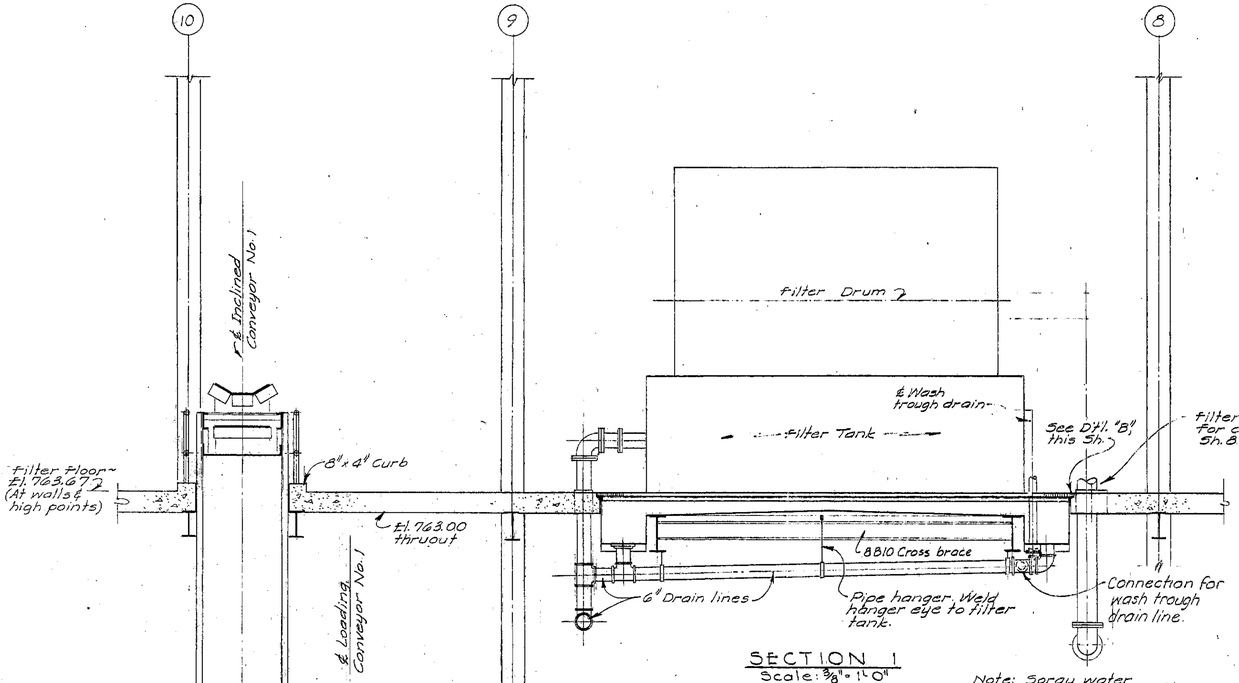
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED GHP CHECKED LEW
DETAILED GHP APPROVED
DATE 2-8-62

SHEET 83 OF 190

PROJECT 5288 1062.32

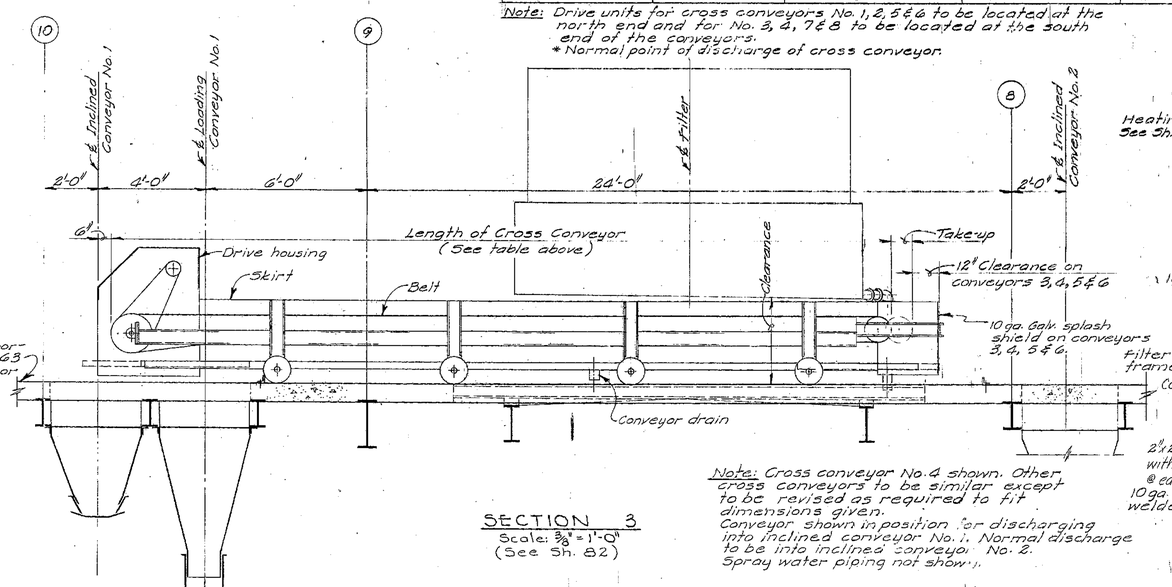


SECTION 1
Scale: 3/8" = 1'-0"
(See Sh. 82)

Note: Spray water piping not shown.

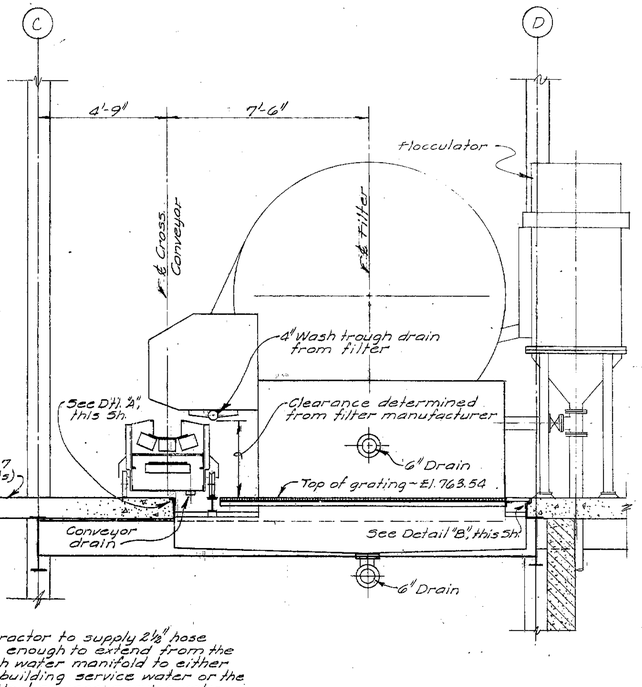
Cross Conveyor No.	Length of Cross Conveyor	Cross Conveyor to Feed		Max. Travel Req'd.
		Inclined Conveyor No.	Loading Conveyor No.	
1	25'-6"	1*	1	4'-0"
2	25'-6"	1*	1	4'-0"
3	29'-0"	1 & 2*	1	6'-0"
4	29'-0"	1 & 2*	1	6'-0"
5	32'-0"	2 & 3*	2	7'-0"
6	32'-0"	2 & 3*	2	7'-0"
7	29'-6"	3	2*	4'-0"
8	29'-6"	3	2*	4'-0"

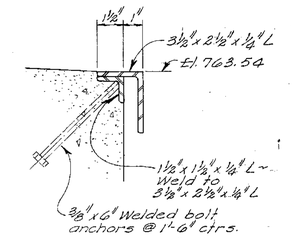
Note: Drive units for cross conveyors No. 1, 2, 5 & 6 to be located at the north end and for No. 3, 4, 7 & 8 to be located at the south end of the conveyors.
* Normal point of discharge of cross conveyor.



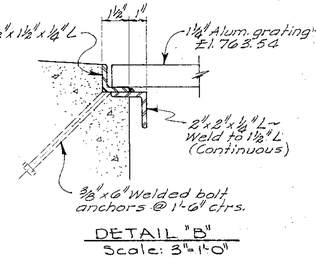
SECTION 3
Scale: 3/8" = 1'-0"
(See Sh. 82)

Note: Cross conveyor No. 4 shown. Other cross conveyors to be similar except to be revised as required to fit dimensions given.
Conveyor shown in position for discharging into inclined conveyor No. 1. Normal discharge to be into inclined conveyor No. 2.
Spray water piping not shown.



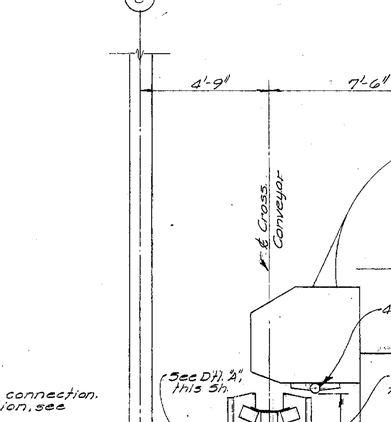


DETAIL "A"
Scale: 3" = 1'-0"

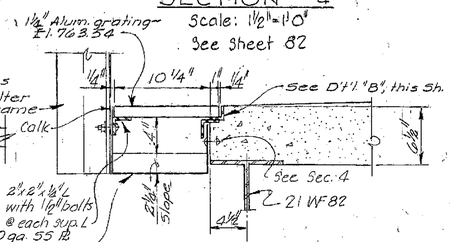


DETAIL "B"
Scale: 3" = 1'-0"

Contractor to supply 2½" hose long enough to extend from the wash water manifold to either the building service water or the settled sewage service valve.

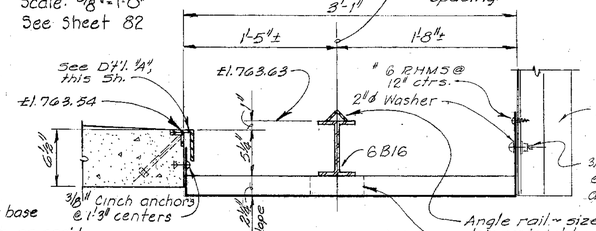


SECTION 4
Scale: 1½" = 1'-0"
See Sheet 82



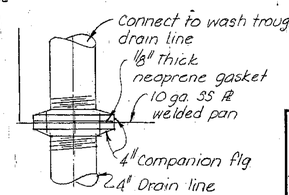
SECTION 5
Scale: 1½" = 1'-0"
See Sheet 82

SECTION 2
Scale: 3/8" = 1'-0"
See Sheet 82



SECTION 6
Scale: 1½" = 1'-0"
See Sheet 82

Note:
All grating supports and edge angles to be hot-dipped galvanized.
All filter pan bolts and screws to be stainless steel or cadmium coated



DETAILS OF WASH TROUGH DRAIN LINE CONNECTION
Scale: 1½" = 1'-0"

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
FILTER AND CONVEYOR, SECTIONS

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

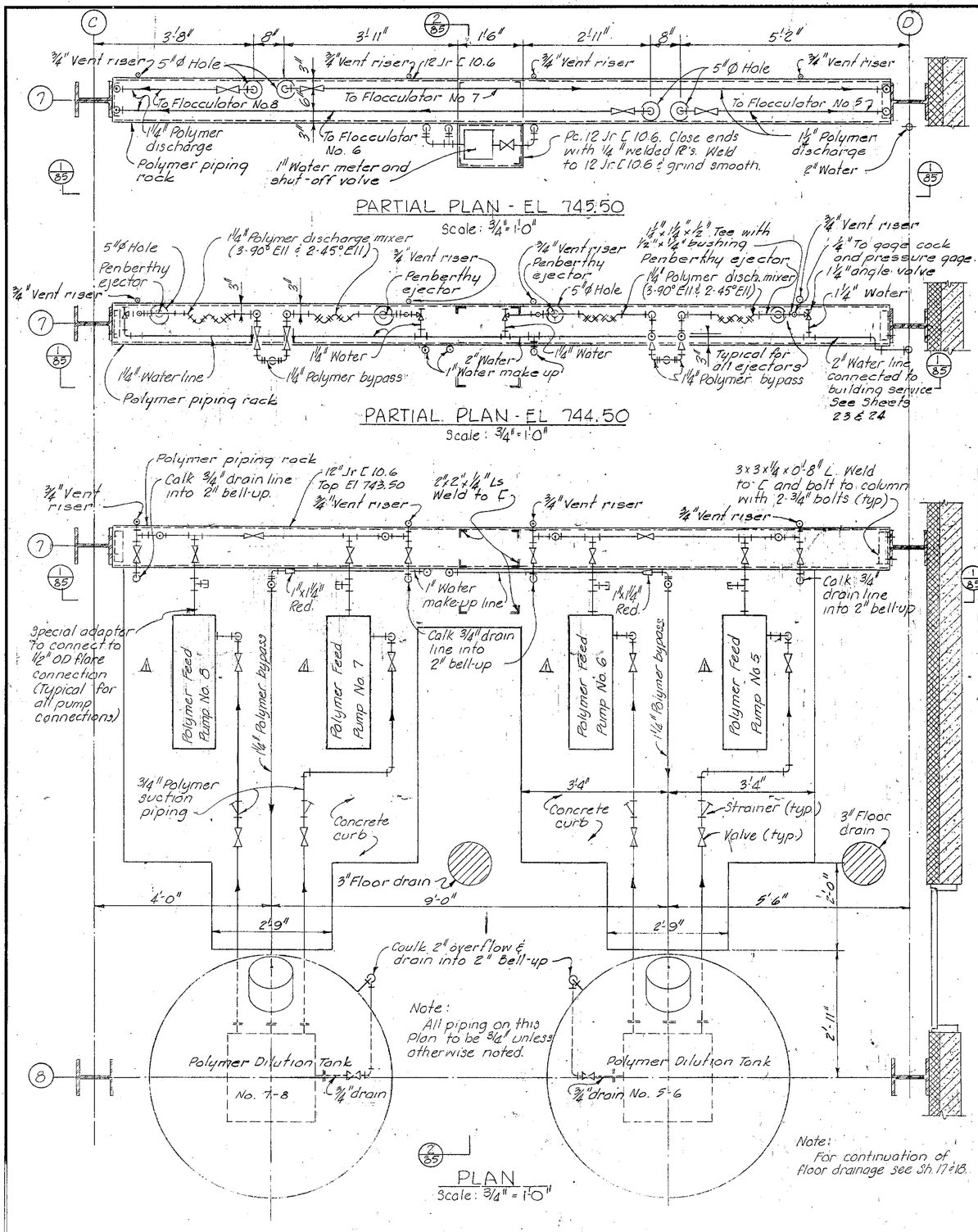
P.C.D. CONTRACT 7

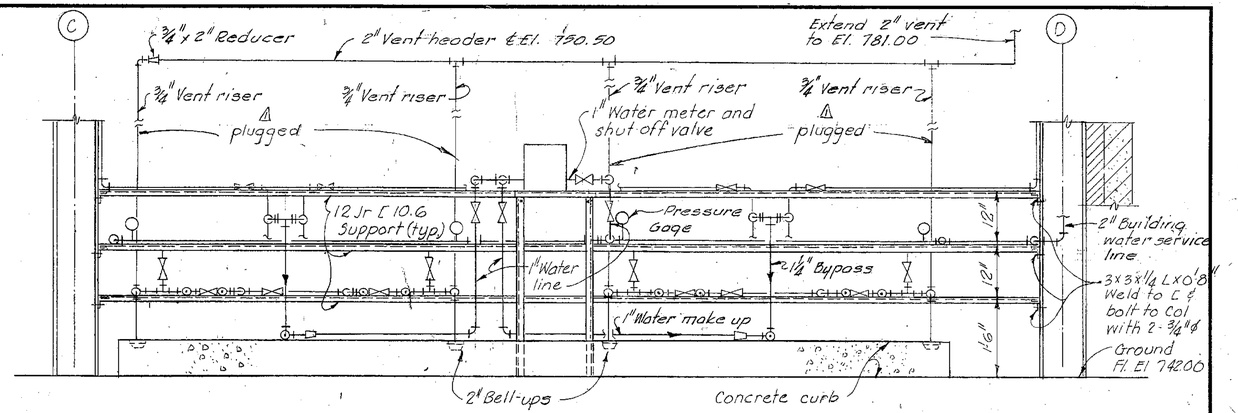
DESIGNED ACP GHP CHECKED LEW
DETAILED ACP GHP APPROVED
DATE 2-4-64

SHEET 84 OF 190

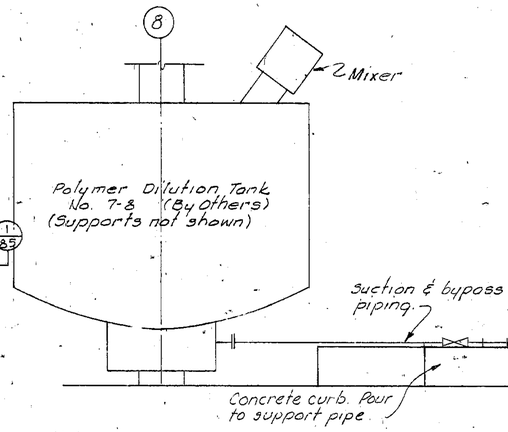
PROJECT 3282

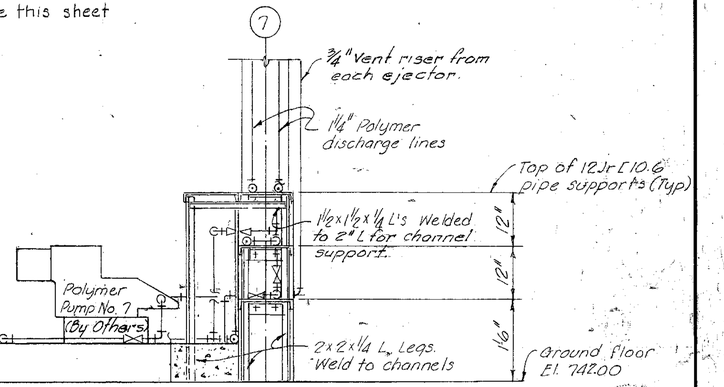
10462.32

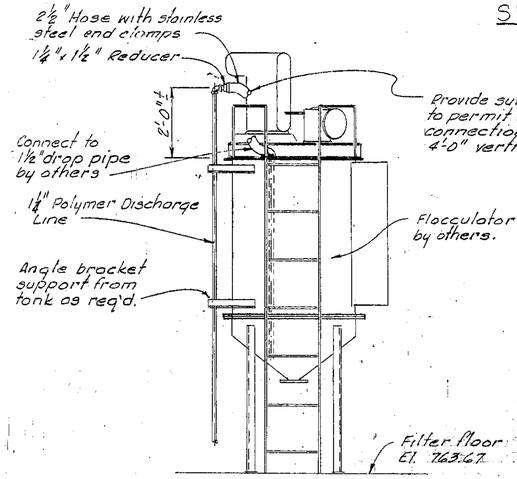




SECTION 1
Scale: 3/4" = 1'-0"
See this sheet







DETAIL OF CHEMICAL CONNECTION AT FLOCCULATOR
Scale 1/2" = 1'-0"

SECTION 2
Scale: 3/4" = 1'-0"
See this sheet

GENERAL NOTES:

Layout for polymer feed pumps 1 thru 4 to be opposite hand and similar.

All piping, valves and fittings to be corrosion resistant except water lines to ejectors and to shut-off valve on water meter.

All polymer piping from dilution tanks to pumps and from pumps to ejectors shall be 3/4" size.

All polymer discharge piping from ejectors, including bypasses, shall be 1 1/4" size.

Attach piping to concrete and support channels with galvanized Grinnell Fig. 126 @ 2'0" centers.

For details of polymer feed pump and polymer dilution tank see Eimco shop drawings (Contract 7B).

Water lines from vacuum preventer to ejectors and shut-off valve on water meter shall be galvinized iron pipe.

NO.	DATE	DESCRIPTION	BY	CHK
1	11-66	Conform to construction records	RLM	ACP

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
POLYMER EQUIPMENT LAYOUT

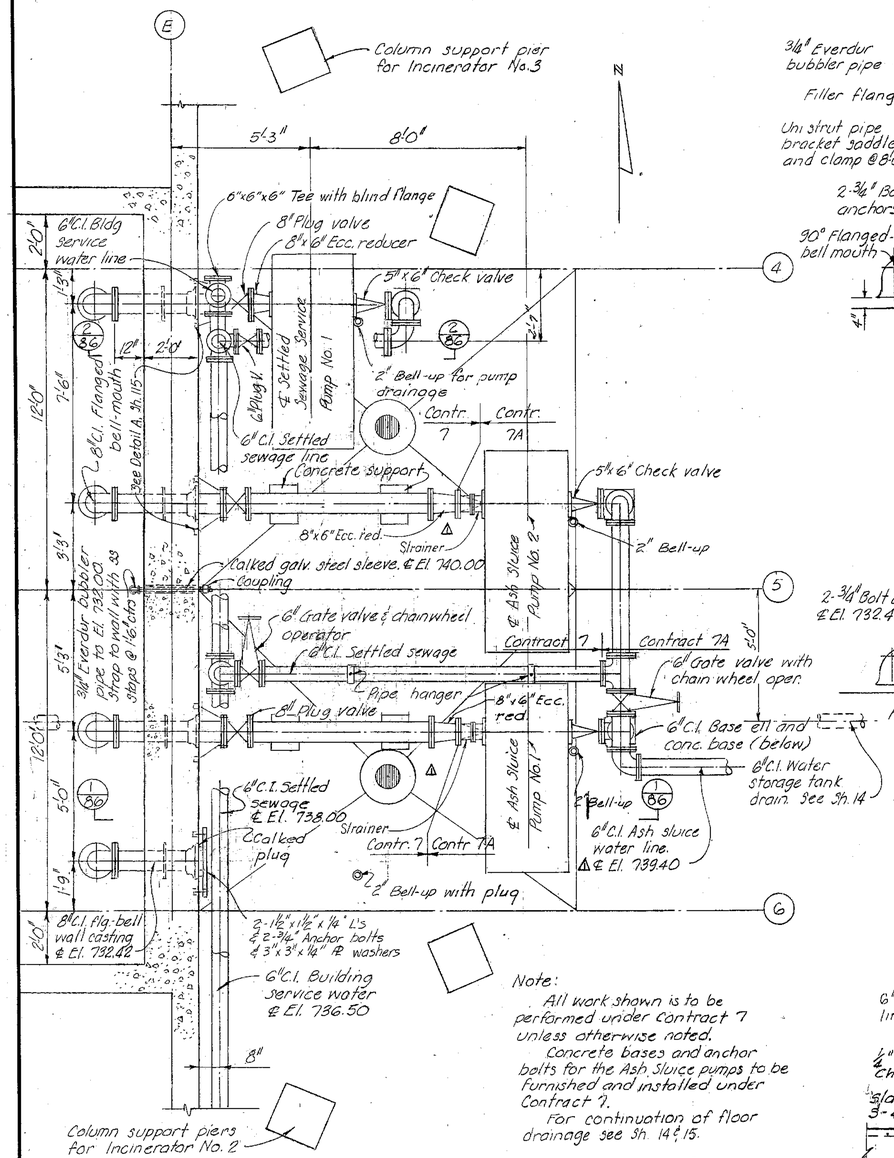
BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED ACP DETAILED ACP CHECKED LEW APPROVED [signature] DATE 7-1-66

SHEET 85 OF 190

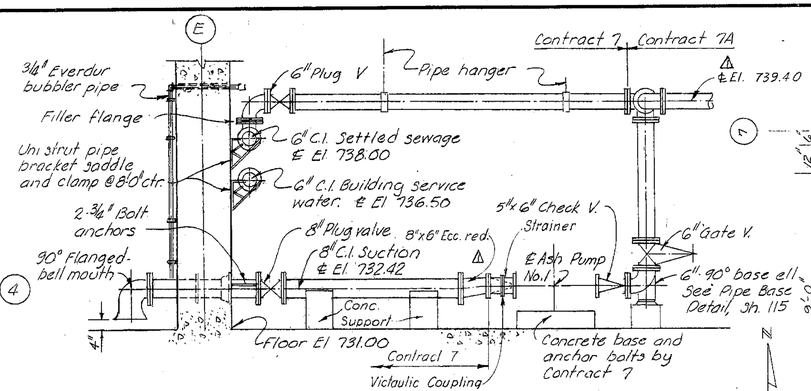
10623.2



Note:
All work shown is to be performed under Contract 7 unless otherwise noted.
Concrete bases and anchor bolts for the Ash Sluice pumps to be furnished and installed under Contract 7.
For continuation of floor drainage see Sh. 14 & 15.

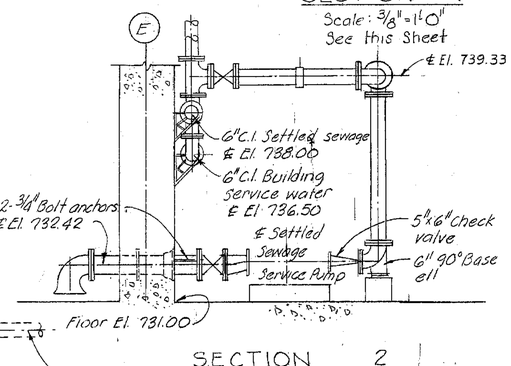
PLAN OF ASH SLUICE PUMPS AND SETTLED SEWAGE SERVICE PUMP

Scale: 3/8" = 1'-0"



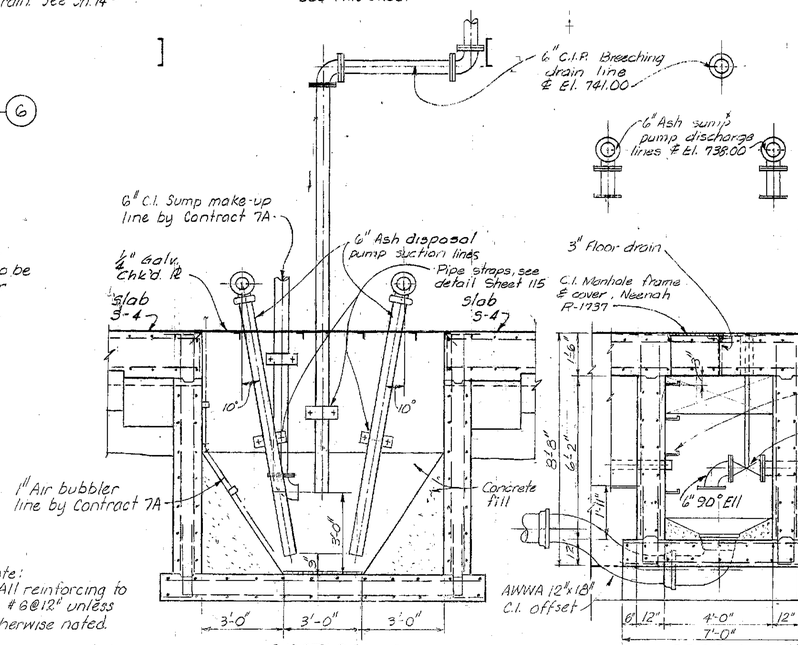
SECTION 1

Scale: 3/8" = 1'-0"
See this Sheet



SECTION 2

Scale: 3/8" = 1'-0"
See this Sheet



Note:
All reinforcing to be #6@12" unless otherwise noted.

Note: All reinf. #6@12" unless otherwise noted

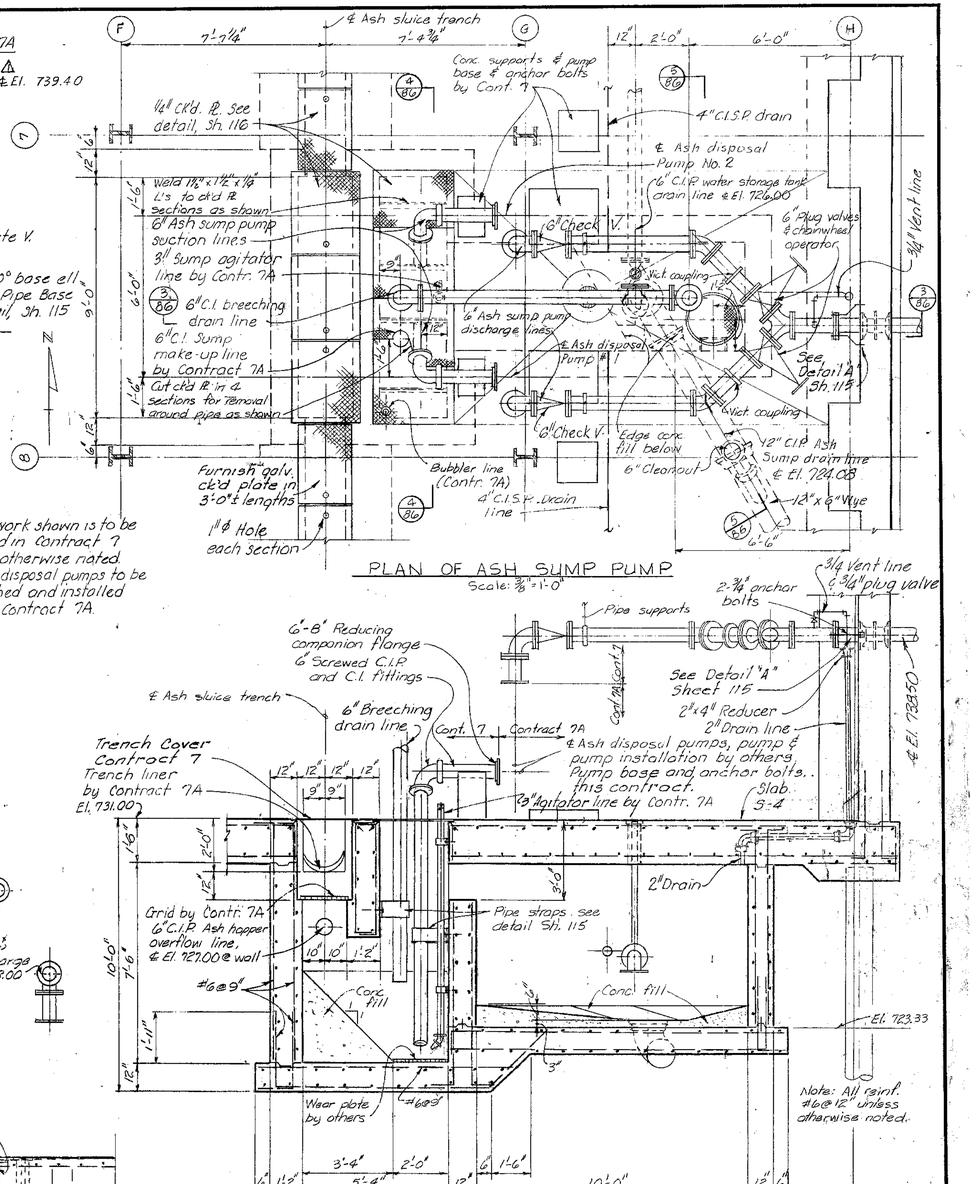
SECTION 4

Scale: 3/8" = 1'-0"
See this Sh.

SECTION 5

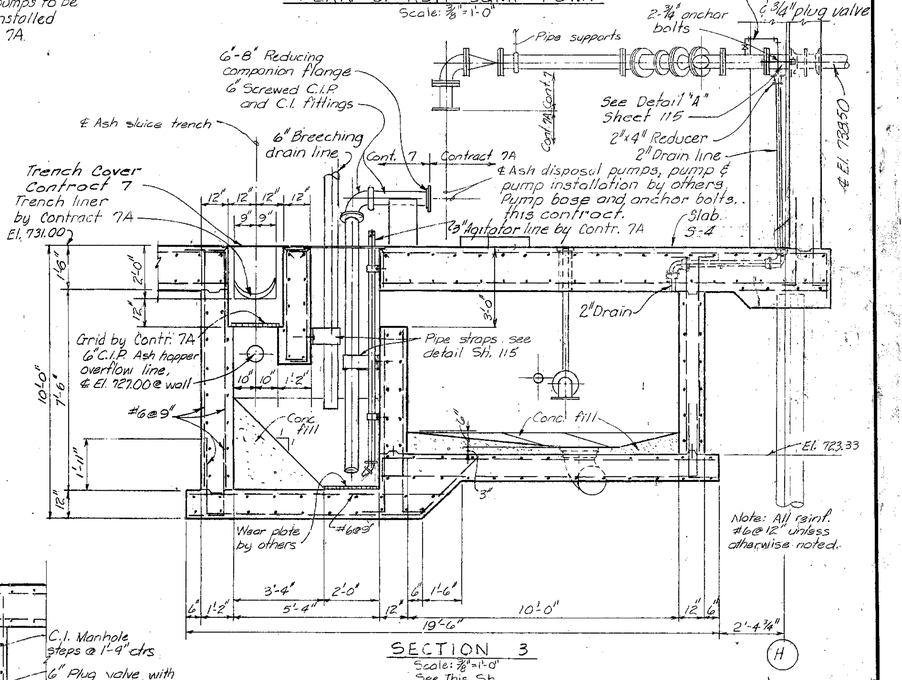
Scale: 3/8" = 1'-0"
See this Sh.

Note:
All work shown is to be included in Contract 7 unless otherwise noted.
Ash disposal pumps to be furnished and installed under Contract 7A.



PLAN OF ASH SUMP PUMP

Scale: 3/8" = 1'-0"



SECTION 3

Scale: 3/8" = 1'-0"
See This Sh.

NO.	DATE	REVISION	BY	CHK'D
1	3-3-65	Ash Sluice Pump Discharge Piping	CGC	KRL

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING

PUMP LAYOUTS AND SECTIONS

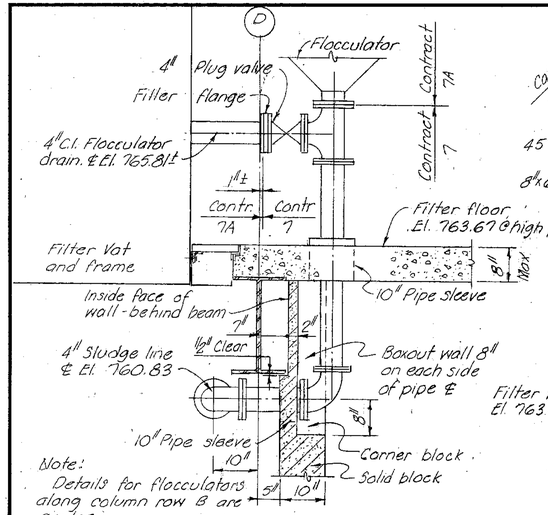
BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED ACP DRG CHECKED LEW
DETAILED ACP DRO APPROVED
DATE 2-8-64

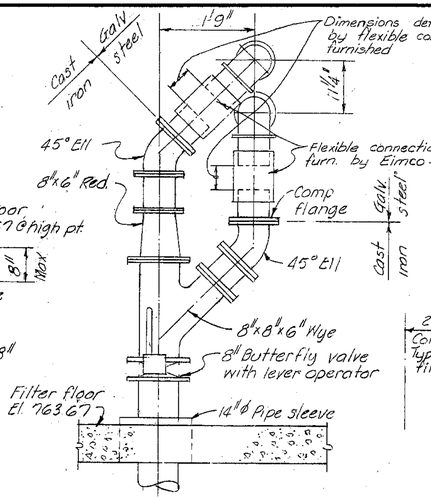
SHEET 86 OF 190

101232

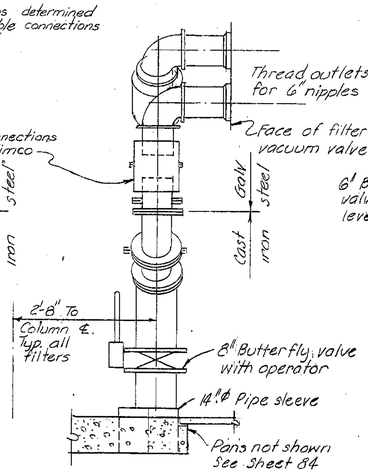


Note:
Details for flocculators along column row B are similar.

SECTION 1
Scale: 3/4" = 1'-0"
See Sh. 20 & 21

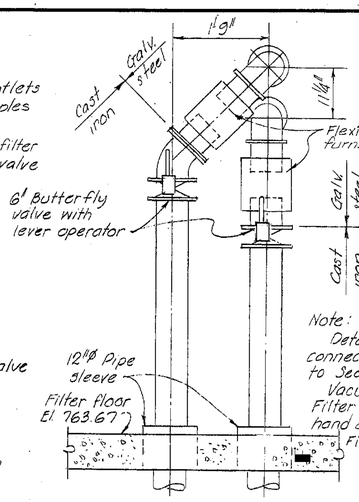


SECTION 2



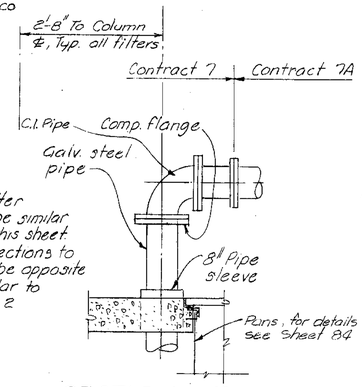
SECTION 3

TYPICAL FILTER VACUUM CONNECTION
Scale: 3/4" = 1'-0"
See Sh. 23 & 24

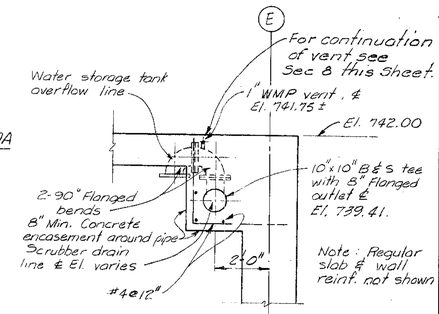


Note:
Details of filter connection to be similar to Section 3, this sheet. Vacuum connections to Filter No. 1 to be opposite hand and similar to Filter No. 2

SECTION 4
FILTER NO. 2 VACUUM CONNECTION
Scale: 3/4" = 1'-0"
See Sheet 21

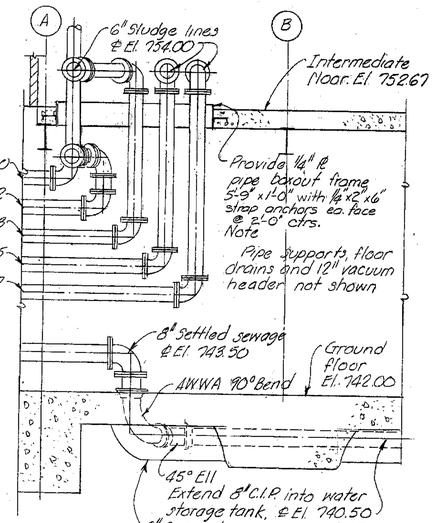


SECTION 5
TYPICAL FILTER DRAIN CONNECTION
Scale: 3/4" = 1'-0"
See Sh. 23 & 24

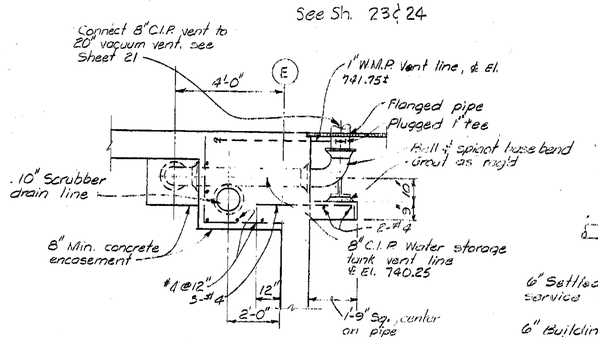


Note: Regular slab & wall reinf. not shown

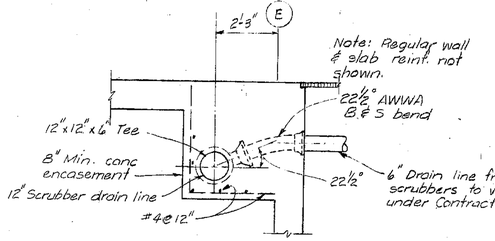
SECTION 7
Scale: 3/8" = 1'-0"
See Sheet 17



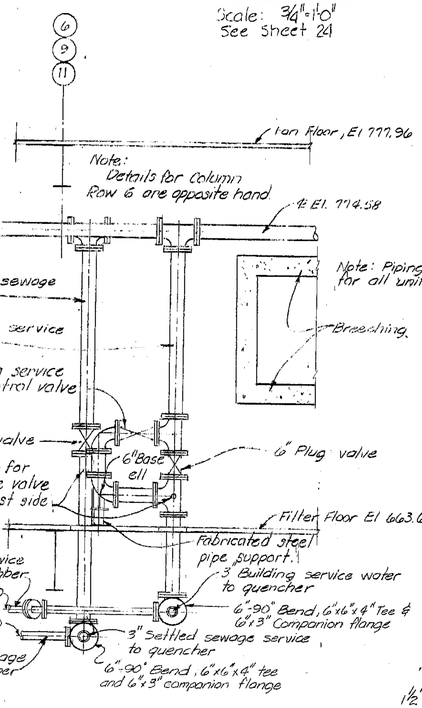
SECTION 6
Scale: 3/8" = 1'-0"
See Sh. 17 & 20



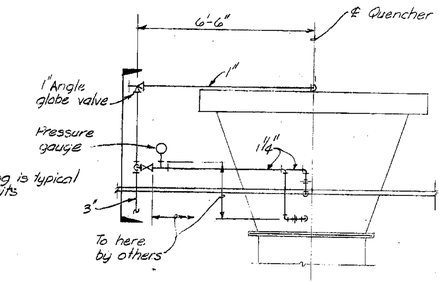
SECTION 8
Scale: 3/8" = 1'-0"
See Sh. 17



SECTION 9
Scale: 3/8" = 1'-0"
See Sh. 17

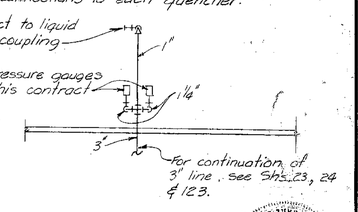


SECTION 11
Scale: 3/8" = 1'-0"
See Sheet 24



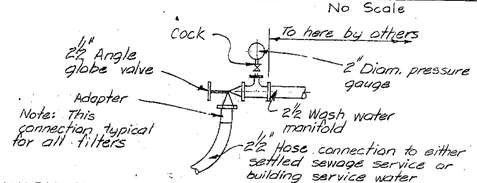
ELEVATION

Note:
This connection detail is typical for both the settled sewage service and building service water connections to each quencher.

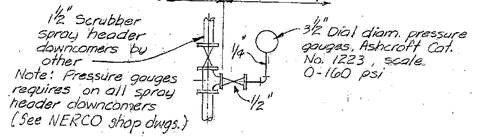


SECTION

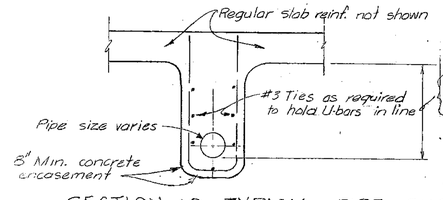
QUENCHER SPRAY WATER CONNECTION DETAILS
No Scale



WASH WATER MANIFOLD CONNECTION TO FILTERS
No Scale



SCRUBBER SPRAY HEADER DOWNCOMER PRESSURE GAUGE CONNECTION DETAIL



Note: This detail applies, unless otherwise noted or shown on plans, for all pipe located under floor slabs

SECTION 10 - TYPICAL PIPE ENCASEMENT DETAIL
Scale: 3/8" = 1'-0"
See Sheet 18

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
PIPING SECTIONS

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

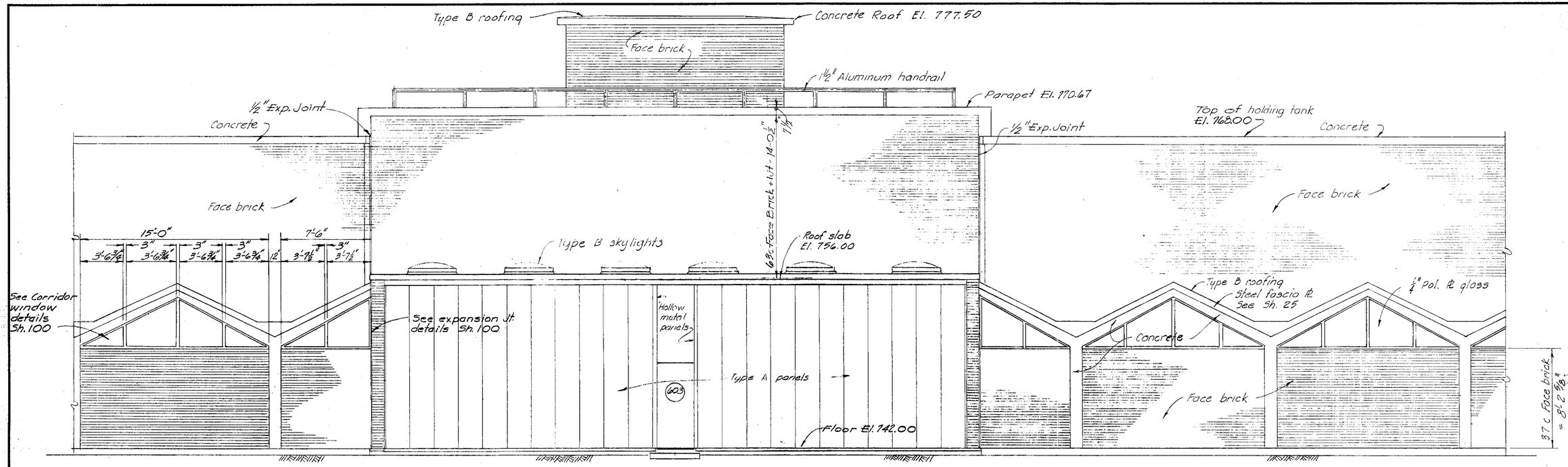
P.C.D. CONTRACT 7

DESIGNED ACP DRG — CHECKED
DETAILED ACP DRG — APPROVED
DATE 2-24-69

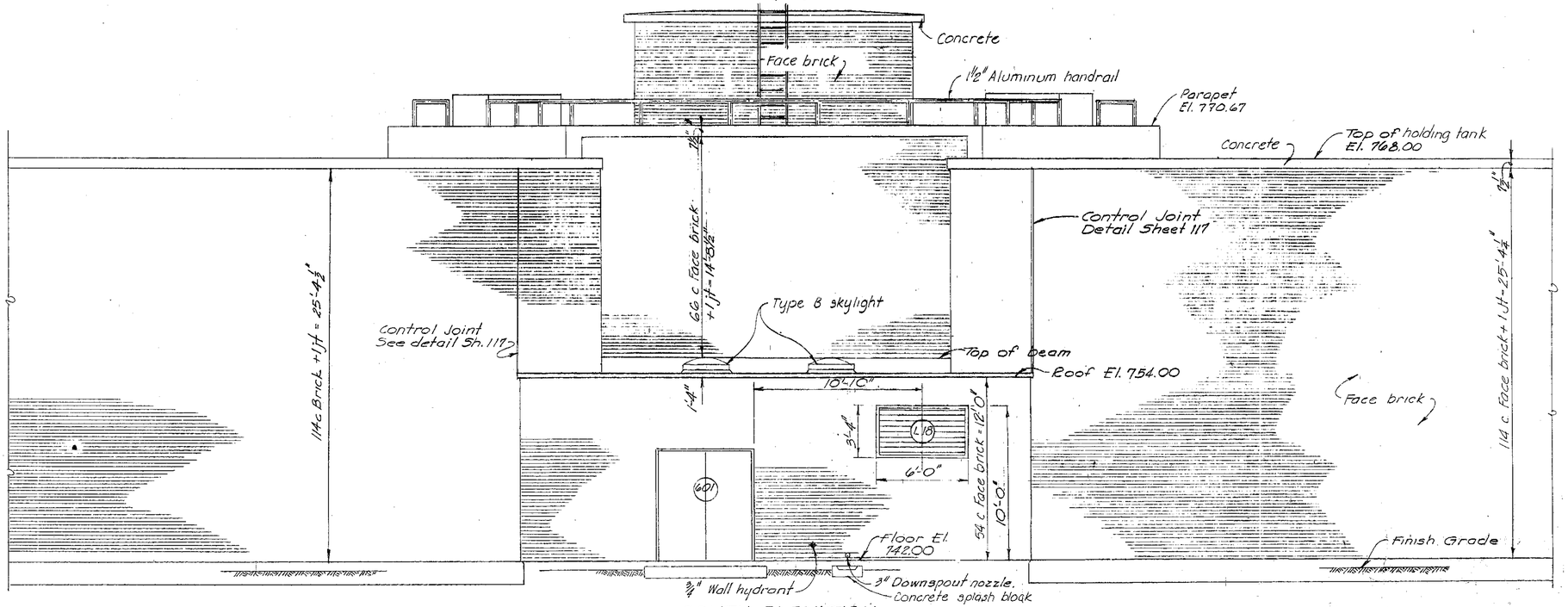
SHEET 87 OF 190

REGISTERED PROFESSIONAL ENGINEER
H. VEATCH JR.
STATE OF MISSOURI

1042.32



NORTH ELEVATION
Scale: ¼" = 1'-0"



SOUTH ELEVATION
Scale: ¼" = 1'-0"

Note
Building substructure not shown.

REGISTERED ARCHITECT
STATE OF MISSOURI

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE HOLDING TANKS
ELEVATIONS

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED ACB MDM CHECKED LEW
DETAILED ACB LWD APPROVED
DATE 2-6-68

SHEET 88 OF 190

PROJECT 23 B 6 IN 232

SLUDGE HOLDING TANK NO. 1

SLUDGE HOLDING TANK NO. 2

FOUNDATION AND PILING PLAN
Scale 3/16" = 1'-0"

TYPICAL PILE CAP DETAILS
Scale 3/8" = 1'-0"

Note:
Reinforcing shown for the particular slab strips is typical for all other corresponding slab strips in each direction.
Slab strips and pile spacing shown are to symmetrical about holding tank ℄'s.
Elevations of top of piles shall be as marked as symmetrical about ℄ of holding tank.
Number of similar piles under each tank is in parentheses.
At least 7 days shall elapse between pours of abutting concrete slabs.

Note:
Slab reinforcing not shown.

Note:
Piling for east holding tank not shown. Piling to be opposite hand of west tank.

NO.	DATE	DESCRIPTION	BY	CHK
Δ	1-1166	Conform to construction records	RLM	ACP

REVISIONS

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE HOLDING TANKS
FOUNDATION AND PILING PLAN

BLACK & VEATCH AND BURNS & MC DONNELL,
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED ACP DETAILED ACP LWD CHECKED LEW APPROVED DATE 2-4-66

SHEET 89 OF 190

Match line. For continuation see Sh. 91

8" Sludge discharge
E El. 743.00
E El. 744.50
8' Long radius base bends

2" Bell-up & trap

Col. HT-1

12" Conc. supports @ 8' centers

1" Drain line

1" Drain line from drip trap

2" Bell-up and trap

Column HT-1

½" Exp. jt.

8" Sludge suction E El. 738.50
½" Aluminum checkered plate

See Detail A, this sheet

4-#6

#5 @ 12"

45° Ell

8" Plug valve

#5

#3 @ 12" Ties

Match line. For continuation see Sh. 91

See Detail A this sheet

#5 @ 12"

See Detail A Sheet 115

Drain 513GX Josam Trap 1943 ZZN

1½" Pipe handrail

3" Floor drain
Top El. 736.83

3" Floor drain.

3" Drain line

Ladder HT-2

End of drainage trough

4"x8" Conc. curb

Drain 513GX Josam, Top El. 736.83 (Typ.) Trap: Josam 1943 ZZN.

See Detail A Sheet 115

Concrete encasement 2'-0" wide.

Concrete encasement

4"x8" Conc. curb

1½" Aluminum handrail

3" Drain, Josam 513GX Josam trap 1943 ZZN

Sludge Transfer Pump No. 5

Col. HT-2

Column HT-2

Unit heater UH-7
Top El. 751.50

1½" Pipe handrail

8" Plug valve

Mixer

Unit heater UH-8
Top El. 751.50

6" Check valve

8" Drain line with 8" minimum conc. encasement

Mixer, for connection details see Sh. 116

8" Sludge inlet E El. 738.50

8" Sludge suction beneath floor with 8" min. concrete encasement

3" Overflow

6" Plug V.

8" C.I. Overflow

SUMP PUMP PIT

2" W.H.P. Sump pump discharge, boss and tap 8" Concrete encasement

Building E.S.

Stair No. HT-1 See Sec. 1 Sh. 99

Sludge Transfer Pump No. 4

Mount cover position indicators on column

3" Plug valve

Sanitary vent up 3" thru roof

Conc. support

12"x12" Concrete post reinforce with 4-#5 Extend to El. 736.00

Column HT-1

¾" Hose V.

See Detail A, Sheet 115

8" C.I. Sludge Inlet E El. 743.00

Floor El. 742.00
Pipe support rack See detail, Sh. 115

8" C.I. Sludge Inlet E El. 743.00

Note:
Piling not shown.

Sludge Transfer Pump No. 3

Slope 1" to gutter (Typ.)

2'-0" 40'-0" R

2' Dia. sump

3" Floor drain

3" Drain line

½" Expansion joint

Unit heater UH-5, Top El. 750.33

Column HT-1

Fire extinguisher

℄ Sludge Holding Tanks

Column HT-1

Unit Heater UH-6 Top El. 750.33

Pressure relief valve See detail, Sh. 116

N. 2177.50

℄ Sludge Holding Tank

Landing bracket for floating cover. Number and spacing to be same as trusses in floating cover. Furnished (See Bracket HT-1, Sh. 118).

12"x12" Concrete post reinforce with 4-#5. Extend to El. 736.00

Sludge Transfer Pump No. 1

6" Check V.

45° AWWA B-3 ell Provide smooth pocket in concrete to end of ell.

6" VCP Under drain See detail sheet 116

Ladder HT-1, see details Sh. 116

Drain 513 GX Josam Top El. 736.33 Trap 1943 ZZN.

Mixer for connection details see Sh. 116

Ladder HT-1, see details Sh. 116

Mixer, for connection details see Sh. 116

8" Sludge suction E El. 738.50

6" Plug valve

8" Conc. curb

2" Bell-up

2" Drain line

Sludge Transfer Pump No. 2

3" Floor drain Top El. 736.83

8" Mechanical joint wall casting

8" Plug valve

8" Drain line, Invert El. 739.00 @ face of building

½" Aluminum Checkered plate

1½" Hose faucet See Water Seal System No. 1, Sh. 120

3" Cast iron sleeve

3" Floor drain leader

Air handling Unit AHU-2 5000 cfm 355000 Btu/hr See details, Sh. 141

See Detail B, this sheet

See Detail B, this sheet

For wall details see section, Sh. 97

Existing El. 740.67

3/4" wall

2'-0"x3'-0" splash block.

72"x40" Fixed weather louver 18" Top El. 750.00

8" Plug valve

8" C.I. Sludge Inlet E El. 743.00

2" Expansion joint

Notes:
1. Regular wall reinforcing not shown. See Section 1, Sheet 97
2. East holding tank to be opposite hand of west holding tank.
3. Lifting eyes to be placed in slab or beams over sludge pumps, mixers and sludge disintegrators. See details Sh. 116.
4. For unit heater and air handling unit capacities see Sh. 139
5. Support heating units with conc. inserts in ceiling and ½" rods.
6. For building service water and gland seal water schematics see Sh. 124.
7. Floor drain traps, Josam 1943 ZZN.
8. For chk'd plate detail see Sh. 116.

FLOOR PLAN
Scale: 3/8"=1'-0"

DETAIL A
Scale: 1½"=1'-0"

½"x½" Thiokol Calking & Plastic Tape

½" Expansion Joint Material

1½"x½" Thiokol Calking & Plastic Tape

TYPICAL CALKING
Scale: 3"=1'-0"

½" Exp. Jt. Material

Plastic Tape

½"x½" Thiokol calking

DETAIL B
Scale: 1½"=1'-0"

½"x½" Thiokol Calking & Plastic Tape

2"

½"x½" Thiokol Calking & Plastic Tape

TYPICAL FLOOR EXPANSION JOINT DETAIL
Scale 1"=1'-0"

Wall or footing

½"x½" Thiokol caulking & plastic tape.

Floor

½" Expansion joint material

NO.	DATE	DESCRIPTION	BY	CHK
1	22-65	Revised water services	ACP	LWW

REVISIONS

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE HOLDING TANKS
FLOOR PLAN

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED ACP 13 CHECKED LWW
DETAILED LWD APPROVED
DATE

SHEET 90 OF 190

11A232

Match line. For continuation see Sh. 91

8" Sludge discharge ℄ El. 743.00 18" long radius 90° bend; ℄ El. 744.50 base bends

Col. HT-1

12" Conc. supports @ 8' centers

2" Drain lines

See Detail A this sheet

#5 @ 12"

Drain 513 GX Josam Trap 1943 ZZN

1½" Pipe handrail

3" Floor drain Top El. 736.83

See Detail A Sheet 115

5'-8"

5'-6"

Ladder HT-2

2'-6"

Concrete encasement

4" x 8" Conc. curb

1½" Aluminum handrail

3" Drain, Josam 513 GX Josam trap 1943 ZZ N

3" Drain line

16'-6"

Liner

Sludge Transfer Pump No. 5

Col. HT-2

Unit heater UH-8 Top El. 751.50

6" Check valve

8" Drain line with 8" minimum conc. encasement

6" Plug V.

8" Overflow

8" Sludge suction beneath floor with 8" min. concrete encasement

Building ℄

Stair No. HT-1 See Sheet 1 Sh. 99

Mount cover position indicators on column

Sludge Transfer Pump No. 4

3" Plug valve

Conc. support

12"x12" Concrete post reinforce with 4-#5. Extend to El. 736.00

See Detail A, Sheet 115

Column HT-1

¾" Hose V.

8" C.I. Sludge Inlet ℄ El. 743.00

8" Plug V.

Floor El. 742.00

Pipe support rack See detail, Sh. 115

Note: Piling not shown.

90° Base ℄ 11

2' Dia. sump

Sludge Transfer Pump No. 3

Slope 1" to gutter (Typ.)

3" Floor drain PRV-4 1000 cfm @ .3" SP

3" Drain line

1½" Expansion joint

2'-0" 40'-0" R

Unit heater UH-5, top El. 750.33

℄ Fire extinguisher

℄ Holding Tanks

Column HT-1

℄ Sludge Holding Tank

Landing bracket for floating cover. Number and spacing to be same as trusses in floating cover furnished (See Bracket HT-1, Sh. 118)

12"x12" Concrete post reinforce with 4-#5. Extend to El. 736.00

Sludge Transfer Pump No. 2

6" Check V.

Ladder HT-1, see details, Sheet 116

Drain 513 GX Josam Top El. 736.83

Mixer, for connection details see Sh. 116

8" Sludge suction ℄ El. 738.50

Sludge Transfer Pump No. 1

6" Plug valve

8" Plug V.

2" Bell-up 2" Drain line

3" Floor drain Top El. 736.33

8" Mechanical joint wall casting

8" Plug valve

8" Drain line. Invert ℄ El. 739.00 @ face of building.

See Detail B, this Sh.

For wall details see section 1, Sh. 97

Drain ℄ El. 741.67

Wall ℄

Bib flg & ¾" hose V.

¼" Aluminum checkered plate 6'-9"

1½" Hose faucet See Water Seal System No. 1 Sh. 101

¾" Hose valve

3" Cook drain leaders

Air handling Unit AHU-2 3000 cfm 85000 BTU/hr See details Sh. 141

See Detail B, this Sh.

2'-0" x 2'-0" Splash block

12" x 40" Fixed weather louver: L/E top El. 752.00

Unit Heater UH-6 Top El. 750.33

FLOOR PLAN

Scale: 3/8" = 1'-0"

½" Exp. Jt.

8" Sludge suction ℄ El. 738.50

¼" Aluminum checkered plate

See Detail A this sheet

#5 @ 12"

8" Plug valve

Match line. For continuation see Sh. 91

#5

#3 @ 12" Ties

45° Ell

See Detail A Sheet 115

Drain 513 GX Josam, Top El. 736.83 (Typ.) trap: Josam 1943 ZZ N

Concrete encasement 2'-0" wide.

3" Floor drain

3" Drain line

Ladder HT-2

End of drainage trough

4" x 8" Conc. curb

Unit heater UH-7 Top El. 751.50

1½" Pipe handrail

8" Plug valve

Mixer, for connection details see Sh. 116

8" Sludge inlet ℄ El. 738.50

8" Ck V.

8" C.I. Overflow

BUMP PUMP PIT

2" W.M.P. Sump pump discharge, boss and tap 8" conc. sperflow @ ℄ Elev. 751.00

8" Sludge suction with 8" minimum concrete encasement

2" Sanitary vent up. 3" thru roof

2" Drain line

¾" Hose V.

3" Plug valve

℄ Drain in drainage trough

Column HT-1

8" C.I. Sludge Inlet ℄ El. 743.00

8" Plug valve

5" Expansion joint

Notes:

1. Regular wall reinforcing not shown. See Section 1, Sheet 97
2. East holding tank to be opposite hand of west holding tank.
3. Lifting eyes to be placed in slab or beams over sludge pumps, mixers and sludge disintegrators. See details Sh. 116.
4. For unit heater and air handling unit capacities see Sh. 139
5. Support heating units with conc. inserts in ceiling and ½" rods.
6. For building service water and ℄ land seal water schematics see Sh. 124.
7. Floor drain traps, Josam 1943 ZZ N.
8. For chk'd plate detail see Sh. 116.

DETAIL A

Scale: 1½" = 1'-0"

½" x ½" Thiokol Calking & Plastic Tape

½" Expansion Joint Material

½" x ½" Thiokol Calking & Plastic Tape

TYPICAL CALKING

Scale: 3" = 1'-0"

½" Exp. Jt. Material

Plastic Tape

½" x ½" Thiokol calking

DETAIL B

Scale: ½" = 1'-0"

½" x ½" Thiokol Calking & Plastic Tape

½" x ½" Thiokol Calking & Plastic Tape

Pressure relief valve See detail, Sh. 116

40'-0" R

45°

45° AWWA B-3 ell Provide smooth pocket in concrete to end of ell.

4'-0"

2'-6"

6'-8"

6" V.C.P. Under drain See detail sheet 116

N. 2177.50

E. 1995.00

N

Wall or footing

½", ½" Thiokol caulking & plastic tape.

Floor.

½" Expansion joint material

TYPICAL FLOOR EXPANSION JOINT DETAIL

Scale 1" = 1'-0"

NO.	DATE	DESCRIPTION	BY	CHK
1	2-2-65	Revised water services	ACP	LWW

REVISIONS

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

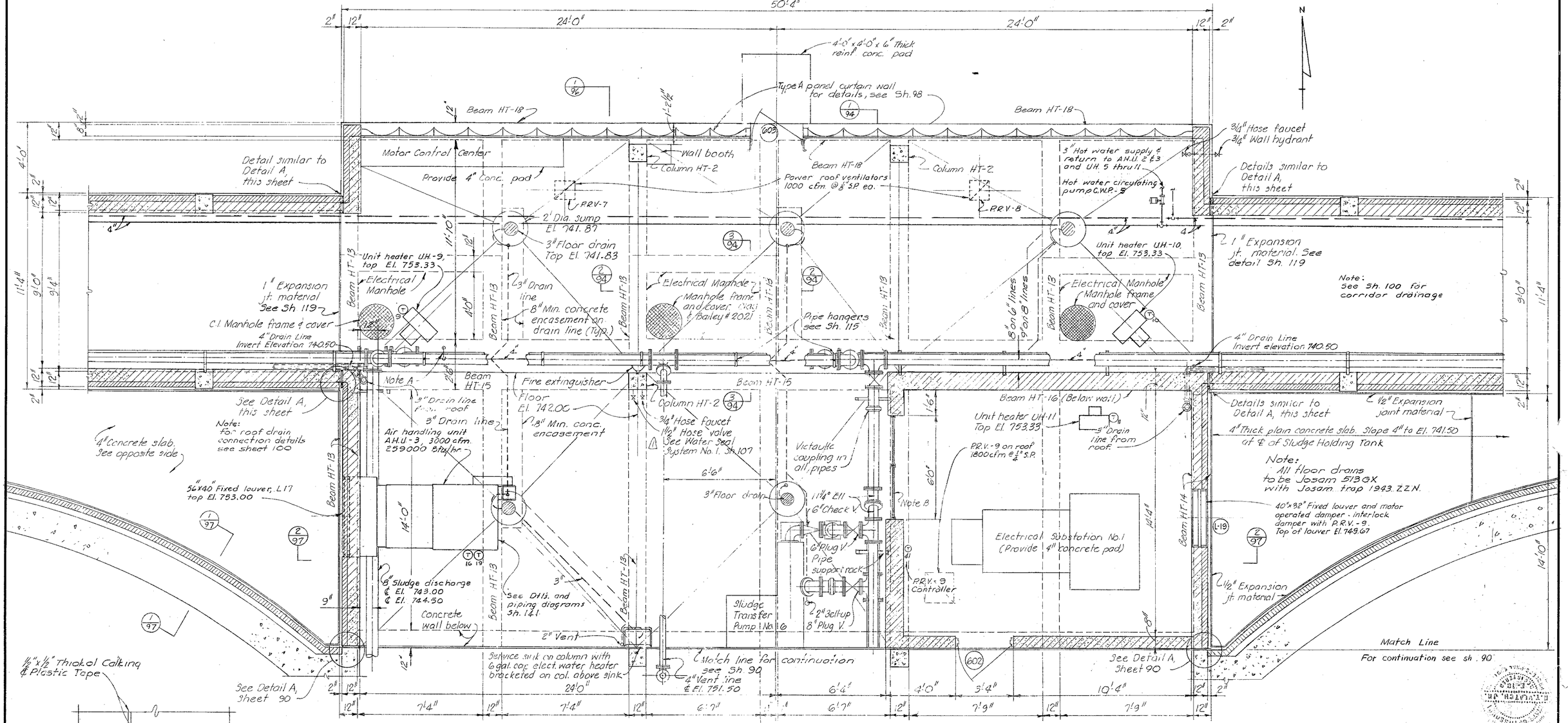
SLUDGE HOLDING TANKS
FLOOR PLAN

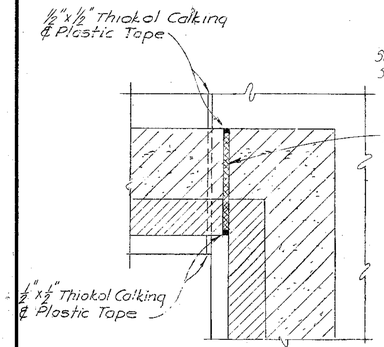
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED ACP CHECKED LEW
DETAILED ACP LWD APPROVED
DATE 2-2-64

SHEET 90 OF 190





DETAIL A
Scale: 1 1/2" = 1'0"

Note B: Wall access panel
The wall access panel shall be constructed from 1 1/2" Cemesto panels using H & B Enterprise Corp. extruded aluminum accessories as follows: Sill (BC1 and MB2); Jamb (FIC9 and MB2); Head (BC1 and MB2); Center Vertical Member (MB2). Anchorage details shall be similar to those shown for Control Room wall panels - See Sh. 50. Masonry opening for access panel to be 0'-0" x 8'-8". Solid blocks to be provided at jambs. For lintel over opening, see schedule Sh. 78.

Note A:
Provide 1 1/2" vent line from Scum Line to 2" bell-ups in floor. See Section 1, Sheet 96.

OPERATING FLOOR PLAN
Scale: 3/8" = 1'0"

Notes:
1. Support unit heaters and air handling unit with conc. inserts in ceiling and 1/2" rods
2. For capacities of heating units see Sh. 139
3. See Sheet 124 for building service water and gland seal water schematic (Sh. 107)
4. See Heating Piping Diagram Sh. 141
5. At least 7 days shall elapse between pouring of abutting slabs.
6. All floor drains to be Josam 513 GX with Josam trap 1943 ZZN

NO.	DATE	DESCRIPTION	BY	CHK
1	2-2-65	Revised water services	ACP	LWW

REVISIONS

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

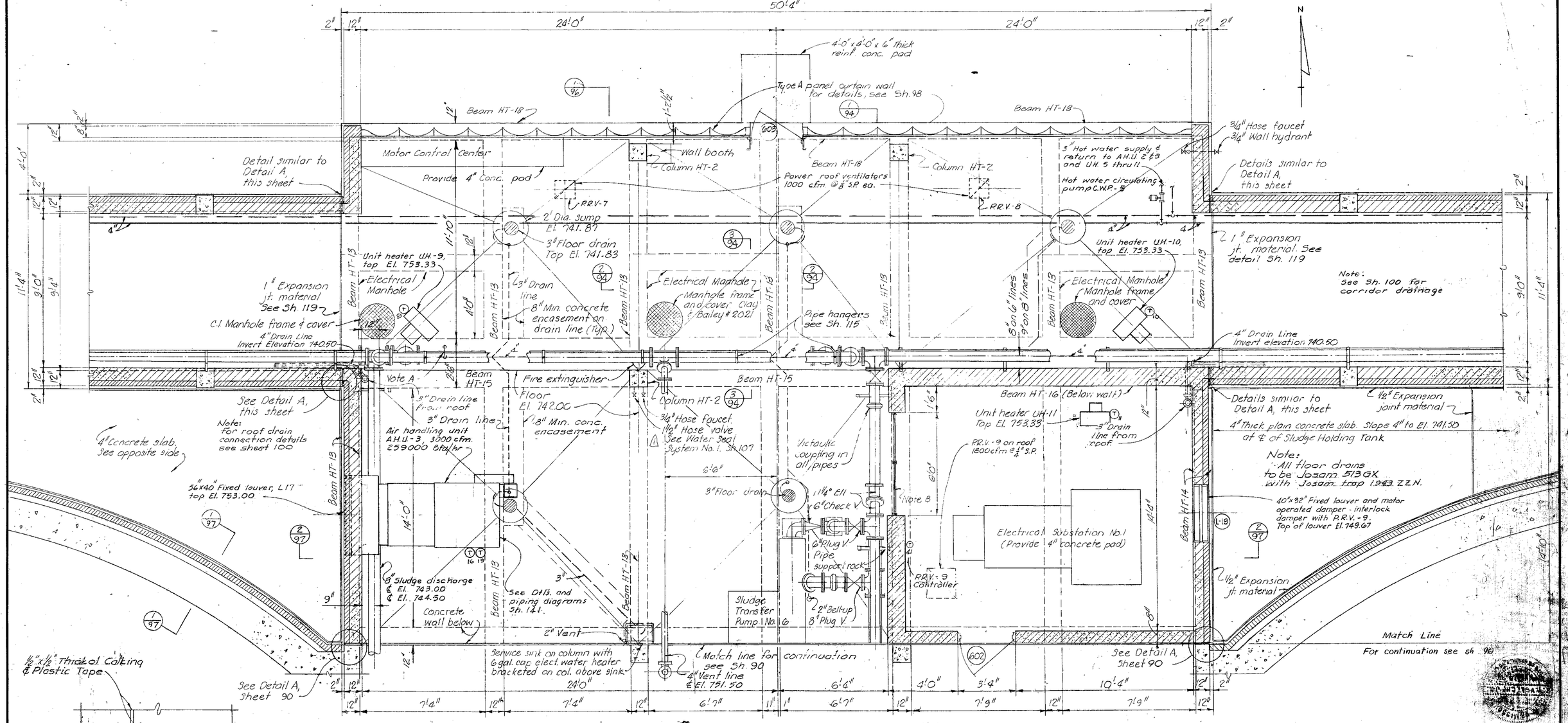
SLUDGE HOLDING TANKS FLOOR PLAN

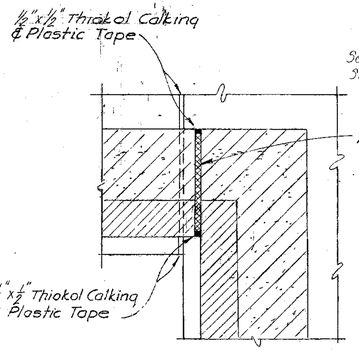
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED ACP CHECKED LEW
DETAILED ACP LWD APPROVED
DATE 2-4-1965

SHEET 91 OF 190





DETAIL A
Scale: 1½" = 1'0"

Note A: Provide 1½" vent line from Scum Line to 2" bell-ups in floor. See Section 1, Sheet 96.

Note B: Wall access panel
The wall access panel shall be constructed from 1⅛" Cemesto panels using H & B Enterprise Corp. extruded aluminum accessories as follows: Sill (BC1 and MB2); Jamb (FIC9 and MB2); Head (BC1 and MB2); Center Vertical Member (MB2). Anchorage details shall be similar to those shown for Control Room wall panels - See Sh. 50. Masonry opening for access panel to be 6'-0" x 3'-8". Solid blocks to be provided at jambs. For lintel over opening, see schedule Sh. 76.

OPERATING FLOOR PLAN
Scale: 3/16" = 1'0"

Notes:
1. Support unit heaters and air handling unit with conc. inserts in ceiling and ⅜" rods.
2. For capacities of heating units see Sh. 139
3. See Sheet 124 for building service water and gland seal water schematic (Sh. 107)
4. ~~See Heating Piping Diagram Sh. 141~~
5. At least 7 days shall elapse between pouring of abutting slabs.
6. All floor drains to be Josam 513 GX with Josam trap 1943 ZZN

NO.	DATE	DESCRIPTION	BY	CHK
2265		Revised water services	ACP	WW

REVISIONS

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE HOLDING TANKS
FLOOR PLAN

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED ACP CHECKED LEW
DETAILED ACP LWD APPROVED
DATE

SHEET 91 OF 190

PROJECT 3209 1062.32

PENTHOUSE SECTIONAL PLAN

Scale: 3/8"=1'0"

SECTIONAL PLAN EL 753.00

Scale: 3/8"=1'0"

ROOF PLAN

Scale: 3/8"=1'0"

DETAIL A

Scale: 1½"=1'0"

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE HOLDING TANKS
ROOF AND SECTIONAL PLANS

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED ACP DETAILED ACP CHECKED APPROVED DATE

SHEET 92 OF 490

PROJECT 1062.32

N

50'-0"

4½" | 12" | 7'-0½" | 12" | 7'-1" | 12" | 6'-5" | 12" | 1" | 6'-4" | 12" | 7'-8" | 12" | 7'-7½" | 12" | 4½"

℄ Building

1/36 — 1/34

Edge of 4 Conc. slab

Beam HT-17 — Beam HT-17 — Beam HT-17

Column HT-2 (below)

3'-6½"

PRV-7

3'-0"

Type B Skylight See Detail, Sh 116 Center between beams.

Column HT-2 (below)

3'-0"

3'-10"

PRV-8

Beam HT-9

Beam HT-8

Beam HT-8

Beam HT-8

Beam HT-9

Beam HT-8

Beam HT-9

Provide ½" caulking space between folded plate roof overhang & masonry wall

Column C-1

CORRIDOR

For section thru corridor at Bldg wall see Detail A, Sheet 101

Folded plate roof with Type B roofing

2"x6" Nailer

½" Exp. Jt. material

Column C-1

5'-0"

Beam HT-10 — Beam HT-10 — Beam HT-10

12"

12"

3" Roof drain Josam 4553 (Typical)

Column HT-2 (below)

Masonry wall below

3" Roof Drain

5'-0"

6'-0"

Provide ½" caulking space between folded plate roof overhang & masonry wall

3'-6"

1'-1"

9'-0"

18'-2"

3'-6"

1'-1"

9'-0"

18'-2"

Folded plate roof, for notes see west side of Bldg This sheet

CORRIDOR

Beam HT-9

Beam HT-8

Beam HT-8

Beam HT-8

Beam HT-9

Beam HT-8

Beam HT-9

14'-0"

Type B Skylight (typical)

Masonry Wall below

P.R.V.-9

Beam HT-11

Masonry wall below

2/37

6/37

End beam HT-12 @ east face of exp Jt.

3" Vent thru roof

℄ Building

Bracket HT-2

Bracket HT-2

Bracket HT-2

12"

Match Line for continuation see Sheet 92

Detail similar to detail A this sheet

See Detail A this sheet

12"

El. 152.00

Beam HT-12 below

Column HT-1 (below)

Beam HT-12 (below)

Column HT-1 (below)

Beam HT-12 below

1/36 — 1/34

½" Expansion Jt.

½" Expans joint

4½" | 12" | 7'-0½" | 12" | 7'-1" | 12" | 6'-5" | 12" | 1" | 6'-4" | 12" | 7'-8" | 12" | 7'-7½" | 12" | 4½"

50'-0"

½"x½" Thiokol Caulking & Plastic Tape

½" Exp. Jt. Mat'l.

DETAIL A

Scale: 1½"=1'-0"

ROOF PLAN

Scale: 3/8"=1'-0"

NO	DATE	DESCRIPTION	BY	CHK
		REVISIONS		
Δ	11-1-66	Conform to construction records	RLM	ACP

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

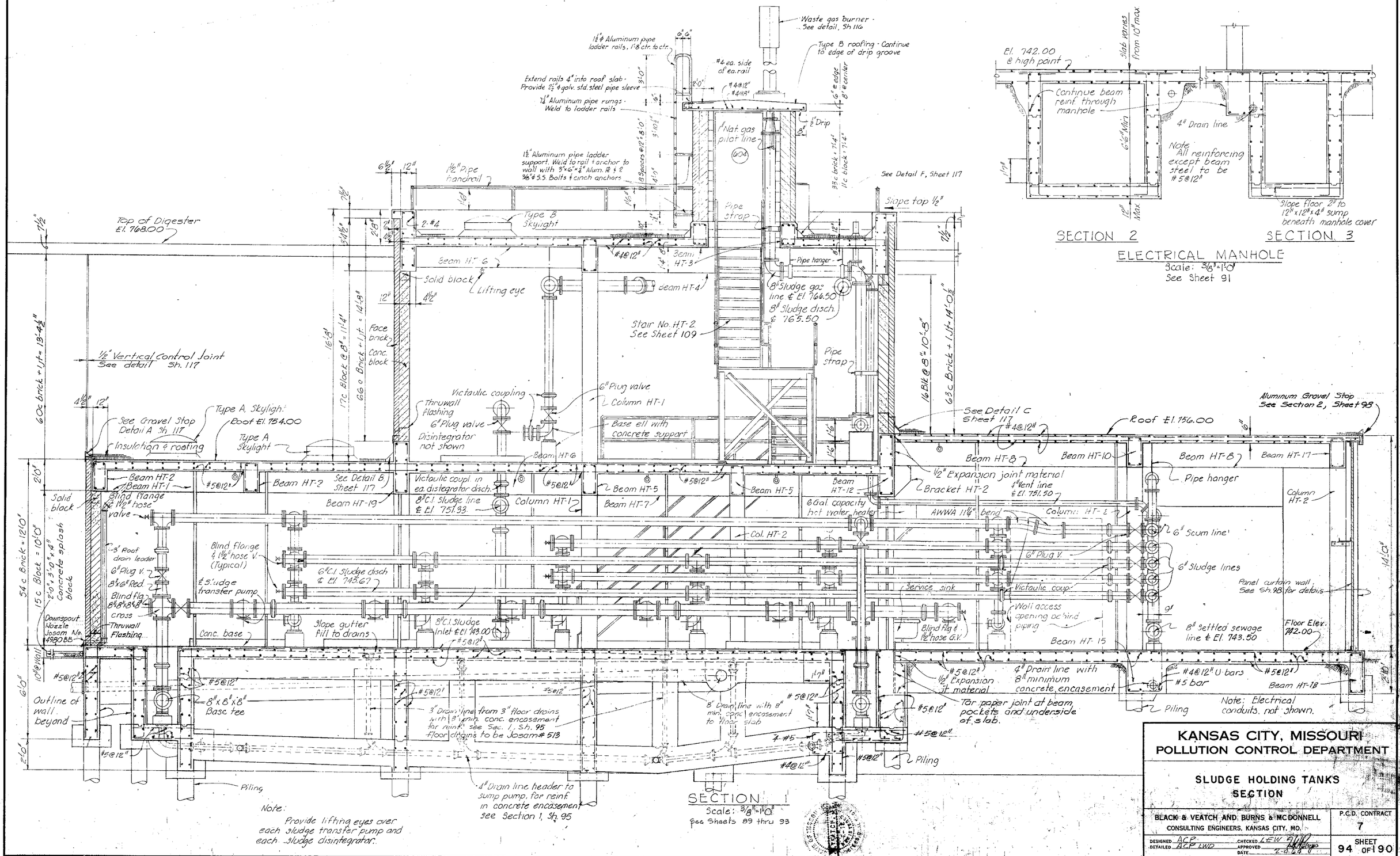
SLUDGE HOLDING TANKS
ROOF PLAN

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED ACP DETAILED ACP TWD CHECKED LEW APPROVED DATE 2-6-68

SHEET 93 of 190



KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE HOLDING TANKS SECTION

BLACK & VEATCH AND BURNS & MCDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED ACP CHECKED LEW
DETAILED ACP LWD APPROVED
DATE 2-0-69

SHEET 94 OF 190

PROJECT 32-83 1062.32

Waste gas burner See detail, Sh. 116
#4@8" #4@12"
Type B roofing
6"@ Edges 8" @ Center
1/2" Drip (Typical)
6"x8" Reducer
Solid block
Provide 1/4" aluminum weir 12" with 1/2" alum rod handle.
Stack bond concrete block
1" Natural gas pilot line
See Sludge Box Cover Detail, Sh. 99
For Metal Spout See detail, Sheet 116
Thru-wall Flashing
2-#4 Cont. in Curb
See Detail E, Sh. 117
Beam HT-3
#4@12"
#5@12"
#4@12" Hoops
Top of weir
Light weight concrete walkway. (See roof plan)
Pipe strap
Fill conc.
Beam HT-4
C.I. Sleeves
Pipe hanger
3" Bevel
8" Sludge line & El. 765.50
6" Sludge gas line. ℄ El. 766.67
8" Sludge discharge to digester for and sludge box ℄ El. 765.50
8" Sludge Inlet
8" Sludge line through wall
Note: Stair No. HT-2 not shown. See details, sheet 99
Flame cell
Gas pressure gage
6" Plug valve
6" Pres. relief
1/2" Conn.
3/4" Vent thru wall Flame trap
Pipe strap
Condensate & Sediment trap with drip trap
Pipe support
Conc. Support
Beam HT-7
#4@12"
#4@8"
Drip Trap
Victaulic coupling
Note: Stair No. HT-1 not shown. See details, sheet 99
6" Plug valve
8" Plug valve
Victaulic coupling
6" Check valve
For piping support racks see sheet 115
6" Discharge ℄ El. 745.67
8" Suction header ℄ El. 744.50
Floor El. 742.00 (@ high points)
Sludge pumps not shown
#5@12"
Slope conc. fill to drains
10" Max. Slope to drains.
8" Min. concrete encasement
3'-6"
1'-2"
8" Plug valve
8" Sludge discharge ℄ El. 738.50
See Detail A, Sheet 115
1/2" Exp. joint material
Calk
3" Drain line
4-#5
4" Drain line header to sump pump
3" Drain line
8" Min. conc. encasement
El. 734.00
Piling
Note: Pipe handrails and mixers not shown, see Plan, Sh. 90

SECTION 1
Scale: 3/8"=1'0"
See Sheets 89, 90 & 92

See detail E, Sh. 117
Type A Skylight
Roof El. 754.00
Built-up roofing and insulation
Face brick
See detail E, Sheet 117
1/2" Exp. Jt. Mat'l
#4@12"
Beam HT-1
Beam HT-2
Beam HT-3
1" Bevel
Beam HT-10 (Beyond)
8"x6"x8" Tee
For reinf. see Sec. 1, Sh. 97
Pipe hanger
8"x8"x6" Tee
8" Plug valve
8" C.I. Sludge Line ℄ El. 751.33
℄ Structure
For continuation see west wall
For reinf. see Sec. 1, Sh. 97
8" C.I. Sludge inlet
6" Plug valve
6" Base ell
45° ell
8"x8"x6" Cross
1/4" Alum. checkered plate. See detail, sheet 116
6" Check v.
Base for sludge pump
8" Plug valve
8" Drain line
8" Suction header ℄ El. 738.50
8"x8"x8" Base tee
12" Wide conc. support
Calk
Victaulic coupling
#5@12"
12" Max. Slope to 10" ø drain
Piling
12" Expansion joint material
Notes: Mixers not shown

SECTION 2
Scale: 3/8"=1'0"
See Sheets 89, 90 & 92

℄ Sump Pump
8" Discharge
2" Gate Valve
2" Check Valve
1/2" Conn. for 1/8" drain at side
El. 742.00
#5@12"
8 Inch Drain Line
SUMP PUMP PIT
Note: Sump pump and piping not shown.
4" Drain line, Inv. El. 739.50

SECTION 3
Scale: 3/8"=1'-0"
See Sheets 89 & 90

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE HOLDING TANKS
SECTIONS

BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

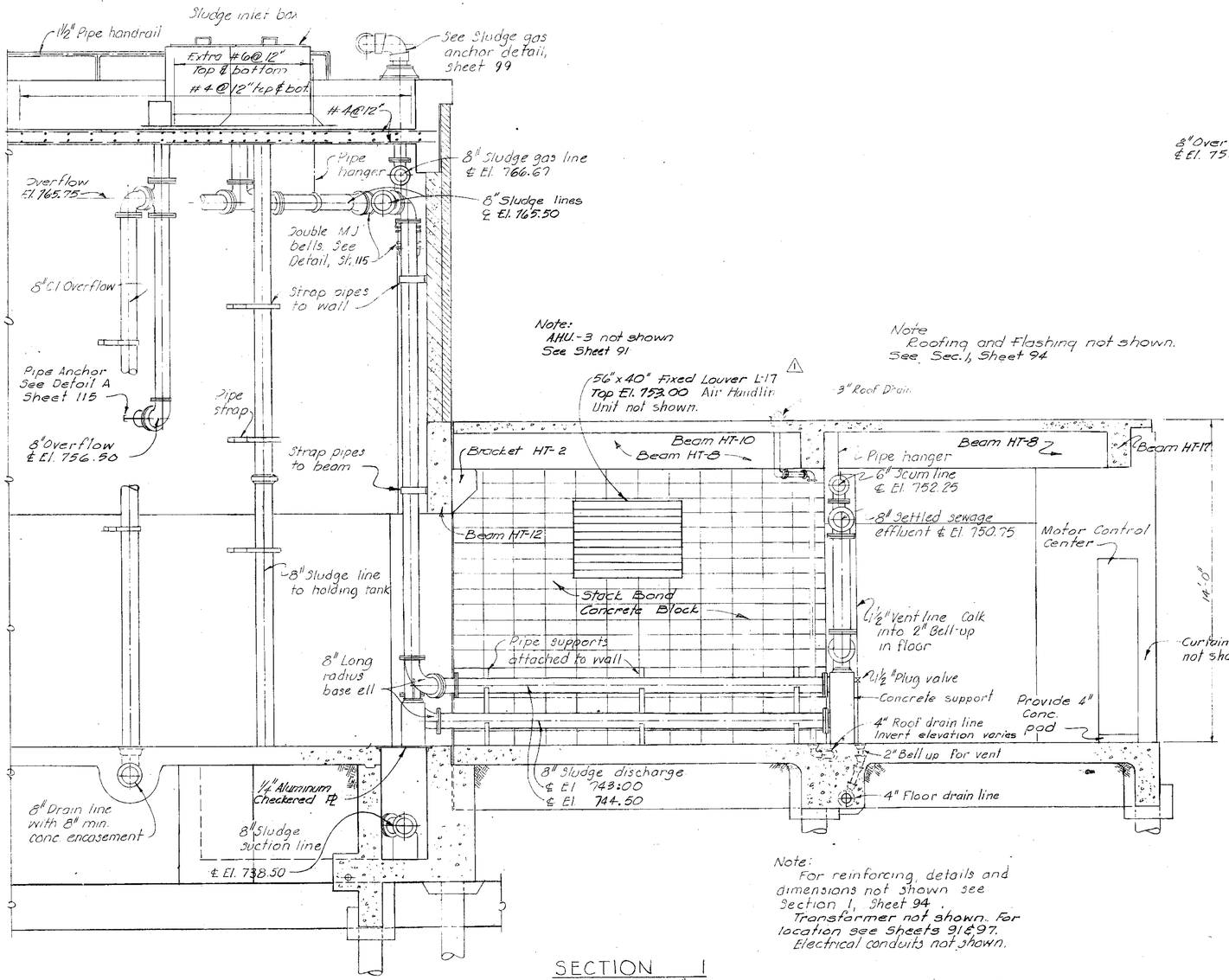
P.C.D. CONTRACT 7

DESIGNED ACP DETAILED ACP LWD CHECKED LEW APPROVED DATE 2-4-64

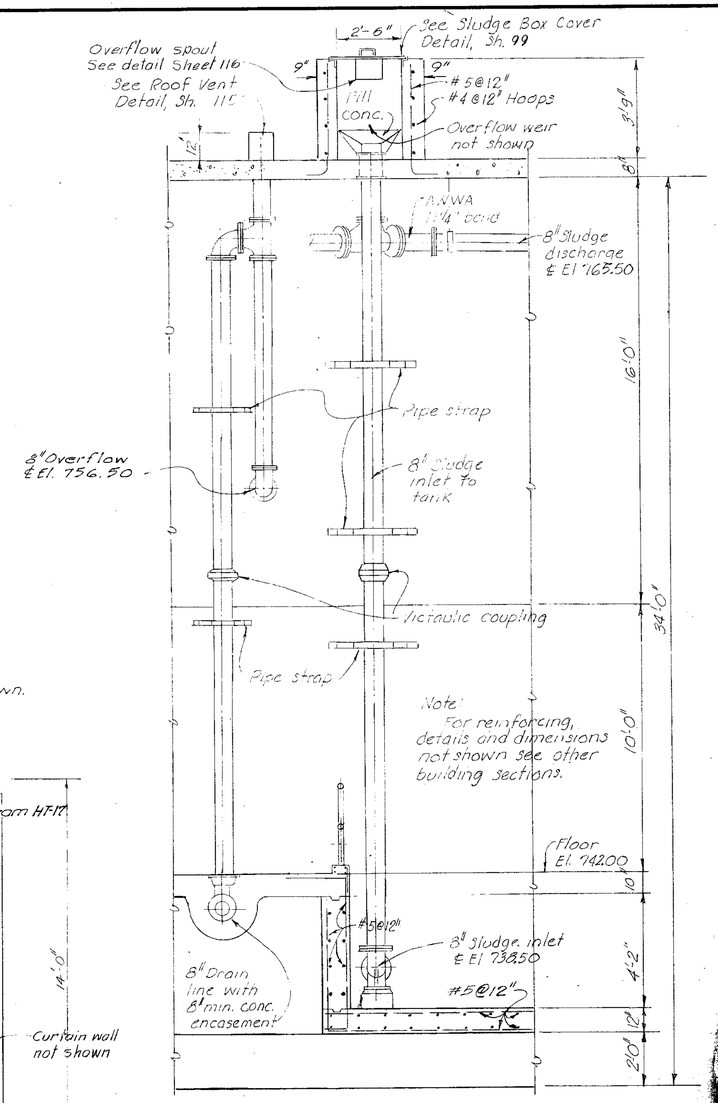
SHEET 95 OF 190

PROJECT 3202

11162.32



SECTION 1
Scale: 3/8"=1'0"
See Sheets 89 Thru 92



SECTION 2
Scale: 3/8"=1'0"
See Sheets 90 & 92

NO.	DATE	REVISION	BY	CK'D
1	5-2064	Rev. Louver L-14 to L-17	W.J.D.	A.C.P.

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE HOLDING TANKS
SECTIONS

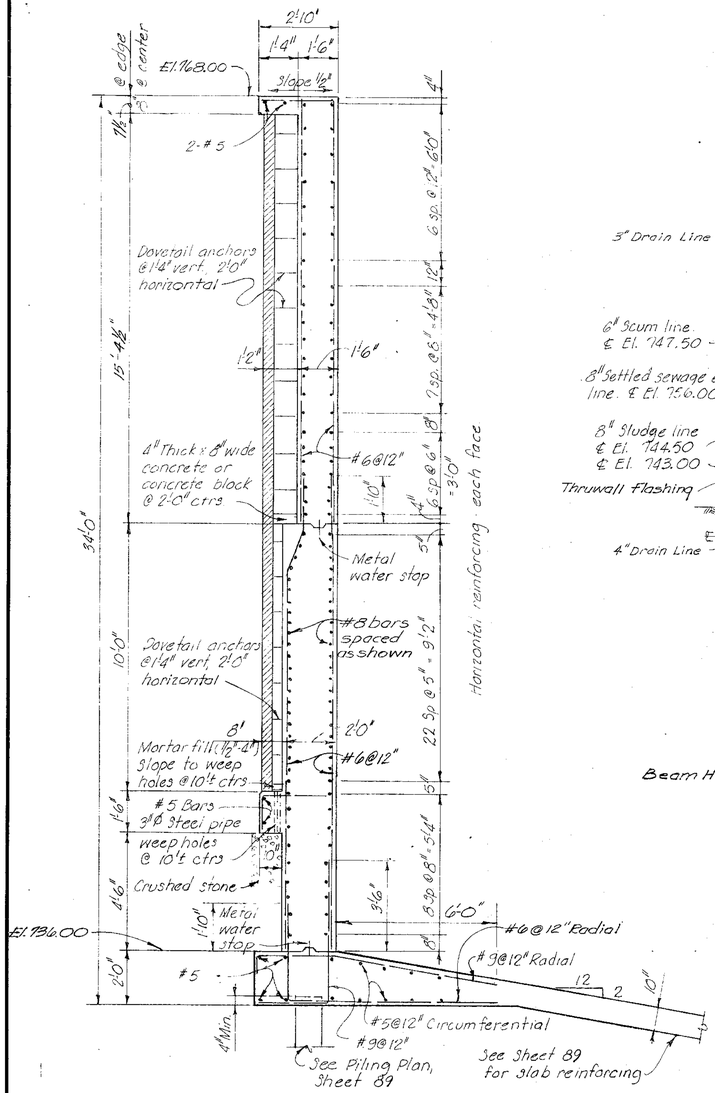
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

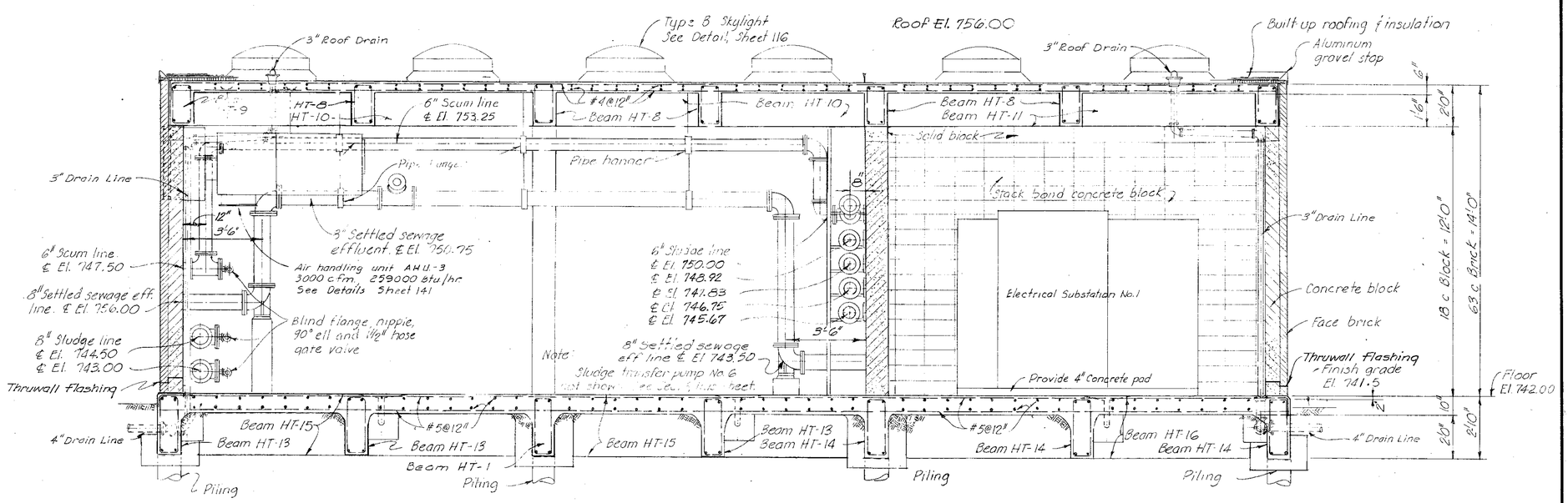
DESIGNED ACP DETAILED ACP, LWD CHECKED LEW APPROVED DATE 2-4-64

SHEET 96 OF 190

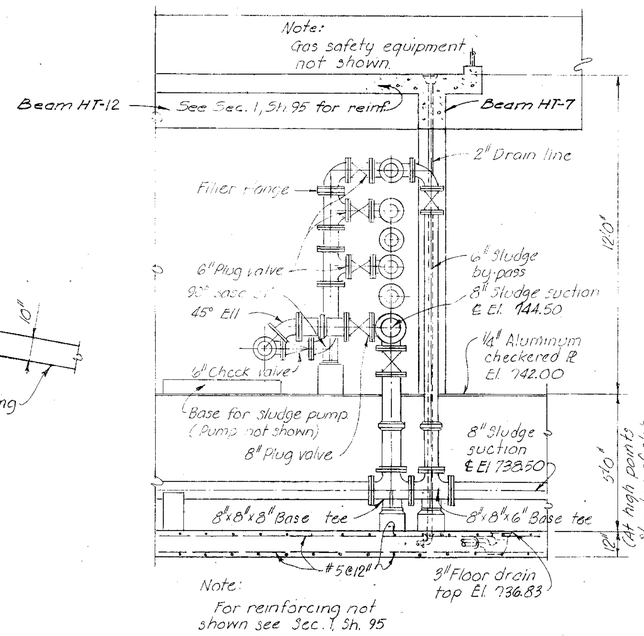
1062.32



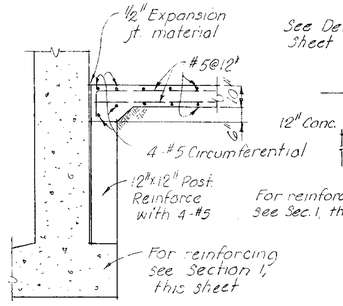
SECTION 1
Scale: 3/8" = 1'-0"
See Sheets 89 Thru 93



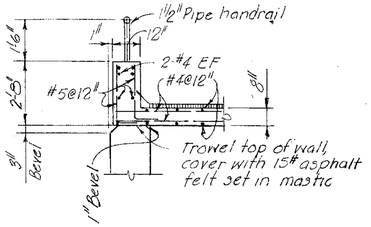
SECTION 2
Scale: 3/8" = 1'-0"
See Sheets 91 & 93



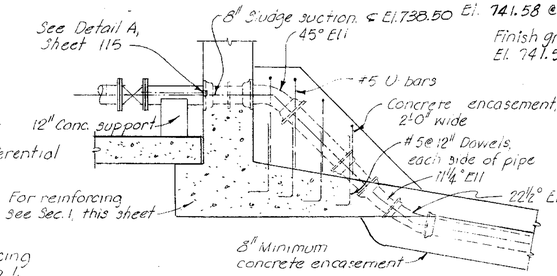
SECTION 3
Scale: 3/8" = 1'-0"
See Sheet 90



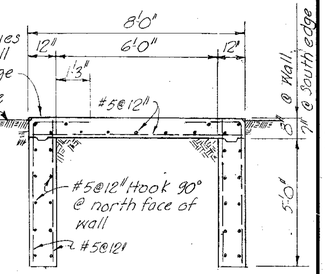
SECTION 4
Scale: 3/8" = 1'-0"
See Sheet 90



SECTION 7
Scale: 3/8" = 1'-0"
See Sheet 92



SECTION 5
Scale: 3/8" = 1'-0"
See Sheet 90



SECTION 6
Scale: 3/8" = 1'-0"
See Sheet 90.

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE HOLDING TANKS SECTIONS

BLACK & VEATCH AND BURNS & McDONNELL, CONSULTING ENGINEERS, KANSAS CITY, MO.

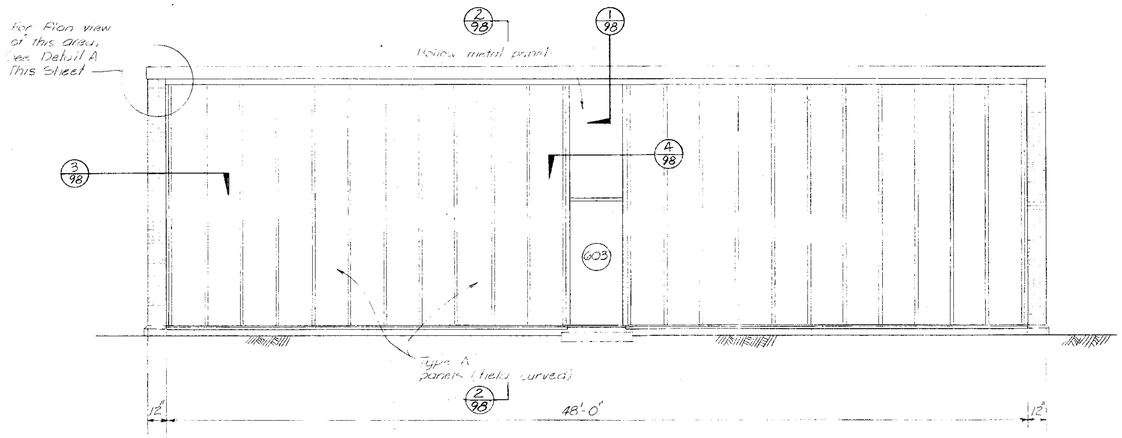
P.C.D. CONTRACT 7

DESIGNED ACP DETAILED ACP LWD CHECKED LEW APPROVED DATE 2-4-64

SHEET 97 OF 190

PROJECT 3292

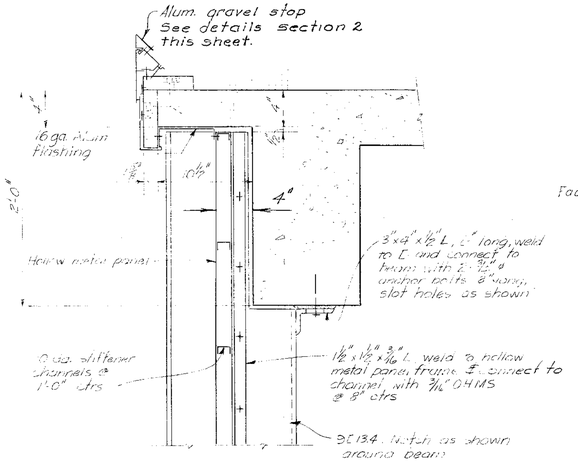
10162-32



NORTH ELEVATION

HOLDING TANK CONTROL BUILDING CURTAIN WALL

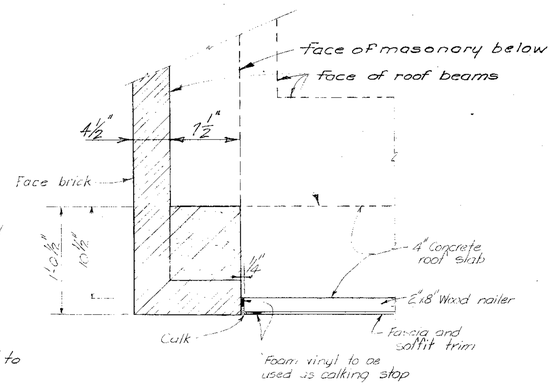
Scale: 1/4" = 1'-0"



SECTION 1

Scale: 1 1/2" = 1'-0"

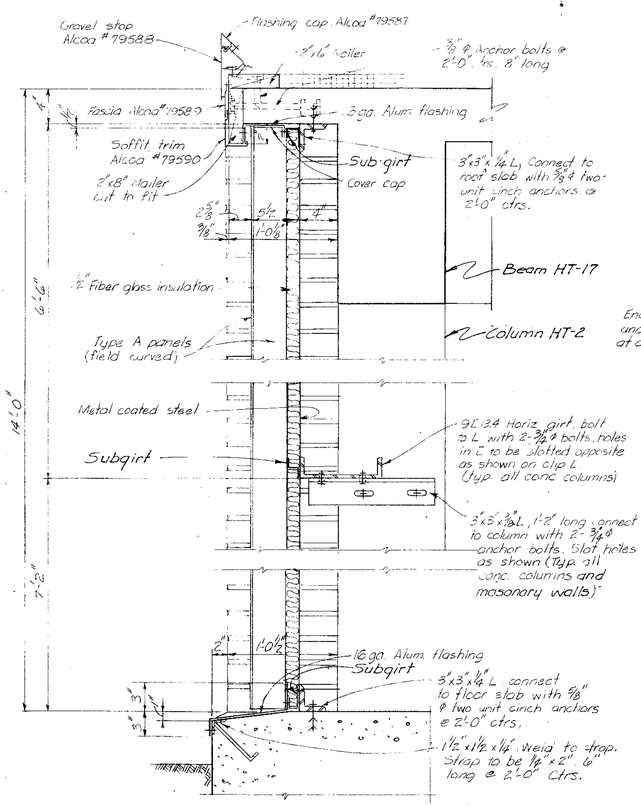
See This Sh.



DETAIL A

Scale: 1 1/2" = 1'-0"

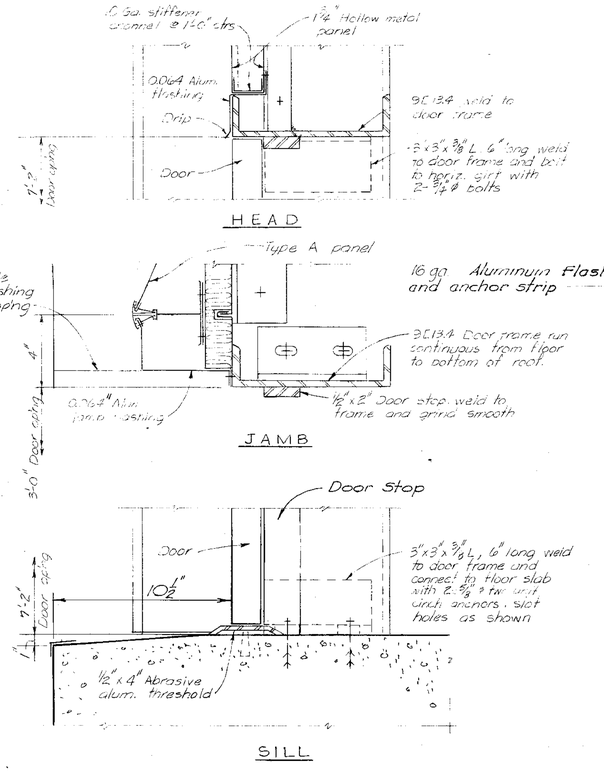
See This Sh.



SECTION 2

Scale: 1 1/2" = 1'-0"

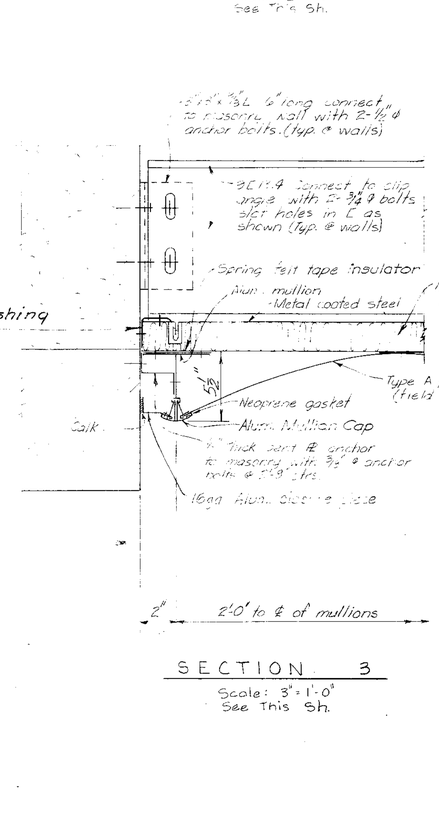
See This Sh.



DOOR DETAILS 603

Scale: 3" = 1'-0"

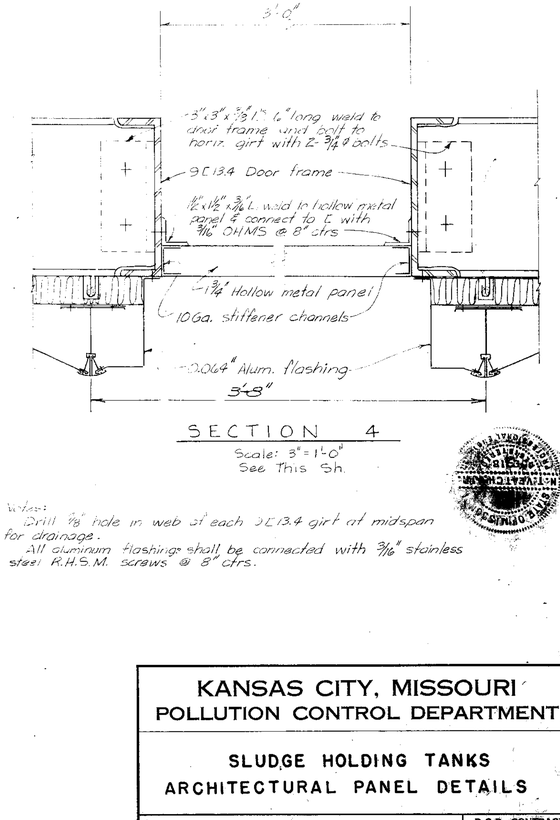
See This Sh.



SECTION 3

Scale: 3" = 1'-0"

See This Sh.



SECTION 4

Scale: 3" = 1'-0"

See This Sh.

Notes:
Drill 1/8" hole in web of each 9E13.4 girt at midspan for drainage.
All aluminum flashings shall be connected with 3/16" stainless steel R.H.S.M. screws @ 8" ctrs.

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE HOLDING TANKS
ARCHITECTURAL PANEL DETAILS

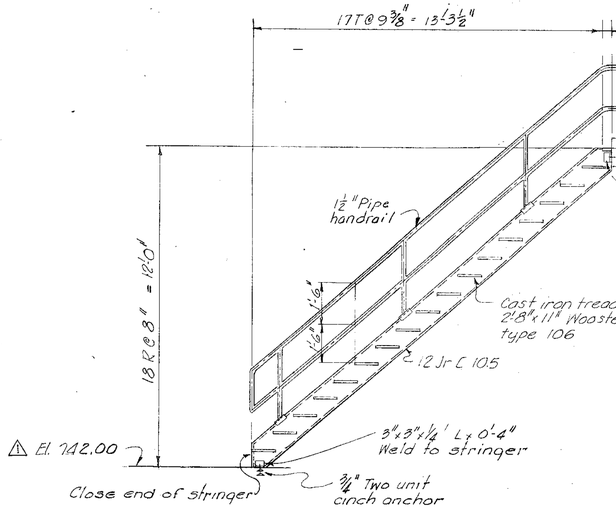
BLACK & VEATCH AND BURNS & MCDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED DRG CHECKED LEW
DETAILED DRG IWD APPROVED
DATE 2-4-60

SHEET 98 OF 190

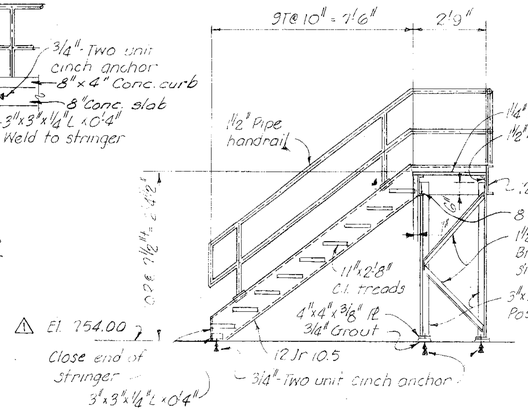
PROJECT 10432



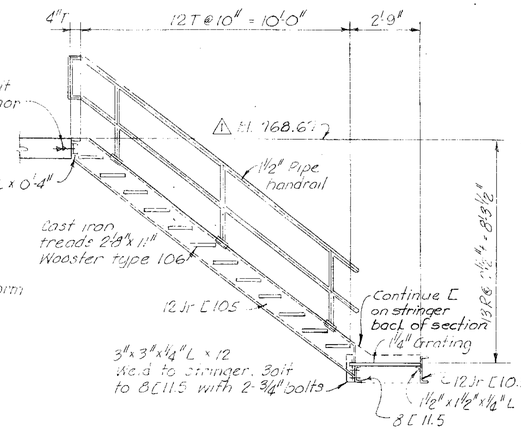
SECTION 1 - STAIR NO. HT-1

Scale: 3/8" = 1'-0"

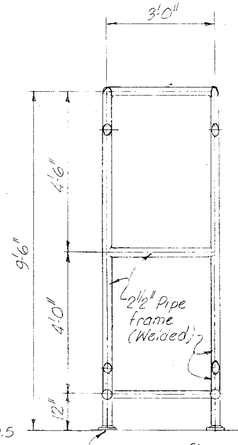
See Sheets 90, 92



SECTION 2



SECTION 3

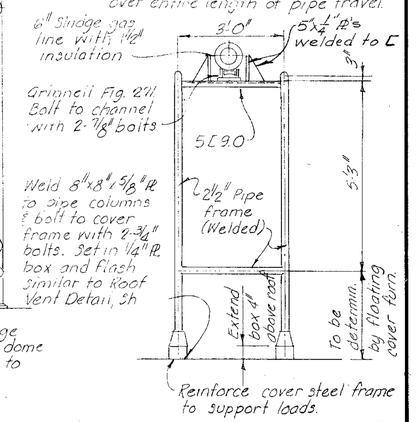


SECTION 6

Scale: 1/2" = 1'-0"

See this sheet

Note: -
Entire pipe support frame to be hot dip galvanized after fabrication.
Provide pipe covering protective saddle, 4'-0" long, Grinnell Fig 185, over entire length of pipe travel.



SECTION 7

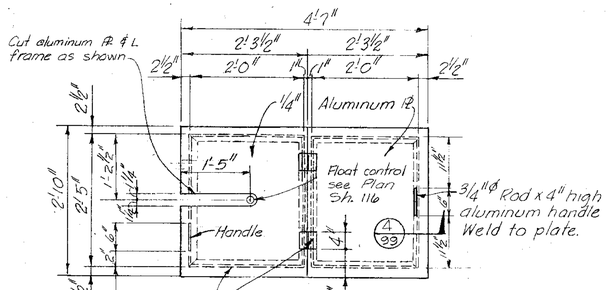
Scale: 1/2" = 1'-0"

See this sheet

STAIR NO. HT-2

Scale: 3/8" = 1'-0"

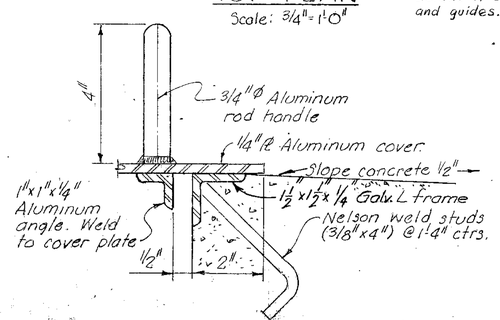
See Sheet 92



TOP PLAN

Scale: 3/4" = 1'-0"

Note: See sheet 116 for details of control float and guides.

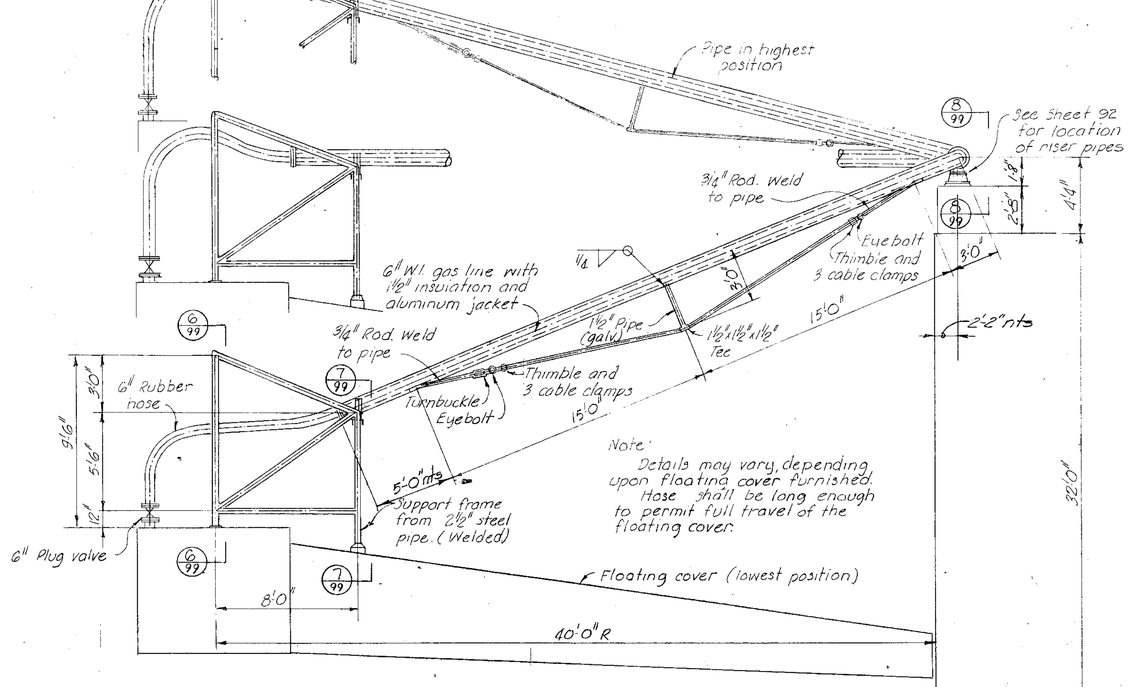


SECTION 4

Scale: 6" = 1'-0"

SLUDGE BOX COVER DETAIL

See Sheet 92

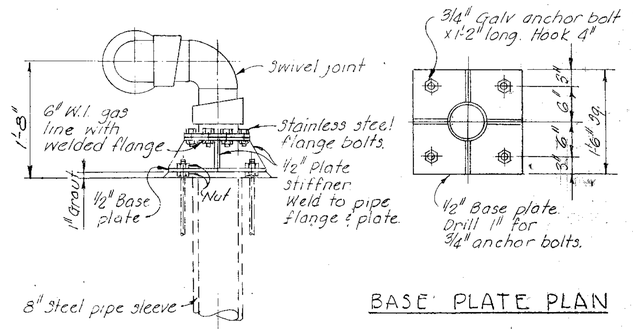


SECTION 5

GAS CONNECTION AT FLOATING COVERS

Scale: 1/4" = 1'-0"

See Sheet 92



BASE PLATE PLAN

SECTION 8

SLUDGE GAS PIPING ANCHOR DETAIL

Scale: 1" = 1'-0"

See this Sheet

NO.	DATE	REVISION	BY	CK'D
1	5-20-64	Rev. Elev. Sec. 1, 2 & 3	W.I.D.	A.C.B.

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE HOLDING TANKS
STAIR AND STEEL DETAILS

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED ACB DETAILED ACB LWD CHECKED LEW APPROVED DATE 2-8-65

SHEET 99 OF 190

PROJECT 3-2-00 1062.32

Note:
For piping and details of fin tube convectors (F.T.C.) see Sh. 141 & 144

Note:
Sludge and Scum Discharge and Settling Sewage Lines are not shown.

Top of all piles this plan El. 738.00

3/4" Wall Hydrant

3" Floor Drain Top El 741.83

2' Dia. Sump El. 741.87

1" Exp. Joint

3/4" Wall Hydrant & El. 742.67

3/4" Wall Hydrant

1/2" Exp. Jt.

N 2230 ℄ Sludge Thickener

F.T.C.-1 F.T.C.-2 F.T.C.-3 F.T.C.-4 F.T.C.-5 F.T.C.-6 F.T.C.-7 F.T.C.-8 F.T.C.-9 F.T.C.-10 F.T.C.-11 F.T.C.-12 F.T.C.-13 F.T.C.-14 F.T.C.-15 F.T.C.-16 F.T.C.-17

15'-10" 16'-0" 16'-0" 15'-10" 50'-4" 15'-10" 16'-0" 16'-0" 16'-0" 16'-0" 16'-0" 16'-0" 16'-0" 16'-0" 16'-0" 15'-10"

3" Drain Line

3/4" Hose faucet

2" Bellup

3/4" Hose Faucet ℄ El. 745.00

3/4" Hose Faucet

4"

C.O. Trap

4'-0"

Inv. El. 738.60

7'-10"

4" drain

Sludge Processing Bldg.

1'-6"

3/4" Wall Hydrant

3/4" Wall hydrant

12" 7'-10" 16'-0" Typical piling spacing unless otherwise noted.

4" Drain Line with 8" min. concrete encasement

7'-10"

7'-10" 16'-0" Typical spacing

Begin Drain Lines in Elevation. 740.60

Construction joint

4" Drain line with 8" min. conc enc.

Gutter Drains Josam 0503X with Josam traps 1943 ZZN.

4'-0" Construction joint

8"x8"x4" Wye Plug end

Inv. E. 738.20

3'-4"

8"

For Continuation See sheet 5

For Holding Tank Structure Piling See Sheet 89

3" Floor Drains are Josam 1036X

DRAIN AND PILING PLAN

Scale: 3/32" = 1'-0"

Note:
Drain lines for roof drains not shown. Construction joint locations are for base slab and grade beams only. Const. joint locations in the folded plate roof slab shall be determined by the Contractor but shall located at the mid-point beween the ridge and the valley.
At least 7 days shall elapse between abutting pours of roof and base slabs.

N

64'-0" 50'-0" 176'-0"

See detail A, Sh. 101 for connection of corridor to holding tank bldg.

Sloped Concrete

4"

1'-4"

Sludge Processing Bldg

N 2230 ℄ Sludge Thickener

Roof Drains Josam 4550

See detail A, Sh. 101 for connection of corridor roof to thickener Pump Station

Corridor Roof Drains Josam 443 (Inside Calk)

Inv. El. 740.50

Inv. El. 739.50

4" Drain Line

6" CIP to M.H. #10

4" 4"

6" CIP Inv. El. 736.75 at wye (See Sheet 5 for Continuation)

Corridor Roof Drains Josam 443 (Inside Calk)

Note: See Detail B, Sheet 101 for connection of Corridor to Sludge Processing Bldg

6" CIP Inv. El. 736.67 @ 45° bend (See Sheet 5)

Folded plate conc. roof

ROOF PLAN

Scale: 3/32" = 1'-0"

3'-6" 1'-1" 9'-0" 1'-1" 3'-6"

See Sheet 101 for reinforcing

Type B Roofing

1/2" Fascia ℞ see details Sh. 25

Corridor Roof Drains Josam 4823-B

Note: Electrical conduits not shown

Hot Water Heating lines

6" Sludge Lines ℄ El. 750.00

℄ El. 748.92

℄ El. 747.83

℄ El. 746.75

℄ El. 745.67

Hot Water Heating Lines

3/8"ϕ S.S. Bolt & 2 unit cinch anchors @ 1'-9" ctrs.

Con. col. arm

Shim with cont. neoprene gasket & calk both sides

3" x 1 1/2" x 1/4" Alum. ∠ Cont.

1"-1 1/2"-1/8" Alum. L. fasten to 3" L with 3/16" S.S.M.S. @ 10" ctrs.

3" Roof Drain Leader

Potable 2" Service Line

1 1/2" Gland Seal Water

Corridor Gutter Drains Josam 0503X

8"

6" Scum Line ℄ El. 741.50

8" Settled Sewage ℄ El. 740.00

9"

8" Sludge Discharge ℄ El. 744.50

8" Sludge Disch. ℄ El. 742.00

El. 741.92

El. 742.00

5'-2 5/8" 31 Crs brick

Notes
Pipe support rock details are shown on sheet 101 & 115
Section 2 is similar to Section 1 except as shown.
See Sheet 101 for other corridor details.
Electrical conduits not shown.

FTC-16

2" Service Water Line

8" Settled Sewage Eff. ℄ El. 743.50

3/4" Potable water

El. 742.00

1" Natural gas line

4" Drain line invert elevation varies

Drain line Inv El. varies from 740.60 to 738.60

Stirrups #4@12"

#5@12"

4"Wye Branch C.I. Soil Pipe

6"x4" C.I. Reducer

4-#5

4" drain

See Sec. 1, Sh. 178

4" Drain Line with 6" min. concrete encasement

Pile Cap

2'-6" 4'-0"

2 # 9 bars top & bot.

6" CIP Inv. El. 736.67

See Sec. 1, Sheet 179

For Pile Caps See detail Sh. 89

Piling

SECTION 1

Scale: 3/8" = 1'-0" See This Sheet

SECTION 2

Scale: 3/8" = 1'-0" See This Sheet

SECTION 3

Scale: 1 1/2" = 1'-0"

Alum. sill, Alcoa type AA 5468Z

Anchor clip, Alcoa SA-100

Face brick

1/4" Fixed Pol. ℞ glass

Solid conc. block, cut

4 1/8"

5'-2 5/8" to El. 742.00

12"

SECTION 4

Scale: 1 1/2" = 1'-0"

1/2"

1 1/2"-1"-1/8" Alum. L. Miter into L @ top

1/8"ϕ S.S. toggle bolts @ 1'-4" ctrs.

1/2"ϕ S.S. bolts & 2 unit cinch anchors @ 1'-4" ctrs.

1/4" Fixed Pol. ℞ glass

Calk

1/4" Neoprene gasket

1 1/2"-1"-1/8" Alum. L

DETAIL A

Scale: 3"-1'-0"

1/2" Expansion Joint See Detail A, Sheet 91

Conc. block

Calk

See Detail A this sh.

Calk

Alum. sill, extend into masonry 2"

Face brick

Provide space for 1/2" expansion of sill.

SECTION 5

Scale: 1 1/2" = 1'-0"

DETAILS OF PIPE CORRIDOR WINDOWS

NO.	DATE	DESCRIPTION	BY
1	2-2-65	Revised water services	ACP

REVISIONS

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

CORRIDOR
PLANS & SECTIONS

BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

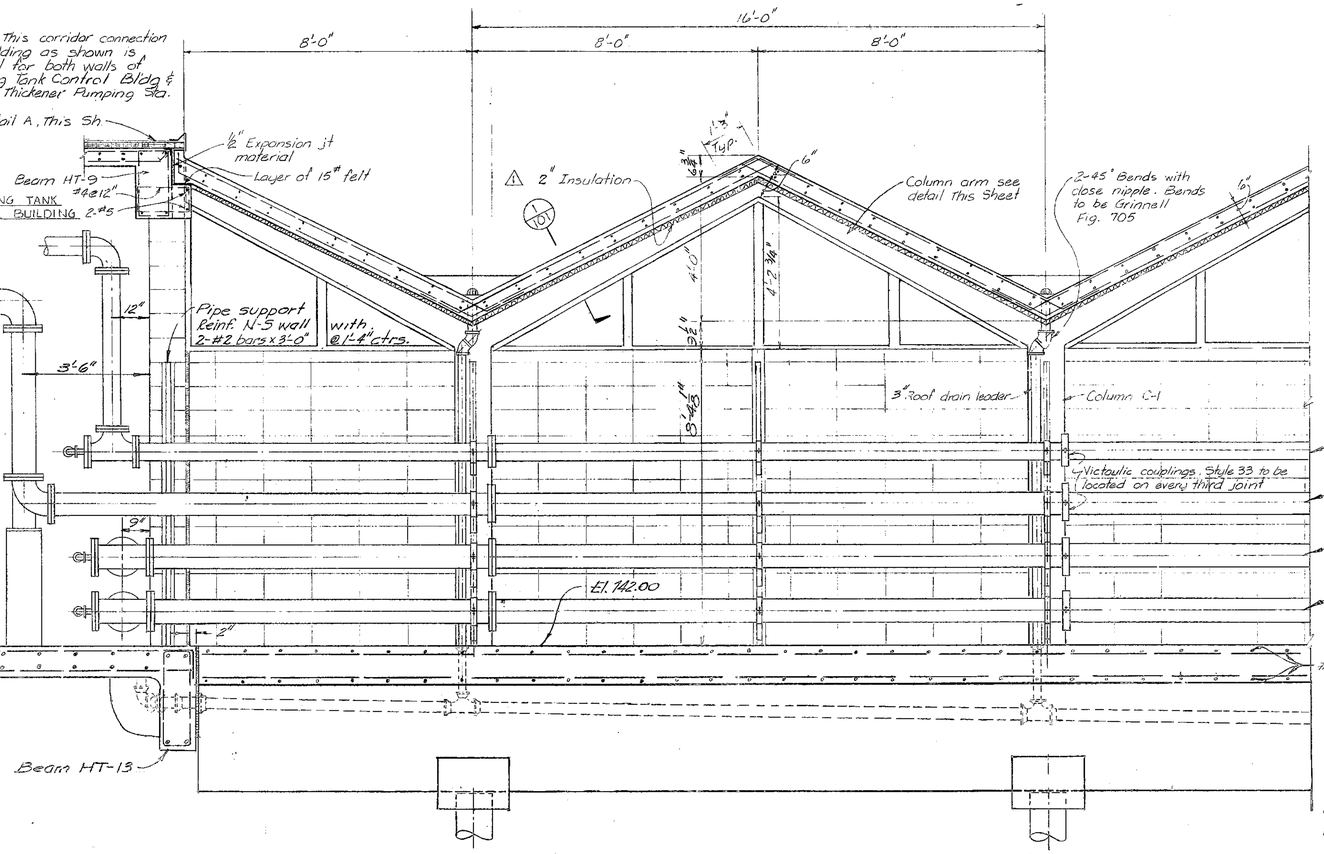
P.C.D. CONTRACT 7

DESIGNED ACP LWD CHECKED LEW
DETAILED LWD APPROVED
DATE 2-2-65

SHEET 100 OF 190

PROJECT 3292

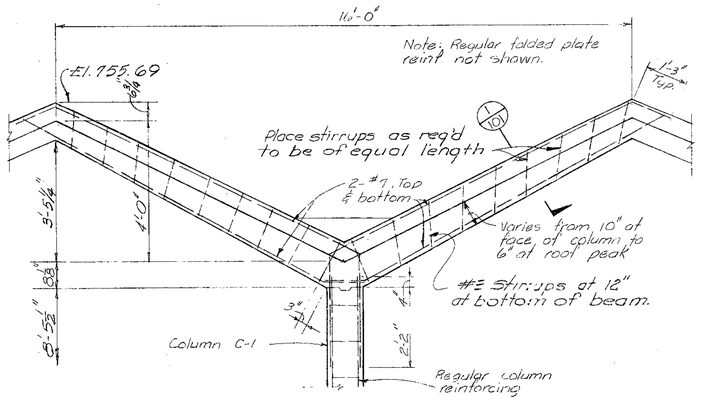
11062.32



TYPICAL SECTION OF CORRIDOR LOOKING SOUTH

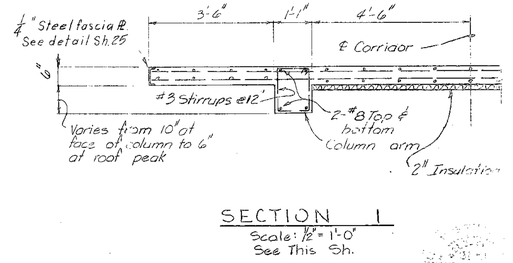
Scale: ½" = 1'-0"

Notes:
All reinforcing in folded plate roof to be #4 @ 12"
Floor drains & drain lines not shown.
Columns, column arms and folded plate roof may be precast - see Concrete Specifications



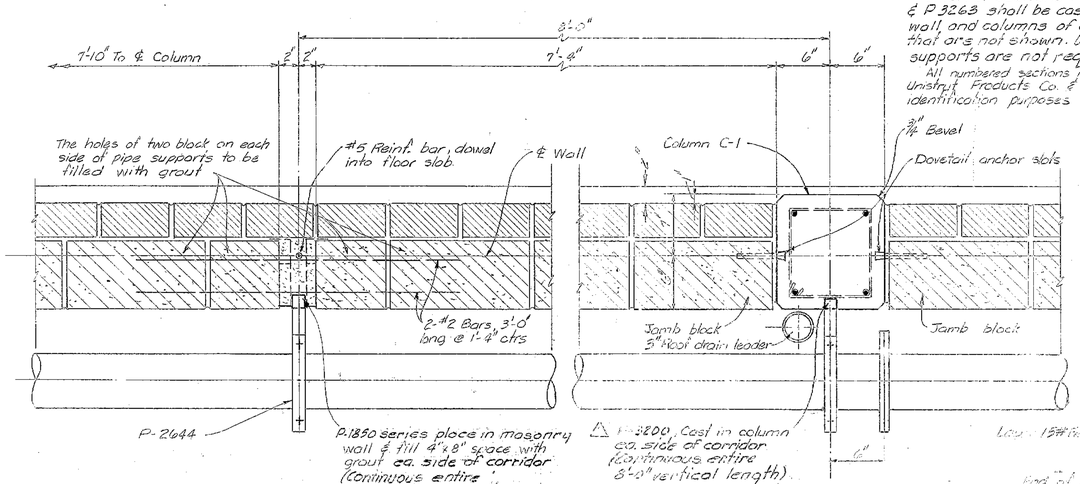
COLUMN ARM DETAIL

Scale: ½" = 1'-0"
See This Sh.



SECTION 1

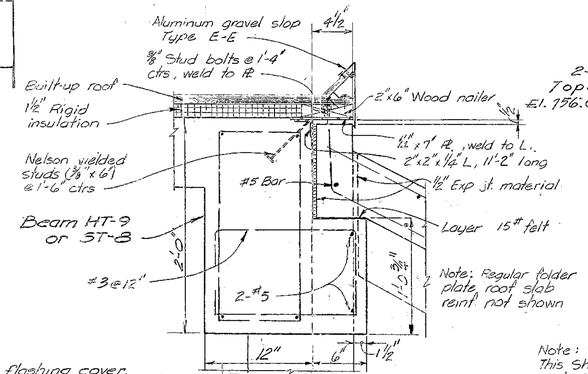
Scale: ½" = 1'-0"
See This Sh.



TYPICAL SECTIONAL PLAN OF CORRIDOR WALLS

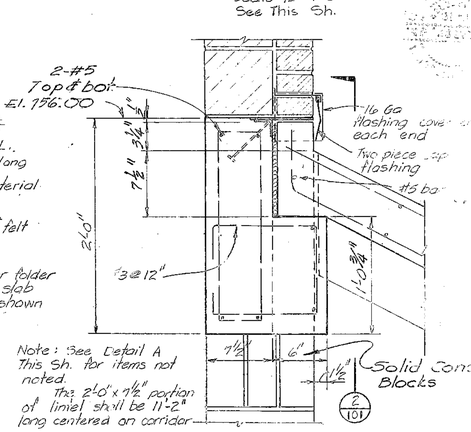
Scale: 1½" = 1'-0"

Notes:
Unistrut sections P-1850 series & P-3263 shall be cast in opposite wall and columns of corridor that are not shown. Unistrut pipe supports are not req'd.
All numbered sections refer to Unistrut Products Co. & are for identification purposes only.



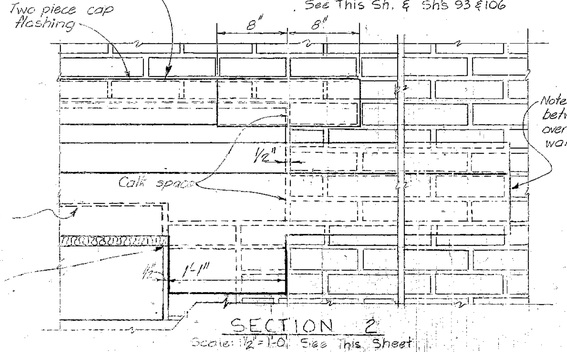
DETAIL A

Scale: 1½" = 1'-0"
See This Sh. & Shts 93 & 106



DETAIL B

Scale: 1½" = 1'-0" See Sheets 100



SECTION 2

Scale: 1½" = 1'-0" See this Sheet

3	5-20-6	Use roof insulation & Uni-strut anchor	W.J.	D.A.C.P.
NO.	DATE	REVISION	BY	CK'D.

KANSAS CITY, MISSOURI
FOLLUTION CONTROL DEPARTMENT

CORRIDOR

SECTIONS AND DETAILS

BLACK & VEATCH AND BURNS & MCDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED DRG CHECKED LEW
DETAILED DRG/WJ APPROVED
DATE 5-20-6

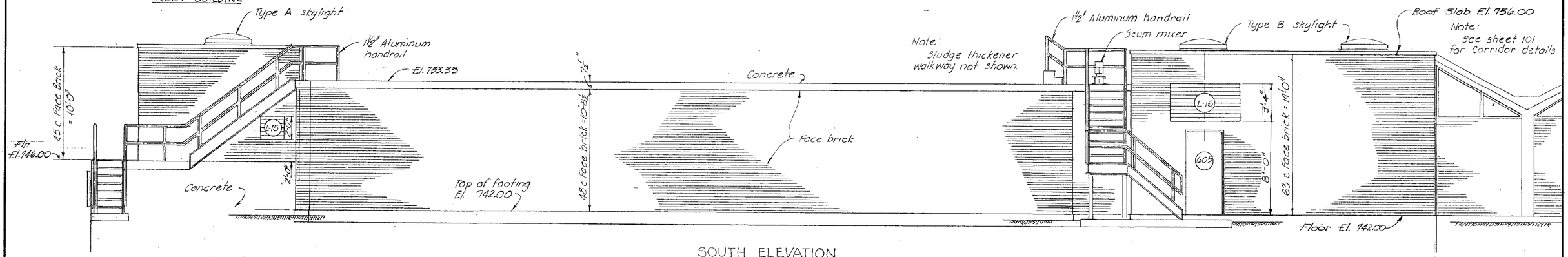
SHEET 101 OF 194

1062.32

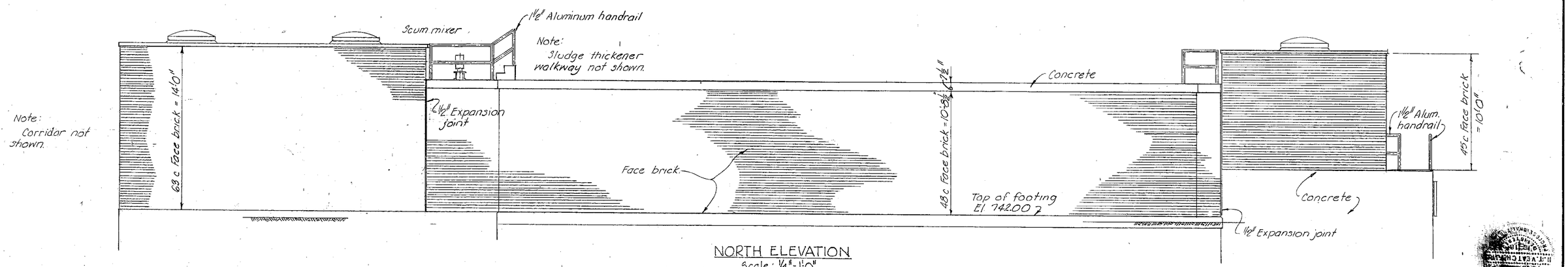
SLUDGE THICKENER INLET BUILDING

SLUDGE THICKENER BASIN

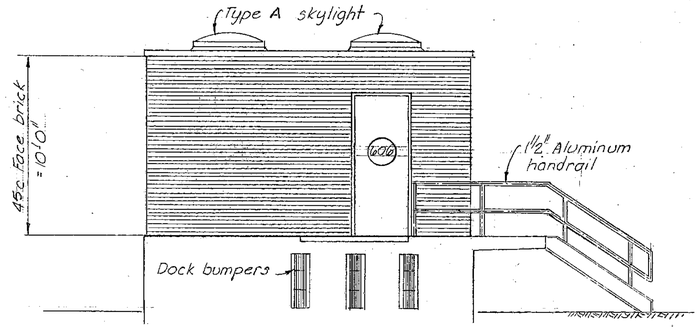
SLUDGE THICKENER PUMPING STATION



SOUTH ELEVATION
Scale: 1/4" = 1'-0"



NORTH ELEVATION
Scale: 1/4" = 1'-0"

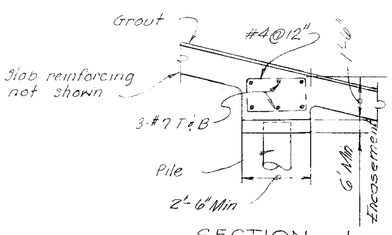


WEST ELEVATION
Scale: 1/4" = 1'-0"

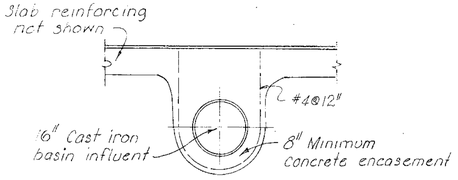
KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE THICKENER ELEVATIONS

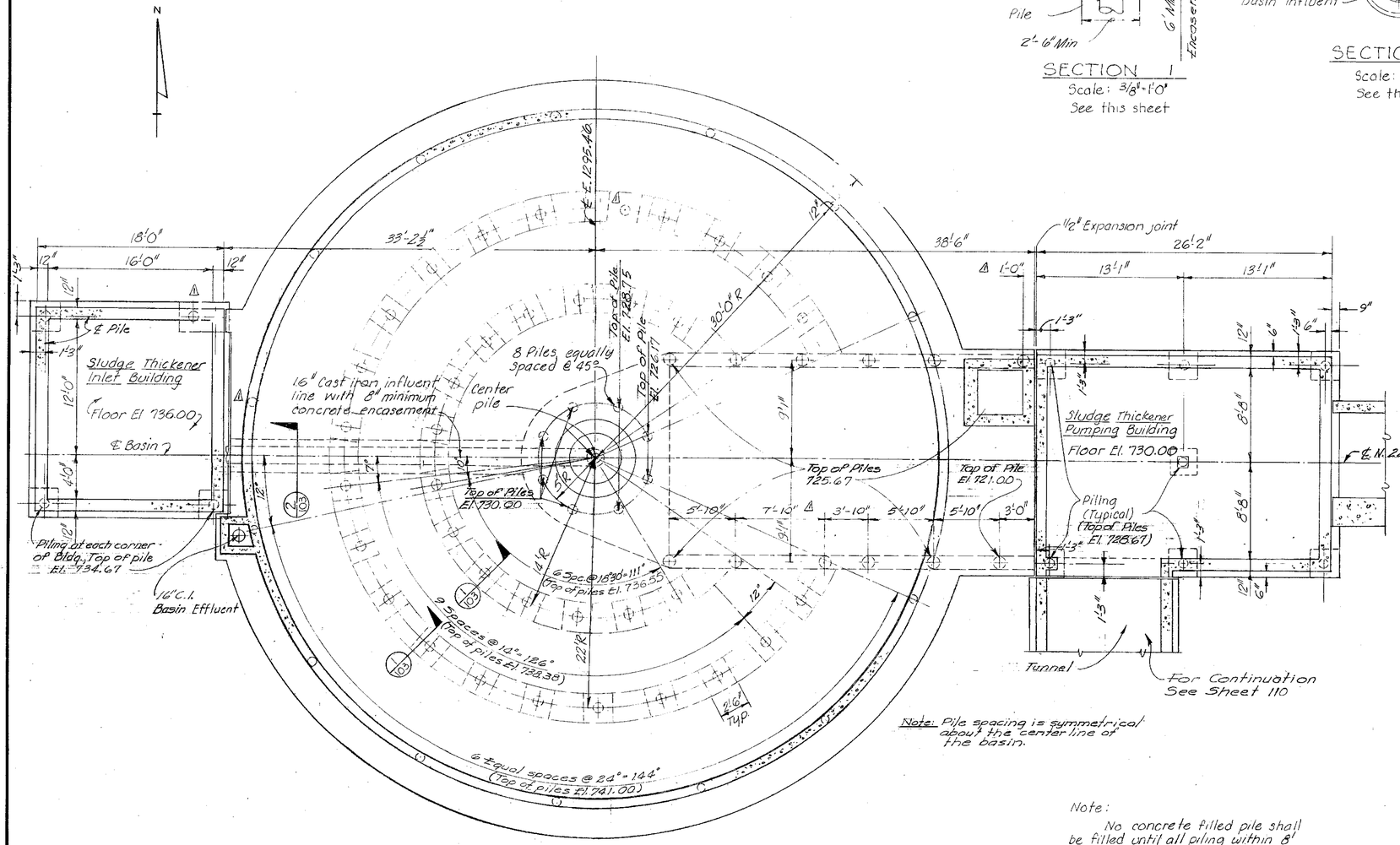
BLACK & VEATCH AND BURNS & MC DONNELL CONSULTING ENGINEERS, KANSAS CITY, MO.	P.C.D. CONTRACT 7
DESIGNED ACP CHECKED LEW	SHEET 102 OF 190
DETAILED ACP DWG APPROVED	
	DATE 4-3-64



SECTION 1
Scale: 3/8"=1'0"
See this sheet



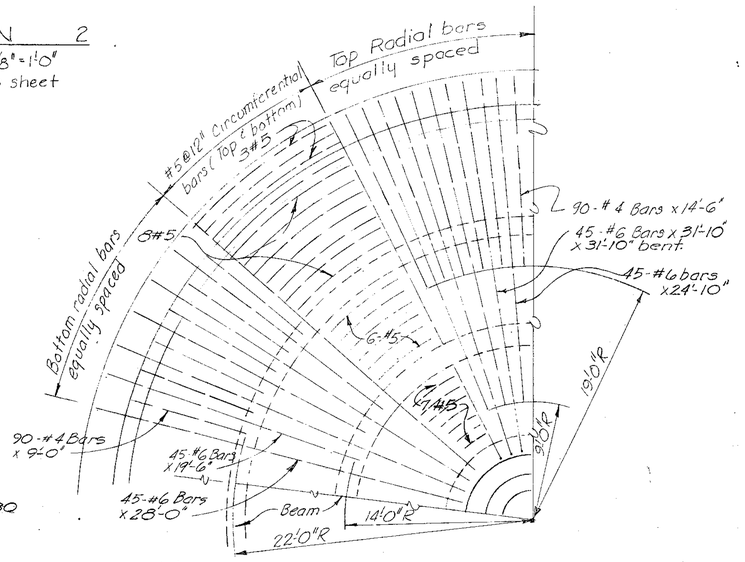
SECTION 2
Scale: 3/8"=1'0"
See this sheet



Note: Pile spacing is symmetrical about the center line of the basin.

Note:
No concrete filled pile shall be filled until all piling within 8' have been driven.
The base slabs for the sludge thickener shall be poured at least 7 days before the abutting slabs in the Sludge Thickener Pumping Building are poured.

PILING PLAN
Scale: 3/16"=1'0"



Note:
Lengths of bars are typical except for 20 top & 20 bottom bars adjacent to sludge thickener inlet building

SLAB REINFORCING PLAN.
Scale: 3/16"=1'0"

NO.	DATE	DESCRIPTION	BY	CHK
1	11-66	Conform to construction records.	RLM	ACP

REVISIONS

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE THICKENER
PILING PLAN & DETAILS

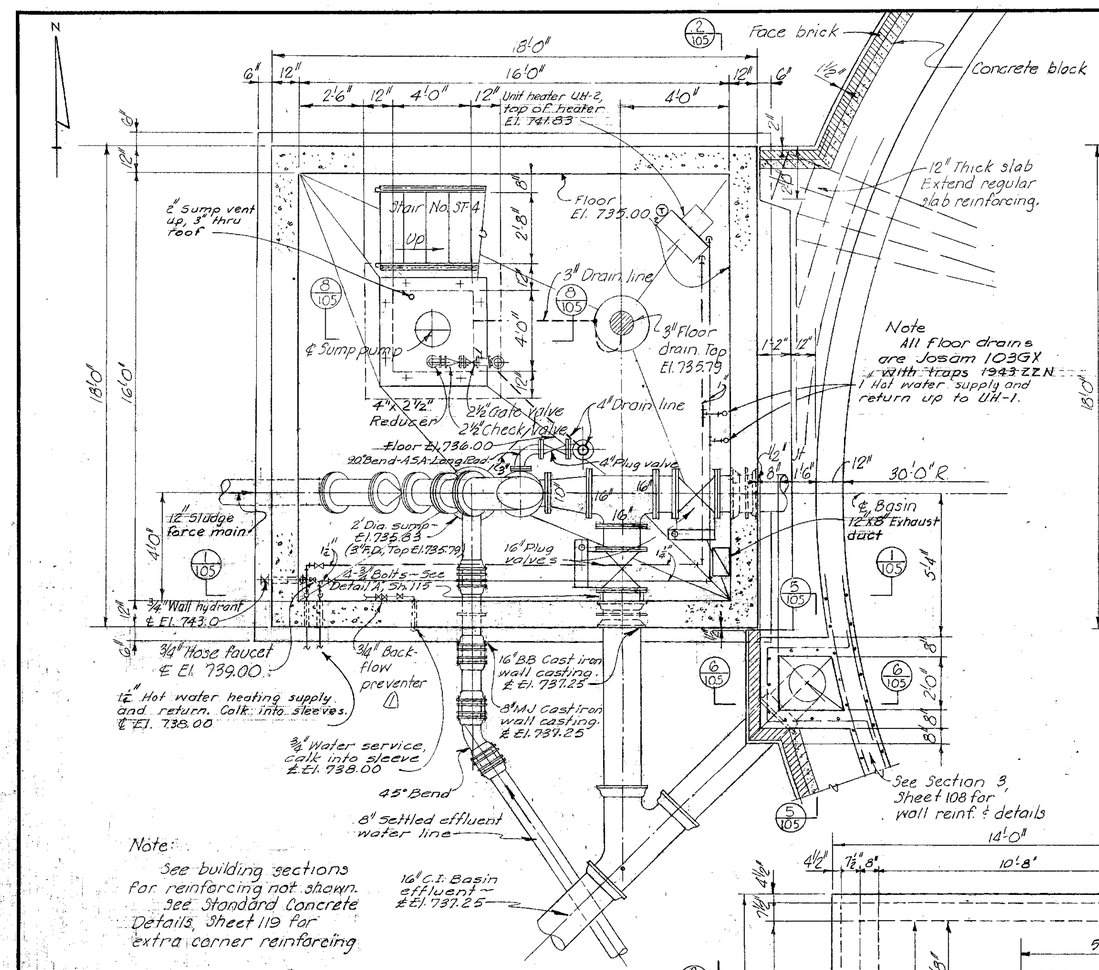
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED ACP DETAILED ACP LWD CHECKED LEW APPROVED DATE 2-6-68

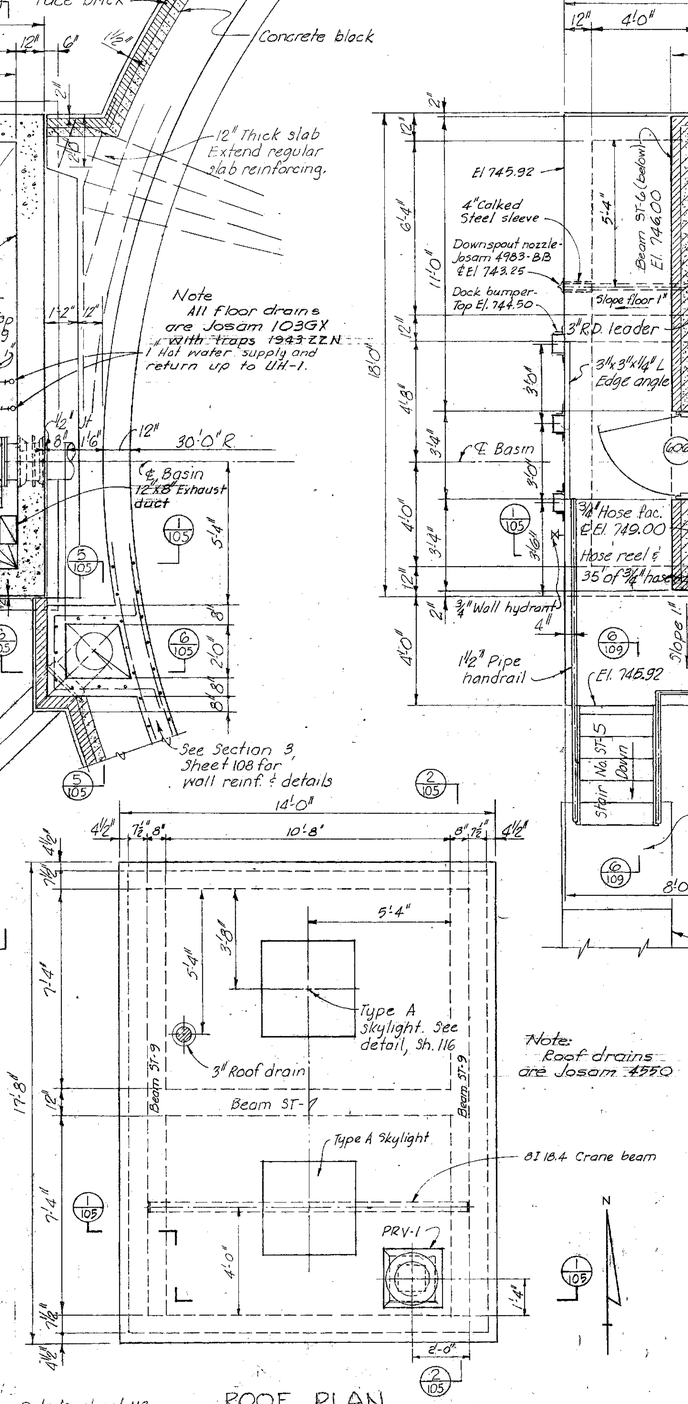
SHEET 103 OF 190

PROJECT 3-2-9 10-2-32



BASEMENT FLOOR PLAN

Scale: 3/8" = 1'0"

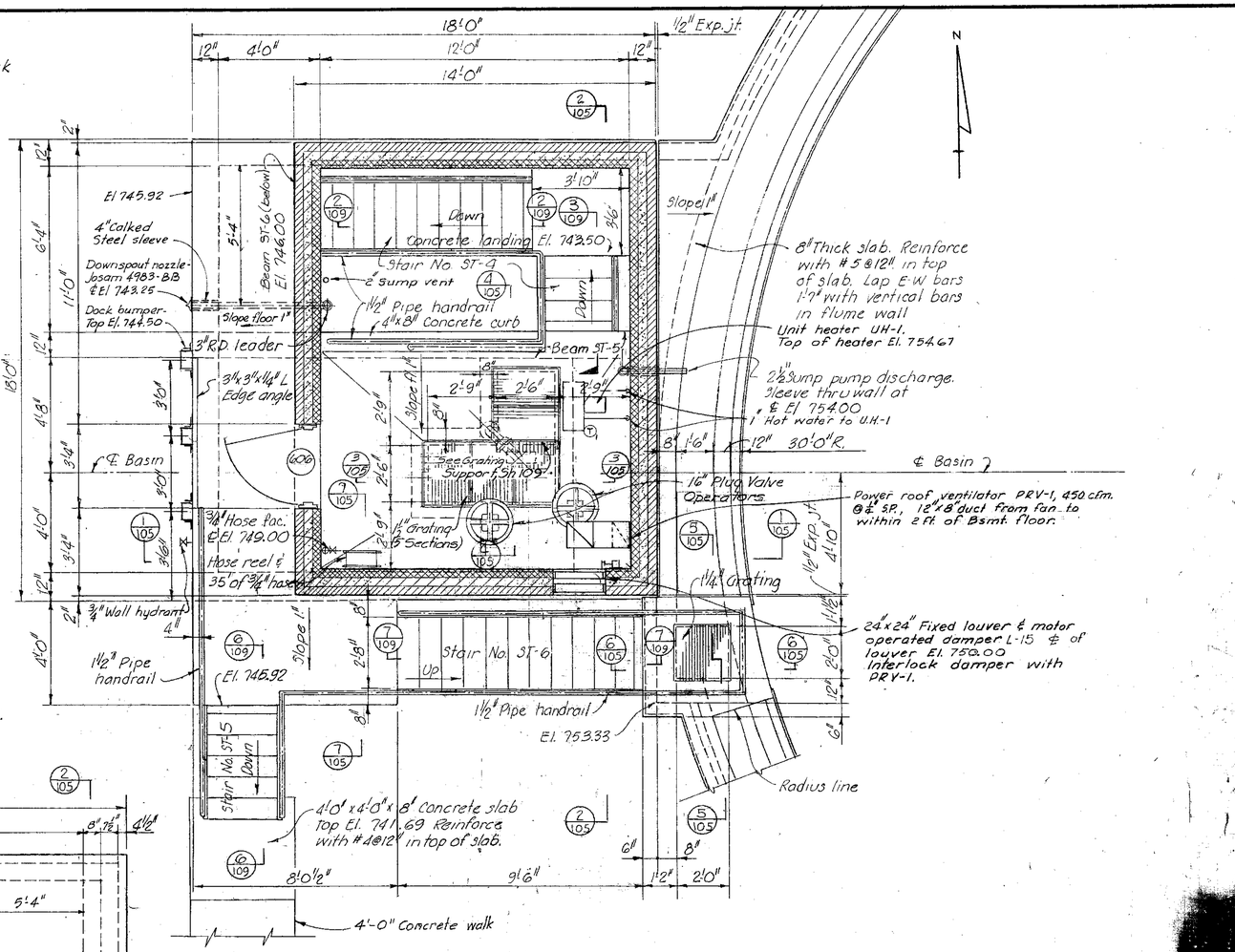


Note: Roof drains are Josam 4550

Note: See Details, sheet 118 for extra reinforcing at corners of roof slab.

ROOF PLAN

Scale: 3/8" = 1'0"



OPERATING FLOOR PLAN

Scale: 3/8" = 1'0"

GENERAL NOTES

1. Unit heaters to be supported with conc. inserts in ceiling and ⅜" rods.
2. For unit heater capacities see Sheet 139
3. See Sheet 124 for building service water schematic.

NO.	DATE	DESCRIPTION	BY	CHK
1	2-2-65	Revised service water	ACP	LWW

REVISIONS

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

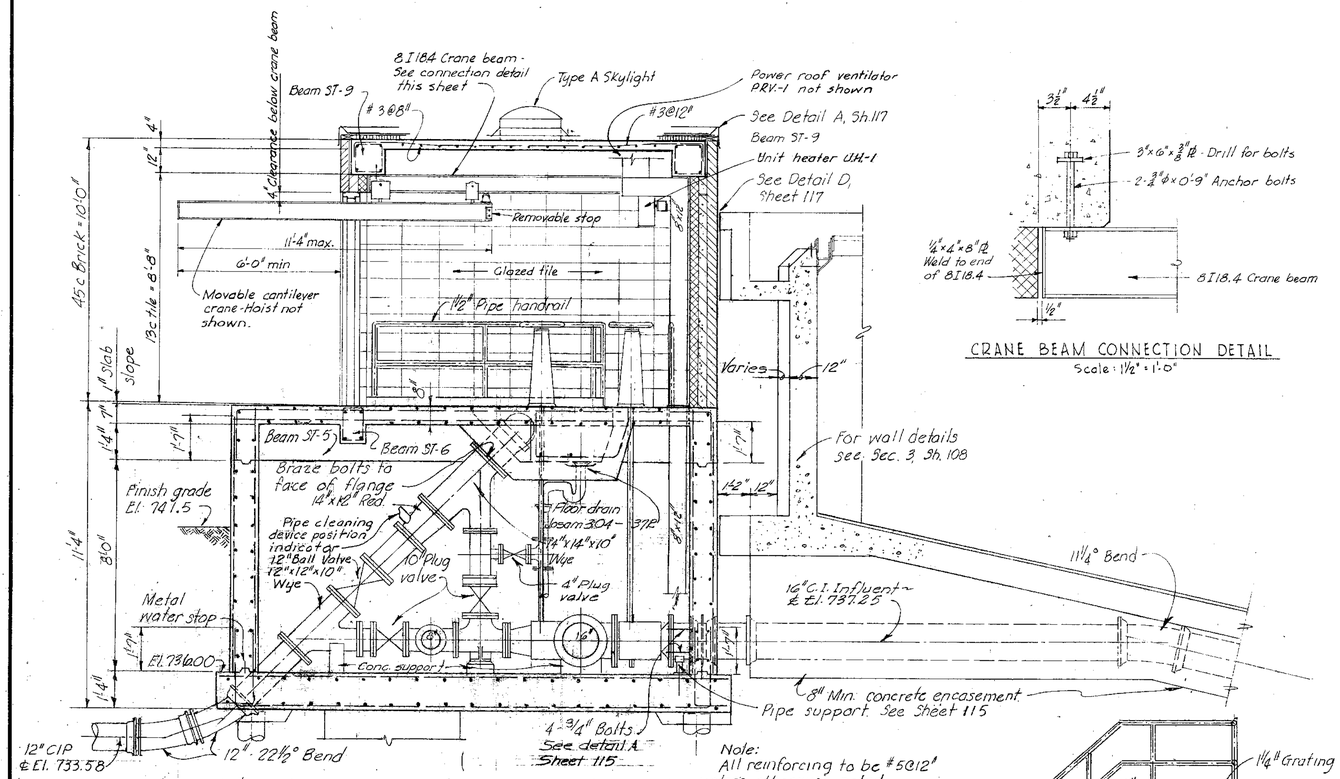
SLUDGE THICKENER INLET BUILDING
FLOOR PLANS

BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

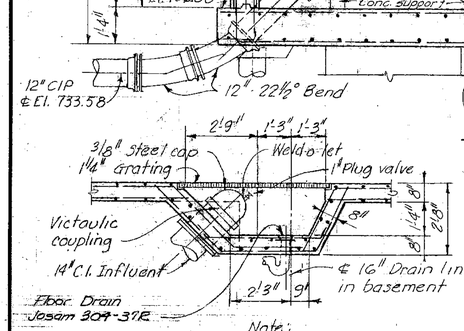
P.C.D. CONTRACT 7

DESIGNED ACP DETAILED ACP LWD CHECKED LEW APPROVED DATE 2-2-65

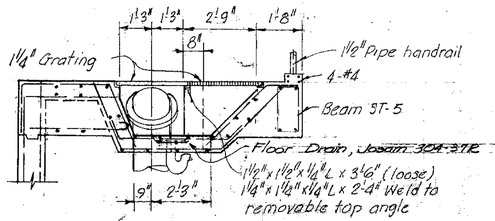
SHEET 104 OF 190



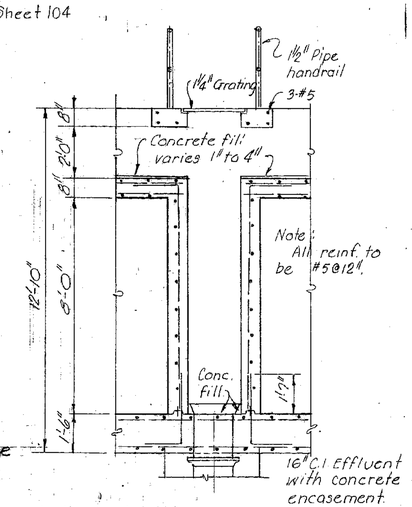
SECTION 1
Scale 3/8" = 1'-0"
See Sheet 104



SECTION 3
Scale: 3/8" = 1'-0"
See Sheet 104



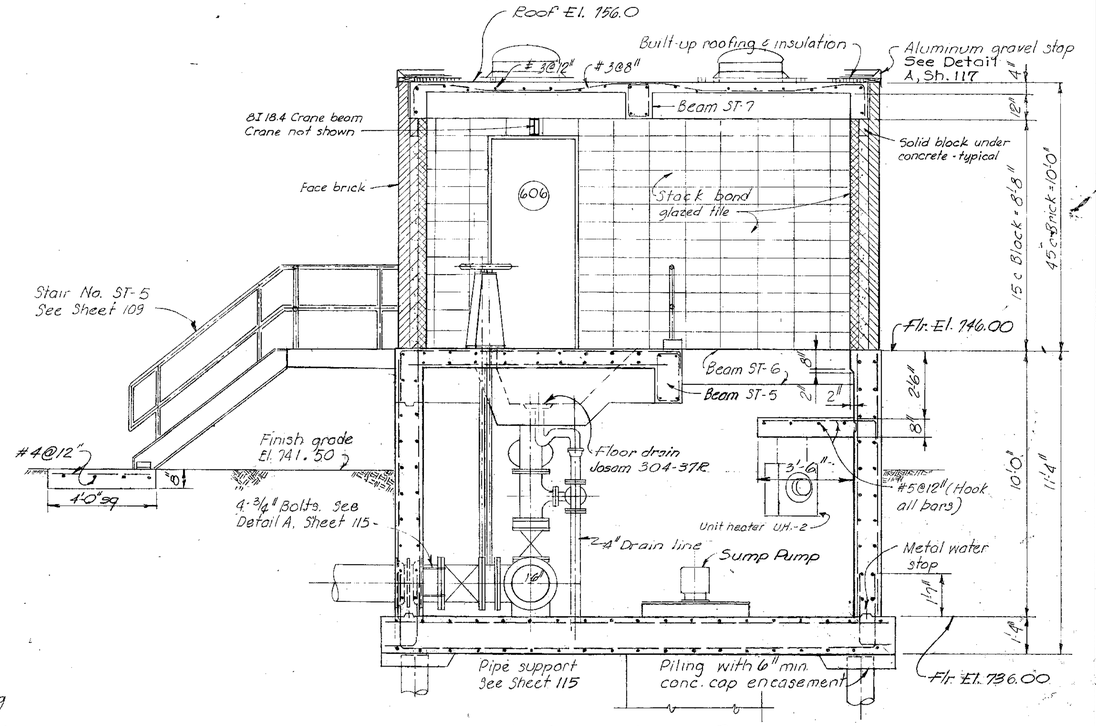
SECTION 4
Scale: 3/8" = 1'-0"
See Sheet 104



SECTION 5
Scale: 3/8" = 1'-0"
See Sheet 104

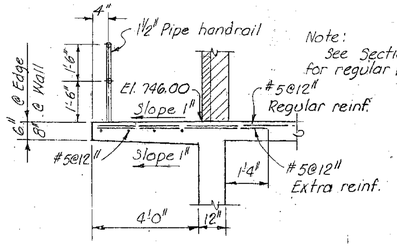
CRANE BEAM CONNECTION DETAIL
Scale: 1½" = 1'-0"

SECTION 6
Scale: 3/8" = 1'-0"
See Sheet 104



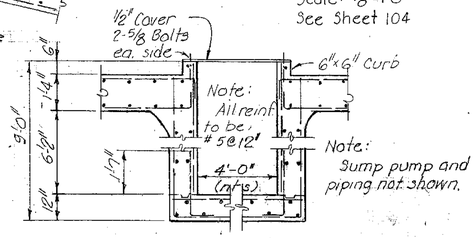
SECTION 2
Scale: 3/8" = 1'-0"
See Sheet 104

Note: All reinforcing to be #5@12 unless otherwise noted Stairs Nos. 4 & 6 not shown. Piping smaller than 4" not shown



Note: See Section 2, this sheet for regular wall & slab reinf.

SECTION 7
Scale: 3/8" = 1'-0"
See Sheet 104



Note: Sump pump and piping not shown.

SECTION 8
Scale: 3/8" = 1'-0"
See Sheet 104

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE THICKENER INLET BUILDING SECTIONS

BLACK & VEATCH AND BURNS & MCDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED ACP
DETAILED ACP LWD
CHECKED LEW LWD
APPROVED
DATE 2-4-68

SHEET 105 OF 190

PROJECT 32-92 104232

Notes:
Lifting eyes to be placed over sludge and scum pumps. See detail, Sheet 116.

Deepen scum baffle & scum trough skirt to 2'-0" for 6' preceding and 2' following scum trough and around scum trough.

Fabricate steel scum trough. Weld threaded flange to trough wall. Cut hole in trough wall

Walkway to be furnished by basin equip. mfr.

4" Steel sleeve Calk with lead wool @ El. 752.00

3" galv. pipe light pole with 2½" reamed & unthreaded tip 10'0" high welded into handrail

Scum baffle — Weir plate See Sh. 109

Sump No. ST-3 See Sheet 108

Beam ST-2 (Below)

Down Stair No. ST-1 See Sheet 109

Up Stair No. ST-1 See Sheet 109

Down Stair No. ST-1 See Sheet 109

Sludge Panel No. 3 (Provide 4" thick concrete pad)

Motor Control Center No. 11

To PRV-2 1000 cfm @ 1½" S.P. See Sec. 1, Sh. 107 for duct routing

Power roof ventilator PRV-3 1000 cfm @ ⅛" SP

Column ST-1

Beam ST-3

Beam ST-4

Beam ST-8

Column C-1

Floor El. 742.00

Floor El. 730.00

Floor El. 729.92 at gutter

Floor El. 739.50

Top El. 753.33

Top El. 753.50

Top El. 739.67

Top El. 729.83

Top El. 729.87

Top El. 730.00

Fir. El. 727.00

Fir. El. 742.67

Fir. El. 729.92

Fire extinguisher

Service sink with ¾ H&CW

Water Seal System No. 1 See Schematics Sh. 107

Reinforcing not shown see Section 2, Sheet 108

Reinforcing not shown

End of wall below

Elastic water stop

1½" Expansion jt.

1" Expansion Joint

Lifting eye in slab, see detail, Sh. 116

Type B Skylight See details, Sheet 116

Connection of corridor roof to wall similar to Holding Tank Control Bldg. See Sh. 93 & Detail A, Sh. 101

CORRIDOR

Unit heater UH-3

Unit heater UH-4

Hot water circulating pump CWP-8

Pump CWP-7

Air handling unit AHU-1 5000 cfm., 435 000 Btu./hr., see Dtls. Sh. 141

Heating water main loop (See Sh. 141)

End of main hot water loop

Hot Water Circulating

Pipe hanger

Pipe hanger (Typical)

Pipe brackets supported from inserts in masonry

Sludge density sensor

Sump pump

Sludge Pump No. 2

Sludge Pump No. 4

Sludge Pump No. 5

Scum Pump No. 5

Scum Mixer No. 5

Basin

Duct up to PRV-2

16"x10" Duct

16"x16" Duct

Base ℄ tap for 1½" hose valve

8"x8"x6" Base tee

6"x8"x6" Base tee

6"x4" Eccked.

90° AWWA

45° AWWA

Elastic water stop

Conc. base support

Conc. base curb

Conc. Fill

Slope 0.01"/ft

Conc. Slope

2" Bell-up (Typical @ each pump)

3" F.D.

6" Base ell

6" Scum discharge

3" Floor drain

2" Dram sump

3" Floor drain

6 Gal. cap. elect. water heater bracketed on wall

4" Drain Line from Corridor

Cleanout 2" cleanout in corridor floor

2" Vent up, 3" thru roof

2" Vent thru roof

2" Sump vent up, 3" thru roof

4" Drain line

1½" Hose faucet

¾" Hose faucet

#5@12"

1½" Hot water supply & return to Sludge Thickener Inlet Bldg. see Sh. 104 & 141

4" Drain Line from tunnel

2" Service Sink Vent

4" Flow Transmitter #5

See detail A Sh. 91 for typical joint connection

Note: Instrument Panel No. 3 & Motor Control Center No. 11 shall be supported on a 4" conc. base.

1½" Pipe handrail

4"x8" Concrete curb

1½" Handrail, Provide bracket @ wall

1¼" Aluminum Grating

2"x2"x¼" L, Bolt to wall at 1'-6" ctrs.

1½" Exp. joint

1" Exp. jt. below

Fire ctrl. Sump Vent

Wall Hyd. @ El. 742.67

12'-9"x 5'-0"x12" Concrete platform

72"x40" Fixed louver, L-16

5'-0" Conc. Walk

Lt. Duty Bronze Hose Hanger

Beam ST-2 (Above)

Sump No. ST-3 See Sheet 108

2" Sump Disch.

Column ST-1

Beam ST-3

Down Stair No. ST-2

2½" Sump Disch.

Ramp

Fill

Slope 0.01"/ft

Concrete slope

Scum trough

Scum baffle

Weir plate

Sump pump

Sludge density sensor

Air handling unit AHU-1

Unit heater UH-4, top El. 753.50

Unit heater UH-3 Top El. 739.67

Hot water supply & return to UH-3 & 4 and AHU-1

Hot Water Circulating Pump CWP-7

Hot water supply & return to UH-3 & 4 and AHU-1

Pipe hanger

Beam ST-3

Column ST-1

Floor El. 742.00

Unit heater UH-4, top El. 753.50

Pipe brackets supported from inserts in masonry

Air handling unit AHU-1 5000 cfm., 435 000 Btu./hr., see Dtls. Sh. 141

Hose faucet

2" Service Sink Vent

See detail A Sh. 91 for typical joint connection

Note:
Instrument Panel No. 3 & Motor Control Center No. 11 shall be supported on a 4" conc. base.

Note:
1. All floor drains on this sheet are Josam with Josam traps 1943 Z N
2. Unit heaters to be supported with conc. inserts in ceiling and ⅝" rods
3. For unit heater and air handling unit heating capacities see Sh. 139
4. See heating details Sh. 141

GROUND FLOOR PLAN
Scale: 3/8"=1'0"

BASEMENT FLOOR PLAN
Scale: 3/8"=1'0"

ROOF PLAN
Scale: 1/4"=1'0"

NO	DATE	DESCRIPTION	BY	CHK
2	2-2-65	Revised water service	ACP	LWW
1	2-2-65	Revised pump locations	ACP	KRL

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

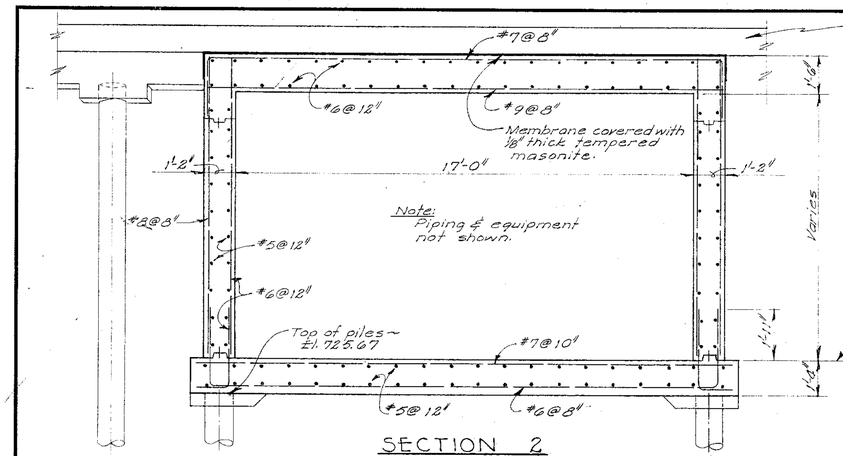
SLUDGE THICKENER PUMPING STATION
FLOOR PLANS

BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

DESIGNED ACP
DETAILED ACP LWW
CHECKED LFW
APPROVED
DATE 2-4-66

P.C.D. CONTRACT 7

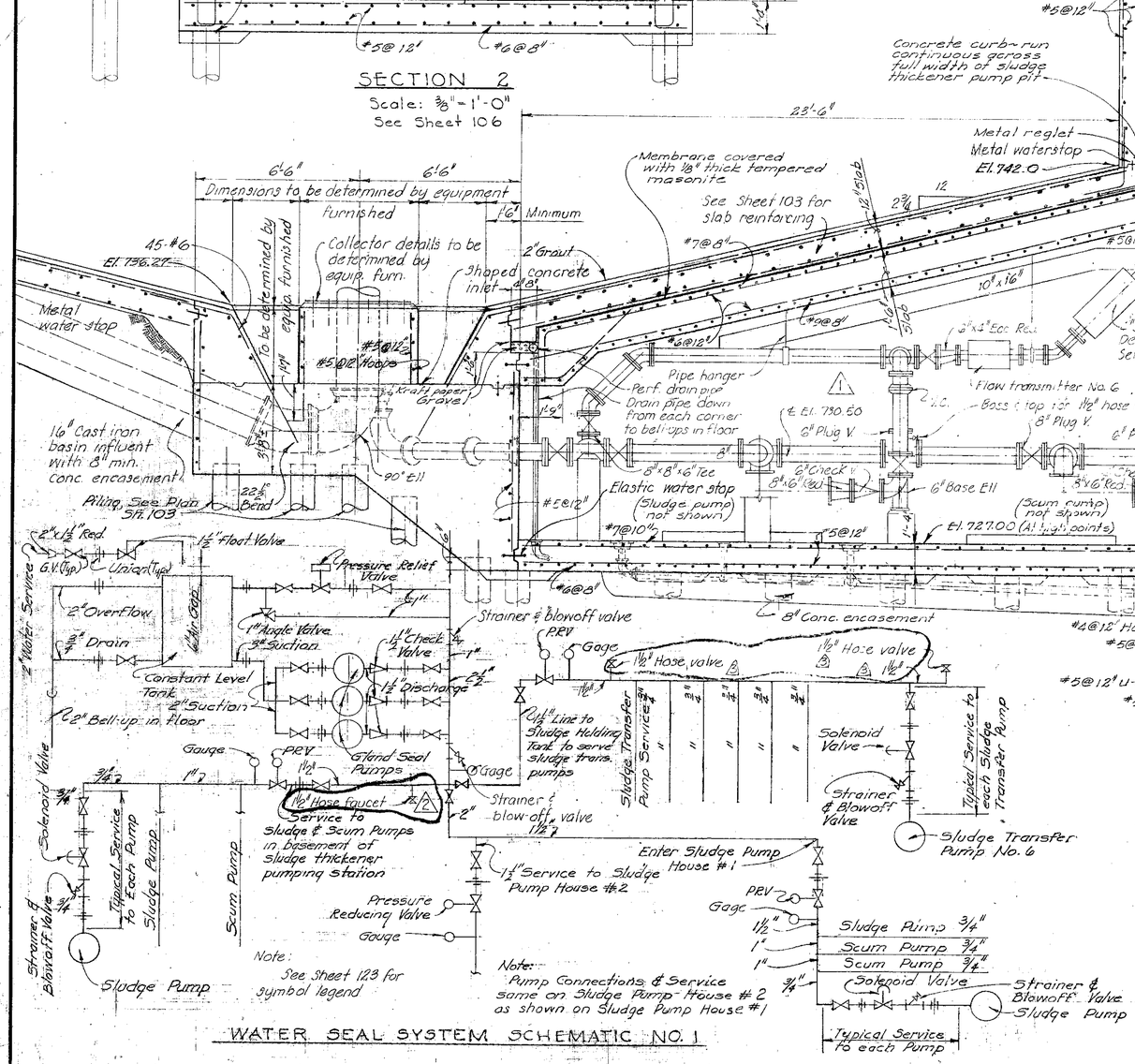
SHEET 106 OF 190



SECTION 2

Scale: 3/8"=1'-0"

See Sheet 106



Notes:
Lifting eyes to be placed over sludge and scum pumps. See detail, Sheet 116

SECTION 1

Scale: 3/8"=1'-0"

See Sheet 106

WATER SEAL SYSTEM SCHEMATIC NO. 1

NO.	DATE	DESCRIPTION	BY	CHK.
3	2-2-65	Revised water seal system	ACP	LWW
2	2-2-65	Revised water service	ACP	LWW
1	2-2-65	Revised pump locations	ACP	RRL

REVISIONS

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

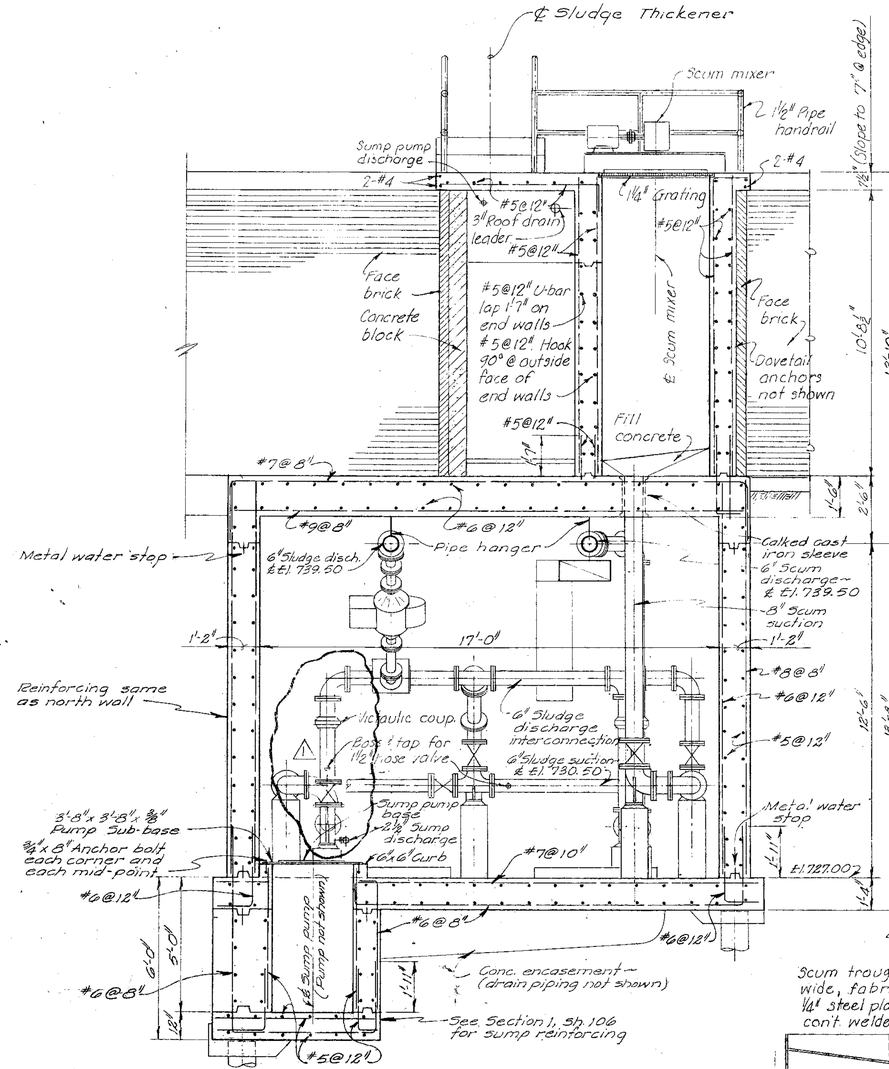
SLUDGE THICKENER PUMPING STATION SECTIONS

BLACK & VEATCH AND BURNS & McDONNELL, CONSULTING ENGINEERS, KANSAS CITY, MO.

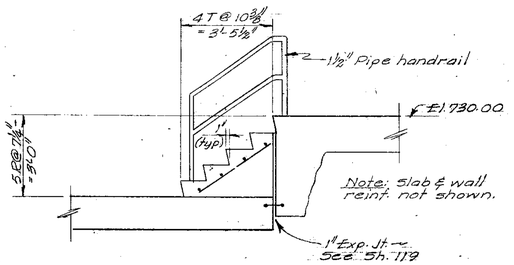
P.C.D. CONTRACT 7

DESIGNED ACP DETAILED ACP LWD CHECKED LFW APPROVED DATE 2-4-65

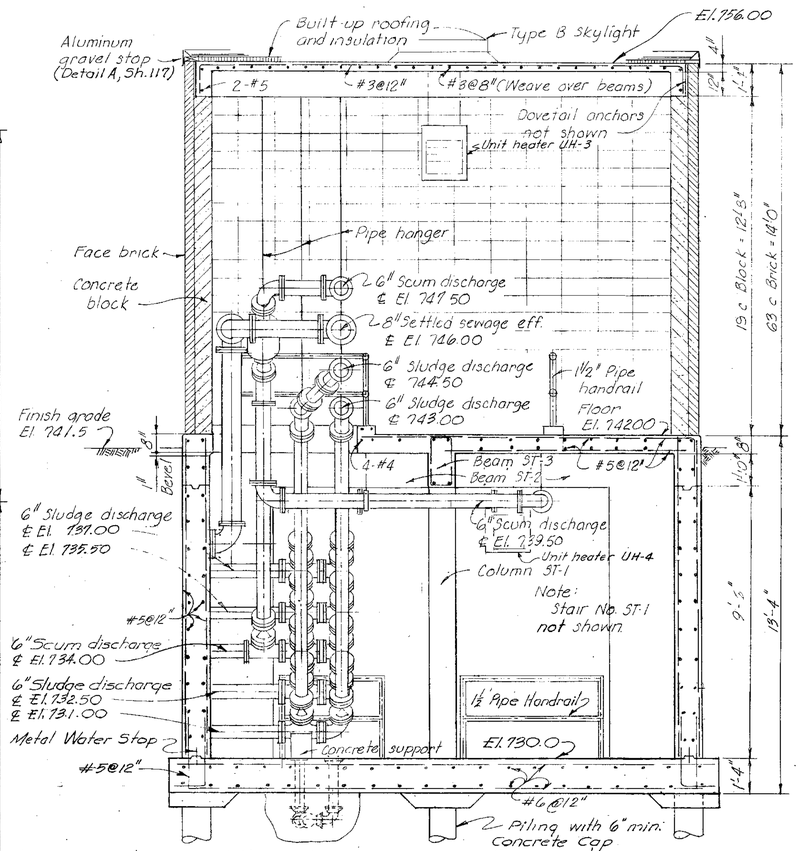
SHEET 107 OF 190



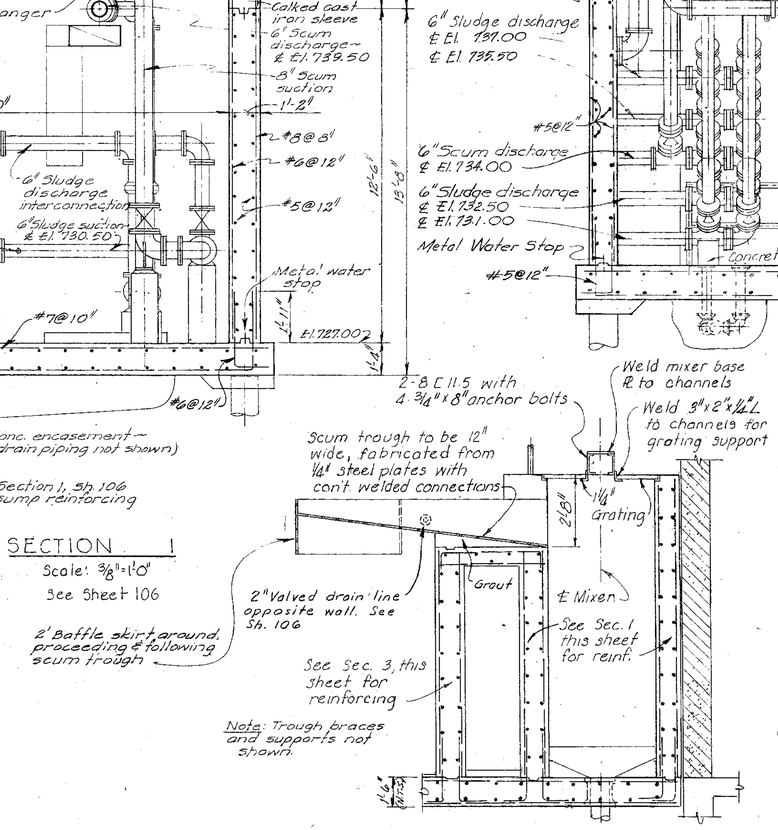
SECTION 1
Scale: 3/8" = 1'-0"
See Sheet 106



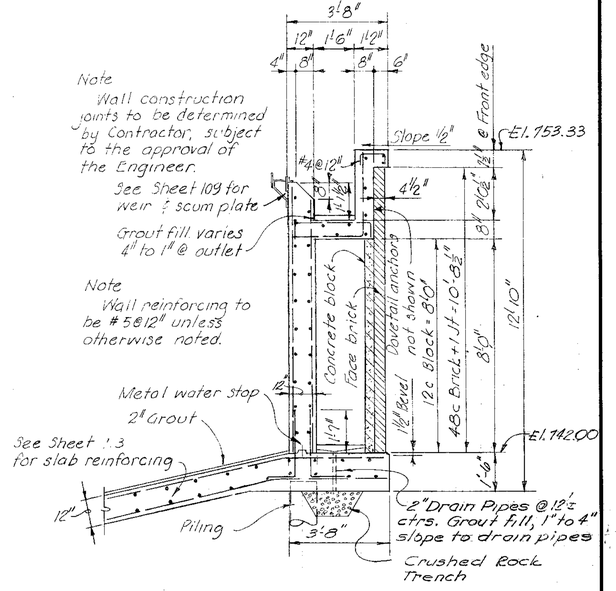
SECTION 4
Scale: 3/8" = 1'-0"
See Sheet 106



SECTION 2
Scale: 3/8" = 1'-0"
See Sheet 106



SECTION 5
Scale: 3/8" = 1'-0"
See Sheet 106



SECTION 3
Scale: 3/8" = 1'-0"
See Sheet 106

NO.	DATE	DESCRIPTION	BY	CHK
1	2-2-65	Revised pump locations	ACP	KRL

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE THICKENER PUMPING STATION
SECTIONS

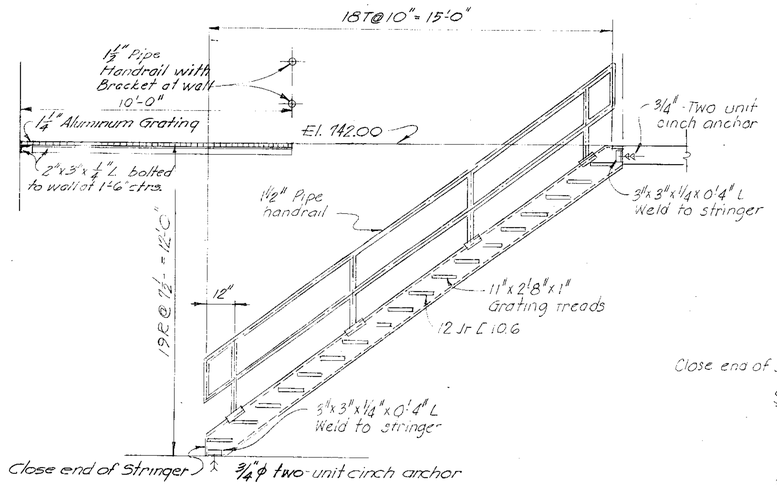
BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED ACP CHECKED LEW
DETAILED ACP LWD APPROVED
DATE 2-2-65

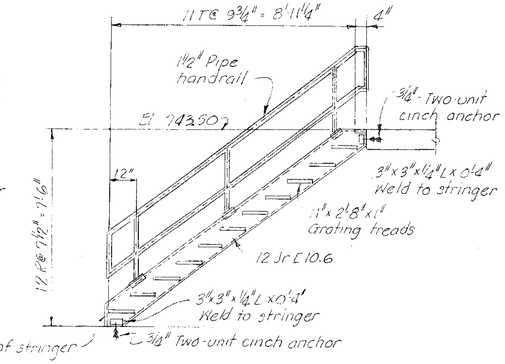
SHEET 108 OF 190

PROJECT 3292 1062.32



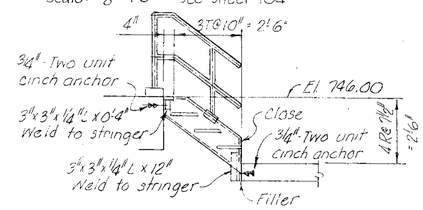
SECTION 1 — STAIR NO. ST-1

Scale: 3/8"=1'-0" See Sheet 106



SECTION 2 - STAIR NO. ST-4

Scale: 3/8"=1'0" See Sheet 104

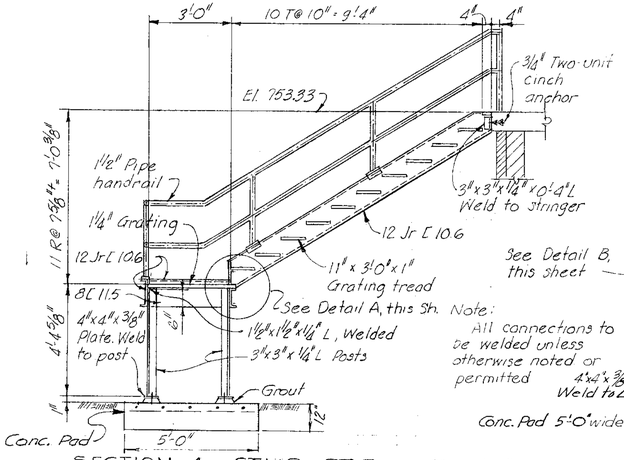


SECTION 3

STAIR NO. ST-3

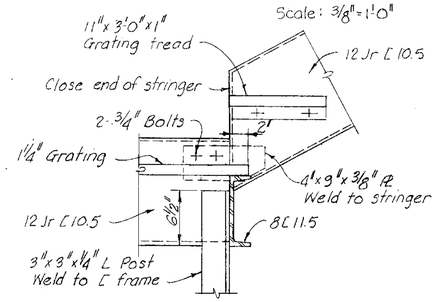
Scale: 3/8"=1'-0"

See Sheet 104



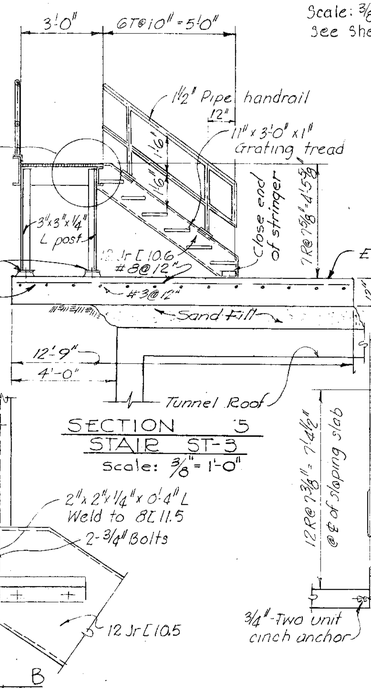
SECTION 4 STAIR ST-3

Scale: 3/8"=1'-0"



DETAIL A

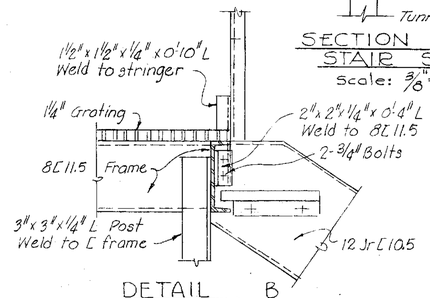
Scale: 1½"=1'-0"



SECTION 5

STAIR ST-3

Scale: 3/8"=1'-0"

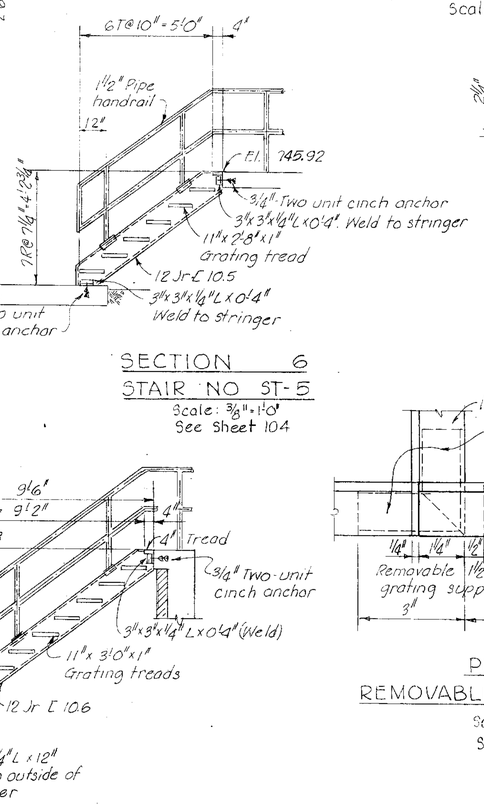


DETAIL B

Scale: 1½"=1'-0"

STAIR NO. ST-3

See Sheet 106



SECTION 6

STAIR NO. ST-5

Scale: 3/8"=1'-0"

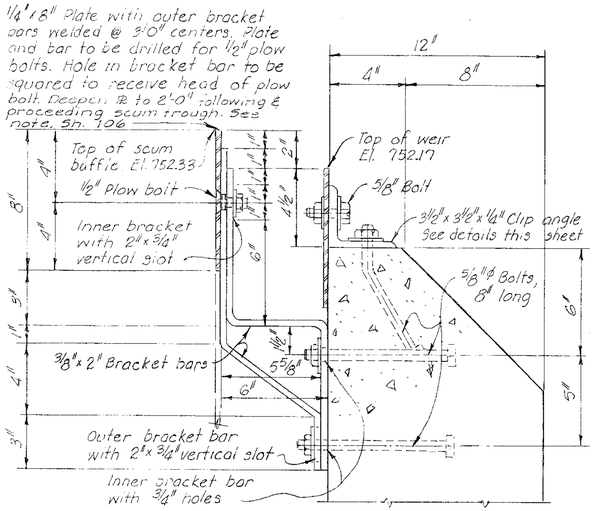
See Sheet 104

SECTION 7

STAIR NO. ST-6

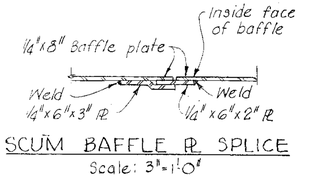
Scale: 3/8"=1'-0"

See Sheet 106



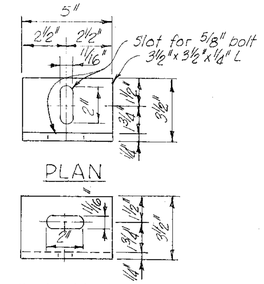
SCUM BAFFLE & WEIR SUPPORT

Scale: 3"=1'-0"



SCUM BAFFLE PL SPLICE

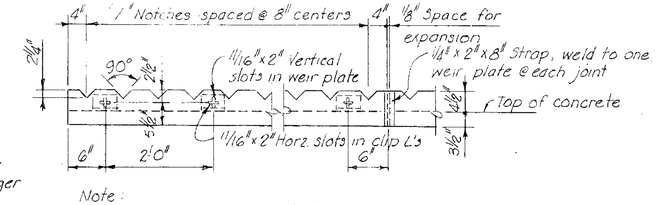
Scale: 3"=1'-0"



ELEVATION

DETAIL OF WEIR CLIP ANGLE

Scale: 3"=1'-0"

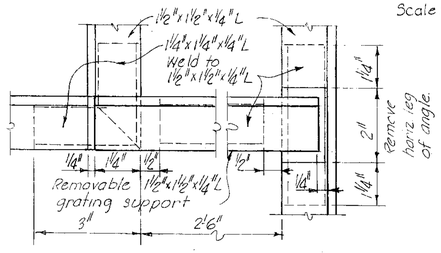


Note:

Top edge of plate and "V" notches to be cut & ground to a true edge. Plate to be bent to a radius of 30'0". Surface of concrete and adjacent side of weir plate to be coated with heavy layer of asphalt mastic prior to placing weir plate. Maximum plate length = 13'0".

DETAIL OF WEIR PLATE

Scale: ¾"=1'-0"



PLAN OF

REMOVABLE GRATING SUPPORT

Scale: 6"=1'-0"

See Sheet 104

KANSAS CITY, MISSOURI

POLLUTION CONTROL DEPARTMENT

SLUDGE THICKENER

STAIR AND STEEL DETAILS

BLACK & VEATCH AND BURNS & MCDONNELL

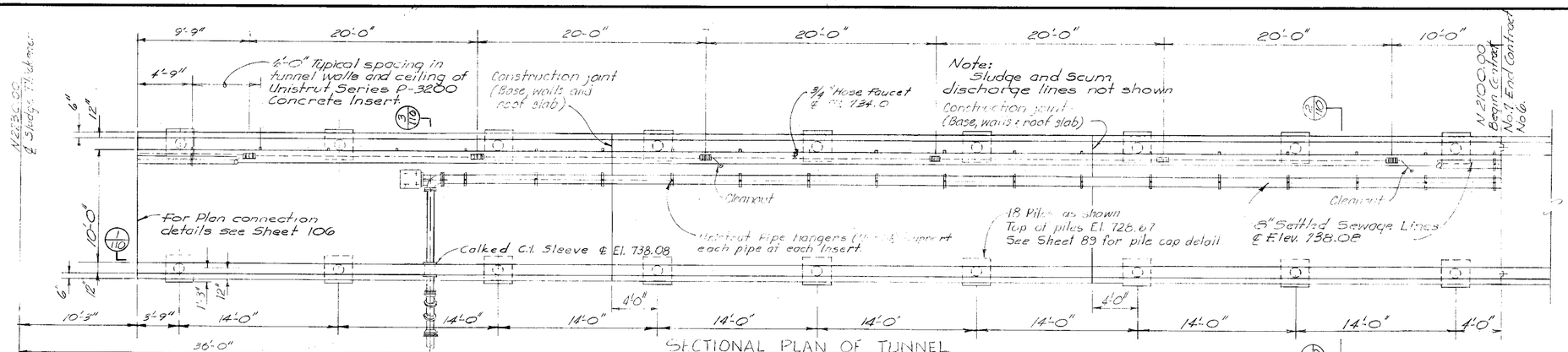
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

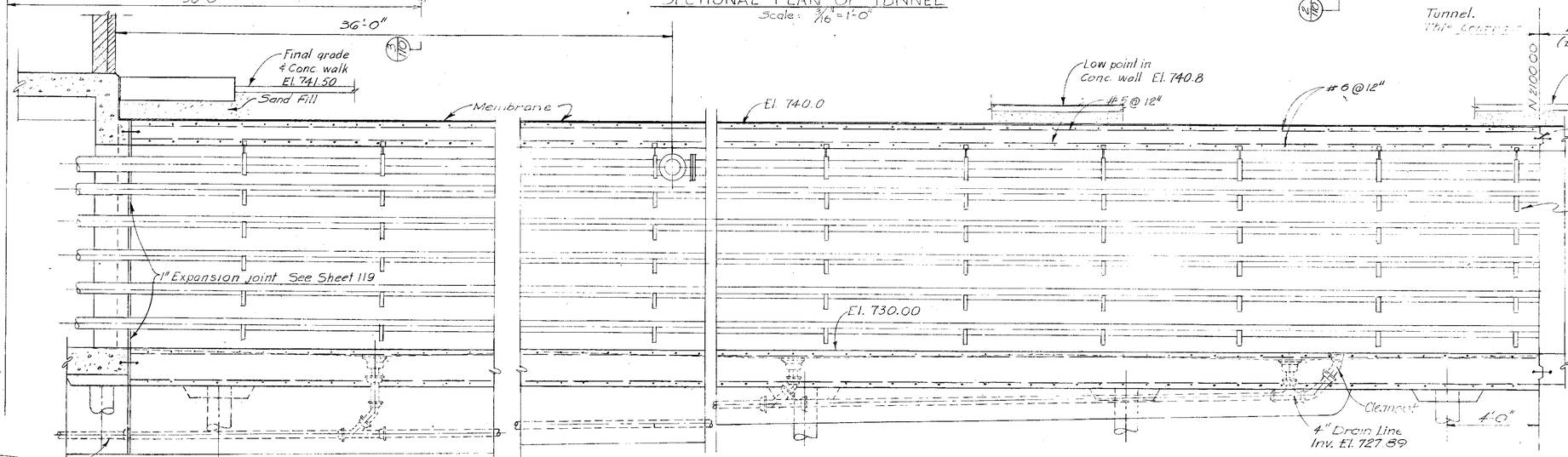
DESIGNED ACP DETAILED ACP LWD CHECKED LEW APPROVED DATE 2-4-60

SHEET 109 OF 190

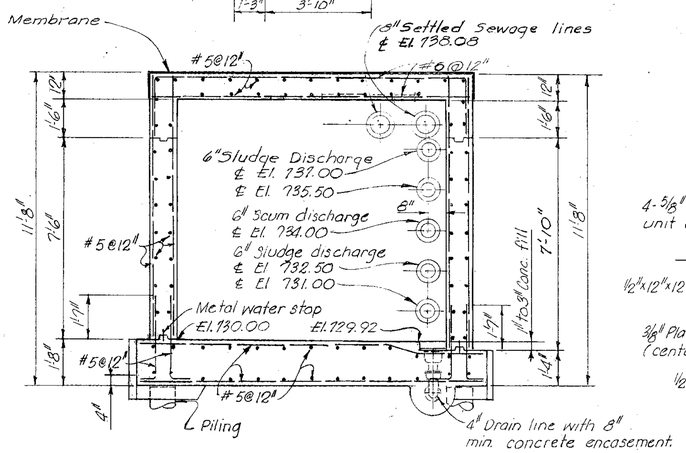
10062.32



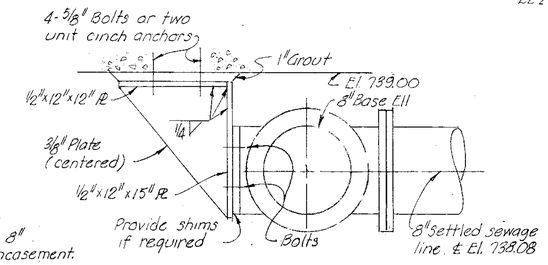
SECTIONAL PLAN OF TUNNEL
Scale: 3/16"=1'-0"



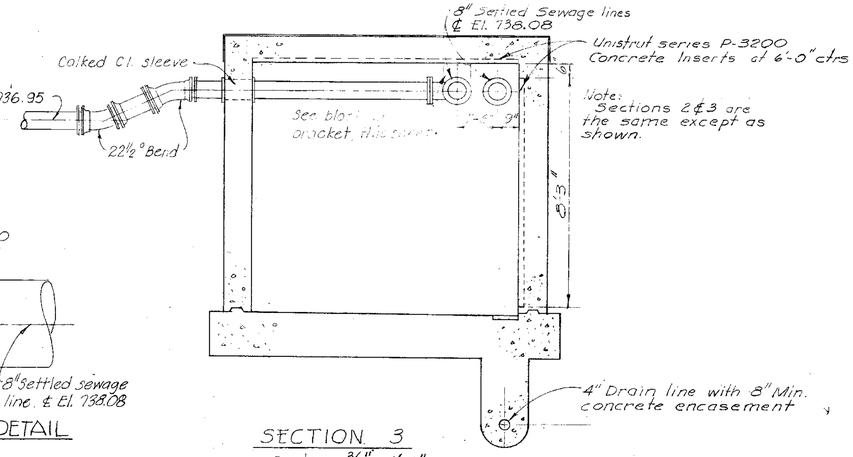
SECTION 1
Scale 3/8"=1'-0"
See this sheet



SECTION 2
Scale: 3/8"=1'-0"
See this sheet



BLOCKING BRACKET DETAIL
Scale: 1½"=1'-0"



SECTION 3
Scale: 3/8"=1'-0"
See this sheet

Note:
For finish ground elevation see sheet 5
At least 7 days shall elapse before pouring abutting bases walls and slabs. See Sectional Plan for locations of construction joints.

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

TUNNEL
PLAN AND SECTIONS

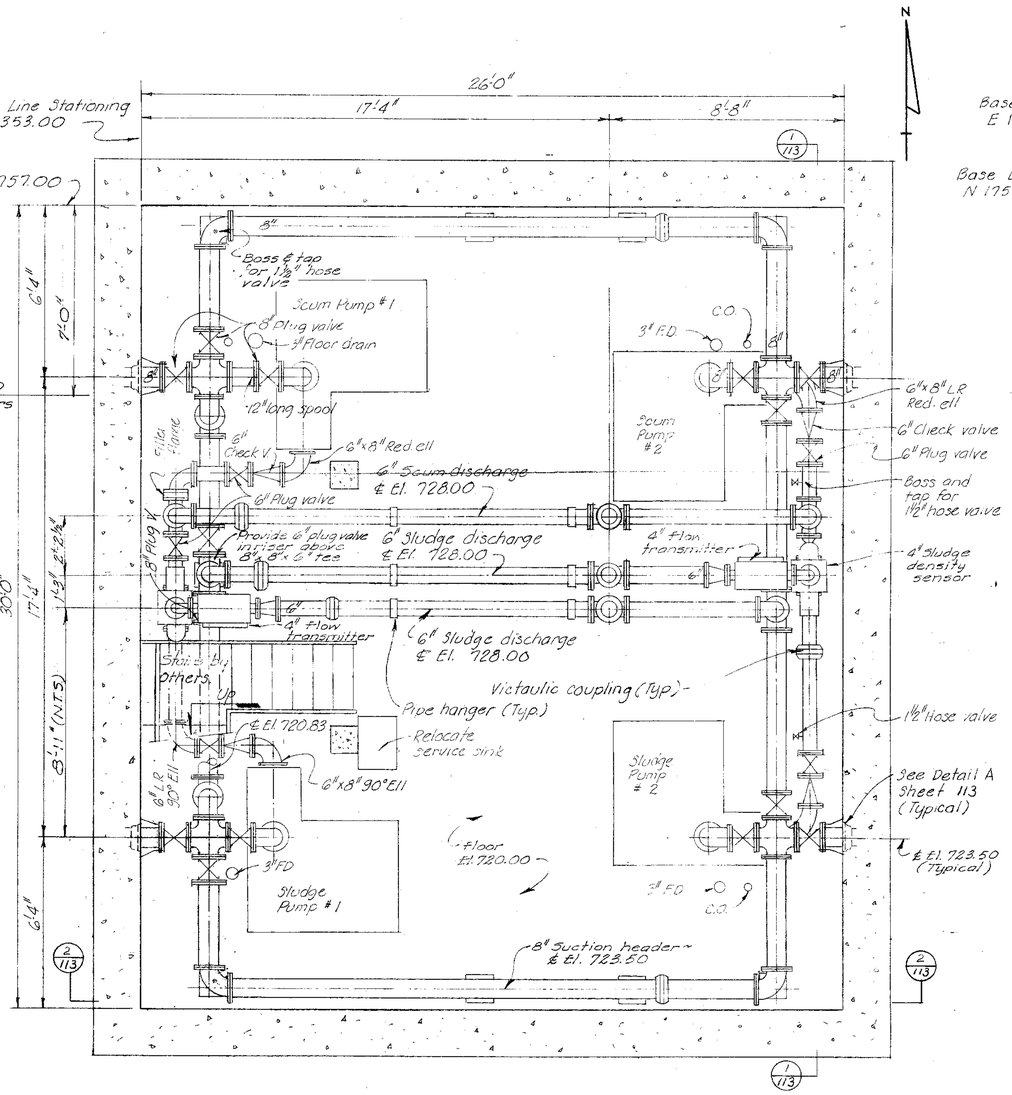
BLACK & VEATCH AND BURNS & MCDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED ACP
DETAILED ACP LWD
CHECKED LEW
APPROVED
DATE 2-1-60

SHEET 110 OF 190

PROJECT 11062.32



BASEMENT FLOOR PLAN

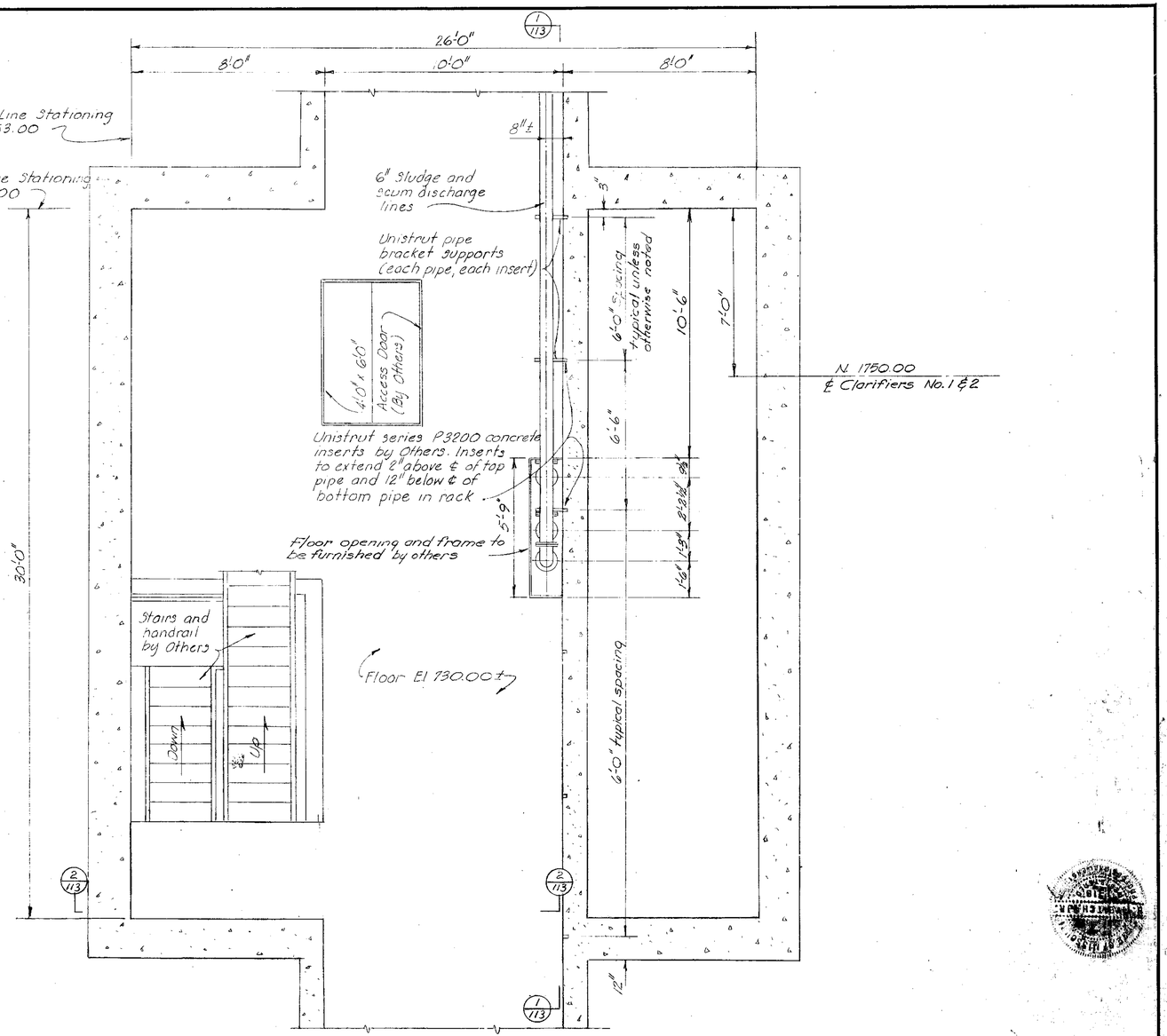
Scale: 3/8"=1'0"

Note:

The following items are to be furnished and installed under Contract No 7:

1. Sludge, scum, and settled sewage effluent piping and valves.
2. Sludge, scum, and settled sewage effluent pumps and bases
3. Piping hangers and supports.
4. Sludge density controllers and flow meters.
5. Pump drainage piping from pump to bell-ups furnished by others.
6. Pump gland seal water piping
7. Piping supports, hangers and anchors.
8. Strainer, piping and supports

Gland seal piping not shown, see schematic, sheet 107



TUNNEL FLOOR PLAN

Scale: 3/8"=1'0"

No.	Date	Description	By	Chk.
1	2-2-65	Revised pump locations	ACP	KRL

REVISIONS

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

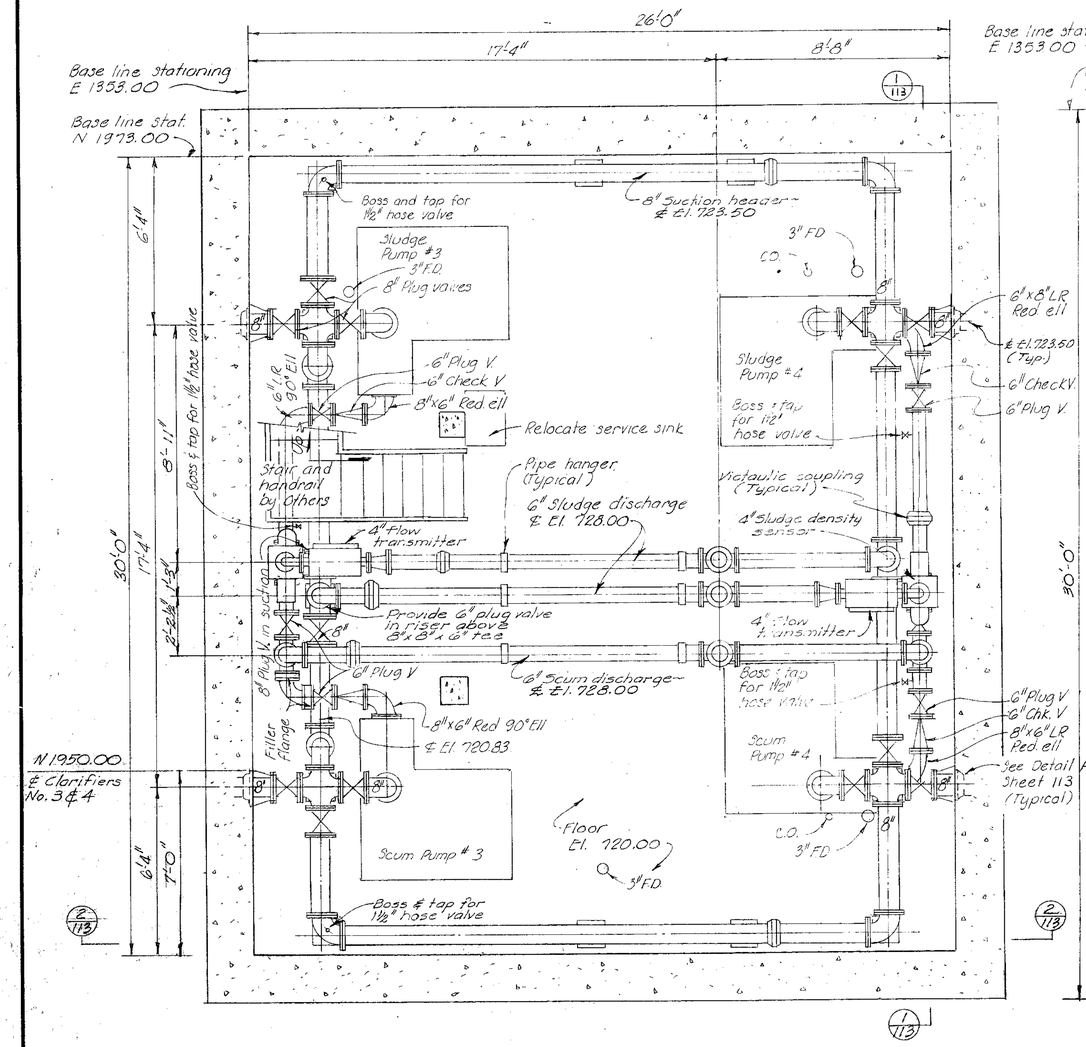
SLUDGE HOUSE NO. 1
FLOOR PLANS

BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED ACP
DETAILED ACP LWD
CHECKED LEW
APPROVED
DATE 2-65

SHEET 111 OF 190

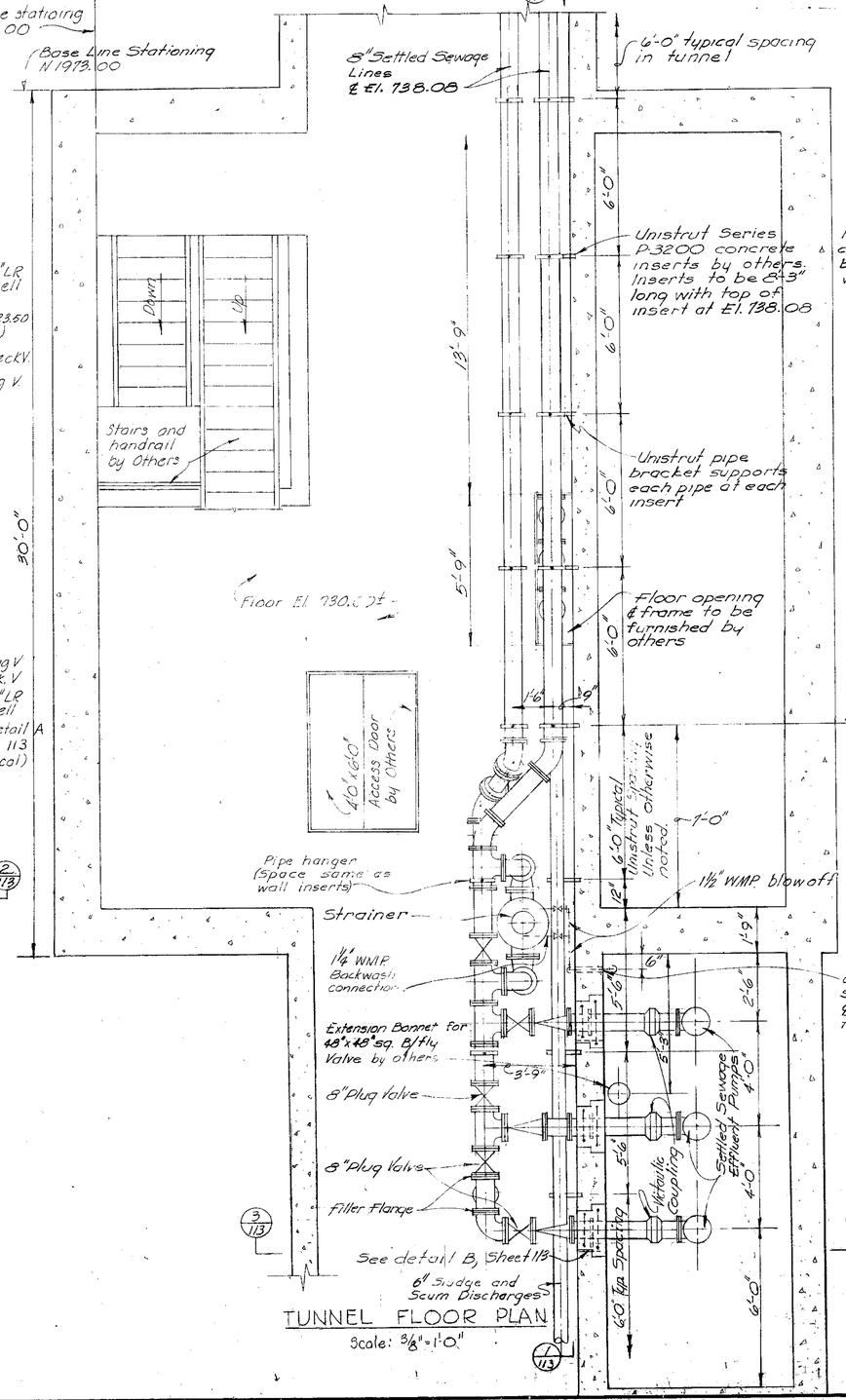


BASEMENT FLOOR PLAN

Scale: 3/8"=1'0"

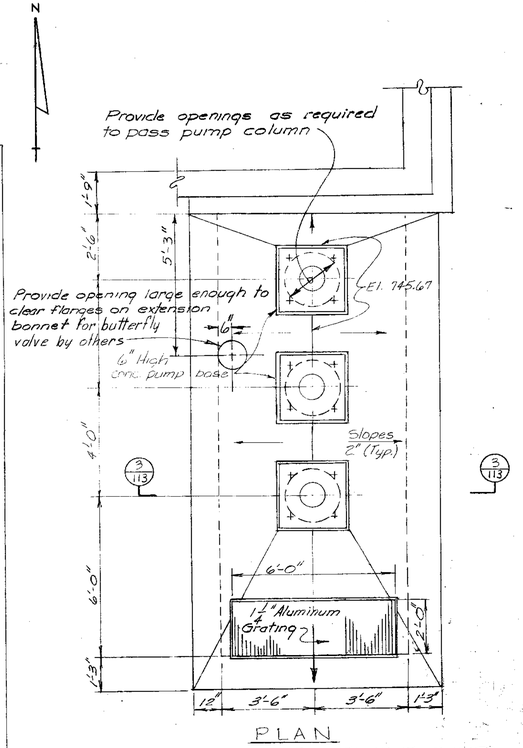
Note:

See Sheet 111 for list of items of work to be furnished and installed under Contract No. 7.



TUNNEL FLOOR PLAN

Scale: 3/8"=1'0"



PLAN

SETTLED SEWAGE EFFLUENT PUMPS

Scale: 3/8"=1'-0"

NO.	DATE	DESCRIPTION	BY	CHK
1	2-2-65	Revised pump locations	ACP	KRL

REVISION

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE HOUSE NO. 2

FLOOR PLANS

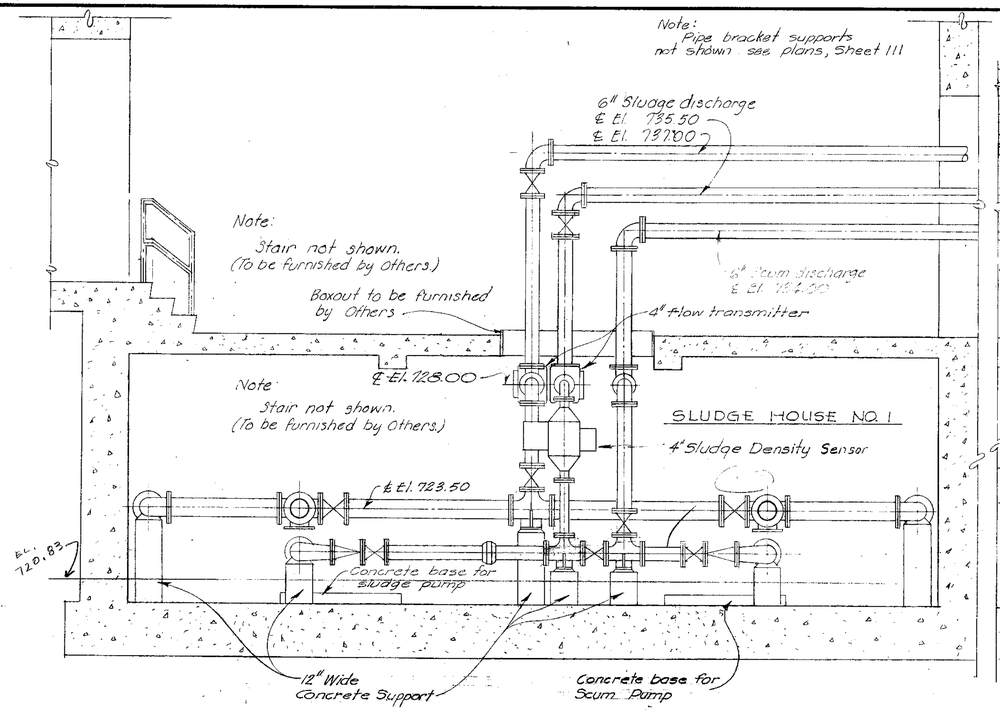
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT: 7

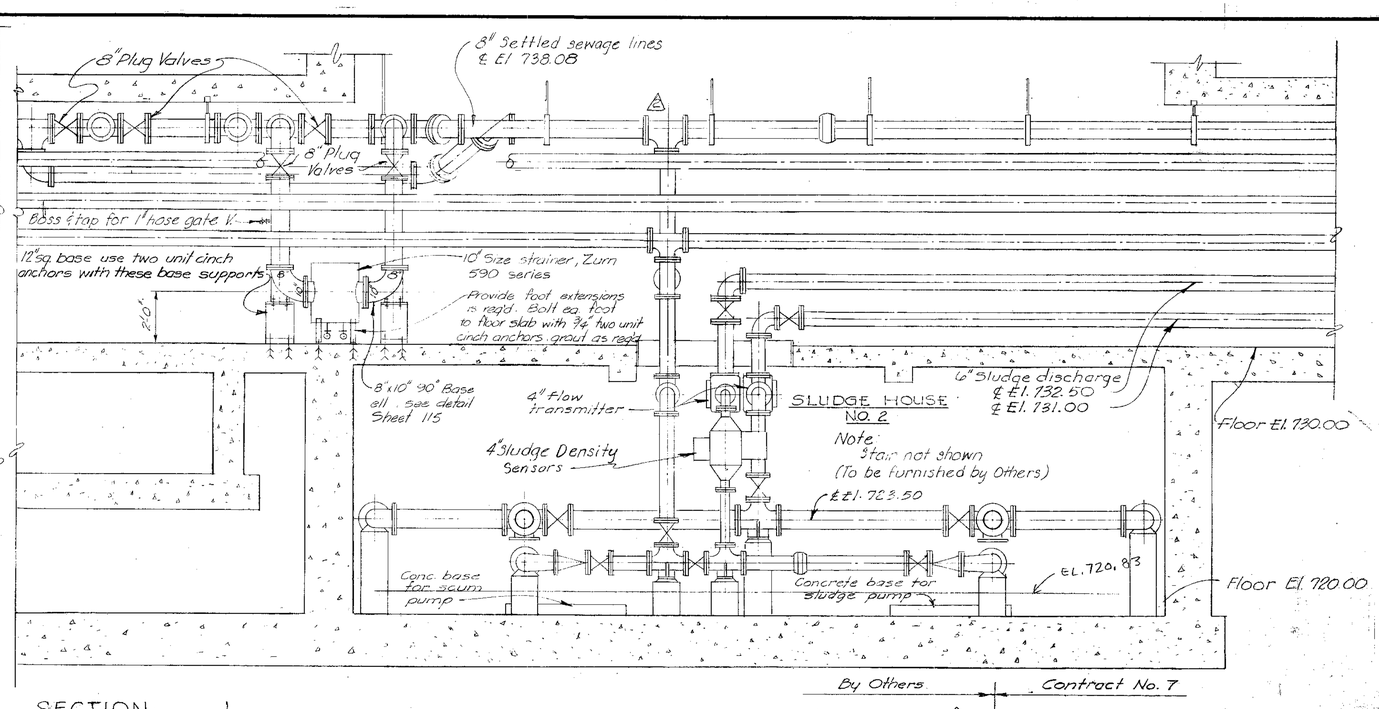
DESIGNED ACP DETAILED ACP LWD CHECKED LEW APPROVED DATE 2-4-65

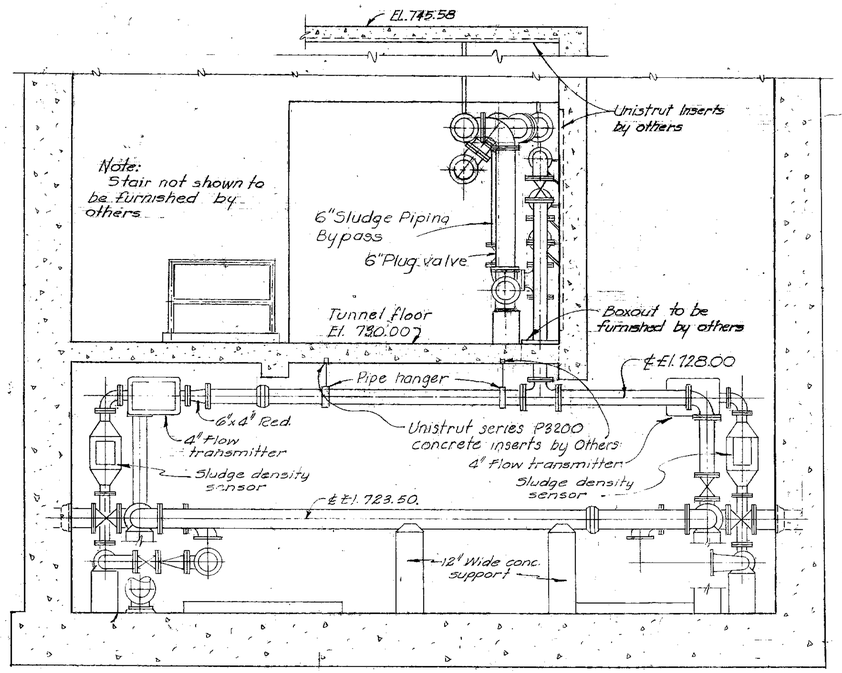
SHEET 112 OF 190

PROJECT 73-0-2 104232

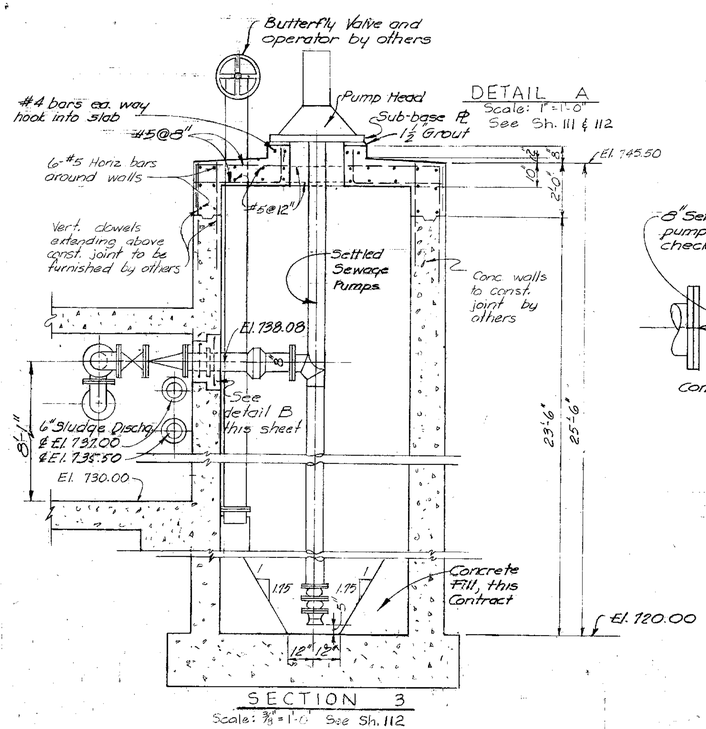


SECTION 1
Scale: 3/8"=1'-0"
See Sheets 111 & 112



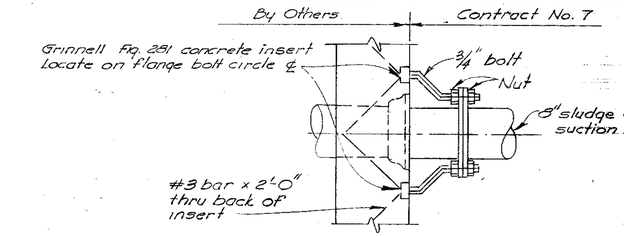


SECTION 2
Scale: 3/8"=1'-0"
See Sheet # 111

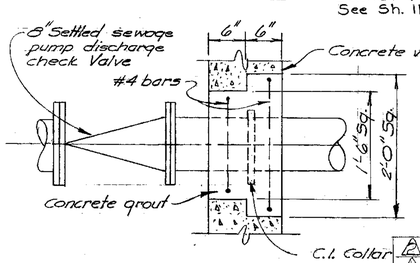


SECTION 3
Scale: 3/8"=1'-0" See Sh. 112

DETAIL A
Scale: 1"=1'-0"
See Sh. 111 & 112



DETAIL A
Scale: 1"=1'-0"
See Sh. 111 & 112



DETAIL B
Scale: 1"=1'-0"
See Sheets 112 & 113

NO	DATE	DESCRIPTION	BY	CHK
2	11-66	Conform to construction records	RLM	ACP
1	2-2-65	Revised pump location	ACP	KRL

REVISION

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

- SLUDGE HOUSE SECTIONS AND DETAILS

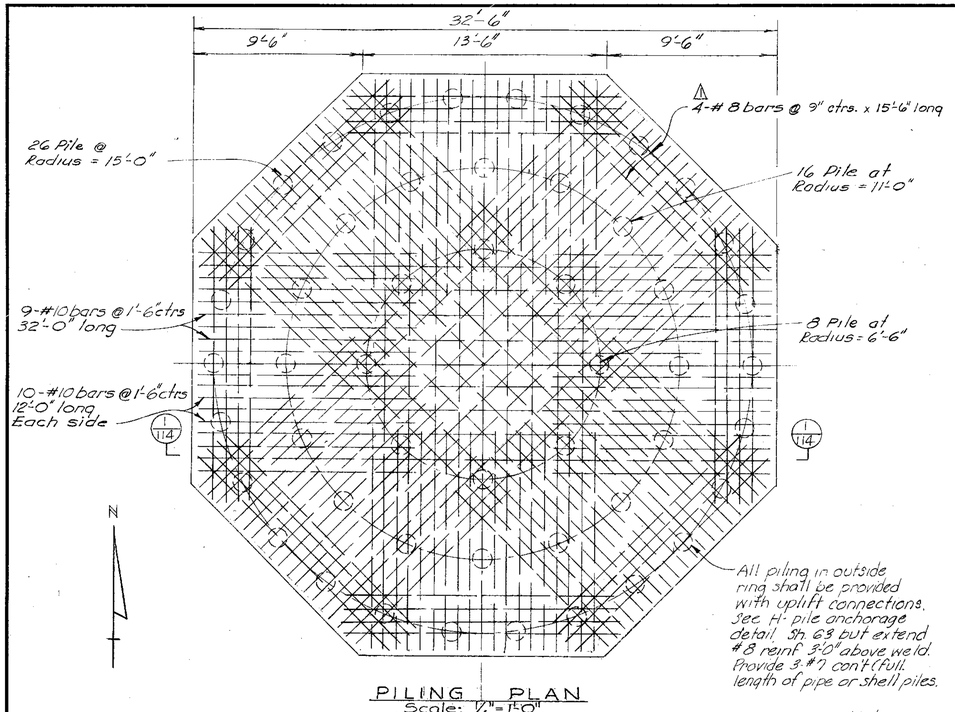
BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

FED. CONTRACT 7

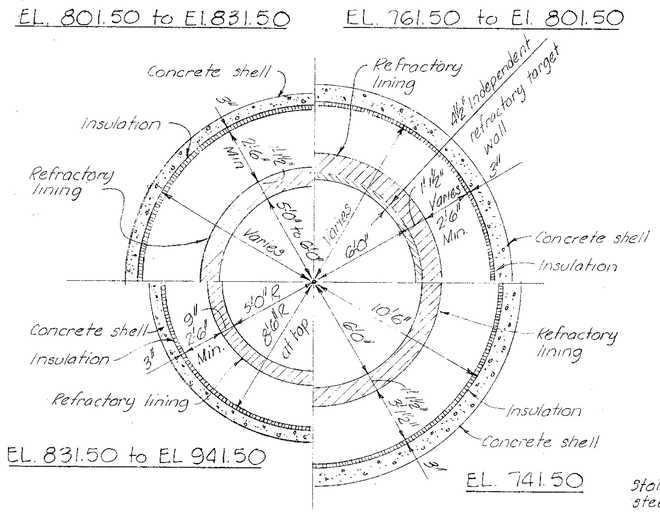
DESIGNED ACP CHECKED LEW
DETAILED ACP, LWD APPROVED
DATE 6-64

SHEET 113 OF 190

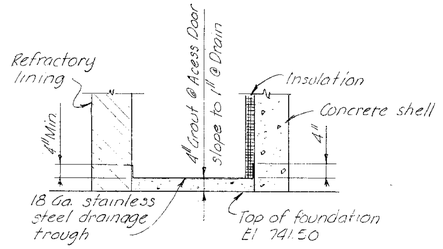
PROJECT 10662.32



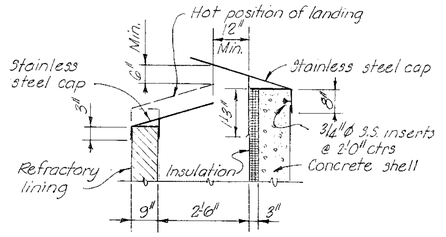
PILING PLAN
Scale: 1/4" = 1'-0"



COMPOSITE CROSS SECTION
Scale: 1/4" = 1'-0"

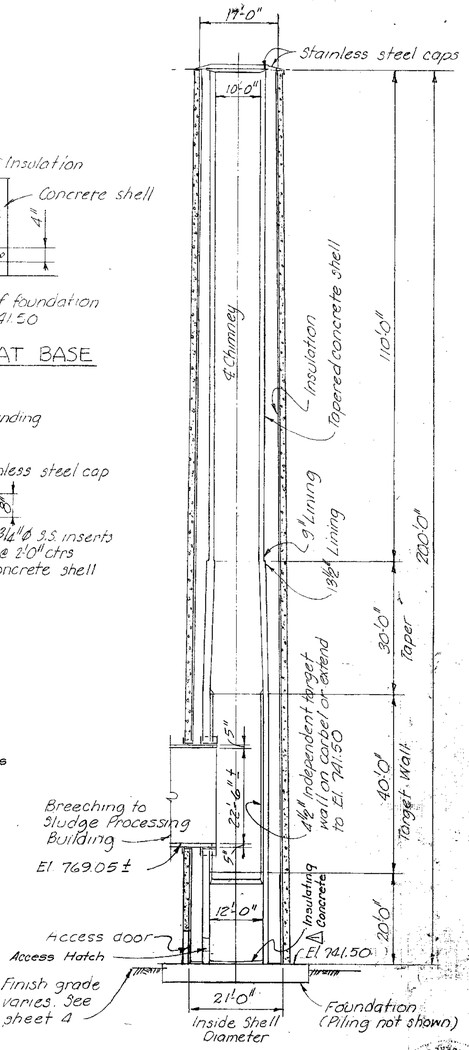


FLASHING DETAILS AT BASE
Scale: 1/2" = 1'-0"

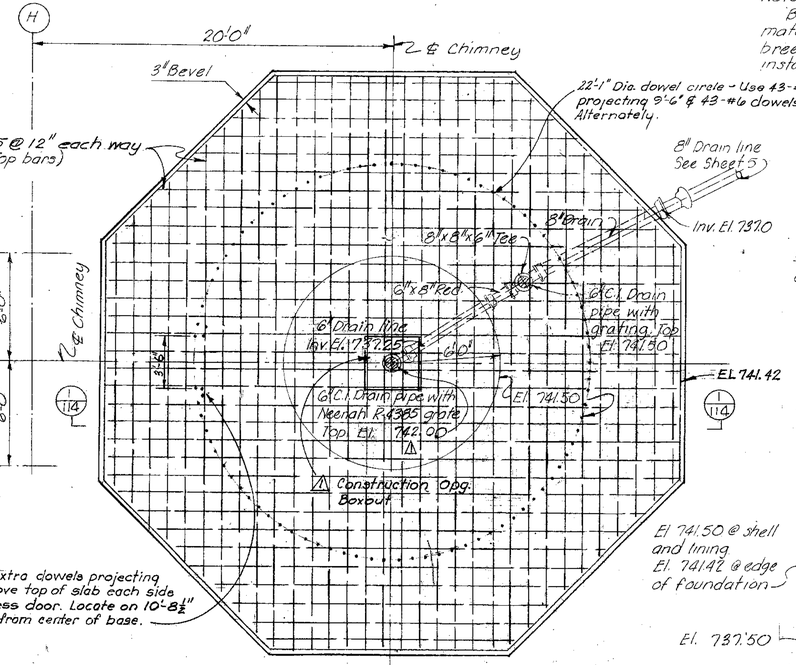


CAP DETAIL
Scale: 1/2" = 1'-0"

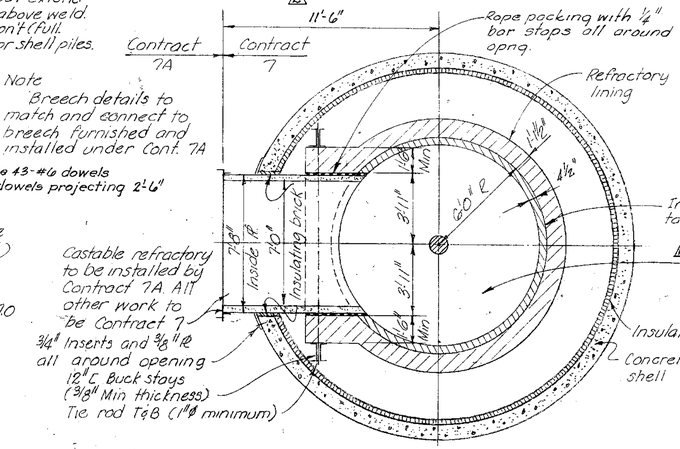
Note: Chimney accessories such as ladders, platforms, lighting protection, obstruction lighting and sampling openings are not shown. See chimney Specifications



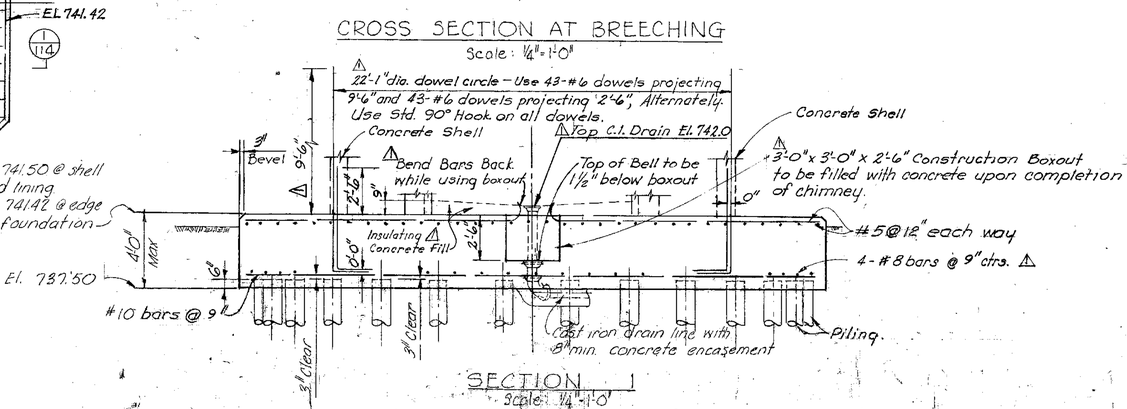
VERTICAL SECTION
Scale: 1/16" = 1'-0"



REINFORCEMENT FOR CHIMNEY BASE
Scale: 1/4" = 1'-0"



Note
Breech details to match and connect to breech furnished and installed under Cont. 7A



SECTION 1
Scale: 1/4" = 1'-0"
See this sheet

No.	Date	Revision	By	Ckd.
2	9/1/64	Breeching Dimension	LWD	LEW
1	8/28/64	Chimney Reinf. & Insulating Conc.	LWD	LEW

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

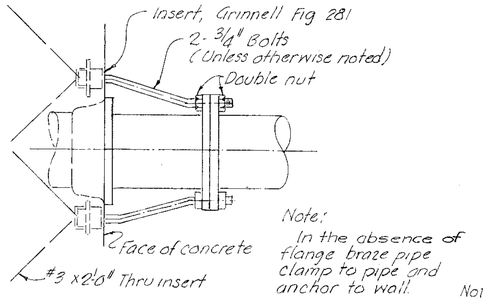
CHIMNEY

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

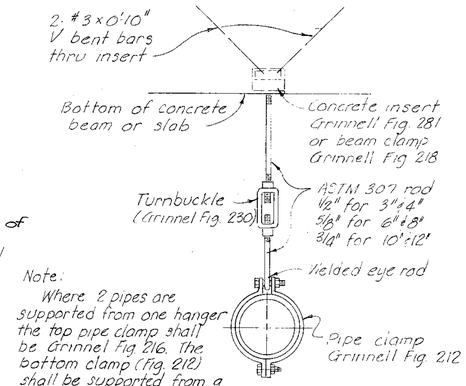
DESIGNED RAM ACP CHECKED LEW, VEA
DETAILED LWD ACP APPROVED
DATE 2-4-64

SHEET 114 OF 190



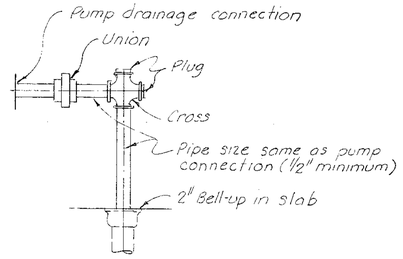
Note:
In the absence of flange braze pipe clamp to pipe and anchor to wall.

DETAIL A
PIPE ANCHOR DETAIL
No Scale

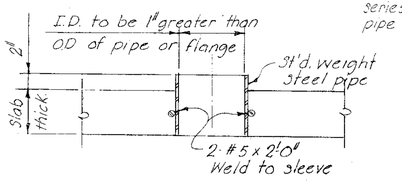


Note:
Where 2 pipes are supported from one hanger the top pipe clamp shall be Grinnel Fig 216. The bottom clamp (Fig. 212) shall be supported from a weldless eye nut (Fig 290)

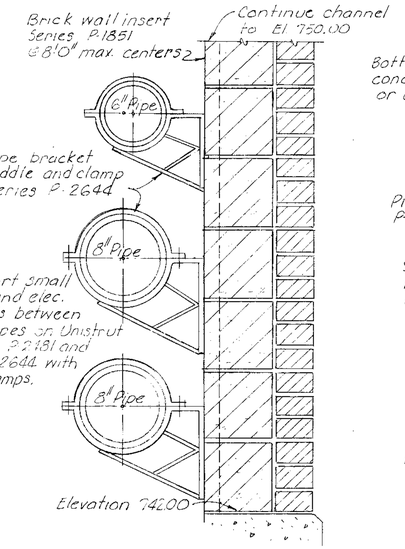
PIPE HANGER DETAIL
Scale: 1½" = 1'-0"



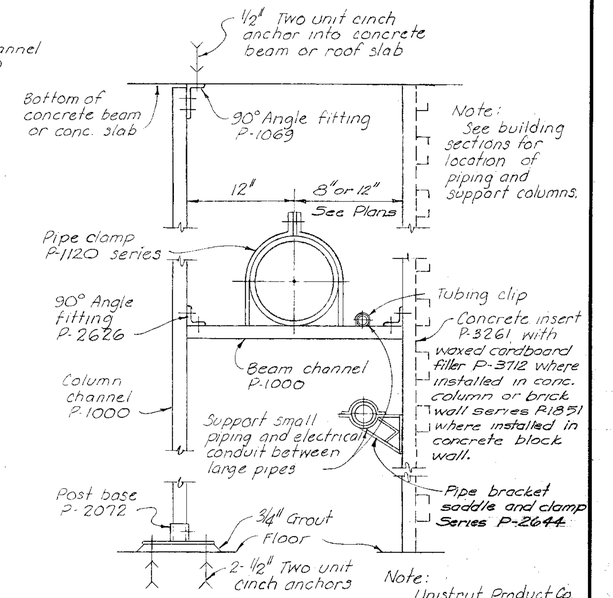
TYPICAL PUMP DRAINAGE CONNECTION DETAIL
No Scale



TYPICAL PIPE SLEEVE DETAIL
No Scale



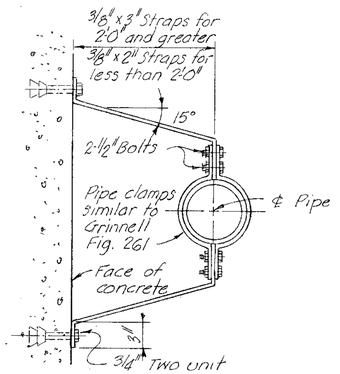
Note:
Support small piping and elec. conduits between large pipes on Unistrut brackets P-2181 and series P-2644 with pipe clamps.



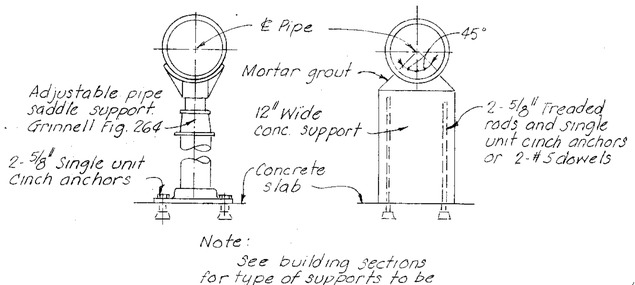
Note:
See building sections for location of piping and support columns.

Note:
Unistrut Product Co. catalogue numbers are used for identification purposes only. All Unistrut members, pieces and bolts shall be hot dip galvanized.

TYPICAL PIPE SUPPORT RACK DETAILS
Scale: 1½" = 1'-0"



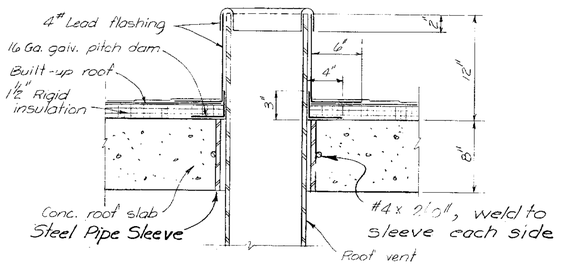
PIPE STRAP DETAIL
Scale: 1½" = 1'-0"



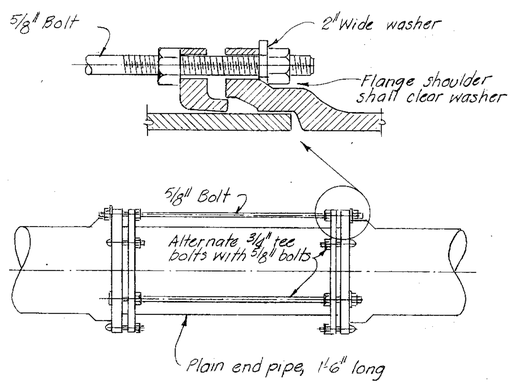
Note:
See building sections for type of supports to be used

PIPE TYPE CONCRETE TYPE

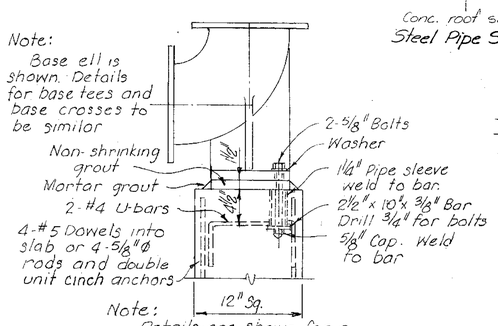
TYPICAL PIPE SUPPORT DETAILS
Scale: 1½" = 1'-0"



TYPICAL ROOF VENT FLASHING DETAIL
Scale: 1½" = 1'-0"



TYPICAL DOUBLE MECHANICAL JOINT BELL ANCHOR DETAIL
No Scale



PIPE BASE DETAIL
Scale: 1½" = 1'-0"

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

MISCELLANEOUS PIPING DETAILS

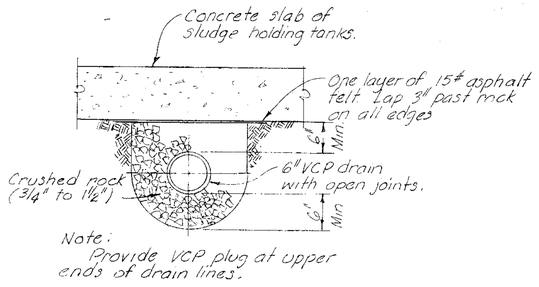
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

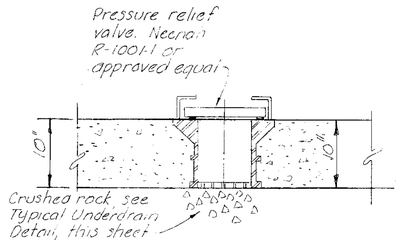
DESIGNED REP CHECKED LEW
DETAILED REP LWD APPROVED
DATE 2-24-64

SHEET 115 OF 190

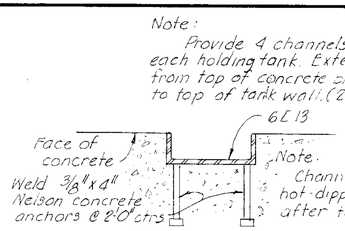
PROJECT 32.92 1042.32



TYPICAL UNDERDRAIN DETAIL
Scale: 3/4" = 1'0"
See Sheet 90

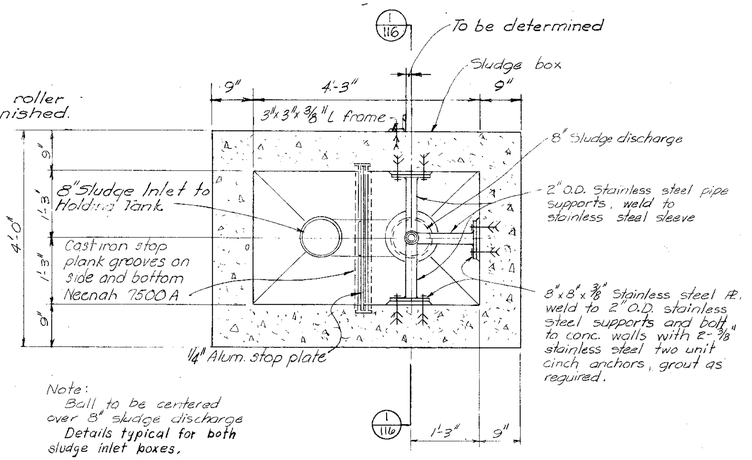


PRESSURE RELIEF VALVE DETAIL
Scale: 1 1/2" = 1'0"
See Sheet 90



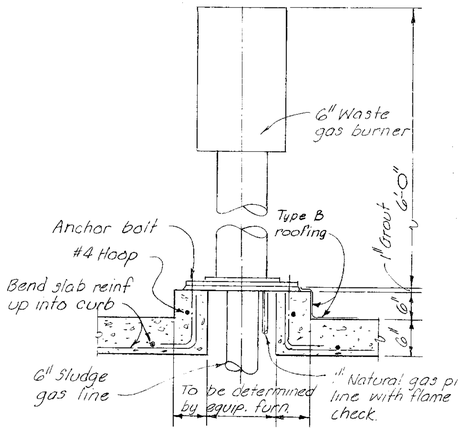
Note: Locate opposite roller guides on cover furnished.

FLOATING COVER GUIDE DETAIL
Scale: 3" = 1'0"

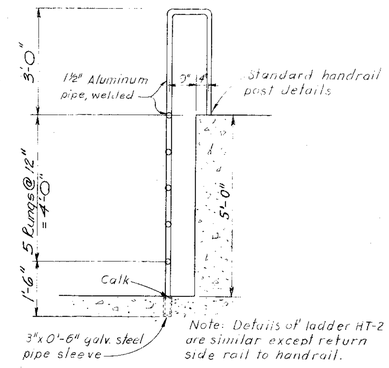


Note: Ball to be centered over 8" sludge discharge. Details typical for both sludge inlet boxes.

PLAN OF SLUDGE INLET BOX FLOAT CONTROL
Scale: 3/4" = 1'-0"
See Sh. 92

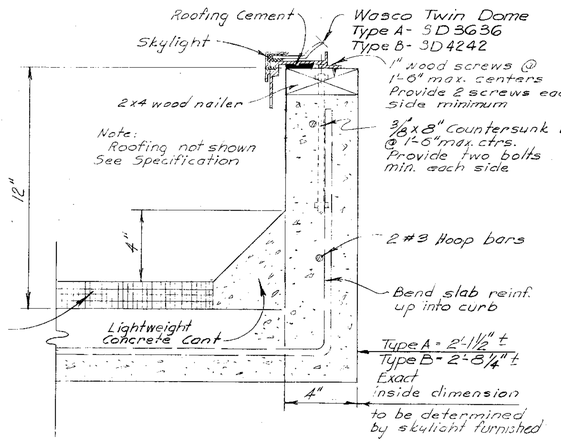


WASTE GAS BURNER DETAIL
Scale: 3/4" = 1'0"
See Sheet

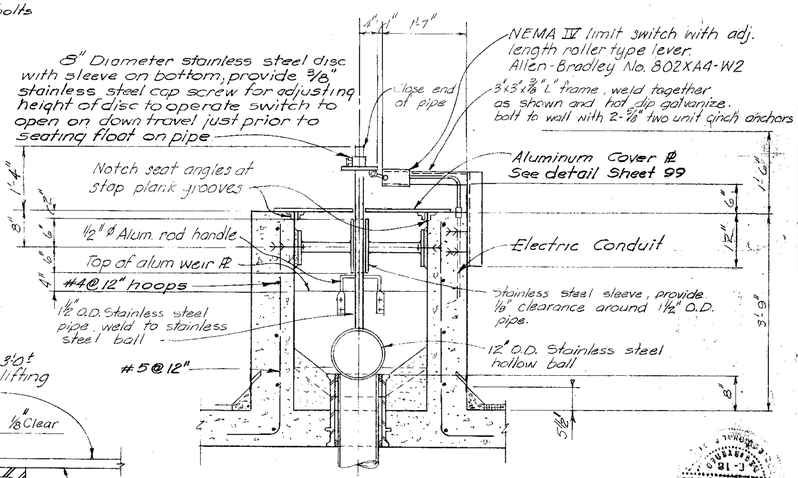


Note: Details of ladder HT-2 are similar except return side rail to handrail.

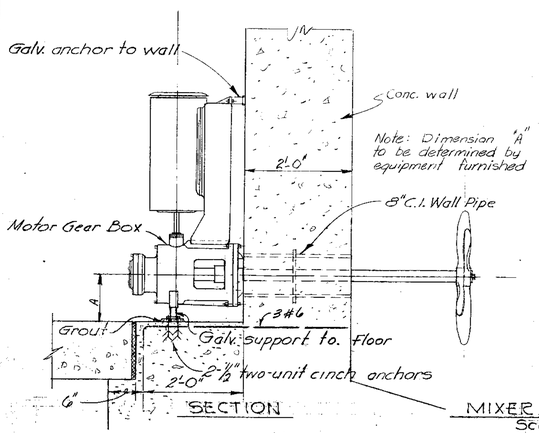
DETAIL OF LADDER HT-1
Scale 1/2" = 1'-0"



SKYLIGHT DETAIL
Scale: 3" = 1'-0"

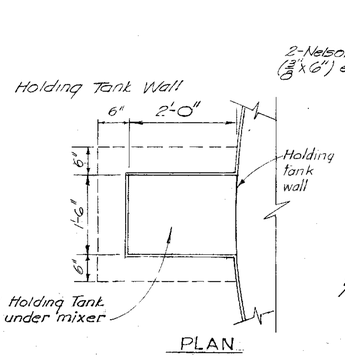


SECTION 1
Scale: 3/4" = 1'-0"
See This Sh.

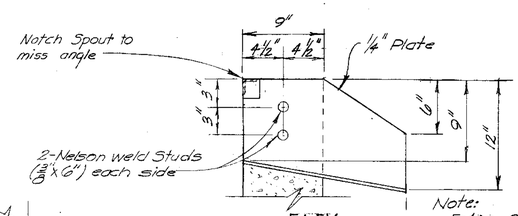


SECTION

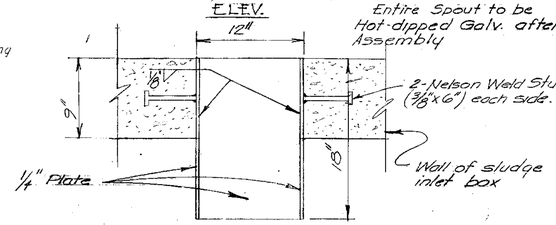
MIXER SUPPORT DETAIL
Scale: 3/4" = 1'-0"



PLAN

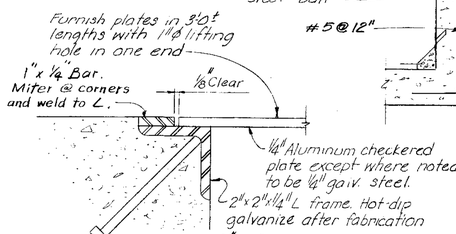


Note: Entire Spout to be Hot-dipped Galv. after Assembly

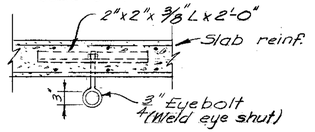


PLAN

METAL SPOUT DETAIL
Scale: 1 1/2" = 1'-0"



CHECKERED Pl DETAIL
Scale: 6" = 1'-0"



LIFTING EYE DETAIL
Scale: 3/4" = 1'-0"

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

MISCELLANEOUS DETAILS

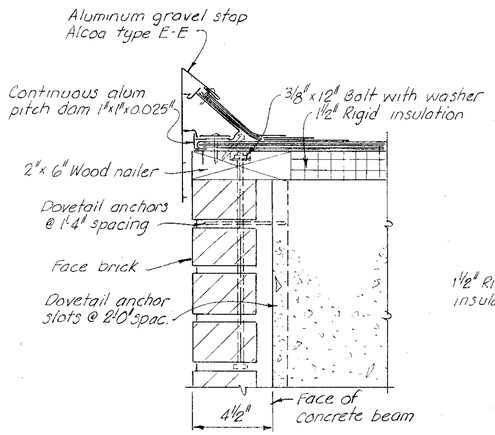
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

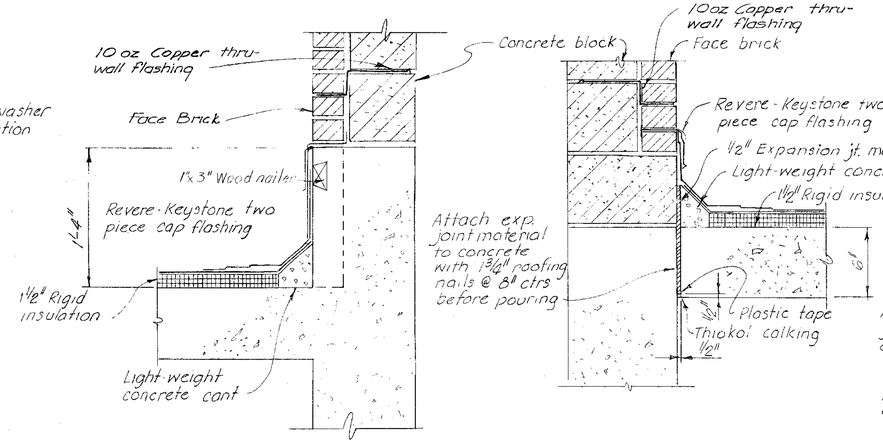
DESIGNED ACP DETAILED ACP LWD CHECKED LEW APPROVED [illegible] DATE 2-4-64

SHEET 116 OF 190

10/232

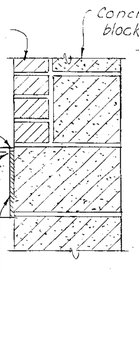


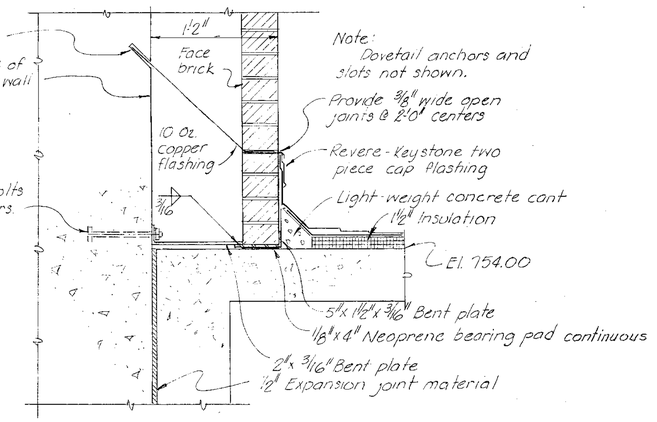
DETAIL A
Scale: 3" = 1'-0"
See Sh. 94, 105, & 107



DETAIL B
Scale: 1½" = 1'-0"
See Sh. 94

DETAIL C
Scale: 1½" = 1'-0"
See Sh. 94





DETAIL D
Scale: 1½" = 1'-0"
See Sh. 107

DETAIL E
Scale: 1½" = 1'-0"
See Sh. 95

DETAIL F
Scale: 1½" = 1'-0"
See Sh. 95

DETAIL G
PLAN OF FACING CONTROL JOINT
Scale: 1½" = 1'-0"
See Sh. 88 & 94

BOILER VENT DETAIL
Scale: 1" = 1'-0"

INCINERATOR VENT CURB DETAIL
Scale: 1½" = 1'-0"

REGISTERED ENGINEER
STATE OF MISSOURI
E-18
H. LEVATICH

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

ARCHITECTURAL DETAILS

BLACK & VEATCH AND BURNS & MCDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED ACP DETAILED ACP CHECKED LEW APPROVED DATE 2-24-64

SHEET 117 OF 190

PROJECT 3292 1042.32

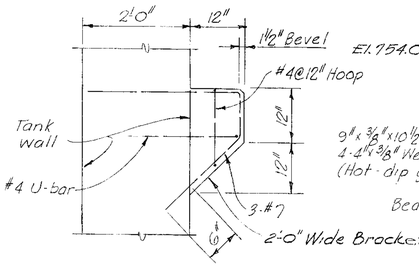
CONCRETE BEAM SCHEDULE NO. 2

Beam	D	W	Top Bars	Bottom Bars	Side Bars ½ Ea. Face	Stirrups	Remarks
ST-1	1'-6"	2'-6"	3-#11	4-#11	-	Note A	
ST-2	2'-0"	12"	2-#11	2-#11	-	#4@12"	
ST-3	2'-0"	12"	2-#8	2-#8	-	#4@12"	
ST-4	1'-4"	12"	2-#8	2-#8	-	#3@12"	
ST-5	2'-0"	12"	2-#10	2-#11	-	#3@12"	D Slopes to 1'-11"
ST-6	1'-4"	12"	2-#7	2-#7	-	#3@12"	
ST-7	1'-4"	12"	2-#7	2-#7	-	#3@12"	
ST-8	2'-0"	12"	2-#8	2-#9	-	#4@12"	See Detail A Sheet 101
ST-9	1'-4"	1'-3½"	2-#7	2-#7		#3@12"	
HT-1	2'-0"	12"	2-#9	3-#9	-	#3@12"	
HT-2	2'-0"	12"	2-#8	2-#8	-	#3@12"	
HT-3	1'-8"	1'-2"	3-#8	3-#9	-	#3@12"	
HT-4	2'-0"	1'-6"	3-#9	3-#11	-	#4@12"	Note B
HT-5	2'-0"	12"	2-#8	3-#8	-	#3@12"	
HT-6	2'-0"	12"	2-#8	2-#8	-	#3@12"	
HT-7	2'-0"	12"	2-#8	2-#8	-	#3@12"	
HT-8	2'-0"	12"	2-#8	2-#9	-	#4@12"	
HT-9	2'-0"	12"	2-#8	2-#9	-	#4@12"	2-#6 T&B may be used over partition walls.
HT-10	2'-0"	12"	2-#8	2-#9	-	#4@12"	
HT-11	2'-0"	12"	2-#6	2-#6	-	#4@12"	
HT-12	4'-0"	12"	2-#9	2-#9	4-#5	#4@12"	
HT-13	2'-10"	12"	2-#9	2-#10	-	#4@12"	
HT-14	2'-10"	12"	2-#9	2-#11	-	#4@12"	
HT-15	2'-10"	-	2-#9	2-#10	-	-	Stirrups not req'd. see Sec. 1, Sh. 94
HT-16	2'-10"	-	3-#10	3-#11	-	-	
HT-17	2'-0"	12"	2-#9	2-#9	-	#4@12"	
HT-18	2'-10"	12"	2-#9	2-#9	-	#4@12"	
HT-19	3'-4"	12"	2-#9	2-#9	2-#5	#4@12"	
HT-20	2'-0"	12'	2-#8	2-#8	-	#3@12"	

Note A: Space #4 Stirrups @ 3", 3", 4", 4", 5", 6", 6", 8", 12", 12", 12" to 4' of beam (ea. end)
Note B: Provide 2-#7 in curb above top of beam @ penthouse. See Sec. 1, Sh. 95

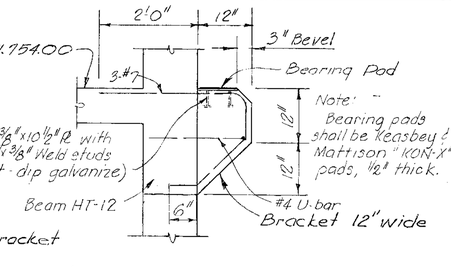
CONCRETE COLUMN SCHEDULE NO 2

Col.	T	W	Vertical Bars	Tie Bars	Remarks
ST-1	12"	12"	4-#6	#3@12"	
HT-1	12"	12"	4-#9	#3@12"	
HT-2	12"	12"	4-#6	#3@12"	
C-1	1'-1"	12"	4-#6	#3@12"	



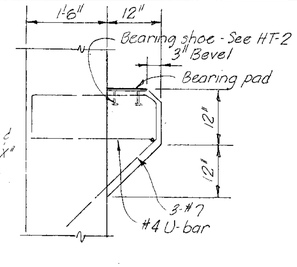
Note:
Number of brackets to be same as number of trusses in floating cover furnished

BRACKET HT-1
Scale: ¾" = 1'-0"



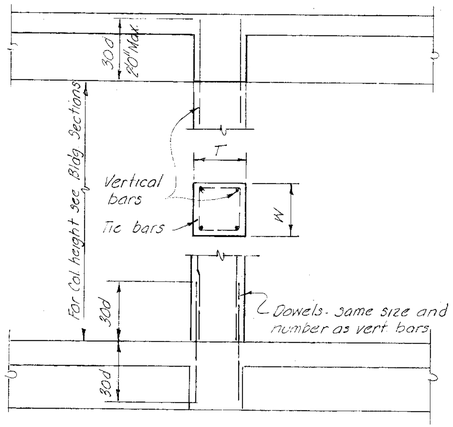
Note:
Bracket HT-2 to be provided under south end of all HT-8 beams.

BRACKET HT-2
Scale: ¾" = 1'-0"

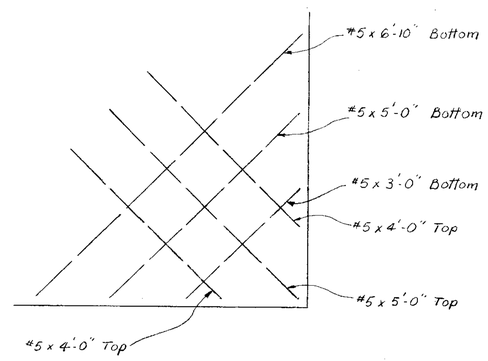


Note:
Bracket HT-3 to be provided on tank walls under ends of Beam HT-20

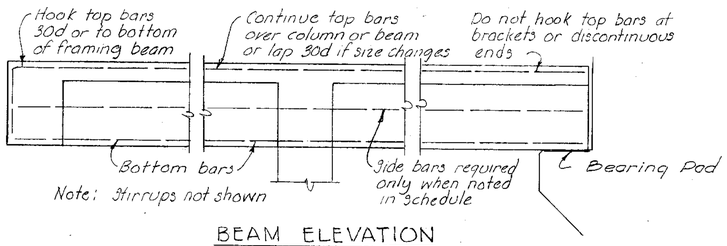
BRACKET HT-3
Scale: ¾" = 1'-0"



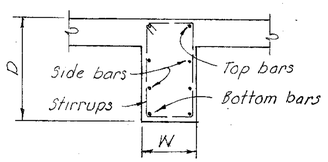
COLUMN ELEVATION
No Scale



TYPICAL PLAN OF EXTRA REINFORCING IN FLAT ROOF SLAB CORNERS
Scale: ¾" = 1'-0" See Sheet 92



BEAM ELEVATION



BEAM SECTION

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

CONCRETE DETAILS

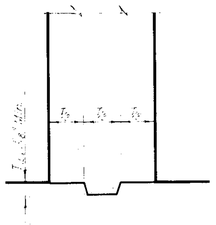
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

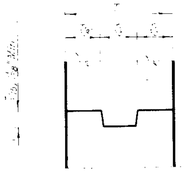
DESIGNED ACP
DETAILED ACP
CHECKED LEW
APPROVED
DATE 2-4-64

SHEET 118 OF 190

SLABS

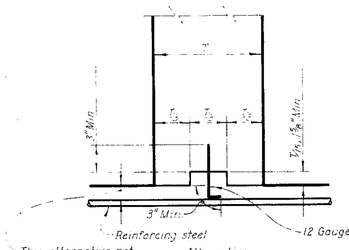


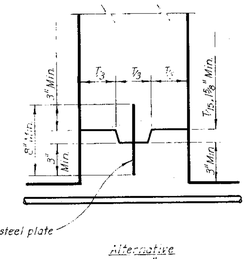
BASE OF WALLS

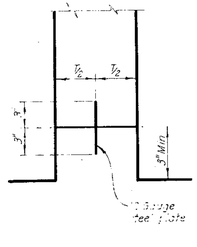


WALLS

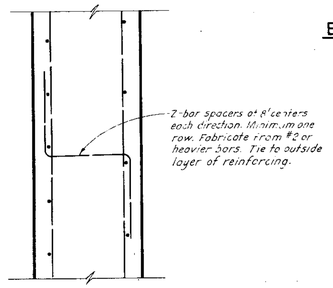
JOINTS WITHOUT WATER STOPS



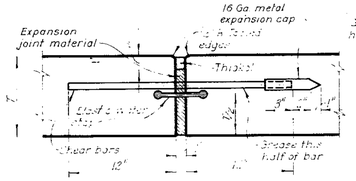




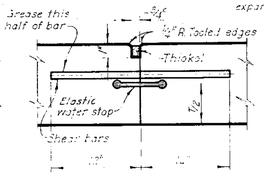
BASE OF WALLS



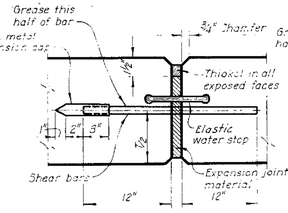
SPACERS FOR WALL REINFORCEMENT



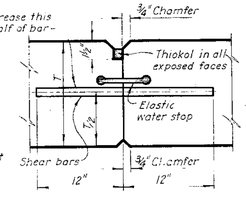
EXPANSION JOINTS IN SLABS



CONTRACTION JOINTS IN SLABS



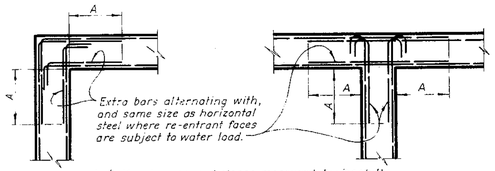
EXPANSION JOINTS IN WALLS



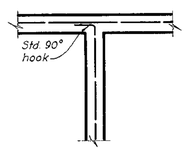
CONTRACTION JOINTS IN WALLS

Note: Horizontal reinforcing steel not to be carried across expansion or contraction joints.
Shear bars to be smooth, free from any rust or scale and greased as noted with a thick coating of No-Ox-Id "A Special" or approved equal.
Where watertight joints are not required, omit elastic water stops; see specifications.

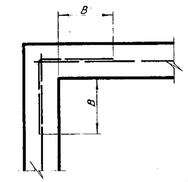
TYPICAL EXPANSION AND CONTRACTION JOINTS



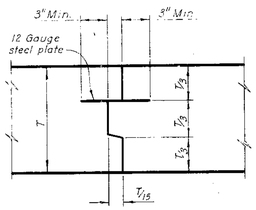
A = ⅓ the clear span distance measured horizontally or vertically, whichever is the smaller, but in no case less than 43 times the square of the bar diameter or 36 times the bar diameter, whichever is greater.

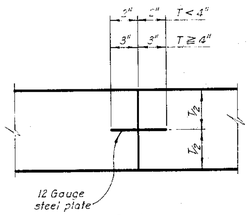


Note: Vertical reinforcing not shown.

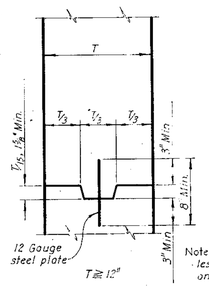


B = 43 times the square of the bar diameter or 36 times the bar diameter, whichever is greater.

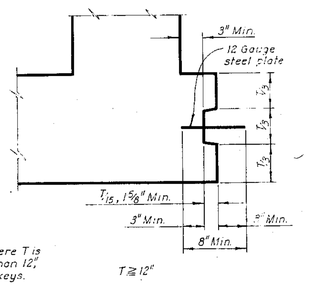




SLABS



WALLS



CORNERS

WATERTIGHT JOINTS

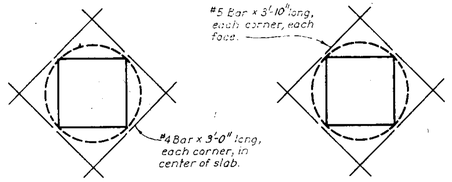
TYPICAL CONSTRUCTION JOINTS

Note: Reinforcing steel is to be carried across all construction joints.

CONCRETE COVER FOR REINFORCEMENT

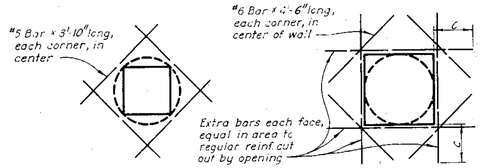
LOCATION	MINIMUM COVER
Unformed surfaces adjacent to excavation	3"
Formed or top surfaces exposed to weather or saturated air, submerged, in contact with earth, or in beams or columns:	
#6 or larger bars	2"
#5 or smaller bars	1½"
Other locations:	Bar diameter
#7 or larger bars	
#6 or smaller bars	¾"

Cover shall be measured from the outside face of the outer layer of primary reinforcement to the concrete surface. Except for beams and columns, the main load carrying bars shall be installed to the outside with secondary bars inside. Cover for reinforcing steel shall not exceed the minimum by more than 6 per cent of the concrete thickness.



Note: These details apply to openings larger than 18" in diam. or diagonal.

SLABS



WALLS

TYPICAL EXTRA REINFORCING AT OPENINGS

GENERAL NOTES:

Details on this sheet apply to the entire set of plans except where specifically shown otherwise

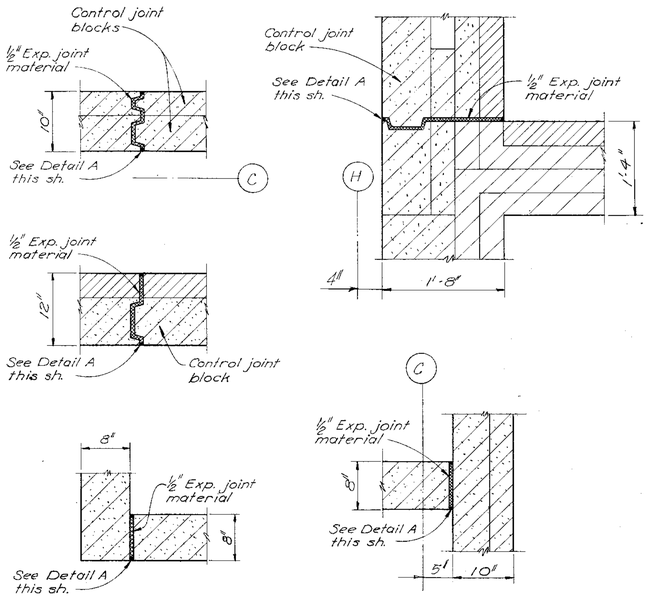
KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

STANDARD CONCRETE DE...

BLACK-SIVALLS-AND-BRYSON, INC.

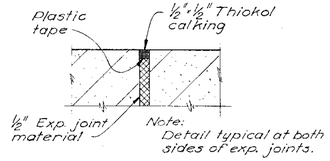
DESIGNED
TRACED ACW. DATE
CHECKED

119 OF 190



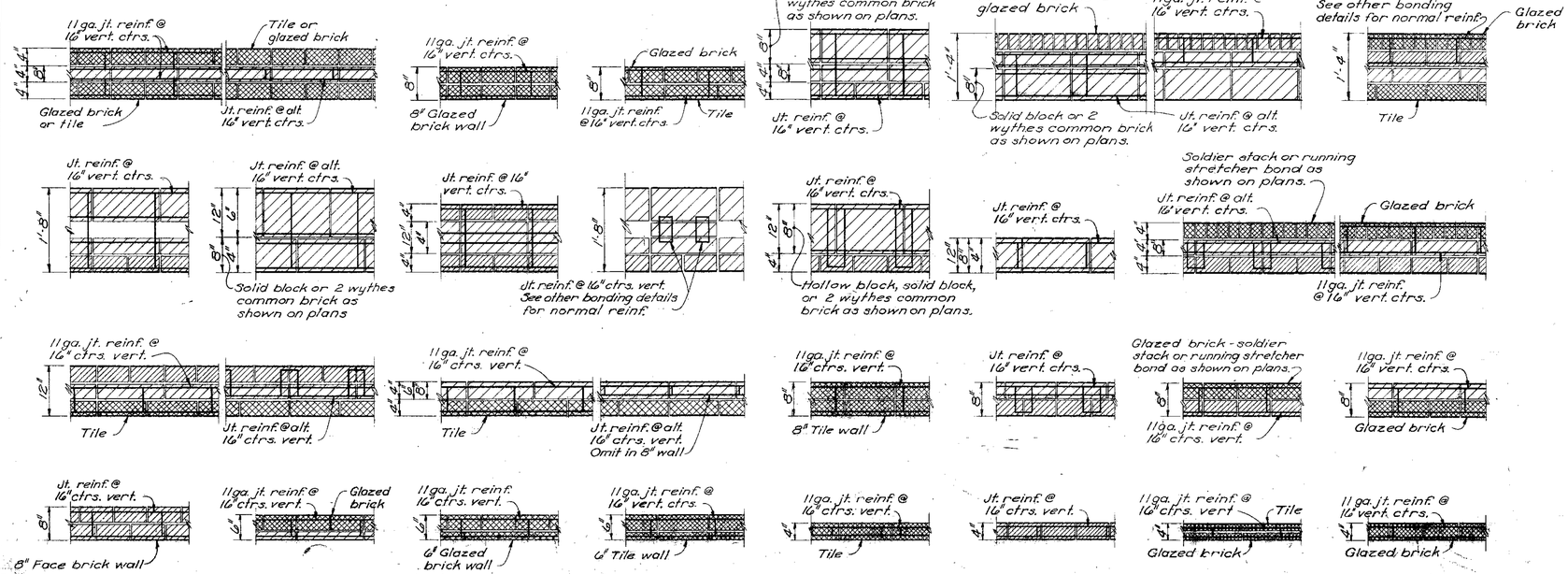
TYPICAL MASONRY EXPANSION JOINT DETAILS

Scale: 1" = 1'-0"



DETAIL A

Scale: 3" = 1'-0"



TYPICAL BONDING DETAILS

Scale: 3/4" = 1'-0"

Note:
These details apply to all structures unless otherwise noted.

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

STANDARD ARCHITECTURAL DETAILS

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED MDM ACP CHECKED LEW
DETAILED DES APPROVED
DATE 2-1-69

SHEET 120 OF 190

PROJECT 3202 1062.32

Sludge Thickener Basin
Scum Manhole Drawoff

Thickener basin Sludge drawoff

Sludge Pump #6

Sludge Pump #5

Scum Pump #5

4" Flow Transmitter #5

4" Sludge Density Sensor

4" Flow transmitter No. 6

6" Sludge discharge

6" Sludge discharge

6" Scum discharge

6" Sludge discharge

6" Sludge discharge

6" Scum

6" Sludge to Filters #1&2 Note: For continuation See Sheet 122

6" Sludge to Filters #3&4

6" Sludge to Filters #5&6

6" Sludge to Filters #7&8

Sludge Box

Sludge Box

Primary Basin No. 3 Sludge drawoff

Sludge Pump #3

4" Sludge Density Sensor

4" Flow Transmitter No. 3

Sludge Pump #4

Primary Basin No. 4 Sludge Drawoff

6" Bypass to 8" settled sewage line to the Sludge Thickner Inlet

Bypass

Bypass

Bypass

Holding Tank No. 1

Holding Tank No. 2

Primary Basin No. 3 Scum Drawoff

Scum Pump #3

4" Flow Transmitter No. 4

4" Sludge Density Sensor

Scum Pump #4

Primary Basin No. 4 Scum Drawoff

SLUDGE HOUSE NO. 2

Primary Basin No. 1 Scum Drawoff

Scum Pump #1

6" Sludge

6" Sludge

6" Scum

Scum Pump #2

Primary Basin No. 2 Scum Drawoff

Bypass

Bypass

Primary Basin No. 1 Sludge Drawoff

Sludge Pump #1

4" Sludge Density Sensor

4" Flow Transmitter No. 1

4" Flow Transmitter No. 2

4" Sludge Density Sensor

Sludge Pump #2

Primary Basin No. 2 Sludge Drawoff

SLUDGE HOUSE NO. 1

Duntegan No. 1

Distr. No. 2

Distr. No. 3

Distr. No. 4

Sludge Tr. Pump No. 6

Sludge Tr. Pump No. 5

Sludge Tr. Pump No. 4

Sludge Tr. Pump No. 3

Sludge Tr. Pump No. 2

Sludge Transfer Pump No. 1

6" Sludge Density Sensor

Mixed Sludge Drawoff Piping (typical)

SLUDGE HOLDING TANKS

LEGEND

- Flow
- Check valve
- Plug valve
- 3-Way plug valve (2 Position, 3 Port 90° turn)

Note: Valves to be 6" unless noted otherwise on schematic or plans.

N

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE AND SCUM PIPING SCHEMATIC

BLACK & VEATCH AND BURNS & MCDONNELL CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT

DESIGNED — DETAILED — CHECKED — APPROVED — DATE

SHEET NO. OF 190

104-232

N

12" Vacuum Line
12"x8"x8" Tee
8" Vacuum Line
8"x6"x6" Red. Tee
8"x6"x6" Red. Tee
4"x4"x4" Tee
4"x3" Red. Ell
MFM
Flocculator No. 8
Filter No. 8
6"
6'
Filter No. 7
Flocculator No. 7
To Drain 6"
4" Flocculator drain
4" Drain
4"x4"x4" Tee
6"x4" Red.
6"x4"x4" Wye
4"x3" Red.
6" Sludge Line
6" Sludge Line
6"x4"x4" True wye
For continuation see Sludge and Scum Piping Schematic, Sh. 121
4"x3" Red.
4"x3" Red
Flocculator No 6
Filter No. 6
Filter No. 5
Flocculator No. 5
4"x4"x4" Tee
4" Drain
8"x6"x6" Tee
12"x8"x8" Red. tee
8" Vacuum Line
12" Vacuum Line
6" Scum Line
6" Sludge Line
6" Sludge Line
12" Vacuum header
Vacuum Pump No. 8
Receiver No. 8
Filtrate Pump
8"x6" Ell
4" Filtrate Drain
12"x8" Red
12"x12"x6" Tee
Vacuum Pump No. 7
Receiver No. 7
Filtrate Pump
20"x12" Red.
6"x4" Red.
4"
Note A
20"x20"x20" Tee
Vacuum Pump No. 6
Receiver No. 6
Filtrate Pump
20"x20"x6" Tee
20"x16" Red.
8"x6" Red.
4"
Note A
Vacuum Vent Header
16"x16"x6" Tee
Vacuum Pump No. 5
Receiver No. 5
Filtrate Pump
16"x16"x8" Tee
Vacuum Pump No. 4
Receiver No. 4
Filtrate Pump
12"x16" Red.
10"x8" Red.
12"x12"x6" Tee
Vacuum Pump No. 3
Receiver No. 3
Filtrate Pump
12"x12"x6" Tee
Vacuum Pump No. 2
Receiver No. 2
Filtrate Pump
12"x8" Red.
8"
6"x4" Red. (Typ.)
Vacuum Pump No. 1
Receiver No. 1
Filtrate Pump
6"x8" Ell
Silencer (Typ.)
10" to Sewer
12"x12"x8" Tee (Typical)
12" Vacuum header
12"x12"x8" Tee
12"x8"x8" Tee
8"x8"x8" Tee
8"x8"x6" Tee
8" Vacuum line
6" Vacuum line
8"x6"x6" Tee
8"x6"x6" Tee
6"x4"x4" Wye
6"x4" Red.
4"x3" Red.
MFM
6"x4"x4" Wye
6"x4" Red.
4"x3" Red.
MFM
4"x3" Red.
Flocculator No. 4
Filter No. 4
Filter No. 3
Flocculator No. 3
4"x4"x4" Tee
4" Drain
4" Drain
4"x4"x4" Tee
To Drain 6"
Flocculator No. 2
Filter No. 2
Filter No. 1
Flocculator No. 1,
4"x4"x4" Tee
4" Flocculator drain
4" Flocculator drain
8" Vent from Settled Sewage Storage Tank
20" Vent to breeching
6" Scum Line
6" Connection to settled sewage service line
6" Plug valve
6"x6"x6"x6" Cross
6"x4" Red.
4' Scum line to Sludge Feeder No. 3
6"x4"x4" Tee
4' Scum line to Sludge Feeder No. 2
4' Scum line to Sludge Feeder No. 1

LEGEND

- Flow
- Plug valve in sludge, filtrate & scum lines. Butterfly valve in vent and vacuum lines.
- Control valve
- Check valve (Vacuum service)
- MFM — Magnetic flow meter (3")
- Reducer in line
- Relief valve (furnished under Contract 78)

Note A:
Provide 1" drain lines with 1" plug valves from bottom of 20"x20"x20" tee on vacuum vent and bottom of 12" vacuum header into a 2" bell-up of the ground floor drainage system.

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

FILTRATION PIPING SCHEMATIC

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED ACP CHECKED LEW
DETAILED ACP APPROVED
DATE

SHEET 122 OF 190

8" Overflow line to Scrubber drain line
8" Vent to vacuum pump vent header to breeching
1" Air line 12" of bubbler to within floor
Settled Sewage Effluent Storage Tank
8" Plug valves
Settled Sewage Service Pump No. 1
5"x6" Red Check V. (Typ)
6" Plug Valve
6"x6"x6" Tee
8" Plug Valve
Ash Sluice Pump No. 2
Ash Sluice Pump No. 1
Contr. 7
Contract 7A
8"x6" Ecc. Reducer
6" Plug Valve
Contract No. 7A
Contract No. 7
Note: See Sh. 86 for work in this area.
Plug for future pump
6" Ash Sluice Water (Contract 7A)
6" Settled Sewage Service
6" Building Service Water
8' thru tunnel and corridor to Sludge Processing Building
8" Settled Sewage Effluent to Sludge Thickener Inlet Building
8" Plug valve
Strainer
8" Plug valve
Settled Sewage Effluent Pump No. 3
8" Check valve
Settled Sewage Effluent Pump No. 2
8" Plug valve
8" Check valve
Settled Sewage Effluent Pump No. 1
To 8" Potable water service connection. See Schematic, Sh. 124
SLUDGE HOUSE NO. 2
6"
4" Plug Valve
Sluice
Ash Hopper No. 3
6" Pneumatic control valve in make-up water line
3" Ash Sump
3" Valve in agitator line
Contr. 7
Contract 7A
Ash Hopper No. 2
Sluice
6" Building Service Water Contract 7A
4" Plug Valve
Contr. 7
3"
Ash Hopper No. 1
Floodlight & window flush
4" Plug Valve
Sluice
Note: Ash hopper leveling nozzles not shown. See Seal Water System No. 2.
BASEMENT OF SLUDGE PROCESSING BUILDING
6" Plug valve
To connection with 6" scum line @ ℄ El. 791.50
6"x6"x6" Tee & blind flange ℄ El. 774.58
6" Settled Sewage Service to ℄ El. 774.58
6" Building Water Service to El. 774.58
2½" Angle Globe Valve (Typical)
2½" Hose Gate Valve Typical
Hose
Gage (Typ)
2½" Angle Globe Valve (Typ)
Note: for break point in piping to Filters, Quenchers, & Scrubbers between contract 7 and others, See Sheet 87
2½" (Typ)
Filter #8
Filter #7
2½" Plug Valve (Typical)
℄ El. 761.33
Typical ¾" connection for hose faucet lines For continuation see Sh 124
Filter #6
Filter #5
2" Plug Valve (Typical)
Filter #4
Filter #3
2" Plug Valve (Typ)
Filter #2
Filter #1
6" to ℄ El. 774.58
FILTER FLOOR OF SLUDGE PROCESSING BUILDING
PS
Scrubber No. 3
¼" Angle valves
Quencher No. 3
Quencher No. 2
¼" Angle valves
Scrubber No. 2
2" Backflow Preventer in lines to Polymer Dilution Tanks
1" Angle Globe Valve (Typ)
6" Plug Valve (Typical)
Quencher No. 1
Bush up to 1½" (Typ)
¼" Angle Valve (typ)
1" Angle Globe Valve (Typ)
4"
Scrubber No. 1
6" Control Valve (Typ)
6" Plug Valve (Typ)
Note: Piping sizes shown for Scrubber No. 1 & Quencher No. 1 are typical. Piping sizes and equipment shown for filters No. 7 & 8 are typical.
N
1" Leveling nozzles
1½" Ash Hopper No. 3
1½" No. 2
1½" No. 1
Contract 7A
Priming Connection Ash Disposal Pumps No. 1 No. 2
1" Float Valve
Union
1" Water Supply
Strainer with blowoff V
6" Air gap
Press relief V
Contract 7
Contract 7A
¾" Hose faucet
1½" Hose faucet in Sludge Holding Building
2" Overflow
Constant Level Tank
1" Angle Valve
1½" Check V.
1" Bypass
¾" Drain
Cooling tower reservoir
Chiller
¾"
½"
2" Bellup in floor
2" Suction
1½"
Strainer with blowoff V
¾" To Admin Building Basement
Gland seal pumps
Pressure Reducing Valve
¾" To Heating water expansion tank fill line
¾" to Settled Sewage Service Pump
¾" to Ash Sluice Pump No. 1
¾" to Ash Sluice Pump No. 2
Plugged tee
¾" To Heating Boiler No. 1
1½" to Ash Disposal Pump No. 1
¾" To Heating Boiler No. 2
Strainer & blowoff valve and solenoid valve to be furnished by Contract 7 and installed by Contr. 7A
Ash Disposal Pump No. 2
PS
Typical Service to Each Pump
WATER SEAL SCHEMATIC FOR SETTLED SEWAGE SERVICE, ASH SLUICE, AND ASH DISPOSAL SYSTEM - SEAL WATER SYSTEM NO. 2
2" Float Valve
Air Gap
Valve
2" Inlet
Union
2" OverFlow
¾" Drain
Constant Level Tank
3" Valve
3" Pipe
2½" Pipe
2" Pipe
1½" Pipe
Typical Drop Pipe
2" Bellup in floor
1½" Drop Pipe to Vacuum & Filtrate Pump
1½"
1½" Valve
1½" Strainer
1½" Solenoid Valve
¾" to Filtrate Pump
1" to Vacuum Pump
GRAVITY WATER SEAL SCHEMATIC FOR VACUUM AND FILTRATE PUMPS - SEAL WATER SYSTEM NO. 3
LEGEND
Building Service Water
Ash Sluice Water
Settled Sewage or Seal Water
Pressure Gage & ¼" Cock
Reducer
Check Valve
Angle Globe Valve
Plug valve 4" & larger, gate valve 3" & smaller.
Control Valve
Backflow Preventer
Pressure Relief Valve
Pressure Reducing Valve
Solenoid Valve
Union
Strainer
Strainer & Blowoff Valve
PS Pressure Switch & ¼" cock
SETTLED SEWAGE SERVICE, BUILDING SERVICE WATER (WHERE IN DUAL SYSTEMS) AND ASH SLUICE WATER SCHEMATIC
NO. | DATE | DESCRIPTION | BY | CHK
1 | 2-2-65 | Revised water services | ACP | LWW
REVISIONS
KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT
SETTLED SEWAGE EFFLUENT AND SERVICE WATER SCHEMATICS
BLACK & VEATCH AND BURNS & MCDONNELL CONSULTING ENGINEERS, KANSAS CITY, MO.
P.C.D. CONTRACT 7
DESIGNED DRG ACP
DETAILED LWD
CHECKED LEW
APPROVED
DATE 2-9-66
SHEET 123 OF 190

POTABLE WATER SCHEMATIC
SLUDGE PROCESSING BUILDING

PARTIAL BUILDING SERVICE
WATER SCHEMATIC

SLUDGE PROCESSING BUILDING

No Scale

LEGEND
HF Hose faucet
WH Wall hydrant

Note:
Hot water piping not shown. See Schematic Diagrams Sheet 125 and Sheet 143. Location of lines to be determined in field.
Potable water lines in Sludge Thickener Inlet Building not shown on this schematic. See Plans, Sheet 104.
See Sheet 107 for details of Seal Water System No. 1.
See Sheet 123 for details of Seal Water System No. 2 & No. 3.
Provide shut-off valve in supply line to each fixture or item of equipment.
All hose faucets to be 3'-0" above floor unless otherwise noted.
All wall hydrants to be 8" above ground floor unless otherwise noted.

NO.	DATE	DESCRIPTION	BY	CHK
1	2-2-65	Revised water services	ACP	LWW

REVISIONS

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

WATER SCHEMATICS

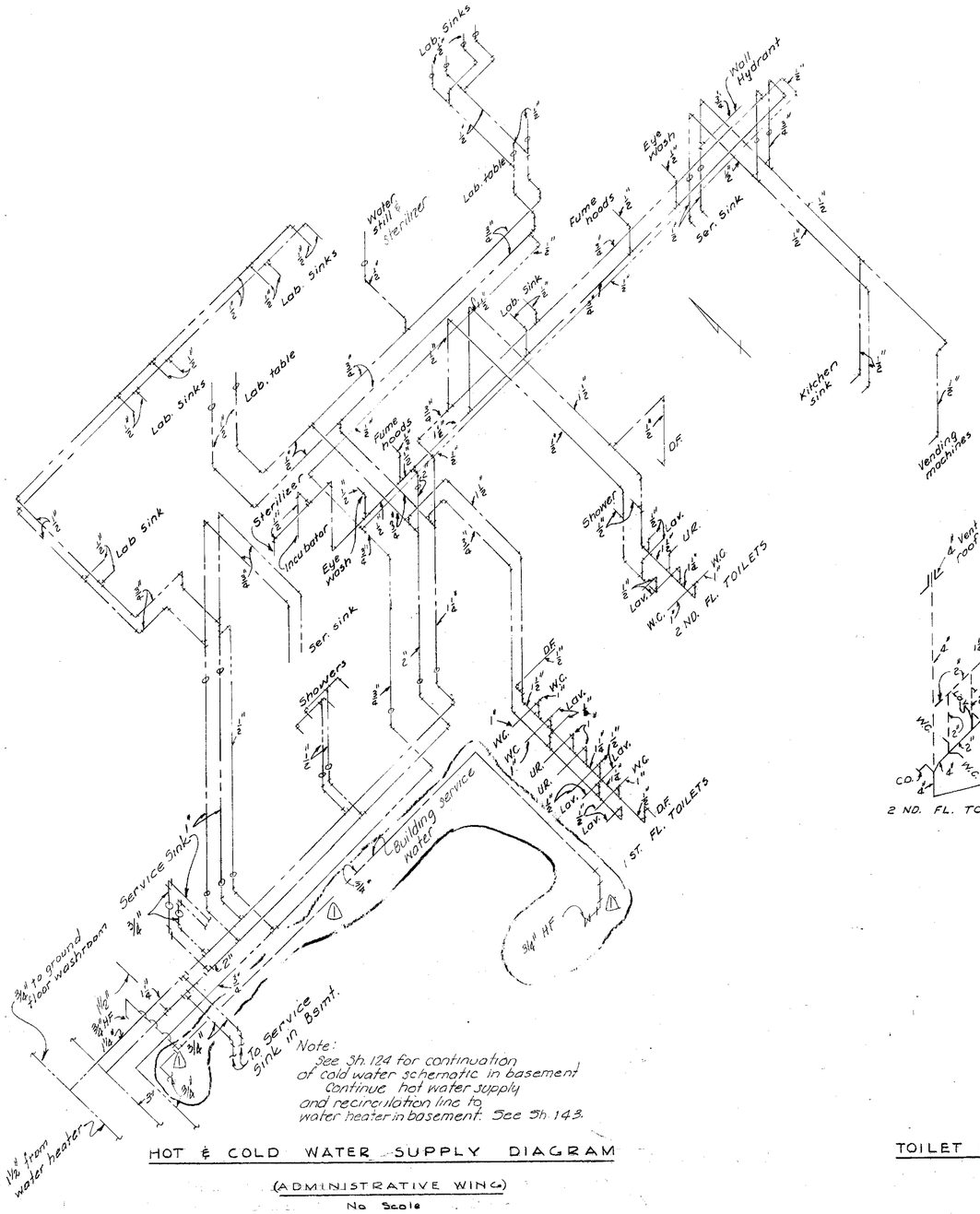
BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED ACP CHECKED LEW
DETAILED ACP APPROVED
DATE 2-2-65

SHEET 124 OF 190

1162.32

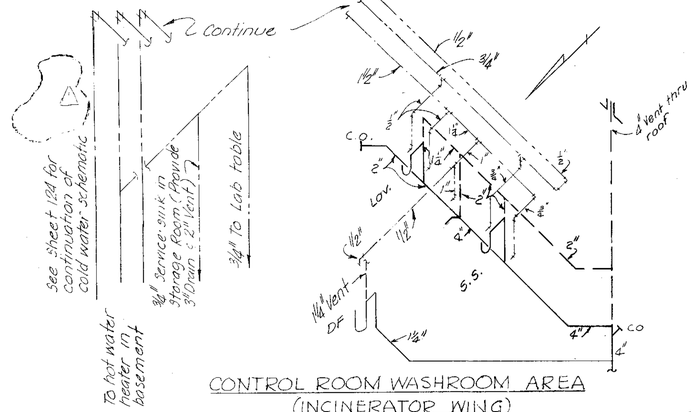


Note:
See Sh. 124 for continuation of cold water schematic in basement
Continue hot water supply and recirculation line to water heater in basement. See Sh. 143.

HOT & COLD WATER SUPPLY DIAGRAM

(ADMINISTRATIVE WING)

No Scale



CONTROL ROOM WASHROOM AREA

(INCINERATOR WING)

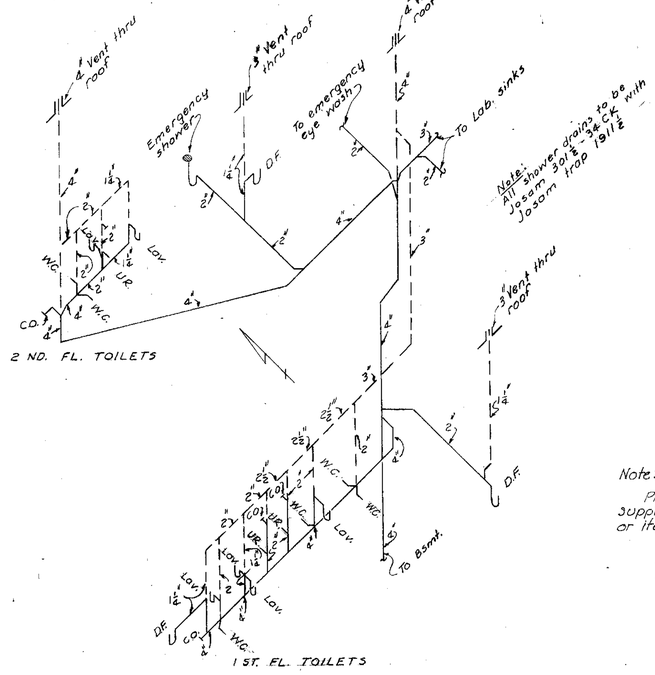
No Scale

See Sheet 124 for continuation of cold water schematic

GROUND FLOOR WASHROOM

(INCINERATOR WING)

No Scale



TOILET ROOMS SOIL & WASTE PIPING DIAGRAM

(ADMINISTRATIVE WING)

No Scale

Note:
Provide shut-off valves in supply line to each fixture or item of equipment

LEGEND

- Building service water
- Cold water
- Hot water
- Recirculating hot water
- Soil & waste piping
- Sanitary vent piping

W.C.	Water Closet
U.R.	Urinal
S.S.	Service Sink
Lav.	Lavatory
DF	Drinking fountain
WH	Wall hydrant
HF	Hose faucet

NO.	DATE	DESCRIPTION	BY	CHK
1	2-2-65	Revised water services	ACP	LWW

REVISIONS

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

PLUMBING SCHEMATICS

BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED N.W.S. CHECKED LEW
DETAILED R.M.M. APPROVED
DATE 2-2-65

SHEET 125 OF 190

Note:
Piping to Burners 1-A & 1-C
to be similar to Burners 1-B & 1-D

Bug screen above roof

To Burner 1-A & 1-C

Burner 1-C

Not furnished by Nichols

Burner 1-A

To Burners 1-A & 1-C

To Burners 1A & 1-C

PRV-Capacity 18400 cfh
Inlet - 5.0 psi
Outlet 2¼ psi

From other units

Burner 1-B

Burner 1-D

Combustion Air Blower No. 5
3200 CFM @ 24.05"
See Sheet 26 & 27 for location

Limit Switch

REHEAT SECTION, HEARTH NO.1
4-NORTH AMERICAN BURNERS, 223G8A

Limit Switch

Burner 4-A

Not furnished by Nichols

Burner 4-B

Burner 4-C

PRV Capacity 3630 cfh
Inlet 5.0 psi
Outlet 1.75 psi

FURNACE SECTION HEARTH No. 4
3 NORTH AMERICAN BURNERS, 223G-6
3 Combustion Air, Hearth No. 6 and 8, 3-N.A Burners, 223G-6.
Burner Nos 8A, 6A, 8B, 6B, 8C & 6C.
(Piping & controls similar to Hearth No. 4)

Not furnished by Nichols

Vent

Natural Gas To No. 6 Hearth
Piping same for No. 4 Hearth

Vent

Natural Gas To No. 8 Hearth
Piping same as for No. 4 Hearth

To Incinerator No. 2,
(Incinerators 1 & 3 have similar piping schematics)

3¼" Vent to Incinerator No. 1 Vent Risers

3" to Building Heat Boiler

3" to Building Heat Boiler

Inlet - 5.5 psi
Outlet - 0.5 psi

Combustion Air Blower No. 2
2160 CFM @ 16.05"
(See Sheet 15 for location)

¾" to sludge Holding tanks Waste Gas Burner Pilot

1" to Laboratory Equipment

Plug end of 6"x6"x4" Tee

1" to Water Heater

El. 740.00

El. 736.00

LEGEND:

- CA — Combustion Air Piping, Blowers and Accessories
- NG — Natural Gas Piping, Burners and Accessories
- V — Vent Piping and Accessories
- C — Control Air
- Pressure Reducing Valve
- Shut-Off Valve
- Reducer
- Pressure Gauge
- Pressure Switch (Unless otherwise noted)
- Solenoid Safety Shut-Off Valve with Limit Switch
- Electric Checking Cock
- V-Port Limiting Orifice Valve
- Atmospheric Regulator
- Manually Operated Butterfly Valve with Limit Switch
- Pilot-Atmospheric Regulator
- Pilot Burner, Including Mixer and Tip
- Pneumatic Adjustable Port Valve
- Pilot Pressure Regulator
- Solenoid Valve

NOTES:

Unless otherwise noted all combustion air piping, valves, equipment and blowers shall be furnished and assembled by Nichols Research & Eng. Corp. Main Gas Pilot Burners, and Electric Ignition Equipment shall be furnished and installed by Nichols Research and Eng. Corp.

Unless otherwise noted all items shown shaded and all natural gas, and vent piping valves and accessories shall be furnished and installed under Contract 7.

PRESSURE AT BURNERS:

Reheat Section Air	20 osi
Reheat Section Natural Gas	22 osi
Furnace Section Air	14 osi
Furnace Section Natural Gas	17 osi

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

NATURAL GAS PIPING SCHEMATIC

BLACK & VEATCH AND BURNS & MCDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED LN CHECKED LN LEW
DETAILED LWD APPROVED LNL
DATE 2-5-64

SHEET 126 OF 190

N

Louver #L-3

3'-0"x 8'-0" F.A. Louver, Birdscreen, & Dmp'r. Bottom El. 743.33'

Filter

1'-9"x 4'-9" Access Door

59"ϕ

Vent Fan #F-12

NORTH ZONE

Louver #L-2
Exhaust Fan # F-11
℄ Elev. 748.00'

For Installation See Detail B, Sheet 80

16"x12" Exh. Gr. Top 7.67' Above Floor

20"x16" Stamped Stl. Rtn. Gr.

48¼"x 18⅞" F.A. Louver, Bird screen & Damper - See Dwg. #55 For Details.

Louver #L-1

Room Stat & El. 747.00' Wire To Control Valve @ Htg. Coil #3 Set @ 70°

52"x 36" Rtn. Gr. (Stamped Stl.) 8" Above Fl'r.

R.A.

48" X 32" Opn'g.

7.6 MBH

108"x108"

Canvas Conn

58"x 42" Fan Discharge

66"x 48" Up

Sleeve

7.6 MBH

Fin Tube Convector See Sheet 144 For Details.

Sleeve

7.6 MBH

¾ Hot Water Supply & Return Risers & Extend to Gr. Floor Connect To Lines In Gr. See Dwg. #141

Sleeve

Shop
See Sheet 129 For Ventilation Of This Room

Pump Room
See Sh. 129 & 130 For Ventilation of This Room

Scrubber No. 3

Incinerator No. 3

Up

Dn

Interlock motor operated damper with Fans F-15 & F-16

¾" Supply & ¾" Return Dn.

Stair Platform El. 747.33'

¾" H.W. Supply & Return

60"x 32" F.A. Louver, L-10 Birdscreen, & Motor Op. Damper, & El. 744.67'

COMBUSTION AIR INTAKE

12'-0"x 12'-0" F.A. Louver, Birdscreen & Dmp'r. Bottom El. 743.33'

2-72"x60" Exp. Metal Sup. Grs.

2-48"x 12" Mod. Dampers

Louver #L-9

Mixing Baffle

Elevator

Room Stat - El. 747'-0" - Wire To Control Valve For Fin Tube

For Cont. See Dwg. #128

GROUND FLOOR PLAN - EL. 742.00'
Scale - 3/16" = 1'-0"

24"x 24" Exh. Louver & Bird Screen Bottom EL. 756.00

Louver #L-4

Backdraft Relief Damper

13"x18"

Canvas Conns. 18"ϕ

6" Sludge Pipe See Sheet 20

El. 752.67'

Fan #F-1

24"x24" Exh. Gr.

Ceiling

SECTION - 1
Scale ⅜" = 1'-0"
Sheet 129

℄ 8'-0" Above Fl'r.

24"x 24" Fire Damper In Wall

28"x 28" Stamped St'l. Grille

PARTIAL BASEMENT PLAN
See Sheet No. 14
Scale - 3/16" = 1'-0"

Ⓛ = Louvered Door

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
GROUND FLOOR
HEATING & VENTILATING

BLACK & VEATCH AND BURNS & MCDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED J.E.D. CHECKED
DETAILED D.C.H., F.B. APPROVED
DATE 2-7-64

SHEET 127 OF 190

N

A B C D E F G H

7 8 9 10 11 12

For Cont. See Dwg. #127

52"x 36" Rtn. Gr. (Stamped Stl.) 8" Above Flr.

R.A

48"x 32" Opng.

Polymer Dilution Tank No. 7-8

Polymer Dilution Tank No. 5-6

Room Stat - El. 747.00' Wire To S Control Valve @ Htg. Coil #4 - Set @ 60°

T

UP

Incinerator No. 2

Incinerator No. 1

Mixing Baffle

3- 48"x12" Mod. Dampers.

3-72"x60" Expanded Metal Sup. Grs.

16'-0" x 12'-0" F.A. Louver, Birdscreen, & Dmp'r. Bottom El. 743.33'

2/131

Louver #L-8

Louver #L-7

COMBUSTION AIR INTAKES

Scrubber No. 2

Scrubber No. 1

Boiler Stack Up & Dn. For Connection To Boiler See Sheet #15

℄ El. 739.00'

6" H.W. Sup. & Rtn. To H.W. Pump #17 See Sheet #143

52"x 36" Rtn. Gr. (Stamped Stl.) 8" Above Flr.

48"x 32" Opng.

R.A.

¢ 6" H.W. Sup. Up

¢ 6" H.W. Rtn. Up

Dn

Up

108"x 108"

72" ϕ Canvas Conn.

78"x 48" Up

71"x 52" Fan Discharge

SOUTH ZONE

9'-0"x 8'-0" F.A. Louver, Birdscreen, & Dmp'r. Bottom El. 743.33'

Louver #L-5

Filter

1'-9"x 4'-9" Access Door

Vent Fan #F-13

Freight Elevator

Louver #L-6

48⅛"x 187½" F.A. Louver, Bird Screen, ℄ Damper - See Dwg. #55 For Details

GROUND FLOOR PLAN - EL. 742.00'

Scale: 3/16"=1'-0"

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
GROUND FLOOR
HEATING & VENTILATING

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED J.E.D. CHECKED
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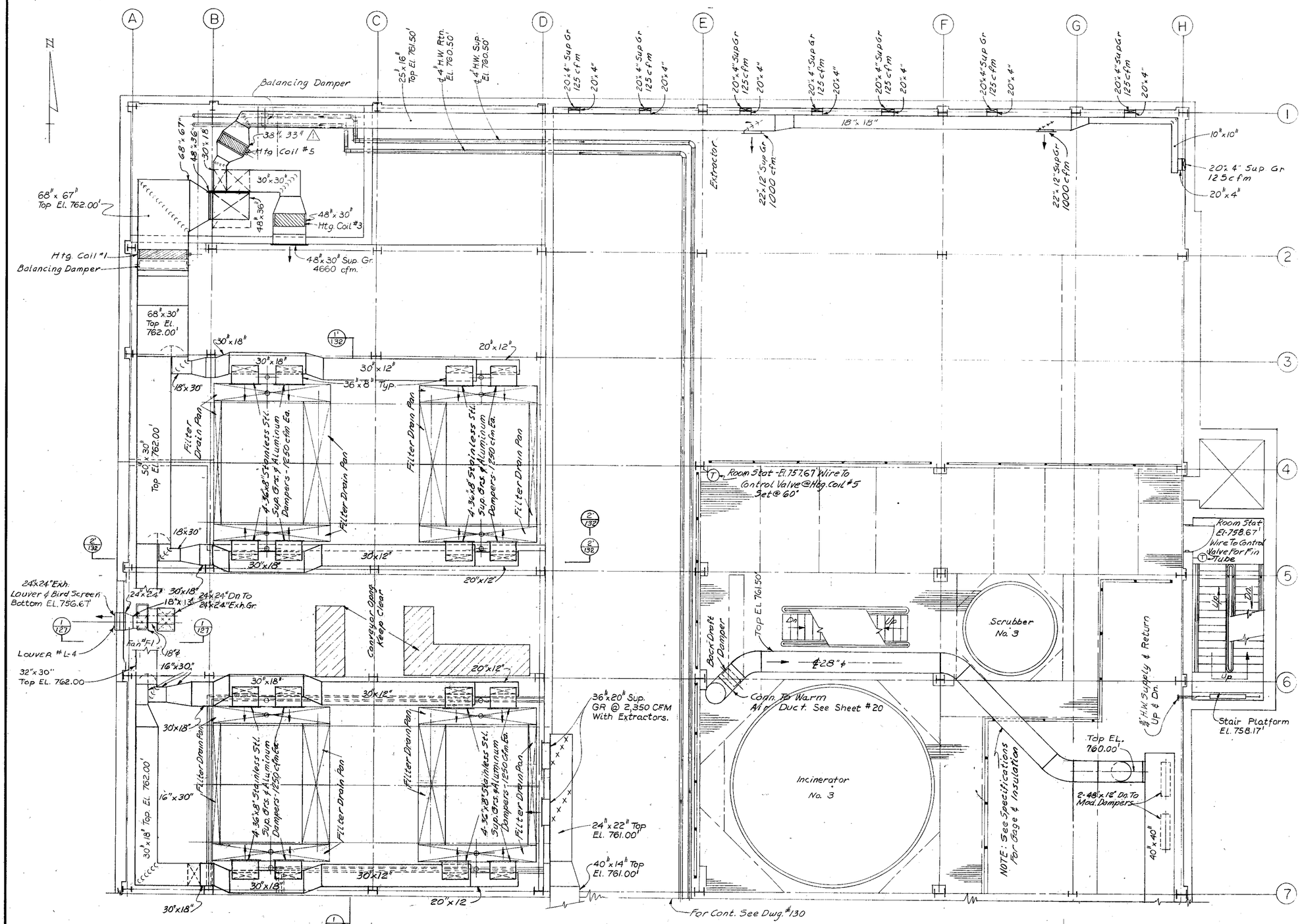
DATE 2-4-64

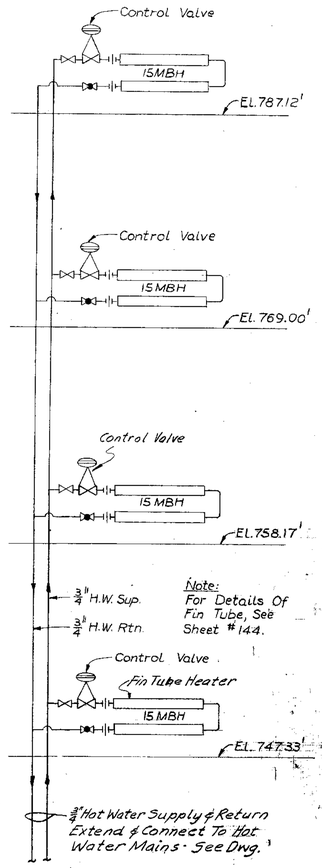
SHEET 128 OF 190

PROJECT 7363 104.32



INTERMEDIATE FLOOR PLAN - EL. 752.67'

Scale - 1/8" = 1'-0"



STAIRWAY HEATING RISER

no scale

NO.	DATE	REVISION	BY	CK'D
1	5-27-64	Revised Htg. Coil #5	W.J.O.	A.C.R.

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
INTERMEDIATE FLOOR
HEATING & VENTILATING

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

DESIGNED J.E.D. CHECKED J.E.R.
DETAILED D.C.H., E.B. APPROVED
DATE 2-5-68

P.C.D. CONTRACT 7

SHEET 129 OF 190

PROJECT 3292 1142.32

N

A B C D E F G H

7 8 9 10 11 12

40"x14" Top El. 761.00'

For Cont - See Dwg. #129

¢ 20" Vacuum Vent El. 760.33'

¢ 4" H.W. Sup. El. 761-50'

¢ 4" H.W. Rtn. El. 761-50'

Back Draft Damper

Top El.- 761.50

28"¢

Top El. 760.00'

40"x40"

Conveyor Opening Keep Clear

20"x12"

40"x14" Top El. 759.33'

30"x18" Top El. 761.50'

30"x18"

30"x12"

Filter Drain Pan

4-36"x8" Stainless Stl. Sup. Grs. & Aluminum Dampers - 1250 cfm Ea.

Dn.

36"x20" Sup. Gr. @ 2350 cfm With Extractor

Conn. To Warm Air Duct. See Sheet #21.

Incinerator No. 2

3-48"x12" Dn. To Mod. Damper

20"x4"

20"x4" Sup Gr. 100 c.f.m.

40"x22"

30"x18" Top El. 762.00'

16"x30"

32"x30"

18"x30"

Room Stat - El. 752.67 Wire To Control Valve @ Htg. Coil #6 Set @ 60°

Up

Scrubber No. 2

Boiler Stack Dn.

Back Draft Damper

1"x4" Rod

Conn. To Warm Air Duct. See Sheet #21.

Top El. 761.50

Incinerator No. 1

1½" H.W. Sup. & Rtn. Up To Htg. Coil #7

22"x12" Sup. Gr. 1000 c.f.m.

18"x18"

Boiler Stack Top El. 758.00'

Boiler Stack Up

10"x10"

50"x30"

18"x30"

66"x27" Dn.

18"x20"

68"x30"

68"x67"

Top El. 761.50'

Htg. Coil #2 Balancing Damper

66"x21" Dn.

68"x58"

48"x12" Dn.

Htg. Coil #4

¢ El. 758.50'

Htg. Coil #6

5¢"x24"

6"Cap

25"x16"

Top El. 761.50' Balancing Dampers

68"x22" Top El. 761.50'

To 20"x4" Sup. Gr. (200 c.f.m.)

68"x22" Top El. 758.00'

68"x14" Top El. 761.00'

68"x22" Top El. 761.00'

This Duct Shall Be Removable

Extractor

Freight Elevator

22"x12" Sup. Gr. 1000 c.f.m.

18"x18"

Scrubber No. 1

13"x13"

3.75

1.25

¢ 6" H.W. Rtn., El. 760.50'

¢ 6" H.W. Sup., El. 760.50'

Note: See Dwg. #131 - For Piping Connections To Each Coil

INTERMEDIATE FLOOR PLAN - EL. 752.67'

Scale - 3/16" = 1'-0"

NO.	DATE	REVISION	W.J.D. BY	A.C.P. CK'D
1	5-27-64	Revised Htg. Coils #4 & 6		

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
INTERMEDIATE FLOOR
HEATING & VENTILATING

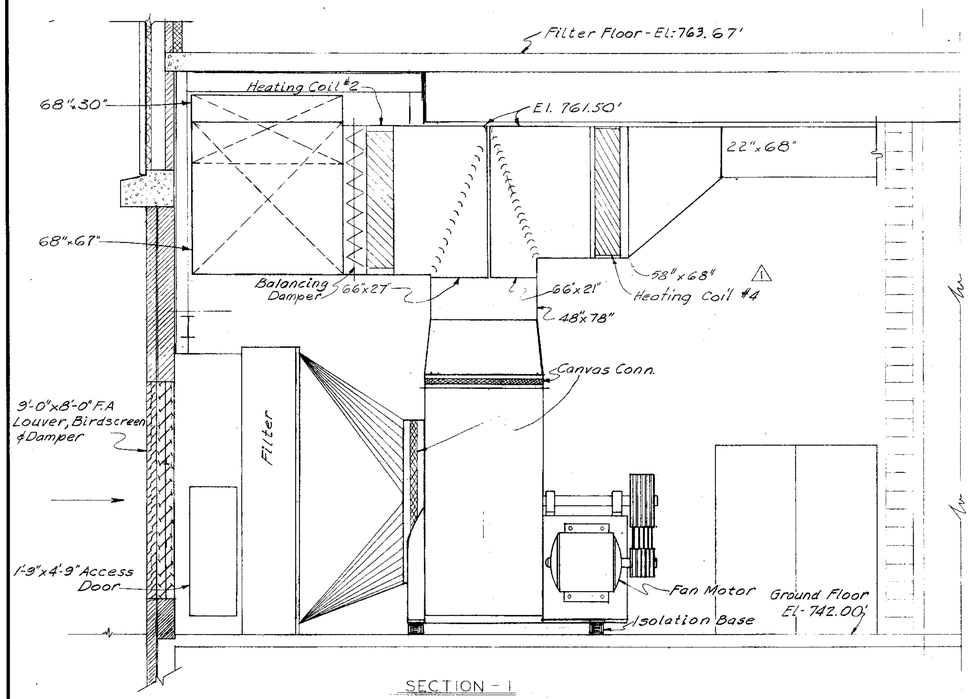
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

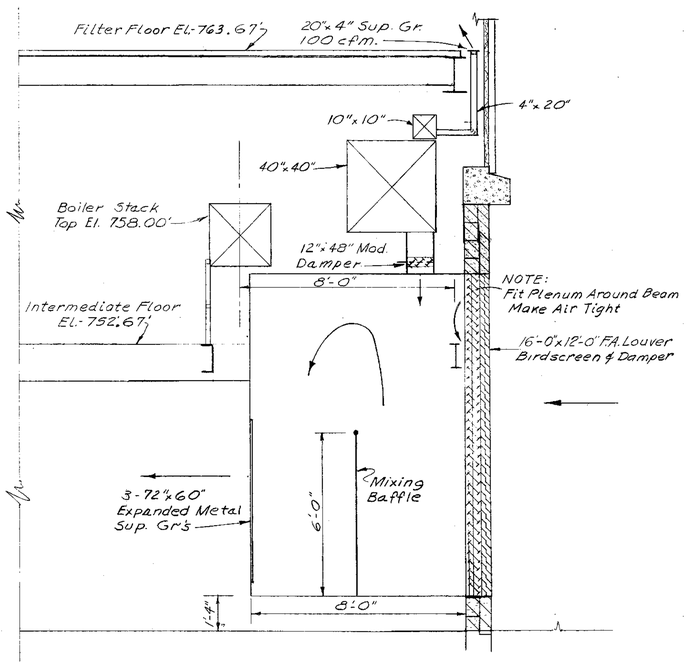
DESIGNED J.E.D. CHECKED
DETAILED D.C.H., F.B. APPROVED
DATE 2 dec 64

SHEET 130 OF 190

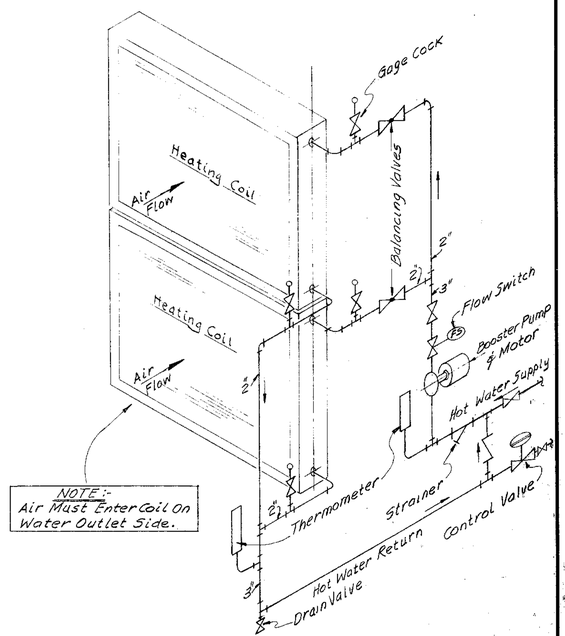
1062.32



SECTION - 1
Scale - 3/8" = 1'-0"
Sheet # 130

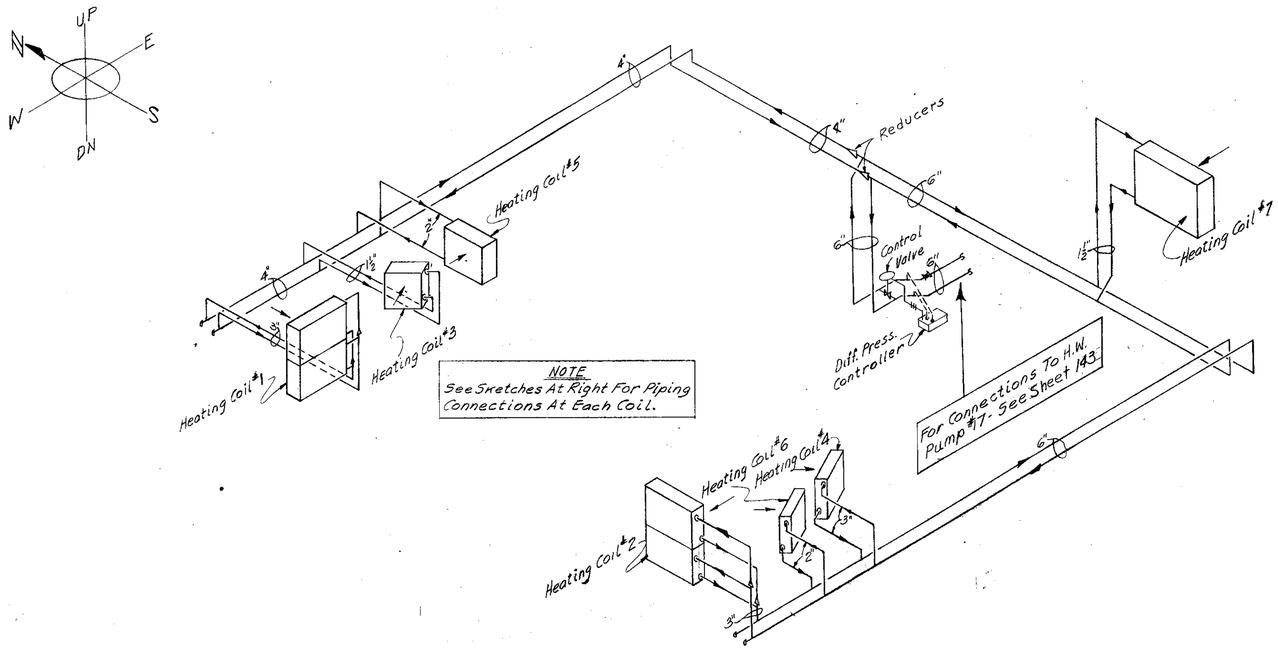


SECTION - 2
Scale - 3/8" = 1'-0"
Sheet # 130

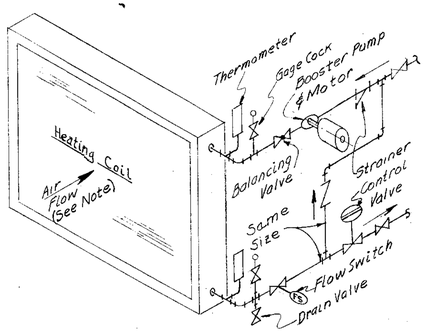


NOTE:- Air Must Enter Coil On Water Outlet Side.

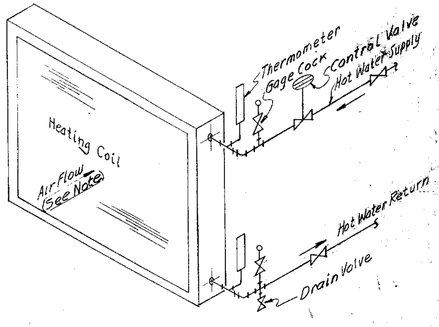
SKETCH OF CONNECTIONS TO HOT WATER HEATING COILS NO.- 1, 2 & 4



HOT WATER PIPING ISOMETRIC



SKETCH OF CONNECTIONS TO HOT WATER HEATING COILS NO- 3, 5 & 6



SKETCH OF CONNECTIONS TO HOT WATER HEATING COIL NO.- 7

PIPING SYMBOLS

- ⋈ - Gate Valve
- ⋈ - Globe Valve
- ⊻ - Check Valve

NO.	DATE	REVISION	BY	CK'D
1	5-27-64	Rev. Sec. 1, Sketch of conn. to coils 1 & 2, Sketch of conn. to coils 3, 4, 5 & 6	M.J.D.	A.C.P.

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

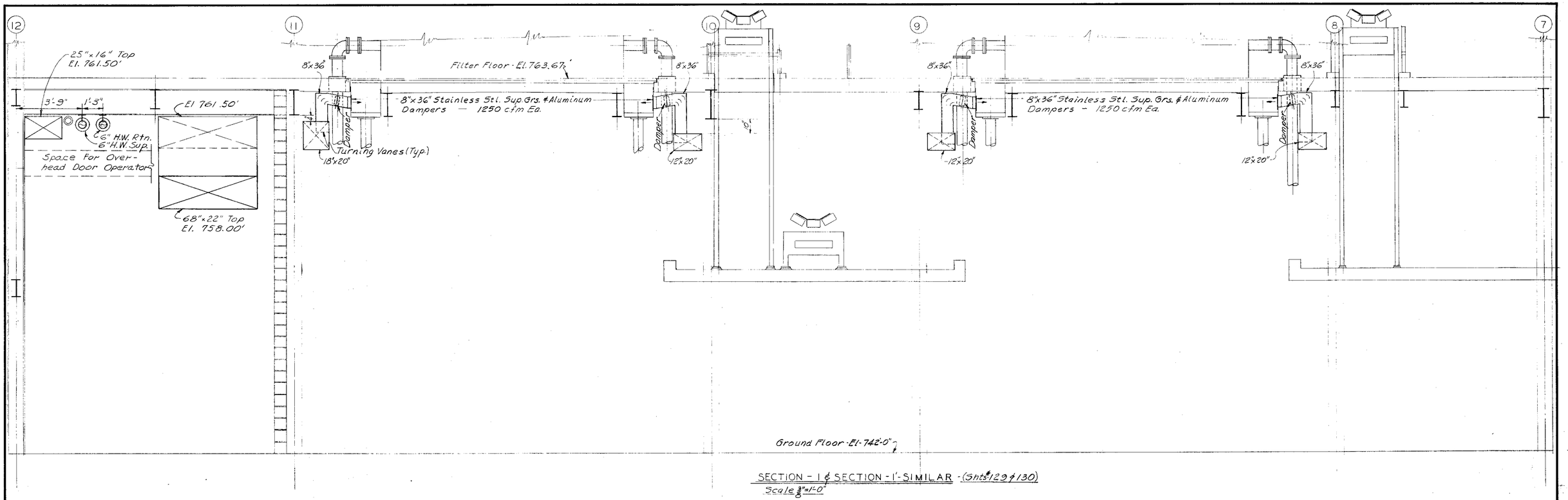
SLUDGE PROCESSING BUILDING
SECTIONS
HEATING & VENTILATING

BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

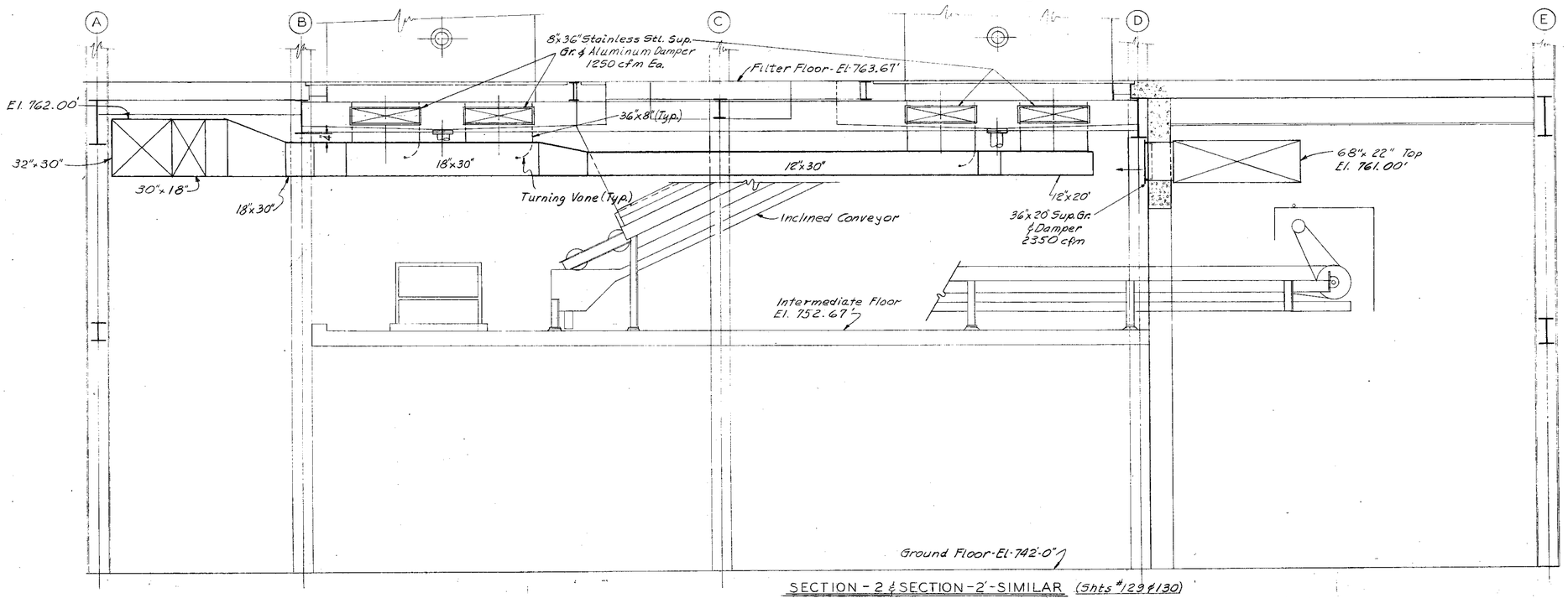
DESIGNED J.E.D. CHECKED J.F.P.
DETAILED D.C.H. APPROVED
DATE 2-24-64

SHEET 131 OF 190



SECTION - 1 & SECTION - 1' - SIMILAR (Shts #129 & 130)

Scale 3/8"=1'-0"



SECTION - 2 & SECTION - 2' - SIMILAR (Shts #129 & 130)

Scale 3/8"=1'-0"

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
SECTIONS
HEATING & VENTILATING

BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED J.E.D. DETAILED D.C.H. CHECKED APPROVED DATE 4-64

SHEET 132 OF 190

N

4 5 6 7 8 9 10 11 12

H G F E D

Stair Platform El. 787.12

Room Stat. El. 782.96

40"x12" Dn.

40"x12" R.A.Gr

16"x16"

Scrubber No. 3

Scrubber No. 2

Scrubber No. 1

20"x20"

Incinerator No. 3

Incinerator No. 2

Incinerator No. 1

Elevator

28"x20" Dn. 24"x24" Dn. (3000 CFM)

Extractor

28"x24"

24"x24" Dn. (4300 cfm)

26"x26"

28"x28"

30"x30"

36"x30"

40"x30"

44"x30"

48"x30"

54"x30"

28"x30"

32"x30"

24"x24" Dn. (4300 CFM)

Refrigeration Lines Up Thru Roof

Refrigeration Lines

Htg. Coil #7

Air Conditioning Unit #1

Air Conditioning Unit #2

70"x36" Relief Damper 1/2" H.W. Sup. & Rtn. Dn

72"x30" Rtn Dmpr

48"x48" F.A. Dmpr 4-40"x18" Relief

48"x48" Up to Roof F.A. Fan

5'-6"

R.A. 12"x30"

48"x48"

36"x15"

1'-9"x4'-9" Access Door

1" Drain Dn.

1" Drain Dn. See Sheet #27

1" Drain Below Floor

Note
See Sheet 134 For Exhaust Duct System in toilet room

NOTES
1. Calk Around All Ducts, Pipes, Etc. Make Supply Plenum Airtight.
2. For Location Of Return Air Grilles See Sheet # 134
3. Control Room - 100% Ventilated Tile
4. Corridor - 68% Ventilated Tile

Room Stat - El. 768'-8" Wire To Control Valve @ Htg. Coil #1 - Set @ 60°

Room Stat - El. 768'-8" - Wire To Control Valve @ Htg. Coil #2 - Set @ 60°

CONTROL ROOM FLOOR PLAN - EL. 777.96
Scale - 3/16" = 1'-0"

NO	DATE	REVISION	BY	CK'D
1	5-27-64	Rev. Htg. coil #7 & 70"x36" Relief Damper	W.J.D.	A.L.P.

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

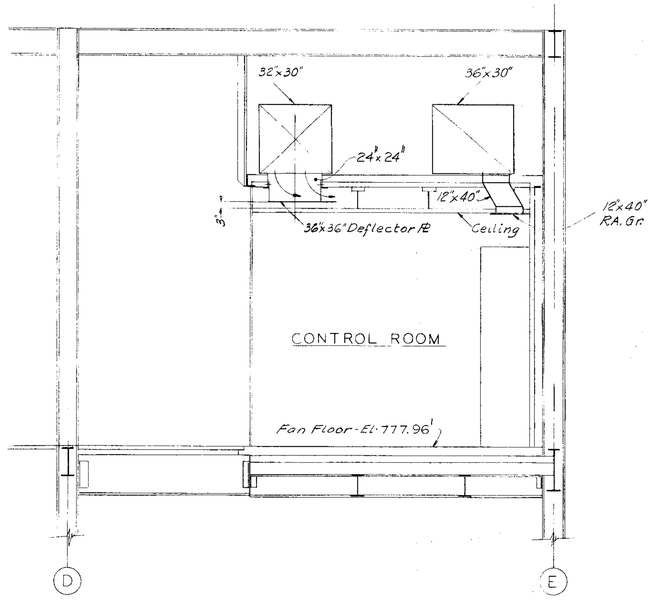
SLUDGE PROCESSING BUILDING
CONTROL ROOM
AIR CONDITIONING

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

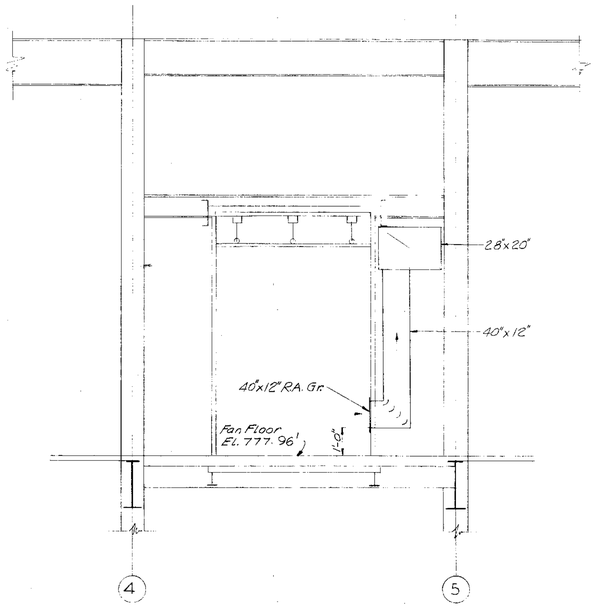
P.C.D. CONTRACT 7

DESIGNED J.E.D. DETAILED E.B. CHECKED APPROVED DATE 5-27-64

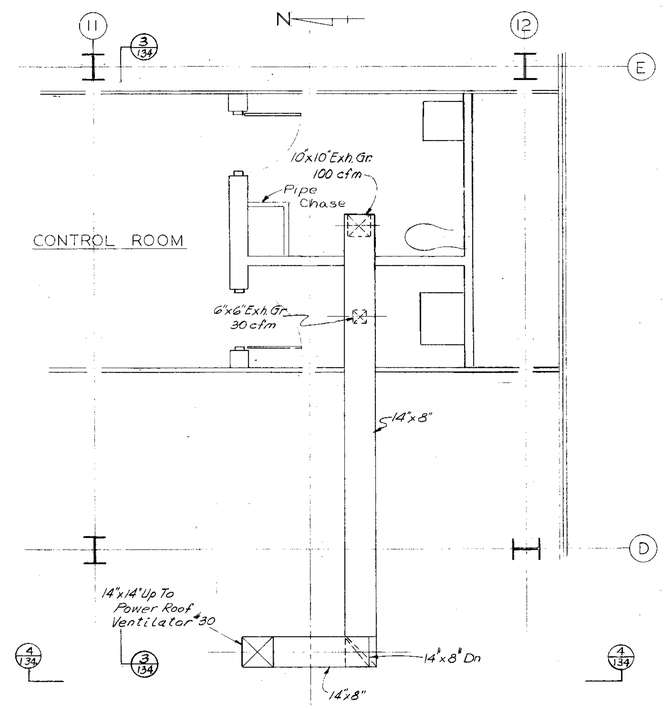
SHEET 133 OF 190



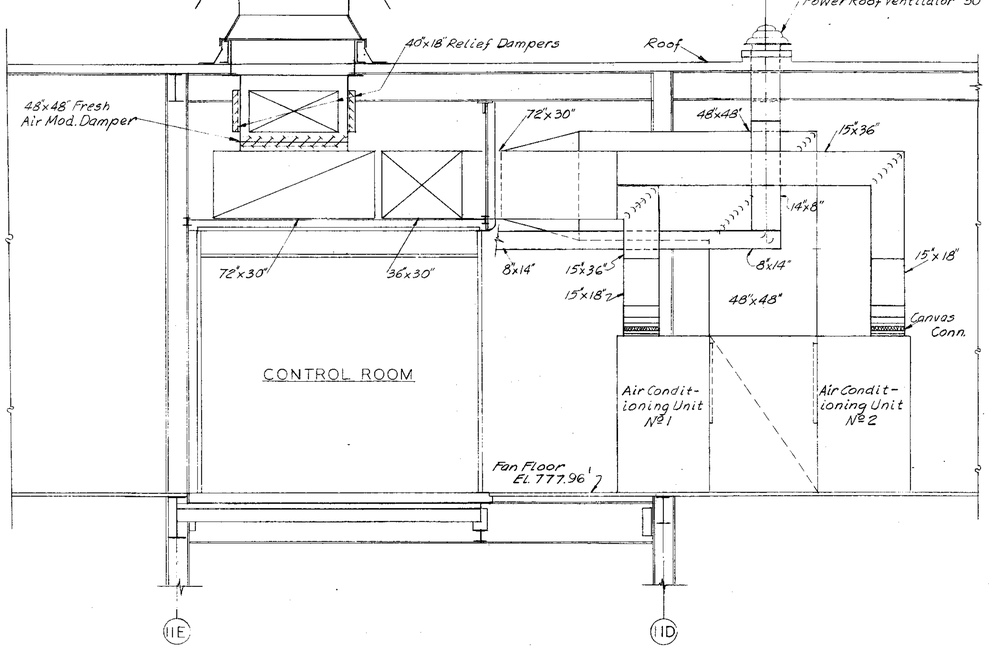
SECTION - 1
Scale - 3/8" = 1'-0"
Sheet 133



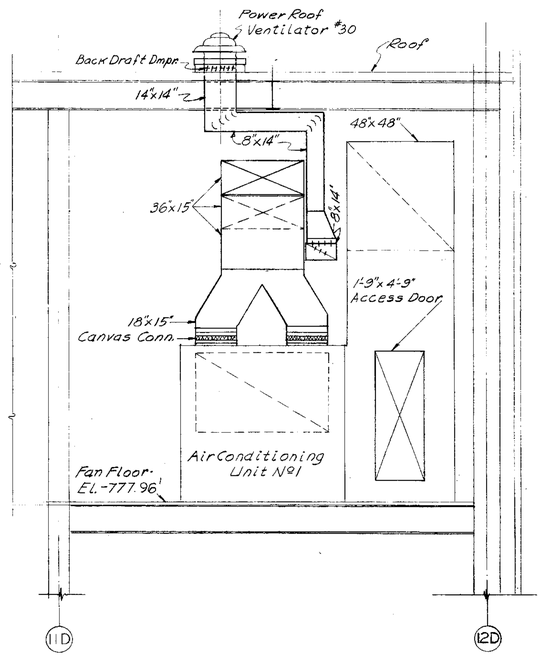
SECTION - 2
Scale - 3/8" = 1'-0"
Sheet 133



PLAN OF TOILET ROOM
Scale - 3/8" = 1'-0"



SECTION - 3
Scale - 3/8" = 1'-0"
This Sheet



SECTION - 4
Scale - 3/8" = 1'-0"
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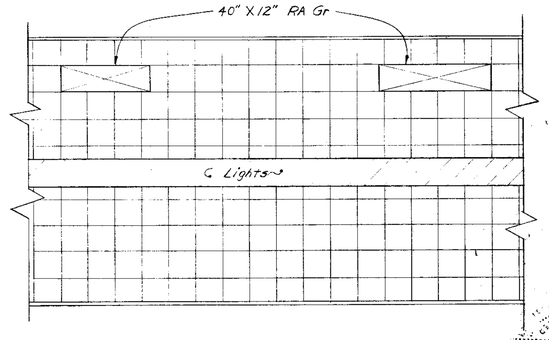


PARTIAL CONTROL ROOM
REFLECTED CEILING PLAN
Scale - 3/8" = 1'-0"

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
SECTIONS
CONTROL ROOM

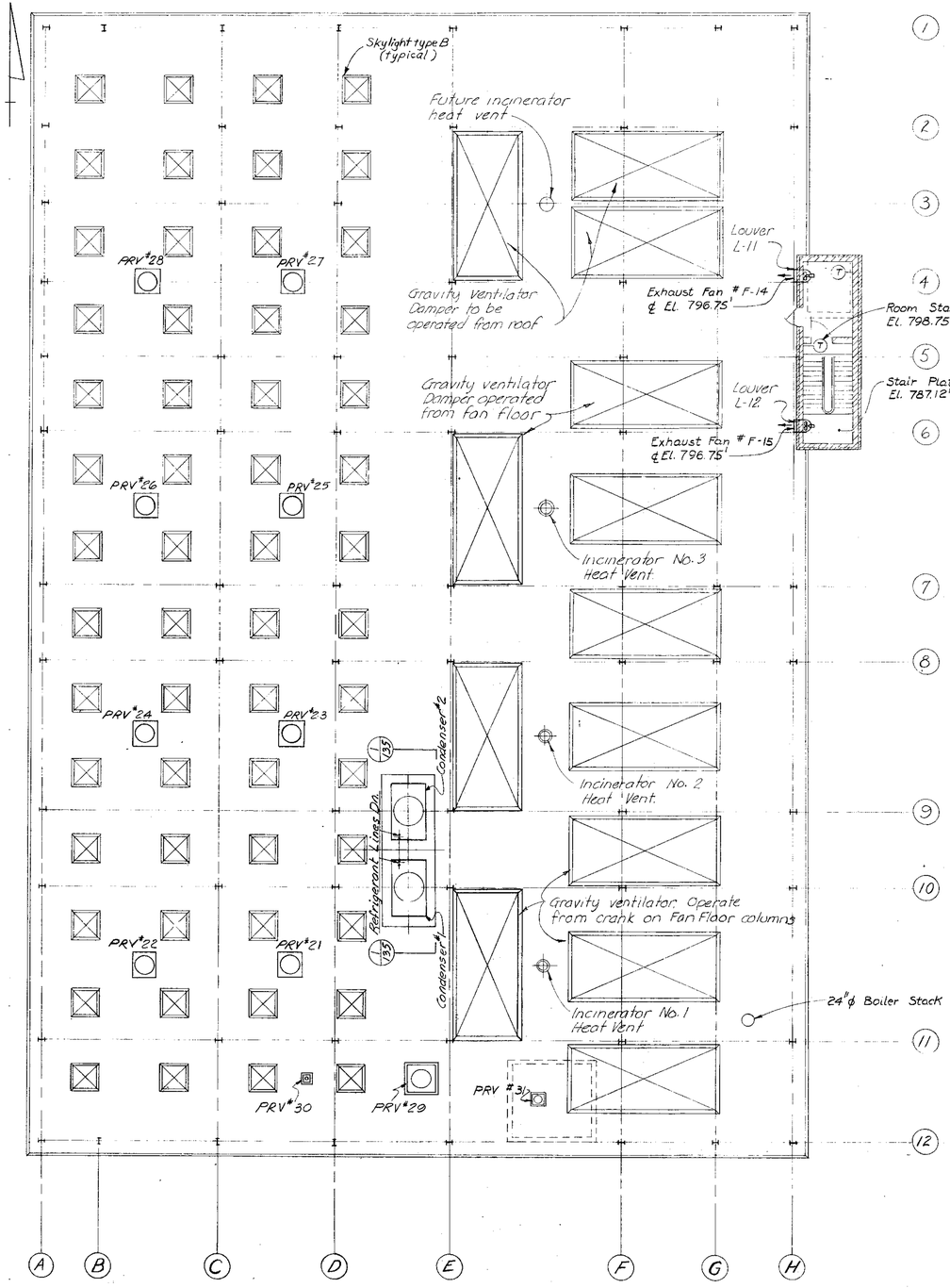
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED J.E.O. CHECKED
DETAILED E.B. APPROVED
DATE 2-4-64

SHEET 134 OF 190

PROJECT 3202 1062.32



ROOF PLAN
Scale $\frac{3}{32}$"=1'-0"

SCHEDULE OF HOT WATER HEATING COILS

H.W. Coil No.	Location & Area Served	CFM	Max. Air Friction Loss	Face Area	MBH	Ent. Water Temp.	Ent. Air Temp.	GPM	Water Vel.	Water Frict.	No. Of Circuits	Approximate Overall Size
1	North Zone Filters	20,000	0.50"	2@13.3	1,525	200°	0°	150	2@5'	4.4	Double	68" X 67"
2	South Zone Filters	20,000	0.50"	2@13.3	1,525	200°	0°	150	2@5'	4.4	Double	68" X 67"
3	North Zone Shop	4,700	0.50"	1@5.7	357	200°	0°	35	1@2.8	4.4	Single	45" X 29"
4	South Zone Pump Rm	14,800	0.50"	2@8.0	4,120	200°	0°	112	1@3.4	7.3	Double	68" X 58"
5	North Zone Building	3,000	0.55"	1@6.0	480	200°	0°	48	1@3.8	5.7	Single	38" X 33"
6	South Zone Building	3,000	0.50"	1@6.0	480	200°	0°	48	1@3.1	4.8	Double	56" X 24"
7	Control Room	16,000	0.50"	1@14.3	320	200°	70°	32	1@1.9	3.4	Single	74" X 37"

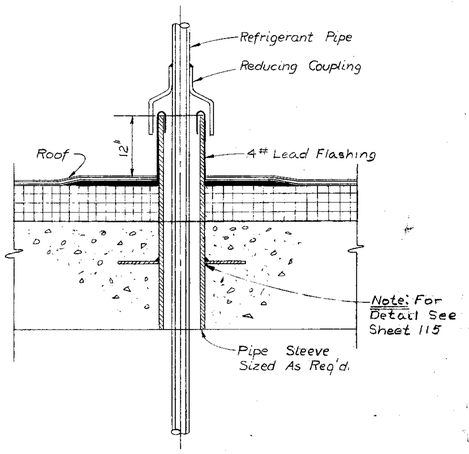
SCHEDULE OF HOT WATER PUMPS

Pump No.	H.W. Coil No. Served	GPM	Head Ft.		Voltage	Type & Size
11	1	150	6		440v 3℄	In The Line Pump
12	2	150	6		440v 3℄	In The Line Pump
13	3	35	5		120v 1℄	In The Line Pump
14	4	112	9		440v 3℄	In The Line Pump
15	5	48	7		120v 1℄	In The Line Pump
16	6	48	6½		120v 1℄	In The Line Pump
17	All Coils	550	25		440v 3℄	Floor Mounted

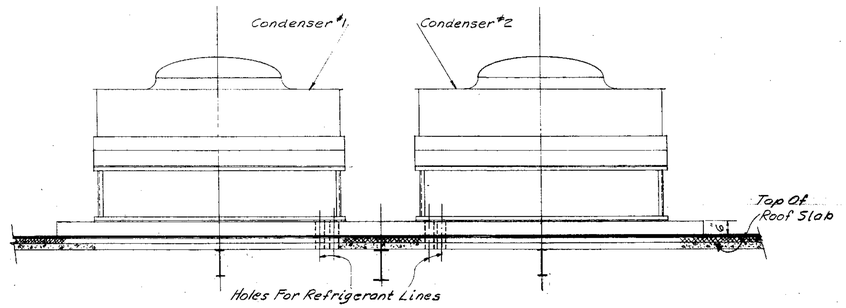
FAN SCHEDULE

Fan No	Location	Area Served	Type	Size	C.F.M.	S.P.	Fan R.P.M.		H.P.	Voltage	Accessories
*PRV #'s 23 to 28 Incl.	Roof	Filters	116"L-CRF	270	5,390	1/4"	490		1/2	440 3℄	Bird Screen & Back Draft Damper
PRV. # 29	Roof	Air Cond. Supply Air	116"L-SRQ	483	16,900	0	490		1 3/4	440 3℄	Bird Screen Without Damper
PRV. #30	Roof	Toilet in Control Rm.	116"L-CRF	67	134	1/4"	1550		1/10	120 1℄	Bird Screen & Back Draft Damper
Exh. Fan #F-14	Janitors Closet	Toilet - Gnd. Flr.	116" PD	123	750	1/8"	1550		1/20	120 1℄	Motor Operated Shutter, Wire Guards & Bird Screen
Vent Fan #F-13	Fan Room	North Zone	Amer. Blwr. Sirocco	537	28,883	1 1/2"	231		10	440 3℄	Belt Guard, Isolation Base Fan Arrgt. #9 - Class I Clockwise
Vent Fan #F-13	Fan Room	South Zone	Amer. Blwr. Sirocco	657	37,800	1 1/2"	186		15	440 3℄	Belt Guard, Isolation Base Fan Arrgt. #9 - Class I Counterclock.
Exh. Fan #F-14	Elevator Equipment Room	Elevator Shaft	116"PD	243	3900 - 2210	1" 10	855 - 570		1/4	120 1℄	Fan Guard
Exh Fan #F-15	Stairway On Roof	Stairway	116"PD	123	920	1" 8	1725		1/8	120 1℄	Fan Guard
PRV 31	Roof	Elevator Shaft	116"ARV	243	—	—	—		—	—	Bird Screen

Note: All Roof Ventilators And Exhaust Fans Shall Be Direct Drive.



TYPICAL PIPE SLEEVE DETAIL
No Scale



SECTION - 1
Scale - $\frac{3}{8}$"=1'-0"
This Sheet

NO.	DATE	REVISION	BY	CK'D.
1	5-27-64	Rev. Htg. coil schedule	W.J.D.	A.C.P.

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
ROOF PLAN
HEATING & VENTILATING

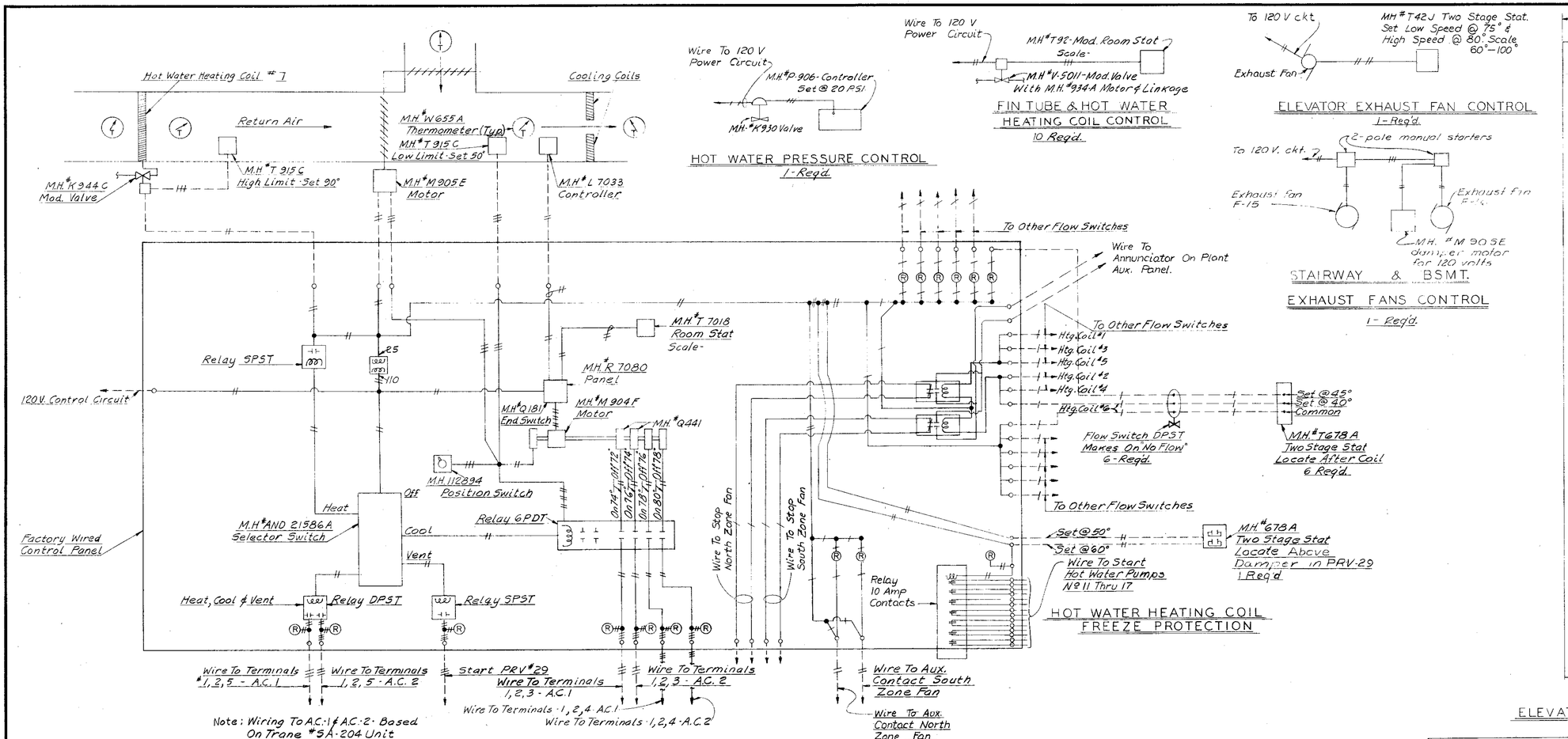
BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

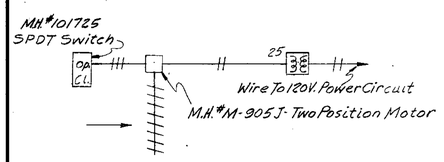
DESIGNED J.E.D. CHECKED
DETAILED F.B. APPROVED
DATE

SHEET 135 OF 190

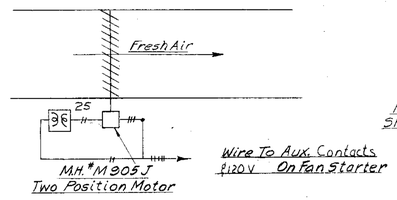
10/232



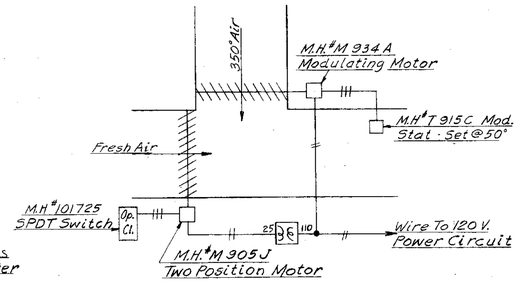
HEATING, VENTILATING & AIR CONDITIONING CONTROL PANEL



FRESH AIR INTAKE - NORTH & SOUTH DOOR
2-Req'd.



FRESH AIR INTAKE - NORTH & SOUTH ZONES
2-Req'd.



COMBUSTION AIR INTAKES
3-Req'd.

SEQUENCE OF OPERATION FOR CONTROL ROOM

1. Selector Switch In "Off" Position
   Fans In Air Conditioning Units Stop. Fresh Air Damper Spring Returns To "Close" Position.
2. Selector Switch In "Vent" Position
   Fans In Air Conditioning Units & The Fresh Air Fan Start. Room Stat Controls Space Condition By Modulating Fresh Air & Return Dampers.
3. Selector Switch In "Cool" Position.
   Fans In Air Conditioning Unit Start. Room Stat Cycles Compressors To Maintain Space Condition. F.A. Is Controlled By The Positioning Switch.
4. Selector Switch In "Heat" Position.
   Fans In Air Conditioning Unit Start. High Limit Controller Modulates Control Valve To Maintain 90° Return Air. Room Stat Modulates Return & Fresh Air Dampers To Maintain Space Condition.
5. Coil Freeze Protection.
   (a) Hot Water Pumps Start @ 60° Outside
   (b) Freeze Protection Is Energized @ 50° Outside.
   (c) With "No Flow" & Or Leaving Air Temp @ 40° The Pilot Light & Annunciator Indicates Trouble & The Zone Supply Fan Stops.
   (d) When Leaving Air Temperature Drops Below 45° The Pilot Light Indicates Low Temperature.

ELEVATION OF CONTROL PANEL
Scale - 1½" = 1'-0"

NAME PLATE SCHEDULE

1	Heating, Ventilating & Air Conditioning	17	Filters - North Zone
2	Supply Air Temperature	18	Filters - South Zone
3	Return Air Temperature	19	Pump Room
4	Re-Heat Air Temperature	20	Shop
5	Fresh Air Temperature	21	Air Conditioning Unit 1
6	Mixed Air Temperature	22	Air Conditioning Unit 2
		23	Fan
		24	Compressor
9	Clean Filters @ 0.50" Air Conditioner 1	25	Heating & Ventilation
10	Clean Filters @ 0.50" Air Conditioner 2	26	Hot Water Pumps
11	Room Stat	27	Control Room Fresh Air Vent Fan
12	Fresh Air Positioning Switch	28	North Zone Fan
13	Selector Switch	29	South Zone Fan
14	Hot Water Coil Freeze Protection	30	Combustion Air Intake
15	Building - North Zone	31	
16	Building - South Zone	32	

ELECTRICAL SYMBOLS
- (R) Red Lens Pilot Light
- o Terminals
- -#- Number Of Conductors
- -#- Shielded 2 Conductor Cable

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT
SLUDGE PROCESSING BUILDING
TEMPERATURE CONTROL

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED J.E.D. CHECKED
DETAILED E.B. APPROVED
DATE 2-5-64

SHEET 136 OF 190

H I K L M N

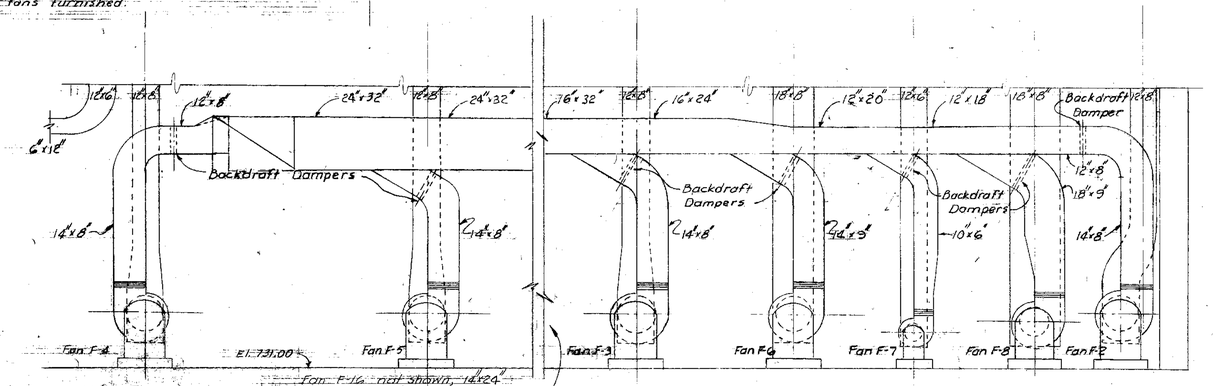
1" Foamglas insulation
Min. 4" concrete encasement
12"x6" Metal duct 250 cfm.
Slope up 12"x6"
℄ El. of duct 741.08
Zone 9 supply
Fan F-4 350 cfm.
Fan F-5 400 cfm.
Fan F-16 2300 cfm @ ½" S.P.
Fan F-3 400 cfm.
Fan F-6 825 cfm.
Fan F-7 275 cfm.
Fan F-8 1000 cfm.
Fan F-2 350 cfm.
32"x24" 5550 c.f.m.
32"x24" 5150 c.f.m.
32"x16" 2850 c.f.m.
24"x16" 2450 c.f.m.
20"x18" 1625 c.f.m.
18"x12" 1350 c.f.m.
48"x12" 350 c.f.m.
36"x24" 5900 c.f.m.
3" Heating water supply & return
C.W.R.
C.W.S.
El. 731.00
Chilled water circulating pump, C.W.P.-9, 230 g.p.m. @ 35' hd.
Cooling tower circulating water pump, C.W.P.-10, 300 g.p.m. @ 40' hd.
Note: For refrigeration unit and cooling tower piping Diagrams see Sh. 144
Refrigeration Unit
500 gal. cap. cooling tower reservoir tank
Stamped 3'-1" grille to suit 48"x24" opening
48"x24" Fire damper, top El. 738.50
Backdraft dampers 2 reqd., ea. 18"x24"
Elevated chilled water reserve tank, min. 3' above chilled water tank
36"x36" Fixed louver L-11
6'-0"
2'-8"
4" cooling water supply & return to cooling tower
C.W.S.
C.W.R.
N

3.1
5.1

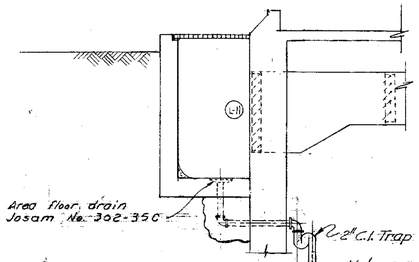
FAN SCHEDULE			
Symbol	c.f.m.	S.P.	Make and Model
F-1	2000	0.125	Peerless 165 : Trane 1GB1
F-2	350	0.25	ILG-BCA-1225 : Trane 1081
F-3	450	0.25	" " " : " "
F-4	350	0.25	" " " : " "
F-5	400	0.25	" " " : " "
F-6	825	0.25	" " " : Peerless 122
F-7	275	0.25	ILG. B-12 : " 8A
F-8	1000	0.25	" BCA-1225 : " 122
F-9	75	0.10	Trade-Wind 1201 with F1212 cap
F-10	2200	0.25	Peerless 182 : Trane 1881
PRV-1	450	0.25	Penn LC-13 : Davidson PC-13
PRV-2	1000	0.125	Penn LC-16 : Davidson PC-16
PRV-3	1000	0.125	" " : " "
PRV-4	1000	0.125	" " : " "
PRV-5	1000	0.125	" " : " "
PRV-6	1000	0.125	" " : " "
PRV-7	1000	0.125	" " : " "
PRV-8	1000	0.125	" " : " "
PRV-9	1500	0.25	Penn LC-22
F-16	1500	0.25	Peerless 182 : Trane 1881

F-1, F-2, F-3, F-5, F-6, F-7 and F-8 CCW rotation, UB discharge.
F-4 CW rotation, UB discharge.
F-10 CCW rotation, BH discharge.
Fans F-2 to F-8 inclusive to be installed on 4" high concrete pads, of a size to suit the fans furnished.

BASEMENT FLOOR PLAN
Scale: 1/8" = 1'-0"



SECTION 1
Scale: 3/8" = 1'-0"
See this Sheet



SECTION 2
Scale: 3/8" = 1'-0"
See this Sheet

Note: For reinforcing See sections 3 & 4, Sheet 64

Note: For continuation of drainage see sheet 16

NO.	DATE	DESCRIPTION	BY	CHK
1	11/66	Conform to construction records	R.L.M.	A.C.P.

REVISIONS

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
ADMINISTRATION WING
HEATING AND AIR CONDITIONING

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

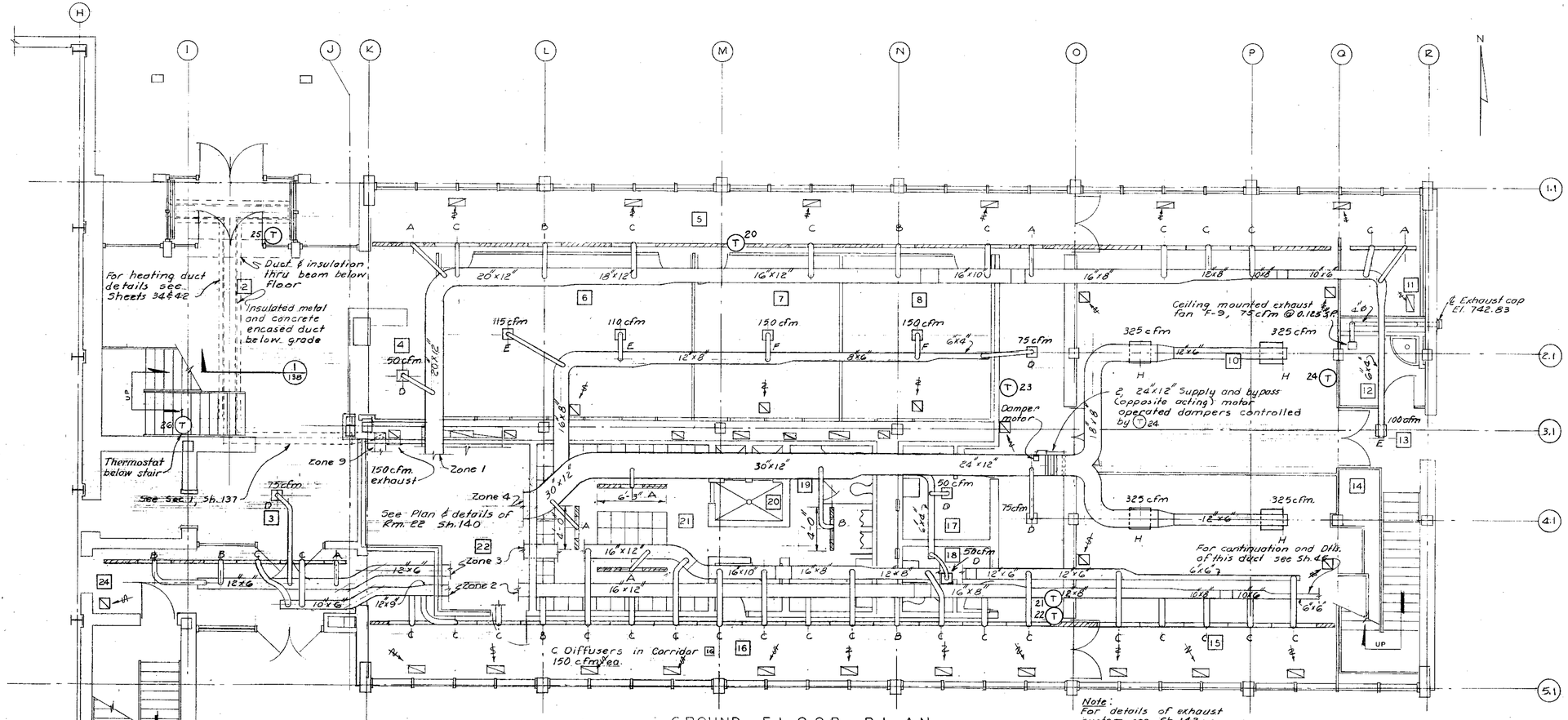
P.C.D. CONTRACT 7

DESIGNED N.W.S. CHECKED S.G.W.Q. L.L.R.
DETAILED R.L.M. APPROVED
DATE 2-1967

SHEET 137 OF 190

PROJECT 3292

1042.32



GROUND FLOOR PLAN

Scale: 3/16" = 1'-0"

GENERAL NOTES

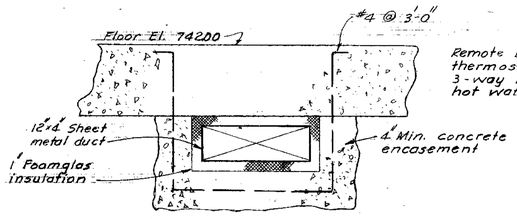
Straight Line diffusers, Anemostat Airmodule Type AM-1 continuous as shown with supply plenums as noted. Areas not having plenums are to be blanked (▭).
Type A plenum 24" 75 cfm.
Type B plenum 36" 115 cfm.
Type C plenum 48" 130 cfm.
except as otherwise noted for areas 2 & 10.
Straight Line diffusers in corridors 5 & 16 shall be adjusted for one direction throw.
▨ Indicates 12"x12" or 18"x8" ceiling return grille as shown.
Square diffusers 1st floor, Anemostat Type E ceiling diffusers.
Type D 4" throat
Type E 5" "
Type F 6" "
Type G 7" "
Type H 8" "

Square diffusers 2nd floor, Anemostat Type E-1 ceiling diffusers.
Type I 4" throat
Type J 5" "
Type K 7" "
Type L 8" "
Type M 10" "
Type N 12" "

All diffusers shall have volume control dampers and equalizing deflectors.
Neck velocity of the diffusers shall not exceed 1000 f.p.m.

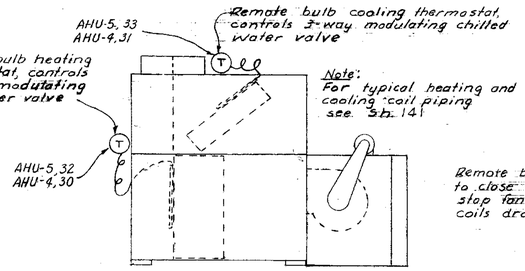
HEATING & AIR CONDITIONING LEGEND

- Hot Water Heating supply piping
- Hot Water Heating return piping
- Supply air duct
- Return or exhaust air duct
- 12"x12" Ceiling return grille
- Gate valve
- Flow control valve
- 3-Way motor operated valve
- Check valve
- Strainer
- T Thermostat
- H Humidistat
- U.H. Unit heater
- A.H.U. Air handling unit
- F.T.C. Fin tube convector
- F Fan
- C.W.P. Circulating water pump
- C.W.S. Chilled water supply
- C.W.R. Chilled water return
- C. Condenser water supply
- C.R. Condenser water return



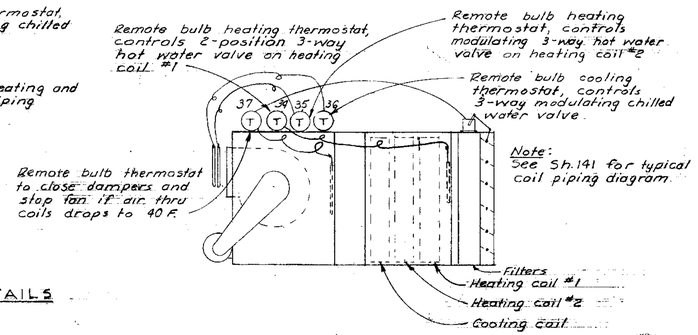
SECTION 1

Scale: 1½" = 1'-0"



AIR HANDLING UNITS 4 & 5 DETAILS

No Scale



AIR HANDLING UNIT 6 DETAILS

No Scale

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

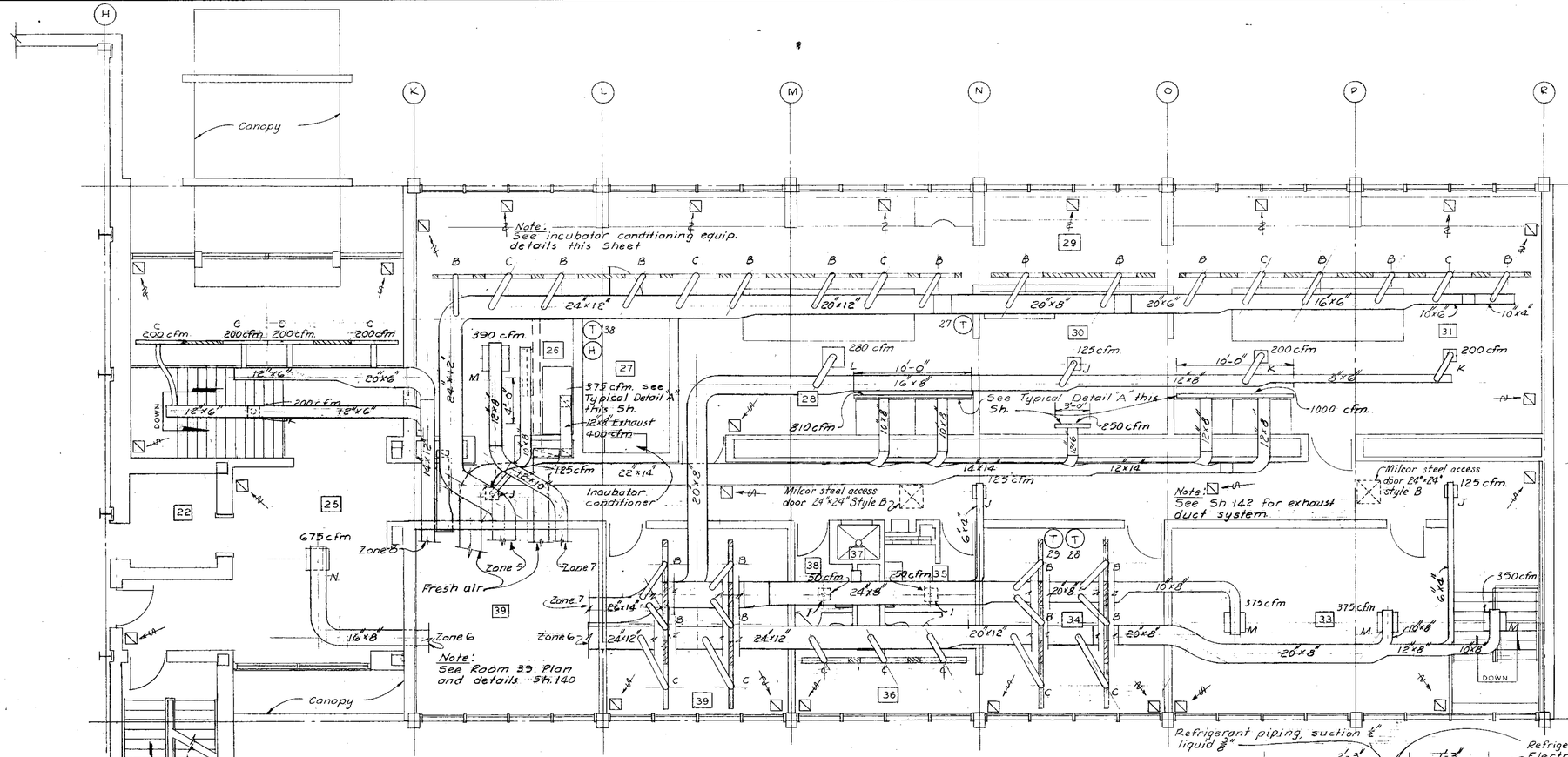
SLUDGE PROCESSING BUILDING
ADMINISTRATION WING
HEATING AND AIR CONDITIONING

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED — CHECKED S.G. JLR
DETAILED — APPROVED —
DATE 8-28-58

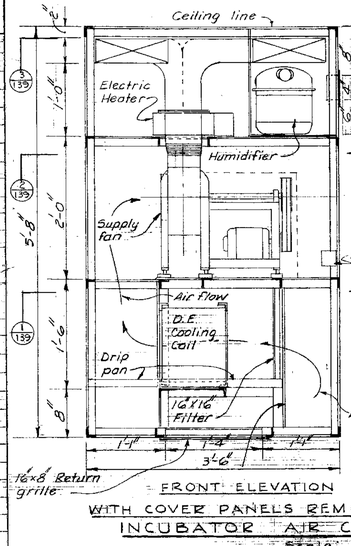
SHEET 138 OF 190



LABORATORY FLOOR PLAN

Scale: 3/16" = 1'-0"

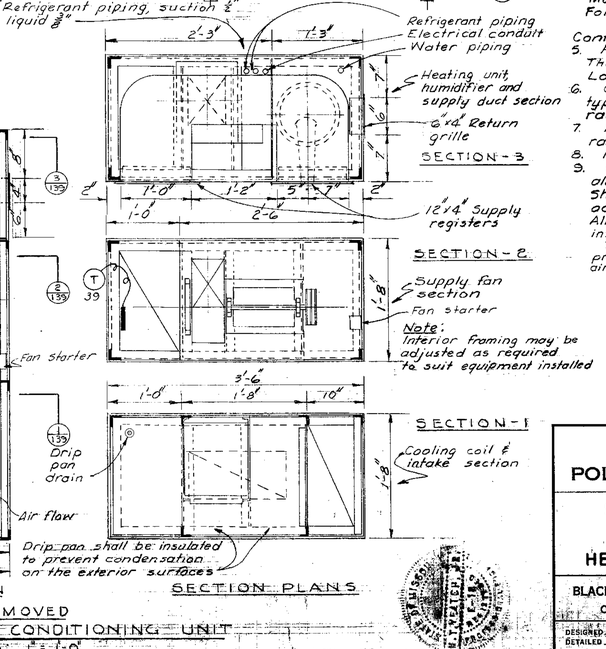
UNIT	LOCATION	C.F.M.	G.P.M. 200° WATER	B.T.U. HEATING	G.P.M. 44° WATER	B.T.U COOLING
UH-1	Sludge Thickener Inlet Bldg.	—	5.0	49000	—	—
UH-2	Sludge Thickener Inlet Bldg.	—	4.5	43100	—	—
UH-3	Sludge Thickener Pump. Sta.	—	5.5	52500	—	—
UH-4	Sludge Thickener Pump. Sta.	—	3.0	27600	—	—
UH-5	Sludge Holding Tanks	—	3.0	27200	—	—
UH-6	Sludge Holding Tanks	—	3.0	27200	—	—
UH-7	Sludge Holding Tanks	—	4.5	43100	—	—
UH-8	Sludge Holding Tanks	—	4.5	43100	—	—
UH-9	Sludge Holding Tanks	—	4.0	34600	—	—
UH-10	Sludge Holding Tanks	—	4.0	34600	—	—
AHU-1	Sludge THickener PUMP Sta.	5000	43.5	435000	—	—
AHU-2	Sludge Holding Tanks	5000	43.5	435000	—	—
AHU-3	Sludge Holding Tanks	3000	26.0	260000	—	—
AHU-4	1st. Fl. Administration Wing	7955	66.0	652000	69.0	340000
AHU-5	2Nd. Fl. Administration Wing	8300	65.0	645000	88.0	430000
AHU-6	2 Nd Fl. Administration Wing	2435	24.0	216000	32.0	152500
FTC-1	Corridor	—	1.0	8500	—	—
FTC-2 thru 4	Corridor	—	7.8	76480	—	—
FTC-5	Corridor	—	1.0	8500	—	—
FTC-6	Corridor	—	1.0	8500	—	—
FTC-7 thru 16	Corridor	—	26.0	255600	—	—
FTC-17	Corridor	—	1.0	8500	—	—
UH-11	Sludge Holding Tanks	—	2.0	10 000	—	—
Shop	office & Tool Storage	—	2.5	22000	—	—
Stair	tower	—	6.0	60000	—	—



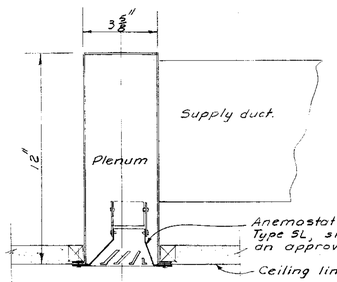
FRONT ELEVATION WITH COVER PANELS REMOVED

INCUBATOR AIR CONDITIONING UNIT

Scale: 1" = 1'-0"



SECTION PLANS



TYPICAL DETAIL "A"

Scale: 3" = 1'-0"

INCUBATOR AIR CONDITIONING NOTES

1. Supply fan: 250 cfm @ 0.65 SP. Peerless Elect. Div. of H.K. Porter Co., Inc., forward curve utility blower Model No. 8, 120 V., 1ph, 60 cy.
2. Electic heater: Chromalox Airduct heater, Type FTD, Size FTD-1, 1 KW, 120 V, 1ph., 60cy.
3. Direct expansion cooling coil: Trane, Type F, 5 row, series 18, 12"x12" face area. Capacity to cool 250 cfm. from 68 F. DB. and 67 F. W.B. to 6.5 F. D.B. and 64 F. W.B. with 50 F. refrigerant suction temperature.
4. Humidifier: Walton Laboratories Inc., Model SW-2, moisture output 2 lbs/hr. For use with 120 V., 1ph, 60 cy, electrical sec.

Controls —

5. Heating: Chromolox type PC, Chromotrol Thermistor, precision temperature controller, Lo range 65 F to 225 F, catalog No. PC-6.
6. Cooling: Minneapolis Honeywell, remote bulb type, 2 position temp. controller, T415B, range 15 F to 90 F.
7. Humidity: Minneapolis Honeywell, Model T622, range 20 to 96 % R.H.
8. Fan: Manual thermal starter.
9. Cabinet to be constructed of 2"x2"x¼" aluminum angles with all joints welded. Sheath 16 ga. aluminum. Interior panels and access doors 12 ga. aluminum. All interior surfaces to have 1" of fiberglass insulation.

The supply fan horsepower shall be adequate to prevent overloading when handling the specified air volume at 50 F. temp.

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
ADMINISTRATION WING
HEATING AND AIR CONDITIONING

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED R.W.S. CHECKED S.G.
DETAILED R.M.M. APPROVED
DATE

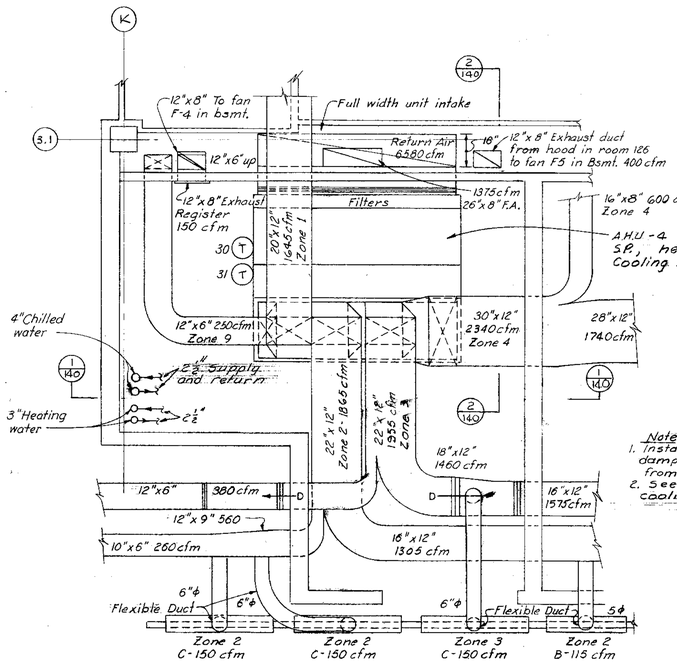
SHEET 139 OF 190

AIR HANDLING UNITS

ZONE ARRANGEMENT

(Based on 11 segments in each unit)

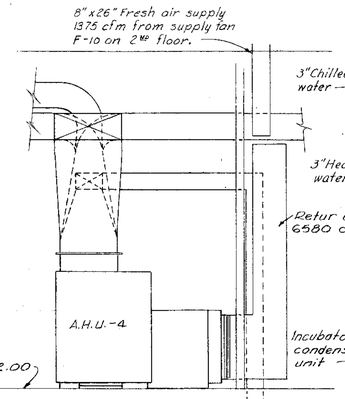
A.H.U.-4	Zone 1	2	Segments
" "	" 2	2	"
" "	" 3	2	"
" "	" 4	3	"
" "	" 9	1	"
" "	Blank	1	"
A.H.U. 5	Zone 5	3	Segments
" "	" 6	3	"
" "	" 7	4	"
" "	" 8	1	"



PLAN ROOM - 22

Scale: 3/8"=1'-0"

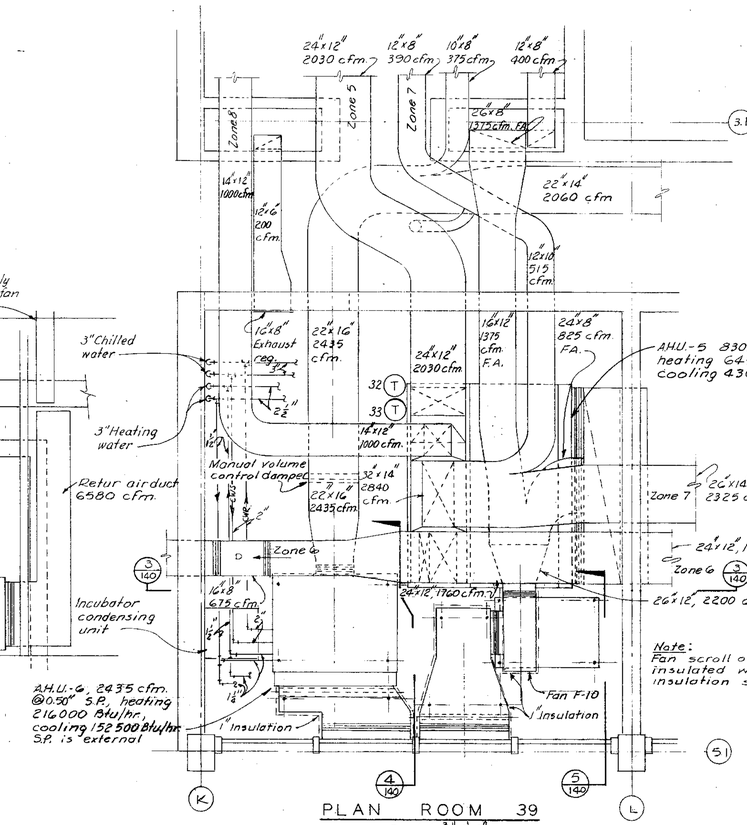
Note:
1. Install manual volume control dampers in each zone duct from A.H.U.-4 & A.H.U.-5
2. See Sh. 141 for heating an cooling coil piping Diagr.



SECTION 2

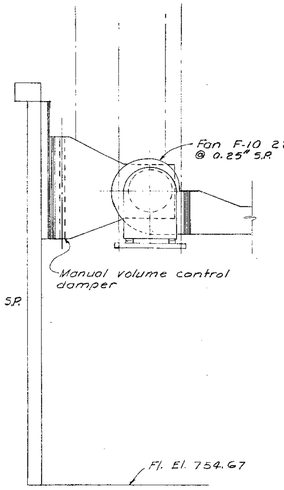
Scale: 3/8"=1'-0"

See this Sheet



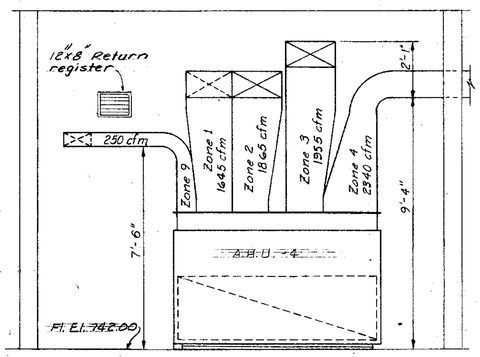
PLAN ROOM 39

Scale: 3/8"=1'-0"



SECTION 5

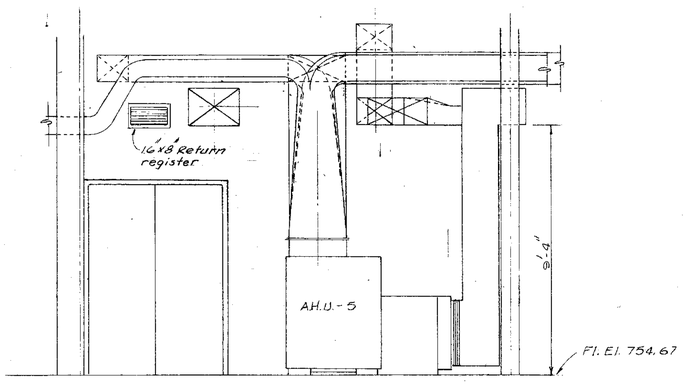
Scale: 3/8"=1'-0"



SECTION 1

Scale: 3/8"=1'-0"

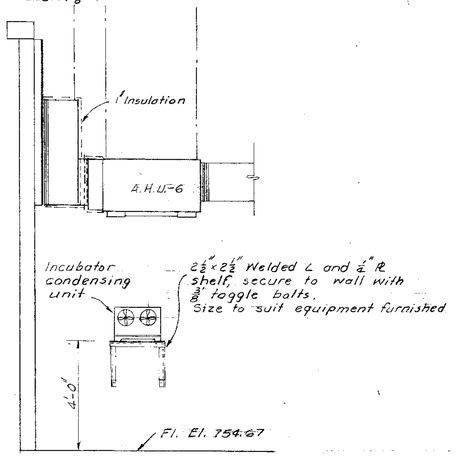
See this Sheet



SECTION 3

Scale: 3/8"=1'-0"

See this Sheet



SECTION 4

Scale: 3/8"=1'-0"

See this Sheet

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
ADMINISTRATION WING
HEATING AND AIR CONDITIONING

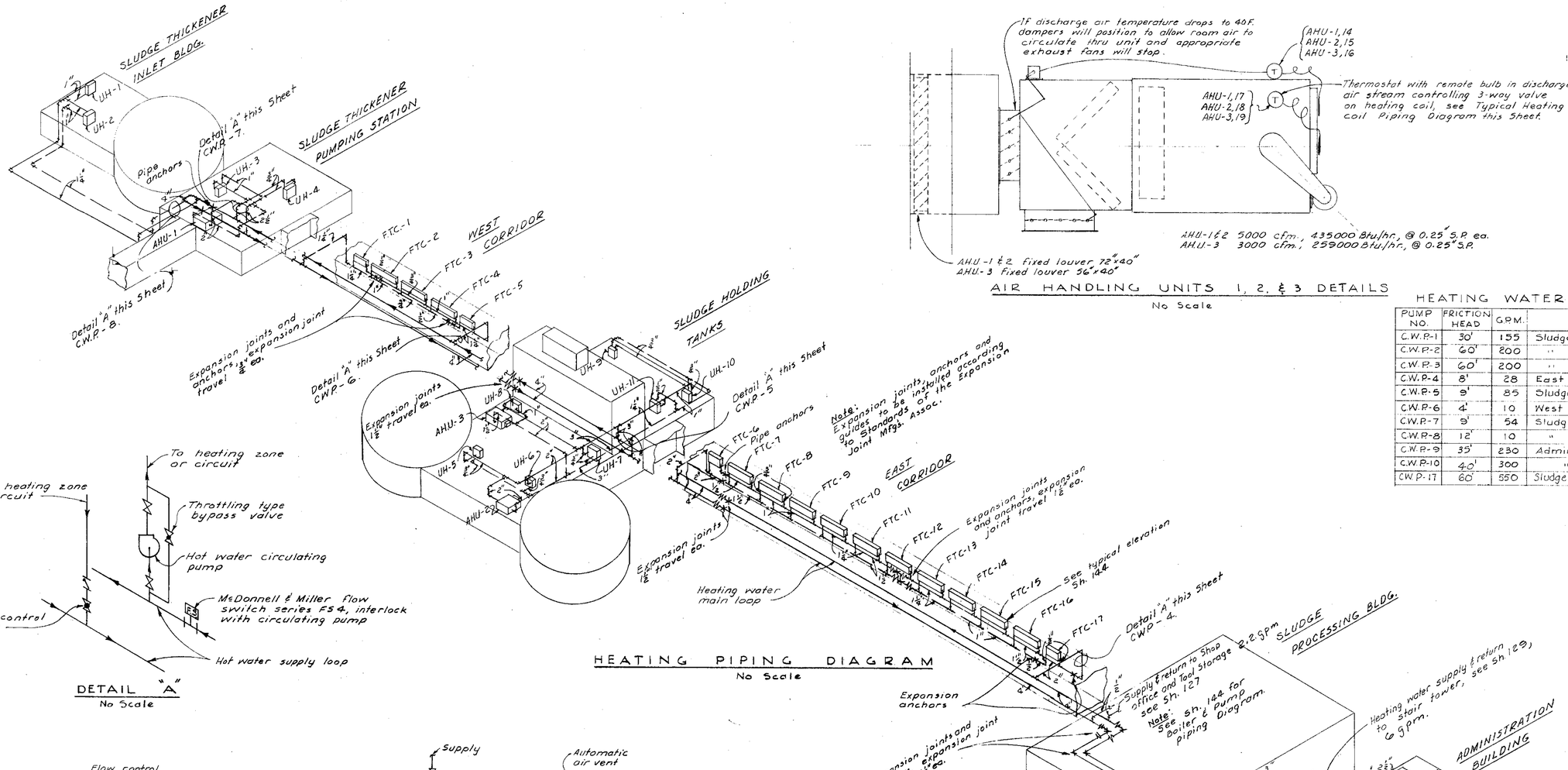
BLACK & VEATCH AND BURNS & MCDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED N.W.S. DETAILED L.E.M. CHECKED S.G. APPROVED DATE 2-24-64

SHEET 140 OF 190

10462.32



HEATING PIPING DIAGRAM

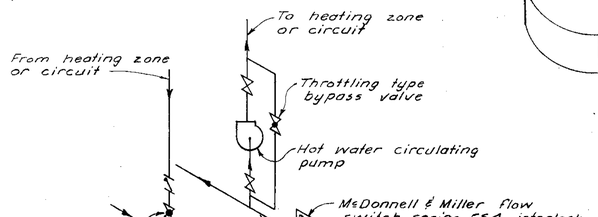
No Scale

AIR HANDLING UNITS 1, 2, & 3 DETAILS

No Scale

HEATING WATER CIRCULATING PUMPS

PUMP NO.	FRICTION HEAD	G.P.M.	LOCATION
C.W.P.-1	30'	155	Sludge Process 31'
C.W.P.-2	60'	200	" "
C.W.P.-3	60'	200	" "
C.W.P.-4	8'	28	East Corridor
C.W.P.-5	9'	85	Sludge Holding ink
C.W.P.-6	4'	10	West Corridor
C.W.P.-7	9'	54	Sludge Thickene n station
C.W.P.-8	12'	10	" " " "
C.W.P.-9	35'	230	Administration Wing
C.W.P.-10	40'	300	" "
C.W.P.-11	60'	550	Sludge Processing Building



DETAIL "A"

No Scale

TYPICAL UNIT HEATER PIPING DIAGRAM

No Scale

TYPICAL HEATING & COOLING COIL PIPING DIAGRAM

No Scale

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

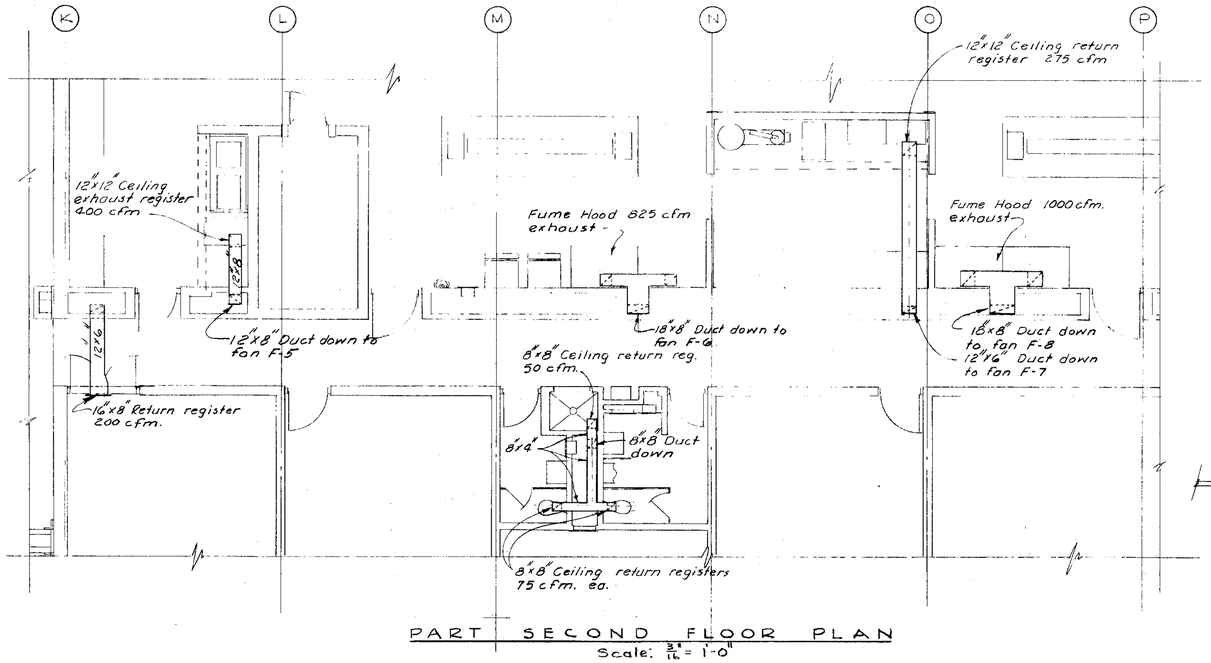
SLUDGE THICKENER BUILDINGS
SLUDGE HOLDING TANKS AND CORRIDOR
HEATING AND AIR CONDITIONING

BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.G.D. CONTRACT 7

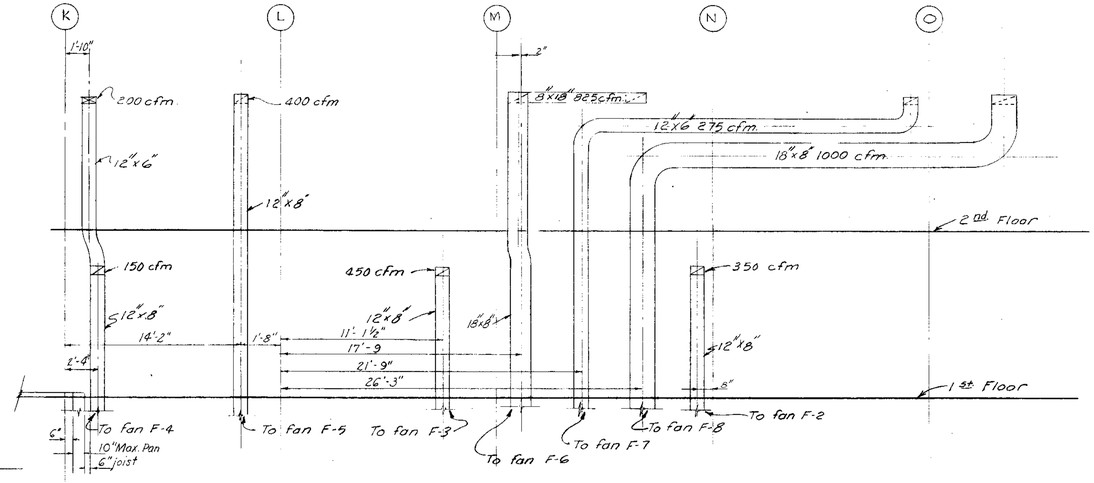
DESIGNED NWS CHECKED SG JLR
DETAILED GMM APPROVED
DATE

SHEET 141 OF 190



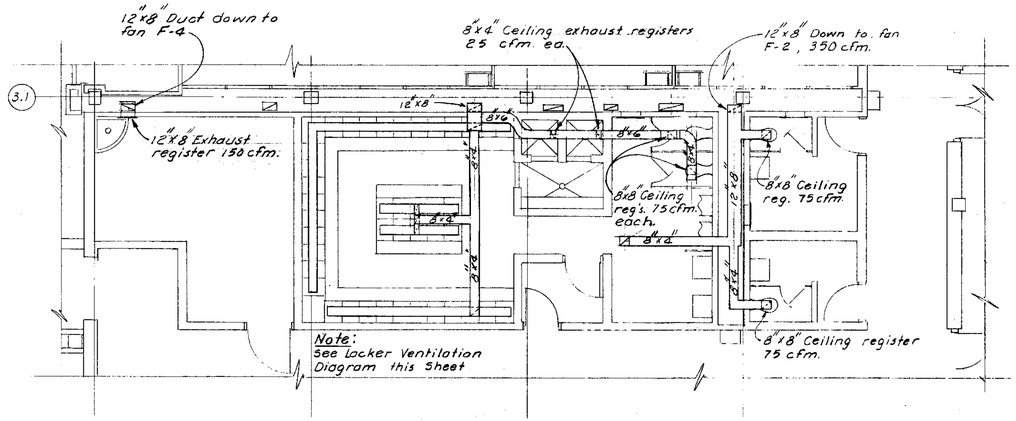
PART SECOND FLOOR PLAN

Scale: $\frac{3}{16}$" = 1'-0"



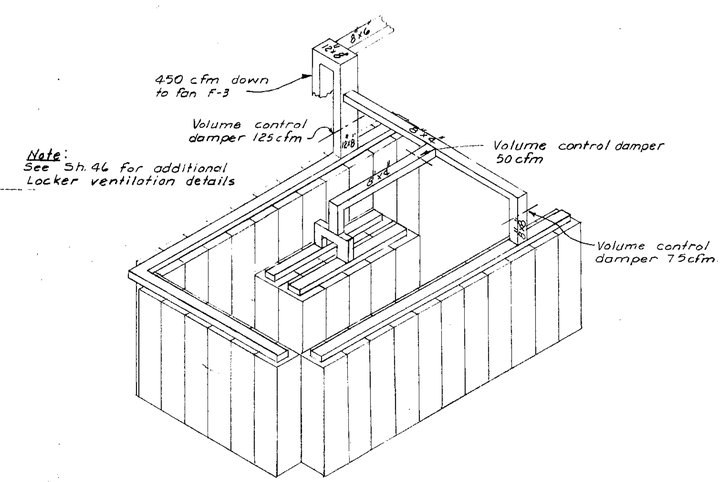
EXHAUST DUCT SYSTEM DIAGRAM

No Scale



PART FIRST FLOOR PLAN

Scale: $\frac{3}{16}$" = 1'-0"



LOCKER VENTILATION DIAGRAM

No Scale

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
ADMINISTRATION WING
VENTILATION DETAILS

BLACK & VEATCH AND BURNS & MCDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

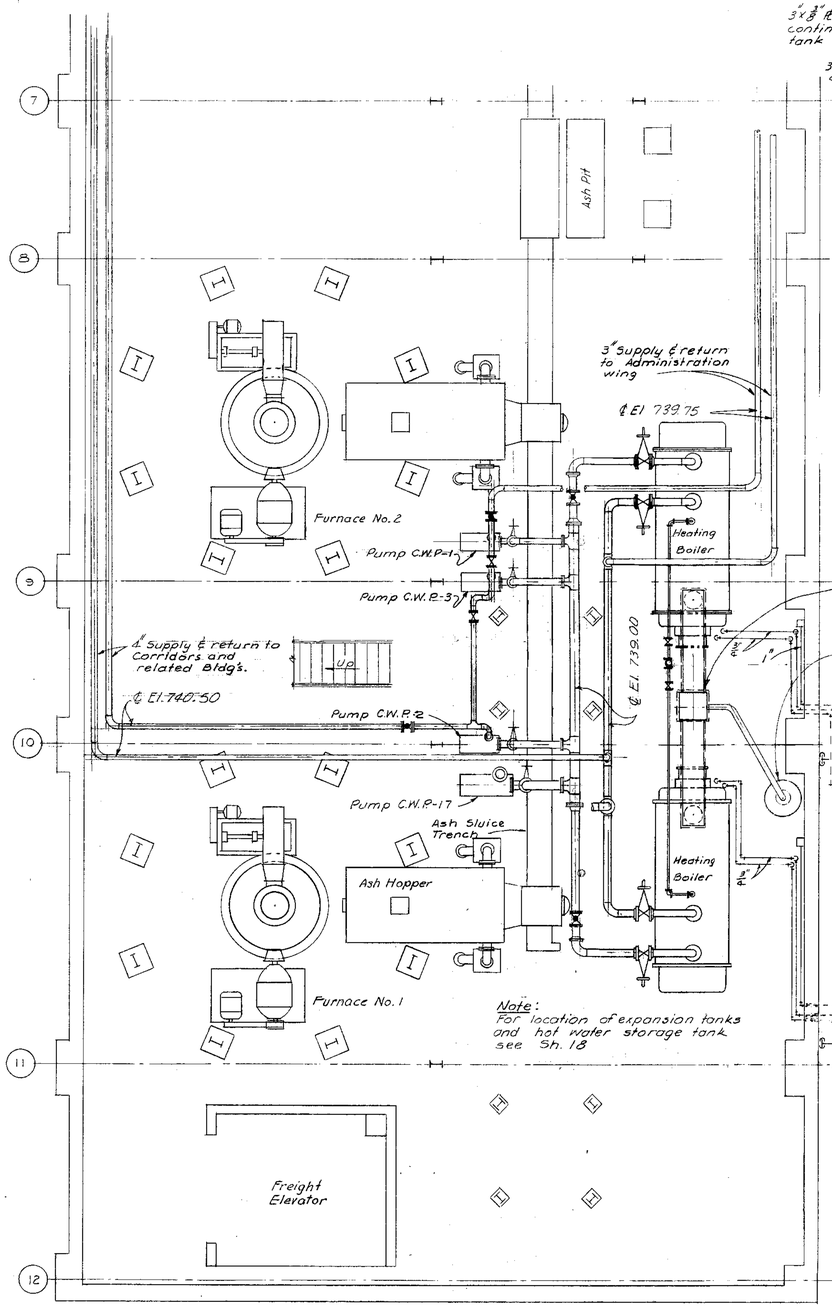
P.C.D. CONTRACT 7

DESIGNED N.W.S. DETAILED R.M.M. CHECKED S.G. APPROVED J.L.R. DATE 2-9-64

SHEET 142 OF 190

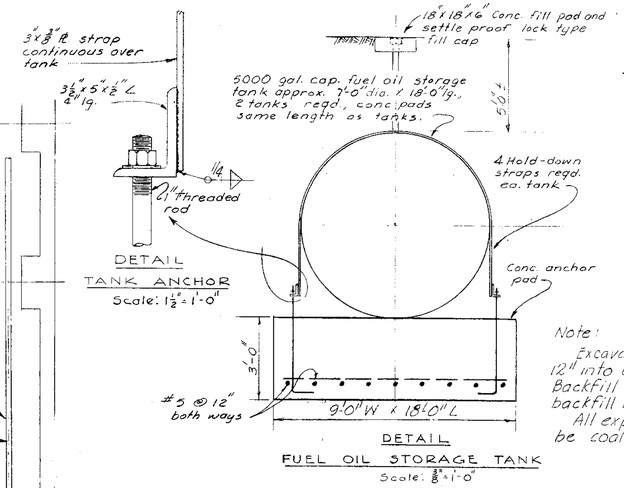
K&E 10 X 10 TO THE INCH 71103

Project 104232

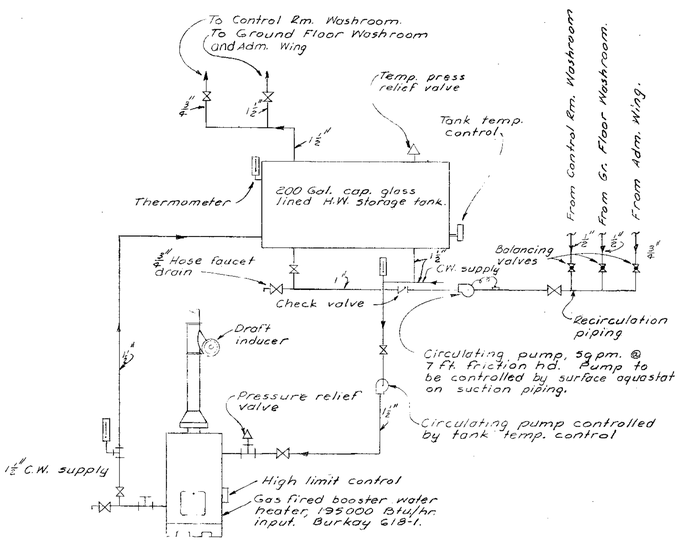


Note: See Boiler Piping Diagram Sh. 144

Note: For location of expansion tanks and hot water storage tank see Sh. 18



Note:
Excavate to El. 720', approx. 12" into dense sand layer. Backfill with inundated sand backfill to base of slab.
All exposed tie-downs shall be coal-tar painted



DOMESTIC HOT WATER PIPING DIAGRAM
No Scale

THERMOSTAT SCHEDULE

T1	Sludge Thickener Inlet Bldg.	1st Floor unit heater	2 Pos.
T2	" " " "	Basement " "	"
T3	" " Pumping Station	1st Floor " "	"
T4	" " " "	Basement " "	"
T14	" " " "	Damper motor on A.H.U.-1	"
T7	" " " "	3-Way valve on A.H.U.-1	Modulating
T5	" Holding Tank Bldg.	Unit heater	2 Pos.
T6	" " " "	" "	"
T7	" " " "	" "	"
T8	" " " "	" "	"
T9	" " " "	" "	"
T10	" " " "	" "	"
T11	" " " "	" "	"
T15	" " " "	Damper motor on A.H.U.-2	"
T8	" " " "	3-Way valve on A.H.U.-2	Modulating
T16	" " " "	Damper motor on A.H.U.-3	2 Pos.
T19	" " " "	3-Way valve on A.H.U.-3	Modulating
T12	West Corridor	H.W. Cir. pump	2 Pos.
T13	East Corridor	" " "	"
T20	Adm. Wing, Processing Bldg.	Z-1 Damper motor A.H.U.-4	Modulating
T21	" " " "	Z-2 " " "	"
T22	" " " "	Z-3 " " "	"
T23	" " " "	Z-4 " " "	"
T24	" " " "	Z-4A " " on duct	"
T25	" " " "	Z-9 " " A.H.U.-4	"
T24	" " " "	Z-8 " " A.H.U.-5	"
T27	" " " "	Z-5 " " "	"
T28	" " " "	Z-7 " " "	"
T29	" " " "	Z-6 " " "	"
T30	" " " "	3-Way valve-H- on A.H.U.-4	"
T31	" " " "	3-Way valve-C- on A.H.U.-4	"
T32	" " " "	3-Way valve-H- on A.H.U.-5	"
T33	" " " "	3-Way valve-C- on A.H.U.-5	"
T34	" " " "	3-Way valve-H- on A.H.U.-6	2 Pos.
T35	" " " "	3-Way valve-H- on A.H.U.-6	Modulating
T36	" " " "	3-Way valve-C- on A.H.U.-6	"
T37	" " " "	D. motor & fan on A.H.U.-6	2 Pos.
T38	" " " "	Incubator Rm. elect. heat (Chromalox, PC Thermistor)	
T39	" " " "	" " cooling solenoid,	2 Pos.
T40	" " " "	Cooling tower Fans	2 Pos.
T41	Sludge Holding Tank Bldg.	P.R.V.-9	2 Pos.

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

MISCELLANEOUS HEATING AND AIR CONDITIONING DETAILS

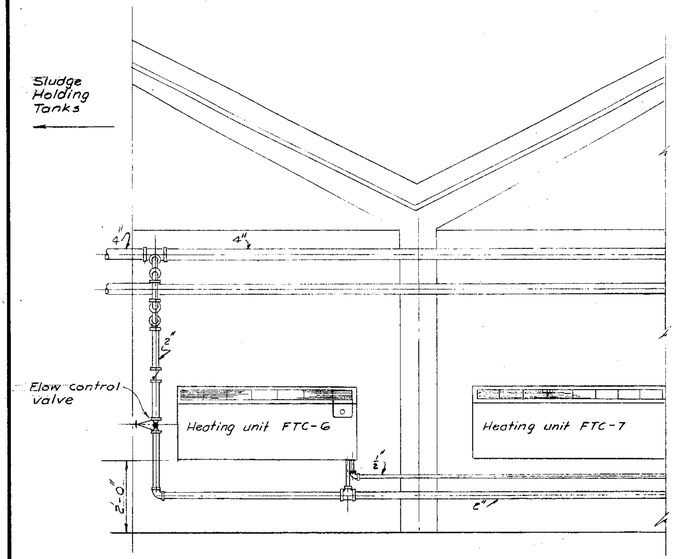
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

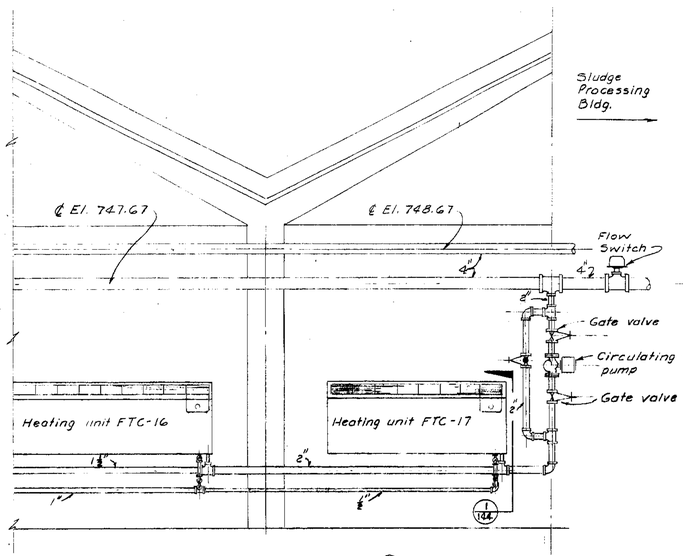
P.C.D. CONTRACT 7

DESIGNED N.W.S. CHECKED S.G. J.L.R.
DETAILED R.M.M. APPROVED
DATE 2-8-62

SHEET 143 OF 190

PROJECT 10A232



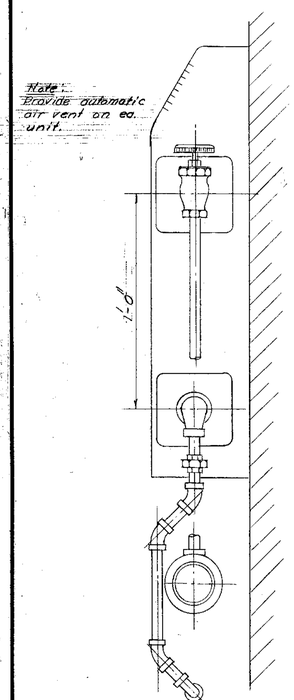


ELEVATION

CORRIDOR HEATING UNITS

(TYPICAL)

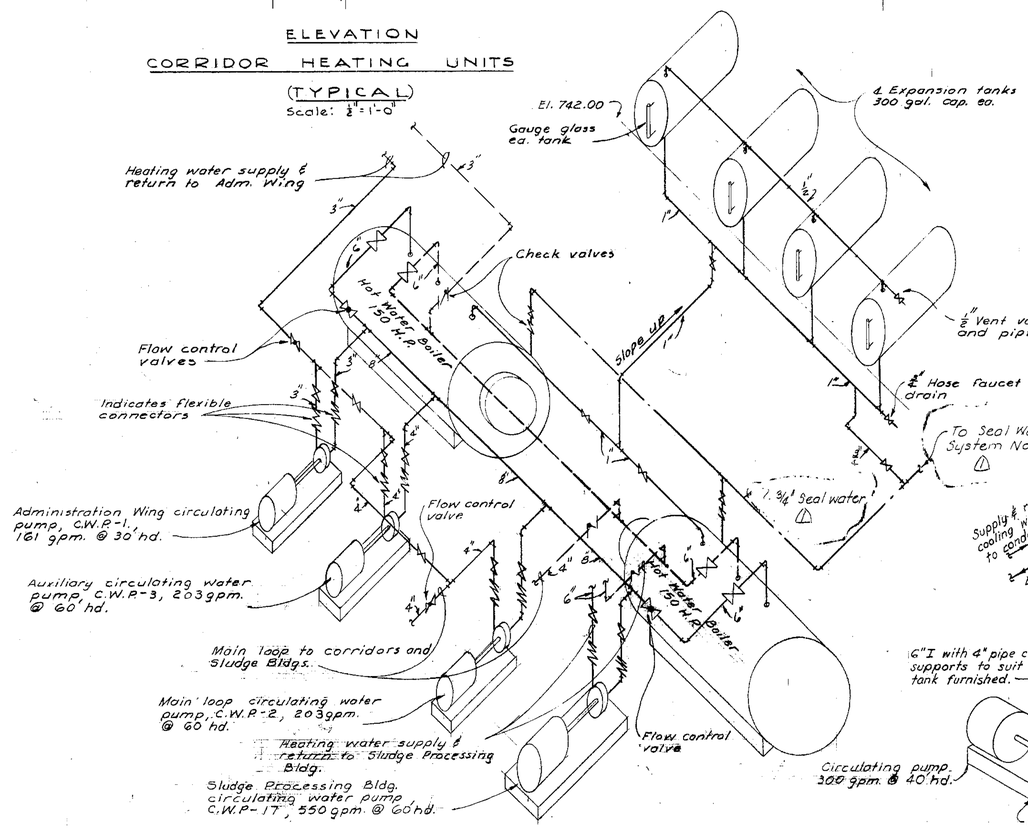
Scale: $\frac{1}{2}$"=1'-0"



SECTION 1

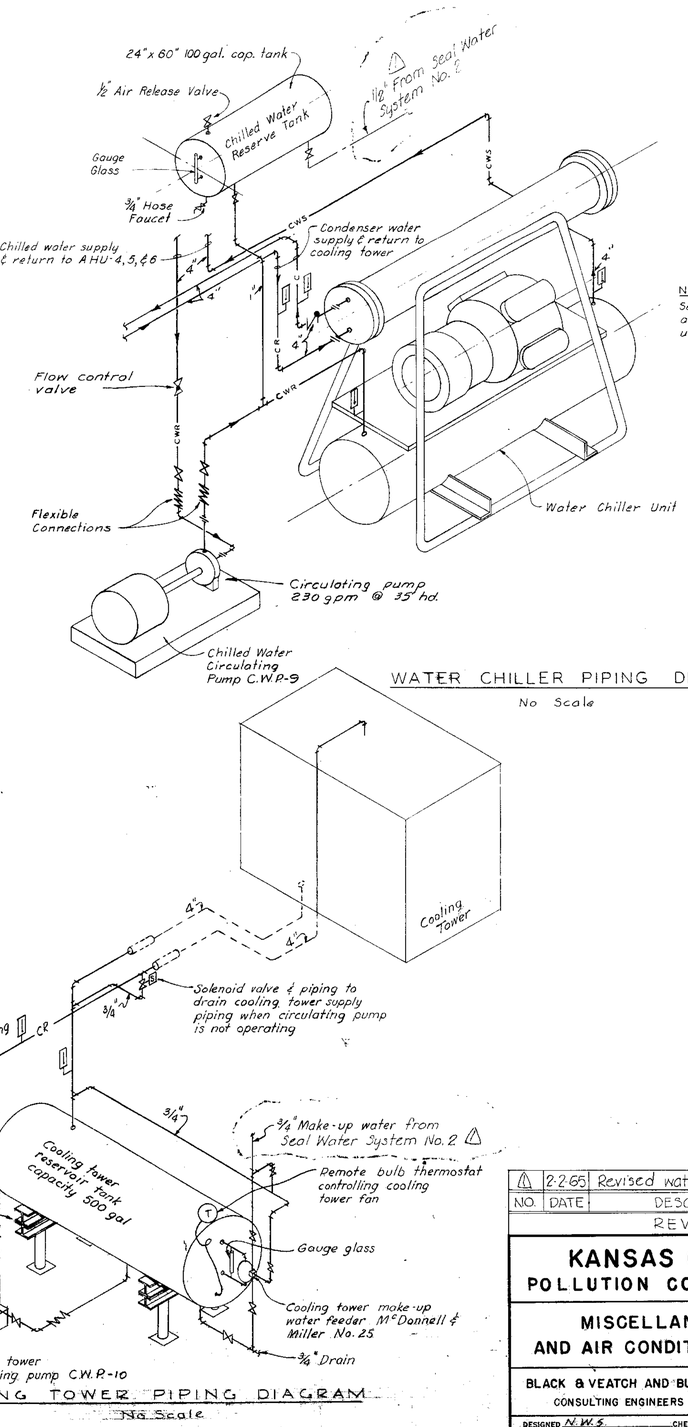
Scale: 3"=1'-0"

See this Sheet



BOILER PIPING DIAGRAM

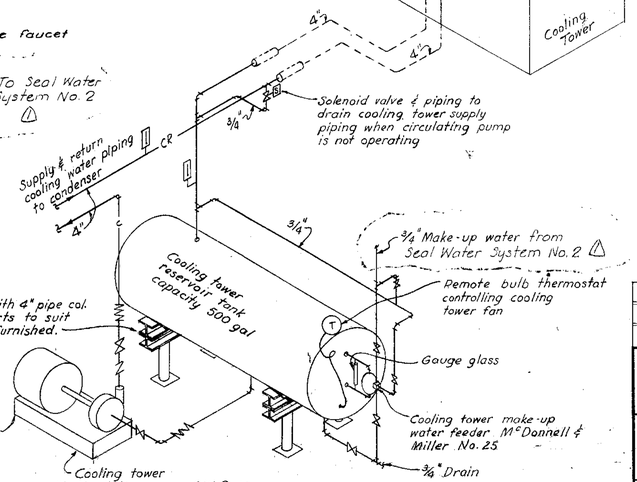
No Scale



NOTE:
See specifications for performance and capacity of water chiller unit.

WATER CHILLER PIPING DIAGRAM

No Scale



COOLING TOWER PIPING DIAGRAM

No Scale

NO.	DATE	DESCRIPTION	BY	CHK
1	2-2-65	Revised water services	ACP	LWW

REVISIONS

KANSAS CITY, MISSOURI

POLLUTION CONTROL DEPARTMENT

MISCELLANEOUS HEATING AND AIR CONDITIONING DETAILS

BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED N.W.S. CHECKED S.G. J.L.R.
DETAILED K.W.W. APPROVED
DATE 2-4-64

SHEET 144 OF 190

ELECTRICAL LEGEND

COMMUNICATIONS

- Telephone, outside & intercom
- Telephone, intercom only
- (LS) Ceiling mounted cone type Loudspeaker, axis vertical.
- LS Ceiling mounted horn type Loudspeaker, axis vertical and sound pattern in direction of symbol.
- LS 30° Horn type Loudspeaker, sound pattern width horizontal, aimed as arrow, axis at indicated, angle below horizontal.

Altec-Lansing horn pattern is similar to horn shape; Electro-Voice horn pattern is rotated 90°.

Number code pertaining to each Loudspeaker symbol on plans or Loudspeaker shown in detail to be interpreted as shown by following example :

1-8-3A Loudspeaker code
1 = Loudspeaker type (See specs.)
8 = 8 watts line matching transformer connection
3A = Loudspeaker circuit LS-3A

- V Manual stepped attenuator-Loudspeaker volume control.
- Dynamic microphone with integral preamplifier and dynamic receiver mounted in telephone handset.
- Line amplifier
- 30W Power amplifier with power output rating in watts indicated.
- C Compressor
- Auto Attn. Automatic attenuator
- AT Manual stepped attenuator-600 ohm circuit
- CN 600 ohm combining network - see schematic diagrams.
- DN 600 ohm dividing network - see schematic diagrams.
- High frequency equalizier - see schematic diagram.
- 300cps Low frequency equalizier with cutout frequency indicated.
- P 600 ohm fixed T pad
- Photo-resistive switch-see schematic diagram.
- VARY
- 2 conductor telephone type jack
- Paired 2 conductor telephone type jack for "normal through" connection.
- Paired 2 conductor telephone type jacks for "normal through" connection with normally open contacts on one jack to provide line termination when jack is operated.
- 2 Pair of 2 conductor telephone type jacks for balanced line.
- 70 volt loud speaker connecting receptacles (jacks) with patch cord.
- Paired banana plug jacks for 70 volt loudspeaker line monitoring.
- Diode
- Condenser
- Resistor
- Potentiometer
- W Pilot light, letter "W" - white.

ELECTRICAL PLANS

- Exposed conduit
- Concealed conduit in ceiling & wall
- Concealed conduit above ceiling
- Concealed conduit in floor & wall
- Short dash for each #12 insulated wire and long dash for #12 bare ground wire in ½" conduit. Circuit of 4 or 5 #12 wires & a #12 ground wire in ¾" conduit.
- L1-1, 3 240 Volt-1φ circuit 1-3, lighting panel L1
- Conduit turning up
- Conduit turning down
- L1-6 Home run, all of circuit 6 to panel L1
- L1-2 Partial home run, part of circuit 2 to panel L1
- $ Flush mounted switch
- S Surface mounted switch
- $3 - S3 Three way switch
- $4 - S4 Four way switch
- $W - SW Weatherproof switch
- SM Momentary, double throw switch for lighting contactor
- SA,B OR C Lighting switch with letter for circuit distinction
- Flush mounted receptacle
- Surface mounted receptacle
- Flush receptacle 7'-6" high
- Flush weatherproof receptacle
- 208 Volt-1φ flush receptacle
- 30 A.-1φ-240 Volt receptacle
- 30 A.-1φ-120 Volt receptacle
- Flush clock receptacle 7'-6" high
- ⚠ Welding or Hoist Receptacle, 480V, 3φ, 30A. Welding MH, 3'-0" Hoist MH, 5'-0"
- J Junction box
- T3 T3 Thermostat, some numbered
- 1 Push-button station - momentary "On-Off"
- 2 Push-button station - "On-Off" selector switch
- 3 Push-button station - "Hand-Off-Auto" selector switch
- 4 Push-button station - momentary "Raise-Lower"
- 5 Push-button station - momentary "Forward-Off-Reverse"
- 6 Push-button station - momentary "Up-Stop-Down"

ELECTRICAL ONE LINE DIAGRAMS

- 3-30 Air circuit breaker, 3 pole, 30 amp.
- S1 Motor starter, 3 phase, size 1.
- S1-Rev Motor starter, reversing, 3 phase, size 1.
- S7 Individually enclosed combination motor starter, size 1.
- Transformer, voltage, phase, and size in Kva as noted on drawings.
- 5 Motor with assumed horsepower (5 HP)
- Current limiting fuse
- 15 KV, 3 position, interrupting switch.
- Additional device in MCC enclosure not directly connected to MCC bus, contactor, relay, timer, etc. as noted on drawings.
- J Junction box
- 3 #6, #8G, 1¼" Circuit of 3 #6, phase or phase and neutral conductors - #8G, grounding conductor-1¼", size of rigid steel galv. conduit required.
- 11 #12, 1¼" Filter #1 & #2 panel / MCC #12 Circuit from MCC #12 to Filter #1 & #2 Panel of 11 #12 conductors in 1¼" rigid steel galv. conduit.
- * Additional symbols used on one line diagrams are listed under "Electrical Letters & Abbreviations," this sheet.
- Circuits as required. Special cables may be furnished with equipment.
- Circuit partially or all underground. See underground details for common conduits.

ELECTRICAL SCHEMATICS

- CPT Control power transformer & fuse. (120 V-1φ)
- OL (3) Motor starter overload contacts, indicates 3 contacts.
- M Motor starter holding coil
- Push-button contact, normally closed (Off, stop, etc.) Push-button contact, normally open (Start, on, forward, reverse, etc.)
- M Motor starter aux. contact, normally closed ("b" contact).
- M Motor starter aux. contact, normally open ("a" contact).
- Normally closed contact, use as indicated (PS, LS, R, etc.).
- Normally open contact, use as indicated (PS, LS, R, etc.).
- HAND OFF AUTO Hand-Off-Automatic (or any 3 position selector switch).
- OFF ON On-Off switch (or any 2 position switch).
- Holding coil as indicated (Relay, Time delay relay, Solenoid, etc.).
- R Pilot light, letter indicates color (R-red)
- 21 Lighting fixture, number for fixture schedule type
- PC & PC Photocell unit (controls outside lights)
- DM Damper motor
- MV Motorized valve
- T3 Thermostat with number, some numbered.
- Motor Motor (not holding coil).
- Neut. Neutral conductor
- Ground connection
- Schematic item located on filter panel
- Schematic item located on incinerator panel
- Schematic item located on Heating, Ventilating, & Air conditioning panel
- Schematic item not located at starter or same MCC
- Manual motor starter

ELECTRICAL LETTERS AND ABBREVIATIONS

The following letters or abbreviations may be found on plans, one lines & schematics in squares, circles, or hexagons and in the open beside contacts.

AQ	Aquastat (water temperature switch)
C	Contactor
CTI	Cycle timer No. 1
CPT	Control power transformer, 120 V ac
CWP-3	Hot water circulating pump No. 3
3"C	3" conduit
DM	Damper motor with transformer if required
DP	Differential pressure switch
DS	Disconnect switch
DF	Drinking fountain
3"E.C.	3" Empty conduit
E5"	Existing 5" conduit
F3	Fan No. 3
FD	Flow detecting switch
FS	Float switch
Fwd.	"Forward" contactor
HVA	Heating, Ventilating, & Air conditioning (panel)
J	Junction box
L	"Lower" speed changer motor
LC	Lighting contactor, momentary control
LSw	Limit switch
M	Manual motor starter
MCC 10	Motor control center No. 10
MFR	Master fuel relay
MH	Mounting height
MS	Manual starter
MV	Motor operated valve with transformer if required
PC	Photo cell and contact
PRV-2	Power roof ventilator No. 2
PS	Pressure switch
R	"Raise" speed changer motor
R1	Relay No. 1 (Applications, not individual relays)
Rev.	"Reverse" contactor
RT	Repeating Timer
S2	Size 2 magnetic starter
SI	Speed indicator
SV	Solenoid valve
T or T3	Thermostat, some numbered
TC	Time delay closing contact
Tc	Timer clutch
TG	Tachometer generator
TM	Time meter
Tm	Timer motor
TO	Time delay opening contact
UG	Circuit all in underground duct banks
VS	Vacuum switch

GENERAL NOTES

1. Fan numbers PRV-10 through PRV-20, pump numbers CWP-9 & CWP-10, and lighting panels L6 through L9 were not used.
2. Equipment numbers "Effluent Pump No.1 to 4, Scum Mixer No.1 to 4, and MCC No.1 to 8" were used on other contracts at this site.
3. Control adjustments are to be tested and changed if required for best performance.
4. Additional or larger devices or circuits shall be provided if required by equipment.
5. See specifications for grounding, also sh. #166.
6. Spare auxiliary contacts on control centers starters are not shown on schematics.
7. Loudspeakers (Type 4 & 6) shall be wall mounted 7'-6" above floor unless otherwise noted.
8. ⚠ If oil-hydraulic passenger elevator is installed the hoisting equipment will be located in the basement. (Electrical hoisting equipment shown in penthouse, sheet #173).

NO.	DATE	REVISION	BY.	CKD.
⚠	5-20-64	Addendum No.1	DLF	ACO

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

ELECTRICAL
LEGEND AND NOTES

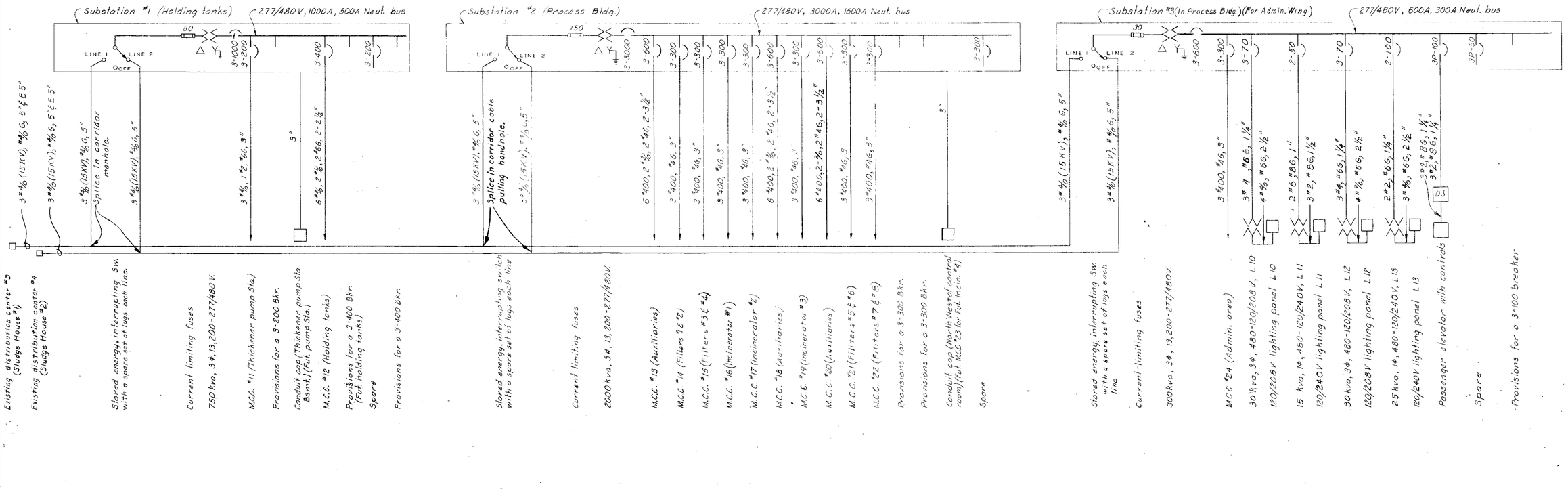
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED AKZ ACO CHECKED ACO
DETAILED DRS, RVG APPROVED
DATE APRIL 20, 1964

SHEET 145 OF 190

PROJECT 7.0.02 46-2-22



NOTES.
1. Electrical Legend, see sheet #145.

NO.	DATE	REVISION	BY	CK'D
1	12-8-66	Conform to construction records	LEM	DAC

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

MAIN POWER
ELECTRICAL ONE-LINE

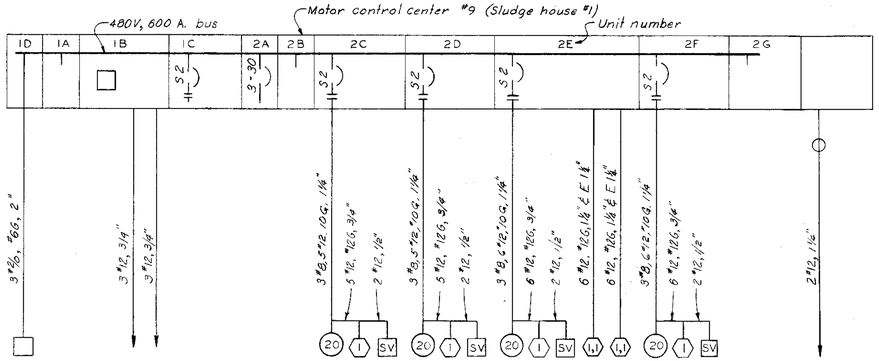
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

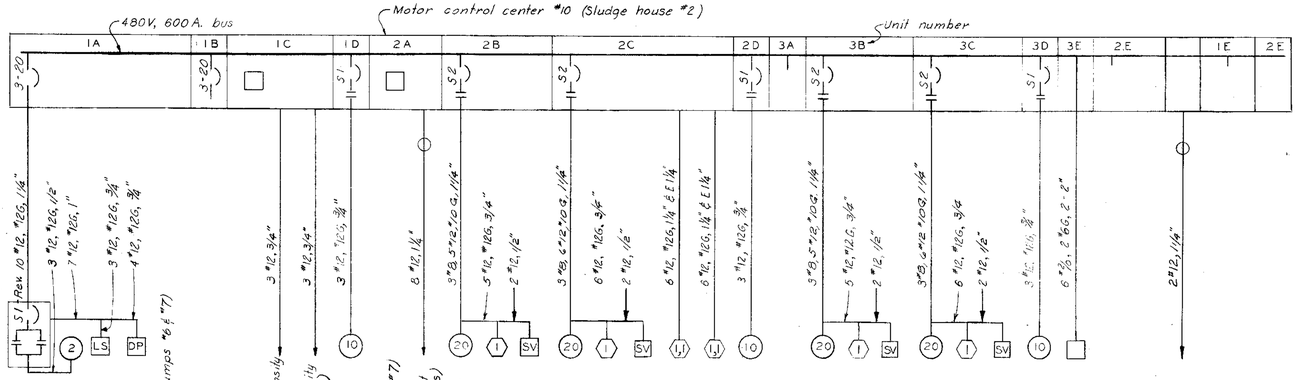
DESIGNED ACO
DETAILED LEM
CHECKED
APPROVED
DATE April 20, 1964

SHEET 146 OF 190

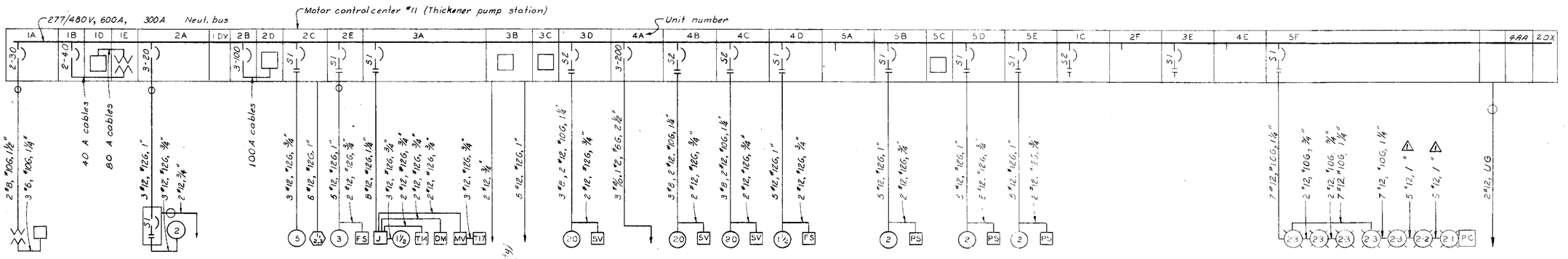
PROJECT 106232



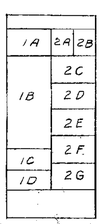
Existing 3-150 breaker in Distribution Center #3
Provisions for S2 starter
Timers, relays, & time meters (Sludge & scum pumps)
Sludge panel #1 (Sludge density meter at discharge #1 & 120V)
Sludge panel #1 "Sludge density meter at discharge #2 & 120V)
Spare
Spare
Provisions for a 3-100 breaker
Sludge pump #1
(Seal)
Sludge pump #2
(Seal)
Scum pump #1
(Seal)
(Scum box) (Pumps #1 & #2)
(Scum box) (Pumps #1 & #2)
Scum pump #2
(Seal)
Provisions for a S2 starter
Disintegrator #1 (All sludge & scum pumps)



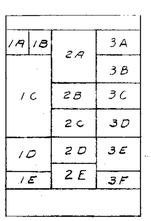
Strainer
(Strainer)
(Strainer)
(Controls to & from effluent pumps #6 & #7)
Spare
Timers, relays, & time meters (Sludge & scum pumps)
Sludge panel #2 (Sludge density meter at discharge #1 & 120V)
Sludge panel #2 (Sludge density meter at discharge #2 & 120V)
Effluent pump #7
Relays (Effluent pumps #6 & #7) (#2-6)+(#2-7)
Plant auxiliary panel (Effluent storage tank level controls)
Sludge pump #4
(Seal)
Scum pump #4
(Seal)
(Scum box) (Pumps #3 & #4)
(Scum box) (Pumps #3 & #4)
Effluent pump #6
Provisions for a S2 starter
Sludge pump #3
(Seal)
Scum Pump #3
(Seal)
Effluent pump #5
Exist. 3-300 breaker in distribution center #4
Provisions for a S2 starter
Disintegrator #2 (All sludge & scum pumps)
Space - 3 pole 100 A.



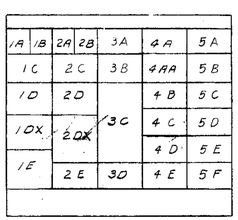
7½ kva, 1Φ, 480-120/240V, L1 (Thickener inlet Bldg.)
Lighting panel L1 (Thickener inlet Bldg.)
120/240V lighting panel L2
10 kva, 1Φ, 480-120/240V, L2
Starter with overload devices
Thickener
Plant auxiliary panel (Annun.)
277/480V lighting panel L3
Scum mixer #5
(Scum box) (Mixer #5 & pump #5)
Sump pump (Thickener inlet Bldg.)
(AHU-1)
Air handling unit AHU-1
(Cold safety)
(Heating water)
M.C.C. #12 (Holding tanks, AHU-3)
Timers & relays AHU-1, PRV 3, & density
Sludge panel #3 & 4 (Sludge density meter #5 & pump #5)
Timers & relays (Sludge & scum pumps)
Scum pump #5
(Seal)
Main breaker
Substation #1 (Holding tanks)
Sludge pump #5
(Seal)
Sludge pump #6
(Seal)
Sump pump
Provisions for a S2 starter
Water seal pump #1
(Standby start)
Relays (Water seal pumps)
Water seal pump #2
Standby start
Water seal pump #3
(Standby start)
Spare
Provisions for a S2 starter
Spare
Provisions for a S2 starter
Walkway light
Walkway light
Walkway light
Walkway light
Walkway light
Street light
Street light & photocell
MCC #12 (All sludge & scum pumps)



MOTOR CONTROL CENTER NO. 9-FRONT VIEW



MOTOR CONTROL CENTER NO. 10-FRONT VIEW



MOTOR CONTROL CENTER NO. 11-FRONT VIEW

NOTES
1. Electrical Legend, see sheet #145.

Note: See Revision Block, this sheet.

NO.	DATE	REVISION	BY	CKD.
2	12-8-66	Conform to const. records	HLD	DAC
1	5-20-64	Addendum No.1	DLF	ACO

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

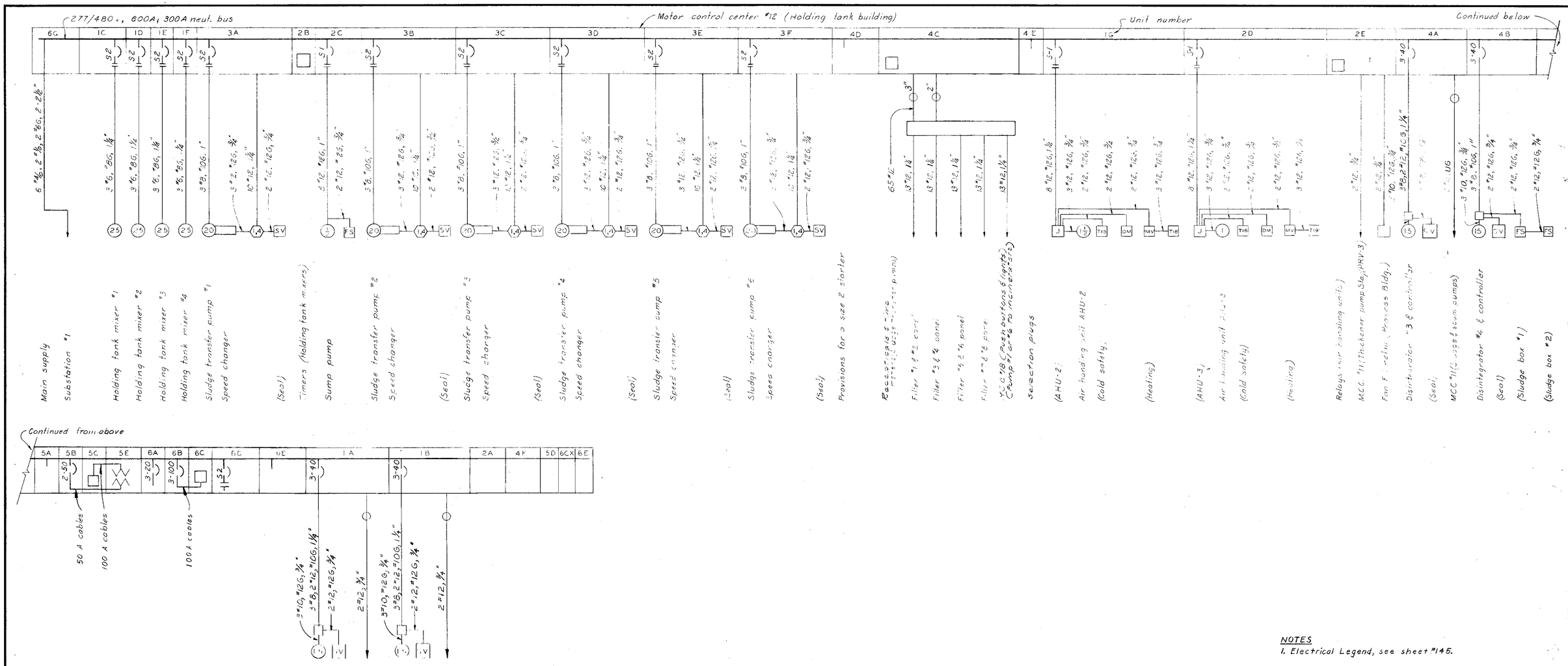
SLUDGE HOUSES AND
SLUDGE THICKENER PUMPING STATION
ELECTRICAL ONE-LINE

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED ACO CHECKED
DETAILED LEM APPROVED
DATE April 20, 1964

SHEET 147 OF 190



1A	1B	2A	3A	4A	4B	5A	5B	6A	6B
1C		2B	3B	4C		5C		6C	
1D			3C					6CX	
1E	2C		3D	4D		5D		6D	
1F	2D		3E	4E		5E		6E	
1G	2E		3F	4F				6F	
								6G	

MOTOR CONTROL CENTER NO. 12-FRONT VIEW

NOTES
1. Electrical Legend, see sheet #145.

NO.	DATE	REVISION	BY	CK'D
1	12-8-66	Conform to const. records	HLD	DAC

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE HOLDING TANKS

ELECTRICAL ONE-LINE

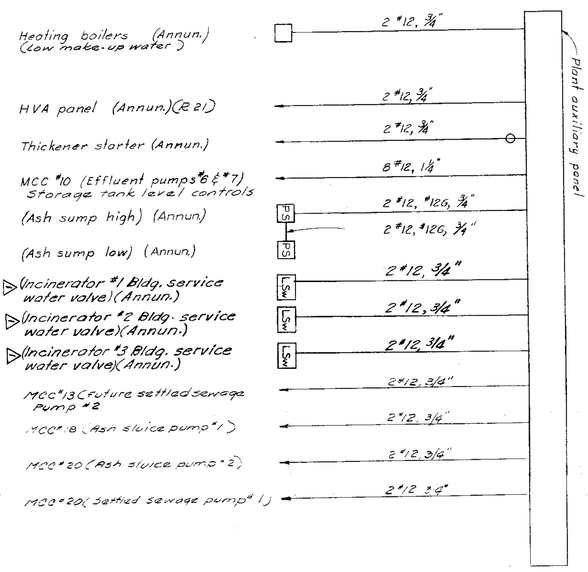
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

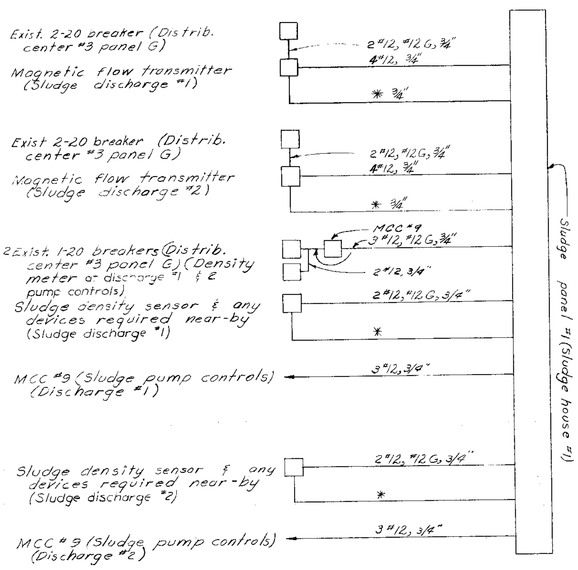
P.C.D. CONTRACT 7

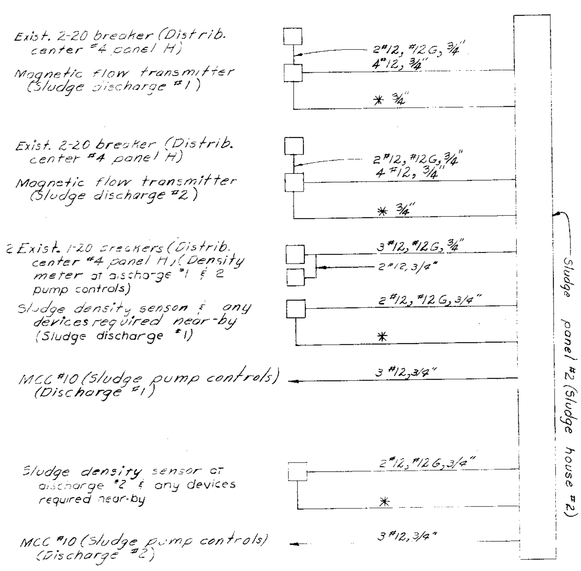
DESIGNED CCO DETAILED LEM, RVC. CHECKED DWS APPROVED DATE April 20, 1964

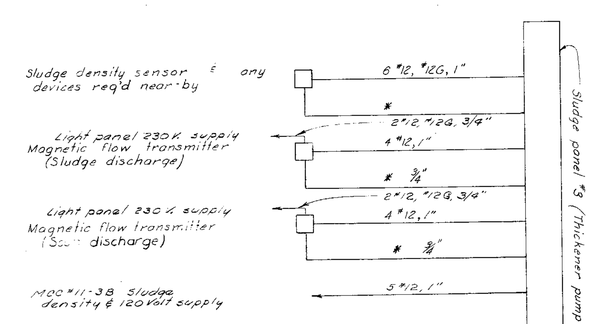
SHEET 148 OF 190

(6/32)









NOTES.
1. Electrical Legend, see sheet #145.

NO	DATE	REVISION	BY	CKD
2	12-8-66	Conform to const. records	DLF	DAC
1	5-20-66	Addendum No. 1	DLF	DAC

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

CONTROL AND INSTRUMENTATION
ELECTRICAL ONE-LINE

BLACK & VEATCH AND BURNS & MCDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

DESIGNED AGO
DETAILED LEH, RVC
CHECKED
APPROVED
DATE APRIL 20, 1966

P.C.D. CONTRACT 7

SHEET 149 OF 190

PROJECT 13292

STATE OF MISSOURI
REGISTERED
ENGINEER
E-12

KANSAS CITY, MISSOURI

CONTRACT NO.7 SLUDGE PROCESSING FACILITIES

PLAN APPENDIX

MANUFACTURER	DRAWING NO.
NICHOLS ENGINEERING AND RESEARCH CORPORATION	A-10303
	A-10410
	A-10447
	A-10448
	A-10449
	A-10450
	A-10451
	A-10452
	A-10453
	A-10465
	A-10467
	A-10468
	A-10473
	A-10495
	A-10503
	A-10545
	A-10563
	A-10556

MANUFACTURER	DRAWING NO.
ALLEN-SHERMAN-HOFF COMPANY	2348-7A
THE EIMCO CORPORATION	001F-124D
	C04Z-007D
	U00Z-154D
	P03Z-582C
	P03Z-534C
	B90Z-001C
	B90G-096C
	P03F-0028
	P08F-0033
	J02G-0258
UNIVERSAL SILENCER CORPORATION	A 22-776
KROGH PUMP COMPANY	G-1159

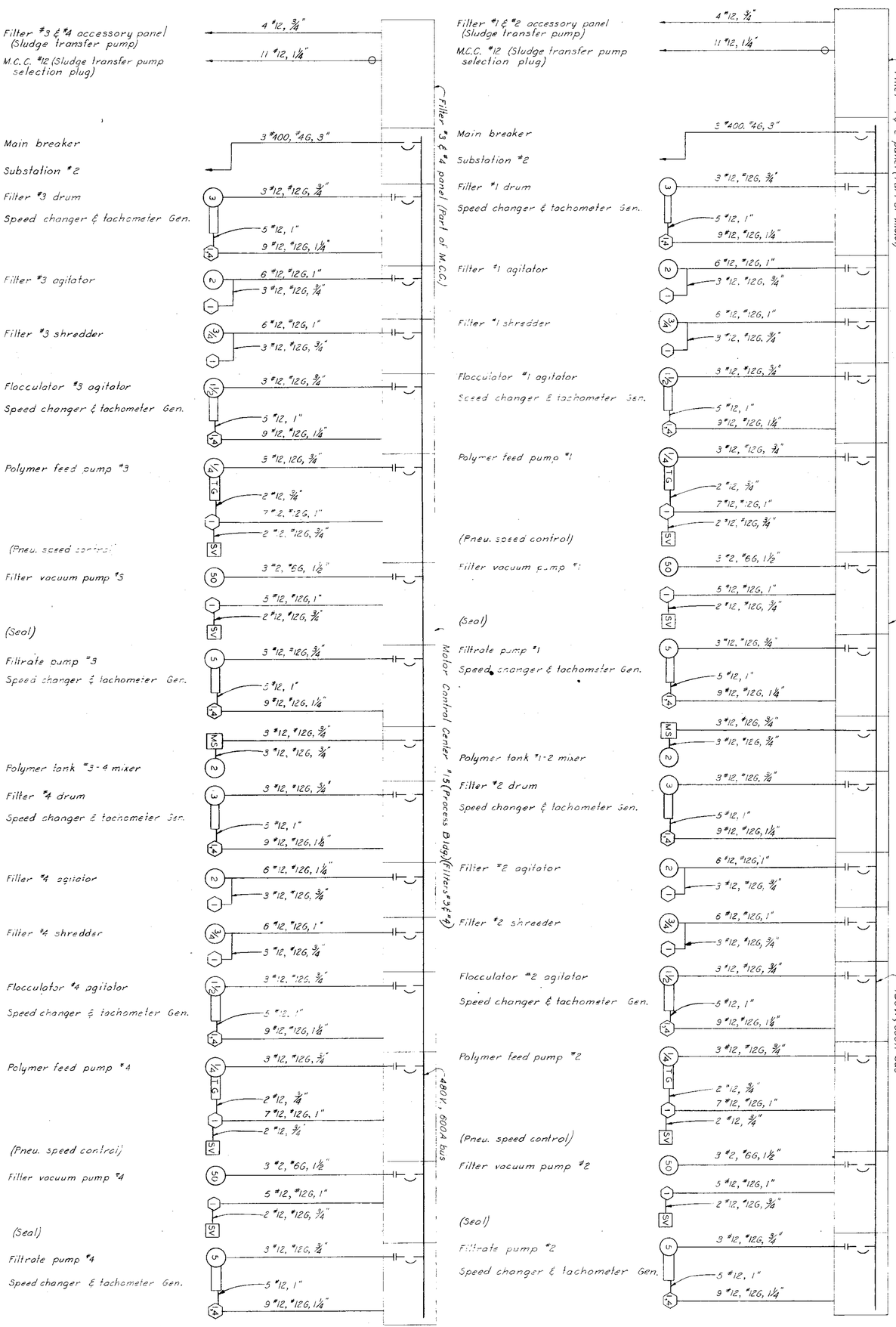
THERE IS NO EXPRESSED OR IMPLIED GUARANTEE AS TO THE ACCURACY OR COMPLETENESS OF THE INFORMATION AND DATA CONTAINED IN THESE DRAWINGS, NOR OF THE INTERPETATION THEREOF BY THE CITY OF KANSAS CITY, MISSOURI, OR BLACK & VEATCH AND BURNS & McDONNELL, CONSULTING ENGINEERS, KANSAS CITY, MISSOURI, OR ANY OF THEIR REPRESENTATIVES.

BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS
KANSAS CITY, MISSOURI

PROJECT NO. 3292-D7

MICROFILMED

Sepia Drawings herewith given/left
to the City 5/79, Al Peterson



NOTES
1. Electrical Legend, see sheet #145.
2. MCC 14 & 15 are furnished with filters.

NO.	DATE	REVISION	BY	CK'D
1	12-8-66	Conform to construction records	LEM	DAC

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
FILTERS
ELECTRICAL ONE-LINE

BLACK & VEATCH AND BURNS & MCDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

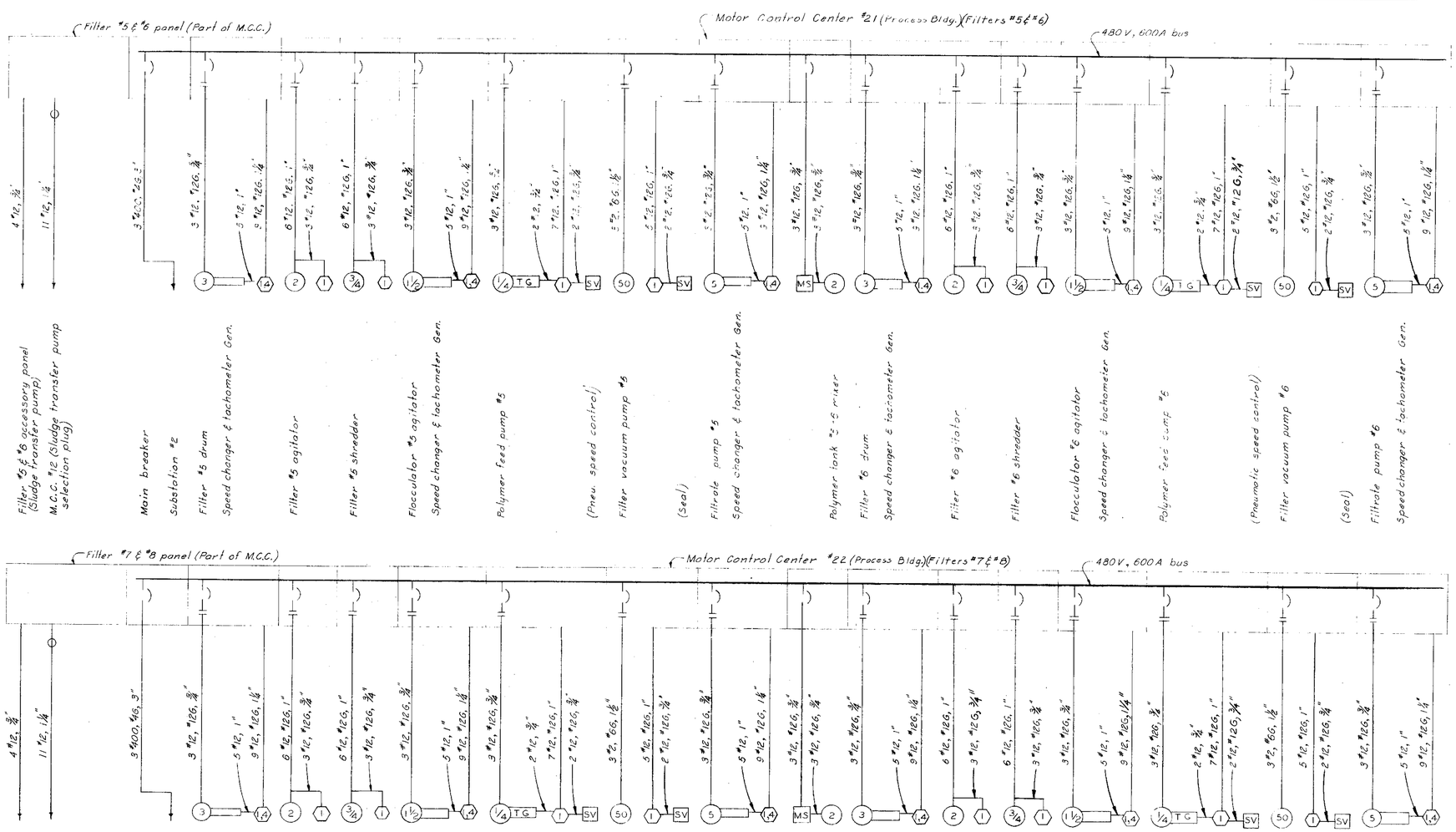
P.C.D. CONTRACT 7

DESIGNED DAC
DETAILED LEM
CHECKED
APPROVED
DATE April 20, 1966

SHEET 150 OF 190

PROJECT 39.92

1062.32



NOTES

1. Electrical Legend, see sheet #145
2. MCC 21 & 22 are furnished with filters

MICROFILMED

NO.	DATE	REVISION	BY	CK'D
1	12-8-66	Conform to const. records	LEM	DAC

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING

FILTERS
ELECTRICAL ONE-LINE

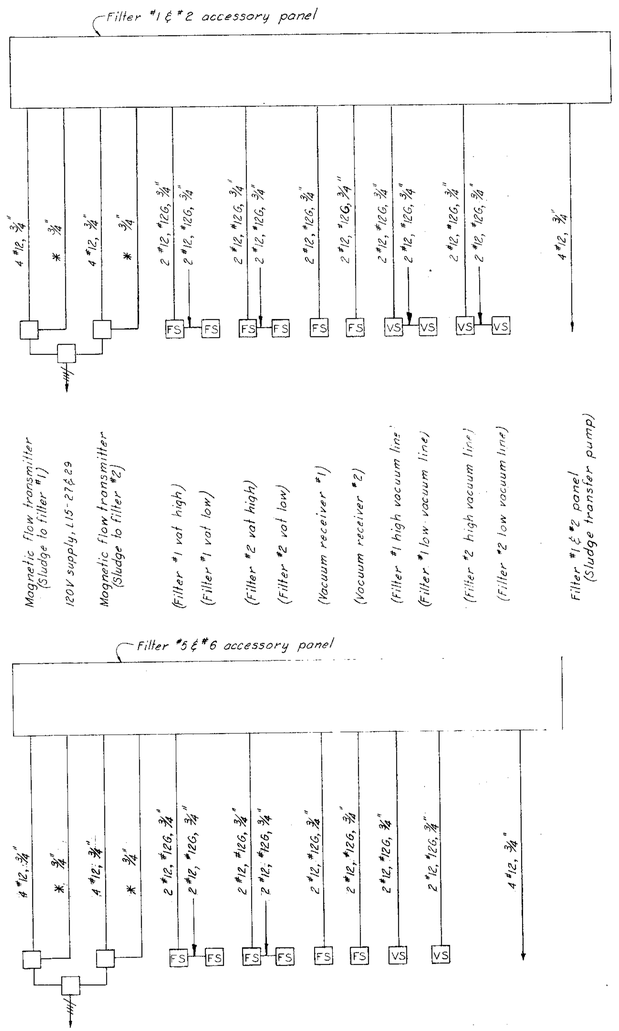
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

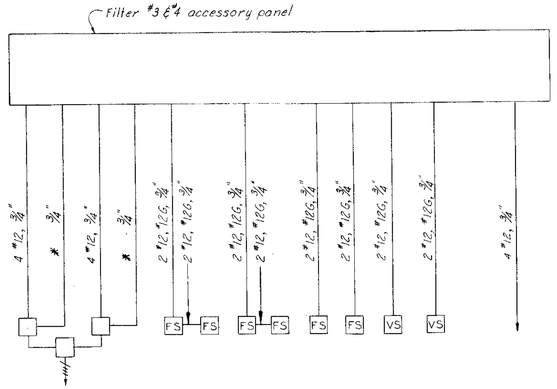
P.C.D. CONTRACT 7

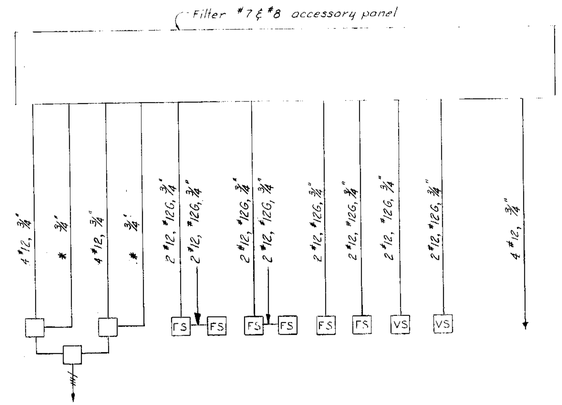
DESIGNED ACG CHECKED DAC
DETAILED LEM, EWV APPROVED
DATE April 20, 1964

SHEET 151 OF 190

1062.32







NOTES

1. Electrical Legend, see sheet # 145
2. Filters 3 to 8 do not have low vacuum indication.

MICROFILMED

NO.	DATE	REVISION	BY	CK'D
1	12-8-66	Conform to const. records	LEM	DAC

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
FILTERS
ELECTRICAL ONE-LINE

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

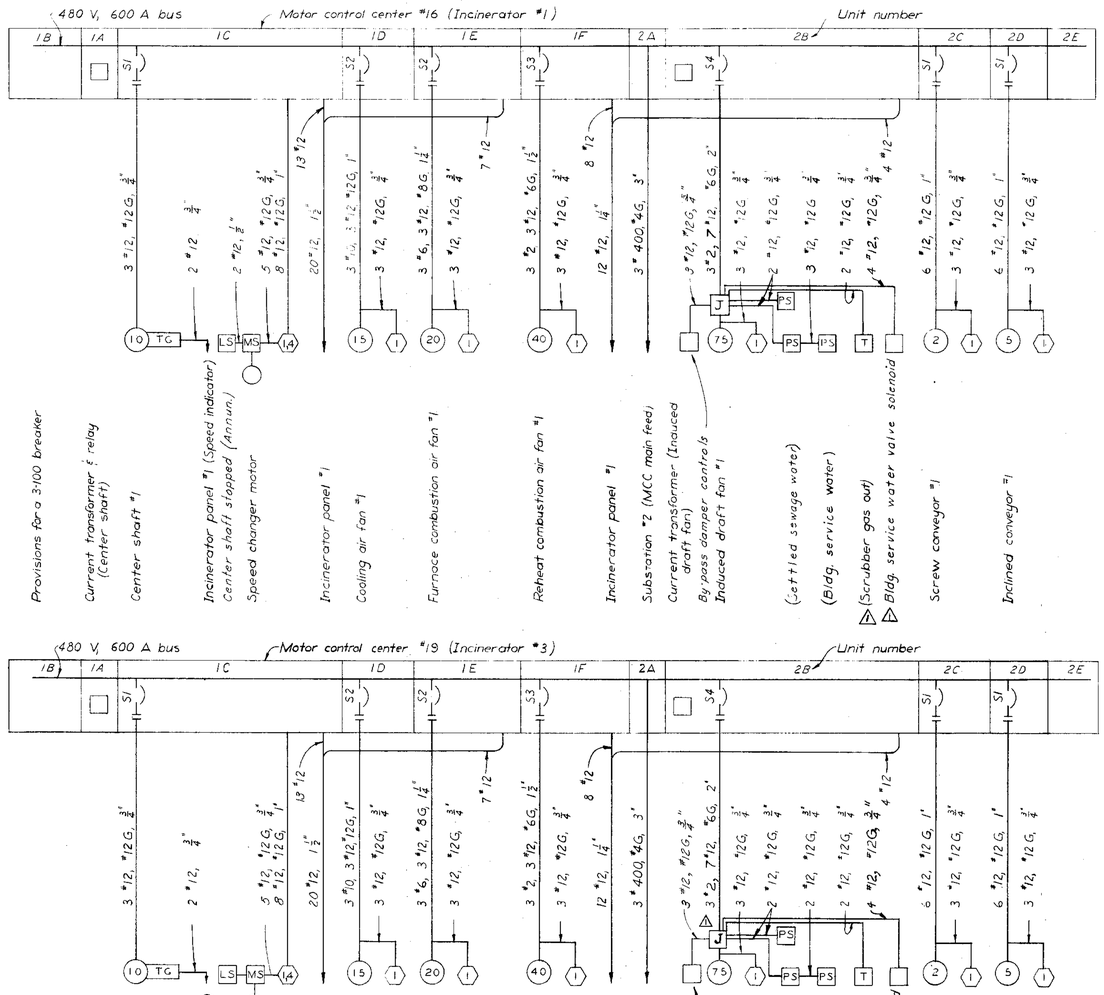
P.C.D. CONTRACT 7

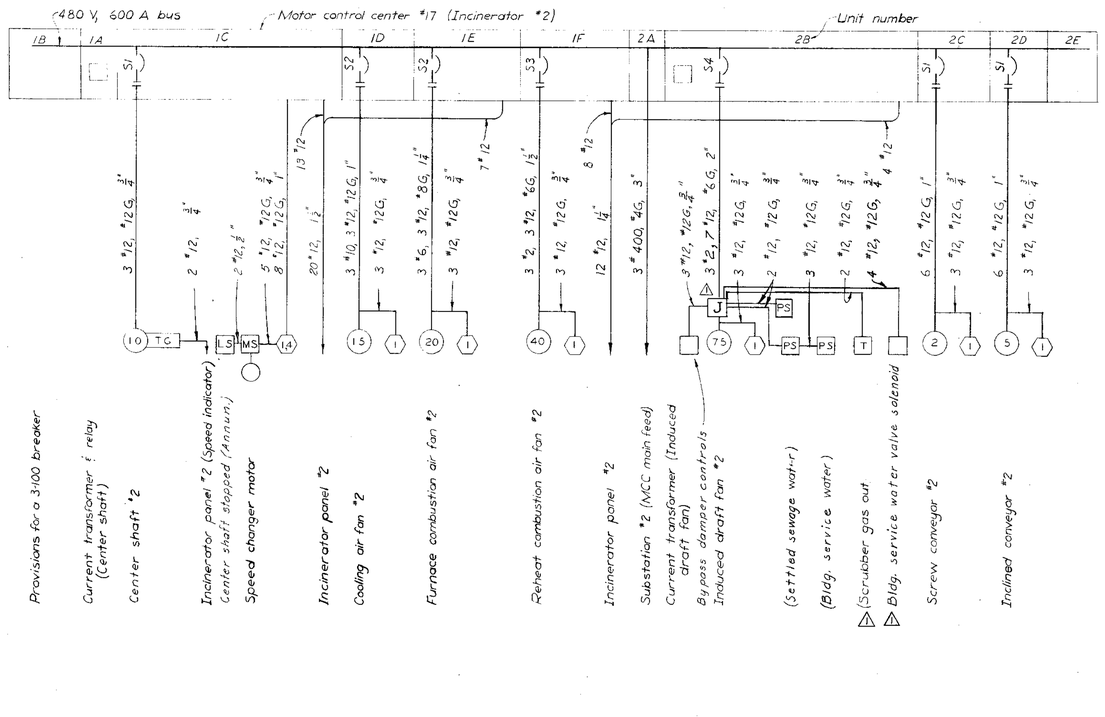
DESIGNED aco
DETAILED LEM, EWV
CHECKED DJG
APPROVED
DATE April 20, 1964

SHEET 152 OF 190

PROJECT 3.98

1062.32





1A	2A
1B	
1C	2B
1D	
1E	2C
1F	2D
	2E

MOTOR CONTROL CENTER NO'S. 16, 17, & 19-FRONT VIEW

NOTES

1. Electrical Legend, see sheet #145

NO	DATE	REVISION	BY	CKD
2	12-8-66	Conform to const. records	LEM	DAC
1	5-20-64	Addendum No.1	DLF	DCD

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
INCINERATORS
ELECTRICAL ONE-LINE

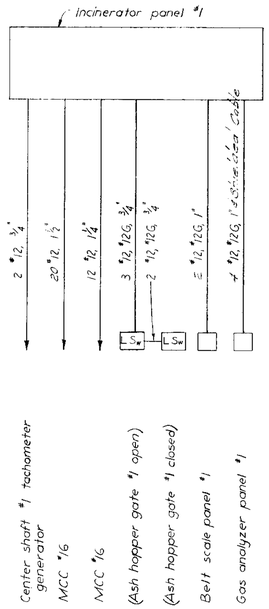
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

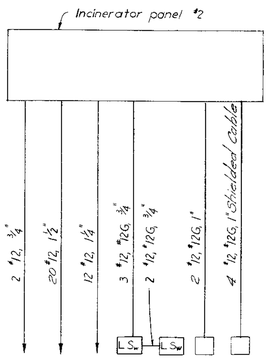
P.C.D. CONTRACT 7

DESIGNED ccc CHECKED
DETAILED LEM, RWC, EWV. APPROVED
DATE April 20, 1964

SHEET 153 OF 190

PROJECT 1062.32





NOTES

1. Electrical Legend, see sheet #145

NO	DATE	REVISION	BY	CK'D
1	10-8-66	Conform to const. records	KAH	DAC

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
INCINERATORS
ELECTRICAL ONE-LINE

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

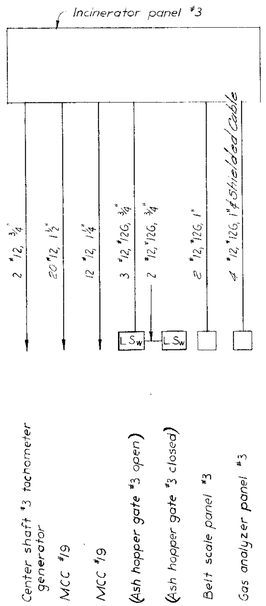
P.C.D. CONTRACT 7

DESIGNED QCA CHECKED
DETAILED LEM, EWY APPROVED
DATE April 20, 1966

SHEET 154 OF 190

PROJECT 1062.32

K&E 215466 TRACING CLOTH



NOTES

1. Electrical Legend, see sheet #145

MICROFILMED

NO.	DATE	REVISION	BY	CK'D
1	10-8-64	Conform to const. records	EAH	DAC

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING INCINERATORS AND AUXILIARIES ELECTRICAL ONE-LINE

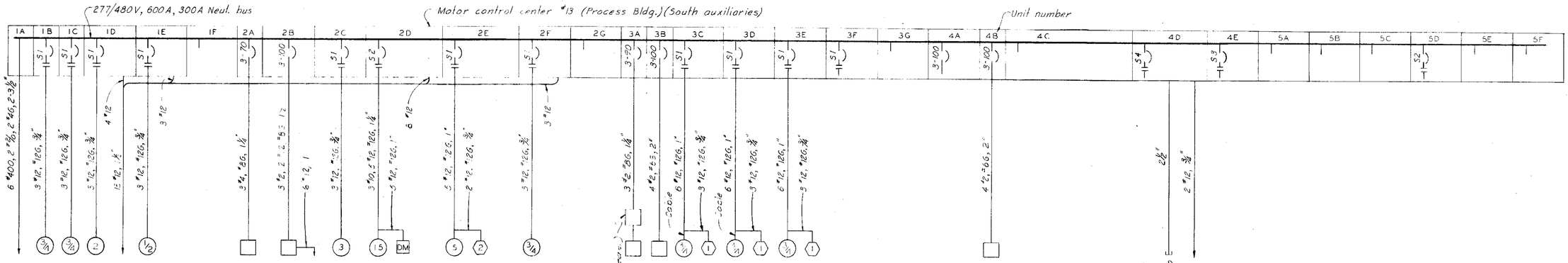
BLACK & VEATCH AND BURNS & MCDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

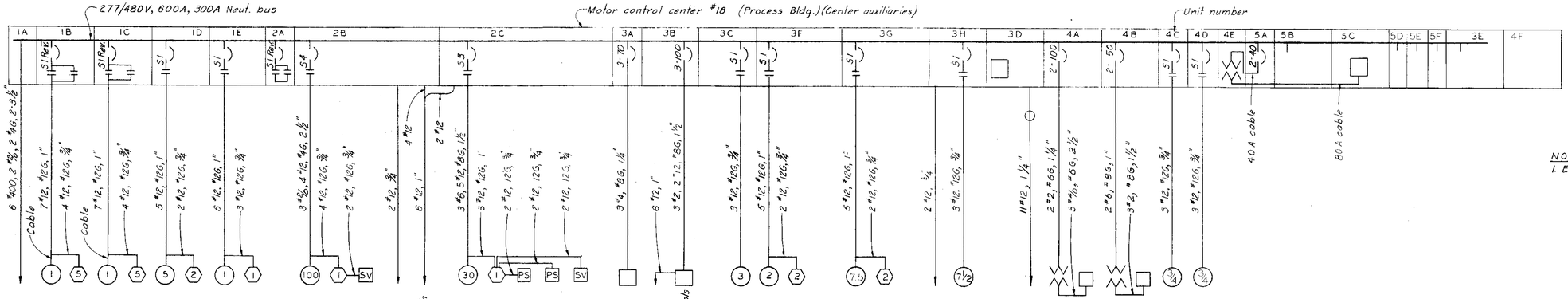
P.C.D. CONTRACT 7

DESIGNED O.C.O. CHECKED
DETAILED L.E.M., E.W.V. APPROVED
DATE April 20, 1964

SHEET 155 OF 190

1062.32





1A	2A	2B	3A	3B	4A	4B	5A
1B	2C		3C		4C		5B
1C	2D		3D		4D		5C
1D	2E		3E				5D
1E	2F		3F		4E		5E
1F	2G		3G				5F

MOTOR CONTROL CENTER NO. 13-FRONT VIEW

1A	2A	3A	3B	4A	4B	5A	5B
1B		3C		4C		5C	
	2B	3D		4D			
1C		3E					
		3F		4E		5D	
1D		3G				5E	
	2C			4F			
1E		3H				5F	

MOTOR CONTROL CENTER NO. 18-FRONT VIEW

NOTES.
1. Electrical Legend, see sheet #145

MICROFILMED

NO.	DATE	REVISION	BY	CK'D
1	12-8-66	Conform to const. records	RAH	DAC

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
PLANT AUXILIARIES
ELECTRICAL ONE-LINE

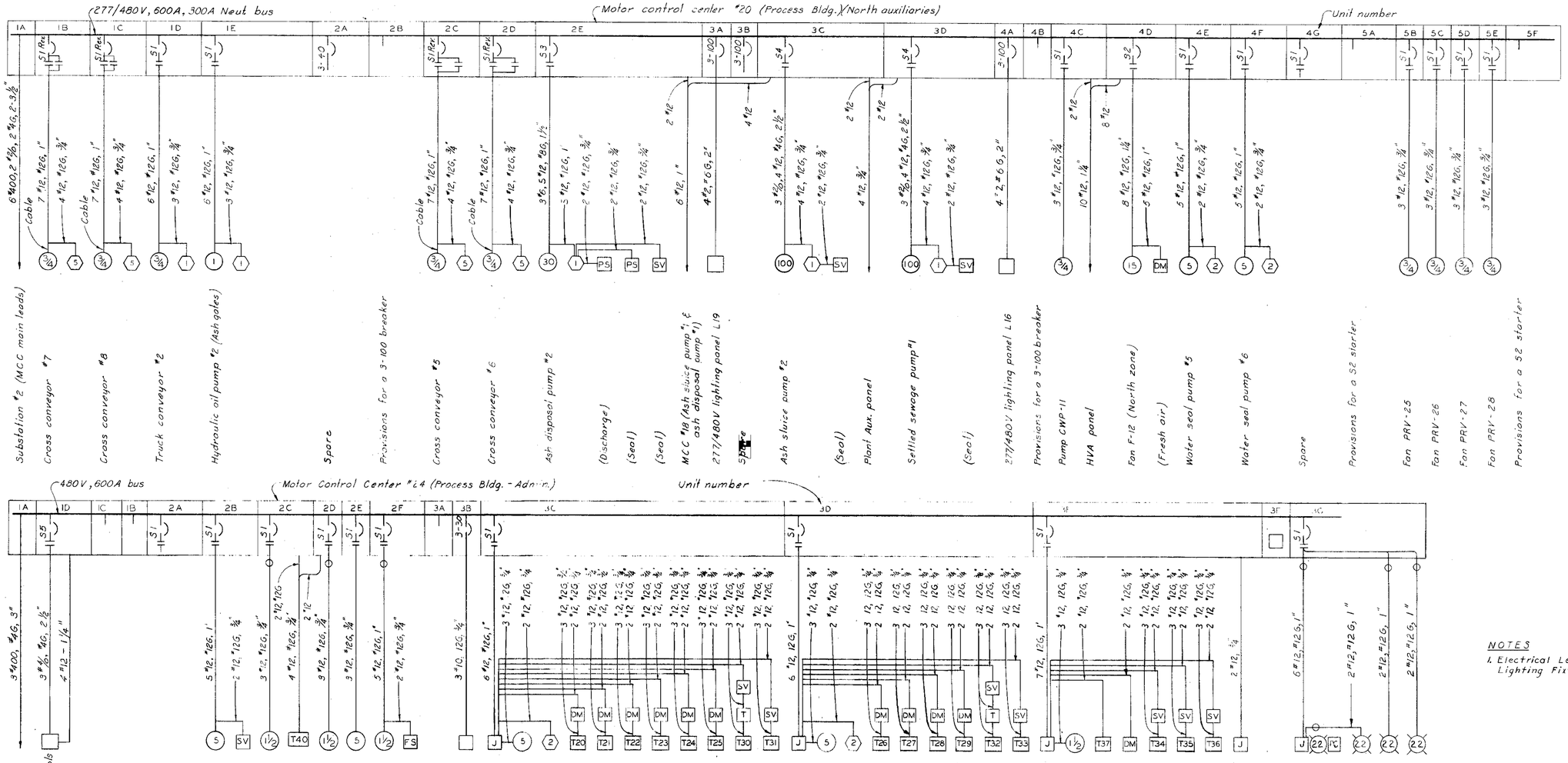
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED GCO CHECKED GCO
DETAILED LEM, RVC APPROVED
DATE April 20, 1964

SHEET 156 OF 190

PROJECT 3292 1062.32



1A	2A	2B	3A	3B	4A	4B	5A
1B	2C		3C		4C	4B	5B
1C	2D				4D		5C
1D	2E		3D		4E		5D
1E					4F		5E
					4G		5F

MOTOR CONTROL CENTER No. 20
FRONT VIEW

1A	2A	3A	3B
1B	2B	3C	
1C	2C	3D	
1D	2D	3E	
	2E	3F	
	2F	3G	

MOTOR CONTROL CENTER No. 24
FRONT VIEW

NOTES
1. Electrical Legend, see sheet #145, Lighting Fixture Schedule, see sheet #163

NO.	DATE	REVISION	BY	CK'D
1	12-9-64	Conform to const. records	RHH	DAC

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
PLANT AUXILIARIES
ELECTRICAL ONE-LINE

BLACK & VEATCH AND BURNS & MCDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

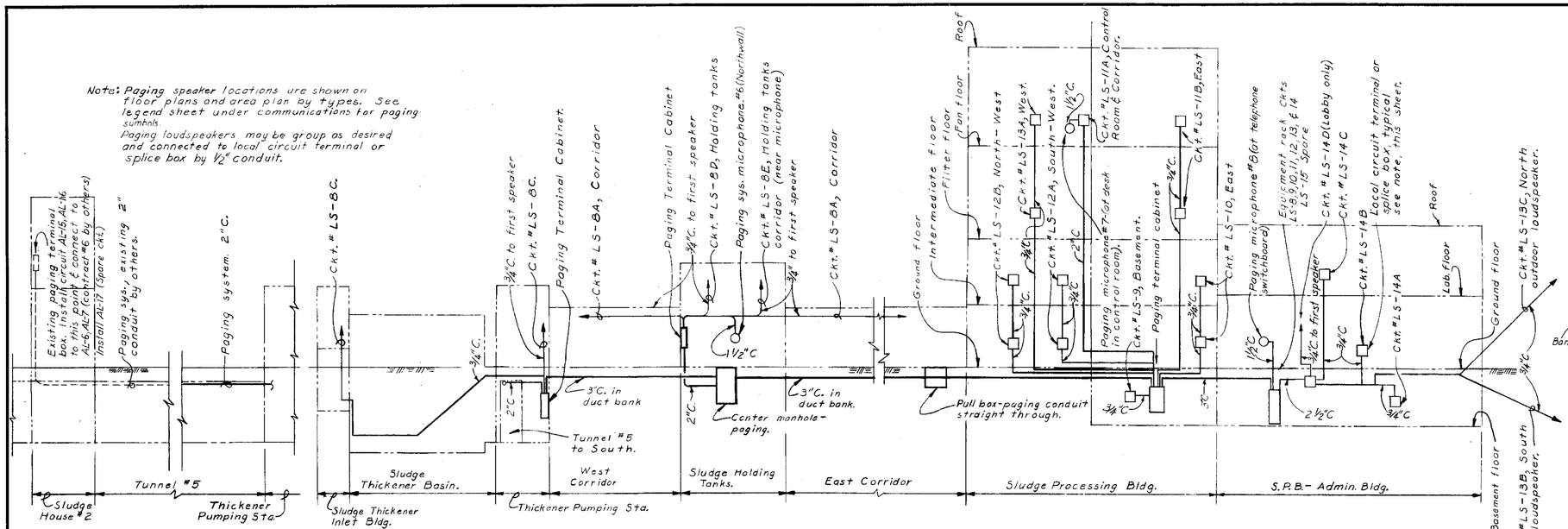
P.C.D. CONTRACT 7

DESIGNED ACO CHECKED DAC, ACO
DETAILED LEM, FWV APPROVED
DATE April 20, 1964

SHEET 157 OF 190

PROJECT 1062.32

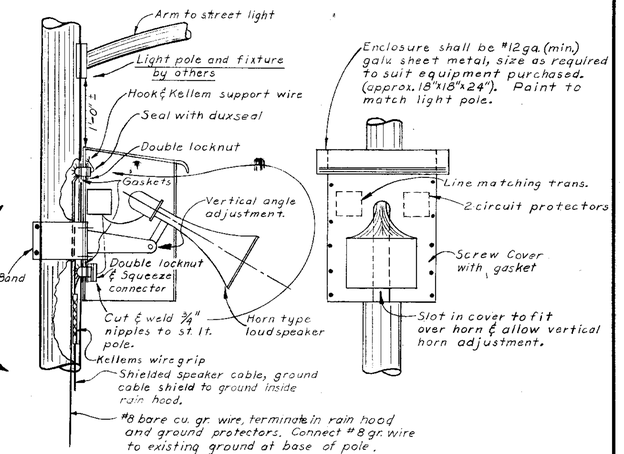
Note: Paging speaker locations are shown on floor plans and area plan by types. See legend sheet under communications for paging symbols.
Paging loudspeakers may be group as desired and connected to local circuit terminal or splice box by ½" conduit.



LOOKING WEST

PAGING SYSTEM RISER — LOOKING NORTH

No Scale

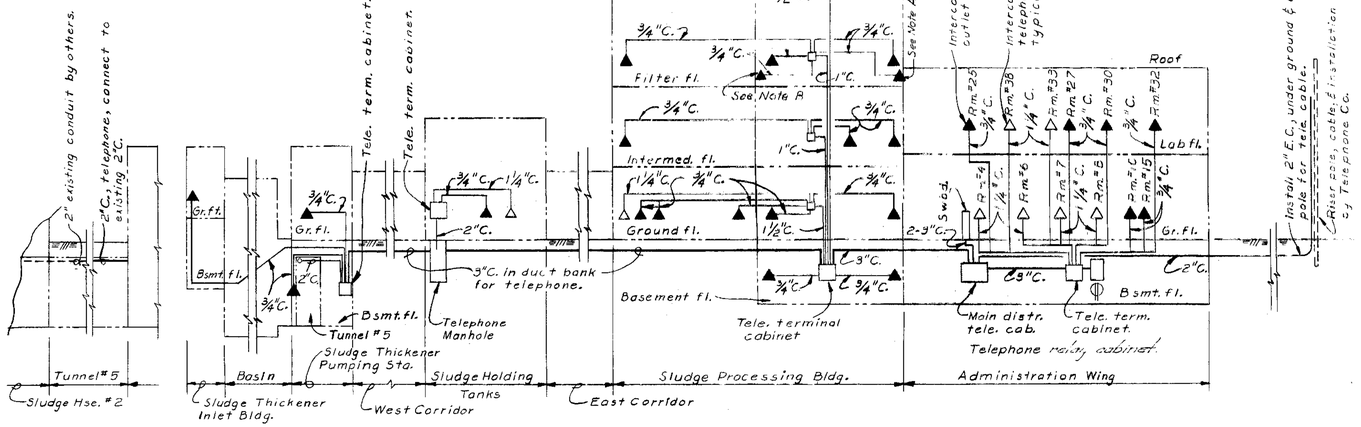


OUTDOOR LOUDSPEAKER RAIN HOOD

No Scale

Note A - Intercom-phone to be installed on passenger elevator by others. Provide conduit and phone junction box 8"x8"x4"D. case in shaft hallway up with blank cover.

Note B - Same as above except for freight elevator



LOOKING WEST

EMPTY TELEPHONE CONDUIT SYSTEM — RISER DIAGRAM — LOOKING NORTH

No Scale

NOTES

1. For other Paging Sheets, see sheets #181 thru #183
   For Paging Legend, see sheet #145
2. Electrical Legend, see sheet #145

NO	DATE	REVISION	BY	CK'D
1	12-8-64	Conform to const. records	RAH	DAC

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

TELEPHONE AND PAGING
RISER DIAGRAMS AND DETAILS

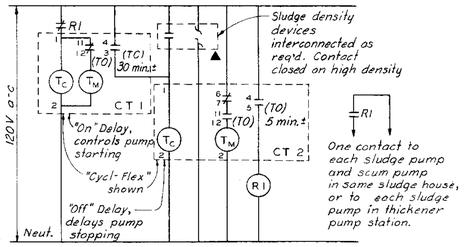
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

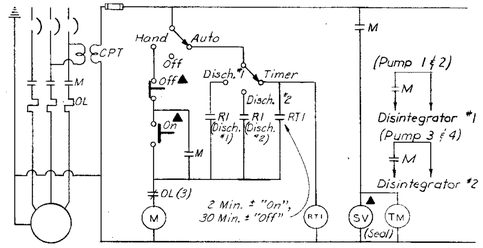
DESIGNED RWG CHECKED GCO
DETAILED RWG APPROVED [signature]
DATE April 20, 1964

SHEET 158 OF 190

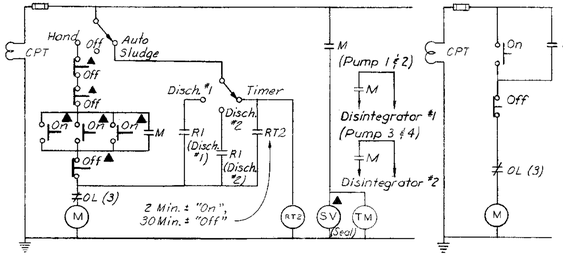
PROJECT 3393 106232



SLUDGE PUMP COMMON CONTROLS (5)

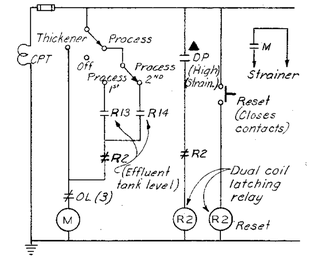


SLUDGE PUMP #1 TO #4 (4)

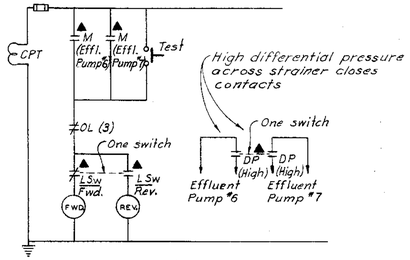


SCUM PUMP #1 TO #4 (4)
(Also substitute as Sludge Pumps)

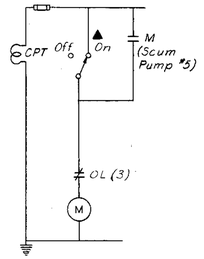
EFFLUENT PUMP #5



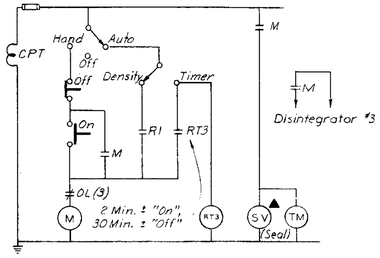
EFFLUENT PUMP #6 & #7 (2)



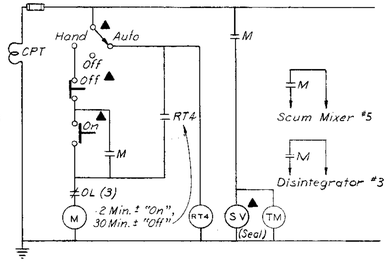
STRAINER



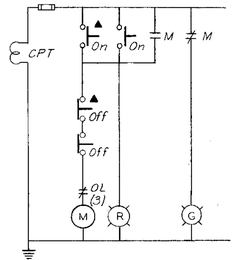
SCUM MIXER #5



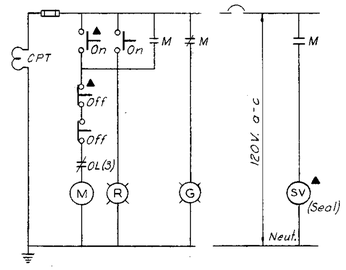
SLUDGE PUMP #5 & #6 (2)



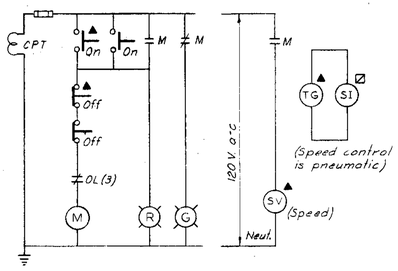
SCUM PUMP #5



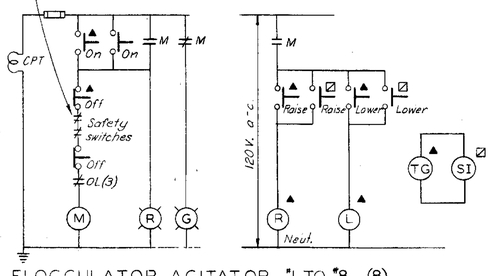
FILTER AGITATOR #1 TO #8 (8)
FILTER SHREDDER #1 TO #8 (8)
CROSS CONVEYOR #1 & #2 (2)



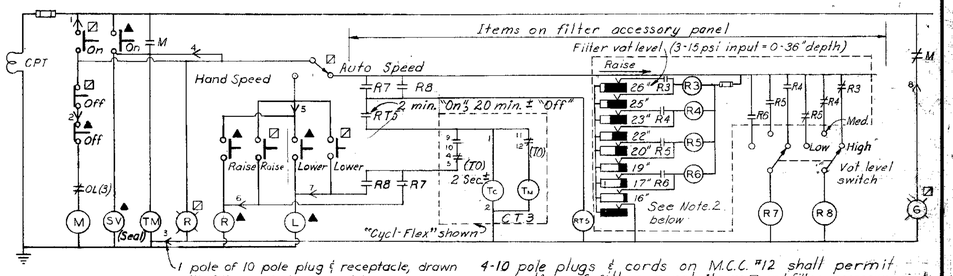
FILTER VACUUM PUMP #1 TO #8 (8)



POLYMER FEED PUMP #1 TO #8 (8)



FLOCCULATOR AGITATOR #1 TO #8 (8)
FILTER DRUM #1 TO #8 (8)
FILTRATE PUMP #1 TO #8 (8)

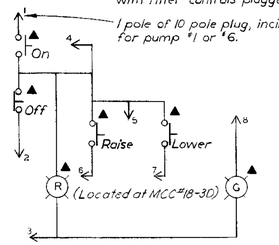


1 pole of 10 pole plug & receptacle, drawn with filter controls plugged in.

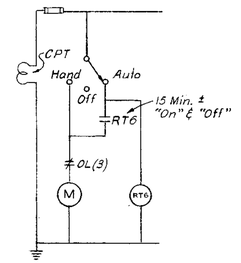
4-10 pole plugs & cords on M.C.C. #12 shall permit selection of filter panel items ☑ and filter accessory panel items between pump circuits as follows:
Filter #1 & #2 = Pump #3, #5 or #6; Filters #3 & #4 = Pump #2, #4 or #1;
Filter #5 & #6 = Pump #3, #5 or #6; Filters #7 & #8 = Pump #2, #4 or #1.

1-10 pole plug on MCC #12 shall permit jumpering filter panel "Off" and "Hand Speed" contacts for local operation of any pump.

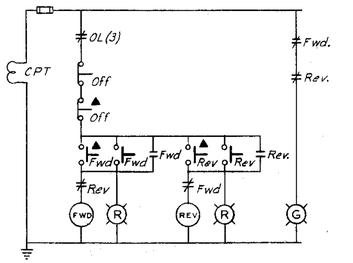
1-10 pole plug and cord on MCC #12 shall permit manual control of pump #1 or #6 from Process Bldg. for pumping to incinerators. (Manual control at MCC #18)



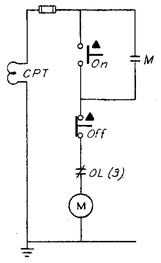
SLUDGE TRANSFER PUMP #1 TO #6 (6)



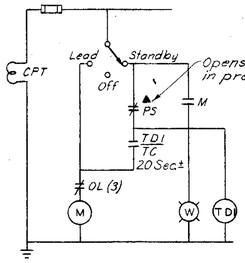
HOLDING TANK MIXER #1 TO #4 (4)



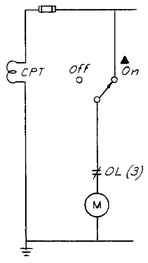
CROSS CONVEYOR #3 TO #8 (6)



TRUCK CONVEYOR #1 & #2



WATER SEAL PUMP #1 TO #3 (3)



WATER SEAL PUMP #4 TO #6 (3)

NOTES

1. Electrical Legend, see sheet #145
2. Honeywell photo-cell level controller, not Rotax; see shop drawings.

NO.	DATE	REVISION	BY	CK'D
1	12-8-66	Conform to const. records	RAA	DAC

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

MISCELLANEOUS
ELECTRICAL SCHEMATICS

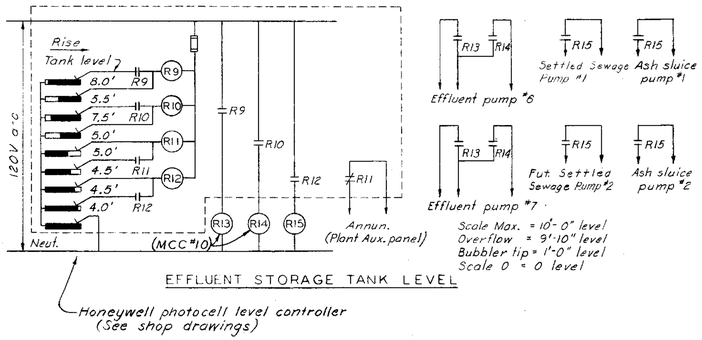
BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

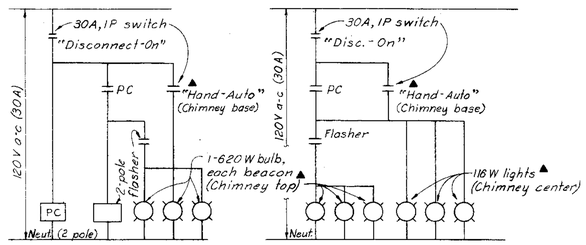
DESIGNED ACA CHECKED
DETAILED L.E.M. MAP APPROVED
DATE April 20, 1964

SHEET 159 OF 190

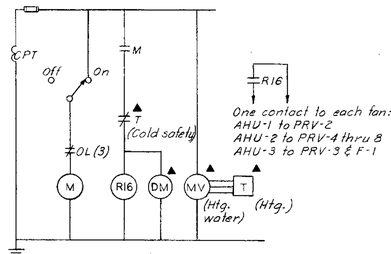
PROJECT 3382 1062.32



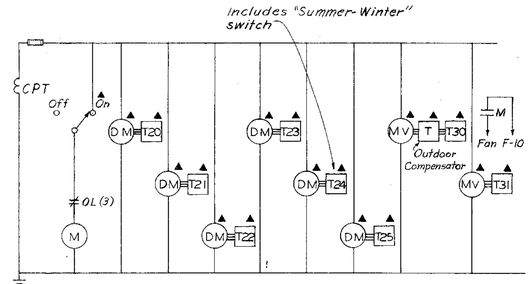
EFFLUENT STORAGE TANK LEVEL



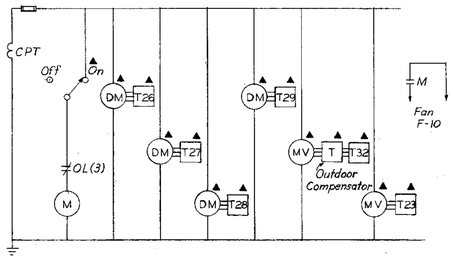
CHIMNEY LIGHTS



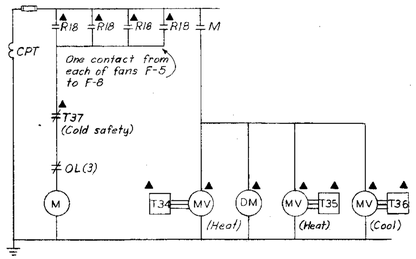
AIR HANDLING UNIT AHU-1 TO AHU-3 (3)



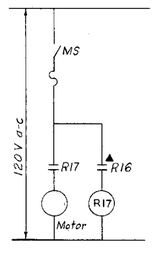
AIR HANDLING UNIT AHU-4



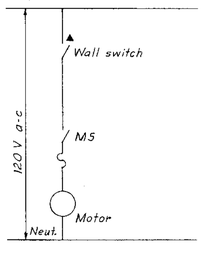
AIR HANDLING UNIT AHU-5



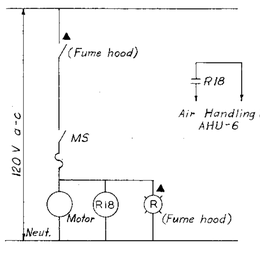
AIR HANDLING UNIT AHU-6



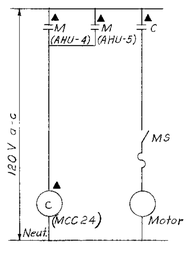
FAN F-1



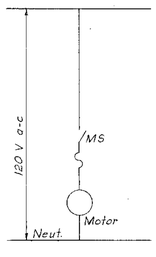
FAN F-2 TO F-4 (3)



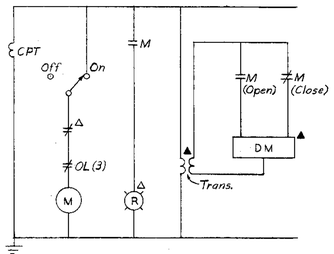
FAN F-5 TO F-8 (4)



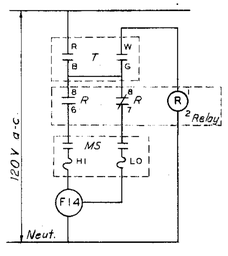
FAN F-10



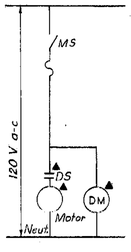
FAN F-11



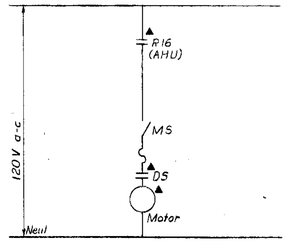
FAN F-12 & F-13 (2)



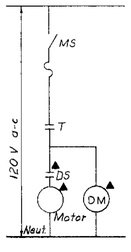
FAN F-14



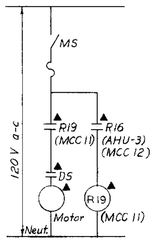
FAN PRV-1



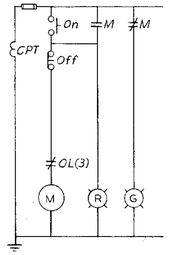
FAN PRV-2 & PRV-4 TO PRV-8 (6)



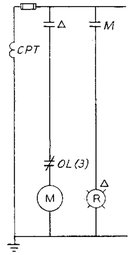
FAN PRV-9



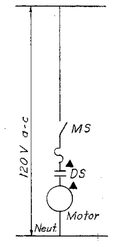
FAN PRV-3



FAN PRV-21 TO PRV-28 (8)



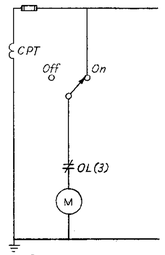
FAN PRV-29



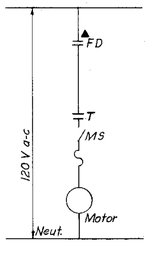
FAN PRV-30

NOTES

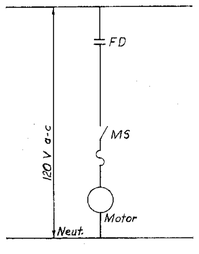
1. Electrical Legend, see sheet #145



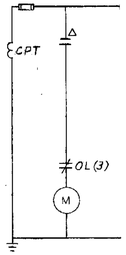
PUMP CWP-1 TO CWP-3 (3)



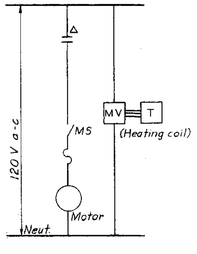
PUMP CWP-4 & CWP-6 (2)



PUMP CWP-5, CWP-7, & CWP-8 (3)



PUMP CWP-11, CWP-12, CWP-14, & CWP-17 (4)



PUMP CWP-13 CWP-15 & CWP-16 (3)

Microfilmed

NO.	DATE	REVISION	BY	CK'D
1	12-8-66	Conform to const. records	LEM	DAC

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

MISCELLANEOUS
ELECTRICAL SCHEMATICS

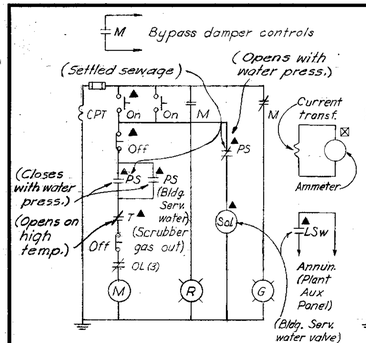
BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

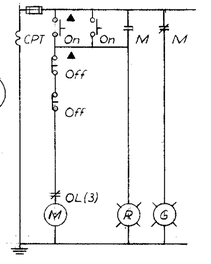
DESIGNED ACO CHECKED
DETAILED LEM MAP APPROVED
DATE April 20, 1966

SHEET 160 OF 190

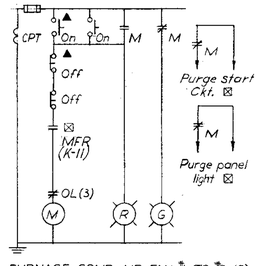
PROJECT 3292 1062.32



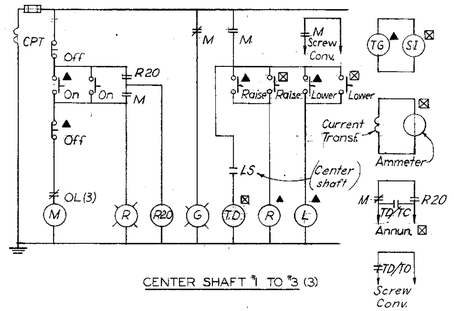
INDUCED DRAFT FAN #1 TO #3 (3)



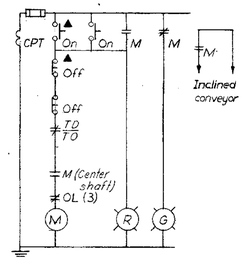
COOLING AIR FAN #1 TO #3 (3)



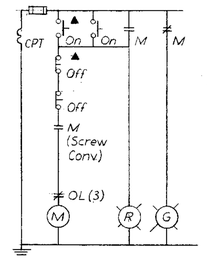
FURNACE COMB. AIR FAN #1 TO #3 (3)
REHEAT COMB. AIR FAN #1 TO #3 (3)



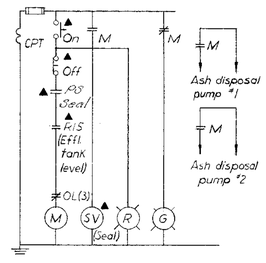
CENTER SHAFT #1 TO #3 (3)



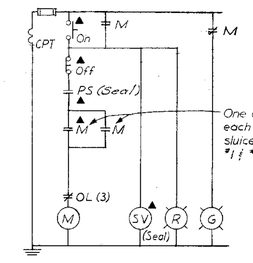
SCREW CONVEYOR #1 TO #3 (3)



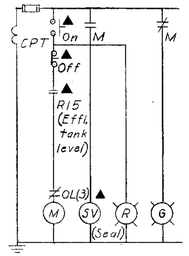
INCLINED CONVEYOR #1 TO #3 (3)



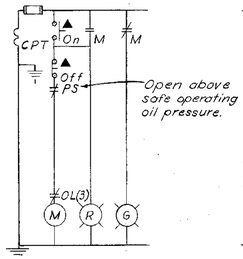
ASH SLUICE PUMP #1 & #2 (2)



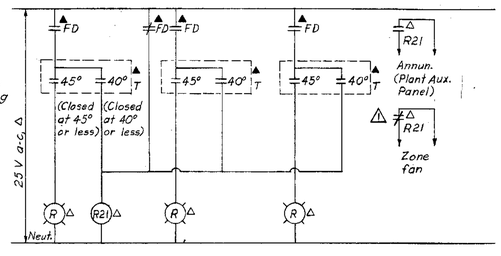
ASH DISPOSAL PUMP #1 & #2 (2)



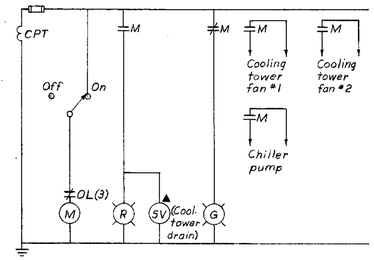
SETTLED SEWAGE PUMP #1
FUT. SETTLED SEWAGE PUMP #2



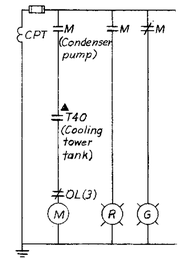
HYDRAULIC OIL PUMP #1 & #2 (2)



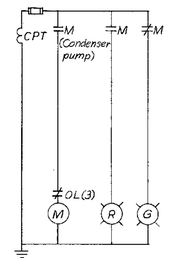
FREEZE PROTECTION, HOT WATER HEATING COILS #1, #3, & #5
FREEZE PROTECTION, HOT WATER HEATING COILS #2, #4, & #6



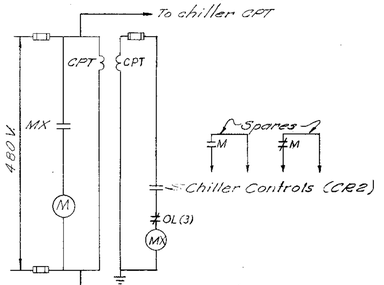
CONDENSER PUMP
CWP-10

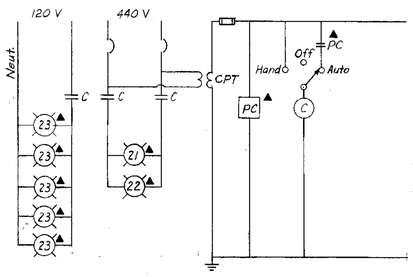


COOLING TOWER FAN #1 & #2 (2)

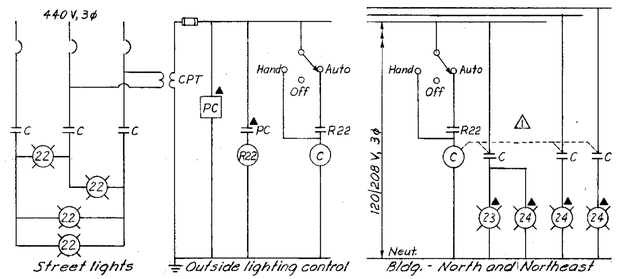


CHILLER PUMP
CWP-9

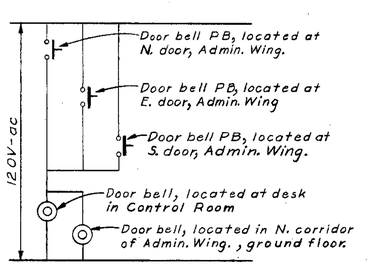




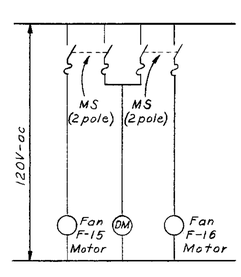
THICKENER AREA STREET & WALKWAY LIGHTING



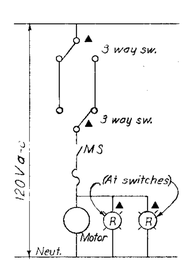
ADMINISTRATION WING - STREET & BUILDING FLOODLIGHTING



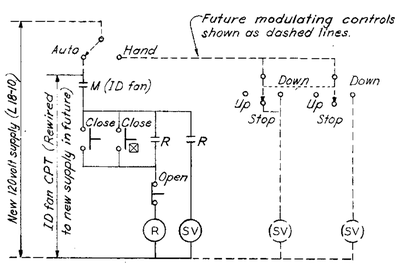
DOOR BELL



FAN F-15 AND F-16



LABORATORY VACUUM PUMP



BYPASS DAMPER CONTROLS (3) 2

NOTES

1. Electrical Legend, see sheet #145
Lighting Fixture Schedule, see sheet #163

NO	DATE	REVISION	BY	CKD
2	12-21-67	Conformed to Const. records.	DAC	DAC
1	5-20-64	Addendum No. 1	DLF	DRD

MICROFILMED

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

MISCELLANEOUS
ELECTRICAL SCHEMATICS

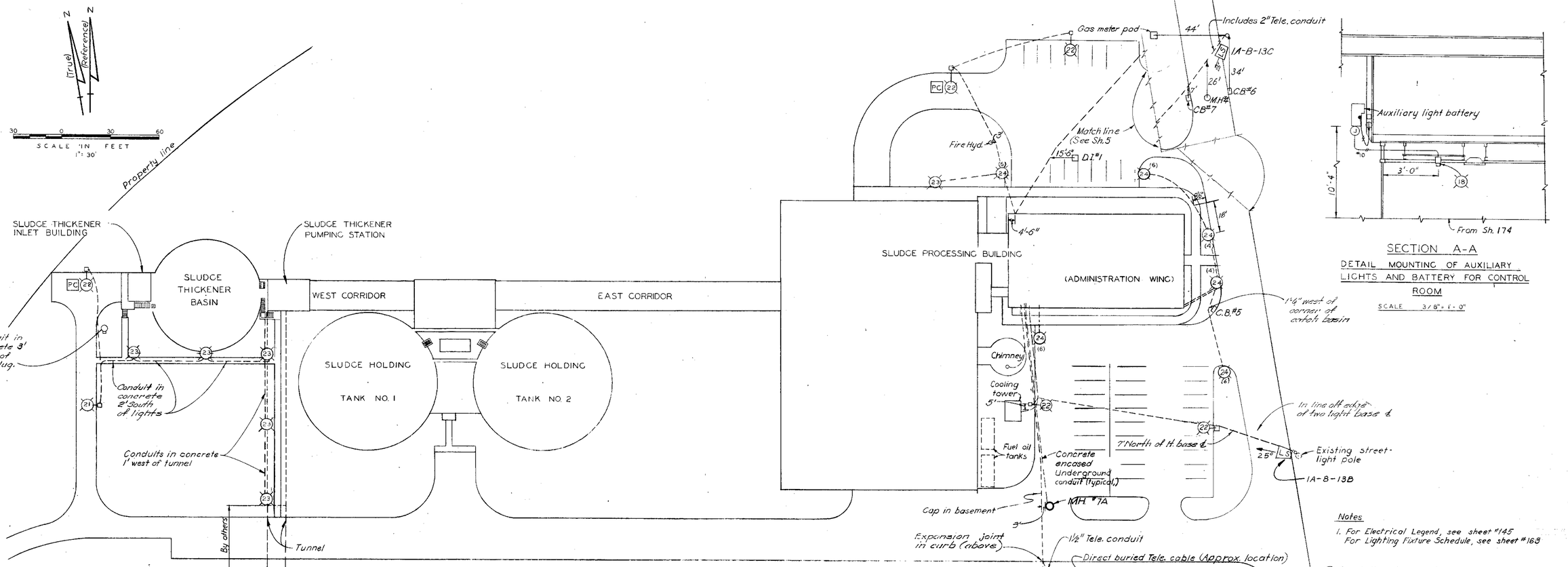
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED O.C.O. CHECKED
DETAILED NAP APPROVED
DATE April 20, 1964

SHEET 161 OF 190

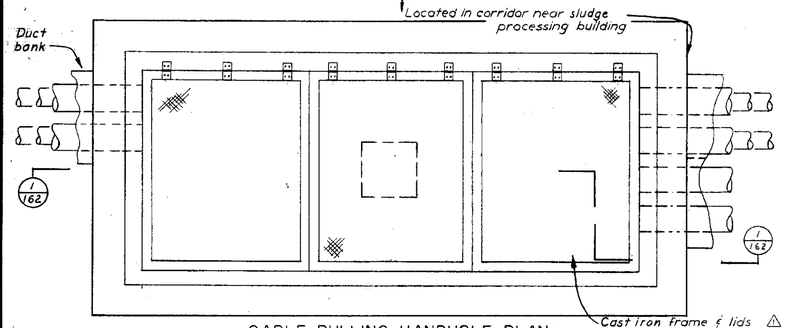
PROJECT 3292 1062.32



SECTION A-A

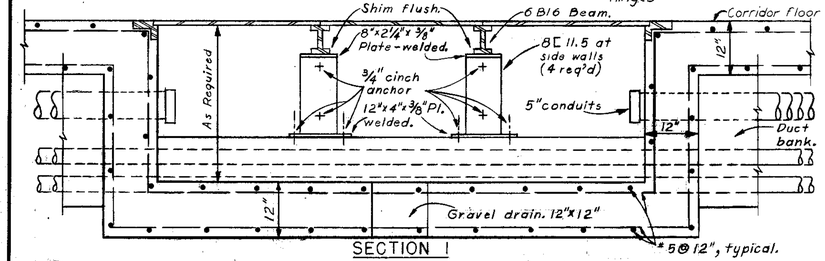
DETAIL MOUNTING OF AUXILIARY LIGHTS AND BATTERY FOR CONTROL ROOM

SCALE 3/8" = 1'-0"

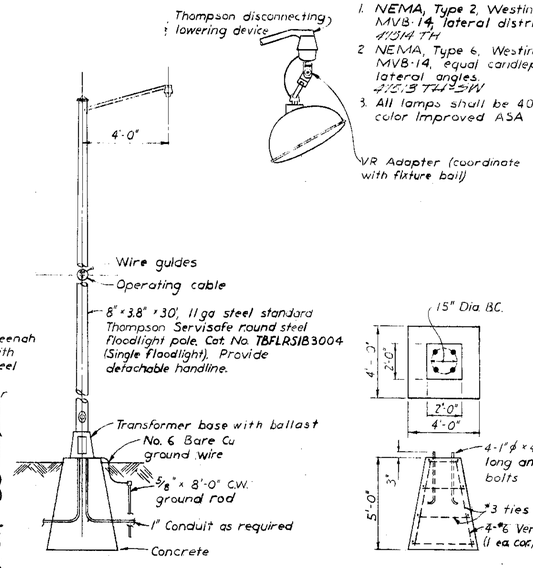


CABLE PULLING HANDHOLE PLAN

SCALE 3/4" = 1'-0"



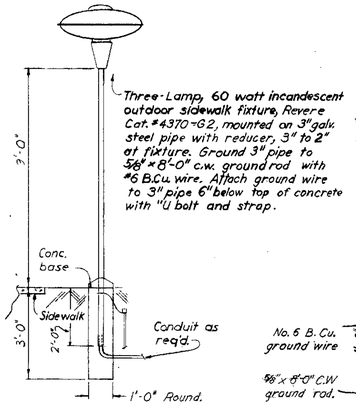
SECTION 1



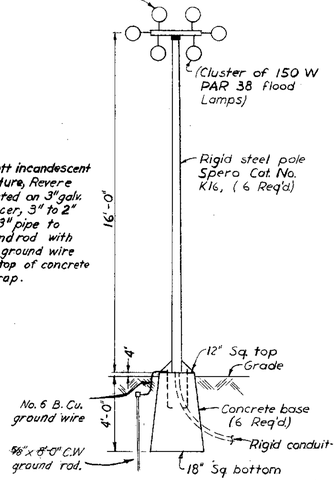
1. NEMA, Type 2, Westinghouse VRS-18, Crouse-Hinds, MVB-14, lateral distribution 20° To 30°. 4/154 TH — (21)
2. NEMA, Type 6, Westinghouse VEK-16, Crouse-Hinds, MVB-14, equal candlepower distribution at all lateral angles. 4/2.9 TH-2W — (22)
3. All lamps shall be 400 watt, 440 V, Mercury, color Improved ASA Code H33-1GL/C.

VR Adapter (coordinate with fixture bail)

STREETLIGHT - (21)
STREETLIGHT - (22)
NO SCALE



WALKWAY LIGHT - (23)
NO SCALE



Spero Cat. No. JHM6 (4 Req'd.)
Spero Cat. No. JHM4 (2 Req'd) (Floods)

FLOODLIGHT - (24)
NO SCALE

MICROFILMED

NO	DATE	REVISION	BY	CK'D
1	10-8-66	Conform to const. records	RAH	DAC

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

MISCELLANEOUS
ELECTRICAL DETAILS

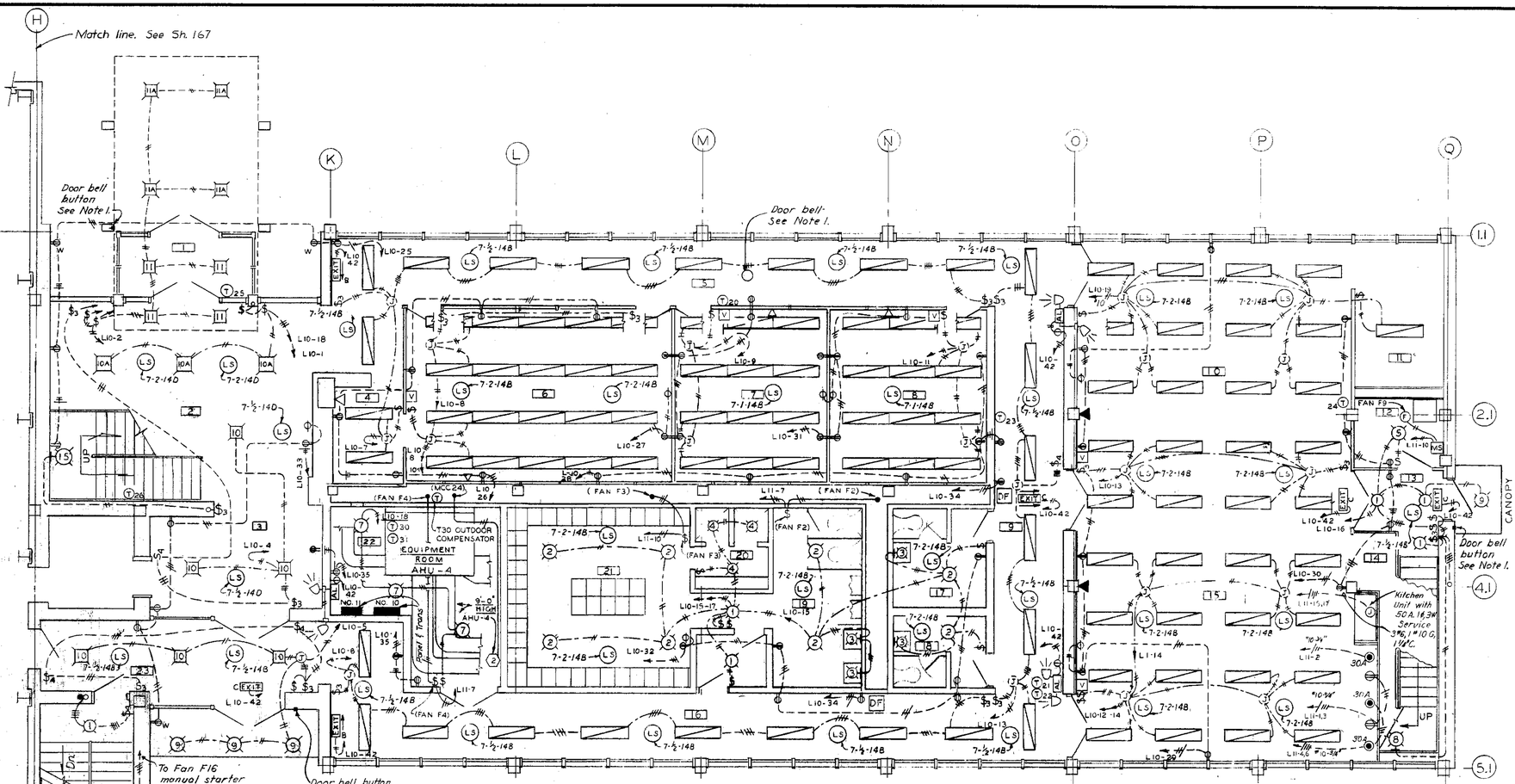
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED BSF DETAILED B.R.S. CHECKED D.C.O. APPROVED [signature] DATE April 20, 1966

SHEET 162 OF 190

PROJECT 3292 1062.32 19



GROUND FLOOR PLAN

SCALE 3/16" = 1'-0"

800	Chandelier Rm. 2	1 2	Ltgs. canopy outside & inside	1200
1000	Ltgs. Back Stairs	3 4	Ltgs. Lobby Rms. 2 & 3	900
1260	Ltgs. Outside canopy & Rm. 23	5 6	Ltgs. Rm. 16	900
1100	Ltgs. Rms. 4 & 5	7 8	Ltgs. Rm. 6	1000
1200	Ltgs. Rm. 7	9 10	Ltgs. Rm. 6	1000
1200	Ltgs. Rm. 8	11 12	Ltgs. Rm. 15	800
1900	Ltgs. Rms. 9 & 10	13 14	Ltgs. Rm. 15	800
1100	Ltgs. Rms. 17, 18 & 19	15 16	Ltgs. Rms. 12, 13, 19	920
1325	Ltgs. Rms. 20 & 21	17 18	Ltgs. stairs & outside doors Rm. 24	1050
1300	Ltgs. Rms. 10 & 11	19 20	Ltgs. Room 122	1375
	Spare	21 22	Ltgs. Basement	1050
	Spare	23 24	7 Recp. Basement Spare	
750	5 Recp. Rms. 2, 5 & Outside Main Dr.	25 26	6 Recp. Rms. 4 & 6	900
900	6 Recp. Rms. 5, 6 & 7	27 28	6 Recp. Rms. 6, 7, 8 & 9	900
900	6 Recp. Rms. 10 & 15	29 30	6 Recp. Rms. 10, 12, 13 & 14	900
750	5 Recp. Rms. 7 & 8	31 32	5 Recp. Rms. 16, 17, 18, 19 & 21	750
750	5 Recp. Rms. 3 & 23	33 34	6 DF. Rms. 9 & 16	1160
600	4 Recp. Rms. 3, 16 & 22	35 36	Admin. bldg. floodlights(4) East	600
1080	Admin. bldg. floodlights(6) & walkway light(1)(North)	37 38	Admin. bldg. floodlights(6) (South-East)	900
900	Admin. bldg. floodlights(6) (North-East)	39 40	Admin. bldg. floodlights(6) (South West)	900
600	Admin. bldg. floodlights(6) (East)	41 42	All Exit & Auxiliary Lighting Units.	500
		NEUT		

PANEL NO. L10

120 / 208 VOLT - 3Ø PANEL

LOCATED IN UTILITY ROOM

1200	1-Recp. Rm. 15.	1 2	30A	3 4	1-Recp. Rm. 15.	1600
1200	1-Recp. Rm. 15.	3 4	30A	5 6	1-Recp. Rm. 15.	1600
		5 6	30A	7 8	1-Recp. Rm. 15.	1600
800	Fan F2 & F4 1/6 HP. ea.	7 8		9 10	Fan F7 & F8 1/6 HP. ea.	800
800	Fan F5 & F6 1/6 HP. ea.	9 10		11 12	Fan F9 & F3 1/20 & 1/6 HP.	500
500	Fan F10 1/3 HP	11 12	30A	13 14	Chimney lights	1950
900	Fan F-15, 1/6 HP, Fan F16, 1/4 HP & Damper motor in stairway	13 14	30A	15 16	Chimney lights	2300
10,000	Kitchen Unit	15 16	50A	17 18	Spare	
		17 18		19 20	Spare	
	Spare	19 20		21 22	Spare	
	Provision for future breakers.	21 22		23 24	Provisions for future breakers.	
		NEUT				

PANEL N. L11

120 / 240 VOLT - 1Ø PANEL

LOCATED IN UTILITY ROOM

Notes 1. Three door bell buttons shall be connected in parallel to operate two door bells in parallel. One door bell located at desk in Control Room. Connect to L10-25, Lobby recept. ckt.

2. For Electrical Legend, see sheet #145, For Lighting Fixture Schedule, see this sheet

LIGHTING FIXTURE SCHEDULE

SYMBOL	LAMP	MTG. HGT.	TYPE	MANUFACTURE	FIXTURE
1	150 W.	ceiling	Recessed housing #M6639, #M639-3 Aluminum trim, #M79 lens.	Moe Mfg. Co.	
2	2/100 W.	ceiling	Cubic square plastic unit	Holophane #C868.	
2A	2/75 W.	ceiling	Chromium 10 1/2" dia.	Moe Mfg. Co. #M9410-4	
3	75 W.	above mirror	Chromium bracket switch & recp.	Moe Mfg. Co. #M700.	
4	60 W.	—	Recessed aluminum unit	Moe Mfg. Co. #M5655.	
5	150 W.	ceiling	R.L.M. Dome vented steel reflector.	Steber #RPD 214 RO	
5A	200 W.	ceiling	R.L.M. Dome vented steel reflector.	Steber #RPD 216 RO	
6	100 W.	ceiling	R.L.M. Dome Vented steel reflector	Benj. Mfg. Co. #V9641	
7	150 W.	Pendant	R.L.M. Dome Vented steel reflector	Steber #RPD 214 RV	
8 H	100 W.	8'-0"	Satin cast al. Bracket fixture	Moe Mfg. Co. #M875.	
9	2/60 W.	Recessed	Anodized aluminum canopy unit.	Day Brite Co. #2501	
10	300 W. Med. Base	Shallow Recessed	Two trim screws & hinged central lens	Holophane Co. Catg. F776	
10A		Deep Recessed	Auto. Latching Poke Re-lamping	Holophane Co. Catg. F-1663.	

11	150 W.	Recessed in concrete	Housing #M6661 satin aluminum trim #M628-3. Fresnel lins #M78.	Moe Mfg. Co.	
11A	150 W.	Recessed in concrete	Housing #M6661, satin aluminum trim #M628-3. Drop Opal lens #M88.	Moe Mfg. Co.	
K12	200 W.	10' above door	Weatherproof Bracket	Holophane #922	
13	2/150 W. R-30	—	Twin cone Anodized aluminum	Moe Mfg. Co. #M1004-3	
14	2/150 W. PAR-38	as noted	Weatherproof cast aluminum	Moe Mfg. Co. #M4922	
15	2/100 W.	8'-0" High	Double wall bracket cast aluminum.	#Moe Mfg. Co. #M876.	
EXIT	Miniature Lamps	As Noted	Single & Double Face, Back & Ceiling mounted	Day Brite Co. #5016, R-L, RL.	EXIT
ALL	2-25 W. Lamps	As Noted	Auto. Auxiliary Lighting Equipment	Dual lite PC-25-L	ALL
16	400 W. H33-1500	25' high	High Bay Prismpack	Holophane Co. #L30. 277 V.	
17	75 W.	ceiling	Porcelain Receptacle	GE #5740-7	
18	21 C.P. 6 Volts	Flush Ceiling	Flush mounted Fixture	Carpenter Mfg. Co. #SF15-21CP.	
19	21 C.P. 6 Volts	as noted	Flood, remote, swivel bracket.	Carpenter Mfg. Co. #RHC, 21 C.P.	
20	175 W. Mercury 240 V	10'-0" High	H.P. Factor, IES. II MT5 W 37-22 Lamp. Circuit inside post	GE Co. #PMA-115 catg. #C708G021 Luminaire	

21	400 W	Streetlight	See sh. 162 for details		
22	400 W.	Streetlight	See sh. 162 for details		
23	3-60 W.	Walkwaylight	See sh. 162 for details		
24	4-150 W. or 6-150 W.	Floodlights	See sh. 162 for details		
	2/40 T12 CW, RS.	Recessed	12" Wafflatex Troffer, Plaster Frame, F 245. #739	Gibson F95-22K11	
	3/40 T12 CW, RS.	Recessed	24" Wafflatex Troffer, Plaster Frame "F" System.	Gibson F955-32K11	
	4/40 T12 CW, RS.	Recessed	24" Wafflatex Troffer, Plaster Frame "F" System	Gibson F955-42K11	
V	2/40 T12 CW., RS., LT.	ceiling	Vapor Tight Fixture Clear Glass. Low Temp. 0°F.	Wheeler T4443 No Ballast	
2	3/40 T12 CW, RS, LT.	ceiling	Industrial, R.L.M. Flat Reflector Low Temp. 0°F.	Wheeler D8031-DIFRS No Ballast	
3	2/40 T12 CW, RS, LT.	as noted	Industrial R.L.M. 10% Up Reflector Low Temp. 0°F.	Benj. Mfg. Co. #F1024-4. 120 or 277 V.	
4	1/40 T12 CW, RS.	on ceiling	Aluminum Symmetric Reflector Strip	Day Brite Co. #2"89155-4 120 Volt.	
5	2 F96 T12 CW., HO, LT.	as noted	Industrial R.L.M. 10% Up Reflector Low Temp 0°F.	Wheeler D8575-DIFRS	
	2/40 T12 CW, RS.	Recessed	12" Wafflatex Troffer, Metal Pan Sys. "M"	Gibson M95-22K11	
6	6 F40 CW., RS. Tandem.	Troffer	12" Wafflatex Acoustical ceiling Frame "L" Sys.	Gibson F95-32K11	
7	6 F40 CW., RS., Tandem	as noted	Industrial R.L.M. 10% up reflector Low Temp. 0°F.	Wheeler D8041-DIF	

NO.	DATE	REVISION	BY	CK'D
1	12-8-66	Conform to const. records	LEM	DAC

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
GROUND FLOOR PLAN EL. 742.00
ELECTRICAL

BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

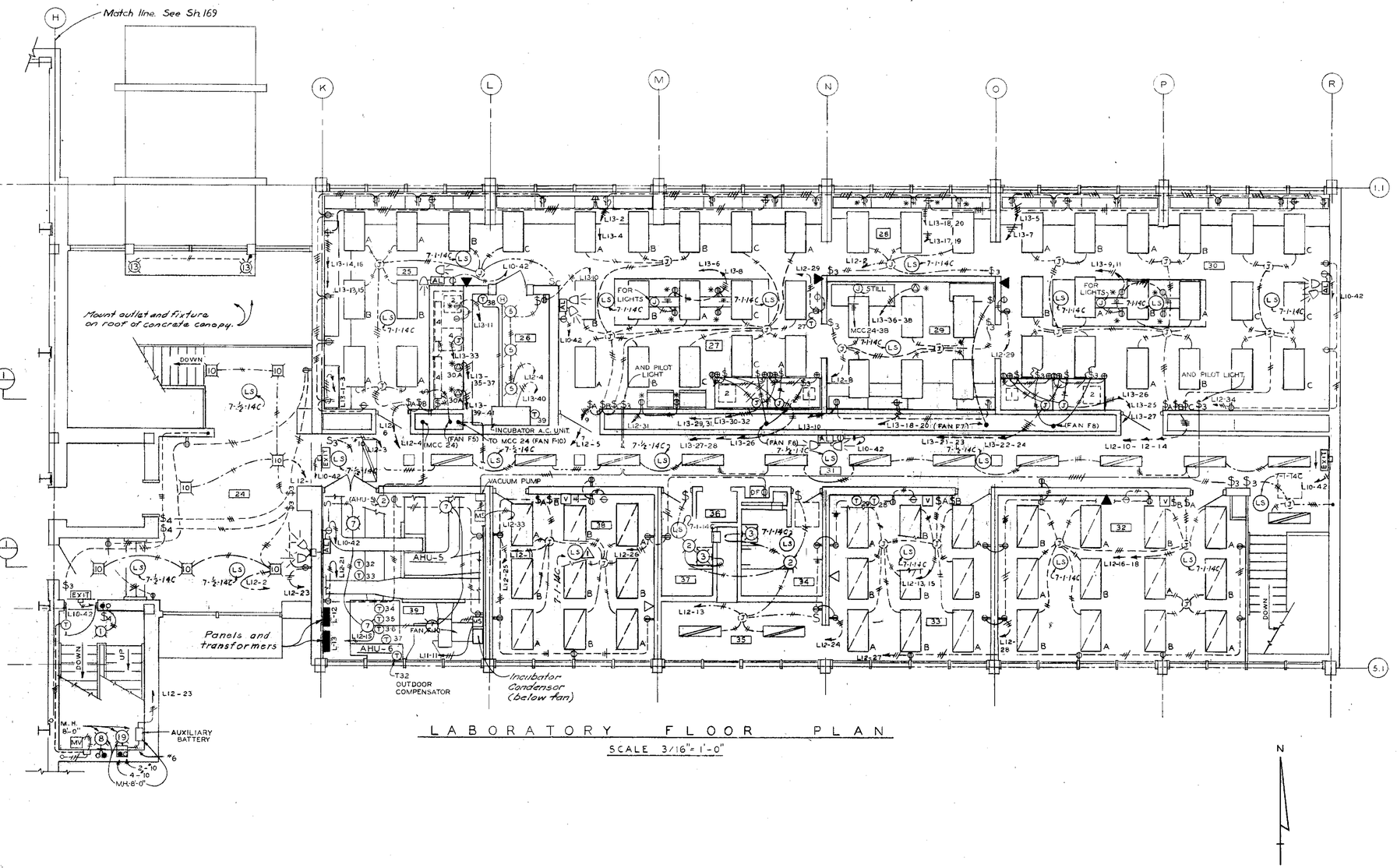
P.C.D. CONTRACT 7

DESIGNED H.L.D. DATE
DETAILED H.L.D. DATE
CHECKED D.F.C.
APPROVED
DATE April 20, 1964

SHEET 163 OF 190

PROJECT 3292

1062.32



LABORATORY FLOOR PLAN

SCALE 3/16"= 1'-0"

1200	Ltgs. Rm. 24	1 2	3 Ltgs. Rms. 24 & 28	1500
1200	Ltgs. Corridor #31	3 4	4 Ltgs. Rms. 25 & 26	1250
1000	Ltgs. Rm. 27	5 6	4 Ltgs. Rms. 25 & 27	800
1000	Ltgs. Rm. 27	7 8	4 Ltgs. Rm. 29	1200
1000	Ltgs. Rm. 27	9 10	4 Ltgs. Rm 30	1200
1350	Ltgs. Rm. 38	11 12	4 Ltgs. Rm. 30	1200
1350	Ltgs. Rms. 33,34,35,37	13 14	4 Ltgs. Rm. 30	1200
1350	Ltgs. Rms. 33 & 39	15 16	4 Ltgs. Rm 32	900
	Spare	17 18	4 Ltgs. Rm. 32	900
	Spare	19 20	Spare	
600	4 Recp. Rm. #39	21 22	Spare	
900	6 Recp. Rm 24	23 24	5 Recp. Rms. 33, 34 & 35	750
900	6 Recp. Rms 31 & 38	25 26	3 Recp. Rms., 31, 37 & 38	750
750	5 Recp. Rms 32 & 33	27 28	7 Recp. Rms. 31, 32 & 33	1050
400	2 Recp. Rms. 27 & 30	29 30	Provisions for future breakers.	
600	Refrig. Incubator-Rm 27	31 32		
500	Vacuum Pump-½ HP-Rm 39	33 34	3 Recp. Rm. 30.	450
1200	Paging Eq. Rack #1	35 36	Provisions for future breakers.	
1200	Paging Eq. Rack #2	37 38		
1200	Paging Eq. Rack #3	39 40		
	Spare	41 42		
		NEUT.		

PANEL NO L12

120/208 VOLT - 3 ϕ PANEL

LOCATED IN UTILITY ROOM

800	4 Recp. Rms. 25 & 27.	1 2	3 Recp. Rms. 27 & 28	600
800	4 Recp. Rms. 25 & 27.	3 4	4 Recp. Rms. 27 & 28	750
600	3 Recp. Rm. 30.	5 6	2 Recp. Rm. 27	900
600	3 Recp. Rm. 30.	7 8	2 Recp. Rm. 27	900
400	2 Recp. Rm. 30.	9 10	3 Recp. Rms. 25 & 29	600
1000	2 Recp. Rm. 30 & Dry Oven Rm. 25	11 12	Spare	
800	2 Recp. Rms. 25 & 27. 220 Volt.	13 14	2 Recp. Rms. 25 & 27 220 Volt.	800
1800	2 Recp. Rms. 25 & 30 220 Volt.	15 16 17 18 19 20	4 Recp. Rms. 28, 29 & 30 220 Volt.	1600
3400	Muffle Furnace Rm. 30. 220 Volt.	21 22 23 24	2 Recp. Rm. 30. 220 Volt Fume Hoods	800
800	4 Recp. in Fume Hoods Rm. 30.	25 26 27 28	Drying Ovens. Rms. 30 & 27 4 Recp. in Fume Hoods Rm. 27.	1200
600	Ltgs. in Fume Hoods Rm. 27 & 30			800
3400	Muffle Furnace Rm. 27 220 Volt.	29 30 31 32	2 Recp. Rm. 27 220 Volt Fume Hoods	400
1200	Hot Air Sterilizer Rm. 25.	33 34	Spare	
4000	Steam sterilizer Rm. 25.	35 36 30A 37 38 30A	Steam sterilizer Rm. 29.	4000
4000	Steam sterilizer Rm. 25.	39 40 30A 41 42	Incubator Air Cond. Unit - Rm. 26. Spare	2000
		NEUT.		

PANEL NO L13

120/240 VOLT - 1 ϕ PANEL

LOCATED IN UTILITY ROOM

Notes

1. * Indicates receptacles that are not pedestal mounted at laboratory furniture or equipment.
2. See laboratory layouts on Sh. 22 & 48.
3. Electrical Legend, see sheet #145, Lighting Fixture Schedule, see sheet #163.

NO.	DATE	REVISION	BY	CKD
2	12-8-66	Conform to const. records	RHH	DAC
1	5-20-66	Addendum No. 1	DLF	DLO

KANSAS CITY, MISSOURI

POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING

LABORATORY FLOOR PLAN EL. 754.67

ELECTRICAL

BLACK & VEATCH AND BURNS & MC DONNELL

CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

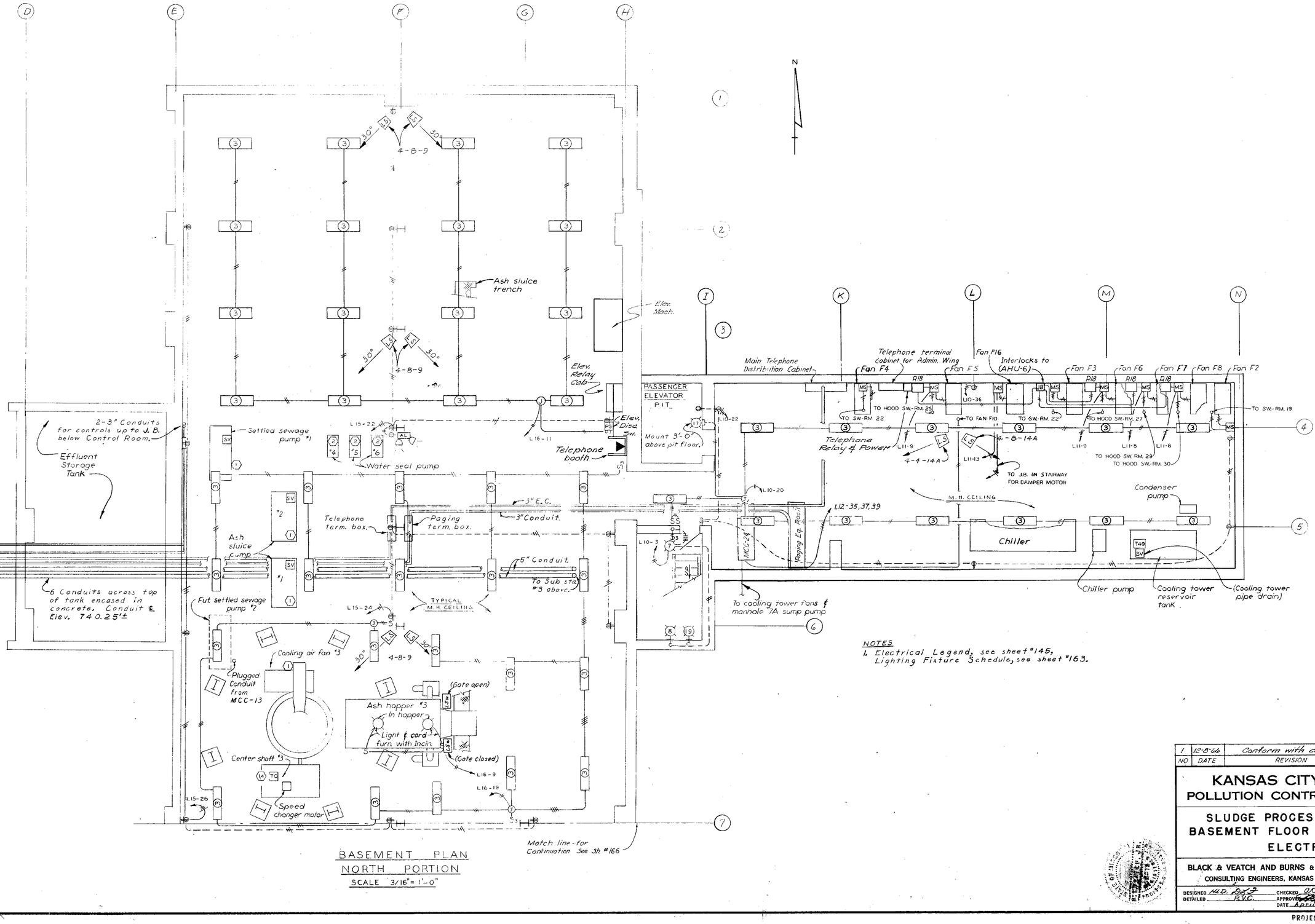
DESIGNED HLD, MFS CHECKED DLO

DETAILED HLD, BRS APPROVED

DATE April 20, 1966

SHEET 164 OF 190

PROJECT 1062.32



BASEMENT PLAN
NORTH PORTION
SCALE 3/16"= 1'-0"

NOTES
1. Electrical Legend, see sheet #145, Lighting Fixture Schedule, see sheet #163.

NO	DATE	REVISION	BY	CK'D
1	12-8-66	Conform with const. records	RAH	DAC

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
BASEMENT FLOOR PLAN EL. 731.00
ELECTRICAL

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

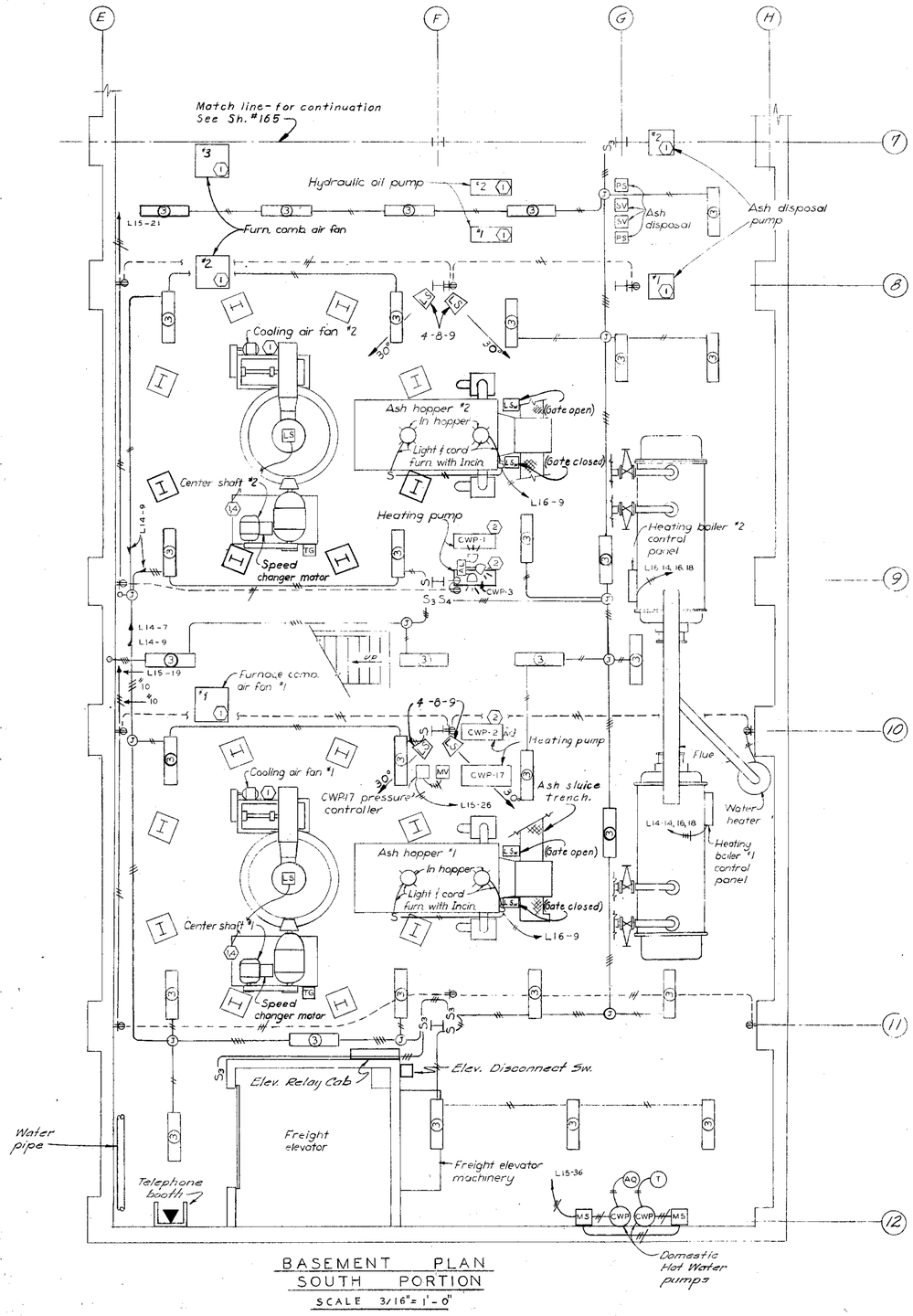
P.C.D. CONTRACT 7

DESIGNED A.L.D. DETAILED R.V.C. CHECKED D.A.C. APPROVED [illegible] DATE April 20, 1967

SHEET 165 OF 190

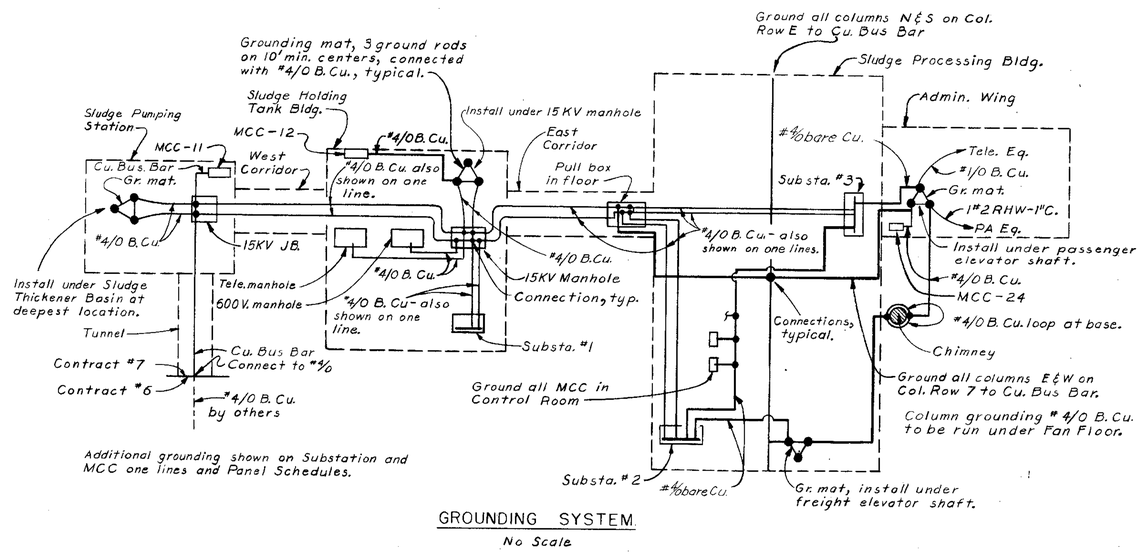
PROJECT 3892

1062.32



BASEMENT PLAN
SOUTH PORTION
SCALE 3/16"= 1'-0"

N



Additional grounding shown on Substation and MCC one lines and Panel Schedules.

GROUNDING SYSTEM
No Scale

NOTES
1. Electrical Legend, see sheet #145, Lighting Fixture Schedule, see sheet #163.

Short 3 fixtures in basement.

NO	DATE	REVISION	BY	CK'D
1	12-8-66	Conform with const. records	RAH	DAC

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING BASEMENT FLOOR PLAN EL. 731.00 ELECTRICAL

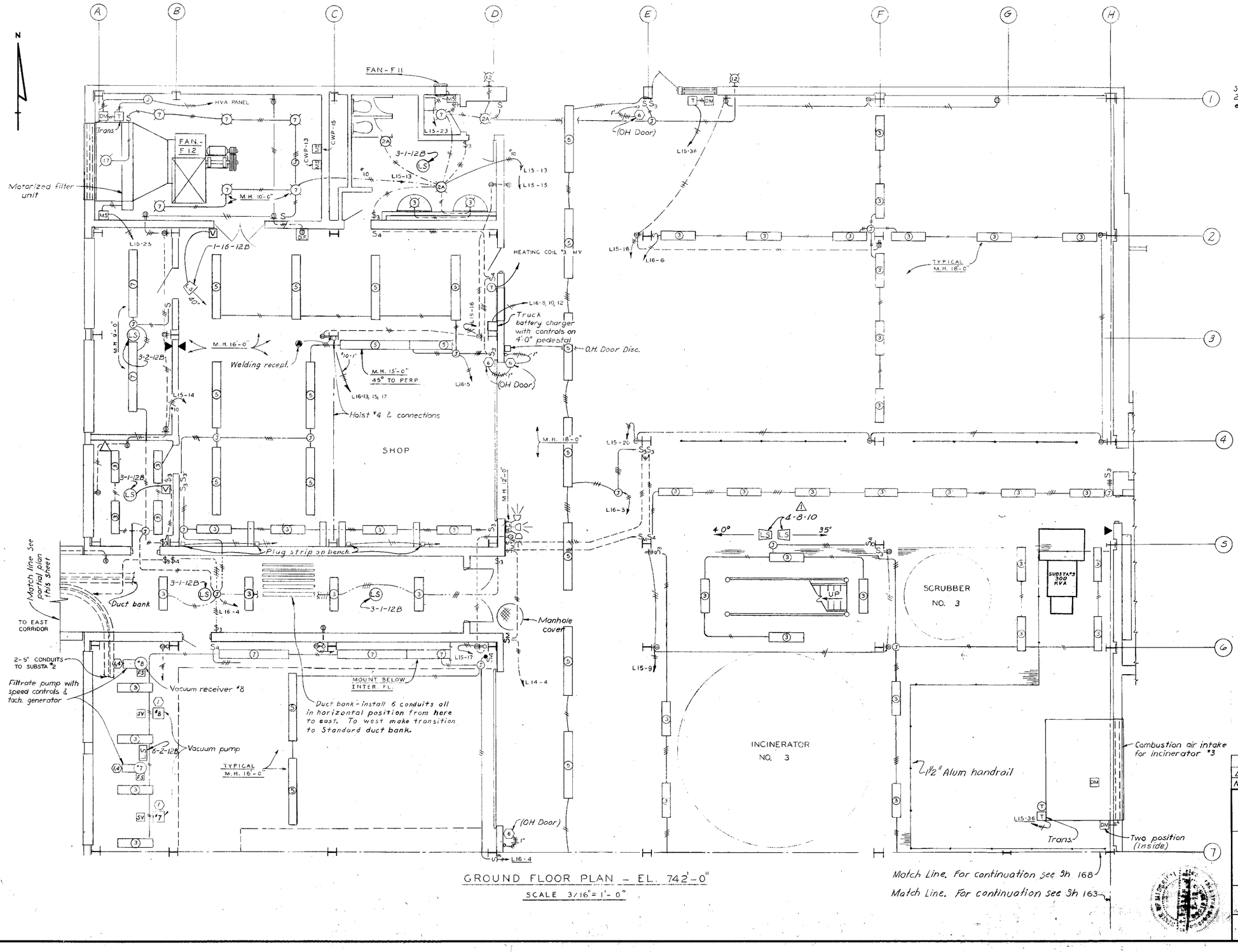
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED H.L.D. CHECKED
DETAILED R.V.C. H.L.D. APPROVED
DATE April 20, 1964

SHEET 166 OF 190

PROJECT 1062.32



PARTIAL PLAN OF CORRIDOR

GROUND FLOOR PLAN - EL. 742'-0"

SCALE 3/16" = 1'-0"

NOTES

1. Electrical Legend, see sheet #145, Lighting Fixture Schedules, see sheet #163.

NO	DATE	REVISION	BY	CKD
2	6-14-67	Conformed to construction records	LEM	DEC
1	5-20-64	Addendum No-1	DLF	OCO

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
GROUND FLOOR PLAN EL. 742.00
ELECTRICAL

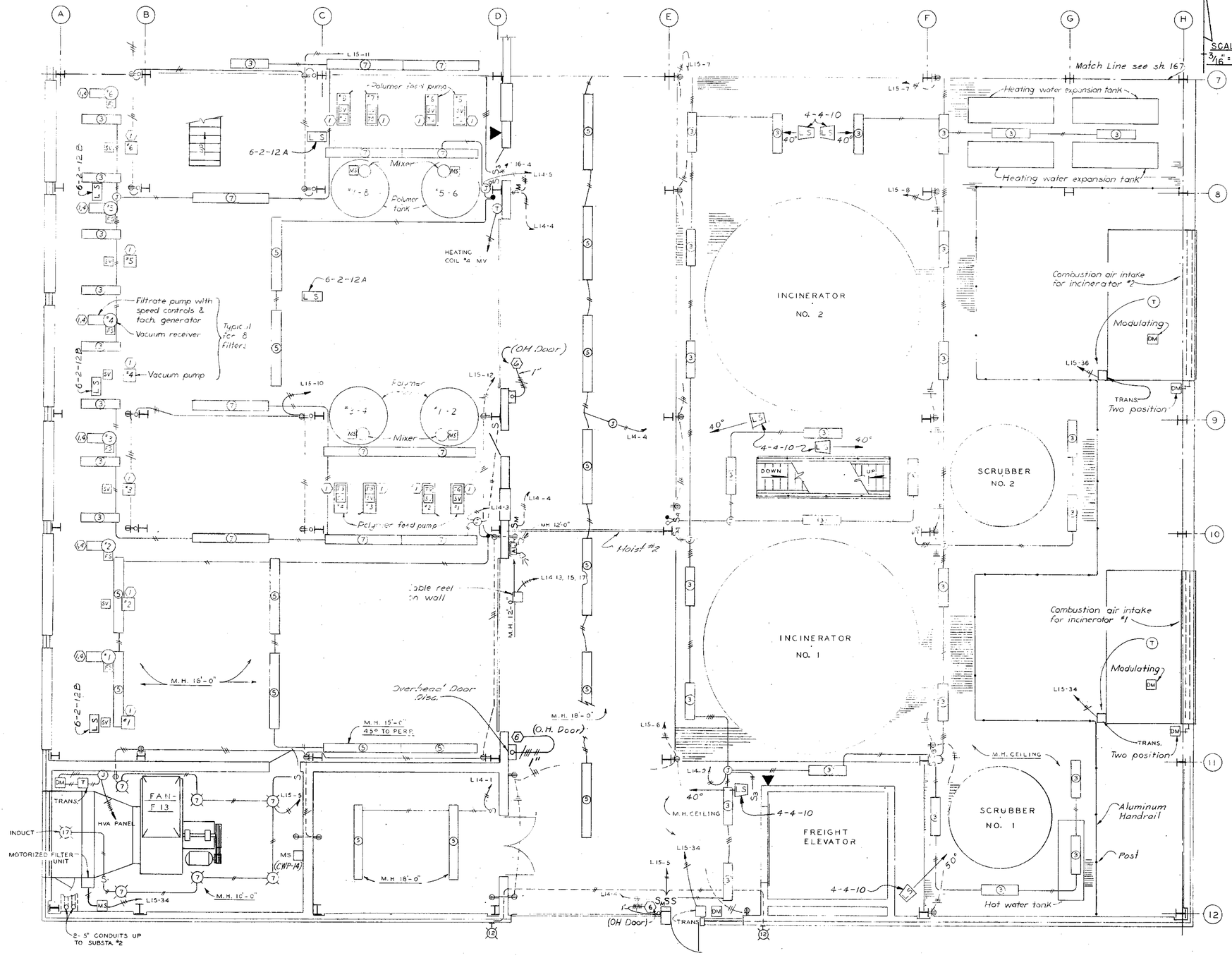
BLACK & VEATCH AND BURNS & MCDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED H.L.D. DETAILED H.L.D. CHECKED O.C.O. APPROVED R.V.C. DATE April 20, 1964

SHEET 167 OF 190

PROJECT 1062.32



Watts				Watts
1236	Stairs Intermediate Ltgs. Ground & Basement	1 2	Ltgs. Ground Floor	2484
2904	Filter #1 & #2 Ltgs. Ground Floor	3 4	*Ltgs. Large Corridor	2540
1980	Filter #3 & #4 Ltgs. Ground Floor	5 6	Spare	
1656	Ltgs. South Basement	7 8		
1014	Ltgs. South Basement	9 10	Overhead doors 16 @ 3/4 HP)	1000
	Spare	11 12		
		13 14		
2000	Hoist #2 (Truck aisle) 2 HP	15 16	Heating Boiler #1 (3 HP)	3000
		17 18		
	Spare	19 20	Spare	
	Spare	21 22	Spare	
	Spare	23 24	Spare	

*- Ckt. L14-4 switch by Lighting Contactor

PANEL NO L14
INTERMEDIATE FLOOR SOUTH
277 / 480 VOLTS - 3ϕ

NOTES
1. Electrical Legend, see sheet #145, Lighting Fixture Schedule, see sheet #163.

MICROFILMED

NO	DATE	REVISION	BY	CK'D
1.	6-19-67	Conform with const. records	RAH	DAC

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
GROUND FLOOR PLAN EL. 742.00
ELECTRICAL

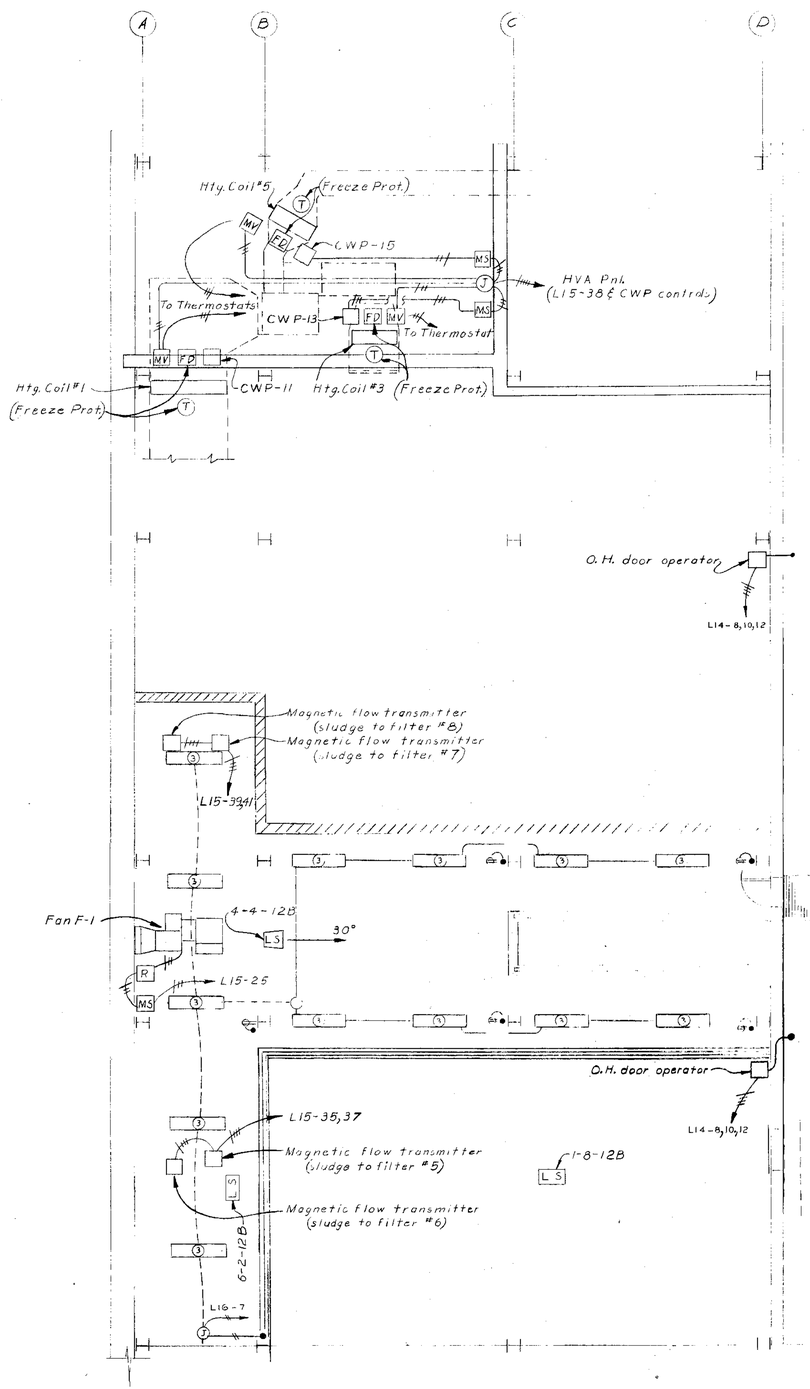
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

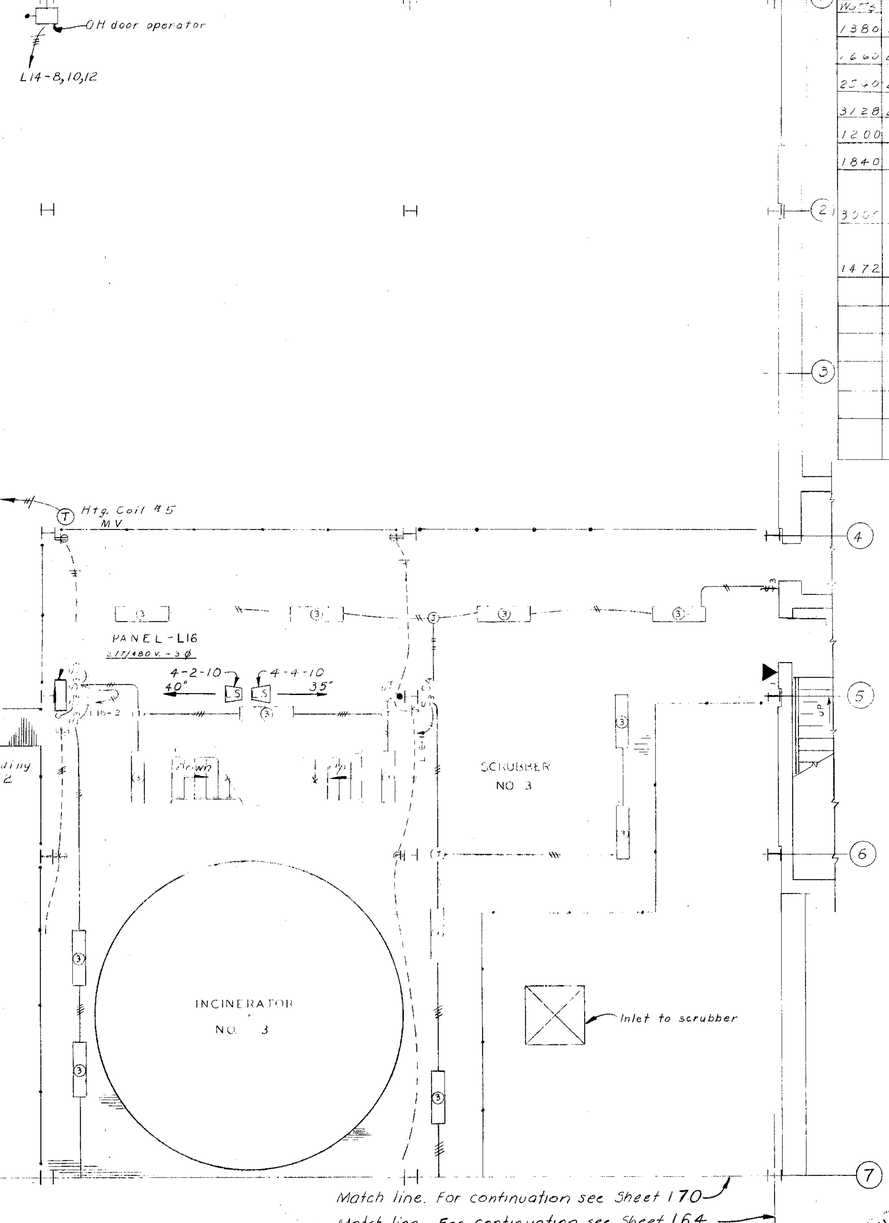
P.C.D. CONTRACT 7

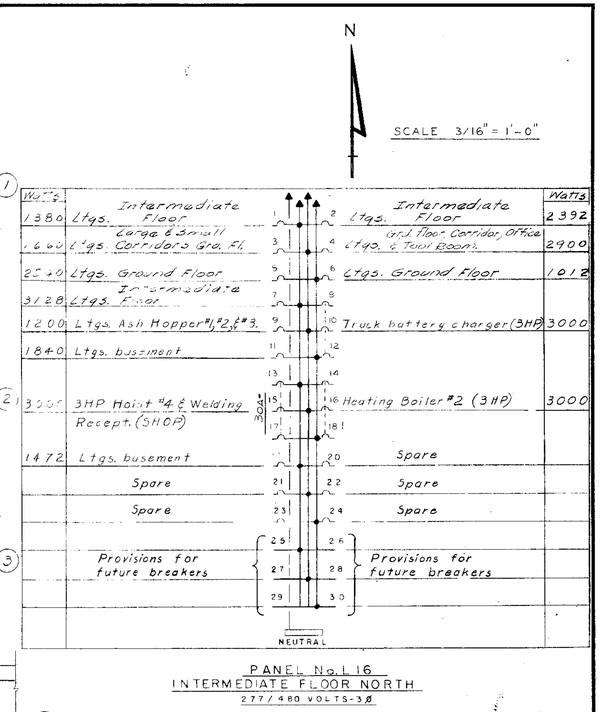
DESIGNED WLD DRAWN DKS CHECKED GCP
DETAILED WLD CHKD DKS APPROVED
DATE April 20, 1963

SHEET 168 OF 190

1062.32







PANEL No. L16
INTERMEDIATE FLOOR NORTH
277/480 VOLTS-3Ø

NOTES
1. Electrical Legend, see sheet #145, Lighting Fixture Schedule, see sheet #163.

NO	DATE	REVISION	BY	CK'D
1.	6-13-67	Conform with const. records	RAH	DAC

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
INTERMEDIATE FLOOR PLAN EL. 752.67
ELECTRICAL

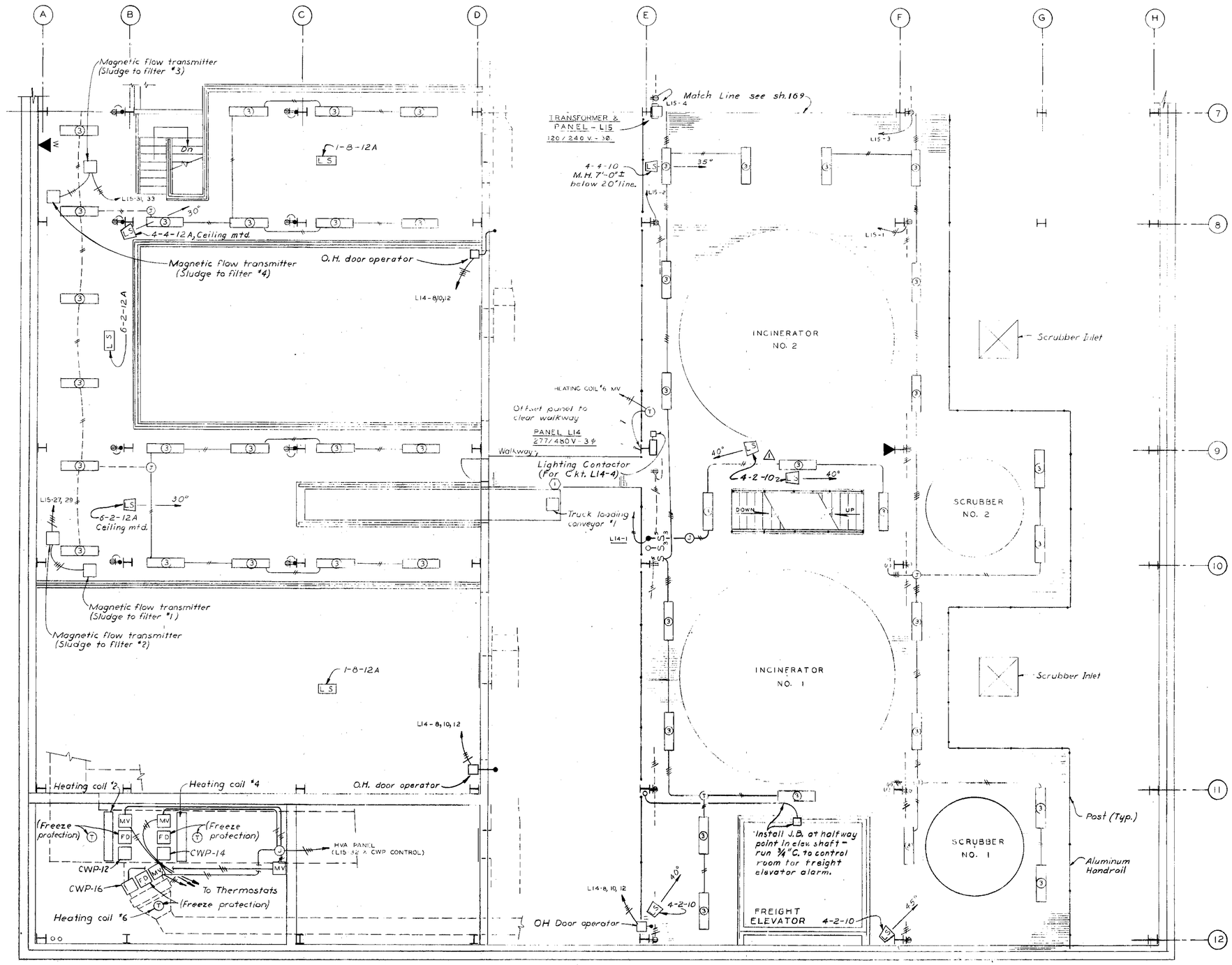
BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED HLD DLS DETAILED HLD RVC CHECKED OCD APPROVED [signature] DATE April 20, 1964

SHEET 169 OF 190

PROJECT 1062.32



N

SCALE 3/16" = 1'-0"

Watts				Watts
750	(5) Recp. Intermediate Floor	1	2 (5) Recp. Intermediate Floor	750
600	(4) Recp. Intermediate Floor Outside & Fan	3	4 (4) Recp. Intermediate Floor	600
750	5 Ltgs. Rm. Ground Floor	5	6 (5) Recp. Ground Floor	750
750	(5) Recp. Ground Floor	7	8 (5) Recp. Ground Floor	750
1200	(8) Recp. Ground Floor	9	10 (8) Recp. Ground Floor Filter 1 & 2	1200
1200	(8) Recp. Intermediate Ground & Fan Room	11	12 (8) Recp. Grd. Floor Fan Room	1200
1200	8 Ltgs. Ground Floor	13	14 (8) Recp. Ground Floor	1200
600	4 Ltgs. Toilet, Vest. Door & Furn.	15	16 (4) Recp. & Toilet Ground Floor	600
750	(5) Recp. Ground Floor	17	18 (5) Recp. Ground Floor	750
600	4 Recp. Basement	19	20 (4) Recp. Ground Floor	600
750	5 Recp. Basement	21	22 (5) Recp. Basement	750
600	Spare	23	24 (4) Recp. Basement	600
900	N Fan Rm. - Filter ⅛ HP, Fan FI, ¼ HP & A/C Controls	25	26 (6) Recp. Basement	900
700		27	28 Air Dryer ½ HP	700
700	2 Magnetic flow transmitters for filters #1 & #2 (230 V, 1Ø)	29	30 Air Dryer ½ HP	700
		31	32 S. Mech. Eq. Rm. - CWP-16, ⅛ HP & Controls	600
600		33	34 S. Fan Rm. Filter ⅛ HP & Controls	600
200		35	36 East side of bldg. - H & V and A/C controls	200
900	2 Magnetic flow transmitters for filters #5 & #6 (230 V, 1Ø)	37	38 N. Mech. Eq. Rm. - 2-⅛ HP & controls	900
		39	40 Spare	
	2 Magnetic flow transmitters for filters #7 & #8 (230 V, 1Ø)	41	42 Spare	

NEUTRAL

PANEL NO. L15
INTERMEDIATE FLOOR CENTER
120/240 VOLTS - 1Ø

NOTES
1. Electrical Legend, see sheet #145, Lighting Fixture Schedule, see sheet #163.

NO	DATE	REVISION	BY	CKD
2	6-13-64	Conform with const. records	RAH	DAC
1	5-20-64	Addendum No. 1	DLF	QCO

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING;
INTERMEDIATE FLOOR PLAN EL. 752.67
ELECTRICAL

BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED HLD, DAS CHECKED QCO
DETAILED HLD, RVC APPROVED
DATE April 20, 1964

SHEET 170 OF 190

1062.32

Scale: 3/16"=1'-0"

Open area for future incinerator.

1½" Alum. handrail

Future inclined conveyor

1-2-13A

L18-1

L18-3

Shredder

Agitator & Controls

Flocculator #8

Filter No. 8

Agitator

Filter #8 Drum & Controls

Cross Conveyor #8

Mtg. Coil #1

MV

Cross Conveyor #7

Filter No. 7

Agitator & Controls

Flocculator #7

Filter #7 Drum & Controls

L19-1

L19-3

Space for future inclined Conveyor

1-2-13A

Truck Conveyor #2 below this area.

Automatic belt scales #3

L20-11

Inclined Conveyor #3

Filter #6 Drum & Controls

Cross Conveyor #6

Agitator

Flocculator #6

Filter No. 6

Agitator & Controls

Shredder

Cross Conveyor #5

Filter #5 Drum & Controls

Agitator

Agitator & Controls G-1-13A

Flocculator #5

Filter No. 5

M.H. CEILING

TYPICAL M.H. APPROX. 26'-0"

Shredder

L18-5

L18-2

4-4-11B

10°

35°

Down

Up

SCRUBBER NO. 3

INCINERATOR NO. 3

Settled sewage water

Building service water valve solenoid and limit switch.

Building service water Gas Analyzer Cabinet #3

L19-7,9,11

M.H. CEILING

M.H. B.C.

MV

Match line. For Continuation see Sh. 172

NOTES

1. Electrical Legend, see sheet #145, Lighting Fixture Schedule, see sheet #165

NO	DATE	REVISION	BY	CK'D
1	6-13-67	Conform with const. records	RAH	DAC

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
FILTER FLOOR PLAN EL. 763.67
ELECTRICAL

BLACK & VEATCH AND BURNS & MCDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED H.L.D. A.C.D.
DETAILED H.L.D. R.V.C.
CHECKED D.A.C.
APPROVED
DATE April 20, 1964

SHEET 171 OF 190

1062-32

N

3/16" = 1'-0"

Match Line see sh. 171

Space for future Inclined Conveyor

1-2-13A

Automatic belt scales #2

L20-11

Inclined Conveyor #2

L18-8

Shredder

Agitator & Controls

Flocculator #4

Filter No. 4

Agitator

Filter #4 Drum & Controls

Cross Conveyor #4

L18-9

Filter No. 3

Flocculator #3

6-1-13A

Filter #3 Drum & Controls

Cross Conveyor #3

Space for future Inclined Conveyor

Truck Conveyor below this area

Automatic belt scales #1

L20-11

Hopper for Loading Conveyor

Hopper for Inclined Conveyor #1

Inclined Conveyor #1

M.H. 12'-0"

Cross Conveyor #2

Filter #2 Drum & Controls

Filter No. 2

Filter No. 1

Filter #1 Drum & Controls

TYPICAL M.H. APPROX. 26'-0"

Flocculator #2

Flocculator #1

6-2-13A

M.H. CEILING

L18-7

L18-4

L18-21

L15-28, 30

L17-5

2-5" conduits up to Sub Sta. #2

Vacuum pump inside

Dual air dryer with starters

#2

#1

Air Compressors

Lab. Table with Receptacles, manual starters & Warning light

INCINERATOR NO. 2

4-4-118

40°

Settled sewage water

Building service water valve Solenoid and limit switch.

Building service water Gas Analyzer Cabinet #2

L19-7, 9, 11

SCRUBBER NO. 2

INCINERATOR NO. 1

Building service water valve solenoid and limit switch.

Building service water Gas Analyzer Cabinet #1

L19-7, 9, 11

SCRUBBER NO. 1

FREIGHT ELEVATOR

Aluminum Handrail

L17-2

L17-3

L18-6

L18-2

DOWN

UP

NOTES

1. Electrical Legend, see sheet #145, Lighting Fixture Schedule, see sheet #163

NO	DATE	REVISION	BY	CK'D
1	6-13-67	Conform with const. records	RAH	DAC

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
FILTER FLOOR PLAN EL. 763.67
ELECTRICAL

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED H.L.D. DRAWN A.C.D. CHECKED [illegible]
DETAILED H.L.D. TRACED R.V.C. APPROVED [illegible]
DATE April 20, 1964

SHEET 172 OF 190

PROJECT 1062.32

SCALE 3/16" = 1'-0"

Watts				Watts
3698	Ltgs. Filter Room	1 2	Ltgs. Incinerator Room & Filter Room	1380
2736	Ltgs. Filter Room	3 4	Ltgs. Control Room	2572
1524	Ltgs. Corridor below Control Room	5 6	Ltgs. Control Room & small Corridor	2572
		7 8	Ltgs. Control Room Cat Walk	2760
4000	Gas Analyzer Cabinets #1, #2, #3, & controls, 3-3/4 H.P.	9 10	Spare	
		11 12	Spare	
	Spare	13 14	Provisions for future breakers	
	Spare	15 16		
	Spare	17 18		

NEUTRAL

PANEL NO. L 19
FAN ROOM NORTH
277 / 480 VOLTS - 3Ø.

Open

Open

Open

M.H. - EL. 777'

60°

1-2-11B

Auto transformer for LS volume control.

7-1-11A

6-1-13A

7-1-11A

Desk

L19-4
L19-6
PANEL L19, 277/480v, 3ϕ

L19-8
Door bell

3"12-3/4"C. to front door.

Filter "7ϕ"8 Accessory Panel

Down

Filter "7ϕ"8 Panel

Inclined Conveyor #3

Inclined Conveyor #3 Motor Screw

MCC #22 (Filter "7ϕ"14)

Filter #16

Filter "5ϕ"6 Accessory Panel

Filter "5ϕ"6 Panel

Incinerator #3 Vent

MCC #21 (Filter "5ϕ"16)

MCC #20 (Auxiliaries)

Telephone booth

Reheat Combustion air fan (Incinerator #3)

Match line. For continuation see Sheet 174

EMERGENCY BATTERY

SCRUBBER NO. 3

(Scrubber gas out) (Below floor)

Open

Induced Draft Fan No. 3

95°

1-8-11B

L18-18

Breeching

L17-14, 16, 18

L18-13

L18-14

7-1-11A

7-1-11A

7-1-11A

See Note #2

7-1-11A

3" empty capped conduit from Sub sta. #2 (future MCC #23)

Supply to MCC #22

M.H. 10'-0"

Grating

6-1-13A

AUXILIARY BATTERY

7-1-11A

Open

Down

MCC 21-L4

MCC 21-L5

MCC 22-L4

Fan F-14

F-15

To Damper Motor in Stairway at EL. 745'

Fan F-15

PENTHOUSE
EL. 793.67'
SCALE 3/16" = 1'-0"

NOTES

1. Electrical Legend, see sheet #145, Lighting Fixture Schedule, see sheet #163.

⚠ 2. Install light fixtures #18 and loudspeakers in control room on same center line.

NO	DATE	REVISION	BY	CKD
2	6-15-64	Conform with const. records	RAH	DMC
⚠	5-20-64	Addendum No. 1	DLF	DCD

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
FAN FLOOR PLAN EL. 777.96
ELECTRICAL

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

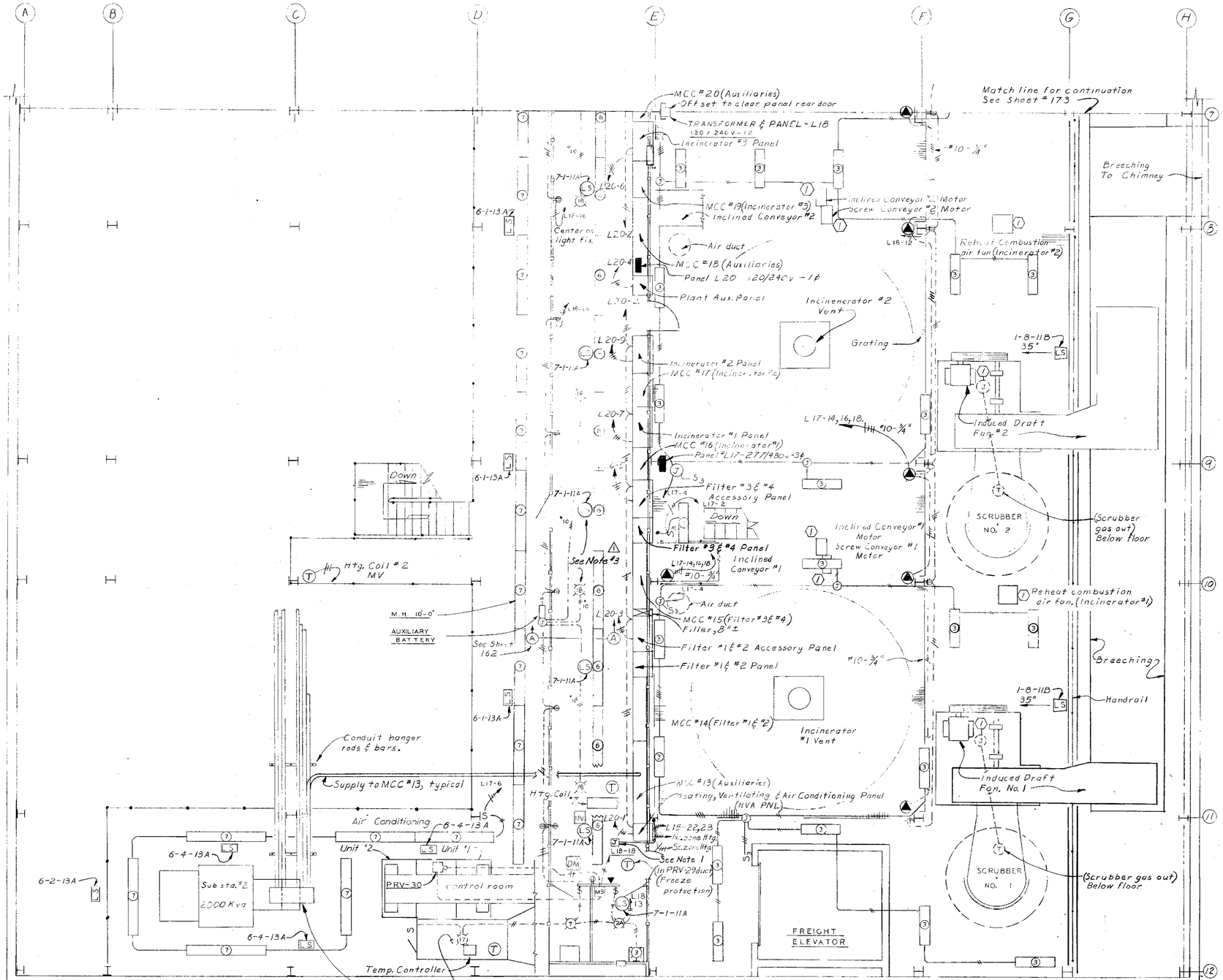
P.C.D. CONTRACT 7

DESIGNED WLD, DCD CHECKED RAH, DCD
DETAILED NED, RVC APPROVED
DATE April 20, 1964

SHEET 173 OF 190

PROJECT 3292

1062.32



N

Scale: 3/16" = 1'-0"

PANEL NO. L18
FAN ROOM CENTER
120 / 240 VOLTS - 1Ø

Watts					Watts
400	(6) Recp. Filter Rm.	1	2	(4) Recp. Incinerator & Filter Rm.	600
600	(6) Recp. Filter Rm.	3	4	(4) Recp. Filter Rm.	600
600	(6) Recp. Filter Rm.	5	6	(4) Recp. Filter Rm.	600
1200	(8) Recp. Filter Rm.	7	8	(6) Recp. Filter Rm.	900
900	(6) Recp. Filter Rm.	9	10	Spare	
	Spare	11	12	(7) Recp. Fan Rm.	1050
1200	Ctrl. Rm. Toilet Ltgs. & Back Stairs	13	14	6 Recp. Control Rm.	750
450	3 Recp. Back Stairs & Pent House	15	16	6 Recp. Control Rm.	900
	Spare	17	18	Fan F-14, 1/4 Hp, & Stairway ltg. controls & PRV-30	1100
	Spare	19	20	Spare	
700	Vacuum pump 1/2 HP, Filter Rm. Lab. table	21	22	Spare	
		23	24		
		25	26		
	Provisions for future breakers	27	28	Provisions for future breakers	
		29	30		

NEUTRAL

PANEL NO. L17
FAN ROOM SOUTH
277 / 480 VOLTS - 3Ø

Watts					Watts
2286	Ltgs. on Filter Floor	1	2	Ltgs. South stairs on Filter Floor	1380
2736	Ltgs. Filter Floor	3	4	Ltgs. Fan Floor	2668
2182	Ltgs. Filter Floor	5	6	Ltgs. - Substa #2	1104
		7	8	Spare	
		9	10	Spare	
		11	12	Spare	
	Provisions for future breakers	13	14		
		15	16	Hoist #5 Recp. (7) (Incin.) (5 HP)	5000
		17	18		

NEUTRAL

NOTES
1. Junc. box & empty conduit for freight elevator alarm, see freight elevator Sh. #170.
2. Electrical Legend, see sheet #145, Lighting Fixture Schedule, see sheet #163.
3. Install lighting fixtures #18 and loudspeakers in control room on same center line.

NO.	DATE	REVISION	BY	CKD
2	6-14-67	Conformed to construction records	LEM	DAC
1	5-20-66	Addendum No. 1	DLF	DCO

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT
SLUDGE PROCESSING BUILDING
FAN FLOOR PLAN EL. 777.96
ELECTRICAL

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

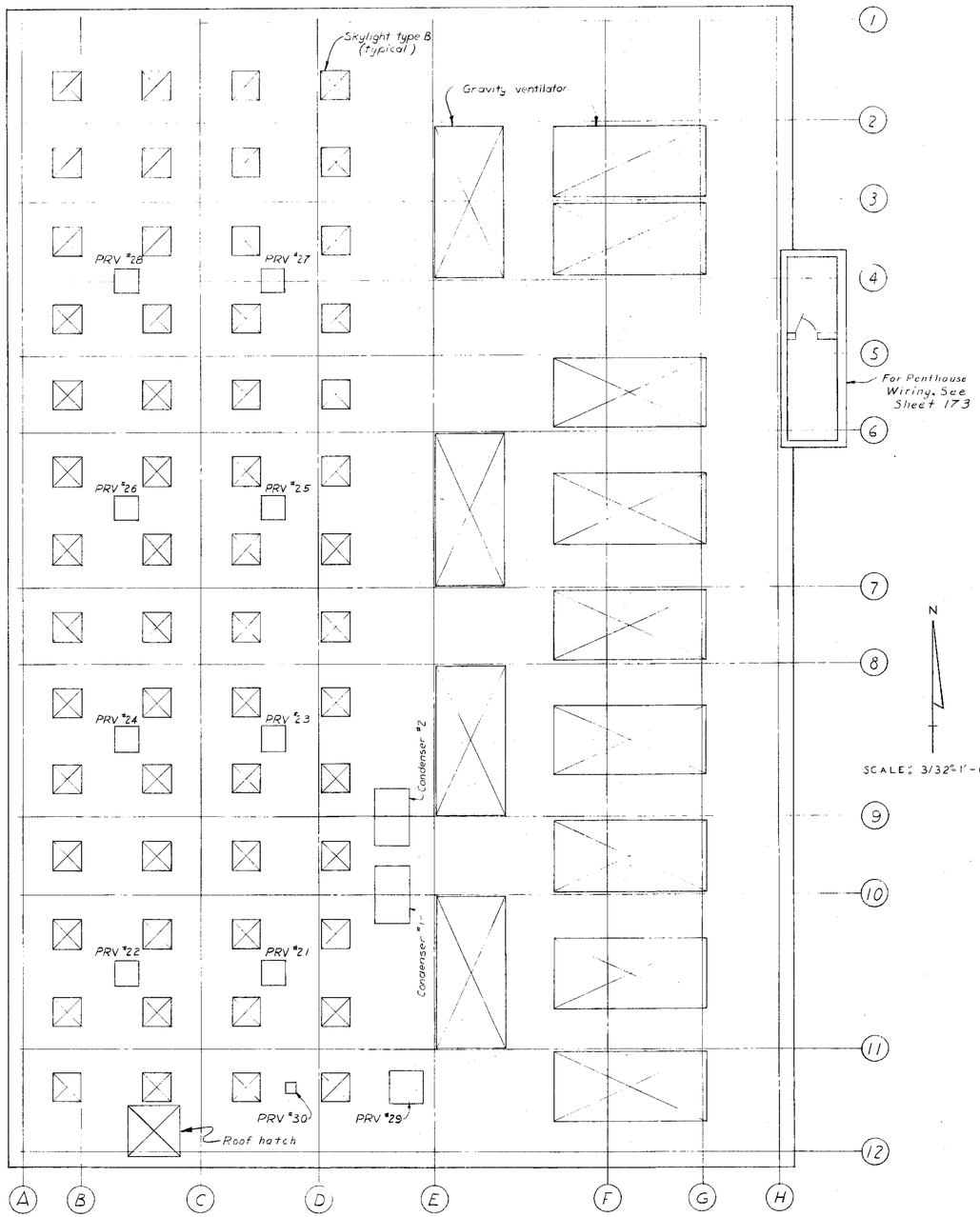
P.C.D. CONTRACT 7

DESIGNED HLD, DCS CHECKED DCO
DETAILED HLD, RVC APPROVED
DATE April 20, 1964

SHEET 174 OF 190

PROJECT 3292 1062.32

K&E 31303



1000	HVA Panel	1 2	Lights & Recept. in control Rm control panels	500
200	Filter #1 & #2 Access. panel	3 4	Plant aux. panel	200
200	Filter #3 & #4 Access. panel	5 6	Incinerator #3 panel	200
200	Incinerator #1 panel	7 8	Filter #5 & #6 Access. panel	200
200	Incinerator #2 panel	9 10	Filter #7 & #8 Access. panel	200
200	Auto. Belt Scales #1, #2, #3	11 12	Spare	
	Spare	13 14	Spare	
	Spare	15 16	Spare	
	Provisions for future breakers	17 18 19 20 21 22 23 24	Provisions for future breakers	
		NEUT.		

PANEL NO. L20
120 / 240 VOLT - 1 ϕ PANEL
LOCATED IN MCC NO 18 - CONTROL ROOM

NOTES

1. Electrical Legend, see sheet #145

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE PROCESSING BUILDING
ROOF PLAN
ELECTRICAL

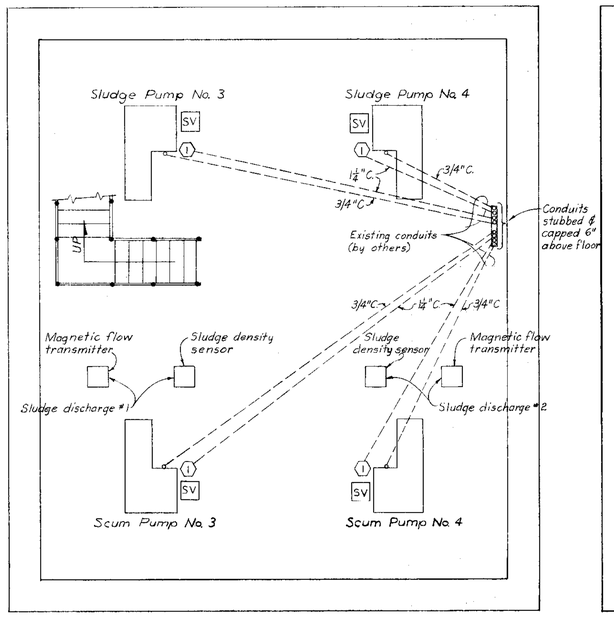
BLACK & VEATCH AND BURNS & MCDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED WLD. CHECKED QCO
DETAILED WLD-EWV APPROVED
DATE April 20, 1964

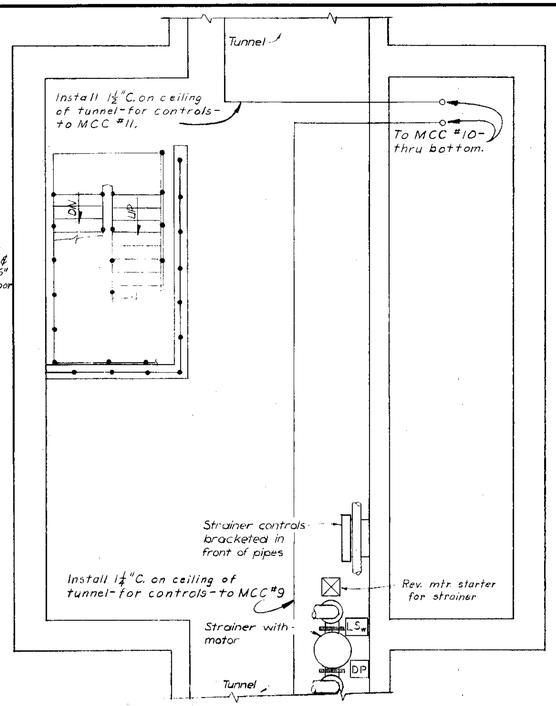
SHEET 175 OF 190

Project 1062.32



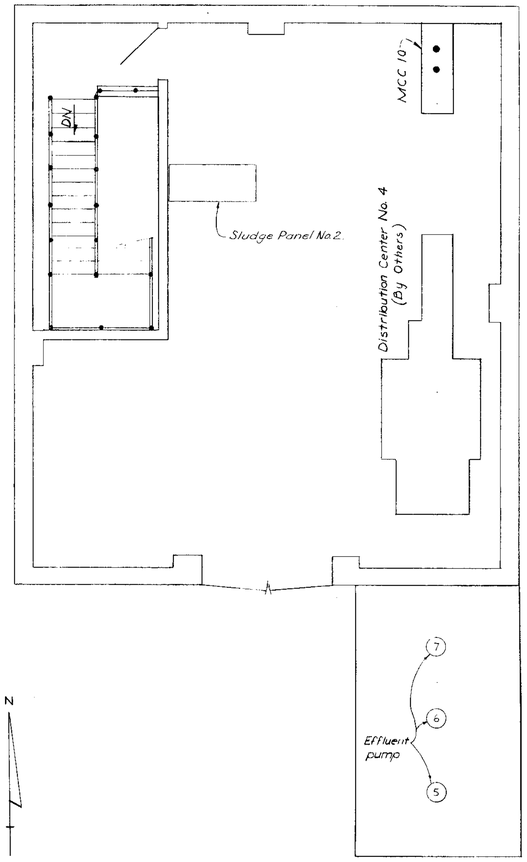
SLUDGE HOUSE NO. 2 BASEMENT

SCALE: 1/4" = 1'-0"



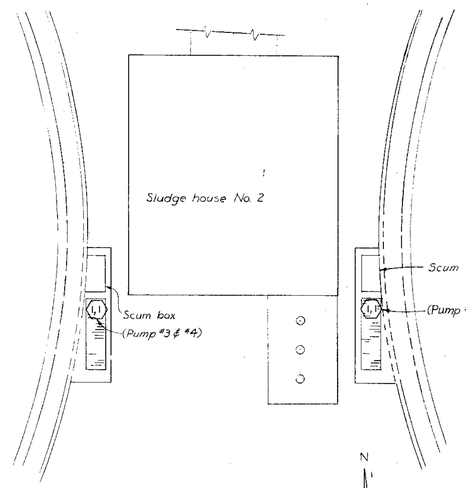
SLUDGE HOUSE NO. 2 TUNNEL FLOOR

SCALE: 1/4" = 1'-0"



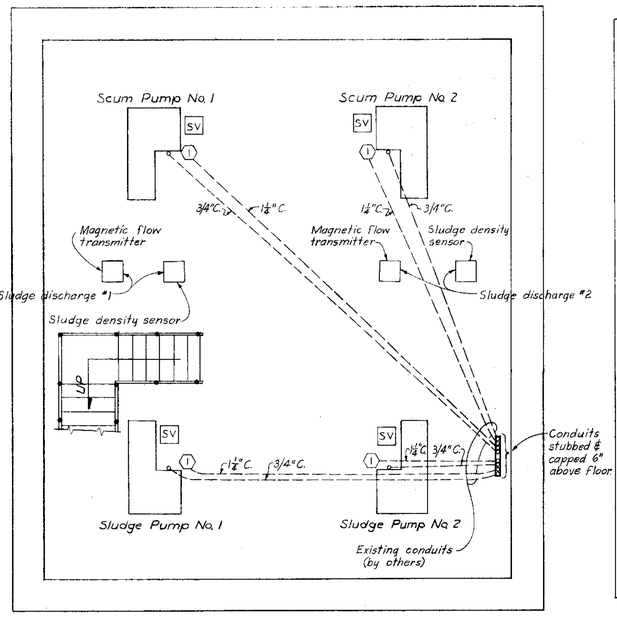
SLUDGE HOUSE NO. 2 OPERATING FLOOR

SCALE: 1/4" = 1'-0"



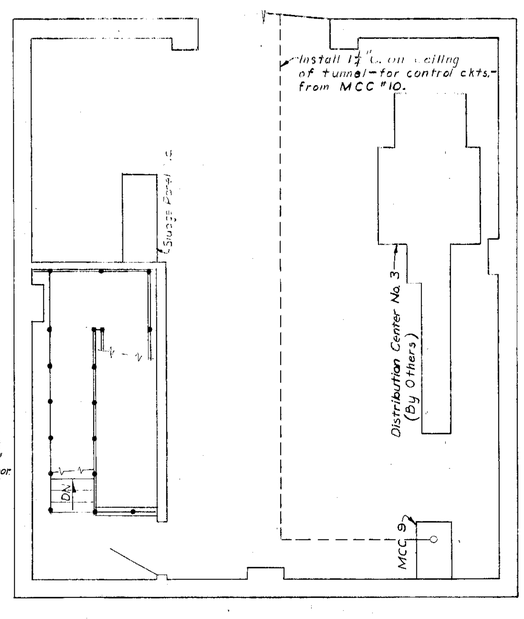
SLUDGE HOUSES & SCUM BOXES

SCALE: 1" = 10'



SLUDGE HOUSE NO. 1 BASEMENT

SCALE: 1/4" = 1'-0"



SLUDGE HOUSE NO. 1 OPERATING FLOOR

SCALE: 1/4" = 1'-0"

NOTES

1. Electrical Legend, see sheet #145
2. Existing conduits (by others) in the Sludge House's basements could not be used because some were "stubbed up" under the sludge & scum pump bases, and all were full of mud.

NO	DATE	DESCRIPTION	BY	CK'D
1	12/26/67	Conformed to Construction records	DAC	DAC

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE HOUSE PLANS
ELECTRICAL

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

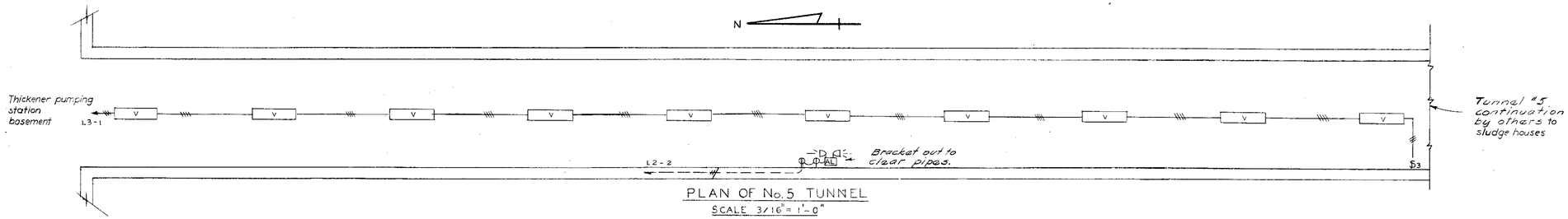
P.C.D. CONTRACT 7

DESIGNED ACO
DETAILED RVC, BRS
CHECKED
APPROVED
DATE April 20, 1964

SHEET 176 OF 190

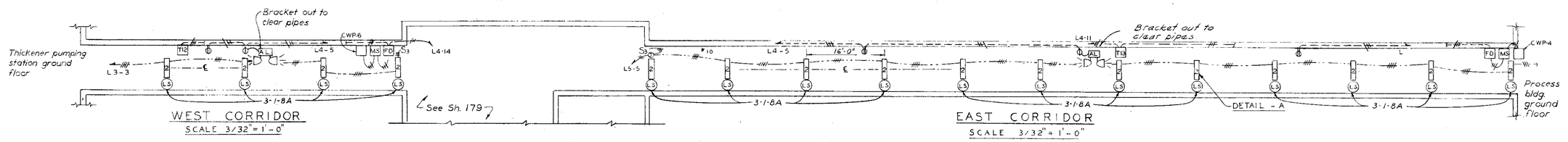
PROJECT 3292 1062.32

K&E 31009



PLAN OF No. 5 TUNNEL

SCALE 3/16" = 1'-0"



WEST CORRIDOR

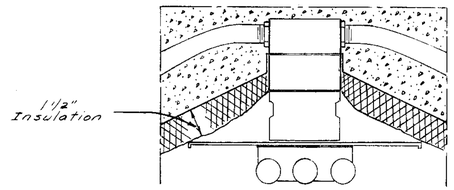
SCALE 3/32" = 1'-0"

SLUDGE HOLDING TANKS

SCALE 3/32" = 1'-0"

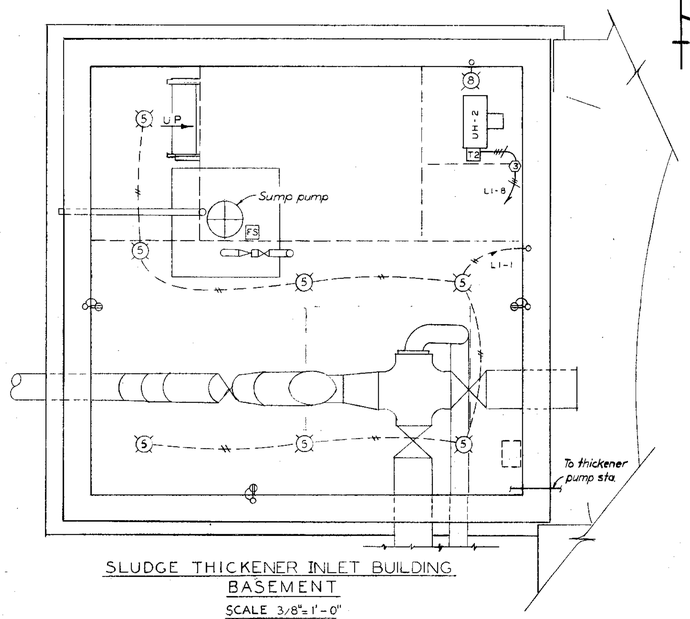
EAST CORRIDOR

SCALE 3/32" = 1'-0"



DETAIL A

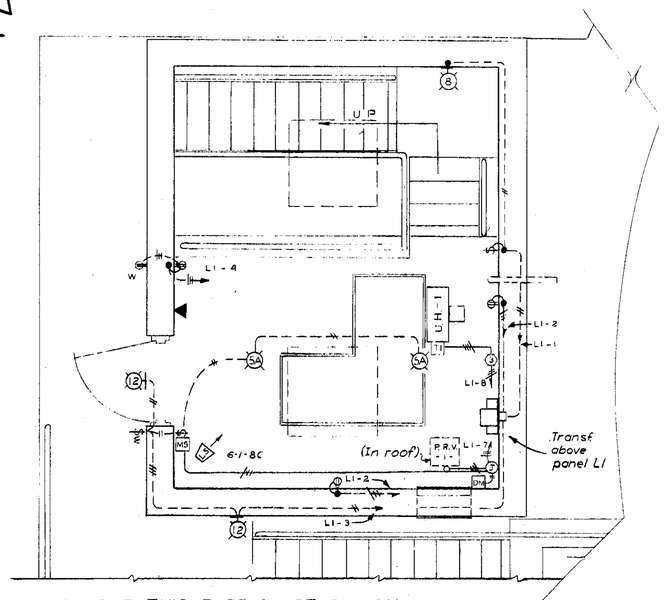
MOUNTING OF LIGHT FIXTURE ON CORRIDOR CEILING OF POURED-IN-PLACE CONCRETE



SLUDGE THICKENER INLET BUILDING

BASEMENT

SCALE 3/8"=1'-0"



SLUDGE THICKENER INLET BUILDING

OPERATING FLOOR

SCALE 3/8"=1'-0"

Watts				Watts
1250	Ltgs. Stairs and Basement	1 2	4 Recp. Oper. Floor & Basement	600
800	Ltgs. Outside and Oper. Floor	3 4	3 Recp. Outside & Oper. Floor	450
	Spare	5 6	Spare	
400	1/6 HP. PRV #1	7 8	UH #1 & UH #2	475
	Provisions for future breakers	9 10 11 12	Provisions for future breakers	
		NEUTRAL		

PANEL NO LI

SLUDGE THICKENER INLET BUILDING

120 / 240 VOLTS - 1Ø.

MICROFILMED

NO.	DATE	REVISION	BY	CK'D
1	6-14-67	Conformed to construction records	LEM	DAC

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE THICKENER INLET BUILDING, TUNNEL, AND CORRIDORS PLANS ELECTRICAL

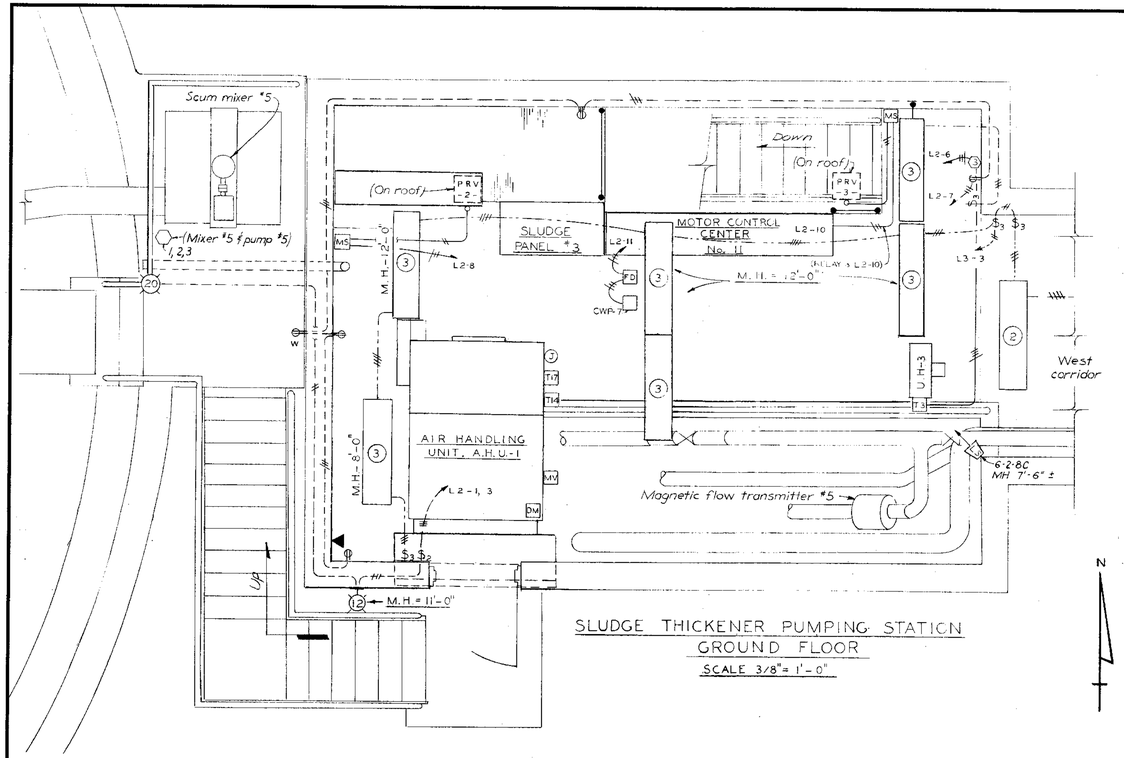
BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED HLO DETAILED HLO CHECKED GRO APPROVED [signature] DATE April 20, 1964

SHEET 177 OF 190

PROJECT 1062.32



SLUDGE THICKENER PUMPING STATION
GROUND FLOOR
SCALE 3/8" = 1'-0"

Watts				Watts
405	Outside flood & 120 V	1 2	Recp.(6) Tunnel #5 & Basement	900
	Door lights	3 4	Recp.(5) Basement	1000
300	S. Walkway lights	5 6	UH #3 & UH #4	475
150	Recp.(5) First floor	7 8	1/6 H.P. P.R.V-2	400
800	Pump CWP-8 1/3 HP	9 10	1/6 H.P. P.R.V-3	400
550	Pump CWP-7 1/4 HP	11 12	Water heater	1500
	Spare	13 14	Spare	
	Spare	15 16	Spare	
	Spare	17 18	Spare	

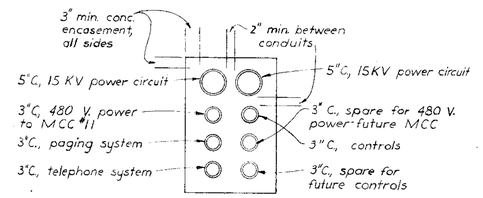
NEUTRAL

PANEL NO. L-1
THICKENER PUMPING STA.
120/240 VOLTS - 1Ø
LOCATED IN M.C.C. NO. 11

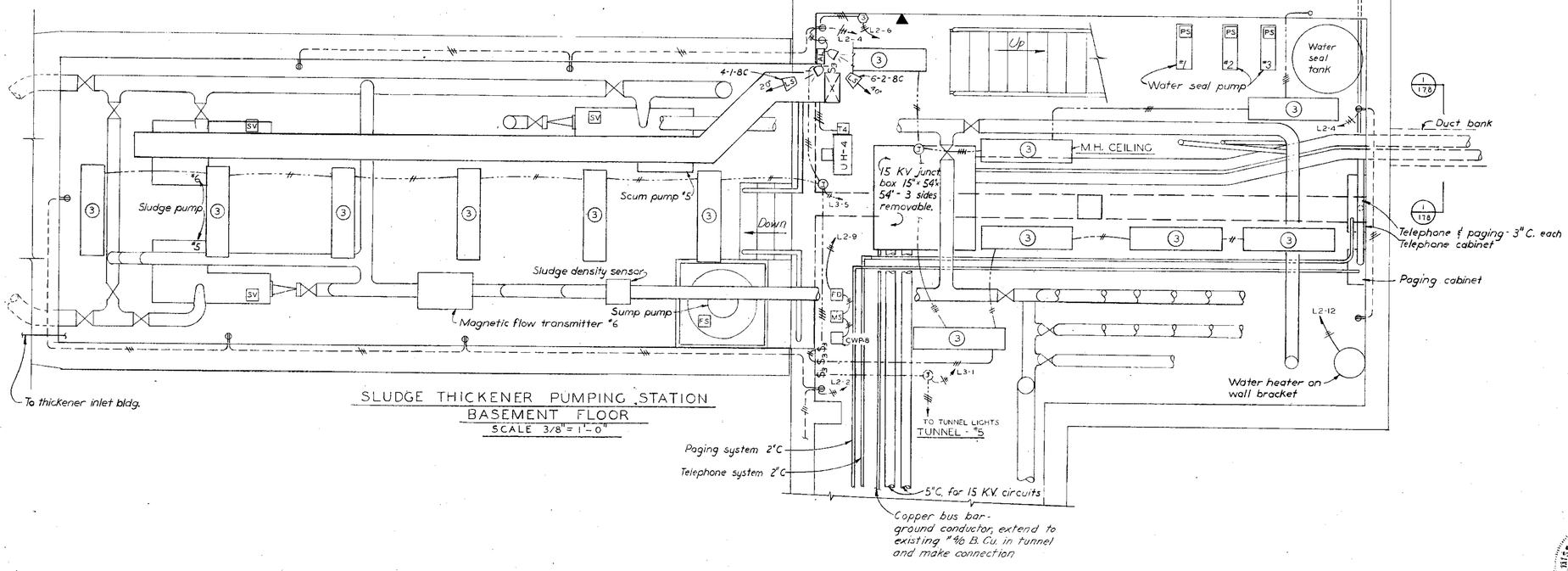
Watts				Watts
1000	Ltgs. Tunnel #5	1 2	Spare	
1250	Ltgs. First floor & West corridor	3 4	Spare	
1300	Ltgs. Basement	5 6	Spare	
		7 8		
	Provisions for future breakers	9 10	Provisions for future breakers	
		11 12		

NEUTRAL

PANEL NO L3
THICKENER PUMPING STA.
277/480 VOLTS - 3Ø.
LOCATED IN M.C.C. No. 11



SECTION 1
NO SCALE



SLUDGE THICKENER PUMPING STATION
BASEMENT FLOOR
SCALE 3/8" = 1'-0"

NOTES
1. Electrical Legend, see sheet #145, Lighting Fixture Schedule, see sheet #163.

MICROFILMED

NO.	DATE	REVISION	BY	CK'D
1	6-14-67	Conformed to construction records	LEM	DAC

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE THICKENER PUMPING STATION
PLANS
ELECTRICAL

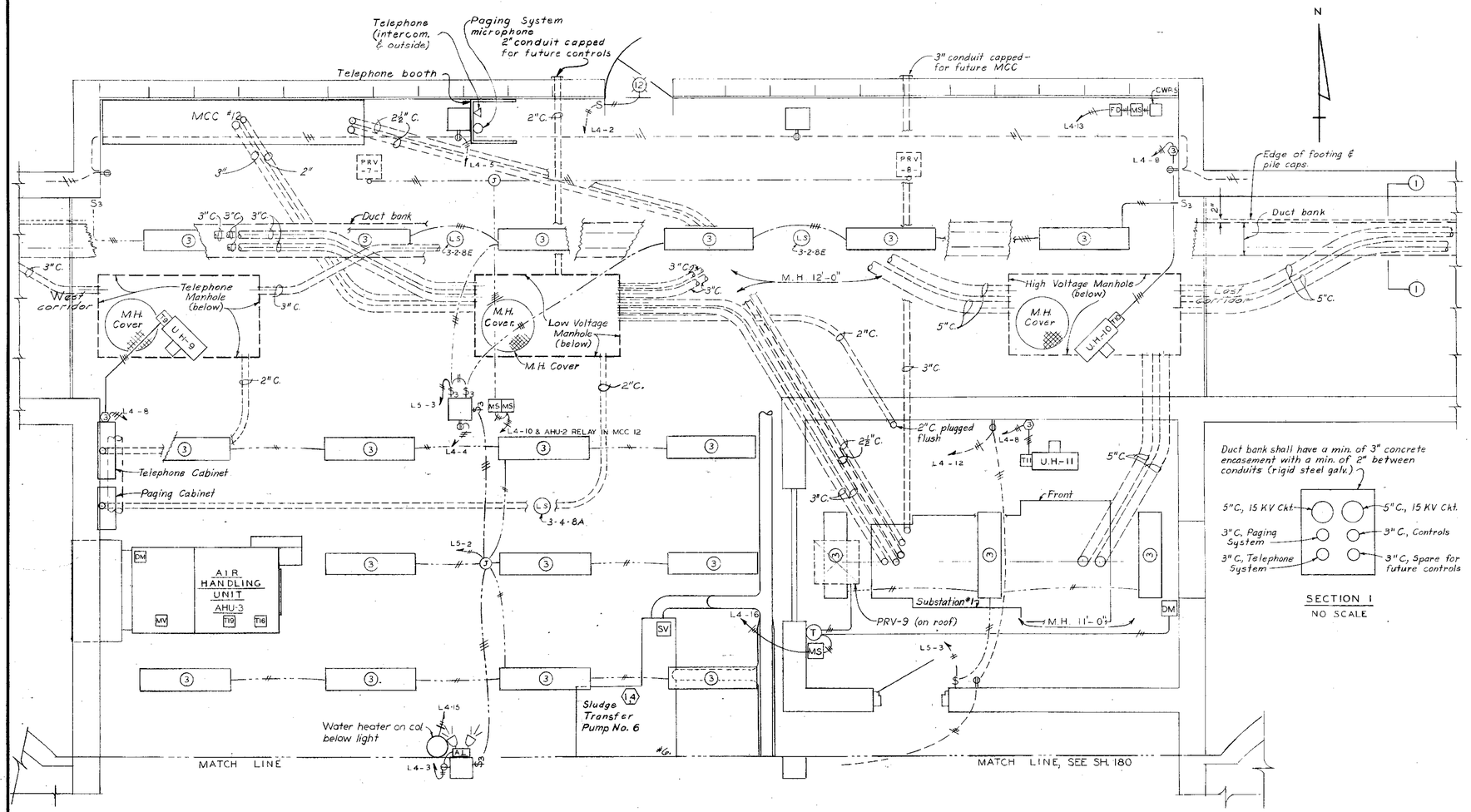
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED H.L.D. DRAWN BRS CHECKED DEO APPROVED [signature] DATE April 20, 1967

SHEET 178 OF 190

PROJECT 1062.32



NORTH OPERATING FLOOR
SLUDGE HOLDING TANKS
SCALE 3/8" = 1'-0"

Duct bank shall have a min. of 3" concrete encasement with a min. of 2" between conduits (rigid steel galv.)

SECTION 1
NO SCALE

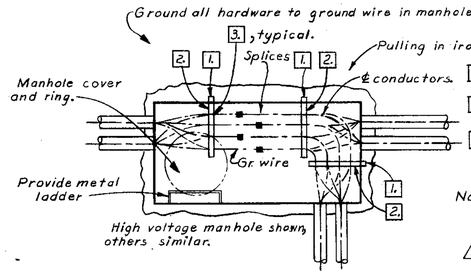
Watts				Watts
1500	Ltgs., South & Center Ground Floor	1	2 Ltgs. Control Room	1100
1200	Ltgs., Main Corridor, Small Room Sec. & Third Floor.	3	4 Spare	
1800	Ltgs. East Corridor.	5	6 Spare	
		7	8	
	Provision for future breakers	9	10 Provision for future breakers	
		11	12	
			NEUTRAL	

PANEL NO L5
SLUDGE HOLDING TANKS
277 / 480 VOLTS - 3Ø.
LOCATED IN M.C.C. No. 12

Watts				Watts
600	Ltgs. Penthouse outside	1	2 Ltgs. Outside Doors	600
450	(3) Recp. Penthouse, Sec. & Grd. Floor.	3	4 (5) Recp. Grd. Floor	750
900	(8) Recp. East & West Corridors	5	6 UH's #5-#6-#7 & 8	600
400	PRV-2 Fan 1/6 HP.	7	8 UH's #9-#10 & #11	300
800	PRV-5 & 6 Fans 1/6 HP. ea.	9	10 PRV-7 & 8 Fans 1/6 HP. ea.	800
550	Pump CWP #4 1/4 HP	11	12 (5) Recp. Grd. Floor	750
800	Pump CWP #5 1/3 HP	13	14 Pump CWP #6 1/4 HP	550
1500	Water heater	15	16 PRV-9, 1/4 HP Fan & Damper Mtr.	600
	Spare	17	18 Spare	
	Spare	19	20 Spare	
	Spare	21	22 Spare	
		23	24	
		25	26	
	Provisions for future breakers	27	28 Provisions for future breakers	
		29	30	
			NEUTRAL	

PANEL NO L4
SLUDGE HOLDING TANKS
120 / 240 VOLTS - 1Ø
LOCATED IN M.C.C. No. 12

NOTES
1. Electrical Legend, see sheet #145, Lighting Fixture Schedule, see sheet #163.



MANHOLE AND CABLE PULLING HANDHOLE HARDWARE
No Scale.

MICROFILMED

NO	DATE	REVISION	BY	CKD
2	6-14-67	Conformed to construction records	LEM	DAC
⚠	5-27-64	Addendum No. 2	OLF	OCO

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE HOLDING TANKS
PLAN
ELECTRICAL

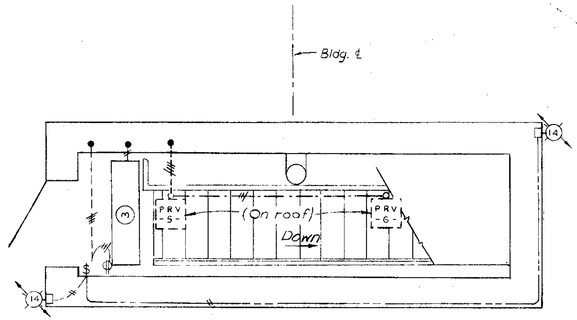
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED HAD, DLF CHECKED OCO
DETAILED WED, MAP APPROVED for Resident Engineer
DATE April 20, 1964

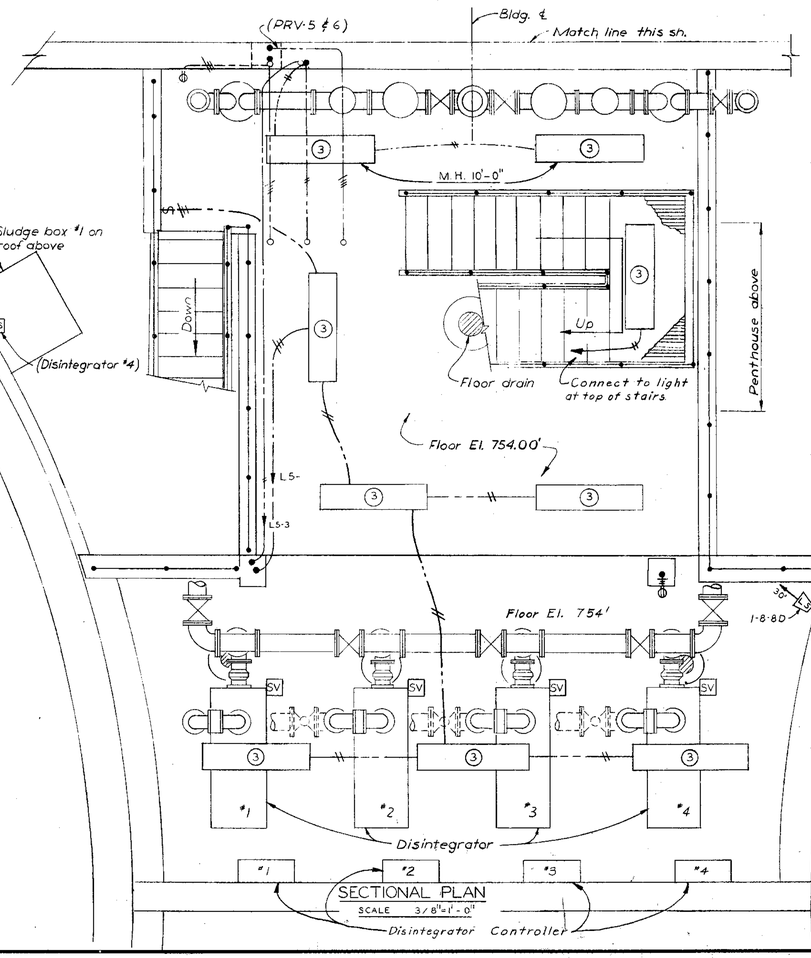
SHEET 179 OF 190

PROJECT 292 1062.32



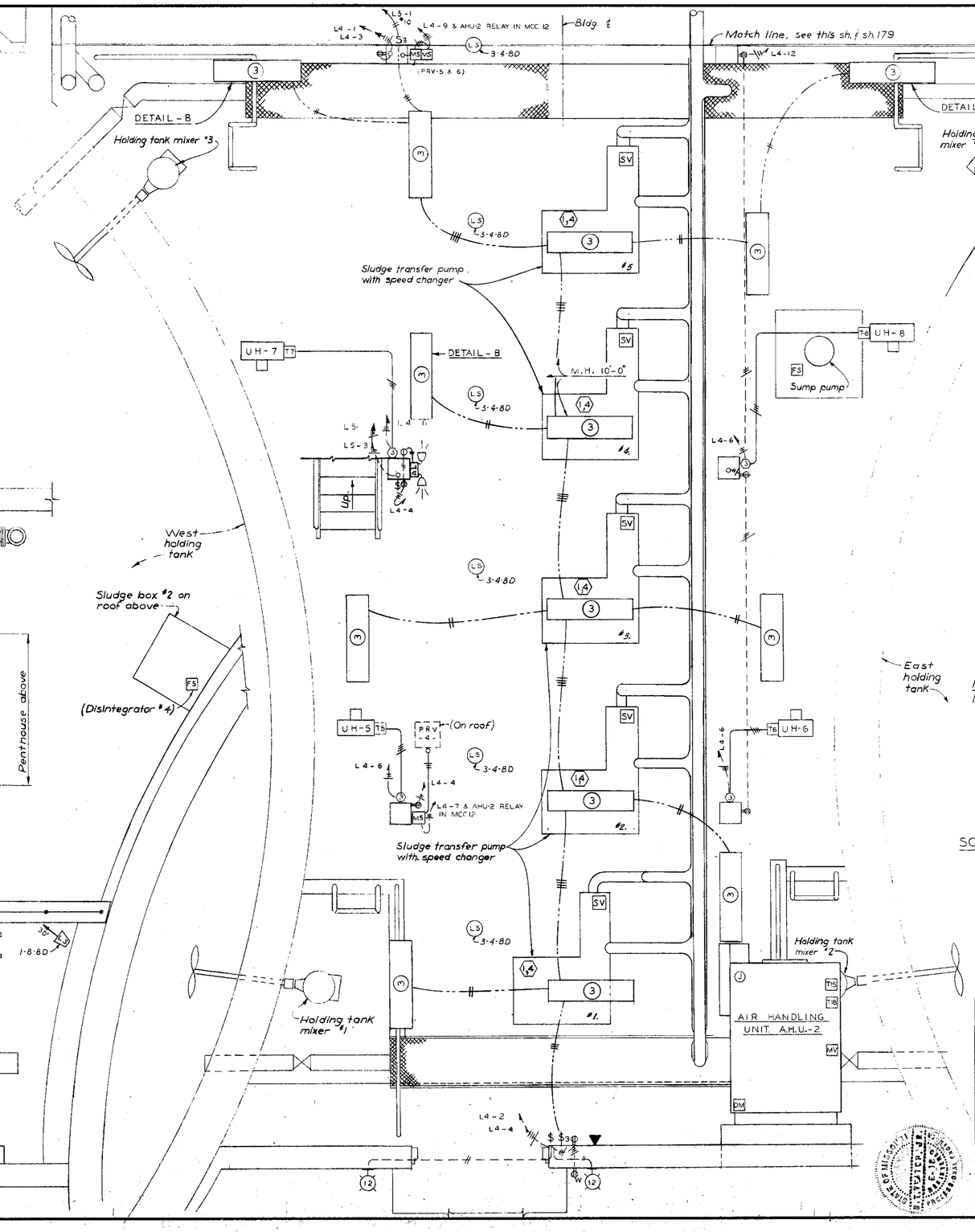
PENTHOUSE SECTIONAL PLAN

SCALE 3/8"= 1'-0"



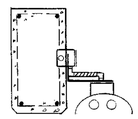
SECTIONAL PLAN

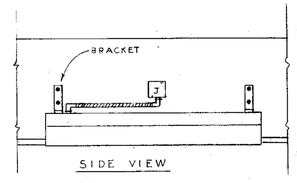
SCALE 3/8"=1'-0"



SOUTH AND CENTER OPERATING FLOOR
SLUDGE HOLDING TANKS

SCALE 3/8" = 1'-0"





DETAIL - B

MOUNTING OF LIGHT FIXTURES ON CONCRETE BEAM

NOTES

1. Electrical Legend, see sheet #145, Lighting Fixture Schedule, see sheet #163.

NO.	DATE	REVISION	BY	CK'D
1	6-14-67	Conformed to construction records	LEM	DAC

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

SLUDGE HOLDING TANKS
PLANS
ELECTRICAL

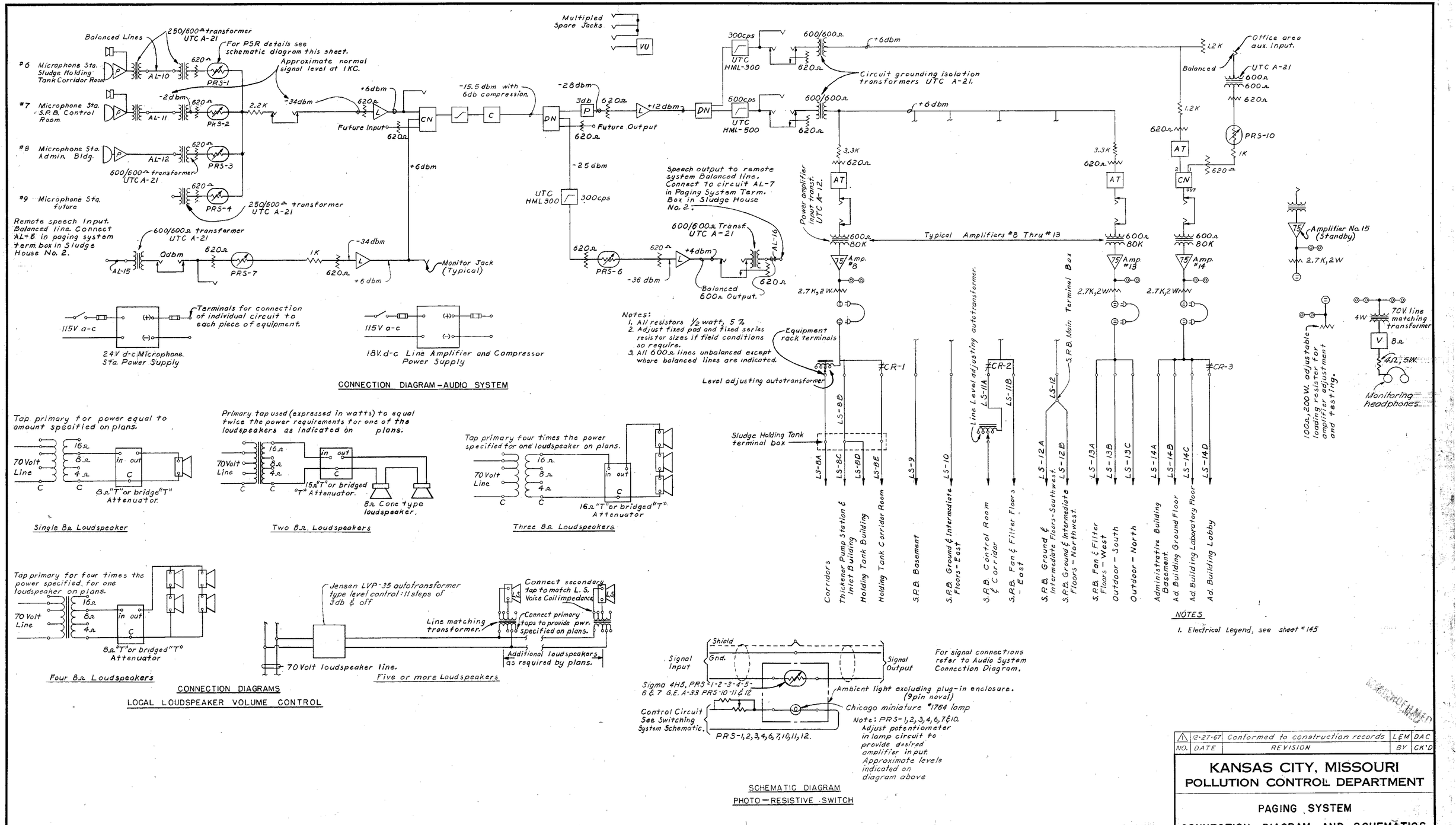
BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED HLD DRAFT CHECKED DCC
DETAILED HLD, RVC APPROVED
DATE April 20, 1967

SHEET 180 OF 190

PROJECT 32-90 1062.32



NO.	DATE	REVISION	BY	CK'D
1	12-27-67	Conformed to construction records	LEM	DAC

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

PAGING SYSTEM

CONNECTION DIAGRAM AND SCHEMATICS

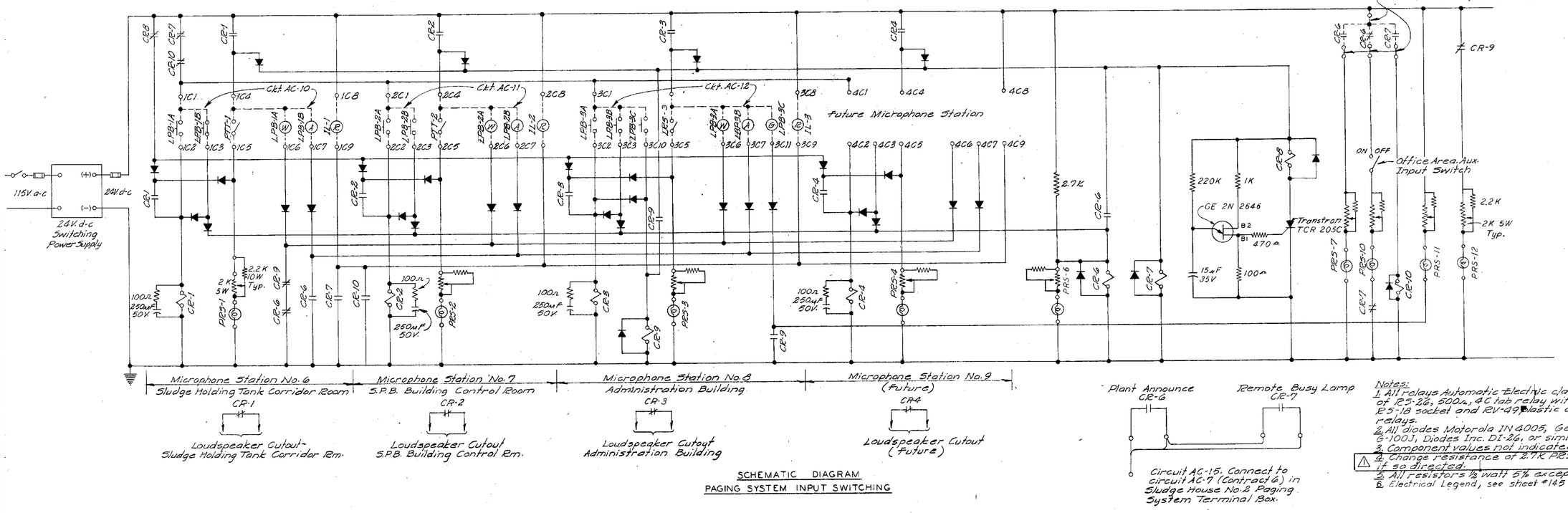
BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED ACO CHECKED
DETAILED RVC APPROVED
DATE April 20, 1966

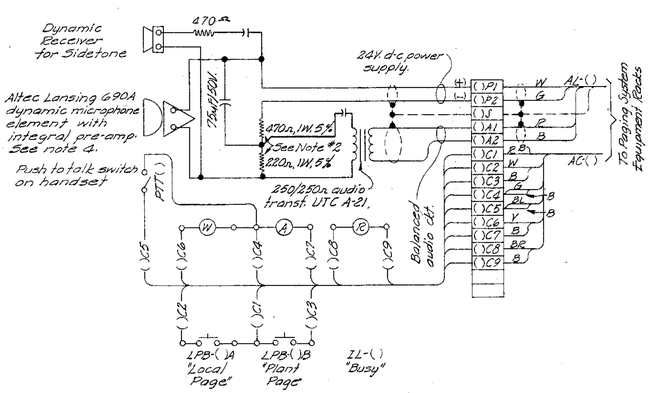
SHEET 181 OF 190

PROJECT 3293 1062.32



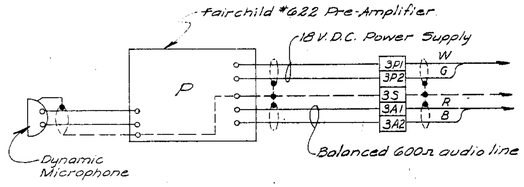
SCHEMATIC DIAGRAM
PAGING SYSTEM INPUT SWITCHING

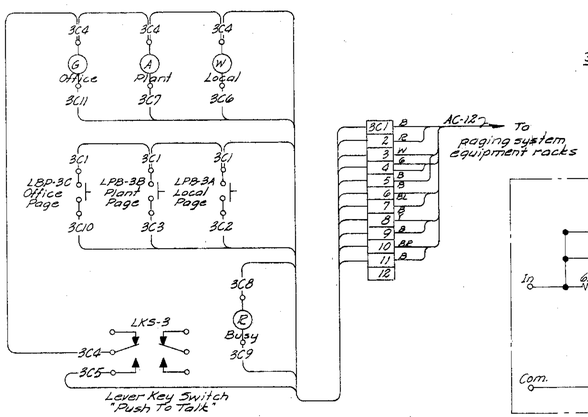
Notes:
1. All relays Automatic Electric class 11N consisting of RS-26, 500Ω, 4C tab relay with banana plug mounting, RS-18 socket and RV-49 plastic cover. Provide 2 spare relays.
2. All diodes Motorola 1N4005, General Instruments G-100J, Diodes Inc. DI-26, or similar approved item.
3. Component values not indicated will be furnished later.
4. Change resistance of 2.7K PRS resistors in field if so directed.
5. All resistors ½ watt 5% except as noted.
6. Electrical Legend, see sheet #145



Notes:
1. Insert numbers in parenthesis.( ) per schematic above (terminal and device no.).
2. Change size of resistors in field if necessary to obtain proper mic. station output or receiver input.
3. Ground mic. stations to ground wire or conduit system.
4. Remove external strapping on microphone to reduce sensitivity 6db if so directed in field.
5. See Microphone Station Detail Sheet).

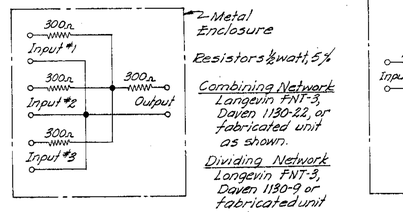
CONNECTION DIAGRAM
MICROPHONE STATION
Station 6 & 7 Only





Note: See detail Sh. No. 183 for switch and lamp mounting enclosure.

CONNECTION DIAGRAM
MICROPHONE STATION NO. 8

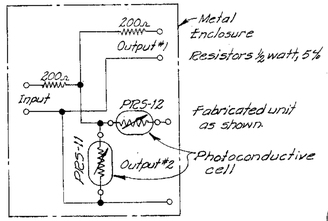


Combining Network
Langevin FNT-3, Daven 1130-22, or fabricated unit as shown.

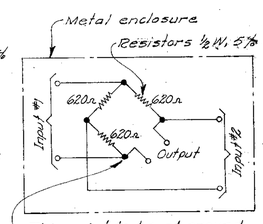
Dividing Network
Langevin FNT-3, Daven 1130-9 or fabricated unit as shown.

SCHEMATIC DIAGRAM
3 TO 1 COMBINING OR DIVIDING NETWORK

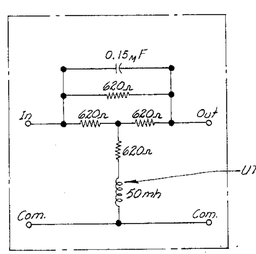
(Unit shown is combining network. for dividing network, inputs become outputs and output becomes input)



SCHEMATIC DIAGRAM
1 TO 2 DIVIDING NETWORK

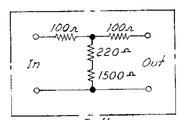


SCHEMATIC DIAGRAM
2 TO 1 COMBINING NETWORK



Resistors - ½ watt, 5%
Capacitors - 100V, 10% mylar

SCHEMATIC DIAGRAM
HIGH FREQUENCY EQUALIZER



3 db

600Ω Pad to be Langevin FN-100T, Daven T-153, Tech Laboratories Type 500 or fabricated unit as shown.

SCHEMATIC DIAGRAM
FIXED PAD

NO.	DATE	REVISION	BY	CK'D
⚠	12-29-67	Conformed to construction records	LEM	DAC

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

PAGING SYSTEM
CONNECTION DIAGRAM AND SCHEMATICS

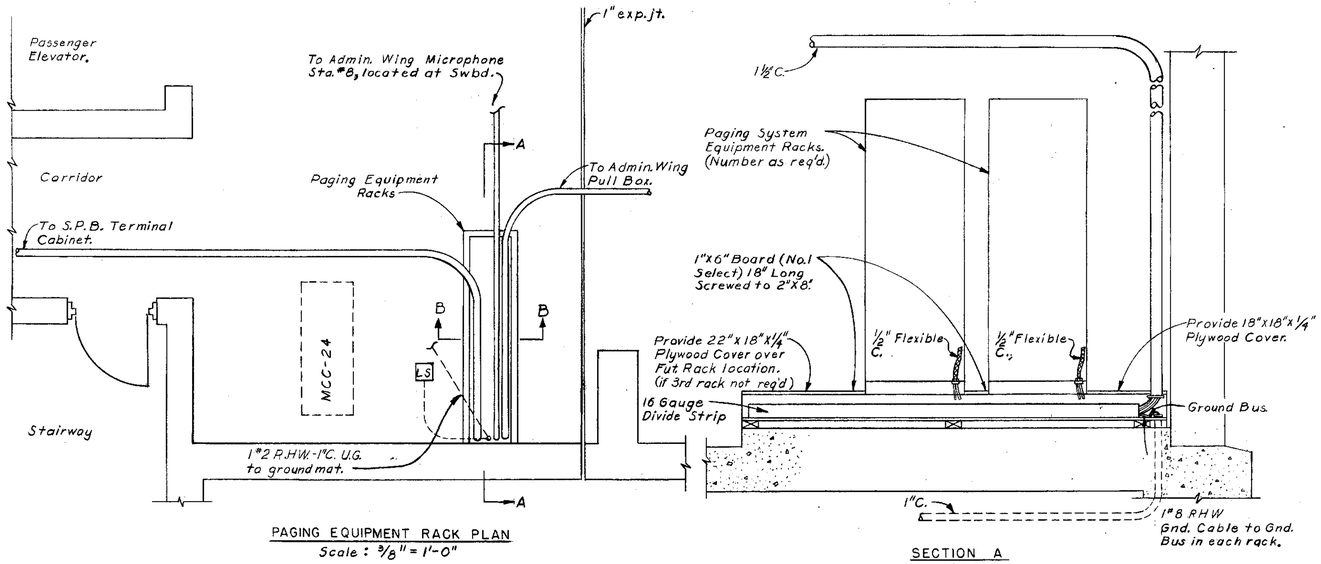
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED OCO CHECKED
DETAILED LGP APPROVED
DATE April 20, 196#

SHEET 182 OF 190

PROJECT 1062.32

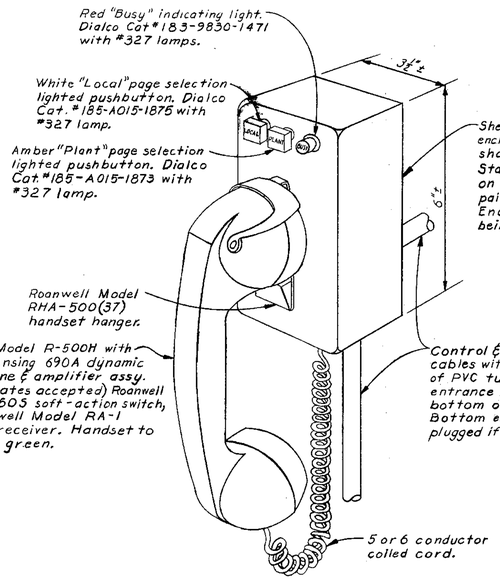


PAGING EQUIPMENT RACK PLAN

Scale : 3/8" = 1'-0"

SECTION A

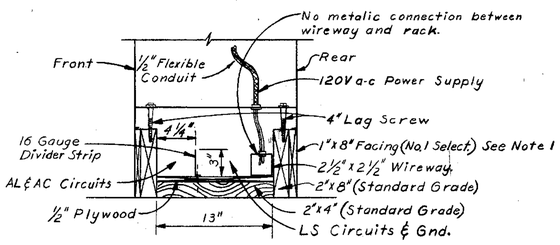
Scale: 3/8" = 1'-0"



Stations 6 & 7 Only

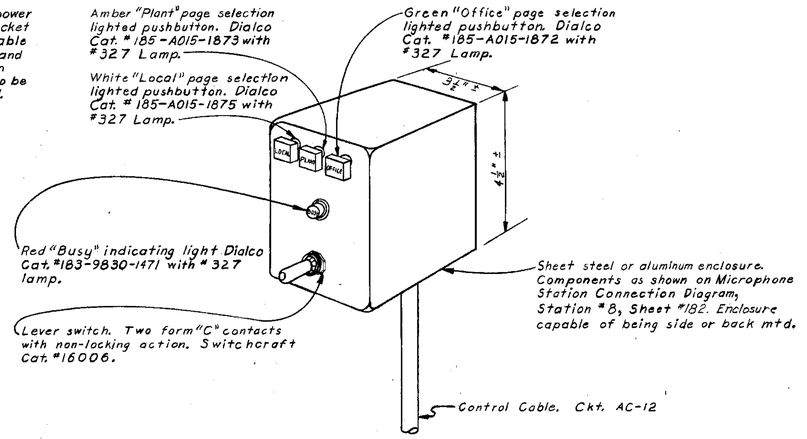
DETAIL-MICROPHONE STATION

Not to scale.



SECTION B

Scale 1" = 1'-0"



SWITCH ASSEMBLY—MICROPHONE STATION NO. 8

Not to scale

Paging System Audio Line, Control And Loudspeaker Circuits

	Circuit No.	From	To	Remarks
Audio Line Circuits	AL-10	Equipment Racks	Sludge Holding Tank Corridor Room Mic. Sta. #6	
	AL-11	Equipment Racks	S.P.B. Control Room, Mic. Sta. #7	
	AL-12	Equipment Racks	Administration Building, Mic. Sta. #8	
	AL-17	Equipment Racks	Sludge House No. 2	Spare Circuits
	AL-50	Equipment Racks	Sludge Holding Tank Building Terminal Box	
	AL-51	Equipment Racks	S.P.B. Main Terminal Box	
	AL-52	Equipment Racks	S.P.B. Main Terminal Box	
	AL-15	Equipment Racks	Sludge House No. 2 (Connects to AL-6 of Contract No. 6)	Input & Output, To & From Remote Paging System
	AL-16	Equipment Racks	Sludge House No. 2 (Connects to AL-7 of Contract No. 6)	
Audio Control Circuits	AC-10	Equipment Racks	Sludge Holding Tank Corridor Room Mic. Sta. #6	
	AC-11	Equipment Racks	S.P.B. Control Room, Mic. Sta. #7	
	AC-12	Equipment Racks	Administration Bldg. Mic. Sta. #8	
	AC-15	Equipment Racks	Sludge House No. 2 (Connects to AC-7 of Contract No. 6)	
	AC-50	Equipment Racks	Sludge Holding Tank Bldg. Terminal Box	Spare Circuits
	AC-51	Equipment Racks	S.P.B. Main Terminal Box	
	AC-52	Equipment Racks	S.P.B. Main Terminal Box	
Loudspeaker Circuits	LS-8A	Equipment Racks	Corridors Via. Holding Tank Bldg. Terminal Box	
	LS-8B	Equipment Racks	Holding Tank Bldg. Terminal Box	
	LS-8C	Holding Tank Bldg. Terminal Box	Thickener Pump Station & Inlet Building	
	LS-8D	Holding Tank Bldg. Terminal Box	Holding Tank Building	
	LS-8E	Equipment Racks	Holding Tank Corridor Room Via Holding Tank Bldg. Term. Box	
	LS-9	Equipment Racks	S.P.B. Basement	
	LS-10	Equipment Racks	S.P.B. Ground & Intermediate Floors - East	
	LS-11A	Equipment Racks	S.P.B. Control Room & Corridor	
	LS-11B	Equipment Racks	S.P.B. Fan & Filter Floors-East	
	LS-12	Equipment Racks	S.P.B. West Terminal Box	
	LS-12A	S.P.B. Main Terminal Box	S.P.B. Ground & Intermediate Floors - Southwest	
	LS-12B	S.P.B. Main Terminal Box	S.P.B. Ground & Intermediate Floors - Northwest	
	LS-13A	Equipment Racks	S.P.B. Fan & Filter Floors - West	
	LS-13B	Equipment Racks	Administration Bldg. Area - Outdoor, South.	
	LS-13C	Equipment Racks	Administration Bldg. Area - Outdoor, North.	
	LS-14A	Equipment Racks	Administration Bldg. Basement	
	LS-14B	Equipment Racks	Administration Bldg. Ground Floor	
	LS-14C	Equipment Racks	Administration Bldg. Lab. Floor	
	LS-14D	Equipment Racks	Administration Bldg. Lobby	
	LS-50	Equipment Racks	S.P.B. Main Terminal Box	Spare Circuits
	LS-51	Equipment Racks	S.P.B. Main Terminal Box	
	LS-52	Equipment Racks	S.P.B. Main Terminal Box	
	LS-53	Equipment Racks	Holding Tank Terminal Box	
	LS-54	Equipment Racks	Holding Tank Terminal Box	

NOTES

1. Facings to be painted to match racks.
2. Ground divider strip and wireway.
3. Electrical Legend, see sheet #145.

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

PAGING SYSTEM

CIRCUIT SCHEDULE AND DETAILS

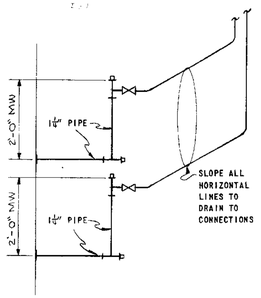
BLACK & VEATCH AND BURNS & MCDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

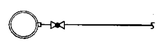
DESIGNED CCO DETAILED RVC CHECKED APPROVED DATE April 20, 1964

SHEET 183 OF 190

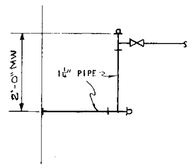
PROJECT 3288 1062.32



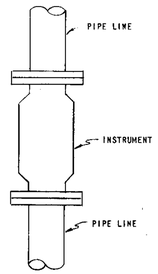
F - 1



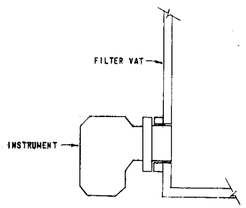
P - 1



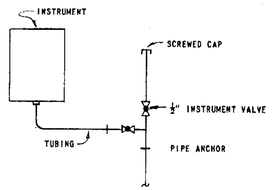
P - 2



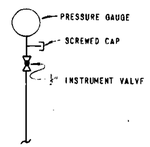
X - 1



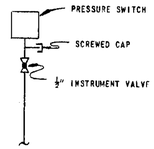
X - 2



X - 3



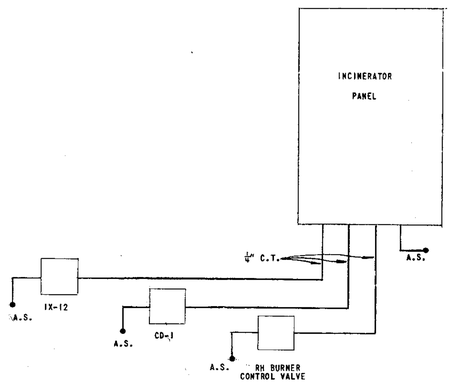
X - 4



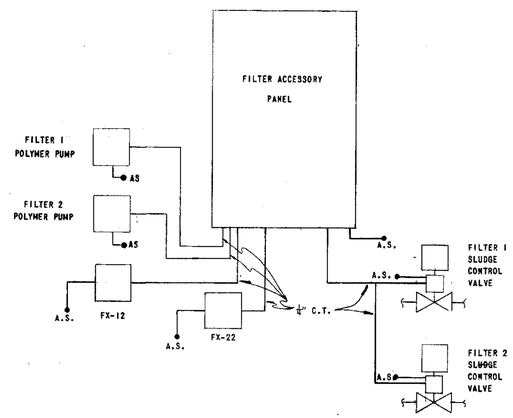
X - 5

PRIMARY INSTRUMENT PIPING SUMMARY

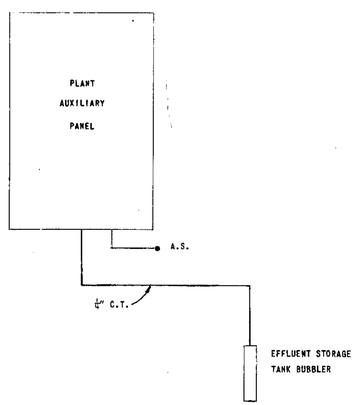
INSTRUMENT NAME	INSTRUMENT NUMBER	INSTRUMENT LOCATION		PRIMARY CONN. TYPE	INSTRUMENT CONN. TYPE	PIPE SIZE INCHES	SUPPLEMENTAL NOTES
		BUILDING COLUMN	ELEVATION				
ID DRAFT TO BREECHING	IP-11A	G-11	783	P-2		1/2	
	IP-21A	G-9	783	P-2		1/2	
	IP-31A	G-6	783	P-2		1/2	
ID FAN DRAFT INLET	IP-11B	F-11	783	P-2		1/2	
	IP-21B	F-10	783	P-2		1/2	
	IP-31B	F-5	783	P-2		1/2	
SCRUBBER INLET DAMPER	IP-11C	G-11	747	F-1		1/2	
	IP-21C	G-9	747	F-1		1/2	
	IP-31C	G-6	747	F-1		1/2	
COOLING AIR PRESS	IP-11D	F-10	736	P-2		1/2	
	IP-21D	F-9	736	P-2		1/2	
	IP-31D	F-6	736	P-2		1/2	
GAS SUPPLY PRESS	IX-12	F-10	783	P-1	X-3	1/2	
	IX-22	F-8	783	P-1	X-3	1/2	
	IX-32	F-6	783	P-1	X-3	1/2	
COMB. AIR PRESS	IP-11F	F-10	783	P-2	PANEL	1/2	
	IP-21F	F-8	783	P-2	PANEL	1/2	
	IP-31F	F-6	783	P-2	PANEL	1/2	
FLUE GAS ANALYZER	IX-11	G-10	778	SPECIAL	SEE MFR. DWG.	1/2	
	IX-21	G-8	778	SPECIAL	SEE MFR. DWG.	1/2	
	IX-31	G-7	778	SPECIAL	SEE MFR. DWG.	1/2	
MAGNETIC FLOWMETER BODIES	FX-11	A-10	754	–	X-1	–	
	FX-21	A-10	754		X-1		
	FX-31	A-8	754		X-1		
	FX-41	A-8	754		X-1		
	FX-51	A-6	754		X-1		
	FX-61	A-6	754		X-1		
	FX-71	A-4	754		X-1		
	FX-81	A-4	754		X-1		
	SX-12	SLUDGE HOUSE 1			X-1		
	SX-13	SLUDGE HOUSE 1			X-1		
	SX-22	SLUDGE HOUSE 2			X-1		
	SX-23	SLUDGE HOUSE 2			X-1		
	SX-32	THICKENER PUMP STATION			X-1		
	SX-33	THICKENER PUMP STATION			X-1		
SLUDGE DENSITY TRANSMITTERS	SX-11A	SLUDGE HOUSE 1			X-1		
	SX-11B	SLUDGE HOUSE 1			X-1		
	SX-21A	SLUDGE HOUSE 2			X-1		
	SX-21B	SLUDGE HOUSE 2			X-1		
	SX-31	THICKENER PUMP STATION			X-1		
FILTER VAT LEVEL TRANSMITTERS	FX-12	D-11	765		X-2		MOUNT ON VAT
	FX-22	B-11	765		X-2		MOUNT ON VAT
	FX-32	D-8	765		X-2		MOUNT ON VAT
	FX-42	B-8	765		X-2		MOUNT ON VAT
	FX-52	D-7	765		X-2		MOUNT ON VAT
	FX-62	B-7	765		X-2		MOUNT ON VAT
	FX-72	D-3	765		X-2		MOUNT ON VAT
	FX-82	B-3	765		X-2		MOUNT ON VAT
ALL PRESSURE GAUGES				P-1	X-4	1/2	
ALL PRESSURE SWITCHES				P-1	X-5	1/2	



INCINERATOR PANEL TUBING DRAWING



FILTER ACCESSORY PANEL TUBING DRAWING



PLANT AUXILIARY PANEL TURBINE DRAWING

NOTES

1. ALL MAGNETIC FLOWMETER BODIES AND ALL SLUDGE DENSITY TRANSMITTERS ARE SHOWN ON DETAILED PIPING DRAWINGS.
2. ABBREVIATIONS:
   A.S. - AIR SUPPLY
   C.T. - COPPER TUBE
3. THREE IDENTICAL INCINERATOR PANELS WILL BE INSTALLED, EACH CONFORMING TO THE INCINERATOR PANEL TUBING DRAWING SHOWN.
   FOUR IDENTICAL FILTER ACCESSORY PANELS WILL BE INSTALLED, EACH CONFORMING TO THE FILTER ACCESSORY PANEL TUBING DRAWING SHOWN.
4. FLUE GAS SAMPLE SYSTEMS TO BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
5. VAT LEVEL TRANSMITTERS WILL BE MOUNTED DIRECTLY ON THE FILTER VATS USING FLANGED CONNECTIONS PROVIDED BY THE FILTER MANUFACTURER.

BLACK & VEATCH, U.S.A.
E-180
REGISTERED PROFESSIONAL ENGINEER
STATE OF MISSOURI

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

INSTRUMENT CONNECTIONS AND TUBING

BLACK & VEATCH AND BURNS & MCDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

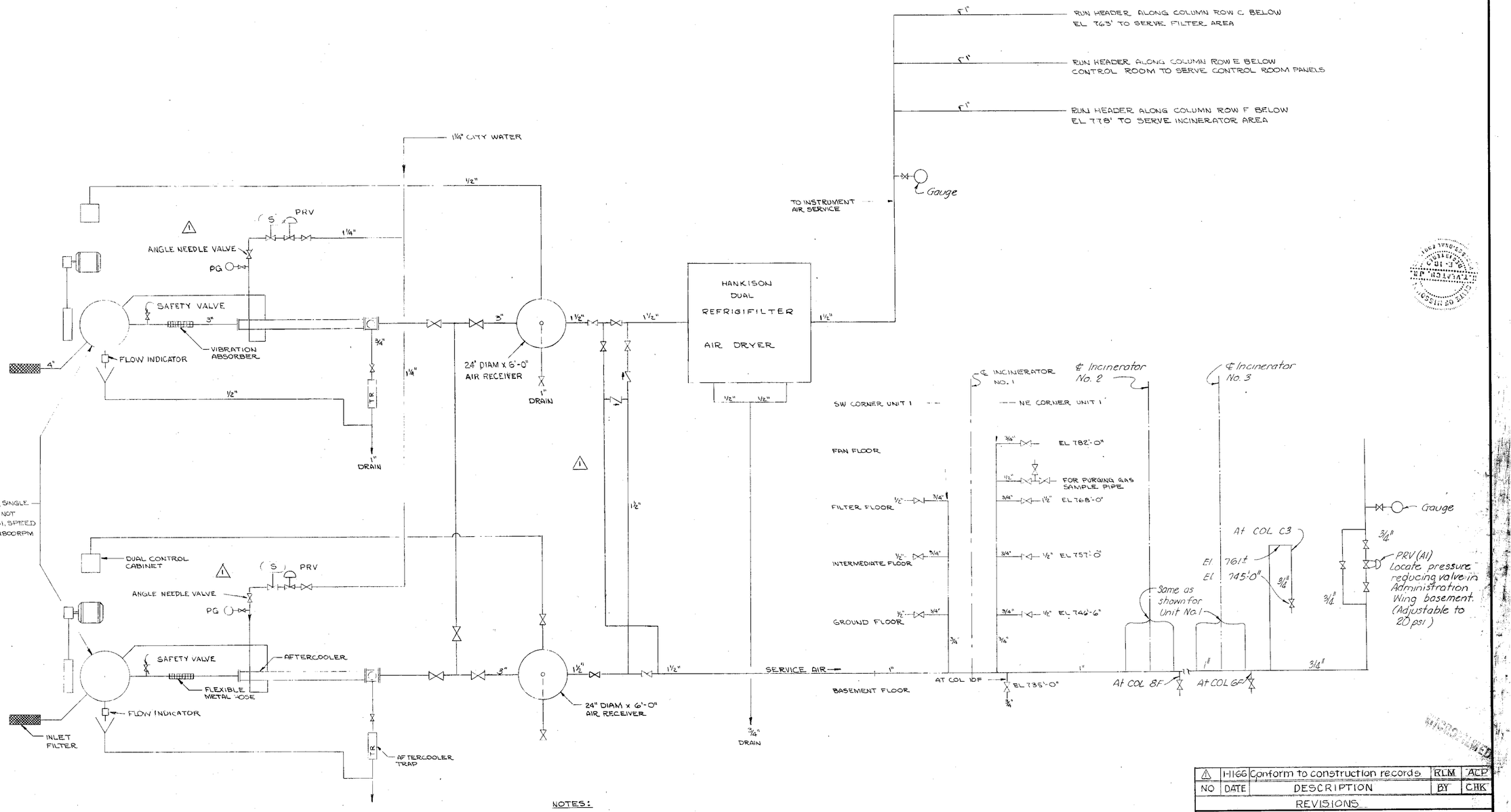
P.C.D. CONTRACT 7

DESIGNED RAR
DETAILED HB
CHECKED RAR
APPROVED
DATE 2-4-69

SHEET 184 OF 190

PROJECT 1062.32

K&E 71008



NOTES:

¾" CONNECTION FOR POWER TOOLS
½" CONNECTION FOR PURGING FURNACE DOORS EXCEPT AS NOTED.
VERTICAL HEADERS ADJACENT TO INCINERATOR SHELL.

NO	DATE	DESCRIPTION	BY	CHK
1	11-66	Conform to construction records	RLM	ACP

REVISIONS

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

COMPRESSED AIR PIPING SCHEMATIC

BLACK & VEATCH AND BURNS & MCDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED RAR DETAILED DR CHECKED RAR APPROVED DATE 2-9-64

SHEET 185 OF 187

PROJECT 3392 1062.32

GRADED YARD PIPING TABLE

POINT DESIGNATION	PIPE DATA	LENGTH & GRADE ℄ to ℄ STRUCTURES	N. COORDINATE ℄	E. COORDINATE ℄	INV. EL. (IN) ****	INV. EL. (OUT) ****	EL. STRUCTURE COVER	LINE
Exist. M.H.			2078.32	2542.42		723.64		Line S-1
	21" RCP, III, C	15.50' @ 1.33%						
M.H. # 1C			2081.18	2515.70	724.00	724.30	* 738±	
	21" RCP, III, C	203.39' @ 1.33%						
M.H. # 1B			2047.81	2327.97	726.84	726.97	* 736±	
	21" RCP, III, C	190.00' @ 1.33%						
M.H. # 1A			2014.00	2141.00	729.50	729.70	* 736±	
	21" RCP, III, C	187.09' @ 1.2%						
M.H. # 1			2070.00	1962.40	731.96	732.26	* 739.5±	
	21" RCP, III, C	148.84' @ 0.44%						
M.H. # 2			2216.65	1936.81	732.91	733.01	740.19	
	21" RCP, III, C	102.89' @ 0.44%						
M.H. # 3			2318.00	1919.12	733.46	733.76	740.70	
	21" RCP, III, C	90.12' @ 0.40%						
D.I. # 1 (Type B)			2318.00	1829.00	734.12	734.33	740.00	
	21" CM.P. 12ga., C	172.99' @ 0.5%						
D.I. # 2 (Type A)			2431.00	1698.00	735.20	735.40	739.75	
	18" C.M.P. 12ga, C	212.26' @ 0.4%						
D.I. # 3 (Type A)			2352.00	1501.00	736.25		739.75	
M.H. # 3			2318.00	1919.12		734.33	740.70	Line S-2
	12" C.M.P. 12ga., C	82.71' @ 0.8%						
M.H. # 4			2399.45	1904.90	734.99		741.35	
M.H. # 1			2070.00	1962.40		732.78	*	Line S-3
	15" C.M.P. 12ga., C	(See Note "A" ← 43.00'± @ 1.4%						
C.B. # 3			See Note "B"	See Note "B"	733.48	733.68	**	
	15" C.M.P. 12ga., C	(See Note "A" ← 48.00'± @ 1.54%						
D.I. # 5 (Type B)			2120.00	1886.28	734.42	734.72	**	
	12" C.M.P. 12ga., C	(See Note "A" ← 97.42'± @ 1.31%						
M.H. # 5			2208.00	1844.50	736.00		740.20	
M.H. # 7 ***			2080.00	1828.17		722.00	739.90	Line S-4
	12" C.I.P., C	24.00' @ 1.25%						
M.H. # 7A			2100.77	1815.50	722.30	722.80	740.12	
	8" V.C.P. Std. Str., B	107.23' @ 3.82%						
M.H. # 6			2208.00	1815.50	726.90		740.20	
Plugged end			2080.00	1985.00		718.53		Line S-5
	36" RCP, III, C	156.83' @ 0.30%						
M.H. # 7			2080.00	1828.17	719.00	720.00	739.90	
	24" RCP, III, C	169.67' @ 5.44%						
Spec. M.H. "A"			2080.00	1658.50	729.81		740.44	
Break Point			2065.00	1633.00		736.41		Line S-6
	24" C.I.P., C	21.21' @ 0.32%						
Spec. M.H. "A"			2080.00	1648.00	736.48	736.58	740.40	
	24" C.I.P., C	33.9'± @ 0.32%						
M.H. # 8			2104.00	1672.00	736.69		741.40	
Break Point			2100.00	1578.00		734.42	740.55	Line S-7
	15" C.M.P. 12ga., C	27.00' @ 0.4%						
M.H. # 9			2127.00	1578.00	734.53	734.83	740.00	
	15" C.M.P. 12ga., C	32.53' @ 0.4%						
D.I. # 4 (Type A)			2150.00	1601.00	734.96		739.50	
M.H. # 9			2127.00	1578.00		735.08	740.00	Line S-8
	12" C.M.P. 12ga., C	76.06' @ 0.8%						
M.H. # 10			2196.00	1546.00	735.69	735.99	741.40	
Break Point			2065.00	1542.33		736.69	740.90	Line S-9
	8" C.I.P., C	40.00' @ 1.05%						
M.H. # 11			2105.00	1542.33	737.11	737.41	740.70	
	8" C.I.P., C	109.99' @ 1.33%						
22½° Bend			2150.00	1442.00	738.90	738.90	741.40	
Break Point			2100.00	1355.29		735.15	741.00	Line S-10
	12" C.M.P. 12ga., C	18.76' @ 0.6%						
M.H. # 12			2118.00	1350.00	735.26	735.46	740.85	
	12" C.M.P. 12ga., C	79.00' @ 0.6%						
M.H. # 13			2197.00	1350.00	735.93	736.13	741.40	
	12" C.M.P. 12ga., C	25.46' @ 0.6%						
M.H. # 14			2215.00	1368.00	736.28	736.61	741.50	
M.H. # 1			2070.00	1962.40		733.00	*	Catch Basin Connections
	12" C.M.P. 12ga., C	See Note "A"						
C.B. # 1			2080.00	See Note "D"	733.50		**	
M.H. # 2			2216.65	1936.81		733.75	740.19	
	12" C.M.P. 12ga., C	See Note "A"						
C.B. # 4			See Note "E"	See Note "E"	734.25		**	
M.H. # 2			2216.65	1936.81		733.75	740.19	
	12" C.M.P. 12ga., C	See Note "A"						
C.B. # 5			See Note "E"	See Note "E"	734.25		**	
M.H. # 4			2399.45	1904.90		735.25	741.35	
	12" C.M.P. 12ga., C	See Note "A"						
C.B. # 6			See Note "E"	See Note "E"	735.75		**	
M.H. # 4			2399.45	1904.90		735.25	741.35	
	12" C.M.P. 12ga., C	See Note "A"						
C.B. # 7			See Note "E"	See Note "E"	735.75		**	

GRADED YARD PIPING TABLE

POINT DESIGNATION	PIPE DATA	LENGTH & GRADE ℄ to ℄ STRUCTURES	N. COORDINATE ℄	E. COORDINATE ℄	INV. EL. (IN) ****	INV. EL. (OUT) ****	EL. STRUCTURE COVER	LINE
M.H. # 1			2070.00	1962.40		733.00	*	Catch basin connection Line S-11
	12" C.M.P. 12ga. C	(18.5'± @ 0.67% ← See Note "A"						
C.B. # 2			See Note "B"	See Note "B"	733.13		**	
D.I. # 5 (Type B)			2120.00	1886.28	734.72	735.22	**	
	12" C.M.P. 12ga. C	(210.7'± @ 0.66% ← See Note "A"						
C.B. # 9			See Note "D"	1675.50	736.61	736.91	**	
	12" C.M.P. 12ga. C	(24.5'± @ 0.67% ← See Note "A"						
C.B. # 8			See Note "D"	1675.50	737.07		**	

Note "A":
Length & grade of lines depend upon the field location of Catch Basins

Note "B":
Locate catch basin in middle of curb radius and according to catch basin details, sheet 184

Note "C":
Locate catch basin on P.C. of curb radius and according to catch basin details, sheet 184

Note "D":
Locate according to catch basin details, sheet 184

Note "E":
Locate catch basins approximately perpendicular to manholes

* To be determined in the field by the engineer. See sheet 4 & 5 for layout.

** Catch basin heights determined by curbs, see detail sheet 185

*** Extend 12" C.I.P. through M.H. wall and install 12" C.I. Flange Frame Flap Valve.

**** "IN" elevations refer to downstream side of structure. "OUT" elevations refer to upstream side of structure.

General Notes:
Pipe data includes, size, type, and type of bedding.
See sheet 185 for details of M.H. # 7A
Line S-1 shall enter the existing Manhole 1'-0" north of Manhole ℄.

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

GRADED YARD PIPING TABLE

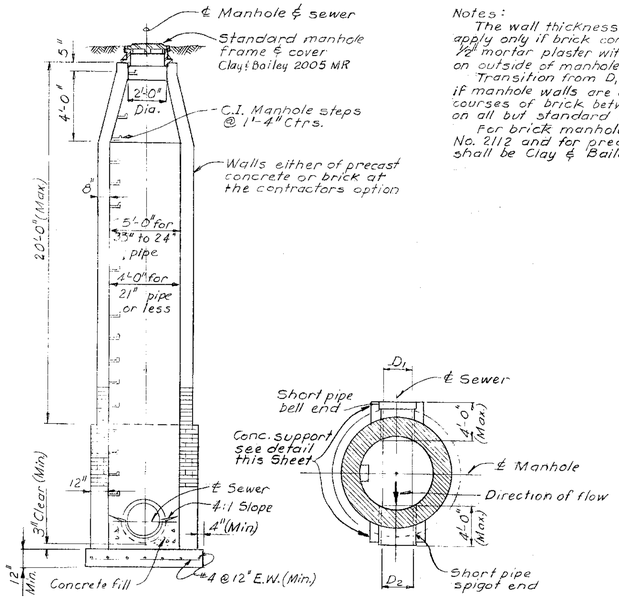
BLACK & VEATCH AND BURNS & McDONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED DRG DETAILED LWD CGC CHECKED LEW APPROVED [signature] DATE 2-4-64

SHEET 186 OF 190

1062.32



SECTION SECTIONAL PLAN

STANDARD DEEP MANHOLE

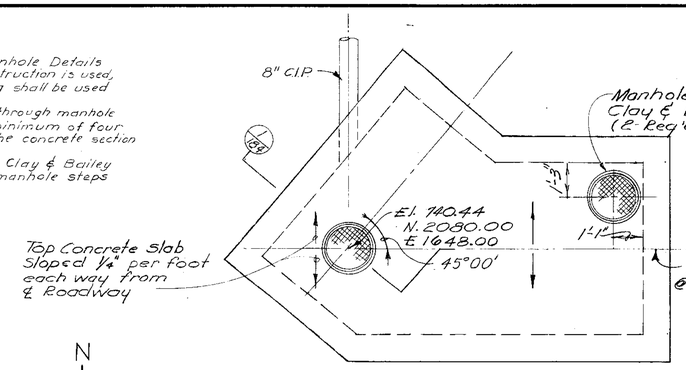
No Scale

Notes:

The wall thickness as shown on the Standard Manhole Details apply only if brick construction is used. If brick construction is used, ½" mortar plaster with bituminous waterproof coating shall be used on outside of manhole wall.

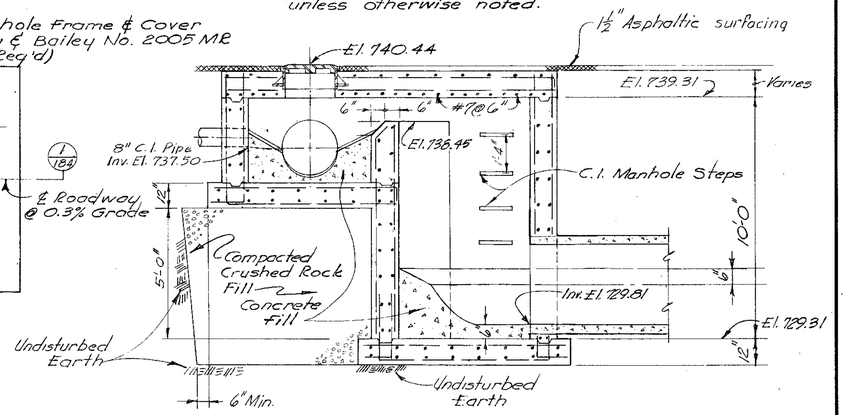
Transition from D_1 to D_2 formed with invert paving through manhole if manhole walls are of precast concrete, provide a minimum of four courses of brick between manhole ring and top of the concrete section on all but standard shallow manholes.

For brick manholes, C.I. manhole steps shall be Clay & Bailey No. 2112 and for precast concrete manholes, C.I. manhole steps shall be Clay & Bailey No. 2104.

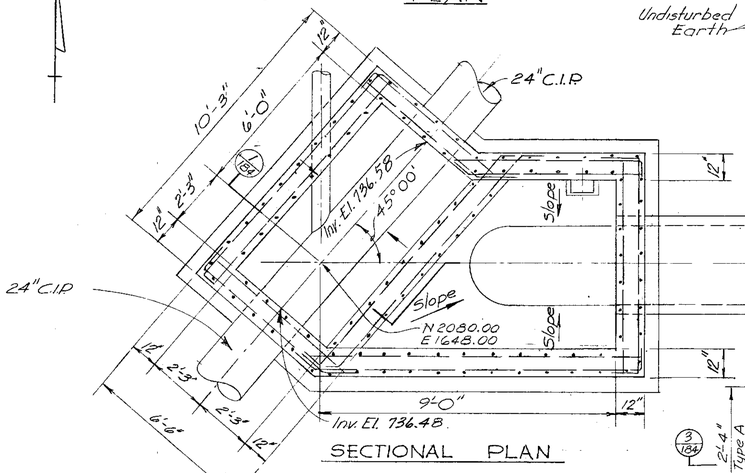


PLAN

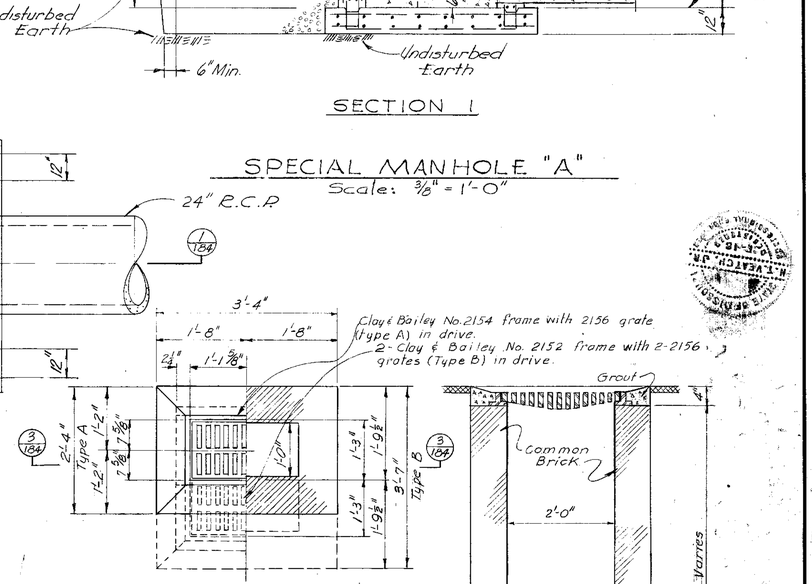
Note:
All reinforcing shall be #5 @ 12" unless otherwise noted.



SECTION 1



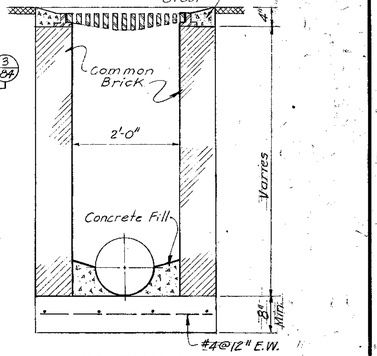
SECTIONAL PLAN



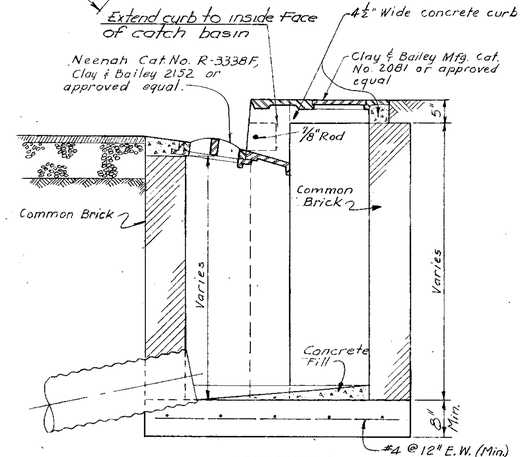
PLAN

SPECIAL MANHOLE "A"

Scale: 3/16" = 1'-0"



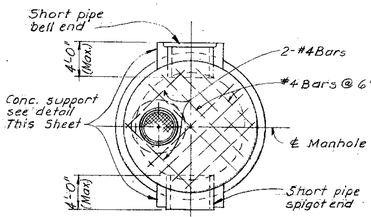
SECTION 3



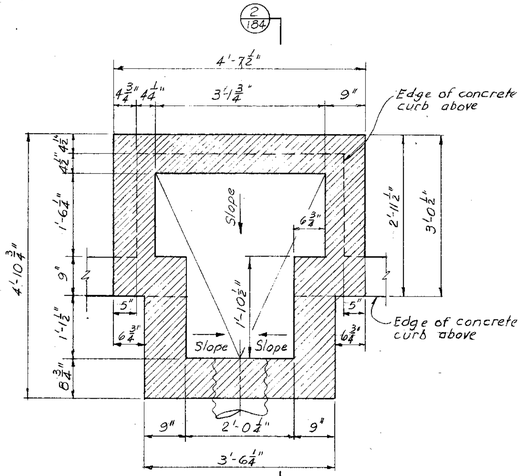
SECTION 2

STANDARD DROP INLET

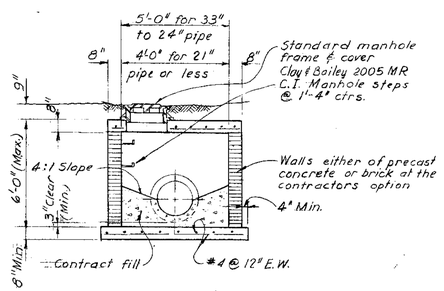
No Scale



PLAN



SECTIONAL PLAN



SECTION

STANDARD SHALLOW MANHOLE

No Scale

STANDARD CATCH BASIN

Scale: 3/4" = 1'-0"

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

MANHOLE AND CATCH BASIN DETAILS

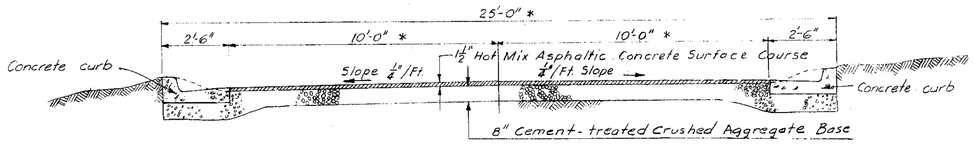
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

DESIGNED DRG CHECKED LEW
DETAILED A.D. LWD APPROVED
DATE 2-4-64

SHEET 187 OF 190

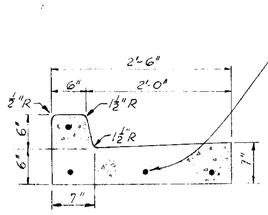
062.32



TYPICAL ROAD SECTION - ASPHALTIC CONCRETE SURFACE

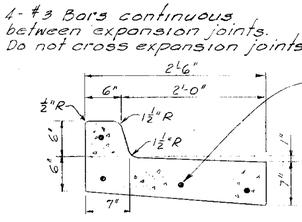
Not to Scale

Note:
Section similar for 12'-0" wide road except dimensions marked *



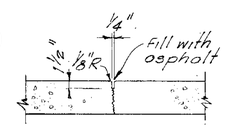
TYPICAL SECTION OF CURB & GUTTER

Not to Scale

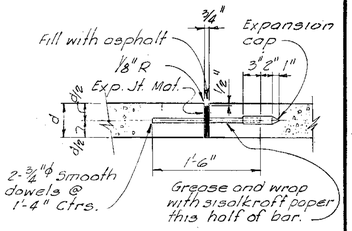


CURB & GUTTER WARPED SECTION

Not to Scale



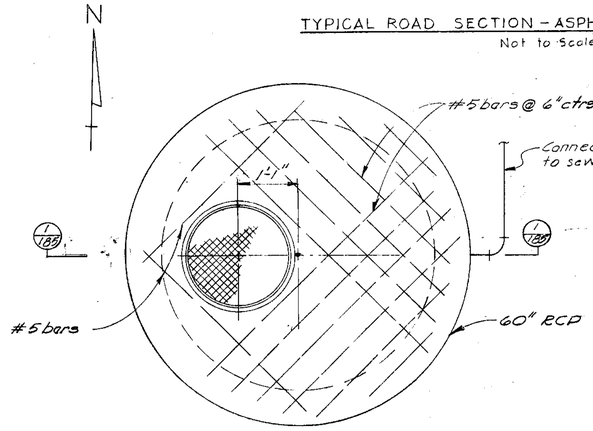
SAWED CONTRACTION JOINT



EXPANSION JOINT

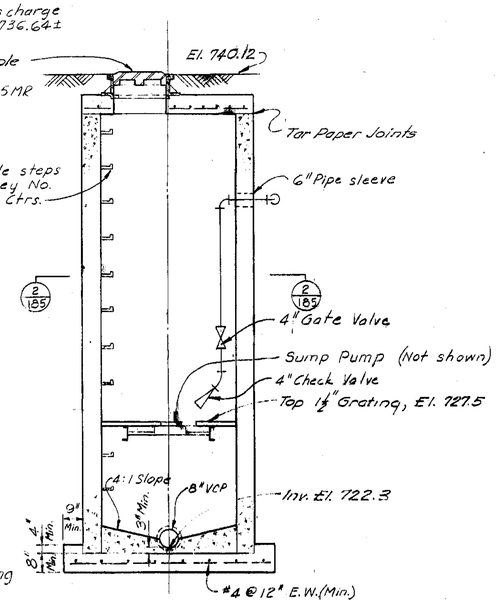
CURB & GUTTER JOINT DETAILS

Scale 1"=1'-0"



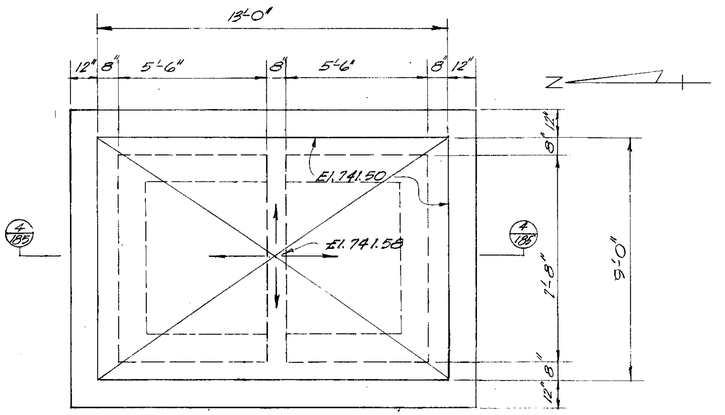
TOP PLAN

Scale: 3/4" = 1'-0"



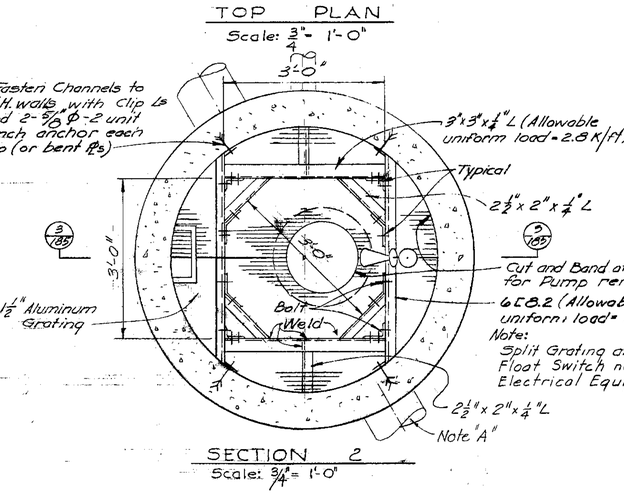
SECTION 1

Scale: 3/16" = 1'-0"



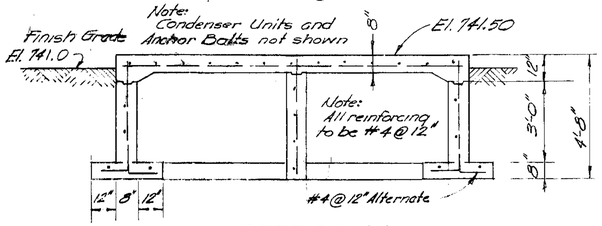
PLAN

Scale: 3/8" = 1'-0"



SECTION 2

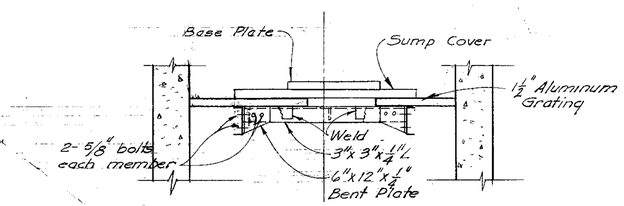
Scale: 3/4" = 1'-0"



SECTION 4

Scale: 3/8" = 1'-0"

FOUNDATION DETAILS FOR ADMINISTRATION WING CONDENSER UNIT



SECTION 3

Scale: 3/4" = 1'-0"

Note A:
Plug manhole effluent line with watertight 2" wood plug until Northeast Industrial District Pump Station is in operation.
When pump station is in operation the sump pump in this manhole will be removed by the City.

DETAILS OF MANHOLE 7A

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

DRIVE AND YARD PIPING DETAILS

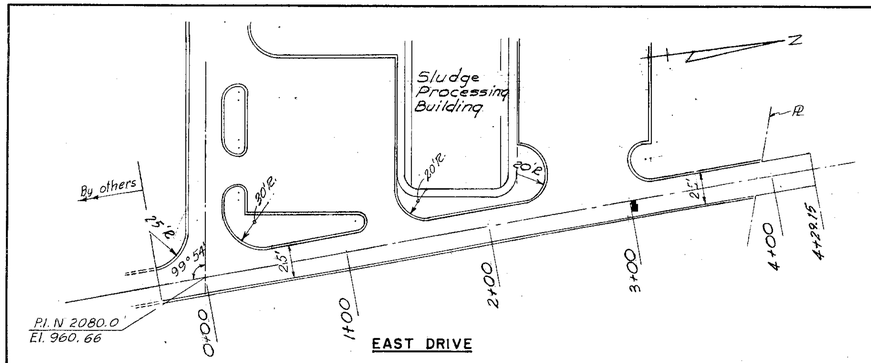
BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

P.C.D. CONTRACT 7

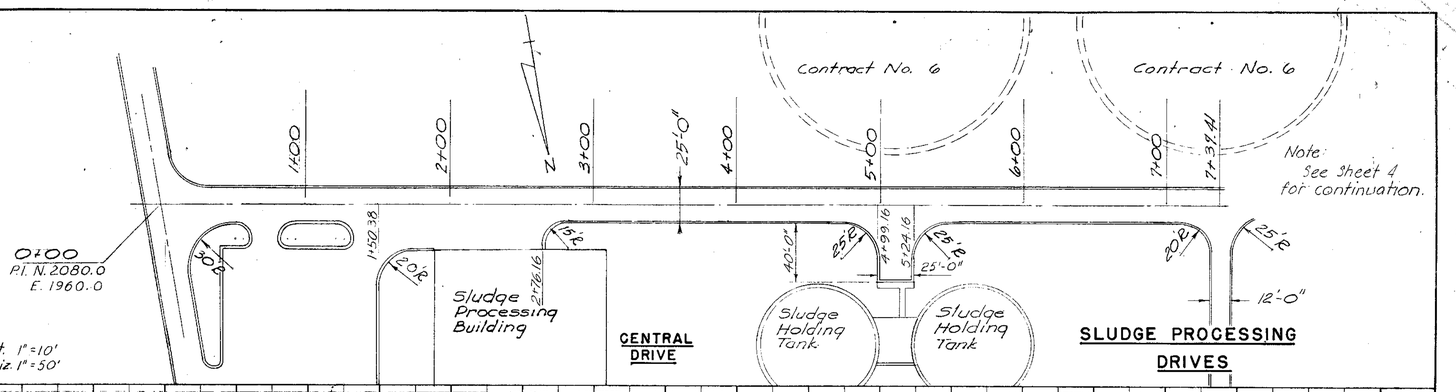
DESIGNED ACP DETAILED A.D. LWD CHECKED LEW JEP APPROVED DATE 2-8-64

SHEET 188 OF 190

PROJECT 1062.32



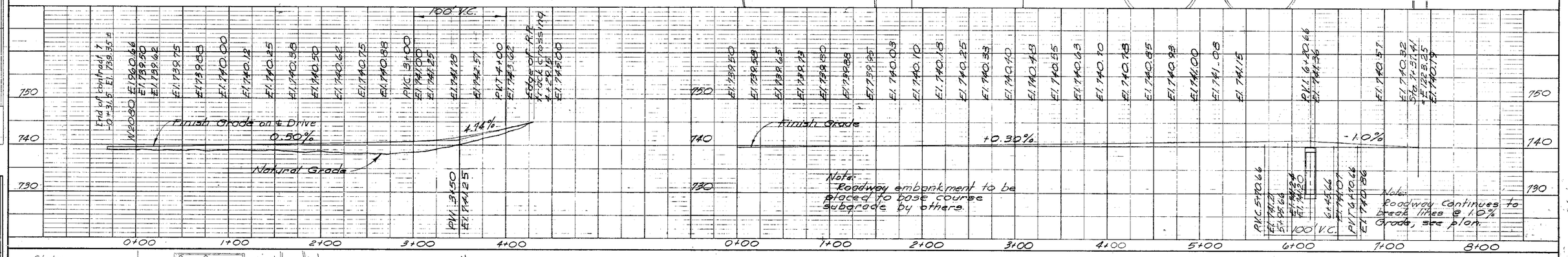
EAST DRIVE

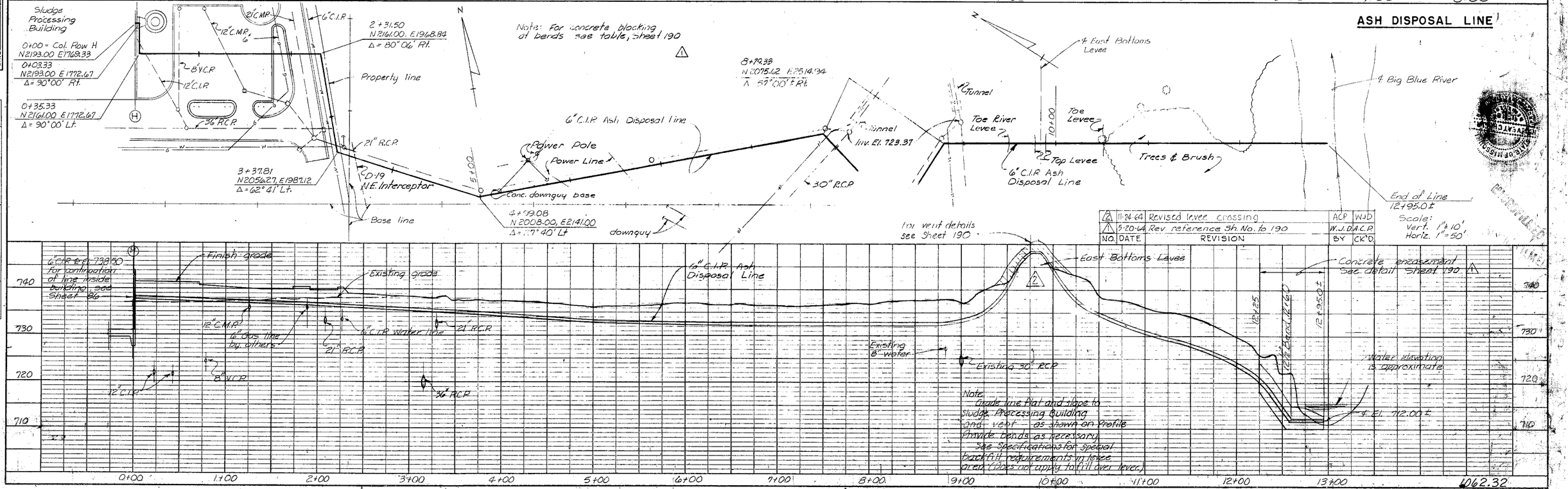


CENTRAL DRIVE

SLUDGE PROCESSING DRIVES

Scales: Vert. 1"=10'
Horiz. 1"=50'





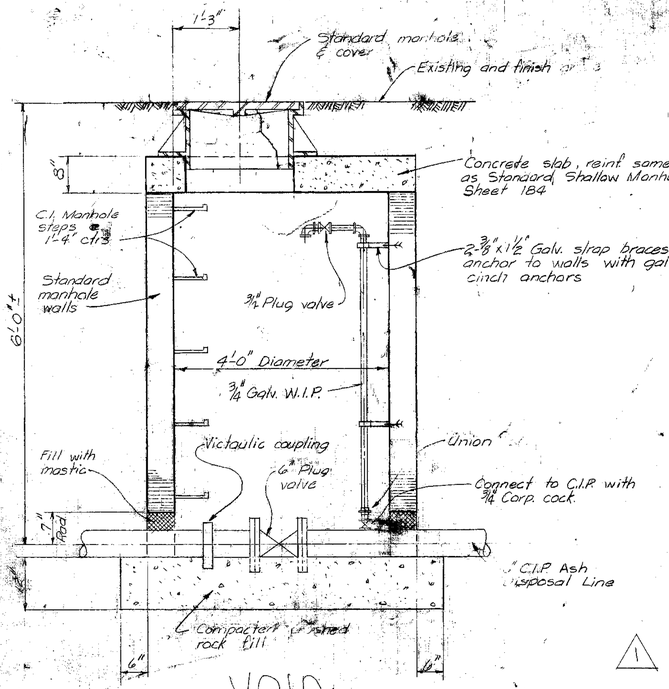
ASH DISPOSAL LINE

DESIGNED JWD DRAWN DAG CHECKED LEW APPROVED DATE 2-3-64

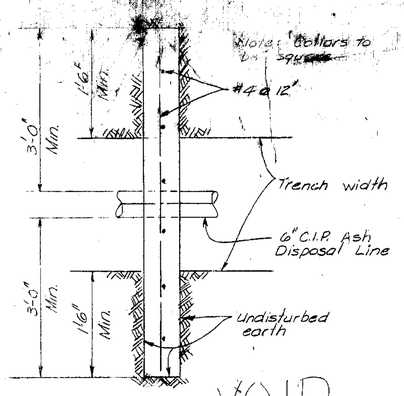
PLAN — SURVEYED, PLOTTED, ALIGNMENT CHECKED, AS BUILT CHECKED, NOTE BOOK, NO.

PROFILE — SURVEYED, PLOTTED, ALIGNMENT CHECKED, B. M.'S NOTED, STRUCTURE NOTATIONS CHKD

BLACK & VEATCH AND BURNS & McDONNELL, CONSULTING ENGINEERS, KANSAS CITY, MO. 1964 POLLUTION CONTROL DEPARTMENT, KANSAS CITY, MO. CONTRACT NO. 7 SLUDGE PROCESSING FACILITIES PROJECT 3292 SHEET 189 OF 190



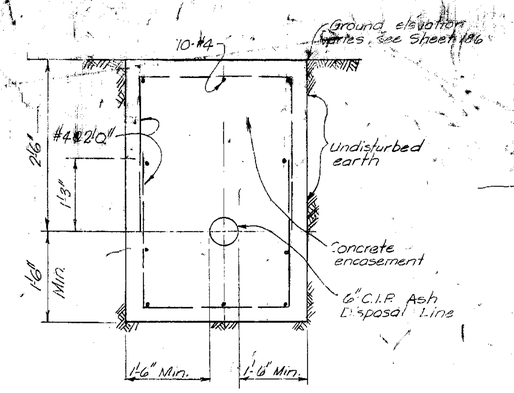
ASH DISPOSAL LINE VALVE MANHOLE DETAIL
Scale:
See Sheet 186



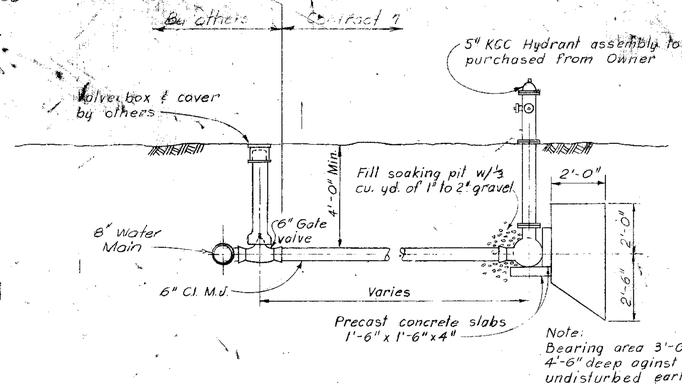
PLAN - CONCRETE COLLAR DETAIL
Scale: 3/4" = 1'-0"
See Sheet 186

CONCRETE BLOCKING TABLE FOR ASH DISPOSAL LINE	
STATION	AREA - SQ. FT.
0+03.33	3
0+35.33	3
2+31.50	3
3+37.81	2
4+99.08	2
8+79.08	2

Note: Concrete shall be placed symmetrically about the horizontal centerline of the pipeline back to a vertical trench face that is in undisturbed earth

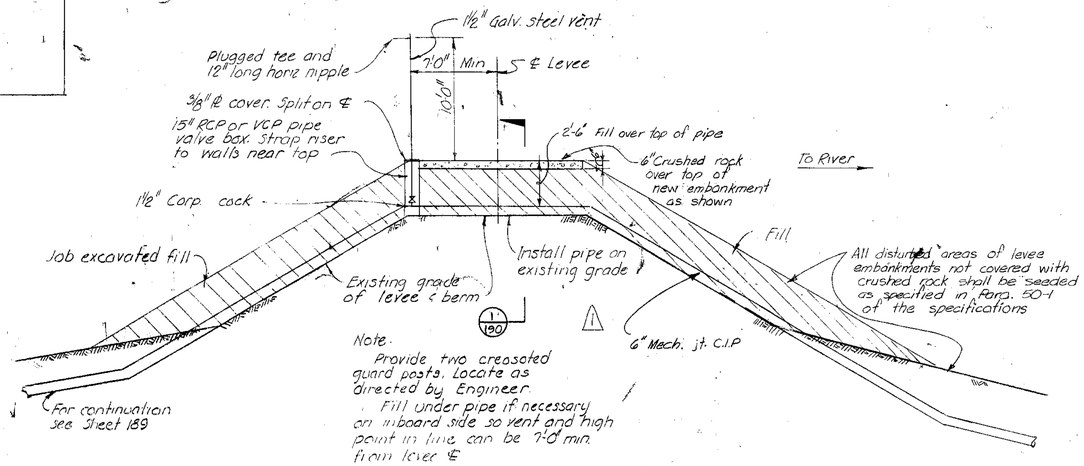


ASH DISPOSAL LINE CONC. ENCASEMENT DETAIL
No Scale
See Sheet 186

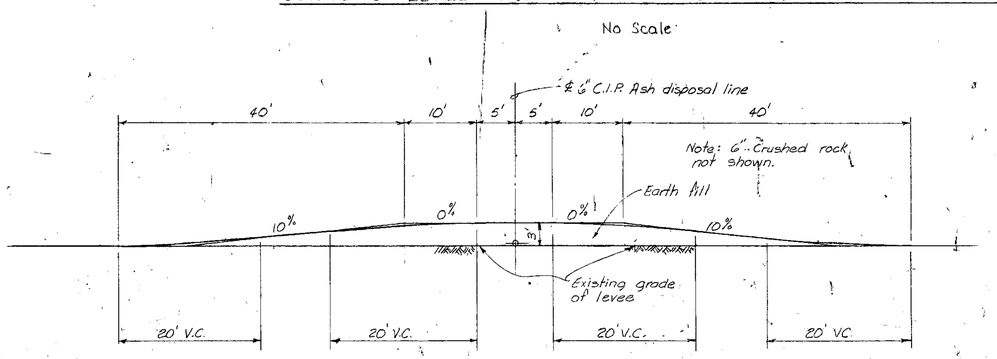


Note:
Bearing area 3'-0" Wide x 4'-6" deep against undisturbed earth.

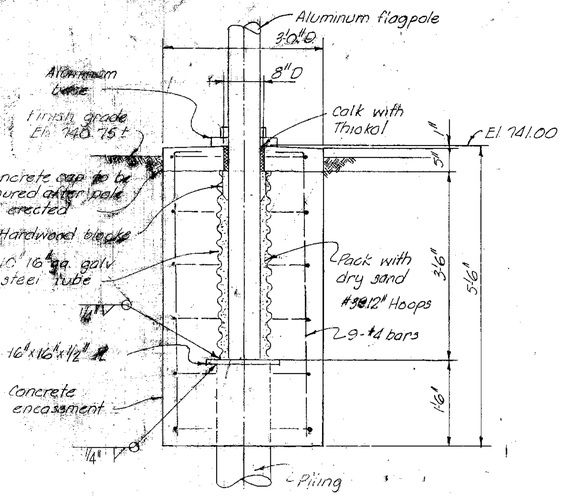
TYPICAL HYDRANT INSTALLATION
No Scale



DETAILS OF LEVEE CROSSING WITH 6" C.I.P ASH DISPOSAL LINE



SECTION 1
Scale: 1" = 10'
See This Sh.



FLAGPOLE DETAIL
Scale: 3/4" = 1'-0"
See Sh. 4 of 5

NO.	DATE	REVISION	BY	CHK
2	12-10-64	Revised Levee Embankment	DRG	LWW
1	11-24-64	Revised Ash Disposal Line & Levee	ACP	LWW

KANSAS CITY, MISSOURI
POLLUTION CONTROL DEPARTMENT

MISCELLANEOUS YARD DETAILS

BLACK & VEATCH AND BURNS & MC DONNELL
CONSULTING ENGINEERS, KANSAS CITY, MO.

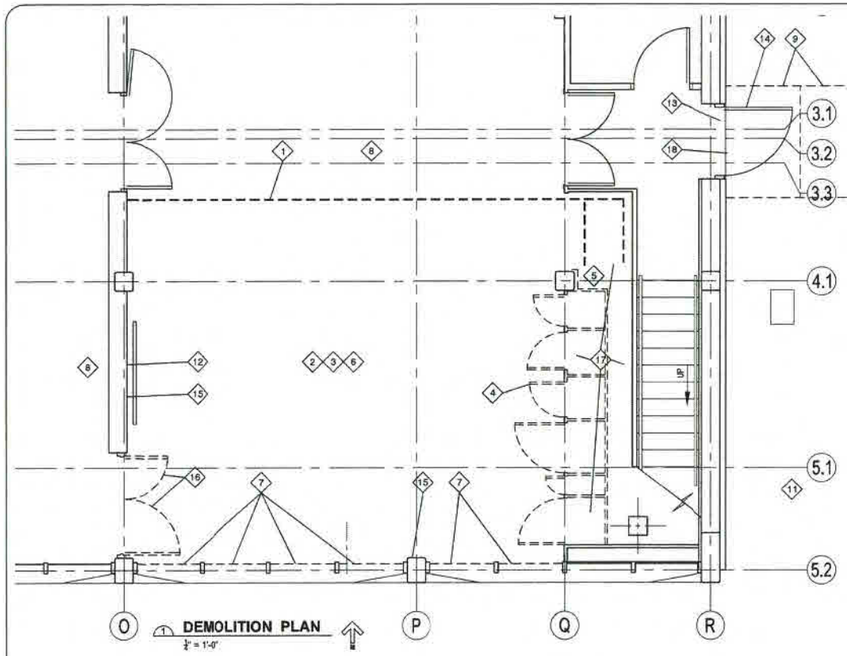
P.C.D. CONTRACT 7

DESIGNED ACP DRG
DETAILED GGC DRG
CHECKED LEW
APPROVED
DATE 2-2-65

SHEET 190 OF 190

PROJECT 1062.32

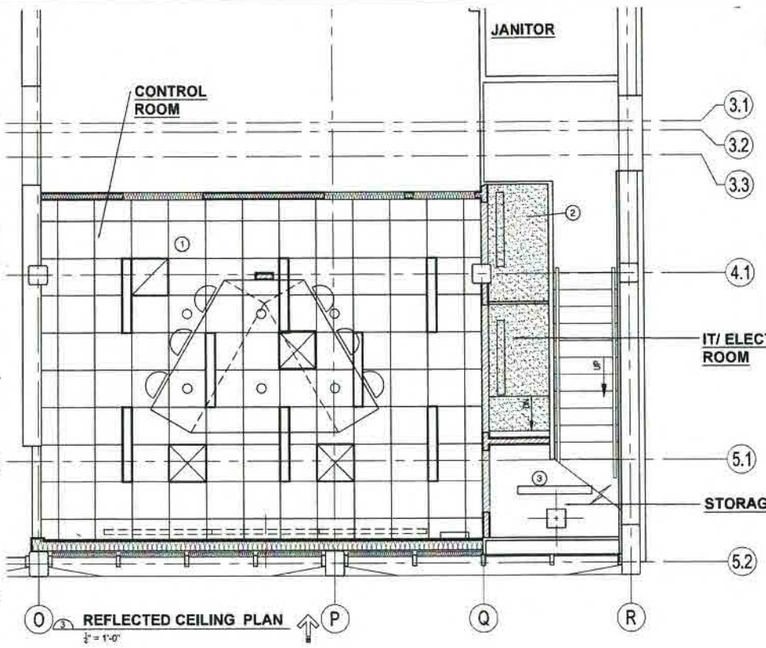
MICROFILMED



1 DEMOLITION PLAN
1/4" = 1'-0"

DEMOLTION NOTES:

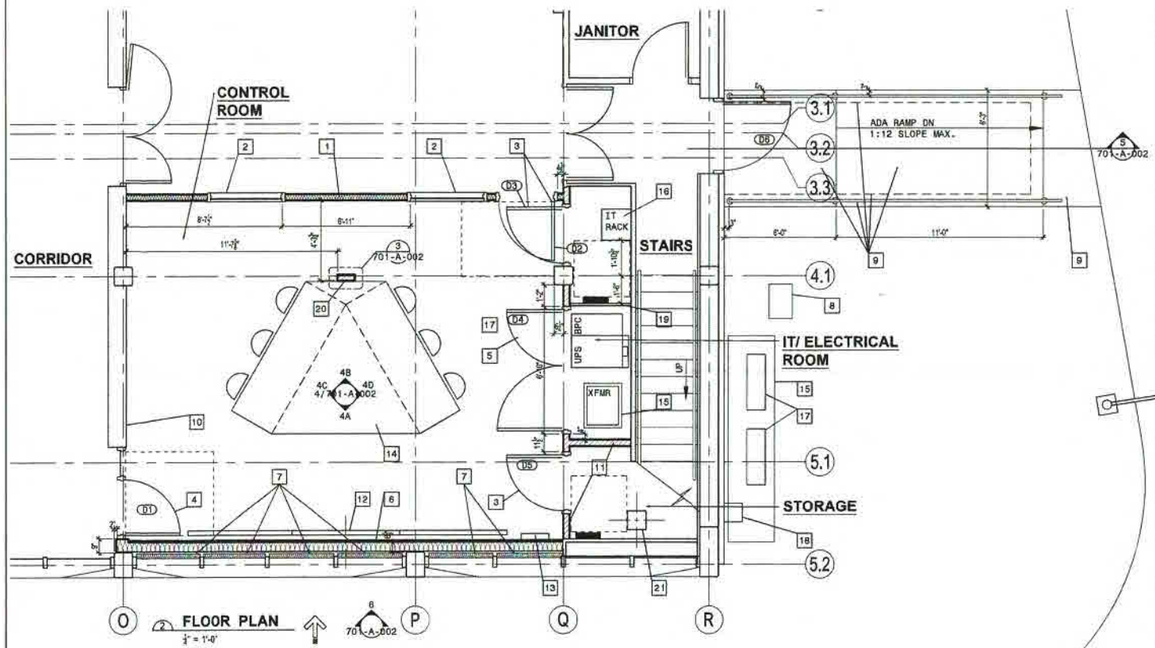
1. REMOVE THE OPERABLE WALL SYSTEM COMPLETE INCLUDING THE TRACK, ALL STRUCTURAL ITEMS, FRAMING, BRACKETS AND ALL-THREAD HANGERS. DO NOT DISTURB THE EXISTING CEILING THAT'S TO REMAIN.
2. REMOVE THE SUSPENDED CEILING SYSTEM, SOFFITS, LIGHTS, AND SPEAKERS COMPLETE. SALVAGE ALL HEAT AND SMOKE DETECTORS FOR RE-INSTALLATION INTO THE NEW SUSPENDED CEILING SYSTEM. REFER TO ELECTRICAL DWGS.
3. REMOVE DUCTWORK PER THE HVAC DRAWINGS.
4. REMOVE ALL WALL MATERIALS INCLUDING CLOSET DOORS, MILLWORK AND SHELVING COMPLETE.
5. REMOVE EXISTING PLUMBING THAT'S BEEN DISCONNECTED FLUSH TO THE FLOOR. REFER TO PLUMBING PLANS.
6. EXISTING FLOORING TO REMAIN. PROTECT DURING CONSTRUCTION.
7. REMOVE GLASS PANELS AND PREPARE OPENINGS FOR NEW SPANDREL PANELS & GLAZING.
8. EXISTING SUSPENDED CEILING TO REMAIN. DO NOT DISTURB.
9. REMOVE ENTIRE CONCRETE STOOP AND SIDEWALK COMPLETE.
10. EXISTING SIDEWALK TO REMAIN.
11. REMOVE EXISTING DECORATIVE GRAVEL AS NEEDED AROUND SITEWORK. SALVAGE AND CLEAN PRIOR TO REINSTALL.
12. REMOVE PLASTIC ANCHORS IN WALL AND PREPARE FOR CAULKING.
13. REMOVE EXISTING DOOR THRESHOLD AND PREPARE FOR NEW THRESHOLD.
14. REMOVE EXISTING DOOR SHOE AND PREPARE FOR NEW DOOR SHOE.
15. REMOVE EXISTING WALL BASE FROM WALLS AND COLUMNS.
16. REMOVE DOOR, FRAME AND GLAZING COMPELTE. PREPARE OPENING FOR NEW FRAME, DOOR AND GLAZING.
17. REMOVE ALL FLOORING AND GRIND FLOOR SMOOTH AS NECESSARY IN PREPARATION FOR THE NEW VCT FLOORING.
18. REMOVE PORTION OF FOUNDATION WALL AS NECESSARY FOR THE JOINT FILLER STRIP, SEALANT AND RAMP.



3 REFLECTED CEILING PLAN
1/4" = 1'-0"

REFLECTED CEILING NOTES

1. NEW SUSPENDED CEILING SYSTEM WITH CEILING PANELS AND ALUMINUM GRID. INSTALL NEW CEILING AT THE SAME HEIGHT AS THE EXISTING CEILING. REFER TO THE HVAC DRAWINGS FOR DIFFUSERS AND THE ELECTRICAL DRAWINGS FOR LIGHT FIXTURES, HEAT DETECTORS AND SMOKE DETECTORS.
2. NEW SUSPENDED GYPSUM BOARD CEILING. CEILING TO BE INSTALLED AT 10'-0" A.F.F. IN NORTH END OF THE IT/ ELECTRICAL ROOM THEN HELD TIGHT TO THE UNDERSIDE OF THE SLOPE OF THE STAIR CASE. REFER TO THE HVAC DRAWINGS FOR DIFFUSERS AND THE ELECTRICAL PLANS FOR LIGHT FIXTURES, HEAT DETECTORS AND SMOKE DETECTORS.
3. LIGHT FIXTURE TO BE MOUNTED TO THE UNDERSIDE OF THE CONCRETE LANDING.



2 FLOOR PLAN
1/4" = 1'-0"

FLOOR PLAN NOTES:

1. NEW WALL WITH 5/8" GYPSUM BOARD ON EACH SIDE OF 3.5" METAL STUDS AT 16" O.C. TO 8" ABOVE THE CEILING AND BRACED TO THE STRUCTURE ABOVE WITH KICKERS AT 32" O.C. STUD CAVITIES FILLED WITH ACOUSTIC INSULATION (STC RATING OF 48) AND INTERNAL SOLID WOOD BLOCKING FOR MONITORS. LOCATE NEW WALL SO THE FINISHED NORTH FACE OF THE WALL IS AGAINST THE EXISTING SUSPENDED CEILING THAT'S TO REMAIN. PROVIDE SEALANT ALONG BRICK/ GYPSUM BOARD INTERSECTION, BOTH SIDES.
2. NEW GLASS WINDOW IN A HOLLOW METAL FRAME. WINDOW HEAD HEIGHT TO MATCH DOOR HEAD HEIGHT. PROVIDE CAULKING ON BOTH SIDES.
3. NEW WOOD DOOR IN HOLLOW METAL FRAME. PROVIDE CAULKING ON BOTH SIDES.
4. NEW WOOD DOOR, SIDELITE AND TRANSOM IN HOLLOW METAL FRAME. PROVIDE CAULKING ON BOTH SIDES.
5. NEW PAIR OF WOOD DOORS IN HOLLOW METAL FRAME.
6. NEW WALL WITH 5/8" GYPSUM BOARD ON ROOM SIDE OVER A COMPLETE LAYER OF ¾" PLYWOOD ON 6" METAL STUDS AT 16" O.C. TO 6" ABOVE THE CEILING AND BRACED TO THE STRUCTURE ABOVE WITH KICKERS AT 32" O.C. FILL STUD CAVITIES WITH R-19 THERMAL INSULATION.
7. PROVIDE SPANDREL PANELS & GLAZING COMPLETE, MATCHING THE EXTERIOR COLOR OF THE EXISTING SPANDREL GLAZING.
8. EXISTING IRRIGATION CONTROL BOX TO REMAIN.
9. NEW CONCRETE LANDING, RAMP, RAILS,CONCRETE FOUNDATION AND SIDEWALK ALL COMPLYING WITH ADA REQUIRMENTS.
10. INSTALL CAULKING IN EXISTING PLASTIC ANCHOR HOLES. PROVIDE MOCKUP TO ASSURE CAULKING COLOR MATCHES MORTAR COLOR.
11. NEW WALL WITH ¾" GYPSUM BOARD ON EACH SIDE OF 3.5" METAL STUDS AT 16" O.C. TO 6" ABOVE THE CEILING AND BRACED TO THE STRUCTURE WITH KICKERS AT 32" O.C.
12. MONITORS. REFER TO ELEC. PLANS.
13. DIGITAL WALL CLOCK. REFER TO ELECTRICAL PLANS.
14. CUSTOM FURNITURE (OWNER FURNISHED, OWNER INSTALLED). CONTRACTOR TO PROVIDE, COORDINATE, RUN AND CONNECT ALL POWER AND IT CABLES FROM THE IT RACK AND ELECTRICAL PANELS TO THE FURNITURE.
15. HOUSEKEEPING PAD. REFER TO STRUCTURAL DRAWINGS.
16. IT CABINET (OWNER FURNISHED, OWNER INSTALLED). REFER TO ELECTRICAL DRAWINGS FOR CABLING AND CONNECTIONS.
17. REFER TO HVAC DRAWINGS FOR HVAC EQUIPMENT OUTSIDE AND ABOVE THE CEILING.
18. REFER TO ELECTRICAL DRAWINGS FOR GENERATOR TAPBOX.
19. PROVIDE UNI-STRUT FRAMING AS NEEDED TO SUPPORT ELECTRICAL PANEL AND CONDUITS.
20. PROVIDE WALL BASE ALL AROUND CHASE.
21. EXISTING STAIR COLUMN TO REMAIN.

GENERAL NOTES

1. DIMENSIONS FOR WALLS ARE TO THE FACE OF THE STUDS.

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DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP

BLACK & VEATCH
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Professional Engineering Corporation License No. 001646

REGISTERED ARCHITECT SEAL

THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION BY DOUGLAS C. SWIFT ON MAY 1, 2020, AND SEALED BY DOUGLAS C. SWIFT, A LICENSED PROFESSIONAL ARCHITECT IN THE STATE OF MISSOURI, NO. 2013004246

NAME: DOUGLAS C. SWIFT
NO.: A-2013004246

FOR WSD USE:

KANSAS CITY, MISSOURI, WATER SERVICES DEPARTMENT

WASTEWATER SCADA SYSTEM IMPROVEMENTS

CITY OF KANSAS CITY,
JACKSON COUNTY, MISSOURI

701-A-001

BLUE RIVER PRIMARY WWTP OPERATION CENTER DEMOLITION PLAN, FLOOR PLAN AND REFLECTED CEILING PLAN

DRAWN BY	CHECKED BY	MAP NO.	RANGE	TWP	SEC
DS	MD				

CONTRACTOR | DATE COMPLETED

CONTRACT NO.	CONTRACT DATE	DATE	WORK ORDER NO.	DRAWING NO.
1444		05/01/2020		D-1352.02

PROJECT NO. 81000819

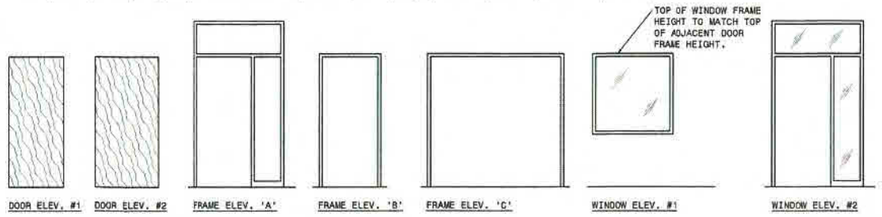
D189046

DOOR AND FRAME SCHEDULE

OPENING NUMBER	FIRE RATING	DOOR WIDTH	DOOR HEIGHT	DOOR THICKNESS	DOOR MATERIAL	DOOR ELEV.	FRAME MATERIAL	FRAME FACE	FRAME DEPTH	FRAME ELEV.	ENTRANCE DOOR HARDWARE SET	SINGLE STORAGE RM. DOOR HARDWARE SET	DOUBLE STORAGE RM. DOOR HARDWARE SET	SINGLE EXISTING EXIT DOOR HARDWARE SET
D1	NO	3'-0"	7'-0"	1 ¾"	S.C. WD.	1	H.M.	2"	5 ½"	A	YES	NO	NO	NO
D2	NO	3'-0"	7'-0"	1 ¾"	S.C. WD.	1	H.M.	2"	5 ½"	B	YES	NO	NO	NO
D3	NO	3'-0"	7'-0"	1 ¾"	S.C. WD.	1	H.M.	2"	5 ½"	B	NO	YES	NO	NO
D4	NO	PR 3'-6"	7'-0"	1 ¾"	S.C. WD.	2	H.M.	2"	5 ½"	C	NO	NO	YES	NO
D5	NO	3'-0"	7'-0"	1 ¾"	S.C. WD.	1	H.M.	2"	5 ½"	B	NO	YES	NO	NO
D6	EXIST.	EXIST.	EXIST.	EXIST.	EXIST.	EXIST.	EXIST.	EXIST.	EXIST.	---	NO	NO	NO	YES

WINDOW SCHEDULE

OPENING NUMBER	GLASS AREA WIDTH	GLASS AREA HEIGHT	GLASS AREA THICKNESS	WINDOW ELEVATION	FRAME MATERIAL	FRAME FACE	FRAME DEPTH	FRAME ELEVATION	TEMPERED SAFETY	ANNEALED FLOAT GLASS	SPANDREL GLASS	SPANDREL PANEL	FOOT NOTES
W1	4'-0"	4'-0"	3/16"	WINDOW ELEV. #1	H.M.	2"	5 ½"	1	NO	YES	NO	NO	
W2	*	*	6mm	REFER TO 6/701-A-002	EXIST.	EXIST.	EXIST.	*	NO	NO	YES	YES	* MATCH EXISTING SIZE. REFER TO DETAIL 6/701-A-002
W3	*	*	6mm	REFER TO 6/701-A-002	EXIST.	EXIST.	EXIST.	*	NO	NO	YES	YES	* MATCH EXISTING SIZE. REFER TO DETAIL 6/701-A-002
W4	1'-5"	6'-8"	3/16"	WINDOW ELEV. #2	H.M.	2"	5 ½"	2	YES	NO	NO	NO	
W5	4'-7"	1'-7"	3/16"	WINDOW ELEV. #2	H.M.	2"	5 ½"	2	YES	NO	NO	NO	

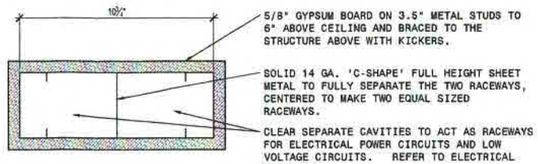


① DOOR, FRAME AND WINDOW SCHEDULES
¼" = 1'-0"

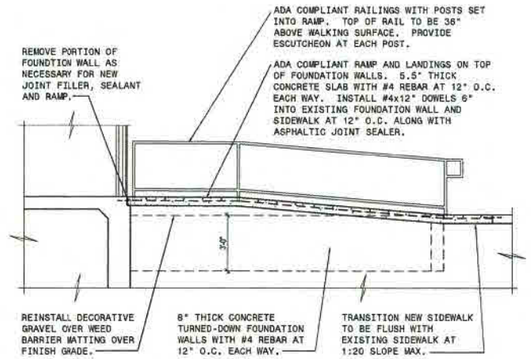
ROOM FINISH SCHEDULE

ROOM NAME	FLOORS	WALLS WALL BASE NORTH	WALL BASE SOUTH	WALL BASE EAST	WALL BASE WEST	PAINT NORTH	PAINT SOUTH	PAINT EAST	PAINT WEST	CEILINGS TYPE	CEILINGS HEIGHT
CONTROL RM.	EXISTING	YES	YES	YES	YES	YES	YES	YES	NO	SUSP. ACT	MATCH EXIST.
IT/ ELECTRICAL RM.	V.C.T.	YES	YES	YES	YES	YES	YES	YES	YES	SUSP. G.B.	10'-0" THEN VARIES
STORAGE RM.	V.C.T.	YES	YES	YES	YES	YES	YES	YES	YES	EXPOSED	

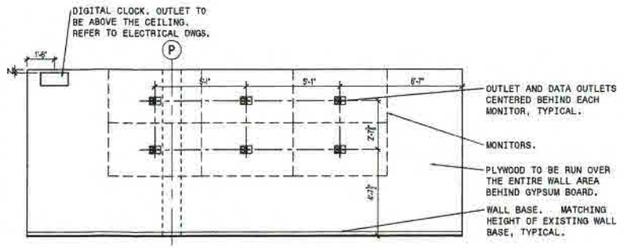
② FINISH SCHEDULE



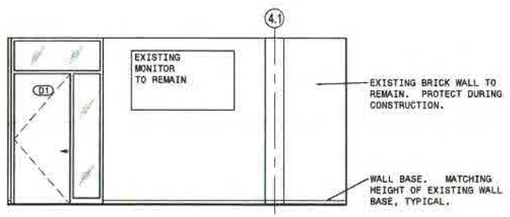
③ CHASE DETAIL
3/701-A-001 3"= 1'-0"



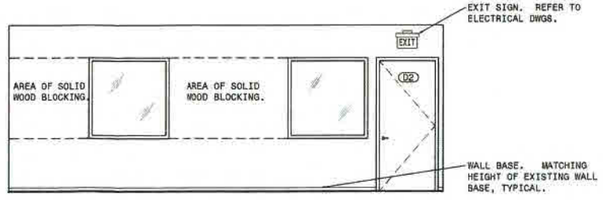
⑤ ADA COMPLIANT RAMP SECTION
5/701-A-001 ½" = 1'-0"



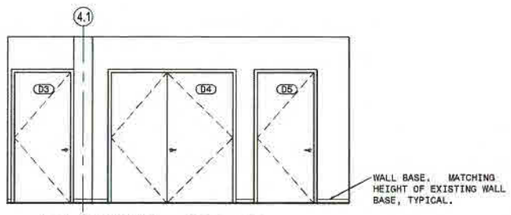
'A' ELEVATION - SOUTH WALL



'C' ELEVATION - WEST WALL

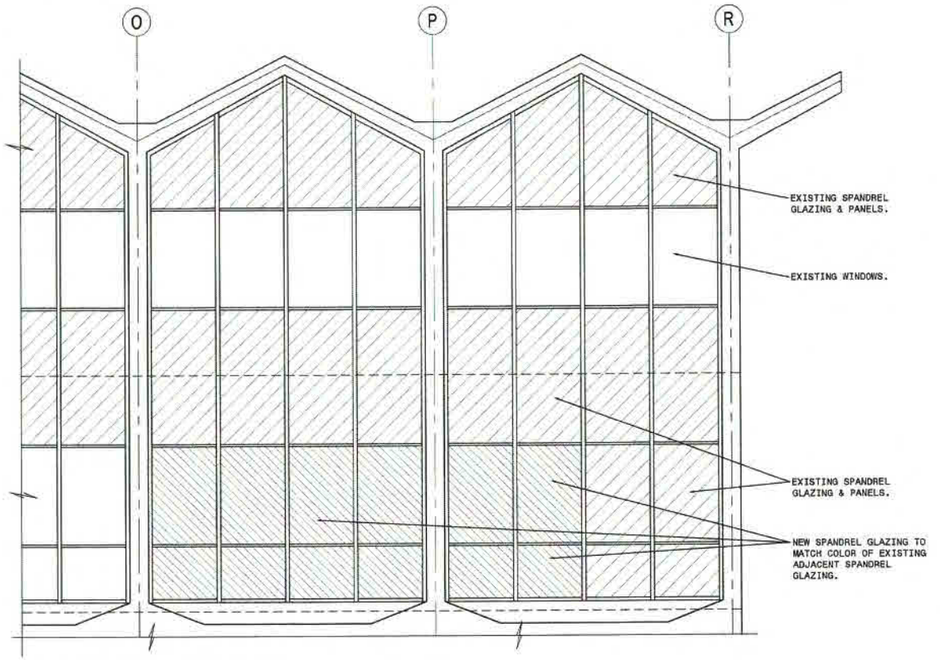


'B' ELEVATION - NORTH WALL



'D' ELEVATION - EAST WALL

④ INTERIOR ELEVATIONS
4/701-A-001 ¼" = 1'-0"



⑥ SOUTH EXTERIOR ELEVATION
6/701-A-001 ¼" = 1'-0"

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REGISTERED ARCHITECT SEAL

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NAME: DOUGLAS C. SWIFT
NO.: A-2013004246

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WASTEWATER SCADA SYSTEM IMPROVEMENTS

CITY OF KANSAS CITY,
JACKSON COUNTY, MISSOURI

701-A-002

BLUE RIVER PRIMARY WWTP OPERATIONS CENTER ELEVATONS, DETAILS AND SCHEDULES

DRAWN BY	CHECKED BY	MAP NO.	RANGE	TWP	SEC
DS	MD				
CONTRACTOR			DATE COMPLETED		

CONTRACT NO.	CONTRACT DATE	DATE	WORK ORDER NO.	DRAWING NO.
1444		05/01/2020		D-1352.02

PROJECT NO. 81000819

SHEET 74 OF 119

D189046

2

DEMOLITION GENERAL NOTES

1. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING ALL EXISTING CONDITIONS FOR PLUMBING AND MECHANICAL SYSTEMS.
2. WHERE FLOOR DRAINS OCCUR WITHIN THE LIMITS OF CONSTRUCTION, PREVENT CONSTRUCTION DEBRIS FROM ENTERING DRAIN BODY BY SEALING DRAIN OPENING PRIOR TO START OF WORK. UNSEAL DRAINS AT COMPLETION OF CONSTRUCTION.

PLAN NOTES

[1] DEMOLISH EXISTING DUCTWORK WHERE INDICATED BY HATCHING. INSTALL INSULATED MECHANICAL CAP AT END OF REMAINING DUCT.

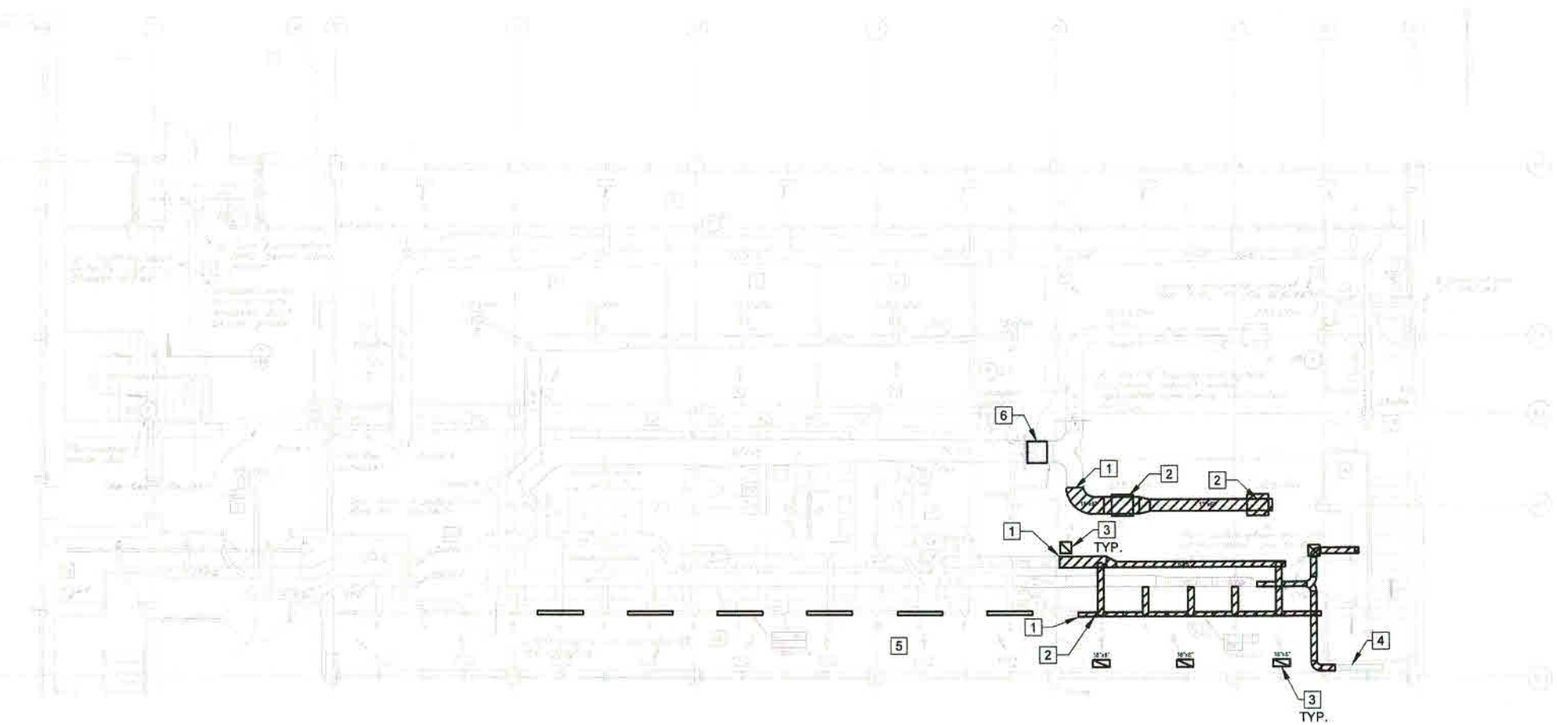
[2] DEMOLISH EXISTING SUPPLY AIR DIFFUSERS AND BRANCH DUCTWORK BACK TO SOURCE AS INDICATED BY HATCHING. INSTALL INSULATED MECHANICAL CAP AT SOURCE DUCT AFTER BRANCH DUCT REMOVAL.

[3] REMOVE EXISTING RETURN AIR GRILLES. REFERENCE ARCHITECTURAL SHEETS FOR EXTENT OF CEILING DEMOLITION WORK.

[4] EXISTING AIR SUPPLY TO STAIRWELL AREA TO BE MAINTAINED BY RECONFIGURED DUCT ROUTING. REFERENCE SHEET M102 FOR DUCT RECONSTRUCTION WORK.

[5] FOLLOWING COMPLETION OF HVAC RECONSTRUCTION WORK (REFERENCE SHEET M-002), REBALANCE INDICATED DIFFUSERS IN CORRIDOR AS NEEDED FOR NET TOTAL INCREASE TO CORRIDOR OF 260 CFM.

[6] FOLLOWING COMPLETION OF HVAC RECONSTRUCTION WORK (REFERENCE SHEET M-002), FIELD ADJUST FACE AND BYPASS DAMPERS TO MAINTAIN EXISTING AIRFLOW AT SPACES SERVED BY RECONSTRUCTED DUCTWORK.



N

MECHANICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0"

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PROFESSIONAL ENGINEER SEAL

THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION BY ANDREW JOSEPH DAILEY ON MAY 11, 2020, AND SEALED BY ANDREW JOSEPH DAILEY, A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF MISSOURI, NO. 2009001070

NAME: ANDREW J. DAILEY
NO.: PE-2009001070

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DATE	REVISIONS AND RECORD OF ISSUE	NO	BY	CK	APP

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WASTEWATER SCADA SYSTEM IMPROVEMENTS

CITY OF KANSAS CITY,
JACKSON COUNTY, MISSOURI

701-M-001
BLUE RIVER PRIMARY WWTP ADMIN. BLDG. DEMOLITION PLAN

DRAWN BY	CHECKED BY	MAP NO.	RANGE	TWP	SEC
JRW	AJD				
CONTRACTOR			DATE COMPLETED		

CONTRACT NO.	CONTRACT DATE	DATE	WORK ORDER NO.	DRAWING NO.
1444		05/01/2020		D-1352.02

PROJECT NO. 81000819

SHEET 75 OF 119

CUSTOM ENGINEERING
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PROFESSIONAL ENGINEERING CORPORATION LICENSE NO. 000238

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Professional Engineering Corporation License No. 001646

D1950946

3

SPLIT SYSTEM SCHEDULE

MARK	MANUFACTURER	MODEL	SUPPLY FAN		HEATING	COOLING	ELECTRICAL			CONDENSING UNIT								
			CFM	TOTAL S.P. (IN WC)	BTUH TOTAL	BTUH TOTAL	V/PH/CY	MCA	MOCP	MARK	ELECTRICAL V/PH/CY	MCA	MOCP	NOM. TONS	AMBIENT TEMP. (°F)	MANUFACTURER	MODEL	NOTES/OPTIONS
FCU-1	MITSUBISHI	PEAD-A18AA7	400	0.50	19,000	18,000	POWERED FROM HP-1			HP-1	208/1/60	11	28	1.5	100	MITSUBISHI	PUZ-A18NKA7-BS	1, 2, 4, 5, 6, 7
FCU-2	MITSUBISHI	PEAD-A12AA7	390	0.50	14,000	12,000	POWERED FROM CU-1			CU-1	208/1/60	11	28	1	100	MITSUBISHI	PUY-A12NKA7-BS	1, 2, 3, 5, 6, 7

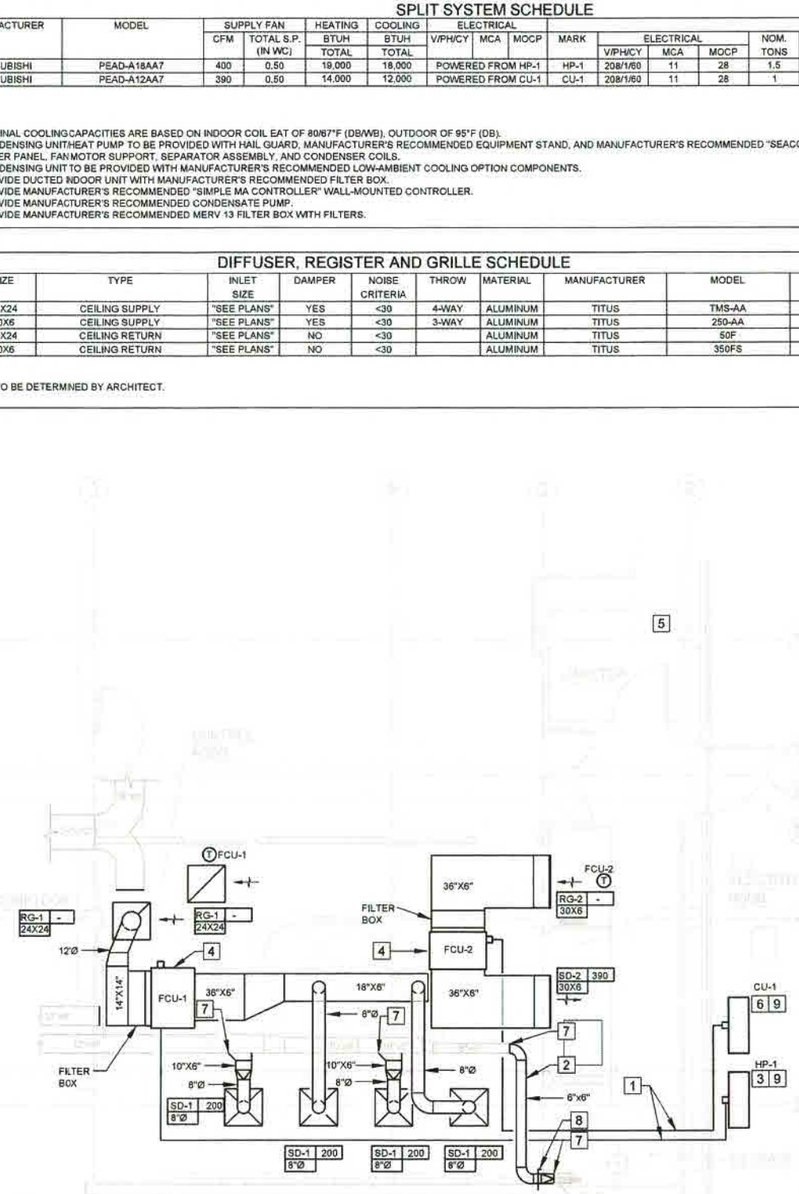
NOTES:

1. NOMINAL COOLING CAPACITIES ARE BASED ON INDOOR COIL EAT OF 80/67°F (DB/WB), OUTDOOR OF 95°F (DB).
2. CONDENSING UNIT/HEAT PUMP TO BE PROVIDED WITH HAIL GUARD, MANUFACTURER'S RECOMMENDED EQUIPMENT STAND, AND MANUFACTURER'S RECOMMENDED "SEACOAST PROTECTION" ANTI-CORROSIVE COATING SYSTEM FOR EXTERNAL OUTER PANEL, FAN MOTOR SUPPORT, SEPARATOR ASSEMBLY, AND CONDENSER COILS.
3. CONDENSING UNIT TO BE PROVIDED WITH MANUFACTURER'S RECOMMENDED LOW-AMBIENT COOLING OPTION COMPONENTS.
4. PROVIDE DUCTED INDOOR UNIT WITH MANUFACTURER'S RECOMMENDED FILTER BOX.
5. PROVIDE MANUFACTURER'S RECOMMENDED "SIMPLE MA CONTROLLER" WALL-MOUNTED CONTROLLER.
6. PROVIDE MANUFACTURER'S RECOMMENDED CONDENSATE PUMP.
7. PROVIDE MANUFACTURER'S RECOMMENDED MERV 13 FILTER BOX WITH FILTERS.

DIFFUSER, REGISTER AND GRILLE SCHEDULE

MARK	SIZE	TYPE	INLET SIZE	DAMPER	NOISE CRITERIA	THROW	MATERIAL	MANUFACTURER	MODEL	NOTES
SD-1	24X24	CEILING SUPPLY	"SEE PLANS"	YES	<30	4-WAY	ALUMINUM	TITUS	TMS-AA	1
SD-2	30X6	CEILING SUPPLY	"SEE PLANS"	YES	<30	3-WAY	ALUMINUM	TITUS	250-AA	1
RG-1	24X24	CEILING RETURN	"SEE PLANS"	NO	<30		ALUMINUM	TITUS	50F	1
RG-2	30X6	CEILING RETURN	"SEE PLANS"	NO	<30		ALUMINUM	TITUS	350FS	1

NOTES:
1. FINISH TO BE DETERMINED BY ARCHITECT.



N

MECHANICAL NEW PLAN
SCALE: 1/4" = 1'-0"

GENERAL NOTES

1. COORDINATE INSTALLATION OF PIPING, DUCTWORK, CONDUIT, AND EQUIPMENT TO PREVENT CONFLICTS.
2. LOCATE EQUIPMENT REQUIRING ACCESS 1'-0" MAXIMUM ABOVE CEILING.
3. LOCATE DUCTWORK, PIPING AND MECHANICAL EQUIPMENT AWAY FROM THE SPACE ABOVE ELECTRICAL PANELS, TRANSFORMERS AND OTHER ELECTRICAL EQUIPMENT.
4. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH THE RESPECTIVE MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS.

PLAN NOTES

1. ANTICIPATED ROUTING OF REFRIGERANT LINE SET TO FAN COIL UNITS.
2. FIELD EXTEND SUPPLY DUCT TO MAINTAIN AIR AT STAIRWELL AREA AND PROVIDE AIRFLOW AT IT/ELECTRICAL ROOM.
3. PROVIDE HEAT PUMP UNIT ON EQUIPMENT PAD. FIELD ROUTE REFRIGERANT PIPING, POWER CIRCUIT, AND CONTROL CIRCUIT FROM HP-1 TO FCU-1.
4. PROVIDE DUCTED FAN COIL UNIT ABOVE CEILING. COORDINATE EXACT LOCATION WITH ARCHITECTURAL AND LIGHTING IMPROVEMENTS. LOCATE AND CONFIGURE EQUIPMENT TO FACILITATE EASE OF ACCESS AND MAINTENANCE OPERATIONS.
5. EXISTING SERVICE SINK IN THIS VICINITY. FIELD ROUTE 3/4" CONDENSATE DRAIN PIPING FROM FCU-1 AND FCU-2 TO THIS LOCATION. TERMINATE DRAIN PIPING MAXIMUM 6" ABOVE SINK RIM. REMOVE AND REPLACE PORTION OF CEILING REQUIRED FOR DRAIN PIPING INSTALLATION. COORDINATE WITH ARCHITECT.
6. PROVIDE CONDENSING UNIT ON EQUIPMENT PAD. FIELD ROUTE REFRIGERANT PIPING, POWER CIRCUIT, AND CONTROL CIRCUIT FROM CU-1 TO FCU-2.
7. CONNECT NEW DUCT TO EXISTING IN THIS VICINITY. REPLACE INSULATION ON EXISTING DUCT AS NEEDED TO MAINTAIN CONTINUOUS INSULATION SYSTEM.
8. PROVIDE MANUAL BALANCING DAMPER. BALANCE THE AIRFLOW TO 100 CFM DOWNSTREAM OF DAMPER TO EXISTING DUCTWORK.
9. REFERENCE SHEET 901-I-001 FOR ADDITIONAL INFORMATION REGARDING EQUIPMENT PAD CONSTRUCTION.

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NAME: ANDREW J. DAILEY
NO.: PE-2009001070
FOR WSD USE

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DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP

KANSAS CITY, MISSOURI, WATER SERVICES DEPARTMENT

WASTEWATER SCADA SYSTEM IMPROVEMENTS

CITY OF KANSAS CITY,
JACKSON COUNTY, MISSOURI

701-M-002

BLUE RIVER PRIMARY WWTP ADMIN. BLDG. NEW PLAN

DRAWN BY	CHECKED BY	MAP NO.	RANGE	TWP	SEC
JRW	AJD				
CONTRACTOR			DATE COMPLETED		
CONTRACT NO.	CONTRACT DATE	DATE	WORK ORDER NO.	DRAWING NO.	
1444		05/01/2020		D-1352.02	
PROJECT NO.					
81000819		SHEET 76 OF 119			

CUSTOM ENGINEERING
MECHANICAL & ELECTRICAL ENGINEERING
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PROFESSIONAL ENGINEERING CORPORATION LICENSE NO. 000239

BLACK & VEATCH
8400 Ward Parkway Kansas City, Missouri 64114 913.458.2000
Professional Engineering Corporation License No. 001646

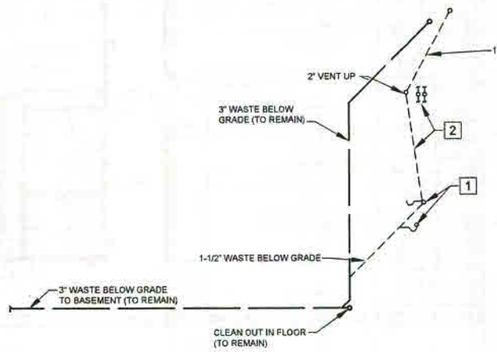
D189046

4

PLAN NOTES

1. EXISTING WASTE, VENT, AND DOMESTIC WATER PIPING (FROM PREVIOUS KITCHENETTE AND VENDING MACHINE AREA) IS PRESENT IN THIS VICINITY. ALL PIPING BELOW CEILING ELEVATION EXPOSED BY RECONSTRUCTION WORK SHALL BE REMOVED TO NEAREST WALL/FLOOR SURFACE AND MECHANICALLY CAPPED.

2. EXISTING VENT AND DOMESTIC WATER PIPING IN THIS VICINITY ABOVE CEILING ELEVATION AND NOT IN ACTIVE USE SHALL BE REMOVED BACK TO SOURCE AND MECHANICALLY CAPPED. PLUMBING CONTRACTOR TO COORDINATE WITH OTHER TRADES REGARDING ANY RECONSTRUCTION OR RECONFIGURATION OF EXISTING WASTE, VENT AND DOMESTIC WATER PIPING IN THIS VICINITY NEEDED TO FACILITATE ARCHITECTURAL, MECHANICAL AND/OR ELECTRICAL RECONSTRUCTION WORK.



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PLUMBING DEMOLITION PLAN

SCALE: 1/8" = 1'-0"

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NO.: PE-2009001070

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WASTEWATER SCADA SYSTEM IMPROVEMENTS

CITY OF KANSAS CITY,
JACKSON COUNTY, MISSOURI

701-P-001
BLUE RIVER PRIMARY WWTP ADMIN. BLDG. PLUMBING DEMOLITION PLAN

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

DATE	REVISIONS AND RECORD OF ISSUE	NO	BY	CK	APP

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JRW	AJD				
CONTRACTOR			DATE COMPLETED		

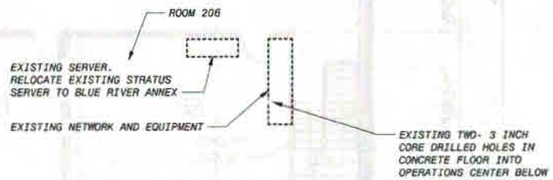
CONTRACT NO.	CONTRACT DATE	DATE	WORK ORDER NO.	DRAWING NO.
1444		05/01/2020		D-1352.02

PROJECT NO.
81000819

SHEET 77 OF 119

D189046

5



FLOOR PLAN
NO SCALE

0 1/2 1
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NO.: 2020007493

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WASTEWATER SCADA SYSTEM IMPROVEMENTS

CITY OF KANSAS CITY,
JACKSON COUNTY, MISSOURI

701-E-008

BLUE RIVER PRIMARY WWTP ADMINISTRATION BUILDING FLOOR PLAN

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81000819

SHEET 57 OF 119

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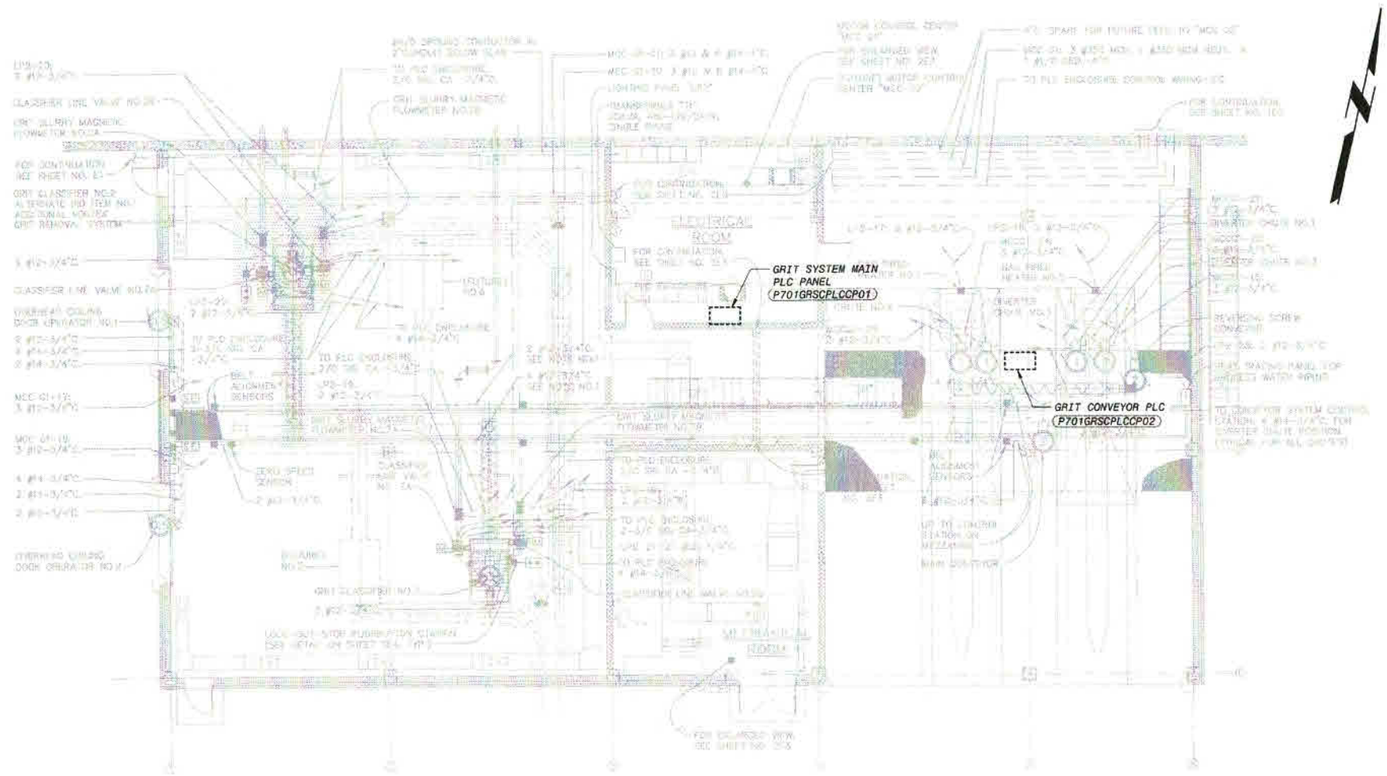
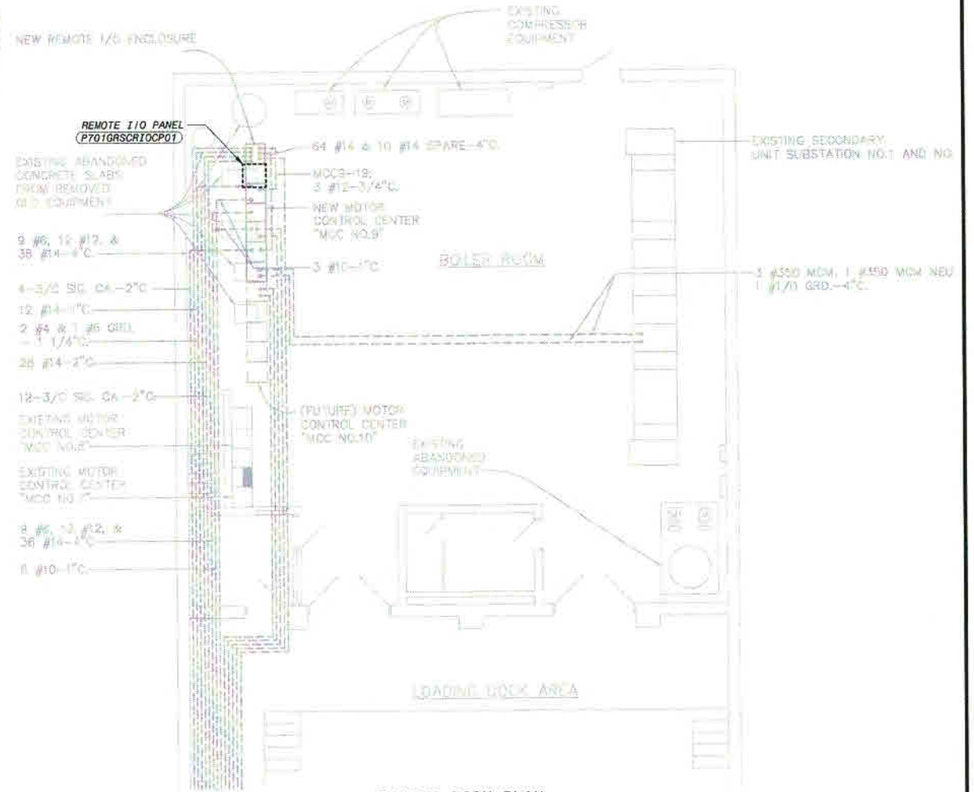
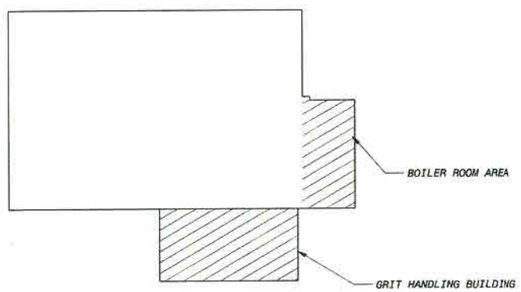


FLOOR PLAN
1/8" = 1'-0"



BOILER ROOM PLAN
3/16" = 1'-0"



KEY PLAN
NO SCALE

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NAME: JEFFREY S. MILLER
NO.: 2020007493

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WASTEWATER SCADA SYSTEM IMPROVEMENTS

CITY OF KANSAS CITY,
JACKSON COUNTY, MISSOURI

701-E-009

BLUE RIVER PRIMARY WWTP GRIT REMOVAL BUILDING FLOOR PLAN

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JKS	TEB				
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CONTRACT NO.	CONTRACT DATE	DATE	WORK ORDER NO.	DRAWING NO.
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PROJECT NO.
81000819

SHEET 58 OF 119

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GENERAL NOTES

1. SEE GENERAL NOTES, LEGEND AND ABBREVIATIONS ON SHEET 001-G-002.

FIXTURE SCHEDULE

TYPE	MANUFACTURER OR APPROVED EQUAL	DESCRIPTION	CATALOG/SERIES NUMBER	BATTERY BACKUP	LAMP TYPE	TOTAL WATTS	VOLTAGE	TOTAL LUMENS	MOUNTING	FIXTURE FINISH	NOTES
A	METALUMEN	6 INCH X 4 FOOT RECESSED LED FLUX PANEL, 3000 LUMENS, 4000K. PROVIDE LED DIMMING DRIVER.	S6-1L40K-4-G-MB-W-L3-1-T-1	N/A	LED	27	120	3000	RECESSED	WHITE	OPERATIONS CENTER
AE	METALUMEN	6 INCH X 4 FOOT RECESSED LED FLUX PANEL. 3000 LUMENS, 4000K. PROVIDE LED DIMMING DRIVER. PROVIDE BODINE BSL310 10W BATTERY PACK.	S6-1L40K-4-G-MB-W-L3-1-EM-T-1	EMERGENCY BATTERY PACK 10W	LED	27	120	3000	RECESSED	WHITE	OPERATIONS CENTER
BE	ALL GREEN LIGHTING	EXTERIOR BUILDING PERIMETER WALL MOUNTED FIXTURE. UL WET LOCATION RATED AND RATED FOR -25 DEGREE C TO +40 DEGREE C. 3700 LUMENS, 4000K. PROVIDE INTEGRAL PHOTOCELL.	LEO-2-45W-BR-100-120-40K-WALL-120-PC	EMERGENCY BATTERY PACK 8W, 900 LUMENS	LED	45	120	3700	WALL MOUNT AT APPROX. 7 FT AFF	BRONZE	EXTERIOR WALL
C	INTENSE LIGHTING	4 INCH RECESSED LED DOWNLIGHT WITH WHITE REFLECTOR AND WHITE TRIM KIT. 1300 LUMENS, 3500K.	LC4DF-L5-ED10V1 (FRAME) LCT4DRT-W-SF-359 (TRIM)	N/A	LED	16	120	1300	RECESSED	WHITE	OPERATION CENTER DOWLIGHTS
DE	DAYBRITE (SIGNIFY)	1 X 4 LED STRIP FIXTURE WITH FROSTED ACRYLIC DIFFUSER. 4000 LUMENS, 4000K. UL DAMP LOCATION RATED.	FSSEZ-4-40L-840-UNV -EMLED (FOR EMERGENCY FIXTURES)	EMERGENCY BATTERY PACK 1100 LUMENS	LED	32	120	4000	SURFACE MOUNT	WHITE	IT CLOSET, ELEC, STORAGE SPACE
X	COOPER LIGHTING - SURE-LITES	LED EXIT SIGN WITH GREEN LETTERS AND BATTERY BACKUP. PROVIDE SELF DIAGNOSTICS. PROVIDE UNIVERSAL MOUNTING OPTION.	EEX-6-1-B-G	PROVIDE NICKEL CADMIUM BATTERY BACKUP FOR 90 MINUTES	LED	3	120		SURFACE MOUNT 7FT-8IN AFF TO BOTTOM OF BLADE, U.N.O.	WHITE WITH GREEN LETTERS. SEE PLANS FOR ARROWS AND FACES.	EXIT SIGN

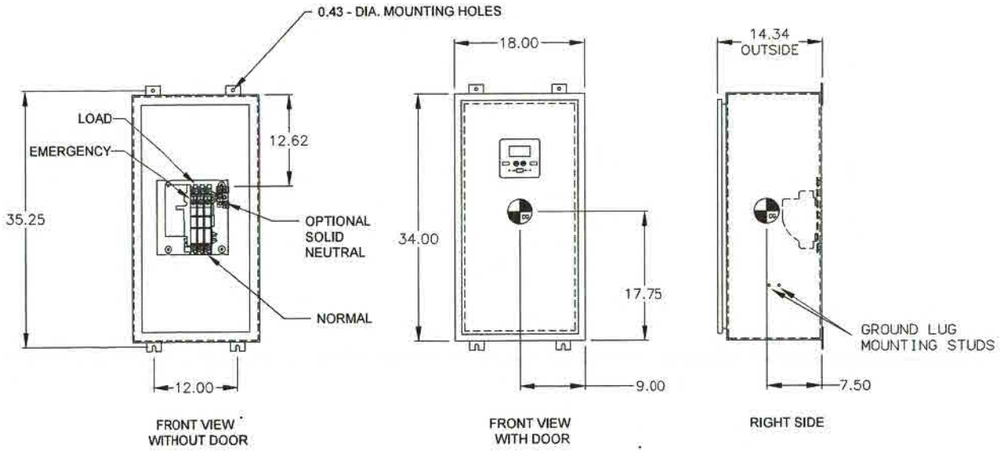
NOTES:

1. ALL INTERIOR LAMPS SHALL BE APPROXIMATELY 4000K, U.N.O.

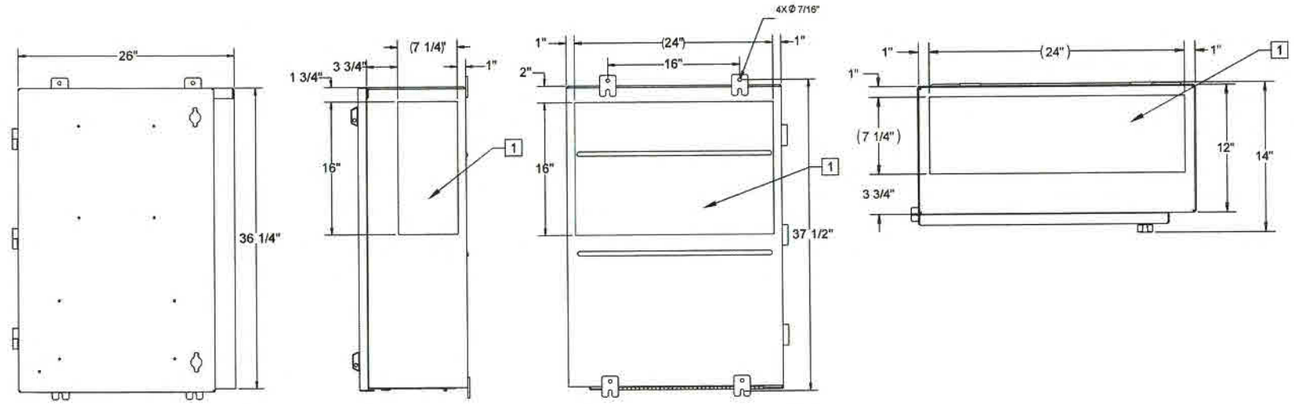
2. FIXTURES DESIGNATED WITH "E" ON THE DRAWINGS SHALL HAVE AN INTEGRAL 90 MINUTE EMERGENCY BATTERY PACK.

3. ALL FIXTURES SHALL BE DLC LISTED.

4. ALL FIXTURES SHALL HAVE UNIVERSAL MULTI-TAP 120-277V DRIVERS, U.N.O.



1 NON-AUTOMATIC TRANSFER SWITCH
SCALE: NOT TO SCALE



2 GENERATOR TAP BOX
SCALE: NOT TO SCALE

DETAIL 2 NOTE 1: CONDUIT ENTRY AREA - SIZE AND LOCATION SUBJECT TO CHANGE WITH ADDITION OF FEATURES.

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NAME: CARLOS A. RONDON
NO. PE-2019000027

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CITY OF KANSAS CITY,
JACKSON COUNTY, MISSOURI

701-E-010

BLUE RIVER PRIMARY WWTP ADMIN. BLDG. FIXTURE LIGHTING SCHEDULE

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HK	CAR				

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CONTRACT NO.	CONTRACT DATE	DATE	WORK ORDER NO.	DRAWING NO.
1444		05/01/2020		D-1352.02

PROJECT NO. 81000819

SHEET 59 OF 119

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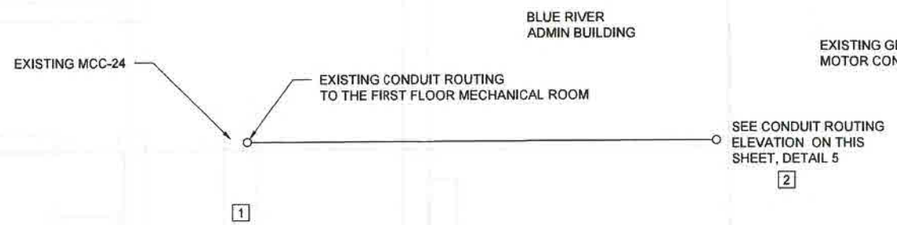
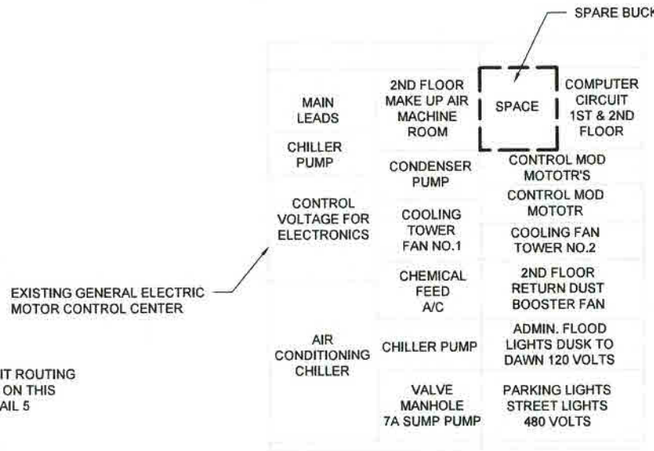


1 MCC-24 BASEMENT LOCATION PLAN
SCALE: 1/4" = 1'-0"

0 2' 4' 8'



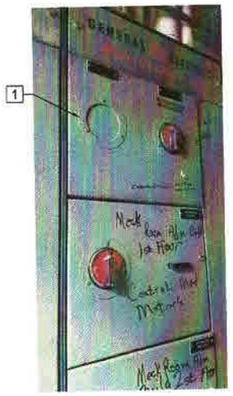
2 MCC-24 ELEVATION - BUCKET C1 PLAN
SCALE:NTS

3 MCC-24 PHOTO
SCALE:NTS

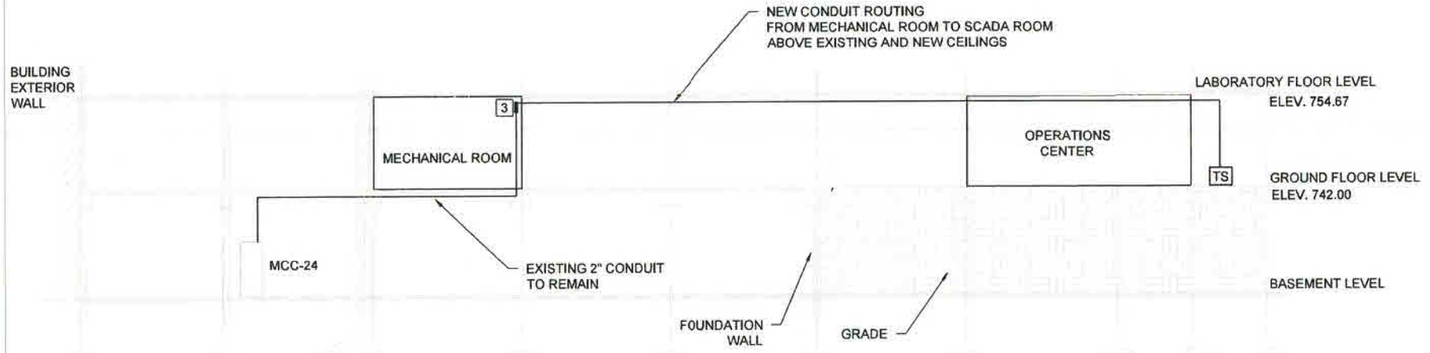
0 1/2 1

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP



4 MCC-24 BUCKET- C1 PHOTO
SCALE:NTS



5 NORTH BUILDING SECTION SHOWING CONDUIT ROUTING TO OPERATIONS CENTER
SCALE:NTS

GENERAL NOTES

1. SEE GENERAL NOTES, LEGEND AND ABBREVIATIONS ON SHEET 001-G-002.

PLAN NOTES

1 PROVIDE A 3-PHASE , 480V, 50A BREAKER LOCKABLE IN THE OPEN POSITION IN EXISTING MCC SPARE BUCKET THAT IS COMPATIBLE WITH EXISTING GE EQUIPMENT AND RATINGS, GE CATALOG # GEF1F12, OR APPROVED EQUAL. CONTRACTOR SHALL FIELD INVESTIGATE THE EXISTING MCC RATINGS SO THAT NEW BREAKER WILL MATCH EXISTING MCC RATINGS. SEE ONE-LINE DIAGRAM ON SHEET 701-E-014.

2 EXISTING CONDUIT TO MECHANICAL ROOM TO BE REUSED OR CONTRACTOR TO VERIFY BEST ROUTE TO THE NEW SCADA ROOM TRANSFER SWITCH.

3 EXISTING 2" CONDUIT TERMINATED AT CONDULET BOX. CONNECT NEW CONDUIT TO CONTINUE TO SCADA ROOM. CONDUIT SHALL BE CONCEALED ABOVE EXISTING AND NEW CEILINGS. SEE ONE-LINE DIAGRAM ON SHEET 701-E-014.

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701-E-011

BLUE RIVER PRIMARY WWTP ADMIN. BLDG. MCC-24 LOCATION PLAN

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HK	CAR				
CONTRACTOR			DATE COMPLETED		
CONTRACT NO.	CONTRACT DATE	DATE	WORK ORDER NO.	DRAWING NO	
1444		05/01/2020		D-1352.02	
PROJECT NO.					
81000819			SHEET 60 OF 119		

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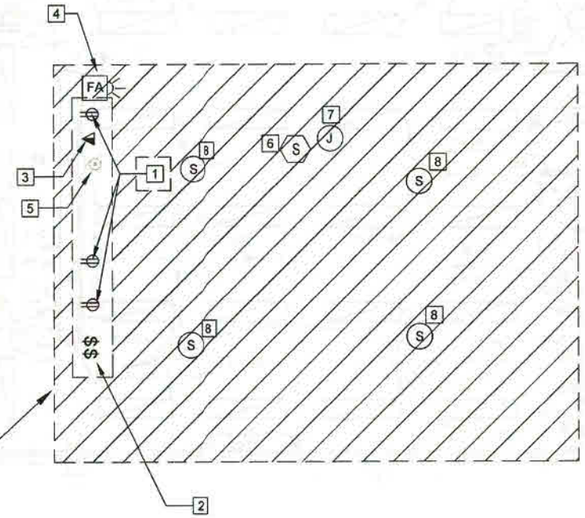

LIMITS OF DEMOLITION SCOPE OF WORK.

N

1 ELECTRICAL POWER AND LIGHTING DEMO PLAN
SCALE: 1/4" = 1'-0"

0 2' 4' 8'

GENERAL NOTES:

1. SEE GENERAL NOTES, LEGEND AND ABBREVIATIONS ON SHEET 001-G-002.
2. ALL ELECTRICAL, LIGHTING AND SPEAKER EQUIPMENT SHOWN IN HATCH SHALL BE REMOVED UNLESS NOTED OTHERWISE.
3. FOR ELECTRICAL AND LIGHTING EQUIPMENT SHOWN TO BE REMOVED, REMOVE ALL WIRE AND ASSOCIATED ACCESSIBLE CONDUIT BACK TO PANEL BOARD OR NEAREST DEVICE NOT INDICATED FOR DEMOLITION.
4. REMOVE ALL ASSOCIATED FIXTURE AND CONDUIT SUPPORTS, CABLES, PENDANTS, ETC.
5. TEMPORARILY SUPPORT ALL CONDUIT PRIOR TO CEILING REMOVAL. PERMANENTLY SUPPORT FROM STRUCTURE ANY CONDUIT PREVIOUSLY SUPPORTED FROM CEILING AFTER CEILING REMOVAL IS COMPLETE.

PLAN NOTES

1. EXISTING RECEPTACLE TO REMAIN. RECIRCUIT TO NEW PANEL PER SHEET 701-E-013.
2. EXISTING LIGHT SWITCHES TO BE REMOVED. JUNCTION BOX TO REMAIN FOR NEW SWITCHES INSTALLED PER SHEET 701-E-015.
3. EXISTING DATA OUTLET MOUNTED AT CEILING TO BE RELOCATED. SEE NEW POWER PLAN FOR LOCATION.
4. EXISTING FIRE ALARM HORN/STROBE MOUNTED AT CEILING TO BE RELOCATED. SEE NEW POWER PLAN FOR LOCATION.
5. EXISTING MICROPHONE JACK TO REMAIN.
6. EXISTING SMOKE DETECTOR TO BE REMOVED AND RETAINED FOR CEILING DEMOLITION AND REINSTALLED AFTER NEW CEILING INSTALLATION.
7. EXISTING UNUSED JUNCTION BOX TO BE REMOVED.
8. EXISTING SPEAKER TO BE REMOVED.

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KANSAS CITY, MISSOURI, WATER SERVICES DEPARTMENT

WASTEWATER SCADA SYSTEM IMPROVEMENTS

CITY OF KANSAS CITY,
JACKSON COUNTY, MISSOURI

701-E-012

BLUE RIVER PRIMARY WWTP ADMIN. BLDG. POWER AND LIGHTING DEMO PLAN

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CONTRACT NO.	CONTRACT DATE	DATE	WORK ORDER NO.	DRAWING NO.
1444		05/01/2020		D-1352.02

PROJECT NO. 81000819

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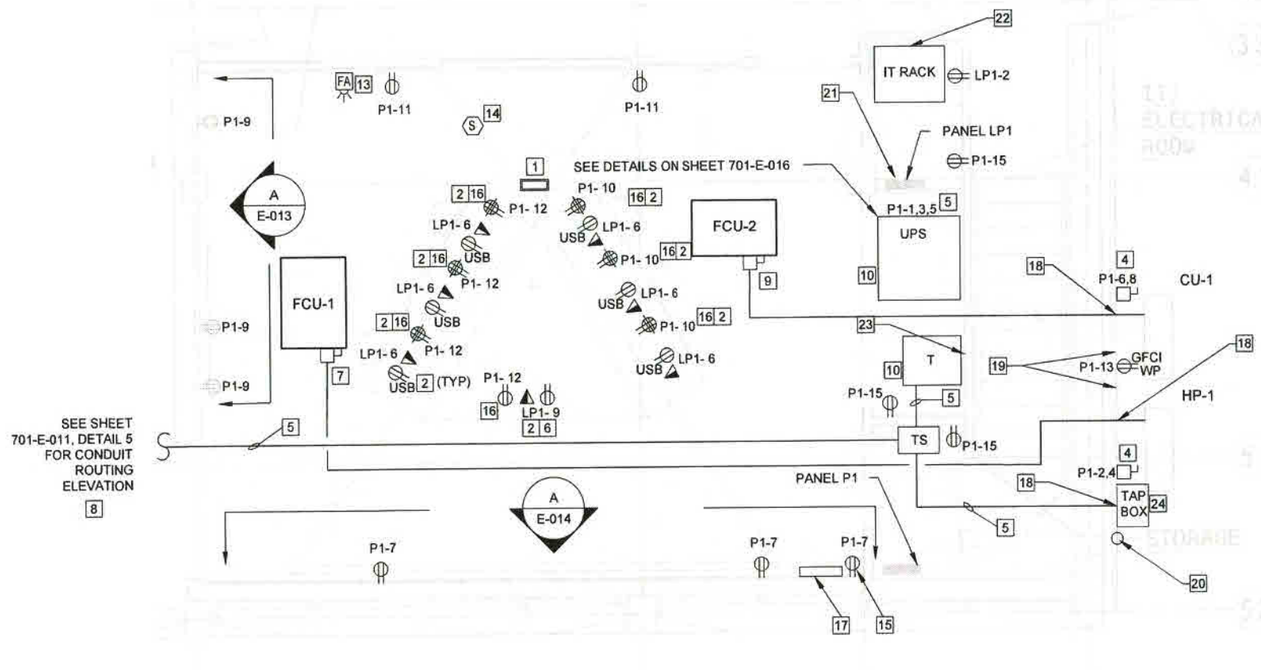
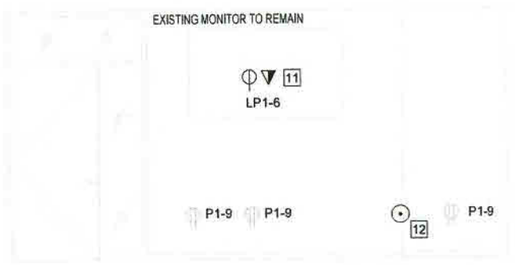


1 ELECTRICAL NEW POWER PLAN

SCALE: 3/8" = 1' -0"

0 6" 1' 3' 5'



A WEST WALL EXISTING POWER PLAN

SCALE: 3/8" = 1' -0"

0 6" 1' 3' 5'

GENERAL NOTES

1. SEE GENERAL NOTES, LEGEND AND ABBREVIATIONS ON SHEET 001-G-002.
2. SEE PANEL SCHEDULES ON SHEET 701-E-017.
3. SEE ONE-LINE DIAGRAM ON SHEET 701-E-014 FOR CONDUIT AND WIRE SIZING, TRANSFORMER AND GENERATOR INFORMATION.
4. ALL CONDUIT AND WIRING FOR ALL CIRCUITS SHALL BE 2 - #12, 1 - #12 GND IN 3/4" CONDUIT UNLESS NOTED OTHERWISE.
5. SEE SHEET 701-M-002 FOR MECHANICAL EQUIPMENT SCHEDULE.
6. ALL CIRCUITS TO PANEL LP1 ARE CONNECTED TO THE UPS SYSTEM. ALL RECEPTACLES CIRCUITED TO PANEL LP1 SHALL BE CLEARLY MARKED ON THE FACEPLATE WITH A SELF-ADHESIVE VINYL LABEL (LABELED "UPS ONLY") TO IDENTIFY PROPER USE. MISCELLANEOUS LOADS SHALL NOT BE CONNECTED TO UPS RECEPTACLES INTENDED FOR CRITICAL LOADS.

PLAN NOTES

1 POWER / COMMUNICATIONS CHASE TO LAY-IN CEILING FOR POWER AND DATA CABLES TO WORKSTATION MONITORS. SEE ARCHITECTURAL DETAIL 3, SHEET 701-A-002.

2 ROUTE DATA AND POWER CABLES IN CABLE TRAY THROUGH CABINET MILLWORK. COORDINATE WITH FURNITURE DETAILS AND MILLWORK CONTRACTOR.

3 30KVA TRANSFORMER 480V-208/120V LOCATED IN STORAGE ROOM. SEE DETAIL 1, SHEET 701-E-014.

4 PROVIDE A NEMA 4X, SINGLE PHASE, 30A, 208V, NON-FUSED DISCONNECT SWITCH FOR MECHANICAL EQUIPMENT, CU-1 AND HP-1.

5 SEE ONE-LINE DIAGRAM ON SHEET 701-E-014 FOR CONDUIT AND WIRE SIZING.

6 RECEPTACLE AND DATA OUTLET FOR PRINTERS.

7 FCU-1 IS FED FROM HP-1. PROVIDE A NEMA 1, SINGLE PHASE , 30A, 208V, NON-FUSED DISCONNECT SWITCH ABOVE CEILING NEXT TO EQUIPMENT. PROVIDE 2-#12, 1#12 GND IN 3/4" CONDUIT BETWEEN HP-1 AND FCU-1.

8 NEW CONDUIT FROM FIRST FLOOR MECHANICAL ROOM TO NEW OPERATIONS CENTER TRANSFER SWITCH. CONCEAL CONDUITS ABOVE CEILINGS.

9 FCU-2 IS FED FROM CU-1. PROVIDE A NEMA 1, SINGLE PHASE , 30A, 208V, NON-FUSED DISCONNECT SWITCH ABOVE CEILING NEXT TO EQUIPMENT. PROVIDE 2-#12, 1#12 GND IN 3/4" CONDUIT BETWEEN CU-1 AND FCU-2.

10 PROVIDE CONCRETE EQUIPMENT PAD PER STRUCTURAL DETAIL A ON SHEET 901-I-001.

11 EXISTING DATA OUTLET AND CABLE TO BE RELOCATED BEHIND EXISTING MONITOR. COORDINATE WITH MONITOR LOCATION.

PLAN NOTES CONTINUED:

12 EXISTING MICROPHONE JACK TO REMAIN.

13 EXISTING FIRE ALARM HORN/STROBE RELOCATED TO NEW NORTH WALL. MOUNT AT 80" AFF. PROVIDE NEW WIRE AND CONDUIT TO MATCH EXISTING AS REQUIRED TO RELOCATE.

14 REINSTALL EXISTING SMOKE DETECTOR IN SAME LOCATION AFTER NEW CEILING INSTALLATION IS COMPLETE.

15 MOUNT RECEPTACLE FOR CLOCK JUST ABOVE CEILING TILE. SEE ARCHITECTURAL ELEVATION A, DETAIL 4 ON SHEET 701-A-002.

16 COMPUTER STATION RECEPTACLE FOR NON-UPS LOADS.

17 PROVIDE A DIGITAL CLOCK, DIGITAL DISPLAY SYSTEMS CATALOG # BSA-62440, OR APPROVED EQUAL.

18 EXTERIOR WALL CONDUIT PENETRATION. SEE DETAIL 1 ON SHEET 701-E-017.

19 EXISTING CONDUITS TO REMAIN.

20 PROVIDE A 10' - 0" LONG X 5/8" DIAMETER COPPER -CLAD STEEL GROUND ROD NEXT TO PORTABLE GENERATOR TAP BOX. BOND GROUND ROD TO BUILDING STEEL AND WATER PIPE WITH #2 BARE COPPER CONDUCTOR. CONTRACTOR SHALL FIELD INVESTIGATE LOCATIONS TO CONNECT GROUND ROD TO EXISTING BUILDING GROUNDING SYSTEM.

21 PANEL LP1 SHALL BE MOUNTED ON UNISTRUT. SEE DETAIL 3 ON SHEET 701-E-016.
Per Add 6: "P710NETCP01 TO BE PROVIDED BY CONTRACTOR"

22 ~~IT RACK PROVIDED BY OWNER.~~

23 PROVIDE SIGN ABOVE TRANSFORMER INDICATING "TRANSFER DISCONNECTING MEANS IS LOCATED IN BASEMENT AT MCC-24 BUCKET C-1."

24 PROVIDE EXTERIOR CONCRETE EQUIPMENT PAD PER STRUCTURAL DETAIL B ON SHEET 901-I-001.

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NAME CARLOS A. RONDON
NO. PE-2019000027

FOR WSD USE:

KANSAS CITY, MISSOURI, WATER SERVICES DEPARTMENT

WASTEWATER SCADA SYSTEM IMPROVEMENTS

CITY OF KANSAS CITY,
JACKSON COUNTY, MISSOURI

701-E-013

BLUE RIVER PRIMARY WWTP ADMIN. BLDG. NEW POWER PLAN

DRAWN BY	CHECKED BY	MAP NO	RANGE	TWP	SEC
HK	CAR				
CONTRACTOR			DATE COMPLETED		

CONTRACT NO.	CONTRACT DATE	DATE	WORK ORDER NO	DRAWING NO
1444		05/01/2020		D-1352.02

PROJECT NO. 81000819

SHEET 62 OF 119

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DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP

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MECHANICAL & ELECTRICAL ENGINEERING
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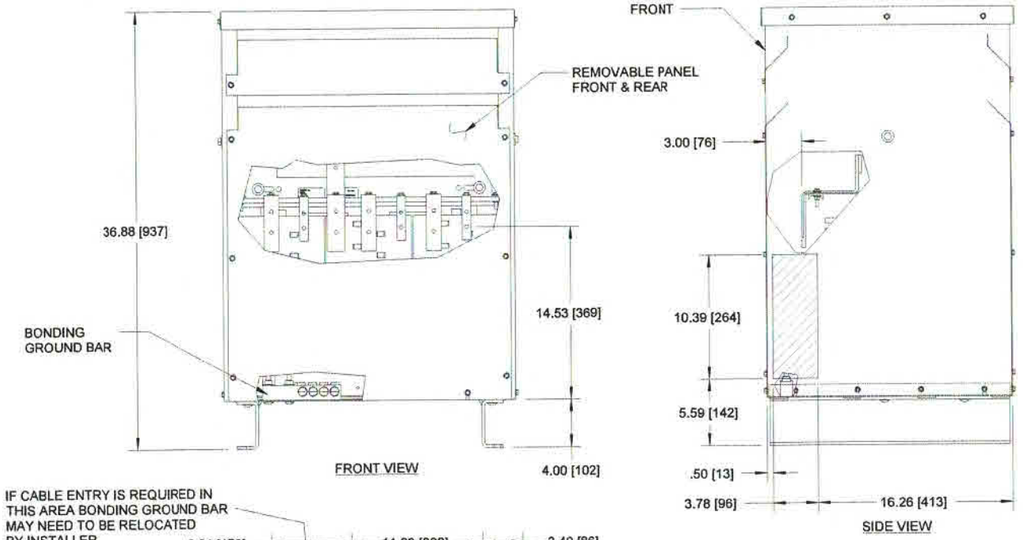
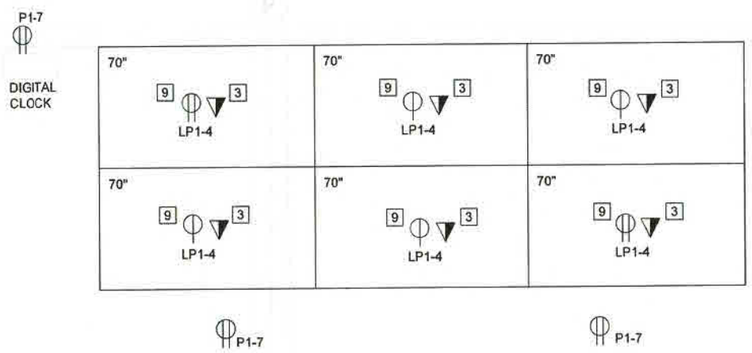
D189046

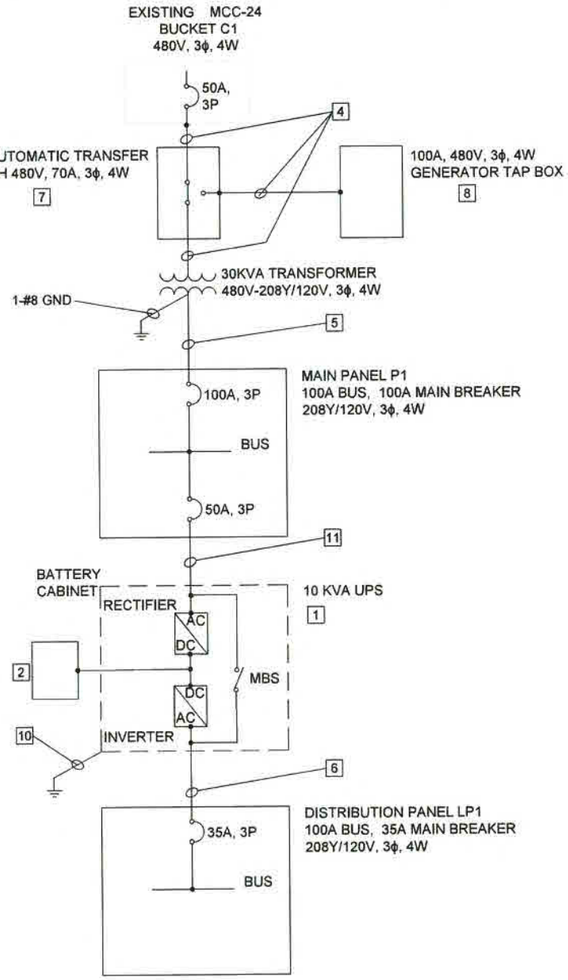


USE 10.39[264] x 3.78[96] BOTH SIDES, AND (11.03[280]+6.81[173]) x 4.25[108] ON BOTTOM AS RECOMMENDED CABLE ENTRY LOCATIONS.

1 30KVA TRANSFORMER DETAILS
SCALE: NTS



A RECEPTACLE - SOUTH WALL 70" MONITORS
SCALE: 1/2" = 1'-0"



2 ONE-LINE DIAGRAM
SCALE:NTS

GENERAL NOTES

1. SEE GENERAL NOTES, LEGEND AND ABBREVIATIONS ON SHEET 001-G-002.
2. SEE PANEL SCHEDULES ON SHEET 701-E-017.

PLAN NOTES

[1] 10KVA / 8KW, 208V, 3ϕ, 4W UPS FRAME, SCHNEIDER ELECTRIC CATALOG # G35T10KF4B4S, OR APPROVED EQUAL. SEE DETAIL ON SHEET 701-E-016.

[2] EXTERNAL BYPASS CABINET, SCHNEIDER ELECTRIC CATALOG G35TSBP10DK15F, OR APPROVED EQUAL. SEE DETAIL ON SHEET 701-E-016.

[3] PROVIDE 1" CONDUIT FROM ABOVE CEILING IN WALL TO DATA OUTLET FOR DATA CABLES. COORDINATE LOCATION WITH MONITOR LOCATION AND ARCHITECTURAL DETAILS.

[4] 4 - #6, 1 #10 GND IN 1" C.

[5] 4 - #1, 1 #8 GND IN 1-1/2" C.

[6] 4 - #8, 1 #10 GND IN 1" C.

[7] ASCO CATALOG # D-03NTS-A-3-0070-N-G0-C OR APPROVED EQUAL. SEE DETAIL 1 ON SHEET 701-E-010.

[8] PROVIDE A NEMA 3R, 600V, 3 PHASE, 4W, 100A QUICK DISCONNECT FOR A PORTABLE GENERATOR, TRYSTAR, CATALOG #GDS-01-5-W-L-M-A-C-D, OR APPROVED EQUAL. SEE DETAIL 2 ON SHEET 701-E-010.

[9] PROVIDE 3/4" CONDUIT FROM ABOVE CEILING IN WALL TO RECEPTACLE FOR POWER WIRING COORDINATE LOCATION WITH MONITOR LOCATION AND ARCHITECTURAL DETAILS.

[10] GROUND UPS PER MANUFACTURER'S RECOMMENDATIONS.

[11] 4 - #6, 1 #10 GND IN 1" C.

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NAME: CARLOS A. RONDON
NO.: PE-2019000027

FOR WSD USE:

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KANSAS CITY, MISSOURI, WATER SERVICES DEPARTMENT

WASTEWATER SCADA SYSTEM IMPROVEMENTS

CITY OF KANSAS CITY,
JACKSON COUNTY, MISSOURI

701-E-014

BLUE RIVER PRIMARY WWTP ADMIN. BLDG. ONE-LINE DIAGRAM AND DETAILS

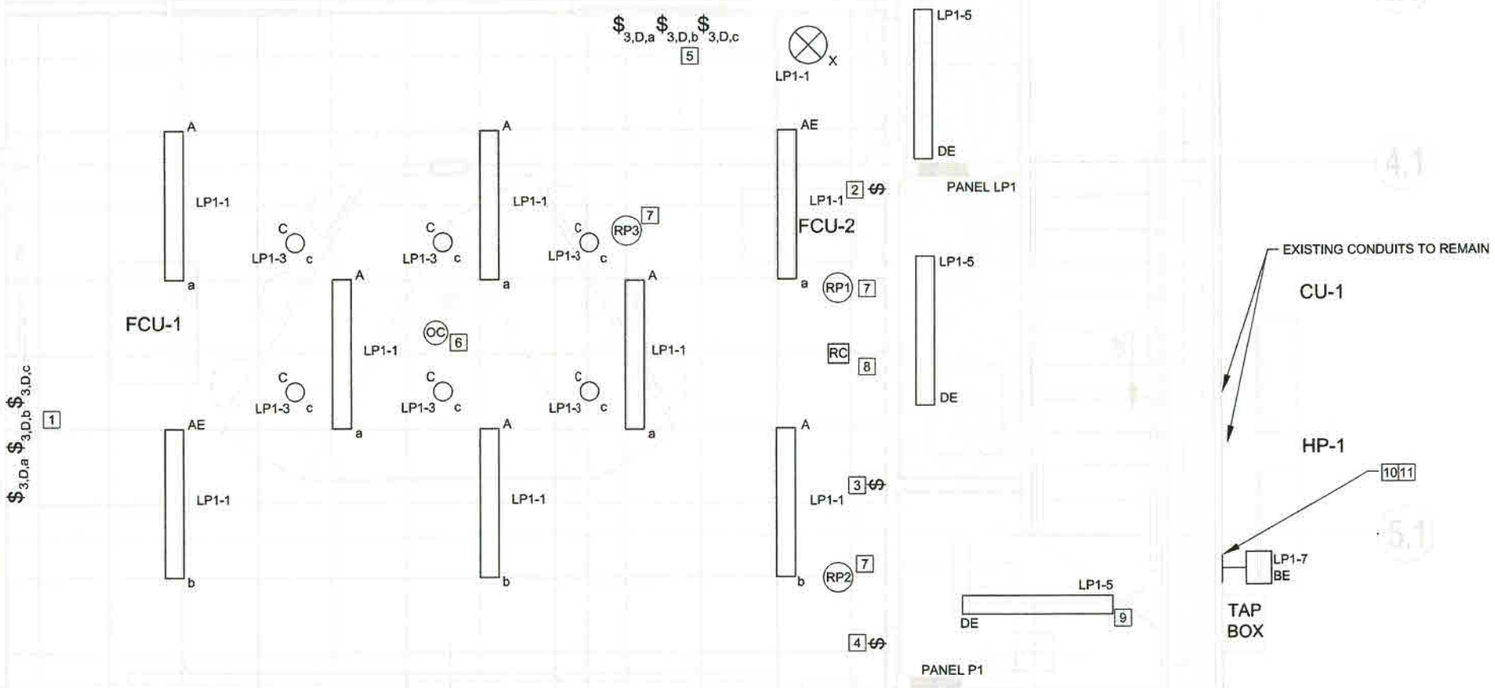
DRAWN BY	CHECKED BY	MAP NO.	RANGE	TWP	SEC
HK	CAR				
CONTRACTOR			DATE COMPLETED		

CONTRACT NO.	CONTRACT DATE	DATE	WORK ORDER NO.	DRAWING NO.
1444		05/01/2020		D-1352.02

PROJECT NO
81000819

D189046

12



GENERAL NOTES

1. SEE GENERAL NOTES, LEGEND AND ABBREVIATIONS ON SHEET 001-G-002.
2. SEE FIXTURE SCHEDULE ON SHEET 701-E-010.
3. SEE PANEL SCHEDULE ON SHEET 701-E-017.

PLAN NOTES

1. NEW LIGHT SWITCHES IN EXISTING JUNCTION BOX. PROVIDE AN EIGHT-BUTTON SWITCH FOR DIMMING ZONES AS SHOWN, LEVITON CATALOG #DRKDN-C8W, OR APPROVED EQUAL.
2. LIGHT SWITCH FOR IT ROOM FIXTURE.
3. LIGHT SWITCH FOR ELEC ROOM FIXTURE.
4. LIGHT SWITCH FOR STORAGE ROOM FIXTURE.
5. PROVIDE AN EIGHT-BUTTON SWITCH FOR DIMMING ZONES AS SHOWN, LEVITON CATALOG #DRKDN-C8W, OR APPROVED EQUAL.
6. PROVIDE A CEILING MOUNTED OCCUPANCY SENSOR, LEVITON CATALOG #OSR05-ICW, OR APPROVED EQUAL.
7. PROVIDE THREE SMART RELAY PACKS, ONE FOR EACH LIGHTING ZONE, LEVITON CATALOG #DRC07-EDO, OR APPROVED EQUAL.
8. PROVIDE A LIGHTING ROOM CONTROLLER, LEVITON CATALOG #DRC00-OLO, OR APPROVED EQUAL.
9. FIXTURE TO BE SURFACE MOUNTED TO UNDERSIDE OF CONCRETE STAIR LANDING.
10. SECURE FIXTURE TO CONCRETE BLOCK WALL. ROUTE CONDUIT UNDERNEATH CONCRETE STAIR SLAB LANDING ONCE INSIDE BUILDING.
11. EXTERIOR WALL CONDUIT PENETRATION. SEE DETAIL 1 ON SHEET 701-E-017.

N

1 ELECTRICAL NEW LIGHTING PLAN
SCALE: 1/2" = 1'-0"

0 1' 2' 4'

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NO. PE-2019000027

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KANSAS CITY, MISSOURI, WATER SERVICES DEPARTMENT

WASTEWATER SCADA SYSTEM IMPROVEMENTS

CITY OF KANSAS CITY,
JACKSON COUNTY, MISSOURI

701-E-015

BLUE RIVER WWTP ADMIN. BLDG. NEW LIGHTING PLAN

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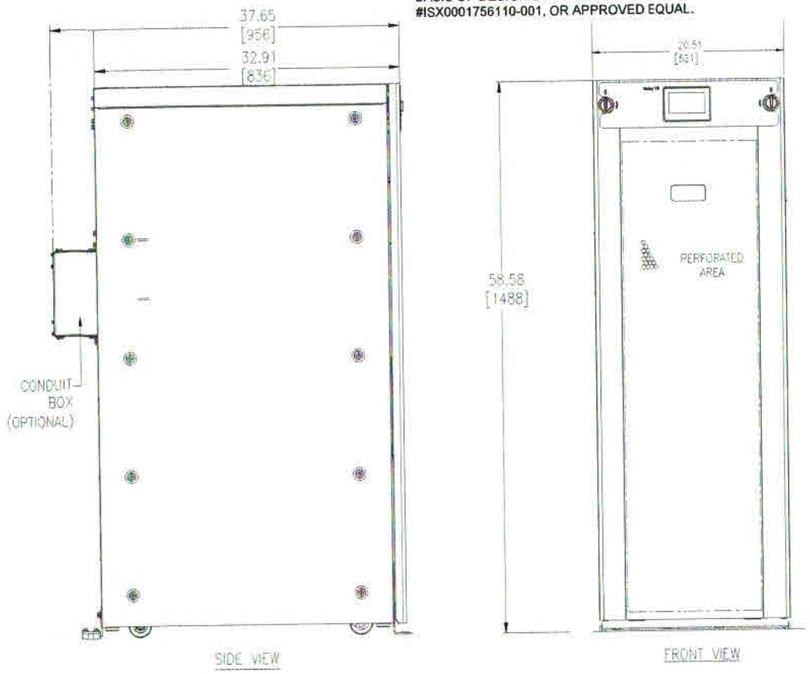
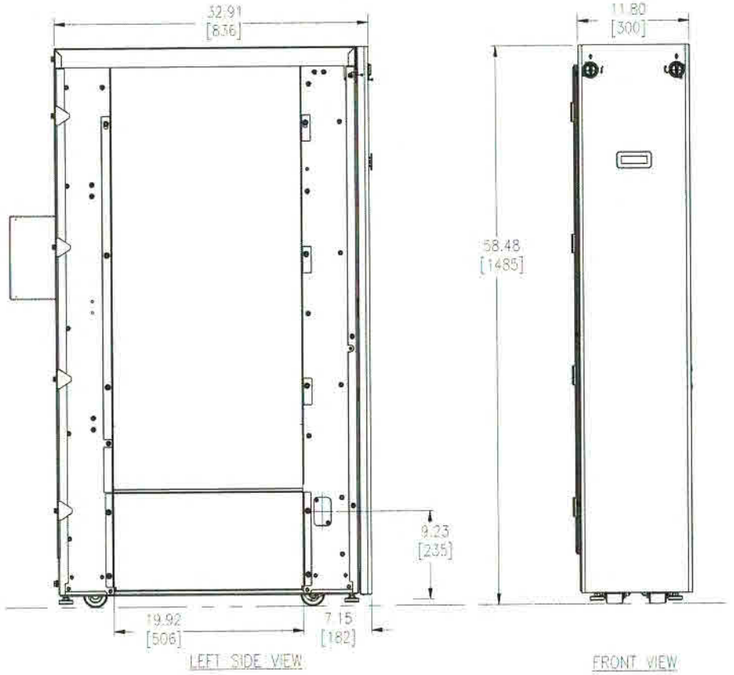
HK	CAR				
CONTRACTOR			DATE COMPLETED		
CONTRACT NO.	CONTRACT DATE	DATE	WORK ORDER NO.	DRAWING NO.	
1444		05/01/2020		D-1352.02	
PROJECT NO.					
81000819			SHEET 64 OF 119		

D189046

13

BASIS OF DESIGN BY P3 SOLUTION
#ISX0001756110-001, OR APPROVED EQUAL.





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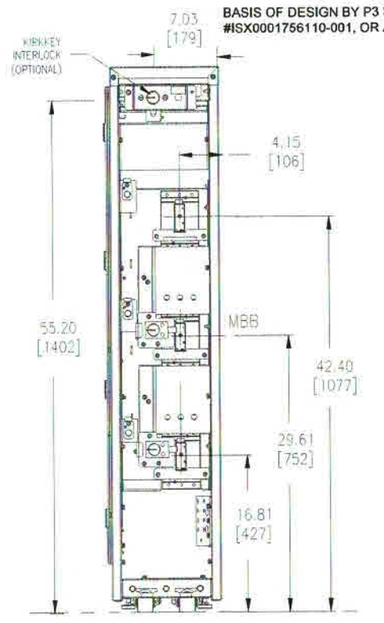
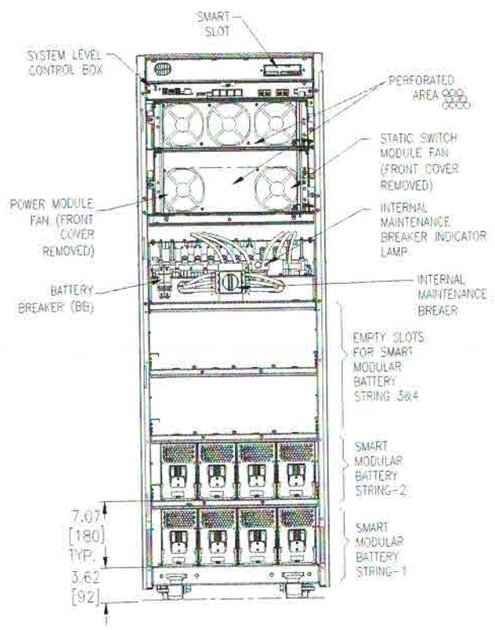
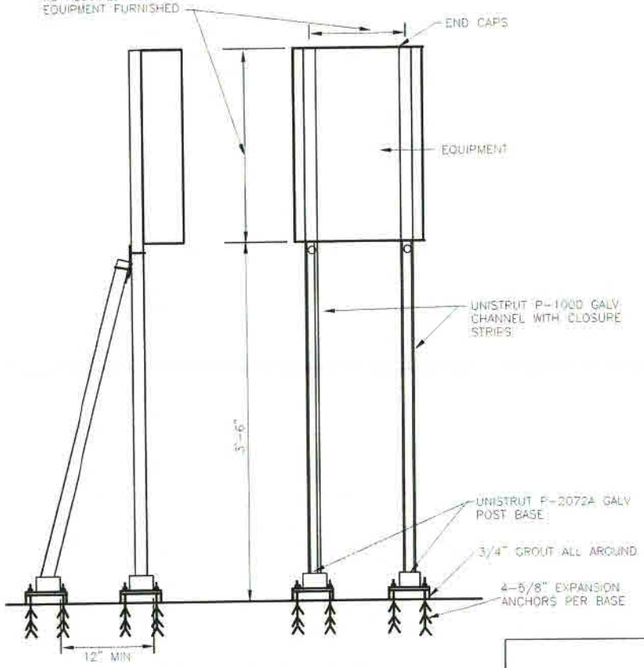
#ISX0001756110-001, OR APPROVED EQUAL.





1 UPS SYSTEM ELEVATION
SCALE:NTS



3 UNISTRUT MOUNTING DETAIL
SCALE:NTS

NOTE: IN OUTDOOR LOCATIONS, USE STAINLESS STEEL BOLTS, NUTS, WASHERS, AND ANCHOR BOLTS.

2 BYPASS CABINET ELEVATION
SCALE:NTS

DETAIL 1 AND 2 NOTES:

1. UPS SYSTEM SHALL BE 208V INPUT, 208V OUTPUT, 3 PHASE, 10KVA, 10KW, WITH THREE HOUR BATTERY BACKUP MINIMUM AND 9AH INTERNAL BATTERIES. BATTERIES SHALL SUPPORT 3KVA LOAD.
2. BYPASS CABINET SHALL BE 208V INPUT, 208V OUTPUT, 3 PHASE, WITH INTERNAL MAINTENANCE BYPASS BREAKER.

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KANSAS CITY, MISSOURI, WATER SERVICES DEPARTMENT

WASTEWATER SCADA SYSTEM IMPROVEMENTS

CITY OF KANSAS CITY,
JACKSON COUNTY, MISSOURI

701-E-016

BLUE RIVER WWTP ADMIN. BLDG. UPS DETAILS

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DATE	REVISIONS AND RECORD OF ISSUE	NO	BY	CK	APP

NAME CARLOS A. RONDON
NO PE-2019000027

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DRAWN BY	CHECKED BY	MAP NO.	RANGE	TWP	SEC
HK	CAR				
CONTRACTOR			DATE COMPLETED		

CONTRACT NO.	CONTRACT DATE	DATE	WORK ORDER NO	DRAWING NO.
1444		05/01/2020		D-1352.02

PROJECT NO.
81000819

SHEET 65 OF 119

14

D189046

PANELBOARD ID : LP1 (UPS LOADS)

VOLTAGE : 208 / 120 V — **LOCATION :** NEW IT/ELEC ROOM
PHASE / WIRE : 3 PHASE, 4 WIRE — **ENCLOSURE :** NEMA 1
RATED AMPERAGE : 100 AMPS. — **MOUNTING :** SURFACE
MAIN : 35 M.C.B.
A.I.C. (RMS SYM. AMPS.) : 22 kA

CKT. #	LOAD DESCRIPTION	CKT. VA	BREAKER AMPS.	P	PHASE LOADS VA A	B	C	BREAKER P	AMPS.	CKT. VA	LOAD DESCRIPTION	CKT. #
1	LTG CKT- 1 LINEAR	216	20	1	416	-	-	1	20	200	REC-IT RACK	2
3	LTG CKT- 2 DOWN LIGHTS	96	20	1	-	816	-	1	20	720	REC-MONITORS	4
5	LTG - STOR/IT/ELEC	96	20	1	-	-	1176	1	20	1080	REC-COMPUTER STATIONS	6
7	LTG - EXTERIOR	45	20	1	45	-	-	1	20	0	SPARE	8
9	REC - PRINTERS	360	20	1	-	360	-	1		0	SPACE	10
11	SPARE	0	20	1	-	-	0	1		0	SPACE	12
13	SPARE	0	20	1	0	-	-	1		0	SPACE	14
15	SPARE	0	20	1	-	0	-	3	30	0	SURGE PROTECTION	16
17	SPARE	0	20	1	-	-	0			0		18
19	SPARE	0	20	1	0	-	-			0		20
21	SPARE	0	20	1	-	0	-	1		0	SPACE	22
23	SPARE	0	20	1	-	-	0	1		0	SPACE	24
					461	1176	1176					

TOTAL DEMAND KVA : 2.9
TOTAL DEMAND AMPERES : 8.1

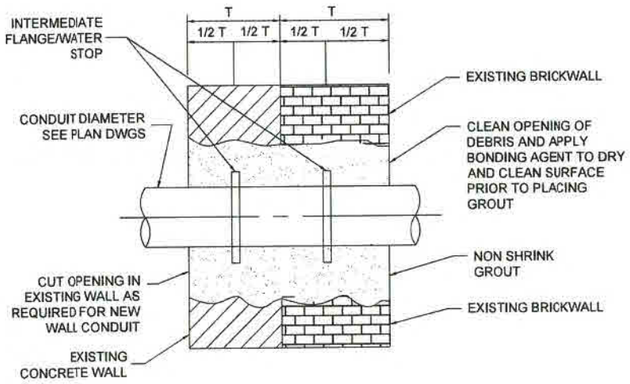
NOTE: ALL CIRCUITS TO PANEL LP1 ARE CONNECTED TO THE UPS SYSTEM. ALL RECEPTACLES CIRCUITED TO PANEL LP1 SHALL BE CLEARLY MARKED ON THE FACEPLATE WITH A SELF-ADHESIVE VINYL LABEL (LABELED "UPS ONLY") TO IDENTIFY PROPER USE. MISCELLANEOUS LOADS SHALL NOT BE CONNECTED TO UPS RECEPTACLES INTENDED FOR CRITICAL LOADS.

PANELBOARD ID : P1

VOLTAGE : 208 / 120 V — **LOCATION :** NEW IT/ELEC ROOM
PHASE / WIRE : 3 PHASE, 4 WIRE — **ENCLOSURE :** NEMA 1
RATED AMPERAGE : 100 AMPS. — **MOUNTING :** SURFACE
MAIN : 100 M.C.B.
A.I.C. (RMS SYM. AMPS.) : 22 kA

CKT. #	LOAD DESCRIPTION	CKT. VA	BREAKER AMPS.	P	PHASE LOADS VA A	B	C	BREAKER P	AMPS.	CKT. VA	LOAD DESCRIPTION	CKT. #
1	UPS (PANEL LP1)	3333	50	3	4477	-	-	2	20	1144	HP-1	2
3		3333			-	4477	-			1144		4
5		3333			-	-	4477	2	20	1144	CU-1	6
7	REC. SOUTH WALL	540	20	1	1684	-	-			1144		8
9	REC - WEST WALL	540	20	1	-	1620	-	1	20	1080	EAST WORK STAT RECEPT	10
11	REC. - NORTH WALL	360	20	1	-	-	1620	1	20	1260	WEST WORK STAT RECEPT	12
13	REC. EXTERIOR GFCI	180	20	1	180	-	-	1	20	0	SPARE	14
15	REC. IT/STOR/ELEC	540	20	1	-	540	-	1	20	0	SPARE	16
17	SPARE	0	20	1	-	-	0	1	20	0	SPARE	18
19	SPACE	0		1	0	-	-	3	30	0	SURGE PROTECTION	20
21	SPACE	0		1	-	-	0			0		22
23	SPACE	0		1	0	-	-			0		24
					6341	6637	6097					

TOTAL DEMAND KVA : 16.8
TOTAL DEMAND AMPERES : 46.7



1 EXISTING CONCRETE WALL - CONDUIT PENETRATION
SCALE: NOT TO SCALE

2 DUPLEX RECEPTACLE WITH TWO USB CHARGING PORTS
SCALE: NOT TO SCALE

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK.	APP.

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NAME: CARLOS A. RONDON
NO: PE-2019000027
FOR WSD USE:

KANSAS CITY, MISSOURI, WATER SERVICES DEPARTMENT

WASTEWATER SCADA SYSTEM IMPROVEMENTS

CITY OF KANSAS CITY,
JACKSON COUNTY, MISSOURI

701-E-017

BLUE RIVER WWTP ADMIN. BLDG. PANEL SCHEDULES

DRAWN BY	CHECKED BY	MAP NO.	RANGE	TWP	SEC
HK	CAR				
CONTRACTOR			DATE COMPLETED		

CONTRACT NO.	CONTRACT DATE	DATE	WORK ORDER NO.	DRAWING NO.
1444		05/01/2020		D-1352.02

PROJECT NO.
81000819

SHEET 66 OF 119

D189046

15

CITY OF FOUNTAINS
HEART OF THE NATION

KANSAS CITY
MISSOURI

ADDENDUM NUMBER 2

Project Number: 80XX0001 / Contract Number: 1805

Project Title: ADA Compliance for various KC Water Buildings
Blue River WTP, Administration Building

ISSUE DATE: **December 3, 2025**

Bidders are hereby notified that the Bidding and Contract Documents for the above project, for which Bids are to be received on **December 9, 2025**, are amended as follows:

Information to Bidders The following is provided to Bidders for information only:

1. Pre-Bid Conference Attendance List (attached)

Q4.	Keynote 12 (provide new door hardware without closure and latch) at Door 201.1, door schedule screenshot of door 202.1 showing existing and adjusting door closure hardware) - "which one is correct?
A4.	**Screenshots refer to two different doors (201.1 and 202.1). Door 201.1 is to be replaced to change the swing direction (keynote 12) and is located in Room 201. 202.1 needs the closure adjusted to comply with ADA (keynote 1) and is located in Room 202.**
Q5.	Have the bidding documents been submitted to the city for review?
A5.	**Yes, a permit is approved and ready to be pulled.**
Q6.	Will the GC be responsible for paying the plan-review fee?
A6.	**No.**
Q7.	Will the GC be responsible for paying the Building Permit fee?
A7.	**Yes.**
Q8.	As always, the MEP trade contractors will be responsible for their permit fees.
A8.	**Yes.**
Q9.	Please provide head-jamb-sill details for doors 109.1 & 110.1 as both doors/frames are cut-into existing masonry partition. Actually, I'm not finding any head-jamb-sill details at doors/frames for the interior partitions.
A9.	**Will provide head-jamb-sill details for doors 109.1 and 110.1. ADD02 includes details on A600.**
Q10.	On the door schedule, door 114.2 is existing to remain, while note N3 indicates "new

	door, frame & hardware"
A10.	**Existing door 114.2 is on level 02. Will be replacing exterior door 114.1 on level 01.**
Q11.	Who is responsible for testing if there is any required?
A11.	**The curtain wall and storefront manufacturer is required to provide testing on corresponding stock systems per spec section 2.2.C. items 2, 3 & 4 so they can receive the certifications for those tests prior to listing them in their product data sheets.**
Q12.	What testing is required?
A12.	**Air infiltration tests on the fixed framing and glass area as well as the entrance doors.**
Q13.	Have all permits been acquired?
A13.	**Permits are approved and ready to be pulled.**
Q14.	Who is to procure permits?
A14.	**Contractor to procure permit.**
Q15.	Are costs waived for all permits?
A15.	**No.**
Q16.	Please reiterate the temporary enclosure notes that were made on site.
A16.	**Refer to specification 015000 Temporary Exterior Enclosure / Field Office, section 1.2B6 for attachment to existing floor slab. Current design scope does not include work on the concrete columns. Any attachments to exterior face of structure must be patched and repaired to match existing conditions.**
Q17.	Does the temporary exterior enclosure need to be insulated?
A17.	**Yes, it has to be insulated as necessary to keep the air temperature within the enclosure at 70 degrees F +/- 5 degrees.**
Q18.	During interior remodeling, will we be able to close down the whole hallway (Locker room and restroom hallways)?
A18.	**Yes, but access to the control room must be preserved.**
Q19.	Is there a spec/product data/vendor for the Ceramic Brick?
A19.	**Refer to specification 040120 Masonry Repair.**
Q20.	Assuming Prevailing Wage Order #32 Building?
A20.	**Yes, we will be using Prevailing Wage Order #32.**
Q21.	For moving material to the second floor, will we be able to use the elevator? Is there a service elevator, and if so, what is its size?
A21.	**There is no separate service elevator. The existing elevator is currently not in service.**
Q22.	Please confirm that adequate laydown will be provided for our work on site.
A22.	**Yes, there will be a designated location for staging material.**

Q23.	Will the elevator be operational prior to this job commencing, or do you want me to include pricing to troubleshoot & get it running?
A23.	**No, only include the current scope.**
Q24.	Could you please share pre-bid meeting / sign-in sheet and plan holders list for the project **"ADA Compliance for various KC Water Building- Blue River WTP, Admin Bldg. Kansas City , MO"**.?
A24.	**Sign In Sheet will be attached with this addenda.**
Q25.	There is a hardware conflict on Doors – 100.1, 100.2, 145.1. They are all pairs and have rim panics and electric strikes specified, however they don't have locking center mullions included in the hardware package which would be required. Or they could go to electrified concealed vertical rod panics and not need a center locking mullion or electric strikes.
A25.	**In all three (3) hardware sets, a manual flush bolt is specified to be put on the inactive leaf. This eliminates the need for a locking center mullion since only the active leaf will serve as the exiting leaf. The manual flush blot when locked, will provide a secure situation for both leaves. The electric strike is to be installed on the inactive leaf and to the card reader by the door.**

Drawings:
A600 – ADD details (01/A600, 02/A600) for HM door installation in existing walls and (04/A600 and 05/A600) HM door installation in new walls.

Specifications:
010000 – REVISE to include 055000 specification.

055000 – ADD Metal Fabrications specification to supplement details (01/A600 and 02/A600).

NOTE: Bidders must acknowledge receipt of this Addendum by listing the number and date, where provided, on the Bid Form - Document 00410.

CITY OF FOUNTAINS
HEART OF THE NATION

KANSAS CITY
MISSOURI

Pre-Bid Conference Attendance List

Project Number: 80XX0001 / **Contract Number:** 1805

Project Title: ADA Compliance for various KC Water Buildings
Blue River WTP, Administration Building

KC Water Department
4800 East 63rd Street, Kansas City, Missouri 64130
Tuesday, November 18, 2025; 10:00 AM ■ Mandatory ☐ Optional

Name	Organization	Phone Number	E-Mail Address
Bon Marie Gardner	KC Water	816-513-0354	bon.marie.gardner@kcmo.org
Bill Vaughn	Mark One	816-842-7023	Bill.Vaughn@markoneco.com
Sandy Walk	Witec	8168705493	Sandy@witecinc.com
David Strack	WITEC	816-739-3645	DavidS@witecinc.com
Maurice Boss	Custom Engineering	816 350 1475	Mboss@customengco.com
Liz Fraka	SLATTERY	816-708-1500	lfraka@slatterydesign.com
Amy Slattery	SLATTERY	816-708-1500	aslattery@slatterydesign.com
Katie Walker	Hartline	816-921-6000	kwalker@hartlinekc.com
Jennifer Hart	Hartline	816-921-6000	jhart@hartlinecon.com
Brad Mantz	Max Elec	816-918-6358	Bradm@maxelectric-KC.com
Amanda Augustine	EAE	913-620-4046	aaugustine@eaei.com
Marzella Hammons	Bucher Bucwinn	573 094	
Kevin White	KC Water	816 513 0213	Kevin.White@kcmo.org
AUSTIN PFANNENSTIEL	MEGA KC	816-262-8383	AUSTINP@megakc.com
Dustin Lewis	Realm	816-279-6620	Dustin@realmconstruction.com
David Madden	Vazquez CC	816-225-4576	DavidM@Vazquezcc.com
Bailey Wilcox	FMI construction	913-426-2625	FM baileyw@fmicompanies.com
BROOKE SCHNURR	D BUILD	3)626-4217	bschnurr@dibuild.com

055000

METAL FABRICATIONS

PART 1 - GENERAL

1.1 WORK INCLUDED:

A. Provide steel angle lintels at door openings as called out in the drawings.

B. Provide steel plate threshold at new door openings.

C. Note: Due to H2S gases in the area, all steel shall be painted or completely enclosed within other materials. All edges must be finished with sealant.

1.2 COORDINATION

A. COORDINATE SELECTION OF SHOP PRIMERS with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

1.3 COORDINATE INSTALLATION OF METAL FABRICATIONS that are anchored to or that receive other work. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

1.4 RELATED SECTIONS

A. None.

1.5 ACTION SUBMITTALS

A. PRODUCT DATA for the following:

1. Paint products.

2. Grout.

B. SHOP DRAWINGS: Include plans, elevations, sections, details, and attachments to other work.

1.6 INFORMATION SUBMITTALS

A. QUALIFICATION DATA: For professional engineer.

B. MILL CERTIFICATES: Signed by stainless-steel manufacturers, certifying that products furnished comply with requirements.

C. WELDING CERTIFICATES of installer's personnel

D. PAINT COMPATIBILITY CERTIFICATES: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

E. RESEARCH/EVALUATION REPORTS: For post-installed anchors, from ICC-ES.

1.7 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

B. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."

2. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."

3. AWS D1.6/D1.6M, "Structural Welding Code - Stainless Steel."

1.8 FIELD CONDITIONS

A. FIELD MEASUREMENTS: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 METAL MATERIALS

A. METAL SURFACES, GENERAL: Provide materials with smooth, flat surfaces unless otherwise indicated.

B. STEEL PLATES, SHAPES, AND BARS: ASTM A36

C. ROLLED-STEEL FLOOR PLATE: ASTM A 786/A 786M, rolled from plate complying with ASTM A 36/A 36M or ASTM A 283/A 283M, Grade C or D.

D. ROLLED-STAINLESS-STEEL FLOOR PLATE: ASTM A 793.

E. ABRASIVE-SURFACE FLOOR PLATE: Steel plate with abrasive granules rolled into surface.

2.2 FASTENERS:

A. AT EXPOSED FASTENERS, provide square or hex socket flat-head machine screws unless otherwise indicated.

B. POST-INSTALLED ANCHORS: Chemical (epoxy) anchors capable of sustaining, without failure, a load equal to six (6)-times the load imposed when installed in unit masonry or four (4)-times the load imposed when installed in concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.

1. MATERIAL FOR INTERIOR LOCATIONS: Carbon-steel components zinc-plated to comply with ASTM B633 or ASTM F1941, Class Fe/Zn 5, unless otherwise indicated.

2.3 MISCELLANEOUS MATERIALS:

A. WELDING RODS AND BARE ELECTRODES: Select according to AWS specifications for metal alloy welded. For aluminum and stainless-steel railings, provide type and alloy as recommended by producer of metal to be welded and as required for color match, strength, and compatibility in fabricated items.

B. GALVANIZING REPAIR PAINT: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

C. SHOP PRIMER: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI # 79 and compatible with topcoat indicated in Division-09 “Painting” Section.

1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.

D. BITUMINOUS PAINT: Cold-applied asphalt emulsion complying with ASTM D1187.

E. NONSHRINK, NONMETALLIC GROUT: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.4 FABRICATION – GENERAL

A. SHOP ASSEMBLY: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. CUT, DRILL, AND PUNCH METALS CLEANLY AND ACCURATELY. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm) unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

C. FORM BENT-METAL CORNERS TO SMALLEST RADIUS POSSIBLE without causing grain separation or otherwise impairing work.

D. FORM EXPOSED WORK with accurate angles and surfaces and straight edges.

E. WELD CORNERS AND SEAMS continuously to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.

2. Obtain fusion without undercut or overlap.

3. Remove welding flux immediately.

4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing.

F. FORM EXPOSED CONNECTIONS WITH HAIRLINE JOINTS, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.

G. CUT, REINFORCE, DRILL, AND TAP METAL FABRICATIONS as indicated to receive finish hardware, screws, and similar items.

H. PROVIDE FOR ANCHORAGE OF TYPE INDICATED; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

2.5 MISCELLANEOUS FRAMING AND SUPPORTS

A. GENERAL: Provide framing and supports not specified in other Sections as needed to complete the Work.

B. FABRICATE UNITS FROM STEEL SHAPES, PLATES, AND BARS of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.

1. Fabricate units from slotted channel framing where indicated.

2. Furnish inserts for units installed after concrete is placed.

2.6 MISCELLANEOUS STEEL TRIM

A. UNLESS OTHERWISE INDICATED, fabricate units from steel shapes, plates, and bars of profiles shown with continuously welded joints and smooth exposed edges. Miter corners and use concealed field splices where possible.

B. PROVIDE CUTOUTS, FITTINGS, AND ANCHORAGES as needed to coordinate assembly and installation with other work.

C. PROVIDE WITH INTEGRALLY WELDED STEEL STRAP ANCHORS for embedding in concrete or masonry construction.

2.7 LOOSE STEEL LINTELS

A. FABRICATE LOOSE STEEL LINTELS from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated. Fabricate in single lengths for each opening unless otherwise indicated. Weld adjoining members together to form a single unit where indicated.

B. SIZE LOOSE LINTELS to provide bearing length at each side of openings equal to 1/12 of clear span, but not less than 8 inches (200 mm) unless otherwise indicated.

C. GALVANIZE AND PRIME loose steel lintels located in exterior walls.

2.8 STEEL WELD PLATES AND ANGLES

A. PROVIDE STEEL WELD PLATES AND ANGLES not specified in other Sections, for items supported from concrete construction as needed to complete the Work. Provide each unit with no fewer than two integrally welded steel strap anchors for embedding in concrete.

2.9 FINISHES, GENERAL

A. FINISH METAL fabrications after assembly.

B. FINISH EXPOSED SURFACES to remove tool and die marks and stretch lines, and to blend into surrounding surface.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. CUTTING, FITTING, AND PLACEMENT: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

B. FIT EXPOSED CONNECTIONS ACCURATELY together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

C. FIELD WELDING: Comply with the following requirements:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.

2. Obtain fusion without undercut or overlap.

3. Remove welding flux immediately.

4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

D. FASTENING TO IN-PLACE CONSTRUCTION: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.

E. PROVIDE TEMPORARY BRACING or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

F. CORROSION PROTECTION: Coat concealed surfaces of aluminum that come into contact with grout, concrete, masonry, wood, or dissimilar metals with the following:

1. Cast Aluminum: Heavy coat of bituminous paint.

2. Extruded Aluminum: Two coats of clear lacquer.

3.2 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

A. GENERAL: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

3.3 ADJUSTING AND CLEANING

A. TOUCHUP PAINTING: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

B. APPLY BY BRUSH OR SPRAY to provide a minimum 2.0-mil dry film thickness.

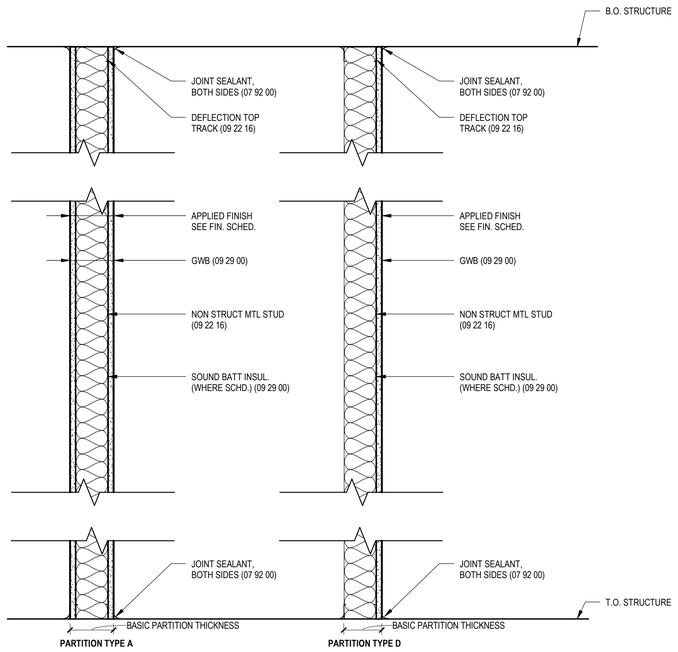
C. TOUCHUP PAINTING: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Section 099100 "Painting."

D. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780/A 780M.

End of Section

PARTITION SYSTEM

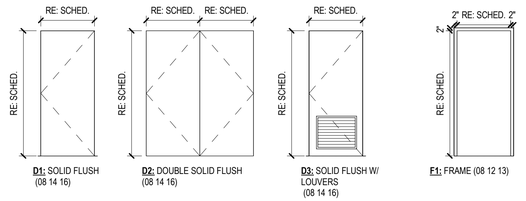
PARTITION IDENTIFICATION PLAN SYMBOL	BASIC PARTITION THICKNESS	ACOUSTICAL RATINGS (STC)	ACOUSTICAL TEST NUMBER	FIRE RATING	INSULATION THICKNESS	GWB THICKNESS	PARTITION CORE			FINISH HEIGHT		REMARKS
							STUD / FURRING SIZE	METAL THICKNESS	STUD SPACING	STUD TO STRUCT ABV	GWB TO STRUCT ABV	
Partition System A												
A3	0' - 4 7/8"	N/A	N/A	N/A	3-1/2"	5/8"	3 5/8"	20 GA	16" OC	YES	YES	DEFLECTION TOP TRACK (09 22 16)
A6	0' - 7 1/4"	N/A	N/A	N/A	3-1/2"	5/8"	6"	20 GA	16" OC	YES	YES	DEFLECTION TOP TRACK (09 22 16)
Partition System D												
D2	0' - 3 1/8"	N/A	N/A	N/A	3-1/2"	5/8"	2 1/2"	20 GA	16" OC	YES	YES	DEFLECTION TOP TRACK (09 22 16)
D3	0' - 4 1/4"	N/A	N/A	N/A	3-1/2"	5/8"	3 5/8"	20 GA	16" OC	YES	YES	DEFLECTION TOP TRACK (09 22 16)
D6	0' - 6 5/8"	N/A	N/A	N/A	3-1/2"	5/8"	6"	20 GA	16" OC	YES	YES	DEFLECTION TOP TRACK (09 22 16)



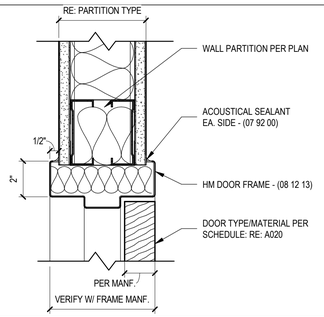
03 PARTITION TYPES AND SCHEDULE

DOOR SCHEDULE

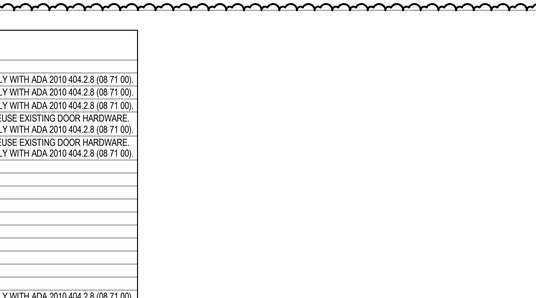
MARK	HEIGHT	WIDTH	DOOR TYPE	FRAME TYPE	DOOR FINISH	FRAME FINISH	HARDWARE	FIRE RATING	COMMENTS
101.1	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	N/A	ADJUST EXISTING DOOR CLOSURE HARDWARE TO COMPLY WITH ADA 2010 404.2.8 (08 71 00).
101A.1	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	N/A	ADJUST EXISTING DOOR CLOSURE HARDWARE TO COMPLY WITH ADA 2010 404.2.8 (08 71 00).
103.1	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	N/A	ADJUST EXISTING DOOR CLOSURE HARDWARE TO COMPLY WITH ADA 2010 404.2.8 (08 71 00).
105.1	7' - 0"	5' - 4"	D2	EXIST	WD	HM	EXIST	N/A	REPLACE LEAFS WITH (1) 3'-0" LEAF, AND (1) 2'-4" LEAF. REUSE EXISTING DOOR HARDWARE. ADJUST EXISTING DOOR CLOSURE HARDWARE TO COMPLY WITH ADA 2010 404.2.8 (08 71 00).
105.2	7' - 0"	5' - 4"	D2	EXIST	WD	HM	EXIST	N/A	REPLACE LEAFS WITH (1) 3'-0" LEAF, AND (1) 2'-4" LEAF. REUSE EXISTING DOOR HARDWARE. ADJUST EXISTING DOOR CLOSURE HARDWARE TO COMPLY WITH ADA 2010 404.2.8 (08 71 00).
109.1	7' - 0"	3' - 0"	D3	F1	WD	HM	5	N/A	
109.2	7' - 0"	3' - 0"	D1	F1	WD	HM	4	N/A	UNDERCUT FOR VENTILATION
109.3	7' - 0"	3' - 0"	D1	F1	WD	HM	4	N/A	UNDERCUT FOR VENTILATION
110.1	7' - 0"	3' - 0"	D3	F1	WD	HM	5	N/A	
110.2	7' - 0"	3' - 0"	D1	F1	WD	HM	4	N/A	UNDERCUT FOR VENTILATION
110.3	7' - 0"	3' - 0"	D1	F1	WD	HM	4	N/A	UNDERCUT FOR VENTILATION
111.1	7' - 0"	3' - 0"	D3	F1	WD	HM	5	N/A	
111.2	7' - 0"	3' - 0"	D3	F1	WD	HM	5	N/A	
111.3	7' - 0"	3' - 0"	D1	F1	WD	HM	4	N/A	UNDERCUT FOR VENTILATION
111.4	7' - 0"	3' - 0"	D1	F1	WD	HM	4	N/A	UNDERCUT FOR VENTILATION
113.1	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	N/A	ADJUST EXISTING DOOR CLOSURE HARDWARE TO COMPLY WITH ADA 2010 404.2.8 (08 71 00).
114.2	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	N/A	ADJUST EXISTING DOOR CLOSURE HARDWARE TO COMPLY WITH ADA 2010 404.2.8 (08 71 00).
115.1	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	N/A	ADJUST EXISTING DOOR CLOSURE HARDWARE TO COMPLY WITH ADA 2010 404.2.8 (08 71 00).
201.1	7' - 0"	3' - 0"	D1	F1	WD	HM	6.1	N/A	
202.1	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	N/A	ADJUST EXISTING DOOR CLOSURE HARDWARE TO COMPLY WITH ADA 2010 404.2.8 (08 71 00).
203.1	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	N/A	ADJUST EXISTING DOOR CLOSURE HARDWARE TO COMPLY WITH ADA 2010 404.2.8 (08 71 00).
205.1	7' - 0"	3' - 0"	D1	F1	WD	HM	6.2	N/A	
208.1	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	N/A	ADJUST EXISTING DOOR CLOSURE HARDWARE TO COMPLY WITH ADA 2010 404.2.8 (08 71 00).
209.1	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	N/A	ADJUST EXISTING DOOR CLOSURE HARDWARE TO COMPLY WITH ADA 2010 404.2.8 (08 71 00).
210.1	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	EXIST	N/A	ADJUST EXISTING DOOR CLOSURE HARDWARE TO COMPLY WITH ADA 2010 404.2.8 (08 71 00).



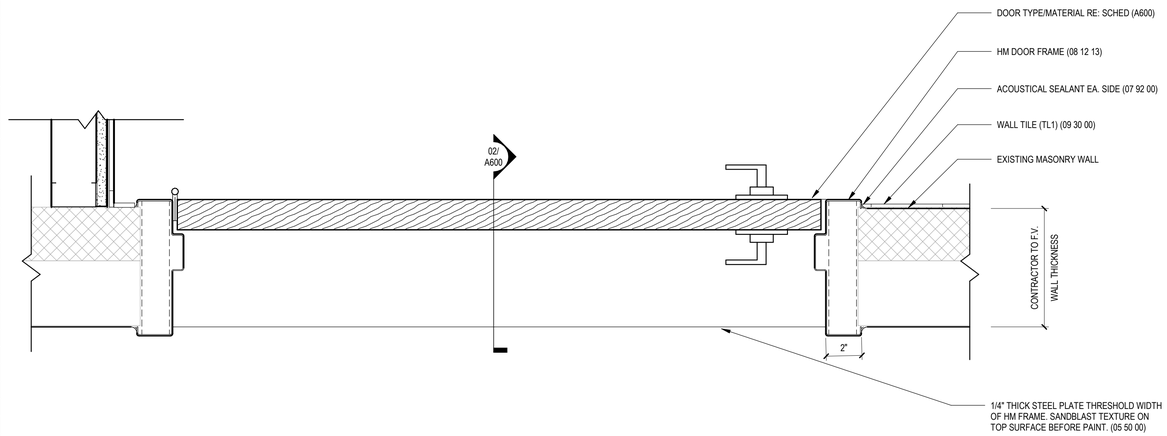
06 DOOR SCHEDULE AND LEGEND



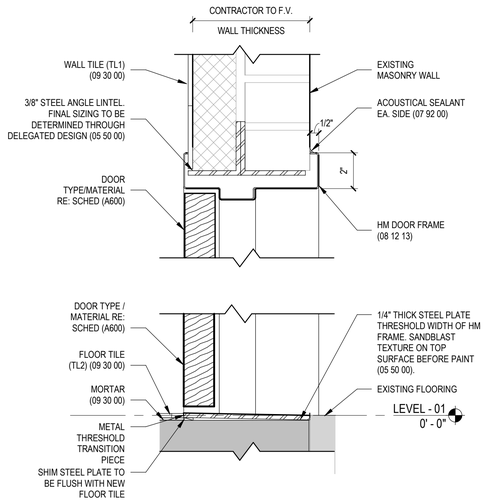
04 SECTION DETAIL - HM DOOR HEAD IN NEW PARTITION, TYP.
3" = 1'-0"



05 PLAN DETAIL - HM DOOR JAMB IN NEW PARTITION, TYP.
3" = 1'-0"



01 PLAN DETAIL - HM DOOR JAMB IN EXISTING MASONRY WALL
RE: 01 / A500 | 3" = 1'-0"



02 SECTION DETAIL - HM DOOR HEAD AND SILL IN EXISTING MASONRY WALL
RE: 01 / A500 | 3" = 1'-0"

©2025 SLATTERY LAF

12/3/2025 10:17:44 AM

SLATTERY DESIGN + ARCHITECTURE

MO Certificate of Authority: #2016000414

SHEET NOTES

GENERAL NOTES

△	DATE	DESCRIPTION
2	12/03/2025	ADD02

STATE OF MISSOURI — AMY J. SLATTERY — NUMBER A-2007019930 — 12/31/2025 — ARCHITECT

AMY SLATTERY - ARCHITECT - MO # 2007019930

ADD02

FOR WSD USE:

KANSAS CITY, MISSOURI, WATER SERVICES DEPARTMENT

7300 HAWTHORNE RD. WW FACILITY #701

BLUE RIVER WASTEWATER TREATMENT PLANT, ADMIN. BLDG.

SCHEDULES & ELEVATIONS

ARCHITECTURE

DRAWN BY	CHECKED BY	MAP NO.	RANGE	TWP	SEC
LAF	AJS	S011	33	50	25
CONTRACTOR			DATE COMPLETED		

CONTRACT NO.	DRAWING SUBMITTED	FAC/WWE/WO#	DRAWING NO.
1805	7/31/2025	701	D1059.05

PROJECT NO. 80XX0001 — **A600** — SHEET 14 OF 37

CITY OF FOUNTAINS
HEART OF THE NATION

KANSAS CITY
MISSOURI

REQUEST FOR INTERPRETATION

Project Number _____

Project Title _____

Contractor _____

RFI Number _____ Date _____

From: _____

To: _____

Re: _____

Spec. Sec. Ref: Paragraph: Drawing Ref: Detail:

Signed:

Response:

❑ Attachments

Response From: To: Date Transmitted:_____ Date Rec'd:_____

Signed:_____ Signed:_____
Design Professional Owner's Representative

Distribution:
- ❑ Owner
- ❑ Contractor
- ❑ Construction Manager
- ❑ Design Professional
- ❑ Consultant _____
- ❑ Other _____

CITY OF FOUNTAINS
HEART OF THE NATION

KANSAS CITY
MISSOURI

REQUEST FOR INTERPRETATION LOG

Project Number _____

Project Title _____

CONTRACTOR _____

OWNER _____

RFI No.	Issue Date	Brief Description of issue and response	Respond Date

CITY OF FOUNTAINS
HEART OF THE NATION

KANSAS CITY
MISSOURI

SUPPLEMENTAL DESIGN INSTRUCTION

Project Number _____

Project Title _____

To Contractor _____

From: _____ SDI No _____ Issue Date: _____

The Work shall be carried out in accordance with the following supplemental instructions issued in accordance with the Contract Documents without change in Contract Price or Contract Times. Proceeding with the Work in accordance with these instructions indicates your acknowledgement that there will be no change in the Contract Price or Contract Times.

Description:

❑ Attachments *(List)*

(Signature) Design Professional Date

Distribution:
- ❑ Owner
- ❑ Contractor
- ❑ Construction Manager
- ❑ Design Professional
- ❑ Consultant _____
- ❑ Other _____

CITY OF FOUNTAINS
HEART OF THE NATION

KANSAS CITY
MISSOURI

REQUEST FOR PROPOSAL

Project Number _____

Project Title _____

To Contractor _____

From: _____ RFP No _____ Issue Date: _____

Please submit an itemized proposal for changes in the Contract Price and Contract Times for proposed modifications to the Contract Documents described herein. Submit proposal within _____ days, or notify the Owner in writing of the date on which you anticipate submitting your proposal.

This is NOT a Change Order, a Work Change Directive or a direction to proceed with the work described in the proposed modifications.

Description:

❑ Attachments

Prepared by Design Professional

Prepared by Construction Manager

REQUESTED by OWNER'S Representative

Distribution:
- ❑ Owner
- ❑ Contractor
- ❑ Construction Manager
- ❑ Design Professional
- ❑ Consultant _____
- ❑ Other _____

CITY OF FOUNTAINS
HEART OF THE NATION

KANSAS CITY
MISSOURI

REQUEST FOR PROPOSAL LOG

Project Number _____

Project Title _____

CONTRACTOR _____

OWNER _____

RFP No.	Issue Date	Brief Description of Request	Respond Date	Amount	CO No.

CITY OF FOUNTAINS
HEART OF THE NATION

KANSAS CITY
MISSOURI

CHANGE ORDER

Project Number/Contract Number _____

Project Title _____

Change Order No: _____ Date of Issuance: _____

Ordinance No: _____ Ordinance Effective Date: _____

Contract Notice To Proceed Date: _____

To CONTRACTOR: (Enter Contractor's Company Name)

The Contract is changed as follows: _____

This Change Order constitutes compensation in full on behalf of the Contractor and its subcontractors and suppliers for all costs, including impact costs and extended general conditions, and markups directly and indirectly attributable to the Work changes ordered herein, for all delays related thereto and for performance of the changes within the time stated. Contractor hereby releases all claims for delay, interruption, extended general conditions, impact and cumulative impact claims for this Work.

[**Note**: Identify the specific attachments; example: "Attachment A, Additional Scope of Services."] **Delete all notes before printing final**

☐ See Attached Document(s) Flysheets needed before each attachment

A - Updated Certificate of Insurance

B-

C.D.E…...

[**Note:** If the CO does not change the Contract Price, use "Director of Water Services" instead of "Director of Finance"]

Not valid until signed by the Director of Finance.

The original Contract Price was	$0.00
Net change by previously authorized Change Orders	$0.00
The Contract Price prior to this Change Order was	$0.00
The Contract Price will be (☐ increased by) (☐ decreased by) (☐ unchanged)	$0.00
The new Contract Price including this Change Order will be	$0.00

[Note: If revised, establish and enter new dates. If unchanged, enter current contract dates. If you are only changing the Final Completion date, add the following reference: "The Contract Time for Final Completion will be . . ."]

The Contract Time will be (☐ increased by) (☐ decreased by) (☐ unchanged)	( ) calendar days
The date of Substantial Completion as of the date of this Change Order therefore is	Enter Date
The date of Final Completion as of the date of this Change Order therefore is	Enter Date

Project No. _____ Project Title_____
Change Order No.

[**Note:** Include any required additional signatures.]

DESIGN PROFESSIONAL: **Name (Type Company Name)**	**By:** **Title:**	(type Name) (type Title)	**Date:**
CONTRACTOR: **Name (Type Company Name)**	**By:** **Title:**	(type Name) (type Title)	**Date:**
CITY: **KC Water**	**By** **Title:**	CEO/SSO/OO's name CEO/SSO/OO's title	**Date:**

Approved as to form: _____
Assistant City Attorney

[**Note**: If this CO does not change the Contract Price, delete the cert. of funds by Finance Director but send signed copy to Finance.]

I certify there is a balance otherwise unencumbered to the credit of the appropriation to which the above amount is chargeable, and a cash balance otherwise unencumbered in the treasury to the credit of the fund from which payment is to be made, each sufficient to meet the above obligation.

By: _____
Director of Finance Date

Distribution:
- ❑ CITY
- ❑ CONTRACTOR
- ❑ DESIGN PROFESSIONAL

REMINDER: CONTRACTOR is responsible for considering the effect this Change Order may have on its ability to meet or exceed the D/M/WBE participation amounts in its Contractor Utilization Plan (CUP) as amended by any previously approved Request for Modification/Substitution. If CONTRACTOR will not be able to achieve the approved participation amounts in performing the work included within this Change Order, or if CONTRACTOR needs to retain the services of additional D/M/WBEs not previously listed in its CUP, CONTRACTOR is advised to submit a Request for Modification/Substitution.

CITY OF FOUNTAINS
HEART OF THE NATION

KANSAS CITY
MISSOURI

WORK CHANGE DIRECTIVE

Project Number _____

Project Title _____

No.: _____ Date of Issuance: _____

TO:
(CONTRACTOR)

You are directed to proceed promptly with the following work:

Description:

Purpose of Work Change Directive:

Attachments: *(List documents supporting change)*

If the above work results on a change in the Contract Price or Contract Times, any request for a Change Order based thereon will involve one or more of the following methods of determining the effect of the change(s).

Method of determining change in Contract Price:	Method of determining change in Contract Times:
❑ Unit Prices	❑ CONTRACTOR's Records
❑ Lump Sum	❑ DESIGN PROFESSIONAL's Records
❑ As Stipulated in General Conditions	❑ City's Records
❑ Other _____	❑ Other _____
Estimated increase (decrease) in Contract Price:	Estimated increase (decrease) in Contract Times:
$ _____	Substantial Completion: _____ days;
If the change involves an increase, the estimated Amount is not to be exceeded without further authorization.	Final Completion: _____ days. If the change involves an increase, the estimated times are not to be exceeded without further authorization.

Recommended:	Recommended:	Recommended:
DESIGN PROFESSIONAL	Construction Manager	City
By (Authorized Signature)	By (Authorized Signature)	By (Authorized Signature)

Distribution:
❑ City
❑ Contractor
❑ Construction Manager
❑ Design Professional
❑ Consultant
❑ Other

WORK CHANGE DIRECTIVE ("WCD") INSTRUCTIONS

[Note: Do not attach these instructions to the WCD Form]

A. GENERAL INFORMATION

This document was developed for use in situations involving changes in the Work which, if not processed expeditiously, might delay the Project. These changes are often initiated in the field and may affect the Contract Price or the Contract Times. This is not a Change Order, but only a directive to proceed with Work that may be included in a subsequent Change Order. If the WCD may result in an increase in the Contract Price, a contract impact cost analysis must be performed prior to issuing the WCD. Availability of funds and authorization to expend funds must be part of the analysis.

For supplemental instructions and minor changes not involving a possible change in the Contract Price or the Contract Times a Supplemental Design Instruction may be used.

B. COMPLETING THE WORK CHANGE DIRECTIVE FORM

Based on conversations between Design Professional, City's Representative and CONTRACTOR, Design Professional must complete the following:

DESCRIPTION: shall include a summary of the Work included in the WCD. Additional information may be attached to the WCD to further define the scope.

PURPOSE OF WORK CHANGE DIRECTIVE: will identify clearly if the Work included in the WCD is an addition, deletion, revision, or some combination.

ATTACHMENTS: shall identify all attachments included in and made a part of the WCD. Be certain that attachments are clearly labeled.

METHOD OF DETERMINING CHANGE, IF ANY, IN CONTRACT PRICE: Mark the method to be used in determining the final cost of Work involved and the estimated net effect on the Contract Price. If the change involves an increase in the Contract Price and the estimated amount is approached before the additional or changed Work is completed, another WCD must be issued to change the estimated price. Do not leave blank spaces or write "To be determined" (or "TBD"). An estimated dollar figure must be assigned to the Work. If the WCD is not likely to change the Contract Price, the space for estimated increase (decrease) should be marked "No Change in Price".

METHOD OF DETERMINING CHANGE, IF ANY, IN CONTRACT TIMES: Mark the method to be used in determining the change in Contract Times and the estimated increase or decrease in Contract Times. If the change involves an increase in the Contract Times and the estimated times are approached before the additional or changed Work is completed, another WCD must be issued to change the times or CONTRACTOR may stop the changed Work when the estimated times are reached. Do not leave blank spaces or write "To be determined" (or "TBD"). If the WCD is not likely to change the Contract Times, the space for estimated increase (decrease) should be marked "No Change in Times".

Once Design Professional has completed and signed the form, all copies should be sent to CITY for authorization because Design Professional does not have authority to authorize changes in Price or Times. Once authorized by CITY, a copy must be sent by Design Professional to CONTRACTOR. Price and Times may only be changed by Change Order signed by CITY, Design Professional, and CONTRACTOR. If the value of the work included in the WCD exceeds the contingency or budget available for the contract, staff must obtain written approval from the Director or his or her designee before the WCD is issued. A Director or his or her designee may not approve a WCD that will exceed City Council authorization. If the work included in the WCD is needed as a result of an emergency, staff may proceed with the issuance of the WCD without

prior written approval even if the value of the work added is expected to exceed the contract contingency balance.

Once the Work covered by this directive is completed or final cost and times are determined. CONTRACTOR must submit proper documentation for inclusion in a Change Order.

IF THIS IS A DIRECTIVE TO PROCEED WITH A CHANGE THAT MAY AFFECT THE CONTRACT PRICE OR THE CONTRACT TIMES A CHANGE ORDER, IF ANY, MUST BE PROCESSED PROMPTLY.

SECTION 01000 – GENERAL PROJECT REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. This section covers the general project requirements for all projects.

B. The work to be performed under these Contract Documents shall be consistent with Construction General Conditions, or Design-Build General Conditions in the construction, installation, and completion of all project work.

C. Project Delivery. For Work under a traditional construction contract, this Section shall be performed by "Contractor." Work under an alternative project delivery or Design-Build contract shall be performed by "Design-Builder."

1. All uses of the word "Contractor" listed in all Sections shall be substituted from "Contractor" to "Design-Builder."
2. References to General Conditions and/or supplementary conditions listed in all Sections shall be substituted from "Section 00700 – General Conditions, Section 00800 – Supplementary Conditions," to "Design-Build General Conditions of Contract"

1.02 RELATED SECTIONS

A. Section 00700 – General Conditions.

B. Section 01300 – Submittals.

C. Section 01329 - Safety Plan

1.03 CODES AND STANDARDS

A. By reference, as applicable for the Work being performed.

1.04 SUBMITTALS

A. Submit as specified in Section 01300 – Submittals.

B. Project Communications:

1. Progress Meeting Minutes.

C. Other:

1. Description and location of offsite storage arrangements.
2. Construction Site Plan.
3. Safety Representative.

1.05 QUALITY ASSURANCE

A. The Contractor is responsible for the quality assurance and quality control of the Work.

1.06 TRAVEL

A. Projects with integrated systems, systems not currently in use by City, systems currently in pilot testing, or proprietary technology shall require an on-site tour by City and its designated stakeholders. All U.S. domestic travel for City employees shall be furnished by the City. All international travel for City employees shall be provided by Contractor.

B. Contractor and City's designated representative shall be present for witness inspections during Factory Acceptance tests and as required by the commissioning plan.

1.07 MATERIALS SELECTION AND ACQUISITION

A. The Contractor shall not use materials or equipment removed from existing premises, except as specifically permitted by the Contract Documents. All products shall be new, never used before, unless otherwise specified.
B. Provide interchangeable components of the same manufacturer, for similar removable components, such as: T-bolts, glands, gaskets, manhole rings and covers, nuts, wiring, slip rings, conduit, bolts, seals, etc.

1.08 CONSTRUCTION SITE PLAN

A. The Contractor shall submit a site plan showing the locations and dimensions of temporary facilities which include, but are not limited to, the following layouts and details:
    1. Equipment and material storage area on City property and bonded warehouses).
    2. Access and traffic routes.
    3. Indicate if a supplemental or off-site staging area is being utilized.
    4. Show locations of safety and construction fencing, job site trailer, construction entrances, trash dumpsters, temporary sanitary facilities and parking areas for project personnel.
    5. Indicate locations of concrete washout facilities.

1.09 EASEMENTS AND RIGHTS-OF-WAY

A. The City will furnish the Site in accordance with Section 00700 - General Conditions. The Contractor shall confine construction operations to the immediate vicinity of the Site shown in the Contract Documents and shall use due care in placing construction tools, equipment, excavated materials, construction materials and supplies to cause the least possible damage to public and private property and least possible interference with public traffic.
B. On Private Property:
    1. The permanent easements are as noted in the Contract Documents. No additional temporary construction easements have been obtained, unless otherwise indicated in the Contract Documents. The Contractor shall set stakes to mark the boundaries of construction easements across each private property. The stakes shall be protected and maintained until completion of the Work. After cleanup has been completed in accordance with Section 01566 – Cleanup Operations, the Contractor shall remove all construction stakes.
    2. The Contractor shall not enter any private property outside the designated construction easement boundaries without written permission from the owner of the property and notification to the RPR
    3. Should it become necessary to use or occupy the land beyond the limits of the Site (as defined by Section 00700 – General Conditions), the Contractor shall obtain a written agreement with each affected property owner and tenant. Each agreement shall clearly outline the terms for which the Contractor may utilize the property and shall be fully executed by the Contractor, the property owner and the tenant (when applicable).
    4. Whenever the easement is occupied by crops which will be damaged by construction operations, the Contractor shall notify the property owner sufficiently in advance so that the crops may be removed before the Work is started. The Contractor is responsible for all damage to crops outside the easement and shall make satisfactory settlement for the damage directly with the property owner.

5. Where the Work impacts fields that are leveled for irrigation or terraced, the Contractor shall relevel irrigated fields and replace all terraces to their original or better condition and to the satisfaction of the property owner.

C. State Highways:
   1. All work within MoDOT right-of-way shall be in conformance with MoDOT regulations. The permit must be secured before any construction is started within MoDOT right-of-way.

1.10 LINES AND GRADES

A. All Work shall be done to the lines, grades and elevations indicated in the Contract Documents.
B. Basic horizontal and vertical control points are provided in the Contract Documents. All additional survey, layout and measurement work shall be performed by the Contractor as a part of the Work.
C. The Contractor shall provide an experienced surveyor, competent assistants and all instruments, tools, stakes and other materials required to complete the survey, layout and measurement work.
D. The Contractor shall provide qualified personnel, materials and equipment (tools, stakes and other materials) as may be required for the following tasks needed in the Work:
   1. Establish or designate control points.
   2. Establish construction easement boundaries.
   3. Verify survey.
   4. Verify layout shown on the Contract Documents.
   5. Verify and document work performed by the Contractor.

   These efforts shall be included in the Contractor's bid price and performed at no additional cost to the City.
E. The Contractor shall remove and reconstruct, at no additional cost to the City, any Work that was improperly installed or improperly located.
F. See Section 01020 – Record Documents, paragraph SURVEY REQUIREMENTS for additional requirements.

1.11 CONNECTIONS TO EXISTING FACILITIES

A. Unless otherwise specified or indicated in the drawings, the Contractor or Design-Builder shall make all necessary connections to existing facilities. This includes, but is not limited to, structures, drain lines, water utilities, sewer utilities, gas utilities, communications utilities and electric utilities. In each case, the Contractor or shall receive permission from the City or the owning utility prior to undertaking a connection or disconnection. The Contractor shall protect facilities against deleterious substances and damage.
B. Connections to existing facilities that are in service shall be thoroughly planned in advance. All required equipment, material and labor shall be on hand at the time of undertaking the connections.

1.12 UNFAVORABLE CONSTRUCTION CONDITIONS.

A. During unfavorable weather, wet ground, or other unsuitable construction conditions, the Contractor shall confine operations to Work that will not be adversely affected by such conditions.
B. No portion of the Work shall be constructed under conditions that would adversely affect the quality or efficiency thereof, unless special means or precautions are taken

by the Contractor to perform the Work in a manner acceptable to the City.

1.13 UNDERGROUND FACILITIES AND ASSOCIATED RESTORATION

A. As provided in the General Conditions, the Contractor shall perform all cutting and patching required for the Work and as may be necessary in connection with locating all underground facilities, installation of Work, uncovering Work for inspection or for the correction of defective Work.

B. The Contractor shall perform all cutting and patching required for and in connection with the Work, including but not limited to the following:
   1. Removal of improperly timed Work.
   2. Removal of samples of installed materials for testing.
   3. Alteration of existing facilities.
   4. Installation of new Work.

C. The Contractor shall provide all shoring, bracing, supports and protective devices necessary to safeguard all Work and existing facilities during cutting and patching operations. The Contractor shall not undertake any cutting or demolition that may affect the structural stability of the Work or existing facilities without City's approval.

D. Materials shall be cut and removed as required to complete the Work. Materials shall be removed in a careful manner, with no damage to adjacent facilities or materials. The Contractor shall remove all excavated materials from the site that cannot be incorporated in the Work.

E. All Work and existing facilities affected by cutting operations shall be restored with new materials, or with salvaged materials acceptable to City, to obtain a finished installation with strength, appearance and functional capacity required to match the existing area. If necessary, entire surfaces shall be patched and refinished.

F. The Contractor, at no extra cost to the City, shall replace all surface features damaged, removed or so designated to be replaced.

G. Contractor shall at no cost provide photographic documentation of all exposed work after excavation prior to additional underground work and prior to backfill. Photos shall be taken from as many angles as possible.

1.14 ENVIRONMENTAL PROTECTION

A. Laws and Regulations:
   1. The Contractor shall conform to all laws and regulations as required by Section 00700 – General Conditions,

B. Storm Water Runoff:
   1. Storm Water Pollution Prevention Plan (SWPPP): As required by Section 00700 – General Conditions
   2. Erosion Sediment Control: See Paragraph 1.25.
   3. The Contractor shall prevent the pollution of drains and watercourses by sanitary wastes, sediment, debris and other substances resulting from construction activities. See paragraph 1.38.
   4. Dewatering: As required by Section 02200 – Earthwork.
   5. Concrete Washout Facilities: As required by Section 01566 – Cleanup Operations.

C. Air Pollution:
   1. Burning: No open burning will be permitted.
   2. Dust Control: See paragraph 1.37.

1.15 LICENSES, PERMITS, AND CERTIFICATES

A. Requirements for licenses, permits and certificates are provided in Section 00700 – General Conditions.
B. Permitting exceptions (if any) are noted in Section 00800 – Supplementary Conditions.

1.16 APPLICABLE CODES

A. Standard specifications of the Kansas City, Missouri Department of Public Works are, by reference, hereby made a part of this contract specifications.

1.17 REFERENCE STANDARDS

A. See Section 00700 – General Conditions, paragraph 3.02 for references to standards and specifications of technical societies.
B. All technical standards shall adhere to the KC Water – Rules and regulations unless otherwise specified in Contract Documents.
https://www.kcwater.us/projects/rulesandregulations

1.18 PRECONSTRUCTION CONFERENCE

A. A Preconstruction Conference will be held in accordance with Article 2 of the General Conditions. The conference will be held at a mutually agreed time and location. The conference shall be attended by:
   1. Contractor and the project superintendent(s).
   2. Design Professional(s) (Engineer of Record) and Owner's Advisor if applicable
   3. Resident Project Representative(s).
   4. City's Representative
   5. City's CREO Representative
   6. Other City Staff (Engineering, Operations, etc…)

B. Other participants as requested by the Contractor, or City; such as the following:
   1. Principal Subcontractors such as Systems Integrator, Electrical, shoring, Mechanical, concrete, etc.
   2. Representative of principal suppliers and manufacturers as appropriate.
   3. Utility Company representatives.
   4. Affected Property Owners and other stakeholders
   5. Governmental representatives as appropriate.
   6. The Contractor or Design-Builder shall bring to the conference the Preliminary Schedules described in Article 2 of the General Conditions (Preliminary Project Schedule, Preliminary Schedule of Values, Preliminary Schedule of Shop Drawings and Samples), major outages, OCCPs, suggested communication routes, a draft risk register, and list of project goals.
C. The purpose of the conference is to designate responsible personnel and to establish a working relationship. Matters requiring coordination will be discussed and procedures for handling such matters established. The agenda shall include, but not limited to, the following:
   1. Contractor's Preliminary Schedules.
   2. Document Management
   3. Timing the Monthly Schedule Update
   4. Processing Applications for Payment.
   5. Commissioning Plan including the Commissioning Manager
   6. Maintaining record documents

7. electronic data requirements including Electronic O&M manuals and BIM (if applicable)
8. Critical Work sequences
9. Field decisions and Change Orders.
10. Use of premises, field office, material storage areas, security, housekeeping, and City's needs.
11. Major equipment deliveries and priorities.
12. Contractor or Design-Builder's assignment for Safety Representative.
13. Discussion of the Safety Plan (See Section 01329 –Safety Plan)
14. Expectations and the Contractor or Design-Builder's plan for Environmental Protection.

D. Contractor will preside at the conference, will arrange for keeping the minutes and will distribute draft minutes to all persons in attendance within one business day.

1.19 PROGRESS MEETINGS

A. The Contractor shall schedule and hold progress meetings weekly unless mutual agreed upon, and, at other times as requested by the City or as needed by the progress of the Work. The duration of the weekly meetings will mutually agree upon by the City and Contractor. The Contractor, City, Design Professional, and all Subcontractors active on the Site shall be represented at each meeting. The Contractor or Design-Builder may, at their discretion, request attendance of their suppliers, manufacturers or other utilities.

B. The Contractor shall preside at the meeting. Meeting minutes shall be prepared and distributed by the Contractor after review by the City or Design Professional. The purpose of the meetings will be to review the progress of the Work, maintain coordination of efforts, discuss changes in scheduling and resolve problems which may have developed on the project.

C. Draft meeting minutes will be distributed within one business day.

1.20 SAFETY REPRESENTIVE

A. In accordance with Section 00700 – General Conditions, the Contractor shall submit the name and complete contact information for the person designated as the Safety Representative for the Project.

B. In accordance with Section 01300 – Submittals. This information shall be submitted prior to the Preconstruction Conference.

C. If the Safety Representative changes during the Project, the Contractor shall designate a new person to fulfill the role and submit their name and complete contact information.

1.21 SAEFTY PLAN

A. See Section 01329 – Safety Plan.

1.22 SITE ADMINISTRATION

A. The Contractor is responsible for all areas of the site used by their personnel and all Subcontractors in the performance of the Work. The Contractor will exert full control over the actions of all employees and other persons with respect to the use and preservation of property and existing facilities, except such controls as may be specifically reserved to Owner or others. The Contractor or Design-Builder has the right to exclude from the site all persons who have no purpose related to the Work or its inspection and may require all persons on the site to observe the same regulations

as their personnel.

1.23 SUBSTANTIAL COMPLETION WALKTHROUGH

A. See Section -00700 – General Condition Article 14.04.
B. Walkthrough will also include City Employees from the operating division as designed by their Division Manager.

1.24 FINAL ACCEPTANCE

A. Final Acceptance of the Work shall be in accordance with Section 00700 – General Conditions, Article 14.

1.25 STREET LIGHTS AND SITE LIGHTING

A. Relocation or restoration of streetlights and Site lighting due to construction interference shall be included in the Contractor or Design-Builder's Bid Price. No separate measurement and payment will be made. The Contractor or Design-Builder shall notify and coordinate street light relocations with the Public Works Department:

Street Lights Division
Phone: (816) 513-9500.

1.26 RESTORATION

A. The Contractor shall replace all surface material and shall restore all paving, curbs, gutters, sidewalks, driveways, shrubbery, fences, sod, walls, floors, roofs, piping, conduit, cable trays, HVAC equipment, architecture features, drains, gravel, coating systems, fences, furniture, tiling, fixtures, masonry, structural supports, doors, windows, skylights and all other features disturbed to a condition of equal to or better than before the work began, furnishing all material, labor and equipment incidental thereto.

1.27 WATER

A. The City will furnish, without charge, all water necessary for the Work (i.e., filling, flushing, testing and disinfecting completed water lines). The Contractor or Design-Builder shall make arrangements with the City for all water used.
B. Use of the City's water facilities shall be at the direction of the Water Services Department so that water is not wasted and service to customers is not impaired.
C. Any water furnished by the City must be obtained from an existing City main.
D. The Contractor shall use a Reduced Pressure Zone (R.P.Z.) Backflow Preventer and meter when connected to the City's water system.
E. When utilizing public hydrants, The Contractor shall contact the Kansas City Fire Department (KCFD) at (816) 513-4645 to purchase a hydrant meter permit. After securing a hydrant meter permit from KCFD, the Contractor shall present the permit to the Consumer Services desk located at Water Services Department headquarters, 4800 E. 63rd Street, KCMO. The Contractor shall apply for and pay Consumer Services the refundable security deposit. If approved, the Contractor or Design-Builder shall contact the Water Services Backflow Department at (816) 513-4797 to schedule the installation of the R.P.Z./Meter (hydrant meter). The Contractor shall provide the location of the hydrant where the R.P.Z./Meter is to be installed. The Contractor shall contact the Backflow Department to have the R.P.Z./Meter moved or returned to Water Services. Jetting and Vacuum trucks with approved backflow prevention devices or air gap separation are not required to utilize a R.P.Z. backflow preventer; however, a meter to track water usage shall be used at all times. The

Jetter/Vac Contractor shall contact the Water Services Backflow Department for issuance of the meter and pay the associated refundable security deposit. In all cases, the Contractor is solely responsible for any and all damage to the equipment issued by the Water Services Backflow Department. The cost to repair the damage or the cost of complete replacement of the unit shall be deducted from the security deposit.

When utilizing hydrants on City projects after the facility's water meter, Contractor shall utilize an RPZ/Meter that is pre-approved by the City. The location and duration for the connection must be submitted 15 days prior to the proposed connection. Any unapproved connections will be grounds for removal from the Site(s) by the connecting Contractor or Subcontractor.

F. ALL COSTS FOR LABOR, MATERIAL, EQUIPMENT AND SERVICES NEEDED TO OBTAIN WATER FOR CONSTRUCTION PURPOSES SHALL BE INCLUDED IN THE BID. NO SEPARATE MEASUREMENT OR PAYMENT WILL BE MADE TO MAKE CONNECTIONS.OPERATION OF EXISTING VALVES
G. The Contractor shall not operate any valves on the City's system outside the fence line without direct supervision from a Water Services Department representative.
H. OCCP may allow for the contractor to operate valves and equipment.
I. If the Contractor needs valves operated, the request shall be made at least five (5) days in advance to Water Services for such operation, also giving notice to any affected customers/properties.
J. All fire hydrants and water valves shall be kept free from obstruction and available for use at all times.

1.28 BARRICADES AND LIGHTS

A. All streets, roads, highways, facility roads, and other public thoroughfares which are closed to traffic shall be protected by effective barricades and acceptable warning signs. Barricades shall be located per the approved traffic control plan and associated permit. RPR will approve the barricades for facility roads.
B. All trenches and other excavations shall be covered and shall have suitable barricades, signs and lights to provide adequate protection to the public and City Staff. Obstructions such as material piles and equipment shall be provided with similar warning signs and lights in roads.
   All barricades and obstructions shall be illuminated with warning lights from sunset to sunrise in the public right of way. Material storage and execution of the Work on or alongside public streets and highways shall cause the minimum obstruction and inconvenience to the traveling public.
C. All barricades, signs, lights and other protective devices shall be installed and maintained in conformity with applicable statutory requirements and as required by the authority having jurisdiction; such as, Work within railroad right-of-way, highway right-of-way, etc.

1.29 EXISTING FENCING

A. All existing fences affected by the Work shall be maintained by the Contractor until completion of the Work. Fences which interfere with construction operations shall not be relocated or dismantled until written permission is obtained from the owner of the fence including the City and the period the fence may be left relocated or dismantled has been agreed upon.
B. Where fences must be maintained across the construction easement or plant site, adequate gates or City approved access shall be installed. Facility Gates and Gates

outside facilities shall be kept closed and locked at all times when not in use. Within Facilities, operations staff will determine what gates will need to be close and locked.

1.30 SAFETY FENCING

A. Provide fencing along the construction site at all open excavations and tunnels to control access if the excavation or tunnel can otherwise be accessed by the public.
B. Temporary safety fencing must be a high visibility orange colored, high density polyethylene grid or approved equal, a minimum of 48 inches high and maximum mesh size of 2 inches, supported and tightly secured to steel posts located on maximum 10-foot centers, constructed at the approved location.
C. Remove the fence from the work site upon completion of the Work.

1.31 PROTECTION OF PUBLIC AND PRIVATE PROPERTY

A. The Contractor shall protect, shore, brace, support, and maintain all underground pipes, conduits, drains and other underground construction uncovered or otherwise affected by the construction operations.
B. All pavement, surfacing, driveways, curbs, gutters, sidewalks, buildings, utility poles, guy wires, fences, and all other features and structures affected by construction operations, together with all sod and shrubs in yards, parkways, medians and green spaces, shall be restored to their original condition, whether within or outside the right-of-way or easement. All replacements shall be made with new materials.

1.32 DAMAGE TO EXISTING PROPERTY

A. The Contractor is solely responsible for any damage to existing features, structures, Work, materials, or equipment because of their operations and shall repair or replace any damaged features, structures, Work, materials, or equipment to the satisfaction of the City and at no additional cost to the City.
B. The Contractor shall protect all existing structures and property from damage and shall provide bracing, shoring, or other work necessary for such protection.
C. The Contractor is responsible for all damage to streets, roads, curbs, sidewalks, highways, shoulders, ditches, embankments, culverts, bridges, or other public or private property, which may be caused by transporting equipment, materials, or personnel to or from the Work. The Contractor shall make satisfactory and acceptable arrangements with the agency having jurisdiction over the damaged property concerning its repair or replacement.

1.33 NOISE CONTROL

A. The Contractor shall conduct construction operations as described herein and in compliance with the City of Kansas City, Missouri Code of Ordinances, Chapter 46 – NOISE CONTROL.
B. The Contractor shall take all reasonable measures to avoid unnecessary noise. Such measures shall be appropriate for the normal ambient sound levels in the area during working hours. All construction machinery and vehicles shall be equipped with practical sound-muffling devices and operated in a manner to cause the least noise, consistent with the efficient performance of the Work.
C. During construction activities on or adjacent to occupied buildings and when appropriate, the Contractor shall erect screens or barriers effective in reducing noise in the building and shall conduct their operations to avoid unnecessary noise which might interfere with the activities of the building occupants.
D. Contractor shall insure no facilities will have noise levels that prevent a full shift at the facility per OSHA safety standards.

E. All work including, but not limited to, excavation, demolition, alteration, or repair being performed in or adjacent to a residential area other than between the hours of 7:00 a.m. and 6:00 p.m. on weekdays, except in the case of urgent necessity in the interest of public safety, shall require a letter of permission from the Water Services Department of the City of Kansas City, Missouri.

1.34 DUST CONTROL

A. The Contractor shall take all reasonable measures to prevent unnecessary dust. Earth surfaces subject to dusting shall be kept moist with water or by the approved application of an approved chemical suppressant. When practicable, dusty materials in piles or in transit shall be covered to prevent blowing.
B. Buildings or operating facilities which may be affected adversely by dust shall be adequately protected from dust. Existing or new machinery, motors, instrument panels, or similar equipment shall be protected by suitable dust screens. Proper ventilation shall be included with dust screens.

1.35 POLLUTION CONTROL

A. The Contractor shall prevent the pollution of drains (Combined Sewer, plant piping, Storm Sewer), and watercourses by sanitary wastes, sediment, debris or other substances resulting from the construction activities. No sanitary wastes will be permitted to enter any drain or watercourse other than sanitary sewers. No sediment, debris, or other substance will be permitted to enter sanitary sewers and all reasonable measures will be taken to prevent such materials from entering any drain or watercourse.

1.36 SECURITY

A. The Contractor is solely responsible for security and protection of the site. This includes protecting all Work, materials, equipment, existing facilities and all temporary facilities against theft, vandals and access by unauthorized persons.
B. No claim shall be made against the City by reason of an act of an employee or trespasser. The Contractor shall make good on all damage and theft of property resulting from the Contractor's failure to provide adequate security measures including City Property. After trespass or theft, the City may direct the Contractor to provide additional site security at no cost including but not limited to security cameras, on site security, and night security.

1.37 PARKING

A. The Contractor shall provide and maintain suitable parking areas for the use of all City personnel, construction workers and others performing work or furnishing services in connection with the Project. Suitable parking is required to avoid the need for parking personal vehicles where they may interfere with traffic, City's operations, or construction activities. Location of the parking within Facilities should be mutually agreed up by the operating division manager and the Contactor. Operating Division Manager may change parking areas as need to maintain operations

PART 2 - PRODUCTS
Not used.

PART 3 - EXECUTION
Not used.

END OF SECTION

CITY OF FOUNTAINS
HEART OF THE NATION
KANSAS CITY
MISSOURI

APPLICATION FOR PAYMENT

Project Number _____

Project Title _____

Final Payment[5] ☐

CONTRACTOR

Address

Application Number[2]: _____
Date: _____
Ordinance/Resolution Number: _____
Effective: _____
PO Number _____
Vendor Number _____

Application for Work Accomplished from _____ to _____

Original Contract Price		[1]			$	-
Net by Change Orders___through___				[2]	$	-
Current Contract Price (1+2)				[3]	$	-
Completed Work		[4]	$ -			
Disputed Amounts[3]	[-]	[4a]	$ -			
Stored Material[4]		[5]	$ -			
Disputed Amounts[3]	[-]	[5a]	$ -			
Total Completed and Stored to Date (4+5)				[6]	$	-
Previous Payments		[7]	$ -			
Previous Retainage		[8]	$ -			
Total Previous Applications (7+8)				[9]	$	-
Amount This Application (6-9)				[10]	$	-
Less Retainage This Application (5%)				[-] [11]	$	-
Release of Retainage				[12]	$	-
Total Due This Application (10-11+12)				[13]	$	-
Liquidated Damages						
Completion of Work		[14]	$ -	[-]	$	-
Prevailing Wage[7]		[15]	$ -	[-]	$	-
MBE/WBE Program[7]		[16]	$ -	[-]	$	-
Workforce Program[7]		[17]	$ -	[-]	$	-
Total Amount Due Contractor (13 - 14 through 17)				[18]	$	-

Accompanying Documentation: [1, 2, 3, 4, 5, & 6] and any other information as necessary.

NOTE: Initial all figures on this Application and on the Schedule of Values that are changed to correct errors or conform to the amount recommended. Attach explanation of changes that have been made.

CONTRACTOR's Certification:

The undersigned CONTRACTOR certifies that (a) all previous progress payments received from OWNER on account of Work done under this Contract have been applied on account to discharge CONTRACTOR's legitimate obligations incurred in connection with Work covered by all prior Applications for Payment; (b) at time of payment, title of all Work, materials and equipment incorporated into said Work or otherwise listed in or covered by this Application for Payment will pass to OWNER free and clear of all Liens, security interests and encumbrances (except such as are covered by a Bond acceptable to OWNER indemnifying OWNER against any such Lien, security interest or encumbrance); and (c) all Work covered by this Application for Payment is in accordance with the Contract Documents and not defective; and (d) all manufactured goods or commodities used or supplied for this Project are in compliance with Kansas City's Buy America ordinance.

_____ By _____ _____

Contractor | Authorized Representative (Print) | Signature

Date_____

State of)
)SS
County of)

Subscribed and Sworn to before me this _____ day of _____, _____ .

My commission expires:

_____ Notary Public: _____

DESIGN PROFESSIONAL's Recommendation of Payment:

In accordance with the Contract Documents, based on on-Site observations and the data comprising this application, the DESIGN PROFESSIONAL recommends to the OWNER that to the best of the DESIGN PROFESSIONAL's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the CONTRACTOR is entitled to payment of the Amount above listed in this application.

Name of firm (Print)	DESIGN PROFESSIONAL (Print)	(Signature)

Date: _____

Construction/Program Manager's Recommendation of Payment: (if applicable)

In accordance with the Contract Documents, based on on-Site observations and the data comprising this application, the Construction/Program Manager recommends to the OWNER that to the best of the Construction/Program Manager's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the CONTRACTOR is entitled to payment of the Amount above listed in this application.

Construction/Program Manager firm (Print)	Authorized Representative (Print)	(Signature)

Date: _____

City's Representative's Agreement with Recommendation of Payment

City's Representative(print)	(Signature)	(Date)

City's Approval

The amount previously recommended is approved for payment.

Director or Designee (Print)	(Signature)	(Date)

[1]See General Conditions Article 14.02 A and B

[2]Proof of tax compliance if 1st payment and if Contract amount exceeds $150,000.00

[3]Schedule of Values–Denote any amounts currently disputed in this application. Attach additional dispute documentation if required.

[4]If requesting payment for stored materials, see General Conditions Article 14.02 A.1

[5]If final payment, current proof of tax compliance if Contract is longer than 1 year and amount exceeds $150,000.00.

[6] Per General Conditions Sec. 14.02 attach a copy of the most recent 00485.01 M/WBE Monthly Utilization Report, 00485.02 Project Workforce Monthly Report and 00485.03 Company-Wide Workforce Monthly Report CONTRACTOR has submitted to the City's Human Relations Department

[7]Applicable only if final payment

REMINDER: CONTRACTOR is responsible for meeting or exceeding the the D/M/WBE participation amounts in its Contractor Utilization Plan (CUP) as amended by any previously approved Request for Modification/Substitution. Any Change Orders or amendements modifying the amount CONTRACTOR is to be compensated will have correspondingly impacted the amount of compensation due D/M/WBEs for purposes of meeting or exceeding the Bidder/Proposer participation. CONTRACTOR is again reminded to consider the effect of any Change Order or amendment, and to submit a Request for Modification/Substitution if appropriate.

Distribution: Owner, Contractor, Construction Manager, Project Manager, Design Professional

CITY OF FOUNTAINS
HEART OF THE NATION
KANSAS CITY
MISSOURI

SCHEDULE OF VALUES

Project Number _____

Project Title _____

HRD APPROVED CUP		
MBE	**WBE**	**DBE**
$0.00	$0.00	$0.00
%	**%**	**%**

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
SPEC SECTION	UNIT PRICE CONTRACTS			DESCRIPTION OF WORK UNIT ITEM DESCRIPTION	$ UNIT PRICE	NO. OF UNITS	$ TOTAL OR LUMP SUM	UNITS COMPLETE	$ COMPLETED WORK	$ STORED MATERIAL	$ TOTAL COMPLETED AND STORED TO DATE		TOTALS TO DATE			% AT BOTTOM	$ TOTAL PREVIOUS APPLICATIONS	$ AMOUNT THIS APPLICATION L-R
	UNIT ITEM NO.	UNIT	ESTIMATED QUANTITY								$ J+K	% J/H	$ MBE	$ WBE	$ DBE			
																P/L		
																O/L		
																N/L		

CITY OF FOUNTAINS
HEART OF THE NATION

KANSAS CITY
MISSOURI

SUBCONTRACTORS AND MAJOR MATERIAL SUPPLIERS LIST

Project Number _____ Project Title _____

From Contractor _____ To _____ Date _____

Spec. No.	Section Title	4	Firm, Address (Check box if Supplier)	Phone, FAX and e-mail	Contact

❑ Attachments:

Signed by: _____ Date _____

Distribution: ❑ Owner ❑ Contractor ❑ Construction Manager ❑ Design Professional ❑ Consultant ❑ Other

CITY OF FOUNTAINS
HEART OF THE NATION

KANSAS CITY
MISSOURI

DAILY LABOR FORCE REPORT

Project Number _____ Day _____ Date _____
Project Title _____
Contractor _____
Subcontractor _____

Weather: (Indicate if weather prevented work and why) _____
_____
_____

Shift: (circle) 5–8 hr Days 4–10 hr Days Other _____

* This report *MUST be completed and turned in* for EACH DAY until FINAL COMPLETION.

Worker's Full Legal Name	**Occupational Title or Classification Group & Skill**	**Hours Worked & Time (i.e. 10AM – 4PM)**	**Race & Gender**

I CERTIFY THAT ALL OF THE INFORMATION PROVIDED ABOVE IS TRUE AND COMPLETE.
Contractor/Subcontractor Representative:

Complete Name: (print) _____ Title: (print) _____

Signature: _____ Page ____ of ____

Distribution: ❑ City Department ❑ Contractor ❑ Subcontractor ❑ Other

CITY OF FOUNTAINS
HEART OF THE NATION

KANSAS CITY
MISSOURI

CERTIFICATE OF SUBSTANTIAL COMPLETION

Project Number _____

Project Title _____

CONTRACT FOR: _____

CONTRACTOR: _____

DATE OF ISSUANCE: _____

PROJECT OR DESIGNATED PORTION SHALL INCLUDE:

The Work performed under this Contract has been reviewed and found, to the Design Professional's and/or Construction Manager's best knowledge, information and belief, to be substantially complete. Substantial Completion is the state in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so the Owner can occupy or utilize the Work for its intended use. The date of Substantial Completion of Project or portion thereof designated above is hereby established as _____ which is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below:

A list of items to be completed or corrected is attached hereto. The failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

CONSTRUCTION MANAGER	BY	DATE
DESIGN PROFESSIONAL	BY	DATE

The Contractor will complete or correct the Work on the list of items attached hereto within _____ days from the above date of Substantial Completion.

CONSTRUCTION MANAGER	BY	DATE
DESIGN PROFESSIONAL	BY	DATE

The Owner accepts the Work or designated portion thereof as substantially complete and will assume full possession thereof at _____ (time) on _____(date).

OWNER'S REPRESENTATIVE	BY	DATE

Distribution:
- ❑ Owner
- ❑ Contractor
- ❑ Construction Manager
- ❑ Design Professional
- ❑ Consultant _____
- ❑ Other _____

CITY OF FOUNTAINS
HEART OF THE NATION

KANSAS CITY
MISSOURI

PUNCH LIST

Project Number _____

Project Title _____

CONTRACTOR _____

From _____ Site Visit Date _____

The following items require the attention of the CONTRACTOR for completion or correction. This list may not be all-inclusive, and the failure to include any items on this list does not alter the responsibility of the CONTRACTOR to complete all Work in accordance with the Contract Documents.

Item No.	Location (Area)	Description	Correction/ Completion Date	Verification Check

❑ Attachments

Signed by: Date:

DESIGN PROFESSIONAL (Firm/In House)

Distribution:
- ❑ OWNER
- ❑ CONTRACTOR
- ❑ DESIGN PROFESSIONAL
- ❑ Consultant _____
- ❑ Other _____

CITY OF FOUNTAINS
HEART OF THE NATION

KANSAS CITY
MISSOURI

CONTRACTOR AFFIDAVIT FOR FINAL PAYMENT

Project Number _____

Project Title _____

STATE OF _____)
)SS
COUNTY OF _____)

The Undersigned, _____ of lawful
(Name)
age, being first duly sworn, states under oath as follows:

1. I am the _____ of _____who is the general
(Title) (CONTRACTOR)
CONTRACTOR for the OWNER on Project No. _____ and Project Title _____.

2. All payrolls, material bills, use of equipment and other indebtedness connected with the Work for this Project have been paid and all Claims of whatever nature have been satisfied, as required by the Contract.

3 (✓) ____Prevailing wage does not apply; or

(✓) ____All provisions and requirements set forth in Chapter 290, Section 290.210 through and including 290.340, Missouri Revised Statutes, pertaining to the payment of wages to workmen employed on public works projects have been fully satisfied and there has been no exception to the full and complete compliance with these provisions and requirements and the Annual Wage Order contained in the Contract in carrying out the Contract and Work. CONTRACTOR has fully complied with the requirements of the prevailing wage law as required in the Contract and has attached affidavits from all Subcontractors on this Project, regardless of tier, affirming compliance with the prevailing wage law as stipulated in the Contract.

4. I hereby certify that (a) at project completion and pursuant to contractor's final request for payment, contractor achieved (_____%) Minority Business Enterprise (MBE) participation and (_____%) Women Business Enterprise (WBE) participation on this contract, and (b) listed herein are the names of all certified M/WBE subcontractors, regardless of tier, with whom I, or my subcontractors contracted.

1. Name of MBE/WBE Firm _____
Address _____
_____
Telephone Number (_____) _____
IRS Number _____
Area/Scope*of Work _____
Subcontract Final Amount _____

2. Name of MBE/WBE Firm _____
Address _____
_____
Telephone Number (_____) _____
IRS Number _____
Area/Scope*of Work_____
Subcontract Final Amount _____

List additional subcontractors, if any, on a similar form and attach to the bid.

Supplier** Final Amount: _____

*Reference to specification sections or bid item number.

(✓) ____ Met or exceeded the Contract utilization goals; or
(✓) ____ Failed to meet the Contract utilization goals (attach waiver, substitution or modification); or
(✓) ____ No goals applied to this Project.

5. CONTRACTOR certifies that each Subcontractor has received full payment for its respective work in connection with the Contract.

6. If applicable, I hereby certify that (a) at project completion and pursuant to contractor's final request for payment, contractor achieved, company-wide, at least ten percent (10%) minority workforce participation and two percent (2%) women workforce participation and (2) a true and accurate copy of my final project workforce monthly report (HRD Form 00485.02 and final company-wide workforce monthly report (HRD Form 00485.03) are attached. **NOTE: This paragraph is only applicable if you completed a construction contract that was estimated by the City, prior to solicitation, as requiring more than 800 construction labor hours and costing in excess of $324,000.01. If applicable you MUST attach copies of your final monthly workforce reports.**

7. This affidavit is made in behalf of the CONTRACTOR for the purpose of securing from Kansas City, Missouri, the certification of completion of the Project and receiving payment therefore.

8. If the Contract amount exceeded $123,500.01, CONTRACTOR has submitted proof of compliance with the City tax ordinances administered by the City's Commissioner of Revenue and has on file proof of tax compliance from all Subcontractors. If the Contract term exceeded one (1) year, CONTRACTOR has provided proof of compliance with the City tax ordinances administered by the City's Commissioner of Revenue prior to receiving final payment and has on file proof of tax compliance from all Subcontractors prior to the Subcontractor receiving final payment from CONTRACTOR.

CONTRACTOR_____

By _____
(Authorized Signature)

Title _____

On this _____ day of _____, _____, before me

appeared _____, to me personally known to be the

_____of the_____,

and who executed the foregoing instrument and acknowledged that (s)he executed the same on behalf of

_____ as its free act and deed.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal on the day and year first above written.

My commission expires:

_____ _____
Notary Public

CITY OF FOUNTAINS
HEART OF THE NATION
KANSAS CITY
MISSOURI

SUBCONTRACTOR AFFIDAVIT FOR FINAL PAYMENT

Project Number _____

Project Title _____

STATE OF MISSOURI)

) ss:

COUNTY OF _____)

After being duly sworn the person whose name and signature appears below hereby states under penalty of perjury that:

1. I am the duly authorized officer of the business indicated below (hereinafter Subcontractor) and I make this affidavit on behalf of Subcontractor in accordance with the requirements set forth in Section 290.290, RSMo. Subcontractor has completed all of the Work required under the terms and conditions of a subcontract as follows:

Subcontract with: _____, Contractor

Work Performed: _____

Total Dollar Amount of Subcontract and all Change Orders: $_____

City Certified ☐MBE ☐ WBE ☐ DBE ☐ NA
List certifications: _____

2. Subcontractor fully complied with the provisions and requirements of the Missouri Prevailing Wage Law set forth in Sections 290.210, RSMo through 290.340, RSMo.

Business Entity Type:
(___) Missouri Corporation
(___) Foreign Corporation
(___) Fictitious Name Corporation
(___) Sole Proprietor
(___) Limited Liability Company
(___) Partnership
(___) Joint Venture
(___) Other (Specify)

Subcontractor's Legal Name and Address

_____

_____
Phone No. _____
Fax: _____
E:mail:_____
Federal ID No._____

I hereby certify that I have the authority to execute this affidavit on behalf of Subcontractor.

By: _____ _____
(Signature) (Print Name)

_____ _____
(Title) (Date)

NOTARY

Subscribed and sworn to before me this _____ day of _____, 20_____.

My Commission Expires:_____ By_____

_____ _____
Print Name Title

SECTION 01300 – SUBMITTALS

PART 1 - GENERAL

1.01 SUMMARY

A. This section provides for the submittals required by the City prior to the start of work and, as required, for the duration of the Work.

B. All submittals shall be clearly identified by reference to a specification section and/or detail drawing. Submittals shall be clear and legible and shall include sufficient presentation of the data.

C. No portion of the work requiring a shop drawing, product data or sample shall be started nor shall any materials be fabricated or installed prior to the completion of the submittal process described herein. Fabrication performed, purchased materials or on-site construction accomplished prior to completing the submittal process as defined herein shall be at the Contractor or Design-Builder's sole risk. The City shall not be liable for any expense or delay to complete the submittal process.

1.02 RELATED SECTIONS

A. Section 00700 – General Requirements

B. Section 01140 – Work Restrictions

C. Section 01335 – Document Management.

1.03 GENERAL INFORMATION

A. Quality Requirements:

1. The Contractor or Design-Builder shall submit Shop Drawings and Samples in accordance with Section 00700.
2. Submittals such as Shop Drawings and product data shall be of suitable quality for legibility and reproduction purposes. Every line, character and letter shall be clearly legible. Drawings shall be useable for further reproduction to yield legible hard copies.
3. All submittals by subcontractors shall be sent directly to the Contractor or Design-Builder for checking. The Contractor or Design-Builder shall be responsible for their submission at the proper time to prevent delays.
4. The Contractor or Design-Builder shall check all subcontractors' submittals regarding measurements, sizes, materials and details to determine and verify that they meet the requirements of the Contract Documents. Submittals found to be inaccurate or otherwise in error shall be returned to the subcontractors for correction before submission to the City.
5. Certificates of Compliance – Where indicated in these specifications, each submittal shall include a certificate of compliance prepared by the manufacturer or Supplier of the submitted data, certifying that the item covered complies with Contract Documents. The certificate of compliance shall be a separate document and shall include identification of all deviations, if any, from the Contract Documents.

B. Submittal Completeness:

1. The Contractor or Design-Builder shall accept full responsibility for the completeness of each submission. When an item consists of components from several sources, the Contractor or Design-Builder's initial submittal on the item shall include all components.
2. Submittals shall be complete with respect to dimensions, design criteria, materials of construction and other information specified to enable the City or Designee to review the information effectively.

3. Where standard drawings are furnished which cover several variations of the general class of Equipment, each drawing shall be annotated to indicate exactly which parts of the drawing apply to the Equipment being furnished. Use hatch marks to indicate variations that do not apply to the Submittal. The use of "highlighting markers" will not be an acceptable means of annotating Submittals. Annotation shall also include proper identification of the Submittal permanently attached to the drawing.
4. Reproductions or copies of Contract Drawings or portions thereof will not be accepted as complete fabrication or erection drawings. The Contractor or Design-Builder may use a reproduction of Contract Drawings for erection drawings to indicate information on erection or to identify detail drawing references. Whenever the Drawings are revised to show this additional Contractor or Design-Builder information, the Design Professional's title block shall be replaced with Contractor or Design-Builder's title block and the Design Professional's professional seal shall be removed from the drawing. The Contractor or Design-Builder shall revise these erection drawings, as needed, for subsequent Design Professional revisions to the Contract Drawings.

C. Form of Submittals:
1. Submittals and other Project documents shall be transmitted in electronic format and non-electronic format as specified.
2. Contractor or Design-Builder shall provide a submittal registry prior to the pre-con meeting that is suitable for upload to the City's Document Management program.
3. Electronic Format:
   (a) Transmit Submittals and Project documents utilizing:
      (i) Adobe ".pdf" files created directly from native electronic format or City-approved equal file type and format.
      (ii) Electronic submittal ".pdf" files are not to be combined files or collections of files/drawings. Each drawing document must stand alone.
      (iii) Each file will be right reading and oriented the same for all consecutive resubmissions.
      (iv) For any given Submittal, the filename and format shall be consistent for initial submission and subsequent revisions of the same. Use consistent naming convention throughout. Reference to revision or dates shall not be included in a filename.
      (v) Files greater than 5 pages shall have table of contents with bookmarks for each section. The Sections shall have easily understood names.
      (vi) Submittals not meeting the above criteria are subject to rejection.
   (b) Provide Project Record Documents, equipment instruction books and operating and maintenance manuals and any other documents, as required, in a file type and format approved by City.
4. Non-electronic Format:
   (a) Selected Submittals may be provided in paper (hard copy), as well, only with advance approval of the City and using procedures specified herein.
   (b) Equipment instruction books and operating manuals shall be provided in hardcopies in addition to the specified electronic format.

D. Transmittal of Submittals:
1. Submittal register shall be uploaded prior the transmission of the first submittal.
2. All submittals, regardless of origin, shall be stamped with the approval of the Contractor or Design-Builder and identified with the name and number of this Contract, Contractor's or Design-Builder's name, references to applicable specification paragraphs and Contract Drawings and version of the submittal. Submittals can be named for their specification if the submittals cover the full scope of work in said specification.

3. Each submittal shall indicate the intended use of the item in the Work. When catalog pages are submitted, applicable items shall be clearly identified and inapplicable data crossed out. The current revision, issue number and date shall be indicated on all drawings and other descriptive data. The Contractor or Design-Builder's stamp of approval is a representation to the City and Design Professional that the Contractor or Design-Builder accepts full responsibility for determining and verifying all quantities, dimensions, field construction criteria, materials, catalog numbers and similar data, and the Contractor or Design-Builder has reviewed and coordinated each submittal with the requirements of the Work and the Contract Documents.
4. Electronic Submittals – The Contractor or Design-Builder shall utilize the City's document management system as specified in Section 01335- Document Management for managing, tracking and storing documents associated with the Project. If an internet-based document management system is to be used, additional requirements are provided in Section 01335- Document Management. The Contractor or Design-Builder shall comply with the file protocols and procedures for the document management system.
5. Approved submittals shall be tagged per City's metadata tagging standard and provided to the City as part of the Electronic O&M Manual.

E. Submittals Required for the Preconstruction Conference:
1. Following are the minimum required submittals to be provided by the Contractor or Design-Builder at the pre-construction conference:
(a) General Requirements:
(i) Preliminary Project Schedule including Submittals.
(ii) Preliminary Schedule of Values.
(iii) Preliminary Submittal Registry.
(iv) Listing of Subcontractors.
(v) Project Sign Request.
(vi) List of Major Equipment utilized.
(vii) Safety Representative.
(b) Document Management can be found in Section 01335 – Document Management.

F. In order to allow expedited review submittals on the sections or topics below are required to have a pre-submittal meeting:
1. Commissioning Schedule.
2. Sanitary Screens.
3. First Factory Acceptance Test Plan.
4. Switchgear and Transformer.
5. PLC Programming.

1.04 SHOP DRAWINGS AND SAMPLES

A. Shop Drawings:
1. Shop Drawings and engineering data covering all equipment and fabricated and building materials which will become a permanent part of the Work under this Contract shall be submitted to the City or Designee for review as specified herein. The data shall include drawings, descriptive information, sufficient detail to show the kind, size, arrangement and operation of component materials and devices; the external connections, anchorages and supports required; performance characteristics; and dimensions needed for installation and correlation with other materials and equipment.
2. All deviations from the Contract Documents shall be identified on each submittal and shall be tabulated in the Contractor or Design-Builder's letter of transmittal. Such submittals shall, as pertinent to the deviation, indicate essential details of all changes proposed by the Contractor or Design-Builder (including modifications to other facilities

that may be a result of the deviation) and all required piping and wiring diagrams.

B. Product Data:
   1. Product data as specified in individual Sections, include, but are not necessarily limited to, standard prepared data for manufactured products (sometimes referred to as catalog data), such as the manufacturer's product specification and installation instructions, availability of colors and patterns, manufacturer's printed statements of compliances and applicability, roughing-in diagrams and templates, catalog cuts, product photographs, standard wiring diagrams, printed performance curves and operational-range diagrams, production or quality control inspection and test reports and certifications, mill reports, product operating and maintenance instructions and recommended spare-parts listing and printed product warranties, as applicable to the Work.
   2. If applicable, submittals for equipment shall include a listing of all installations where identical or similar equipment has been installed and been in operations for a period of at least one year.
   3. Certificates are statements printed on the manufacturer's or supplier's letterhead and signed by responsible officials of manufacturer of product, system or material. Certifications shall provide a clear statement that the product, system or material meets the specified requirements of Contract Documents. All certificates shall be dated after the Effective Date of the contract and shall clearly indicate the project name and project number.

C. Samples:
   1. Samples specified in individual Sections, include, but are not necessarily limited to, physical examples of the work such as sections of manufactured or fabricated work, small cuts or containers of materials, complete units of repetitively used products, color/texture/pattern swatches and range sets, specimens for coordination of visual effect, graphic symbols and units of work to be used by the City or Designee for independent inspection and testing, as applicable to the Work.

D. Survey Data
   1. All field books, notes, videotapes, and other data developed by Contractor in performing surveys required as part of the Work shall be available to City for examination throughout the construction period.
   2. All such data shall be submitted to City with the other documentation required for final acceptance of the Work.

1.05 CONSTRUCTION PROGRESS PHOTOGRAPHS AND VIDEOS

A. Photos and Videos documenting assets that will not be visible during the substantial completion walkthrough shall have their record photos taken prior to be obscured by backfill, equipment installation, gypsum board installation, etc… Record photos shall have metadata tags per KC Water standards.

1.06 WARRANTY and BONDS and CLOSEOUT SUBMITTALS

A. Section 01770 Closeout Procedures, Section 00800 Supplementary Conditions, and 00700 General Conditions

1.07 SCHEDULE OF VALUES

A. The CONTRACTOR shall prepare and submit to the DESIGN PROFESSIONAL for approval by the preconstruction conference, a Schedule of Values for and covering the Lump Sum Price Bid as shown in the Proposal. The Schedule of Values shall show the estimated total number of construction units for each kind of work and the value of each unit.
B. Each price listed shall include all overhead, other costs, CONTRACTOR's profit and the total

estimated value of the items of work listed in the Schedule of Values shall equal the Contract Lump Sum Price covered by the estimate. Overhead and profit are not to be listed as separate items.

C. An unbalanced schedule of values providing for overpayment of CONTRACTOR on items of Work which would be performed first will not be approved. The Schedule of Values shall be revised and resubmitted until acceptable to the DESIGN PROFESSIONAL & OWNER. Final acceptance by DESIGN PROFESSIONAL shall indicate only consent to the Schedule of Values as a basis for preparation of applications for progress payments and shall not constitute an agreement as to the value of each indicated item.

1.10 CITY OR DESIGNEE'S REVIEW OF DRAWINGS AND DATA

A. The City or Designee's review of drawings and data submitted by Contractor or Design-Builder will cover only general compliance with the Construction Contract Documents. The City or Designee's review does not indicate a thorough review of all dimensions, quantities and details of the material, equipment, device or item shown. The City or Designee's review shall not relieve Contractor or Design-Builder of Contractor or Design-Builder's responsibility for errors, omissions or deviations in the drawings and data, nor of sole responsibility for compliance with the Construction Contract Documents.

B. The City or Designee's submittal review period shall be 21 consecutive calendar days in length and shall commence on the first calendar day immediately following the date of arrival of the submittal or resubmittal in the City or Designee's office. The time required to mail the submittal or resubmittal back to Contractor or Design-Builder shall not be considered a part of the submittal review period.

C. Contractor or Design-Builder may request an expedited review of a limited number of submittals. The City may elect to require a workshop to facilitate this expedited review. A maximum of one workshop per week will be allowed.

D. Submittals shall be returned to the Contractor or Design-Builder under one of the following assignments:

1. "Approved" is assigned when there are no notations or comments on the submittal. When returned, the Contractor or Design-Builder may release the equipment and/or material for manufacture.
2. "Approved as Noted" is assigned when a confirmation of the notations and comments is not required by the Contractor or Design-Builder. The Contractor or Design-Builder may release the equipment or material for manufacture; however, all notations and comments must be incorporated into the final product.
3. "Revise and Resubmit" is assigned when the submittal does not meet the intent of the Construction Contract Documents. The Contractor or Design-Builder must resubmit the document revised to bring the submittal into compliance with Contract Documents. "Revise and Resubmit" is also assigned when notations and comments are extensive enough to require a resubmittal of the package.
4. "Rejected" is assigned when the submittal does not meet the intent of the Construction Contract Documents. The Contractor or Design-Builder must resubmit the entire package revised to bring the submittal into compliance with Contract Documents. It may be necessary to resubmit using a different manufacturer/vendor to meet the Construction Contract Documents. "Rejected" is also assigned when the notations and comments are extensive enough to require a resubmittal of the package.
5. "For Record Only" is assigned when the submittal is provided as a courtesy to the City or as a contractual requirement by the Design-Builder or Contractor. Design-Builder or Contractor has no further action required. Submittal is for supplementary information

only; pamphlets, general information sheets, catalog cuts, standard sheets, test reports, manufacturer's or supplier's letters included with submittal data, unmarked catalog data, bulletins and similar data, all of which are useful to Owner in design, operation, or maintenance, but which by their nature does not constitute a basis for determining that items represented thereby conform with the design concept or comply with the intent of the Contract Documents. It is not subject to Owner's review and acceptance, and is being filed for Record Copy purposes only. This is generally used in acknowledging receipt of means and methods of construction work plans, filed conformance test reports, health and safety plans, or structural design by the Design-Builder's or Contractor Engineer of Record, etc.

E. If the Contractor or Design-Builder considers any correction indicated on the shop drawings to constitute a change to the Contract Documents, the Contractor or Design-Builder shall give written notice thereof to the City or Designee at least seven working days prior to release for manufacture.

F. Resubmittal of Drawings and Data:
   1. The Contractor or Design-Builder shall accept full responsibility for the completeness of each resubmittal. The Contractor or Design-Builder shall verify that all corrected data and additional information previously requested by the City or Designee are provided on the resubmittal. When corrected copies are resubmitted, the Contractor or Design-Builder shall in writing direct specific attention to all revisions and shall list separately any revisions made other than those called for by the City or Designee on previous submissions.
   2. Requirements specified for initial submittals shall also apply to resubmittals. Resubmittals shall bear the number of the first submittal followed by a letter (A, B, etc.) to indicate the sequence of the resubmittal.
   3. Resubmittals shall be made within thirty (30) days of the date of the letter returning the submittal to be modified or corrected; unless, within 14 days, the Contractor or Design-Builder submits an acceptable request for an extension of the stipulated period, listing the reasons the resubmittal cannot be completed within the specified time.
   4. Any need for more than one resubmission or any other delay in obtaining the City or Designee's review of submittals, will not entitle the Contractor or Design-Builder to an extension of the Contract Times, unless: the delay of the Work is directly caused by a change in the Work authorized by a Change Order or by failure of the City or Designee to review the submittals within the submittal review period specified herein.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used

END OF SECTION

CITY OF FOUNTAINS
HEART OF THE NATION

KANSAS CITY
MISSOURI

DAILY FIELD OBSERVATION REPORT

Project Number _____

Project Title _____

Contractor _____

Report Number _____ Date _____ Time _____

Weather			Site Conditions		Day	
❑ Clear	❑ Snow	❑ Warm	❑ Clear	❑ Dusty	❑ Monday	❑ Thursday
❑ Overcast	❑ Foggy	❑ Hot	❑ Muddy	❑ _____	❑ Tuesday	❑ Friday
❑ Rain	❑ Cold	❑ Temperature Range _____			❑ Wednesday	❑ _____

Persons Contacted:

Work Observed:

Items Discussed:

Materials Delivered:

Requested Revisions or Interpretations:

Nonconforming Work Reported This Date To Contractor:

Remarks:

❑ Attachments

Signed by: Date:

Distribution:
- ❑ Owner
- ❑ Contractor
- ❑ Construction Manager
- ❑ Design Professional
- ❑ Consultant _____
- ❑ Other _____

CITY OF FOUNTAINS
HEART OF THE NATION

KANSAS CITY
MISSOURI

PERIODIC FIELD OBSERVATION REPORT

Project Number _____

Project Title _____

Contractor _____

Report Number _____ Date _____ Time _____

Weather			Site Conditions		Day	
❑ Clear	❑ Snow	❑ Warm	❑ Clear	❑ Dusty	❑ Monday	❑ Thursday
❑ Overcast	❑ Foggy	❑ Hot	❑ Muddy	❑ _____	❑ Tuesday	❑ Friday
❑ Rain	❑ Cold	❑ Temperature Range _____			❑ Wednesday	❑ _____

Persons Contacted:

Work Observed:

Items Discussed:

Remarks:

❑ Attachments

Signed by: Date:

Distribution:
- ❑ Owner
- ❑ Contractor
- ❑ Construction Manager
- ❑ Design Professional
- ❑ Consultant _____
- ❑ Other _____

CITY OF FOUNTAINS
HEART OF THE NATION

KANSAS CITY
MISSOURI

WEEKLY REPORT OF WORKING DAYS

Project Number _____

Project Title _____

Contractor _____

Report Number _____ Week Ending: _____

DATE:	WORKING DAY	REMARKS

TOTAL THIS WEEK	PREVIOUSLY	TOTAL TO DATE	WORKING DAYS IN CONTRACT	REMAINING OR OVERTIME

Signed by OWNER'S REPRESENTATIVE Date:

Signed by CONTRACTOR Date:

Distribution: ❑ OWNER ❑ CONTRACTOR ❑ Construction Manager ❑ Design Professional ❑ Consultant ❑ Other

SECTION 01329 – SAFETY PLAN

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes the development and maintenance of a Construction Safety Plan.

1.02 REFERENCES

A. National Fire Protection Association (NFPA):
    1. 70E - Standard for Electrical Safety in the Workplace.
B. Occupational Safety and Health Administration (OSHA).
C. Section 01300 Submittal Procedures.

1.03 CONSTRUCTION SAFETY PLAN

A. Detail the Methods and Procedures to comply with NFPA 70E, Federal, and Local Health and Safety Laws, Rules and Requirements for the duration of the Contract Times. Include reference to and comply with latest Owner safety policies. Include the following:
    1. Identification of the Certified or Licensed Safety Consultant (Safety Officer) who will prepare, initiate, maintain and supervise safety programs, and procedures.
    2. Procedures for providing workers with an awareness of safety and health hazards expected to be encountered over the course of construction.
    3. Safety equipment appropriate to the safety and health hazards expected to be encountered during construction including hydrogen sulfide (H2S), asbestos, and lead. Include warning devices, barricades, safety equipment in public right-of-way and protected areas, safety equipment used in multi-level structures, and personal protective equipment (PPE) as required by NFPA 70E.
    4. Methods for minimizing employees' exposure to safety and health hazards expected during construction including entrance to tanks, such as digesters, and confined spaces used in the operation of the treatment plant and demolition.
    5. Procedures for reporting safety or health hazards.
    6. Procedures to follow to correct a recognized safety and health hazard.
    7. Procedures for investigation of accidents, injuries, illnesses, and unusual events that have occurred at the construction site.
    8. Periodic and scheduled inspections of general work areas and specific workstations.
    9. Training for employees and workers at the jobsite.
    10. Methods of communication of safe working conditions, work practices and required personal protection equipment.
    11. Provision of a site-specific emergency action and evacuation plan during normal operations as well as when site access is blocked by trains.
B. Submit draft Safety Plan to Owner in accordance to Section 01300 Submittal Procedures for review prior to the Pre-Construction Meeting. The Safety Plan shall be a discussion topic on the agenda for the Pre-Construction Meeting. Following the Pre-Construction Meeting, Contractor shall submit final Safety Plan for Owner review within two weeks.

C. Contractor assumes sole responsibility for every aspect of Health and Safety on the jobsite, including the health and safety of subcontractors, suppliers, and other persons on the jobsite:
    1. Forward available information and reports to the Safety Consultant Officer who shall make the necessary recommendations concerning worker health and safety at the jobsite.
    2. Employ additional health and safety measures specified by the Safety Consultant Officer, as necessary, for workers in accordance with OSHA guidelines.
D. Timely Transmit to Owner and Engineer copies of reports and other documents related to accidents or injuries encountered during construction in accordance with Section 01300 Submittal Procedures.
E. Smoking
    1. There is no smoking allowed in buildings or within 50 feet of Digesters and NFPA classified areas and envelopes.
    2. No smoking will be allowed in facilities once they are closed in.
    3. No smoking will be permitted anywhere on the site following delivery of chemicals.
    4. Smoking is only allowed in Owner designated areas.
    5. Contractor shall provide signage identifying designated smoking areas, and when any changes to the designated areas are made.
    6. Contactor will be responsible for cleaning up cigarette butts.

PART 2 - PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

End of Section

CITY OF FOUNTAINS
HEART OF THE NATION

KANSAS CITY
MISSOURI

TRANSMITTAL LETTER

Project Number _____

Project Title _____

Date _____

TO: _____ Re: _____

ATTN: _____

We are sending you ❑ Attached ❑ Under separate cover via _____ the following items:
❑ Shop Drawings ❑ Prints ❑ Drawings ❑ Samples ❑ Specifications
❑ Copy of Letter ❑ Change Order ❑ _____

Copies	Date	No.	Description

These are transmitted as checked below:

❑ For Approval ❑ Approved as Submitted ❑ Resubmit _____ Copies for Approval
❑ For Your Use ❑ Approved as Noted ❑ Submit _____ Copies for Distribution
❑ As Requested ❑ Returned for Corrections ❑ Return _____ Corrected Prints
❑ For Review and Comment ❑ _____

Remarks: _____

By: _____

Distribution:
❑ Owner
❑ Contractor
❑ Construction Manager
❑ Design Professional
❑ Consultant
❑ Other

SECTION 01335 –DOCUMENT MANAGEMENT

PART 1 - GENERAL

1.01 SUMMARY

A. An internet-based coordination and document management systems (DMS), e-builder & B2G, will be used for the Project. This system will be used to manage project documentation among the City (and/or Designee) , Contractor (or Design-Builder) and Engineer of Record. The Contractor or Design-Builder shall utilize the document management system for all project related correspondence and documentation.

B. The DMS will be utilized to create, track and organize project documentation (City's Representative will provide the exceptions), including, but not limited to, the following:
   1. Schedules.
   2. Applications for Payment.
   3. Meeting minutes with action items.
   4. Project correspondence.
   5. Shop Drawing and Sample(s) Submittals.
   6. Transmittals.
   7. Change Management:
      (a) General Contractor Requests for Interpretation.
      (b) Proposal Requests.
      (c) Work Change Directives. (Storage only)
      (d) Change Orders.
   8. Reporting:
      (a) Certified Payroll Report. (B2G)
      (b) Subcontractors and Major Material Suppliers List. (B2G)
      (c) Daily Labor Force Reports. (B2G)
      (d) Daily Inspection Reports.
      (e) Photographs and Video.
      (f) Certificate of Achievement of Full Operation.
      (g) Contractor Affidavit for Final Payment.
      (h) Subcontractor Affidavit for Final Payment.
      (i) Punch Lists.
   9. Notifications:
      (a) Correction of Defective Work.
      (b) Notification of Non-Compliant Work.

1.02 RELATED SECTIONS

A. Section 00700 – General Conditions.
B. Section 01300 – Submittals.

1.03 COORDINATION MEETING

A. Prior to the pre-construction conference, the City will facilitate a meeting with the Contractor or Design-Builder to review requirements for project coordination, document control and use of the DMS. The meeting should be scheduled to allow

the Contractor or Design-Builder time to submit the initial project correspondence, other requirements and preliminary schedules in accordance with Section 00700-General Conditions.

B. At this meeting, the City will present the procedures to be used for document management for the Project.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01500 – TEMPORARY FACILITIES

PART 1 - GENERAL

1.01 SUMMARY

A. This specification covers the requirements for temporary construction facilities required on all projects.

1.02 RELATED SECTIONS

A. Section 01000 – General Project Requirements.
B. Section 01300 – Submittals.

1.03 CODES AND STANDARDS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.
B. National Fire Protection Association:
   1. NFPA 10 - Standard for Portable Fire Extinguishers.
   2. NFPA 70 - National Electric Code.
   3. NFPA 241 - Standard for Safeguarding Construction, Alternation and Demolition Operations.

1.04 INFORMATION PROVIDED BY THE CITY

A. As provided in the Contract Documents.

1.05 SUBMITTALS

A. Submit as specified in Section 01300 – Submittals.

1.06 QUALITY ASSURANCE

A. The Contractor is responsible for the quality assurance and quality control of the Work.
B. Regulations – Comply with industry standards and applicable laws and regulations of authorities having jurisdiction, including but not limited to:
   1. Building Code requirements.
   2. Health and safety regulations.
   3. Utility company regulations.
   4. Police, Fire Department and rescue squad rules.
C. Standards:
   1. Comply with NFPA 10 and 241 and ANSI A10 Series standards “Temporary Electrical Facilities.”
D. Comply with NEMA, NECA and UL standards and regulations for temporary electric service. Install service in compliance with NFPA 70.Inspections – Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.01 OFFICE

A. Stationary Office – Contractor shall maintain a suitable stationary office at or near the Site during the performance of the Work.
B. Assigned Vehicle – For projects of a certain scale and duration, the City will allow the Contractor to use an assigned vehicle to serve as a mobile office at the site of the Work.
C. The office shall serve as the headquarters of the Contractor's representative authorized to receive Contract Documents, instructions, other communication or articles associated with the Work.
D. Any communication given to the Contractor's representative or delivered to Contractor's office at the site of the Work shall be deemed to have been delivered to Contractor.
E. Copies of the Contract Documents shall be kept at the office and shall be available for use at all times.

3.02 TEMPORARY UTILITIES

A. Provide temporary utilities required for construction. Materials may be new or used, must be adequate for the required usage, not create unsafe conditions and not violate applicable codes and standards.
B. Power:
    1. All power for lighting, operations of the Contractor's plant/equipment or for any other use which may be required for proper completion of the Work shall be provided by the Contractor.
    2. Temporary heat and lighting shall be maintained until the Work is accepted.
C. Telephone/internet service:
    1. Contractor shall make all necessary arrangements and pay all installation and monthly charges for telephone/internet service for the temporary office at the site and shall provide all required devices for such service.
D. Sanitary Facilities:
    1. Contractor shall furnish temporary sanitary facilities at the site, as provided herein, for the needs of all construction workers and others performing work or furnishing services on the Project.
    2. Sanitary facilities shall be of reasonable capacity, properly maintained throughout the construction period and obscured from public view to the greatest practical extent. If toilets of the chemically treated type are used, at least one toilet will be furnished for each 20 persons. Contractor shall enforce the use of such sanitary facilities by all personnel at the site.
    3. Ventilate the units to control odors and fumes and empty and clean them at least once a week or more often if required by the City. The doors shall be self-closing. Locate the facility behind the construction fence or out of the public view.

3.03 SECURITY

A. See Section 01000 – General Project Requirements – SECURITY regarding the requirements for security.

3.04 PARKING

A. See Section 01000 – General Project Requirements – PARKING regarding the requirements for parking.

END OF SECTION

CITY OF FOUNTAINS
HEART OF THE NATION

KANSAS CITY
MISSOURI

SUBSTITUTION REQUEST

Project Number: 80002597 / Contract Number: 9940

Project Title: Drinking Water Service Line Inspections

To: _____ Authorization Number: _____
_____ From: _____
Re: _____ Date: _____
_____ Contract For: _____

Specification Title: _____
Section: _____ Page: _____ Article/Paragraph: _____

Proposed Substitution: _____
Manufacturer: _____ Address: _____ Phone No. _____
Trade Name: _____ Model No. _____
Installer: _____ Address: _____ Phone No. _____
History: ❑ New Product ❑ 2-5 years old ❑ 5-10 years old ❑ More than 10 years old
Differences between proposed substitution and specified product: _____
_____
_____

❑ Point-by-point comparative data attached – REQUIRED

Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance, service, and availability of replacement parts, as applicable, are available.
- Proposed substitution will not affect or delay Progress Schedule, except as stated below.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances, except as stated below.
- Payment will be made for changes to building design, including architectural or engineering design, detailing, licenses, royalties, and construction costs caused by the requested substitution.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be completed in all respects.

Reason for not providing specified item: _____
_____
_____
_____

Similar Installation:
Project: _____ Design Professional: _____
Address: _____ Owner: _____
_____ Date Installed: _____
Proposed substitution affects other parts of Work: ❑ No ❑ Yes; explain _____
_____
_____

Savings to Owner for accepting substitution: _____
Proposed substitution changes Contract Time: ❑ No ❑ Yes; add/deduct _____ days.

Supporting Data Attached:
❑ Product Data ❑ Drawings ❑ Tests ❑ Reports ❑ Samples ❑ _____
Attachments: _____

Submitted by: _____
Signature: _____
Firm: _____
Address: _____

Telephone: _____ Fax: _____ E-Mail: _____

Additional Comments: ❑ Contractor ❑ Subcontractor ❑ Supplier ❑ Manufacturer ❑ DP ❑ _____

DESIGN PROFESSIONAL'S REVIEW AND ACTION

- ❑ Substitution approved – Make submittals in accordance with Specification Section 01300.
- ❑ Substitution approved as noted – Make submittals in accordance with Specification Section 01300.
- ❑ Substitution rejected – Use specified materials.
- ❑ Substitution Request received too late – Use specified materials.

Signed by: _____ Date: _____

Distribution:
- ❑ Owner
- ❑ Design Professional
- ❑ Contractor
- ❑ Consultant
- ❑ Construction Manager
- ❑ Other

SECTION 01770

CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Inspection procedures.
2. Project Record Documents.
3. Operation and maintenance manuals.
4. Warranties.
5. Instruction of Owner's personnel.
6. Final cleaning.

1.3 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, the contractor shall comply with all conditions in Supplementary Conditions SC-14.04A and complete the following. List items below that are incomplete in request.

1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
2. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
3. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
4. Prepare and submit Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
5. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
6. Complete startup and performance testing of systems.
7. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
8. Submit changeover information related to Owner's use, operation, and maintenance.
9. Complete final cleaning requirements, including touchup painting.

10. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, the Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. The Engineer will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Engineer, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Substantial Completion.
3. The Contractor shall pay for any reinspection other than the first reinspection. The costs of all extra reinspections, including the cost of the Owner’s Representative and the Design Professional deducted from the Contractor’s payments.

1.4 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:
1. Submit certified copy of Engineer's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Engineer. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
2. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
3. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected. The Contractor shall pay for any reinspection other than the first reinspection. The costs of all extra reinspections, including the cost of the Owner’s Representative and the Design Professional deducted from the Contractor’s payments.

1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Preparation: Submit three copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction. The Contractor shall use the standard Kansas City form for all items.

1. Organize list of spaces in sequential order,

2. Organize items applying to each space by major element, including categories equipment, and building systems.
3. Include the following information at the top of each page:

    a. Project Number

    b. Project name.

    c. Date.

    d. Name of Contractor.

    e. Page number.

1.6 PROJECT RECORD DOCUMENTS

A. General: Do not use Project Record Documents for construction purposes. Protect Project Record Documents from deterioration and loss. Provide access to Project Record Documents for Engineer's and the Owner's Representative's reference during normal working hours.

B. Record Drawings: Maintain and submit one set of blue- or black-line white prints of Contract Drawings and Shop Drawings.

1. Mark Record Prints with dimensions from a fixture that to show the actual installation where installation varies from that shown originally. Require individual or entity that obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.

    a. Give particular attention to information on concealed elements that cannot be readily identified and recorded later.

    b. Accurately record information in an understandable drawing technique.

    c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.

    d. Mark Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. Where Shop Drawings are marked, show cross-reference on Contract Drawings.

2. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at the same location.
3. Mark important additional information that was either shown schematically or omitted from original Drawings.
4. Note Construction Change Directive numbers, Change Order numbers, alternate numbers, and similar identification where applicable.
5. Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location. Organize into manageable sets; bind each set with durable paper cover sheets. Include identification on cover sheets.

C. Record Specifications: Submit one copy of Project's Specifications, including addenda and contract modifications. Mark copy to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Note related Change Orders, Record Drawings, and Product Data, where applicable.

D. Record Product Data: Submit one copy of each Product Data submittal. Mark one set to indicate the actual product installation where installation varies from that indicated in Product Data.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, Record Drawings, and Record Specifications, where applicable.

E. Miscellaneous Record Submittals: Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

1.7 WARRANTIES

A. Submittal Time: Submit written warranties on request of Engineer for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.

B. Partial Use: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and used by Owner during construction period by separate agreement with Contractor.

C. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.

1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Final Completion for entire Project or for a portion of Project:

a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.

b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.

c. Remove tools, construction equipment, machinery, and surplus material from Project site.

d. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, and similar spaces.

e. Sweep concrete floors broom clean in unoccupied spaces.

f. Remove labels that are not permanent.

g. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already shows evidence of repair or restoration.

1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.

h. Wipe surfaces of mechanical and electrical equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

i. Replace parts subject to unusual operating conditions.

j. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.

k. Clean ducts, blowers, and coils if units were operated without filters during construction.

l. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

m. Leave Project clean and ready for use.

C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION

SECTION 01781

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:

1. Record Drawings.
2. Record Specifications.
3. Record Product Data.

B. Related Sections include the following:

1. Division 1 Section "Closeout Procedures" for general closeout procedures.

1.3 SUBMITTALS

A. Record Drawings: Comply with the following:

1. Number of Copies: Submit copies of Record Drawings as follows:

a. Initial Submittal: Submit **one** set of marked-up Record Prints. Project Manager will initial and date each sheet and mark whether general scope of changes, additional information recorded, and quality of drafting are acceptable. Project Manager will return the prints for organizing into sets, printing, binding, and final submittal.
b. Final Submittal: Submit three sets of marked-up Record Prints. Print each Drawing, whether or not changes and additional information were recorded.

B. Record Specifications: Submit one copy of Project's Specifications, including addenda and contract modifications.

C. Record Product Data: Submit two copies of each Product Data submittal.

1. Where Record Product Data is required as part of operation and maintenance manuals, submit marked-up Product Data as an insert in the manual instead of submittal as Record Product Data.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Prints: Maintain one set of blue- or black-line white prints of the Contract Drawings and Shop Drawings.

1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity that obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.

    a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
    b. Accurately record information in an understandable drawing technique.
    c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.

2. Content: Types of items requiring marking include, but are not limited to, the following:

    a. Dimensional changes to Drawings.
    b. Revisions to details shown on Drawings.
    c. Depths of foundations below first floor.
    d. Locations and depths of underground utilities.
    e. Revisions to routing of piping and conduits.
    f. Revisions to electrical circuitry.
    g. Actual equipment locations.
    h. Duct size and routing.
    i. Locations of concealed internal utilities.
    j. Changes made by Change Order or Construction Change Directive.
    k. Changes made following Project Manager's written orders.
    l. Details not on the original Contract Drawings.
    m. Field records for variable and concealed conditions.
    n. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at the same location.

5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
7. Paragraph and subparagraphs below describe a procedure for assembling nearly correct reproducible Drawings. Add requirements for special printing methods on specific material, such as moisture-sensitive prints on mylar film. Delete if not required.

B. Newly Prepared Record Drawings: Prepare new Drawings instead of preparing Record Drawings where Project Manager determines that neither the original Contract Drawings nor Shop Drawings are suitable to show actual installation.

1. New Drawings may be required when a Change Order is issued as a result of accepting an alternate, substitution, or other modification.
2. Consult with Project Manager for proper scale and scope of detailing and notations required to record the actual physical installation and its relation to other construction. Integrate newly prepared Record Drawings into Record Drawing sets; comply with procedures for formatting, organizing, copying, binding, and submitting.

C. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Identification: As follows:

    a. Project name.
    b. Date.
    c. Designation "PROJECT RECORD DRAWINGS."
    d. Name of Project Manager.
    e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of the manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.

4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
5. Note related Change Orders, Record Drawings, and Product Data where applicable.

2.3 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, Record Drawings, and Product Data where applicable.

2.4 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.

B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Project Manager’s reference during normal working hours.

END OF SECTION

011000

SUMMARY

PART 1 - GENERAL

1.1 PROJECT / WORK IDENTIFICATION:

A. SUMMARY BY REFERENCES: The Work of this Contract can be summarized by references to the Contract, General Conditions, Supplementary Conditions, Specification Sections, Drawings, Addenda and other modifications to the Contract Documents issued subsequent to the initial printing of this Project Manual, and including but not necessarily limited to printed material referenced by any of these. It is recognized that the Work of the Contract is also unavoidably affected or influenced by governing regulations, natural phenomenon including weather conditions and other forces in addition to these Contract Documents.

B. ABBREVIATED SUMMARY OF THE WORK: Briefly and without force and effect upon the Contract Documents, the Work of the Contract can be summarized to include the following:

1. ACCESSIBILITY IMPROVEMENTS: Preform various modifications to the following existing building, as indicated on the Drawings and as required by the Specifications, for improved accessibility compliance:

a. Blue River Waste Water Treatment Plant – Administration Building

2. SELECTIVE DEMOLITION, to include removal and legal disposal of select, existing interior and exterior construction elements as required for installation of new work and not utilized within the new construction;

3. SITEWORK, including site improvements such as new pavement, and exterior stairs and railings;

4. BUILDING RENOVATION CONSTRUCTION to include general construction and finishes, modifications to existing doors and hardware, and associated modifications to mechanical, plumbing and electrical Work, as indicated.

1.2 CONTRACT TYPE:

A. UNLESS OTHERWISE INDICATED in the Owner / Contractor Agreement, the Work of this Project will be constructed under a single (prime) General Construction contract.

1.3 SEPARATE CONTRACTS:

A. THE OWNER RESERVES THE RIGHT TO AWARD Separate Contracts to furnish and/or to install specific, limited portions of the Project, including but not necessarily limited to the following:

1. SIGNAGE (except for building address numbers, and other code-required signs indicated herein

2. FIXTURES, FURNISHINGS AND EQUIPMENT associated with this Project.

B. COOPERATE FULLY WITH SEPARATE CONTRACTORS so that work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract.

C. REVIEW SHOP DRAWINGS prepared by separate contractor(s) or suppliers of related Work for general conformance with the intent of the Construction Documents, and for service-connections and clearances if required. Verify that required rough-ins, connections and clearances will be provided, and report any discrepancies.

D. PROVIDE SCHEDULED DATES for delivery and installation to Separate Contractors or suppliers, and notify them when construction is ready for their delivery and installation Work. Provide openings, delivery access, and staging space for installation. Contact the Owner if scheduling or communication problems arise regarding separate contractor(s).

1.4 CONTRACT DOCUMENT FORMATS AND CONVENTIONS

A. SECTION IDENTIFICATION: The Specifications use Section numbers and titles to help cross-referencing within the Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete as not all numbers are used. Consult the "Table of Contents" at the beginning of the Project Manual to determine Section numbers and names of Specification Sections within the Contract Documents.

B. DIVISION-01 "GENERAL REQUIREMENTS" Sections apply to the Work of the entire Project, and to all Sections of the Specifications. When a more specific requirement is indicated within a Specification Section or on the Drawings, that requirement takes precedence over the Division-01 requirement for that Section's Work only.

C. CONTRACT DOCUMENT LANGUAGE:

1. THE CONTRACT DOCUMENTS (including the Drawings and Specifications) use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

2. ABBREVIATED LANGUAGE: Language used in the Contract Documents is abbreviated. Words and meanings will be interpreted as appropriate. Words implied, but not stated, will be inferred as the sense requires. Singular words will be interpreted as plural, and plural words will be interpreted as singular where applicable as the context of the Contract Documents indicates.

3. IMPERATIVE MOOD AND STREAMLINED LANGUAGE are generally used in the Contract Documents. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.

4. THE WORDS "SHALL," "SHALL BE,", "SHALL COMPLY WITH," or “WILL, “MUST” or “MUST COMPLY WITH” - depending on the context, are implied where a colon (:) is used within a sentence or phrase.

1.5 OWNER FURNISHED – CONTRACTOR INSTALLED (OFCI) PRODUCTS:

A. COORDINATE WITH AND INSTALL all Owner-Furnished products, including but not limited to providing schedule information regarding completion of prior work and allowable time periods for performance by the Separate Contractors, receiving at site, verifying receipt, handling, storage on-site, and mechanical/electrical/plumbing service connections, as applicable. The Owner will pay directly for the product costs including delivery to the Project Site. Provide all OFCI suppliers with an accurate address with accurate delivery directions and instructions.

B. AT DELIVERY, INSPECT PRODUCTS FOR DAMAGE at the Project Site. If items are damaged, defective or missing, mark the bill of lading as necessary. Contact the freight line and request a damage inspection of the items and submit a damage claim. Notify the owner within five (5) days of receipt of any missing, damaged or otherwise defective products – or replace/repair items at no cost to the Owner.

C. PROTECT PRODUCTS from damage, including damage from exposure to the elements. Replace or repair items damaged as a result of Construction operations. Damage resulting from inappropriate storage or handling, including but not limited to environmental conditions, will be the responsibility of the Contractor. No claim for additional costs due to damage to stored products or equipment will be considered. Repair damage to Owner-furnished products caused by construction operations to the Owner’s satisfaction.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

End of Section

SECTION 015000 - TEMPORARY EXTERIOR ENCLOSURE/ FIELD OFFICE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes requirements for temporary exterior enclosures, to be designed and provided by the contractor.

B. Temporary enclosure/ tenting and is to be designed to meet the following criteria:
   1. Designed and provided by the contractor.
   2. Meet all applicable codes adopted by the City of Kansas City, Missouri taking into account wind loads and structural loads.
   3. Keep the area between the enclosure and the exterior face of the building 70 degrees Fahrenheit +/- 5 degrees Fahrenheit.
   4. Keep all birds and insects out of the Administration Building.
   5. The temporary enclosure is to be designed to be weatherproof to keep all winds and rain out of the Administration Building.
   6. The enclosure structure cannot be fastened to the exterior columns of the building in any way. Temporarily fastening to the floor slab structures is acceptable as long as it doesn't violate the adopted codes.
   7. Provide all necessary electrical connections, panels etc. for any electrical loads associated with the Temporary Enclosure.
   8. Sound control: Due to the exterior curtain wall and storefront being removed while the building is occupied, take measures to keep the construction noise down to a minimum.
   9. Provide the heating units for the Temporary Enclosure along with the cost of the energy to connect them and run them.
   10. All temporary electrical work shall conform to NEC Article 590, OSHA 1926 Subpart K, and local jurisdiction requirements.
   11. All temporary HVAC equipment is to meet all adopted codes by Kansas City, MO.
   12. After completion of construction, remove all associated structures, restore permanent electrical services to original condition.
   13. Remove all temporary wiring and devices upon completion of construction.

C. Portable chain-link security fencing

D. Common-Use Field Office

E. Related Requirements:

   1. Section 011000 "Summary" for work restrictions and limitations on utility interruptions.

1.3 USE CHARGES

A. General: Installation and removal of, and use charges, for the Temporary Enclosure and temporary Common-Use Field Office shall be included in the Contract Sum unless otherwise indicated.

B. Sewer Service: Not applicable.

C. Water Service (for the Temporary Enclosure and Common-Use Field Office): Owner will pay water-service use charges for water used by all entities for construction operations.

D. Temporary Enclosure Heating source (natural gas, electric and propane): Contractor to provide the energy source necessary to provide temporary heating under the enclosure/ tenting.

E. Water from Existing System (for the Temporary Enclosure and Common-Use Field Office): Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

F. Electric Power Service from Existing System (for the Temporary Enclosure and Common-Use Field Office): Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

G. Sewer, Water, and Electric Power Service: Use charges are specified in Section 011200 "Multiple Contract Summary."

1.4 INFORMATIONAL SUBMITTALS

A. Site Utilization Plan: Show temporary facilities, temporary utility lines and connections, staging areas, construction site entrances, vehicle circulation, and parking areas for construction personnel.

B. Implementation and Termination Schedule: Within 15 days of date established for commencement of the Work, submit schedule indicating implementation and termination dates of each temporary utility.

C. Project Identification and Temporary Signs: Show fabrication and installation details, including plans, elevations, details, layouts, typestyles, graphic elements, and message content.

D. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.

E. Moisture- and Mold-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage and mold.

F. Dust and HVAC Control Plan: Submit coordination drawing and narrative that indicates the dust and HVAC control measures proposed for use, proposed locations, and proposed time frame for their operation. Include the following:

1. Locations of dust-control partitions at each phase of work.
2. HVAC system isolation schematic drawing.
3. Location of proposed air-filtration system discharge.
4. Waste-handling procedures.
5. Other dust-control measures.

1.5 QUALITY ASSURANCE

A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

C. Accessible Temporary Egress: Not applicable.

1.6 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Not applicable.

PART 2 - PRODUCTS

2.1 MATERIALS FOR TEMPORARY ENCLOSURE

A. Site enclosure security chain-link fencing installed around the temporary enclosure to deny access to the Administration Building during off hours: Minimum 2-inch (50mm), 0.148-inch (3.8mm) thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet (1.8 m) high with galvanized-steel pipe posts; minimum 2-3/8-inch (60mm) OD line posts and 2-7/8-inch (73-mm-) OD corner and pull posts, with 1-5/8-inch (42-mm) OD top rails with galvanized barbed-wire top strand.

B. Structure for temporary enclosure: Structure to be full height of the Administration Building and will be selected, designed and provided by the contractor.

C. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10-mil (0.25-mm) minimum thickness, with flame-spread rating of 15 or less per ASTM E 84 and passing NFPA 701 Test Method 2.

D. Insulation: Temporary enclosure insulation to be selected, designed and provided by the contractor with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

2.2 TEMPORARY COMBINED-USE OFFICE FACILITIES

A. Common-Use Field Office, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.

B. Common-Use Field Office: Of sufficient size to accommodate needs of Owner, Construction Manager, and construction personnel office activities and to accommodate Project meetings specified in other Division 01 Sections. Keep office clean and orderly. Furnish and equip offices as follows:

1. Furniture required for Project-site documents including file cabinets, plan tables, plan racks, and bookcases.
2. Conference room of sufficient size to accommodate meetings of 10 individuals. Provide electrical power service and 120-V ac duplex receptacles, with no fewer than one receptacle on each wall. Furnish room with conference table, chairs, and 4-foot (1.2m) square tack and marker boards.
3. Drinking water and private toilet.
4. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 deg F (20 to 22 deg C).
5. Lighting fixtures capable of maintaining average illumination of 20 fc (215 lx) at desk height.

C. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.

1. Store combustible materials apart from building.

2.3 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures. Provide a minimum of two (2) portable fire extinguishers within the confines of the Temporary Enclosure along with two (2) within the combined use office.

B. HVAC Equipment for Temporary Enclosure: Provide vented, self-contained, liquid-propane-gas, fuel-oil heaters or electric heaters with thermostatic control.

1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
2. Heating Units: Listed and labeled for type of fuel being consumed, by a qualified testing agency acceptable to authorities having jurisdiction, and marked for intended location and application.
3. After the construction is finished the contractor is to replace all HVAC filters in the Administration Buildings dedicated systems.

C. HVAC Equipment for Combined-Use Office: Unit to have self-contained HVAC system and controls.

PART 3 - EXECUTION

3.1 TEMPORARY FACILITIES, GENERAL

A. Conservation: Coordinate construction and use of temporary facilities with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.

3.2 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

1. Locate facilities to limit site disturbance as specified in Section 011000 "Summary."

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.3 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service.

1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.

1. Provide a self-contained sanitary service for the combined use office unit.

C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.

D. Water Service: Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.

E. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

1. Toilets: Use of Owner's existing toilet facilities will not be permitted.

F. Temporary Heating: Provide temporary heating required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

1. Provide temporary dehumidification systems when required to reduce ambient and substrate moisture levels to level required to allow installation or application of finishes and their proper curing or drying.

G. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.

1. Prior to commencing work, isolate the Temporary Enclosure HVAC system from the Administration Buildings HVAC system in area where work is to be performed.

a. Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.

2. Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust-containment devices.
3. Perform daily construction cleanup and final cleanup using approved vacuum equipment.

H. Electric Power Service: Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner.

I. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.

1. Install electric power service overhead unless otherwise indicated.
2. Connect temporary service to Owner's existing power source, as directed by Owner.
3. Use weatherproof service disconnects, panels, and distribution boxes rated for outdoor/temporary use (NEMA 3R minimum).
4. Feeders and branch circuits shall be cable assemblies listed for hard usage.
5. Provide GFCI protection on all 15-, 20-, and 30-amp receptacle circuits.
6. Receptacles shall be weather-resistant, tamper-proof, and installed with in-use covers when located outdoors.
7. Maintain a dedicated circuit for HVAC or heating equipment.
8. Coordinate with the Owner for available power capacity and connection location.

J. Lighting: Provide temporary lighting under the temporary enclosure with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
2. Provide general illumination levels of 5fc throughout occupied and egress areas.

K. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel. Install Wi-Fi cell phone access equipment and one land-based telephone line(s) for each field office.

1. At each telephone, post a list of important telephone numbers.

a. Police and fire departments.
b. Ambulance service.
c. Contractor's home office.

d. Contractor's emergency after-hours telephone number.
e. Architect's office.
f. Construction Manager's home office.
g. Engineers' offices.
h. Owner's office.
i. Principal subcontractors' field and home offices.

L. Electronic Communication Service: Provide a desktop computer in the primary field office adequate for use by Architect and Owner to access Project electronic documents and maintain electronic communications. Equip computer with not less than the following:

1. Processor: Intel Core i7.
2. Memory: **4** gigabyte.
3. Disk Storage: 1 terabyte hard-disk drive and combination DVD-RW/CD-RW drive.
4. Display: 32-inch LCD monitor with 256-Mb dedicated video RAM.
5. Full-size keyboard and mouse.
6. Network Connectivity: 1 Gigabyte
7. Operating System: Microsoft Windows 11 Professional.
8. Productivity Software:

    a. Microsoft Office Professional, 2020 or higher, including Word, Excel, and Outlook.

9. Printer: "All-in-one" unit equipped with printer server, combining color printing, photocopying, scanning, and faxing, or separate units for each of these three functions.
10. Internet Service: Broadband modem, router and ISP, equipped with hardware firewall, providing minimum 1,000 Mbps upload and 1,000 Mbps download speeds at each computer.
11. Internet Security: Integrated software, providing software firewall, virus, spyware, phishing, and spam protection in a combined application.
12. Backup: External hard drive, minimum 2 terabyte, with automated backup software providing daily backups.

3.4 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:

1. Provide construction for temporary offices, shops, and sheds located within construction area or within 30 feet (9 m) of building lines that is noncombustible according to ASTM E 136. Comply with NFPA 241.
2. Maintain support facilities until Architect schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

B. Existing Paved Areas: Protect and maintain existing paved areas during construction operations. All repairs to match the existing materials and finishes.

C. Parking: Use designated areas of Owner's existing parking areas for construction personnel.

D. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.

1. Identification Signs: Provide Project identification signs as indicated on Drawings.
2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.

    a. Provide temporary, directional signs for construction personnel and visitors.

3. Maintain and touch up signs so they are legible at all times.

E. Waste Disposal Facilities: Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."

F. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Section 017300 "Execution."

G. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.

1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

H. Temporary Elevator Use: Use of elevators is not permitted.

I. Temporary Stairs: Until permanent stairs are available, provide temporary stairs where ladders are not adequate.

J. Existing Stair Usage: Use of Owner's existing stairs will not be permitted.

3.5 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

1. Where access to adjacent properties is required in order to affect protection of existing facilities, obtain written permission from adjacent property owner to access property for that purpose.

B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

1. Comply with work restrictions specified in Section 011000 "Summary."

C. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.

D. Tree and Plant Protection: Comply with requirements specified in Section 015639 "Temporary Tree and Plant Protection."

E. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using materials approved by authorities having jurisdiction.

F. Site Enclosure Security Fence: Before construction operations begin furnish and install site enclosure fence in a manner that will prevent people from easily entering site except by entrance gates.

1. Extent of Fence: As required to enclose entire Project site.
2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one set of keys to Owner.

G. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each workday.

H. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

I. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.

J. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.

1. Where heating or cooling is needed and permanent enclosure is incomplete, insulate temporary enclosures.

K. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by Owner from fumes and noise.

1. Where fire-resistance-rated temporary partitions are indicated or are required by authorities having jurisdiction, construct partitions according to the rated assemblies.

3.6 MOISTURE AND MOLD CONTROL

A. Contractor's Moisture-Protection Plan: Describe delivery, handling, storage, installation, and protection provisions for materials subject to water absorption or water damage.

1. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water-damaged Work.
2. Indicate methods to be used to avoid trapping water in finished work.

B. Exposed Construction Period: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:

1. Protect porous materials from water damage.

2. Protect stored and installed material from flowing or standing water.
3. Keep porous and organic materials from coming into prolonged contact with concrete.
4. Remove standing water from decks.
5. Keep deck openings covered or dammed.

C. Partially Enclosed Construction Period: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:

1. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
2. Keep interior spaces reasonably clean and protected from water damage.
3. Periodically collect and remove waste containing cellulose or other organic matter.
4. Discard or replace water-damaged material.
5. Do not install material that is wet.
6. Discard and replace stored or installed material that begins to grow mold.
7. Perform work in a sequence that allows wet materials adequate time to dry before enclosing the material in gypsum board or other interior finishes.

D. Controlled Construction Period: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:

1. Control moisture and humidity inside building by maintaining effective dry-in conditions.
2. Use temporary or permanent HVAC system to control humidity within ranges specified for installed and stored materials.
3. Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water limits.

    a. Hygroscopic materials that may support mold growth, including wood and gypsum-based products, that become wet during the course of construction and remain wet for 48 hours are considered defective and require replacing.
    b. Measure moisture content of materials that have been exposed to moisture during construction operations or after installation. Record readings beginning at time of exposure and continuing daily for 48 hours. Identify materials containing moisture levels higher than allowed. Report findings in writing to Architect.
    c. Remove and replace materials that cannot be completely restored to their manufactured moisture level within 48 hours.

3.7 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Keep all welding gases and grinding odors out of the Administration Building during construction.

C. Maintenance: Maintain facilities in good operating condition until removal.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

D. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

E. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
2. Where site area around the building is intended for landscape development. Remove construction materials contaminated with petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks, as required by authorities having jurisdiction.
3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700 "Closeout Procedures."

END OF SECTION 015000

024119

SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 WORK INCLUDED:

A. Demolish and remove existing site improvements and building components indicated, including hidden materials as required to facilitate new construction Work, and as specified herein.

1.2 MATERIALS OWNERSHIP:

A. THE OWNER RESERVES THE RIGHT to claim any existing product or material for reuse, at their discretion. Except for items or materials so claimed, demolished materials will become the Contractor's property and must be removed from the site with further disposition at an approved waste facility.

1.3 QUALITY ASSURANCES:

A. TRAFFIC: Conduct selective demolition operations and debris removal in a manner to ensure minimum interference with other adjacent occupied or used facilities.

B. REGULATORY REQUIREMENTS: Comply with governing EPA notification regulations before starting selective demolition. Comply with hauling and disposal regulations of applicable AHJ representatives.

1.4 FIELD CONDITIONS

A. CONDITIONS EXISTING at the time of inspection for bidding will be maintained by the Owner to the greatest extent practical.

B. EXISTING CONDITIONS: The Owner and the Architect do not accept or assume any responsibility for the condition of items or building elements intended to be demolished.

C. PROMPTLY REPAIR DAMAGE to existing conditions and facilities that are to remain caused by demolition operations and restore to original operational conditions.

D. HAZARDOUS MATERIALS: It is not expected that asbestos, PCB’s, lead-based paints or other hazardous materials will be encountered with this Project. If any material is uncovered that is suspected to contain a hazardous material, do not disturb the material – and notify the Architect immediately.

E. STORAGE OR SALE OF REMOVED ITEMS or materials on-site will not be permitted.

F. PROVIDE REPAIR MATERIALS identical to existing materials, whose installed performance equals or surpasses that of the exiting materials. Where identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.1 EXAMINATION

A. EXAMINE AREAS AND CONDITIONS under which the Work of this Section will be performed. Do not proceed if conditions exist that are detrimental to proper and timely completion. Commencement of this Work will be construed as acceptance of existing conditions, and assumption of responsibility for satisfactory completion.

1. SURVEY EXISTING CONDITIONS and correlate with requirements indicated to determine extent of selective demolition required.

2. SURVEY THE CONDITIONS OF THE BUILDING to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of the structure or adjacent structures during selective demolition. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

B. INVENTORY AND RECORD THE CONDITION of items to be removed and reinstalled and items to be removed and salvaged. Photograph existing damage to structural surfaces, equipment or to surrounding properties which could be misconstrued as damage resulting from selective demolition work; file with Architect prior to starting work.

C. IF UNANTICIPATED mechanical, electrical, or structural elements which conflict with the intended function of design are encountered, investigate and measure both nature and extent of the conflict. Submit report to the Architect in written, accurate detail. Pending receipt of directive from the Architect, rearrange selective demolition schedule as necessary to continue overall job progress without delay.

3.2 PROTECTION:

A. PROVIDE TEMPORARY BARRICADES and other forms of protection as required to protect adjacent Work, the Owner's personnel or the public from injury due to selective demolition work.

B. EXISTING TO REMAIN: Protect construction indicated or intended to remain against damage and soiling during selective demolition. Items may be removed to a suitable, protected storage location during selective demolition and then cleaned and reinstalled in their original locations.

C. PROVIDE 3/4-INCH THICK PLYWOOD protection panels under dumpster wheels or skids.

3.3 BUILDING SERVICES

A. MAINTAIN EXISTING SERVICES in operation and protect them against damage during demolition operations.

1. DO NOT INTERRUPT EXISTING SERVICES serving any other occupied or operating facilities, except when indicated or authorized by the Owner and with concurrence of AHJ representatives.

2. PROVIDE TEMPORARY SERVICES during interruptions of existing services, acceptable to the Owner and to AHJ's.

B. LOCATE, IDENTIFY, DISCONNECT AND SEAL OR CAP OFF services associated with selective demolition operations, and verify that services have been disconnected and capped before start of selective demolition operations.

3.4 PREPARATION - GENERAL:

A. CONDUCT SELECTIVE DEMOLITION OPERATIONS and remove debris to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities

B. CONDUCT OPERATIONS TO PREVENT INJURY to people and damage to adjacent buildings and facilities to remain. Ensure safe passage of people around selective demolition area. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways.

C. PROVIDE AND MAINTAIN SHORING, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of buildings or elements to be demolished and to adjacent buildings or elements intended to remain. Strengthen or add new supports when required during progress of demolition.

D. PROVIDE TEMPORARY WEATHER PROTECTION, during interval between demolition and removal of existing construction, on exterior surfaces to ensure that no water leakage or damage occurs to structure or interior areas.

3.5 PREPARATION FOR SELECTIVE SITE DEMOLITION:

A. DO NOT CLOSE OR OBSTRUCT STREETS, walks, or other adjacent occupied or used facilities without permission from the Owner, and if required, from AHJ's.

B. PROVIDE ALTERNATE ROUTES around closed or obstructed roads if required by AHJ's.

C. PROTECT EXISTING SITE IMPROVEMENTS, appurtenances, and landscaping to remain.

D. ERECT A FENCE around drip line of individual trees or around perimeter drip line of groups of trees to remain.

3.6 PREPARATION FOR INTERIOR SELECTIVE DEMOLITION:

A. PROTECT WALLS, CEILINGS, FLOORS, and other existing finishes that are to remain and are exposed during demolition operations.

B. COVER AND PROTECT furniture, furnishings, and equipment that will not be removed. Protect air-handling equipment from dust or debris.

C. ERECT AND MAINTAIN DUSTPROOF PARTITIONS and temporary enclosures to limit dust and dirt migration and to separate areas from fumes and noise. Construct dustproof partitions of not less than nominal 4-inch studs, 5/8-inch gypsum wallboard with joints taped on occupied side, and 1/2-inch-thick fire-retardant treated plywood on the demolition side. Insulate partition to provide noise protection to occupied areas. Seal joints and perimeter. Equip partitions with dustproof doors and security locks.

3.7 POLLUTION CONTROLS:

A. UTILIZE water mist, temporary enclosures, and other suitable methods to limit the spread of dust and dirt. Comply with governing environmental protection regulations, as applicable.

B. DO NOT CREATE HAZARDOUS or objectionable conditions, such as ice, flooding, and pollution, when using water, and do not create objectionable odors from use of chemicals.

C. REMOVE AND TRANSPORT DEBRIS in a manner that will prevent spillage on adjacent surfaces and areas. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level.

3.8 SELECTIVE DEMOLITION OPERATIONS:

A. DEMOLISH AND REMOVE EXISTING CONSTRUCTION ELEMENTS only to the extent required by new construction or as indicated. Use methods required to complete Work within limitations of governing regulations and as follows:

B. NEATLY CUT OPENINGS AND HOLES plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. To minimize disturbance of adjacent surfaces, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain

C. CUT OR DRILL FROM THE EXPOSED OR FINISHED SIDE into concealed surfaces to avoid marring existing finished surfaces. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations. Maintain adequate ventilation when using cutting torches

D. REMOVE DECAYED, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.

E. RETURN ELEMENTS OF CONSTRUCTION AND SURFACES TO REMAIN to condition existing before start of demolition operations.

F. DEMOLISH CONCRETE AND MASONRY in small sections. Cut concrete and masonry at junctures with construction to remain, using power-driven masonry saw or hand tools; do not use power-driven impact tools.

G. REMOVE RESILIENT FLOOR COVERINGS and adhesive according to recommendations of the Resilient Floor Covering Institute's (RFCI) "Recommended Work Practices for the Removal of Resilient Floor Coverings". Remove residual adhesive and prepare substrate for new floor coverings by one of the methods recommended by RFCI.

H. REMOVE AIR-CONDITIONING EQUIPMENT without releasing refrigerants.

3.9 BELOW-GRADE DEMOLITION WORK:

A. DEMOLISH FOUNDATION WALLS and other below-grade construction, as follows:

1. REMOVE BELOW GRADE CONSTRUCTION, including foundation walls, to at least 12-inches below grade.

2. BELOW GRADE CONCRETE SLABS: break up and remove unless otherwise indicated to remain. Break into sections no larger than 24-inches square and leave in place.

3.10 PATCHING AND REPAIRS

A. PROMPTLY PATCH AND REPAIR holes and damaged surfaces caused to adjacent construction by selective demolition operations. Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.

B. RESTORE EXPOSED FINISHES of patched areas and extend finish restoration into adjoining construction to remain in a manner that eliminates evidence of patching and refinishing.

C. PATCH AND REPAIR FLOOR AND WALL SURFACES in the new space where demolished walls or partitions extend one finished area into another. Provide a flush and even surface of uniform color and appearance. Closely match texture and finish of existing adjacent surface. Patch with durable seams that are as invisible as possible.

D. WHERE PATCHING SMOOTH PAINTED SURFACES, extend final paint coat over entire unbroken surface containing the patch after the surface has received primer and second coat

E. REMOVE EXISTING FLOOR AND WALL COVERINGS and replace with new materials, if necessary, to achieve uniform color and appearance.

3.11 DISPOSAL OF DEMOLISHED MATERIALS

A. PROMPTLY DISPOSE of demolished materials. Do not allow demolished materials to accumulate on-site.

B. DO NOT BURN demolished materials on-site.

C. TRANSPORT DEMOLISHED MATERIALS off the property and legally dispose of them.

3.12 CLEANING

A. POLICE THE SITE every day to pick up loose construction debris and dispose of properly.

B. SWEEP THE SITE AND BUILDING broom clean on completion of selective demolition operation.

C. CHANGE FILTERS ON AIR-HANDLING EQUIPMENT on completion of selective demolition operations.

End of Section

040120

MASONRY REPAIR

PART 1 - GENERAL

1.1 WORK INCLUDED

A. REPAIR EXISTING MASONRY where affected or modified by the Work of this Project, taking care to ensure that existing materials are not damaged. The Work includes:

1. Cleaning of existing masonry

2. Repair of existing masonry to match adjacent masonry materials to the greatest extent feasible, to include replacing of damaged or broken units, as applicable.

3. Final cleaning of exposed masonry surfaces.

1.2 QUALITY ASSURANCE

A. MAINTENANCE / REPAIR WORKER QUALIFICATIONS: Persons must be experienced in restoration work of the types that they will be performing.

1.3 SUBMITTALS

A. SUBMIT PRODUCT DATA for each type of material required to be provided as a part of the Work of this Section. Include recommendations for application and use. Include test data substantiating that products comply with requirements.

1.4 DELIVERY, STORAGE, AND HANDLING:

A. FURNISH CEMENT materials in suitable bags used for packaging. Labeling of packages must clearly define contents, manufacturer, and batch identification. Detergents, masonry cleaners, paint removers, solvents, epoxies and other chemicals used for masonry cleaning must be in sealed containers that legibly show the designated name, formula or specification number, quantity, date of manufacture, manufacturer's formulation number, manufacturer's directions including any warnings and special precautions, and name of manufacturer.

B. STORE MATERIALS IN WEATHERTIGHT CONTAINERS which will exclude moisture and contaminants. Accessories must be stored avoiding contamination and deterioration. Admixtures which have been in storage onsite for six months or longer, or which have been subjected to freezing, must not be used unless retested and proven to meet the specified requirements.

C. GENERAL AMBIENT CONDITIONS: Do not perform the Work of this Section when weather conditions could affect the quality of the Work. Do not install new materials when the air temperature is below 40 degrees F. When air temperature is likely to exceed 90 degrees F masonry and mortar must have a temperature not exceeding 90 degrees F when placed. Do not install materials during periods of rain or other precipitation. Clean masonry surfaces only when air temperatures are above 40 degrees F and will remain so until masonry has dried out.

1.5 COORDINATION

A. COORDINATE MASONRY REPAIR and cleaning with public circulation at Project sites. The Work may be circulation and access routes that cannot be closed off entirely. Plan and execute the Work accordingly.

B. ORDER REPLACEMENT MATERIALS at earliest possible date to avoid delaying completion of the Work. Order sand and Portland cement for pointing mortar immediately after approval of samples and mockups. Take delivery of and store at Project sites a sufficient quantity to complete the work.

PART 2 - PRODUCTS

2.1 CLEANING MATERIALS:

A. SELECT CLEANING MATERIALS to be used on the basis of the masonry materials to be cleaned, a rationale for the cleaning, and an understanding of the anticipated level of cleanliness expected. Do not over-clean surfaces as it may be detrimental to the substrate, and may remove desirable surface details or patinas. Overly aggressive cleaning methods and materials can cause subtle, long-term damage to existing masonry units. Use cleaning materials that have a minimum five (5) year successful performance record on similar projects.

B. CLEANING IMPLEMENTS: Furnish brushes that contain natural or nylon fiber bristles only. Do not use wire brushes. Scrapers and application paddles must be made of wood with rounded edges. Metallic tools are not permitted.

2.2 MASONRY REPAIR MATERIALS

A. USE MASONRY MATERIALS having physical and chemical properties, and composition of masonry and mortar in repair work that match the original existing masonry and mortar to be repaired, unless existing materials are faulty or non-performing.

B. REPLACEMENT MORTAR: Match original existing mortar in color and texture, with new mortar mix sand to match the original in color, shape and particle size distribution as defined in ASTM C144 and with ASTM E11 sieves.

2.3 REPLACEMENT MASONRY UNITS:

A. PROVIDE REPLACEMENT MASONRY UNITS as required to complete the masonry repair Work as required by the existing building conditions. Provide units with colors, color variation within units, surface texture, size, and shape to match existing masonry to the greatest extent feasible. For masonry units that exhibit a range of colors or color variation within units, provide replacement units that proportionally matches that range and variation, rather than individual units matching an individual color within that range. Match existing units in size and shape.

B. REPLACEMENT BRICK: Replacement brick must meet requirements of ASTM C216 Grade SW unless otherwise indicated or required. Provide specially molded, 100-percent solid shapes for applications where core holes or "frogs" could be exposed to view or weather when in final position and where shapes produced by sawing would result in sawed surfaces being exposed to view. Mechanical chopping or breaking brick, or bonding pieces of brick together by adhesive, are not acceptable procedures for fabricating special shapes.

PART 3 - EXECUTION

3.1 EVALUATION AND ANALYSIS:

A. Undertake masonry repair only after evaluation and structural analysis of the areas to be repaired is completed.

3.2 PREPARATION

A. MIXING, TRANSPORTING, AND PLACING JOB MATERIALS: Provide equipment used for mixing, transporting, placing, and confining masonry and mortar placements capable of satisfactorily mixing material and supporting uninterrupted placement operations. Equipment used for mixing, conveying, and placing of materials shall be clean, free of old materials and contaminants, and shall conform to the material manufacturer's recommendations.

B. ASSOCIATED EQUIPMENT: Provide associated equipment, such as mixer timing equipment, valves, pressure gauges, pressure hoses, other hardware, and tools, as required to ensure a continuous supply of material and operation control.

C. REMOVE UN-USED MASONRY ANCHORS and other extraneous items no longer in use, unless identified to remain. Remove items carefully to avoid spalling or cracking existing masonry. If an item cannot be removed without damaging surrounding masonry, cut or grind off item approximately 3/4 inch beneath surface and core drill a recess of same depth in surrounding masonry as close around item as practical.

3.3 PROTECTION:

A. PROTECT PERSONS, motor vehicles, adjacent surfaces, surrounding buildings, equipment, and landscape materials from chemicals used and runoff from cleaning and paint removal operations. Erect temporary protection covers, which will remain in operation during the course of the work, over pedestrian walkways and at personnel and vehicular points of entrance and

exit. Protect the interior of buildings from weather, cleaning (from chemicals used and runoff from cleaning), and repair operations at all times.

3.4 MASONRY CLEANING:

A. DO NOT DAMAGE materials in the process of cleaning. Cleaning shall conform to NPS TPS Brief 1, and as follows:

1. Surfaces must be evenly cleaned with no evidence of streaking or bleaching. The cleaning process cannot affect the density, porosity, or color of the masonry or mortar. Cleaned masonry shall have a neutral pH.

2. Use the gentlest methods possible for cleaning masonry to achieve the desired results. Make test patches to determine a satisfactory cleaning result.

3. Cleaning shall proceed in an orderly manner, working from top to bottom of each scaffold width and from one end of each elevation to the other.

B. PERFORM CLEANING in a manner which results in uniform coverage of all surfaces, and which produces an even effect without streaking or damage to masonry. The cleaning materials, equipment, and methods must not result in staining, erosion, marring, or other damage to the existing surfaces.

C. PROTECT ALL INTERIOR surfaces to remain from the cleaning fluids. Contain fluids within the work area.

3.5 WATER CLEANING

A. PRESSURE SPRAYING: Spray apply water to masonry surfaces to comply with requirements indicated by test patches for location, purpose, water temperature, pressure, volume, and equipment. Unless otherwise indicated, the surface washing shall be done with clean, low-pressure water (pressure of less than 55 psi and 2.5 to 3 gpm discharge) and the spray nozzle shall not be held less than 12 inches from surface of masonry. Water shall be applied side to side in overlapping bands to produce uniform coverage.

B. HAND SCRUBBING: Scrub surfaces to be cleaned to remove surface contaminants. Pre-wet surfaces and use hand-held natural bristle or nylon brushes. Do not use wire brushes.

C. RINSING: Rinse scrubbed surfaces clean of all contaminants and cleaning solutions with water in a low-to-moderate pressure spray, working upwards from bottom to top of each treated area. The rinsing cycle shall remove all traces of contaminants and cleaning solutions.

3.6 MASONRY REPAIR:

A. MATCH REPAIRED SURFACES with adjacent existing surfaces. Use products in accordance with the manufacturer's instructions.

B. REPOINTING MASONRY: Repoint masonry in accordance with NPS TPS Brief 2.

3.7 MIXING AND INSTALLATION

A. REPOINTING MORTAR may be site mixed, Type N or Type O. Ensure appropriate material proportions as regards to the effect of moisture content on the individual components (cement, sand and lime). Batch materials using volumetric measurement devices (not shovels) and consistently consolidate the material in these devices to ensure the uniformity of the mortar.

3.8 COMPRESSION / JOINT FINISH / CURING

A. Compress each layer thoroughly and allow it to become thumbprint hard before applying the next layer of mortar, as applicable.

B. When mortar is thumbprint hard at the surface of the wall, finish the joints to match the original joint profile. Allow water evaporation from the freshly repointed walls in order to initiate the carbonation process in high lime content mortars. The carbonation of lime mortar initially requires wet-and-dry cycles, which can be created by water misting the joints after the mortar application when dry weather conditions prevail. Finish the joint profile before these cycles are started. Depending on the environmental conditions (temperature and humidity), carry out water misting until a full nine alternating wet-and-dry cycles are completed.

3.9 PROTECTION:

A. Keep mortar from drying out too quickly or from becoming too wet. Protect it from direct sun and high winds for the first 72-hours after installation or from driving rain for the first 24-hours, using plastic sheeting if necessary. Allow for air circulation to facilitate the carbonation process.

End of Section

045110

MASONRY CLEANING

PART 1 - GENERAL

1.1 SUMMARY

A. WORK INCLUDES cleaning existing masonry surfaces, including old caulking and paint, where indicated on the Drawings, as specified herein.

B. Due to the H2S gases in the area, all materials and fasteners are to be either aluminum or stainless steel.

1.2 PREINSTALLATION MEETINGS

A. PREINSTALLATION CONFERENCE: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. PRODUCT DATA: For each type of product.

1.4 QUALITY ASSURANCE

A. MOCKUPS: Prepare mockup of cleaning on existing surfaces to demonstrate aesthetic effects and to set quality standards for materials and execution.

1. CLEANING: Clean an area of approximately 10 sq. ft. for each type of masonry and surface condition.

2. TEST CLEANERS AND METHODS ON SAMPLES OF ADJACENT MATERIALS for possible adverse reactions. Do not test cleaners and methods known to have deleterious effect.

3. ALLOW A WAITING PERIOD of not less than seven (7)-days after completion of sample cleaning to permit a study of sample panels for negative reactions.

PART 2 - PRODUCTS

2.1 CLEANING MATERIALS

A. WATER: Potable.

1. HOT WATER: Water heated to a temperature of 140- to 160-deg F.

B. NONACIDIC LIQUID CLEANER: Manufacturer's standard mildly alkaline liquid cleaner formulated for removing mold, mildew, and other organic soiling from ordinary building materials, including polished stone, brick, aluminum, plastics, and wood.

1. MANUFACTURERS: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. American Building Restoration Products, Inc.
b. Cathedral Stone Products, Inc.
c. Diedrich Technologies, Inc.; a Hohmann & Barnard company.
d. Dumond Chemicals, Inc.
e. Hydroclean; Hydrochemical Techniques, Inc.
f. Price Research, Ltd.
g. PROSOCO, Inc.

PART 3 - EXECUTION

3.1 PROTECTION

A. COMPLY WITH cleaning product manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products.

1. Prevent chemical cleaning solutions from coming into contact with people, and other surfaces that could be harmed by such contact.

2. Cover adjacent surfaces with materials that are proven to resist paint removers and chemical cleaners used unless products being used will not damage adjacent surfaces.

3. Apply masking agents according to manufacturer's written instructions.

4. When no longer needed, promptly remove masking to prevent adhesive staining.

3.2 CLEANING MASONRY, GENERAL

A. CLEANING APPEARANCE STANDARD: Cleaned surfaces are to have a uniform appearance.

B. PROCEED WITH CLEANING in an orderly manner. Ensure that dirty residues and rinse water do not wash over dry, cleaned surfaces.

1. USE ONLY THOSE CLEANING METHODS indicated for each masonry material and location.

a. BRUSHES: Do not use wire brushes or brushes that are not resistant to chemical cleaner being used.

2. SPRAY EQUIPMENT: Use spray equipment that provides controlled application at volume and pressure indicated, measured at nozzle. Adjust pressure and volume to ensure that cleaning methods do not damage surfaces, including joints.

    a. Equip units with pressure gages.
    b. For chemical-cleaner spray application, use low-pressure tank or chemical pump suitable for chemical cleaner indicated, equipped with nozzle having a cone-shaped spray.

3. For water-spray application, use fan-shaped spray that disperses water at an angle of 25 to 50 degrees.

4. For heated water-spray application, use equipment capable of maintaining temperature between 140 and 160 deg F at flow rates indicated.

C. PERFORM CLEANING in a manner that results in uniform coverage of all surfaces, including corners, moldings, and interstices, and that produces an even effect without streaking or damaging masonry surfaces. Keep wall wet below area being cleaned to prevent streaking from runoff.

1. PERFORM ADDITIONAL GENERAL CLEANING, paint and stain removal, and spot cleaning of small areas that are noticeably different when viewed, so that cleaned surfaces blend smoothly into surrounding areas.

D. CHEMICAL-CLEANER APPLICATION METHODS: Apply chemical cleaners to masonry surfaces according to chemical-cleaner manufacturer's written instructions; using brush or spray application as appropriate. Do not spray apply at pressures exceeding 50-PSI. Do not allow chemicals to remain on surface for periods longer than those indicated or recommended in writing by manufacturer.

1. RINSE OFF CHEMICAL RESIDUE and soil by working upward from bottom to top of each treated area. Periodically during each rinse, test pH of rinse water running off of cleaned area to determine that chemical cleaner is completely removed.

2. APPLY NEUTRALIZING AGENT and repeat rinse if necessary, to produce tested pH of between 6.7 and 7.5.

3.3 PRELIMINARY CLEANING

A. Before beginning general cleaning, remove extraneous substances that are resistant to planned cleaning methods. Extraneous substances include paint, plastic anchors, calking, asphalt, and tar.

B. Remove existing paint and calking / sealant materials with alkaline paint remover, if necessary.

3.4 CLEANING MASONRY

A. NONACIDIC LIQUID CHEMICAL CLEANING:

1. Wet surface with hot water applied by low-pressure spray.

2. Apply cleaner to surface in two applications by brush or low-pressure spray.

3. Let cleaner remain on surface for period recommended in writing by chemical-cleaner manufacturer.

4. Rinse with water applied by low-pressure spray to remove chemicals and soil.

5. Repeat cleaning procedure above where required to produce required cleaning effect established by mockup. Do not repeat more than once. If additional cleaning is required, use steam cleaning.

End of Section

055200

METAL RAILINGS

PART 1 - GENERAL

1.1 WORK INCLUDED:

A. Provide metal railings including handrails and guard-railings, as specified herein, and as necessary for complete installation.

B. Handrails and guardrails must meet the 2010 ADA requirements.

1.2 COORDINATION

A. COORDINATE SELECTION OF SHOP PRIMERS with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. COORDINATE INSTALLATION OF ANCHORAGES FOR RAILINGS. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

C. SCHEDULE INSTALLATION so wall attachments are made only to completed walls. Do not support railings temporarily by any means that do not satisfy structural performance requirements.

1.3 RELATED SECTIONS

A. None.

1.4 ACTION SUBMITTALS

A. PRODUCT DATA: Include manufacturer’s information for Products required, including metal infill panel materials, anchors, and handrail brackets

B. SHOP DRAWINGS: Include plans, elevations, sections, details, and attachments to other work.

1.5 INFORMATION SUBMITTALS

A. WELDING CERTIFICATES of installer’s personnel

1.6 QUALITY ASSURANCE

A. FABRICATOR QUALIFICATIONS: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

B. INSTALLER QUALIFICATIONS: Entity with no less than three (3) years of successful experience in installation of Work similar to the requirements for this project, acceptable to the manufacturer of the primary products specified, as verifiable by a current written statement from the manufacturer.

C. QUALIFY WELDING PROCEDURES AND PERSONNEL according to the following:

1. AWS D1.1, "Structural Welding Code--Steel."

2. AWS D1.3, "Structural Welding Code--Sheet Steel."

3. CERTIFY that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone recertification.

1.7 DELIVERY, STORAGE, AND HANDLING

A. PROTECT MECHANICAL FINISHES on exposed surfaces of railings from damage by applying a strippable, temporary protective covering before shipping.

1.8 FIELD CONDITIONS

A. FIELD MEASUREMENTS: Verify actual locations of walls and other construction contiguous with railings by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. STRUCTURAL PERFORMANCE OF GUARD RAILINGS & HANDRAILS: PROVIDE GUARD RAILINGS AND HANDRAILS capable of withstanding the following structural loads:

1. HANDRAILS & TOP RAIL OF GUARD RAILINGS: Concentrated load of 200 lbs applied at any point and in any direction, and a uniform load of 50 lbs/ft. applied in any direction. Concentrated and uniform load need not be assumed to act concurrently.

2. INFILL AREA OF GUARD RAILINGS: Horizontal concentrated load of 50 lbs applied to 1 sq. ft at any point in system, including panels, cables, intermediate rails, balusters, or other elements composing infill area. Load on infill area need not be assumed to act concurrently with loads on top rails.

B. THERMAL MOVEMENTS: At exterior railings, provide units that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects of temperature. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120-deg-F, ambient; 180-deg-F, on material surfaces.

C. CONTROL OF CORROSION: At exterior railings, prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

2.2 METAL MATERIALS

A. STEEL AND IRON:

1. STEEL TUBE: ASTM A513 Type 5 steel tube with wall thickness as required by structural loads but not less than 0.125 (1/8th)-inch, in profile as indicated or typical as follows:

   a. Refer to the drawings for details.
   b. Square Tube (for guard rail system): 1-1/2-inch square profiled tube with eased edges.
   c. Round (for handrails): 1-1/2-inch OD tube

2. STEEL PLATES, SHAPES, AND BARS: ASTM A36

B. WALL BRACKETS: Provide units with 1-1/2-inch clearance between railing and bracket mount per accessibility requirements, and with minimum 2-1/4-inch clearance from inside face of handrail to finished wall surface per NFPA's Life-Safety Code. Weld exterior brackets to metal posts. Provide brackets with pre-drilled mounting holes for attachment to interior wall surfaces.

2.3 FASTENERS:

A. PROVIDE EXPOSED FASTENERS with finish matching railings, including color and texture, and as follows:

1. AT UN-GALVANIZED-STEEL RAILINGS: plated steel fasteners complying with ASTM B633 or ASTM F1941, Class Fe/Zn 5 for zinc coating.

2. AT HOT-DIP GALVANIZED RAILINGS: Hot-dip zinc-coated steel fasteners per ASTM A153 or ST F 2329 for zinc coating, or Type 304 stainless-steel units when hot-dip galvanized units are not available.

B. FASTENERS FOR ANCHORING RAILINGS TO OTHER CONSTRUCTION: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction indicated, and capable of withstanding design loads.

C. AT EXPOSED FASTENERS, provide square or hex socket flat-head machine screws unless otherwise indicated.

D. POST-INSTALLED ANCHORS: Chemical (epoxy) anchors capable of sustaining, without failure, a load equal to six (6)-times the load imposed when installed in unit masonry or four (4)-times the load imposed when installed in concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.

1. MATERIAL FOR INTERIOR LOCATIONS: Carbon-steel components zinc-plated to comply with ASTM B633 or ASTM F1941, Class Fe/Zn 5, unless otherwise indicated.

2. MATERIAL FOR EXTERIOR LOCATIONS: Alloy Group 1 (A1) stainless-steel bolts, ASTM F593, and nuts, ASTM F594.

2.4 MISCELLANEOUS MATERIALS:

A. WELDING RODS AND BARE ELECTRODES: Select according to AWS specifications for metal alloy welded. For aluminum and stainless-steel railings, provide type and alloy as recommended by producer of metal to be welded and as required for color match, strength, and compatibility in fabricated items.

B. ETCHING CLEANER FOR GALVANIZED METAL: Comply with MPI # 25.

C. GALVANIZING REPAIR PAINT: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

D. SHOP PRIMER: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI # 79 and compatible with topcoat indicated in Division-09 “Painting” Section.

1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.

E. BITUMINOUS PAINT: Cold-applied asphalt emulsion complying with ASTM D1187.

F. NONSHRINK, NONMETALLIC GROUT: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.5 FABRICATION OF RAILING SYSTEMS - GENERAL

A. FABRICATE RAILINGS to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.

B. HANDRAILS: Locate with top surface of hand-railing 36-inches above nosing line of stair or ramp (both sides unless noted otherwise) and extend hand-railings not less than 12-inches level beyond top and bottom riser or ramp. Provide wall returns at ends of wall-mounted hand-railings, and interconnect handrails on inside of stair runs are to be continuous.

C. SHOP ASSEMBLE RAILINGS to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.

D. CUT, DRILL, AND PUNCH METALS cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32-inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

E. FORM WORK TRUE TO LINE AND LEVEL with accurate angles and surfaces.

F. FABRICATE CONNECTIONS that are exposed to weather in a manner that excludes water. Provide weep holes where water may accumulate.

G. CUT, REINFORCE, DRILL, AND TAP as indicated to receive finish hardware, screws, and similar items.

H. CONNECTIONS: Fabricate railings with welded connections typically, and with flush, non-welded connections where necessary to facilitate shipping, installation and future maintenance of railing systems, unless otherwise indicated. Connect guardrail post supports to stair framing by direct welding, unless otherwise indicated.

I. WELDED CONNECTIONS: Cope components at connections to provide close fit, or use fittings designed for this purpose.

1. At tee and cross intersections, cope ends of intersecting members to fit contour of tube to which end is joined.

2. Weld all around fittings and connections, and grind smooth and flush, so no roughness shows after finishing, and so welded surfaces match contours of adjoining members.

3. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.

4. Obtain fusion without undercut or overlap, and remove flux immediately.

J. TOE BOARDS: Provide toe boards at railings around openings and at edge of open-sided floors and platforms. Fabricate to dimensions and details indicated.

2.6 STEEL HANDRAILS AND GUARDRAILS:

A. FABRICATE FROM STEEL SHAPES OR TUBE (not pipe) per design, dimensions, profiles and details indicated on Drawings – and if not indicated, per the following - but not less than that required to withstand the required performance loads:

B. GUARDRAILS: Fabricate with not more than four (4)-inch clearance at all internal openings and to adjacent floor or wall surfaces.

1. Vertical Guardrail Supports: 1-1/2-inch square steel tubes at four (4) feet maximum, unless otherwise indicated.

2. Top Rail of Guardrails: Fabricate not less than 42-inches above finished floor (AFF) or adjacent grade, unless otherwise indicated.

3. Bottom Rail of Guardrails: Match size and profile of top railing unless otherwise indicated

4. Guardrail pickets: 1/2-inch square tubes between top and bottom rails of guardrails.

C. HANDRAILS: Fabricate from 1-1/2-inch square steel tubing with 90-degree angle bends and returns, with eased edges.

2.7 FINISH OF STEEL HANDRAILS AND GUARDRAILS:

A. GALVANIZE AND PRIME PAINT handrails and guardrails when located at exterior conditions

B. PRIME PRIME-PAINTED UNITS AT INTERIOR LOCATIONS, for field finishing per Division-09 “Painting” Section.

PART 3 - EXECUTION

3.1 EXAMINATION

A. EXAMINE adjacent Work for verification of installation tolerances and for compliance with other requirements and conditions affecting installation.

1. Verify critical dimensions and examine supporting structure and other conditions under which the Work of this Section is to be installed.

2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 CONTROL OF CORROSION:

A. Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

B. Coat, with a heavy coat of bituminous paint, concealed surfaces of aluminum that are in contact with grout, concrete, masonry, wood, or dissimilar metals.

3.3 INSTALLATION:

A. INSTALL units where indicated, using mounting methods and fasteners appropriate to substrate as recommended by system manufacturer, in compliance with the manufacturer's instructions, and in compliance with shop drawings. Install units plumb and level, firmly anchored in locations and at position indicated.

B. FIT EXPOSED CONNECTIONS together to form tight, hairline joints.

C. PERFORM CUTTING, DRILLING, AND FITTING required for installing railings. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.

D. DO NOT WELD, CUT, OR ABRADE SURFACES of railing components that are coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.

E. SPACE POSTS AT SPACING INDICATED or, if not indicated, as required by design loads. Plumb posts in each direction.

1. Anchor posts to steel by welding directly to steel supporting members.

F. FASTENING TO IN-PLACE CONSTRUCTION: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

3.4 RAILING CONNECTIONS

A. WELDED CONNECTIONS: Use fully welded joints for permanently connecting railing components. Comply with requirements for welded connections in "Fabrication" Article whether welding is performed in the shop or in the field.

B. EXPANSION JOINTS: Install expansion joints at locations indicated but not farther apart than required to accommodate thermal movement. Provide slip-joint internal sleeve extending 2-inches beyond joint on either side, fasten internal sleeve securely to one side, and locate joint within 6-inches of post.

3.5 ANCHORING POSTS

A. FORM OR CORE-DRILL HOLES not less than 5-inches-deep and 3/4-inch larger than OD of post for installing posts in concrete. Clean holes of loose material, insert posts, and fill annular space between post and concrete with nonshrink, nonmetallic grout, mixed and placed to comply with anchoring material manufacturer's written instructions.

1. COVER ANCHORAGE JOINT with flange of same metal as post, attached to post with set screws.

2. LEAVE ANCHORAGE JOINT EXPOSED with 1/8-inch buildup, sloped away from post.

B. ANCHOR POSTS TO METAL SURFACES with oval flanges, angle type, or floor type as required by conditions, connected to posts and to metal supporting members by welding flanges to post and bolt to metal supporting surfaces.

C. INSTALL REMOVABLE RAILING SECTIONS, where indicated, in slip-fit metal sockets cast in concrete.

3.6 ATTACHING RAILINGS

A. ATTACH HANDRAILS TO WALL with wall brackets spaced as indicated or, if not indicated, at spacing required to support structural loads, but not to exceed four (4)-foot centers.

B. SECURE WALL BRACKETS to building construction as follows:

1. For concrete and solid masonry anchorage, use drilled-in expansion shields and hanger or lag bolts.

2. For hollow masonry anchorage, use toggle bolts.

3. For wood stud partitions, use hanger or lag bolts set into studs or wood backing between studs. Coordinate with carpentry work to locate backing members.

4. For steel-framed partitions, use hanger or lag bolts set into wood blocking / backing between studs. Coordinate with stud installation to locate backing members.

3.7 INSTALLATION TOLERANCES:

A. Set posts plumb within a tolerance of 1/16-inch in 3-feet.

B. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4-inch in 12-feet.

C. ADJUST RAILINGS BEFORE ANCHORING to ensure matching alignment at abutting joints.

3.8 ADJUSTING AND CLEANING

A. CLEAN RAILINGS by washing thoroughly with clean water and soap and rinsing with clean water.

B. TOUCHUP PAINTING: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop painting to comply with SSPC-PA 1 requirements for touching up shop-painted surfaces. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.

C. GALVANIZED SURFACES: Clean field welds, bolted connections, and abraded areas, and repair galvanizing to comply with ASTM A780.

D. PROTECT finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.

End of Section

061011

ROUGH CARPENTRY

PART 1 - GENERAL

1.1 WORK INCLUDED

A. PROVIDE nailers, blocking, backing, and plywood as required for completion of the Work, where noted on the Drawings, and as specified herein.

B. Interior rough carpentry must be fire-retardant treated (FRT)

1.2 DEFINITIONS

A. ROUGH CARPENTRY: Carpentry Work not specified as part of other Sections, and which is generally not exposed.

B. BOARDS OR STRIPS: Lumber of less than 2-inches nominal size in least dimension.

C. DIMENSION LUMBER: Lumber of 2-inches nominal size or greater but less than 5-inches nominal size in least dimension.

D. EXPOSED FRAMING: Framing not concealed by other construction.

1.3 ACTION SUBMITTALS

A. PRODUCT DATA: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.

2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.

    a. For fire-retardant treatments, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D5664.

3. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.

1.4 INFORMATIONAL SUBMITTALS

A. MATERIAL CERTIFICATES: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.

B. EVALUATION REPORTS: For the following, from ICC-ES:

1. Wood-preservative-treated wood.

2. Fire-retardant-treated wood.

1.5 DELIVERY, STORAGE, AND HANDLING

A. STORE ROUGH CARPENTRY UNITS flat with spacers beneath and between each bundle to provide air circulation. Protect from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 LUMBER STANDARD:

A. DOC PS 20 and applicable rules of grading agencies indicated, or if no grading agency is indicated, comply with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Grade lumber by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.

2. Dress lumber, S4S, unless otherwise indicated.

3. Maximum Moisture Content of Lumber: 15 percent.

B. WOOD BLOCKING for support or attachment of other construction, including rooftop equipment bases and support curbs, roof blocking, cants, nailers, furring and grounds, and concealed wall blocking in drywall partitions at applications to include installation of grab-bars, wall-mounted cabinets, and wall-mounted door stops: provide minimum 2x6 nominal (3-1/2 by 5-1/2-inch actual) dimension lumber of Construction, Stud, or No. 2 grade with 19 percent maximum moisture content.

C. WOOD BACKING PANELS: As alternative to wood blocking above at interior applications within drywall partitions, provide APA C-D PLUGGED INT plywood, 3/4-inch-thick minimum x 12-inch-high panels, securely anchored to studs on both sides.

1. ELECTRICAL / PHONE PANELS: DOC PS 1, APA B-C Plugged, Exposure 1, fire-retardant treated plywood, minimum 3/4-inch-thick by 24-inch-wide by 48-inch-high minimum or as otherwise indicated on the Drawings.

2.2 WOOD-PRESERVATIVE-TREATED (TRT) MATERIALS

A. PRESERVATIVE TREATMENT BY PRESSURE PROCESS: Comply with AWPA U1, and as follows:

1. For interior construction not in contact with the ground: Use Category UC2

2. For exterior construction not in contact with the ground: Use Category UC3b

3. For items in direct contact with the ground: Use Category UC4a

4. PRESERVATIVE CHEMICALS: Provide materials acceptable to AHJ and containing no arsenic or chromium.

5. KILN-DRY after treatment to maximum moisture content of 15-percent.

6. FOR EXPOSED ITEMS, PRESERVATIVE TREAT ITEMS that are noted to receive a stained or natural finish, use chemical formulations that do not require incising, contain colorants, bleed through, or otherwise adversely affect finishes.

B. TREAT ITEMS INDICATED on Drawings, and the following:

1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.

2. Wood sills, sleepers, blocking, furring, and similar concealed members in contact with masonry or concrete.

3. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.

4. Wood framing members that are less than 18-inches above the ground in crawlspaces or unexcavated areas.

5. Wood floor plates that are installed over concrete slabs-on-grade.

2.3 FIRE RETARDANT TREATED (FRT) WOOD MATERIALS

A. USE MATERIALS complying with requirements in this article, that are acceptable to the AHJ, and with fire-test-response characteristics as determined by testing identical products by a qualified testing agency.

B. FRT LUMBER AND PLYWOOD BY PRESSURE PROCESS: Products with a flame-spread index of 25 or less when tested per ASTM E84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5-feet beyond the centerline of the burners at any time during the test.

C. INTERIOR TYPE A: Treated materials must have a moisture content of 28-percent or less when tested per ASTM D3201 at 92-percent relative humidity.

D. KILN-DRY after treatment to maximum moisture content of 15-percent.

E. IDENTIFY FIRE-RETARDANT TREATED WOOD with appropriate classification marking of qualified testing agency.

2.4 FASTENERS

A. PROVIDE FASTENERS OF SIZE AND TYPE that comply with requirements specified in this Article for material and manufacture.

1. Nails, Brads, and Staples: ASTM F1667.

2. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to AHJ, based on ICC-ES AC70.

3. Wood Screws: ASME B18.6.1.

4. Screws for Fastening to Cold-Formed Metal Framing: ASTM C954, except with wafer heads and reamer wings, length as recommended by screw manufacturer for material being fastened.

5. Lag Bolts: ASME B18.2.1. (ASME B18.2.3.8M).

6. Bolts: Steel bolts complying with ASTM A307, Grade A (ASTM F568M, Property Class 4.6); with ASTM A563 hex nuts and, where indicated, flat washers.

B. WHERE ROUGH CARPENTRY IS EXPOSED TO WEATHER, in ground contact, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A153.

C. POST-INSTALLED ANCHORS: Fastener systems with an evaluation report acceptable to AHJ, based on ICC-ES AC01 for mechanical anchors in masonry substrate, or ICC-ES AC58 for adhesive anchors in masonry substrate, or ICC-ES AC193 for mechanical anchors in concrete substrate, or ICC-ES AC308 for adhesive anchors in concrete substrate, as applicable.

1. Provide expansion-type units consisting of an anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in masonry, or equal to 4 times the load imposed when installed into concrete substrates as determined by testing per ASTM E488 conducted by a qualified independent testing and inspecting agency.

2. Material: Carbon-steel components, zinc plated to comply with ASTM B633, Class Fe/Zn 5.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. FRAMING STANDARD: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.

B. SET ROUGH CARPENTRY to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry accurately to other construction. Locate furring, nailers, blocking, and similar supports to comply with requirements for attaching other construction.

C. INSTALL BLOCKING AND BACKING PANELS by fastening to studs; coordinate locations with requirements of items to be wall-supported and with utilities requiring backing panels. Install FRT plywood backing panels with classification marking of testing agency exposed to view.

D. SORT AND SELECT LUMBER so that natural characteristics do not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

E. COMPLY WITH AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

1. Use inorganic boron for items that are continuously protected from liquid water.

2. Use copper naphthenate for items not continuously protected from liquid water.

F. WHERE PRESERVATIVE-TREATED WOOD IS INSTALLED ADJACENT TO METAL DECKING, install continuous flexible flashing separator between the wood and metal decking.

G. SECURELY ATTACH ROUGH CARPENTRY WORK to substrate by anchoring and fastening as indicated, complying with the following:

1. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code (IBC).

2. ICC-ES evaluation report for fastener.

3. Use screws unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.

3.2 WOOD BLOCKING, AND NAILER INSTALLATION:

A. INSTALL WHERE INDICATED and where required for attaching other Work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other Work involved.

B. ATTACH ITEMS TO SUBSTRATES to support applied loading.

C. RECESS BOLTS AND NUTS FLUSH with surfaces, unless otherwise indicated. Build anchor bolts into masonry during installation of masonry work. Where possible, secure anchor bolts to formwork before concrete placement.

D. PROVIDE PERMANENT GROUNDS of dressed, pressure-preservative-treated, key-beveled lumber not less than 1-1/2-inches-wide and of thickness required to bring face of ground to exact thickness of finish material. Remove temporary grounds when no longer required.

3.3 PROTECTION

A. PROTECT WOOD THAT HAS BEEN TREATED with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

B. PROTECT ROUGH CARPENTRY from weather. If, despite protection, rough carpentry becomes sufficiently wet that moisture content exceeds that specified, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

End of Section

062023

INTERIOR FINISH CARPENTRY

PART 1 - GENERAL

1.1 WORK INCLUDED: PROVIDE INTERIOR FINISH CARPENTRY REQUIRING QUALITY CRAFTSMANSHIP AND JOINERY SKILLS, WHERE INDICATED, AS SPECIFIED HEREIN, AND AS NECESSARY FOR COMPLETE INSTALLATION. THIS SECTION INCLUDES:

A. Shelving and supports.

1.2 RELATED SECTIONS:

A. DIVISION-06 “ROUGH CARPENTRY” SECTION for furring, blocking, backing and other carpentry Work not exposed to view.

1.3 DEFINITIONS

A. MDF: Medium-density fiberboard.

B. MDO: Plywood with a medium-density overlay on the face.

C. PVC: Polyvinyl chloride

1.4 COORDINATION

A. COORDINATE SIZES AND LOCATIONS of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections, to ensure that Architectural Woodwork can be supported and installed as indicated.

1.5 ACTION SUBMITTALS

A. PRODUCT DATA: For each type of product and process specified and incorporated into items of Architectural woodwork during fabrication, finishing, and installation.

1.6 QUALITY ASSURANCE

A. QUALITY STANDARD: Comply with AWI's "Architectural Woodwork Quality Standards" for grades of Architectural Woodwork, construction, finishes, and other requirements as applicable to the Work.

1.7 DELIVERY, STORAGE, AND HANDLING:

A. STORE lumber, plywood, and other panels flat with spacers between each bundle to provide air circulation.

B. PROTECT MATERIALS from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

C. DELIVER INTERIOR FINISH CARPENTRY MATERIALS only when environmental conditions meet requirements specified for installation areas. If interior finish carpentry materials must be stored in other than installation areas, store only where environmental conditions meet requirements specified for installation areas.

1.8 FIELD CONDITIONS

A. DO NOT INSTALL MATERIALS that are wet, moisture damaged, or mold damaged. Indications that materials are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape. Indications that materials are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

B. FIELD MEASUREMENTS: Where woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being enclosed and indicate measurements on Shop Drawings.

1. Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating woodwork without field measurements. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

PART 2 - PRODUCTS

2.1 CARPENTRY MATERIALS - GENERAL

A. PROVIDE WOOD MATERIALS that comply with requirements of the referenced AWI quality standard for each type of woodwork/quality grade indicated and with requirements of the following referenced standards:

1. ALL MATERIALS are to be a class A (concealed) or B (exposed) flame spread rating.

2. PARTICLEBOARD (PBD): ANSI A208.1, Grade M-2, made with binder containing no urea-formaldehyde resin.

3. PREFINISHED (MELAMINE-FACED) PARTICLEBOARD: Particleboard complying with ANSI A208.1, Grade M-2, finished on both faces with thermally fused, melamine-impregnated decorative paper and complying with requirements of NEMA LD3, Grade

VGL, for test methods 3.3, 3.4, 3.6, 3.8, and 3.10. Provide in color indicated, or if not indicated: White.

4. HIGH-PRESSURE DECORATIVE LAMINATE (HPDL, or PLAM for "plastic-laminate"): High-pressure, decorative laminate meeting NEMA LD 3, grades as indicated, or if not indicated, as required by woodwork quality standard.

   a. APPROVED MANUFACTURERS: Provide Manufacturer, color/series (including solid-color core), and finish as indicated. Other manufacturers must be submitted as a Substitution Request for approval by the Architect per Division-01 Requirements.
   b. MINIMUM GRADES:
      1) Horizontal Surfaces: Grade HGS

   c. EDGES: PVC edge-banding, 0.12-inch-thick minimum, matching laminate in color, pattern, and finish.

2.2 PLASTIC-LAMINATE FINISHED SHELVES AND COMPONENTS:

A. EXPOSED SHELVING: fabricate from particleboard with Grade HGS plastic laminate both sides, and with heat-applied PVC edging all around.

B. STANDARDS FOR ADJUSTABLE SHELF BRACKETS: BHMA Grade 2 compliant heavy-duty 14-gage cold-rolled steel channels 1-1/16-inch wide by 11/16-inch deep standards with double slot design for brackets adjustable at 1-1/4-inch increments, in white powder-coat finish (unless otherwise indicated):

1. Basis-of-Design: KV Series 82 Standards, or equal, Knape & Vogt Manufacturing, 616-459-3311, www.kv.com

C. ADJUSTABLE SHELF BRACKETS: BHMA Grade 2 heavy duty 16-gage units, 0.53-inch thick typical, in white powder-coat finish (unless otherwise indicated), with bracket locks:

1. Basis-of-Design: KV Series 182 Brackets, with KV # 182DP lock bracket and #182DP LCTR/JNR joiner.

2.3 MISCELLANEOUS WOODWORK MATERIALS

A. FASTENERS FOR INTERIOR FINISH CARPENTRY: Nails, screws, and other anchoring devices of type, size, material, and finish required for application indicated to provide secure attachment, concealed where possible.

B. GLUE: Aliphatic-resin, polyurethane, or resorcinol wood glue recommended by manufacturer for general carpentry use. Wood glue must have a VOC content of 30 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.4 FABRICATION

A. GENERAL: Provide and maintain units with 7- to 12-percent moisture content typically. Comply with AWI Section 300, Custom grade except as otherwise indicated, or other AWI requirements as applicable:

B. PLAM SHELVES: 3/4-inch-thick thermoset decorative panel exposed to bottom surface with NEMA LD-3 grade high-pressure plastic laminate (PLAM) finish on top surface – self-edged with 3-mil PVC tape matching PLAM.

PART 3 - EXECUTION

3.1 EXAMINE SUBSTRATES WITH INSTALLER PRESENT, FOR COMPLIANCE WITH REQUIREMENTS FOR INSTALLATION TOLERANCES AND OTHER CONDITIONS AFFECTING PERFORMANCE.

A. Examine finish carpentry materials before installation. Reject materials that are wet, moisture damaged, and mold damaged.

B. Examine shop-fabricated work for completion and complete Work as required, including removal of packing and back-priming.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. CONDITION WOODWORK to average prevailing humidity conditions in installation areas before installation. Deliver inserts and similar anchoring devices to be built into substrates well in advance of time substrates are to be built.

B. COMPLY WITH AWI Section 1700 for the grade indicated for type of woodwork involved.

C. INSTALL WOODWORK LEVEL, plumb, true, and straight without distortions. Shim with concealed shims as required. Install level and plumb to a tolerance of 1/8-inch in 96-inches. Scribe and cut woodwork to fit adjoining work, and refinish cut surfaces and repair damaged finish at cuts.

D. DISCARD materials that are unsound, warped, bowed, twisted, improperly treated, not adequately seasoned or too small to fabricate work with minimum of joints or optimum jointing arrangements, or which are of defective manufacturer with respect to surfaces, sizes or patterns.

E. ANCHOR TO ANCHORS OR BLOCKING built in or directly attached to substrates to prevent movement or warping. Use fine finishing nails for exposed nailing, countersunk fastener heads and fill holes flush with filler to match woodwork finish surface. Do not use staples, or T-nails.

3.3 ADJUSTABLE SHELVING INSTALLATION

A. INSTALL SHELF BRACKETS according to manufacturer's written instructions, spaced not more than 32-inches OC (every other stud maximum) and within 6-inches of end of shelves. Space fasteners not more than 12-inches OC.

1. Anchor standards to framing members, blocking, or metal backing, or use toggle bolts or hollow wall anchors.

B. CUT SHELVES and apply edging to neatly fit openings with only enough gap to allow shelves to be removed and reinstalled. Install shelves, fully seated on cleats, brackets, and supports. Fasten shelves to cleats with trim screws, set flush. Fasten shelves to brackets to comply with bracket manufacturer's written instructions.

3.4 CLEANING AND PROTECTION

A. REPAIR DAMAGED AND DEFECTIVE WOODWORK to eliminate functional and visual defects. When not possible to repair, replace woodwork. Adjust joinery for uniform appearance.

B. CLEAN WOODWORK on exposed and semi-exposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

C. PROTECT WOODWORK and maintain protection to ensure that Work will be without damage or deterioration at time of Substantial Completion.

End of Section

072113

BATT, BLANKET AND ACOUSTIC INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. WORK INCLUDED: Provide batt and blanket insulation, as shown on the Drawings, as specified herein, and as needed to meet the requirements of the construction shown in the Contract Documents.

1.2 ACTION SUBMITTALS

A. SUBMIT PRODUCT DATA with installation instructions for each type of insulation, moisture protection material, and related accessories required, including fasteners and anchors.

1.3 DELIVERY, STORAGE, AND HANDLING

A. PROTECT INSULATION MATERIALS from physical damage and from deterioration due to moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS - GENERAL

A. THERMAL CONDUCTIVITY: Thicknesses indicated are for thermal conductivity (k-value at 75 degrees F or 24 degrees C) specified for each material. Provide adjusted thicknesses as directed for equivalent use of material having a different thermal conductivity. Where insulation is identified by "R" value, provide thickness required to achieve indicated value.

B. FIRE AND INSURANCE RATINGS: Comply with fire-resistance, flammability and insurance ratings indicated.

2.2 MANUFACTURERS

A. SINGLE SOURCE OF INSULATION PRODUCTS: Obtain each type of insulation from a single source with resources to provide products of consistent quality and physical properties, without delaying Work progress.

B. SIZE / THICKNESS: Provide materials in thickness indicated, in maximum sizes to minimize joints.

C. AVAILABLE MANUFACTURERS: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. CertainTeed Corporation

2. Johns Manville, a Berkshire Hathaway company

3. Knauf Insulation

4. Owens Corning / Thermafiber

5. Rockwool North America

2.3 MINERAL / GLASS FIBER BATT / BLANKET INSULATION

A. CLASS-A FACED BATT INSULATION: Formaldehyde free fiberglass or rock-wool faced batts or blankets with a polypropylene-scrim-kraft-facing, meeting ASTM C665, Type II (nonreflective faced, Class A (faced surface with a flame spread index of 25 or less); Category 1 (membrane is a vapor barrier).

1. Provide identification mark indicating R-value of each piece of insulation 12-inches and wider in width.

B. ACOUSTICAL INSULATION: formaldehyde free fiberglass or rock-wool un-faced batts or blankets (without facings), meeting ASTM C665, Type I (blankets without membrane facing) with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

2.4 ACCESSORIES

A. LOOSE-FILL INSULATION: Glass-fiber insulation meeting ASTM C764, Type II, with maximum flame-spread and smoke-developed indexes of 5, per ASTM E84.

PART 3 - EXECUTION

3.1 EXAMINATION

A. EXAMINE SUBSTRATES AND CONDITIONS, with Installer present, for compliance with requirements for Sections in which substrates and related work are specified and other conditions affecting performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. CLEAN SUBSTRATES OF SUBSTANCES harmful to insulations or vapor retarders, including removing projections capable of puncturing vapor retarders or of interfering with insulation attachment.

3.3 INSTALLATION, GENERAL

A. COMPLY WITH INSULATION MANUFACTURER'S WRITTEN INSTRUCTIONS applicable to products and application indicated. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed at any time to ice and snow.

B. INSTALL INSULATION WITH MANUFACTURER'S R-VALUE LABEL exposed after insulation is installed.

C. EXTEND INSULATION IN THICKNESS INDICATED to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

D. APPLY SINGLE LAYER OF INSULATION to produce thickness indicated, unless multiple layers are otherwise shown or required to make up total thickness.

3.4 INSTALLATION OF INSULATION IN FRAMED CONSTRUCTION

A. BATT, BLANKET and ACOUSTICAL INSULATION: Install in cavities formed by framing members according to the following requirements:

1. USE INSULATION WIDTHS AND LENGTHS that fully fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.

2. PLACE INSULATION IN CAVITIES formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.

3. FOR METAL-FRAMED WALL CAVITIES where cavity heights exceed 96-inches, support unfaced blankets mechanically and support faced blankets by taping flanges of insulation to flanges of metal studs.

4. TOP OF WALLS: Run acoustic blankets over the top of the stud walls in the ceiling plenum and extend a minimum of 2 feet in both directions. Blankets are to be fit tightly together.

B. MISCELLANEOUS VOIDS: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:

1. Glass-Fiber Insulation: Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft.

C. LOOSE-FILL INSULATION: Apply according to ASTM C1015 and manufacturer's written instructions.

1. Level horizontal applications to uniform thickness as indicated, lightly settle to uniform density, but do not compact excessively.

3.5 PROTECTION

A. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

End of Section

076100

FLASHING & SHEET METAL

PART 1 - GENERAL

1.1 SCOPE

A. PROVIDE SHEET METAL FLASHINGS and trims where indicated, as specified herein, and as required for the prevention of water penetration into the building.

1. This Section includes requirements for sheet metal work associated with Curtain Wall and Storefront Work specified in other Sections.

2. Due to the H2S gases in the area, all materials and fasteners are to be either aluminum or stainless steel.

1.2 RELATED SECTIONS

A. DIVISION-06 "ROUGH CARPENTRY" Section for wood nailers, curbs, and blocking.

B. DIVISION-07 "JOINT SEALANTS" Section for field-applied sealants associated with sheet metal flashing and trims.

1.3 COORDINATION

A. COORDINATE LAYOUT and seams of sheet metal flashing and trim with sizes and locations of areas requiring flashing.

B. COORDINATE SHEET METAL FLASHING and trim installation with adjoining wall materials, joints to make a leakproof, secure, and noncorrosive installation.

1.4 PREINSTALLATION MEETINGS

A. CONDUCT CONFERENCE at Project site per applicable Division-01 requirements. Review construction schedule. Verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

1. Review special curtain wall and storefront details, and condition of other construction that affect sheet metal flashing and trim.

2. Review requirements for insurance and certificates if applicable.

3. Review sheet metal flashing observation and repair procedures after flashing installation.

1.5 ACTION SUBMITTALS

A. SUBMIT PRODUCT DATA including manufacturer's installation instructions and general recommendations for each specified sheet material and fabricated product, including underlayment materials, sealants and sealers.

B. SUBMIT SHOP DRAWINGS showing layout, joining, profiles, and anchorages of fabricated work, including major flashings, trim units, expansion joint systems, etc., with plan & elevation layout at 1/4-inch scale, and with details at 3-inch scale.

1. Show 3-dimensional details in shop drawings where different joint conditions connect so that tradespersons can clearly understand the intent and relationship of different materials and conditions.

1.6 QUALITY ASSURANCES:

A. FABRICATOR QUALIFICATIONS: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.

B. REFERENCED QUALITY STANDARD: Comply with SMACNA's "Architectural Sheet Metal Manual." Conform to dimensions and flashing profiles shown unless more stringent requirements are indicated.

1.7 DELIVERY, STORAGE, AND HANDLING

A. DELIVER SHEET METAL FLASHING MATERIALS and fabrications undamaged. Protect sheet metal flashing and trim materials and fabrications during transportation and handling. Unload, store, and install sheet metal flashing materials and fabrications in a manner to prevent bending, warping, twisting, and surface damage.

B. STACK MATERIALS on platforms or pallets, covered with suitable weathertight and ventilated covering. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage.

1.8 WARRANTY

A. SPECIAL EXPOSED FINISH WARRANTY: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period. Deterioration includes, but is not limited to, the following:

1. Color fading more than 5 Delta E units when tested in accordance with ASTM D2244.

2. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.

3. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

4. WARRANTY PERIOD: 20-years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. INSTALL SHEET METAL FLASHING AND TRIM TO WITHSTAND wind loads, structural movement, thermally induced movement, and exposure to weather without failing, rattling, leaking, and fastener disengagement.

B. THERMAL MOVEMENTS: Provide sheet metal flashing and trim that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of sheet metal and trim thermal movements. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. TEMPERATURE CHANGE (Range): 120 deg F, ambient; 180 deg F, material surfaces.

C. WATER INFILTRATION: Provide sheet metal flashing and trim assemblies that do not allow water infiltration to the building interior.

2.2 PRE-FINISHED ALUMINUM SHEET:

A. ASTM B209, Alloy 3003, 3004, 3105, or 5005, Temper suitable for forming and structural performance required, but not less than H14, finished as follows:

1. FLUOROPOLYMER 2-COAT SYSTEM: Manufacturer's standard 2-coat, thermo-cured system consisting of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight; complying with AAMA 2605.

a. Color for horizontal trim/ flashing: As selected by the Architect from the manufacturer’s full range

2.3 MISCELLANEOUS MATERIALS

A. PROVIDE MATERIALS AND TYPES OF FASTENERS, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation.

B. FASTENERS: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads. All fasteners are to be stainless steel. At exposed fasteners, provide heads matching color of sheet metal by means of plastic caps or factory-applied coating. At flashing and trim, provide blind fasteners of high-strength aluminum or stainless-steel, or self-drilling screws, gasketed, with hex washer head.

C. SEALING TAPE: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealing tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape.

D. ELASTOMERIC SEALANT: ASTM C920, elastomeric silicone polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

1. BUTYL SEALANT: ASTM C1311, single-component, solvent-release butyl rubber sealant, polyisobutylene plasticized, heavy bodied for hooked-type expansion joints with limited movement.

E. BITUMINOUS COATING: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil (0.4-mm) dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.4 GENERAL FABRICATION

A. CUSTOM FABRICATE SHEET METAL flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated. Shop fabricate items where practicable. Obtain field measurements for accurate fit before shop fabrication.

B. FABRICATE SHEET METAL flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal. Fabricate sheet metal flashing and trim without excessive oil canning, buckling, and tool marks and true to line and levels indicated, with exposed edges folded back to form hems.

C. TYPICAL SEALED JOINTS: Form nonexpansion but movable joints in metal to accommodate elastomeric sealant to comply with SMACNA recommendations.

D. EXPANSION PROVISIONS: Where lapped or bayonet-type expansion provisions in the Work cannot be used, form expansion joints of intermeshing hooked flanges, not less than 1-inch deep, filled with elastomeric sealant concealed within joints.

E. CONCEAL FASTENERS AND EXPANSION PROVISIONS where possible on exposed-to-view sheet metal flashing and trim, unless otherwise indicated.

F. FABRICATE CLEATS AND ATTACHMENT DEVICES from same material as accessory being anchored or from compatible, noncorrosive metal. Fabricate in thickness as recommended by SMACNA's "Architectural Sheet Metal Manual" and FMG Loss Prevention Data Sheet 1-49 for application but not less than thickness of metal being secured.

G. PROTECT MECHANICAL AND PAINTED FINISHES on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

2.5 FABRICATED ITEMS:

A. THROUGH-WALL SHEET METAL (SM) FLASHINGS: Fabricate in sections not exceeding 12-foot- long (minimum 8-feet long at continuous units) at steel lintels in masonry veneer construction, and at locations where indicated on the Drawings. Fabricate discontinuous lintel, sill, and similar flashings to extend a minimum of four (4)-inches beyond each side of wall openings. Form with 2-inch-high end dams where flashing is discontinuous. Fabricate with drip edge, by extending flashing 1/2-inch out from wall, with outer edge bent down 30 degrees. Fabricate with preformed corners, end dams, other special shapes, and seaming materials at splices as applicable. Fabricate through-wall flashings from one of the following materials:

1. Stainless Steel: 0.016-inch-thick.

2. Zinc-Tin Alloy-Coated Stainless Steel: 0.015-inch-thick.

PART 3 - EXECUTION

3.1 EXAMINATION:

A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions and other conditions affecting performance of work.

B. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION – GENERAL

A. ANCHOR SHEET METAL FLASHING AND TRIM and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system. Torch cutting of sheet metal flashing and trim is not permitted.

B. METAL PROTECTION: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating or by other permanent separation as recommended by fabricator or manufacturers of dissimilar metals. Coat side of sheet metal flashing and trim with bituminous coating where flashing and trim will contact wood, ferrous metal, or cementitious construction.

C. SHEET METAL FLASHING AND TRIM without excessive oil canning, buckling, and tool marks. Install sheet metal flashing and trim true to line and levels indicated. Provide uniform, neat seams with minimum exposure of sealant. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.

D. INSTALL CONTINUOUS CLEATS anchored at 12-inch centers minimum at face.

3.3 EXPANSION PROVISIONS:

A. PROVIDE FOR THERMAL EXPANSION of exposed flashing and trim, by spacing joints at a maximum of 10-feet with no joints allowed within 24-inches of corner or intersection.

1. Where lapped or bayonet-type expansion provisions cannot be used or would not be sufficiently watertight, form expansion joints of intermeshing hooked flanges, not less than 1-inch deep, filled with elastomeric sealant concealed within joints.

3.4 FASTENERS:

A. USE FASTENERS OF SIZES that will penetrate substrate not less than 1-1/4-inches for nails and not less than 3/4-inch for wood screws.

1. Use stainless-steel fasteners.

3.5 JOINTS

A. SEAL JOINTS WITH ELASTOMERIC SEALANT as required for watertight construction.

1. Where sealant-filled joints are used, embed hooked flanges of joint members not less than 1-inch into sealant.

2. Form joints to completely conceal sealant.

3. When ambient temperature at time of installation is moderate, between 40 and 70 deg F, set joint members for 50 percent movement either way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below 40 deg F.

4. Prepare joints and apply sealants to comply with requirements in Division-07 Section "Joint Sealants."

5. Rivet or weld joints in uncoated aluminum where necessary for strength.

3.6 WALL FLASHING INSTALLATION

A. INSTALL SHEET METAL WALL FLASHING to intercept and exclude penetrating moisture according to SMACNA recommendations and as indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.

B. WINDOW OPENINGS: Install sill flashings with end-dams in framed wall systems. Install through-wall flashings to extend 4-inches beyond wall openings in masonry construction.

3.7 INSTALLATION TOLERANCES:

A. SHIM AND ALIGN SHEET METAL FLASHING and trim within installed tolerance of 1/4-inch in 20-feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.8 CLEANING AND PROTECTION

A. CLEAN EXPOSED METAL SURFACES of substances that interfere with uniform oxidation and weathering.

B. REMOVE TEMPORARY PROTECTIVE COVERINGS and strippable films as sheet metal flashing and trim are installed. On completion of installation, clean finished surfaces, including removing unused fasteners, metal filings, pop rivet stems, and pieces of flashing. Maintain in a clean condition during construction.

C. REPLACE SHEET METAL FLASHING AND TRIM that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

End of Section

079200

JOINT SEALANTS

PART 1 - GENERAL

1.1 WORK INCLUDED

A. PROVIDE sealants where indicated and complying with requirements included herein, to establish and maintain airtight, vermin proof, and waterproof continuous seals on a permanent basis.

1. Failures of installed sealants to comply with this requirement will be recognized as failures of materials or workmanship.

2. Due to the H2S gases in the area, all materials and fasteners are to be either aluminum or stainless steel.

B. TYPES OF APPLICATIONS include the following:

1. EXTERIOR JOINTS in the following vertical or horizontal surfaces:

a. Perimeter joints between wall surfaces and frames of curtain wall system, storefront system, doors, windows, louvers and other openings or penetrations. Provide sealants on both the inside and outside of building

2. INTERIOR JOINTS in the following vertical or horizontal surfaces:

a. Control joints on exposed surfaces and frames of interior doors and windows.
b. Perimeter joints between interior wall surfaces and frames of interior doors and windows.
c. Perimeter joints of toilet fixtures at walls and floors.
d. Perimeter joints between different products, materials or surfaces.
e. Joints at Tile Work
f. Joints between countertops to wall surfaces, and between countertops and loose backsplashes
g. Joints between plumbing fixtures and adjoining walls, floors, and counters.

1.2 ACTION SUBMITTALS

A. PRODUCT DATA: For each joint-sealant product indicated.

1.3 INFORMATIONAL SUBMITTALS

A. PRODUCT TEST REPORTS: For each kind of joint sealant, for tests performed by manufacturer and witnessed by a qualified testing agency.

B. MANUFACTURER'S CERTIFICATES indicating that products comply with specification requirements are suitable for the uses indicated.

1.4 DELIVERY, STORAGE AND HANDLING

A. DELIVER MATERIALS to Project site in original unopened containers or bundles with labels informing about manufacturer, product name and designation, color, expiration period for use, pot life, curing time, and mixing instructions for multi-component materials.

B. STORE AND HANDLE MATERIALS per manufacturers' recommendations to prevent their deterioration or damage due to moisture, high or low temperatures, contaminates, or other causes.

1.5 FIELD CONDITIONS

A. DO NOT PROCEED WITH INSTALLATION of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.

2. When joint substrates are wet.

3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.

4. When contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.6 WARRANTY

A. SPECIAL INSTALLER'S WARRANTY: Installer's standard form in which Installer agrees to repair or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

B. SPECIAL MANUFACTURER'S WARRANTY: Manufacturer's standard form in which elastomeric sealant manufacturer agrees to furnish elastomeric joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Five (5)-years from date of Substantial Completion.

C. SPECIAL WARRANTIES specified in this Article exclude deterioration or failure of elastomeric joint sealants from the following:

1. Movement of the structure resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression caused by structural settlement or errors attributable to design or construction.

2. Disintegration of joint substrates from natural causes exceeding design specifications.

3. Mechanical damage caused by individuals, tools, or other outside agents.

4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. AVAILABLE MANUFACTURERS / PRODUCTS:

1. Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the named products listed in this Section.

B. COMPATIBILITY: Provide joint sealants, backings, and other related materials that are compatible with one another, and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer, based on testing and field experience.

C. SEALANT COLORS: Match adjacent material color typically, as approved by the Architect.

1. The quantity of sealant colors is limited only by the number and color of adjacent materials indicated in the Drawings

2. Provide custom colors to match adjacent materials at no additional cost if manufacturer’s “standard” colors do not match adjacent materials, in the professional opinion of the Architect

3. Provide multiple-colors of sealant as required by field-conditions when adjacent materials and their colors change throughout the height or width of a sealant joint

D. VOC CONTENT OF INTERIOR SEALANTS: Sealants and sealant primers used inside the weatherproofing system must comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

1. Architectural Sealants: 250 g/L.

2. Sealant Primers for Nonporous Substrates: 250 g/L.

3. Sealant Primers for Porous Substrates: 775 g/L.

E. LOW-EMITTING INTERIOR SEALANTS: Sealants and sealant primers used inside the weatherproofing system must comply with the testing and product requirements of the

California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.2 ELASTOMERIC JOINT SEALANTS

A. ELASTOMERIC SEALANTS: Comply with ASTM C920 and other requirements indicated for each liquid-applied chemically curing sealant specified, including those referencing ASTM C920 classifications for type, grade, class, and uses related to exposure and joint substrates.

B. STAIN-TEST-RESPONSE CHARACTERISTICS: Where elastomeric sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C1248 and have not stained porous joint substrates indicated for Project.

2.3 POLYURETHANE TRAFFIC-JOINT SEALANT:

A. ASTM C920 Type S (single component), grade P (pourable), class 25, use T (traffic), in colors selected by Architect from manufacturer’s full range of available options. Provide primer for 100% adhesion between surface materials and sealant. Clear joints to minimum depth of 1/2-inch. Available Products include but are not limited to the following:

B. Two-Part Self Leveling Polyurethane Sealants:

1. “Urexpan NR-200, by Pecora Corporation

2. “Vulkem 245”, by Tremco Corporation, or approved equal

2.4 EXTERIOR SILICONE SEALANT

A. (TYPICAL EXTERIOR BUILDING SEALANT): Ultra-low-modulus sealant per ASTM C920 Type S (single component), grade NS (nonsag), class 100/50, Use NT (nontraffic) and use related to joint substrates of M, G, A, and, as applicable to joint substrates indicated, O. Available Products:

1. “790 Silicone Building Sealant”, by Dow Corning.

2. “SCS2700 SilPruf LM Sealant”, by GE Silicones.

3. “890NST” by Pecora Corporation;

4. “Sikasil WS-290” by Sika Corporation, Construction Products Division.

5. “Spectrem 1” by Tremco Incorporated.

2.5 EXTERIOR BUTYL-RUBBER SEALANT

A. (USE AT DOOR THRESHOLDS): Comply with ASTM C1085. Available Products:

1. “Chem-Calk 300 Butyl Rubber Sealant” by Bostick, Inc.

2. “BC-158” by Pecora Corporation

3. “PSI-301” by Polymeric Systems Inc.

4. “Tremco Butyl Sealant”, by Tremco.

2.6 INTERIOR LATEX JOINT SEALANTS

A. (TYPICAL INTERIOR APPLICATIONS EXCEPT AS INDICATED): Comply with ASTM C834, Type P, Grade NF. Acceptable Products include:

1. “Sonolac” by BASF Building Systems.

2. “Chem-Calk 600” by Bostik, Inc.

3. “AC-20” by Pecora Corporation

4. “Tremflex 834” by Tremco Incorporated.

2.7 SANITARY SILICONE SEALANT

A. For sealing interior joints at countertops, vanities, tubs, plumbing fixtures, and other locations subject to moisture, provide single-component mildew-resistant acid-curing silicone sealant per ASTM C920, Type S (single component), Grade: NS (non-sag), Class: 25. 4, Use: (nontraffic), white color (unless otherwise indicated). Acceptable Products include:

1. “Sonneborn OmniPlus” by BASF Building Systems

2. “786 Mildew Resistant” by Dow Corning Corporation

3. “Sanitary SCS1700” by GE Silicones

4. “898 Sanitary Silicone” by Pecora Corporation

5. “Tremco Incorporated” by Tremsil 200 Sanitary

6. “Tremsil 200” by Tremco Incorporated

2.8 ACOUSTICAL SEALANT:

A. Manufacturer's standard nonsag, non-hardening, nondrying, paintable, nonstaining latex sealant complying with ASTM C834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E90.

1. “Acoustical Sealant” by Tremco Incorporated

2. “SheetRock Acoustical Sealant” by USG Corporation

3. “Tremco Acoustical Sealant”, Tremco, Inc.

2.9 JOINT-SEALANT BACKING

A. PROVIDE SEALANT BACKINGS of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. CYLINDRICAL SEALANT BACKINGS: ASTM C1330, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance:

C. ELASTOMERIC TUBING SEALANT BACKINGS: Neoprene, butyl, EPDM, or silicone tubing complying with ASTM D1056, nonabsorbent to water and gas, and capable of remaining resilient at temperatures down to minus 26 deg F. Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and to otherwise contribute to optimum sealant performance.

D. BOND-BREAKER TAPE: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

2.10 MISCELLANEOUS MATERIALS

A. PRIMER: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. CLEANERS FOR NONPOROUS SURFACES: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. MASKING TAPE: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

D. WEEPS: Absorbent, UV-resistant synthetic fiber rope, 3/8-inch minimum diameter, in length required to produce an initial 2-inch exposure on the exterior face extending through sealant backing into the internal drainage plane.

PART 3 - EXECUTION

3.1 EXAMINATION

A. EXAMINE JOINTS indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. SURFACE CLEANING OF JOINTS: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.

2. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include concrete and masonry.

3. Remove laitance and form-release agents from concrete.

4. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include metal and glass.

B. JOINT PRIMING: Prime joint substrates, where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. MASKING TAPE: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. COMPLY WITH JOINT-SEALANT MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS for products and applications indicated, unless more stringent requirements apply.

B. SEALANT INSTALLATION STANDARD: Comply with recommendations in ASTM C1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. INSTALL SEALANT BACKINGS of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.

2. Do not stretch, twist, puncture, or tear sealant backings.

3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

D. INSTALL WEEPS IN SEALANT JOINTS above head and sill flashings, at spacing not to exceed twenty-four (24)-inch centers. Install with weeps two (2)-inches outside of sealant joint face, and extend through the sealant backing into the internal drainage plane. After sealant is cured, cut off weeps flush with face of sealant joint.

E. INSTALL BOND-BREAKER TAPE behind sealants where sealant backings are not used between sealants and backs of joints.

F. INSTALL SEALANTS using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.

2. Completely fill recesses in each joint configuration.

3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

G. ACOUSTICAL SEALANT INSTALLATION: At sound-rated assemblies and elsewhere as indicated, seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C919 and with manufacturer's written recommendations.

H. TOOLING OF NON-SAG SEALANTS: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.

2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.

3. Provide concave joint configuration per Figure 5A in ASTM C1193, unless otherwise indicated.

4. Provide flush joint configuration where indicated per Figure 5B in ASTM C1193.

5. Provide recessed joint configuration of recess depth and at locations indicated per Figure 5C in ASTM C1193. Use masking tape to protect surfaces adjacent to recessed tooled joints.

I. CLEAN OFF EXCESS SEALANT OR SEALANT SMEARS adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

J. PROTECT JOINT SEALANTS during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.4 JOINT / SEALANTS SCHEDULE:

EXTERIOR PAVEMENT JOINTS: at perimeter of building at pavement (including sidewalks and curbs), and at pavement expansion Joints:.....	Polyurethane
TYPICAL EXTERIOR VERTICAL AND HORIZONTAL BUILDING JOINTS, at perimeters of doors, windows, louvers, storefront frames (both sides), curtain wall frames (both sides) exterior wall penetrations, exterior building joints including masonry joints, and at masonry control joints:	Exterior Silicone
EXTERIOR DOOR THRESHOLDS:	Butyl Rubber
ACOUSTICALLY RATED DRYWALL PARTITIONS, on both sides of studs between gypsum board and adjacent materials at both base and top of partition, and where indicated:	Acoustic Sealant
TYPICAL INTERIOR JOINTS including but not limited to drywall joints:....	Latex
TILE JOINTS and joints between countertops and walls:	Sanitary Silicone
PLUMBING FIXTURES to walls:.....	Sanitary Silicone

End of Section

081416

WOOD DOORS

PART 1 - GENERAL

1.1 SUMMARY

A. PROVIDE FLUSH WOOD DOORS as indicated, as specified herein and in compliance with applicable requirements of referenced quality standards. The Work of this Section includes:

B. Shop preparation for field finishing and staining.

1.2 RELATED SECTIONS:

A. DIVISION-08 “METAL FRAMES” Section for metal frames associated with wood doors

B. DIVISION-08 “GLAZING” Section for glass view panels within flush wood doors

C. DIVISION-09 “PAINTING” Section for field finishing doors and frames

1.3 ACTION SUBMITTALS:

A. SUBMIT PRODUCT DATA including manufacturer's technical data for each type of door, including details of core and edge construction, trim for openings and louvers, indicating compliance with these specifications.

B. SUBMIT SHOP DRAWINGS indicating location and size of each door, elevation of each kind of door, details of construction, location and extent of hardware blocking, fire ratings, requirements for factory preparation and other pertinent data. Include the following:

1. Door elevations, dimensions and location of hardware, lite locations, and glazing thickness.

2. Dimensions and locations of mortises and holes for hardware.

3. Clearances and undercuts.

4. Requirements for veneer matching.

C. DOOR AND FRAME SCHEDULE: For flush wood doors, prepared by or under the supervision of supplier, indicate door and frame location, type, size, fire-protection rating and swing, using same reference numbers for details and openings as those on Drawings. Coordinate with final door hardware schedule.

D. SAMPLES: Corner sections of doors, approximately 8- by 10-inches, with door faces and edges representing actual materials to be provided. Provide samples illustrating expected range of veneer colors and or grain anticipated.

1. SUBMIT FACTORY FINISH SAMPLES applied to actual door face materials, approximately 8 by 10 inches, for each material and finish. For each wood species and transparent finish, provide set of three samples showing typical range of color and grain to be expected in the finished Work.

1.4 INFORMATION SUBMITTALS

A. SAMPLE WARRANTY: For manufacturer's special warranty

1.5 QUALITY ASSURANCE

A. QUALITY STANDARD: Comply with ANSI / WDMA I.S. 1A – Interior Architectural Wood Flush Doors (most recent edition) by the Window & Door Manufacturers Association (WDMA) for grade of door, core construction and finish requirements.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Comply with requirements of referenced standard and manufacturer's written instructions.

B. Package doors individually in cardboard cartons, and wrap bundles of doors in plastic sheeting.

C. Mark each door on top and bottom rail with opening number used on Shop Drawings.

1.7 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, and HVAC system is operating and maintaining temperature and relative humidity at levels designed for building occupants for the remainder of construction period.

1.8 WARRANTY

A. SPECIAL MANUFACTURER'S WARRANTY: Manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

2. Delamination of veneer.

3. Warping (bow, cup, or twist) more than 1/4-inch in a 42-by-84-inch section.

4. Telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch span.

5. Warranty must also include installation and finishing that may be required due to repair or replacement of defective doors and frames.

B. WARRANTY PERIODS:

1. For Solid-Core Interior Doors: Life of installation.

PART 2 - PRODUCTS

2.1 MANUFACTURER:

A. SOURCE LIMITATION: Obtain wood doors of each type required from a single manufacturer.

B. AVAILABLE MANUFACTURERS: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Masonite Architectural - Graham-Maiman Series (www.masonite.com)

2. Oshkosh Door Company (www.oshkoshdoor.com)

3. Vancouver Door Company (www.vancouverdoorco.com)

4. VT Industries Inc. (www.vtindustries.com)

2.2 FLUSH WOOD DOORS– GENERAL

A. DOOR & TRANSOM PANEL THICKNESS: 1-3/4-inch minimum, unless otherwise indicated

B. QUALITY STANDARD PERFORMANCE GRADE: Comply with WDMA I.S.1-A as follows:

1. Minimum Performance Grade: Heavy Duty (except as otherwise indicated)

C. CORE: Except at hollow-core or fire-rated units, provide ANSI A208.1, Grade LD-2 solid-particleboard core, made with binder containing no added urea-formaldehyde (NAUF).

D. EXPOSED VERTICAL EDGES: Same species or a compatible species as faces, or applied wood-veneer edges of same species as faces and covering edges of faces.

E. BLOCKING: Provide minimum five (5)-inch high solid wood blocking in particleboard-core doors, and composite blocking in mineral-core doors per fire-protection rating, to eliminate through-bolting hardware, at doors indicated to receive closers, and at kick, mop or armor plates.

F. ASSEMBLY: Five (5)-ply, hot-pressed bonded (vertical and horizontal edging is bonded to core) with entire unit abrasive planed before veneering, using Type I adhesive per WDMA T.M. 6 except as otherwise indicated.

G. LIGHT OPENINGS cannot extend lower than ten (10)-inches from bottom, per accessibility requirements.

H. WOOD BEADS FOR LIGHT OPENINGS: Provide manufacturer's standard flush, rectangular beads of same species as door faces. At wood-core doors with 20-minute fire-rating, provide wood beads and metal glazing clips approved for such use.

I. WOOD LOUVERS: Door manufacturer's standard solid-wood louvers of same species as door faces, in "flat" profile unless otherwise indicated.

2.3 INTERIOR SOLID-CORE FLUSH-WOOD VENEER-FACED DOORS FOR TRANSPARENT FINISH:

A. SPECIES & CUT: Match existing wood door species and cut to the greatest extent feasible:

1. Existing doors: assumed to be of mahogany or walnut – field verify.

B. VENEER MATCHING AND ASSEMBLY: Match existing – field verify.

1. Provide pair and set matching on doors hung in same opening or separated only by mullions.

C. FACTORY SEAL with sealer compatible with field-finish indicated in Division-09 "Painting" Section.

2.4 FABRICATION:

A. FACTORY FIT DOORS to suit frame-opening sizes indicated. Comply with clearance requirements of referenced quality standard for fitting.

B. FACTORY MACHINE DOORS & FRAMES FOR HARDWARE that is not surface applied. Locate hardware to comply with DHI-WDHS-3. Pre-drill pilot holes for all hardware. Comply with final hardware schedules, door frame shop drawings, DHI A115-W series standards, and hardware templates. Coordinate measurements of hardware mortises in metal frames to verify dimensions and alignment before proceeding with factory machining.

C. OPENINGS: Cut and trim openings through doors to comply with applicable requirements of referenced standards for kind(s) of doors required. Trim openings with moldings of material and profile to match color and finish of door finish.

PART 3 - EXECUTION

3.1 EXAMINATION

A. EXAMINE rough openings and installed frames, with Installer present, before installing door and frames.

1. Verify that openings and installed frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.

2. Reject doors with defects.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. HARDWARE: For installation, refer to Division-08 “Hardware” Section.

B. INSTALL DOORS to comply with manufacturer's written instructions, referenced quality standard, and as indicated.

1. Install non-fire-rated doors per SDI 250.8 and HMMA 841.

C. INSTALL JOB-FITTED DOORS aligned and fitted in frames with uniform clearances and bevels as indicated below.

1. Do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors, when applicable.

D. Machine doors for hardware. Seal edges of doors, edges of cutouts, and mortises after fitting and machining.

3.3 CLEARANCES:

A. At head, jambs and between pairs of doors: 1/8-inch

B. At bottom of door to top of decorative floor finish or covering: 1/2-inch

C. At bottom of door to top of threshold (when indicated): 3/8-inch

D. Bevel non-fire-rated doors 1/8-inch in 2 inches (3-1/2 degrees) at lock and hinge edges.

3.4 ADJUSTING

A. OPERATION: Rehang or replace doors that do not swing or operate freely.

B. REPLACE DOORS that are damaged or do not comply with requirements. Doors may be repaired or refinished if Work complies with requirements and shows no evidence of repair or refinishing.

C. PROTECT doors as recommended by door manufacturer to ensure that they will be without damage or deterioration at time of Substantial Completion.

End of Section

084113

ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Due to the H2S gases in the area, all materials and fasteners are to be either aluminum or stainless steel.

1.2 SUMMARY

A. This Section covers Aluminum Entrances, including doors, the aluminum framing, gasketing for glazing, door hardware, and components.

B. Related Sections:

1. 079100: Joint Sealants
2. 084313: Aluminum-Framed Storefronts
3. 084413: Glazed Aluminum Curtain Walls
4. 087100: Door Hardware
5. 088100: Solar Control Coated Insulating Glass

1.3 DEFINITIONS

A. For fenestration industry standard terminology and definitions, refer to the Fenestration & Glazing Industry Alliance (FGIA) Glossary (AAMA AG-13).

1.4 PERFORMANCE REQUIREMENTS

A. General Performance:

1. Aluminum-framed entrance system shall withstand the effects of the following performance requirements without failure due to defective manufacture, fabrication, installation, or other defects in construction.

B. Wind Loads:

1. The curtain wall system shall include anchorage that is capable of withstanding the following wind load design pressures:

    a. Inward: 39 psf
    b. Outward: -72psf

2. The design pressures are based on the International Building Code, 2018 Edition.

C. Air Leakage:

1. For single-acting offset pivot or butt-hung entrances in the closed and locked position, the test specimen shall be tested in accordance with ASTM E 283 at a pressure differential of 1.57 psf (75 Pa) for single doors and pairs of doors.

2. A single 3'0" x 7'0" (915 mm x 2134 mm) entrance door and frame shall not exceed 1.0 cfm/ft2.

D. Uniform Load:

1. A static air design load shall be applied in the positive and negative direction in accordance with ASTM E 330:

    a. 250T: 50 psf (2400 Pa) for single doors and 40 psf (1920 Pa) for pairs of doors

2. At a structural test load equal to 1.5 times the specified design load, no glass breakage or permanent set in the framing members in excess of 0.2% of their clear spans shall occur.

E. Structural-Test Performance:

1. Corner strength shall be tested per the Kawneer dual moment load test procedure and certified by an independent testing laboratory to ensure weld compliance and corner integrity. (Testing procedure and certified test results are available upon request.)

F. Energy Efficiency:

1. Thermal transmittance (U-factor):

    a. Refer to section 088100 Solar Control Coated Insulating Glass.

2. Condensation Resistance Factor (CRF) or Condensation Index (CI):

    a. If using CRF, when tested to AAMA Specification 1503, the CRF for 250T shall not be less than 49frame and 68glass (1" low-e insulating glass with warm edge spacer).
    b. If using CI, when tested to CSA A440-00, the CI for 250T shall not be less than 37frame and 66glass (1" low-e insulating glass with warm edge spacer).

3. Solar Heat Gain Coefficient(:

    a. Refer to section 088100 Solar Control Coated Insulating Glass.

4. Visible Transmittance:

a. Refer to section 088100 Solar Control Coated Insulating Glass.

G. Sound Transmission Loss:

1. When tested to ASTM E90 and ASTM E1425, the Sound Transmission Class (STC) and Outdoor/Indoor Transmission Class (OITC) shall not be less than:

a. 250T: STC 37 or OITC 32 based upon 1" (25.4 mm) insulating glass (1/4", 1/2" AS, 1/4")

H. Windborne-Debris-Impact Resistance Performance:

1. Performance shall be tested in accordance with ASTM E1886 and information in ASTM E1996, and in TAS-201/203:

a. Large-Missile Impact: For aluminum-framed systems located within 30 feet (9.1 m) of grade

I. Forced Entry:

1. Performance shall be tested in accordance with AAMA 1304.

J. Environmental Product Declaration (EPD): Shall have an Aluminum Extrusions EPD.

1.5 SUBMITTALS

A. Product Data:

1. For each type of aluminum-framed entrance door indicated, include:

a. Construction details
b. Material descriptions
c. Fabrication methods
d. Dimensions of individual components and profiles
e. Hardware
f. Finishes
g. Installation instructions

B. Shop Drawings:

1. Plans

2. Elevations

3. Sections

4. Details

5. Hardware

6. Attachments to other work

7. Operational clearances

8. Installation details

C. Samples for Initial Selection:

1. Provide samples for units with factory-applied color finishes.

2. Provide samples of hardware and accessories involving color selection.

D. Samples for Verification:

1. Provide a verification sample for aluminum-framed entrance doors and required components.

E. Product Test Reports:

1. Provide test reports for each type of aluminum-framed entrance door used in the project.

2. Test reports must be based on evaluation of comprehensive tests performed by a qualified preconstruction testing agency.

3. Test reports must indicate compliance with performance requirements.

F. Fabrication Sample:

1. Provide a fabrication sample of each vertical-to-horizontal intersection of aluminum-framed systems, made from 12" (304.8 mm) lengths of full-size components and showing details of the following:

a. Joinery, including concealed welds
b. Anchorage
c. Expansion provisions
d. Glazing
e. Flashing and drainage

G. Entrance Door Hardware Schedule:

1. Refer to section 087100 Door Hardware.

2. Schedule shall be prepared by or under the supervision of supplier.

3. Schedule shall detail fabrication and assembly of entrance door hardware, including procedures and diagrams.

4. Coordinate final entrance door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of entrance door hardware.

1.6 QUALITY ASSURANCE

A. Installer Qualifications:

1. Installer must have successfully installed the same or similar units required for the project and other projects of similar size and scope.

B. Manufacturer Qualifications:

1. Manufacturer must be capable of fabricating aluminum-framed entrance doors and storefronts that meet or exceed the stated performance requirements.

2. Manufacturer must document this performance by the inclusion of test reports and calculations.

C. Source Limitations:

1. Obtain aluminum-framed entrance doors through one source from a single manufacturer.

D. Acceptable manufacturers: Subject to compliance with performance requirements and unit sizes of products indicated, products of one of the following are acceptable:

1. Kawneer North America, and Arconic Company (www.kawneer.com)

2. Manko Window Systems, Inc. (www.mankowindows.com)

E. Product Options:

1. Drawings indicate size, profiles, and dimensional requirements of aluminum-framed entrance doors and are based on the specific system indicated. Refer to Division 01 Product Requirements Section. Do not modify size and dimensional requirements.

2. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

F. Mockups:

1. Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

2. Build mockup for the type(s) of swing entrance door(s) indicated, in location(s) shown on drawings.

G. Pre-installation Conference:

1. Conduct conference at project site to comply with requirements in Division 01 Project Management and Coordination Section.

1.7 PROJECT CONDITIONS

A. Field Measurements:

1. Verify actual dimensions of thermally broken aluminum-framed door openings by field measurements before fabrication.

2. Indicate measurements on shop drawings.

1.8 WARRANTY

A. Submit manufacturer's standard warranty for owner's acceptance.

B. Warranty Period:

1. Two years from Date of Substantial Completion of the project provided however that in no event shall the Limited Warranty begin later than six months from date of shipment by manufacturer.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design for Aluminum Interior Window Framing System: Trifab® VersaGlaze® 450 Framing System, 1-3/4" Sightline:

1. 1-3/4" x 4-1/2" (44.5 mm x 114.3 mm) nominal dimension

2. Non-thermal

3. Glass: center

4. Screw spline, shear block, stick

B. Basis of Design for Aluminum Storefront System: Kawneer Trifab® 451UT Framing System:

1. 2" x 4-1/2" (50.8 mm x 114.3 mm) nominal dimension

2. Thermal

3. Center Plane

4. Screw Spline Fabrication

C. Basis of Design for Aluminum Doors: Kawneer 500T Insulpour Thermal Entrance

1. The door stile and rail face dimensions of the entrance doors and vestibule doors will be as follows:

a. Vertical face dimension: 5" (127.0 mm)
b. Top Rail: 5" (127.0 mm)
c. Bottom Rail: 6-1/2" (165.1 mm)
d. Optional Bottom Rail: 7" (177.8 mm); 10" (254.0 mm); or, 12" (304.8 mm)

2. Major portions of the door members shall be 0.125" (3.2 mm) nominal thickness.

3. Glazing molding shall be 0.05" (1.3 mm) thick.

4. Glazing gaskets shall be either EPDM elastomeric extrusions or a thermoplastic elastomer.

5. Provide adjustable glass jacks to help center the glass in the door opening.

D. Substitutions:

1. Refer to Division 01 Substitutions Section for procedures and submission requirements.

2. Pre-Contract (Bidding Period) Substitutions:

a. Submit written requests ten (10) days prior to bid date.

3. Post-Contract (Construction Period) Substitutions:

a. Submit written request in order to avoid installation and construction delays.

4. Product Literature and Drawings:

a. Submit product literature and drawings modified to suit specific project requirements and job conditions.

5. Certificates:

a. Submit certificate(s) certifying that the substitute manufacturer (1) attests to adherence to specification requirements for aluminum entrance and storefront system performance criteria, and (2) has been engaged in the design, manufacture, and fabrication of aluminum entrances and storefronts for a period of not less than ten (10) years. (Company Name)

6. Test Reports:

a. Submit test reports verifying compliance with each test requirement required by the project.

7. Samples:

a. Provide samples of typical product sections and finish samples in manufacturer's standard sizes.

E. Substitution Acceptance:

1. Acceptance will be in written form, either as an addendum or modification.

2. Acceptance will be documented by a formal change order signed by the owner and contractor.

2.2 MATERIALS

A. Aluminum Extrusions:

1. Alloy and temper recommended by aluminum-framed entrance door manufacturer for strength, corrosion resistance, and application of required finish.

2. Not less than 0.125" (3.2 mm) wall thickness at any location for the main frame and door leaf members.

B. Fasteners:

1. Aluminum, nonmagnetic stainless steel or other materials must be non-corrosive and compatible with aluminum members, trim hardware, anchors, and other components.

C. Anchors, Clips, and Accessories:

1. Aluminum, nonmagnetic stainless steel complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating.

2. Anchors, clips, and accessories shall provide sufficient strength to withstand the design pressure indicated.

D. Reinforcing Members:

1. Aluminum, nonmagnetic stainless steel complying with ASTM B 456 for Type SC 3 severe service conditions

2. Reinforcing members must provide sufficient strength to withstand the design pressure indicated.

E. Slide-In-Type Weather-Stripping:

1. Provide woven-pile weather stripping of wool, polypropylene, or nylon pile and resin-impregnated backing fabric.

2. Comply with AAMA 701/702.

F. Weather Seals:

1. Refer to section 087100 Door Hardware.

2. Comply with AAMA 701/702.

G. Thermal Barrier:

1. Shall be IsoPour™ utilizing two continuous rows of polypropylene with a nominal 7/32" (5.5 mm) separation that consists of a two-part, chemically curing high density polyurethane which is mechanically and adhesively bonded to the aluminum at door rails and stiles.

2.3 GLAZING

A. Refer to section 988100 Solar Control Coated Insulating Glass for glazing.

B. Glazing Gaskets:

1. Manufacturer's standard compression types

2. Replaceable, extruded EPDM rubber

C. Spacers and Setting Blocks:

1. Manufacturer's standard elastomeric type

2.4 HARDWARE

A. General Hardware Requirements:

1. Refer to section 087100 Door Hardware.

2. Hardware shall be fabricated from aluminum, stainless steel, or other corrosion-resistant material that is compatible with aluminum.

3. Hardware shall be designed to smoothly operate, tightly close, and securely lock aluminum-framed entrance doors.

2.5 FABRICATION

A. Fabricate aluminum-framed entrance doors in sizes indicated.

B. Include a complete system for assembling components and anchoring doors.

C. Fabrication requirements:

1. Thermally broken aluminum-framed doors shall be reglazable without dismantling perimeter framing.

2. Door corner construction:

a. Mechanical clip fastening
b. SIGMA deep-penetration plug welds
c. 1" (25.4 mm) long fillet welds inside and outside of all four corners

d. Hook-in type glazing stops with EPDM glazing gaskets reinforced with non-stretchable cord

3. Joint construction:

a. Accurately fit and secure joints and corners.
b. Make joints hairline in appearance.

4. Prepare components with internal reinforcement for door hardware.

5. Arrange fasteners and attachments to conceal from view.

D. Weather-stripping:

1. Provide weather-stripping locked into extruded grooves in door panels or frames as indicated on manufacturer's drawings and details.

2.6 ALUMINUM FINISHES

A. Finish designations that are prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

B. Factory Finishing:

1. Kawneer Permanodic® AA-M10C21A41, AAMA 611, Architectural Class I Clear Anodic Coating (Color #14 Clear)

PART 3 - EXECUTION

3.1 EXAMINATION

A. With installer present, examine openings, substrates, structural support, anchorage, and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of work:

1. Verify rough opening dimensions.

2. Verify levelness of sill plate.

3. Verify operational clearances.

4. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components for proper water management.

5. Masonry Surfaces:

a. Masonry surfaces must be visibly dry and free of excess mortar, sand, and other construction debris.

6. Wood Frame Walls:

    a. Wood frame walls must be dry, clean, sound, well nailed, free of voids, and without offsets at joints.
    b. Ensure that nail heads are driven flush with surfaces in opening and within 3" (76.2 mm) of opening.

7. Metal Surfaces:

    a. Metal surfaces must be dry and clean (free of grease, oil, dirt, rust, corrosion, and welding slag).
    b. Ensure that metal surfaces are without sharp edges or offsets at joints.

B. Proceed with installation only after correcting unsatisfactory conditions.

3.2 INSTALLATION

A. Comply with Drawings, Shop Drawings, and manufacturer's written instructions for installing thermally broken aluminum-framed entrance doors, hardware, accessories, and other components.

B. Install thermally broken aluminum-framed entrance doors so that the doors:

1. Are level, plumb, square, and true to line

2. Are without distortion and do not impede thermal movement

3. Are anchored securely in place to structural support

4. Are in proper relation to wall flashing and other adjacent construction

C. Set the sill threshold in a bed of sealant, as indicated, for weathertight construction.

D. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

3.3 FIELD QUALITY CONTROL

A. Manufacturer's Field Services:

1. Upon owner’s written request, provide periodic site visit by manufacturer’s field service representative.

3.4 ADJUSTING, CLEANING, AND PROTECTION

A. Adjusting: Not applicable.

B. Protection:

1. Protect installed product’s finish surfaces from damage during construction.

C. Cleaning:

1. Avoid damaging protective coatings and finishes.

2. Clean glass and aluminum surfaces of product immediately after installation.

3. Comply with glass manufacturer's written recommendations for final cleaning and maintenance.

4. Remove non-permanent labels and clean surfaces.

5. Remove excess sealants, glazing materials, dirt, and other substances.

6. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during the construction period.

7. Remove construction debris from project site and legally dispose of debris.

End of Section

084413

GLAZED ALUMINUM CURTAIN WALLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Due to the H2S gases in the area, all materials and fasteners are to be either aluminum or stainless steel.

1.2 SUMMARY

A. This Section covers Architectural Aluminum Curtain Wall Systems, including perimeter trims, stools, accessories, shims and anchors, and perimeter sealing of curtain wall framing.

B. Refer to specification section 088100 Solar Control Insulating Glass for glazing specifications. Glazing and the curtain wall to be installed by the same contractor.

C. Due to the H2S gases at the wastewater treatment plant, all fasteners are to be stainless steel. Reinforcing members and other metal materials are to be either stainless steel or aluminum.

D. Types of Kawneer Aluminum Curtain Wall Systems include:

1. 1600UT Wall System®1 Curtain Wall:

    a. Sightline: 2-1/2" (63.5 mm)
    b. Outside-glazed pressure plate format
    c. System depth: 6" (152.4 mm) for 1" (25.4 mm) insulating glazing

E. Related Sections:

1. 079200: Joint Sealants

2. 076000: Flashing & Sheet Metal

3. 084113: Aluminum-Framed Entrances and Storefronts

4. 084313: Aluminum-Framed Storefronts

5. 085113: Aluminum Windows

6. 088100: Solar Control Insulating Glass

7. 102000: Louvers and Vents

1.3 DEFINITIONS

A. For fenestration industry standard terminology and definitions, refer to the Fenestration & Glazing Industry Alliance (FGIA) Glossary (AAMA AG-13).

1.4 PERFORMANCE REQUIREMENTS

A. General Performance:

1. Product to comply with the specified performance requirements without failure due to defective manufacture, fabrication, installation, or other defects in construction, as determined by testing of glazed aluminum curtain walls representing those indicated for this project.

2. Glazed aluminum curtain walls shall withstand movements of supporting structure including, but not limited to, story drift, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.

3. Failure includes any of these events:

   a. Thermal stresses transferring to building structure
   b. Glass breakage
   c. Loosening or weakening of fasteners, attachments, and other components
   d. Failure of operating units

B. Delegated Design:

1. Design glazed aluminum curtain walls, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

C. Wind Loads:

1. The curtain wall system shall include anchorage that is capable of withstanding the following wind load design pressures:

   a. Inward: 39 psf
   b. Outward: -72psf

2. The design pressures are based on the International Building Code, 2018 Edition.

D. Air Leakage:

1. The test specimen shall be tested in accordance with ASTM E 283.

2. Air infiltration rate shall not exceed 0.06 cfm/ft2 (0.3 l/s · m2) at a static air pressure differential of 6.2 psf (300 Pa).

E. Water Resistance:

1. Static:

a. The test specimen shall be tested in accordance with ASTM E 331.
b. There shall be no leakage at a minimum static air pressure differential of 12 psf (575 Pa) as defined in AAMA 501.

2. Dynamic:

a. The test specimen shall be tested in accordance with AAMA 501.1.
b. There shall be no leakage at an air pressure differential of 12 psf (575 Pa) as defined in AAMA 501.

F. Uniform Load:

1. A static air design load of 40 psf (1915 Pa) shall be applied in the positive and negative direction in accordance with ASTM E 330.

2. There shall be no deflection in excess of L/175 of the span of any framing member at design load.

3. At a structural test load equal to 1.5 times the specified design load, no glass breakage or permanent set in the framing members in excess of 0.2% of their clear spans shall occur.

G. Seismic:

1. When tested to AAMA 501.4, system must meet design displacement (elastic) of 0.010 times the story height and ultimate displacement (inelastic) of 1.5 times the design displacement.

H. Sound Transmission Loss:

1. When tested to ASTM E90 and ASTM E1425, the Sound Transmission Class (STC) and Outdoor/Indoor Transmission Class (OITC) shall not be less than:

a. STC 31 or OITC 26 based upon 1" (25.4 mm) insulating glass (1/4", 1/2" AS, 1/4")

I. Windborne-Debris-Impact Resistance Performance:

1. Performance shall be tested in accordance with TAS 201/203, ASTM E1886 and information in ASTM E1996:

a. Large-Missile Impact: For aluminum-framed systems located within 30 feet (9.1 m) of grade

J. Environmental Product Declaration (EPD): Shall have a Type III Product-Specific EPD created from a Product Category Rule.

1.5 SUBMITTALS

A. Product Data:

1. For each type of product indicated, include:

a. Construction details
b. Material descriptions
c. Dimensions of individual components and profiles
d. Finishes

2. Material Ingredient Reporting:

a. Include documentation for material reporting that has a complete list of chemical ingredients to at least 100 ppm (0.01%) that covers 100% of the product.

B. Shop Drawings:

1. Plans

2. Elevations

3. Sections

4. Full-size details

5. Attachments and attachment details to other work. All fasteners are to be stainless steel.

C. Samples for Initial Selection:

1. Provide samples for units with factory-applied color finishes.

D. Samples for Verification:

1. Provide a verification sample for each type of exposed finish required, in manufacturer's standard sizes.

E. Product Test Reports:

1. Provide test reports for glazed aluminum curtain walls.

2. Test reports must be based on evaluation of comprehensive tests performed by a qualified preconstruction testing agency.

3. Test reports must indicate compliance with performance requirements.

F. Fabrication Sample:

1. Provide a fabrication sample of each vertical-to-horizontal intersection of aluminum-framed curtain wall systems, made from 12" (304.8 mm) lengths of full-size components and showing details of the following:

a. Joinery
b. Glazing

1.6 QUALITY ASSURANCE

A. Installer Qualifications:

1. Installer must have successfully installed the same or similar systems required for the project and five (5) other projects of similar size and scope.

B. Manufacturer Qualifications:

1. Manufacturer must be capable of fabricating glazed aluminum curtain walls that meet or exceed the stated performance requirements.

C. Source Limitations:

1. Obtain aluminum curtain wall system through one source from a single manufacturer.

D. Product Options:

1. Information on drawings and in specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction.

2. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

E. Mockups:

1. Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution. Refer to the drawings for the mockup sketch.

F. Pre-installation Conference:

1. Conduct conference at project site to comply with requirements in Division 01 Project Management and Coordination Section.

1.7 PROJECT CONDITIONS

A. Field Measurements:

1. Verify actual locations of structural supports for glazed aluminum curtain walls by field measurements before fabrication.

2. Indicate field measurements on shop drawings.

1.8 WARRANTY

A. Submit manufacturer's standard warranty for owner's acceptance.

B. Warranty Period:

1. Two years from Date of Substantial Completion of the project provided however that in no event shall the Limited Warranty begin later than six months from date of shipment by manufacturer.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product:

1. Kawneer Company, Inc.

2. 1600UT Wall System®1 Curtain Wall types:

a. 1600UT Wall System®1 Curtain Wall:
1) Sightline: 2-1/2" (63.5 mm)
2) Outside-glazed pressure plate format
3) System depth: 6" (152.4 mm) for 1" (25.4 mm) insulating glazing.

3. Tested to AAMA 501, ASTM E 1886, E 1996, and TAS 201, 202, 203

B. Substitutions:

1. Refer to Division 01 Substitutions Section for procedures and submission requirements.

2. Pre-Contract (Bidding Period) Substitutions:

a. Submit written requests ten (10) days prior to bid date.

3. Post-Contract (Construction Period) Substitutions:

a. Submit written request in order to avoid installation and construction delays.

4. Product Literature and Drawings:

a. Submit product literature and drawings modified to suit specific project requirements and job conditions.

5. Certificates:

a. Submit certificate(s) certifying that the substitute manufacturer (1) attests to adherence to specification requirements for curtain wall system performance criteria, and (2) has been engaged in the design, manufacture, and fabrication of

aluminum curtain walls for a period of not less than ten (10) years. (Company Name).

6. Test Reports:

   a. Submit test reports verifying compliance with each test requirement required by the project.

7. Samples:

   a. Provide samples of typical product sections and finish samples in manufacturer's standard sizes.

C. Substitution Acceptance:

1. Acceptance will be in written form, either as an addendum or modification.

2. Acceptance will be documented by a formal change order signed by the owner and contractor.

2.2 MATERIALS

A. Aluminum Extrusions:

1. Alloy and temper recommended by glazed aluminum curtain wall manufacturer for strength, corrosion resistance, and application of required finish

2. Not less than 0.070" (1.8 mm) wall thickness at any location for the main frame

3. Complying with ASTM B221: 6063-T6 alloy and temper

B. Aluminum Sheet Alloy:

1. Shall meet the requirements of ASTM B209.

C. Fasteners:

1. Aluminum or nonmagnetic stainless steel must be non-corrosive and compatible with aluminum members, trim hardware, anchors, and other components.

D. Anchors, Clips, and Accessories:

1. Aluminum or nonmagnetic stainless steel complying with ASTM B 633 for SC 3 severe service conditions.

2. Anchors, clips, and accessories shall provide sufficient strength to withstand the design pressure indicated.

E. Pressure Plate:

1. Pressure plate shall be aluminum.

2. Pressure plate shall be fastened to the mullion with stainless steel screws.

F. Reinforcing Members:

1. Aluminum or nonmagnetic stainless steel complying with ASTM B 456 for Type SC 3 severe service conditions.

2. Reinforcing members must provide sufficient strength to withstand the design pressure indicated.

G. Sealant:

1. For sealants required within fabricated curtain wall system, provide permanently elastic, non-shrinking, and non-migrating type recommended by sealant manufacturer for joint size and movement.

H. Thermal Barrier:

1. Thermal separator shall be extruded of a silicone compatible elastomer that provides a minimum 1/4" (6.3 mm) separation.

I. Tolerances:

1. References to tolerances for wall thickness and other cross-sectional dimensions of glazed curtain wall members are nominal and in compliance with AA Aluminum Standards and Data.

J. Red List Free:

1. Product does not contain PVC or Neoprene.

2.3 CURTAIN WALL FRAMING

A. Framing Members:

1. Manufacturer's standard extruded or formed-aluminum framing members of thickness required and reinforced as required to support imposed loads.

2. Glazing System: Four-sided captured

3. Glazing Plane: Front

B. Glass:

1. Refer to specification section 088100 Solar Control Insulating Glass for glazing specifications.

C. Brackets and Reinforcements:

1. Manufacturer's standard high-strength aluminum with non-staining, non-ferrous shims for aligning system components.

D. Framing Sealants:

1. Shall be suitable for glazed aluminum curtain wall as recommended by sealant manufacturer.

E. Fasteners and Accessories:

1. Manufacturer's stainless steel fasteners and accessories must be compatible with adjacent materials.

2. Exposed and non-exposed fasteners and accessories shall be stainless steel.

F. Perimeter Anchors:

1. When steel anchors are used, provide bituminous paint or slip sheet between steel material and aluminum material to prevent galvanic action.

G. Packing, Shipping, Handling, and Unloading:

1. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

H. Storage and Protection:

1. Store materials so that they are protected from exposure to harmful weather conditions.

2. Handle material and components to avoid damage.

3. Protect material against damage from elements, construction activities, and other hazards before, during, and after installation.

2.4 GLAZING

A. Refer to specification section 088100 Solar Control Insulating Glass for glazing specifications.

B. Glazing Gaskets:

1. Gaskets to meet requirements of ASTM C864.

C. Spacers and Setting Blocks:

1. Manufacturer's standard elastomeric type

D. Bond-Breaker Tape:

1. Manufacturer's standard TFE-fluorocarbon or polyethylene material to which sealants will not develop adhesion.

E. Glazing Sealants:

1. As recommended by manufacturer for joint type.

2.5 OPERABLE UNITS

A. Doors comply with Division 08 Aluminum-Framed Entrances and Storefronts Section.

2.6 ACCESSORY MATERIALS

A. Bituminous Paint:

1. Cold-applied asphalt-mastic paint

2. Complies with SSPC-Paint 12 requirements except containing no asbestos

3. Formulated for 30-mil (0.762 mm) thickness per coat

2.7 FABRICATION

A. Extrude or form aluminum shapes before finishing.

B. Fabricate components that, when assembled, have the following characteristics:

1. Profiles that are sharp, straight, and free of defects or deformations

2. Accurately fitted joints

3. Physical and thermal isolation of glazing from framing members

4. Accommodations for thermal and mechanical movements of glazing and framing that maintain required glazing edge clearances

5. Provisions for field replacement of glazing from exterior

6. Fasteners, anchors, and connection devices are concealed from view

7. Internal weeping system or other means to drain water passing joints, condensation occurring within framing members, and moisture migrating within glazed aluminum curtain wall to exterior

C. Curtain Wall Framing:

1. Fabricate components for assembly using shear block system following manufacturer's standard installation instructions.

D. After fabrication, clearly mark components to identify their locations in project according to shop drawings.

2.8 ALUMINUM FINISHES

A. Finish designations that are prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

B. Factory Finishing:

1. Kawneer Permanodic® AA-M10C21A31, AAMA 611, Architectural Class II Clear Anodic Coating (Color #17 Clear)

2. Kawneer Permanodic® AA-M10C21A44, AAMA 611, Architectural Class I Anodic Coating (Color #29 Black). Refer to drawings for locations.

PART 3 - EXECUTION

3.1 EXAMINATION

A. With installer present, examine areas for compliance with requirements for installation tolerances and other conditions affecting performance of the work.

B. Proceed with installation only after correcting unsatisfactory conditions.

3.2 INSTALLATION

A. Curtain Wall System Installation:

1. Install curtain wall systems plumb, level, and true to line, without warp or rack of frames, within manufacturer's prescribed tolerances, and complying with installation instructions.

2. Provide support and anchor in place.

3. Dissimilar Materials:

a. Provide separation of aluminum materials from sources of corrosion or electrolytic action contact points.

4. Glazing:

a. Glass shall be outside-glazed.
b. Glass shall be held in place with extruded aluminum pressure plates anchored to the mullion using stainless steel fasteners that are spaced no more than 9" (228.6 mm) on center.

5. Water Drainage

a. Each light of glass shall be compartmentalized using joint plugs and silicone sealant to divert water to the horizontal weep locations.

b. Weep holes shall be located in the horizontal pressure plates and covers to divert water to the exterior of the building.

B. Related Products Installation:

1. Sealants (Perimeter):

a. Refer to Joint Treatment (Sealants) Section.

2. Glass:

a. Refer to specification section 088100 Solar Control Insulating Glass for glazing specifications.
b. Reference: ANSI Z97.1, CPSC 16 CFR 1201, and GANA Glazing Manual.

3.3 FIELD QUALITY CONTROL

A. Field Tests:

1. Architect shall select curtain wall units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter-caulked, and cured.

2. Conduct tests for air infiltration and water penetration with manufacturer's representative present.

3. Tests that do not meet the specified performance requirements and units that have deficiencies shall be corrected as part of the contract amount.

4. Testing shall be performed per AAMA 503 by a qualified independent testing agency. Refer to Testing Section for payment of testing and testing requirements.

5. Air Infiltration Tests:

a. Conduct tests in accordance with ASTM E 783.
b. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance requirements or 0.09 cfm/ft2, whichever is greater.

6. Water Infiltration Tests:

a. Conduct tests in accordance with ASTM E 1105.
b. No uncontrolled water leakage is permitted when tested at a static test pressure of two-thirds the specified water penetration pressure but not less than 8 psf (383 Pa).

B. Manufacturer's Field Services:

1. Upon owner's written request, provide periodic site visits by manufacturer's field service representative.

3.4 ADJUSTING, CLEANING, AND PROTECTION

A. Adjusting: Adjust as necessary to provide a straight and true application.

B. Protection:

1. Protect installed product's finish surfaces from damage during construction.

2. Protect aluminum curtain wall system from damage from grinding and polishing compounds, plaster, lime, acid, cement, or other harmful contaminants.

C. Cleaning:

1. Repair or replace damaged installed products.

2. Clean installed products in accordance with manufacturer's instructions prior to owner's acceptance.

3. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during the construction period.

4. Remove construction debris from project site and legally dispose of debris.

End of Section

085619

ALUMINUM INTERIOR PASS WINDOW ASSEMBLIES

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes:

1. Aluminum, medium-duty interior sliding pass window assemblies as indicated in drawings and in sections.

2. Due to the H2S gases in the area, all materials and fasteners are to be either aluminum or stainless steel.

1.2 RELATED SECTIONS

A. 084113 Aluminum Framed Entrances and Storefronts

1.3 SUBMITTALS

A. Product Data: Submit Manufacturer’s technical product data substantiating that product complies.

B. Shop drawings: Submit for fabrication and installation of windows. Include details, elevations and installation requirement of finish hardware and cleaning.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver components with adequate protection to prevent damage during transit and job storage

B. Inspect components upon delivery for damage. Unless minor defects can be made to meet the Architect’s specifications and satisfaction, damaged parts should be removed and replaced.

C. Store components at building site under cover in dry location.

1.5 PROJECT CONDITIONS

A. Field measurements: Check opening by accurate field measurement before fabrication. Show recorded measurements on shop drawings. Coordinate fabrication schedule with construction progress to avoid delay of work.

1.6 QUALITY ASSURANCE

A. Installer qualifications: Engage an experienced installer who has completed installations of Interior Sliding Pass Window Assemblies similar in design and extent to those required for the project and whose work has resulted in construction with a record of success in service performance.

B. Manufacturer's qualifications: Sliding Pass Window Assembly produced by a firm experienced in manufacturing Interior Sliding Pass Windows that are similar to those indicated for this project and that have a record of success in service performance.

C. Single source responsibility: Obtain Sliding Pass Window Assembly from a single manufacturer to ensure full compatibility and warranty of parts.

D. Design criteria: The drawings indicate the size, profile and dimensional requirements of the Sliding Pass Window Assembly required and are based on the specific types and models indicated.

E. Safety glass standards: (By Others)

1. Tempered glass components that comply with ANSI Z97.1

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURER'S

A. Basis of design: Design is based on aluminum, interior sliding pass window assembly manufactured by:

C.R. Laurence Co., Inc. (CRL)

Tel: (800) 421-6144 Ext. 7760 Fax: (800) 458-7496

Email: transaction@crlaurence.com

www.crlaurence.com

2.2 MATERIALS

A. Frames: Aluminum frame modules shall be constructed of 6063-T5 extruded aluminum. Assemblies roll on base shoes with rollers engaged in lower track. Jambs are optional and must be specified if desired.

B. Finish: All aluminum to be clear anodized, duranodic bronze, or for selected models, brushed nickel or flat black.

C. Glazing: Typically 1/4" (6 mm) in thickness. Glass not included, to be supplied by others.

D. Options: Keyed lock, finger pulls, end caps, and selected models have anti-lift security features.

E. Pass Window Assembly Models:

1. D2300 Series

a. Upper double channel: #D609A. Plastic Lined.
b. Glass Overlap: 2”
c. Glazing Vinyl Cat. #SDV732
d. H-Bar Cat. #D610
e. Cat. #D650 Nylon Wheels
f. Insert Rail Cat. #D601
g. Lower Double Channel Cat. #D603

2. Accessories:

a. Item # D639A Satin Anodized Extruded Aluminum Finger Pull with 1” Lip
b. Item #KV965 Polished Chrome “Pick-Proof” Sliding Glass Door Lock

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install components in accordance with manufacturer’s printed instructions and recommendations. Repair damaged units as directed (if approved by the manufacturer and the architect) or replace with new units.

3.2 CLEANING

A. Clean frame and glazing surfaces after installation, complying with requirements contained in the manufacturer’s instructions. Remove excess glazing sealant compounds, dirt or other substances.

3.3 PROTECTION

A. Institute protective measures required throughout the remainder of the construction period to ensure that all the windows do not incur any damage or deterioration, other than normal weathering, at the time of acceptance.

End of Section

087100

DOOR HARDWARE

PART 1 - GENERAL

1.1 WORK INCLUDED:

A. Provide door hardware where indicated, as specified herein, and as necessary for complete installation.

1. This Section includes items known commercially as finish or door hardware that are required for swing and sliding doors, and other doors to the extent indicated. Hardware for special types of unique hardware is specified in the same Sections as the doors and door frames on which they are installed.

2. Due to the H2S gases in the area, all materials and fasteners are to be either aluminum or stainless steel.

B. The Work of this Section includes:

1. Mechanical door hardware for swinging ADA compliant and non-compliant personnel doors.

2. Modification of existing hardware to comply with Accessibility Requirements:

a. Adjust door closer speed and opening force per 2010 ADA Standards for Accessible Design item 404.2.8, or replace unit if not able to meet ADA requirements.

3. Cylinders specified for door locks that are keyed into the clients grand master system.

1.2 RELATED SECTIONS

A. APPLICABLE DIVISION-08 SECTIONS for doors and frames.

1.3 COORDINATION

A. WOOD BLOCKING IN DRYWALL PARTITIONS: Arrange with the Installer of Division-06 “Rough Carpentry” Section to provide wood blocking in drywall partitions where wall stops or other wall mounted hardware will be anchored.

B. INSTALLATION TEMPLATES: Distribute for doors, frames, and other work specified to be factory prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

C. OWNER'S SECURITY PROVIDER: Coordinate installation of door hardware, keying, and access control with the Owner's security consultant or service provider, as applicable.

D. EXISTING OPENINGS: Where hardware components are scheduled for application to existing construction or where modifications to existing door hardware are required, field verify existing conditions and coordinate installation of door hardware to suit opening conditions and to provide proper door operation.

1.4 PREINSTALLATION MEETINGS

A. HARDWARE & KEYING COORDINATION MEETING: Coordinate and manage a meeting between the Owner's representative and the hardware supplier's Architectural Hardware Consultant (AHC) to confirm requirements of specified hardware items before ordering, and to determine the final keying requirements.

1. Include the Owner's separate Security Consultant or Contractor in the coordination meetings, when applicable

2. Provide a minimum of two (2) meetings, each to take not less than two (2) hours, with all meetings to be held at the project site or offices of the Owner (unless otherwise agreed to by Owner's representative).

3. Review and finalize construction schedule and verify availability of materials.

4. Review the required inspecting, testing, commissioning, and demonstration procedures

5. Incorporate keying directions into keying schedule after reviewing door hardware keying system including, but not limited to, the following:

    a. Flow of traffic and degree of security required.
    b. Preliminary key system schematic diagram.
    c. Requirements for key control system.
    d. Address for delivery of keys.

6. Confirm decisions made in writing, and submit report to Architect within three (3) days after meeting.

1.5 ACTION SUBMITTALS

A. PRODUCT DATA including manufacturers' technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.

B. DOOR HARDWARE SCHEDULE: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

C. FORMAT: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."

D. ORGANIZATION: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.

E. CONTENT: Include the following information:

1. Type, style, function, size, label, hand, and finish of each door hardware item.

2. Manufacturer of each item.

3. Fastenings and other pertinent information.

4. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.

5. Explanation of abbreviations, symbols, and codes contained in schedule.

6. Mounting locations for door hardware.

7. Door and frame sizes and materials.

8. Warranty information for each product.

F. SUBMITTAL SEQUENCE: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.

G. KEYING SCHEDULE: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.

1.6 INFORMATION SUBMITTALS

A. QUALIFICATION DATA: For Installer and Architectural Hardware Consultant.

B. PRODUCT TEST REPORTS: For compliance with accessibility requirements, for tests performed by manufacturer and witnessed by a qualified testing agency, for door hardware on doors located in accessible routes.

C. FIELD QUALITY-CONTROL reports.

D. SAMPLE WARRANTY: For special warranty.

E. MAINTENANCE DATA: For each type of door hardware to include in Operations and Maintenance Manuals.

1.7 QUALITY ASSURANCE

A. SUPPLIER QUALIFICATIONS: A recognized Architectural door hardware supplier, with warehousing facilities in the Project's vicinity, that has a record of successful in-service performance for supplying door hardware similar in quantity, type, and quality to that indicated for this Project and that employs an experienced Architectural Hardware Consultant (AHC) who will be available to Owner, Architect, and Contractor, at reasonable times during the course of the Work, for consultation, in addition to the coordination meetings indicated, and with following capabilities.

1. SCHEDULING RESPONSIBILITY: Preparation of door hardware and keying schedule.

2. ENGINEERING: Preparation of data for electrified door hardware, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.

3. INSTALLER TRAINING: Prior to installation of door hardware, conduct project specific training of hardware installers on the proper installation and adjustment of products. Training must include use of installation manuals, hardware schedules, templates and physical product samples as appropriate.

B. ARCHITECTURAL HARDWARE CONSULTANT QUALIFICATIONS: A person experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and who is currently certified by DHI as an Architectural Hardware Consultant (AHC).

C. INSTALLER QUALIFICATIONS: Installers must be trained and certified by the hardware manufacturer’s representative on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals. Product training must be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors.

1.8 PRODUCT HANDLING

A. TAG EACH ITEM OR PACKAGE SEPARATELY with identification related to final hardware schedule, and include basic installation instructions with each item or package. Packaging of door hardware is responsibility of supplier. As material is received by hardware supplier from various manufacturers, sort and repackage in containers clearly marked with appropriate hardware set number to match set numbers of approved hardware schedule. Two or more identical sets may be packed in same container.

B. INVENTORY DOOR HARDWARE jointly with representatives of hardware supplier and hardware installer until each is satisfied that count is correct.

C. DELIVER INDIVIDUALLY PACKAGED DOOR HARDWARE ITEMS promptly to place of installation (shop or Project site).

D. PROVIDE SECURE LOCK-UP for door hardware delivered to the Project, but not yet installed. Control handling and installation of hardware items that are not immediately replaceable so that completion of the Work will not be delayed by hardware losses both before and after installation.

1.9 WARRANTIES

A. PROVIDE WRITTEN WARRANTY, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fail in materials or workmanship within the indicated warranty period after Substantial Completion of the Work. Failures include, but are not limited to, the following:

1. Structural failures including excessive deflection, cracking, or breakage.

2. Faulty operation of the hardware.

3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

4. Electrical component defects and failures within the systems operation.

B. SPECIAL PRODUCT WARRANTY PERIODS (in addition to other contractual and/or implied warranties):

1. Ten (10) years for mortise locks and latches.

2. Seven (7) years for heavy duty cylindrical (bored) locks and latches.

3. Five (5) years for exit hardware.

4. Twenty-five (25) years for manual surface door closer bodies.

5. Ten (10) years for heavy duty floor closers.

6. Two (2) years for shallow depth floor closers.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. SINGLE SOURCE RESPONSIBILITY: Obtain each type of door hardware from a single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. FIRE-RATED DOOR ASSEMBLIES: Where fire-rated doors are indicated, provide door hardware complying with NFPA 80 that is listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.

B. MEANS OF EGRESS DOORS: Latches do not require more than 15 lbf to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.

C. ACCESSIBILITY REQUIREMENTS: For door hardware on doors in an accessible route, comply with the DOJ's "2010 ADA Standards for Accessible Design" and ICC A117.1:

1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf.

2. Comply with the following maximum opening-force requirements:

a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf applied perpendicular to door.
b. Sliding or Folding Doors: 5 lbf applied parallel to door at latch.
c. Fire Doors: Minimum opening force allowable by AHJ.

3. Bevel raised thresholds with a slope of not more than 1 : 2. Provide thresholds not more than 1/2-inch-high.

4. Adjust door closer sweep periods so that, from an open position of 90-degrees, the door will take at least 5-seconds to move to a position of 12-degrees from the latch.

5. Adjust spring hinges so that, from an open position of 70-degrees, the door will take at least 1.5-seconds to move to the closed position.

6. Allowable height limits for accessible, operational door hardware:

a. Minimum Height Above Grade or Floor: 15-inches
b. Maximum Height Above Grade or Floor: 48-inches

2.3 GENERAL PRODUCT REQUIREMENTS:

A. MANUFACTURER'S NAME PLATE: Do not use products with the manufacturer's name or trade name displayed in a visible location (omit removable nameplates) except in conjunction with required fire-rated labels and as otherwise acceptable to Architect. Manufacturer's identification will be permitted on rim of lock cylinders only.

B. BASE METALS: Produce hardware units of basic metal and forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness, but in no case of lesser (commercially recognized) quality than specified for applicable hardware units by applicable ANSI/BHMA A156 series standards for each type of hardware item and with ANSI/BHMA A156.18 for finish designations indicated. Do not furnish "optional" materials or forming methods for those indicated, except as otherwise specified.

C. FASTENERS: Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation. Do not provide hardware that has been prepared for self-tapping sheet metal screws, except as specifically indicated.

D. FURNISH STAINLESS STEEL SCREWS FOR INSTALLATION with each hardware item. Provide Phillips flat-head screws except as otherwise indicated. Finish exposed (exposed under any condition) screws to match hardware finish or, if exposed in surfaces of other work, to match finish of this other work as closely as possible including "prepared for paint" surfaces to receive painted finish.

E. PROVIDE STAINLESS STEEL CONCEALED FASTENERS for hardware units that are exposed when door is closed except to the extent no standard units of type specified are available with concealed fasteners. Do not use thru-bolts for installation where bolt head or nut on opposite face is exposed in other work unless their use is the only means of reinforcing the work adequately to fasten the hardware securely. Where thru-bolts are used as a means of reinforcing the work, provide sleeves for each thru-bolt or use sex screw fasteners.

2.4 MAINTENANCE TOOLS:

A. PROVIDE A COMPLETE SET of specialized tools and maintenance instructions as needed for Owner’s continued adjustment, maintenance, and removal and replacement of door hardware.

2.5 DOOR HANGING DEVICES:

A. HINGES: ANSI/BHMA A156.1 full mortise (butt) units typical, template-produced for units installed on hollow-metal doors and hollow-metal frames, and as follows:

1. For metal doors and frames, provide machine screws for installation into drilled and tapped holes.

2. Provide screw heads finished to match surface of hinges.

3. Hinge Width: for doors up to 36-inch-wide: 4-1/2-inch; for doors over 36-inch up to 48-inch-wide: 5-inch, or as otherwise scheduled

4. Hinge Weight and Type for Exterior doors: Heavy-weight, non-ferrous ball bearing typical.

5. Hinge Weight and Type for interior doors without closers: Standard-weight, steel units unless otherwise indicated in Hardware Sets Schedule

6. Hinge Weight and Type for Interior fire-rated doors and for doors with closers: Standard-weight, steel, ball bearing type unless otherwise indicated in Hardware Sets Schedule

7. Pins: Non-removable (NRP) on out-swinging exterior doors, with flat button tips and matching plug, finished to match leaves.

8. Number of Hinges: Provide not less than three (3) per door leaf and as follows:

9. For 91- to 120-inch height: four (4) hinges

10. Over 121-inches-high: Provide four (4) hinges and ADD one (1) hinge per each 30-inches added height

B. CONTINUOUS GEARED HINGES: ANSI/BHMA A156.26 certified continuous geared hinge with minimum 0.120-inch-thick extruded 6060 T6 aluminum alloy hinge leaves and a minimum overall width of 4-inches. Units are non-handed, reversible and fabricated to template screw locations. Provide concealed flush mount (with or without inset), in heavy duty models, as specified in the Hardware Sets. Concealed continuous hinges to be UL listed for use on up to and including 90-minute rated door installations. Factory cut hinges for door size and provide with removable service power transfer panel where indicated at electrified openings.

C. SLIDING DOOR HARDWARE: of type and design specified and to comply with ANSI/BHMA A156.14.

2.6 DOOR OPERATING TRIM

A. FLUSH BOLTS AND SURFACE BOLTS: ANSI/BHMA A156.3 and A156.16, Grade 1, certified automatic, self-latching, and manual flush bolts and surface bolts. Manual flush bolts to be furnished with top rod of sufficient length to allow bolt location approximately six feet from the floor. Furnish dust proof strikes for bottom bolts. Surface bolts to be minimum 8” in length and UL listed for labeled fire doors and UL listed for windstorm components where applicable. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.

2.7 DOOR PUSH PLATES AND PULLS:

A. PROVIDE ANS/BHMA A156.6 certified door pushes and pulls of type and design specified below or in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates, and as follows. Provide manufacturer's designated fastener type as indicated in Hardware Sets.

B. PUSH/PULL PLATES: Minimum .050-inch-thick, 4-inches-wide by 16-inches-high, with square corners and beveled edges, secured with exposed screws unless otherwise indicated.

C. STRAIGHT PULL DESIGN: Minimum 1-inch round diameter stainless steel bar or tube stock pulls with 2 1/2-inch projection from face of door unless otherwise indicated.

D. OFFSET PULL DESIGN: Minimum 1-inch round diameter stainless steel bar or tube stock pulls with 2 1/2-inch projection and offset of 90 degrees unless otherwise indicated.

E. PUSH BARS: Minimum 1-inch round diameter horizontal push bars with minimum clearance of 2 1/2-inch projection from face of door unless otherwise indicated.

2.8 CYLINDERS AND KEYING:

A. OBTAIN EACH TYPE of keyed cylinder and keys from the same source manufacturer as locksets and exit devices, unless otherwise indicated. Provide original manufacturer cylinders complying with the following:

1. Mortise Type: Threaded cylinders with rings and straight- or clover-type cam.

2. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.

3. Bored-Lock Type: Cylinders with tailpieces to suit locks.

4. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.

5. Keyway: Match existing facility standard

B. EXISTING FACILITY KEYING SYSTEM: Each type of lock and cylinders to be factory keyed. Conduct specified "Keying Conference" to define and document the Owner’s keying system instructions and requirements.

1. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.

2. Existing Keying System: Key locks to Owner's existing system.

C. KEY REGISTRATION LIST (Bitting List): Provide keying transcript list to Owner's representative in the proper format for importing into key control software, if exists. Provide transcript listing in writing or electronic file as directed by the Owner.

2.9 MECHANICAL LOCKS AND LATCHING DEVICES

A. MORTISE LOCKSETS, Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 certified mortise locksets furnished in the functions as specified in the Hardware Sets. Locksets to be manufactured with a corrosion resistant, stamped 12-gauge minimum formed steel case and be field-reversible for handing without disassembly of the lock body. Lockset trim (including knobs, levers, escutcheons, roses) to be the product of a single manufacturer. Furnish with standard 2 3/4" backset, 3/4" throw anti-friction stainless steel latch-bolt, and a full 1" throw stainless steel bolt for deadbolt functions. Provide mortise lock bodies functionally compatible with a rose-less lever trim option.

B. CYLINDRICAL LOCKSETS, Grade 1 (Heavy Duty): ANSI/BHMA A156.2, Series 4000, Grade 1 certified cylindrical (bored) locksets furnished in the functions as specified in the Hardware Sets. Lock chassis fabricated of heavy gauge steel, zinc dichromate plated, with through-bolted application. Furnish with solid cast levers, standard 2 3/4” backset, and 1/2" (3/4" at rated paired openings) throw brass or stainless-steel latch-bolt. Locks are to be non-handed and fully field reversible. Provide lock trim design as indicated in the Hardware Sets.

C. TUBULAR LOCKSETS: Standard tubular locksets designed to fit ANSI standard 161 door prep without additional through-bolt preps. Locksets to be non-handed with bi-directional lever operation and be available with 2 3/4" standard and 2 3/8" optional backsets. Lever designs must be available to match other locksets and exit devices. Rose-less tubular is available for lockset functions only and requires special custom door preparation

D. LOCK TRIM DESIGN: Match existing facility standard.

2.10 AUXILIARY LOCKS - CYLINDRICAL DEADLOCKS:

A. ANSI/BHMA A156.5, Grade 1, cylindrical type deadlocks to fit standard ANSI 161 preparation and 1 3/8" to 1 3/4" thickness doors. Provide tapered collars to resist vandalism and 1" throw solid steel bolt with hardened steel roller pins. Deadlocks to be products of the same source manufacturer and keyway as other locksets.

B. LOCK AND LATCH STRIKES: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:

1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.

2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.

3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.

4. Standards: Comply with the following:

5. Strikes for Mortise Locks and Latches: BHMA A156.13.

6. Strikes for Bored Locks and Latches: BHMA A156.2.

7. Strikes for Auxiliary Deadlocks: BHMA A156.5.

8. Dustproof Strikes: BHMA A156.16.

2.11 DOOR CLOSERS

A. GENERAL: Provide units matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers must be non-handed with full sized covers including installation and adjusting information on inside of cover.

B. COMPLY WITH UL-10C and IBC Standards for Positive Pressure Fire Test and be UL listed for use of fire rated doors.

C. CYCLE TESTING: Provide closers which have surpassed 15 million cycles in a test witnessed and verified by UL.

D. UNIT SIZE: Comply with manufacturer's written recommendations for closer sizing depending on size of door indicated, exposure to weather, and anticipated frequency of use.

E. ACCESSIBILITY REQUIREMENTS FOR CLOSERS: Unless otherwise indicated, doors throughout the Project must be accessible to the physically handicapped, per requirements of ANSI ICC/A117.1:

1. CLOSING SPEED: The time required to move the door from an open position of 90-degrees to a position of 12-degrees from the latch must not be less than 5-seconds.

2. OPENING FORCE: For sliding or folding doors, maximum force of 5-pounds (for continuous application – not the initial force needed to overcome the inertia of the door), except for “fire doors” which must have the minimum opening force allowable by the AHJ. This force does not apply to the force required to retract latch bolts or to disengage other devices that hold the door or gate in a closed position.

F. CLOSER ARMS: Provide heavy duty, forged steel closer arms unless otherwise indicated.

1. Where closers are indicated to have mechanical dead-stop, provide heavy duty arms and brackets with an integral positive stop.

2. Where closers are indicated to have mechanical hold open, provide heavy duty units with an additional built-in mechanical holder assembly designed to hold open against normal wind and traffic conditions. Holder to be manually selectable to on-off position.

3. Where closers are indicated to have a cushion-type stop, provide heavy duty arms and brackets with spring stop mechanism to cushion door when opened to maximum degree.

G. DO NOT INSTALL CLOSERS on exterior or corridor side of doors - where possible, install on door for optimum aesthetics. Provide drop plates or other accessories as required for proper mounting.

H. CLOSER ACCESSORIES: Provide accessories including custom templates, special mounting brackets, spacers and drop plates, and through-bolt or security type fasteners as required per installation conditions.

I. SURFACE-MOUNTED HEAVY-DUTY CLOSERS: ANSI/BHMA A156.4, Grade 1 surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one-piece cast iron body and piston construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control. Provide non-handed units and high impact, non-corrosive plastic covers standard. Provide black resilient parts for exposed bumpers, tamper resistant regulating screws for speed, back-check and latch speed, and with “all-temperature” fluid.

2.12 ARCHITECTURAL TRIM

A. DOOR PROTECTIVE TRIM: Units to be of type and design as specified below or in the Hardware Sets. Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets. Provide manufacturer's designated fastener type as specified in the Hardware Sets.

B. METAL PROTECTION PLATES: ANSI/BHMA A156.6 certified metal protection plates (kick, armor, or mop), beveled on four edges (B4E), fabricated from Stainless Steel - 050-inch-thick, with countersunk screw holes (CSK).

C. DOOR STOPS AND BUMPERS: ANSI/BHMA A156.16, Grade 1 certified door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor

stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.

D. OVERHEAD DOOR STOPS AND HOLDERS: ANSI/BHMA A156.6, Grade 1 certified overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy tempered steel. Provide non-handed design with mounting brackets as required for proper operation and function.

2.13 ARCHITECTURAL SEALS:

A. PROVIDE CONTINUOUS WEATHERSTRIP GASKETING on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated.

B. AT EXTERIOR APPLICATIONS provide non-corrosive fasteners and elsewhere where indicated. Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.

2.14 FINISHES:

A. DESIGNATIONS INDICATE HARDWARE FINISHES complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.

B. PROVIDE QUALITY OF FINISH, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware.

C. PROTECT MECHANICAL FINISHES on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

D. TYPICAL FINISHES (UNO): “SATIN-CHROME” (BHMA # 626) typical or as otherwise noted below:

1. Continuous hinges at aluminum doors: match finish of door

2. Weather trim: satin-anodized – field-paint to match frame or door color

3. Pulls and Plates: stainless steel (BHMA # 630)

PART 3 - EXECUTION

3.1 EXAMINATION

A. EXAMINE OPENINGS, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

1. Notify Architect of discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware.

2. Proceed only after such discrepancies or conflicts have been resolved.

B. PREPARE DOORS AND FRAMES as follows for installation of hardware items:

1. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.

2. Wood Doors: Comply with ANSI/DHI A115-W series.

C. INSTALL EACH ITEM of mechanical hardware to comply with manufacturer's written instructions and according to specifications. Manufacturer’s instructions will dictate templating and installation instructions.

1. Do not install surface-mounted items until finishes have been completed on substrates involved.

2. Due to the H2S gases in the area, all exterior doors will have gasketing to attempt to mitigate the amount of H2S gases that get into the building. Every attempt to assure the gasketing will perform that duty must be done.

D. SET UNITS LEVEL, PLUMB, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.

1. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

E. MOUNT HARDWARE UNITS at heights indicated in following applicable publications, except as specifically indicated or required to comply with governing regulations including the ADA and the Building Code, or as otherwise directed by Architect.

1. "Recommended Locations for Builders Hardware for Standard Steel Doors and Frames" by DHI.

2. DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."

3. DHI WDHS.5 "Recommended Hardware Reinforcement Locations for Mineral Core Wood Flush Doors."

4. Steel Doors and Frames: For surface applied door hardware, drill and tap doors and frames according to ANSI/SDI A250.6.

5. Comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."

F. RETROFITTING: Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing Work.

G. HINGES: install quantities indicated but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30-inches of door height, whichever is greater, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.

H. STOPS: Provide wall stops for doors except where a floor stop is indicated in Hardware Sets Schedule or is required per field-conditions. Do not mount floor stops where they will impede traffic.

I. SET THRESHOLDS FOR EXTERIOR DOORS in full bed of butyl-rubber mastic sealant complying with requirements specified in Division-07 Section "Joint Sealers."

J. WEATHERSTRIPPING AND SEALS: Comply with manufacturer's instructions and recommendations to the extent installation requirements are not otherwise indicated. Do not notch perimeter units to install other surface-applied hardware. At meeting stile units, fasten to meeting stiles, forming seal when doors are closed.

3.2 ADJUSTING AND CLEANING

A. ADJUSTING: initially adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. replace units that cannot be adjusted to operate as intended:

1. ADJUST DOOR CONTROL DEVICES to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

2. DOOR CLOSERS: adjust door closers immediately upon installation. Adjust in exact conformance with manufacturer’s printed instructions. Advance backcheck to eliminate shock at dead stop. Set closer latching speed to assure unassisted positive latching. Degree of swing of door for self-limiting closers shall be maximum available.

3. ADJUST EXIT DEVICES immediately upon installation. adjust in exact conformance with manufacturers’ printed instructions.

B. FINAL ADJUSTMENTS: at completion of the installation and prior to substantial completion, make final adjustments to door closures and other items of hardware. Leave all hardware clean and fully operable. Should any item be found to be defective, it shall be repaired or replaced as directed.

C. POST-OCCUPANCY ADJUSTMENT: Approximately three months after date of Substantial Completion, Installer's Architectural Hardware Consultant must examine and readjust, including adjusting operating forces, each item of door hardware as necessary to ensure function of doors, and door hardware units.

3.3 CLEANING & PROTECTION:

A. CLEAN OPERATING ITEMS as necessary for proper function and finish of hardware and doors. clean adjacent surfaces soiled by hardware installation. provide final protection and maintain conditions that ensure door hardware is without damage or deterioration.

3.4 FIELD QUALITY CONTROL

A. HARDWARE SUPPLIER'S INSTALLATION COMPLIANCE REPORT: At completion of installation, the Hardware Supplier (not the Installer) must perform a final observation of the installed door hardware, and prepare a written report to the Owner indicating whether the Work complies with or deviates from the door hardware manufacturer's installation requirements, including whether door hardware is properly installed, operating and adjusted.

B. Repeat observation and report until all installed hardware complies with requirements.

3.5 DEMONSTRATION:

A. PROVIDE TRAINING of Owner's maintenance personnel to adjust, operate, and maintain door hardware.

3.6 CONTINUING MAINTENANCE SERVICE:

A. BEGINNING AT SUBSTANTIAL COMPLETION, provide maintenance service by skilled employees of the door hardware Installer. At end of the Maintenance period, provide proposal to Owner for continued maintenance service.

B. INCLUDE QUARTERLY PREVENTIVE MAINTENANCE, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door and door hardware operation.

1. Provide parts and supplies as used in the manufacturer and installation of the original Products.

C. MAINTENANCE PERIOD: Provide twelve (12) months of continuing maintenance service.

3.7 HARDWARE SCHEDULE:

A. PROVIDE HARDWARE FOR EACH DOOR in the Project, to comply with requirements above, and in accordance with the following "Hardware Schedule', indicating the quantity of hardware items per hardware set, item description, and specific installation requirements, as applicable.

B. THE FOLLOWING HARDWARE SETS represent the design intent of the Architect and the directions of the Owner, to the best of the Architect's knowledge, ability and belief. However, these Hardware Sets" sets are a guideline only, and are not to be considered as a final, detailed hardware schedule for this Project, which will be prepared as a part of the Work of this Section.

C. PROVIDE ALL ACCESSORY COMPONENTS AND RELATED ITEMS required for operation even if not specifically required in the following schedule. Notify the Architect if discrepancies, conflicting hardware or missing items are discovered. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

D. BASIS-OF-DESIGN (BOD) MANUFACTURER REFERENCES:

1.	Hinges:	IVE – IVES Hardware
2.	Continuous Hinges:	IVE – IVES Hardware
3.	Locksets / Latchsets:	SCH – Schlage L06 Series (levers only)
4.	Cylinders:	SCH – Schlage High-Security removable-core type
5.	Surface Closers:	LCN – LCN Closers
6.	Exit Devices:	VON – Von Duprin
7.	Stops:	IVE – IVES Hardware
8.	Weatherstripping / Gasketing:	NGP – National Guard Products
9.	Protective Trim:	RO – Rockwood Manufacturing Company

E. TYPICAL FINISHES (UNO): "STAINLESS-STEEL" (BHMA # 630) typical or as otherwise noted in the hardware sets.

F. HARDWARE SETS

1. HARDWARE SET #1.0

   a. Double exterior storefront doors #100.1 (with card reader) and 145.1.
   b. 1 EA CONTINUOUS HINGE: NGP #HD1800
   c. 1 ADA DOOR OPERATOR (on active leaf): LCN 4642 Push side auto equalizer low energy power door operator. Operators to be synchronized with each other, the exterior pedestal and the interior push button.
   d. 1 EXTERIOR ADA PEDESTAL: PEDESTAL PRO #ADA-SS-TWR-47X4X6-2. Provide two (2) single gang cutouts, one for the Operator button and one for the card reader.
   e. 1 NARROW STYLE ACTUATOR (PEDESTAL MOUNTED): LCN 8310-818T
   f. 1 MANUAL FLUSH BOLT: IVES #262 (Top bolt only in in-active leaf)
   g. 1 ADA THRESHOLD: NGP #896N (1/2"T x 5"W) Aluminum finish
   h. 1 EA GASKET KIT (on jamb and head): NGP #130S
   i. 1 OVERLAPING ASTRAGAL: NGP #158SA
   j. 1 EA ELECTRIC STRIKE (MOUNTED IN DOOR LEAF WITH ADA DOOR OPERATOR): AR #7110 HD 12V
   k. 1 EA PANIC DEVICE (on both leaves): VON 99-L (3/4" throw)
   l. 1 COORDINATOR: IVES #COR72
   m. GLAZING: REFER TO SPECIFICATIONS

2. HARDWARE SET #2.0

   a. Double interior storefront doors #100.2.
   b. 1 EA CONTINUOUS HINGE: NGP #HD1800

c. 1 ADA DOOR OPERATOR (on active leaf): LCN 4642 Push side auto equalizer low energy power door operator. Operators to be synchronized with each other, the exterior pedestal and the interior push button.
d. 1 EA NARROW STYLE ACTUATOR (JAMB MOUNTED): LCN 8310-818T
e. 1 EA ADA THRESHOLD: NGP #896N (1/2"T x 5"W) Aluminum finish
f. 1 EA GASKET KIT: NGP #130S
g. 3 EA SILENCERS (THREE PER LEAF): IVE #SR64, GRAY
h. 1 EA PANIC DEVICE (on both leaves): VON 99-L (3/4" throw)
i. 1 COORDINATOR: IVES #COR72
j. GLAZING: REFER TO SPECIFICATIONS

3. HARDWARE SET #3.0

a. Single exterior door #114.1 with reader.
b. 1 EA CONTINUOUS HINGE: NGP #HD1800
c. 1 EA PASSAGE LOCKSET: SCH #ND10S-RHO
d. 1 EA ELECTRIC STRIKE (FRAME MOUNTED): AR #7110 HD 12V
e. 1 EA SURFACE MOUNTED CLOSER WITH HOLD OPEN AND BUMPER: LCN #4040XPT-3038HB
f. 1 EA ADA THRESHOLD: NGP #896N (1/2"T x 5"W) Aluminum finish
g. 1 EA KICKPLATE (PUSH SIDE): RO #K1125-18"H x 2"LDW (Stainless steel and bevel 4 edges)
h. 1 EA KICKPLATE (PULL SIDE): RO #K1125-18"H x 1.5"LDW (Stainless steel and bevel 4 edges)
i. 1 EA GASKET KIT: NGP #130S
j. 3 EA SILENCERS: IVE #SR64, GRAY
k. 1 PANIC DEVICE: VON 99-L (3/4" throw)
l. 1 EA RAIN CAP: NGP #16A x DOOR WIDTH + 4" Mount to frame above door.
m. 1 EA LITE KIT: NGP #L-CVFM-SS (1" insulated safety glass)
n. GLAZING: REFER TO SPECIFICATIONS

4. HARDWARE SET #4.0

a. Single toilet room doors #109.2, 109.3, 110.2, 110.3, 111.3, and 111.4.

b.	3 EA	HINGE	5BB1 4.5 X 4.5	630	IVE
c.	1 EA	PRIVACY LOCK	ND40S RHO	626	SCH
d.	1 EA	SURFACE CLOSER	1461 RW/PA	689	LCN
e.	1 EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
f.	1 EA	WALL STOP	WS406/407CCV	630	IVE
g.	3 EA	SILENCER	SR64	GRY	IVE

5. HARDWARE SET #5.0

a. Single locker room entry doors #109.1, 110.1, 111.1, and 111.2.

b.	3 EA	HINGE	5BB1 4.5 X 4.5	630	IVE
c.	1 EA	PUSH/PULL PLATE SET	107 x 73B/73BL	630	RO
d.	1 EA	SURFACE CLOSER	1461 RW/PA	689	LCN
e.	1 EA	WALL STOP	475	630	IVE

1) INSTALL STOP 4" BELOW TOP OF DOOR PANEL

f.	3 EA	SILENCER	SR64	GRY	IVE

6. HARDWARE SET #6.1

a.	Single Interior door #201.1				
b.	3 EA	HINGE	5BB1 4.5 X 4.5	630	IVE
c.	1 EA	PUSH/PULL PLATE SET	107 x 73B/73BL	630	RO
d.	3 EA	SILENCER	SR64	GRY	IVE

7. HARDWARE SET #6.2

a.	Single Interior door #205.1				
b.	3 EA	HINGE	5BB1 4.5 X 4.5	630	IVE
c.	1 EA	PUSH/PULL PLATE SET	107 x 73B/73BL	630	RO
d.	1 EA	WALL STOP	475	630	IVE
	1)	INSTALL STOP 4” BELOW TOP OF DOOR PANEL			
e.	3 EA	SILENCER	SR64	GRY	IVE

End of Section

088100

SOLAR CONTROL COATED INSULATING GLASS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Double-Glazed Solar Control Insulating Glass Units to be installed in the curtainwall system, the storefront system and its doors and individual personnel doors.

B. Due to the H2S gases in the area, all materials and fasteners are to be either aluminum or stainless steel.

1.2 RELATED SECTIONS

A. 079100: Joint Sealants

B. 084113: Aluminum Framed Entrances and Storefronts

C. 084413: Glazed Aluminum Curtain Walls

1.3 REFERENCES

A. ANSI Z 97.1 - Glazing Materials Used in Buildings, Safety Performance Specifications and Methods of Test.

B. ASTM C 1036 - Standard Specification for Flat Glass.

C. ASTM C 1048 - Standard Specification for Heat-Treated Flat Glass--Kind HS, Kind FT Coated and Uncoated Glass.

D. ASTM C 1376 - Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Glass.

E. ASTM E 2188 – Standard Test Method for Insulating Glass Unit Performance.

F. ASTM E 2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation.

G. CPSC 16CFR-1201 - Safety Standard for Architectural Glazing Materials.

H. Glass Association of North America (GANA) Glazing Manual.

1.4 DEFINITIONS

A. Sealed Insulating Glass Unit Surfaces:

1. Surface No. 1: Exterior surface of outer lite.

2. Surface No. 2: Interior surface of outer lite.

3. Surface No. 3: Exterior surface of inner lite.

4. Surface No. 4: Interior surface of inner lite.

B. Airspace: Space between lites of an insulating glass unit that contains dehydrated air or other inert specified gas.

1.5 SUBMITTALS

A. Comply with Section 01330 - Submittal Procedures.

B. Product Data: Submit manufacturer's product data, including performance characteristics and installation instructions.

C. Shop Drawings: Submit manufacturer's or fabricator's shop drawings, including plans, elevations, sections, and details, indicating glass dimensions, tolerances, types, thicknesses, and coatings.

D. Samples: Submit manufacturer's samples of each type, thickness, and coating.

E. Fabricator's Certification: Submit fabricator's certification by manufacturer.

F. Cleaning Instructions: Submit manufacturer's cleaning instructions.

G. Warranty: Submit manufacturer's standard warranty for sealed insulating glass units.

1.6 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Minimum of 5 years' experience manufacturing solar control coated glass.

B. Fabricator's Qualifications:

1. Minimum of 5 years' experience manufacturing sealed insulating glass units meeting ASTM E 2190.

2. Certified by coated glass manufacturer.

C. Mock-Ups:

1. Comply with Section 01450 - Quality Control.

2. Obtain acceptance of mock-ups by Architect before proceeding with work.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Delivery:

1. Deliver glass to site in accordance with manufacturer's instructions.

2. Deliver glass in manufacturer's or fabricator's original containers and packaging, with labels clearly identifying product name and manufacturer.

B. Storage:

1. Store glass in accordance with manufacturer's instructions.

2. Store glass in clean, dry area indoors.

3. Protect from exposure to direct sunlight and freezing temperatures.

4. Apply temporary coverings loosely to allow adequate ventilation.

5. Protect from contact with corrosive chemicals.

6. Avoid placement of glass edge on concrete, metal, and other hard objects.

7. Rest glass on clean, cushioned pads at 1/4-points.

C. Handling:

1. Handle glass in accordance with manufacturer's instructions.

2. Protect glass from damage during handling and installation.

3. Do not slide 1 lite of glass against another.

4. Do not use sharp objects near unprotected glass.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Basis of Design: Guardian Glass, LLC, 2300 Harmon Road, Auburn Hills, Michigan 48326. Toll Free (866) 482-7374. Phone (248) 340-1800. Web Sites www.guardianglass.com.

B. Substitutions:

1. Substitutions are permitted. However, they must be equal or better, than what’s specified and approved by the Architect.

2.2 FABRICATORS

A. Sealed Insulating Glass Units: Heat Strengthened Glass, Tempered Glass, and Spandrel Glass:

1. Acceptable Fabricators: Certified by Guardian Glass, LLC to fabricate SunGuard Solar Control Coated Glass products.

2.3 SOLAR CONTROL INSULATING COATED GLASS

A. Double-Glazed Sputter-Coated Insulating Glass Units:

1. Conformance: ASTM E 2190.

2. Outboard Lite: Sputter-coated Guardian CrystalGray® glass.

a. Guardian CrystalGray® Glass: ASTM C 1036, Type 1, Class 2, Quality q3.
b. Vacuum Deposition Sputtered Coating: ASTM C 1376.
c. Coating on Surface No. 2: SunGuard SNX 62/27.
d. Glass Thickness: 6 mm (1/4 inch).
e. Heat Treatment: Heat-strengthened, ASTM C 1048, Kind HS and/ or Tempered; ASTM C 1048, Kind FT; CPSC 16CFR-1201; ANSI Z 97.1. Refer to the drawings for locations of the tempered glass.
f. Bird glass: TBD

3. Air Space: 12 mm (1/2 inch) wide, hermetically sealed, dehydrated air space.

4. Inboard Lite: Guardian Clear glass.

a. Clear Glass: ASTM C 1036, Type 1, Class 1, Quality q3.
b. Glass Thickness: 6 mm (1/4 inch).
c. Coating on surface No. 4: Guardian no coating
d. Heat-Treatment: Heat-strengthened, ASTM C 1048, Kind HS and/ or Tempered; ASTM C 1048, Kind FT; CPSC 16CFR-1201; ANSI Z 97.1. Refer to the drawings for locations of the tempered glass.

5. Glass Unit Performance Characteristics:

a. Visible Light Transmittance: 44 percent
b. Visible Light Reflectance Outdoors: 8 percent
c. Direct Solar Energy Transmittance: 16 percent
d. Direct Solar Energy Reflectance Outdoors: 19 percent
e. Winter U-Value Nighttime: 0.29
f. Summer U-Value Daytime: 0.27
g. Solar Heat Gain Coefficient: 0.22
h. Summer Relative Heat Gain: 54

6. Edge Seals: ASTM E 2188, with aluminum spacers, dual-sealed with a primary seal of polyisobutylene and a secondary seal of silicone sealant for glass-to-spacer seals.

7. Sealant: Approved by glass manufacturer.

8. Edge Seals: ASTM E 2188, with aluminum spacers, dual-sealed with a primary seal of polyisobutylene and a secondary seal of silicone sealant for glass-to-spacer seals.

9. Sealant: Approved by glass manufacturer.

B. Windborne-Debris-Impact Resistance Performance:

1. Performance shall be tested in accordance with TAS 201/203, ASTM E1886 and information in ASTM E1996:

a. Large-Missile Impact: For aluminum-framed systems located below 30 feet (9.1 m) of grade.
b. Missile level D per ASTM E1996 – 17 Missile Levels

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to receive glass. Notify Architect of conditions that would adversely affect installation. Do not proceed with installation until unsatisfactory conditions are corrected.

3.2 PREPARATION

A. Verify glazing openings are correct size and within tolerance.

B. Verify glazing channels, recesses, and weeps are clean and free of obstructions.

3.3 GLAZING

A. Install glass in accordance with manufacturer's instructions, except where local codes or GANA Glazing Manual indicate more stringent requirements.

3.4 FIELD QUALITY CONTROL

A. Coated glass, when viewed from minimum of 10 feet, exhibiting slightly different hue or color not apparent in hand samples, will not be cause of rejection of glass units, as determined by Architect.

B. Verify glass is free of chips, cracks, and other inclusions that could inhibit structural or aesthetic integrity.

3.5 CLEANING

A. Clean glass promptly after installation in accordance with manufacturer's instructions.

B. Remove labels from glass surface.

C. Do not use harsh cleaning materials or methods that would damage glass.

3.6 PROTECTION

A. Protect installed glass from damage during construction.

B. Protect installed glass from contact with contaminating substances resulting from construction operations.

C. Remove and replace glass that is broken, chipped, cracked, abraded, or damaged in other ways during construction period, including natural causes, accidents, and vandalism.

End of Section

092116

GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL

1.1 WORK INCLUDED

A. PROVIDE screw-type gypsum drywall including non-structural metal framing, where indicated, as specified herein, and as needed to meet the requirements of the construction shown in the Contract Documents. The Work includes:

1. Non-structural metal framing
2. Suspension systems for interior drywall ceilings and soffits
3. Acoustical insulation for interior walls and partitions
4. Interior gypsum board for walls, ceilings and soffits
5. Tile backing panels
6. Joint finishing, ready for paint finishing as specified in other Sections

1.2 RELATED REQUIREMENTS

A. DIVISION-06 "ROUGH CARPENTRY" Section for blocking installed within gypsum board assemblies.

1.3 DEFINITIONS

A. GYPSUM BOARD TERMINOLOGY: Refer to ASTM C1396 for definitions of terms for gypsum board assemblies not defined in this Section or in other referenced standards.

1.4 ACTION SUBMITTALS

A. PRODUCT DATA: For each type of product required.

1.5 QUALITY ASSURANCE

A. CODE-COMPLIANCE CERTIFICATION OF STUDS AND TRACKS: Provide documentation that framing members are certified according to the product-certification program of the Certified Steel Stud Association, the Steel Framing Industry Association, or the Steel Stud Manufacturers Association, as acceptable to the AHJ.

1.6 DELIVERY, STORAGE, AND HANDLING

A. DELIVER MATERIALS in original packages, containers, or bundles bearing brand name and identification of manufacturer or supplier.

B. STORE MATERIALS inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes. Stack gypsum panels flat to prevent sagging.

1.7 FIELD CONDITIONS

A. ENVIRONMENTAL LIMITATIONS: Comply with ASTM C840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.

B. DO NOT INSTALL PAPER-FACED GYPSUM PANELS until installation areas are enclosed and conditioned.

C. DO NOT INSTALL PANELS THAT ARE WET, moisture damaged, or mold damaged.

1. Indications that panels may be wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.

2. Indications that panels may be mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS:

A. SUBJECT TO COMPLIANCE WITH REQUIREMENTS, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. STEEL FRAMING & FURRING:

a. ClarkDietrich / Clarkwestern Dietrich Building Systems LLC, 800-543-7140, www.clarkdietrich.com
b. Consolidated Fabricators Corp Building Products Division, 800-237-4545, www.confabbpd.com
c. Marino\Ware; Division of Ware Industries, Inc., 800-627-4661, www.marinoware.com
d. SCAFCO Steel Stud Company, 509-343-9000, www.scafco.com
e. Telling Industries, 866-372-6384, www.buildstrong.com

2. GYPSUM BOARD AND RELATED PRODUCTS:

a. American Gypsum Co.
b. Georgia-Pacific Building Gypsum LLC.
c. National Gypsum Company.

d. United States Gypsum Co.

B. PERFORMANCE REQUIREMENTS

C. STRUCTURAL - HORIZONTAL DEFLECTION PROPERTIES: For wall / partition assemblies, limited to 1/360 of the clear-span height based on horizontal loading of 5 lbf/sq. ft. The following table is per the Steel Stud Manufacturer's Association (SSMA)'s Limiting Heights Table for 1/360th deflection with a 5 lbf PSF load:

2.2 METAL FRAMING

A. FRAMING MEMBERS – GENERAL: Comply with ASTM C754 for conditions indicated.

B. STEEL SHEET COMPOSITE: Comply with ASTM C645 requirements for steel unless otherwise indicated.

C. PROTECTIVE COATING: ASTM A653, G40 (Z120), hot-dip galvanized unless otherwise indicated.

D. STUDS AND TRACKS: ASTM C645. Use either conventional steel studs and tracks or embossed, high-strength steel studs and tracks. Provide runners matching studs, of type recommended by stud manufacturer for floor and ceiling support of studs, and for vertical abutment of drywall at other Work.

2.3 CONVENTIONAL STEEL STUDS AND TRACKS:

A. MINIMUM BASE-STEEL THICKNESS: 0.018-inch (25-gage), as required by performance requirements for horizontal deflection, or as indicated, whichever is greater.

B. DEPTH: As indicated on Drawings, or as required by performance requirements for horizontal deflection, whichever is greater.

2.4 EMBOSSED, HIGH STRENGTH STEEL STUDS AND TRACKS:

A. ROLL-FORMED AND EMBOSSED with surface deformations to stiffen the framing members so that they are structurally comparable to conventional ASTM C645 steel studs and tracks.

B. MINIMUM BASE-STEEL THICKNESS: 0.0147-inch (25-gage equivalent), as required by performance requirements for horizontal deflection, or as indicated on the Drawings, whichever is greater.

C. DEPTH: As indicated on Drawings, or as required by performance requirements for horizontal deflection, whichever is greater.

D. BASIS-OF-DESIGN: ClarkDietrich "ProSTUD" Drywall Framing, or equal.

2.5 HEAD TRACKS

A. SLIP-TYPE HEAD TRACKS: Provide at top of non-load bearing walls and partitions to prevent compression of stud framing or cracking of gypsum board resulting from deflection of the structure above. Provide one of the following head tracks to allow minimum 1-1/2-inch vertical movement, or greater, if indicated:

B. CLIP SYSTEM: Clips designed for use in head-of-wall deflection conditions that provide a positive attachment of studs to tracks while allowing 1-1/2-inch minimum vertical movement.

C. SINGLE LONG-LEG TRACK SYSTEM: ASTM C645 top track with 2-inch-deep flanges in thickness not less than indicated for studs, installed with studs friction fit into top track and with continuous bridging located within 12-inches of the top of studs to provide lateral bracing.

D. DOUBLE-TRACK SYSTEM: ASTM C645 top outer tracks, inside track with 2-inch-deep flanges in thickness not less than indicated for studs and fastened to studs, and outer track sized to friction-fit over inner track.

E. SLOTTED DEFLECTION TRACK: Steel sheet top track manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs. Subject to compliance with requirements, acceptable products include:

1. VertiTrack VTD Series by the Steel Network, Inc.

2. SFT Superior Flex Track System by Superior Metal Trim

3. Slotted Track, by Metal-Lite, Inc.

4. MaxTrak Slotted Deflection Track by ClarkDietrich

2.6 ACCESSORY COMPONENTS

A. FLAT STRAP AND BACKING PLATE: Steel sheet for blocking and bracing in length and width indicated.

1. Minimum Base-Steel Thickness: 0.027-inch-thick (22-gage)

B. COLD-ROLLED CHANNEL (CRC) BRIDGING: Steel, 0.054-inch (16-gage) minimum base-steel thickness, with minimum 1/2-inch-wide flanges.

1. Depth: 1-1/2-inches minimum or as indicated on Drawings

C. CLIP ANGLES: Not less than 1-1/2 by 1-1/2-inches, 0.068-inch- (14-gage) thick, galvanized steel.

D. VERTICAL, HAT-SHAPED, DRYWALL FURRING CHANNELS: ASTM C645. Include manufacturer's standard clips, shoes, ties, reinforcements, fasteners and other accessories as needed for a complete furring system.

1. Minimum Base-Steel Thickness: 0.018-inch (25-gage) or as otherwise indicated on Drawings

2. Depth: 7/8-inch or 1-1/2-inches, as indicated on Drawings.

E. COLD-ROLLED FURRING CHANNELS: 0.053-inch (16-gage) uncoated-steel thickness, with minimum 1/2-inch-wide flanges.

1. Depth: 3/4-inch or as indicated on Drawings

F. FURRING BRACKETS: Adjustable, corrugated-edge-type steel sheet with minimum uncoated-steel thickness of 0.0329-inch (20-gage structural).

G. TIE WIRE: ASTM A641, Class 1 zinc coating, soft temper, 0.062-inch-diameter (16-gage) wire, or double strand of 0.048-inch- (18-gage) diameter wire.

2.7 SUSPENSION SYSTEMS

A. FOR SUSPENDED DRYWALL CEILINGS AND SOFFITS, comply with ASTM C754 for conditions indicated, using steel members as noted above, and as follows:

B. EXPANSION-ANCHOR HANGERS INTO CONCRETE: Post-installed expansion-anchors fabricated from corrosion-resistant materials with holes or loops for attaching hanger wires and capable of sustaining, without failure, a load equal to 5 times that imposed by construction as determined by testing according to ASTM E488 by a qualified independent testing agency. Units must have ICC-ES evaluation report based on ICC-ES AC193 acceptable to the AHJ.

C. POWDER-ACTUATED HANGERS INTO CONCRETE: Suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other devices for attaching hangers of type indicated, and capable of sustaining, without failure, a load equal to 10 times that imposed by construction as determined by testing according to ASTM E1190 by a qualified independent testing agency.

D. CORROSION-RESISTANT MATERIALS FOR INTERIOR LOCATIONS: Carbon-steel components zinc-plated to comply with ASTM B633 or ASTM F1941, Class Fe/Zn 5, unless otherwise indicated.

E. VERTICAL SUSPENSION WIRES (typical, between structure above to CRC framing members below): ASTM A641, pre-stretched soft-temper carbon steel wire with Class 1 galvanized zinc coating, with a yield-stress load of at least four (4)-times the load of suspended materials, and as follows:

1. Minimum wire size: not less than 0.1055-inch-diameter (# 12 AWG) wire (for up to 94 lbs total load per wire)

2. At Exterior suspended soffits: Not less than 0.162-inch (#8 AWG) wire (up to 221 lbs load per wire)

3. Maximum Spacing: Four (4)-feet OC each way.

F. CARRYING CHANNELS (Main Runners at 4-feet centers typically): Cold-rolled channels (CRCs), commercial-steel sheet with a base-steel thickness of 0.0538-inch (16-gage) with 1/2-inch-wide flanges and as follows:

1. Minimum height (depth): 1-1/2-inch or greater as indicated

G. HORIZONTAL, CEILING OR SOFFIT FURRING CHANNELS (install at 16-inch centers typically except where indicated to be resilient channels at acoustical-rated suspended ceilings): ASTM C645 hat-shaped units with manufacturer's standard clips, ties, fasteners and other accessories as needed for a complete furring system.

1. Minimum Base-Steel Thickness: 0.0296-inch (20-gage non-structural)

2. Depth: 7/8-inch minimum, or as otherwise indicated on Drawings.

H. GRID SUSPENSION SYSTEM FOR GYPSUM BOARD CEILINGS (Contractor’s option to carrying channels and furring channels above): ASTM C645, direct-hung system composed of main beams and cross-furring members that interlock.

2.8 AUXILIARY METAL FRAMING MATERIALS

A. GENERAL: PROVIDE AUXILIARY MATERIALS that comply with referenced installation standards.

B. FASTENERS FOR STEEL FRAMING: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

2.9 GYPSUM BOARD MATERIALS

A. GYPSUM BOARD: ASTM C1396 compliant Type X (fire resistant) with tapered long edges, 5/8" thickness minimum typically, except where otherwise indicated, in maximum length available which will minimize end joints.

B. TILE-BACKER GYPSUM BOARD (Provide behind all wall tile and up 12-inches minimum at tile or resinous floor base): ASTM C1178 compliant glass mat surfaced water-resistant gypsum board panels with a water-resistant fiberglass reinforced gypsum core, and with an integral moisture-resistant barrier to stop moisture passing through tile joints:

1. Basis-of-Design: “DensShield Tile Backer” by GP, or “Gold Bond eXP Tile Backer” by National Gypsum, “Durock Glass-Mat Tile Backerboard” by USG, or equal

2. Anchors: Type S-12 bugle head self-tapping, rust-resistant fine-thread panel anchors

3. Tile-Backer Joint Treatment: Use only ASTM C1047 plastic trims, set with 2-inch-wide 10x10 fiberglass mesh tape embedded with setting-type waterproof joint compound. At joints between surfaces, provide silicone joint sealer equal to “Dow Corning 795”, “Pecora 895”, “GE Silpruf” or “Tremco Dymonic” or equal.

C. WATER-RESISTANT GYPSUM BOARD (WR-GWB - provide in rooms with showers, saunas and other potentially humid areas): ASTM C1658 compliant glass-mat surfaced inorganic gypsum board panels with a water-resistant fiberglass reinforced gypsum core, and tested as mold resistant per ASTM D3273 with score of 10 per ASTM D3274:

1. Basis-of-Design: “DensArmor Plus Fireguard Interior Panel” by GP, “Gold Bond eXP Interior Extreme Gypsum Panel” by National Gypsum, “Sheetrock Glass-Mat Mold Tough Firecode X” panels by USG or equal

2. Anchors: Type S-12 bugle head self-tapping, rust-resistant fine-thread panel anchors

3. Joint Treatment: 2-inch-wide 10x10 fiberglass mesh tape, embedded with setting-type waterproof joint compound

D. TRIM ACCESSORIES: Provide manufacturer's standard trim accessories of types indicated for drywall work, formed of galvanized steel unless otherwise indicated, with either knurled and perforated or expanded flanges for nailing and beaded for concealment of flanges in joint compound. Provide corner beads, L-type edge trim-beads, U-type edge trim-beads, special L-kerf-type edge trim-beads. Stapling of trim accessories will not be permitted.

E. TRIM AT TILE BACKER & WATER-RESISTANT GYPSUM PANELS: Provide ASTM C1047 “Plastic” trim accessories,

F. TYPICAL CONTROL JOINT TRIM: Manufacturer’s standard trim unit with 1/8-inch or less exposed surface joint, or provide two (2) each standard L-type edge trim beads – butted 1/8-inch apart, in lieu of manufacturer's standard one-piece unit.

2.10 JOINT TREATMENT MATERIALS

A. COMPLY with ASTM C475

B. TYPICAL JOINT TAPE at Interior Gypsum Board: Paper

C. JOINT TAPE AT TILE BACKER, GLASS MAT AND WATER-RESISTANT GYPSUM BOARD: Minimum 2-inch-wide 10-by-10 glass mesh tape as recommended by gypsum panel manufacturer

D. JOINT COMPOUND FOR TYPICAL INTERIOR GYPSUM BOARD: For each coat, use formulation that is compatible with other compounds applied on previous or for successive coats.

1. Prefilling: At open joints or beveled panel edges, and damaged surface areas, use setting-type taping compound.

2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound.

3. Use setting-type compound for installing paper-faced metal trim accessories.

4. Fill Coat and Finish Coat: For second and third coat, use setting-type, sandable topping compound.

5. Skim Coat for final coat of Level 5 finish: Use setting-type, sandable topping compound or high-build interior coating product designed for application by airless sprayer and to be used instead of skim coat to produce Level 5 finish.

E. JOINT COMPOUND AT WATER-RESISTANT GYPSUM BOARD: Use setting-type taping compound and setting type, sandable topping compound.

F. JOINT COMPOUND AT TILE BACKER: For prefilling and first-coat, provide silicone sealant (equal to “Dow Corning” 795, “Pecora” 895, “GE” Silicone Silpruf, or “Tremco” Dymonic), with setting -type joint compound finish coat.

2.11 AUXILIARY MATERIALS

A. PROVIDE AUXILIARY AND MISCELLANEOUS MATERIALS that comply with referenced installation standards and manufacturer's written instructions.

B. GYPSUM BOARD SCREWS: ASTM C1002 unless otherwise indicated. Use screws complying with ASTM C954 for fastening panels to steel members from 0.033-inch-thick (20-gage structural) to 0.112-inch-thick (12-gage).

C. ACOUSTICAL INSULATION: ASTM C665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag or rock wool.

1. Provide 3-1/2-inch-thick units except as otherwise indicated.

D. ACOUSTICAL SEALANT: As specified in Division-07 “Joint Sealants" Section.

PART 3 - EXECUTION

3.1 EXAMINATION

A. EXAMINE AREAS AND SUBSTRATES, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance.

1. EXAMINE PANELS before installation. Reject panels that are wet, moisture damaged, and mold damaged.

B. PROCEED WITH INSTALLATION only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. SUSPENDED ASSEMBLIES:

1. COORDINATE INSTALLATION OF SUSPENSION SYSTEMS with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive hangers at spacing required to support the Work and that hangers will develop their full strength.

2. Furnish steel deck hanger clips, concrete inserts and other devices required to other trades for installation in advance of time needed for coordination and construction.

3.3 INSTALLATION OF NON-STRUCTURAL METAL FRAMING

A. INSTALLATION STANDARD: ASTM C754

B. GYPSUM BOARD ASSEMBLIES: Comply with requirements in ASTM C84 that apply to framing installation.

C. INSTALL FRAMING SYSTEM COMPONENTS in unit size and spacing indicated (at 16-inch centers maximum), and per the Steel Stud Manufacturer's Association (SSMA)'s limiting heights table for L/360 deflection at 5 PSF load, as summarized below:

D. MAXIMUM STUD SYSTEM FRAMING HEIGHT PER UNIT SIZE, APPLICATION & SPACING:

1. Non-composite Drywall Assemblies (w/ gyp. bd. short of wall top & w/ studs braced at 48" OC vertical max)

3-5/8-inch x 0.018-inch (25-gage) studs at 12-inch centers: 12' – 6"
3-5/8-inch x 0.018-inch (25-gage) studs at 16-inch centers: 11' – 4" (max allowable stud spacing)
3-5/8-inch x 0.0296-inch (20-gage) studs at 12-inch centers: 14' – 10"
3-5/8-inch x 0.0296-inch (20-gage) studs at 16-inch centers: 13' – 6" (max allowable stud spacing)

2. Composite Drywall Assemblies (with gypsum board full-height each side to top of wall)

3-5/8-inch x 0.018-inch (25-gage) studs at 12-inch centers: 14' - 7"
3-5/8-inch x 0.018-inch (25-gage) studs at 16-inch centers: 13' – 3" (max allowable stud spacing)
3-5/8-inch x 0.0296-inch (20-gage) studs at 12-inch centers: 16' - 4"
3-5/8-inch x 0.0296-inch (20-gage) studs at 16-inch centers: 14' - 10" (max allowable stud spacing)
6-inch x 0.018-inch (25-gage) studs at 12-inch centers: 19' – 11"
6-inch x 0.018-inch (25-gage) studs at 16-inch centers: 18' – 1" (max allowable stud spacing)
6-inch x 0.0296-inch (20-gage) studs at 12-inch centers: 23' – 8"
6-inch x 0.0296-inch (20-gage) studs at 16-inch centers: 21' – 6" (max allowable stud spacing)

E. INSTALL FRAMING AND ACCESSORIES plumb, square, and true to line, with connections securely fastened. Do not bridge building control and expansion joints with steel framing

members - frame both sides of joints independently. Install bracing at terminations of assemblies.

F. INSTALL TRACKS AT FLOORS AND OVERHEAD SUPPORTS, extending framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts that penetrate partitions above ceiling. Provide tracks of same material thickness as studs.

G. ISOLATE STUD SYSTEM from transfer of structural loading, both horizontally and vertically. Provide slip-type head joints to attain lateral support and avoid axial loading.

H. SLIP-TYPE HEAD JOINTS: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.

I. WHERE INSTALLED directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.

J. INSTALL STUDS so flanges within framing system point in same direction.

K. AT DOOR OPENINGS, screw vertical studs at jambs to jamb anchor clips on door frames; install track section (for cripple studs) at head and secure to jamb studs.

1. Install two (2)-each 0.032-inch (20-gage non-structural) studs at each jamb, extending jamb studs through suspended ceilings and attached to underside of overhead structural support, at both jambs.

2. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch shim clearance from jamb stud to allow for installation of control joint in finished assembly.

L. OTHER FRAMED OPENINGS: Frame openings other than door openings the same as required for door openings unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.

M. AT WALL BACKING OR BLOCKING to support fixtures, equipment, heavy trim, toilet accessories, wall mounted cabinets or grab-bars and similar work which cannot be adequately supported on gypsum board alone, install back-to-back doubled 0.032-inch (20-gage non-structural) studs (minimum) extending to or braced to lateral support above, and securely attached by screws together and to the wall backing / blocking material.

3.4 INSTALLING CEILING SUSPENSION SYSTEMS

A. INSTALL SUSPENSION SYSTEM COMPONENTS according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.

1. HANGERS: 48-inches OC.

2. CARRYING CHANNELS (Main Runners): 48-inches OC

3. FURRING CHANNELS (Furring Members): 16-inches OC

B. ISOLATE SUSPENSION SYSTEMS from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.

C. SUSPEND HANGERS from building structure as follows:

1. INSTALL HANGERS plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system.

2. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.

3. WHERE WIDTH OF DUCTS and other construction within ceiling plenum produces hanger spacings that interfere with locations of hangers required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.

4. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced installation standards for not more than l/360 deflection.

D. WIRE HANGERS: Secure by looping and wire tying, either directly to structures or to inserts, eye screws, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause hangers to deteriorate or otherwise fail.

1. Do not attach hangers to steel roof deck.

2. Do not attach hangers to permanent metal forms. Furnish cast-in-place hanger inserts that extend through forms.

3. Do not attach hangers to rolled-in hanger tabs of composite steel floor deck.

4. Do not connect or suspend steel framing from ducts, pipes, or conduit.

3.5 INSTALLATION TOLERANCE FOR METAL FRAMING:

A. INSTALL VERTICAL FRAMING MEMBERS so fastening surfaces vary not more than 1/8-inch from the plane formed by faces of adjacent framing.

B. INSTALL SUSPENSION SYSTEMS that are level to within 1/8-inch in 12-feet measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

3.6 GENERAL GYPSUM BOARD INSTALLATION REQUIREMENTS:

A. COMPLY with ASTM C840.

B. INSTALL CEILING PANELS across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

C. INSTALL PANELS WITH FACE SIDE OUT. Butt panels together for a light contact at edges and ends with not more than 1/16-inch of open space between panels. Do not force into place.

D. LOCATE EDGE AND END JOINTS over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

E. FORM CONTROL AND EXPANSION JOINTS with space between edges of adjoining gypsum panels.

F. COVER BOTH FACES OF SUPPORT FRAMING with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.

G. UNLESS CONCEALED APPLICATION IS INDICATED or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 SF in area.

H. FIT GYPSUM PANELS around ducts, pipes, and conduits.

I. WHERE PARTITIONS INTERSECT STRUCTURAL MEMBERS projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch-wide joints to install sealant.

J. ISOLATE PERIMETER OF GYPSUM BOARD applied to non-load-bearing partitions at structural abutments. Provide 1/4- to 1/2-inch-wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

K. ATTACHMENT TO STEEL FRAMING: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

L. INSTALL SOUND ATTENUATION BLANKETS before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

3.7 INSTALLATION OF INTERIOR GYPSUM BOARD

A. SINGLE-LAYER APPLICATION:

1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.

2. On partitions/walls, apply gypsum panels vertically (parallel to framing) unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.

3. Stagger abutting end joints not less than one framing member in alternate courses of panels.

4. At stairwells and other high walls, install panels horizontally unless otherwise indicated or required by fire-resistance-rated assembly.

5. On Z-shaped furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.

6. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

3.8 MULTILAYER APPLICATION:

A. ON CEILINGS, apply gypsum board indicated for base layers before applying base layers on walls/partitions; apply face layers in same sequence. Apply base layers at right angles to framing members and offset face-layer joints one framing member, 16-inches minimum, from parallel base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly.

B. ON PARTITIONS/WALLS, apply gypsum board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.

C. ON Z-SHAPED FURRING MEMBERS, apply base layer vertically (parallel to framing) and face layer either vertically (parallel to framing) or horizontally (perpendicular to framing) with vertical joints offset at least one furring member. Locate edge joints of base layer over furring members.

D. FASTENING METHODS: Fasten base layers and face layers separately to supports with screws unless otherwise indicated.

3.9 INSTALLATION OF TILE BACKING PANELS

A. GLASS-MAT, WATER-RESISTANT BACKING PANELS: Comply with manufacturer's written installation instructions and install at locations indicated to receive tile finish. Install with 1/4-inch gap where panels abut other construction or penetrations. Where tile backing panels abut other types of panels in same plane, shim surfaces to produce a uniform plane across panel surfaces, if required.

3.10 INSTALLATION OF DRYWALL TRIM ACCESSORIES

A. GENERAL: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

B. CONTROL JOINTS: Install control joints per recommendations of ASTM C840, where indicated on Drawings, at intervals not to exceed 30-feet maximum uninterrupted surface in walls and ceilings, above both sides of door frames, and in specific locations as approved by the Architect for visual effect.

C. INTERIOR TRIM: Install in the following locations:

1. CORNERBEAD: Use at outside corners unless otherwise indicated.

2. L-TYPE TRIM: Where Work is tightly abutted to other work

3. U-BEAD: Use at exposed, revealed, gasketed or sealant-filled panel edges.

3.11 FINISHING GYPSUM BOARD

A. TREAT GYPSUM BOARD JOINTS, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

B. PREFILL OPEN JOINTS or beveled edges, and damaged surface areas.

C. APPLY JOINT TAPE over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.

D. PARTIAL FINISHING: Omit third coat and sanding on concealed drywall work which is indicated for drywall finishing or which requires finishing to achieve fire resistance rating, sound rating or to act as air or smoke barrier. Refer to sections on painting, coating and wall-coverings in Division-09 for decorative finishes to be applied to drywall work.

E. FINISH GYPSUM BOARD to “levels” indicated below, per ASTM C840, for locations indicated:

1. LEVEL 1: Typical at ceiling plenums and concealed areas. Embed tape at panel joints.

2. LEVEL 2: Typical at tile-backer panels finished with tile.

3. LEVEL 3: For gypsum board surfaces receiving medium- or heavy-textured finishes before painting, or heavy-textured wallcoverings where lighting conditions are not critical

4. LEVEL 4: Typical exposed gypsum-board finish required, unless otherwise indicated:

   a. Embed tape and apply separate first, fill, and finish coats of joint compound to tape, fasteners, and trim flanges at that will be exposed to view.

5. LEVEL 5 FINISH (where indicated, and at custom digital wall murals / vinyl wall graphics):

   a. Embed tape in joint compound and apply first, fill (second), and finish (third) coats of joint compound over joints, angles, fastener heads, and accessories;
   b. Apply two (2) each thin, uniform skim coats of joint compound over entire surface. For skim coats, use joint compound specified for third coat, or a product specially formulated for this purpose and acceptable to gypsum board manufacturer.
   c. Touch up and sand between coats and after last coat as needed to produce a surface free of visual defects, tool marks, and ridges and ready for final finishing.

F. PAINT AND PRIMER and its application are specified in Division-09 “Painting" Section

3.12 PROTECTION

A. PROTECT ADJACENT SURFACES from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.

B. PROTECT INSTALLED PRODUCTS from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

C. REMOVE AND REPLACE PANELS that are wet, moisture damaged, and mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.

2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

End of Section

093000

TILING

PART 1 - GENERAL

1.1 WORK INCLUDED

A. PROVIDE TILE WORK and nosings where indicated, as specified herein, and as needed to meet the requirements of the construction shown in the Contract Documents.

1.2 RELATED REQUIREMENTS

A. DIVISION-07 “JOINT SEALANTS” Section for sealing expansion, contraction, control and isolation joints in tile surfaces.

B. DIVISION-09 “GYPSUM BOARD ASSEMBLIES” Section for glass-mat water-resistant tile backer board.

1.3 DEFINITIONS

A. DEFINITIONS in the ANSI A108 series of tile installation standards and in ANSI A137.1 and ANSI A137.3 apply to Work of this Section unless otherwise specified.

B. ANSI A108 SERIES TILE INSTALLATION STANDARDS: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, ANSI A108.17, ANSI A108.19, and ANSI A108.20, which are contained in its "Specifications for Installation of Ceramic Tile."

C. GPT: Gauged Porcelain Tile, between 1/8- to 1/4-inch thick, and measuring less than 40- by 40-inches.

D. GPTPS: Gauged Porcelain Tile Panels or Slabs, measuring over 40- by 40-inches.

E. FACE SIZE: Actual tile size, excluding spacer lugs.

F. LARGE FORMAT TILE: Tile units with any edge having a dimension of fifteen (15)-inches or more.

G. MODULE SIZE: Actual tile size plus joint width indicated.

1.4 ACTION SUBMITTALS

A. PRODUCT DATA: Submit manufacturer's technical information and installation instructions for each product.

B. SAMPLES FOR INITIAL SELECTION: For each type of tile, grout and accessory involving color selection.

1. Assemble samples mounted on a rigid panel, with grouted joints, for each type and composition of tile and for each color and finish required.

2. Make samples at least 12-inch square, but not fewer than four (4) tiles. Use grout of type and in color or colors approved for completed Work.

1.5 INFORMATION SUBMITTALS

A. QUALIFICATION DATA: For Installer.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. FURNISH EXTRA MATERIALS that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.

B. TILE AND TRIM UNITS: Furnish quantity of full-size units equal to 3-percent of amount installed for each type, composition, color, pattern, and size indicated, with minimum of 10-square-feet of each tile material.

C. GROUT: Furnish quantity of grout equal to three-percent (3%) of amount installed for each type, composition, and color indicated.

1.7 QUALITY ASSURANCE:

A. INSTALLER QUALIFICATIONS:

1. Installer is a Five-Star member of the National Tile Contractors Association or a “Trowel of Excellence” member of the Tile Contractors' Association of America.

2. Installer's supervisor for Project holds the International Masonry Institute's Foreman Certification.

3. Installer employs only Ceramic Tile Education Foundation Certified Installers or installers recognized by the U.S. Department of Labor as Journeyman Tile Layers, who will be used on this Project.

B. INSTALLER QUALIFICATIONS FOR GPT application: Comply with above, and be “Certified” by Advanced Certification for Tile Installers (ACT) program for GPT, and with

completion of a comprehensive installation program provided by IMI tile layer programs or the NTCA. Submit applicable qualifications.

1.8 MOCKUPS

A. BUILD MOCKUPS to verify material and color/finish selections made and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Build mockups of each type of floor or wall tile installation and obtain Architect's approval.

2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.9 DELIVERY, STORAGE, AND HANDLING

A. DELIVER AND STORE PACKAGED MATERIALS in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A137.1 for labeling tile packages.

B. STORE TILE AND CEMENTITIOUS MATERIALS on elevated platforms, under cover, and in a dry location.

C. STORE AGGREGATES where grading and other required characteristics can be maintained and contamination can be avoided.

D. STORE LIQUID MATERIALS in unopened containers and protected from freezing.

1.10 FIELD CONDITIONS

A. ENVIRONMENTAL LIMITATIONS: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

1.11 WARRANTIES:

A. SPECIAL PRODUCT WARRANTY: Manufacturer shall unconditionally guarantee tile for minimum of ten (10) years against failure.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. SOURCE LIMITATIONS: Obtain tile of each type and color or finish, membranes, and setting and grouting materials from a single source or producer.

B. ACCEPTABLE MANUFACTURERS FOR SETTING MATERIALS: Subject to compliance with requirements, provide tile-setting products as manufactured by one of the following:

1. Custom Building Products.

2. LATICRETE International Inc.

3. MAPEI Corporation.

4. H. B. Fuller Construction Products Inc. / TEC

C. ACCEPTABLE MANUFACTURERS FOR MEMBRANES: Subject to compliance with requirements, provide tile-setting products as manufactured by one of the following:

1. Custom Building Products

2. The Noble Company

3. Schluter Systems LP

2.2 GENERAL PRODUCT REQUIREMENTS:

A. TILE MATERIALS STANDARD: ANSI A137.1 for types, compositions, and other characteristics indicated. Provide tile complying with Standard grade requirements unless otherwise indicated.

B. FACTORY BLENDING: For tile exhibiting color variations within ranges, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.

C. FACTORY-MOUNTED TILE: Provide back- or edge-mounted tile assemblies as standard with manufacturer unless otherwise indicated.

D. TILE INSTALLATION MATERIALS STANDARDS: Provide installation materials complying with ANSI A108.02, and ANSI standards as referenced by the TCNA installation methods required, as applicable.

2.3 TILE PRODUCTS

A. REFER TO THE DRAWINGS for tile materials, finishes and colors, and per the following:

B. PORCELAIN TILE: ANSI A 137.1 compliant tile material with less than 0.5% water absorption as tested per ASTM C373 and “certified” by the Porcelain Tile Certification Agency (PTCA).

C. LARGE FORMAT / GPT or GPTPS: “Standard” grade meeting ANSI A137.3, suitable for area of use and intended application. Submit “Letter of Compliance Certificate” indicating name and location of Project from Manufacturer.

D. FINISH OF WET-USE FLOOR TILE (regularly walked on when wet): Provide tile units with a dynamic Coefficient of Friction (COF) of not less than 0.42.

E. TILE TRIM UNITS: Provide units matching characteristics of adjoining flat tile and coordinated with sizes and coursing of adjoining flat tile where applicable. Provide manufacturer's standard shapes, including but not limited to coved base units, wainscot caps, external corner units and other trim units as applicable.

2.4 MEMBRANES:

A. CRACK-SUPPRESSION MEMBRANE (fluid applied): Waterproof membrane material complying with ANSI A118.10, to waterproof tile assembly as specified in ANSI A108.13.

1. BASIS-OF-DESIGN: “RedGard Waterproofing and Crack Prevention Membrane” by Custom Building Products, or equal.

B. FLOOR WATERPROOFING MEMBRANE (for use elevated floors): 0.050-inch-thick (50 mil) composite sheet membrane made from an alloy of non-plasticized chlorinated polyethylene (CPE) with nonwoven fiber laminated to both sides, meeting ANSI A118.10 for waterproofing, with Sound Transmission Class (STC) of 59 per ASTM E90 & ASTM E413, with Impact Insulation Class (IIC) of 62 per ASTM E492 & ASTM E989, manufactured specifically for adhering tile with latex-Portland cement mortar; 72-inches-wide sheets:

1. BASIS-OF-DESIGN: “NobleSeal SIS” System by The Noble Company, or equal.

2.5 SETTING MATERIALS

A. TYPICAL THIN-SET MORTAR: Prepackaged, ANSI A118.15 compliant “Improved Modified Mortar” dry-mortar mix combined with acrylic resin or styrene-butadiene-rubber liquid-latex additive at Project site. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.15.

1. BASIS-OF-DESIGN: “Porcelain Tile Fortified Thin-Set Mortar”, “VersaBond Flex Fortified Thin-Set Mortar”, “MegaLite Crack Prevention Mortar” (for wall use), or “Complete Contact LFT” (for floor use), by Custom Building Products, or equal.

2.6 GROUT MATERIALS

A. TYPICAL STAIN-RESISTANT GROUT (for typical floor and wall surfaces): ANSI A118.7, single component, high-performance stain resistant premixed grout. Provide sanded grout for joints over 1/8-inch – unsanded grout for joints 1/8-inch and less:

1. BASIS-OF-DESIGN PRODUCT: “Fusion Pro” by Custom Building Products, or equal

2.7 METAL TRIM UNITS:

A. PROVIDE angled or L-shaped units, in height to align with tile and setting-bed thickness as applicable:

B. SQUARE-EDGED WALL-TILE TRIM: “Schluter – JOLLY” or equal edge-protection profile with trapezoid-perforated anchoring leg and 87-degree sloped edge, in color-coated aluminum or anodized aluminum finish as indicated, or if not indicated, as selected by the Architect from manufacturer’s full range of available color / finish options.

C. ROUNDED-EDGED STAINLESS-STEEL WALL-TILE TRIM: Schluter – Rondec-EB” brushed stainless-steel profile with perforated anchoring leg and quarter-rounded trim-edge, complete with end cap, outside corners, inside corners, inside coved corners, and connectors as appropriate to installation.

D. TILE-EDGE TRIM AT CONCRETE FLOORING: “Schluter – Reno-V – AEVT/B” (satin anodized aluminum) in height require to match tile thickness and with minimum 0.75-inch transition leg. Provide typically at edge of tile abutting exposed concrete or resilient flooring.

E. TILE-EDGE NOSING AT STAIRS: “Schluter – TREP-G/GK black slip-resistant nosing made of brushed stainless steel. Provide a continuous nosing the full length across the tread at all stair nosings with an exposed surface of 1- 3/16” and matching end caps as needed.

F. TYPICAL TILE-EDGE TRIM AT CARPETING: “Schluter – Schiene AE” (satin anodized aluminum) in height require to match tile thickness. Provide typically between tile and carpeting.

G. ACCEPTABLE MANUFACTURERS: Blanke Corporation, Ceramic Tool Company, or Schluter (Basis-of-Design).

2.8 MISCELLANEOUS MATERIALS

A. BOND-BREAKER TAPE: for application over all cracks in concrete floor substrate, and movement joints per manufacturer’s instructions. Acceptable Products: Schluter “Kerdi-Band” – 4 mil, or Nobleseal CIS.

B. TROWELABLE UNDERLAYMENTS AND PATCHING COMPOUNDS: Latex-modified, Portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

C. TILE CLEANER: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.

D. PENETRATING GROUT SEALER: As recommended by grout manufacturer that will not change color or appearance of grout (not required at epoxy grouts).

E. FLOOR SEALER: Manufacturer's standard product for sealing grout joints and that does not change color or appearance of grout.

2.9 MIXING MORTARS AND GROUT

A. MIX MORTARS AND GROUTS to comply with referenced standards and mortar and grout manufacturers' written instructions. Add materials, water, and additives in accurate proportions. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION & INSPECTION:

A. EXAMINE AREAS AND CONDITIONS under which the Work of this Section will be performed. Do not proceed if conditions exist that are detrimental to proper and timely completion. Commencement of this Work will be construed as acceptance of existing conditions or prior work by others, and assumption of responsibility for satisfactory installation.

1. VERIFY THAT SUBSTRATES FOR SETTING TILE are firm; dry; clean; free of oil, waxy films, and curing compounds; and within flatness tolerances required by referenced ANSI A108 Series of tile installation standards for installations indicated.

2. VERIFY THAT INSTALLATION of electrical and mechanical units of work, and similar items located in or behind tile has been completed before installing tile.

3. VERIFY THAT JOINTS IN TILE SUBSTRATES are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.

B. PROCEED WITH INSTALLATION only after unsatisfactory conditions have been corrected.

3.2 PREINSTALLATION MOISTURE AND ALKALINITY TESTING:

A. TEST CONCRETE SUBSTRATES for moisture and alkalinity (pH) unless concrete was installed with a MVE-control admixture, or if a MVE-topical treatment has been installed per Division-09 “MVE Control” Section.

1. TESTING AGENCY: Engage a qualified testing agency to perform tests.

B. MOISTURE TESTING: Perform testing using in situ probes per ASTM F2170, with probe depth at 40% of overall depth of concrete. Perform tests so that each test area does not exceed 1,000 sq. ft., and perform no fewer than three (3)-tests in each installation area and with test areas evenly spaced in installation areas.

C. DO NOT INSTALL TILE where concrete substrates exhibit relative humidity level greater than 75-percent.

D. SUBMIT TEST RESULTS to Contractor, Architect and owner’s representative before starting Work.

3.3 PREPARATION

A. FILL CRACKS, HOLES, AND DEPRESSIONS in concrete substrates for tile floors installed with thinset mortar] with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.

B. PREPARE SUBSTRATES TO RECEIVE WATERPROOF MEMBRANES by applying a reinforced mortar bed that complies with ANSI A108.1A and is sloped 1/4-inch per foot toward drains.

C. BLENDING: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

D. PROTECT EXISTING ADJACENT SURFACES before beginning tile installation Work.

E. TEST EXISTING CONCRETE SUBSTRATES without a Moisture Vapor Emission (MVE) admixture or topical-treatment to verify that rate of MVE does not exceed four (4)-pounds per 1,000 SF per 24 hours when tested using calcium chloride moisture test kit for 72 hours. Install MVE treatment per other Division-09 Section maximum level is exceeded.

F. INSTALL MEMBRANES throughout tile installation area, per requirements of membrane manufacturer.

1. Install crack isolation membrane to comply with ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness that is bonded securely to substrate. Allow crack isolation membrane to cure before installing tile or setting materials over it.

3.4 INSTALLATION OF TILE

A. COMPLY WITH TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" as applicable to installation methods indicated. Comply with parts of the ANSI A108 series "Specifications for Installation of Ceramic Tile" that are referenced in TCNA installation methods, and that apply to types of setting and grouting materials required.

B. INSTALL WALL TILE only after installation and with use of permanent light fixtures. Use of temporary floor-mounted lighting is not permitted as it alters the appearance of shadow lines at tile joints.

C. SEQUENCE OF FLOOR TILE INSTALLATION: Where integral tile-cove base is indicated, install tile work after installation of gypsum board, base cabinets, or other base substrate as applicable.

D. EXTEND TILE WORK INTO RECESSES and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

E. ACCURATELY FORM INTERSECTIONS and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-

in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

F. TILE TRIM: install tile manufacturer's standard tile trim units when necessary to eliminate exposed tile edges, or use metal-edge trim when trim shapes are not available.

G. ACCENT TILE: Where accent tile differs in thickness from field tile, vary setting-bed thickness so that tiles are flush.

H. JOINTING PATTERN: Lay tile in grid pattern, unless otherwise indicated. Align joints when adjoining tiles on floor, base, walls, and trim are same size. Lay out tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths as follows, unless otherwise indicated.

1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so joints between sheets are not apparent in finished Work.

2. Where adjoining tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.

3. Where tiles are specified or indicated to be whole integer multiples of adjoining tiles on floor, base, walls, or trim, align joints unless otherwise indicated

4. Where staggered (brick type) joints are indicated for tile over 12-inch in size, provide joints at 30% of the tile, per TCNA.

5. Joint Widths: unless otherwise indicated or required by tile manufacturer, install tile with the following joint widths:

    a. Ceramic Mosaic Tile: 1/16-inch
    b. Glazed Wall Tile: 1/8-inch
    c. Porcelain Tile: 1/4-inch

I. GROUT TILE TO COMPLY WITH requirements of ANSI A108.10.

J. EXPANSION JOINTS: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated or required by referenced tile installation standards. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.

1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.

K. STONE THRESHOLDS: Install stone thresholds in same type of setting bed as adjacent floor unless otherwise indicated.

1. At locations where mortar bed (thickset) would otherwise be exposed above adjacent floor finishes, set thresholds in improved modified dry-set mortar (thinset).

2. Do not extend membranes under thresholds set in mortar. Fill joints between such thresholds and adjoining tile set on membranes with elastomeric sealant.

L. INSTALL METAL EDGE STRIPS at locations indicated and where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with top of tile where no stone threshold is indicated.

M. FLOOR SEALER: Apply floor sealer according to floor-sealer manufacturer's written instructions. As soon as floor sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.

3.5 ADJUSTING AND CLEANING

A. REMOVE AND REPLACE TILE that is damaged or that does not match adjoining tile. Provide new matching units, installed as specified and in a manner to eliminate evidence of replacement.

B. CLEANING: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.

1. Remove grout residue from tile as soon as possible.

2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions but no sooner than 10 days after installation.

3. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned.

4. Protect metal surfaces and plumbing fixtures from effects of cleaning.

5. Flush surfaces with clean water before and after cleaning.

3.6 PROTECTION

A. PROTECT INSTALLED TILE WORK with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.

B. PROHIBIT FOOT AND WHEEL TRAFFIC from tiled floors for at least seven days after grouting is completed.

C. REMOVE PROTECTIVE COVERINGS and rinse neutral protective cleaner from tile surfaces before final inspection.

3.7 TILE INSTALLATION SCHEDULE

A. TYPICAL INTERIOR WALL TILE & TILE BASE (at limited-wet areas, including toilets):

1. Installation Standard: TCNA Method # W248 and as follows:

2. Wall Tile grouted with stain-resistant cement grout, on

3. Thin-set cement mortar, over

4. Gypsum Tile Backer Board on stud framing.

B. INTERIOR FLOOR TILE ON SLAB-ON-GRADE (not on elevated floors):

1. Installation Standard: TCNA Method # F113 and as follows:

2. Floor tile grouted with stain-resistant cement grout, thinset on

3. Polymer-modified cement mortar bond coat, on

4. Well-cured, clean concrete slab, without curing compounds (wet-cured)

C. TYPICAL FLOOR TILE ON ELEVATED CONCRETE FLOORS: (above occupied space):

1. Installation Standard: TCNA Method # F122, and as follows:

2. Floor tile with stain-resistant grout, set in polymer-modified cement mortar, over

3. Waterproof membrane set in polymer-modified cement mortar bond-coat – extend membrane up minimum of four (4)-inches behind tile base at all walls, partitions and penetrations, as applicable, over

4. Well-cured, clean and dry concrete substrate (or with MVE treatment), or cement-board underlayment, mechanically anchored to wood substrate.

End of Section

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PAINTING

PART 1 - GENERAL

1.1 WORK INCLUDED

A. WORK INCLUDES surface preparation and application of paint or transparent “stained” wood finishes (hereinafter referred to as “paint”) to surfaces exposed to view, throughout the Project and in accordance with requirements herein.

B. PAINT EXPOSED FIRE-SUPPRESSION, MECHANICAL, ELECTRICAL AND PLUMBING system components, in accordance with this Section, and per additional requirements in applicable Division-21 through Division-28 Sections.

C. PAINT FINISH ALL EXPOSED SURFACES (unless prefinished) whether painting is specifically designated in the Drawings or not. Where items or surfaces are not specifically mentioned, paint the same as similar adjacent materials or areas.

D. PAINTING IS NOT REQUIRED on the following, unless otherwise indicated:

1. Surfaces of plastic laminate, anodized aluminum, stainless steel, chromium plate and similar “finished” materials

2. Plumbing fixtures and electrical equipment (except for exposed distribution cabinets or electrical devices and panels).

3. Surfaces such as walls or ceilings in concealed or inaccessible areas, including utility tunnels, pipe spaces, duct shafts, elevator shafts, or interstitial spaces above ceilings.

4. Do not paint over code-required labels (UL or FMG) or equipment identification, warning or performance / instructional labels.

5. Do not paint moving parts of operating mechanical or electrical units, such as valve and damper operators, linkages, sinkages, sensing devices, motor and fan shafts and similar items, unless otherwise indicated.

1.2 RELATED REQUIREMENTS

A. APPLICABLE DIVISION-05 SECTIONS for shop-priming of metal surfaces and substrates.

B. APPLICABLE DIVISION-21 THROUGH DIVISION-28 SECTIONS for additional painting requirements of Fire Suppression, Plumbing, HVAC, Electrical, Communications and Electronic Safety and Security components.

1.3 DEFINITIONS

A. DFT: Dry Film Thickness, in mils (0.001-inch)

B. EXPOSED SURFACES: Includes areas visible when permanent or built-in fixtures, convector covers, grilles, and similar components are in place.

C. MPI GLOSS LEVELS:

1. LEVEL 1 (Flat or Matte): Not more than five units at 60 degrees and 10 units at 85 degrees, per ASTM D523.

2. LEVEL 2 (velvet-like): Not more than 10 units at 60 degrees and 10 to 35 units at 85 degrees, per ASTM D523.

3. LEVEL 3 (Eggshell-like): 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, per ASTM D523.

4. LEVEL 4 (Satin-like): 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, per ASTM D523.

5. LEVEL 5 (Semi-gloss): 35 to 70 units at 60 degrees, per ASTM D523.

6. LEVEL 6 (Gloss): 70 to 85 units at 60 degrees, per ASTM D523.

7. LEVEL 7 (Hig-gloss): More than 85 units at 60 degrees, per ASTM D523.

1.4 COORDINATION

A. REVIEW OTHER SECTIONS in which primers are provided to ensure compatibility of the total system for various substrates. Upon request, furnish information on characteristics of finish materials to ensure use of compatible primers.

1.5 ACTION SUBMITTALS

A. PRODUCT DATA: For each type of product, including VOC content. Include preparation requirements and application instructions. Include Printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.

B. SAMPLES

1. SAMPLES FOR INITIAL SELECTION: For each type of topcoat product.

2. SAMPLES FOR VERIFICATION: For each type of paint system and in each color and gloss of topcoat.

C. SUBMIT COLOR SAMPLES on rigid hardboard, 8-1/2 by 11-inch minimum.

1. Apply coats on Samples in steps to show each coat required for system.

2. Label each coat of each Sample.

3. Label each Sample for location and application area.

D. PAINT SCHEDULE: Based on information included in the Drawings, or otherwise provided by the Architect, indicate rooms, areas and elements of paint applications, cross-referenced to paint material systems and with color designations to be installed. Use same designations indicated on Drawings and in schedules.

1.6 INFORMATION SUBMITTALS

A. QUALIFICATION DATA: For firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

B. MAINTENANCE DATA to include in Operations and Maintenance manuals required in Division-01 “Closeout Submittals” Section. Include the following:

1. Updated Paint Schedule, indicating paint product and colors installed in each room, area, or construction element.

2. Manufacturer’s Product Data Information

3. Cleaning and stain-removal recommendations, with touch-up procedures.

4. Material Safety Data Sheets

5. Record Color Samples: for each paint material and color installed (3 each samples minimum)

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. FURNISH EXTRA MATERIALS from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. PAINT: five-percent (5%), but not less than 1-gal. of each material and color applied.

1.8 QUALITY ASSURANCE

A. APPLICATOR QUALIFICATIONS: Engage an experienced applicator who has completed painting system applications similar in material and extent to that indicated for this Project with a record of successful in-service performance.

B. USE ONLY SKILLED PAINTERS for mixing and applying paint. Quality workmanship is required. In the acceptance or rejection of finish painting, no allowance will be made for the painters' lack of skill or for inadequate lighting conditions during painting operations.

C. MOCKUPS:

1. PREPARE FIELD MOCKUPS of each paint system indicated and for each color and finish to verify preliminary selections made under Sample submittals, to demonstrate aesthetic effects and to set quality standards for materials and execution.

   a. Architect will select one surface to represent surfaces and conditions for application of each paint system.
   b. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft. in area
   c. For other Items (i.e.: door frame or trims): Architect will designate items or areas required as mockup.

2. FINAL APPROVAL OF COLOR SELECTIONS will be based on mockups.

3. IF PRELIMINARY COLOR SELECTIONS ARE NOT APPROVED, apply additional mockups of additional colors selected by Architect at no added cost to Owner.

4. APPROVAL OF MOCKUPS does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.9 DELIVERY, STORAGE, AND HANDLING

A. DELIVER MATERIALS to job site in original, new and unopened packages and containers bearing manufacturer's name and product identification labels.

B. STORE MATERIALS NOT IN USE in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45-deg F.

1. Maintain containers in clean condition, free of foreign materials and residue.

2. Remove rags and waste from storage areas daily.

1.10 FIELD CONDITIONS

A. SAFETY: Take all precautions to ensure that workers and Work areas are adequately protected from fire hazards and health hazards resulting from handling, mixing and application of paints.

B. APPLY PAINTS only when temperature of surfaces and ambient air temperatures are between 50- and 95-deg F.

C. DO NOT APPLY PAINTS when relative humidity exceeds 85-percent; at temperatures less than 5-deg F above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. SOURCE LIMITATIONS: Obtain paint products, including but not limited to block fillers, primers, and undercoat materials for each coating system from the same manufacturer as the finish coats.

2.2 PAINT PRODUCTS

A. PROVIDE PAINT PRODUCTS indicated in the "Paint Materials Schedule" at the end of this Section, for materials and applications indicated.

B. MPI STANDARDS: Provide paint products listed in, and in compliance with the Master Painters Institute (MPI) "Approved Products List" (www.paintinfo.com)

C. COLORS / FINISH SHEENS: Refer to Drawings for paint colors and sheens required, or as selected by the Architect from manufacturer's full range of available color / sheen options.

D. DEEP TONES: Up to twenty (20)-percent of total painted surface areas may be painted with deep tones.

E. MATERIAL QUALITY Provide the best quality grade of the various types of paint materials as regularly manufactured. Materials not displaying manufacturers identification as a standard, best-grade product will not be acceptable.

F. MATERIAL COMPATIBILITY: Materials for use within each paint system must be compatible with one another and the substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.

1. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. EXAMINE SUBSTRATES, AREAS, AND CONDITIONS, with Applicator present, for compliance with requirements, including maximum moisture content and other conditions affecting performance of the Work.

B. MAXIMUM MOISTURE CONTENT OF SUBSTRATES: When measured with an electronic moisture meter as follows:

1. Concrete, Fiber-cement board, and Masonry (Clay and CMUs): 12-percent.

2. Wood: 15-percent.

3. Gypsum Board and Plaster: 12-percent.

C. GYPSUM BOARD SUBSTRATES: Verify that finishing compound is sanded smooth.

D. PLASTER SUBSTRATES: Verify that plaster is fully cured.

E. VERIFY SUITABILITY OF SUBSTRATES, including surface conditions and compatibility, with existing finishes and primers.

F. PROCEED WITH APPLICATION only after unsatisfactory conditions have been corrected. Application of coating indicates acceptance of surfaces and conditions.

G. VERIFY COLORS to be provided before application of primers.

3.2 PREPARATION

A. COMPLY WITH MANUFACTURER'S WRITTEN INSTRUCTIONS and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.

B. REMOVE HARDWARE, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

C. CLEAN SUBSTRATES of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and re-prime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.

D. CEMENTITIOUS AND MASONRY SUBSTRATES: Remove release agents, curing compounds, efflorescence, chalk, dust dirt, grease, oils, and roughen surfaces to remove glaze, if exists. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.

1. DETERMINE ALKALINITY AND MOISTURE CONTENT OF SURFACES by performing appropriate tests.

2. APPLY APPROPRIATE COATINGS to correct unacceptable conditions, per paint manufacturer’s written instructions.

E. STEEL SUBSTRATES: Remove rust, loose mill scale, and shop primer, if any. Clean using methods recommended in writing by paint manufacturer but not less than the following:

1. SSPC-SP 2 and SSPC-SP 3.

2. SHOP-PRIMED STEEL SUBSTRATES: Clean field welds, bolted connections, and areas where shop paint is abraded. Wire-brush, clean with solvents recommended by the paint manufacturer, and touch up shop-applied prime coats that have been damaged with the same material as used for shop priming per SSPC-PA 1 for touching up shop-primed surfaces.

3. GALVANIZED-METAL SUBSTRATES: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints. Consult paint manufacturer if galvanized-metal is chromate passivated for appropriate surface preparation and primers.

F. ALUMINUM SUBSTRATES: Remove loose surface oxidation.

G. WOOD SUBSTRATES: Scrape and clean knots and apply coat of knot sealer before applying primer. Sand surfaces that will be exposed to view and dust off. Prime edges, ends, faces, undersides, and backsides of wood where at masonry, plaster, or other wet wall construction substrates. Seal tops, bottoms, and cutouts of unprimed wood doors with a heavy coat of varnish or sealer immediately upon delivery or after installation, if unit is cut in the field. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

3.3 APPLICATION

A. APPLY PAINTS according to manufacturer's written instructions and per recommendations in "MPI Manual."

1. Use applicators and techniques suited for paint and substrate indicated.

2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Paint surfaces behind permanently fixed equipment or furniture with prime coat only.

3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.

4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.

B. BLOCK FILLERS: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.

C. PROVIDE BARRIER COATS over incompatible primers or remove and re-prime.

D. TINT EACH UNDERCOAT a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat but provide sufficient difference in shade of undercoats to distinguish each separate coat.

1. IF UNDERCOATS OR OTHER CONDITIONS SHOW THROUGH topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

E. APPLY PAINTS TO PRODUCE SURFACE FILMS without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

1. TOUCH-UP SUCTION- OR HOT-SPOTS IN CEMENT or plaster that are noticeable after application of the first coat, before applying subsequent coats.

2. THE NUMBER OF COATS AND THE FILM THICKNESS required are the same regardless of the application method. Do not apply succeeding coats until the previous coat has cured as recommended by the paint manufacturer.

F. SAND BETWEEN COATS if sanding is required to produce a smooth, even surface according to manufacturer's written instructions.

G. MINIMUM COATING FINISH SYSTEM THICKNESS: Apply each coat at not less than manufacturer’s recommended spreading rate, to provide a total DFT for the entire coating system (prime and finish coats) as follows:

1. For two-coats: 3.5 mils

2. For three-coats: 5.0 mils.

H. PIGMENTED (OPAQUE) FINISHES: Completely cover surfaces to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.

I. MATCH APPROVED MOCKUPS OR SAMPLES for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

J. EXISTING WORK: At ceilings and walls in existing areas that are patched or aligned with new Work to match existing finishes, prepare existing surfaces including primer if required, and apply new finish coats to the existing surfaces. Extend full height as applicable, and to closest corner of walls or partitions. Re-paint entire ceiling areas extending to a change of ceiling materials.

K. AT EXISTING ROOMS indicated to be painted, apply new paint finishes to all existing painted surfaces.

L. PAINTING FIRE SUPPRESSION, PLUMBING, HVAC/MECHANICAL, ELECTRICAL, COMMUNICATION, AND ELECTRONIC SAFETY AND SECURITY WORK:

1. PAINT THE FOLLOWING ITEMS when exposed to view in occupied areas, including storage, service, support and equipment rooms:

a. Mechanical and plumbing piping, pipe covering and jacket, supports and anchors
b. Metal and plastic conduits, buss, supports and anchors.

c. Mechanical equipment, heating unit covers, connector covers and grilles, tanks that do not have a factory-applied final finish, un-insulated ducts and duct insulation with a paintable jacket material.
d. Electrical conduits, wireways, buss, supports and anchors.
e. Exposed panels and panel-faces of recessed electrical, communications, or safety and security panels

M. PAINT PORTIONS OF INTERNAL SURFACES OF METAL DUCTS behind air inlets, outlets and louvers that are visible from occupied spaces.

3.4 TRANSPARENT (CLEAR) AND STAINED FINISHES:

A. APPLY STAIN AND TRANSPARENT FINISHES off-site, and deliver to Project with final finish installed, to the greatest extent feasible, to minimize VOCs and to control the quality of finish Work. Touch-up on-site after installation.

B. APPLY TRANSPARENT STAINS per the stain manufacturer's recommendations to ensure proper penetration of the stain, and to produce an even, consistent, color that enhances the natural characteristics of the substrate material.

1. Apply with spray and brush applicators using means and techniques best suited for the substrate and the type of stain being applied.

2. Provide a consistent application of stain without color irregularities, brush marks, or other surface irregularities not inherent with the substrate material.

3. Stain edges and ends of boards and brush out excess stain that collects in surface textures or joints, as applicable. Do not apply stain on surfaces that are not sufficiently dry, or that are in direct sunlight.

C. TRANSPARENT (CLEAR) FINISHES: Use multiple coats to produce a glass-smooth surface film of even luster.

1. Lightly sand the surfaces between each successive coat.

2. Provide a finish free of laps, runs, cloudiness, color irregularity, brush marks, orange peel, nail holes, or other surface imperfections.

3. Typically, provide satin finish for final coats, unless noted otherwise.

D. FINISHING DOORS: Stain and finish the top, bottom and both edges of natural-finished doors, to match faces.

3.5 FIELD QUALITY CONTROL

A. DRY FILM THICKNESS TESTING: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.

1. Touch up and restore painted surfaces damaged by testing.

B. IF TEST RESULTS INDICATE that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor must pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

3.6 CLEANING AND PROTECTION

A. AT END OF EACH WORKDAY, REMOVE RUBBISH, empty cans, rags, and other discarded materials from Project site.

B. AFTER COMPLETING PAINT APPLICATION, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. PROTECT WORK OF OTHER TRADES against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. PROVIDE “WET PAINT” SIGNS as required by site conditions, to protect newly painted finishes. Remove temporary protective wrappings provided by others for protection of their Work, after completion of painting operations.

E. AT COMPLETION OF CONSTRUCTION ACTIVITIES OF OTHER TRADES, touch up and restore damaged or defaced painted surfaces.

3.7 PAINT MATERIALS SCHEDULE:

(RE: www.paintinfo.com for MPI’s “Approved Product List” – except as indicated below)

A. EXTERIOR FINISHES:

1. EXTERIOR PAINTED DRYWALL SOFFITS: FLAT ACRYLIC LATEX:

a. Primer: MPI # 6 X-Green - Primer, Latex for Exterior Wood
b. 2 Finish Coats: MPI # 10 - Latex, Exterior flat (MPI Gloss Level 1-2)

2. EXTERIOR WOOD TRIM: EGGSHELL/SATIN ENAMEL:

a. Primer: MPI # 6 X-Green - Primer, Latex for Exterior Wood
b. Finish Coat: MPI # 15 - Latex, Exterior, Low Sheen (MPI Gloss Level 3-4)

3. EXTERIOR CMU WALLS: EGGSHELL/SATIN ENAMEL:

a. Block Filler: MPI # 4 X-Green - Block Filler, Latex, Interior/Exterior
b. Primer: MPI # 6 X-Green - Primer, Latex for Exterior Wood
c. 2 Finish Coats: MPI # 15 - Latex, Exterior, Low Sheen (MPI Gloss Level 3-4)

4. EXTERIOR FERROUS METAL: SEMI-GLOSS ALKYD

a. Primer: MPI # 23 - Primer, Metal, Surface Tolerant (w/ SSPC SP1 + SP 2 or SP3 prep)
b. Note: Primer not required to be applied in field on pre-primed items – verify compatibility
c. 2 Finish Coats: MPI # 94 - Alkyd, Exterior, Semi-Gloss (MPI Gloss Level 5), or
d. MPI # 81 - Alkyd, Quick Dry, Semi-Gloss

5. EXTERIOR ZINC-COATED (GALVANIZED) METAL: SEMI-GLOSS ALKYD:

a. Primer: MPI # 134 - Primer, Galvanized, Water Based
b. 2 Finish Coats: MPI # 94 - Alkyd, Exterior, Semi-Gloss (MPI Gloss Level 5), or
c. MPI # 81 - Alkyd, Quick Dry, Semi-Gloss

B. INTERIOR FINISHES:

1. INTERIOR GYPSUM BOARD: EGGSHELL/SATIN LATEX

a. Primer Coat: MPI # 149 X-Green - Primer Sealer, Interior, Institutional Low Odor/VOC
b. 2 Finish Coats: MPI # 44 X-Green - Latex, Interior, (MPI Gloss Level 2)
c. Apply finish coats with roller, unless otherwise indicated

2. INTERIOR GYPSUM BOARD: CLEANABLE / WASHABLE – 2-COMPONENT GLOSS EPOXY FINISH

a. Primer Coat: MPI # 45 Primer Sealer, Alkyd, Interior, or as otherwise recommended by finish coat manufacturer
b. 2 Finish Coats: MPI # 98 – Epoxy, High Build, Gloss
c. Basis-of-Design: Sherwin Williams Tile-Clad High Solids (HS) – with MR (mildew resistant) hardener
    1) apply with spray or roller
    2) Note that finish coat materials are considered to be “hazardous” – use appropriate PPE for application

3. INTERIOR CMU WALLS: SEMI-GLOSS LATEX

a. Block Filler & Primer Coat: MPI # 4 latex block filler
b. Primer Coat: MPI # 149 X-Green - Primer Sealer, Interior, Institutional Low Odor/VOC
c. 2 Finish Coats: MPI # 54 X-Green - Latex, Interior, Semi-Gloss (MPI Gloss Level 5)

4. INTERIOR EXPOSED STRUCTURE: DRY-FALL FLAT LATEX:

a. 2 Coats: MPI # 118 – Dry Fall Latex flat

5. INTERIOR EXPOSED GALVANIZED STEEL STRUCTURE: DRY-FALL FLAT LATEX:

a. 2 Coats: MPI # 133 – Dry Fall Water Based for Galvanized Steel, flat (MPI gloss Level 1)

6. INTERIOR PAINTED WOOD: EGGSHELL / SATIN WATER-BASED ALKYD

   a. First Coat: MPI # Prime Coat: MPI # 39 – Interior Latex Primer for Wood
   b. 2nd & 3rd Coats: MPI # 167 – Alkyd, Water Based (MPI Gloss Level 3)

7. INTERIOR METAL: SEMI-GLOSS ALKYD ENAMEL

   a. First Coat: MPI # 107 - Primer, Rust-Inhibitive, Water Based
   b. 2nd & 3rd. Coats: MPI # 54 X-Green - Latex, Interior, Semi-Gloss (MPI Gloss Level 5)

C. INTERIOR TRANSPARENT / STAINED WOOD FINISHES

1. INTERIOR "NATURAL-FINISHED" STAINED HARDWOOD: SATIN SHEEN - WATER-BASED SATIN SYSTEM

   a. Tinted-paste filler coat: MPI # 91 - Solvent-based clear paste filler (omit on close-grained woods)
   b. Stain coat(s): MPI # 90 Solvent-based semi-transparent stain - color/intensity per sample
   c. 1st, 2nd & 3rd Finish Coats: MPI # 128 – Water-Based Clear Varnish – satin sheen

End of Section

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SIGNAGE

PART 1 - GENERAL

1.1 WORK INCLUDED

A. PROVIDE signage to comply with requirements indicated for manufacturing process, material finishes, style, size and message content, as specified herein, and as required for a complete and proper installation.

B. TYPES OF SIGNAGE REQUIRED include to the following:

1. Handicapped parking-stall signs

2. ADA Compliant Door Signs for exits and toilet room doors

3. Room signs (where indicated) to match existing sign style, but ADA compliant including braille-plate.

1.2 REFERENCE STANDARDS

A. COMPLY WITH applicable requirements of the Americans with Disabilities Act (ADA), requirements of the Building Code, including but not limited to accessibility requirements of ANSI A117.1 (most recent edition), and local regulations or ordinances.

1.3 SUBMITTALS

A. SUBMIT PRODUCT DATA of standard signs, indicating text and layout.

B. SUBMIT SHOP DRAWINGS of custom-fabricated signage prior to fabrication and erection. Include plans, elevations and large-scale details of fabrication, text, and layout, when applicable. Show details of anchorages to other materials, and accessory items.

PART 2 - PRODUCTS

2.1 SIGN MATERIALS

A. ALUMINUM SHEET: Alloy and temper recommended by aluminum producer or finisher for type of use and finish indicated, and with not less than the strength and durability properties required in ASTM B209 for 5005 H15.

B. PRESSURE SENSITIVE VINYL (PSV): "220 Scotchcal" by 3M or equal 2 mil minimum thickness, opaque, non-reflecting, cast PVC film with pressure sensitive adhesive backing sheet, suitable for exterior applications, in colors as selected by Architect from manufacturer's full range of available options, or as indicated.

2.2 FABRICATED ITEMS:

A. ACCESSIBLE PARKING SIGNS (provide one unit at each accessible parking space): 12 x 18-inch white rectangle with longer dimension vertical, with a green message and a blue and white international barrier-free symbol, and including the text: "Disabled Parking – State Permit Required" and "Violators fined up to $200.00" (verify and coordinate final text with local regulations). Provide with standard mounting post set in a concrete post foundation base, and set bottom of sign five (5) feet above grade.

B. ACCESSIBLE DOOR SIGNAGE (per ANSI A117.1 & ADA): 6 x 8-inch minimum Pictorial Symbol Signs, with 1/32" raised pictogram symbols, 1/32" x 5/8" high upper case raised letter text, and with 1/32" Grade II Braille text. Text and pictogram to be white on black colored sign panel with matte finish. Provide double sided 1/32" thick Scotchmount tape for attaching at 60" above floor to center of sign on the wall adjacent to the latch side of a door: Basis-of-Design Products include, but are not limited to the following:

1. 1 each sign reading "RESTROOM" at each uni-sex Toilet Room: Cal-Royal # RSH68 or equal

2. 1 each sign reading "MEN" at each public Men's Toilet Room: Cal-Royal # MH68 or equal

3. 1 each sign reading "WOMEN" at each public Women's Toilet Room: Cal-Royal # WH68 or equal

4. 1 each sign reading "EXIT" at each exit door: Cal-Royal # EX66 or equal

C. WAYFINDING, DIRECTIONAL & ROOM / DOOR SIGNS: Where indicated on the Drawings, provide new tactile, accessible sign units with raised letters, raised symbols (as applicable) and with Grade II Braille text meeting requirements of ANSI A117.1 and the 2010 ADA Standard for Accessible Design for fabrication and for installation requirements.

1. COMPOSITION: Multi-layer, ultraviolet resistant, moisture-resistant, non-glare interior photosensitive photopolymer sheet with minimum 1/8-inch-thick PETG base, with surface burning characteristics that consist of a flame spread of 75 and a smoke development of 120 when tested in accordance to UL 723 (ASTM E84). Provide in "letter" color as selected by Architect from Manufacturer's full range of available color options.

2. SECOND SURFACE or "background" surface to be painted with non-glare acrylic paint as recommended by Manufacturer, in a contrasting color to the remaining character surface, in colors (potentially different on each floor) as selected by the Architect from the manufacturer's full range of available color options.

3. TYPICAL FONT: match existing building standard font style

4. BRAILLE CHARACTERS: Fabricate each sign unit with corresponding Grade II Braille text.

5. FABRICATION PROCESS: Camera ready artwork is reproduced onto the photosensitive surface and exposed to light – with the background surface removed where not exposed, producing an integrated solid sign panel. Laminated photopolymers, added-on characters, and engraved characters are not acceptable.

6. ACCESSIBILITY REQUIREMENTS: Comply with requirements of the ADA:

   a. Character Proportions: Letters and numbers on signs must have a width to-height ratio between 3:5 and 1:1 and a stroke width-to-height ratio between 1:5 and 1:10.
   b. Color Contrast: Characters and symbols must contrast with their background - either light characters on a dark background or dark characters on a light background.
   c. Raised Characters or Symbols: Letters and numbers on signs must be raised 1/32 in minimum and be sans serif characters. Raised characters or symbols must be at least 5/8 in high but no higher than 2-inches. Symbols or pictograms on signs must be raised 1/32 in minimum.

2.3 MISCELLANEOUS MATERIALS:

A. FASTENERS: Use concealed fasteners, unless otherwise indicated, which are fabricated from metals which are non-corrosive to either sign materials or mounting surface.

B. ANCHORS AND INSERTS: Use nonferrous metal or hot dipped galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion bolt devices for drilled in place anchors. Furnish inserts, as required, to be set into concrete or masonry work.

PART 3 - EXECUTION

3.1 INSTALLATION

A. INSTALL signage in accordance with the approved shop drawings, to be level, plumb, and at height indicated, free from distortion or other defects of appearance. Remove and reinstall signage materials that do not comply with these requirements.

B. MOUNT accessible room signs directly onto wall surface centered nine (9)-inches from the strike-side edge of the door, at 5'-0" AFF to center of sign, unless otherwise indicated on the Drawings.

   1. Use double sided foam tape to mount to smooth non-porous surfaces.

C. CLEAN soiled sign surfaces and protect units from damage until Substantial Completion.

End of Section

102100

LOUVERS AND VENTS

PART 1 - GENERAL

1.1 SCOPE

A. PROVIDE ARCHITECTURAL LOUVERS where indicated, as specified herein, and as necessary for complete installation.

B. Due to the H2S gases in the area, all materials and fasteners are to be either aluminum or stainless steel.

1.2 COORDINATION

A. COORDINATE setting drawings, diagrams, templates, instructions, and directions for installation of anchorages that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to Project site.

1.3 SUBMITTALS

A. SUBMIT PRODUCT DATA for each type of product indicated.

B. SUBMIT SHOP DRAWINGS for louvers and accessories, including plans, elevations, sections, details, and attachments to other Work. Show blade profiles, angles, and spacing.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. STRUCTURAL PERFORMANCE OF LOUVERS: Provide louvers capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated without permanent deformation of louver components, noise or metal fatigue caused by louver blade rattle or flutter, or permanent damage to fasteners and anchors. Wind pressures must be considered to act on vertical projection of louvers.

1. WIND LOADS: Determine loads based on a uniform pressure of 30 lbs./sq. ft. acting inward or outward.

B. STANDARD: Comply with SMACNA's "Architectural Sheet Metal Manual" for fabrication, construction details, and installation procedures.

2.2 MATERIALS

A. ALUMINUM EXTRUSIONS: ASTM B221, alloy 6063-T5 or T-52.

B. ALUMINUM SHEET: ASTM B209, alloy 3003 or 5005 with temper as required for forming, or as otherwise recommended by metal producer for required finish.

C. ALUMINUM CASTINGS: ASTM B26 alloy 319.

D. FASTENERS:

1. PROVIDE fasteners made of 300 Series stainless steel. Do not use metals that are incompatible with joined materials.

a. Use types and sizes to suit unit installation conditions.

2. Use Phillips pan-head screws for exposed fasteners, unless otherwise indicated.

3. POST-INSTALLED FASTENERS FOR CONCRETE AND MASONRY: Torque-controlled expansion anchors, made from stainless-steel components, with capability to sustain, without failure, a load equal to 4 times the loads imposed, for concrete, or 6 times the load imposed, for masonry, as determined by testing per ASTM E488, conducted by a qualified independent testing agency.

E. BITUMINOUS PAINT: Cold-applied asphalt emulsion complying with ASTM D1187. To be used between dissimilar metals to avoid electrolysis.

2.3 FIXED HORIZONTAL DECORATIVE LOUVERS

A. BASIS-OF-DESIGN: “Ruskin” # EME420DD or equivalent unit providing AMCA - Class A performance. Provide bird screen and insect screen.

B. LOUVER FABRICATION: Extruded Aluminum stationary horizontal louver style, four (4)-inch nominal depth, and as follows:

1. DESIGN: Double drainable blades contained within the frame with double downspouts in jambs and mullions. Louver design to limit span between visible mullions to 120 inches maximum.

C. LOUVERS:

1. Wall Thickness: 0.081-inch, nominal.

2. Material: Extruded aluminum, Alloy 6063-T6.

D. BLADES:

1. Style: Sightproof, double drainable, horizontally mounted on approximately 3-1/4-inch centers, nominal.

2. Material: Extruded aluminum, Alloy 6063-T6.

3. Wall Thickness: 0.063-inch, nominal.

E. PERFORMANCE DATA: Based on testing a 48- x 48-inches size unit in accordance with AMCA 500-L.

1. Free Area: 40-percent, nominal.

2. WIND DRIVEN WATER PENETRATION PERFORMANCE: Based on testing a 39.375- by 39.375-inches core area, 41- x 44-inches nominal size unit in accordance with AMCA 500-L.

a. Wind Velocity: 29-mph
b. Rainfall Rate: 3-inches/hour
c. Free Area Velocity: 1482 feet per minute.
d. Water Resistance Effectiveness: 99.9% (AMCA Class A).

F. DESIGN WINDLOAD: Incorporate structural supports to withstand wind load of not less than 30-pounds per square foot, inward and outward.

G. BLANK-OFF PANELS (where required to close-off openings at areas not connected to ductwork): Un-insulated units of aluminum sheet metal not less than 0.050-inch nominal thickness, in same type of finish as applied to louvers, but black color. Trim perimeter edges with louver manufacturer's standard extruded-aluminum-channel frames with same finish as panels.

H. INSECT SCREENING: 18-by-16 mesh, of 0.012-inch aluminum wire (typical at all louver units) in removable aluminum frame. Mount the insect screen on the interior face of the louver.

I. BIRD SCREENING: 5/8” x 0.040 expanded flattened aluminum bird screen in removable aluminum frame. Frame size to match exterior dimensions of the louvers. Mount the birdscreen on the exterior face of the louver.

J. FINISH / COLOR: Finish of louvers and birdscreen frame are to match the finish on the curtain wall vertical mullions.

2.4 FABRICATION

A. ASSEMBLE UNITS IN FACTORY to minimize field splicing and assembly. Disassemble units as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Fabricate units to permit field-bolted assembly with close-fitting joints in jambs and mullions, reinforced with splice plates, without interrupting blade-spacing pattern, where height of louver units exceeds fabrication and handling limitations. Provide horizontal mullions at joints. Maintain equal louver blade spacing, including separation between blades and frames at head and sill, to produce uniform appearance.

B. FABRICATE FRAMES including integral sills, to fit in openings of sizes indicated, with allowances made for fabrication and installation tolerances, adjoining material tolerances, and

perimeter sealant joints. Provide interior flange, unless otherwise indicated. Include supports, anchorages, and accessories required for complete assembly. Provide subsills made of same material as louvers or extended sills for recessed louvers.

C. JOIN FRAME MEMBERS to each other and to fixed louver blades with fillet welds, threaded fasteners, or both, as standard with louver manufacturer, concealed from view, unless otherwise indicated or size of louver assembly makes bolted connections between frame members necessary.

D. PROVIDE FULLY-RECESSED VERTICAL MULLIONS behind louver blades of type and at spacings recommended by manufacturer, or 72-inches OC., whichever is less. Where length of louver exceeds fabrication and handling limitations, fabricate with close-fitting blade splices designed to permit expansion and contraction.

PART 3 - EXECUTION

3.1 EXAMINATION:

A. EXAMINE SUBSTRATES and openings, with installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.

1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. LOCATE AND PLACE LOUVERS AND VENTS level, plumb, and at indicated alignment with adjacent work. Use concealed anchorages where possible. Provide brass or lead washers fitted to screws where required to protect metal surfaces and to make a weathertight connection. Form closely fitted joints with exposed connections accurately located and secured. Provide perimeter reveals and openings of uniform width for sealants and joint fillers, as indicated.

B. REPAIR FINISHES damaged by cutting, welding, soldering, and grinding. Restore finishes so no evidence remains of corrective work. Return items that cannot be refinished in the field to the factory, make required alterations, and refinish entire unit or provide new units.

C. PROTECT GALVANIZED AND NONFERROUS-METAL SURFACES from corrosion or galvanic action by applying a heavy coating of bituminous paint on surfaces that will be in contact with concrete, masonry, or dissimilar metals.

D. INSTALL CONCEALED GASKETS, flashings, joint fillers, and insulation as louver installation progresses, where weathertight louver joints are required. Comply with Division-07 Section "Joint Sealants" for sealants applied during louver installation.

E. CLEAN EXPOSED SURFACES of louvers and vents that are not protected by temporary covering, to remove fingerprints and soil during construction period. Do not let soil accumulate until final cleaning. Before final inspection, clean exposed surfaces with water and a mild soap or detergent not harmful to finishes. Thoroughly rinse surfaces and dry.

F. RESTORE LOUVERS AND VENTS DAMAGED during installation and construction so no evidence remains of corrective work. If results of restoration are unsuccessful, as determined by Architect, remove damaged units and replace with new units. Touch up minor abrasions in finishes with air-dried coating that matches color and gloss of, and is compatible with, factory-applied finish coating.

End of Section

102800

TOILET & BATH ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Private-use toilet and shower accessories.

2. Under-lavatory plumbing guards.

1.3 COORDINATION

A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.

B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

2. Include anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.

3. Approved full-size Samples will be returned and may be used in the Work.

B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.

1. Identify locations using room designations indicated.

2. Identify accessories using designations indicated.

1.5 INFORMATIONAL SUBMITTALS

A. Sample Warranty: For manufacturer's special warranties.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For accessories to include in maintenance manuals.

1.7 WARRANTY

A. Manufacturer's Special Warranty for Mirrors: Manufacturer agrees to repair or replace mirrors that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, visible silver spoilage defects.

2. Warranty Period: 20 years from date of Substantial Completion.

B. Manufacturer's Special Warranty for Hand Dryers: Manufacturer agrees to repair or replace hand dryers that fail in materials or workmanship within specified warranty period.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Structural Performance: Design accessories and fasteners to comply with the following requirements:

1. Grab Bars: Installed units are able to resist 250 lbf concentrated load applied in any direction and at any point.

2.2 PRIVATE-USE TOILET AND SHOWER ACCESSORIES

A. Source Limitations: Obtain private-use toilet accessories from single source manufacturer.

B. MANUFACTURER’S STANDARD UNITS

1. UNIT SIZE AND QUANTITY: as indicated on the Drawings

C. Paper Towel Dispenser and Waste Receptacle:

1. Basis of Design: Bobrick B-3974

2. Description: Recessed convertible automatic universal roll paper towel dispenser and waste receptacle.

3. Mounting: Recessed mounted.

4. Minimum Capacity: 8-inch wide, 800-foot long roll.

5. Material and Finish: Type 304 stainless steel with a no. 4 finish (satin)

6. Lockset: Tumbler type.

D. Soap Dispenser:

1. Basis of Design: Bobrick 818615

2. Description: Designed for manual operation and dispensing all-purpose hand soaps.

3. Mounting: Vertically oriented, surface mounted.

4. Capacity: 40oz.

5. Materials: Type 316 stainless steel with no. 4 finish (satin)

6. Lockset: Tumbler type.

7. Refill Indicator: Window type.

E. Grab Bars:

1. Basis of Design: Bobrick B-5806 x 18, B-5806 x 36, B-5806 x 42

2. Mounting: Flanges with concealed fasteners.

3. Material: Type 304 stainless steel with a no. 4 finish (satin) with a slip-resistant surface.

4. Outside Diameter: 1-1/2 inches

5. Configuration and Length: Straight and lengths as indicated on Drawings

F. Sanitary-Napkin and Tampon Vendor

1. Basis of Design: Bobrick B-37063C

2. Mounting: Recessed

3. Operation: free.

4. Exposed Material and Finish: Type 304 stainless steel with no. 4 finish (satin)

5. Lockset: Tumbler type with separate lock and key.

G. Shelf

1. Basis of Design: Bobrick B-295 x 14
2. Description: Fixed rectangular unit.
3. Nominal Size: 14 inches long by 5 inches wide.
4. Material and Finish: Type 304 stainless steel with no. 4 finish (satin)

H. Mirror Unit :

1. Basis of Design: Bobrick B-290 1836
2. Frame: Stainless steel angle
    a. Corners: Welded and ground smooth.
3. Size: 18” wide x 36” tall.

I. Coat Hook:

1. Basis of Design: Bobrick B-232 x 24
2. Description: Three-prong unit.
3. Mounting: Surface
4. Material and Finish: Type 304 stainless steel with no. 4 finish (satin)

J. Toilet Paper Dispenser:

1. Basis of Design: Bobrick B-265
2. Mounting: Surface mounted.
3. Description: Double roll with controlled delivery
4. Material and finish: Type 304 stainless steel with no. 4 finish (satin)

K. Sanitary Napkin Disposal:

1. Basis of Design: Bobrick B-270
2. Mounting: Surface mounted.
3. Description: Container
4. Material and finish: Type 304 stainless steel with no. 4 finish (satin)

L. Seat Cover Dispenser:

1. Basis of Design: Bobrick B-5221

2. Mounting: Surface mounted

3. Description: Toilet seat cover dispenser

4. Material and finish: Type 304 stainless steel with no. 4 finish (satin)

M. Folding Shower Seat

1. Basis of Design: Bobrick B-5181

2. Mounting: Surface mounted with concealed blocking.

3. Description: Folding shower seat

4. Material and finish: Frame (Type 304 stainless steel with no. 4 finish (satin)), Seat (solid phenolic with matte finish)

N. Shower Curtain Rod

1. Basis of Design: Bobrick B-6107x36

2. Mounting: Surface mounted with concealed blocking.

3. Description: 20 gauge, 1” diameter rod. Flanges are 2-1/2” square. ADA compliant.

4. Material and finish: Type 304 stainless steel, satin finish.

O. Shower Curtain

1. Basis of Design: Bobrick 204-2

2. Mounting: Shower Curtain Hook

3. Description: 42”W x 72” H, .008” thick curtain, contains antibacterial and flame retardant agents. Hemmed bottom and sides, requires seven (7) hooks. ADA compliant.

4. Material and finish: Opaque, matte white vinyl. White HDPE grommets along top, one every 6”.

P. Shower Curtain Hook

1. Basis of Design: Bobrick 204-1

2. Mounting: Clip over curtain rod.

3. Description: For use on 1” diameter shower curtain rods.

4. Material and finish: Type 304 Stainless Steel.

2.3 UNDERLAVATORY GUARDS

A. Under-lavatory Guard

1. Description: Insulating pipe covering for supply and drain piping assemblies that prevents direct contact with and burns from piping; allow service access without removing coverings.

2. Material and Finish: Antimicrobial, molded plastic, white.

2.4 MATERIALS

A. Stainless Steel: Per manufacturers product data sheets.

B. Brass: Per manufacturers product data sheets.

C. Fasteners: Per manufacturers product data sheets.

D. Chrome Plating: Per manufacturers product data sheets.

E. Mirrors: Tempered glass per manufacturers product data sheet.

2.5 FABRICATION

A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.

B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install all toilet accessories to meet the 2010 ADA guidelines.

B. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated. Install concealed wood blocking within the walls as required by the manufacturers.

1. Remove temporary labels and protective coatings.

C. Grab Bars: Install to comply with specified structural-performance requirements.

3.2 ADJUSTING AND CLEANING

A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.

B. Clean and polish exposed surfaces according to manufacturer's written instructions.

End of Section

104400

FIRE PROTECTION SPECIALTIES

PART 1 - GENERAL

1.1 WORK INCLUDED:

A. PROVIDE FIRE PROTECTION SPECIALTIES throughout the project, as specified herein, and as required for a complete and proper installation.

1. Provide fire-extinguishers, fire-extinguisher brackets and fire-extinguisher cabinets, where indicated

1.2 REGULATORY REQUIREMENTS

A. UL-LISTED PRODUCTS: For fire extinguishers, provide UL-listed units bearing the UL "Listing Mark" for type, rating, and classification of extinguisher.

1.3 COORDINATION:

A. COORDINATE LOCATIONS, installation, and sequencing with other work to avoid interference with and ensure proper installation, operation, adjustment, cleaning, and servicing.

1.4 SUBMITTALS

A. SUBMIT PRODUCT DATA for each type of product specified. For fire extinguisher cabinets include rough in dimensions, details showing mounting methods, relationships of box and trim to surrounding construction, door hardware, cabinet type and materials, trim style, door construction, panel style, and materials.

B. SUBMIT MAINTENANCE INSTRUCTIONS including service recommendations.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. SINGLE-SOURCE RESPONSIBILITY: Obtain fire extinguishers and cabinets from one source from a single manufacturer.

B. MANUFACTURER OF FIRE EXTINGUISHERS (FE’s): Match manufacturer of Owner’s existing fire-extinguisher units

C. ACCEPTABLE MANUFACTURERS FOR FIRE-EXTINGUISHER CABINETS: Subject to compliance with requirements, Products of the following manufactures are acceptable:

1. American Specialties, Inc.; ASI Group.

2. Fire-End & Croker Corporation.

3. JL Industries / Activar Construction Products Group Inc.

4. Kidde Residential and Commercial Division.

5. Larsens Manufacturing Company.

2.2 TYPICAL FIRE EXTINGUISHERS (FE):

A. MANUFACTURER'S STANDARD multipurpose dry chemical type unit, 10 lb. capacity, UL rated: 4A-80BC equal to JL “Cosmic 10E” # MB846.

2.3 FIRE EXTINGUISHER CABINETS (FEC):

A. PROVIDE MANUFACTURER’S STANDARD ASSEMBLY of formed steel cabinet/tub with tub size of minimum 9-inch wide x 18-inch high x 5-1/2-inch-deep to fit extinguisher unit, complete with manufacturer’s standard door-operating hardware of proper type for cabinet type, ADA-type pull, safety-locking system and with extinguisher mounting bracket.. Unless otherwise indicated, provide semi-recessed units, unless surface-mounted units are indicated:

1. Provide stainless-steel trim type units to match Owner’s existing building standard cabinet type.

2. View Door: Provide vertical clear view panel to match Owner’s existing building standard units

3. BASIS-OF-DESIGN: JL’s Cosmopolitan Series # 1836 – 1-1/2-inch square trimmed / profile recessed unit or equal

B. MOUNTING BRACKETS: Manufacturer's standard steel unit of plated or baked-enamel finish, provided at each fire-extinguisher unit. Design brackets to secure fire extinguisher of sizes, types and capacities required, to prevent accidental dislodgement of extinguisher unit.

C. SIGNAGE: Provide wall signage decals and lettering as required by AHJ representatives for letter style, size, spacing, and location. Locate as directed by Architect.

PART 3 - EXECUTION

3.1 INSTALL UNITS IN LOCATIONS AND AT MOUNTING HEIGHTS INDICATED, OR IF NOT INDICATED, AT HEIGHTS TO COMPLY WITH APPLICABLE REGULATIONS OF AHJ AND THE ACCESSIBILITY REQUIREMENTS OF ANSI A 117.1 AND THE ADA.

WHERE EXACT LOCATION OF SURFACE-MOUNTED CABINETS AND BRACKET-MOUNTED FIRE EXTINGUISHERS IS NOT INDICATED, LOCATE AS DIRECTED BY ARCHITECT, AND PER APPROVAL OF THE AHJ.

3.2 ADJUSTING AND CLEANING

A. Remove temporary protective coverings and strippable films, if any, as fire-protection cabinets are installed unless otherwise indicated in manufacturer's written installation instructions.

B. Adjust fire-protection cabinet doors to operate easily without binding. Verify that integral locking devices operate properly.

C. On completion of fire-protection cabinet installation, clean interior and exterior surfaces as recommended by manufacturer.

D. Touch up marred finishes, or replace fire-protection cabinets that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by fire-protection cabinet and mounting bracket manufacturers.

E. REPLACE FIRE-PROTECTION CABINETS that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

End of Section

105113

METAL LOCKERS

PART 1 - GENERAL

1.1 WORK INCLUDED:

A. PROVIDE ADA COMPLIANT LOCKERS where indicated, as specified herein, and as required for a complete and proper installation. Refer to elevation on the Drawings.

B. PROVIDE WOOD LOCKER ROOM BENCHES where indicated, as specified herein, and as required for a complete and proper installation.

1.2 COORDINATION:

A. COORDINATE LOCKER LOCATIONS, installation, and sequencing with other work to avoid interference with and ensure proper installation, operation, adjustment, cleaning, and servicing of toilet accessory items.

B. COORDINATE FABRICATION SCHEDULE with field measurements and construction progress to avoid delaying the Work.

1.3 SUBMITTALS

A. PROVIDE PRODUCT DATA indicating manufacturers standard components.

1. SUBMIT MANUFACTURER'S COLOR CHARTS showing the full range of colors, textures, and patterns available for each type of finish type or material, for selected by Architect.

B. SUBMIT SHOP DRAWINGS to include plans, elevations and large-scale details of assembly and installation. Indicate clearance requirements, accessory items and anchorages to other materials.

C. SUBMIT MATERIAL COLOR SAMPLES (printed color charts are not acceptable) of finish types and colors selected by the Architect for verification before fabrication.

1.4 FIELD CONDITIONS

A. DO NOT DELIVER UNITS until building is enclosed, wet work is complete, HVAC system is operating and is maintaining temperature and relative humidity at occupancy levels, and after painting and similar finishing operations have been completed in the installation areas. If units must be stored in other than installation areas, store only in areas where environmental conditions will not adversely affect units.

B. FIELD MEASUREMENTS: Verify dimensions of adjacent or related construction by field measurements before fabrication and indicate field measurements on submitted Shop Drawings. Locate concealed framing, blocking, and reinforcements that support the Work of this Section before being enclosed and indicate measurements on Shop Drawings.

1. If field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabrication by providing allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to required dimensions.

PART 2 - PRODUCTS

2.1 SINGLE-SOURCE RESPONSIBILITY:

A. Provide products of same manufacturer for each type of unit and for units exposed to view in same areas, unless otherwise acceptable to Owner.

B. ACCEPTABLE MANUFACTURERS: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the work include, but are not limited to, the following:

1. Penco Products Inc., 800-562-1000, www.pencoproducts.com

2. General Storage Systems (GSS Lockers), 800-265-9055, www.gsslockers.com

3. Lyon Metal Products, 800-323-0082, www.lyonworkspace.com

4. Republic Storage Products LLC., 800-477-1255, www.republicstorage.com

2.2 METAL LOCKERS:

A. MANUFACTURER'S STANDARD UNITS with locker frame tops, sides, backs and doors fabricated from cold-rolled and leveled furniture grade sheet steel without buckle, scale, and surface imperfections. Provide filler panels matching locker units as required by installation:

1. OVERALL HEIGHT OF SYSTEM: 72-inches unless otherwise indicated.

2. TRIPLE TIER CONFIGURATION: Refer to elevation on the Drawings.

3. LOCKER TOPS: integral sloped top, finished in same color as locker door.

4. DOOR LOUVERS: stamped, louvered vents in door face.

5. RECESSED HANDLE AND LATCH: "Accessible" housing to form recess for latch lifter and locking devices; non-protruding latch lifter containing strike and eye for padlock; and automatic, re-locking, pry-resistant latch mechanism

6. DOOR HINGES: heavy duty steel, full-loop, 5-knuckle, tight pin units, welded to inside of frame and secured to door with no fewer than 2 factory-installed fasteners that are completely concealed and tamperproof when door is closed

7. COAT HOOKS: Two-prong unit, mounted to bottom of shelf or divider – one (1) unit per locker cabinet

8. NUMBER PLATE: Manufacturer's standard etched, embossed, or stamped, nonferrous metal number plates with numerals not less than 3/8-inches high, numbered sequentially from 1 or as indicated by the Architect. Attach plates to each locker door, near top, centered, with at least 2 fasteners of same finish as number plate.

9. LOCKER BASE: Manufacturer’s standard recessed metal base typical, four (4)-inch high located under shoe cubby unless otherwise indicated on the Drawings.

10. FINISH: Chemically pretreat metal with degreasing and phosphatizing process. Apply baked-on enamel finish to all surfaces, exposed and concealed, except plates and nonferrous metals. Concealed parts may be manufacturer's standard neutral color.

    a. COLORS: Provide lockers in color(s) selected by Architect from manufacturer's standards. Provide locker units in up to two (2) different colors throughout Project.

2.3 WOOD BENCHES:

A. MANUFACTURER’S STANDARD UNITS with steel pedestals.

1. UNIT SIZE: as indicated on the Drawings.

2. Basis of Design: Lyon or approved equal.

3. Hardwood top finished with two coats of clear acrylic.

4. Steel pedestals constructed of 14 gauge steel with a powder coat paint finish.

PART 3 - EXECUTION

3.1 EXAMINE SUBSTRATES, AREAS, AND CONDITIONS FOR COMPLIANCE WITH REQUIREMENTS FOR INSTALLATION TOLERANCES, ROUGHING-IN OPENINGS, CLEARANCES, AND OTHER CONDITIONS AFFECTING PERFORMANCE OF WORK. EXAMINE WALLS FOR SUITABLE CONDITIONS WHERE UNITS WILL BE INSTALLED. PROCEED WITH INSTALLATION ONLY AFTER UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.

3.2 GENERAL INSTALLATION: INSTALL UNIT(S) LEVEL AND PLUMB, ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS AND IN ACCORDANCE WITH APPROVED SHOP DRAWINGS. USE FASTENERS APPROPRIATE TO SUBSTRATE AS

RECOMMENDED BY UNIT MANUFACTURER. INSTALL UNITS FIRMLY ANCHORED IN LOCATIONS AND AT HEIGHTS INDICATED.

3.3 ADJUST UNITS FOR PROPER OPERATION AND VERIFY THAT MECHANISMS FUNCTION SMOOTHLY. REPLACE DAMAGED OR DEFECTIVE ITEMS.

3.4 CLEAN AND POLISH ALL EXPOSED SURFACES STRICTLY ACCORDING TO MANUFACTURER'S RECOMMENDATIONS AFTER REMOVING TEMPORARY LABELS AND PROTECTIVE COATINGS.

End of Section

122100

WINDOW TREATMENTS

PART 1 - GENERAL

1.1 WORK INCLUDED

A. REMOVE AND REPLACE existing window louver-blind controls to comply with ADA accessibility reach-range requirements throughout the Owner’s existing facility.

1.2 SUBMITTALS

A. SUBMIT PRODUCT DATA including standard Manufacturer's data sheets for each product to be used.

PART 2 - PRODUCTS

2.1 LIFT-OPERATORS: CLEAR-PLASTIC WAND OR DUAL-CORD, TO MATCH EXISTING OPERATOR TYPES

2.2 TILT-OPERATORS: CLEAR-PLASTIC WAND OR DUAL-CORD, TO MATCH EXISTING OPERATOR TYPES.

PART 3 - EXECUTION

3.1 INSTALL NEW OPERATORS ACCORDING TO BLIND MANUFACTURER’S WRITTEN INSTRUCTIONS.

A. OPERATOR HEIGHT: Replace existing units with new operators as required to extend control to not more than 46-inches above adjacent finish floor level, when blinds are fully closed. Attach lowest end of dual-cord loop to the wall with mounting hardware per manufacturer.

3.2 ADJUST WINDOW TREATMENTS TO OPERATE SMOOTHLY, EASILY, SAFELY, AND FREE FROM BINDING OR MALFUNCTIONS THROUGHOUT ENTIRE OPERATIONAL RANGE. REPLACE DAMAGED CONTROL UNITS THAT CANNOT BE REPAIRED.

End of Section

140120

ELEVATOR REHABILITATION FOR ACCESSIBILITY

PART 1 - GENERAL

1.1 WORK INCLUDED

A. REHABILITATE EXISTING ELEVATORS to comply with current accessibility requirements.

1.2 COORDINATION

A. Coordinate between level push buttons and audible signal system, as applicable.

1.3 REGULATORY & REFERENCED STANDARDS

A. COMPLY WITH building and elevator codes, and the following, as applicable:

B. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI):

1. ANSI A117.1, Buildings and Facilities, Providing Accessibility and Usability for Physically Handicapped People.

C. AMERICANS WITH DISABILITIES ACT (ADA) Accessibility Guidelines (ADAAG), Section 407

D. AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME):

1. ASME/ANSI A17.7, Safety Code for Elevators and Escalators.

1.4 DEFINITIONS / TERMINOLOGY:

A. DEFINITIONS in ASME A17.1/CSA B44 apply to work of this Section.

1.5 ACTION SUBMITTALS

A. SUBMIT PRODUCT DATA to include sizes, features, finishes, and similar information. Include product data for new signal systems.

B. SUBMIT SHOP DRAWINGS as follows:

1. Include detailed elevations of hallway controls and signal devices, pushbutton fixtures, and in-car control modifications.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle materials, components and equipment in manufacturer's protective packaging. Store materials, components, and equipment off of ground, under cover, and in a dry location.

PART 2 - PRODUCTS

2.1 PROVIDE MANUFACTURER'S STANDARD ACCESSIBLE ELEVATOR CONTROLS. WHERE COMPONENTS ARE NOT OTHERWISE INDICATED, PROVIDE STANDARD COMPONENTS, AS REQUIRED FOR A COMPLETE SYSTEM.

2.2 SOURCE LIMITATIONS: OBTAIN EACH TYPE OF ACCESSIBLE CONTROL OR SIGNAL COMPONENT FABRICATED BY THE MANUFACTURER OF THE EXISTING ELEVATOR.

2.3 ACCESSIBLE SIGNAL EQUIPMENT

A. AUDIBLE SIGNALS must have a frequency of 1500 Hz maximum, and verbal annunciators must have a frequency of 300 Hz minimum and 3000 Hz maximum. The audible signal and verbal annunciator must be 10 dB minimum above ambient, but must not exceed 80 dB, measured at the hall call button.

B. HALLWAY SIGNALS

1. CALL-BUTTONS: Provide each to contain an integral registration LED white light, which will illuminate upon registration of a call and will extinguish when that call is answered. The direction of each button must be legibly and indelibly identified by arrows not less than .50-inch-high in the face of each button. Provide a corresponding Braille plate on the left side of each button.

    a. Minimum button size: 3/4-inch in smallest dimension.
    b. The call-button that designates the up direction must be located above the call-button that designates the down direction.

2. DIGITAL HALL ARRIVAL LANTERN / POSITION INDICATOR / ANNUNCIATOR: Provide combination fixtures only at main floors. Provide each hall landing with "UP" or "DOWN", in minimum 2.5-inch-high digital arrow lanterns. Each lens must be LED illuminated of proper intensity, so shielded to illuminate individual lens only. The lenses in each lantern must be illuminated green to indicate "UP" travel and red to indicate "DOWN" travel. Lanterns must signal in advance of car arrival at the landing indicating the direction of travel. Hallway lanterns must not be illuminated when a car passes a floor without stopping. Each lantern must be equipped with an audible electronic chime which will sound once for an "UPWARD" bound car and twice for a "DOWNWARD" bound car – but audible signal must not sound when a car passes the floor without stopping. Provide adjustable sound level on audible signal.

a. Mount visible signal fixtures at 72-inches-above the finished floor (per accessibility requirements) to the center of the lantern unit (including both the up and down position indicators).
b. Contractor's option: audible signals may be placed on cars.

C. CAR-OPERATING CONTROL PANEL:

1. MODIFY EXISTING PANEL(s), or provide new manufacturer's standard car-control unit, mounted in the return panel adjacent to car door unless otherwise indicated, and as follows:

2. CAR POSITION INDICATOR & AUDIBLE SIGNAL: Provide digital-type car position indicator, located above car door or above car-control station. Provide audible signal to indicate to passengers that car is either stopping at, or passing each of the floors served. Include travel direction arrows if not provided in car-control station.

D. AUDIO VOICE SYSTEM: Provide digitized audio voice system activated by stopping at a floor. Audio voice must announce floor designations, direction of travel, and special announcements. The voice announcement system must be a natural sounding human voice that receives messages and must comply with ADA requirements for audible car position indicators. The voice announcer must have two separate volume controls, one for the floor designations and direction of travel, and another for special announcements. The voice announcer must have a full range loudspeaker, located on top of the cab. The audio voice unit must contain the number of ports necessary to accommodate the number of floors, direction messages, and special announcements. Install voice announcer per manufacturer's recommendations and instructions. The voice system must be the product of a manufacturer of established reputation. Provide manufacturer literature and list of voice messages. Include the following messages:

1. Fire Service Message.

2. "Please do not block doors".

PART 3 - EXECUTION

3.1 EXAMINATION:

A. Examine elevator areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work. Verify critical dimensions and examine supporting structure and other conditions under which elevator work is to be installed.

1. Prepare written report, endorsed by Installer, listing any conditions detrimental to performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Remove existing fixtures and devices that are being renovated or replaced, repair, and refinish walls as appropriate to match existing conditions.

B. Comply with manufacturer's instructions and recommendations.

3.3 FIELD QUALITY CONTROL:

A. Upon completion of elevator rehabilitation Work, and before permitting elevator use (either temporary or permanent), perform acceptance tests as required and recommended by ASME A17.1/CSA B44 and by governing regulations and agencies.

B. Advise Owner, Architect, and AHJ representatives in advance of dates and times that tests are to be performed on elevators.

End of Section

220517

SLEEVES AND SLEEVE SEALS FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Sleeve-seal systems.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

PART 2 - PRODUCTS

2.1 SLEEVES

A. PVC-Pipe Sleeves: ASTM D 1785, Schedule 40.

2.2 SLEEVE-SEAL SYSTEMS

A. Description: Modular sealing-element unit, designed for field assembly, for filling annular space between piping and sleeve.

1. Sealing Elements: EPDM-rubber interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.
2. Pressure Plates: Carbon steel.
3. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements.

PART 3 - EXECUTION

3.1 SLEEVE INSTALLATION

A. Install sleeves for piping passing through penetrations in floors, partitions, roofs, and walls.

B. For sleeves that will have sleeve-seal system installed, select sleeves of size large enough to provide 1-inch annular clear space between piping and concrete slabs and walls.

1. Sleeves are not required for core-drilled holes.

C. Install sleeves in concrete floors, concrete roof slabs, and concrete walls as new slabs and walls are constructed.

1. Permanent sleeves are not required for holes in slabs formed by molded-PE or -PP sleeves.
2. Cut sleeves to length for mounting flush with both surfaces.

a. Exception: Extend sleeves installed in floors of mechanical equipment areas or other wet areas 2 inches above finished floor level.

3. Using grout, seal the space outside of sleeves in slabs and walls without sleeve-seal system.

D. Install sleeves for pipes passing through interior partitions.

1. Cut sleeves to length for mounting flush with both surfaces.
2. Install sleeves that are large enough to provide 1/4-inch annular clear space between sleeve and pipe or pipe insulation.
3. Seal annular space between sleeve and piping or piping insulation; use joint sealants appropriate for size, depth, and location of joint. Comply with requirements for sealants specified in Section 079200 "Joint Sealants."

E. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials. Comply with requirements for firestopping specified in Section 078413 "Penetration Firestopping."

3.2 SLEEVE-SEAL-SYSTEM INSTALLATION

A. Install sleeve-seal systems in sleeves in exterior concrete walls and slabs-on-grade at service piping entries into building.

B. Select type, size, and number of sealing elements required for piping material and size and for sleeve ID or hole size. Position piping in center of sleeve. Center piping in penetration, assemble sleeve-seal system components, and install in annular space between piping and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make a watertight seal.

3.3 SLEEVE AND SLEEVE-SEAL SCHEDULE

A. Use sleeves and sleeve seals for the following piping-penetration applications:

1. Exterior Concrete Walls below Grade:

    a. Piping Smaller Than NPS 6: Cast-iron wall sleeves with sleeve-seal system.

        1) Select sleeve size to allow for 1-inch annular clear space between piping and sleeve for installing sleeve-seal system.

2. Concrete Slabs-on-Grade:

    a. Piping Smaller Than NPS 6: Cast-iron wall sleeves with sleeve-seal system.

        1) Select sleeve size to allow for 1-inch annular clear space between piping and sleeve for installing sleeve-seal system.

3. Interior Partitions:

    a. Piping Smaller Than NPS 6: PVC-pipe sleeves.

End of Section

220518

ESCUTCHEONS FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Escutcheons.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

PART 2 - PRODUCTS

2.1 ESCUTCHEONS

A. One-Piece, Cast-Brass Type: With polished, chrome-plated finish and setscrew fastener.

B. Split-Casting Brass Type: With polished, chrome-plated finish and with concealed hinge and setscrew.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install escutcheons for piping penetrations of walls, ceilings, and finished floors.

B. Install escutcheons with ID to closely fit around pipe, tube, and insulation of insulated piping and with OD that completely covers opening.

1. Escutcheons for New Piping:

a. Piping with Fitting or Sleeve Protruding from Wall: One-piece, deep-pattern type.

b. Chrome-Plated Piping: One-piece, cast-brass or split-casting brass type with polished, chrome-plated finish.
c. Insulated Piping: One-piece, Chrome plated brass type or split-plate, type with concealed hinge.
d. Bare Piping at Ceiling Penetrations in Finished Spaces: One-piece, cast-brass or split-casting brass type with polished, chrome-plated finish.
e. Bare Piping in Unfinished Service Spaces: One-piece, cast-brass or split-casting brass type with polished, chrome-plated finish.
f. Bare Piping in Equipment Rooms: One-piece, cast-brass or split-casting brass type with polished, chrome-plated finish.

3.2 FIELD QUALITY CONTROL

A. Replace broken and damaged escutcheons and floor plates using new materials.

End of Section

220523.12

BALL VALVES FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Brass ball valves.
2. Bronze ball valves.

1.3 DEFINITIONS

A. CWP: Cold working pressure.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of valve.

1. Certification that products comply with NSF 61 Annex G and NSF 372.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Prepare valves for shipping as follows:

1. Protect internal parts against rust and corrosion.
2. Protect threads, flange faces, and soldered ends.
3. Set ball valves open to minimize exposure of functional surfaces.

B. Use the following precautions during storage:

1. Maintain valve end protection.
2. Store valves indoors and maintain at higher-than-ambient-dew-point temperature. If outdoor storage is necessary, store valves off the ground in watertight enclosures.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR VALVES

A. Source Limitations for Valves: Obtain each type of valve from single source from single manufacturer.

B. ASME Compliance:

1. ASME B1.20.1 for threads for threaded end valves.
2. ASME B16.18 for solder-joint connections.

C. NSF Compliance: NSF 61 Annex G and NSF 372 for valve materials for potable-water service.

D. Bronze valves shall be made with dezincification-resistant materials. Bronze valves made with copper alloy (brass) containing more than 15 percent zinc are not permitted.

E. Valve Pressure-Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.

F. Valve Sizes: Same as upstream piping unless otherwise indicated.

G. Valve Actuator Types:

1. Handlever: For quarter-turn valves smaller than NPS 4.

H. Valves in Insulated Piping:

1. Include 2-inch stem extensions.
2. Extended operating handles of nonthermal-conductive material and protective sleeves that allow operation of valves without breaking vapor seals or disturbing insulation.

2.2 BRASS BALL VALVES

A. Two-Piece, Brass Ball Valves with Full Port and Stainless-Steel Trim:

1. Description:

a. Standard: MSS SP-110.
b. CWP Rating: 600 psig.
c. Body Design: Two piece.
d. Body Material: Forged brass.
e. Ends: Threaded and soldered.
f. Seats: PTFE.
g. Stem: Stainless steel.
h. Ball: Stainless steel, vented.
i. Port: Full.

2.3 BRONZE BALL VALVES

A. Two-Piece, Bronze Ball Valves with Full Port and Stainless-Steel Trim:

1. Description:

a. Standard: MSS SP-110.
b. CWP Rating: 600 psig.
c. Body Design: Two piece.
d. Body Material: Bronze.
e. Ends: Threaded or soldered.
f. Seats: PTFE.
g. Stem: Stainless steel.
h. Ball: Stainless steel, vented.
i. Port: Full.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine valve interior for cleanliness, freedom from foreign matter, and corrosion. Remove special packing materials, such as blocks, used to prevent disc movement during shipping and handling.

B. Operate valves in positions from fully open to fully closed. Examine guides and seats made accessible by such operations.

C. Examine threads on valve and mating pipe for form and cleanliness.

D. Examine mating flange faces for conditions that might cause leakage. Check bolting for proper size, length, and material. Verify that gasket is of proper size, that its material composition is suitable for service, and that it is free from defects and damage.

E. Do not attempt to repair defective valves; replace with new valves.

3.2 VALVE INSTALLATION

A. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.

B. Locate valves for easy access and provide separate support where necessary.

C. Install valves in horizontal piping with stem at or above center of pipe.

D. Install valves in position to allow full stem movement.

3.3 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

A. If valves with specified CWP ratings are unavailable, the same types of valves with higher CWP ratings may be substituted.

B. Select valves with the following end connections:

1. For Copper Tubing, NPS 2 and Smaller: Threaded ends except where solder-joint valve-end option is indicated in valve schedules below.

3.4 DOMESTIC HOT- AND COLD-WATER VALVE SCHEDULE

A. Pipe NPS 2 and Smaller:

1. Bronze and Brass Valves: May be provided with solder-joint ends instead of threaded ends.
2. Two-piece, brass ball valves with full port and stainless-steel trim.
3. Two-piece, bronze ball valves with full port and stainless-steel trim.

End of Section

220523.14

CHECK VALVES FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Bronze, lift check valves.
2. Bronze, swing check valves.

1.2 DEFINITIONS

A. CWP: Cold working pressure.

B. EPDM: Ethylene propylene-diene terpolymer.

C. NBR: Nitrile butadiene rubber (also known as Buna-N).

1.3 ACTION SUBMITTALS

A. Product Data:

1. Bronze, lift check valves.
2. Bronze, swing check valves.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Prepare valves for shipping as follows:

1. Protect internal parts against rust and corrosion.
2. Protect threads, flange faces, grooves, press connections, and weld ends.
3. Set check valves in either closed or open position.

B. Use the following precautions during storage:

1. Maintain valve end protection.
2. Store valves indoors and maintain at higher-than-ambient-dew-point temperature. If outdoor storage is necessary, store valves off the ground in watertight enclosures.

C. Use sling to handle large valves; rig sling to avoid damage to exposed parts. Do not use stems or other components as lifting or rigging points unless specifically indicated for this purpose in manufacturer's instructions.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Obtain each type of valve from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Standards:

1. Domestic water piping check valves intended to convey or dispense water for human consumption are to comply with the U.S. Safe Drinking Water Act (SDWA), requirements of authorities having jurisdiction, and NSF 61/NSF 372, or to be certified in compliance with NSF 61/NSF 372 by an American National Standards Institute (ANSI)-accredited third-party certification body that the weighted average lead content at wetted surfaces is less than or equal to 0.25 percent.

B. ASME Compliance:

1. ASME B1.20.1 for threads for threaded end valves.
2. ASME B16.1 for flanges on iron valves.
3. ASME B16.5 for flanges for metric standard piping.
4. ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.
5. ASME B16.18 for cast-copper solder joint.
6. ASME B16.22 for wrought copper solder joint.
7. ASME B16.51 for press joint.
8. ASME B31.9 for building services piping valves.

C. AWWA Compliance: Comply with AWWA C606 for groove-end connections.

D. Provide bronze valves made with dezincification-resistant materials. Bronze valves made with copper alloy (brass) containing more than 15 percent zinc are unacceptable.

E. Valve Pressure-Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.

F. Valve Sizes: Same as upstream piping unless otherwise indicated.

G. Valve Bypass and Drain Connections: MSS SP-45.

2.3 BRONZE, LIFT CHECK VALVES

A. Bronze, Lift Check Valves with Bronze Disc, Class 125:

1. Standard: MSS SP-80, Type 1.
2. CWP Rating: 200 psig.
3. Body Design: Vertical flow.
4. Body Material: ASTM B61 or ASTM B62, bronze.
5. Ends: Threaded or soldered. See valve schedule articles.

6. Disc: Bronze.

2.4 BRONZE, SWING CHECK VALVES

A. Bronze, Swing Check Valves with Bronze Disc, Class 125:

1. Standard: MSS SP-80, Type 3.
2. CWP Rating: 200 psig.
3. Body Design: Horizontal flow.
4. Body Material: ASTM B62, bronze.
5. Ends: Threaded or soldered. See valve schedule articles.
6. Disc: Bronze.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine valve interior for cleanliness, freedom from foreign matter, and corrosion. Remove special packing materials, such as blocks, used to prevent disc movement during shipping and handling.

B. Operate valves in positions from fully open to fully closed. Examine guides and seats made accessible by such operations.

C. Examine threads on valve and mating pipe for form and cleanliness.

D. Examine mating flange faces for conditions that might cause leakage. Check bolting for proper size, length, and material. Verify that gasket is of proper size, that its material composition is suitable for service, and that it is free from defects and damage.

E. Examine press fittings to verify they have been properly pressed.

F. Do not attempt to repair defective valves; replace with new valves.

3.2 INSTALLATION OF VALVES

A. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.

B. Provide support of piping adjacent to valves such that no force is imposed upon valves.

C. Locate valves for easy access and where not blocked by equipment, other piping, or building components.

D. Install valves so that stems are horizontal or slope upward from centerline of pipe.

E. Install valves in position that does not project into aisles or block access to other equipment.

F. Install valves in position to allow full stem and manual operator movement.

G. Verify that joints of each valve have been properly installed and sealed to assure there is no leakage or damage.

H. Check Valves: Install check valves for proper direction of flow.

1. Swing Check Valves: In horizontal position with hinge pin level.
2. Check Valves: in horizontal or vertical position, between flanges.
3. Lift Check Valves: With stem upright and plumb.

I. Install valve tags. Comply with requirements in Section 220553 "Identification for Plumbing Piping and Equipment" for valve tags and schedules.

J. Adhere to manufacturer's installation instructions. When soldering or brazing valves, do not heat valves above maximum permitted temperature. Do not use solder with melting point temperature above valve manufacturer's recommended maximum.

3.3 ADJUSTING

A. Adjust or replace valve packing after piping systems have been tested and put into service but before final adjusting and balancing. Replace valves if persistent leaking occurs.

End of Section

220529

HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Metal pipe hangers and supports.
2. Thermal-hanger shield inserts.
3. Fastener systems.

1.3 DEFINITIONS

A. MSS: Manufacturers Standardization Society of The Valve and Fittings Industry Inc.

PART 2 - PRODUCTS

2.1 METAL PIPE HANGERS AND SUPPORTS

A. Carbon-Steel Pipe Hangers and Supports:

1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
2. Galvanized Metallic Coatings: Pregalvanized or hot dipped.
3. Nonmetallic Coatings: Plastic coating, jacket, or liner.
4. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
5. Hanger Rods: Continuous-thread rod, nuts, and washer made of stainless steel.

B. Stainless-Steel Pipe Hangers and Supports:

1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
2. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
3. Hanger Rods: Continuous-thread rod, nuts, and washer made of stainless steel.

C. Copper Pipe Hangers:

1. Description: MSS SP-58, Types 1 through 58, copper-coated-steel, factory-fabricated components.
2. Hanger Rods: Continuous-thread rod, nuts, and washer made of copper-coated steel.

2.2 THERMAL-HANGER SHIELD INSERTS

A. Insulation-Insert Material for Cold Piping: ASTM C 552, Type II cellular glass with 100-psig minimum compressive strength and vapor barrier.

B. Insulation-Insert Material for Hot Piping: Water-repellent treated, ASTM C 533, Type I calcium silicate with 100-psig minimum compressive strength.

C. For Trapeze or Clamped Systems: Insert and shield shall cover entire circumference of pipe.

D. For Clevis or Band Hangers: Insert and shield shall cover lower 180 degrees of pipe.

E. Insert Length: Extend 2 inches beyond sheet metal shield for piping operating below ambient air temperature.

2.3 FASTENER SYSTEMS

A. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated steel anchors, for use in hardened portland cement concrete; with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

PART 3 - EXECUTION

3.1 HANGER AND SUPPORT INSTALLATION

A. Metal Pipe-Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Install hangers, supports, clamps, and attachments as required to properly support piping from the building structure.

B. Thermal-Hanger Shield Installation: Install in pipe hanger or shield for insulated piping.

C. Fastener System Installation:

1. Install mechanical-expansion anchors in concrete after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.

D. Install hangers and supports complete with necessary attachments, inserts, bolts, rods, nuts, washers, and other accessories.

E. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.

F. Load Distribution: Install hangers and supports so that piping live and dead loads and stresses from movement will not be transmitted to connected equipment.

G. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and to not exceed maximum pipe deflections allowed by ASME B31.9 for building services piping.

H. Insulated Piping:

1. Attach clamps and spacers to piping.

a. Piping Operating above Ambient Air Temperature: Clamp may project through insulation.
b. Piping Operating below Ambient Air Temperature: Use thermal-hanger shield insert with clamp sized to match OD of insert.
c. Do not exceed pipe stress limits allowed by ASME B31.9 for building services piping.

2. Install MSS SP-58, Type 40, protective shields on cold piping with vapor barrier. Shields shall span an arc of 180 degrees.

a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.

3. Shield Dimensions for Pipe: Not less than the following:

a. NPS 1/4 to NPS 3-1/2: 12 inches long and 0.048 inch thick.
b. NPS 4: 12 inches long and 0.06 inch thick.
c. NPS 5 and NPS 6: 18 inches long and 0.06 inch thick.
d. NPS 8 to NPS 14: 24 inches long and 0.075 inch thick.
e. NPS 16 to NPS 24: 24 inches long and 0.105 inch thick.

3.2 ADJUSTING

A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.

B. Trim excess length of continuous-thread hanger and support rods to 1 inch.

3.3 HANGER AND SUPPORT SCHEDULE

A. Specific hanger and support requirements are in Sections specifying piping systems and equipment.

B. Comply with MSS SP-69 for pipe-hanger selections and applications that are not specified in piping system Sections.

C. Use hangers and supports with galvanized metallic coatings for piping and equipment that will not have field-applied finish.

D. Use nonmetallic coatings on attachments for electrolytic protection where attachments are in direct contact with copper tubing.

E. Use carbon-steel pipe hangers and supports and attachments for general service applications.

F. Use copper-plated pipe hangers and copper or stainless-steel attachments for copper piping and tubing.

G. Use padded hangers for piping that is subject to scratching.

H. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Adjustable, Steel Clevis Hangers (MSS Type 1): For suspension of noninsulated or insulated, stationary pipes NPS 1/2 to NPS 30.
2. Yoke-Type Pipe Clamps (MSS Type 2): For suspension of up to 1050 deg F, pipes NPS 4 to NPS 24, requiring up to 4 inches of insulation.
3. Carbon- or Alloy-Steel, Double-Bolt Pipe Clamps (MSS Type 3): For suspension of pipes NPS 3/4 to NPS 36, requiring clamp flexibility and up to 4 inches of insulation.
4. Steel Pipe Clamps (MSS Type 4): For suspension of cold and hot pipes NPS 1/2 to NPS 24 if little or no insulation is required.
5. Pipe Hangers (MSS Type 5): For suspension of pipes NPS 1/2 to NPS 4, to allow off-center closure for hanger installation before pipe erection.
6. Adjustable, Swivel Split- or Solid-Ring Hangers (MSS Type 6): For suspension of noninsulated, stationary pipes NPS 3/4 to NPS 8.
7. Adjustable, Steel Band Hangers (MSS Type 7): For suspension of noninsulated, stationary pipes NPS 1/2 to NPS 8.
8. Adjustable Band Hangers (MSS Type 9): For suspension of noninsulated, stationary pipes NPS 1/2 to NPS 8.
9. Adjustable, Swivel-Ring Band Hangers (MSS Type 10): For suspension of noninsulated, stationary pipes NPS 1/2 to NPS 8.
10. Split Pipe Ring with or without Turnbuckle Hangers (MSS Type 11): For suspension of noninsulated, stationary pipes NPS 3/8 to NPS 8.
11. Extension Hinged or Two-Bolt Split Pipe Clamps (MSS Type 12): For suspension of noninsulated, stationary pipes NPS 3/8 to NPS 3.
12. U-Bolts (MSS Type 24): For support of heavy pipes NPS 1/2 to NPS 30.
13. Clips (MSS Type 26): For support of insulated pipes not subject to expansion or contraction.
14. Pipe Saddle Supports (MSS Type 36): For support of pipes NPS 4 to NPS 36, with steel-pipe base stanchion support and cast-iron floor flange or carbon-steel plate.
15. Pipe Stanchion Saddles (MSS Type 37): For support of pipes NPS 4 to NPS 36, with steel-pipe base stanchion support and cast-iron floor flange or carbon-steel plate, and with U-bolt to retain pipe.
16. Adjustable Pipe Saddle Supports (MSS Type 38): For stanchion-type support for pipes NPS 2-1/2 to NPS 36 if vertical adjustment is required, with steel-pipe base stanchion support and cast-iron floor flange.
17. Single-Pipe Rolls (MSS Type 41): For suspension of pipes NPS 1 to NPS 30, from two rods if longitudinal movement caused by expansion and contraction might occur.
18. Adjustable Roller Hangers (MSS Type 43): For suspension of pipes NPS 2-1/2 to NPS 24, from single rod if horizontal movement caused by expansion and contraction might occur.

19. Complete Pipe Rolls (MSS Type 44): For support of pipes NPS 2 to NPS 42 if longitudinal movement caused by expansion and contraction might occur but vertical adjustment is not necessary.
20. Pipe Roll and Plate Units (MSS Type 45): For support of pipes NPS 2 to NPS 24 if small horizontal movement caused by expansion and contraction might occur and vertical adjustment is not necessary.
21. Adjustable Pipe Roll and Base Units (MSS Type 46): For support of pipes NPS 2 to NPS 30 if vertical and lateral adjustment during installation might be required in addition to expansion and contraction.

I. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Extension Pipe or Riser Clamps (MSS Type 8): For support of pipe risers NPS 3/4 to NPS 24.
2. Carbon- or Alloy-Steel Riser Clamps (MSS Type 42): For support of pipe risers NPS 3/4 to NPS 24 if longer ends are required for riser clamps.

J. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Steel Turnbuckles (MSS Type 13): For adjustment up to 6 inches for heavy loads.
2. Steel Clevises (MSS Type 14): For 120 to 450 deg F piping installations.
3. Swivel Turnbuckles (MSS Type 15): For use with MSS Type 11, split pipe rings.
4. Malleable-Iron Sockets (MSS Type 16): For attaching hanger rods to various types of building attachments.
5. Steel Weldless Eye Nuts (MSS Type 17): For 120 to 450 deg F piping installations.

K. Building Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Steel or Malleable Concrete Inserts (MSS Type 18): For upper attachment to suspend pipe hangers from concrete ceiling.
2. Top-Beam C-Clamps (MSS Type 19): For use under roof installations with bar-joist construction, to attach to top flange of structural shape.
3. Side-Beam or Channel Clamps (MSS Type 20): For attaching to bottom flange of beams, channels, or angles.
4. Center-Beam Clamps (MSS Type 21): For attaching to center of bottom flange of beams.
5. Welded Beam Attachments (MSS Type 22): For attaching to bottom of beams if loads are considerable and rod sizes are large.
6. C-Clamps (MSS Type 23): For structural shapes.
7. Top-Beam Clamps (MSS Type 25): For top of beams if hanger rod is required tangent to flange edge.
8. Side-Beam Clamps (MSS Type 27): For bottom of steel I-beams.
9. Steel-Beam Clamps with Eye Nuts (MSS Type 28): For attaching to bottom of steel I-beams for heavy loads.
10. Linked-Steel Clamps with Eye Nuts (MSS Type 29): For attaching to bottom of steel I-beams for heavy loads, with link extensions.
11. Malleable-Beam Clamps with Extension Pieces (MSS Type 30): For attaching to structural steel.

12. Welded-Steel Brackets: For support of pipes from below or for suspending from above by using clip and rod. Use one of the following for indicated loads:

    a. Light (MSS Type 31): 750 lb.
    b. Medium (MSS Type 32): 1500 lb.
    c. Heavy (MSS Type 33): 3000 lb.

13. Side-Beam Brackets (MSS Type 34): For sides of steel or wooden beams.
14. Plate Lugs (MSS Type 57): For attaching to steel beams if flexibility at beam is required.
15. Horizontal Travelers (MSS Type 58): For supporting piping systems subject to linear horizontal movement where headroom is limited.

L. Saddles and Shields: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Steel-Pipe-Covering Protection Saddles (MSS Type 39): To fill interior voids with insulation that matches adjoining insulation.
2. Protection Shields (MSS Type 40): Of length recommended in writing by manufacturer to prevent crushing insulation.
3. Thermal-Hanger Shield Inserts: For supporting insulated pipe.

M. Spring Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Restraint-Control Devices (MSS Type 47): Where indicated to control piping movement.
2. Spring Cushions (MSS Type 48): For light loads if vertical movement does not exceed 1-1/4 inches.
3. Spring-Cushion Roll Hangers (MSS Type 49): For equipping Type 41, roll hanger with springs.
4. Spring Sway Braces (MSS Type 50): To retard sway, shock, vibration, or thermal expansion in piping systems.
5. Variable-Spring Hangers (MSS Type 51): Preset to indicated load and limit variability factor to 25 percent to allow expansion and contraction of piping system from hanger.
6. Variable-Spring Base Supports (MSS Type 52): Preset to indicated load and limit variability factor to 25 percent to allow expansion and contraction of piping system from base support.
7. Variable-Spring Trapeze Hangers (MSS Type 53): Preset to indicated load and limit variability factor to 25 percent to allow expansion and contraction of piping system from trapeze support.
8. Constant Supports: For critical piping stress and if necessary to avoid transfer of stress from one support to another support, critical terminal, or connected equipment. Include auxiliary stops for erection, hydrostatic test, and load-adjustment capability. These supports include the following types:

    a. Horizontal (MSS Type 54): Mounted horizontally.
    b. Vertical (MSS Type 55): Mounted vertically.
    c. Trapeze (MSS Type 56): Two vertical-type supports and one trapeze member.

N. Comply with MSS SP-69 for trapeze pipe-hanger selections and applications that are not specified in piping system Sections.

O. Comply with MFMA-103 for metal framing system selections and applications that are not specified in piping system Sections.

P. Use mechanical-expansion anchors instead of building attachments where required in concrete construction.

Q. Use pipe positioning systems in pipe spaces behind plumbing fixtures to support supply and waste piping for plumbing fixtures.

End of Section

220719

PLUMBING PIPING INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes insulating the following plumbing piping services:

1. Domestic hot-water piping.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include thermal conductivity, water-vapor permeance thickness, and jackets (both factory- and field-applied, if any).

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Skilled mechanics who have successfully completed an apprenticeship program or another craft training program certified by the Department of Labor, Bureau of Apprenticeship and Training.

B. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products according to ASTM E 84 by a testing agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing agency.

1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.
2. Insulation Installed Outdoors: Flame-spread index of 75 or less, and smoke-developed index of 150 or less.

C. Comply with the following applicable standards and other requirements specified for miscellaneous components:

1. Supply and Drain Protective Shielding Guards: ICC A117.1.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Packaging: Insulation material containers shall be marked by manufacturer with appropriate ASTM standard designation, type and grade, and maximum use temperature.

1.6 COORDINATION

A. Coordinate sizes and locations of supports, hangers, and insulation shields specified in Section 220529 "Hangers and Supports for Plumbing Piping and Equipment."

B. Coordinate clearance requirements with piping Installer for piping insulation application. Before preparing piping Shop Drawings, establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.

C. Coordinate installation and testing of heat tracing.

1.7 SCHEDULING

A. Schedule insulation application after pressure testing systems and, where required, after installing and testing heat tracing. Insulation application may begin on segments that have satisfactory test results.

B. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

PART 2 - PRODUCTS

2.1 INSULATION MATERIALS

A. Comply with requirements in "Indoor Piping Insulation Schedule" articles for where insulating materials shall be applied.

B. Products shall not contain asbestos, lead, mercury, or mercury compounds.

C. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.

D. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable according to ASTM C 795.

E. Foam insulation materials shall not use CFC or HCFC blowing agents in the manufacturing process.

F. Flexible Elastomeric Insulation: Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C 534, Type I for tubular materials.

2.2 ADHESIVES

A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated, unless otherwise indicated.

B. Flexible Elastomeric and Polyolefin Adhesive: Comply with MIL-A-24179A, Type II, Class I.

1. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
2. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of insulation application.

1. Verify that systems to be insulated have been tested and are free of defects.
2. Verify that surfaces to be insulated are clean and dry.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.

3.3 GENERAL INSTALLATION REQUIREMENTS

A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of piping including fittings, valves, and specialties.

B. Install insulation materials, forms, vapor barriers or retarders, jackets, and thicknesses required for each item of pipe system as specified in insulation system schedules.

C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.

D. Install insulation with longitudinal seams at top and bottom of horizontal runs.

E. Install multiple layers of insulation with longitudinal and end seams staggered.

F. Do not weld brackets, clips, or other attachment devices to piping, fittings, and specialties.

G. Keep insulation materials dry during application and finishing.

H. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.

I. Install insulation with least number of joints practical.

J. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.

K. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.

L. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.

M. For above-ambient services, do not install insulation to the following:

1. Vibration-control devices.
2. Testing agency labels and stamps.
3. Nameplates and data plates.
4. Cleanouts.

3.4 PENETRATIONS

A. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.

B. Insulation Installation at Fire-Rated Wall and Partition Penetrations: Install insulation continuously through penetrations of fire-rated walls and partitions.

1. Comply with requirements in Section 078413 "Penetration Firestopping" for firestopping and fire-resistive joint sealers.

C. Insulation Installation at Floor Penetrations:

1. Pipe: Install insulation continuously through floor penetrations.
2. Seal penetrations through fire-rated assemblies. Comply with requirements in Section 078413 "Penetration Firestopping."

3.5 GENERAL PIPE INSULATION INSTALLATION

A. Requirements in this article generally apply to all insulation materials except where more specific requirements are specified in various pipe insulation material installation articles.

3.6 INSTALLATION OF FLEXIBLE ELASTOMERIC INSULATION

A. Seal longitudinal seams and end joints with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

B. Insulation Installation on Pipe Flanges:

1. Install pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of sheet insulation of same thickness as pipe insulation.
4. Secure insulation to flanges and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install mitered sections of pipe insulation.
2. Secure insulation materials and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

3.7 FINISHES

A. Flexible Elastomeric Thermal Insulation: After adhesive has fully cured, apply two coats of insulation manufacturer's recommended protective coating.

3.8 PIPING INSULATION SCHEDULE, GENERAL

A. Acceptable preformed pipe and tubular insulation materials and thicknesses are identified for each piping system and pipe size range. If more than one material is listed for a piping system, selection from materials listed is Contractor's option.

3.9 INDOOR PIPING INSULATION SCHEDULE

A. Domestic Hot and Recirculated Hot Water:

1. NPS 1-1/4 and Smaller: Insulation shall be the following:

   a. Flexible Elastomeric: 3/4 inch thick.

2. NPS 1-1/2 and Larger: Insulation shall be the following:

   a. Flexible Elastomeric: 1 inch thick.

End of Section

221116

DOMESTIC WATER PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Copper tube and fittings.
2. PEX tube and fittings.
3. Transition fittings.
4. Dielectric fittings.

1.3 ACTION SUBMITTALS

A. Product Data: For transition fittings and dielectric fittings.

1.4 INFORMATIONAL SUBMITTALS

A. System purging and disinfecting activities report.

B. Field quality-control reports.

1.5 FIELD CONDITIONS

A. Interruption of Existing Water Service: Do not interrupt water service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary water service according to requirements indicated:

1. Notify Architect no fewer than two days in advance of proposed interruption of water service.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

A. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

B. Potable-water piping and components shall comply with NSF 14 and NSF 61 Annex G. Plastic piping components shall be marked with "NSF-pw."

C. Comply with NSF Standard 372 for low lead.

2.2 COPPER TUBE AND FITTINGS

A. Hard Copper Tube: and [ASTM B 88, Type M] water tube, drawn temper.

B. Soft Copper Tube: and [ASTM B 88, Type L] water tube, annealed temper.

C. Cast-Copper, Solder-Joint Fittings: ASME B16.18, pressure fittings.

D. Wrought-Copper, Solder-Joint Fittings: ASME B16.22, wrought-copper pressure fittings.

E. Bronze Flanges: ASME B16.24, Class 150, with solder-joint ends.

F. Copper Unions:

1. MSS SP-123.
2. Cast-copper-alloy, hexagonal-stock body.
3. Ball-and-socket, metal-to-metal seating surfaces.
4. Solder-joint or threaded ends.

G. Copper-Tube, Extruded-Tee Connections:

1. Description: Tee formed in copper tube according to ASTM F 2014.

H. Appurtenances for Grooved-End Copper Tubing:

1. Bronze Fittings for Grooved-End, Copper Tubing: ASTM B 75/B 75M copper tube or ASTM B 584 bronze castings.
2. Mechanical Couplings for Grooved-End Copper Tubing:

a. Copper-tube dimensions and design similar to AWWA C606.
b. Ferrous housing sections.
c. EPDM-rubber gaskets suitable for hot and cold water.
d. Bolts and nuts.
e. Minimum Pressure Rating: 300 psig.

2.3 PEX TUBE AND FITTINGS

A. Tube Material: PEX plastic according to ASTM F 876.

B. Fittings: ASTM F 1807, metal insert and copper crimp rings.

C. Manifold: Multiple-outlet, plastic or corrosion-resistant-metal assembly complying with ASTM F 876; with corrosion-resistant-metal valve for each outlet.

D. Provide silver or aluminum colored PEX where piping is exposed to view, such as toilet supply.

2.4 PIPING JOINING MATERIALS

A. Metal, Pipe-Flange Bolts and Nuts: ASME B18.2.1, carbon steel unless otherwise indicated.

B. Solder Filler Metals: ASTM B 32, lead-free alloys.

C. Flux: ASTM B 813, water flushable.

D. Brazing Filler Metals: AWS A5.8M/A5.8, BCuP Series, copper-phosphorus alloys for general-duty brazing unless otherwise indicated.

2.5 ENCASEMENT FOR PIPING

A. Standard: ASTM A 674 or AWWA C105/A21.5.

B. Form: Sheet or tube.

C. Color: Black.

2.6 TRANSITION FITTINGS

A. General Requirements:

1. Same size as pipes to be joined.
2. Pressure rating at least equal to pipes to be joined.
3. End connections compatible with pipes to be joined.

B. Fitting-Type Transition Couplings: Manufactured piping coupling or specified piping system fitting.

C. Sleeve-Type Transition Coupling: AWWA C219.

D. General Requirements: Assembly of copper alloy and ferrous materials with separating nonconductive insulating material. Include end connections compatible with pipes to be joined.

E. Dielectric Unions:

1. Standard: ASSE 1079.

2. Pressure Rating: 125 psig minimum at 180 deg F.
3. End Connections: Solder-joint copper alloy and threaded ferrous.

F. Dielectric Nipples:

1. Standard: IAPMO PS 66.
2. Electroplated steel nipple complying with ASTM F 1545.
3. Pressure Rating and Temperature: 300 psig at 225 deg F.
4. End Connections: Male threaded or grooved.
5. Lining: Inert and noncorrosive, propylene.

PART 3 - EXECUTION

3.1 EARTHWORK

A. Comply with requirements in Section 312000 "Earth Moving" for excavating, trenching, and backfilling.

3.2 PIPING INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of domestic water piping. Indicated locations and arrangements are used to size pipe and calculate friction loss, expansion, and other design considerations. Install piping as indicated unless deviations to layout are approved on coordination drawings.

B. Install copper tubing under building slab according to CDA's "Copper Tube Handbook."

C. Install underground copper tube in PE encasement according to ASTM A 674 or AWWA C105/A21.5.

D. Install shutoff valve, hose-end drain valve, strainer, pressure gage, and test tee with valve inside the building at each domestic water-service entrance. Comply with requirements for pressure gages in Section 220519 "Meters and Gages for Plumbing Piping" and with requirements for drain valves and strainers in Section 221119 "Domestic Water Piping Specialties."

E. Install shutoff valve immediately upstream of each dielectric fitting.

F. Install water-pressure-reducing valves downstream from shutoff valves. Comply with requirements for pressure-reducing valves in Section 221119 "Domestic Water Piping Specialties."

G. Install domestic water piping level and plumb.

H. Rough-in domestic water piping for water-meter installation according to utility company's requirements.

I. Install piping concealed from view and protected from physical contact by building occupants unless otherwise indicated and except in equipment rooms and service areas.

J. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

K. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal, and coordinate with other services occupying that space.

L. Install piping to permit valve servicing.

M. Install nipples, unions, special fittings, and valves with pressure ratings the same as or higher than the system pressure rating used in applications below unless otherwise indicated.

N. Install piping free of sags and bends.

O. Install fittings for changes in direction and branch connections.

P. Install unions in copper tubing at final connection to each piece of equipment, machine, and specialty.

Q. Install PEX tubing with loop at each change of direction of more than 90 degrees.

R. Install thermostats in hot-water circulation piping. Comply with requirements for thermostats in Section 221123 "Domestic Water Pumps."

S. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Section 220517 "Sleeves and Sleeve Seals for Plumbing Piping."

T. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Section 220517 "Sleeves and Sleeve Seals for Plumbing Piping."

U. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Section 220518 "Escutcheons for Plumbing Piping."

3.3 JOINT CONSTRUCTION

A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

B. Remove scale, slag, dirt, and debris from inside and outside of pipes, tubes, and fittings before assembly.

C. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

1. Apply appropriate tape or thread compound to external pipe threads.
2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged.

D. Brazed Joints for Copper Tubing: Comply with CDA's "Copper Tube Handbook," "Brazed Joints" chapter.

E. Soldered Joints for Copper Tubing: Apply ASTM B 813, water-flushable flux to end of tube. Join copper tube and fittings according to ASTM B 828 or CDA's "Copper Tube Handbook."

F. Extruded-Tee Connections: Form tee in copper tube according to ASTM F 2014. Use tool designed for copper tube; drill pilot hole, form collar for outlet, dimple tube to form seating stop, and braze branch tube into collar.

G. Joint Construction for Grooved-End Copper Tubing: Make joints according to AWWA C606. Roll groove ends of tubes. Lubricate and install gasket over ends of tubes or tube and fitting. Install coupling housing sections over gasket with keys seated in tubing grooves. Install and tighten housing bolts.

H. Joints for Dissimilar-Material Piping: Make joints using adapters compatible with materials of both piping systems.

I. Joints for PEX Tubing: Join according to ASTM F 1807 for metal insert and copper crimp ring fittings and ASTM F 1960 for cold expansion fittings and reinforcing rings.

3.4 TRANSITION FITTING INSTALLATION

A. Install transition couplings at joints of dissimilar piping.

B. Transition Fittings in Underground Domestic Water Piping:

1. Fittings for NPS 1-1/2 and Smaller: Fitting-type coupling.
2. Fittings for NPS 2 and Larger: Sleeve-type coupling.

C. Transition Fittings in Aboveground Domestic Water Piping NPS 2 and Smaller: Plastic-to-metal transition fittings.

3.5 DIELECTRIC FITTING INSTALLATION

A. Install dielectric fittings in piping at connections of dissimilar metal piping and tubing.

B. Dielectric Fittings for NPS 2 and Smaller: Use dielectric couplings or nipples.

3.6 HANGER AND SUPPORT INSTALLATION

A. Comply with requirements for pipe hanger, support products, and installation in Section 220529 "Hangers and Supports for Plumbing Piping and Equipment."

1. Vertical Piping: MSS Type 8 or 42, clamps.
2. Individual, Straight, Horizontal Piping Runs:

a. 100 Feet and Less: MSS Type 1, adjustable, steel clevis hangers.
b. Longer Than 100 Feet: MSS Type 43, adjustable roller hangers.
c. Longer Than 100 Feet if Indicated: MSS Type 49, spring cushion rolls.

3. Multiple, Straight, Horizontal Piping Runs 100 Feet or Longer: MSS Type 44, pipe rolls. Support pipe rolls on trapeze.
4. Base of Vertical Piping: MSS Type 52, spring hangers.

B. Support vertical piping and tubing at base and at each floor.

C. Rod diameter may be reduced one size for double-rod hangers, to a minimum of 3/8 inch.

D. Install hangers for copper tubing with the following maximum horizontal spacing and minimum rod diameters:

1. NPS 3/4 and Smaller: 60 inches with 3/8-inch rod.
2. NPS 1 and NPS 1-1/4: 72 inches with 3/8-inch rod.
3. NPS 1-1/2 and NPS 2: 96 inches with 3/8-inch rod.

E. Install supports for vertical copper tubing every 10 feet.

F. Install vinyl-coated hangers for PEX tubing with the following maximum horizontal spacing and minimum rod diameters:

1. NPS 1 and Smaller: 32 inches with 3/8-inch rod.

G. Install hangers for vertical PEX tubing every 48 inches.

H. Support piping and tubing not listed in this article according to MSS SP-58 and manufacturer's written instructions.

I. PEX tubing to be anchored to wall stud at all shut-off valves.

3.7 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. When installing piping adjacent to equipment and machines, allow space for service and maintenance.

C. Connect domestic water piping to exterior water-service piping. Use transition fitting to join dissimilar piping materials.

D. Connect domestic water piping to water-service piping with shutoff valve; extend and connect to the following:

1. Water Heaters: Cold-water inlet and hot-water outlet piping in sizes indicated, but not smaller than sizes of water heater connections.
2. Plumbing Fixtures: Cold- and hot-water-supply piping in sizes indicated, but not smaller than that required by plumbing code.

3.8 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Piping Inspections:

    a. Do not enclose, cover, or put piping into operation until it has been inspected and approved by authorities having jurisdiction.
    b. During installation, notify authorities having jurisdiction at least one day before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction:

        1) Roughing-in Inspection: Arrange for inspection of piping before concealing or closing in after roughing in and before setting fixtures.
        2) Final Inspection: Arrange for authorities having jurisdiction to observe tests specified in "Piping Tests" Subparagraph below and to ensure compliance with requirements.

    c. Reinspection: If authorities having jurisdiction find that piping will not pass tests or inspections, make required corrections and arrange for reinspection.
    d. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

2. Piping Tests:

    a. Fill domestic water piping. Check components to determine that they are not air bound and that piping is full of water.
    b. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit a separate report for each test, complete with diagram of portion of piping tested.
    c. Leave new, altered, extended, or replaced domestic water piping uncovered and unconcealed until it has been tested and approved. Expose work that was covered or concealed before it was tested.
    d. Cap and subject piping to static water pressure of 50 psig above operating pressure, without exceeding pressure rating of piping system materials. Isolate test source and allow it to stand for four hours. Leaks and loss in test pressure constitute defects that must be repaired.
    e. Repair leaks and defects with new materials, and retest piping or portion thereof until satisfactory results are obtained.
    f. Prepare reports for tests and for corrective action required.

B. Domestic water piping will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

3.9 ADJUSTING

A. Perform the following adjustments before operation:

1. Close drain valves, hydrants, and hose bibbs.
2. Open shutoff valves to fully open position.
3. Open throttling valves to proper setting.
4. Remove plugs used during testing of piping and for temporary sealing of piping during installation.

5. Remove and clean strainer screens. Close drain valves and replace drain plugs.
6. Remove filter cartridges from housings and verify that cartridges are as specified for application where used and are clean and ready for use.
7. Check plumbing specialties and verify proper settings, adjustments, and operation.

3.10 CLEANING

A. Clean and disinfect potable domestic water piping as follows:

1. Purge new piping and parts of existing piping that have been altered, extended, or repaired before using.
2. Use purging and disinfecting procedures prescribed by authorities having jurisdiction; if methods are not prescribed, use procedures described in either AWWA C651 or AWWA C652 or follow procedures described below:

    a. Flush piping system with clean, potable water until dirty water does not appear at outlets.
    b. Fill and isolate system according to either of the following:

        1) Fill system or part thereof with water/chlorine solution with at least 50 ppm of chlorine. Isolate with valves and allow to stand for 24 hours.
        2) Fill system or part thereof with water/chlorine solution with at least 200 ppm of chlorine. Isolate and allow to stand for three hours.

    c. Flush system with clean, potable water until no chlorine is in water coming from system after the standing time.
    d. Repeat procedures if biological examination shows contamination.
    e. Submit water samples in sterile bottles to authorities having jurisdiction.

3.11 PIPING SCHEDULE

A. Transition and special fittings with pressure ratings at least equal to piping rating may be used in applications below unless otherwise indicated.

B. Flanges and unions may be used for aboveground piping joints unless otherwise indicated.

C. Fitting Option: Extruded-tee connections and brazed joints may be used on aboveground copper tubing.

D. Under-building-slab, domestic water, building-service piping, NPS 3 and smaller, shall be the following:

1. Soft copper tube, ASTM B 88, Type K; wrought-copper, solder-joint fittings; and brazed joints.

E. Aboveground domestic water piping in Community Buildings, NPS 2 and smaller, shall be the following:

1. Hard copper tube, ASTM B 88, Type M; cast- or wrought-copper, solder-joint fittings; and soldered joints.

F. Aboveground domestic water piping in Residential Building, NPS 1 and smaller, shall be the following:

1. Fittings for PEX tube:

a. ASTM F 1807, metal insert and copper crimp rings.

3.12 VALVE SCHEDULE

A. Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:

1. Shutoff Duty: Use ball or gate valves for piping NPS 2 and smaller. Use butterfly, ball, or gate valves with flanged ends for piping NPS 2-1/2 and larger.
2. Throttling Duty: Use ball or globe valves for piping NPS 2 and smaller. Use butterfly or ball valves with flanged ends for piping NPS 2-1/2 and larger.
3. Drain Duty: Hose-end drain valves.

B. Use check valves to maintain correct direction of domestic water flow to and from equipment.

End of Section

221119

DOMESTIC WATER PIPING SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Water pressure-reducing valves.
2. Balancing valves.
3. Outlet boxes.
4. Water-hammer arresters.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For domestic water piping specialties.

1. Include diagrams for power, signal, and control wiring.

1.4 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For domestic water piping specialties to include in emergency, operation, and maintenance manuals.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR PIPING SPECIALTIES

A. Potable-water piping and components shall comply with NSF 61 Annex G.

2.2 PERFORMANCE REQUIREMENTS

A. Minimum Working Pressure for Domestic Water Piping Specialties: 125 psig unless otherwise indicated.

2.3 WATER PRESSURE-REDUCING VALVES

A. Water Regulators:

1. Standard: ASSE 1003.
2. Pressure Rating: Initial working pressure of 150 psig.
3. Size: 1 inch.
4. Design Flow Rate: 50 gpm.
5. Design Inlet Pressure: Field verify.
6. Design Outlet Pressure Setting: 50 psf.
7. Body: Bronze with chrome-plated finish for NPS 2 and smaller.
8. End Connections: Threaded for NPS 2 and smaller.

2.4 BALANCING VALVES

A. Automatic Flow Control Balancing Valves <Insert drawing designation if any>:

1. Flow Regulation: Plus or minus 5 percent over 95 percent of the working range.
2. Pressure Rating: 200 psig (1380 kPa).
3. Size: NPS 2 (DN 50) or smaller.
4. Body: Stainless steel or brass.
5. Flow Cartridge: Stainless steel or antiscale polymer.
6. End Connections: Threaded or solder joint.

2.5 OUTLET BOXES

A. Icemaker Outlet Boxes:

1. Mounting: Recessed.
2. Material and Finish: Plastic box and faceplate.
3. Faucet: Valved fitting complying with ASME A112.18.1. Include NPS 1/2 or smaller copper tube outlet.
4. Supply Shutoff Fitting: NPS 1/2 gate, globe, or ball valve and NPS 1/2 copper, water tubing.

2.6 WATER-HAMMER ARRESTERS

A. Water-Hammer Arresters:

1. Standard: ASSE 1010 or PDI-WH 201.
2. Type: Copper tube with piston.

3. Size: ASSE 1010, Sizes AA and A through F, or PDI-WH 201, Sizes A through F.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install water regulators with inlet and outlet shutoff valves. Install pressure gages on inlet and outlet.

B. Install water-hammer arresters in water piping according to PDI-WH 201.

3.2 CONNECTIONS

A. Comply with requirements for ground equipment in Section 260526 "Grounding and Bonding for Electrical Systems."

B. Fire-retardant-treated-wood blocking is specified in Section 260519 "Low-Voltage Electrical Power Conductors and Cables" for electrical connections.

3.3 ADJUSTING

A. Set field-adjustable pressure set points of water pressure-reducing valves.

End of Section

221316

SANITARY WASTE AND VENT PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Pipe, tube, and fittings.
2. Specialty pipe fittings.
3. Encasement for underground metal piping.

1.3 PERFORMANCE REQUIREMENTS

A. Components and installation shall be capable of withstanding the following minimum working pressure unless otherwise indicated:

1. Soil, Waste, and Vent Piping: 10-foot head of water.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1.5 QUALITY ASSURANCE

A. Piping materials shall bear label, stamp, or other markings of specified testing agency.

B. Comply with NSF/ANSI 14, "Plastics Piping Systems Components and Related Materials," for plastic piping components. Include marking with "NSF-dwv" for plastic drain, waste, and vent piping and "NSF-sewer" for plastic sewer piping.

1.6 PROJECT CONDITIONS

A. Interruption of Existing Sanitary Waste Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary service according to requirements indicated:

1. Notify Architect no fewer than two days in advance of proposed interruption of sanitary waste service.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

A. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

2.2 HUB-AND-SPIGOT, CAST-IRON SOIL PIPE AND FITTINGS

A. Pipe and Fittings: ASTM A 74, Service class(es).

B. Gaskets: ASTM C 564, rubber.

C. Calking Materials: ASTM B 29, pure lead and oakum or hemp fiber.

2.3 PVC PIPE AND FITTINGS

A. Solid-Wall PVC Pipe: ASTM D 2665, drain, waste, and vent.

B. PVC Socket Fittings: ASTM D 2665, made to ASTM D 3311, drain, waste, and vent patterns and to fit Schedule 40 pipe.

C. Adhesive Primer: ASTM F 656.

1. Adhesive primer shall have a VOC content of 550 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
2. Adhesive primer shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

D. Solvent Cement: ASTM D 2564.

1. PVC solvent cement shall have a VOC content of 510 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
2. Solvent cement shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.4 SPECIALTY PIPE FITTINGS

A. Transition Couplings:

1. General Requirements: Fitting or device for joining piping with small differences in OD's or of different materials. Include end connections same size as and compatible with pipes to be joined.
2. Fitting-Type Transition Couplings: Manufactured piping coupling or specified piping system fitting.
3. Unshielded, Nonpressure Transition Couplings:

    a. Standard: ASTM C 1173.
    b. Description: Elastomeric, sleeve-type, reducing or transition pattern. Include shear ring and corrosion-resistant-metal tension band and tightening mechanism on each end.
    c. Sleeve Materials:

        1) For Cast-Iron Soil Pipes: ASTM C 564, rubber.
        2) For Plastic Pipes: ASTM F 477, elastomeric seal or ASTM D 5926, PVC.
        3) For Dissimilar Pipes: ASTM D 5926, PVC or other material compatible with pipe materials being joined.

4. Shielded, Nonpressure Transition Couplings:

    a. Standard: ASTM C 1460.
    b. Description: Elastomeric or rubber sleeve with full-length, corrosion-resistant outer shield and corrosion-resistant-metal tension band and tightening mechanism on each end.

5. Pressure Transition Couplings:

    a. Standard: AWWA C219.
    b. Description: Metal, sleeve-type same size as, with pressure rating at least equal to, and ends compatible with, pipes to be joined.
    c. Center-Sleeve Material: Manufacturer's standard
    d. Gasket Material: Natural or synthetic rubber.
    e. Metal Component Finish: Corrosion-resistant coating or material.

2.5 ENCASEMENT FOR UNDERGROUND METAL PIPING

A. Standard: ASTM A 674 or AWWA C105/A 21.5.

B. Material: Linear low-density polyethylene film of 0.008-inch minimum thickness.

C. Form: Sheet.

D. Color: Black.

PART 3 - EXECUTION

3.1 EARTH MOVING

A. Comply with requirements for excavating, trenching, and backfilling specified in Section 312000 "Earth Moving."

3.2 PIPING INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on coordination drawings.

B. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.

C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

D. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.

E. Install piping to permit valve servicing.

F. Install piping at indicated slopes.

G. Install piping free of sags and bends.

H. Install fittings for changes in direction and branch connections.

I. Install piping to allow application of insulation.

J. Make changes in direction for soil and waste drainage and vent piping using appropriate branches, bends, and long-sweep bends. Sanitary tees and short-sweep 1/4 bends may be used on vertical stacks if change in direction of flow is from horizontal to vertical. Use long-turn, double Y-branch and 1/8-bend fittings if two fixtures are installed back to back or side by side with common drain pipe. Straight tees, elbows, and crosses may be used on vent lines. Do not change direction of flow more than 90 degrees. Use proper size of standard increasers and reducers if pipes of different sizes are connected. Reducing size of drainage piping in direction of flow is prohibited.

K. Lay buried building drainage piping beginning at low point of each system. Install true to grades and alignment indicated, with unbroken continuity of invert. Place hub ends of piping upstream. Install required gaskets according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements. Maintain swab in piping and pull past each joint as completed.

L. Install soil and waste drainage and vent piping at the following minimum slopes unless otherwise indicated:

1. Building Sanitary Drain: 2 percent downward in direction of flow for piping NPS 3 and smaller; 1 percent downward in direction of flow for piping NPS 4 and larger.
2. Horizontal Sanitary Drainage Piping: 2 percent downward in direction of flow.
3. Vent Piping: 1 percent down toward vertical fixture vent or toward vent stack.

M. Install cast-iron soil piping according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook," Chapter IV, "Installation of Cast Iron Soil Pipe and Fittings."

1. Install encasement on underground piping according to ASTM A 674 or AWWA C105/A 21.5.

N. Plumbing Specialties:

1. Install cleanouts at grade and extend to where building sanitary drains connect to building sanitary sewers in sanitary drainage gravity-flow piping. Install cleanout fitting with closure plug inside the building in sanitary drainage force-main piping. Comply with requirements for cleanouts specified in Section 221319 "Sanitary Waste Piping Specialties."
2. Install drains in sanitary drainage gravity-flow piping. Comply with requirements for drains specified in Section 221319 "Sanitary Waste Piping Specialties."

O. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.

P. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Section 220517 "Sleeves and Sleeve Seals for Plumbing Piping."

Q. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Section 220517 "Sleeves and Sleeve Seals for Plumbing Piping."

R. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Section 220518 "Escutcheons for Plumbing Piping."

3.3 JOINT CONSTRUCTION

A. Join hub-and-spigot, cast-iron soil piping with gasket joints according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for compression joints.

B. Plastic, Nonpressure-Piping, Solvent-Cement Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:

1. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
2. ABS Piping: Join according to ASTM D 2235 and ASTM D 2661 Appendixes.
3. PVC Piping: Join according to ASTM D 2855 and ASTM D 2665 Appendixes.

3.4 SPECIALTY PIPE FITTING INSTALLATION

A. Transition Couplings:

1. Install transition couplings at joints of piping with small differences in OD's.
2. In Drainage Piping: Unshielded, nonpressure transition couplings.
3. In Aboveground Force Main Piping: Fitting-type transition couplings.
4. In Underground Force Main Piping:

    a. NPS 1-1/2 and Smaller: Fitting-type transition couplings.
    b. NPS 2 and Larger: Pressure transition couplings.

3.5 HANGER AND SUPPORT INSTALLATION

A. Comply with requirements for seismic-restraint devices specified in Section 220548 "Vibration and Seismic Controls for Plumbing Piping and Equipment."

B. Comply with requirements for pipe hanger and support devices and installation specified in Section 220529 "Hangers and Supports for Plumbing Piping and Equipment."

1. Install carbon-steel pipe hangers for horizontal piping in noncorrosive environments.
2. Install carbon-steel pipe support clamps for vertical piping in noncorrosive environments.
3. Vertical Piping: MSS Type 8 or Type 42, clamps.
4. Install individual, straight, horizontal piping runs:

    a. 100 Feet and Less: MSS Type 1, adjustable, steel clevis hangers.
    b. Longer Than 100 Feet: MSS Type 43, adjustable roller hangers.
    c. Longer Than 100 Feet if Indicated: MSS Type 49, spring cushion rolls.

5. Multiple, Straight, Horizontal Piping Runs 100 Feet or Longer: MSS Type 44, pipe rolls. Support pipe rolls on trapeze.
6. Base of Vertical Piping: MSS Type 52, spring hangers.

C. Support horizontal piping and tubing within 12 inches of each fitting and coupling.

D. Support vertical piping and tubing at base and at each floor.

E. Rod diameter may be reduced one size for double-rod hangers, with 3/8-inch minimum rods.

F. Install hangers for cast-iron soil piping with the following maximum horizontal spacing and minimum rod diameters:

1. NPS 1-1/2 and NPS 2: 60 inches with 3/8-inch rod.
2. NPS 3: 60 inches with 1/2-inch rod.
3. NPS 4 and NPS 5: 60 inches with 5/8-inch rod.

G. Install hangers for PVC piping with the following maximum horizontal spacing and minimum rod diameters:

1. NPS 1-1/2 and NPS 2: 48 inches with 3/8-inch rod.
2. NPS 3: 48 inches with 1/2-inch rod.
3. NPS 4 and NPS 5: 48 inches with 5/8-inch rod.

H. Install supports for vertical PVC piping every 48 inches.

I. Support piping and tubing not listed above according to MSS SP-69 and manufacturer's written instructions.

3.6 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Connect soil and waste piping to exterior sanitary sewerage piping. Use transition fitting to join dissimilar piping materials.

C. Connect drainage and vent piping to the following:

1. Plumbing Fixtures: Connect drainage piping in sizes indicated, but not smaller than required by plumbing code.
2. Plumbing Fixtures and Equipment: Connect atmospheric vent piping in sizes indicated, but not smaller than required by authorities having jurisdiction.
3. Plumbing Specialties: Connect drainage and vent piping in sizes indicated, but not smaller than required by plumbing code.
4. Install test tees (wall cleanouts) in conductors near floor and floor cleanouts with cover flush with floor.
5. Comply with requirements for cleanouts and drains specified in Section 221319 "Sanitary Waste Piping Specialties."
6. Equipment: Connect drainage piping as indicated. Provide shutoff valve if indicated and union for each connection. Use flanges instead of unions for connections NPS 2-1/2 and larger.

D. Where installing piping adjacent to equipment, allow space for service and maintenance of equipment.

E. Make connections according to the following unless otherwise indicated:

1. Install unions, in piping NPS 2 and smaller, adjacent to each valve and at final connection to each piece of equipment.
2. Install flanges, in piping NPS 2-1/2 and larger, adjacent to flanged valves and at final connection to each piece of equipment.

3.7 IDENTIFICATION

A. Identify exposed sanitary waste and vent piping. Comply with requirements for identification specified in Section 220553 "Identification for Plumbing Piping and Equipment."

3.8 FIELD QUALITY CONTROL

A. During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction.

1. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.

2. Final Inspection: Arrange for final inspection by authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.

B. Reinspection: If authorities having jurisdiction find that piping will not pass test or inspection, make required corrections and arrange for reinspection.

C. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

D. Test sanitary drainage and vent piping according to procedures of authorities having jurisdiction or, in absence of published procedures, as follows:

1. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit separate report for each test, complete with diagram of portion of piping tested.
2. Leave uncovered and unconcealed new, altered, extended, or replaced drainage and vent piping until it has been tested and approved. Expose work that was covered or concealed before it was tested.
3. Roughing-in Plumbing Test Procedure: Test drainage and vent piping except outside leaders on completion of roughing-in. Close openings in piping system and fill with water to point of overflow, but not less than 10-foot head of water. From 15 minutes before inspection starts to completion of inspection, water level must not drop. Inspect joints for leaks.
4. Finished Plumbing Test Procedure: After plumbing fixtures have been set and traps filled with water, test connections and prove they are gastight and watertight. Plug vent-stack openings on roof and building drains where they leave building. Introduce air into piping system equal to pressure of 1-inch wg. Use U-tube or manometer inserted in trap of water closet to measure this pressure. Air pressure must remain constant without introducing additional air throughout period of inspection. Inspect plumbing fixture connections for gas and water leaks.
5. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.
6. Prepare reports for tests and required corrective action.

3.9 CLEANING AND PROTECTION

A. Clean interior of piping. Remove dirt and debris as work progresses.

B. Protect drains during remainder of construction period to avoid clogging with dirt and debris and to prevent damage from traffic and construction work.

C. Place plugs in ends of uncompleted piping at end of day and when work stops.

D. Exposed PVC Piping: Protect plumbing vents exposed to sunlight with two coats of water-based latex paint.

3.10 PIPING SCHEDULE

A. Flanges and unions may be used on aboveground pressure piping unless otherwise indicated.

B. Aboveground, soil and waste piping NPS 4 and smaller shall be the following:

1. Service class, cast-iron soil pipe and fittings; gaskets; and gasketed joints.
2. Solid-wall PVC pipe, PVC socket fittings, and solvent-cemented joints.
3. Dissimilar Pipe-Material Couplings: Unshielded, nonpressure transition couplings.

C. Aboveground, vent piping NPS 4 and smaller shall be the following:

1. Solid-wall PVC pipe, PVC socket fittings, and solvent-cemented joints.
2. Dissimilar Pipe-Material Couplings: Unshielded, nonpressure transition couplings.

D. Underground, soil, waste, and vent piping NPS 4 and smaller shall be the following:

1. Service class, cast-iron soil piping; gaskets; and gasketed joints.
2. Solid-wall PVC pipe, PVC socket fittings, and solvent-cemented joints.

End of Section

221319

SANITARY WASTE PIPING SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Cleanouts.
2. Floor drains.
3. Roof flashing assemblies.
4. Through-penetration firestop assemblies.
5. Miscellaneous sanitary drainage piping specialties.
6. Flashing materials.

1.3 DEFINITIONS

A. ABS: Acrylonitrile-butadiene-styrene plastic.

B. FOG: Fats, oils, and greases.

C. FRP: Fiberglass-reinforced plastic.

D. HDPE: High-density polyethylene plastic.

E. PE: Polyethylene plastic.

F. PP: Polypropylene plastic.

G. PVC: Polyvinyl chloride plastic.

1.4 QUALITY ASSURANCE

A. Drainage piping specialties shall bear label, stamp, or other markings of specified testing agency.

B. Comply with NSF 14, "Plastics Piping Components and Related Materials," for plastic sanitary piping specialty components.

1.5 COORDINATION

A. Coordinate size and location of roof penetrations.

PART 2 - PRODUCTS

2.1 CLEANOUTS

A. Cast Iron Floor Cleanouts:

1. Size: Same as connected branch.
2. Body: Cast Iron.
3. Closure Plug: Cast Iron.
4. Riser: Drainage pipe fitting and riser to cleanout of same material as drainage piping.

2.2 FLOOR DRAINS

A. Cast Iron Floor Drains:

1. Standard: ASME A112.6.3.
2. Material: Cast Iron.
3. Seepage Flange: Required.
4. Clamping Device: Required.
5. Outlet: Bottom.
6. Sediment Bucket: Not required.
7. Top or Strainer Material: Stainless steel.
8. Top of Body and Strainer Finish: Stainless steel.
9. Top Shape: Round.
10. Dimensions of Top or Strainer: 6 inches.
11. Trap Material: Cast Iron drainage piping.
12. Trap Pattern: Standard P-trap.

2.3 ROOF FLASHING ASSEMBLIES

A. Roof Flashing Assemblies:

1. Description: Manufactured assembly made of 4.0-lb/sq. ft., 0.0625-inch-thick, lead flashing collar and skirt extending at least 6 inches from pipe, with galvanized-steel boot reinforcement and counterflashing fitting.

a. Open-Top Vent Cap: Without cap.

2.4 THROUGH-PENETRATION FIRESTOP ASSEMBLIES

A. Through-Penetration Firestop Assemblies:

1. Standard: UL 1479 assembly of sleeve and stack fitting with firestopping plug.

2. Size: Same as connected soil, waste, or vent stack.
3. Sleeve: Molded PVC plastic, of length to match slab thickness and with integral nailing flange on one end for installation in cast-in-place concrete slabs.
4. Stack Fitting: ASTM A 48/A 48M, gray-iron, hubless-pattern, wye branch with neoprene O-ring at base and gray-iron plug in thermal-release harness. Include PVC protective cap for plug.
5. Special Coating: Corrosion resistant on interior of fittings.

2.5 MISCELLANEOUS SANITARY DRAINAGE PIPING SPECIALTIES

A. Floor-Drain, Trap-Seal Primer Fittings:

1. Size: Same as floor drain outlet with NPS 1/2 side inlet.

B. Stack Flashing Fittings:

1. Description: Counterflashing-type, cast-iron fitting, with bottom recess for terminating roof membrane, and with threaded or hub top for extending vent pipe.
2. Size: Same as connected stack vent or vent stack.

2.6 FLASHING MATERIALS

A. Lead Sheet: ASTM B 749, Type L51121, copper bearing, with the following minimum weights and thicknesses, unless otherwise indicated:

1. General Use: 4.0-lb/sq. ft., 0.0625-inch thickness.
2. Vent Pipe Flashing: 3.0-lb/sq. ft., 0.0469-inch thickness.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install cleanouts in aboveground piping and building drain piping according to the following, unless otherwise indicated:

1. Size same as drainage piping up to NPS 4. Use NPS 4 for larger drainage piping unless larger cleanout is indicated.
2. Locate at each change in direction of piping greater than 45 degrees.
3. Locate at minimum intervals of 50 feet for piping NPS 4 and smaller and 100 feet for larger piping.
4. Locate at base of each vertical soil and waste stack.

B. For floor cleanouts for piping below floors, install cleanout deck plates with top flush with finished floor.

C. For cleanouts located in concealed piping, install cleanout wall access covers, of types indicated, with frame and cover flush with finished wall.

D. Install floor drains at low points of surface areas to be drained. Set grates of drains flush with finished floor, unless otherwise indicated.

1. Position floor drains for easy access and maintenance.
2. Set floor drains below elevation of surrounding finished floor to allow floor drainage. Set with grates depressed according to the following drainage area radii:

    a. Radius, 30 Inches or Less: Equivalent to 1 percent slope, but not less than 1/4-inch total depression.

3. Install floor-drain flashing collar or flange so no leakage occurs between drain and adjoining flooring. Maintain integrity of waterproof membranes where penetrated.
4. Install individual traps for floor drains connected to sanitary building drain, unless otherwise indicated.

E. Install roof flashing assemblies on sanitary stack vents and vent stacks that extend through roof.

F. Install flashing fittings on sanitary stack vents and vent stacks that extend through roof.

G. Install through-penetration firestop assemblies in plastic conductors and stacks at floor penetrations.

H. Assemble open drain fittings and install with top of hub 1 inch above floor.

I. Install air-gap fittings on draining-type backflow preventers and on indirect-waste piping discharge into sanitary drainage system.

J. Install sleeve flashing device with each riser and stack passing through floors with waterproof membrane.

K. Install traps on plumbing specialty drain outlets. Omit traps on indirect wastes unless trap is indicated.

3.2 CONNECTIONS

A. Comply with requirements in Section 221316 "Sanitary Waste and Vent Piping" for piping installation requirements. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Install piping adjacent to equipment to allow service and maintenance.

3.3 INSTALLATION

A. Fabricate flashing from single piece unless large pans, sumps, or other drainage shapes are required. Join flashing according to the following if required:

1. Lead Sheets: Burn joints of lead sheets 6.0-lb/sq. ft., 0.0938-inch thickness or thicker. Solder joints of lead sheets 4.0-lb/sq. ft., 0.0625-inch thickness or thinner.

B. Install sheet flashing on pipes, sleeves, and specialties passing through or embedded in floors and roofs with waterproof membrane.

1. Pipe Flashing: Sleeve type, matching pipe size, with minimum length of 10 inches, and skirt or flange extending at least 8 inches around pipe.
2. Sleeve Flashing: Flat sheet, with skirt or flange extending at least 8 inches around sleeve.
3. Embedded Specialty Flashing: Flat sheet, with skirt or flange extending at least 8 inches around specialty.

C. Set flashing on floors and roofs in solid coating of bituminous cement.

D. Secure flashing into sleeve and specialty clamping ring or device.

E. Install flashing for piping passing through roofs with counterflashing or commercially made flashing fittings, according to Section 076200 "Sheet Metal Flashing and Trim."

F. Extend flashing up vent pipe passing through roofs and turn down into pipe, or secure flashing into cast-iron sleeve having calking recess.

G. Fabricate and install flashing and pans, sumps, and other drainage shapes.

3.4 FIELD QUALITY CONTROL

A. Tests and Inspections:

1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

3.5 PROTECTION

A. Protect drains during remainder of construction period to avoid clogging with dirt or debris and to prevent damage from traffic or construction work.

B. Place plugs in ends of uncompleted piping at end of each day or when work stops.

End of Section

221319.13

SANITARY DRAINS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Floor drains.

1.3 DEFINITIONS

A. ABS: Acrylonitrile-butadiene styrene.

B. FRP: Fiberglass-reinforced plastic.

C. HDPE: High-density polyethylene.

D. PE: Polyethylene.

E. PP: Polypropylene.

F. PVC: Polyvinyl chloride.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 DRAIN ASSEMBLIES

A. Sanitary drains shall bear label, stamp, or other markings of specified testing agency.

B. Comply with NSF 14 for plastic sanitary piping specialty components.

2.2 FLOOR DRAINS

A. Cast-Iron Floor Drains:

1. Standard: ASME A112.6.3.
2. Pattern: Floor drain.
3. Body Material: Gray iron.
4. Seepage Flange: Required.
5. Anchor Flange: Required.
6. Clamping Device: Required.
7. Outlet: Bottom.
8. Sediment Bucket: Required.
9. Top or Strainer Material: Nickel bronze.
10. Top of Body and Strainer Finish: Nickel bronze.
11. Top Shape: Round.
12. Top Loading Classification: Medium Duty.
13. Inlet Fitting: Gray iron, with threaded inlet and threaded or spigot outlet, and trap-seal primer valve connection.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install floor drains at low points of surface areas to be drained. Set grates of drains flush with finished floor, unless otherwise indicated.

1. Position floor drains for easy access and maintenance.
2. Set floor drains below elevation of surrounding finished floor to allow floor drainage.
3. Set with grates depressed according to the following drainage area radii:

    a. Radius, 30 Inches (750 mm) or Less: Equivalent to 1 percent slope, but not less than 1/4-inch (6.35-mm) total depression.

4. Install floor-drain flashing collar or flange, so no leakage occurs between drain and adjoining flooring.

    a. Maintain integrity of waterproof membranes where penetrated.

5. Install individual traps for floor drains connected to sanitary building drain, unless otherwise indicated.

B. Install FRP channel drainage system components on support devices, so that top will be flush with adjacent surface.

C. Install plastic channel drainage system components on support devices, so that top will be flush with adjacent surface.

D. Install open drain fittings with top of hub 1 inch above floor.

3.2 CONNECTIONS

A. Comply with requirements in Section 221316 "Sanitary Waste and Vent Piping" for piping installation requirements. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Comply with requirements in Section 221319 "Sanitary Waste Piping Specialties" for backwater valves, air admittance devices and miscellaneous sanitary drainage piping specialties.

C. Comply with requirements in Section 221323 "Sanitary Waste Interceptors" for grease interceptors, grease-removal devices, oil interceptors, sand interceptors, and solid interceptors.

D. Install piping adjacent to equipment to allow service and maintenance.

E. Ground equipment according to Section 260526 "Grounding and Bonding for Electrical Systems."

F. Connect wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

3.3 LABELING AND IDENTIFYING

A. Distinguish among multiple units, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations, in addition to identifying unit. Nameplates and signs are specified in Section 220553 "Identification for Plumbing Piping and Equipment."

3.4 PROTECTION

A. Protect drains during remainder of construction period to avoid clogging with dirt or debris and to prevent damage from traffic or construction work.

B. Place plugs in ends of uncompleted piping at end of each day or when work stops.

End of Section

224213.13

COMMERCIAL WATER CLOSETS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Water closets.
2. Flushometer valves.
3. Toilet seats.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for water closets.
2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

B. Shop Drawings: Include diagrams for power, signal, and control wiring.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For flushometer valves and electronic sensors to include in operation and maintenance manuals.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that are packaged with protective covering for storage and identified with labels describing contents.

1. Flushometer-Valve Repair Kits: Equal to 10 percent of amount of each type installed, but no fewer than one of each type.

PART 2 - PRODUCTS

2.1 WALL-MOUNTED WATER CLOSETS

A. Water Closets: Wall mounted, top spud

1. Acceptable manufacturer and model: Per drawings.
2. Bowl:

    a. Standards: ASME A112.19.2/CSA B45.1 and ASME A112.19.5.
    b. Material: Vitreous china.
    c. Type: Siphon jet.
    d. Style: Flushometer valve.
    e. Height: non-ADA Standard, ADA Top of seat between 17” and 19”.
    f. Rim Contour: Elongated.
    g. Water Consumption: 1.28 gal. per flush.

3. Flushometer Valve: Per drawings.
4. Toilet Seat: Open front less cover for elongated bowl
5. Support:

    a. Standard: ASME A112.6.1M.
    b. Description: Waste-fitting assembly as required to match drainage piping material and arrangement with faceplates, couplings gaskets, and feet; bolts and hardware matching fixture. Include additional extension coupling, faceplate, and feet for installation in wide pipe space.
    c. Water-Closet Mounting Height: ADA Compliant.

2.2 FLUSHOMETER VALVES

A. Hydro-Powered, Solenoid-Actuator, Piston Flushometer Valves Solar/Battery Power Flush Flushometer Valves:

1. Minimum Pressure Rating: 125 psig
2. Features: Include screwdrive check stop
3. Material: Brass body with corrosion-resistant components.
4. Exposed Flushometer-Valve Finish: Chrome plated.
5. Style: Exposed
6. Actuator: Solenoid complying with UL 1951, and listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
7. Trip Mechanism: hard wired powered electronic sensor complying with UL 1951, and listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
8. Consumption: 1.28 gal. per flush.
9. Minimum Inlet: NPS 1

2.3 TOILET SEATS

A. Toilet Seats:

1. Acceptable manufacturer and model: Bemis or Church model 2155SSCT
2. Standard: IAPMO/ANSI Z124.5
3. Material: Solid Injection Molded
4. Type: Commercial (Standard)
5. Shape: Elongated rim, open front
6. Hinge: Self-sustaining, check
7. Hinge Material: Noncorroding metal
8. Seat Cover: Not required
9. Color: White

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine roughing-in of water supply and sanitary drainage and vent piping systems to verify actual locations of piping connections before water-closet installation.

B. Examine walls and floors for suitable conditions where water closets will be installed.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Water-Closet Installation:

1. Install level and plumb according to roughing-in drawings.
2. Install accessible, wall-mounted water closets at mounting height for handicapped/elderly, according to ICC/ANSI A117.1.

B. Support Installation:

1. Use carrier supports with waste-fitting assembly and seal.
2. Install wall-mounted, back-outlet water-closet supports with waste-fitting assembly and waste-fitting seals; and affix to building substrate.

C. Flushometer-Valve Installation:

1. Install flushometer-valve, water-supply fitting on each supply to each water closet.
2. Attach supply piping to supports or substrate within pipe spaces behind fixtures.
3. Install actuators in locations that are easy for people with disabilities to reach.

D. Install toilet seats on water closets.

E. Wall Flange and Escutcheon Installation:

1. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations and within cabinets and millwork.
2. Install deep-pattern escutcheons if required to conceal protruding fittings.
3. Comply with escutcheon requirements specified in Section 220518 "Escutcheons for Plumbing Piping."

F. Joint Sealing:

1. Seal joints between water closets and walls and floors using sanitary-type, one-part, mildew-resistant silicone sealant.
2. Match sealant color to water-closet color.
3. Comply with sealant requirements specified in Section 079200 "Joint Sealants."

3.3 CONNECTIONS

A. Connect water closets with water supplies and soil, waste, and vent piping. Use size fittings required to match water closets.

B. Comply with water piping requirements specified in Section 221116 "Domestic Water Piping."

C. Comply with soil and waste piping requirements specified in Section 221316 "Sanitary Waste and Vent Piping."

D. Where installing piping adjacent to water closets, allow space for service and maintenance.

E. Connect to flushometer.

3.4 ADJUSTING

A. Operate and adjust water closets and controls. Replace damaged and malfunctioning water closets, fittings, and controls.

B. Adjust water pressure at flushometer valves to produce proper flow.

3.5 CLEANING AND PROTECTION

A. Clean water closets and fittings with manufacturers' recommended cleaning methods and materials.

B. Install protective covering for installed water closets and fittings.

C. Do not allow use of water closets for temporary facilities unless approved in writing by Owner.

End of Section

224213.16

COMMERCIAL URINALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Urinals.
2. Flushometer valves.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for urinals.
2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

B. Shop Drawings: Include diagrams for power, signal, and control wiring.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For flushometer valves and electronic sensors to include in operation and maintenance manuals.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that are packaged with protective covering for storage and identified with labels describing contents.

1. Flushometer-Valve Repair Kits: Equal to 10 percent of amount of each type installed, but no fewer than one of each type.

PART 2 - PRODUCTS

2.1 WALL-HUNG URINALS

A. Urinals: Wall hung, back outlet, washout.

1. Fixture:

a. Standards: ASME A112.19.2/CSA B45.1 and ASME A112.19.5.
b. Material: Vitreous china.
c. Type: Washout with extended shields.
d. Strainer or Trapway: Manufacturer's standard strainer with integral trap.
e. Water Consumption: 0.125 GPF.
f. Spud Size and Location: NPS 3/4top.
g. Outlet Size and Location: NPS 2, back.
h. Color: White.

2. Flushometer Valve:

a. See plumbing schedule.

3. Waste Fitting:

a. Standard: ASME A112.18.2/CSA B125.2 for coupling.
b. Size: NPS 2.

4. Support: ASME A112.6.1M, Type I, urinal carrier with fixture support plates and coupling with seal and fixture bolts and hardware matching fixture. Include rectangular, steel uprights.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine roughing-in of water supply and sanitary drainage and vent piping systems to verify actual locations of piping connections before urinal installation.

B. Examine walls and floors for suitable conditions where urinals will be installed.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Urinal Installation:

1. Install urinals level and plumb according to roughing-in drawings.
2. Install wall-hung, back-outlet urinals onto waste fitting seals and attached to supports.

3. Install accessible, wall-mounted urinals at mounting height for the handicapped/elderly, according to ICC/ANSI A117.1.

B. Support Installation:

1. Install supports, affixed to building substrate, for wall-hung urinals.
2. Use off-floor carriers with waste fitting and seal for back-outlet urinals.
3. Use chair-type carrier supports with rectangular steel uprights for accessible urinals.

C. Flushometer-Valve Installation:

1. Install flushometer-valve water-supply fitting on each supply to each urinal.
2. Attach supply piping to supports or substrate within pipe spaces behind fixtures.

D. Wall Flange and Escutcheon Installation:

1. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations.
2. Install deep-pattern escutcheons if required to conceal protruding fittings.
3. Comply with escutcheon requirements specified in Section 220518 "Escutcheons for Plumbing Piping."

E. Joint Sealing:

1. Seal joints between urinals and walls and floors using sanitary-type, one-part, mildew-resistant silicone sealant.
2. Match sealant color to urinal color.
3. Comply with sealant requirements specified in Section 079200 "Joint Sealants."

3.3 CONNECTIONS

A. Connect urinals with water supplies and soil, waste, and vent piping. Use size fittings required to match urinals.

B. Comply with water piping requirements specified in Section 221116 "Domestic Water Piping."

C. Comply with soil and waste piping requirements specified in Section 221316 "Sanitary Waste and Vent Piping."

D. Where installing piping adjacent to urinals, allow space for service and maintenance.

E. Connect power to flushometer.

3.4 ADJUSTING

A. Operate and adjust urinals and controls. Replace damaged and malfunctioning urinals, fittings, and controls.

B. Adjust water pressure at flushometer valves to produce proper flow.

3.5 CLEANING AND PROTECTION

A. Clean urinals and fittings with manufacturers' recommended cleaning methods and materials.

B. Install protective covering for installed urinals and fittings.

C. Do not allow use of urinals for temporary facilities unless approved in writing by Owner.

End of Section

224216.13

COMMERCIAL LAVATORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Lavatories.
2. Faucets.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for lavatories.
2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

B. Shop Drawings: Include diagrams for power, signal, and control wiring of automatic faucets.

1.4 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Counter cutout templates for mounting of counter-mounted lavatories.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For lavatories and faucets to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 VITREOUS-CHINA

A. Manufacturers and description: Refer to schedule on plans.

1. See plumbing schedule.

2.2 SOLID-BRASS, AUTOMATICALLY OPERATED LAVATORY FAUCETS

A. NSF Standard: Comply with NSF/ANSI 61 Annex G, "Drinking Water System Components - Health Effects," for faucet materials that will be in contact with potable water.

B. Lavatory Faucets: Automatic-type, solar/battery power, mixing, solid-brass valve.

1. Manufacturers and description: Refer to schedule on plans.

2.3 SUPPLY FITTINGS

A. NSF Standard: Comply with NSF/ANSI 61 Annex G, "Drinking Water System Components - Health Effects," for supply-fitting materials that will be in contact with potable water.

B. Standard: ASME A112.18.1/CSA B125.1.

C. Supply Piping: Chrome-plated-brass pipe or chrome-plated copper tube matching water-supply piping size. Include chrome-plated-brass or stainless-steel wall flange.

D. Supply Stops: Chrome-plated-brass, one-quarter-turn, ball-type or compression valve with inlet connection matching supply piping.

E. Operation: Loose key.

F. Risers:

1. NPS 1/2
2. Chrome-plated, rigid-copper-pipe and brass straight or offset tailpieces or chrome-plated, soft-copper flexible tube riser.

G. Insulation:

1. Insulate exposed pipes.

2.4 WASTE FITTINGS

A. Standard: ASME A112.18.2/CSA B125.2.

B. Drain: Grid type with NPS 1-1/4 offset and straight tailpiece.

C. Trap:

1. Size: NPS 1-1/4.
2. Material: Chrome-plated, two-piece, cast-brass trap and swivel elbow with 0.032-inch-thick brass tube to wall; and chrome-plated, brass or steel wall flange.
3. Material: Stainless-steel, two-piece trap and swivel elbow with 0.012-inch-thick stainless-steel tube to wall; and stainless-steel wall flange.

D. Insulation:

1. Insulate exposed pipes.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine roughing-in of water supply and sanitary drainage and vent piping systems to verify actual locations of piping connections before lavatory installation.

B. Examine counters and walls for suitable conditions where lavatories will be installed.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install lavatories level and plumb according to roughing-in drawings.

B. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations. Use deep-pattern escutcheons if required to conceal protruding fittings. Comply with escutcheon requirements specified in Section 220518 "Escutcheons for Plumbing Piping."

C. Seal joints between lavatories, counters, and walls using sanitary-type, one-part, mildew-resistant silicone sealant. Match sealant color to fixture color.

D. Install protective shielding pipe covers and enclosures on exposed supplies and waste piping of accessible lavatories. Comply with requirements in Section 220719 "Plumbing Piping Insulation."

3.3 CONNECTIONS

A. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.

B. Comply with water piping requirements specified in Section 221116 "Domestic Water Piping."

C. Comply with soil and waste piping requirements specified in Section 221316 "Sanitary Waste and Vent Piping."

3.4 ADJUSTING

A. Operate and adjust lavatories and controls. Replace damaged and malfunctioning lavatories, fittings, and controls.

B. Adjust water pressure at faucets to produce proper flow.

3.5 CLEANING AND PROTECTION

A. After completing installation of lavatories, inspect and repair damaged finishes.

B. Clean lavatories, faucets, and other fittings with manufacturers' recommended cleaning methods and materials.

C. Provide protective covering for installed lavatories and fittings.

D. Do not allow use of lavatories for temporary facilities unless approved in writing by Owner.

End of Section

224216.16

COMMERCIAL SINKS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Service sinks.
2. Kitchen/utility sinks.
3. Manually operated sink faucets.
4. Supply fittings.
5. Waste fittings.
6. Sink supports.
7. Grout.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for sinks.
2. Include rated capacities, operating characteristics and furnished specialties and accessories.

1.3 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Counter cutout templates for mounting of counter-mounted sinks.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For sinks and faucets to include in operation and maintenance manuals.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Faucet Washers and O-Rings: Equal to 10 percent of amount of each type and size installed.
2. Faucet Cartridges and O-Rings: Equal to 5 percent of amount of each type and size installed.

PART 2 - PRODUCTS

2.1 SERVICE SINKS.

A. Service Sinks - Terrazzo, Floor Mounted:

1. Per Drawings.

2. Source Limitations: Obtain sinks from single source from single manufacturer.
3. Fixture:

a. Material: Marble chips cast in portland cement to produce a compressive strength of not less than 3000 psi, seven days after casting.
b. Shape: Square.
c. Nominal Size: 24 by 24 inches.
d. Height: 12 inches.
e. Rim Guard: On all top surfaces.
f. Color: Not applicable.
g. Drain: Grid with NPS 3 outlet.

4. Mounting: On floor and flush to wall.
5. Faucet: Per Drawings

2.2 KITCHEN/UTILITY SINKS

A. Kitchen/Utility Sinks - Stainless Steel, Counter Mounted:

1. Per Drawing.
2. Source Limitations: Obtain sinks from single source from single manufacturer.
3. Fixture:

a. Standard: ASME A112.19.3/CSA B45.4.
b. Type: Stainless steel, self-rimming, sound-deadened unit with ledge back.
c. Number of Compartments: One.
d. Material: 18 gauge, Type 304 stainless steel.

4. Faucet(s): Per Drawing.

a. Number Required: One
b. Mounting: On ledge.

5. Supply Fittings:

a. Standard: ASME A112.18.1/CSA B125.1.
b. Supplies: Chrome-plated brass compression stop with inlet connection matching water-supply piping type and size.

1) Operation: Wheel handle.
2) Risers: NPS 1/2, ASME A112.18.6/CSA B125.6, braided or corrugated stainless steel flexible hose.

6. Waste Fittings:

    a. Standard: ASME A112.18.2/CSA B125.2.
    b. Trap(s):

        1) Size: NPS 2.
        2) Material:

            a) Stainless steel, two-piece trap and swivel elbow with 0.012-inch-(0.30-mm-) thick stainless steel tube to wall; and stainless steel wall flange.

7. Mounting: On counter with sealant.

2.3 MANUALLY OPERATED SINK FAUCETS

A. Sink faucets intended to convey or dispense water for human consumption are to comply with the U.S. Safe Drinking Water Act (SDWA), with requirements of the Authority Having Jurisdiction (AHJ), and with NSF 61 and NSF 372, or be certified in compliance with NSF 61 and NSF 372 by an ANSI-accredited third-party certification body, in that the weighted average lead content at wetted surfaces is less than or equal to 0.25 percent.

B. Commercial Sink Faucets - Manual Type Two-handle mixing.

1. Per Drawings
2. Source Limitations: Obtain sink faucets from single source from single manufacturer.
3. Standard: ASME A112.18.1/CSA B125.1.
4. General: Include hot- and cold-water indicators; coordinate faucet inlets with supplies and fixture hole punchings; coordinate outlet with spout and sink receptor.
5. Body Type: Widespread.
6. Body Material: Commercial, solid brass, or die-cast housing with brazed copper and brass waterway.
7. Finish: Chrome plated.
8. Maximum Flow Rate: 2.2 gpm.
9. Mounting Type: Deck, exposed.
10. Valve Handle(s): 4-inch wrist blade.
11. Spout Type: Swivel gooseneck.

C. Commercial Service Sink Faucets - Manual Type:

1. Per Drawings
2. Source Limitations: Obtain sink faucets from single source from single manufacturer.
3. Description: Wall/back mounted, brass body, with integral service stops, checks, spout with bucket/pail hook, 3/4-inch hose thread end, integral vacuum breaker, inlets 8 inches o.c., and two-handle mixing.
4. Faucet:

    a. Standards:

        1) ASME A112.18.1/CSA B125.1.

2) NSF 61 and NSF 372.
3) ICC A117.1.
4) ASSE 1001 (VB).

b. Finish: Rough chrome plated.
c. Handles: Lever.
d. Cartridges: Ceramic.
e. Brace: Adjustable top brace.

5. Vacuum Breaker: Required for hose outlet.
6. Spout Outlet: Hose thread in accordance with ASME B1.20.7.

2.4 SUPPLY FITTINGS

A. NSF Standard: Comply with NSF 61 and NSF 372 for supply-fitting materials that will be in contact with potable water.

B. Standard: ASME A112.18.1/CSA B125.1.

C. Supply Piping: Chrome-plated brass pipe or chrome-plated copper tube matching water-supply piping size. Include chrome-plated brass or stainless steel wall flange.

D. Supply Stops: Chrome-plated brass, one-quarter-turn, ball-type or compression valve with inlet connection matching supply piping.

E. Operation: Loose key.

F. Risers:

1. NPS 1/2.
2. ASME A112.18.6/CSA B125.6, braided or corrugated stainless steel flexible hose.

2.5 WASTE FITTINGS

A. Standard: ASME A112.18.2/CSA B125.2.

B. Drain: Grid type with NPS 1-1/2 offset and straight tailpiece.

C. Trap:

1. Size: NPS 1-1/2.
2. Material:

a. Chrome-plated, two-piece, cast-brass trap and swivel elbow with 17-gauge brass tube to wall; and chrome-plated brass or steel wall flange.

2.6 GROUT

A. Standard: ASTM C1107/C1107M, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.

B. Characteristics: Nonshrink; recommended for interior and exterior applications.

C. Design Mix: 5000 psi, 28-day compressive strength.

D. Packaging: Premixed and factory packaged.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine roughing-in for water-supply piping and sanitary drainage and vent piping systems to verify actual locations of piping connections before sink installation.

B. Examine walls, floors, and counters for suitable conditions where sinks will be installed.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install sinks level and plumb in accordance with rough-in drawings.

B. Set floor-mounted sinks in leveling bed of cement grout.

C. Install water-supply piping with stop on each supply to each sink faucet.

1. Exception: Use ball or gate valves if supply stops are not specified with sink. Comply with valve requirements specified in Section 220523.12 "Ball Valves for Plumbing Piping" and Section 220523.15 "Gate Valves for Plumbing Piping."
2. Install stops in locations where they can be easily reached for operation.

D. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations. Use deep-pattern escutcheons if required to conceal protruding fittings. Comply with escutcheon requirements specified in Section 220500 "Common Work Results for Plumbing."

E. Seal joints between sinks and counters, floors, and walls using sanitary-type, one-part, mildew-resistant silicone sealant. Match sealant color to fixture color. Comply with sealant requirements specified in Section 079200 "Joint Sealants."

F. Install protective shielding pipe covers and enclosures on exposed supplies and waste piping of accessible sinks. Comply with requirements in Section 220719 "Plumbing Piping Insulation."

3.3 PIPING CONNECTIONS

A. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.

B. Comply with water piping requirements specified in Section 221116 "Domestic Water Piping."

C. Comply with soil and waste piping requirements specified in Section 221316 "Sanitary Waste and Vent Piping."

3.4 ELECTRICAL CONNECTIONS

A. Connect wiring in accordance with Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

B. Ground equipment in accordance with Section 260526 "Grounding and Bonding for Electrical Systems."

C. Install electrical devices furnished by manufacturer, but not factory mounted in accordance with NFPA 70 and NECA 1.

D. Install nameplate for each electrical connection, indicating electrical equipment designation and circuit number feeding connection.

1. Nameplate shall be laminated acrylic or melamine plastic signs, as specified in Section 260553 "Identification for Electrical Systems."

3.5 ADJUSTING

A. Operate and adjust sinks and controls. Replace damaged and malfunctioning sinks, fittings, and controls.

B. Install new batteries in battery-powered, electronic-sensor mechanisms.

3.6 CLEANING AND PROTECTION

A. After completing installation of sinks, inspect and repair damaged finishes.

B. Clean sinks, faucets, and other fittings with manufacturers' recommended cleaning methods and materials.

C. Provide protective covering for installed sinks and fittings.

D. Do not allow use of sinks for temporary facilities unless approved in writing by Owner.

End of Section

224223

COMMERCIAL SHOWERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Shower heads and shower valves.
2. Shower basins.
3. Grout.

1.2 DEFINITIONS

A. FRP: Fiberglass-reinforced plastic.

B. PMMA: Polymethyl methacrylate; also known as "acrylic."

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for showers and basins.
2. Include rated capacities, operating characteristics, and furnished specialties and accessories.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For shower valves to include in maintenance manuals.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Shower Valve Washers and O-Rings: Equal to 10 percent of amount of each type and size installed.
2. Shower Valve Cartridges and O-Rings: Equal to 5 percent of amount of each type and size installed.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Shower valves intended to convey or dispense water for human consumption are to comply with the U.S. Safe Drinking Water Act (SDWA), with requirements of the Authority Having Jurisdiction (AHJ), and with NSF 61 and NSF 372, or be certified in compliance with NSF 61 and NSF 372 by an ANSI-accredited third-party certification body, in that the weighted average lead content at wetted surfaces is less than or equal to 0.25 percent.

2.2 SHOWER HEADS AND SHOWER VALVES

A. Shower Head with Single-Handle, Thermostatic/Pressure-Balancing Mixing Valve:

1. Per Drawings
2. Source Limitations: Obtain shower heads and shower valves from single source from single manufacturer.
3. Description: Single-handle, accessible, thermostatic/pressure-balancing mixing valve with hot- and cold-water indicators; check stops; and hose with handheld shower head on sliding rod shower head.
4. Shower Valve:

    a. Standards: ASME A112.18.1/CSA B125.1 and ASSE 1016/ASME A112.1016/CSA B125.16.
    b. Body Material: Solid brass.
    c. Finish: Polished chrome plate.
    d. Mounting: Concealed.
    e. Operation: Single-handle, twist or rotate control.
    f. Antiscald Device: Integral with mixing valve.
    g. Check Stops: Check-valve type, integral with or attached to body; on hot- and cold-water supply connections.

5. Supply Connections: NPS 1/2.
6. Shower Head:

    a. Standard: ASME A112.18.1/CSA B125.1.
    b. Type: Ball joint with arm and flange.
    c. EPA WaterSense: Required.
    d. Shower Head Maximum Flow Rate: 1.75 gpm.
    e. Shower Head Material: Metallic with chrome-plated finish.
    f. Spray Pattern: Fixed.
    g. Integral Volume Control: Required.
    h. Temperature Indicator: Integral with valve.

2.3 SHOWER BASINS

A. FRP Shower Basins:

1. Per Drawings
2. Source Limitations: Obtain shower basins from single source from single manufacturer.
3. Description: FRP base for built-up-type shower fixture.
4. Standard: CSA B45.5/IAPMO Z124.
5. Type: Per Drawings
6. Nominal Size and Shape: Per Drawings
7. Color: White.
8. Outlet: Drain with NPS 2 outlet; lip drain outside shower in accordance with the ADA.

2.4 GROUT

A. Standard: ASTM C1107/C1107M, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.

B. Characteristics: Nonshrink; recommended for interior and exterior applications.

C. Design Mix: 5000 psi, 28-day compressive strength.

D. Packaging: Premixed and factory packaged.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine rough-in of water-supply and sanitary drainage and vent piping systems to verify actual locations of piping connections before shower installation.

B. Examine walls and floors for suitable conditions where showers will be installed.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Assemble shower components according to manufacturers' written instructions.

B. Install showers level and plumb.

C. Install ball valves in water-supply piping to the shower if supply stops are specified with the shower valve. Comply with valve requirements specified in Section 220523.12 "Ball Valves for Plumbing Piping" Install valves in locations that are accessible for ease of operation.

D. Install shower flow-control fittings with specified maximum flow rates in shower arms.

E. Set shower basins in leveling bed of cement grout.

F. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations. Use deep-pattern escutcheons if required to conceal protruding fittings. Comply with escutcheons requirements specified in Section 220500 "Common Work Results for Plumbing."

G. Seal joints between showers and floors and walls using sanitary-type, one-part, mildew-resistant silicone sealant. Match sealant color to fixture color. Comply with sealant requirements specified in Section 079200 "Joint Sealants."

3.3 PIPING CONNECTIONS

A. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.

B. Comply with water piping requirements specified in Section 221116 "Domestic Water Piping."

C. Comply with traps and soil and waste piping requirements specified in Section 221316 "Sanitary Waste and Vent Piping."

3.4 ADJUSTING

A. Operate and adjust showers and controls. Replace damaged and malfunctioning showers, fittings, and controls.

B. Adjust water pressure at shower valves to produce proper flow.

3.5 CLEANING AND PROTECTION

A. After completing installation of showers and basins, inspect and repair damaged finishes.

B. Clean showers and basins, shower valves, and other fittings with manufacturers' recommended cleaning methods and materials.

C. Provide protective covering for installed fixtures and fittings.

D. Do not allow use of showers and basins for temporary facilities unless approved in writing by Owner.

End of Section

224713

DRINKING FOUNTAINS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Drinking fountains.
2. Supports.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of drinking fountain and bottle filling station.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
2. Include operating characteristics, and furnished specialties and accessories.

B. Shop Drawings:

1. Include diagrams for power wiring.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For drinking fountains to include in maintenance manuals.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Standards:

1. Drinking fountains and bottle filling stations intended to convey or dispense water for human consumption are to comply with the U.S. Safe Drinking Water Act (SDWA), requirements of the Authority Having Jurisdiction (AHJ), and with NSF 61 or NSF 372, or be certified in compliance with NSF 61 or NSF 372 by an ANSI-accredited third-party certification body, that the weighted average lead content at wetted surfaces is less than or equal to 0.25 percent.
2. Comply with ASME A112.19.3/CSA B45.4 for stainless steel drinking fountains and bottle filling stations.
3. Comply with NSF 42 and NSF 53 for water filters for drinking fountains and bottle filling stations.
4. Comply with ICC A117.1 for accessible drinking fountains and bottle filling stations.

2.2 DRINKING FOUNTAINS

A. Drinking Fountains - Surface Wall-Mounted with Bottle Filling Station, Powder-Coated Metal:

1. Per Drawings
2. Source Limitations: Obtain surface wall-mounted, powder-coated-metal drinking fountains -from single source from single manufacturer.
3. Type: Vandal resistant.
4. Receptor(s):

    a. Type: On horizontal support.
    b. Shape: Rectangular
    c. Bubblers: One for each receptor, with adjustable stream regulator, located on deck.
    d. Drain: Grid type with NPS 1-1/4 tailpiece.

5. Maximum Water Flow: 0.15 gpm.
6. Control: Push button and Sensor.
7. Supply: NPS 3/8 with shutoff valve.
8. Waste Fitting: ASME A112.18.2/CSA B125.2, NPS 1-1/4 chrome-plated brass P-trap and waste.
9. Filter: One or more water filters with capacity sized for unit peak flow rate.
10. Electrical Characteristics:

    a. Volts: 120 V ac.
    b. Phase: Single.
    c. Hertz: 60 Hz..

11. Support: Provide manufacturer's mounting plate.
12. Drinking Fountain Mounting Height: High/low - standard/accessible in accordance with ICC A117.1.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine roughing-in for water-supply and sanitary drainage and vent piping systems to verify actual locations of piping connections before fixture installation.

B. Examine walls and floors for suitable conditions where fixtures will be installed.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install fixtures level and plumb according to roughing-in drawings. For fixtures indicated for children, install at height required by authorities having jurisdiction.

B. Set pedestal drinking fountains and bottle filling stations on flat surface in accordance with manufacturer's written installation instructions.

C. Install recessed, drinking fountains and bottle filling stations secured to wood blocking in wall construction.

D. Install off-the-floor carrier supports, affixed to building substrate, for wall-mounted fixtures.

E. Install water-supply piping with shutoff valve on supply to each fixture to be connected to domestic-water distribution piping. Use ball valve. Install valves in locations where they can be easily reached for operation. Valves are specified in Section 220523.12 "Ball Valves for Plumbing Piping".

F. Install trap and waste piping on drain outlet of each fixture to be connected to sanitary drainage system.

G. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations. Use deep-pattern escutcheons where required to conceal protruding fittings. Comply with escutcheon requirements specified in Section 220500 "Common Work Results for Plumbing."

H. Seal joints between fixtures and walls using sanitary-type, one-part, mildew-resistant, silicone sealant. Match sealant color to fixture color. Comply with sealant requirements specified in Section 079200 "Joint Sealants."

3.3 PIPING CONNECTIONS

A. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.

B. Comply with water piping requirements specified in Section 221116 "Domestic Water Piping."

C. Install ball shutoff valve on water supply to each fixture. Install valve upstream from filter for drinking fountain. Comply with valve requirements specified in Section 220523.12 "Ball Valves for Plumbing Piping".

D. Comply with soil and waste piping requirements specified in Section 221316 "Sanitary Waste and Vent Piping."

3.4 ELECTRICAL CONNECTIONS

A. Ground equipment according to Section 260526 "Grounding and Bonding for Electrical Systems."

B. Install electrical devices furnished by manufacturer, but not factory mounted, according to NFPA 70 and NECA 1.

C. Install nameplate for each electrical connection, indicating electrical equipment designation and circuit number feeding connection.

1. Nameplates to be laminated acrylic or melamine plastic signs, as specified in Section 260553 "Identification for Electrical Systems."

3.5 ADJUSTING

A. Adjust fixture flow regulators for proper flow and stream height.

3.6 CLEANING

A. After installing fixtures, inspect unit. Remove paint splatters and other spots, dirt, and debris. Repair damaged finish to match original finish.

B. Clean fixtures, on completion of installation, according to manufacturer's written instructions.

C. Provide protective covering for installed fixtures.

D. Do not allow use of fixtures for temporary facilities unless approved in writing by Owner.

End of Section

230593

TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Balancing Air Systems:

a. Constant-volume air systems.

2. Duct leakage tests.

1.3 DEFINITIONS

A. AABC: Associated Air Balance Council.

B. BAS: Building automation systems.

C. NEBB: National Environmental Balancing Bureau.

D. TAB: Testing, adjusting, and balancing.

E. TABB: Testing, Adjusting, and Balancing Bureau.

F. TAB Specialist: An independent entity meeting qualifications to perform TAB work.

G. TDH: Total dynamic head.

1.4 PREINSTALLATION MEETINGS

A. TAB Conference: If requested by the Owner, conduct a TAB conference at Project site after approval of the TAB strategies and procedures plan to develop a mutual understanding of the details. Provide a minimum of 14 days' advance notice of scheduled meeting time and location.

1. Minimum Agenda Items:

a. The Contract Documents examination report.

b. The TAB plan.
c. Needs for coordination and cooperation of trades and subcontractors.
d. Proposed procedures for documentation and communication flow.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: Within 90 days of Contractor's Notice to Proceed, submit documentation that the TAB specialist and this Project's TAB team members meet the qualifications specified in "Quality Assurance" Article.

B. Contract Documents Examination Report: Within 90 days of Contractor's Notice to Proceed, submit the Contract Documents review report as specified in Part 3.

C. Strategies and Procedures Plan: Within 90 days of Contractor's Notice to Proceed, submit TAB strategies and step-by-step procedures as specified in "Preparation" Article.

D. System Readiness Checklists: Within 90 days of Contractor's Notice to Proceed, submit system readiness checklists as specified in "Preparation" Article.

E. Examination Report: Submit a summary report of the examination review required in "Examination" Article.

F. Certified TAB reports.

G. Sample report forms.

H. Instrument calibration reports, to include the following:

1. Instrument type and make.
2. Serial number.
3. Application.
4. Dates of use.
5. Dates of calibration.

1.6 QUALITY ASSURANCE

A. TAB Specialists Qualifications: Certified by AABC NEBB or TABB.

1. TAB Field Supervisor: Employee of the TAB specialist and certified by AABC NEBB or TABB.
2. TAB Technician: Employee of the TAB specialist and certified by AABC NEBB or TABB as a TAB technician.

B. Instrumentation Type, Quantity, Accuracy, and Calibration: Comply with requirements in ASHRAE 111, Section 4, "Instrumentation."

C. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1, Section 7.2.2 - "Air Balancing."

D. ASHRAE/IESNA Compliance: Applicable requirements in ASHRAE/IESNA 90.1, Section 6.7.2.3 - "System Balancing."

1.7 FIELD CONDITIONS

A. Full Owner Occupancy: Owner will occupy the site and existing building during entire TAB period. Cooperate with Owner during TAB operations to minimize conflicts with Owner's operations.

B. Partial Owner Occupancy: Owner may occupy completed areas of building before Substantial Completion. Cooperate with Owner during TAB operations to minimize conflicts with Owner's operations.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine the Contract Documents to become familiar with Project requirements and to discover conditions in systems designs that may preclude proper TAB of systems and equipment.

B. Examine installed systems for balancing devices, such as test ports, gage cocks, thermometer wells, flow-control devices, balancing valves and fittings, and manual volume dampers. Verify that locations of these balancing devices are applicable for intended purpose and are accessible.

C. Examine the approved submittals for HVAC systems and equipment.

D. Examine design data including HVAC system descriptions, statements of design assumptions for environmental conditions and systems output, and statements of philosophies and assumptions about HVAC system and equipment controls.

E. Examine equipment performance data including fan and pump curves.

1. Relate performance data to Project conditions and requirements, including system effects that can create undesired or unpredicted conditions that cause reduced capacities in all or part of a system.
2. Calculate system-effect factors to reduce performance ratings of HVAC equipment when installed under conditions different from the conditions used to rate equipment performance. To calculate system effects for air systems, use tables and charts found in AMCA 201, "Fans and Systems," or in SMACNA's "HVAC Systems - Duct Design." Compare results with the design data and installed conditions.

F. Examine system and equipment installations and verify that field quality-control testing, cleaning, and adjusting specified in individual Sections have been performed.

G. Examine test reports specified in individual system and equipment Sections.

H. Examine HVAC equipment and verify that bearings are greased, belts are aligned and tight, filters are clean, and equipment with functioning controls is ready for operation.

I. Report deficiencies discovered before and during performance of TAB procedures. Observe and record system reactions to changes in conditions. Record default set points if different from indicated values.

3.2 PREPARATION

A. Prepare a TAB plan that includes the following:

1. Equipment and systems to be tested.
2. Strategies and step-by-step procedures for balancing the systems.
3. Instrumentation to be used.
4. Sample forms with specific identification for all equipment.

B. Perform system-readiness checks of HVAC systems and equipment to verify system readiness for TAB work. Include, at a minimum, the following:

1. Airside:

a. Verify that leakage and pressure tests on air distribution systems have been satisfactorily completed.
b. Duct systems are complete with terminals installed.
c. Volume, smoke, and fire dampers are open and functional.
d. Clean filters are installed.
e. Fans are operating, free of vibration, and rotating in correct direction.
f. Automatic temperature-control systems are operational.
g. Ceilings are installed.
h. Windows and doors are installed.
i. Suitable access to balancing devices and equipment is provided.

3.3 GENERAL PROCEDURES FOR TESTING AND BALANCING

A. Perform testing and balancing procedures on each system according to the procedures contained in AABC's "National Standards for Total System Balance" and in this Section.

B. Cut insulation, ducts, pipes, and equipment cabinets for installation of test probes to the minimum extent necessary for TAB procedures.

1. After testing and balancing, patch probe holes in ducts with same material and thickness as used to construct ducts.
2. After testing and balancing, install test ports and duct access doors that comply with requirements in Section 233300 "Air Duct Accessories."
3. Install and join new insulation that matches removed materials. Restore insulation, coverings, vapor barrier, and finish according to Section 230713 "Duct Insulation," Section 230716 "HVAC Equipment Insulation," and Section 230719 "HVAC Piping Insulation."

C. Mark equipment and balancing devices, including damper-control positions, valve position indicators, fan-speed-control levers, and similar controls and devices, with paint or other suitable, permanent identification material to show final settings.

D. Take and report testing and balancing measurements in inch-pound (IP) units.

3.4 GENERAL PROCEDURES FOR BALANCING AIR SYSTEMS

A. Prepare test reports for both fans and outlets. Obtain manufacturer's outlet factors and recommended testing procedures. Cross-check the summation of required outlet volumes with required fan volumes.

B. Prepare schematic diagrams of systems' "as-built" duct layouts.

C. Test in accordance with ANSI/ACCA 5 QI-2005 protocol.

D. Determine the best locations in main and branch ducts for accurate duct-airflow measurements.

E. Check airflow patterns from the outdoor-air louvers and dampers and the return- and exhaust-air dampers through the supply-fan discharge and mixing dampers.

F. Locate start-stop and disconnect switches, electrical interlocks, and motor starters.

G. Verify that motor starters are equipped with properly sized thermal protection.

H. Check dampers for proper position to achieve desired airflow path.

I. Check for airflow blockages.

J. Check condensate drains for proper connections and functioning.

K. Check for proper sealing of air-handling-unit components.

L. Verify that air duct system is sealed as specified in Section 233113 "Metal Ducts."

3.5 PROCEDURES FOR CONSTANT-VOLUME AIR SYSTEMS

A. Adjust fans to deliver total indicated airflows within the maximum allowable fan speed listed by fan manufacturer.

1. Measure total airflow.

    a. Set outside-air, return-air, and relief-air dampers for proper position that simulates minimum outdoor-air conditions.
    b. Where duct conditions allow, measure airflow by Pitot-tube traverse. If necessary, perform multiple Pitot-tube traverses to obtain total airflow.
    c. Where duct conditions are not suitable for Pitot-tube traverse measurements, a coil traverse may be acceptable.
    d. If a reliable Pitot-tube traverse or coil traverse is not possible, measure airflow at terminals and calculate the total airflow.

2. Measure fan static pressures as follows:

    a. Measure static pressure directly at the fan outlet or through the flexible connection.
    b. Measure static pressure directly at the fan inlet or through the flexible connection.
    c. Measure static pressure across each component that makes up the air-handling system.
    d. Report artificial loading of filters at the time static pressures are measured.

3. Review Record Documents to determine variations in design static pressures versus actual static pressures. Calculate actual system-effect factors. Recommend adjustments to accommodate actual conditions.
4. Obtain approval from Architect for adjustment of fan speed higher or lower than indicated speed. Comply with requirements in HVAC Sections for air-handling units for adjustment of fans, belts, and pulley sizes to achieve indicated air-handling-unit performance.
5. Do not make fan-speed adjustments that result in motor overload. Consult equipment manufacturers about fan-speed safety factors. Modulate dampers and measure fan-motor amperage to ensure that no overload occurs. Measure amperage in full-cooling, full-heating, economizer, and any other operating mode to determine the maximum required brake horsepower.

B. Adjust air inlets and outlets for each space to indicated airflows.

1. Set airflow patterns of adjustable outlets for proper distribution without drafts.
2. Measure inlets and outlets airflow.
3. Adjust each inlet and outlet for specified airflow.
4. Re-measure each inlet and outlet after they have been adjusted.

C. Verify final system conditions.

1. Re-measure and confirm that minimum outdoor, return, and relief airflows are within design. Readjust to design if necessary.
2. Re-measure and confirm that total airflow is within design.
3. Re-measure all final fan operating data, rpms, volts, amps, and static profile.
4. Mark all final settings.
5. Test system in economizer mode. Verify proper operation and adjust if necessary.
6. Measure and record all operating data.
7. Record final fan-performance data.

D. Measure and record the following:

1. Outdoor ambient temperature.
2. Return air side temperature.
3. Liquid line pressure.
4. Liquid line temperature
5. Suction line pressure.
6. Suction line temperature.
7. Condenser saturation temperature.
8. Sub cooling valve.
9. OEM sub cooling goal.
10. Sub cooling deviation.

3.6 PROCEDURES FOR CONTINUOUSLY RUNNING BATH FANS

A. Adjust fans to deliver total indicated airflows at constant slow speed.

1. Measure total airflow.
2. Adjust fan speed to meet scheduled constant minimum volume flow rate.

3.7 PROCEDURES FOR CONDENSING UNITS

A. Verify proper rotation of fans.

B. Measure entering- and leaving-air temperatures.

C. Record fan and motor operating data.

3.8 DUCT LEAKAGE TESTS

A. Witness the duct pressure testing performed by Installer.

B. Verify that proper test methods are used and that leakage rates are within specified tolerances.

C. Report deficiencies observed.

3.9 CONTROLS VERIFICATION

A. In conjunction with system balancing, perform the following:

1. Verify temperature control system is operating within the design limitations.
2. Confirm that the sequences of operation are in compliance with Contract Documents.
3. Verify that controllers are calibrated and function as intended.
4. Verify that controller set points are as indicated.

B. Reporting: Include a summary of verifications performed, remaining deficiencies, and variations from indicated conditions.

3.10 TOLERANCES

A. Set HVAC system's airflow rates and water flow rates within the following tolerances:

1. Supply, Return, and Exhaust Fans and Equipment with Fans: Plus, or minus 20 percent or 25 cfm.
2. Air Outlets and Inlets: Plus or minus 20 percent or 25 cfm.

B. Maintaining pressure relationships as designed shall have priority over the tolerances specified above.

3.11 PROGRESS REPORTING

A. Initial Construction-Phase Report: Based on examination of the Contract Documents as specified in "Examination" Article, prepare a report on the adequacy of design for systems balancing devices. Recommend changes and additions to systems balancing devices to facilitate proper performance measuring and balancing. Recommend changes and additions to HVAC systems and general construction to allow access for performance measuring and balancing devices.

3.12 FINAL REPORT

A. General: Prepare a certified written report; tabulate and divide the report into separate sections for tested systems and balanced systems.

1. Include a certification sheet at the front of the report's binder, signed and sealed by the certified testing and balancing engineer.
2. Include a list of instruments used for procedures, along with proof of calibration.
3. Certify validity and accuracy of field data.

B. Final Report Contents: In addition to certified field-report data, include the following:

1. Pump curves.
2. Fan curves.
3. Field test reports prepared by system and equipment installers.
4. Other information relative to equipment performance; do not include Shop Drawings and Product Data.

C. General Report Data: In addition to form titles and entries, include the following data:

1. Title page.
2. Name and address of the TAB specialist.
3. Project name.
4. Project location.
5. Architect's name and address.
6. Engineer's name and address.
7. Contractor's name and address.
8. Report date.
9. Signature of TAB supervisor who certifies the report.
10. Table of Contents with the total number of pages defined for each section of the report. Number each page in the report.
11. Summary of contents including the following:

    a. Indicated versus final performance.
    b. Notable characteristics of systems.
    c. Description of system operation sequence if it varies from the Contract Documents.

12. Nomenclature sheets for each item of equipment.
13. Data for terminal units, including manufacturer's name, type, size, and fittings.
14. Notes to explain why certain final data in the body of reports vary from indicated values.

15. Test conditions for fans and pump performance forms including the following:

    a. Settings for outdoor-, return-, and exhaust-air dampers.
    b. Conditions of filters.
    c. Cooling coil, wet- and dry-bulb conditions.
    d. Face and bypass damper settings at coils.
    e. Fan drive settings including settings and percentage of maximum pitch diameter.
    f. Inlet vane settings for variable-air-volume systems.
    g. Settings for supply-air, static-pressure controller.
    h. Other system operating conditions that affect performance.

D. System Diagrams: Include schematic layouts of air and hydronic distribution systems. Present each system with single-line diagram and include the following:

1. Quantities of outdoor, supply, return, and exhaust airflows.
2. Water and steam flow rates.
3. Duct, outlet, and inlet sizes.
4. Pipe and valve sizes and locations.
5. Terminal units.
6. Balancing stations.
7. Position of balancing devices.

E. Air-Handling-Unit Test Reports: For air-handling units with coils, include the following:

1. Unit Data:

    a. Unit identification.
    b. Location.
    c. Make and type.
    d. Model number and unit size.
    e. Manufacturer's serial number.
    f. Unit arrangement and class.
    g. Discharge arrangement.
    h. Sheave make, size in inches, and bore.
    i. Center-to-center dimensions of sheave and amount of adjustments in inches.
    j. Number, make, and size of belts.
    k. Number, type, and size of filters.

2. Motor Data:

    a. Motor make, and frame type and size.
    b. Horsepower and rpm.
    c. Volts, phase, and hertz.
    d. Full-load amperage and service factor.
    e. Sheave make, size in inches, and bore.
    f. Center-to-center dimensions of sheave and amount of adjustments in inches.

3. Test Data (Indicated and Actual Values):

    a. Total airflow rate in cfm.
    b. Total system static pressure in inches wg.

c. Fan rpm.
d. Discharge static pressure in inches wg.
e. Filter static-pressure differential in inches wg.
f. Preheat-coil static-pressure differential in inches wg.
g. Cooling-coil static-pressure differential in inches wg.
h. Heating-coil static-pressure differential in inches wg.
i. Return airflow in cfm.
j. Return-air damper position.

F. Apparatus-Coil Test Reports:

1. Coil Data:

a. System identification.
b. Location.
c. Coil type.
d. Number of rows.
e. Fin spacing in fins per inch o.c.
f. Make and model number.
g. Face area in sq. ft..
h. Tube size in NPS.
i. Tube and fin materials.
j. Circuiting arrangement.

2. Test Data (Indicated and Actual Values):

a. Airflow rate in cfm.
b. Average face velocity in fpm.
c. Air pressure drop in inches wg.
d. Outdoor-air, wet- and dry-bulb temperatures in deg F.
e. Return-air, wet- and dry-bulb temperatures in deg F.
f. Entering-air, wet- and dry-bulb temperatures in deg F.
g. Leaving-air, wet- and dry-bulb temperatures in deg F.
h. Refrigerant expansion valve and refrigerant types.
i. Refrigerant suction pressure in psig.
j. Refrigerant suction temperature in deg F.
k. Refrigerant liquid temperature
l. Refrigerant liquid pressure
m. Condenser saturation temperature.

G. Electric-Coil Test Reports: For electric furnaces, duct coils, and electric coils installed in central-station air-handling units, include the following:

1. Unit Data:

a. System identification.
b. Location.
c. Coil identification.
d. Capacity in Btu/h.
e. Number of stages.
f. Connected volts, phase, and hertz.

g. Rated amperage.
h. Airflow rate in cfm.
i. Face area in sq. ft..
j. Minimum face velocity in fpm.

2. Test Data (Indicated and Actual Values):

a. Heat output in Btu/h.
b. Airflow rate in cfm.
c. Air velocity in fpm.
d. Entering-air temperature in deg F.
e. Leaving-air temperature in deg F.
f. Voltage at each connection.
g. Amperage for each phase.

H. Fan Test Reports: For supply, return, and exhaust fans, include the following:

1. Fan Data:

a. System identification.
b. Location.
c. Make and type.
d. Model number and size.
e. Manufacturer's serial number.
f. Arrangement and class.
g. Sheave make, size in inches, and bore.
h. Center-to-center dimensions of sheave and amount of adjustments in inches.

2. Motor Data:

a. Motor make, and frame type and size.
b. Horsepower and rpm.
c. Volts, phase, and hertz.
d. Full-load amperage and service factor.
e. Sheave make, size in inches, and bore.
f. Center-to-center dimensions of sheave, and amount of adjustments in inches.
g. Number, make, and size of belts.

3. Test Data (Indicated and Actual Values):

a. Total airflow rate in cfm.
b. Total system static pressure in inches wg.
c. Fan rpm.
d. Discharge static pressure in inches wg.
e. Suction static pressure in inches wg.

I. Round, Flat-Oval, and Rectangular Duct Traverse Reports: Include a diagram with a grid representing the duct cross-section and record the following:

1. Report Data:

a. System and air-handling-unit number.
b. Location and zone.
c. Traverse air temperature in deg F.
d. Duct static pressure in inches wg.
e. Duct size in inches.
f. Duct area in sq. ft..
g. Indicated airflow rate in cfm.
h. Indicated velocity in fpm.
i. Actual airflow rate in cfm.
j. Actual average velocity in fpm.
k. Barometric pressure in psig.

3.13 VERIFICATION OF TAB REPORT

A. The TAB specialist's test and balance engineer shall conduct the inspection in the presence of Construction Manager.

B. If rechecks yield measurements that differ from the measurements documented in the final report by more than the tolerances allowed, the measurements shall be noted as "FAILED."

C. If the number of "FAILED" measurements is greater than 10 percent of the total measurements checked during the final inspection, the testing and balancing shall be considered incomplete and shall be rejected.

D. If TAB work fails, proceed as follows:

1. TAB specialists shall recheck all measurements and make adjustments. Revise the final report and balancing device settings to include all changes; resubmit the final report and request a second final inspection.
2. If the second final inspection also fails, Owner may contract the services of another TAB specialist to complete TAB work according to the Contract Documents and deduct the cost of the services from the original TAB specialist's final payment.
3. If the second verification also fails, Owner may contact AABC Headquarters regarding the AABC National Performance Guaranty.

E. Prepare test and inspection reports.

3.14 ADDITIONAL TESTS

A. Within 90 days of completing TAB, perform additional TAB to verify that balanced conditions are being maintained throughout and to correct unusual conditions.

B. Seasonal Periods: If initial TAB procedures were not performed during near-peak summer and winter conditions, perform additional TAB during near-peak summer and winter conditions.

End of Section

230713

DUCT INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes insulating the following duct services:

1. Indoor, concealed supply and outdoor air.
2. Indoor, concealed exhaust between isolation damper and penetration of building exterior.

B. Related Sections:

1. Section 233113 "Metal Ducts" for duct liners.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include thermal conductivity, water-vapor permeance thickness, and jackets (both factory- and field-applied if any).

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer.

B. Material Test Reports: From a qualified testing agency acceptable to authorities having jurisdiction indicating, interpreting, and certifying test results for compliance of insulation materials, sealers, attachments, cements, and jackets, with requirements indicated. Include dates of tests and test methods employed.

C. Field quality-control reports.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Skilled mechanics who have successfully completed an apprenticeship program or another craft training program certified by the Department of Labor, Bureau of Apprenticeship and Training.

B. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products according to ASTM E 84, by a testing agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing agency.

1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.
2. Insulation Installed Outdoors: Flame-spread index of 75 or less, and smoke-developed index of 150 or less.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Packaging: Insulation material containers shall be marked by manufacturer with appropriate ASTM standard designation, type and grade, and maximum use temperature.

1.7 COORDINATION

A. Coordinate sizes and locations of supports, hangers, and insulation shields specified in Section 230529 "Hangers and Supports for HVAC Piping and Equipment."

B. Coordinate clearance requirements with duct Installer for duct insulation application. Before preparing ductwork Shop Drawings, establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.

1.8 SCHEDULING

A. Schedule insulation application after pressure testing systems and, where required, after installing and testing heat tracing. Insulation application may begin on segments that have satisfactory test results.

B. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

PART 2 - PART 2 - PRODUCTS

2.1 INSULATION MATERIALS

A. Comply with requirements in "Duct Insulation Schedule, General," "Indoor Duct and Plenum Insulation Schedule," and "Aboveground, Outdoor Duct and Plenum Insulation Schedule" articles for where insulating materials shall be applied.

B. Products shall not contain asbestos, lead, mercury, or mercury compounds.

C. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.

D. Flexible Elastomeric Insulation: Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C 534, Type II for sheet materials.

E. Mineral-Fiber Blanket Insulation: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 553, Type II and ASTM C 1290, Type II with factory-applied vinyl jacket Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

2.2 ADHESIVES

A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated unless otherwise indicated.

B. Flexible Elastomeric and Polyolefin Adhesive: Comply with MIL-A-24179A, Type II, Class I.

C. Mineral-Fiber Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.

D. ASJ Adhesive, and FSK Jacket Adhesive: Comply with MIL-A-3316C, Class 2, Grade A for bonding insulation jacket lap seams and joints.

2.3 MASTICS

A. Materials shall be compatible with insulation materials, jackets, and substrates; comply with MIL-PRF-19565C, Type II.

B. Vapor-Barrier Mastic: Water based; suitable for indoor use on below ambient services.

1. Water-Vapor Permeance: ASTM E 96/E 96M, Procedure B, 0.013 perm at 43-mil dry film thickness.
2. Service Temperature Range: Minus 20 to plus 180 deg F.
3. Solids Content: ASTM D 1644, 58 percent by volume and 70 percent by weight.
4. Color: White.

C. Vapor-Barrier Mastic: Solvent based; suitable for indoor use on below ambient services.

1. Water-Vapor Permeance: ASTM F 1249, 0.05 perm at 35-mil dry film thickness.
2. Service Temperature Range: 0 to 180 deg F.
3. Solids Content: ASTM D 1644, 44 percent by volume and 62 percent by weight.
4. Color: White.

D. Vapor-Barrier Mastic: Solvent based; suitable for outdoor use on below ambient services.

1. Water-Vapor Permeance: ASTM F 1249, 0.05 perm at 30-mil dry film thickness.
2. Service Temperature Range: Minus 50 to plus 220 deg F.
3. Solids Content: ASTM D 1644, 33 percent by volume and 46 percent by weight.
4. Color: White.

2.4 LAGGING ADHESIVES

A. Description: Comply with MIL-A-3316C, Class I, Grade A and shall be compatible with insulation materials, jackets, and substrates.

1. Fire-resistant, water-based lagging adhesive and coating for use indoors to adhere fire-resistant lagging cloths over duct insulation.
2. Service Temperature Range: 0 to plus 180 deg F.
3. Color: White.

2.5 SEALANTS

A. FSK and Metal Jacket Flashing Sealants:

1. Materials shall be compatible with insulation materials, jackets, and substrates.
2. Fire- and water-resistant, flexible, elastomeric sealant.
3. Service Temperature Range: Minus 40 to plus 250 deg F.
4. Color: Aluminum.

B. ASJ Flashing Sealants, and Vinyl and PVC Jacket Flashing Sealants:

1. Materials shall be compatible with insulation materials, jackets, and substrates.
2. Fire- and water-resistant, flexible, elastomeric sealant.
3. Service Temperature Range: Minus 40 to plus 250 deg F.
4. Color: White.

2.6 FACTORY-APPLIED JACKETS

A. Insulation system schedules indicate factory-applied jackets on various applications. When factory-applied jackets are indicated, comply with the following:

1. ASJ: White, kraft-paper, fiberglass-reinforced scrim with aluminum-foil backing; complying with ASTM C 1136, Type I.
2. ASJ-SSL: ASJ with self-sealing, pressure-sensitive, acrylic-based adhesive covered by a removable protective strip; complying with ASTM C 1136, Type I.
3. FSK Jacket: Aluminum-foil, fiberglass-reinforced scrim with kraft-paper backing; complying with ASTM C 1136, Type II.

2.7 TAPES

A. ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, complying with ASTM C 1136.

1. Width: 3 inches.
2. Thickness: 11.5 mils.
3. Adhesion: 90 ounces force/inch in width.
4. Elongation: 2 percent.
5. Tensile Strength: 40 lbf/inch in width.
6. ASJ Tape Disks and Squares: Precut disks or squares of ASJ tape.

B. FSK Tape: Foil-face, vapor-retarder tape matching factory-applied jacket with acrylic adhesive; complying with ASTM C 1136.

1. Width: 3 inches.
2. Thickness: 6.5 mils.
3. Adhesion: 90 ounces force/inch in width.
4. Elongation: 2 percent.
5. Tensile Strength: 40 lbf/inch in width.
6. FSK Tape Disks and Squares: Precut disks or squares of FSK tape.

C. PVC Tape: White vapor-retarder tape matching field-applied PVC jacket with acrylic adhesive; suitable for indoor and outdoor applications.

1. Width: 2 inches.
2. Thickness: 6 mils.
3. Adhesion: 64 ounces force/inch in width.
4. Elongation: 500 percent.
5. Tensile Strength: 18 lbf/inch in width.

PART 3 - PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of insulation application.

Verify that systems to be insulated have been tested and are free of defects.
Verify that surfaces to be insulated are clean and dry.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.

3.3 GENERAL INSTALLATION REQUIREMENTS

A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of ducts and fittings.

B. Install insulation materials, vapor barriers or retarders, jackets, and thicknesses required for each item of duct system as specified in insulation system schedules.

C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.

D. Install insulation with longitudinal seams at top and bottom of horizontal runs.

E. Install multiple layers of insulation with longitudinal and end seams staggered.

F. Keep insulation materials dry during application and finishing.

G. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.

H. Install insulation with least number of joints practical.

I. Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic.

1. Install insulation continuously through hangers and around anchor attachments.
2. For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends at attachment to structure with vapor-barrier mastic.
3. Install insert materials and install insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.

J. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.

K. Install insulation with factory-applied jackets as follows:

1. Draw jacket tight and smooth.
2. Cover circumferential joints with 3-inch-wide strips, of same material as insulation jacket. Secure strips with adhesive and outward clinching staples along both edges of strip, spaced 4 inches o.c.
3. Overlap jacket longitudinal seams at least 1-1/2 inches. Clean and dry surface to receive self-sealing lap. Staple laps with outward clinching staples along edge at 4 inches o.c.

    a. For below ambient services, apply vapor-barrier mastic over staples.

4. Cover joints and seams with tape, according to insulation material manufacturer's written instructions, to maintain vapor seal.
5. Where vapor barriers are indicated, apply vapor-barrier mastic on seams and joints and at ends adjacent to duct flanges and fittings.

L. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.

M. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.

N. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.

3.4 PENETRATIONS

A. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.

B. Insulation Installation at Floor Penetrations:

1. Duct: For penetrations through fire-rated assemblies, terminate insulation at fire damper sleeves and externally insulate damper sleeve beyond floor to match adjacent duct insulation. Overlap damper sleeve and duct insulation at least 2 inches.
2. Seal penetrations through fire-rated assemblies. Comply with requirements in Section 078413 "Penetration Firestopping."

3.5 INSTALLATION OF MINERAL-FIBER INSULATION

A. Blanket Insulation Installation on Ducts and Plenums: Secure with adhesive and insulation pins.

1. In first subparagraph below, many manufacturers do not recommend 100 percent coverage of adhesive because of the effect on the overall insulation system's fire-performance characteristics. Verify application coverage recommendations with insulation manufacturer.
2. Apply adhesives according to manufacturer's recommended coverage rates per unit area, for 100 percent coverage of duct and plenum surfaces.
3. Revise first subparagraph below to allow adhesive to be omitted from top surface of horizontal rectangular ducts.
4. Apply adhesive to entire circumference of ducts and to all surfaces of fittings and transitions.
5. Install either capacitor-discharge-weld pins and speed washers or cupped-head, capacitor-discharge-weld pins on sides and bottom of horizontal ducts and sides of vertical ducts as follows:

    a. On duct sides with dimensions 18 inches and smaller, place pins along longitudinal centerline of duct. Space 3 inches maximum from insulation end joints, and 16 inches o.c.
    b. On duct sides with dimensions larger than 18 inches, place pins 16 inches o.c. each way, and 3 inches maximum from insulation joints. Install additional pins to hold insulation tightly against surface at cross bracing.

6. Pins may be omitted from top surface of horizontal, rectangular ducts and plenums.
7. Do not overcompress insulation during installation.
8. Impale insulation over pins and attach speed washers.
9. Cut excess portion of pins extending beyond speed washers or bend parallel with insulation surface. Cover exposed pins and washers with tape matching insulation facing.
10. For ducts and plenums with surface temperatures below ambient, install a continuous unbroken vapor barrier. Create a facing lap for longitudinal seams and end joints with insulation by removing 2 inches from one edge and one end of insulation segment. Secure laps to adjacent insulation section with 1/2-inch outward-clinching staples, 1 inch o.c. Install vapor barrier consisting of factory- or field-applied jacket, adhesive, vapor-barrier mastic, and sealant at joints, seams, and protrusions.

a. Repair punctures, tears, and penetrations with tape or mastic to maintain vapor-barrier seal.
b. Install vapor stops for ductwork and plenums operating below 50 deg F at 18-foot intervals. Vapor stops shall consist of vapor-barrier mastic applied in a Z-shaped pattern over insulation face, along butt end of insulation, and over the surface. Cover insulation face and surface to be insulated a width equal to two times the insulation thickness, but not less than 3 inches.

11. Install insulation on rectangular duct elbows and transitions with a full insulation section for each surface. Install insulation on round and flat-oval duct elbows with individually mitered gores cut to fit the elbow.
12. Insulate duct stiffeners, hangers, and flanges that protrude beyond insulation surface with 6-inch-wide strips of same material used to insulate duct. Secure on alternating sides of stiffener, hanger, and flange with pins spaced 6 inches o.c.

3.6 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

3.7 DUCT INSULATION SCHEDULE, GENERAL

A. Plenums and Ducts Requiring Insulation:

1. Indoor, concealed supply and outdoor air.
2. Indoor, concealed exhaust between isolation damper and penetration of building exterior.

B. Items Not Insulated:

1. Fibrous-glass ducts.
2. Metal ducts with duct liner of sufficient thickness to comply with energy code and ASHRAE/IESNA 90.1.
3. Factory-insulated flexible ducts.
4. Factory-insulated plenums and casings.
5. Flexible connectors.
6. Vibration-control devices.
7. Factory-insulated access panels and doors.

End of Section

233113

METAL DUCTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Single-wall rectangular ducts and fittings.

2. Single-wall round ducts and fittings.

3. Sheet metal materials.

4. Sealants and gaskets.

5. Hangers and supports.

B. Related Sections:

1. Retain Sections in subparagraphs below that contain requirements Contractor might expect to find in this Section but are specified in other Sections.

2. Section 230593 "Testing, Adjusting, and Balancing for HVAC" for testing, adjusting, and balancing requirements for metal ducts.

3. Section 233300 "Air Duct Accessories" for dampers, sound-control devices, duct-mounting access doors and panels, turning vanes, and flexible ducts.

1.3 PERFORMANCE REQUIREMENTS

A. Delegated Duct Design: Duct construction, including sheet metal thicknesses, seam and joint construction, reinforcements, and hangers and supports, shall comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" and performance requirements and design criteria indicated in "Duct Schedule" Article.

B. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of the following products:

1. Sealants and gaskets.

B. Delegated-Design Submittal:

1. Sheet metal thicknesses.

2. Joint and seam construction and sealing.

3. Reinforcement details and spacing.

4. Materials, fabrication, assembly, and spacing of hangers and supports.

PART 2 - PRODUCTS

2.1 SINGLE-WALL RECTANGULAR DUCTS AND FITTINGS

A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" based on indicated static-pressure class unless otherwise indicated.

B. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-1, "Rectangular Duct/Transverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

C. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-2, "Rectangular Duct/Longitudinal Seams," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

D. Elbows, Transitions, Offsets, Branch Connections, and Other Duct Construction: Select types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 4, "Fittings and Other Construction," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

2.2 SINGLE-WALL ROUND DUCTS AND FITTINGS

A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 3, "Round, Oval, and Flexible Duct," based on indicated static-pressure class unless otherwise indicated.

B. Flat-Oval Ducts: Indicated dimensions are the duct width (major dimension) and diameter of the round sides connecting the flat portions of the duct (minor dimension).

C. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-1, "Round Duct Transverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

1. Transverse Joints in Ducts Larger Than 60 Inches in Diameter: Flanged.

D. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-2, "Round Duct Longitudinal Seams," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

1. Fabricate round ducts larger than 90 inches in diameter with butt-welded longitudinal seams.

2. Fabricate flat-oval ducts larger than 72 inches in width (major dimension) with butt-welded longitudinal seams.

E. Tees and Laterals: Select types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-5, "90 Degree Tees and Laterals," and Figure 3-6, "Conical Tees," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

2.3 SHEET METAL MATERIALS

A. General Material Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.

B. Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.

1. Galvanized Coating Designation: G90.

2. Finishes for Surfaces Exposed to View: Mill phosphatized.

C. Reinforcement Shapes and Plates: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.

1. Where black- and galvanized-steel shapes and plates are used to reinforce aluminum ducts, isolate the different metals with butyl rubber, neoprene, or EPDM gasket materials.

D. Tie Rods: Galvanized steel, 1/4-inch minimum diameter for lengths 36 inches or less; 3/8-inch minimum diameter for lengths longer than 36 inches.

2.4 SEALANT AND GASKETS

A. General Sealant and Gasket Requirements: Surface-burning characteristics for sealants and gaskets shall be a maximum flame-spread index of 25 and a maximum smoke-developed index of 50 when tested according to UL 723; certified by an NRTL.

B. Water-Based Joint and Seam Sealant:

1. Application Method: Brush on.

2. Solids Content: Minimum 65 percent.

3. Shore A Hardness: Minimum 20.

4. Water resistant.

5. Mold and mildew resistant.

6. VOC: Maximum 75 g/L (less water).

7. Maximum Static-Pressure Class: 10-inch wg, positive and negative.

8. Service: Indoor or outdoor.

9. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel, or aluminum sheets.

C. Flanged Joint Sealant: Comply with ASTM C 920.

1. General: Single-component, acid-curing, silicone, elastomeric.

2. Type: S.

3. Grade: NS.

4. Class: 25.

D. Flange Gaskets: Butyl rubber, neoprene, or EPDM polymer with polyisobutylene plasticizer.

2.5 HANGERS AND SUPPORTS

A. Hanger Rods for Corrosive Environments: Electrogalvanized, all-thread rods or galvanized rods with threads painted with zinc-chromate primer after installation.

B. Strap and Rod Sizes: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 5-1, "Rectangular Duct Hangers Minimum Size," and Table 5-2, "Minimum Hanger Sizes for Round Duct."

C. Steel Cables for Galvanized-Steel Ducts: Galvanized steel complying with ASTM A 603.

D. Steel Cable End Connections: Cadmium-plated steel assemblies with brackets, swivel, and bolts designed for duct hanger service; with an automatic-locking and clamping device.

E. Duct Attachments: Sheet metal screws, blind rivets, or self-tapping metal screws; compatible with duct materials.

F. Trapeze and Riser Supports:

1. Supports for Galvanized-Steel Ducts: Galvanized-steel shapes and plates.

PART 3 - EXECUTION

3.1 DUCT INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of duct system. Indicated duct locations, configurations, and arrangements were used to size ducts and calculate friction loss for air-handling equipment sizing and for other design considerations. Install duct systems as indicated unless deviations to layout are approved on Shop Drawings and Coordination Drawings.

B. Install ducts according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" unless otherwise indicated.

C. Install round ducts in maximum practical lengths.

D. Install ducts with fewest possible joints.

E. Install factory- or shop-fabricated fittings for changes in direction, size, and shape and for branch connections.

F. Unless otherwise indicated, install ducts vertically and horizontally, and parallel and perpendicular to building lines.

G. Install ducts close to walls, overhead construction, columns, and other structural and permanent enclosure elements of building.

H. Install ducts with a clearance of 1 inch, plus allowance for insulation thickness.

I. Route ducts to avoid passing through transformer vaults and electrical equipment rooms and enclosures.

J. Where ducts pass through non-fire-rated interior partitions and exterior walls and are exposed to view, cover the opening between the partition and duct or duct insulation with sheet metal flanges of same metal thickness as the duct. Overlap openings on four sides by at least 1-1/2 inches.

K. Where ducts pass through fire-rated interior partitions and exterior walls, install fire dampers. Comply with requirements in Section 233300 "Air Duct Accessories" for fire and smoke dampers.

L. Protect duct interiors from moisture, construction debris and dust, and other foreign materials. Comply with SMACNA's "IAQ Guidelines for Occupied Buildings Under Construction," Appendix G, "Duct Cleanliness for New Construction Guidelines."

3.2 INSTALLATION OF EXPOSED DUCTWORK

A. Protect ducts exposed in finished spaces from being dented, scratched, or damaged.

B. Trim duct sealants flush with metal. Create a smooth and uniform exposed bead. Do not use two-part tape sealing system.

C. Grind welds to provide smooth surface free of burrs, sharp edges, and weld splatter. When welding stainless steel with a No. 3 or 4 finish, grind the welds flush, polish the exposed welds, and treat the welds to remove discoloration caused by welding.

D. Maintain consistency, symmetry, and uniformity in the arrangement and fabrication of fittings, hangers and supports, duct accessories, and air outlets.

E. Repair or replace damaged sections and finished work that does not comply with these requirements.

3.3 DUCT SEALING

A. Seal ducts for duct static-pressure, seal classes, and leakage classes specified in "Duct Schedule" Article according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

B. Seal ducts to the following seal classes according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible":

1. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

2. Outdoor, Supply-Air Ducts: Seal Class A.

3. Outdoor, Exhaust Ducts: Seal Class C.

4. Outdoor, Return-Air Ducts: Seal Class C.

5. Unconditioned Space, Supply-Air Ducts in Pressure Classes 2-Inch wg and Lower: Seal Class B.

6. Unconditioned Space, Supply-Air Ducts in Pressure Classes Higher Than 2-Inch wg: Seal Class A.

7. Unconditioned Space, Exhaust Ducts: Seal Class C.

8. Unconditioned Space, Return-Air Ducts: Seal Class B.

9. Conditioned Space, Supply-Air Ducts in Pressure Classes 2-Inch wg and Lower: Seal Class C.

10. Conditioned Space, Supply-Air Ducts in Pressure Classes Higher Than 2-Inch wg: Seal Class B.

11. Conditioned Space, Exhaust Ducts: Seal Class B.

12. Conditioned Space, Return-Air Ducts: Seal Class C.

3.4 HANGER AND SUPPORT INSTALLATION

A. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 5, "Hangers and Supports."

B. Building Attachments: Concrete inserts, powder-actuated fasteners, or structural-steel fasteners appropriate for construction materials to which hangers are being attached.

1. Where practical, install concrete inserts before placing concrete.

2. Install powder-actuated concrete fasteners after concrete is placed and completely cured.

3. Use powder-actuated concrete fasteners for standard-weight aggregate concretes or for slabs more than 4 inches thick.

4. Do not use powder-actuated concrete fasteners for lightweight-aggregate concretes or for slabs less than 4 inches thick.

5. Retain subparagraph below for Projects that require seismic restraints.

6. Do not use powder-actuated concrete fasteners for seismic restraints.

C. Hanger Spacing: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 5-1, "Rectangular Duct Hangers Minimum Size," and Table 5-2, "Minimum Hanger Sizes for Round Duct," for maximum hanger spacing; install hangers and supports within 24 inches of each elbow and within 48 inches of each branch intersection.

D. Hangers Exposed to View: Threaded rod and angle or channel supports.

E. Support vertical ducts with steel angles or channel secured to the sides of the duct with welds, bolts, sheet metal screws, or blind rivets; support at each floor and at a maximum intervals of 16 feet.

F. Install upper attachments to structures. Select and size upper attachments with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

3.5 CONNECTIONS

A. Make connections to equipment with flexible connectors complying with Section 233300 "Air Duct Accessories."

B. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for branch, outlet and inlet, and terminal unit connections.

3.6 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Leakage Tests:

1. Comply with SMACNA's "HVAC Air Duct Leakage Test Manual." Submit a test report for each test.

2. Test the following systems:

a. LEED Prerequisite EA 2 requires compliance with ASHRAE/IESNA 90.1, in which Section 6.4.4.2.2 - "Duct Leakage Tests" requires leak testing of at least 25 percent of total installed duct area with a pressure class in excess of 3-inch wg (750 Pa). Retain first subparagraph below for minimum requirements if applying for LEED certification or complying with ASHRAE/IESNA 90.1. To define more stringent requirements, retain subsequent subparagraphs as applicable and delete first subparagraph. Consider cost impact when specifying the extent of duct area to be tested. It is not common to leak test all ducts or ducts with a pressure class less than 3-inch wg (750 Pa).

b. Supply Ducts with a Pressure Class of 2-Inch wg or Higher: Test representative duct sections, selected by Architect from sections installed, totaling no less than 100 percent of total installed duct area for each designated pressure class.

c. Return Ducts with a Pressure Class of 2-Inch wg or Higher: Test representative duct sections, selected by Architect from sections installed, totaling no less than 100 percent of total installed duct area for each designated pressure class.

d. Exhaust Ducts with a Pressure Class of 2-Inch wg or Higher: Test representative duct sections, selected by Architect from sections installed, totaling no less than 100 percent of total installed duct area for each designated pressure class.

3. Disassemble, reassemble, and seal segments of systems to accommodate leakage testing and for compliance with test requirements.

4. Test for leaks before applying external insulation.

5. Conduct tests at static pressures equal to maximum design pressure of system or section being tested. If static-pressure classes are not indicated, test system at maximum system design pressure. Do not pressurize systems above maximum design operating pressure.

6. Give seven days' advance notice for testing.

C. Duct system will be considered defective if it does not pass tests and inspections.

D. Prepare test and inspection reports.

3.7 START UP

A. Air Balance: Comply with requirements in Section 230593 "Testing, Adjusting, and Balancing for HVAC."

3.8 DUCT SCHEDULE

A. Fabricate ducts with galvanized sheet steel except as otherwise indicated and as follows:

B. Supply Ducts:

1. Ducts Connected to Constant-Volume Air-Handling Units:

a. Pressure Class: Positive 3-inch wg.
b. Minimum SMACNA Seal Class: A.
c. SMACNA Leakage Class for Rectangular: 24.
d. SMACNA Leakage Class for Round and Flat Oval: 12.

C. Return Ducts:

1. Ducts Connected to Air-Handling Units:

a. Pressure Class: Positive or negative 3-inch wg.
b. Minimum SMACNA Seal Class: A.
c. SMACNA Leakage Class for Rectangular: 24.
d. SMACNA Leakage Class for Round and Flat Oval: 12.

D. Exhaust Ducts:

1. Ducts Connected to Fans Exhausting (ASHRAE 62.1, Class 1 and 2) Air:

a. Pressure Class: Negative 2-inch wg.
b. Minimum SMACNA Seal Class: B if negative pressure, and A if positive pressure.
c. SMACNA Leakage Class for Rectangular: 12.
d. SMACNA Leakage Class for Round and Flat Oval: 12.

E. Elbow Configuration

1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-2, "Rectangular Elbows."

a. Mitered Type RE 2 with vanes complying with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-3, "Vanes and Vane Runners," and Figure 4-4, "Vane Support in Elbows."

2. Round Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-4, "Round Duct Elbows."

a. Minimum Radius-to-Diameter Ratio and Elbow Segments: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 3-1, "Mitered Elbows." Elbows with less than 90-degree change of direction have proportionately fewer segments.

1) Retain first three subparagraphs below, or delete and retain fourth subparagraph.
2) Radius-to Diameter Ratio: 1.5.

b. Round Elbows, 12 Inches and Smaller in Diameter: Stamped or pleated.

F. Branch Configuration:

1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-6, "Branch Connection."

   a. Rectangular Main to Rectangular Branch: 45-degree entry.
   b. Rectangular Main to Round Branch: Spin in.

2. Round and Flat Oval: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-5, "90 Degree Tees and Laterals," and Figure 3-6, "Conical Tees." Saddle taps are permitted in existing duct.

   a. Velocity 1000 fpm or Lower: 90-degree tap.
   b. Velocity 1000 to 1500 fpm: Conical tap.
   c. Velocity 1500 fpm or Higher: 45-degree lateral.

End of Section

233300

AIR DUCT ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Backdraft and pressure relief dampers.
2. Manual volume dampers.
3. Control dampers.
4. Fire dampers.
5. Smoke dampers.
6. Flange connectors.
7. Turning vanes.
8. Duct-mounted access doors.
9. Duct access panel assemblies.
10. Flexible connectors.
11. Duct accessory hardware.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For duct accessories. Include plans, elevations, sections, details and attachments to other work.

1. Detail duct accessories fabrication and installation in ducts and other construction. Include dimensions, weights, loads, and required clearances; and method of field assembly into duct systems and other construction. Include the following:

a. Special fittings.
b. Manual volume damper installations.
c. Control-damper installations.
d. Fire-damper, smoke-damper, combination fire- and smoke-damper, ceiling, and corridor-damper installations, including sleeves; and duct-mounted access doors and remote damper operators.
e. Include diagrams for power, signal, and control wiring.

1.4 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Reflected ceiling plans, or BIM model, drawn to scale, and coordinated with each other, using input from installers of the items involved.

B. Source quality-control reports.

1.5 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

PART 2 - PRODUCTS

2.1 ASSEMBLY DESCRIPTION

A. Comply with NFPA 90A, "Installation of Air Conditioning and Ventilating Systems," and with NFPA 90B, "Installation of Warm Air Heating and Air Conditioning Systems."

B. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.

2.2 MATERIALS

A. Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.

1. Galvanized Coating Designation: G60.

2. Exposed-Surface Finish: Mill phosphatized.

B. Reinforcement Shapes and Plates: Galvanized-steel reinforcement where installed on galvanized sheet metal ducts; compatible materials for aluminum and stainless-steel ducts.

C. Tie Rods: Galvanized steel, 1/4-inch minimum diameter for lengths 36 inches or less; 3/8-inch minimum diameter for lengths longer than 36 inches.

2.3 BACKDRAFT AND PRESSURE RELIEF DAMPERS

A. Description: Gravity balanced.

B. Performance:

1. Maximum Air Velocity: 1000 fpm.

2. Maximum System Pressure: 1 inch wg.

3. "AMCA Certification" Subparagraph below requires test results to be verified by AMCA staff and the manufacturer to have obtained the proper license from AMCA, in order for the products to bear AMCA's Certified Ratings Seal for air performance, air leakage, or both. Consult manufacturers.

4. Leakage:

a. Class III: Leakage shall not exceed 40 cfm/sq. ft. against 1-inch wg differential static pressure.

C. Construction:

1. Frame:

a. Hat shaped.
b. 16-gauge-thick, galvanized sheet steel, with welded or mechanically attached corners.

2. Blades:

a. Multiple single-piece blades.
b. Off-center pivoted, maximum 6-inch width, 16-gauge-thick, galvanized sheet steel with sealed edges.

3. Blade Action: Parallel.

D. Blade Seals: Neoprene, mechanically locked.

E. Blade Axles:

1. Material: Galvanized steel.

2. Diameter: 0.20 inch.

F. Tie Bars and Brackets: Galvanized steel.

G. Return Spring: Adjustable tension.

H. Bearings: Brass sleeve or synthetic pivot bushings.

2.4 MANUAL VOLUME DAMPERS

A. Standard, Steel, Manual Volume Dampers:

1. Performance:

    a. Leakage Rating Class III: Leakage not exceeding 40 cfm/sq. ft. against 1-inch wg differential static pressure.

2. Construction:

    a. Linkage out of airstream.
    b. Suitable for horizontal or vertical airflow applications.

3. Frames:

    a. Hat-shaped, 16-gauge-thick, galvanized sheet steel.
    b. Mitered and welded corners.
    c. Flanges for attaching to walls and flangeless frames for installing in ducts.

4. Blades:

    a. Multiple or single blade.
    b. Parallel- or opposed-blade design.
    c. Stiffen damper blades for stability.
    d. Galvanized steel; 16 gauge thick.

5. Blade Axles: Galvanized steel.

6. Bearings:

    a. Molded synthetic
    b. Dampers mounted with vertical blades to have thrust bearing at each end of every blade.

7. Tie Bars and Brackets: Galvanized steel.

8. Locking device to hold damper blades in a fixed position without vibration.

2.5 CONTROL DAMPERS

A. General Requirements:

1. Unless otherwise indicated, use parallel-blade configuration for two-position control, equipment isolation service, and when mixing two airstreams. For other applications, use opposed-blade configuration.

2. Factory or field assemble multiple damper sections to provide a single damper assembly of size required by the application.

B. Performance:

1. AMCA Certification: Test and rate in accordance with AMCA 511.

2. Leakage:

    a. Leakage Rating Class III: Leakage not exceeding 40 cfm/sq. ft. against 1-inch wg differential static pressure.

3. Pressure Drop: 0.05 inch wg at 1500 fpm across a 24-by-24-inch damper when tested in accordance with AMCA 500-D, Figure 5.3.

4. Velocity: Up to 3000 fpm.

5. Temperature: Minus 25 to plus 180 deg F

6. Pressure Rating: Damper close-off pressure equal to fan shutoff pressure with a maximum blade deflection of 1/200 of blade length.

C. Construction:

1. Linkage out of airstream.

2. Suitable for horizontal or vertical airflow applications.

3. Frames:

    a. Hat, U, or angle shaped.
    b. 16-gauge-thick, galvanized sheet steel.
    c. Mitered and welded corners.
    d. Flanges for attaching to walls and flangeless frames for installing in ducts.

4. Blades:

    a. Multiple blade with maximum blade width of 6 inches.
    b. Opposed-blade design.
    c. Galvanized steel.
    d. 16-gauge-thick single skin or 14-gauge-thick air foil dual skin.

5. Blade Edging Seals:

    a. Replaceable Closed-cell neoprene.
    b. Inflatable seal blade edging, or replaceable rubber seals.

6. Blade Jamb Seal: Flexible stainless steel, compression type.

7. Blade Axles: 1/2-inch diameter; galvanized steel.

8. Blade-Linkage Hardware: Zinc-plated steel and brass; ends sealed against blade bearings. Linkage mounted out of air stream.

9. Bearings:

    a. Molded synthetic.

b. Dampers mounted with vertical blades to have thrust bearings at each end of every blade.

D. Damper Actuator - Electric:

1. Electric - 120 V ac or 24 V ac.

2. UL 873, plenum rated.

3. Two position with fail-safe spring return.

a. Sufficient motor torque and spring torque to drive damper fully open and fully closed with adequate force to achieve required damper seal.
b. Minimum 90-degree drive rotation.

4. Clockwise or counterclockwise drive rotation as required for application.

5. Environmental Operating Range:

a. Temperature: Minus 40 to plus 130 deg F.
b. Humidity: 5 to 95 percent relative humidity noncondensing.

6. Environmental enclosure: NEMA 2.

7. Actuator to be factory mounted and provided with a single-point wiring connection.

2.6 FIRE DAMPERS

A. Type: Static and dynamic; rated and labeled in accordance with UL 555 by an NRTL.

B. Closing rating in ducts up to 4-inch wg static pressure class and minimum 2000 fpm velocity.

C. Fire Rating: 1-1/2 and 3 hours.

D. Frame: Curtain type with blades outside airstream except when located behind grille where blades may be inside airstream; fabricated with roll-formed galvanized steel; with mitered and interlocking corners; gauge in accordance with UL listing.

E. Mounting Sleeve: Factory- or field-installed, galvanized sheet steel; gauge in accordance with UL listing.

F. Mounting Orientation: Vertical or horizontal as indicated.

G. Blades: Roll-formed galvanized sheet steel, full-length steel blade connectors. Material gauge is to be in accordance with UL listing.

H. Horizontal Dampers: Include blade lock and stainless steel closure spring.

I. Heat-Responsive Device:

1. Replaceable, 165 deg F rated, fusible links.

2.7 SMOKE DAMPERS

A. General Requirements:

1. Label to indicate conformance to UL 555 and UL 555S by an NRTL.

2. Label to indicate conformance to NFPA 80 and NFPA 90A by an NRTL.

3. Unless otherwise indicated, use parallel-blade configuration.

4. Factory or field assemble multiple damper sections to provide a single damper assembly of size required by the application.

5. Factory install damper actuator by damper manufacturer as integral part of damper assembly. Coordinate actuator location, mounting, and electrical requirements with damper manufacturer.

B. Performance:

1. AMCA Certification: Test and rate in accordance with AMCA Publication 511.

2. Leakage:

   a. Class IA: Leakage shall not exceed 3 cfm/sq. ft. against 1-inch wg differential static pressure.

3. Pressure Drop: 0.05 inch wg at 1500 across a 24-by-24-inch damper when tested in accordance with AMCA 500-D, Figure 5.3.

4. Velocity: Up to 3000 fpm.

5. Temperature: Minus 25 to plus 180 deg F.

6. Pressure Rating: Damper close-off pressure equal to fan shutoff pressure with a maximum blade deflection of 1/200 of blade length.

C. Construction:

1. Suitable for horizontal or vertical airflow applications.

2. Linkage out of airstream.

3. Frame:

   a. Hat shaped.
   b. Galvanized sheet steel, with welded, or mechanically attached corners and mounting flange.
   c. Gauge in accordance with UL listing.

4. Blades:

   a. Roll-formed, horizontal, galvanized sheet steel .

b. Maximum width and gauge in accordance with UL listing.

5. Blade Edging Seals:

a. Silicone rubber.

6. Blade Jamb Seal: Flexible stainless steel, compression type.

7. Blade Axles: 1/2-inch diameter; galvanized steel; blade-linkage hardware of zinc-plated steel and brass; ends sealed against blade bearings. Linkage is to be mounted out of airstream.

8. Bearings:

a. Oil-impregnated bronze.

D. Mounting Sleeve: Factory-installed, galvanized sheet steel; length to suit wall or floor application; gauge in accordance with UL listing.

E. Damper Actuator - Electric:

1. Electric - 120 V ac.

2. UL 873, plenum rated.

3. Designed to operate in smoke-control systems complying with UL 555S requirements.

4. Two position with fail-safe spring return.

a. Sufficient motor torque and spring torque to drive damper fully open and fully closed with adequate force to achieve required damper seal.
b. Maximum 15-second full-stroke closure.
c. Minimum 90-degree drive rotation.

5. Clockwise or counterclockwise drive rotation as required for application.

6. Environmental Operating Range:

a. Temperature: Minus 40 to plus 130 deg F
b. Humidity: 5 to 95 percent relative humidity noncondensing.

7. Environmental Enclosure: NEMA 2.

8. Actuator to be factory mounted and provided with single-point wiring connection.

F. Controllers, Electrical Devices, and Wiring:

1. Electrical Connection: 115 V, single phase, 60 Hz.

G. Accessories:

1. Auxiliary switches for signaling or position indication.

2. Momentary test switch, damper mounted.

3. Smoke Detector: Integral, factory wired for single-point connection.

2.8 FLANGE CONNECTORS

A. Description: Add-on or roll-formed, factory fabricated, slide-on transverse flange connectors, gaskets, and components.

B. Material: Galvanized steel.

C. Gauge and Shape: Match connecting ductwork.

2.9 TURNING VANES

A. Manufactured Turning Vanes for Metal Ducts: Curved blades of galvanized sheet steel; support with bars perpendicular to blades set; set into vane runners suitable for duct mounting.

1. Acoustic Turning Vanes: Fabricate airfoil-shaped aluminum extrusions with perforated faces and fibrous-glass fill.

B. Manufactured Turning Vanes for Nonmetal Ducts: Fabricate curved blades of resin-bonded fiberglass with acrylic polymer coating; support with bars perpendicular to blades set; set into vane runners suitable for duct mounting.

C. General Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible"; Figures 4-3, "Vanes and Vane Runners," and 4-4, "Vane Support in Elbows."

D. Vane Construction: Single wall.

E. Vane Construction: Single wall for ducts up to 48 inches wide and double wall for larger dimensions.

2.10 FLEXIBLE CONNECTORS

A. Materials: Flame-retardant or noncombustible fabrics.

B. Coatings and Adhesives: Comply with UL 181, Class 1.

C. Indoor System, Flexible Connector Fabric: Glass fabric double coated with neoprene.

1. Minimum Weight: 26 oz./sq. yd..

2. Tensile Strength: 480 lbf/inch in the warp and 360 lbf/inch in the filling.

3. Service Temperature: Minus 40 to plus 200 deg F.

2.11 FLEXIBLE DUCTS

A. Insulated, Flexible Duct: UL 181, Class 1, black polymer film supported by helically wound, spring-steel wire; fibrous-glass insulation; polyethylene vapor-barrier film.

1. Pressure Rating: 4-inch wg positive and 0.5-inch wg negative.

2. Maximum Air Velocity: 4000 fpm.

3. Temperature Range: Minus 20 to plus 175 deg F.

4. Insulation R-Value: Comply with ASHRAE/IESNA 90.1.

5. Clamps: Nylon strap in sizes 3 through 18 inches, to suit duct size.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install duct accessories according to applicable details in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for metal ducts and in NAIMA AH116, "Fibrous Glass Duct Construction Standards," for fibrous-glass ducts.

B. Install duct accessories of materials suited to duct materials; use galvanized-steel accessories in galvanized-steel and fibrous-glass ducts, stainless-steel accessories in stainless-steel ducts, and aluminum accessories in aluminum ducts.

C. Set dampers to fully open position before testing, adjusting, and balancing.

D. Install test holes at fan inlets and outlets and elsewhere as indicated and as needed for testing and balancing.

E. Install fire and smoke dampers in accordance with UL listing.

F. Install duct access doors on sides of ducts to allow for inspecting, adjusting, and maintaining accessories and equipment at the following locations:

1. Downstream from manual volume dampers, control dampers, backdraft dampers, and equipment.

2. Adjacent to and close enough to fire or smoke dampers, to reset or reinstall fusible links. Access doors for access to fire or smoke dampers having fusible links shall be pressure relief access doors and shall be outward operation for access doors installed upstream from dampers and inward operation for access doors installed downstream from dampers.

3. Control devices requiring inspection.

4. Elsewhere as indicated.

G. Install access doors with swing against duct static pressure.

H. Access Door Sizes:

1. One-Hand or Inspection Access: 8 by 5 inches

2. Two-Hand Access: 12 by 6 inches

3. Head and Hand Access: 18 by 10 inches

4. Head and Shoulders Access: 21 by 14 inches

5. Body Access: 25 by 14 inches

6. Body plus Ladder Access: 25 by 17 inches

I. Install flexible connectors to connect ducts to equipment.

J. Connect terminal units to supply ducts directly or with maximum 12-inch lengths of flexible duct. Do not use flexible ducts to change directions.

K. Connect diffusers or light troffer boots to ducts directly or with maximum lengths of flexible duct clamped or strapped in place.

L. Connect flexible ducts to metal ducts with draw bands.

3.2 FIELD QUALITY CONTROL

A. Tests and Inspections:

1. Operate dampers to verify full range of movement.

2. Inspect locations of access doors, and verify that size and location of access doors are adequate to perform required operation.

3. Operate fire, smoke, and combination fire and smoke dampers to verify full range of movement and that proper heat-response device is installed.

4. Inspect turning vanes for proper and secure installation, and verify that vanes do not move or rattle.

5. Operate remote damper operators to verify full range of movement of operator and damper.

End of Section

233423

HVAC POWER VENTILATORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Ceiling-mounted ventilators.

2. Centrifugal ventilators - roof downblast.

1.3 PERFORMANCE REQUIREMENTS

A. Project Altitude: Base fan-performance ratings on sea level.

B. Operating Limits: Classify according to AMCA 99.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include rated capacities, operating characteristics, and furnished specialties and accessories. Also include the following:

1. Certified fan performance curves with system operating conditions indicated.

2. Certified fan sound-power ratings.

3. Motor ratings and electrical characteristics, plus motor and electrical accessories.

4. Material thickness and finishes, including color charts.

5. Dampers, including housings, linkages, and operators.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.

2. Wiring Diagrams: For power, signal, and control wiring.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For power ventilators to include in emergency, operation, and maintenance manuals.

1.6 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. UL Standards: Power ventilators shall comply with UL 705. Power ventilators for use for restaurant kitchen exhaust shall also comply with UL 762.

PART 2 - PRODUCTS

2.1 CEILING-MOUNTED VENTILATORS (EXHAUST FANS)

A. Air King FRAK series

B. Housing: Steel, lined with acoustical insulation.

C. Fan Wheel: Centrifugal wheels directly mounted on motor shaft. Fan shrouds, motor, and fan wheel shall be removable for service.

D. Grille: Plastic, louvered grille with flange on intake and thumbscrew attachment to fan housing.

E. Electrical Requirements: Junction box for electrical connection on housing and receptacle for motor plug-in.

F. Accessories:

1. Two speed selector

2. Time delay.

3. Manual Starter Switch: Single-pole double throw rocker switch assembly with cover.

4. Isolation: Rubber-in-shear vibration isolators.

5. ENERGY STAR rated.

G. Capacities and Characteristics:

1. See Schedule

2. Electrical Characteristics:

a. Volts: 120.
b. Phase: 1.
c. Hertz: 60.

2.2 CENTRIFUGAL VENTILATORS - ROOF DOWNBLAST

A. Housing: Downblast; removable spun-aluminum dome top and outlet baffle; square, one-piece aluminum base with venturi inlet cone.

B. Fan Wheels: Aluminum hub and wheel with backward-inclined blades.

C. Accessories:

1. Variable-Frequency Motor Controller: Solid-state control to reduce speed from 100 to less than 50 percent.

2. Disconnect Switch: Nonfusible type, with thermal-overload protection mounted outside fan housing, factory wired through an internal aluminum conduit.

3. Bird Screens: Removable, 1/2-inch mesh, aluminum or brass wire.

4. Dampers: Counterbalanced, parallel-blade, backdraft dampers mounted in curb base; factory set to close when fan stops.

5. Motorized Dampers: Parallel-blade dampers mounted in curb base with electric actuator; wired to close when fan stops.

6. Spark-resistant, all-aluminum wheel construction.

7. Mounting Pedestal: Galvanized steel with removable access panel.

D. Prefabricated Roof Curbs: Galvanized steel; mitered and welded corners; 1-1/2-inch-thick, rigid, fiberglass insulation adhered to inside walls; and 1-1/2-inch wood nailer. Size to suit roof opening and fan base.

1. Overall Height: 14 inches.

2. Sound Curb: Curb with sound-absorbing insulation.

3. Hinged sub-base to provide access to damper.

2.3 MOTORS

A. Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements for motors specified in Section 230513 "Common Motor Requirements for HVAC Equipment."

1. Motor Sizes: Minimum size as indicated. If not indicated, large enough so driven load will not require motor to operate in service factor range above 1.0.

B. Permanently lubricated.

C. Electronically commutated motor.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install power ventilators level and plumb.

B. Ceiling Units: Suspend units from structure; use steel wire or metal straps.

C. Install units with clearances for service and maintenance.

3.2 CONNECTIONS

A. Drawings indicate general arrangement of ducts and duct accessories. Make final duct connections with flexible connectors. Flexible connectors are specified in Section 233300 "Air Duct Accessories."

B. Install ducts adjacent to power ventilators to allow service and maintenance.

C. Ground equipment according to Section 260526 "Grounding and Bonding for Electrical Systems."

D. Connect wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

3.3 FIELD QUALITY CONTROL

A. Tests and Inspections:

1. Verify that shipping, blocking, and bracing are removed.

2. Verify that unit is secure on mountings and supporting devices and that connections to ducts and electrical components are complete. Verify that proper thermal-overload protection is installed in motors, starters, and disconnect switches.

3. Verify that cleaning and adjusting are complete.

4. Verify that manual and automatic volume control and fire and smoke dampers in connected ductwork systems are in fully open position.

5. Remove and replace malfunctioning units and retest as specified above.

B. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

End of Section

233700

AIR OUTLETS AND INLETS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Specifications throughout all Divisions of the Project Manual are directly applicable to this Section, and this Section is directly applicable to them.

1.2 SUMMARY

A. Perform all Work required to provide and install diffusers, diffuser boots, registers/grilles, louvers, louver penthouses, roof hoods, and goosenecks indicated by the Contract Documents with supplementary items necessary for proper installation.

1.3 REFERENCE STANDARDS

A. The latest published edition of a reference shall be applicable to this Project unless identified by a specific edition date.

B. All reference amendments adopted prior to the effective date of this Contract shall be applicable to this Project.

C. All materials, installation and workmanship shall comply with the applicable requirements and standards addressed within the following references:

1. AMCA 500 - Test Method for Louvers, Dampers and Shutters.

2. ANSI/NFPA 90A - Installation of Air Conditioning and Ventilating Systems.

3. ARI 890 – Rating of Air Diffusers and Air Diffuser Assemblies.

4. ASHRAE 70 - Method of Testing for Rating the Air Flow Performance of Outlets and Inlets.

5. SMACNA 1035 - HVAC Duct Construction Standards - Metal and Flexible.

1.4 QUALITY ASSURANCE

A. Test and rate performance of air outlets and inlets in accordance with ASHRAE 70.

B. Test and rate performance of louvers in accordance with AMCA 500.

1.5 SUBMITTALS

A. Product Data:

1. Submit product data and Shop Drawings, indicating type, size, location, application, noise level, finish, and type of mounting.

2. Review requirements of outlets and inlets as to size, finish, and type of mounting prior to submitting product data.

B. Operation and Maintenance Data:

1. Submit manufacturer's installation instructions under provisions of Division 01.

PART 2 - PRODUCTS

2.1 GENERAL

A. All materials shall meet or exceed all applicable referenced standards, federal, state and local requirements, and conform to codes and ordinances of authorities having jurisdiction.

B. Grilles, registers and diffusers shall be as scheduled on the Drawings Grilles, registers and diffusers shall be provided with sponge rubber or soft felt gaskets where noted on the Drawings Grilles, slot diffusers and laminar flow bars shall not be internally insulated. If a manufacturer other than the one scheduled is used, the sizes shown on the Drawings shall be checked for performance, noise level, face velocity, throw, pressure drop, etc., before the submittal is made. Selections shall meet the manufacturer's own published data for the above performance criteria. The throw shall be such that the velocity at the end of the throw in the five (5) foot occupancy zone will not exceed 50 fpm nor be less than 25 fpm except where indicated otherwise. Noise levels shall not exceed those published in ASHRAE for the type of space being served (NC level). In the vicinity of lab hoods, terminal velocity at face of hood shall not exceed 20 fpm.

C. Locations of air distribution devices on Drawings are approximate and shall be coordinated with other trades to make symmetrical patterns and shall be influenced by the established general pattern of the lighting fixtures or architectural reflected ceiling plan, but primarily located to maintain proper air distribution. Where called for on Drawings, grilles, registers and diffusers shall be provided with deflecting devices and manual dampers. These grilles, registers, and diffusers shall be the standard product of the manufacturer, and subject to review by the Architect.

D. Provide a frame compatible with the type of ceiling or wall in which the devices are installed. Refer to Architectural Drawings for exact type of ceiling specified.

E. Coordinate color and finish of the devices with the Architect.

2.2 MANUFACTURERS

A. Grilles, Registers, and Diffusers:

1. Tuttle and Bailey

2. Krueger Manufacturing Company.

3. Titus Products.

2.3 Nailor Industries.SQUARE SUPPLY AIR CEILING DIFFUSER

A. 3-cone diffuesr centered within a square housing similar to the Titus TMS model. Drawings that depict two-way and three-way throw options are achieved with the use of filler panel (where required) for directional throw diffusers.

B. Opposed blade volume dampers shall be provided with the diffuser, if scheduled on the Drawings. The volume damper design shall be similar to the Titus AG-75.

C. Although the manufacturers show this model being used only as a supply air device, this same diffuser can also be used as a return air device.

D. Provide round neck connection as scheduled on Drawings.

2.4 CEILING EXHAUST AND RETURN REGISTERS/GRILLES

A. See schedule

2.5 WALL EXHAUST AND RETURN REGISTERS/GRILLES

A. See schedule

PART 3 - EXECUTION

3.1 INSTALLATION

A. Installation shall meet or exceed all applicable federal, state and local requirements, referenced standards and conform to codes and ordinances of authorities having jurisdiction.

B. All installation shall be in accordance with manufacturer’s published recommendations.

C. Check location of air outlets and inlets and make necessary adjustments in position to conform to architectural features, reflected ceiling plans, symmetry, and lighting arrangement.

D. Install air outlets and inlets to ductwork with airtight connection.

E. Provide balancing dampers on duct take-off to diffusers, grilles and registers, regardless of whether dampers are specified as part of the diffuser, grille, or register assembly. The use of

extractors or scoops at duct take-off to diffusers, grilles and registers is not allowed.

F. Paint ductwork visible behind air outlets and inlets matte black. Refer to Division 09.

G. Provide all specialties and frames for air distribution devices as required for proper installation in ceiling type as indicated on Architectural Drawings. Provide all cutting and patching of T-bars, gypsum board, and other ceiling systems as required for installation of air devices.

PART 4 - EXECUTION (ADDITIONAL REQUIREMENTS)

4.1 INSTALLATION

A. General Installation Requirements:

1. Install seismic restraints according to SMACNA's "Kitchen Equipment Fabrication Guidelines, Appendix 1, "Guidelines for Seismic Restraints for Kitchen Equipment".

2. Check location of inlets and outlets and make necessary adjustments in position to conform to architectural features, symmetry, and lighting arrangement.

3. Flexible ducts shall NOT be joined to flat-oval connections. Provide sheet metal oval-to-round transitions where required.

4. Supply air diffusers in operating rooms (Class B and C surgery) shall be opened and cleaned before the space is used.

B. Volume Damper:

1. Provide manual volume dampers on duct take-off to diffusers when there are multiple connections to a common duct. Locate volume dampers as far as possible from the air inlet or outlet.

End of Section

233713

DIFFUSERS, REGISTERS, AND GRILLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Adjustable blade face grilles.
2. Fixed face grilles.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated, include the following:

1. Data Sheet: Indicate materials of construction, finish, and mounting details; and performance data including throw and drop, static-pressure drop, and noise ratings.

PART 2 - PRODUCTS

2.1 GRILLES

A. Adjustable Blade Face Grilles:

1. Material: Steel.
2. Finish: Baked enamel, color selected by Architect.
3. Frame: 1 inch wide.
4. Mounting: Countersunk screw or Lay in.

B. Fixed Face Grilles:

1. Material: Steel.
2. Finish: Baked enamel, color selected by Architect.
3. Frame: 1 inch wide.
4. Mounting: Countersunk screw or Lay in.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas where diffusers, registers, and grilles are to be installed for compliance with requirements for installation tolerances and other conditions affecting performance of equipment.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install diffusers, registers, and grilles level and plumb.

B. Ceiling-Mounted Outlets and Inlets: Drawings indicate general arrangement of ducts, fittings, and accessories. Air outlet and inlet locations have been indicated to achieve design requirements for air volume, noise criteria, airflow pattern, throw, and pressure drop. Make final locations where indicated, as much as practical. For units installed in lay-in ceiling panels, locate units in the center of panel. Where architectural features or other items conflict with installation, notify Architect for a determination of final location.

3.3 ADJUSTING

A. After installation, adjust diffusers, registers, and grilles to air patterns indicated, or as directed, before starting air balancing.

End of Section

260526

GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Grounding systems and equipment.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1.3 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

1.4 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with UL 467 for grounding and bonding materials and equipment.

C. Seal all penetrations through walls, ceiling and floors and vertical chases adjacent to units. Refer to 003060 Sustainable design requirements.

D. Energy star air sealing requirements. Refer to 003060 Sustainable design requirements.

PART 2 - PRODUCTS

2.1 CONDUCTORS

A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise indicated or required by applicable Code or authorities having jurisdiction.

B. Bare Copper Conductors:

1. Solid Conductors: ASTM B 3.
2. Stranded Conductors: ASTM B 8.
3. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG conductor, 1/4 inch in diameter.
4. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.

5. Bonding Jumper: Copper tape, braided conductors terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.
6. Tinned Bonding Jumper: Tinned-copper tape, braided conductors terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.

2.2 CONNECTORS

A. Listed and labeled by an NRTL acceptable to authorities having jurisdiction for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.

B. Bolted Connectors for Conductors and Pipes: Copper or copper alloy, pressure type with at least two bolts.

1. Pipe Connectors: Clamp type, sized for pipe.

C. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.

2.3 GROUNDING ELECTRODES

A. Ground Rods: Copper-clad steel; 3/4 inch by 10 feet in length.

PART 3 - EXECUTION

3.1 APPLICATIONS

A. Conductors: Install solid conductor for No. 8 AWG and smaller, and stranded conductors for No. 6 AWG and larger unless otherwise indicated.

B. Underground Grounding Conductors: Install barecopper conductor, No. 2/0 AWG minimum. Bury at least 24 inches below grade.

C. Conductor Terminations and Connections:

1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
2. Underground Connections: Welded connectors except at test wells and as otherwise indicated.
3. Connections to Structural Steel: Welded connectors.

3.2 EQUIPMENT GROUNDING

A. Install insulated equipment grounding conductors with the following items, in addition to those required by NFPA 70:

1. Feeders and branch circuits.
2. Lighting circuits.

3. Receptacle circuits.
4. Single-phase motor and appliance branch circuits.
5. Flexible raceway runs.
6. Armored and metal-clad cable runs.

3.3 INSTALLATION

A. Grounding Conductors: Route along shortest and straightest paths possible unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

B. Ground Rods: Drive rods until tops are 2 inches below finished floor or final grade unless otherwise indicated.

1. Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating if any.

C. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance except where routed through short lengths of conduit.

1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install bonding so vibration is not transmitted to rigidly mounted equipment.
3. Use exothermic-welded connectors for outdoor locations; if a disconnect-type connection is required, use a bolted clamp.

3.4 LABELING

A. Comply with requirements in Division 26 Section "Identification for Electrical Systems" Article for instruction signs. The label or its text shall be green.

3.5 FIELD QUALITY CONTROL

A. Perform the following tests and inspections and prepare test reports:

1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
2. Inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with a calibrated torque wrench according to manufacturer's written instructions.
3. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal. Make tests at ground rods before any conductors are connected.

B. Excessive Ground Resistance: If resistance to ground exceeds 5 ohms, notify Engineer promptly and include recommendations to reduce ground resistance.

End of Section

260553

IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Identification for raceways.
2. Identification of power and control cables.
3. Identification for conductors.
4. Underground-line warning tape.
5. Warning labels and signs.
6. Instruction signs.
7. Equipment identification labels.
8. Miscellaneous identification products.

1.2 ACTION SUBMITTALS

A. Product Data: For each electrical identification product indicated.

1.3 QUALITY ASSURANCE

A. Comply with ANSI A13.1.

B. Comply with NFPA 70.

C. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.

D. Comply with ANSI Z535.4 for safety signs and labels.

E. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.

PART 2 - PRODUCTS

2.1 POWER RACEWAY IDENTIFICATION MATERIALS

A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway size.

B. Colors for Raceways Carrying Circuits at 600 V or Less:

1. Black letters on an orange field.
2. Legend: Indicate voltage.

C. Self-Adhesive Vinyl Labels for Raceways Carrying Circuits at 600 V or Less: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

2.2 ARMORED AND METAL-CLAD CABLE IDENTIFICATION MATERIALS

A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway and cable size.

B. Colors for Raceways Carrying Circuits at 600 V and Less:

1. Black letters on an orange field.
2. Legend: Indicate voltage.

C. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

2.3 POWER AND CONTROL CABLE IDENTIFICATION MATERIALS

A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway and cable size.

B. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

2.4 CONDUCTOR IDENTIFICATION MATERIALS

A. Color-Coding Conductor Tape: Colored, self-adhesive vinyl tape not less than 3 mils thick by 1 to 2 inches wide.

B. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

2.5 FLOOR MARKING TAPE

A. 2-inch- wide, 5-mil pressure-sensitive vinyl tape, with black and white stripes and clear vinyl overlay.

2.6 UNDERGROUND-LINE WARNING TAPE

A. Tape:

1. Recommended by manufacturer for the method of installation and suitable to identify and locate underground electrical and communications utility lines.
2. Printing on tape shall be permanent and shall not be damaged by burial operations.
3. Tape material and ink shall be chemically inert, and not subject to degrading when exposed to acids, alkalis, and other destructive substances commonly found in soils.

B. Color and Printing:

1. Comply with ANSI Z535.1 through ANSI Z535.5.
2. Inscriptions for Red-Colored Tapes: ELECTRIC LINE, HIGH VOLTAGE.
3. Inscriptions for Orange-Colored Tapes: TELEPHONE CABLE, CATV CABLE, COMMUNICATIONS CABLE, OPTICAL FIBER CABLE.

C. Tag: Type I:

1. Pigmented polyolefin, bright-colored, continuous-printed on one side with the inscription of the utility, compounded for direct-burial service.
2. Thickness: 4 mils.
3. Weight: 18.5 lb/1000 sq. ft..
4. 3-Inch Tensile According to ASTM D 882: 30 lbf, and 2500 psi.

2.7 WARNING LABELS AND SIGNS

A. Comply with NFPA 70 and 29 CFR 1910.145.

B. Self-Adhesive Warning Labels: Factory-printed, multicolor, pressure-sensitive adhesive labels, configured for display on front cover, door, or other access to equipment unless otherwise indicated.

C. Metal-Backed, Butyrate Warning Signs:

1. Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs with 0.0396-inch galvanized-steel backing; and with colors, legend, and size required for application.
2. 1/4-inch grommets in corners for mounting.
3. Nominal size, 10 by 14 inches.

D. Warning label and sign shall include, but are not limited to, the following legends:

1. Multiple Power Source Warning: "DANGER - ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES."
2. Workspace Clearance Warning: "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 36 INCHES."

2.8 INSTRUCTION SIGNS

A. Engraved, laminated acrylic or melamine plastic, minimum 1/16 inch thick for signs up to 20 sq. inches and 1/8 inch thick for larger sizes.

1. Engraved legend with black letters on white face.
2. Punched or drilled for mechanical fasteners.

3. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.

B. Adhesive Film Label: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch.

2.9 EQUIPMENT IDENTIFICATION LABELS

A. Self-Adhesive, Engraved, Laminated Acrylic or Melamine Label: Adhesive backed, with white letters on a dark-gray background. Minimum letter height shall be 3/8 inch.

2.10 MISCELLANEOUS IDENTIFICATION PRODUCTS

A. Paint: Comply with requirements in Division 09 painting Sections for paint materials and application requirements. Select paint system applicable for surface material and location (exterior or interior).

B. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.

B. Apply identification devices to surfaces that require finish after completing finish work.

C. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.

D. Attach signs and plastic labels that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.

E. System Identification Color-Coding Bands for Raceways and Cables: Each color-coding band shall completely encircle cable or conduit. Place adjacent bands of two-color markings in contact, side by side. Locate bands at changes in direction, at penetrations of walls and floors, at 50-foot maximum intervals in straight runs, and at 25-foot maximum intervals in congested areas.

F. Underground-Line Warning Tape: During backfilling of trenches install continuous underground-line warning tape directly above line at 6 to 8 inches below finished grade. Use multiple tapes where width of multiple lines installed in a common trench or concrete envelope exceeds 16 inches overall.

G. Painted Identification: Comply with requirements in Division 09 painting Sections for surface preparation and paint application.

3.2 IDENTIFICATION SCHEDULE

A. Accessible Raceways and Metal-Clad Cables, 600 V or Less, for Service, Feeder, and Branch Circuits More Than 30 A, and 120 V to ground: Install labels at 10-foot maximum intervals.

B. Accessible Raceways and Cables within Buildings: Identify the covers of each junction and pull box of the following systems with self-adhesive vinyl labels with the wiring system legend and system voltage. System legends shall be as follows:

1. Power.

C. Power-Circuit Conductor Identification, 600 V or Less: For conductors in vaults, pull and junction boxes, manholes, and handholes, use color-coding conductor tape to identify the phase.

1. Color-Coding for Phase and Voltage Level Identification, 600 V or Less: Use colors listed below for ungrounded service conductors.

a. Color shall be factory applied.
b. Colors for 240/120-V Circuits:

1) Phase A: Black.
2) Phase B: Red.
3) Phase C: Blue.

c. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding. Locate bands to avoid obscuring factory cable markings.

D. Install instructional sign including the color-code for grounded and ungrounded conductors using adhesive-film-type labels.

E. Conductors to Be Extended in the Future: Attach write-on tags to conductors and list source.

F. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.

1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.
2. Use system of marker tape designations that is uniform and consistent with system used by manufacturer for factory-installed connections.
3. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual.

G. Locations of Underground Lines: Identify with underground-line warning tape for power, lighting, communication, and control wiring and optical fiber cable.

1. Limit use of underground-line warning tape to direct-buried cables.
2. Install underground-line warning tape for both direct-buried cables and cables in raceway.

H. Workspace Indication: Install floor marking tape to show working clearances in the direction of access to live parts. Workspace shall be as required by NFPA 70 and 29 CFR 1926.403 unless otherwise indicated. Do not install at flush-mounted panelboards and similar equipment in finished spaces.

I. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Metal-backed, butyrate warning signs.

1. Comply with 29 CFR 1910.145.
2. Identify system voltage with black letters on an orange background.
3. Apply to exterior of door, cover, or other access.
4. For equipment with multiple power or control sources, apply to door or cover of equipment including, but not limited to, the following:

    a. Power transfer switches.
    b. Controls with external control power connections.

J. Operating Instruction Signs: Install instruction signs to facilitate proper operation and maintenance of electrical systems and items to which they connect. Install instruction signs with approved legend where instructions are needed for system or equipment operation.

K. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and the Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.

1. Labeling Instructions:

    a. Indoor Equipment: Engraved, laminated acrylic or melamine label. Unless otherwise indicated, provide a single line of text with 1/2-inch- high letters on 1-1/2-inch- high label; where two lines of text are required, use labels 2 inches high.
    b. Outdoor Equipment: Engraved, laminated acrylic or melamine label.
    c. Elevated Components: Increase sizes of labels and letters to those appropriate for viewing from the floor.
    d. Unless provided with self-adhesive means of attachment, fasten labels with appropriate mechanical fasteners that do not change the NEMA or NRTL rating of the enclosure.

L. Provide identification labeling for low voltage (Cat 6 and Coax cable).

End of Section

262726

WIRING DEVICES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Receptacles, receptacles with integral GFCI, and associated device plates.
2. Weather-resistant receptacles.
3. Snap switches.
4. Wall-switch.
5. Communications outlets.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: List of legends and description of materials and process used for premarking wall plates.

1.3 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

1.4 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers' Names: Shortened versions (shown in parentheses) of the following manufacturers' names are used in other Part 2 articles:

1. Cooper Wiring Devices; Division of Cooper Industries, Inc. (Cooper).
2. Hubbell Incorporated; Wiring Device-Kellems (Hubbell).
3. Leviton Mfg. Company Inc. (Leviton).
4. Pass & Seymour/Legrand (Pass & Seymour).

B. Source Limitations: Obtain each type of wiring device and associated wall plate from single source from single manufacturer.

2.2 GENERAL WIRING-DEVICE REQUIREMENTS

A. Wiring Devices, Components, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with NFPA 70.

C. Devices that are manufactured for use with modular plug-in connectors may be substituted under the following conditions:

1. Connectors shall comply with UL 2459 and shall be made with stranding building wire.
2. Devices shall comply with the requirements in this Section.

2.3 STRAIGHT-BLADE RECEPTACLES

A. Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 Configuration 5-20R, UL 498, and FS W-C-596.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Cooper; 5351 (single), CR5362 (duplex).
b. Hubbell; HBL5351 (single), HBL5352 (duplex).
c. Leviton; 5891 (single), 5352 (duplex).
d. Pass & Seymour; 5361 (single), 5362 (duplex).

2.4 GFCI RECEPTACLES

A. General Description:

1. Straight blade, non-feed-through type.
2. Comply with NEMA WD 1, NEMA WD 6, UL 498, UL 943 Class A, and FS W-C-596.
3. Include indicator light that shows when the GFCI has malfunctioned and no longer provides proper GFCI protection.

B. Duplex GFCI Convenience Receptacles, 125 V, 20 A:

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Cooper; VGF20.
b. Hubbell; GFR5352L.
c. Pass & Seymour; 2095.
d. Leviton; 7590.

2.5 TOGGLE SWITCHES

A. Comply with NEMA WD 1, UL 20, and FS W-S-896.

B. Switches, 120/277 V, 20 A:

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Single Pole:

1) Cooper; AH1221.
2) Hubbell; HBL1221.
3) Leviton; 1221-2.
4) Pass & Seymour; CSB20AC1.

b. Two Pole:

1) Cooper; AH1222.
2) Hubbell; HBL1222.
3) Leviton; 1222-2.
4) Pass & Seymour; CSB20AC2.

2.6 WALL PLATES

A. Single and combination types shall match corresponding wiring devices.

1. Residential plastic wall plates, White..

B. Wet-Location, Weatherproof Cover Plates: NEMA 250, complying with Type 3R, weather-resistant thermoplastic with lockable cover.

2.7 FINISHES

A. Device Color: White

1. Wiring Devices Connected to Normal Power System: As selected by Architect unless otherwise indicated or required by NFPA 70 or device listing.

B. Wall Plate Color: For plastic covers, match device color.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with NECA 1, including mounting heights listed in that standard, unless otherwise indicated.

B. Coordination with Other Trades:

1. Protect installed devices and their boxes. Do not place wall finish materials over device boxes and do not cut holes for boxes with routers that are guided by riding against outside of boxes.
2. Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.
3. Install device boxes in brick or block walls so that the cover plate does not cross a joint unless the joint is troweled flush with the face of the wall.
4. Install wiring devices after all wall preparation, including painting, is complete.

C. Conductors:

1. Do not strip insulation from conductors until right before they are spliced or terminated on devices.
2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
3. The length of free conductors at outlets for devices shall meet provisions of NFPA 70, Article 300, without pigtails.
4. Branch circuit wiring to be #12 gauge Romex.
5. Control wiring can be #14 gauge Romex.
6. Existing Conductors:

    a. Cut back and pigtail, or replace all damaged conductors.
    b. Straighten conductors that remain and remove corrosion and foreign matter.
    c. Pigtailing existing conductors is permitted, provided the outlet box is large enough.

D. Device Installation:

1. Replace devices that have been in temporary use during construction and that were installed before building finishing operations were complete.
2. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
3. Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.
4. Connect devices to branch circuits using pigtails that are not less than 6 inches in length.
5. When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, two-thirds to three-fourths of the way around terminal screw.
6. Use a torque screwdriver when a torque is recommended or required by manufacturer.
7. When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
8. Tighten unused terminal screws on the device.
9. When mounting into metal boxes, remove the fiber or plastic washers used to hold device-mounting screws in yokes, allowing metal-to-metal contact.

E. Receptacle Orientation:

1. Install ground pin of vertically mounted receptacles up, and on horizontally mounted receptacles to the right.

F. Device Plates: Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening.

G. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical and with grounding terminal of receptacles on top. Group adjacent switches under single, multigang wall plates.

3.2 GFCI RECEPTACLES

A. Install non-feed-through-type GFCI receptacles where protection of downstream receptacles is not required.

3.3 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Test Instruments: Use instruments that comply with UL 1436.
2. Test Instrument for Convenience Receptacles: Digital wiring analyzer with digital readout or illuminated digital-display indicators of measurement.

B. Tests for Convenience Receptacles:

1. Line Voltage: Acceptable range is 105 to 132 V.
2. Percent Voltage Drop under 15-A Load: A value of 6 percent or higher is unacceptable.
3. Ground Impedance: Values of up to 2 ohms are acceptable.
4. GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.
5. Using the test plug, verify that the device and its outlet box are securely mounted.
6. Tests shall be diagnostic, indicating damaged conductors, high resistance at the circuit breaker, poor connections, inadequate fault current path, defective devices, or similar problems. Correct circuit conditions, remove malfunctioning units and replace with new ones, and retest as specified above.

C. Wiring device will be considered defective if it does not pass tests and inspections.

D. Prepare test and inspection reports.

3.4 QUALITY ASSURANCE

A. Seal all penetrations through walls, ceiling and floors and vertical chases adjacent to units. Refer to 003060 Sustainable design requirements.

B. Energy star air sealing requirements. Refer to 003060 Sustainable design requirements.

End of Section

SECTION 262816

ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Fusible switches.
2. Nonfusible switches.
3. Enclosures.

1.2 DEFINITIONS

A. NC: Normally closed.

B. NO: Normally open.

C. SPDT: Single pole, double throw.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of enclosed switch, circuit breaker, accessory, and component indicated.

B. Shop Drawings: For enclosed switches and circuit breakers. Include plans, elevations, sections, details, and attachments to other work.

1. Wiring Diagrams: For power, signal, and control wiring.

1.4 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

1.5 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

1.6 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 FUSIBLE SWITCHES

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
3. Siemens Energy & Automation, Inc.
4. Square D; a brand of Schneider Electric.

B. Type HD, Heavy Duty, Single Throw, 600-V ac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, with clips or bolt pads to accommodate specified fuses, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.

C. Type HD, Heavy Duty, Double Throw, 600-V ac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, with clips or bolt pads to accommodate specified fuses, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.

D. Accessories:

1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
3. Class R Fuse Kit: Provides rejection of other fuse types when Class R fuses are specified.
4. Lugs: Suitable for number, size, and conductor material.
5. Service-Rated Switches: Labeled for use as service equipment.

2.2 NONFUSIBLE SWITCHES

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
3. Siemens Energy & Automation, Inc.
4. Square D; a brand of Schneider Electric.

B. Type HD, Heavy Duty, Single Throw, 600-V ac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.

C. Type HD, Heavy Duty, Double Throw, 600-V ac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.

D. Accessories:

1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
3. Lugs: Suitable for number, size, and conductor material.

2.3 ENCLOSURES

A. Enclosed Switches and Circuit Breakers: NEMA AB 1, NEMA KS 1, NEMA 250, and UL 50, to comply with environmental conditions at installed location.

1. Indoor, Dry and Clean Locations: NEMA 250, Type 1.
2. Outdoor Locations: NEMA 250, Type 3R.
3. Other Wet or Damp, Indoor Locations: NEMA 250, Type 4.
4. Indoor Locations Subject to Dust, Falling Dirt, and Dripping Noncorrosive Liquids: NEMA 250, Type 12.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install individual wall-mounted switches and circuit breakers with tops at uniform height unless otherwise indicated.

B. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.

C. Install fuses in fusible devices.

D. Comply with NECA 1.

3.2 IDENTIFICATION

A. Comply with requirements in Division 26 Section "Identification for Electrical Systems."

1. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs.
2. Label each enclosure with engraved metal or laminated-plastic nameplate.

3.3 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Acceptance Testing Preparation:

1. Test insulation resistance for each enclosed switch and circuit breaker, component, connecting supply, feeder, and control circuit.
2. Test continuity of each circuit.

C. Tests and Inspections:

1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

D. Enclosed switches and circuit breakers will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports, including a certified report that identifies enclosed switches and circuit breakers and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

End of Section

265100

INTERIOR LIGHTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Interior lighting fixtures, lamps, and ballasts.
2. Emergency lighting units.
3. Exit signs.
4. Lighting fixture supports.

B. Related Sections:

1. Division 26 Section "Lighting Control Devices" for automatic control of lighting, including time switches, photoelectric relays, occupancy sensors, and multipole lighting relays and contactors.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of lighting fixture, arranged in order of fixture designation. Include data on features, accessories, and finishes.

B. Shop Drawings: Show details of nonstandard or custom lighting fixtures. Indicate dimensions, weights, methods of field assembly, components, features, and accessories. Product Certificates: For each type of ballast from manufacturer.

1.3 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

1.4 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, product(s) indicated on Drawings.

2.2 GENERAL REQUIREMENTS FOR LIGHTING FIXTURES AND COMPONENTS

A. Recessed Fixtures: Comply with NEMA LE 4 for ceiling compatibility for recessed fixtures.

B. Fluorescent Fixtures: Comply with UL 1598. Where LER is specified, test according to NEMA LE 5 and NEMA LE 5A as applicable.

C. HID Fixtures: Comply with UL 1598. Where LER is specified, test according to NEMA LE 5B.

D. Metal Parts: Free of burrs and sharp corners and edges.

E. Sheet Metal Components: Steel unless otherwise indicated. Form and support to prevent warping and sagging.

F. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position.

G. Diffusers and Globes:

1. Acrylic Lighting Diffusers: 100 percent virgin acrylic plastic. High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.

    a. Lens Thickness: At least 0.125 inch minimum unless otherwise indicated.
    b. UV stabilized.

2. Glass: Annealed crystal glass unless otherwise indicated.

2.3 BALLASTS FOR LINEAR FLUORESCENT LAMPS

A. General Requirements for Electronic Ballasts:

1. Comply with UL 935 and with ANSI C82.11.
2. Designed for type and quantity of lamps served.
3. Ballasts shall be designed for full light output unless another BF, dimmer, or bi-level control is indicated.
4. Sound Rating: Class A.
5. Total Harmonic Distortion Rating: Less than 10 percent.
6. Transient Voltage Protection: IEEE C62.41.1 and IEEE C62.41.2, Category A or better.
7. Operating Frequency: 42 kHz or higher.

8. Lamp Current Crest Factor: 1.7 or less.
9. BF: 0.88 or higher.
10. Power Factor: 0.95 or higher.

B. Luminaires controlled by occupancy sensors shall have programmed-start ballasts.

C. Electromagnetic Ballasts: Comply with ANSI C82.1; energy saving, high-power factor, Class P, and having automatic-reset thermal protection.

1. Ballast Manufacturer Certification: Indicated by label.

D. Single Ballasts for Multiple Lighting Fixtures: Factory wired with ballast arrangements and bundled extension wiring to suit final installation conditions without modification or rewiring in the field.

E. Ballasts for Low-Temperature Environments: Electronic type rated for 0 deg F starting and operating temperature with indicated lamp types.

F. Ballasts for Bi-Level Controlled Lighting Fixtures: Electronic type.

1. Operating Modes: Ballast circuit and leads provide for remote control of the light output of the associated lamp between high- and low-level and off.

a. High-Level Operation: 100 percent of rated lamp lumens.
b. Low-Level Operation: 30 percent of rated lamp lumens.

2. Ballast shall provide equal current to each lamp in each operating mode.
3. Compatibility: Certified by manufacturer for use with specific bi-level control system and lamp type indicated.

2.4 BALLASTS FOR COMPACT FLUORESCENT LAMPS

A. Description: Electronic-programmed rapid-start type, complying with UL 935 and with ANSI C 82.11, designed for type and quantity of lamps indicated. Ballast shall be designed for full light output unless dimmer or bi-level control is indicated:

1. Lamp end-of-life detection and shutdown circuit.
2. Automatic lamp starting after lamp replacement.
3. Sound Rating: Class A.
4. Total Harmonic Distortion Rating: Less than 20 percent.
5. Transient Voltage Protection: IEEE C62.41.1 and IEEE C62.41.2, Category A or better.
6. Operating Frequency: 20 kHz or higher.
7. Lamp Current Crest Factor: 1.7 or less.
8. BF: 0.95 or higher unless otherwise indicated.
9. Power Factor: 0.95 or higher.
10. Interference: Comply with 47 CFR 18, Ch. 1, Subpart C, for limitations on electromagnetic and radio-frequency interference for nonconsumer equipment.

2.5 EMERGENCY LED POWER UNIT

A. Internal Type: Self-contained, modular, battery-inverter unit, factory mounted within lighting fixture body and compatible with ballast. Comply with UL 924.

1. Emergency Connection: Operate led lamp(s) continuously at an output of 320 lumen. Connect unswitched circuit to battery-inverter unit and switched circuit to fixture ballast.
2. Test Push Button and Indicator Light: Visible and accessible without opening fixture or entering ceiling space.

    a. Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
    b. Indicator Light: LED indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.

3. Battery: Sealed, maintenance-free, nickel-cadmium type.
4. Charger: Fully automatic, solid-state, constant-current type with sealed power transfer relay.
5. Integral Self-Test: Factory-installed electronic device automatically initiates code-required test of unit emergency operation at required intervals. Test failure is annunciated by an integral audible alarm and a flashing red LED.

B. General Requirements for Exit Signs: Comply with UL 924; for sign colors, visibility, luminance, and lettering size, comply with authorities having jurisdiction.

C. Internally Lighted Signs:

1. Lamps for AC Operation: Fluorescent, two for each fixture, 20,000 hours of rated lamp life.
2. Lamps for AC Operation: LEDs, 50,000 hours minimum rated lamp life.
3. Self-Powered Exit Signs (Battery Type): Integral automatic charger in a self-contained power pack.

    a. Battery: Sealed, maintenance-free, nickel-cadmium type.
    b. Charger: Fully automatic, solid-state type with sealed transfer relay.
    c. Operation: Relay automatically energizes lamp from battery when circuit voltage drops to 80 percent of nominal voltage or below. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger.
    d. Test Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
    e. LED Indicator Light: Indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.

2.6 EMERGENCY LIGHTING UNITS

A. General Requirements for Emergency Lighting Units: Self-contained units complying with UL 924.

1. Battery: Sealed, maintenance-free, lead-acid type.

2. Charger: Fully automatic, solid-state type with sealed transfer relay.
3. Operation: Relay automatically turns lamp on when power-supply circuit voltage drops to 80 percent of nominal voltage or below. Lamp automatically disconnects from battery when voltage approaches deep-discharge level. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger.
4. Test Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
5. LED Indicator Light: Indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.
6. Wire Guard: Heavy-chrome-plated wire guard protects lamp heads or fixtures.
7. Integral Time-Delay Relay: Holds unit on for fixed interval of 15 minutes when power is restored after an outage.

2.7 FLUORESCENT LAMPS

A. T5 rapid-start lamps, rated 28 W maximum, nominal length of 48 inches, 2700 initial lumens (minimum), CRI 75 (minimum), color temperature 3500 K, and average rated life 20,000 hours unless otherwise indicated.

B. T5 rapid-start lamps, rated 14 W maximum, nominal length of 24 inches, 1300 initial lumens (minimum), CRI 75 (minimum), color temperature 3500 K, and average rated life of 20,000 hours unless otherwise indicated.

C. Compact Fluorescent Lamps: 4-Pin, CRI 80 (minimum), color temperature 3500 K, average rated life of 10,000 hours at three hours operation per start unless otherwise indicated.

1. 13 W: T4, double or triple tube, rated 900 initial lumens (minimum).
2. 18 W: T4, double or triple tube, rated 1200 initial lumens (minimum).
3. 26 W: T4, double or triple tube, rated 1800 initial lumens (minimum).
4. 32 W: T4, triple tube, rated 2400 initial lumens (minimum).
5. 42 W: T4, triple tube, rated 3200 initial lumens (minimum).
6. 57 W: T4, triple tube, rated 4300 initial lumens (minimum).
7. 70 W: T4, triple tube, rated 5200 initial lumens (minimum).

2.8 LIGHTING FIXTURE SUPPORT COMPONENTS

A. Comply with Division 26 Section "Hangers and Supports for Electrical Systems" for channel- and angle-iron supports and nonmetallic channel and angle supports.

B. Single-Stem Hangers: 1/2-inch steel tubing with swivel ball fittings and ceiling canopy. Finish same as fixture.

C. Twin-Stem Hangers: Two, 1/2-inch steel tubes with single canopy designed to mount a single fixture. Finish same as fixture.

D. Wires: ASTM A 641/A 641M, Class 3, soft temper, zinc-coated steel, 12 gage.

E. Wires for Humid Spaces: ASTM A 580/A 580M, Composition 302 or 304, annealed stainless steel, 12 gage.

F. Rod Hangers: 3/16-inch minimum diameter, cadmium-plated, threaded steel rod.

G. Hook Hangers: Integrated assembly matched to fixture and line voltage and equipped with threaded attachment, cord, and locking-type plug.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Lighting fixtures: Set level, plumb, and square with ceilings and walls. Install lamps in each fixture.

B. Comply with NFPA 70 for minimum fixture supports.

C. Suspended Lighting Fixture Support:

1. Pendants and Rods: Where longer than 48 inches, brace to limit swinging.
2. Stem-Mounted, Single-Unit Fixtures: Suspend with twin-stem hangers.
3. Continuous Rows: Use tubing or stem for wiring at one point and tubing or rod for suspension for each unit length of fixture chassis, including one at each end.

D. Adjust aimable lighting fixtures to provide required light intensities.

E. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

3.2 FIELD QUALITY CONTROL

A. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery and retransfer to normal.

B. Prepare a written report of tests, inspections, observations, and verifications indicating and interpreting results. If adjustments are made to lighting system, retest to demonstrate compliance with standards.

End of Section