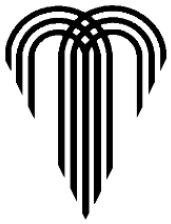


City of Kansas City, Missouri
Conventions and Entertainment
Facilities Department
Kimiko Gilmore, Director

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

Project Manual

PROJECT NO. MAMHADA24

KANSAS CITY CONVENTION CENTER
MUSIC HALL & LITTLE THEATRE RESTROOM UPGRADES PROJECT

BIDDER/ADDRESS

Company _____
Contact _____
Address _____
_____
Phone _____
Fax _____
Email _____

Project Manager: Charles A. Harris, PE, LEED AP
Telephone: (816) 513-2751
Email: charles.harris@kcmo.org

CERTIFICATION PAGE

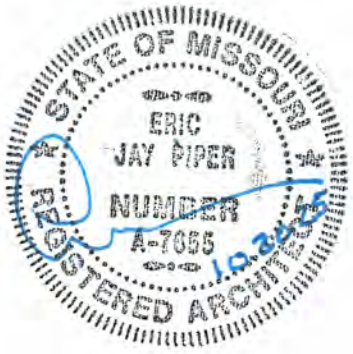
Project Number: MAMHADA24

Project Title: Kansas City Convention Center
Music Hall & Little Theatre
Restroom Upgrades Project

I am responsible for the following specifications and drawings: Architectural

Drawings: G-001, G-002, G-003, G-004, G-005, G-006, ECA-01, ECA-02, A-101, A-102, A-201, A-202, A-203, A-204, A-205, A-206, A-207, A-208, A-209, A-301, A-302, A-303, A-304, A-305, A-306, A-307, A-308, A-309, A-310, A-311, A-312, A-313, A-314, A-315, A-401, A-402, A-403, A-404, A-405, A-406, A-407, A-501, A-502, A-503, A-504, A-601

Specifications: 011000, 012100, 012200, 012300, 012500, 012600, 012900, 013100, 013200, 013233, 013300, 014000, 015000, 016000, 017300, 017700, 017823, 017839, 017900, 024119, 040140.61, 061000, 064023, 078413, 079200, 092216, 092300, 092900, 096623, 097513, 099123, 102800, 102819



_____ (SEAL)

EACH PROFESSIONAL WHOSE SIGNATURE AND PERSONAL SEAL APPEARS ABOVE ASSUMES RESPONSIBILITY IN THESE BIDDING DOCUMENTS ONLY FOR WHAT IS LISTED ABOVE 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 SIGNED PROFESSIONAL RELATING TO OR INTENDED TO BE USED FOR ANY PART OR PARTS OF THE PROJECT.

I am responsible for the following specifications and drawings: Structural

Drawings: S101

Specifications: 033000, 072100

_____ (SEAL)

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I am responsible for the following specifications and drawings: Plumbing

Drawings: P-201, P-301, P-401, P-500

Specifications: 220100, 220517, 220518, 220523, 220529, 220553, 220593, 220719, 220800, 221116, 221119, 221316, 221319, 224200

_____ (SEAL)

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I am responsible for the following specifications and drawings: Electrical

Drawings: ECA-03, E-201, E-301, E-401

Specifications: 260100, 260519, 260523, 260526, 260529, 260533, 260544, 260553, 260800, 260923, 262726, 262816, 265100

_____ (SEAL)

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I am responsible for the following drawings: Lighting Consultant

Drawings: E-600, E-601

_____ (SEAL)

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TABLE OF CONTENTS

Project Number: MAMHADA24

Project Title: Kansas City Convention Center
Music Hall & Little Theatre Restroom Upgrades Project

INTRODUCTORY INFORMATION

00005 Certification Page
00010 Table of Contents
00015 List of Drawings

BIDDING REQUIREMENTS

00130 Request for Proposals
00210 Instructions to Proposers
00410 Proposal Form/Contract
00410.01 Experience Reference Form
00412 Unit Prices
00413 Allowance Form
00420 Alternates Bid Form
00430 Bid Bond
00440 CREO KC 5: Construction Contract Instructions
00450 CREO KC 8: Contractor Utilization Plan/Request for Waiver
00450.01 CREO KC: Letter of Intent to Subcontract
00460 CREO KC 10: Timetable for MBE/WBE Utilization
00470 CREO KC 11: Request for Modification or Substitution
00485 CREO KC: Monthly Reporting Instructions
00485.01.1 MBE/WBE Monthly Utilization Report Instructions
00485.02.1 Workforce Monthly Report Instructions
00485.04 CREO KC: Construction Employee Identification
00490 Pre-Contract Proposer's Certification Form

CONTRACTING REQUIREMENTS

00515 Construction Contract Required Submissions
00515.01 Employee Eligibility Verification Affidavit
00560 Missouri Project Exemption Certificate
00560.01 Kansas City Missouri Tax Exempt Certificate
00610 Performance and Maintenance Bond Form
00615 Payment Bond
00620 Insurance Certificate Forms
00630 Revenue Clearance Release Authorization
00700 General Conditions
00800 Supplementary Conditions
00830 Wage Rate Requirements – Jackson County
00830.02 Prevailing Wage Order 31
00930 Request for Interpretation Form
00930.01 Request for Interpretation Log
00931 Supplemental Design Instructions

00932 Request for Proposal
00933 Request for Proposal Log
00940 Change Order Form
00945 Work Change Directive

DIVISION 1 - GENERAL REQUIREMENTS
011000 Summary
012100 Allowances
01210.01 Allowance Authorization
012200 Unit Prices
012300 Alternates
012500 Substitution Procedures
012600 Contract Modification Procedures
012900 Payment Procedures
01290.01 Application for Payment
01290.02 Schedule of Values
01290.09 Subcontractors and Major Material Suppliers List
01290.11 Daily Labor Force Report
01290.12 Certificate of Substantial Completion
01290.13 Punch List
01290.14 Contractor Affidavit for Final Payment
01290.15 Subcontractor Affidavit for Final Payment
013100 Project Management and Coordination
013200 Construction Progress Documentation
01320.01 Daily Field Observation Report
01320.02 Periodic Field Observation Report
01320.03 Working Day Report
013233 Photographic Documentation
013300 Submittal Procedures
01330.01 Letter of Transmittal
014000 Quality Requirements
015000 Temporary Facilities and Controls
016000 Product Requirements
01630 Substitution Request
017300 Execution
017700 Closeout Procedures
017823 Operation and Maintenance Data
017839 Project Record Documents
017900 Demonstration and Training

DIVISION 2 – SITEWORK
024119 Selective Demolition

DIVISION 3 – CONCRETE
033000 Cast-In-Place Concrete

DIVISION 4 – MASONRY
040140.61 Stone Repair

DIVISION 6 – WOOD, PLASTICS, AND COMPOSITES
061000 Rough Carpentry

064023 Interior Architectural Woodwork

DIVISION 7 - THERMAL AND MOISTURE PROTECTION
072100 Thermal Insulation
078413 Penetration Firestopping
079200 Joint Sealants

DIVISION 9 – FINISHES
092216 Non-Structural Metal Framing
092300 Gypsum Plastering
092900 Gypsum Board
096623 Resinous Matrix Terrazzo Flooring
097513 Stone Wall Facing
099123 Interior Painting

DIVISION 10 – SPECIALTIES
102800 Toilet Accessories
102819 Glass Partition Extensions

DIVISION 22 – PLUMBING
220100 General Plumbing Requirements
220517 Sleeves and Sleeve Seals for Plumbing Piping
220518 Escutcheons for Plumbing Piping
220523 General-Duty Valves for Plumbing Piping
220529 Hangers and Supports for Plumbing Piping and Equipment
220553 Identification for Plumbing Piping and Equipment
220593 Testing, Adjusting, and Balancing for Plumbing
220719 Plumbing Piping Insulation
220800 Commissioning
221116 Domestic Water Piping
221119 Domestic Water Piping Specialties
221316 Sanitary Waste and Vent Piping
221319 Sanitary Waste Piping Specialties
224200 Commercial Plumbing Fixtures

DIVISION 26 – ELECTRICAL
260100 Basic Electrical Requirements
260519 Low-Voltage Electrical Power Conductors and Cables
260523 Control-Voltage Electrical Power Cables
260526 Grounding and Bonding
260529 Hangers and Supports for Electrical Systems
260533 Raceway and Boxes for Electrical Systems
260544 Sleeves and Sleeve Seals for Electrical Raceways and Cabling
260553 Identification for Electrical Systems
260800 Commissioning
260923 Lighting Control Devices
262726 Wiring Devices
262816 Switches and Circuit Breakers
265100 Interior Lighting

SECTION 00015 – LIST OF DRAWINGS

GENERAL INFORMATION

G-001	COVER SHEET
G-002	GENERAL PROJECT INFORMATION
G-003	FIRE RATED PENETRATION DETAILS
G-004	CONSTRUCTION ACCESS DIAGRAM
G-005	CONSTRUCITON ACCESS DIAGRAM
G-006	CONSTRUCTION ACCESS DIAGRAM

ENERGY CODE ANALYSIS

ECA-01	ENERGY CODE ANALYSIS
ECA-02	ENERGY CODE ANALYSIS
ECA-03	ENERGY REPORT

ARCHITECTURAL

A-101	2600 LEVEL – ARENA/GROUND FLOOR REFERENCE PLAN
A-102	5600 LEVEL – BALCONY PLENUM REFERENCE PLAN
A-201	ENLARGED FLOOR PLANS
A-202	ENLARGED REFLECTED CEILING PLANS
A-203	INTERIOR ELEVATIONS
A-204	INTERIOR ELEVATIONS
A-205	INTERIOR ELEVATIONS
A-206	INTERIOR ELEVATIONS
A-207	INTERIOR ELEVATIONS
A-208	INTERIOR ELEVATIONS
A-209	INTERIOR ELEVATIONS
A-301	ENLARGED FLOOR PLANS
A-302	ENLARGED REFLECTED CEILING PLANS
A-303	INTERIOR ELEVATIONS
A-304	INTERIOR ELEVATIONS
A-305	INTERIOR ELEVATIONS
A-306	INTERIOR ELEVATIONS
A-307	INTERIOR ELEVATIONS
A-308	INTERIOR ELEVATIONS
A-309	INTERIOR ELEVATIONS
A-310	INTERIOR ELEVATIONS
A-311	INTERIOR ELEVATIONS
A-312	INTERIOR ELEVATIONS
A-313	INTERIOR ELEVATIONS
A-314	INTERIOR ELEVATIONS
A-315	INTERIOR ELEVATIONS
A-401	ENLARGED FLOOR PLANS
A-402	ENLARGED REFLECTED CEILING PLANS

A-403 INTERIOR ELEVATIONS
A-404 INTERIOR ELEVATIONS
A-405 INTERIOR ELEVATIONS
A-406 INTERIOR ELEVATIONS
A-407 INTERIOR ELEVATIONS

A-501 DETAILS
A-502 DETAILS
A-503 DETAILS
A-504 DETAILS

A-601 SCHEDULES

STRUCTURAL
S101 ELEVATION / SECTIONS

PLUMBING

P-201 ENLARGED RESTROOM PLANS – PLUMBING
P-301 ENLARGED RESTROOM PLANS – PLUMBING
P-401 ENLARGED RESTROOM PLANS – PLUMBING
P-500 PLUMBING SCHEDULES, DETAILS

ELECTRICAL

E-201 ENLARGED RESTROOM PLANS – ELECTRICAL
E-301 ENLARGED RESTROOM PLANS – ELECTRICAL
E-401 ENLARGED RESTROOM PLANS – ELECTRICAL
E-600 ELECTRICAL SCHEDULES
E-601 ELECTRICAL SCHEDULES

END OF SECTION 00015

CITY OF FOUNTAINS
HEART OF THE NATION

KANSAS CITY
MISSOURI

REQUEST FOR PROPOSALS

Project Number MAMHADA24

Project Title Kansas City Convention Center
Music Hall & Little Theatre Restroom Upgrades Project

The General Services Department of Kansas City, Missouri will receive sealed Proposals until 2:00 PM, on Tuesday, January 13, 2026, at City Hall, 414 East 12th Street, 1st Floor, Room 102W Kansas City, MO 64106 at the General Services Procurement Division for:

Project No. MAMHADA24 Kansas City Convention Center Music Hall & Little Theatre Restroom Upgrades Project.

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.

Proposal 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.

Respondents are requested to attend the Mandatory Pre-Proposal Conference at a time and place that will be determined later. **The City will issue an addendum with the time, date and location.**

Project Manager: Charles A. Harris, PE LEED AP
E-mail: Charles.harris@kcmo.org

Contract Administrator: Angela Forte'
Phone Number: 816-513-0831
E-mail: angela.forte@kcmo.org

INSTRUCTIONS TO PROPOSERS

Project Number MAMHADA24

Project Title Kansas City Convention Center
Music Hall & Little Theatre Restroom Upgrades Project

1. Sealed Proposals for **Kansas City Convention Center – Music Hall & Little Theatre Restroom Upgrades Project (Project No. MAMHADA24)** will be received by the General Services Department at Kansas City, Missouri, City Hall, City Hall, 414 East 12th Street, 1st Floor, Room 102W Kansas City, MO 64106 ***2:00 PM, on Tuesday, January 13, 2026***, at which time acceptance of submissions will be closed.

   a. The Proposal Envelope must contain all required submissions to be included with the Proposal. No Proposal may be withdrawn for a period of ninety (90) days after the Proposal is opened. Proposal security shall likewise continue for the same ninety (90) days unless earlier released by the City. The successful Respondent shall comply with all Proposal and contract requirements. Proposals may not be withdrawn without forfeiture of the Proposal security.

   b. All Proposals shall be addressed to the Director of Conventions and Entertainment Facilities shall state on the outside of the sealed Proposal envelope "Proposal Enclosed", title and Project number, and shall be deposited in the locked Bid box. All Proposals must comply with the Requirements of Kansas City, Missouri (CITY).

   c. For the purposes of this Request for Proposals, the term "Proposer" and "Respondent" are used interchangeably.

2. Consideration of Proposals

   a. The City will determine the lowest, most responsive and responsible Proposal. The City may reject any or all proposals. If the City rejects all Proposals, the City may: (1) resolicit Proposals following the City's normal solicitation procedure; or (2) solicit Proposals only from those Proposers that submitted a Proposal pursuant to the original solicitation; or (3) use an expedited Proposal 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 Proposal Alternates, the City, in its sole discretion, may include any, all or none of the Alternates in determining the lowest, responsive and responsible Proposal. In determining lowest, responsive and responsible Proposal, 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 Proposal 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 at the price indicated in the successful respondent's submission.

   c. Construction Schedule: The Conventions Center has a pretty specific and non-flexible timeline for this project. This is particularly true for the mainly the Music Hall restrooms, while there is a little more flexibility with the Little Theater restrooms. The requisite on-site construction schedule is thus:

Music Hall Restrooms: Monday, August 31, 2026 – Friday, November 13, 2026. This is non-flexible, restrooms must be open and in working order for an event on Wednesday, November 18, 2026.

Little Theater Restrooms: Monday, August 31, 2026 – Thursday, December 31, 2026. The Proposer shall include in their evidence of competency to perform their experience in meeting fixed construction start and completion dates of similar durations.

Please review further information in Supplementary Conditions regarding project schedule.

3. Evidence of Competency to Perform. Each respondent shall furnish with the proposal satisfactory evidence of Respondent'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 five 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. Projects of similar scope shall be understood to mean interior restoration, preservation, or rehabilitation (all, or part) of a public, governmental, municipal or institutional building of historic significance, including marble, terrazzo, and plaster repair and restoration.

b. Statement that, during the three (3) years immediately preceding the date of the Proposal, the Proposer has received no written notices of violations of any federal or state prevailing wage statute in which prevailing wage penalties were assessed against the Proposer or Proposer has been found in such but has made restitution to affected workmen and complied with any statutory penalty; and a statement that Proposer is current on payment of Federal and State income tax withholdings and unemployment insurance payments

c. Statement that Proposer 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 Proposal, Proposer is agreeing to timely submit during the 48 hours after Proposal opening an affidavit of describing such program and Proposer'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

(5) Identify three past projects of similar scope that each of the key personnel has performed in the past five years, with a description of each project and their specific role.

f. Discuss generally the tasks involved in the Project.

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

h. Submit a proposal schedule with anticipated milestones for the Project using Microsoft Project 2007 or later format. Given the fixed window of time for construction, describe the process by which the Proposer intends to meet the prescribed project schedule.

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

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

(1) Describe how the Respondent 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 Proposer's Experience Modification Ratio (EMR)

k. Discuss Proposer'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 Proposer suggests resolving them. Include a narrative as to how the Respondent intends to provide protection of the existing historic finishes, within and adjacent, to the project, as well as along all access pathways.

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

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

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

p. Statement regarding all work performed two (2) years immediately preceding the date of the Proposal, 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 Proposer has not been rescinded or debarred from any bidding, contractual, procurement, or other such programs by federal, state or local entities.

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

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

t. Statement of Proposer'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. Identify major sub-contractors (suppliers, fabricators, or installers) of at least the following trades: 1) selective demolition; 2) marble restoration, replacement and installation; 3) terrazzo restoration, replacement and restoration; 4) specialty painting; 5) specialty and custom lighting installation and electrical work in historic structures. Provide no less than (3) projects of similar scope completed within the last (5) years for sub-contractor.

4. Waiver of Proposal 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 Respondents 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 Respondents 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 Proposals: Proposals and modifications of Proposals received after the exact hour and date specified for receipt will not be considered unless: (1) the Proposal is sent via the U.S. Postal Service, common carrier or contract carrier, by a delivery method that guarantees the Proposal will be delivered to the City prior to the submission deadline; or (2) if the Proposal 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 Proposal 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 Proposers meeting the deadline.

6. Interpretations and Addenda All questions about the meaning or intent of the Proposal Documents may be directed to the Project Manager listed at the end of these Instructions to Proposers. 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 Proposal Documents. Questions received less than ten (10) days prior to the date for receiving the Proposals 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 Proposal Documents as deemed advisable by the City.

7. Bid Security Requirements All Proposals 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 Proposal Documents), Cashier's Check, Letter of Credit, Certificate of Deposit or other instrument approved in advance by the City. Prior to submittal of the Proposal, 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 Proposer 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 Proposal, Respondent is agreeing to correct any mistakes on a Bid security submission when requested by the City. When such a mistake occurs and a Respondent 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 Respondent shall also be subject to debarment and damages.

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

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

a. Properly signed, dated, and sealed Performance and Maintenance 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. 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.

14. 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 Proposals offer quality, price, conformity with specifications, term of delivery and other conditions imposed in the specifications that are equal, the City shall select the Proposal 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 proposer's responsibility to claim these preferences.

15. 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. Proposer will be required to comply with the City's Affirmative Action ordinance if Proposer 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.

16. Tax Clearance: Proposer 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.

17. 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.

18. Prevailing Wage Requirements: The successful Respondent 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 Respondent 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, Respondent shall submit user applications to City's provided Prevailing Wage Reporting System for all applicable personnel and shall require subcontractors to submit same.

19. Contract Information Management System. Successful Respondent 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. Proposer shall submit user applications to City's provided Contract Information Management System for all personnel, subcontractors or suppliers as applicable.

20. 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 Proposal 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 Respondent 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, Respondent 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.

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

22. Forfeiture of Bid Bond for Failure to Make MBE/WBE Submissions By submitting its Proposal, Respondent is agreeing to the following: (1) Respondent has made, by the time of proposal submission, a good faith effort to meet the MBE/WBE goals established for the Project; or Respondent will continue to make during the 48 hours after Proposal submission a good faith effort to meet the MBE/WBE goals established for the Project; and (2) Respondent 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) Respondent 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 Respondent being debarred and forfeiting its Bid Bond.

23. 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 Proposal Documents and the Contract Documents.

Successful Proposer 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, Proposer shall submit user applications to City's provided Workforce Program Reporting System for all applicable personnel and shall require subcontractors to submit same.

24. 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 Proposer, and any other Proposer 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 Proposer Bidder to submit an acceptable substitute without an increase in Proposal price.

b. By submitting its Proposal, Respondent 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 Respondent and that the successful Respondent 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 Respondent, City will notify the successful Respondent 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 Proposer due to: i)the successful Proposer 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 Proposer's failure to make timely payments for labor, equipment or materials; or iv)for damage to a Subcontractor or Supplier.

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

25. Pre-Proposal Conference: The General Services Department will hold a pre-Proposal conference on a future date and time TBD. The date, time and location will be sent to all suppliers via an addendum. Attendance at the pre-proposal conference is mandatory for all Respondents on this Project. For this Project, the City shall not contract with a Respondent who has not attended the entire pre-proposal conference for this Project.

~~26.~~ **On-Site Inspection** The Project Site will be available for inspection by Proposers who attend the mandatory pre-proposal conference. Proposers visiting the Project Site shall be responsible for their own safety. The Project Site shall also be available for follow-up inspections within two weeks after the pre-proposal conference at specific dates and times which will be communicated at the pre-proposal conference.

27. **Signatures**: Each copy of the Proposal 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.

28. Forward all questions in writing to the following Project Manager and Contract Administrator. Questions received less than five (5) days prior to the Proposal 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 Proposers. Oral or other interpretations or clarifications shall be without legal effect, even if made at a Pre-Proposal Meeting.

Charles A. Harris, Project Manager
City of Kansas City, Missouri/General Services Department
City Hall, 17th Floor
414 East 12th Street
Kansas City, Missouri 64106
E-mail: charles.harris@kcmo.org

Angela Forte', Contract Administration
City of Kansas City, Missouri/General Services Department
City Hall, 1st Floor
414 East 12th Street
Kansas City, Missouri 64106
E-mail: Angela.Forte@kcmo.org
Phone: 816-513-0831

For persons with disabilities needing reasonable accommodations please contact Jaime Guillen at 816-513-9982. If you need to use the Relay Missouri Center call 1-800-RELAY-MO (1-800-735-2966).

CITY OF FOUNTAINS
HEART OF THE NATION
KANSAS CITY
MISSOURI

EXPERIENCE AND REFERENCE SUMMARY

Project Number MAMHADA24

Project Title Kansas City Convention Center
Music Hall & Little Theatre Restroom Upgrades Project

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				

Proposer: _____

PROPOSAL FORM/CONTRACT

Project Number MAMHADA24

Project Title Kansas City Convention Center
Music Hall & Little Theatre Restroom Upgrades Project

1. Proposer, having examined the Proposal 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 Proposal is selected by CITY, this Proposal Form/Contract will become the Contract between Proposer and CITY for Proposer 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. Proposer agrees the Contract Documents will comprise the entire agreement between CITY and Proposer. The Contract Documents are identified in the General Conditions and are incorporated into and made part hereof this Proposal Form/Contract by reference.
3. Proposer agrees that if this Proposal Form/Contract is executed by CITY, Proposer's offer is accepted and this Proposal Form/Contract that incorporates all other Contract Documents shall constitute the Contract between the parties. Proposer authorizes the CITY to fill in the Contract Price on this Proposal Form/Contract in accordance with Proposer's Proposal. Proposer agrees that this Proposal Form/Contract may be executed in one or more counterparts, each of which will be deemed an original copy of this Proposal Form/Contract and all of which, when taken together, will be deemed to constitute one and the same Proposal Form/Contract. This Proposal 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 Proposal Form/Contract and shall be acceptable in a court of law. A copy of this Proposal Form/Contract shall constitute an original and shall be acceptable in a court of law.
4. The Proposal Price(s) shall be shown in numeric figures only.

TOTAL BASE PROPOSAL IN NUMERIC FIGURES	$_____
ALLOWANCE NO. 1	$ 197,000.00
TOTAL PROPOSAL IN NUMERIC FIGURES	$_____

5. The undersigned Respondent 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 Respondent agrees that this Proposal shall remain subject to selection by CITY, and may not be withdrawn for ninety (90) days after the day Proposals are opened.
7. The undersigned Respondent certifies that this Proposal contains no modifications, deviations, riders or qualifications.
8. Form (s) 00412 Unit Prices and 00413 Allowances contain prices included in the Base Proposal, and are incorporated into this Proposal. Form(s) must be completed and returned with this Proposal.

9. Form 00420 - Alternates contains work and prices which modify the Base Proposal, if selected, and is incorporated into this Proposal. This form must be completed and returned with this Proposal.

10. The undersigned Proposer acknowledges receipt of the following addenda listed by number and date appearing on each addendum:

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

11. By submitting its proposal, Respondent 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, Respondent 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 Respondent fail to meet or exceed the minimum employment goals or otherwise establish that Respondent is entitled to a waiver under circumstances in which Respondent 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 Proposal Form/Contract, Respondent 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.

12. By submitting its proposal, Respondent warrants that if its proposal should exceed $300,000.00 and Respondent employs fifty (50) or more people, Respondent 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. Respondent further warrants that it will comply with the affirmative action requirements contained in the General Conditions as incorporated by reference into this Proposal Form/Contract.

13. Section 13 through Section 17 constitutes the Affidavit of Intended Utilization required to be submitted by Bidders.

14. By submitting its Proposal, Respondent is agreeing to the following: (1) Respondent has made by proposal submission ~~opening~~ a good faith effort to meet the MBE/WBE/DBE goals established for the project; or Respondent will continue to make during the 48 hours after proposal submission ~~opening~~ a good faith effort to meet the MBE/WBE/DBE goals established for the project; and (2) Respondent 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) Respondent 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 Respondent forfeiting its bid bond.

Proposer: _____

PROJECT GOALS: 11% MBE 11% WBE 0 % DBE

PROPOSER'S PARTICIPATION: _____% MBE _____% WBE _____ % DBE

15. To the best of Respondent's knowledge, the following are names of certified MBEs and/or WBEs with whom Respondent, or Respondent'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)

16. By submitting its Proposal, Respondent is agreeing it will identify and timely submit within 48 Hours after Proposal submission ~~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.**
17. Respondent 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 proposal unless the Director of Civil Rights and Equal Opportunity finds the Respondent 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)_____

PROPOSER
Legal name & address of Proposer, person firm, partnership, corporation, or association submitting Proposal:

_____
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 Proposer, person, firm, partnership, corporation or association submitting Proposal.

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: _____ _____

Proposer: _____

ACCEPTANCE OF PROPOSAL

CITY, by executing this Proposal Form/Contract, hereby accepts Respondent's Proposal and this Proposal 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:

00412 Unit Prices, included in the Bid, a copy of which is attached

00413 Allowances, included in the Bid, a copy of which is attached

00420 Alternates, included in the Bid, a copy of which is attached

Alternate No. 1 – Replace existing stone wall panels to match existing in lieu of patching and reusing the existing stone wall panels at the lavatories in all three pairs of restrooms. $

Alternate No. 2 – Replace existing stone wall panels to match existing at all locations in all three pairs of restrooms where wall-mounted accessories are being relocated in lieu of patching and reusing the existing stone wall panels. $

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)

Bidder: _____

CITY OF FOUNTAINS
HEART OF THE NATION
KANSAS CITY
MISSOURI

UNIT PRICES

Project Number MAMHADA24

Project Title Kansas City Convention Center - Music Hall & Little Theatre Restroom Upgrades Project

NOTE: IN THE EVENT OF DISCREPANCY, UNIT PRICE SHALL GOVERN.

Item No.	Unit	Quantity	Item Description:	Unit	Extension
1	sq. ft.	1	For additional terrazzo floor replacement other than what is indicated in the Drawings, provide a unit cost to remove existing terrazzo flooring and install new terrazzo flooring that matches the existing adjacent terrazzo flooring.		
2	sq. ft.	1	For additional patching and repair of existing plaster and lath walls and ceilings other than what is indicated in the Drawings and that is required to complete the Work, provide a unit cost to remove existing plaster, repair existing metal lath and patch in new plaster to match finish of adjacent existing plaster.		
3	each	1	For stone panel replacement other than what is indicated in the Drawings as a part of Alternate No. 1 and Alternate No. 2, provide a unit cost to remove existing stone wall panel, prepare substrate and install new stone wall panel to match existing adjacent stone wall panels.		
			Total Unit Prices: (LAST PAGE ONLY)		TOTAL $

Note: May be printed, for manual fill-in, or filled in on electronic excel spreadsheet version.

Proposer: _____

CITY OF FOUNTAINS
HEART OF THE NATION
KANSAS CITY
MISSOURI

ALLOWANCE FORM

Project Number MAMHADA24

Project Title Kansas City Convention Center - Music Hall & Little Theatre Restroom Upgrades Project

Allowance No.:	Allowance Description:	Allowance in Figures:
1	Include the sum for the following items: New Custom Pendant Light Fixtures: Twelve (12) new cast and fabricated art deco custom surface-mounted light fixtures with dentil pattern and chevrons, etched clear diffusers and LED retrofit lamps (Light Fixture Type LS1) as indicated in the Drawings. New Custom Pendant Light Fixtures: Eight (8) new cast and fabricated art deco custom pendant light fixtures with etched diffuser behind chevron designs with LED retrofit lamps (Light Fixture Type LP2), as indicated in the Drawings. Restoration and Re-Lamping of Existing Surface-Mounted Light Fixtures: Include the sum for the restoration and re-lamping of existing surface-mounted light fixtures by taking finish down to bare metal and refinishing to match existing surface-mounted light fixtures and to provide new internal lamping system to match new fixtures with LED retrofit lamps, as indicated in the Drawings.	$197,000.00

ALTERNATES

Project Number MAMHADA24

Project Title Kansas City Convention Center
Music Hall & Little Theatre Restroom Upgrades Project

No: 1	Description: Replace existing stone wall panels to match existing in lieu of patching and reusing the existing stone wall panels at the lavatories in all three pairs of restrooms.	❑ Add [+] ❑ Deduct [-]	Price in Figures: $

No: 2	Description: Replace existing stone wall panels to match existing at all locations in all three pairs of restrooms where wall-mounted accessories are being relocated in lieu of patching and reusing the existing stone wall panels.	❑ Add [+] ❑ Deduct [-]	Price in Figures: $

BID BOND

Project Number MAMHADA24

Project Title Kansas City Convention Center
Music Hall & Little Theatre Restroom Upgrades Project

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 Proposal 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.

CONTRACTOR UTILIZATION PLAN/REQUEST FOR WAIVER

Project Number MAMHAD24

Project Title KANSAS CITY CONVENTION CENTER MUSIC HALL & LITTLE THEATRE RESTROOM UPGRADES PROJECT

KANSAS CITY CONVENTION CENTER MUSIC HALL & LITTLE THEATRE RESTROOM UPGRADES PROJECT (Department Project)

Conventions and Entertainment Facilities 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 Municipal Auditorium/Bldg 281

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: KANSAS CITY CONVENTION CENTER MUSIC HALL & LITTLE THEATRE RESTROOM UPGRADES PROJECT
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

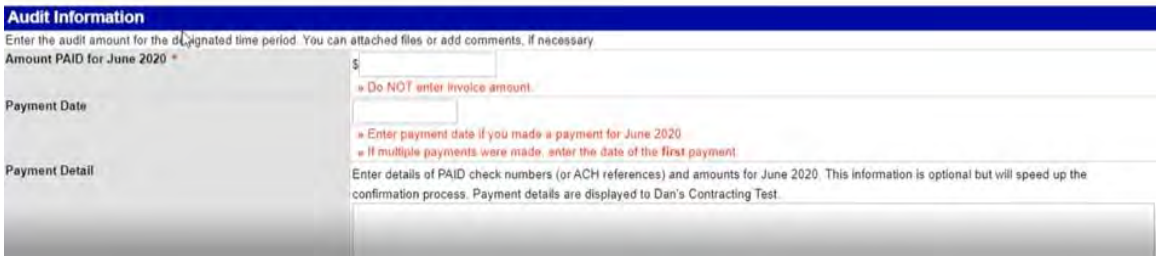
1. Workforce Monthly Reporting only applies to Construction Contracts greater than $300,000 and greater than 800 projected labor hours.
2. The City will utilize a web-based Reporting System in the administration of this Contract. This web-based application database is a collaboration tool selected and 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:

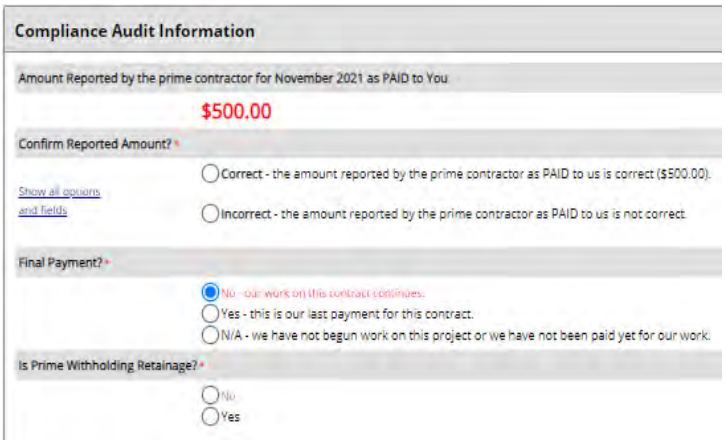


Once information has been entered, select review and save. Complete same steps for all subcontractors. If there were subcontractors that did not receive a payment for the specific audit month, click the Mark Remaining Subcontractors as Zero button to mark remaining subcontractors as 0.

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.

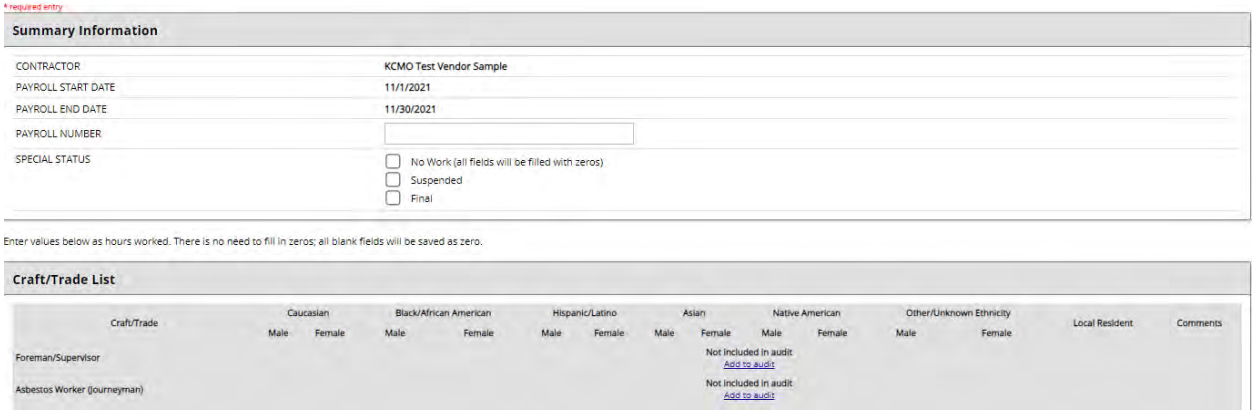
An email notice will be sent from our organization monthly to notify Prime & Subcontractor users of incomplete audits.

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.

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
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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
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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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79										
80										
81										
82										
83										

Pre Contract Proposer's Certification

Project Number MAMHADA24

Project Title Kansas City Convention Center
Music Hall & Little Theatre Restroom Upgrades Project

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 Proposer. I am of sound mind, capable of making this affidavit, and personally acquainted with the facts herein stated:

A. Proposer 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 Proposer has its principal office; and

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

☐ Contract by contract listing of all of Proposer's written notices of violations of any Federal or State prevailing wage statute in which prevailing wage penalties were assessed against the Proposer or paid by the Proposer (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 Proposer.

C. Proposer is currently in good standing with the Missouri Secretary of State or Proposer 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/Contract Number MAMHADA24

Project/Contract Title/Description
Kansas City Convention Center - Music Hall & Little Theatre Restroom Upgrades Project

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:

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

Upgrade of interior finishes and fixtures in two pairs of restrooms in the Kansas City Music Hall and one pair of restrooms in the Little Theatre. Work includes the replacement of lavatories, urinals, and multiple restroom accessories, the replacement of flooring with new terrazzo flooring, the repair and restoration of existing flooring, the repair of existing finishes, the installation of new light fixtures and the re-lamping of existing light fixtures, metal studs and drywall, stone wall panel installation and repair; door hardware repair; plaster patch and repair, miscellaneous rough and finish carpentry, painting, and other Work indicated in the Contract Documents.

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.

PERFORMANCE AND MAINTENANCE BOND

Project Number MAMHADA24

Project Title Kansas City Convention Center
Music Hall & Little Theatre Restroom Upgrades Project

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_____ 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)

PAYMENT BOND

Project Number: MAMHADA24

Project Title: Kansas City Convention Center Music Hall & Little Theatre Restroom Upgrades Project

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 _____, 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	
INSURER B :	
INSURER C :	
INSURER D :	
INSURER E :	
INSURER F :	

INSURED

CONTRACTOR NAME AND ADDRESS

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

GENERAL CONDITIONS

TABLE OF CONTENTS

ARTICLE 1 DEFINITIONS AND TERMINOLOGY

1.01 Defined Terms
1.02 Terminology

ARTICLE 2 PRELIMINARY MATTERS

2.01 Delivery of Bonds
2.02 Evidence of Insurance
2.03 Copies of Documents
2.04 Commencement of Contract Times; Notice to Proceed
2.05 Starting the Work
2.06 Before Starting Construction
2.07 Initially Acceptable Schedules

ARTICLE 3 CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 Intent
3.02 Reference to Standards and Specifications of Technical Societies
3.03 Reporting and Resolving Discrepancies
3.04 Amending and Supplementing Contract Documents
3.05 Reuse of Documents

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

4.01 Availability of Lands
4.02 Subsurface and Physical Conditions
4.03 Differing Subsurface or Physical Conditions
4.04. Physical Conditions - Underground Facilities
4.05 Reference Points
4.06 Asbestos, Lead-Based Paint, PCBs, Petroleum, Hazardous Waste or Radioactive Material

ARTICLE 5 BONDS AND INSURANCE

5.01 Performance, Payment and Other Bonds
5.02 Licensed Sureties and Insurers
5.03 Certificates of Insurance
5.04 CONTRACTOR's Liability Insurance
5.05 CITY's Liability Insurance
5.06 Property Insurance
5.07 Waiver of Rights
5.08 Receipt and Application of Insurance Proceeds
5.09 Partial Utilization - Property Insurance

ARTICLE 6 CONTRACTOR'S RESPONSIBILITIES

6.01 Indemnification

6.02 Supervision and Superintendence
6.03 Services, Working Hours, Labor, Materials and Equipment
6.04 Progress Schedule
6.05 Recovery Schedules
6.06 Substitutes and “Or-Equal” Items
6.07 Concerning Subcontractors, Suppliers and Others
6.08 Patent Fees and Royalties
6.09 Permits
6.10 Laws or Regulations
6.11 Taxes
6.12 Use of Site and Other Areas
6.13 Record Documents
6.14 Safety and Protection
6.15 Safety Representative
6.16 Hazard Communication Programs
6.17 Emergencies
6.18 Shop Drawings and Samples
6.19 Continuing the Work
6.20 CONTRACTOR’s General Warranty and Guarantee

ARTICLE 7 OTHER WORK

7.01 Related Work at Site
7.02 Coordination

ARTICLE 8 CITY’s RESPONSIBILITIES

8.01 Communications to CONTRACTOR
8.02 Replacement of DESIGN PROFESSIONAL
8.03 Furnish Data and Prompt Payment
8.04 Lands and Easements; Reports and Tests
8.05 Insurance
8.06 Change Orders
8.07 Inspections, Tests and Approvals
8.08 Limitations on CITY’s Responsibilities
8.09 Undisclosed Hazardous Environmental Condition
8.10 Evidence of Financial Arrangements
8.11 CITY’s Representative
8.12 Visits to Site

ARTICLE 9 DESIGN PROFESSIONAL’s STATUS DURING CONSTRUCTION

9.01 General Scope of DESIGN PROFESSIONAL’s Duties
9.02 Resident Project Representative
9.03 Clarifications and Interpretations
9.04 Rejecting Defective Work
9.05 Shop Drawings, Change Orders and Payments
9.06 Determinations for Unit Prices
9.07 Decisions on Requirements of Contract Documents and Acceptability of Work
9.08 Limitations on DESIGN PROFESSIONAL’s Authority and Responsibilities

ARTICLE 10 CHANGES IN THE WORK

10.01 Authorized Changes in the Work
10.02 Unauthorized Changes in the Work
10.03 Execution of Change Orders
10.04 Notification to Surety

ARTICLE 11 CHANGE OF CONTRACT PRICE

11.01 Change of Contract Price
11.02 Cost of the Work
11.03 Cash Allowances
11.04 Unit Price Work
11.05 Dispute Resolution

ARTICLE 12 CONTRACT TIMES

12.01 Time of the Essence
12.02 Change of Contract Times
12.03 Proof Required To Justify An Extension of Time For Excusable and Compensable Delays
12.04 Delays Within CONTRACTOR's Control
12.05 Delays Beyond the CITY's and CONTRACTOR's Control
12.06 Delay Damages
12.07 Dispute Resolution

ARTICLE 13 TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 Access to Work
13.02 Tests and Inspections
13.03 Notice of Defects
13.04 Uncovering Work
13.05 CITY May Stop the Work
13.06 Correction or Removal of Defective Work
13.07 Correction Period
13.08 Acceptance of Defective Work
13.09 CITY May Correct Defective Work

ARTICLE 14 PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 Schedule of Values
14.02 Application for Progress Payments
14.03 Contractor's Warranty of Title
14.04 Substantial Completion
14.05 Partial Utilization
14.06 Final Inspection
14.07 Final Payment
14.08 Final Completion Delayed
14.09 Waiver of Claims
14.10 Completion of Work by City

ARTICLE 15 SUSPENSION OF WORK AND TERMINATION

15.01 CITY May Suspend Work
15.02 CITY May Terminate for Default
15.03 CITY May Terminate for Convenience

ARTICLE 16 CLAIMS AND DISPUTES

16.01 Definition
16.02 Written Notice and Burden of Proof
16.03 Time Limits on Claims
16.04 Continuing Contract Performance
16.05 Injury or Damage to Person or Property
16.06 Initial Resolution of Claims and Disputes

16.07 Final Resolution of Claims and Disputes

ARTICLE 17 MISCELLANEOUS

17.01 Giving Notice
17.02 Computation of Times
17.03 Cumulative Remedies
17.04 Survival of Obligations
17.05 Controlling Law

ARTICLE 1 DEFINITIONS AND TERMINOLOGY

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 MAMHADA24

Project Title Kansas City Convention Center
Music Hall & Little Theatre Restroom Upgrades Project

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 CONTRACTOR up to two (2) copies of the Drawings and Specifications, including Addenda.

SC-4.02 Article 4, Paragraph 4.02, Subsurface and Physical Conditions; Subparagraphs A and B are supplemented as follows:

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.

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, the following reports and drawings relating to a Hazardous Environmental Condition identified at the Site of the Work were utilized:

1. Report dated September 10, 2025, prepared by the City of Kansas City, Missouri Office of Environmental Quality; entitled Lead Paint Survey, which may be reviewed upon request to the Project Manager. The technical data contained in such report upon which CONTRACTOR may rely is for reference.

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 two (2) after the date when final payment becomes due, except as provided otherwise by Laws or Regulations or by the Contract Documents.

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, Paragraph A, is amended by adding the following after the first sentence:

Property Insurance on the Work at the Site shall be written with a deductible amount not to exceed $10,000.00.

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 **8** days prior to Proposal date at the following address:

414 East 12th Street City Hall, 17th Floor
Kansas City, Missouri 64106
Attn: Charles A. Harris, 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 ***45*** 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-6.07 J Article 6, Paragraph 6.07, concerning Subcontractors, Suppliers and Others, is supplemented by adding Subparagraph J as follows:

CONTRACTOR shall perform with its own organization Work amounting to not less than 65% of the total Contract Price. “Its own organization” shall be construed to include only workers employed and paid by the CONTRACTOR and equipment owned or rented by the CONTRACTOR, with or without operators. Such term does not include employees or equipment of a subcontractor, assignee, or agent of the CONTRACTOR.

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: State – Building

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-7.02 A. Article 7, Paragraph 7.02, Coordination, Subparagraph A is supplemented as follows:

1. It is anticipated that work under separate contracts will be performed at the Site, concurrent with the Work to be performed pursuant to these Contract Documents. The following person, firm or corporation ("the Coordinating Contractor") will have authority and responsibility for coordination of the activities among the various contractors performing work at the Site:

2. The Coordinating Contractor shall coordinate the scheduling of work between this Contract and other concurrent contracts so that interference with the use of existing facilities and public works and conflicts with interfacing work will be minimized. Particular attention shall be paid to maintaining suitable traffic patterns and adequate access to the existing facilities.
3. Whenever construction activities conflict with the use of existing facilities and public works, the Deputy Director shall decide which activity shall be given priority. The Coordinating Contractor shall be responsible for coordinating work by its own forces, by other contractors and by all subcontractors with work by the operating staff of the existing facility. The Coordinating Contractor shall 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 control as may be specifically reserved to CITY or others. The Coordinating Contractor 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 person on the Site (except CITY's employees) to observe the same regulations as the Coordinating Contractor requires of its own employees.
4. CONTRACTOR will be expected to cooperate with the Coordinating Contractor and to schedule activities at the Site in a manner that will not result in delay or expense to CITY or other contractors.

SC-9.08 E. Article 9, Paragraph 9.08, Limitations on DESIGN PROFESSIONAL's Authority and Responsibilities, Subparagraph E is supplemented as follows:

DESIGN PROFESSIONAL's Consultant(s), Project representative and assistants to the Project representative are the following:

Design Professional: Piper-Wind Architects, Inc.

Project Representative: Eric J. Piper, AIA.

Assistant to the Project Representative: Danny Kliewer, AIA.

1. Consultant: Leigh & O'Kane, LLC.
   Project Representative: Adam O'Kane, P.E.
2. FSC, Inc.
   Project Representative: Darren Baker
3. Lightworks, Inc.
   Project Representative: Kathi Vandel, P.E.

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 Conventions and Entertainment Facilities, and the Work shall be substantially complete, in accordance with Paragraph 14.04, within 180 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 on or before **November 20 2026** or within 40 Calendar Days after the date of Substantial Completion of the Work, whichever occurs first.

3. *The Conventions Center has a major theater production that will be performing at the Music Hall beginning Wednesday, November 25, 2026. They also have a major theater production that will be ending on Sunday, August 30th, 2026. Thus, the Contractor will have a nine-week window from on-site mobilization to substantial completion and a three-week window after that to final completion at the Music Hall. Actual damages will be assessed at the rate of lost revenue for each show that the restrooms are not completed by November 20, 2026.*

C. Actual Damages.

If the Work is not completed within the Contract Times and, as a direct result, CITY incurs additional costs or loses revenues, then the amount of such additional costs and lost revenues, including but not limited to, costs for the completion, correction, replacement, or repair of the Work, lost rental income, costs of relocating tenants, costs of lease replacement or extension, any interest charges, fines or penalties imposed, and/or additional staff costs for administration, including legal costs, will be aggregated and assessed against CONTRACTOR. These and other such costs will compound and accrue until the completion of the Work and acceptance of the Work by CITY. CONTRACTOR shall pay actual damages to CITY in the amount of those additional costs and lost revenues.

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. 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: ***The two pairs of restrooms at the Music Hall must be fully completed, ready for final punch-list inspection and occupancy to be considered substantially complete by the prescribed date indicated above. The pair of restrooms at the Little Theatre has greater flexibility as to their date of substantial completion and final completion, which will allow the Contractor to coordinate their work around the Convention's event schedule.***

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. **0830.02 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.

REQUEST FOR INTERPRETATION

Project Number MAMHADA24

Project Title Kansas City Convention Center
Music Hall & Little Theatre Restroom Upgrades Project

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 _____

REQUEST FOR INTERPRETATION LOG

Project Number MAMHADA24

Project Title Kansas City Convention Center
Music Hall & Little Theatre Restroom Upgrades Project

CONTRACTOR _____

OWNER _____

RFI No.	Issue Date	Brief Description of issue and response	Respond Date

SUPPLEMENTAL DESIGN INSTRUCTION

Project Number MAMHADA24

Project Title Kansas City Convention Center
Music Hall & Little Theatre Restroom Upgrades Project

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 _____

REQUEST FOR PROPOSAL

Project Number MAMHADA24

Project Title Kansas City Convention Center
Music Hall & Little Theatre Restroom Upgrades Project

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 _____

REQUEST FOR PROPOSAL LOG

Project Number MAMHADA24

Kansas City Convention Center

Project Title Music Hall & Little Theatre Restroom Upgrades Project

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 MAMHADA24

Kansas City Convention Center

Project Title Music Hall & Little Theatre Restroom Upgrades Project

Change Order No: _____ Date of Issuance: _____

Ordinance No: _____ Ordinance Effective Date: _____

Contract Notice To Proceed Date: _____

To CONTRACTOR:

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).

[**Note:** If the CO does not change the Contract Price, use "Director" 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. & Title
Change Order No.
[**Note:** Include any required additional signatures.]

DESIGN PROFESSIONAL:	**By:** **Title:**	**Date:**
CONTRACTOR:	**By:** **Title:**	**Date:**
CITY:	**By** **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.

WORK CHANGE DIRECTIVE

Project Number MAMHADA24

Project Title Kansas City Convention Center
Music Hall & Little Theatre Restroom Upgrades Project

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.

ALLOWANCE AUTHORIZATION

Project Number MAMHADA24

Project Title Kansas City Convention Center
Music Hall & Little Theatre Restroom Upgrades Project

To: _____ Authorization Number: _____
_____ From: _____
Re: _____ Date: _____
_____ Contract For: _____

You are authorized to perform the following item(s) of work and to adjust the Allowance Sum accordingly:

This is NOT a CHANGE ORDER and does NOT INCREASE OR DECREASE the CONTRACT AMOUNT.

Original Allowance	$_____
Allowance Expenditures prior to this Authorization	$_____
Allowance Balance prior to this Authorization	$_____
Allowance will be [❑ increased] [❑ decreased] by this Authorization	$_____
New Allowance Balance	$_____

APPROVAL RECOMMENDED

_____
Design Professional Date

_____
Construction Manager Date

CITY APPROVAL

_____
City's Representative Date

CONTRACTOR ACCEPTANCE

_____
Contractor Date

❑ Attachments:

Distribution:
- ❑ City
- ❑ Contractor
- ❑ Construction Manager
- ❑ Design Professional
- ❑ Consultant
- ❑ Other

APPLICATION FOR PAYMENT

Project Number MAMHADA24

Project Title Kansas City Convention Center
Music Hall & Little Theatre Restroom Upgrades Project

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

SCHEDULE OF VALUES

Project Number MAMHADA24

Project Title Kansas City Convention Center - Music Hall & Little Theatre Restroom Upgrades Project

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		

SUBCONTRACTORS AND MAJOR MATERIAL SUPPLIERS LIST

Project Number MAMHADA24 Project Title Kansas City Convention Center
Music Hall & Little Theatre Restroom Upgrades Project

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

DAILY LABOR FORCE REPORT

Project Number MAMHADA24 Day _____ Date _____
Project Title Kansas City Convention Center
Music Hall & Little Theatre Restroom Upgrades Project
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)**

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: ❑ Contractor ❑ Subcontractor ❑ Other

CERTIFICATE OF SUBSTANTIAL COMPLETION

Project Number MAMHADA24

Project Title Kansas City Convention Center
Music Hall & Little Theatre Restroom Upgrades Project

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 _____

PUNCH LIST

Project Number MAMHADA24

Project Title Kansas City Convention Center
Music Hall & Little Theatre Restroom Upgrades Project

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 _____

CONTRACTOR AFFIDAVIT FOR FINAL PAYMENT

Project Number MAMHADA24

Project Title Kansas City Convention Center
Music Hall & Little Theatre Restroom Upgrades Project

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 CITY 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 proposal.

Supplier** Final Amount: _____

*Reference to specification sections or proposal 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 $150,000, 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

SUBCONTRACTOR AFFIDAVIT FOR FINAL PAYMENT

Project Number MAMHADA24

Project Title Kansas City Convention Center
Music Hall & Little Theatre Restroom Upgrades Project

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

DAILY FIELD OBSERVATION REPORT

Project Number MAMHADA24

Project Title Kansas City Convention Center
Music Hall & Little Theatre Restroom Upgrades Project

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 _____

PERIODIC FIELD OBSERVATION REPORT

Project Number MAMHADA24

Project Title Kansas City Convention Center
Music Hall & Little Theatre Restroom Upgrades Project

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 _____

WEEKLY REPORT OF WORKING DAYS

Project Number MAMHADA24

Project Title Kansas City Convention Center
Music Hall & Little Theatre Restroom Upgrades Project

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

TRANSMITTAL LETTER

Project Number MAMHADA24

Project Title Kansas City Convention Center
Music Hall & Little Theatre Restroom Upgrades Project

TO: _____ Date _____
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

SUBSTITUTION REQUEST

Project Number MAMHADA24

Project Title Kansas City Convention Center
Music Hall & Little Theatre Restroom Upgrades Project

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 024119 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. The Work of this Section Includes:

1. Demolition and removal of selected portions of interior of building or structure.
2. Removal and salvage of existing items to be reused or recycled.
3. Demolition and removal of selected portions of systems, equipment and fixtures.

B. Related Requirements:

1. Section 011000 "Summary" for restrictions on use of the premises, Owner-occupancy requirements, and phasing requirements.
2. Section 017300 "Execution" for cutting and patching procedures.

1.2 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of Contractor.

B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.3 INFORMATIONAL SUBMITTALS

A. Schedule of selective demolition activities with starting and ending dates for each activity.

B. Predemolition photographs or video.

C. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician.

1.4 QUALITY ASSURANCE

A. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.

1.5 CLOSEOUT SUBMITTALS

A. Inventory: Submit a list of items that have been removed and salvaged.

1.6 FIELD CONDITIONS

A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.

B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

D. Hazardous Materials:

1. Other than Lead Based Paint, it is not expected that hazardous materials will be encountered in the Work.

a. Refer to Supplementary Conditions for reports of explorations and tests of any Hazardous Environmental Conditions at the Site of the Work that have been prepared for previous remediation projects that have been completed.

b. If materials suspected of containing hazardous materials are encountered, other than Lead Based Paint, do not disturb; immediately notify Architect and Owner. Hazardous materials, other than Lead Based Paint, will be removed by Owner under a separate contract.

c. Lead Based Paint will be encountered throughout the project site and the Contractor shall conduct all construction activities including selective demolition utilizing proper EPA certified / approved standards and other regulatory standards and guidelines to prevent lead hazards.

d. General Contractor shall be responsible for additional Lead Based Paint removal and/or treatment as required to perform demolition and new construction activities. As such, EPA certification by both the General Contractor and appropriate subcontractors is required.

E. Storage or sale of removed items or materials on-site is not permitted.

F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
1. Maintain fire-protection facilities in service during selective demolition operations

G. Arrange selective demolition schedule so as not to interfere with Owner’s operations.

1.7 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials and using approved contractors so as not to void existing warranties.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Standards: Comply with ANSI/ASSP A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped before starting selective demolition operations.

B. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs or video. Comply with Section 013233 “Photographic Documentation.”

1. Inventory and record the condition of items to be removed for salvage or reinstallation. Photograph conditions that might be misconstrued as damage caused by removal.
2. Photograph existing conditions of adjoining construction including finish surfaces, that might be misconstrued as damage caused by selective demolition operations or removal of items for salvage or reinstallation.

3.2 PREPARATION & PROTECTION

A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent facilities to remain.

B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

C. Remove temporary barricades and protections where hazards no longer exist.

D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location and cleaned and reinstalled in their original locations after selective demolition operations are complete.

E. Refrigerant: Before starting demolition, remove refrigerant from mechanical equipment in accordance with 40 CFR 82 and regulations of authorities having jurisdiction.

F. Refer to the drawings for any specific additional temporary protection measures that may be required.

3.3 UTILITY SERVICES AND BUILDING SYSTEMS

A. Existing Services/Systems to Remain: Maintain utilities and building systems and equipment to remain and protect against damage during selective demolition operations.

B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utilities and building systems serving areas to be selectively demolished.
   1. Arrange to shut off utilities with utility companies.
   2. If disconnection of utilities and building systems will affect adjacent occupied parts of the building, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to those parts of the building.
   3. Demolish and remove existing building systems, equipment, and components indicated on Drawings to be removed.

      a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
      b. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
      c. Equipment to Be Removed: Disconnect and cap services and remove equipment and components.

   4. Abandon existing building systems, equipment, and components indicated on Drawings to be abandoned in place.

      a. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material and leave in place.
      b. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material and leave in place.

   5. Remove and reinstall/salvage existing building systems, equipment, and components indicated on drawings to be removed and reinstalled or removed and salvaged:

      a. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment and components; when appropriate, reinstall, reconnect, and make equipment operational.
      b. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and components and deliver to Owner.

3.4 SALVAGE/REINSTALL

A. Removed and Salvaged Items:

   1. Clean salvaged items.
   2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
   3. Store items in a secure area until delivery to Owner.
   4. Transport items to Owner's storage area designated by Owner.
   5. Protect items from damage during transport and storage.

B. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

3.5 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. 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. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
3. 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.
4. Maintain fire watch during and for at least four hours after flame-cutting operations.
5. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
6. Dispose of demolished items and materials promptly.
7. Cut surfaces coated with Lead Based Paint in a manner that complies with all EPA certified / approved standards and other regulatory standards and guidelines to prevent lead hazards.

B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove demolition waste materials from Project site and dispose of them in an EPA-approved construction and demolition waste landfill acceptable to authorities having jurisdiction.

1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

B. Burning: Do not burn demolished materials.

3.7 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 024119

SECTION 033000 – CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. furnishing, placing, and finishing a **3-inch unbonded reinforced concrete topping slab** over EPS geofoam fill installed on existing slab.

1.2 RELATED SECTIONS

A. Section 032000 – Concrete Reinforcing.

B. Section 072100 – Thermal Insulation (Geofoam).

1.3 REFERENCES

A. ACI 301 – Specifications for Structural Concrete.

B. ACI 302.1R – Guide for Concrete Floor and Slab Construction.

C. ASTM C33 – Concrete Aggregates.

D. ASTM C94 – Ready-Mixed Concrete.

E. ASTM C150/C595 – Portland Cement/Blended Hydraulic Cement.

F. ASTM C494 – Chemical Admixtures.

1.4 ACTION SUBMITTALS

A. Concrete mix design indicating proportions, admixtures, and anticipated performance.

B. Manufacturer’s data for admixtures, fibers, and curing compounds.

C. Delivery tickets for each batch of concrete.

1.5 QUALITY ASSURANCE

A. Concrete finishers shall be ACI-certified Flatwork Technicians or equivalent.

1.6 MATERIALS

A. EPS Geofoam: Closed-cell molded block, meeting **ASTM D6817** requirements for Type EPS 15 or EPS 19 as indicated:

1. **EPS 15** – Nominal density 1.0 pcf, compressive resistance 3.6 psi at 1% deformation.
2. **EPS 19** – Nominal density 1.15 pcf, compressive resistance 5.0 psi at 1% deformation.

a. Moisture Absorption: ≤4.0% by volume per ASTM C272.
b. Dimensions: Standard block sizes per manufacturer; field trim to fit tightly.

1.7 MANUFACTURERS

A. Foam-Control® Geofoam (ACH Foam Technologies).

B. InsulFoam® GF (Insulfoam / Carlisle).

C. Plasti-Fab GeoSpec® Geofoam.

D. Drew Foam Geofoam.

E. Or approved equal.

PART 2 - PRODUCTS

2.1 CONCRETE MATERIALS

A. Cement: ASTM C150 Type I/II or ASTM C595 Type IL.

B. Fine and Coarse Aggregates: ASTM C33, 3/8" or 1/2" maximum size.

C. Water: Clean and potable.

D. Admixtures: ASTM C494, non-chloride accelerators, water-reducers, or shrinkage-reducing admixtures as approved.

E. Fibers (Optional): ASTM C1116 micro-synthetic fibers for shrinkage control.

2.2 CONCRETE MIX

A. Compressive Strength: **4000 psi at 28 days** (min. 3500 psi if approved for light-duty use).

B. Water-Cement Ratio: Max 0.45.

C. Slump: 4–5 inches (up to 6 inches with superplasticizer).

D. Air Content: 5–7% if subject to freeze-thaw; otherwise 2–4%.

2.3 REINFORCEMENT

A. Welded Wire Reinforcement (WWR) 6x6-W1.4/W1.4 (or as indicated on drawings) or #3 bars @ 12" o.c. each way.

2.4 MISCELLANEOUS MATERIALS

A. Bond Breaker: 6-mil polyethylene sheeting, lapped 6 inches, taped at seams.

B. Curing Compound: ASTM C309, dissipating resin or acrylic type.

PART 3 - EXECUTION

3.1 PREPARATION

A. Verify geofoam is installed level, secure, and undamaged.

B. Install bond breaker over geofoam; lap and tape seams.

C. Provide edge forms and bulkheads to contain concrete.

3.2 PLACEMENT

A. Place concrete carefully to avoid displacement or damage to geofoam.

B. Use work platforms or load distribution methods to prevent point loads on geofoam.

C. Consolidate with light vibration or rodding; do not over-vibrate.

3.3 FINISHING

A. Strike-off to required elevation; float finish unless otherwise specified.

B. Apply broom finish for slip resistance if required.

3.4 CURING AND PROTECTION

A. Begin curing immediately after finishing using moist curing or curing compound.

B. Protect from traffic, loads, and vibration until minimum strength is achieved.

3.5 TOLERANCES

A. Thickness: ±1/4 inch over 10 feet.

B. Surface: FF 25, FL 20 minimum.

END OF SECTION 033000

SECTION 040140.61 - STONE REPAIR

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes repairing interior polished stone wall panels.

1.2 DEFINITIONS

A. Rebuilding (Setting) Mortar: Mortar used to set and anchor masonry in a structure, distinct from pointing mortar installed after masonry is set in place.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings:

1. Include plans, elevations, sections, and locations of replaced, and repaired stone units on the structure and their jointing.
2. Show partial replacement stone units (dutchmen).
3. Show provisions for expansion joints or other sealant joints.
4. Show replacement and repair anchors, including drilled-in pins.

C. Samples:

1. For each stone type, color and texture indicated. Include three or more Samples in each set and show the full range of variations in appearance characteristics in completed Work.
2. For each color of grout required.
3. For each color of stone adhesive or crack filler required.

1.5 INFORMATIONAL SUBMITTALS

A. Quality-control program.

1.6 QUALITY ASSURANCE

A. Stone Repair Specialist Qualifications: Engage an experienced stone repair firm to perform work of this Section. Firm shall have completed work similar in material, design, and extent to

that indicated for this Project with a record of successful in-service performance. Experience in only installing standard unit masonry or new stone masonry is insufficient experience for stone repair work.

B. Quality-Control Program: Prepare a written quality-control program for this Project to systematically demonstrate the ability of personnel to properly follow methods and use materials and tools without damaging stonework. Include provisions for supervising performance and preventing damage.

C. Mockups: Prepare mockups of stone repair to demonstrate aesthetic effects and to set quality standards for materials and execution and for fabrication and installation.

1. Stone Repair: Prepare sample areas for each type of stone indicated to have repair work performed. If not otherwise indicated, size each mockup not smaller than 12 inches in least dimension. Construct mockup sample panels demonstrating repair techniques with stone varieties similar in color, texture, grain, veining and finish as existing stone material. Demonstrate quality of materials, workmanship, and blending with adjacent stone color and finish.

PART 2 - PRODUCTS

2.1 STONE MATERIALS

A. Stone Matching Existing: Natural building stone of variety, color, texture, grain, veining, finish, size, and shape that match existing stone.

1. Visually inspect stone to be repaired. Confirm stone type and photograph to document existing condition and to provide reference for matching characteristics. Label photographs to include room name and location for coordination with shop drawings.
2. For existing stone that exhibits a range of colors, texture, grain, veining, finishes, sizes, or shapes, provide stone that proportionally matches that range rather than stone that matches an individual color, texture, grain, veining, finish, size, or shape within that range.
3. Quarry: Subject to compliance with requirements, provide stone from the original quarry when possible. Where stone from the original quarry is no longer available, provide stone of similar variety, color, texture, grain, veining, finish, size, and shape that match existing stone.
4. Existing stone types that require repair (As indicated in Music Hall historical architectural drawings):
    a. Carthage Ozark Fleuri Marble

2.2 MORTAR MATERIALS

A. Portland Cement: ASTM C150/C150M, Type I or Type II; color to match existing.

1. Provide cement containing not more than 0.60 percent total alkali when tested according to ASTM C114.

B. Hydrated Lime: ASTM C207, Type S.

C. Masonry Cement: ASTM C91/C91M.

D. Mortar Cement: ASTM C1329/C1329M.

E. Mortar Sand: ASTM C144.

1. Exposed Mortar: Match size, texture, and gradation of existing mortar sand as closely as possible. Blend several sands if necessary to achieve suitable match.
2. Colored Mortar: Natural sand or ground marble, granite, or other sound stone of color necessary to produce required mortar color.

F. Mortar Pigments: ASTM C979/C979M, compounded for use in mortar mixes, and having a record of satisfactory performance in stone mortars.

1. Use formulation that is vapor and water permeable (equal to or more than the stone), exhibits low shrinkage, has lower modulus of elasticity than stone units being repaired, and develops high bond strength to all types of stone.
2. Formulate patching compound in colors, textures, and grain to match stone being patched.

G. Stone Repair Mortar: Mineral based, single component mortar developed for restoring natural stone.

H. Water: Potable

2.3 MANUFACTURED REPAIR MATERIALS

A. Stone Patching and Repair Mortar: Factory-mixed cementitious product that is custom manufactured for patching stone. Mineral based, single component mortar developed for restoring natural stone.

1. Use formulation that is vapor and water permeable (equal to or more than the stone), exhibits low shrinkage, has lower modulus of elasticity than stone units being repaired, and developed high bond strength to all types of stone.
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Jahn International; Jahn Natural Stone Repair Mortar.

B. Crack Filler: Non-staining, UV stable, two-part polyester or epoxy-resin stone crack filler that can be injected into cracks, is suitable for application to wet or dry cracks, exhibits low shrinkage, and developed high bond strength to all types of stone, and recommended in writing by manufacturer for type of stone repair indicated, and matching stone color

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Bonstone Materials Corporation.
b. InnoChem, LLC. (Akemi).

C. Stone-to-Stone Adhesive: Non-staining, UV stable, two-part polyester or epoxy-resin stone adhesive with a 15- to 45-minute cure at 70 deg F, and recommended in writing by adhesive manufacturer for type of stone repair indicated, and matching stone color.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Bonstone Materials Corporation.
b. InnoChem, LLC. (Akemi).

2.4 STONE ANCHORS AND ATTACHMENTS

A. Fabricate anchors from stainless steel, ASTM A 240 or ASTM A 666, Type 304.

1. Fasteners for Stainless-Steel Anchors: Annealed stainless-steel bolts, nuts, and washers; ASTM F 593 for bolts and ASTM F 594 for nuts, Alloy Group 1.

B. Fabricate dowels from stainless steel, ASTM A276, Type 304.

C. Wire Tiebacks: 0.120-inch-diameter, stainless steel wire.

2.5 ACCESSORY MATERIALS

A. Setting Buttons and Shims: Resilient plastic, nonstaining to stone, sized to suit joint thicknesses and bed depths of stone units, less the required depth of pointing materials unless removed before pointing.

B. Cleaner: Stone cleaner specifically formulated for stone types, finishes, and applications indicated, as recommended by stone producer. Do not use cleaning compounds containing acids, caustics, harsh fillers, or abrasives.

C. Stone Sealer: Colorless, stain-resistant sealer that does not affect color or physical properties of stone surfaces, as recommended by stone producer for application indicated.

D. Other Products: Select materials and methods of use based on the following, subject to approval of a mockup:

1. Previous effectiveness in performing the work involved.
2. Minimal possibility of damaging exposed surfaces.
3. Consistency of each application.
4. Uniformity of the resulting overall appearance.
5. Do not use products or tools that could leave residue on surfaces.

2.6 MORTAR MIXES

A. Measurement and Mixing: Measure cementitious materials and sand in a dry condition by volume or equivalent weight. Do not measure by shovel; use known measure. Mix materials in a clean, mechanical batch mixer.

B. Colored Mortar: Produce mortar of color required by using specified ingredients. Do not alter specified proportions without Architect's approval.

1. Mortar Pigments: Where mortar pigments are indicated, do not add pigment exceeding 10 percent by weight of the cementitious or binder materials, except for carbon black which is limited to 2 percent.

C. Do not use admixtures in mortar unless otherwise indicated.

D. Mixes: Mix mortar materials in the following proportions:

1. Pigmented, Colored Mortar: Add mortar pigments to produce exposed, setting (rebuilding) mortar of colors required.

PART 3 - EXECUTION

3.1 PROTECTION

A. Remove all accessories and hardware adjacent to stone and store during stone repair. Reinstall or replace when repairs are complete as indicated on the Drawings.

3.2 STONE REMOVAL AND REPLACEMENT

A. At locations indicated, remove stone that has deteriorated or is damaged beyond repair or is to be reused. Carefully remove entire units from joint to joint, without damaging surrounding stone, in a manner that permits replacement with full-size units.

B. Support and protect remaining stonework that surrounds removal area.

C. Maintain flashing, reinforcement, lintels, and adjoining construction in an undamaged condition.

D. Notify Architect of unforeseen detrimental conditions including voids, cracks, bulges, and loose units in existing stone or unit masonry backup, rotted wood, rusted metal, and other deteriorated items.

E. Remove in an undamaged condition as many whole stone units as possible.

1. Remove mortar, loose particles, and soil from stone by cleaning with hand chisels, brushes, and water.
2. Remove sealants by cutting close to stone with utility knife and cleaning with solvents.

F. Clean stone surrounding removal areas by removing mortar, dust, and loose particles in preparation for stone replacement.

G. Replace removed damaged stone with other removed stone in good condition, where possible, matching existing stone, including direction of rift or natural bedding planes. Do not use broken units unless they can be cut to usable size.

H. Install replacement stone into bonding and coursing pattern of existing stone. If cutting is required, use a motor-driven saw designed to cut stone with clean, sharp, unchipped edges. Finish edges to blend with appearance of edges of existing stone.

1. Maintain joint width for replacement stone to match existing joints.
2. Use setting buttons or shims to set stone accurately spaced with uniform joints.

I. Set replacement stone with rebuilding (setting) mortar and with completely filled bed, head, and collar joints. Butter vertical joints for full width before setting, and set units in full bed of mortar unless otherwise indicated. Replace existing anchors with new anchors of size and type matching existing configuration.

1. Tool exposed mortar joints in repaired areas to match joints of surrounding existing stonework.
2. When mortar is hard enough to support units, remove shims and other devices interfering with pointing of joints.

J. Curing: Cure mortar by maintaining in thoroughly damp condition for at least 72 consecutive hours, including weekends and holidays.

1. Hairline cracking within the mortar or mortar separation at edge of a joint is unacceptable. Completely remove such mortar and repoint.

3.3 STONE FILL REPAIR

A. Stone Fill Repair: For repair of holes in stone for fasteners, where penetrated by electrical or plumbing systems or where area of repair is less than 3/4-inch in diameter, provide stone fill repair.

B. General: Comply with stone filler manufacturer's written instructions.

C. Clean out drill holes and cracks with compressed air and water. Remove dirt and organic matter, loose material, sealants, and failed repair materials. Mask adjacent stone area for protection prior to installing fill material. Apply primer as recommended by manufacturer.

D. Mix stone filler material according to manufacturer's written instructions to the proper consistency, coloring and tinting as necessary to match stone surface to be repaired. Place filler into repair area, removing air bubbles and completely filling all crevices and voids. Apply in layers as recommended by manufacturer

E. Remove excess stone filler from face of stone before it sets. Overfill the patch slightly, and after fill material has cured, sand or grind excess back to face of stone surface, masking the surrounding stone area for protection.

F. With abrasive pads and polishing compounds, polish to match adjacent existing stone surface.

3.4 STONE PLUG REPAIR

A. Stone Plug Repair: For repair of holes in stone for fasteners, where penetrated by electrical or plumbing systems or where area of repair is greater than 3/4-inch in diameter, provide stone plug repair.

B. Remove cylindrical piece of damaged stone by core-drilling perpendicular to stone surface.

C. Prepare a replacement plug by core-drilling replacement stone. Use a drill sized to produce a core that will fit into hole drilled in damaged stone with only minimum gap necessary for adhesive.

D. Apply stone-to-stone adhesive according to adhesive manufacturer's written instructions. Coat bonding surfaces of existing stone and plug, completely filling all crevices and voids.

E. Apply plug while adhesive is still tacky and hold securely in place until adhesive has cured.

F. Clean adhesive residue from exposed surfaces.

3.5 STONE-FRAGMENT REPAIR

A. Carefully remove cracked or fallen stone fragment indicated to be repaired. Reuse only stone fragment that is in sound condition.

B. Remove soil, loose particles, mortar, and other debris or foreign material from fragment surfaces to be bonded and from parent stone where fragment had broken off, by cleaning with stiff-fiber brush.

C. Concealed Pinning: Pin fragments large enough to accommodate pinning. Before applying adhesive, prepare for concealed mechanical anchorage consisting of 1/4-inch-diameter, plain stainless-steel pins set into 1/4-inch-diameter holes drilled into parent stone and into, but not through, the fragment.

D. Apply stone-to-stone adhesive according to adhesive manufacturer's written instructions. Coat bonding surfaces of fragment and parent stone, completely filling all crevices and voids.

E. Fit stone fragment onto parent stone while adhesive is still tacky and hold fragment securely in place until adhesive has cured. Use shims, clamps, wedges, or other devices as necessary to align face of fragment with face of parent stone.

F. Clean adhesive residue from exposed surfaces and patch chipped areas. Polish to match adjacent existing stone surface.

3.6 CRACK INJECTION

A. General: Comply with cementitious crack-filler manufacturer's written instructions.

B. Drill 1/4-inch-diameter injection holes as follows:

1. Transverse Cracks Less Than 3/8 inch Wide: Drill holes through center of crack at 12 to 18 inches o.c.
2. Transverse Cracks More Than 3/8 inch Wide: Drill holes through center of crack at 18 to 36 inches o.c.
3. Delaminations: Drill holes at approximately 18 inches o.c. both vertically and horizontally.
4. Drill holes 2 inches deep.

C. Clean out drill holes and cracks with compressed air and water. Remove dirt and organic matter, loose material, sealants, and failed crack repair materials.

D. Place plastic injection ports in drilled holes and seal face of cracks between injection ports with clay or other nonstaining, removable plugging material. Leave openings at upper ends of cracks for air release.

E. Inject cementitious crack filler through ports sequentially, beginning at one end of area and working to opposite end; where possible, begin at lower end of injection area and work upward. Inject filler until it extrudes from adjacent ports. After port has been injected, plug with clay or other suitable material and begin injecting filler at adjacent port, repeating process until all ports have been injected.

F. Clean cementitious crack filler from face of stone before it sets by scrubbing with water.

G. After cementitious crack filler has set, remove injection ports, plugging material, and excess filler. Patch injection holes and surface of cracks as specified in "Stone Patching" Article. Polish to match adjacent existing stone surface.

3.7 STONE PATCHING

A. Remove deteriorated material and remove adjacent material that has begun to deteriorate. Carefully remove additional material so patch does not have feathered edges but has square or slightly undercut edges on area to be patched and is at least 1/4 inch thick, but not less than recommended in writing by patching compound manufacturer.

B. Mask adjacent mortar joint or rake out for repointing if patch will extend to edge of stone unit.

C. Mix patching compound in individual batches to match each stone unit being patched. Combine one or more colors of patching compound, as needed, to produce exact match.

D. Brush-coat stone surfaces with slurry coat of patching compound according to manufacturer's written instructions.

E. Place patching compound in layers as recommended in writing by patching compound manufacturer, but not less than 1/4 inch or more than 2 inches thick. Roughen surface of each layer to provide a key for next layer.

1. Simple Details: Trowel, scrape, or carve surface of patch to match texture and surrounding surface plane or contour of the stone. Shape and finish surface before or after curing, as determined by testing, to best match existing stone.

2. Carved Details: Build patch up 1/4 inch above surrounding stone, and carve surface to match adjoining stone after patching compound has hardened.

F. Keep each layer damp for 72 hours or until patching compound has set.

G. Remove and replace patches with hairline cracks or that show separation from stone at edges, and those that do not match adjoining stone in color or texture.

3.8 FINAL CLEANING

A. After mortar has fully hardened, thoroughly clean exposed stone surfaces of excess mortar and foreign matter; use wood scrapers, stiff-nylon or -fiber brushes, and clean water, applied by low-pressure spray.

1. Do not use metal scrapers or brushes.
2. Do not use acidic or alkaline cleaners.

END OF SECTION 040140.61

SECTION 061000 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Wood blocking and nailers.

1.2 ACTION SUBMITTALS

A. Product Data:

1. For each type of process and factory-fabricated product.

1.3 INFORMATIONAL SUBMITTALS

A. Material Certificates:

1. 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. Fire-retardant-treated wood.
2. Power-driven fasteners.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: Comply with DOC PS 20 and applicable rules of grading agencies indicated. 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.

B. Maximum Moisture Content:

1. Dimension Lumber: 15 percent for 2-inch nominal thickness or less; 19 percent for more than 2-inch nominal thickness unless otherwise indicated.

2.2 FIRE-RETARDANT-TREATMENT

A. General: Where fire-retardant-treated materials are indicated, materials are to comply with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.

B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to 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.

1. Exterior Type: Treated materials are to comply with requirements specified above for fire-retardant-treated lumber and plywood by pressure process after being subjected to accelerated weathering according to ASTM D2898. Use for exterior locations and where indicated.
2. Interior Type A: Treated materials are to have a moisture content of 28 percent or less when tested according to ASTM D3201/D3201M at 92 percent relative humidity. Use where exterior type is not indicated.

C. Kiln-dry lumber after treatment to maximum moisture content of 19 percent.

D. Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency.

E. Application: Treat all rough carpentry unless otherwise indicated.

2.3 MISCELLANEOUS LUMBER

A. Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:

1. Blocking.
2. Nailers.

B. Dimension Lumber Items: Construction or No. 2 grade lumber of any species.

C. Concealed Boards: 19 percent maximum moisture content and any of the following species and grades:

1. Mixed southern pine or southern pine; No. 2 grade; SPIB.
2. Northern species; No. 2 Common grade; NLGA.

2.4 FASTENERS

A. General: Fasteners are to be of size and type indicated and comply with requirements specified in this article for material and manufacture. Provide nails or screws, in sufficient length, to penetrate not less than 1-1/2 inches into wood substrate.

1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A153/A153M

B. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Set work to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry accurately to other construction. Locate blocking and similar supports to comply with requirements for attaching other construction.

B. 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.

3.2 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.

END OF SECTION 061000

SECTION 064023 - INTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Interior standing and running trim.
   2. Hardwood sheet materials.
   3. Miscellaneous materials.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For interior architectural woodwork.

   1. Include the following:

      a. Dimensioned plans, elevations, and sections.
      b. Attachment details.

   2. Show large-scale details.
   3. Show locations and sizes of furring, blocking, and hanging strips, including blocking and reinforcement concealed by construction and specified in other Sections.
   4. Apply AWI Quality Certification Program label to Shop Drawings.

C. Samples: For each exposed product and for each color and finish specified.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For architectural woodwork manufacturer and Installer.

B. Product Certificates: For the following:

   1. Composite wood products.
   2. Adhesives.

C. Field quality-control reports.

1.4 CLOSEOUT SUBMITTALS

A. Quality Standard Compliance Certificates: AWI Quality Certification Program certificates.

1.5 QUALITY ASSURANCE

A. Fabricator Qualifications: Shop that employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

1. Installer Qualifications: Fabricator of products and Licensed participant in AWI's Quality Certification Program.

B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

1. Build mockups of all interior architectural woodwork as shown on Drawings.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Owner specifically approves such deviations by Change Order.

1.6 FIELD CONDITIONS

A. Environmental Limitations with Humidity Control: Do not deliver or install interior architectural woodwork until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature between 60 and 90 deg F and relative humidity between 25 and 55 percent during the remainder of the construction period.

PART 2 - PRODUCTS

2.1 ARCHITECTURAL WOODWORK, GENERAL

A. Quality Standard: Unless otherwise indicated, comply with the Architectural Woodwork Standards for grades of interior architectural woodwork indicated for construction, finishes, installation, and other requirements.

2.2 INTERIOR STANDING AND RUNNING TRIM FOR OPAQUE FINISH

A. Architectural Woodwork Standards Grade: Premium.

1. Wood Species: Any closed-grain hardwood.
2. Wood Moisture Content: 5 to 10 percent.

2.3 HARDWOOD SHEET MATERIALS

A. Composite Wood Products: Provide materials that comply with requirements of the Architectural Woodwork Standards for each type of interior architectural woodwork and quality grade specified unless otherwise indicated.

1. Medium-Density Fiberboard (MDF): ANSI A208.2, Grade 130

2.4 MISCELLANEOUS MATERIALS

A. Provide self-drilling screws for metal-framing supports, as recommended by metal-framing manufacturer.

B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage.

1. Provide metal expansion sleeves or expansion bolts for post-installed anchors.
2. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.

C. Installation Adhesive: Product recommended by fabricator for each substrate for secure anchorage.

2.5 FABRICATION

A. Fabricate interior architectural woodwork to dimensions, profiles, and details indicated.

1. Ease edges to radius indicated for the following:

a. Edges of Solid-Wood (Lumber) Members: 1/16 inch unless otherwise indicated.

B. Complete fabrication, including assembly, to maximum extent possible before shipment to Project site.

1. Disassemble components only as necessary for shipment and installation.
2. Where necessary for fitting at site, provide allowance for scribing, trimming, and fitting.

PART 3 - EXECUTION

3.1 PREPARATION

A. Before installation, condition interior architectural woodwork to humidity conditions in installation areas for not less than 72 hours prior to beginning of installation.

3.2 INSTALLATION

A. Grade: Install interior architectural woodwork to comply with same grade as item to be installed.

B. Assemble interior architectural woodwork and complete fabrication at Project site to the extent that it was not completed during shop fabrication.

C. Install interior architectural woodwork level, plumb, true in line, and without distortion.

1. Shim as required with concealed shims.
2. Install level and plumb to a tolerance of 1/8 inch in 96 inches.

D. Scribe and cut interior architectural woodwork to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.

E. Anchor interior architectural woodwork to anchors or blocking built in or directly attached to substrates.

1. Secure with countersunk, concealed fasteners and blind nailing.
2. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with interior architectural woodwork.

F. Standing and Running Trim:

1. Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible.
2. Do not use pieces less than 96 inches long, except where shorter single-length pieces are necessary.
3. Scarf running joints and stagger in adjacent and related members.
4. Fill gaps, if any, between top of base and wall with latex sealant, painted to match wall.
5. Install standing and running trim with no more variation from a straight line than 1/8 inch in 96 inches.

END OF SECTION 064023

SECTION 072100 – THERMAL INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Furnishing and installing **EPS geofoam void fill** over existing slab, beneath a concrete topping slab.

1.2 REFERENCES

A. ASTM D6817 – Standard Specification for Rigid Cellular Polystyrene (EPS) Geofoam.

B. ASTM C578 – Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation (reference only).

C. ASTM C272 – Water Absorption of Core Materials.

1.3 ACTION SUBMITTALS

A. Manufacturer's data for geofoam, including nominal density, compressive resistance, moisture absorption, and dimensions.

B. Installation Instructions.

PART 2 - PRODUCTS

2.1 MATERIALS

A. EPS Geofoam: Closed-cell molded block, meeting **ASTM D6817** requirements for Type EPS 15 or EPS 19 as indicated:

1. **EPS 15** – Nominal density 1.0 pcf, compressive resistance 3.6 psi at 1% deformation.
2. **EPS 19** – Nominal density 1.15 pcf, compressive resistance 5.0 psi at 1% deformation.

a. Moisture Absorption: ≤4.0% by volume per ASTM C272.
b. Dimensions: Standard block sizes per manufacturer; field trim to fit tightly.

2.2 MANUFACTURERS

A. Foam-Control® Geofoam (ACH Foam Technologies).

B. InsulFoam® GF (Insulfoam / Carlisle).

C. Plasti-Fab GeoSpec® Geofoam.

D. Drew Foam Geofoam.

E. Or approved equal.

PART 3 - EXECUTION

3.1 PREPARATION

A. Verify existing slab-on-grade is clean, dry, and free of protrusions.

B. Mark layout lines for geofoam placement.

3.2 INSTALLATION

A. Place geofoam blocks in running bond pattern with tight joints; stagger vertical joints where possible.

B. Field cut as necessary using hot wire cutter or fine-tooth saw; maintain clean edges.

C. Protect geofoam from petroleum-based products, solvents, and direct flame.

D. Do not expose geofoam to sunlight for extended periods; cover promptly with bond breaker and/or topping slab.

3.3 PROTECTION

A. Prevent damage from construction traffic by using plywood sheathing or work platforms if early access is required before slab placement.

B. Remove and replace damaged or deformed blocks before placement of topping slab.

END OF SECTION 072100

SECTION 078413 - PENETRATION FIRESTOPPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Penetration firestopping systems.
2. Penetrations in fire-resistance-rated walls.
3. Penetrations in horizontal assemblies.
4. Penetrations in smoke barriers.
5. Exposed penetration firestopping systems.

1.2 ACTION SUBMITTALS

A. Product data: For each type of product.

B. Product Schedule: For each penetration firestopping system. Include location, illustration of firestopping system, and design designation of qualified testing and inspecting agency.

1.3 INFORMATIONAL SUBMITTALS

A. Listed system designs.

1.4 CLOSEOUT SUBMITTALS

A. Installer Certificates: From Installer indicating that penetration firestopping systems have been installed in compliance with requirements and manufacturer's written instructions.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Entity that has been approved by FM Approvals in accordance with FM Approvals 4991 or been evaluated by UL and found to comply with UL's "UL Solutions Qualified Firestop Contractor Program."

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics:

1. Perform penetration firestopping system tests by a qualified testing agency acceptable to authorities having jurisdiction.
2. Test in accordance with testing standards referenced in "Penetration Firestopping Systems" Article. Provide rated systems complying with the following requirements:

    a. Penetration firestop systems installed with products bearing the classification marking of a qualified testing agency.

2.2 PENETRATION FIRESTOPPING SYSTEMS

A. Penetration Firestopping Systems: Systems that resist spread of fire, passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated. Penetration firestopping systems are to be compatible with one another, with the substrates forming openings, and with penetrating items if any.

B. Penetrations in Fire-Resistance-Rated Walls: Penetration firestopping systems with ratings determined in accordance with ASTM E814 or UL 1479.

1. F-Rating: Not less than the fire-resistance rating of the wall penetrated.
2. Membrane Penetrations: Install recessed fixtures such that the required fire resistance will not be reduced.

C. Penetrations in Horizontal Assemblies: Penetration firestopping systems with ratings determined in accordance with ASTM E814 or UL 1479.

1. F-Rating: At least one hour, but not less than the fire-resistance rating of the floor penetrated.
2. T-Rating: At least one hour, but not less than the fire-resistance rating of the floor. The following floor penetrations do not require a T-rating:

    a. Those within the cavity of a wall.
    b. 4-inch or smaller metal conduit penetrating directly into metal-enclosed electrical switchgear.

3. W-Rating: Provide penetration firestopping systems with a Class 1 W-rating in accordance with UL 1479.

D. Penetrations in Smoke Barriers: Penetration firestopping systems with ratings determined in accordance with UL 1479.

1. L-Rating: Not exceeding 5.0 cfm/sq. ft. of penetration opening and no more than 50-cfm cumulative total for any 100 sq. ft. at both ambient and elevated temperatures.

E. Exposed Penetration Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, when tested in accordance with ASTM E84 or UL 723.

F. Accessories: Provide components for each penetration firestopping system that are needed to install fill materials and to maintain ratings required. Use only those components specified by penetration firestopping system manufacturer and approved by qualified testing and inspecting agency for conditions indicated.

PART 3 - EXECUTION

3.1 INSTALLATION OF PENETRATION FIRESTOPPING SYSTEMS

A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of the Work.

B. General: Install penetration firestopping systems to comply with manufacturer's written installation instructions and published drawings for products and applications.

C. Install forming materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings.

1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not forming permanent components of firestopping.

D. Install fill materials by proven techniques to produce the following results:

1. Fill voids and cavities formed by openings, forming materials, accessories and penetrating items to achieve required fire-resistance ratings.
2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
3. For fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.2 IDENTIFICATION

A. Wall Identification: Permanently label walls containing penetration firestopping systems with the words "FIRE AND/OR SMOKE BARRIER - PROTECT ALL OPENINGS," using lettering not less than 3 inches high and with minimum 0.375-inch strokes.

1. Locate in accessible concealed floor, floor-ceiling, or attic space at 15 ft. from end of wall and at intervals not exceeding 30 ft.

B. Penetration Identification: Identify each penetration firestopping system with legible metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches of penetration firestopping system edge so labels are visible to anyone seeking to remove penetrating items or firestopping systems. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:

1. The words "Warning - Penetration Firestopping - Do Not Disturb. Notify Building Management of Any Damage."
2. Contractor's name, address, and phone number.
3. Designation of applicable testing and inspecting agency.
4. Date of installation.

5. Manufacturer's name.
6. Installer's name.

3.3 FIELD QUALITY CONTROL

A. Owner will engage a qualified inspection agency to conduct and report on inspections in accordance with ASTM E2174.

B. Where deficiencies are found or penetration firestopping system is damaged or removed because of testing, repair or replace penetration firestopping system to comply with requirements.

C. Proceed with enclosing penetration firestopping systems with other construction only after inspection reports are issued and installations comply with requirements.

END OF SECTION 078413

SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Silicone joint sealants.
2. Nonstaining silicone joint sealants.
3. Urethane joint sealants.
4. Mildew-resistant joint sealants.
5. Latex joint sealants.

1.2 ACTION SUBMITTALS

A. Product data: For each joint-sealant product.

B. Samples: Manufacturer's standard color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

C. Joint-sealant schedule: Include the following information:

1. Joint-sealant application, joint location, and designation.
2. Joint-sealant manufacturer and product name.
3. Joint-sealant formulation.
4. Joint-sealant color.

1.3 INFORMATIONAL SUBMITTALS

A. Field Quality-Control Reports: For field-adhesion-test reports, for each sealant application tested.

B. Sample warranties.

1.4 CLOSEOUT SUBMITTALS

A. Warranty Documentation:

1. Manufacturers' special warranties.
2. Installer's special warranties.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Authorized representative who is trained and approved by manufacturer.

B. Testing Agency Qualifications: Qualified in accordance with ASTM C1021 to conduct the testing indicated.

1.6 WARRANTY

A. Special Installer's Warranty: Installer agrees to repair or replace 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 agrees to furnish joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:

1. Movement of the structure caused by stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
2. Disintegration of joint substrates from 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 JOINT SEALANTS, GENERAL

A. 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 joint-sealant manufacturer, based on testing and field experience.

B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.2 SILICONE JOINT SEALANTS

A. Silicone, S, NS, 25, T, NT: Single-component, nonsag, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 25, Uses T and NT.

1. Dow Corning Corporation.
2. GE Construction Sealants.
3. May National Associates, Inc., a subsidiary of Sika Corporation U.S.
4. Soudal USA.
5. Tremco Incorporated.

2.3 NONSTAINING SILICONE JOINT SEALANTS

A. Nonstaining Joint Sealants: No staining of substrates when tested in accordance with ASTM C1248.

B. Silicone, Nonstaining, S, NS, 50, NT: Nonstaining, single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 50, Use NT.

1. Dow Corning Corporation.
2. GE Construction Sealants.
3. May National Associates, Inc., a subsidiary of Sika Corporation U.S.
4. Soudal USA.
5. Tremco Incorporated.

2.4 URETHANE JOINT SEALANTS

A. Urethane, M, NS, 25, T, NT: Multicomponent, nonsag, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C920, Type M, Grade NS, Class 25, Uses T and NT.

1. BASF Corporation.
2. Bostik, Inc.
3. LymTal International, Inc.
4. Sika Corporation U.S.

2.5 MILDEW-RESISTANT JOINT SEALANTS

A. Mildew-Resistant Joint Sealants: Formulated for prolonged exposure to humidity with fungicide to prevent mold and mildew growth.

B. Silicone, Mildew Resistant, Acid Curing, S, NS, 25, NT: Mildew-resistant, single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, acid-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 25, Use NT.

1. Dow Corning Corporation.
2. GE Construction Sealants.
3. May National Associates, Inc., a subsidiary of Sika Corporation U.S.
4. Soudal USA.
5. Tremco Incorporated.

2.6 LATEX JOINT SEALANTS

A. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C834, Type OP, Grade NF.

1. Pecora Corporation.
2. BASF Construction Chemicals, LLC, Building Systems.
3. May National Associates, Inc., a subsidiary of Sika Corporation U.S.
4. Sherwin-Williams Company.
5. Tremco Incorporated.

2.7 JOINT-SEALANT BACKING

A. Sealant Backing Material, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Cylindrical Sealant Backings: ASTM C1330, Type C (closed-cell material with a surface skin), Type O (open-cell material), Type B (bicellular material with a surface skin), or any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

C. 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. Provide self-adhesive tape where applicable.

2.8 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.

PART 3 - EXECUTION

3.1 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, 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 the following, but are not limited to:

    a. Concrete.
    b. Masonry.
    c. Stone panels.

3. Remove laitance and form-release agents from concrete.
4. Clean nonporous joint substrate 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 the following, but are not limited to:

    a. Metal.
    b. Glass.
    c. Porcelain enamel.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by 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 or primer 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.

3.2 INSTALLATION OF JOINT SEALANTS

A. General: 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 bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

E. 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.

F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants in accordance with requirements specified in subparagraphs 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 profile in accordance with Figure 8A in ASTM C1193 unless otherwise indicated.

G. 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.

H. 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, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.3 JOINT-SEALANT SCHEDULE

A. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal non-traffic surfaces not subject to significant movement.

1. Joint Locations:

a. Perimeter joints between interior wall surfaces and frames of all doors.
b. Vertical joints on exposed surfaces of walls and partitions.
c. Joints between dissimilar materials.

2. Joint Sealant: Acrylic Latex
3. Joint-Sealant Color: As selected by Architect from manufacturer’s full range of colors.

B. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal non-traffic surfaces.

1. Joint Locations:

a. Joints between plumbing fixtures and adjoining walls and floors.
b. Tile control and expansion joints.

2. Joint Sealant: Silicone, mildew resistant, acid curing, S, NS, 25, NT.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

END OF SECTION 079200

SECTION 092216 - NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Non-load-bearing steel framing systems for interior partitions.
2. Suspension systems for interior ceilings and soffits.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.3 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each type of code-compliance certification for studs and tracks.

B. Evaluation reports for power-actuated fasteners.

1.4 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.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, provide materials and construction identical to those tested in assembly indicated, in accordance with ASTM E119 by an independent testing agency.

B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated on Drawings, in accordance with ASTM E90 and classified in accordance with ASTM E413 by an independent testing agency.

2.2 FRAMING SYSTEMS

A. Framing Members, General: Comply with AISI S220 for conditions indicated.

1. Steel Sheet Components: Comply with AISI S220 requirements for metal unless otherwise indicated
2. Protective Coating: Comply with AISI S220; ASTM A653/A653M, G40; or coating with equivalent corrosion resistance. Galvannealed products are unacceptable.

    a. Coating demonstrates equivalent corrosion resistance with an evaluation report acceptable to authorities having jurisdiction.

B. Studs and Track: AISI S220.

1. Minimum Base-Steel Thickness: 0.0179 inch (25 gauge).
2. Depth: As indicated on Drawings

C. Slip-Type Head Joints: Where indicated, provide one of the following:

1. 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.
2. Single Long-Leg Track System: 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.
3. Double-Track System: 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.
4. 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.

D. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.

1. Minimum Base-Steel Thickness: 0.0296 inch.

E. Cold-Rolled Channel Bridging: Steel, 0.0538-inch minimum base-steel thickness, with minimum 1/2-inch-wide flanges.

1. Depth: 1-1/2 inches.
2. Clip Angle: Not less than 1-1/2 by 1-1/2 inches, 0.068-inch thick, galvanized steel.

2.3 SUSPENSION SYSTEMS

A. Tie Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper, 0.062-inch-diameter wire, or double strand of 0.048-inch-diameter wire.

B. Hanger Attachments to Concrete:

1. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC193 as appropriate for the substrate.

    a. Uses: Securing hangers to structure.

b. Material for Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B633 or ASTM F1941, Class Fe/Zn 5, unless otherwise indicated.
c. Material for Exterior or Interior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 stainless steel bolts, ASTM F593, and nuts, ASTM F594.

C. Wire Hangers: ASTM A641/A641M, Class 1 zinc coating, soft temper, 0.16 inch in diameter.

D. Carrying Channels (Main Runners): Cold-rolled, commercial-steel sheet with a base-steel thickness of 0.0538 inch and minimum 1/2-inch-wide flanges.

1. Depth: 1-1/2 inches.

E. Furring Channels (Furring Members):

1. Hat-Shaped, Rigid Furring Channels: 7/8 inch deep.

a. Minimum Base-Steel Thickness: 0.0179 inch.

2.4 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards.

1. Fasteners for Steel Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Installation Standard: ASTM C754.

1. Gypsum Plaster Assemblies: Also comply with requirements in ASTM C841 that apply to framing installation.
2. Gypsum Board Assemblies: Also comply with requirements in ASTM C840 that apply to framing installation.

B. Install framing and accessories plumb, square, and true to line, with connections securely fastened.

C. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.

D. Install bracing at terminations in assemblies.

E. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

3.2 INSTALLATION OF FRAMING SYSTEMS

A. Install framing system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.

B. Install studs so flanges within framing system point in same direction.

C. Install tracks at floors and overhead supports. Extend 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.

1. 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.
2. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.

    a. Firestop Track: Where indicated, install to maintain continuity of fire-resistance-rated assembly indicated.

3. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.

D. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch from the plane formed by faces of adjacent framing.

3.3 INSTALLATION OF SUSPENSION SYSTEMS

A. Install suspension system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.

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.

    a. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.

2. 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.

    a. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced installation standards.

3. 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.
4. Do not attach hangers to steel roof deck.
5. Do not attach hangers to permanent metal forms. Furnish cast-in-place hanger inserts that extend through forms.
6. Do not attach hangers to rolled-in hanger tabs of composite steel floor deck.
7. Do not connect or suspend steel framing from ducts, pipes, or conduit.

D. Fire-Resistance-Rated Assemblies: Wire tie furring channels to supports.

3.4 FIELD QUALITY CONTROL

A. Installation Tolerances: 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.

END OF SECTION 092216

SECTION 092300 - GYPSUM PLASTERING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Expanded metal lath.
2. Accessories.
3. Base-coat gypsum plaster materials.
4. Finish-coat gypsum plaster materials.

1.2 ACTION SUBMITTALS

A. Product data: For each type of product.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Resistance Ratings: Where indicated on Drawings, provide gypsum plaster assemblies identical to those of assemblies tested for fire resistance in accordance with ASTM E119 by a qualified testing agency.

2.2 EXPANDED METAL LATH

A. Expanded Metal Lath: ASTM C847; cold-rolled carbon-steel sheet, hot-dip galvanized with ASTM A653/A653M G60 zinc coating.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Alabama Metal Industries Corporation; a Gibraltar Industries company.
b. CEMCO.
c. ClarkDietrich Building Systems.
d. MarinoWARE.
e. Phillips Manufacturing Co.

2. Self-Furring Diamond-Mesh Lath: Dimpled.

a. Weight: 2.5 lb/sq. yd.

3. 3/8-Inch (10-mm) Rib Lath: 3.4 lb/sq. yd.

2.3 ACCESSORIES

A. General: Comply with requirements in ASTM C841, and coordinate depth of trim and accessories with thicknesses and number of plaster coats required.

B. Metal Accessories:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Alabama Metal Industries Corporation; a Gibraltar Industries company.
    b. CEMCO.
    c. ClarkDietrich Building Systems.
    d. MarinoWARE.
    e. Phillips Manufacturing Co.

2. Cornerite: Fabricated from expanded metal lath, hot-dip galvanized with ASTM A653/A653M G60 zinc coating.
3. Cornerbeads: Fabricated from zinc-coated (galvanized) steel.

    a. Smallnose cornerbead with expanded flanges; use unless otherwise indicated.
    b. Smallnose cornerbead with expanded flanges reinforced by perforated stiffening rib; use for finishing unit masonry corners.

4. Casing Beads: Fabricated from zinc-coated (galvanized) steel; square-edged style; with expanded flanges.
5. Control Joints: Fabricated from zinc-coated (galvanized) steel; one-piece-type, folded pair of unperforated screeds in M-shaped configuration; with perforated flanges and removable protective tape on exposed face of control joint.
6. One-Piece Expansion Joints: Fabricated from zinc-coated (galvanized) steel; folded pair of unperforated screeds in M-shaped configuration; with expanded flanges.
7. Two-Piece Expansion Joints: Fabricated from zinc-coated (galvanized) steel; formed to produce slip-joint and square-edged reveal that is adjustable from 1/4 to 5/8 inch wide; with perforated flanges.

2.4 BASE-COAT GYPSUM PLASTER MATERIALS

A. Gypsum Neat Plaster: ASTM C28/C28M, for use with job-mixed aggregates.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. National Gypsum Company; Gold Bond two-Way Hardwall Gypsum Plaster
    b. United States Gypsum Company (USG); Red Top Gypsum Plaster

B. Aggregates for Base-Coat Plasters: ASTM C35, sand.

2.5 FINISH-COAT GYPSUM PLASTER MATERIALS

A. Gypsum Ready-Mixed Finish Plaster: Manufacturer's standard, factory-mixed, gauged, interior finish.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. National Gypsum Company; Gold Bond Kal-Kote Smooth Finish Plaster.
b. United States Gypsum Company (USG); Red Top Finish Plaster.

B. Lime: ASTM C206, Type S, special finishing hydrated lime.

C. Lime: ASTM C206, Type N, normal finishing hydrated lime.

2.6 MISCELLANEOUS MATERIALS

A. Water for Mixing and Finishing Plaster: Potable and free of substances capable of affecting plaster set or of damaging plaster, lath, or accessories.

B. Bonding Compound: ASTM C631; recommended by plaster manufacturer for application indicated.

C. Fasteners for Attaching Metal Lath to Substrates: ASTM C841.

D. Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper, not less than 0.0475-inch diameter unless otherwise indicated.

E. Mix Additives: Use gypsum plaster accelerator and retarder products of plaster manufacturer if required by Project conditions. Use only additives that plaster manufacturer recommends in writing for use with plaster to which it is added.

2.7 PLASTER MIXES

A. Mixing: Comply with ASTM C842 and manufacturer's written instructions for applications indicated.

B. Mix Additives: Use accelerators and retarders, if required by Project conditions, in accordance with manufacturer's written instructions.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Fire-Resistance-Rated Assemblies: Install components in accordance with requirements for design designations from listing organization and publication indicated on Drawings.

3.2 INSTALLATION OF EXPANDED METAL LATH

A. Expanded Metal Lath: Install in accordance with ASTM C841.

3.3 INSTALLATION OF ACCESSORIES

A. General: Install in accordance with ASTM C841.

B. Cornerbeads: Install at external corners.

C. Casing Beads: Install at terminations of plasterwork, except where plaster passes behind and is concealed by other work and where metal screeds, bases, or frames act as casing beads.

D. Control Joints: Locate as indicated on Drawings.

E. Expansion Joints: Locate where an expansion joint occurs in supporting construction.

3.4 APPLICATION OF PLASTER

A. General: Comply with ASTM C842.

B. Bonding Compound: Apply on unit masonry and monolithic concrete substrates for direct application of plaster.

3.5 INSTALLATION OF BASE-COAT GYPSUM PLASTER MATERIALS

A. Over Expanded Metal Lath:

1. Scratch Coat: Gypsum neat plaster with job-mixed sand.
2. Brown Coat: Gypsum neat plaster with job-mixed sand.

B. Over Unit Masonry: Gypsum neat plaster with job-mixed sand.

3.6 INSTALLATION OF FINISH-COAT GYPSUM PLASTER MATERIALS

A. Smooth-Troweled Finishes:

1. Materials: Gypsum ready-mixed finish plaster applied to match existing texture.
2. Locations: Provide smooth-troweled finish in locations where adjacent existing plaster is same texture.

B. Textured Finishes:

1. Materials: Gypsum ready-mixed finish plaster applied to match existing texture.
2. Locations: Provide textured finish in locations where adjacent existing plaster is same texture.

C. Concealed Plaster:

1. Where plaster application is concealed behind built-in cabinets, similar furnishings, and equipment, apply finish coat.
2. Where plaster application is concealed above suspended ceilings and in similar locations, omit finish coat.
3. Where plaster application is used as a base for adhesive application of tile and similar finishes, omit finish coat.

3.7 REPAIR

A. Repair or replace work to eliminate cracks, dents, blisters, buckles, crazing and check cracking, dry outs, efflorescence, sweat outs, and similar defects and where bond to substrate has failed.

END OF SECTION 092300

SECTION 092900 - GYPSUM BOARD

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Interior gypsum board.
2. Tile backing panels.

1.2 ACTION SUBMITTALS

A. Product data: For each type of product.

B. Samples: For each texture finish indicated on same backing indicated for Work.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated in accordance with ASTM E119 by an independent testing agency.

2.2 GYPSUM BOARD, GENERAL

A. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. American Gypsum.
2. Georgia-Pacific Building.
3. National Gypsum Company.
4. PABCO Gypsum.
5. USG.

2.3 INTERIOR GYPSUM BOARD

A. Gypsum Board, Type X: ASTM C1396/C1396M.

1. Thickness: 5/8 inch.

2. Long Edges: Tapered and featured (rounded or beveled) for prefilling.

B. Gypsum Ceiling Board: ASTM C1396/C1396M.

1. Thickness: 5/8 inch.
2. Long Edges: Tapered.

C. Mold-Resistant Gypsum Board: ASTM C1396/C1396M. With moisture- and mold-resistant core and paper surfaces.

1. Core: 5/8 inch, Type X.
2. Long Edges: Tapered.
3. Mold Resistance: ASTM D3273, score of 10 as rated in accordance with ASTM D3274.

2.4 TILE BACKING PANELS

A. Cementitious Backer Units: ANSI A118.9 and ASTM C1288 or ASTM C1325, with manufacturer's standard edges.

1. Thickness: 1/2 inch.
2. Mold Resistance: ASTM D3273, score of 10 as rated in accordance with ASTM D3274.

2.5 TRIM ACCESSORIES

A. Interior Trim: ASTM C1047.

1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized-steel sheet.
2. Shapes:

a. Cornerbead.
b. LC-Bead: J-shaped; exposed long flange receives joint compound.
c. L-Bead: L-shaped; exposed long flange receives joint compound.
d. U-Bead: J-shaped; exposed short flange does not receive joint compound.
e. Expansion (control) joint.

2.6 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C475/C475M.

B. Joint Tape:

1. Interior Gypsum Board: Paper.
2. Tile Backing Panels: As recommended by panel manufacturer.

C. Joint Compound for 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, rounded 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 drying-type, all-purpose compound.

    a. Use setting-type compound for installing paper-faced metal trim accessories.

3. Fill Coat: For second coat, use drying-type, all-purpose compound.
4. Finish Coat: For third coat, use drying-type, all-purpose compound.
5. Skim Coat: For final coat of Level 5 finish, use drying-type, all-purpose compound.

D. Joint Compound for Tile Backing Panels:

1. Cementitious Backer Units: As recommended by backer unit manufacturer.

2.7 AUXILIARY MATERIALS

A. Provide auxiliary materials that comply with referenced installation standards and manufacturer's written instructions.

B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.

C. Steel Drill Screws: ASTM C1002 unless otherwise indicated.
1. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.

PART 3 - EXECUTION

3.1 INSTALLATION OF PANELS

A. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

B. Comply with ASTM C840.

C. 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.

D. 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.

3.2 FINISHING OF GYPSUM BOARD

A. Prefill open joints, rounded or beveled edges, and damaged surface areas.

B. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.

C. Gypsum Board Finish Levels: Finish panels to levels indicated below and in accordance with ASTM C840:

1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
2. Level 5: At panel surfaces that will be exposed to view unless otherwise indicated.

a. Primer and its application to surfaces are specified in Section 099123 "Interior Painting."

D. Cementitious Backer Units: Finish according to manufacturer's written instructions.

3.3 PROTECTION

A. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

B. Remove and replace panels that are wet, moisture damaged, and mold damaged.

END OF SECTION 092900

SECTION 096623 - RESINOUS MATRIX TERRAZZO FLOORING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes thin-set, epoxy-resin terrazzo flooring.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1. Review methods and procedures related to terrazzo including, but not limited to, the following:

1. Inspect and discuss condition of substrate and other preparatory work performed by other trades.
2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
3. Review special terrazzo designs and patterns.
4. Review dust control procedures.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Include terrazzo installation requirements. Include plans, sections, component details, and relationship to other work.

C. Samples for Verification: Produce custom terrazzo samples to match existing terrazzo, as indicated on the Drawings, as closely as possible. Label each terrazzo sample to identify manufacturer's matrix color and aggregate types, sizes, and proportions. Prepare samples of same thickness and from same material to be used for the Work in size indicated below:

1. Epoxy Terrazzo: 6 inch square samples.
2. Accessories: 6 inch long samples of each exposed strip item required

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Material certificates.

C. Preinstallation moisture-testing reports.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.6 QUALITY ASSURANCE

A. Installer Qualifications:

1. Engage an installer who is a contractor member of NTMA.
2. Engage an installer who is certified in writing by terrazzo manufacturer as qualified to install manufacturer's products.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. NTMA Standards: Comply with NTMA's written recommendations for terrazzo type indicated unless more stringent requirements are specified.

2.2 EPOXY-RESIN TERRAZZO

A. Epoxy-Resin Terrazzo: Comply with manufacturer's written instructions for matrix and aggregate proportions and mixing. Subject to compliance with requirements, provide products by one of the following:

1. Desco Coatings, Inc.
2. Terrazzo and Marble Supply

B. Mix Color and Pattern: Custom design mix to match existing at Music Hall and Little Theatre for each type as indicated on the Drawings.

C. Materials:

1. Moisture-Vapor-Emission-Control Membrane: Two-component, high-solids, high-density, low-odor, epoxy-based membrane-forming product produced by epoxy terrazzo manufacturer that reduces moisture emission from concrete substrate to not more than 3 lb of water/1000 sq. ft. in 24 hours.
2. Substrate-Crack-Suppression Membrane: Product of terrazzo-resin manufacturer, having minimum 120 percent elongation potential according to ASTM D412.

a. Reinforcement: Fiberglass scrim as recommended by the manufacturer.

3. Primer: Manufacturer's product recommended for substrate and use indicated.
4. Epoxy-Resin Matrix: Manufacturer's standard recommended for use indicated and in color required for mix indicated.
5. Finishing Grout: Resin based.

2.3 STRIP MATERIALS

A. Thin-Set Divider Strips: L-type angle in depth required for topping thickness indicated.

1. Material: Brass or Aluminum to match existing.
2. Top Width: 1/8 inch or match existing.

B. Heavy-Top Divider Strips: L-type angle in depth required for topping thickness indicated.

1. Bottom-Section Material: Galvanized steel.
2. Top-Section Material: Brass or Aluminum to match existing.
3. Top-Section Width: 1/8 inch or match existing.

C. Control-Joint Strips: Separate, double L-type angles, positioned back-to-back, that match material and color of divider strips and in depth required for topping thickness indicated.

2.4 MISCELLANEOUS ACCESSORIES

A. Strip Adhesive: Epoxy-resin adhesive recommended by adhesive manufacturer for this use.

B. Anchoring Devices: Provide mechanical anchoring devices or adhesives for strip materials as recommended by manufacturer and as required for secure attachment to substrate.

C. Patching and Fill Material: Terrazzo manufacturer's resinous product approved and recommended by manufacturer for application indicated.

D. Joint Compound: Terrazzo manufacturer's resinous product approved and recommended by manufacturer for application indicated.

E. Resinous Matrix Terrazzo Cleaner: Chemically neutral cleaner with pH factor between 7 and 10 that is biodegradable, phosphate free, and recommended by sealer manufacturer for use on terrazzo type indicated.

F. Sealer: Slip- and stain-resistant, penetrating-type sealer that is chemically neutral; does not affect terrazzo color or physical properties; and is recommended by sealer manufacturer.

1. Surface Friction: Not less than 0.6 according to ASTM D2047.
2. Acid-Base Properties: With pH factor between 7 and 10.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean substrates of substances, including oil, grease, and curing compounds, that might impair terrazzo bond. Provide clean, dry, and neutral substrate for terrazzo application.

B. Concrete Slabs:

1. Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with terrazzo.

    a. Shot-blast surfaces with an apparatus that abrades the concrete surface, contains the dispensed shot within the apparatus, and recirculates the shot by vacuum pickup.
    b. Repair damaged and deteriorated concrete according to terrazzo manufacturer's written instructions.
    c. Use patching and fill material to fill holes and depressions in substrates according to terrazzo manufacturer's written instructions.

C. Verify that concrete substrates are dry and moisture-vapor emissions are within acceptable levels according to manufacturer's written instructions.

D. Moisture-Vapor-Emission-Control Membrane: Install according to manufacturer's written instructions.

1. Install on concrete substrates that incorporate lightweight aggregates.

E. Substrate-Crack-Suppression Membrane: Install to isolate and suppress substrate cracks according to manufacturer's written instructions.

1. Prepare and prefill substrate cracks with membrane material.
2. Install membrane at substrate cracks in areas to receive terrazzo.
3. Reinforce membrane with fiberglass scrim as recommended by the manufacturer.

F. Protect other work from water and dust generated by grinding operations. Control water and dust to comply with environmental protection regulations.

1. Erect and maintain temporary enclosures and other suitable methods to limit water damage and dust migration and to ensure adequate ambient temperatures and ventilation conditions during installation.

3.2 EPOXY-RESIN TERRAZZO INSTALLATION

A. Comply with NTMA's written recommendations for terrazzo and accessory installation.

B. Strip Materials:

1. Divider and Control-Joint Strips:

    a. Locate divider strips in locations indicated or match existing.
    b. Install control-joint strips back to back and directly above concrete-slab control joints.
    c. Install control-joint strips with 1/4-inch gap between strips, and install sealant in gap.
    d. Install strips in adhesive setting bed without voids below strips, or mechanically anchor strips as required to attach strips to substrate, as recommended by strip manufacturer.

C. Apply primer to terrazzo substrates according to manufacturer's written instructions.

D. Place, rough grind, grout, cure grout, fine grind, and finish terrazzo according to manufacturer's written instructions.

1. Installed Thickness: 1/4 inch or 3/8 inch nominal to match existing.
2. Terrazzo Finishing: Ensure that matrix components and fluids from grinding operations do not stain terrazzo by reacting with divider and control-joint strips.

a. Rough Grinding: Grind with 24-grit or finer stones or with comparable diamond abrasives. Follow initial grind with 60/80-grit stones or with comparable diamond abrasives.
b. Grouting: Before grouting, clean terrazzo with water, rinse, and allow to dry. Apply and cure epoxy grout.
c. Fine Grinding/Polishing: Delay fine grinding until heavy trade work is complete and construction traffic through area is restricted. Grind with 80- or 120-grit stones or with comparable diamond abrasives until grout is removed from surface and to match existing finish.

3. Installation Tolerance: Limit variation in terrazzo surface from level to 1/4 inch in 10 feet; noncumulative.

E. Cut out and replace terrazzo areas that evidence lack of bond with substrate. Cut out terrazzo areas in panels defined by strips and replace to match adjacent terrazzo, or repair panels according to NTMA's written recommendations, as approved by Architect.

F. Cleaning:

1. Remove grinding dust from installation and adjacent areas.
2. Wash surfaces with cleaner according to NTMA's written recommendations and manufacturer's written instructions; rinse surfaces with water and allow them to dry thoroughly.

G. Sealing:

1. Seal surfaces according to NTMA's written recommendations.
2. Apply sealer according to sealer manufacturer's written instructions.

END OF SECTION 096623

SECTION 097513 - STONE WALL FACING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Dimension stone paneling on interior walls.

1.2 ACTION SUBMITTALS

A. Product Data: For each variety of stone, stone accessory, and manufactured product.

B. Shop Drawings: Show fabrication and installation details for stone paneling system, including dimensions and profiles of stone units.

C. Samples:

1. For each stone type indicated. Include three or more Samples in each set and show the full range of variations in appearance characteristics in completed Work.
2. For each color of grout and sealant required.

1.3 QUALITY ASSURANCE

A. Mockups: Build mockups to demonstrate aesthetic effects and to set quality standards for fabrication and installation.

1. Build mockups for the following kinds of stone paneling:

a. Typical stone wainscot paneling, not less than (1) existing panel width by full wainscot height.

B. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations for Stone: Obtain stone from a single quarry, whether specified in this Section or in another Section of the Specifications.

2.2 PERFORMANCE REQUIREMENTS

A. General: Design stone anchors and anchoring systems according to ASTM C1242.

B. Seismic Performance: Stone paneling system shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

1. Component Importance Factor: 1.5.

2.3 MARBLE

A. Material Standard: Comply with ASTM C503/C503M

B. Varieties and Sources: Subject to compliance with requirements, provide the following:

1. Anneilen Fleuri Grey: Carthage Stoneworks.
   a. Carthage Stoneworks
      3125 Roanoke Road
      Kansas City, MO 64111
      P: 816-561-7020

C. Finish: Polished to match Architect's sample.

2.4 SETTING MATERIALS

A. Portland Cement: ASTM C150/C150M, Type I or Type II.

1. Low-Alkali Cement: Not more than 0.60 percent total alkali when tested according to ASTM C114.

B. Hydrated Lime: ASTM C207, Type S.

C. Aggregate: ASTM C144.

D. Water: Potable.

2.5 GROUT

A. Grout Colors: To be selected by Architect from Manufacturer's full range of colors.

B. Sand- Portland Cement Grout: ANSI A108.10, composed of white or gray cement and white or colored aggregate to produce required color.

C. Standard Cement Grout: ANSI A118.6, packaged.

D. Water-Cleanable Epoxy Grout: ANSI A118.3, packaged, chemical-resistant, water-cleanable, tile-setting and -grouting epoxy.

2.6 SEALANTS

A. Joint Sealants: Manufacturer's standard sealants that comply with applicable requirements in Section 079200 "Joint Sealants" and will not stain the stone they are applied to.

2.7 STONE ANCHORS AND ATTACHMENTS

A. Fabricate anchors from stainless steel, ASTM A240/A240M or ASTM A666, Type 304.

1. Fasteners for Stainless-Steel Anchors: Annealed stainless-steel bolts, nuts, and washers; ASTM F593 for bolts and ASTM F594 for nuts, Alloy Group 1.

B. Fabricate dowels from stainless steel, ASTM A276, Type 304.

C. Wire Tiebacks: No. 9 AWG copper or copper-alloy or 0.120-inch-diameter, stainless-steel wire.

2.8 STONE ACCESSORIES

A. Temporary Setting Shims: Rigid plastic shims, nonstaining to stone, sized to suit joint thickness.

B. Cleaner: Stone cleaner specifically formulated for stone types, finishes, and applications indicated, as recommended by stone producer. Do not use cleaning compounds containing acids, caustics, harsh fillers, or abrasives.

C. Stone Sealer: Colorless, stain-resistant sealer that does not affect color or physical properties of stone surfaces, as recommended by stone producer for application indicated.

2.9 FABRICATION OF STONE

A. Select stone for intended use to prevent fabricated units from containing cracks, seams, and starts that could impair structural integrity or function.

B. Cut stone to produce pieces of thickness, size, and shape indicated and to comply with fabrication and construction tolerances recommended by applicable stone association.

1. Where items are installed with adhesive or where stone edges are visible in the finished work, make items uniform in thickness and of identical thickness for each type of item; gage back of stone if necessary.
2. Dress joints straight and at right angle to face unless otherwise indicated.

C. Nominal Thickness: 7/8 inch, to match existing, unless otherwise indicated.

D. Cut stone to produce uniform joints to match existing joint widths and in locations indicated.

E. Pattern Arrangement: Fabricate and arrange panels with veining and other natural markings to comply with the following requirements:

1. Arrange panels in blend pattern to match existing adjacent panels.

2.10 MIXES

A. Spotting Plaster: Stiff mix of molding plaster and water.

B. Mortar, General: Comply with referenced standards and with manufacturers' written instructions for mix proportions, mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures needed to produce mortar of uniform quality and with optimum performance characteristics.

1. Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated. Do not use calcium chloride.
2. Combine and thoroughly mix cementitious materials, water, and aggregates in a mechanical batch mixer unless otherwise indicated. Discard mortar when it has reached initial set.

C. Setting Mortar: Comply with ASTM C270, Proportion Specification, Type N.

D. Grout: Comply with mixing requirements of referenced ANSI standards and with manufacturer's written instructions.

PART 3 - EXECUTION

3.1 INSTALLATION OF STONE, GENERAL

A. Do necessary field cutting as stone is set. Use power saws with diamond blades to cut stone. Cut lines straight and true, with edges eased slightly to prevent snipping.

B. Contiguous Work: Provide reveals and openings as required to accommodate contiguous work.

C. Set stone to comply with requirements indicated. Install anchors, supports, fasteners, and other attachments indicated or necessary to secure stone in place. Shim and adjust anchors, supports, and accessories to set stone accurately in locations indicated, with edges and faces aligned according to established relationships and indicated tolerances.

D. Provide expansion, control, and pressure-relieving joints of widths and at locations indicated.

1. Sealing of expansion and other joints is specified in Section 079200 "Joint Sealants."
2. Keep expansion joints free of plaster, mortar, grout, and other rigid materials.

3.2 CONSTRUCTION TOLERANCES

A. Variation from Plumb: For vertical lines and surfaces, do not exceed 1/8 inch in 96 inches, 1/4 inch maximum.

B. Variation from Level: For lintels, sills, chair rails, horizontal bands, horizontal grooves, and other conspicuous lines, do not exceed 1/8 inch in 10 feet, 1/4 inch in 20 feet, 3/8 inch maximum.

C. Variation in Joint Width: Do not vary from average joint width more than plus or minus 1/16 inch or one-fourth of nominal joint width, whichever is less.

D. Variation in Plane between Adjacent Stone Units (Lipping): Do not exceed 1/32-inch difference between planes of adjacent units.

3.3 INSTALLATION OF STONE FACING

A. Set units firmly against setting spots. Locate setting spots at anchors and spaced not more than 18 inches apart across back of unit, but provide no fewer than one setting spot per 2 sq. ft. unless otherwise indicated.

B. Set units with anchors securely attached to stone and to backup surfaces. Comply with anchoring recommendations in ASTM C1242.

C. Minimum Anchors: Provide a minimum of four anchors per panel up to 12 sq. ft. in face area, plus a minimum of two additional anchors for each additional 8 sq. ft.

D. Grout joints after setting stone.

3.4 GROUTING JOINTS

A. Grout stone to comply with ANSI A108.10.

1. Use unsanded grout mixture for joints 1/8 inch and narrower.

B. Remove temporary shims before grouting.

C. Tool joints uniformly and smoothly with plastic tool.

3.5 INSTALLATION OF JOINT SEALANT

A. Prepare joints and apply sealants to comply with applicable requirements in Section 079200 "Joint Sealants." Remove temporary shims before applying sealants.

3.6 ADJUSTING AND CLEANING

A. In-Progress Cleaning: Clean stone paneling as work progresses. Remove adhesive, grout, mortar, and sealant smears immediately.

B. Clean stone paneling no fewer than amount of days needed per manufacturer’s recommendations after completion of grouting and pointing, using clean water and soft rags or stiff-bristle fiber brushes. Do not use wire brushes, acid-type cleaning agents, cleaning compounds with caustic or harsh fillers, or other materials or methods that could damage stone.

C. Sealer Application: Apply stone sealer to comply with stone producer's and sealer manufacturer's written instructions and recommendations.

END OF SECTION 097513

SECTION 099123 - INTERIOR PAINTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes surface preparation and the application of paint systems on interior substrates:

1. Gypsum Board.
2. Plaster.
3. Wood.
4. Ferrous Metal.
5. ASJ Insulation Covering.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each type of topcoat product.

C. Product Schedule: Use same designations indicated on Drawings and in the Interior Painting Schedule to cross-reference paint systems specified in this Section. Include color designations.

D. Product List: For each product indicated. Include printout of current “MPI Approved Products List” for each product category specified in the Interior Painting Schedule, with the proposed product highlighted.

1.3 QUALITY ASSURANCE

A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1.4 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: 5 percent, but not less than 1 gallon of each material and color applied.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with requirements, provide products listed in the Interior Painting Schedule for the paint designation indicated.

2.2 PAINT PRODUCTS, GENERAL

A. MPI Standards: Provide products that comply with MPI standards indicated and that are listed in its “MPI Approved Products List.”

B. Material Compatibility:

1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. 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.

C. Colors: As indicated in the Finish Materials Legend on the Drawings.

1. Refer to finish legend and schedule for location of surface areas that will be painted with deep tones.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for 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: 12 percent.
2. Fiber-Cement Board: 12 percent.
3. Masonry (Clay and CMU): 12 percent.
4. Wood: 15 percent
5. Gypsum Board: 12 percent.
6. Plaster: 12 percent.

C. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.

D. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

2. When painting an existing surface, paint entire wall, etc., to the nearest inside corner.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in “MPI 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.

C. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

D. 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 reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.

3.3 INSTALLATION

A. Apply paints according to manufacturer's written instructions and to recommendations in “MPI Manual.”

B. 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.

3.4 CLEANING AND PROTECTION

A. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

B. 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.

C. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.5 INTERIOR PAINTING SCHEDULE

A. PT-01:

1. Substrates:
   a. Gypsum Board and Plaster Walls.

2. Two finish coats over a primer.

    a. Preparation: Remove all dirt, grime and all other forms of contamination.
    b. Primer: Sherwin-Williams Premium Wall and Wood Primer, B28W08111, applied at a wet film thickness of 4 mils for a dry film thickness of not less than 1.8 mils per coat.
    Finish: Sherwin-Williams Emerald Interior Satin Latex, K37 Series, applied at a wet film thickness of 4 mils for a dry film thickness of not less than 1.6 mils per coat.

B. PT-02, PT-06, PT-08:

1. Substrates:
    a. Gypsum Board and Plaster Walls.
    b. MDF Trim.
    c. Wood Trim

2. Protective topcoat over two finish coats over a primer.

    a. Preparation: Remove all dirt, grime and all other forms of contamination.
    b. Primer: Rust-Oleum Modern Masters Cool Tone Primer, applied at a wet film thickness of 4 mils for a dry film thickness of not less than 1.5 mils per coat.
    c. Finish: Rust-Oleum Modern Masters Metallic Paint Satin, applied at a wet film thickness of 5-5.5 mils for a dry film thickness of not less than 1.5 mils per coat.
    d. Topcoat: Rust-Oleum Modern Masters MasterClear Protective Clear Topcoat Satin, applied at a wet film thickness of 5 mils for a dry film thickness of not less than 1.5 mils per coat.

C. PT-03, PT-04, PT-05, PT-07:

1. Substrates:

    a. Gypsum Board and Plaster Walls.
    b. Gypsum Board and Plaster Ceilings.
    c. MDF Trim.
    d. Wood Trim.

2. Protective topcoat over three finish coats over a primer.

    a. Preparation: Remove all dirt, grime and all other forms of contamination.
    b. Primer: Rust-Oleum Modern Masters Warm Tone Primer, applied at a wet film thickness of 4 mils for a dry film thickness of not less than 1.5 mils per coat.
    c. Finish: Rust-Oleum Modern Masters Metallic Paint Satin, applied at a wet film thickness of 5-5.5 mils for a dry film thickness of not less than 1.5 mils per coat.
    d. Topcoat: Rust-Oleum Modern Masters MasterClear Protective Clear Topcoat Satin, applied at a wet film thickness of 5 mils for a dry film thickness of not less than 1.5 mils per coat.

D. PT-09, PT-10, PT-11:

1. Substrates:

a. Wood Doors.
b. Wood Door Trim.
c. Wood Mirror Frames

2. Two finish coats over a primer.

a. Preparation: Remove all dirt, grime and all other forms of contamination.
b. Primer: Sherwin-Williams Premium Wall and Wood Primer, B28W08111, applied at a wet film thickness of 4 mils for a dry film thickness of not less than 1.8 mils per coat.
c. Finish: Sherwin-Williams Emerald Urethane Trim Enamel Satin K37-2750/1750/1760 Series, applied at a wet film thickness of 4 mils for a dry film thickness of not less than 1.2 mils per coat.

E. PT-12, PT-13, PT-14:

1. Substrates:

a. Metal Vents.
b. Metal Ceiling Cover Plates
c. Metal Access Panels

2. Protective topcoat over three finish coats over a primer.

a. Preparation: Remove all dirt, grime and all other forms of contamination.
b. Primer: Rust-Oleum Sierra Performance S-70 Water-Based Epoxy Primer, applied at a wet film thickness of 5-7 mils for a dry film thickness of not less than 2-3 mils per coat.
c. Finish: Rust-Oleum Modern Masters Metallic Paint Satin, applied at a wet film thickness of 5-5.5 mils for a dry film thickness of not less than 1.5 mils per coat.
d. Topcoat: Rust-Oleum Modern Masters MasterClear Protective Clear Topcoat Satin, applied at a wet film thickness of 5 mils for a dry film thickness of not less than 1.5 mils per coat.

F. PT-15:

1. Substrates:

a. Metal Radiators.

2. Protective topcoat over two finish coats over a primer.

a. Preparation: Remove all dirt, grime and all other forms of contamination.
b. Primer: Rust-Oleum Sierra Performace S-70 Water-Based Epoxy Primer, applied at a wet film thickness of 5-7 mils for a dry film thickness of not less than 2-3 mils per coat.
c. Finish: Rust-Oleum Modern Masters Metallic Paint Satin, applied at a wet film thickness of 5-5.5 mils for a dry film thickness of not less than 1.5 mils per coat.
d. Topcoat: Rust-Oleum Modern Masters MasterClear Protective Clear Topcoat Satin, applied at a wet film thickness of 5 mils for a dry film thickness of not less than 1.5 mils per coat.

G. PT-16, PT-17, PT-18:

1. Substrates:

a. Metal Wall Cover Plates.
b. Metal Door Trim.
c. Metal Door Louvers.

2. Two finish coats over a primer.

a. Preparation: Remove all dirt, grime and all other forms of contamination.
b. Primer: Sherwin-Williams Pro Industrial Pro-Cryl Universal Primer, B66-1310 Series, applied at a wet film thickness of 5 mils for a dry film thickness of not less than 2 mils per coat.
c. Finish: Sherwin-Williams Emerald Urethane Trim Enamel Satin, K37-2750/1750/1760 Series, applied at a wet film thickness of 4 mils for a dry film thickness of not less than 1.2 mils per coat.

H. PT-19:

1. Substrates:

a. ASJ Pipe Coverings.

2. Two finish coats over a primer.

a. Preparation: Remove all dirt, grime and all other forms of contamination.
b. Primer: Sherwin-Williams ProMar 200 Zero VOC Interior Latex Primer, B28W12600, applied at a wet film thickness of 4 mils for a dry film thickness of not less than 1.5 mils per coat.
c. Finish: Sherwin-Williams Emerald Interior Satin Latex, K37 Series, applied at a wet film thickness of 4 mils for a dry film thickness of not less than 1.6 mils per coat.

END OF SECTION 099123

SECTION 102800 - TOILET ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Public-use washroom accessories.
2. Childcare accessories.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.3 INFORMATIONAL SUBMITTALS

A. Sample warranties.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance data.

PART 2 - PRODUCTS

2.1 PUBLIC-USE WASHROOM ACCESSORIES

A. Paper Towel (Folded) Dispenser:

1. Manufacturer:

a. Tork Global

2. Mounting: Surface mounted.
3. Minimum Capacity: 1,230 Tork PeakServe continuous hand towels.
4. Material and Finish: Manufacturer’s standard black plastic.
5. Lockset: Tumbler type.
6. Refill Indicator: Manufacturer’s standard indicator.

B. Manual Soap Dispenser:

1. Manufacturer:

a. Bobrick Washroom Equipment

2. Description: Designed for manual operation and dispensing soap in liquid or lotion form.
3. Mounting: Horizontally oriented, surface mounted.
4. Capacity: 40-fl oz.
5. Materials: Type-304 stainless steel with satin finish container and black molded plastic push button and spout.
6. Lockset: Tumbler type.
7. Refill Indicator: Window type.

C. Automatic Soap Dispenser:

1. Manufacturer:

   a. Tork Global

2. Description: Automatic dispenser with infrared sensor to detect presence of hands; battery powered; designed for dispensing soap in liquid or lotion or lather form.
3. Mounting: Surface mounted.
4. Capacity: 33.82-fl oz.
5. Materials: Manufacturer’s standard black plastic.
6. Refill Indicator: LED indicator.
7. Low-Battery Indicator: LED indicator.

D. Feminine Product Dispenser Unit:

1. Manufacturer:

   a. Bobrick Washroom Equipment

2. Mounting: Semi-recessed.
3. Door or Cover: 18-gauge, flat door design with 90 deg return edges, concealed flange, concealed, full-length stainless steel piano hinge, equipped with two tumbler locks.
4. Material and Finish: Type 304 stainless steel, No. 4 finish (satin).

2.2 CHILDCARE ACCESSORIES

A. Diaper-Changing Station:

1. Manufacturer:

   a. Koala Kare

2. Description: Horizontal unit that opens by folding down from stored position and with child-protection strap.

   a. Engineered to support minimum of 200 lb static load when opened.

3. Mounting: Surface mounted, with unit projecting not more than 4 inches from wall when closed.
4. Operation: By pneumatic shock-absorbing mechanism.
5. Material and Finish: Stainless steel, ASTM A480/A480M No. 4 finish (satin), exterior shell with rounded plastic corners; HDPE interior in manufacturer's standard color.

6. Liner Dispenser: Provide built-in dispenser for disposable sanitary liners.

2.3 FABRICATION

A. 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 accessories in accordance with 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.

1. Remove temporary labels and protective coatings.

END OF SECTION 102800

SECTION 102819 – GLASS PARTITION EXTENSIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Mounting clamps for glass partition extensions.

2. Glazing for glass partition extensions.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For all conditions of glass partition extensions.

C. Samples: For each type of product.

1.3 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.4 QUALITY ASSURANCE

A. Mockups: Construct in-place mockup of glass partition extension at the existing stone partitions using the materials and products indicated in Part 2 and on the Drawings to demonstrate the proposed anchoring and fastening of the metal glass clamps to the existing stone partitions. Obtain Architect's approval of mockups before starting work, fabrication, or construction.

1.5 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of mounting clamps that fail in materials or workmanship within specified warranty period, without monetary limitation.

1. Warranty Period: **10** years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PARTITION EXTENSIONS

A. Metal Glass Clamps for Glass Partition Extensions: Subject to compliance with requirements, provide the following products:

1. CRL (C.R. Laurence Co., Inc.): Square Style, Notch-In-Glass, Fixed Panel, U-Clamp

B. Hardware: Manufacturer's standard units as indicated and as required for a complete installation.

1. Materials: Brass; ASTM B927.
2. Finish: Brushed Nickel.

C. Glazing:

1. Safety glazing materials complying with 16 CFR 1201, Category II, with permanently etched identification acceptable to authorities having jurisdiction.

a. Glass Nominal Thickness: 3/8 inch.
b. Patterned Glass: ASTM C1048, Kind FT (fully tempered), Type II, Class 1 (clear), Form 3; Quality-Q6, Finish F2 (patterned, both sides).

1) Pattern: As indicated on Drawings.

D. Fasteners: Use the following fasteners and/or anchors when installing the metal glass clamps into different substrates.
1. Existing Wood Partition Doors: Manufacturer's standard stainless steel or other noncorrosive fasteners.
2. Existing Stone Partitions: Special-Insert KEEP-NUT 2 Crown, 10-24 Thread, 8.5mm Height Anchor (IM4S/P10-24/H8.5) with a #10-24 stainless steel 7/16” length flat-head machine screw.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Prepare and install per manufacturer's written instructions unless more stringent requirements are contained in NGA's "GANA Glazing Manual."

B. Clean substrates, removing projections, filling voids, and sealing joints.

C. Set units level, plumb, and true to line, without warp or rack of panels, and anchor securely in place.

D. Fasten components securely in place, with provisions for thermal movement. Install with concealed fasteners unless otherwise indicated.

E. Repair, refinish, or replace components damaged during installation.

3.2 ADJUSTING AND CLEANING

A. Remove nonpermanent labels, and clean surfaces immediately after installation.

END OF SECTION 102819

SECTION 220100 – GENERAL PLUMBING REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. This Section is hereby made a part of all other sections of Division 22 – Plumbing Work, as if repeated in each.

1.2 SUMMARY OF WORK

A. This Division requires the furnishing and installation of a complete and functioning plumbing system consisting of domestic cold and hot water, sanitary waste and vent as specified or indicated on the Drawings and Specifications or reasonably inferred; including every fitting, device or accessory (whether specifically called for by item) reasonably required to facilitate each system's functioning as indicated by the design and the equipment specified. Elements of the work include materials, labor, supervision, supplies, equipment, transportation, and utilities.

B. The Drawings have been prepared diagrammatically intended to convey the scope of work, indicating the intended general arrangement of the equipment, fixtures, piping, etc. without showing all the exact details as to elevations, offsets, control lines, and other installation requirements. The Contractor shall use the Drawings as a guide when laying out the work and shall verify that materials and equipment will fit into the designated spaces, and which, when installed per manufacturers requirements, will ensure a complete, coordinated, satisfactory and properly operating system.

1.3 QUALITY ASSURANCE

A. All permits, licenses and utility fees that are required by governing authorities for the performance of the work shall be procured and paid for by the Contractor.

B. All work shall be in strict conformance with the manufacturer’s requirements and recommendations. Equipment and materials shall be installed in a neat and professional manner and shall be aligned, leveled adjusted for satisfactory operation.

C. All work shall be performed in compliance with and shall conform to the requirements of the accepted applicable codes and ordinances with amendments as adopted by the City of Kansas City to include the 2017 National Electrical Code, the latest editions of the National Fire Protection Association, the 2018 International Building Code, 2018 International Mechanical Code, 2018 Uniform Plumbing Code, 2018 Fuel Gas Code and the 2021 International Energy Conservation Code and governing safety regulations including the regulations of the Occupational and Safety Health Act and all State and local laws, codes and ordinances.

D. Laws, codes, ordinances, and regulations shall take precedent excepting only where the work called for by the drawings and specifications exceeds by quality and quantity.

E. Fixtures, appliances, equipment, and materials, which are subject to Underwriter's Laboratory tests, shall bear such approval.

F. Electrical designs are based on the requirements for the specified manufacturers listed on the equipment schedules. Conduit, disconnects, motor starters, breakers, fuse, and wire sizes are selected on the basis of scheduled equipment. Increased current requirements necessitating larger wire, breakers, switches, etcetera, to accommodate any alternate or substitute manufacturer's equipment, other than as shown on drawings shall be provided without any increase in contract price by Contractor furnishing the equipment.

G. Manufacturers, where specifically called for, must provide factory tests, unit installation observations, unit start-up and tests, etcetera, as specified, and submit signed reports to the Construction Inspector upon completion of these services. Subletting of these services will not be permitted. Shop drawing submittals shall be accompanied with a letter of certification by the manufacturer that the specified services shall be provided. Failure to do so shall be reason to reject the shop drawing submittals.

H. The contract drawings are in part schematic and intended to convey the scope of work and indicate the general layout, design, and arrangement. The Contractor shall follow these drawings in the layout of his work and shall consult general construction drawings, architectural, mechanical, and electrical drawings and all other drawings for this project and shall verify all existing site conditions to determine all conditions affecting the work shown or specified. The contract drawings are not to be scaled, and the Contractor shall verify spaces in which the work is to be installed.

I. Follow drawings in laying out work, check drawings of other trades to verify spaces in which work will be installed and maintain maximum headroom and space conditions at all points. Where headroom or space conditions appear inadequate, Architect shall be notified before proceeding with installation.

J. Work in cooperation with one another to fit piping into the structure as job conditions may demand.

K. All work shall be performed in a thorough professional manner by trained mechanics of a particular trade licensed to perform the specified work.

1. Work shall be performed in cooperation with other trades and scheduled to allow timely and efficient completion of the project.
2. Furnish other trades advance information on locations and sizes of frames, boxes, sleeves, and openings needed for work, and furnish information and shop drawings necessary to permit other trades affected to install their work properly without delay.
3. Where there is evidence that the work of one trade will interfere with the work of other trades, all trades shall assist in working out space conditions to make satisfactory adjustments.

L. Work installed before coordinating with other trades causing interference with the work of such other trades shall be changed to correct such conditions without an increase in contract price and as directed by the Architect.

M. Where specific details and dimensions are not shown in the drawings, the Contractor shall take measurements and make layouts for the proper installation of the work and coordination with all other work on the project. In case of any discrepancies between the drawings and the

specifications, it shall be assumed, by the signing of the Contract, that the higher cost (if any difference in costs) is included in the contract price, and the Contractor shall perform the work in accordance with the drawings or with the specifications, as determined and approved by the Project Architect.

N. Definitions:

1. "Piping" includes, in addition to pipe, all fittings, valves, sleeves, hangers, and other supports and accessories related to such piping.
2. "Concealed" means hidden from sight in chases, furred spaces, shafts, hung ceilings, embedded in construction, or in crawl spaces.
3. "Exposed" means not installed underground or "concealed" as defined above.
4. The words "furnish and install", "provide", "furnish", "install", or equivalent words are used or are understood, to mean the Contractor shall furnish and completely install the system, service, equipment, or material named, together with other associated devices, equipment, material, wiring, piping, etcetera as required for a complete operating installation, and conforming to the manufacturer's standards and recommendations.
5. It is the intent of the Plumbing specifications and drawings to call for finished work, tested and ready for operation.

    a. All apparatus, appliances, materials or work not shown on drawings, but mentioned in specifications, or vice versa, and/or all incidental accessories necessary to make work complete and ready for operation, even though not specified or shown on drawings, shall be furnished, and installed without an increase in contract price.

    b. Should there be discrepancies or questions of intent, refer matter to the Architect in writing for decision before ordering any equipment or materials, or before starting any related work.

1.4 SUBMITTALS

A. Submittals and shop drawings shall not contain the firm name, logo, seal, or signature of the Engineer. They shall not be copies of the work product of the Engineer. If the Contractor desires to use elements of such product, the license agreement for transfer of information obtained from the Engineer must be used.

B. Assemble and submit for review manufacturer product literature for material and equipment to be furnished and/or installed under this Division. Literature shall include shop drawings, manufacturer product data, performance sheets, samples and other submittals required by this Division. General product catalog data not specifically noted to be part of the specified product will be rejected and returned without review.

C. Separate submittals according to individual specification sections. Only resubmit those sections requested for resubmittal.

D. Provide submittals in sufficient detail to demonstrate compliance with the Contract Documents and the design concept. Highlight, mark, list or indicate the materials, performance criteria and accessories that are being proposed.

E. Transmit submittals as early as required to support the project schedule.

F. Before transmitting submittals and material lists, verify that the equipment submitted is mutually compatible with and suitable for the intended use. Verify that the equipment will fit the available space and maintain manufacturer recommended service clearances. If the size of equipment furnished makes necessary any change in location, or configuration, submit a shop drawing showing the proposed layout.

G. Submittals shall contain the following information:
   1. The project name.
   2. The applicable specification section and paragraph.
   3. Equipment identification acronym as used on the drawings.
   4. The submittal dates.
   5. The Contractor's stamp, which shall certify that the Contractor has checked the stamped drawings, comply with the Drawings and Specifications, and have been coordinated with other trades.
   6. Submittals not so identified will be returned to the Contractor without action.

H. The checking and subsequent acceptance by the Engineer and/or Architect of submittals shall not relieve responsibility from the Contractor for (1) deviations from the Drawings and Specifications; (2) errors in dimensions, details, sizes of equipment, or quantities; (3) omissions of components or fittings; and (4) not coordinating items with actual building conditions and adjacent work. The contractor shall request and secure written acceptance from the Engineer and Architect prior to implementing any deviation.

I. Prepare maintenance manuals in accordance with Division 1 for the Owner and include the following information for equipment items:
   1. Submittal data stating equipment rating, selected options, performance curves, engineering data and tests for each piece of equipment requiring maintenance, lighting, and controls.
   2. A complete narrative of how each system is intended to operate. Include normal operating characteristics, recommended settings, and limitations.
   3. Manufacturer's printed operating procedures to include start-up, break-in, and routine and normal operating instructions; regulation, control, stopping, shutdown, and emergency instructions; and summer and winter operating instructions for each piece of equipment requiring maintenance. Maintenance procedures for routine preventative maintenance should be clearly identified. Include relamping, recalibration of controls, troubleshooting; disassembly, repair, and reassemble; aligning and adjusting instructions.
   4. Servicing instructions and lubrication charts and schedules.
   5. Complete nomenclature and commercial numbers of replacement parts.
   6. Names and addresses of at least one qualified service agency.

1.5 RECORD DRAWINGS

A. A set of work prints of the Contract Documents shall be kept on the jobsite during construction for the purpose of noting changes. The Contractor shall indicate on these Documents changes made from the original Contract Documents. Particular attention should be paid to those items which need to be located for servicing. Underground utilities shall be located by dimension, from column lines.

B. Within 30 days after the date of system acceptance, provide record drawings and indicate installed conditions for the following:

1. Piping systems, size, and location with terminal water design flow rates.
2. Locations of control devices and valve final setpoint positions.
3. Equipment locations (exposed and concealed), dimensioned from prominent building lines.
4. Approved substitutions, Contract Modifications, and actual equipment and materials installed with performance data.

PART 2 - PRODUCTS

2.1 GENERAL

A. All materials and equipment shall be new and shall bear the manufacturer’s name, model number, serial number, date of manufacture and other identification marking.

B. All materials and equipment shall be the standard product of manufacturers regularly engaged in production of required type of material or equipment for at least 5 years (unless specifically exempted by the Project Architect) and shall be manufacturer's latest design having published properties.

2.2 ELECTRICAL EQUIPMENT

A. General: Unless specified or shown otherwise, the Contractor shall furnish the required motors for equipment furnished in the Plumbing Work. Motors shall be provided where indicated and as required for the operation of the equipment to be furnished.

PART 3 - EXECUTION

3.1 EXISTING UTILITIES

A. Schedule and coordinate with the Owner and with the Engineer connection to, or relocation of, or discontinuation of normal utility services from existing utility lines. Premium time and all utility fees required for any such work shall be included in the bid.

B. Existing utilities damaged due to the operations of utility work for this project shall be repaired to the satisfaction of the Owner and Engineer without additional cost.

C. Utilities shall not be left disconnected at the end of a workday or over a weekend unless authorized by representatives of the Owner or Engineer.

D. Repairs and restoration of utilities shall be made before workers leave the project at the end of the workday in which the interruption takes place.

E. Contractor shall include in his bid the cost of furnishing temporary facilities to provide services during interruption of normal utility service.

3.2 CUTTING AND PATCHING

A. The responsibility for any cutting of construction, which is required for the installation work, shall be by the Contractor. The Contractor shall coordinate with the Architect before any cutting and obtain approval prior to any cutting.

1. Where openings for plumbing work are provided under other sections of the specifications, this Contractor shall be responsible for locating and providing the proper dimensions for all such openings.

B. Cutting shall be done with extreme care and in such a manner that the strength of the structure will not be endangered. Wherever possible, openings in concrete or masonry construction shall be by concrete saw or rotary core drill. Openings in any construction shall be cut the minimum size required for the installation of the work.

1. Adequate protection should be provided to prevent damage to adjacent areas and to prevent dust from spreading to adjacent areas.
2. The use of jack hammers will not be permitted.

C. Where openings or holes are cut in existing construction and the cutting breaks existing electrical circuitry or control circuitry, or communications, conduit, and wiring, then it shall be the responsibility of the Contractor to have the circuitry, conduit and rewiring re-routed and to complete the circuitry as required and as approved by the Owner. Temporary completion shall be provided where necessary before the permanent re-routing and completion work is finished. All costs for this work shall be the responsibility of the Contractor and no additions will be allowed to the Contract price.

D. Before any cutting, patching, or finishing work is started, dust and moisture protection shall first be installed as required to protect adjacent construction and equipment and to prevent dust spreading from the immediate area where work is being performed.

E. After any work is installed through any opening in walls, partitions, ceilings, or floors, the opening around the work shall be patched to match the existing construction, and the openings around pipe sleeves, and between pipes and sleeves shall be sealed watertight through floors and shall be sealed fireproof and smoke tight through floors, walls, partitions, and ceilings.

F. No structural member shall be cut without the approval of the Architect, and all such cutting shall be done in a manner directed by him.

3.4 FIRESTOPPING

A. Fire stopping is defined herein as the process of furnishing and installing a material, or combination of materials, in various constructions to maintain an effective barrier against the spread of flame, smoke, and gases and to retain the integrity of time-rated construction. It shall be used in specific locations as specified hereinafter.

1. Piping penetrations through floor slab and through time-rated partitions or fire walls.
2. Hanger penetrations through fire rated lid.
3. Opening between floor slabs and curtain walls, including inside hollow curtain walls at the floor slab.
4. Penetrations of vertical service shafts.

5. Openings and penetrations in enclosures with time-rated fire doors.
6. Other locations where specifically shown on drawings or where specified in other sections of these specifications.
7. Openings in non-time-rated construction shall be closed with a compacted fill of ¾ LB density fiberglass and then sealed gas tight.

B. Material for fire stopping shall be asbestos free and capable of maintaining an effective barrier against flame, smoke, and gases in compliance with the requirements of ASTM E 814, UL NO. 1479. Fire stopping material shall be listed in the "Building Materials Directory" of UL as suitable for fire stopping of penetrations made by steel, glass, plastic, and insulated pipe. On insulated pipe, the classification must not require removal of insulation. The rating of the fire stopping material shall not be less than the rating of the time-rated floor or wall assembly.

C. The installation of fire stopping shall be in accordance with the manufacturer’s recommendations and requirements. Surface to be in contact with fire stopping shall be cleaned of dirt, grease, oil, loose materials, rust, or other substance that may affect proper fitting or the required fire resistance.

D. Fire stopping materials shall provide an effective barrier regardless of the geometric configurations of the void spaces. Fire stopping materials for filling voids in floors having openings of four (4) inches or more shall be installed to support the same load as the floor is designed to support, unless the area is protected by a permanent barrier preventing loading or traffic on the fire stopped area.

3.5 ELECTRICAL COORDINATION

A. All control wiring and safety interlock wiring required shall be furnished and installed as specified within these specifications. The control wiring shall include the furnishing and installation of all conduits, boxes, fittings, devices, accessories, wire, and connections required for complete and properly functioning systems. All wiring shall be installed in conduit, and all splices and connections shall be made in approved type enclosures or boxes.

1. If motors or controls are not shown on the Electrical Drawings, it has been assumed that these motors and controls have been wired as part of a piece of package equipment, or that the Contractor will run control wiring.

B. Reports: The Contractor shall submit to the Architect, after plumbing systems are completely installed and operating under normal load conditions and prior to final acceptance of the project, four (4) copies of tabulated report on each piece of plumbing equipment motor and motor starter. The tabulated reports shall show the following information:

1. Plumbing equipment identification on which motor and starter is used.
2. Motor nameplate horsepower, full load amperes, and voltage.
3. Motor nameplate service factor and temperature rise.
4. Actual (metered) motor running amperes and voltage.
5. Motor starter nameplate H.P. rating and voltage.
6. Motor starter thermal overload protection unit current rating, manufacturer's name and manufacturer's catalog number marked on thermal units.

END OF SECTION 220100

SECTION 220517 - SLEEVES AND SLEEVE SEALS FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Sleeves.
2. Grout.

PART 2 - PRODUCTS

2.1 SLEEVES

A. Cast-Iron Wall Pipes: Cast or fabricated of cast or ductile iron and equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop unless otherwise indicated.

B. Galvanized-Steel Wall Pipes: ASTM A 53/A 53M, Schedule 40, with plain ends and welded steel collar; zinc coated.

C. Galvanized-Steel-Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, zinc coated, with plain ends.

D. PVC-Pipe Sleeves: ASTM D 1785, Schedule 40.

E. Galvanized-Steel-Sheet Sleeves: 0.0239-inch (0.6-mm) minimum thickness; round tube closed with welded longitudinal joint.

2.2 GROUT

A. Standard: ASTM C 1107/C 1107M, Grade B, post-hardening, and volume-adjusting, dry, hydraulic-cement grout.

B. Characteristics: Non-shrink; recommended for interior and exterior applications.

C. Design Mix: 5000-psi (34.5-MPa), 28-day compressive strength.

D. Packaging: Premixed and factory packaged.

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 (25-mm) annular clear space between piping and concrete slabs and walls.

C. Install sleeves in concrete floors and concrete walls.

1. Cut sleeves to length for mounting flush with both surfaces.

a. Exception: Extend sleeves installed in floors of wet areas 2 inches (50 mm) above finished floor level.

2. 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. 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.

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.

3.2 SLEEVE AND SLEEVE-SEAL SCHEDULE

A. Use sleeves and sleeve seals for the following piping-penetration applications:

1. Concrete Slabs above Grade:

a. Piping Smaller Then NPS 6 (DN 150): Galvanized-steel-pipe sleeves or Sleeve-seal fittings.
b. Piping NPS 6 (DN 150) and Larger: Galvanized-steel-pipe sleeves or stack-sleeve fittings.

2. Interior Partitions:

a. Piping Smaller Then NPS 6 (DN 150): Galvanized-steel-pipe sleeves.
b. Piping NPS 6 (DN 150) and Larger: Galvanized-steel-sheet sleeves.

END OF SECTION 220517

SECTION 220518 - ESCUTCHEONS FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Escutcheons.

PART 2 - PRODUCTS

2.1 ESCUTCHEONS

A. One-Piece, Cast-Brass Type: With polished, chrome-plated finish and setscrew fastener.

B. One-Piece, Deep-Pattern Type: Deep-drawn, box-shaped brass with chrome-plated finish and spring-clip fasteners.

C. One-Piece, Stamped-Steel Type: With chrome-plated finish and spring-clip fasteners.

D. Split-Casting Brass Type: With polished, chrome-plated finish and with concealed hinge and setscrew.

E. Split-Plate, Stamped-Steel Type: With chrome-plated finish, concealed hinge, and spring-clip fasteners.

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, stamped-steel type, or split-plate, stamped-steel type with concealed hinge.
d. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece, cast-brass, or split-casting brass type with polished, chrome-plated finish.

e. Bare Piping at Ceiling Penetrations in Finished Spaces: One-piece, cast-brass, or split-casting brass type with polished, chrome-plated finish.
f. Bare Piping in Unfinished Spaces: One-piece, cast-brass, or split-casting brass type with polished, chrome-plated finish.

2. Escutcheons for Existing Piping:

a. Chrome-Plated Piping: Split-casting brass type with polished, chrome-plated finish.
b. Insulated Piping: Split-plate, stamped-steel type with concealed hinge.
c. Bare Piping at Wall and Floor Penetrations in Finished Spaces: Split-casting brass type with polished, chrome-plated finish.
d. Bare Piping at Ceiling Penetrations in Finished Spaces: Split-casting brass type with polished, chrome-plated finish.
e. Bare Piping in Unfinished Spaces: Split-casting brass type with polished, chrome-plated finish.

3.2 FIELD QUALITY CONTROL

A. Replace broken and damaged escutcheons using new materials.

END OF SECTION 220518

SECTION 220523 - GENERAL-DUTY VALVES FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Bronze ball valves.
2. Butterfly valves.
3. Bronze check valves.
4. Bronze gate valves.

B. Related Sections:

1. Section 220553 "Identification for Plumbing Piping and Equipment" for valve tags and schedules.
2. Section 221116 "Domestic Water Piping" for valves applicable only to this piping.
3. Section 221319 "Sanitary Waste Piping Specialties" for valves applicable only to this piping.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of valve indicated.

1.3 QUALITY ASSURANCE

A. Source Limitations for Valves: Obtain each type of valve from a single manufacturer.

B. ASME Compliance:

1. ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.
2. ASME B31.1 for power piping valves.
3. ASME B31.9 for building services piping valves.

C. NSF Compliance: NSF 61 for valve materials for potable-water service.

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, and weld ends.
3. Set gate valves closed to prevent rattling.
4. Set ball valves open to minimize exposure of functional surfaces.
5. Block 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.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR VALVES

A. Refer to valve schedule articles for applications of valves.

B. ASME Compliance:

1. ASME B1.20.1 for threads for threaded end valves.
2. ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.
3. ASME B16.18 for cast-copper solder joint.
4. ASME B16.22 for wrought-copper solder-joint connections.
5. ASME B16.51 for press joint connections.
6. ASME B31.9 for building services piping valves.

C. NSF Compliance: NSF 61 and NSP 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 and 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. Hand wheel: For valves other than quarter-turn types.
2. Hand lever: For quarter-turn valves NPS 6 (DN 150) and smaller except plug valves.

H. Valves in Insulated Piping: With 2-inch (50-mm) stem extensions and the following features:

1. Gate Valves: With rising stem.
2. Ball Valves: With extended operating handle of non-thermal-conductive material, and protective sleeve that allows operation of valve without breaking the vapor seal or disturbing insulation.

I. Valve-End Connections:

1. Solder Joint: With sockets according to ASME B16.18.
2. Threaded: With threads according to ASME B1.20.1.

J. Valve Bypass and Drain Connections: MSS SP-45.

2.2 BRONZE BALL VALVES, LEAD FREE

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Conbraco Industries, Inc.; Apollo Valves.
2. NIBCO INC.
3. Watts Regulator Co.; a division of Watts Water Technologies, Inc.

B. Two-Piece, Full-Port, Lead-Free Bronze Ball Valves with Bronze or Stainless Steel Trim:

1. Standard: MSS SP-110.
2. SWP Rating: 150 psig (1035 kPa).
3. CWP Rating: 600 psig (4140 kPa).
4. Body Design: Two piece.
5. Body Material: Bronze.
6. Ends: Threaded or soldered.
7. Seats: PTFE or TFE.
8. Stem: Bronze or Stainless steel.
9. Ball: Chrome-plated brass or stainless steel.
10. Port: Full.

C. Two-Piece, Full Port, Lead Free, Press Ends – Bronze with Bronze or Stainless Steel Trim:

1. Standards: MSS SP-110, MSS SP-145, and IAPMO/ANSI Z1157.
2. CWP Rating: Minimum 200 psig (1380 kPa).
3. Body Design: Two piece.
4. Body Material: Bronze.
5. Ends: Press.
6. Press-End Connections Rating: Minimum 200 psig (1380 kPa).
7. Seats: PTFE or RTPFE.
8. Stem: Bronze or Stainless steel.
9. Ball: Chrome-plated brass or stainless steel.
10. Port: Full.
11. O-Ring Seal: EPDM or NBR.

2.3 BUTTERFLY VALVES, LEAD FREE

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Conbraco Industries, Inc.; Apollo Valves.
2. NIBCO INC.
3. Watts Regulator Co.; a division of Watts Water Technologies, Inc.

B. Butterfly Valves, Lead Free, Single Flange (Lug Type) - Iron, with Aluminum-Bronze Disc:

1. Standard: MSS SP-67, Type I.
2. CWP Rating: 150 psig (1035 kPa), or 200 psig (1380 kPa). See Part 3 butterfly valve schedule articles.

3. Body Design: Single flange (lug type), suitable for bidirectional dead-end service at rated pressure without use of downstream flange.
4. Body Material: ASTM A126, cast iron or ASTM A536, ductile iron.
5. Seat: EPDM or NBR. See Part 3 butterfly valve schedule articles.
6. Stem: One- or two-piece stainless steel.
7. Disc: Aluminum bronze.

2.4 BRONZE SWING CHECK VALVES, LEAD FREE

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Conbraco Industries, Inc.; Apollo Valves.
2. NIBCO INC.
3. Watts Regulator Co.; a division of Watts Water Technologies, Inc.

B. Class 125, Lead Free Bronze Swing Check Valves with Bronze Disc:

1. Standard: MSS SP-80, Type 3.
2. CWP Rating: 200 psig (1380 kPa).
3. Body Design: Horizontal flow.
4. Body Material: ASTM B 62, bronze.
5. Ends: Threaded or soldered.
6. Disc: Bronze.

C. Check Valves, Lead Free, Swing Type, Press Ends - Bronze:

1. Standards: MSS SP-80 and MSS SP-139.
2. CWP Rating: Minimum 200 psig (1380 kPa).
3. Body Design: Horizontal flow.
4. Body Material: ASTM B584, bronze.
5. Ends: Press.
6. Press-End Connections Rating: Minimum 200 psig (1380 kPa).
7. Disc: Bronze.

2.5 BRONZE GATE VALVES, LEAD FREE

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Hammond Valve.
2. NIBCO INC.
3. Watts Regulator Co.; a division of Watts Water Technologies, Inc.

B. Gate Valves, Lead Free, Threaded or Soldered Ends - Bronze, RS, Class 125:

1. Standard: MSS SP-80, Type 2.
2. CWP Rating: 200 psig (1380 kPa).
3. Body Material: Bronze with integral seat and screw-in bonnet.

4. Ends: Threaded or solder joint.
5. Stem: Bronze.
6. Disc: Solid wedge, bronze.
7. Packing: Asbestos free.
8. Handwheel: Malleable iron, bronze, or aluminum.

C. Gate Valves, Lead Free Class 125, NRS Bronze Gate Valves:

1. Standard: MSS SP-80, Type 1.
2. CWP Rating: 200 psig (1380 kPa).
3. Body Material: bronze with integral seat and screw-in bonnet.
4. Ends: Threaded or soldered.
5. Stem: Bronze.
6. Disc: Solid wedge; bronze.
7. Packing: Asbestos free.
8. Handwheel: Malleable iron.

D. Gate Valves, Lead Free, Threaded Ends - Bronze, NRS, Class 150:

1. Standard: MSS SP-80, Type 1.
2. CWP Rating: 300 psig (2070 kPa).
3. Body Material: Bronze with integral seat and union-ring bonnet.
4. Ends: Threaded.
5. Stem: Bronze.
6. Disc: Solid wedge, bronze.
7. Packing: Asbestos free.
8. Handwheel: Malleable iron.

E. Gate Valves, Lead Free, Threaded Ends - Bronze, RS, Class 150:

1. Standard: MSS SP-80, Type 2.
2. CWP Rating: 300 psig (2070 kPa).
3. Body Material: Bronze with integral seat and union-ring bonnet.
4. Ends: Threaded.
5. Stem: Bronze.
6. Disc: Solid wedge, bronze.
7. Packing: Asbestos free.
8. Handwheel: Malleable iron.

F. Gate Valves, Lead Free, Press Ends - Bronze:

1. Standards: MSS SP-80 and MSS SP-139.
2. CWP Rating: Minimum 200 psig (1380 kPa).
3. Body Material: Bronze with integral seat and union-ring bonnet.
4. Ends: Press.
5. Press Ends Connection Rating: Minimum 200 psig (1380 kPa).
6. Stem: Brass or bronze, RS or NRS.
7. Disc: Solid wedge, bronze.
8. Packing: Graphite.
9. Port: Full.
10. Handwheel: Malleable iron, bronze, or aluminum.

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. Do not attempt to repair defective valves; replace them with new valves.

3.2 VALVE INSTALLATION

A. Install valves with unions 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.

E. Install check valves for proper direction of flow.

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.

3.4 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

A. If valve applications are not indicated, use the following:

1. Shutoff Service: Ball, or gate valves.
2. Throttling Service: Ball valves.

B. If valves with specified SWP classes or CWP ratings are not available, the same types of valves with higher SWP classes or CWP ratings may be substituted.

C. Select valves with the following end connections:

1. For Copper Tubing, NPS 2 (DN 50) and Smaller: Threaded ends except where solder-joint valve-end option or press-end option is indicated in valve schedules below.

2. For Copper Tubing, NPS 2-1/2 to NPS 4 (DN 65 to DN 100): Threaded valve-end or press-end option.

3.5 DOMESTIC, HOT- AND COLD-WATER VALVE SCHEDULE

A. Pipe NPS 2 (DN 50) and Smaller:

1. Bronze Valves: May be provided with solder-joint ends or press-end option instead of threaded ends.
2. Ball Valves: Class 125, two-piece, full port, bronze with bronze trim.
3. Bronze Swing Check Valves: Class 125, bronze disc.
4. Pump Discharge Check Valves: Class 125, bronze disc.
5. Bronze Gate Valves: Class 125, NRS.

3.6 DOMESTIC, HOT- AND COLD-WATER VALVE SCHEDULE

A. Pipe NPS 2-1/2’ (DN 65) and Larger:

1. Bronze Valves: May be provided with threaded ends or press-end option.
2. Ball Valves: Class 125, two-piece, full port, bronze with bronze trim.
3. Bronze Swing Check Valves: Class 125, bronze disc, and metal seats.
4. Bronze Gate Valves: Class 150, RS.

END OF SECTION 220523

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SECTION 220529 - HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Metal pipe hangers and supports.
2. Thermal hanger shield inserts.
3. Fastener systems.
4. Pipe positioning systems.
5. Equipment supports.

1.2 DEFINITIONS

A. MSS: Manufacturers Standardization Society of The Valve and Fittings Industry Inc.

1.3 INFORMATIONAL SUBMITTALS

A. Welding certificates.

1.4 QUALITY ASSURANCE

A. Structural Steel Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

B. Pipe Welding Qualifications: Qualify procedures and operators according to ASME Boiler and Pressure Vessel Code.

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: Pre-galvanized 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 carbon steel.

2.2 THERMAL-HANGER SHIELD INSERTS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Carpenter & Paterson, Inc.
2. National Pipe Hanger Corporation.
3. Pipe Shields, Inc.; a subsidiary of Piping Technology & Products, Inc.
4. Piping Technology & Products, Inc.

B. Insulation-Insert Material for Cold Piping: ASTM C 552, Type II cellular glass with 100-psig (688-kPa) or ASTM C 591, Type VI, Grade 1 polyisocyanurate with 125-psig (862-kPa) minimum compressive strength and vapor barrier.

C. Insulation-Insert Material for Hot Piping: Water-repellent treated, ASTM C 533, Type I calcium silicate with 100-psig (688-kPa) minimum compressive strength.

D. For Clevis or Band Hangers: Insert and shield shall cover the lower 180 degrees of pipe.

E. Insert Length: Extend 2 inches (50 mm) beyond sheet metal shield for piping operating below ambient air temperature.

2.3 FASTENER SYSTEMS

A. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

B. 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.

2.4 PIPE POSITIONING SYSTEMS

A. Description: IAPMO PS 42, positioning system of metal brackets, clips, and straps for positioning piping in pipe spaces; for plumbing fixtures in commercial applications.

2.5 EQUIPMENT SUPPORTS

A. Description: Welded, shop- or field-fabricated equipment support made from structural carbon-steel shapes.

2.6 MISCELLANEOUS MATERIALS

A. Structural Steel: ASTM A 36/A 36M, carbon-steel plates, shapes, and bars; black and galvanized.

B. Grout: ASTM C 1107, factory-mixed and -packaged, dry, hydraulic-cement, nonshrink and nonmetallic grout; suitable for interior and exterior applications.

1. Properties: Nonstaining, noncorrosive, and nongaseous.
2. Design Mix: 5000-psi (34.5-MPa), 28-day compressive strength.

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 pipe hanger or shield for insulated piping.

C. Fastener System Installation:

1. Install powder-actuated fasteners for use in lightweight concrete or concrete slabs less than 4 inches (100 mm) thick in concrete after concrete is placed and completely cured. Use operators that are licensed by powder-actuated tool manufacturers. Install fasteners according to powder-actuated tool manufacturer's operating manual.
2. Install mechanical-expansion anchors in concrete after concrete is placed and completely cured. Install fasteners according to the manufacturer’s written instructions.

D. Pipe Positioning-System Installation: Install support devices to make rigid supply and waste piping connections to each plumbing fixture.

E. Install hangers and supports complete with necessary attachments, inserts, bolts, rods, nuts, washers, and other accessories.

F. Equipment Support Installation: Fabricate from welded-structural-steel shapes.

G. 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.

H. Install lateral bracing with pipe hangers and supports to prevent swaying.

I. Install building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads, including valves, flanges, and strainers, NPS 2-1/2 (DN 65) and larger and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten inserts to forms and install reinforcing bars through openings at top of inserts.

J. Load Distribution: Install hangers and supports so that piping live and dead loads and stresses from movement will not be transmitted to connected equipment.

K. 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.

L. 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 inserts 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 39, protection saddles if insulation without vapor barrier is indicated. Fill interior voids with insulation that matches adjoining insulation.

   a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 (DN 100) and larger if pipe is installed on rollers.

3. 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 (DN 100) and larger if pipe is installed on rollers.

4. Shield Dimensions for Pipe: Not less than the following:

   a. NPS 1/4 to NPS 3-1/2 (DN 8 to DN 90): 12 inches (305 mm) long and 0.048 inch (1.22 mm) thick.
   b. NPS 4 (DN 100): 12 inches (305 mm) long and 0.06 inch (1.52 mm) thick.

5. Thermal-Hanger Shields: Install with insulation same thickness as piping insulation.

3.2 EQUIPMENT SUPPORTS

A. Grouting: Place grout under supports for equipment and make bearing surface smooth.

B. Provide lateral bracing, to prevent swaying, for equipment support.

3.3 METAL FABRICATIONS

A. Cut, drill, and fit miscellaneous metal fabrications for trapeze pipe hangers and equipment supports.

B. Fit exposed connections together to form hairline joints. Field weld connections that cannot be shop welded because of shipping size limitations.

C. Field Welding: Comply with AWS D1.1/D1.1M procedures for shielded, metal arc welding; appearance and quality of welds; and methods used in correcting welding work; and 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 the welding flux immediately.
4. Finish welds at exposed connections so no roughness shows after finishing and so contours of welded surfaces match adjacent contours.

3.4 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 1-1/2 inches (40 mm).

3.5 PAINTING

A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use the same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.

1. Apply paint with brush or spray to provide a minimum dry film thickness of 2.0 mils (0.05 mm).

B. Touchup: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal.

C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

3.6 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 attachments for copper piping and tubing.

G. Use thermal-hanger shield inserts for insulated piping and tubing.

H. 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.

I. Use powder-actuated fasteners or mechanical-expansion anchors instead of building attachments where required in concrete construction.

J. Use pipe positioning systems in pipe spaces behind plumbing fixtures to support supply and waste piping for plumbing fixtures.

END OF SECTION 220529

SECTION 220553 - IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Equipment labels.
2. Warning signs and labels.
3. Warning tapes.
4. Pipe labels.
5. Valve tags.
6. Warning tags.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples: For color, letter style, and graphic representation required for each identification material and device.

C. Equipment Label Schedule: Include a listing of all equipment to be labeled with the proposed content for each label.

D. Valve numbering scheme.

E. Valve Schedules: For each piping system to be included in maintenance manuals.

1.3 COORDINATION

A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.

B. Coordinate installation of identifying devices with locations of access panels and doors.

C. Install identifying devices before installing acoustic ceilings and similar concealment.

PART 2 - PRODUCTS

2.1 EQUIPMENT LABELS

A. Plastic Labels for Equipment:

1. Material and Thickness:

2. Multilayer, multicolor, hard plastic labels for mechanical engraving, 1/8 inch (3.2 mm) thick, and having predrilled holes for attachment hardware.
3. Letter Color: Black.
4. Background Color: White.
5. Maximum Temperature: Able to withstand temperatures up to 160 deg F (71 deg C).
6. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch (64 by 19 mm).
7. Minimum Letter Size: 1/4 inch (6.4 mm) for the name of units if the viewing distance is less than 24 inches (600 mm), 1/2 inch (13 mm) for viewing distances up to 72 inches (1830 mm), and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
8. Fasteners: Stainless-steel rivets or self-tapping screws.
9. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

B. Label Content: Include equipment's Drawing designation or unique equipment number, drawing numbers where equipment is indicated (plans, details, and schedules), plus the Specification Section number and title where equipment is specified.

C. Equipment Label Schedule: For each item of equipment to be labelled on 8-1/2-by-11-inch (A4) bond paper. Tabulate equipment identification number and identify Drawing numbers where equipment is indicated (plans, details, and schedules), plus the Specification Section number and title where equipment is specified. Equipment schedule shall be included in operation and maintenance data.

2.2 WARNING SIGNS AND LABELS

A. Material and Thickness: Multilayer, multicolor, hard plastic labels for mechanical engraving, 1/8 inch (3.2 mm) thick, and predrilled holes for attachment hardware.

B. Letter Color: Black.

C. Background Color: White.

D. Maximum Temperature: Able to withstand temperatures up to 160 deg F (71 deg C).

E. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch (64 by 19 mm).

F. Minimum Letter Size: 1/4 inch (6.4 mm) for the name of units if the viewing distance is less than 24 inches (600 mm), 1/2 inch (13 mm) for viewing distances up to 72 inches (1830 mm), and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.

G. Fasteners: Stainless-steel rivets or self-tapping screws.

H. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

I. Label Content: Include caution and warning information, plus emergency notification instructions.

2.3 WARNING TAPE

A. Material: Vinyl.

B. Minimum Thickness: 0.005 inch (0.12 mm).

C. Letter, Pattern, and Background Color: As indicated for specific application under Part 3.

D. Waterproof Adhesive Backing: Suitable for indoor or outdoor use.

E. Maximum Temperature: 160 deg F (70 deg C).

F. Minimum Width: 2 inches (50 mm).

2.4 PIPE LABELS

A. General Requirements for Manufactured Pipe Labels: Preprinted, color-coded, with lettering indicating service, and showing flow direction.

B. Self-Adhesive Pipe Labels: Printed plastic with contact-type, permanent-adhesive backing.

C. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings, pipe size, and an arrow indicating flow direction.

1. Flow-Direction Arrows: Integral with piping system service lettering to accommodate both directions, and as separate unit on each pipe label to indicate flow direction.
2. Lettering Size: At least 1-1/2 inches (38 mm) high.

2.5 VALVE TAGS

A. Valve Tags: Stamped or engraved with 1/4-inch (6.4-mm) letters for piping system abbreviation and 1/2-inch (13-mm) numbers.

1. Tag Material: Brass, 0.032-inch (0.8-mm) minimum thickness and predrilled or stamped holes for attachment hardware.
2. Fasteners: Brass wire-link or beaded chain; or S-hook.

B. Valve Schedules: For each piping system, on 8-1/2-by-11-inch (A4) bond paper. Tabulate valve number, piping system, system abbreviation (as shown on valve tag), location of valve (room or space), normal-operating position (open, closed, or modulating), and variations for identification. Mark valves for emergency shutoff and similar special uses.

1. The schedule shall be included in operation and maintenance data.

2.6 WARNING TAGS

A. Warning Tags: Preprinted or partially preprinted, accident-prevention tags, plasticized card stock with matte finish suitable for writing.

1. Size: 3 by 5-1/4 inches (75 by 133 mm) minimum.
2. Fasteners: Brass grommet and wire.
3. Nomenclature: Large-size primary captions such as "DANGER," "CAUTION," or "DO NOT OPERATE."
4. Color: Yellow background with black lettering.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean piping and equipment surface of substances that could impair bond of identification devices, including dirt, oil, grease, release agents, and incompatible primers, paints, and encapsulants.

3.2 EQUIPMENT LABEL INSTALLATION

A. Install or permanently fasten labels on each major item of mechanical equipment.

B. Locate equipment labels where accessible and visible.

3.3 INSTALLATION OF WARNING TAPE

A. Warning Tape Color and Pattern: Yellow background with black diagonal stripes.

B. Install warning tape on pipes and ducts, with cross-designated walkways providing less than 6 ft. (2 m) of clearance.

C. Locate tape to be readily visible from the point of normal approach.

3.4 PIPE LABEL INSTALLATION

A. Locate pipe labels where piping is exposed or above accessible ceilings in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior exposed locations as follows:

1. Near each valve and control device.
2. Near each branch connection, excluding short takeoffs for fixtures and terminal units. Where the flow pattern is not obvious, mark each pipe at branch.
3. Near penetrations through walls, floors, ceilings, and inaccessible enclosures.
4. At access doors, utility access holes, and similar access points that permit view of concealed piping.
5. Near major equipment items and other points of origination and termination.
6. Spaced at maximum intervals of 50 feet (15 m) along each run. Reduce intervals to 25 feet (7.6 m) in areas of congested piping and equipment.
7. On piping above removable acoustic ceilings. Omit intermediately spaced labels.

B. Pipe Label Color Schedule:

1. Domestic Water Piping:

    a. Background Color: White.
    b. Letter Color: Black.

3.5 VALVE-TAG INSTALLATION

A. Install tags on valves and control devices in piping systems, except check valves; valves within factory-fabricated equipment units; shutoff valves; faucets; convenience and lawn-watering hose connections; and similar roughing-in connections of end-use fixtures and units. List tagged valves in a valve schedule.

B. Valve-Tag Application Schedule: Tag valves according to size, shape, and color scheme and with captions like those indicated in the following subparagraphs:

1. Valve-Tag Size and Shape:

    a. Cold Water: 1-1/2 inches (38 mm), round.
    b. Hot Water: 1-1/2 inches (38 mm), round.

2. Valve-Tag Color:

    a. Cold Water: Natural.
    b. Hot Water: Natural.

3. Letter Color:

    a. Cold Water: Black.
    b. Hot Water: Black.

3.6 WARNING-TAG INSTALLATION

A. Write the required message on and attach warning tags to equipment and other items where required.

END OF SECTION 220553

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SECTION 220593 - TESTING, ADJUSTING, AND BALANCING FOR PLUMBING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. TAB of domestic water system.
2. TAB of plumbing equipment:

    a. Domestic hot-water in-line circulation pumps.
    b. Pipe-leakage test verification.

3. Testing, adjusting, and balancing existing plumbing systems and equipment.

1.2 DEFINITIONS

A. AABC: Associated Air Balance Council.

B. NEBB: National Environmental Balancing Bureau.

C. TAB: Testing, adjusting, and balancing.

D. TABB: Testing, Adjusting, and Balancing Bureau.

E. TAB Specialist: An independent entity meeting qualifications to perform TAB work.

F. TDH: Total dynamic head.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: Within 60 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. Examination Report: Submit a summary report of the examination review required in the “Examination" Article.

C. Certified TAB reports.

D. Sample report forms.

E. Instrument calibration reports, to include the following: Instrument type and make, serial number, application, dates of use, and dates of calibration.

1.4 QUALITY ASSURANCE

A. TAB Specialists Qualifications, Certified by NEBB:

1. TAB Field Supervisor: Employee of the TAB specialist and certified by NEBB.
2. TAB Technician: Employee of the TAB specialist and certified by NEBB.

B. Instrumentation Type, Quantity, Accuracy, and Calibration: Comply with requirements in ASHRAE 111, Section 4, "Instrumentation."

C. ASHRAE 111 Compliance: Requirements in ASHRAE 111 applicable to analogous domestic water system and plumbing equipment balancing.

D. ASHRAE 188 Compliance: Comply with balancing and report requirements, Section 8.3 "Balancing."

E. Code and Authorities Having Jurisdiction Compliance: TAB is required to comply with governing codes and requirements of authorities having jurisdiction.

1.5 FIELD CONDITIONS

A. Full Owner Occupancy: Owner will occupy the site and existing building during the entire TAB period. 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, gauge cocks, thermometer wells, flow-control devices, and balancing valves and fittings. Verify that locations of these balancing devices are applicable for intended purpose and are accessible.

C. Examine approved submittals for plumbing systems and equipment.

D. Examine equipment performance data, including pump curves.

1. Relate performance data to Project conditions and requirements, including pump system effects that can create undesired or unpredicted conditions that cause reduced capacities in all or part of a system.
2. Calculate pump system-effect factors to reduce performance ratings of plumbing equipment when installed under conditions different from the conditions used to rate equipment performance. Compare results with the design data and installed conditions.

E. Examine system and equipment installations, and verify that field quality-control testing, cleaning, and adjusting specified in individual Sections have been performed.

F. Examine test reports specified in individual system and equipment Sections.

G. Examine temporary and permanent strainers. Verify that temporary strainer screens used during system cleaning and flushing have been removed and permanent strainers are installed and clean.

H. Examine control valves for proper installation for their intended function of isolating, throttling, diverting, or mixing fluid flows.

I. Examine system pumps to ensure absence of entrained air in the suction piping.

J. Examine operating safety interlocks and controls on plumbing equipment.

K. Report deficiencies discovered before and during performance of TAB procedures. Observe and record system reactions to changes in conditions. Record default 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 plumbing systems and equipment to verify system readiness for TAB work. Include, at a minimum, the following:

1. Domestic Water System:

a. Verify leakage and pressure tests on water distribution systems have been satisfactorily completed in accordance with applicable code and authority having jurisdiction.
b. Water heaters are installed and functioning.
c. Piping is complete and all points of outlet are installed.
d. The water treatment is complete.
e. Systems are flushed, filled, and air purged.
f. Strainers are clean.
g. Control valves function in accordance with the sequence of operation.
h. Shutoff and balance valves are 100 percent open.
i. Hot water circulating pumps are operational and proper rotation is verified.
j. Pump gauge connections are installed directly at pump inlet and outlet flanges or in discharge and suction pipe prior to valves or strainers.
k. Variable-frequency controllers' startup is complete, and safeties are verified.
l. 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 in accordance with the procedures contained in NEBB's "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems" and in this Section.

B. Cut insulation, pipes, and equipment casings for installation of test probes to the minimum extent necessary for TAB procedures.

1. Where holes for probes are required in piping or equipment, install pressure and temperature test plugs to seal systems.
2. Install and join new insulation that matches removed materials. Restore insulation, coverings, vapor barrier, and finish in accordance with Section 220716 "Plumbing Equipment Insulation" and Section 220719 "Plumbing Piping Insulation."

C. Mark equipment and balancing devices, including valve position indicators 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 PLUMBING EQUIPMENT

A. Test, adjust, and balance plumbing equipment indicated on Drawings, including, but not limited to, the following:

1. Domestic water in-line pumps.

3.5 PROCEDURES FOR DOMESTIC WATER SYSTEMS

A. Prepare test reports for pumps and other equipment. Obtain approved submittals and manufacturer-recommended testing procedures. Crosscheck the summation of required equipment flow rates with system design flow rates.

B. Prepare schematic diagrams of systems' Record drawings piping layouts.

C. In addition to the requirements in the “Preparation" Article, prepare domestic water systems for testing and balancing as follows:

1. Check the expansion tank for proper setting.
2. Check the water heater for proper discharge temperature setting.
3. Check remote most points of outlet for adequate pressure.
4. Check flow-control valves for proper position.
5. Locate start-stop and disconnect switches, electrical interlocks, and motor controllers.
6. Verify that motor controllers are equipped with properly sized thermal protection.
7. Check that air has been purged from the system.

D. Measure and record upstream and downstream pressure of each piece of equipment.

E. Check settings and operation of automatic temperature-control valves, self-contained control valves, and pressure-reducing valves. Record final settings.

F. Check settings and operation of each safety valve. Record settings.

3.6 PROCEDURES FOR DOMESTIC HOT-WATER CIRCULATING INLINE PUMP

A. Balance system with manual or automatic balancing valves by setting at design flow.

1. Measure flow in main and branch pipes.
2. Adjust main and branch balance valves for design flow.
3. Re-measure each main branch after all have been adjusted.

B. Adjust pump to deliver total design flow.

1. Measure pump TDH as follows:

a. Measure discharge pressure directly at the pump outlet flange or in discharge pipe prior to any valves.
b. Measure inlet pressure directly at the pump inlet flange or in suction pipe prior to any valves or strainers.
c. Convert pressure to head and correct for differences in gauge heights.
d. Verify pump impeller size by measuring the TDH with the discharge valve closed. Note the point on manufacturer's pump curve at zero flow and verify that the pump has the intended impeller size.

2. Monitor motor performance during procedures, and do not operate motor in an overloaded condition.
3. Mark final settings and verify that all memory stops have been set.
4. Verify final system conditions as follows:

a. Re-measure and confirm that total flow is within design.
b. Re-measure final pumps' operating data, TDH, volts, amps, speed, and static profile.
c. Mark final settings.

3.7 PROCEDURES FOR TESTING, ADJUSTING, AND BALANCING EXISTING SYSTEMS

A. Perform a preconstruction inspection of existing equipment that is to remain and be reused.

1. Measure and record flows, temperatures, and pressures of each piece of equipment. Compare the values to design or nameplate information, where information is available.
2. Measure motor voltage and amperage. Compare the values to motor nameplate information.
3. If filters are in the system, check the condition of the filters.
4. Check bearings and other lubricated parts for proper lubrication.
5. Report on the operating condition of the equipment and the results of the measurements taken. Report deficiencies.

B. TAB After Construction: Before performing testing and balancing of renovated existing systems, inspect existing equipment that is to remain and be reused to verify that existing equipment has been cleaned and refurbished in accordance with the renovation scope indicated by Contract Documents. Verify the following:

1. New filters are installed.
2. Bearings and other parts are properly lubricated.
3. Deficiencies noted in the preconstruction report are corrected.

C. Perform testing and balancing of existing systems to the extent that existing systems are affected by the renovation work.

1. Compare the indicated system flows of the renovated work to the measured flows and determine the new pump speed.
2. Verify that the indicated system flows of the renovated work result in velocities and pump speeds that are within the acceptable limits defined by equipment manufacturer.
3. If calculations increase or decrease the system flow rates by more than 5 percent, make equipment adjustments to achieve the calculated rates. If the increase or decrease is 5 percent or less, equipment adjustments are not required.

3.8 TOLERANCES

A. Set plumbing system's flow rates within the following tolerances:

1. Domestic Water Flow Rate: Plus or minus 5 percent. If the design value is less than 10 gpm (0.63 L/s), within 10 percent.

3.9 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. Manufacturers' test data.
3. Field test reports prepared by system and equipment installers.
4. Other information related 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. Notes to explain why certain final data in the body of reports vary from indicated values.
14. Test conditions for pump performance forms, including the following:

    a. Variable-frequency controller settings for variable-flow hydronic systems.
    b. Settings for pressure controller(s).
    c. Other system operating conditions that affect performance.

D. System Diagrams: Include schematic layouts of distribution systems. Present each system with single-line diagram and include the following:

1. Flow rates.
2. Pipe and valve sizes and locations.
3. Balancing stations.
4. Position of balancing devices.

E. Pump Test Reports: Calculate impeller size by plotting the shutoff head on pump curves, and include the following:

1. Unit Data:

    a. Unit identification.
    b. Location.
    c. Service.
    d. Make and size.
    e. Model number and serial number.
    f. Water flow rate in gpm (L/s).
    g. Water-pressure differential in feet of head or psig (kPa).
    h. Required net positive suction head in feet of head or psig (kPa).
    i. Pump speed.
    j. Impeller diameter in inches (mm).
    k. Motor make and frame size.
    l. Motor horsepower and rpm.
    m. Voltage at each connection.
    n. Amperage for each phase.

o. Full-load amperage and service factor.
p. Seal type.

2. Test Data (Indicated and Actual Values):

a. Static head in feet of head or psig (kPa).
b. Pump shutoff pressure in feet of head or psig (kPa).
c. Actual impeller size in inches (mm).
d. Full-open flow rate in gpm (L/s).
e. Full-open pressure in feet of head or psig (kPa).
f. Final discharge pressure in feet of head or psig (kPa).
g. Final suction pressure in feet of head or psig (kPa).
h. Final total pressure in feet of head or psig (kPa).
i. Final water flow rate in gpm (L/s).
j. Voltage at each connection.
k. Amperage for each phase.

F. Instrument Calibration Reports: Instrument type and make, serial number, application, dates of use, and dates of calibration.

END OF SECTION 220593

SECTION 220719 - PLUMBING PIPING INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes insulating the following plumbing metal piping services and ADA related piping:

1. Domestic cold-water piping.
2. Domestic hot-water piping.
3. Domestic recirculating hot-water piping.
4. Sanitary waste piping exposed to freezing conditions.
5. Stormwater piping exposed to freezing conditions.
6. Roof drains and rainwater leaders.
7. Supplies and drains for handicap-accessible lavatories and sinks.

1.2 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).

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

1. Detail insulation application at elbows, fittings, flanges, valves, and specialties for each type of insulation.
2. Detail application of field-applied jackets.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Packaging: Insulation material containers shall be marked by the manufacturer with appropriate ASTM standard designation, type and grade, and maximum use temperature.

PART 2 - PRODUCTS

2.1 INSULATION MATERIALS

A. Comply with requirements in "Piping Insulation Schedule, General," "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. Flexible Elastomeric: Closed-cell or expanded-rubber materials; suitable for maximum use temperature between minus 70 deg F (minus 57 deg C) and 220 deg F (104 deg C). Comply with ASTM C534/C534M, Type I for tubular materials.

1. Manufacturer:

a. Aeroflex USA, Inc.; Aerocel.
b. Armacell LLC; AP Armaflex.
c. K-Flex USA; Insul-Lock, Insul-Tube, and K-FLEX LS.

E. Glass-Fiber, Preformed Pipe: Glass fibers bonded with a thermosetting resin; suitable for temperature use from 0 deg F (-18 deg C) up to 850 deg F (454 deg C) in accordance with ASTM C411. Comply with ASTM C547.

1. Preformed Pipe Insulation: Type I, Grade A with factory-applied ASJ.
2. Fabricated shapes in accordance with ASTM C450 and ASTM C585.
3. Products: Subject to compliance with requirements, provide the following:

a. Johns Manville; Micro-Lok.
b. Knauf Insulation; 1000-Degree Pipe Insulation.
c. Owens Corning; Fiberglas Pipe Insulation.

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 Adhesive: Solvent-based adhesive.

1. As recommended by flexible elastomeric and polyolefin manufacturer and with a VOC content of 80 g/L or less.
2. Flame-spread index is 25 or less and smoke-developed index is 50 or less as tested in accordance with ASTM E84.
3. Wet Flash Point: Below 0 deg F (minus 18 deg C).
4. Service Temperature Range: 40 to 200 deg F (4 to plus 93 deg C).

C. Glass-Fiber Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.

1. For indoor applications, adhesive shall have a VOC content of 80 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

D. ASJ Adhesive: Comply with MIL-A-3316C, Class 2, Grade A for bonding insulation jacket lap seams and joints.

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).

E. PVC Jacket Adhesive: Compatible with PVC jacket.

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).

2.3 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.

2.4 FIELD-APPLIED JACKETS

A. Field-applied jackets comply with ASTM C1136, Type I, unless otherwise indicated.

B. PVC Jacket: High-impact-resistant, UV-resistant PVC complying with ASTM D1784, Class 16354-C; thickness as scheduled; roll stock ready for shop or field cutting and forming. Thickness is indicated in field-applied jacket schedules.

1. Color: White.
2. Factory-fabricated fitting covers to match jacket if available; otherwise, field fabricate.

a. Shapes: 45- and 90-degree, short- and long-radius elbows, tees, valves, flanges, unions, reducers, end caps, soil-pipe hubs, traps, mechanical joints, and P-trap and supply covers for lavatories.

2.5 TAPES

A. ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, complying with ASTM C 1136.

1. Width: 3 inches (75 mm).
2. Thickness: 11.5 mils (0.29 mm).
3. Adhesion: 90 ounces force/inch (1.0 N/mm) in width.
4. Elongation: 2 percent.
5. Tensile Strength: 40 lbf/inch (7.2 N/mm) in width.
6. ASJ Tape Disks and Squares: Precut disks or squares of ASJ tape.

B. PVC Tape: White vapor-retarder tape matching field-applied PVC jacket with acrylic adhesive; suitable for indoor and outdoor applications.

1. Width: 2 inches (50 mm).
2. Thickness: 6 mils (0.15 mm).
3. Adhesion: 64 ounces force/inch (0.7 N/mm) in width.
4. Elongation: 500 percent.
5. Tensile Strength: 18 lbf/inch (3.3 N/mm) in width.

2.6 PROTECTIVE SHIELDING GUARDS

A. Protective Shielding Pipe Covers:

1. Description: Manufactured plastic wraps for covering plumbing fixture hot- and cold-water supplies and trap and drain piping. Comply with Americans with Disabilities Act (ADA) requirements.

B. Protective Shielding Piping Enclosures:

1. Description: Manufactured plastic enclosure for covering plumbing fixture hot- and cold-water supplies and trap and drain piping. Comply with ADA requirements.

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.

B. Surface Preparation: Clean and prepare surfaces to be insulated. Before insulating, apply a corrosion coating to insulated surfaces as follows:

C. Coordinate insulation installation with the trade installing heat tracing. Comply with requirements for heat tracing that apply to insulation.

D. Mix insulating cement with clean potable water; if insulating cement is to be in contact with stainless-steel surfaces, use demineralized water.

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 an insulation material manufacturer.

I. Install insulation with the least number of joints practical.

J. 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.
4. Cover inserts with jacket material matching adjacent pipe insulation. Install shields over jacket, arranged to protect jacket from tears or puncture by hanger, support, and shield.

K. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.

L. Install insulation with factory-applied jackets as follows:

1. Draw jacket tight and smooth.
2. Cover circumferential joints with 3-inch (75-mm-) wide strips of the same material as insulation jacket. Secure strips with adhesive and outward clinching staples along both edges of strip, spaced 4 inches (100 mm) o.c.
3. Overlap jacket longitudinal seams at least 1-1/2 inches (38 mm). Install insulation with longitudinal seams at bottom of pipe. Clean and dry surface to receive self-sealing lap. Staple laps with outward clinching staples along edge at 2 inches (50 mm) 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 pipe flanges and fittings.

M. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.

N. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.

O. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches (100 mm) beyond damaged areas. Adhere, staple, and seal patches like butt joints.

P. 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.

C. Insulation Installation at Floor Penetrations:

1. Pipe: Install insulation continuously through floor penetrations.
2. Seal penetrations through fire-rated assemblies.

3.5 GENERAL PIPE INSULATION INSTALLATION

A. Requirements in this article apply to all insulation materials except where more specific requirements are specified in various pipe insulation material installation articles.

B. Insulation Installation on Fittings, Valves, Strainers, Flanges, and Unions:

1. Install insulation over fittings, valves, strainers, flanges, unions, and other specialties with continuous thermal and vapor-retarder integrity unless otherwise indicated.
2. Insulate pipe elbows using preformed fitting insulation or mitered fittings made from same material and density as adjacent pipe insulation. Each piece shall be butted tightly against adjoining piece and bonded with adhesive. Fill joints, seams, voids, and irregular surfaces with insulating cement finished to smooth, hard, and uniform contour that is uniform with adjoining pipe insulation.
3. Insulate tee fittings with preformed fitting insulation or sectional pipe insulation of same material and thickness as used for adjacent pipe. Cut sectional pipe insulation to fit. Butt each section closely to the next and hold in place with tie wire. Bond pieces with adhesive.
4. Insulate valves using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. For valves, insulate up to and including the bonnets, valve stuffing-box studs, bolts, and nuts. Fill joints, seams, and irregular surfaces with insulating cement.
5. Insulate strainers using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe

insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. Fill joints, seams, and irregular surfaces with insulating cement. Insulate strainers so strainer basket flange or plug can be easily removed and replaced without damaging the insulation and jacket. Provide a removable reusable insulation cover. For below-ambient services, provide a design that maintains vapor barrier.

6. Insulate flanges and unions using a section of oversized preformed pipe insulation. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker.
7. Cover segmented insulated surfaces with a layer of finishing cement and coat with a mastic. Install vapor-barrier mastic for below-ambient services and a breather mastic for above-ambient services. Reinforce the mastic with fabric-reinforcing mesh. Trowel the mastic to a smooth and well-shaped contour.
8. For services not specified to receive a field-applied jacket except for flexible elastomeric and polyolefin, install fitted PVC cover over elbows, tees, strainers, valves, flanges, and unions. Terminate ends with PVC end caps. Tape PVC covers to adjoining insulation facing using PVC tape.
9. Stencil or label the outside insulation jacket of each union with the word "union." Match size and color of pipe labels.

C. Insulate instrument connections for thermometers, pressure gages, pressure temperature taps, test connections, flow meters, sensors, switches, and transmitters on insulated pipes. Shape insulation at these connections by tapering it to and around the connection with insulating cement and finish with finishing cement, mastic, and flashing sealant.

3.6 INSTALLATION OF MINERAL-FIBER INSULATION

A. Insulation Installation on Straight Pipes and Tubes:

1. Secure each layer of preformed pipe insulation to pipe with wire or bands and tighten bands without deforming insulation materials.
2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.
3. For insulation with factory-applied jackets on above-ambient surfaces, secure laps with outward clinched staples at 6 inches (150 mm) o.c.
4. For insulation with factory-applied jackets on below-ambient surfaces, do not staple longitudinal tabs. Instead, secure tabs with additional adhesive as recommended by insulation material manufacturer and seal with vapor-barrier mastic and flashing sealant.

B. Insulation Installation on Pipe Fittings and Elbows:

1. Install preformed sections of same material as straight segments of pipe insulation when available.
2. When preformed insulation elbows and fittings are not available, install mitered sections of pipe insulation, to a thickness equal to adjoining pipe insulation. Secure insulation materials with wire or bands.

C. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed sections of same material as straight segments of pipe insulation when available.

2. When preformed sections are not available, install mitered sections of pipe insulation to valve body.
3. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
4. Install insulation to flanges as specified for flange insulation application.

3.7 FIELD QUALITY CONTROL

A. All insulation applications will be considered defective Work if sample inspection reveals noncompliance with requirements.

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.

B. Items Not Insulated: Unless otherwise indicated, do not install insulation on the following:

1. Chrome-plated pipes and fittings unless there is a potential for personnel injury.

3.9 INDOOR PIPING INSULATION SCHEDULE FOR PIPING SYSTEMS

A. Domestic Cold Water (40 to 60 degrees F. with copper pipe and fittings):

1. NPS 1-1/4 (DN 32) and smaller: Insulation shall be: Type I, preformed glass-fiber, 1/2-inch thick with a minimum “R” value of 3 at a thermal conductivity range of 0.21 to 0.27 @75 deg. F.

2. NPS 1-1/2 (DN 40) to NPS 3 (DN 80): Insulation shall be: Type I, preformed glass-fiber, 1-inch thick with a minimum “R” value of 3 at a thermal conductivity range of 0.21 to 0.27 @75 deg. F.

B. Domestic Hot and Recirculated Hot Water: (105 to 140 degrees F. with copper pipe and fittings):

1. NPS 1-1/4 (DN 32) and smaller: Insulation shall be: Type I, preformed glass-fiber, 1-inch thick with a minimum “R” value of 3.6 at a thermal conductivity range of 0.21 to 0.28 @100 deg. F.

C. Stormwater and Overflow: Thermal resistance “R” value of 2.

1. All Pipe Sizes: Insulation shall be a minimum of ½” thick and one of the following: flexible elastomeric or glass-fiber.

D. Roof Drain and Overflow Drain Bodies: Thermal resistance “R” value of 2.

1. All Pipe Sizes: Insulation shall be a minimum of ½” thick and one of the following: flexible elastomeric or glass-fiber.

E. Exposed Sanitary Drains, Domestic Water, Domestic Hot Water, and Stops for Plumbing Fixtures for People with Disabilities:

1. All Pipe Sizes: Insulation shall be a minimum of 1" thick and one of the following: flexible elastomeric or glass-fiber with field-applied PVC jacket.

F. Sanitary Waste Piping Where Heat Tracing Is Installed: Thermal resistance "R" value of 2.

1. All Pipe Sizes: Insulation shall be glass-fiber.

G. Floor Drains, Traps, and Sanitary Drain Piping within 10 Feet (3 m) of Drain Receiving Condensate and Equipment Drain Water below 60 Deg F (16 Deg C): Thermal resistance "R" value of 2.

1. All Pipe Sizes: Insulation shall be a minimum ½" thick and one of the following: flexible elastomeric or glass-fiber.

H. Hot Service Drains: Thermal resistance "R" value of 2.

1. All Pipe Sizes: Insulation is the following: glass-fiber.

3.10 INDOOR, FIELD-APPLIED JACKET SCHEDULE FOR PIPING SYSTEMS

A. Install jacket over insulation material. For insulation with factory-applied jacket, install the field-applied noise barrier jacket over the factory-applied jacket.

B. Piping, Exposed:

1. PVC: 20 mils (0.5 mm) thick.

END OF SECTION 220719

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SECTION 220800 - COMMISSIONING OF PLUMBING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes commissioning process requirements for plumbing systems, assemblies, and equipment.

1.2 DEFINITIONS

A. Commissioning Plan: A document that outlines the organization, schedule, allocation of resources, and documentation requirements of the commissioning process.

B. CxA: Commissioning Authority.

C. Systems, Subsystems, Equipment, and Components: Where these terms are used together or separately, they shall mean "as-built" systems, subsystems, equipment, and components.

1.3 INFORMATIONAL SUBMITTALS

A. Certificates of readiness.

B. Certificates of completion of installation, prestart, and startup activities.

1.4 CONTRACTOR'S RESPONSIBILITIES

A. Perform commissioning tests at the direction of the CxA.

B. Participate in plumbing systems, assemblies, equipment, and component maintenance orientation and inspection as directed by the CxA.

C. Provide information requested by the CxA for final commissioning documentation.

1.5 CxA'S RESPONSIBILITIES

A. Provide Project-specific construction checklists and commissioning process test procedures for actual plumbing systems, assemblies, equipment, and components to be furnished and installed as part of the construction contract.

B. Direct commissioning testing.

C. Verify testing of Work is complete.

D. Provide Owner Training as required by individual Specification Sections.

E. Provide test data, inspection reports, and certificates in the Systems Manual.

1.6 COMMISSIONING DOCUMENTATION

A. Provide the following information to the CxA for inclusion in the commissioning plan:

1. Plan for delivery and review of submittals, systems manuals, and other documents and reports.
2. Identification of installed systems, assemblies, equipment, and components including design changes that occurred during the construction phase.
3. Process and schedule for completing construction checklists and manufacturer's prestart and startup checklists for plumbing systems, assemblies, equipment, and components to be verified and tested.
4. Certificate of completion certifying that installation, prestart checks, and startup procedures have been completed.
5. Certificate of readiness certifying that plumbing systems, subsystems, equipment, and associated controls are ready for testing.
6. Test and inspection reports and certificates.
7. Corrective action documents.
8. Verification of testing reports.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TESTING PREPARATION

A. Certify that plumbing systems, subsystems, and equipment have been installed, calibrated, and started and are operating according to the Contract Documents.

B. Certify that plumbing instrumentation and control systems have been completed and calibrated, that they are operating according to the Contract Documents, and that pretest set points have been recorded.

C. Certify that testing procedures have been completed and that reports have been submitted, discrepancies corrected, and corrective work approved.

D. Set systems, subsystems, and equipment into operating mode to be tested (e.g., normal shutdown, normal auto position, normal manual position, unoccupied cycle, emergency power, and alarm conditions).

E. Inspect and verify the position of each device and interlock identified on checklists.

F. Check safety cutouts, alarms, and interlocks with life-safety systems during each mode of operation.

G. Testing Instrumentation: Install measuring instruments and logging devices to record test data as directed by the CxA.

3.2 TESTING VERIFICATION

A. Prior to performance of testing Work, provide copies of reports, sample forms, checklists, and certificates to the CxA.

B. Provide technicians, instrumentation, and tools to verify testing of Plumbing systems at the direction of the CxA.

3.3 GENERAL TESTING REQUIREMENTS

A. Provide technicians, instrumentation, and tools to perform commissioning tests at the direction of the CxA.

B. Scope of plumbing testing shall include domestic hot water system. Testing shall include measuring capacities and effectiveness of operational and control functions.

C. Test all operating modes, interlocks, control responses, and responses to abnormal or emergency conditions, and verify proper response of automation system controllers and sensors.

D. Tests will be performed using design conditions whenever possible.

1. Simulated conditions may need to be imposed using an artificial load when it is not practical to test under design conditions. Before simulating conditions, calibrate testing instruments. Provide equipment to simulate loads. Set simulated conditions as directed by the CxA and document simulated conditions and methods of simulation. After tests, return settings to normal operating conditions.
2. The CxA may direct that set points be altered when simulating conditions are not practical.
3. The CxA may direct that sensor values be altered with a signal generator when design or simulating conditions and altering set points are not practical.

E. If tests cannot be completed because of a deficiency outside the scope of the plumbing system, document the deficiency and report it to the Owner. After deficiencies are resolved, reschedule tests.

F. If the testing plan indicates specific seasonal testing, complete appropriate initial performance tests and documentation and schedule seasonal tests.

3.4 PLUMBING SYSTEMS, SUBSYSTEMS AND EQUIPMENT TESTING PROCEDURES

A. Water Heater Testing and Acceptance Procedures: Testing requirements are specified in Water Heater Sections. Provide submittals and test data to the CxA.

B. Equipment Testing: Provide technicians, instrumentation, tools, and equipment to test performance of filtration and treatment systems. The CxA shall determine the sequence of testing and testing procedures for each equipment item and pipe section to be tested.

C. Plumbing Pump Testing: Provide technicians, instrumentation, tools, and equipment to test performance of pump systems.

3.5 DEMONSTRATION AND TRAINING

A. Provide training as required by individual Specification Sections. Include instruction for the following as applicable to the system, equipment, or component:

1. Basis of System Design, Operational Requirements, and Criteria: Include the following:

a. System, subsystem, and equipment descriptions.
b. Performance criteria.
c. Operating standards.
d. Regulatory requirements.
e. Equipment function.
f. Operating characteristics.
g. Limiting conditions.

2. Documentation: Review the following items in detail with trainees:

a. Emergency manuals.
b. Systems and equipment operation manuals.
c. Systems and equipment maintenance manuals.
d. Project Record Documents.
e. Identification systems.

3. Emergencies: Include the following, as applicable:

a. Instructions on meaning of warnings, trouble indications, and error messages.
b. Instructions on stopping.
c. Shutdown instructions for each type of emergency.
d. Operating instructions for conditions outside of normal operating limits.
e. Sequences for electric or electronic systems.
f. Special operating instructions and procedures.

4. Operations: Include the following, as applicable:

a. Startup procedures.
b. Equipment or system break-in procedures.
c. Routine and normal operating instructions.
d. Regulation and control procedures.
e. Control sequences.
f. Safety procedures.
g. Instructions on stopping.
h. Normal shutdown instructions.
i. Operating procedures for emergencies.
j. Operating procedures for system, subsystem, or equipment failure.
k. Seasonal and weekend operating instructions.
l. Required sequences for electric or electronic systems.
m. Special operating instructions and procedures.

5. Adjustments: Include the following:

a. Alignments.

b. Checking adjustments.
c. Noise and vibration adjustments.
d. Economy and efficiency adjustments.

6. Troubleshooting: Include the following:

a. Diagnostic instructions.
b. Test and inspection procedures.

B. Scheduling: Provide instruction at mutually agreed-on times. For equipment that requires seasonal operation, provide similar instruction at the start of each season.

1. Schedule training with Owner, through the Architect with at least seven days' advance notice.

C. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.

D. Cleanup: Collect used and leftover educational materials and remove from Project site. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

END OF SECTION 230800

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SECTION 221116 - DOMESTIC WATER PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Domestic water pipes, tubes, and fittings inside buildings.

1.2 ACTION SUBMITTALS

A. Product Data: For all piping, fittings, and joint construction.

1.3 INFORMATIONAL SUBMITTALS

A. System purging and disinfecting activities report.

B. Field quality-control reports.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

A. Comply with requirements in the “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. Plastic piping components shall be marked with "NSF-pw."

2.2 COPPER TUBE AND FITTINGS

A. Hard Copper Tube: ASTM B88, Type K (ASTM B88M, Type A), Type L (ASTM B 88M, Type B) and ASTM B 88, Type M (ASTM B 88M, Type C) water tube, drawn temper.

B. Cast-Copper, Solder-Joint Fittings: ASME B16.18, pressure fittings.

C. Wrought-Copper, Solder-Joint Fittings: ASME B16.22, wrought-copper pressure fittings.

D. 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.

E. Copper Pressure-Seal-Joint Fittings:

1. Equal to Viega ProPress with Smart Connect feature.
2. Housing: Copper.
3. Fittings for NPS 2 (DN 50) and Smaller: Wrought-copper fitting with EPDM-rubber, O-ring seal in each end.
4. Fittings for NPS 2-1/2 to NPS 4 (DN 65 to DN 100): Cast-bronze or wrought-copper fitting with EPDM-rubber, O-ring seal in each end.
5. Minimum 200-psig (1370-kPa) working-pressure rating at 250 deg F (121 deg C).

2.3 PIPING JOINING MATERIALS

A. Solder Filler Metals: ASTM B 32, lead-free alloys.

B. Flux: ASTM B 813, water flushable.

C. Brazing Filler Metals: AWS A5.8/A5.8M, BCuP Series, copper-phosphorus alloys for general-duty brazing unless otherwise indicated.

D. Press Fitting: Copper and copper alloy press fittings shall conform to material requirements of ASME B16.18 or ASME B16.22 and performance criteria of IAPMO PS 117. Sealing elements for press fittings shall be EPDM factory installed. Press ends shall have SC (Smart Connect) feature design. The function of this feature is to provide the installer with quick and easy identification of connections which have not been pressed prior to putting the system into operation.

2.4 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.

1. Manufacturers: Subject to compliance with requirements, provide products by the following:

a. Cascade Waterworks Manufacturing.
b. Dresser, Inc.; Piping Specialties Products.
c. Viking Johnson.

2.5 DIELECTRIC FITTINGS

A. General Requirements: Assembly of copper alloy and ferrous materials with separating nonconductive insulating material. Include end connections compatible with pipes to be joined.

B. Dielectric Unions:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:

a. Capitol Manufacturing Company; member of the Phoenix Forge Group.
b. Watts; a division of Watts Water Technologies, Inc.
c. Wilkins; a Zurn company.

2. Standard: ASSE 1079.
3. Pressure Rating: 125 psig (860 kPa) minimum at 180 deg F (82 deg C).
4. End Connections: Solder-joint copper alloy and threaded ferrous.

C. Dielectric Nipples:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:

a. Elster Perfection Corporation.
b. Grinnell Mechanical Products; Tyco Fire Products LP.
c. Matco-Norca.
d. Precision Plumbing Products, Inc.
e. Victaulic Company.

2. Standard: IAPMO PS 66.
3. Electroplated steel nipple complying with ASTM F 1545.
4. Pressure Rating and Temperature: 300 psig (2070 kPa) at 225 deg F (107 deg C).
5. End Connections: Male threaded or grooved.
6. Lining: Inert and noncorrosive, propylene.

PART 3 - EXECUTION

3.1 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 pipes 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 shutoff valve immediately upstream of each dielectric fitting.

D. Install domestic water piping level and plumb.

E. Install piping concealed from view and protected from physical contact by building occupants unless otherwise indicated and except in equipment rooms and service areas.

F. 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.

G. Install the piping above accessible ceilings to allow sufficient space for ceiling panel removal, and coordinate with other services occupying that space.

H. Install piping to permit valve servicing.

I. 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.

J. Install piping free of sags and bends.

K. Install fittings for changes in direction and branch connections.

L. Install unions in copper tubing at final connection to each piece of equipment, machine, and specialty.

M. Install sleeves for piping penetrations of walls, ceilings, and floors.

N. Install sleeve seals for piping penetrations of concrete walls and slabs.

O. Install escutcheons for piping penetrations of walls, ceilings, and floors.

3.2 JOINT CONSTRUCTION

A. Ream the 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. Press connections: Copper and copper alloy press connections shall be made in accordance with the manufacturer's installation instructions. The tubing shall be fully inserted into the fitting and the tubing marked at the shoulder of the fitting. The fitting alignment shall be checked against the mark on the tubing to ensure the tubing is fully engaged (inserted) in the fitting. The joints shall be pressed using the tools approved by the manufacturer.

G. Joints for Dissimilar-Material Piping: Make joints using adapters compatible with materials of both piping systems.

3.3 TRANSITION FITTING INSTALLATION

A. Install transition couplings at joints of dissimilar piping.

B. Transition Fittings in Aboveground Domestic Water Piping NPS 2 (DN 50) and Smaller: Plastic-to-metal transition fittings or unions.

3.4 DIELECTRIC FITTING INSTALLATION

A. Install dielectric fittings in piping at connections of dissimilar metal piping and tubing.

B. Dielectric Fittings for NPS 2 (DN 50) and Smaller: Use dielectric couplings or nipples.

C. Dielectric Fittings for NPS 2-1/2 to NPS 4 (DN 65 to DN 100): Use dielectric flange kits.

3.5 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 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. Equipment: Cold- and hot-water-supply piping as indicated, but not smaller than equipment connections. Provide shutoff valve and union for each connection.

3.6 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 the 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 1-1/2 times the normal operating pressure, but not less than 75 psig, 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.

3.7 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. Adjust balancing valves in hot-water-circulation return piping to provide adequate flow.

a. Manually adjust ball-type balancing valves in hot-water-circulation return piping to provide hot-water flow in each branch.

b. Adjust calibrated balancing valves to indicated flows.

5. Remove plugs used during testing of piping and for temporary sealing of piping during installation.
6. Remove and clean strainer screens. Close drain valves and replace drain plugs.
7. Remove filter cartridges from housings and verify that cartridges are as specified for application where used and are clean and ready for use.
8. Check plumbing specialties and verify proper settings, adjustments, and operation.

3.8 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 (50 mg/L) 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 (200 mg/L) of chlorine. Isolate and allow to stand for three hours.

c. Flush the 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.

B. Prepare and submit reports of purging and disinfecting activities. Include copies of water-sample approvals from authorities having jurisdiction.

C. Clean interior of domestic water piping system. Remove dirt and debris as work progresses.

3.9 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. Fitting Option: Brazed joints and pressure seal join fittings may be used on aboveground copper tubing.

C. Aboveground domestic water piping mains and branch piping all sizes, shall be the following:

1. Hard copper tube, ASTM B 88, Type L (ASTM B 88M, Type B); cast or wrought-copper, solder-joint fittings; and soldered joints or copper pressure seal joint fittings.

END OF SECTION 221116

SECTION 221119 - DOMESTIC WATER PIPING SPECIALTIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Vacuum breakers.
2. Balancing valves.
3. Water-hammer arresters.
4. Air vents.
5. Flexible connectors.
6. Domestic water expansion tanks.

1.2 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.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR PIPING SPECIALTIES

A. Potable-water piping, and components shall comply with NSF 61 and NSF 14 on plastic piping components.

2.2 PERFORMANCE REQUIREMENTS

A. Minimum Working Pressure for Domestic Water Piping Specialties: 125 psig (860 kPa) unless otherwise indicated.

2.3 VACUUM BREAKERS

A. Pipe-Applied, Atmospheric-Type Vacuum Breakers:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:

a. Cash Acme; a division of Reliance Worldwide Corporation.
b. Conbraco Industries, Inc.

c. FEBCO; a division of Watts Water Technologies, Inc.
d. Watts; a division of Watts Water Technologies, Inc.; Watts Regulator Company.
e. Zurn Industries, LLC; Plumbing Products Group; Wilkins Water Control Products.

2. Standard: ASSE 1001.
3. Size: NPS 1/4 to NPS 3 (DN 8 to DN 80), as required to match connected piping.
4. Body: Bronze.
5. Inlet and Outlet Connections: Threaded.
6. Finish: Rough bronze.

B. Hose-Connection Vacuum Breakers:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:

a. Cash Acme; a division of Reliance Worldwide Corporation.
b. Conbraco Industries, Inc.
c. Watts; a division of Watts Water Technologies, Inc.; Watts Regulator Company.
d. Zurn Industries, LLC; Plumbing Products Group; Wilkins Water Control Products.

2. Standard: ASSE 1011.
3. Body: Bronze, nonremovable, with manual drain.
4. Outlet Connection: Garden-hose threaded complying with ASME B1.20.7.
5. Finish: Chrome or nickel plated.

2.4 BALANCING VALVES

A. Memory-Stop Balancing Valves:

1. 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:

a. Conbraco Industries, Inc.
b. Hammond Valve.
c. NIBCO INC.

2. Standard: MSS SP-110 for two-piece, copper-alloy ball valves.
3. Pressure Rating: 400-psig (2760-kPa) minimum CWP.
4. Size: NPS 2 (DN 50) or smaller.
5. Body: Copper alloy.
6. Port: Standard or full port.
7. Ball: Chrome-plated brass.
8. Seats and Seals: Replaceable.
9. End Connections: Solder joint or threaded.
10. Handle: Vinyl-covered steel with memory-setting device.

2.5 WATER-HAMMER ARRESTERS

A. Water-Hammer Arresters:

1. Manufacturers: Subject to compliance with requirements, provide products by the following:

    a. Sioux Chief Manufacturing Company, Inc.
    b. Watts Drainage Products.
    c. Zurn Industries, LLC; Plumbing Products Group; Specification Drainage Products.

2. Standard: ASSE 1010 or PDI-WH 201.
3. Type: Copper tube with piston.
4. Size: ASSE 1010, Sizes AA and A through F, or PDI-WH 201, Sizes A through F.

2.6 AIR VENTS

A. Bolted-Construction Automatic Air Vents:

1. Body: Bronze.
2. Pressure Rating and Temperature: 125-psig (860-kPa) minimum pressure rating at 140 deg F (60 deg C).
3. Float: Replaceable, corrosion-resistant metal.
4. Mechanism and Seat: Stainless steel.
5. Size: NPS 3/8 (DN 10) minimum inlet.
6. Inlet and Vent Outlet End Connections: Threaded.

2.7 FLEXIBLE CONNECTORS

A. Manufacturers: Subject to compliance with requirements, provide products by the following:

1. Flex-Hose Co., Inc.
2. Hyspan Precision Products, Inc.
3. Metraflex, Inc.

B. Stainless-Steel-Hose Flexible Connectors: Corrugated-stainless-steel tubing with stainless-steel wire-braid covering and ends welded to inner tubing.

1. Working-Pressure Rating: Minimum 200 psig (1380 kPa).
2. End Connections NPS 2 (DN 50) and Smaller: Threaded steel-pipe nipple.
3. End Connections NPS 2-1/2 (DN 65) and Larger: Flanged steel nipple.

2.8 DOMESTIC-WATER EXPANSION TANKS

A. Source Limitations: Obtain domestic-water expansion tanks from single source from single manufacturer.

B. Description: Steel pressure-rated tank constructed with welded joints and factory-installed, butyl-rubber diaphragm. Include air precharge to minimum system-operating pressure at tank.

C. Construction:

1. Tappings: Factory-fabricated stainless steel, welded to tank before testing and labeling. Include ASME B1.20.1 pipe thread.

2. Interior Finish: Comply with NSF 61 and NSF 372 barrier materials for potable-water tank linings, including extending finish into and through tank fittings and outlets.
3. Air-Charging Valve: Factory installed.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install water-hammer arresters in water piping according to PDI-WH 201.

B. Install air vents at high points of water piping.

3.2 CONNECTIONS

A. Comply with requirements for ground equipment in Section 260526 "Grounding and Bonding for Electrical Systems."

3.3 ADJUSTING

A. Set field-adjustable flow set points of balancing valves.

END OF SECTION 221119

SECTION 221316 - SANITARY WASTE AND VENT PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Pipe, tube, and fittings.
2. Specialty pipe fittings.

1.2 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 (30 kPa).

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1.4 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.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

A. Comply with requirements in the “Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

2.2 HUBLESS, CAST-IRON SOIL PIPE AND FITTINGS

A. Pipe and Fittings: ASTM A 888 or CISPI 301.

B. CISPI, Hubless-Piping Couplings:

1. Standards: ASTM C 1277 and CISPI 310.
2. Description: Stainless-steel corrugated shield with stainless-steel bands and tightening devices; and ASTM C 564, rubber sleeve with integral, center pipe stop.

C. Heavy-Duty, Hubless-Piping Couplings:

1. Standards: ASTM C 1277 and ASTM C 1540.
2. Description: Stainless-steel shield with stainless-steel bands and tightening devices; and ASTM C 564, rubber sleeve with integral, center pipe stop.

D. Cast-Iron, Hubless-Piping Couplings:

1. Standard: ASTM C 1277.
2. Description: Two-piece ASTM A 48/A 48M, cast-iron housing; stainless-steel bolts and nuts; and ASTM C 564, rubber sleeve with integral, center pipe stop.

2.3 PVC PIPE AND FITTINGS

A. Comply with NSF 14 for plastic piping components. Include "NSF-dwv" marking for plastic drain, waste, and vent piping and "NSF-sewer" marking for plastic sewer piping.

B. Solid-Wall PVC Pipe: ASTM D2665 drain, waste, and vent.

C. PVC Socket Fittings: ASTM D2665, made in accordance with ASTM D3311, drain, waste, and vent patterns and to fit Schedule 40 pipe.

D. Adhesive Primer: ASTM F656.

E. Solvent Cement: ASTM D2564.

2.4 SPECIALTY PIPE FITTINGS

A. Transition Couplings:

1. General Requirements: Fitting or device for joining piping with minor differences in OD's or of dissimilar 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. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1) Dallas Specialty & Mfg. Co.
2) Fernco Inc.
3) Mission Rubber Company; a division of MCP Industries, Inc.
4) Plastic Oddities; a division of Diverse Corporate Technologies, Inc.

b. Standard: ASTM C 1173.

c. Description: Elastomeric, sleeve-type, reducing or transition pattern. Include shear ring and corrosion-resistant-metal tension band and tightening mechanism on each end.

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.

PART 3 - EXECUTION

3.1 PIPING INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipes 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 at indicated slopes.

F. Install piping free of sags and bends.

G. Install fittings for changes in direction and branch connections.

H. Install piping to allow application of insulation.

I. 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 the 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 drainpipe. Straight tees, elbows, and crosses may be used on vent lines. Do not change the direction of flow more than 90 degrees. Use proper size of standard increasers and reducers if pipes of varied sizes are connected. Reducing the size of drainage piping in the direction of flow is prohibited.

J. 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 (DN 80) and smaller; 1 percent downward in direction of flow for piping NPS 4 (DN 100) 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.

K. 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."

L. Install aboveground PVC piping in accordance with ASTM D2665.

M. 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. Cleanouts are to be provided every 50-feet, at changes in direction, and at the base of stacks.
2. Install cleanout fitting with closure plug inside the building in sanitary drainage force-main piping.
3. Install drains in sanitary drainage gravity-flow piping.

N. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.

O. Install sleeves for piping penetrations of walls, ceilings, and floors.

P. Install sleeve seals for piping penetrations of concrete walls and slabs.

Q. Install escutcheons for piping penetrations of walls, ceilings, and floors.

3.2 JOINT CONSTRUCTION

A. Join hubless, cast-iron soil piping according to CISPI 310 and CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for hubless-piping coupling joints.

B. Plastic, Nonpressure-Piping, Solvent-Cement Joints: Clean and dry joining surfaces. Join pipe and fittings in accordance with the following:

1. Comply with ASTM F402 for safe-handling practice of cleaners, primers, and solvent cements.
2. PVC Piping: Join in accordance with ASTM D2855 and ASTM D2665 appendixes.

3.3 SPECIALTY PIPE FITTING INSTALLATION

A. Transition Couplings:

1. Install transition couplings at joints of piping with minor differences in OD's.
2. In Drainage Piping: Unshielded, nonpressure transition couplings.

B. Dielectric Fittings:

1. Install dielectric fittings in piping at connections of dissimilar metal piping and tubing.
2. Dielectric Fittings for NPS 2 (DN 50) and Smaller: Use dielectric nipples.
3. Dielectric Fittings for NPS 2-1/2 to NPS 4 (DN 65 to DN 100): Use dielectric nipples.
4. Dielectric Fittings for NPS 5 (DN 125) and Larger: Use dielectric flange kits.

3.4 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.

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 (DN 50) and smaller, adjacent to each valve and at final connection to each piece of equipment.
2. Install flanges, in piping NPS 2-1/2 (DN 65) and larger, adjacent to flanged valves and at final connection to each piece of equipment.

3.5 IDENTIFICATION

A. Identify exposed sanitary waste and vent piping.

B. Comply with requirements for identification specified in Section 220553 "Identification for Plumbing Piping and Equipment."

3.6 FIELD QUALITY CONTROL

A. During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in the 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 the 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 (30 kPa). 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 (250 Pa). Use a U-tube or manometer inserted in trap of water closet to measure this pressure. Air pressure must remain constant without introducing additional air throughout the 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.

3.7 CLEANING AND PROTECTION

A. Clean interior of piping. Remove dirt and debris as work progresses.

B. Protect drains during the 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.

3.8 PIPING SCHEDULE

A. Aboveground, soil and waste piping risers, NPS 4 (DN 100) and smaller shall be the following:

1. Hubless, cast-iron soil pipe and fittings; CISPI with heavy-duty hubless-piping couplings; and coupled joints.
2. Solid-wall PVC pipe, PVC socket fittings, and solvent-cemented joints when not in a return air plenum.

B. Aboveground, soil and waste horizontal piping NPS 4 (DN 100) and smaller shall be the following:

1. Hubless, cast-iron soil pipe and fittings; CISPI with heavy-duty hubless-piping couplings; and coupled joints for all applications.
2. Solid-wall PVC pipe, PVC socket fittings, and solvent-cemented joints when not in a return air plenum.
3. Dissimilar Pipe-Material Couplings: Unshielded, nonpressure transition couplings.

C. Aboveground, vent piping NPS 4 (DN 100) and smaller shall be the following:

1. Hubless, cast-iron soil pipe and fittings; CISPI with heavy-duty hubless-piping couplings; and coupled joints for all applications.
2. Solid-wall PVC pipe, PVC socket fittings, and solvent-cemented joints when not in a return air plenum.
3. Dissimilar Pipe-Material Couplings: Unshielded, nonpressure transition couplings.

END OF SECTION 221316

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SECTION 221319 - SANITARY WASTE PIPING SPECIALTIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Cleanouts.
2. Miscellaneous sanitary drainage piping specialties.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include rated capacities, operating characteristics, and accessories for the following:

1.3 QUALITY ASSURANCE

A. Drainage piping specialties shall bear label, stamp, or other markings of specified testing agencies.

B. Comply with NSF 14, "Plastics Piping Components and Related Materials," for plastic sanitary piping specialty components.

PART 2 - PRODUCTS

2.1 CLEANOUTS

A. Cast-Iron Exposed Cleanouts:

1. Standard: ASME A112.36.2M.
2. Size: Same as connected drainage piping
3. Body Material: Hub-and-spigot, cast-iron soil pipe T-branch OF Hubless, cast-iron soil pipe test tee as required to match connected piping.
4. Closure: Countersunk, brass plug.
5. Closure Plug Size: Same as or not more than one size smaller than cleanout size.

B. Metal Floor Cleanouts:

1. ASME A112.36.2M, Cast-Iron Cleanouts:

a. Manufacturers: Subject to compliance with requirements, provide products by the following

1) Josam Company.

2) Tyler Pipe.
3) Watts Drainage Products.
4) Zurn Plumbing Products Group.

2.2 MISCELLANEOUS SANITARY DRAINAGE PIPING SPECIALTIES

A. Trap Guards:

1. Proset Systems “trap guard.” Flexible elastomeric PVC material molded into the shape of duck’s bill, open on top with curl closure at bottom. Designed to allow wastewater to open and adequately discharge floor drain through its interior. Device to close and return to the original molded shape after wastewater discharge is complete.

B. Floor-Drain, Trap-Seal Primer Fittings:

1. Description: Cast iron, with threaded inlet and threaded or spigot outlet, and trap-seal primer valve connection.
2. Size: Same as floor drain outlet with NPS 1/2 (DN 15) side inlet.

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 (DN 100). Use NPS 4 (DN 100) for larger drainage piping unless larger cleanout is indicated.
2. Locate at each change in the direction of piping greater than 45 degrees.
3. Locate at minimum intervals of 50 feet (15 m) for piping NPS 4 (DN 100) and smaller and 100 feet (30 m) for larger piping.

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 (750 mm) or Less: Equivalent to 1 percent slope, but not less than 1/4-inch (6.35-mm) total depression.
b. Radius, 30 to 60 Inches (750 to 1500 mm): Equivalent to 1 percent slope.

c. Radius, 60 Inches (1500 mm) or Larger: Equivalent to 1 percent slope, but not greater than 1-inch (25-mm) total depression.

3. Install floor-drain flashing collar or flange so no leakage occurs between drain and adjoining flooring. Maintain the integrity of waterproof membranes where penetrated.
4. Install individual traps for floor drains connected to sanitary building drains, unless otherwise indicated.

E. Install wood-blocking reinforcement for wall-mounting-type specialties.

F. Install traps on plumbing specialty drain outlets. Omit traps on indirect waste unless trap is indicated.

3.2 CONNECTIONS

A. Install piping adjacent to equipment to allow service and maintenance.

3.3 PROTECTION

A. Protect drains during the 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

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SECTION 224200 - COMMERCIAL PLUMBING FIXTURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Commercial lavatories.
2. Commercial urinals.
3. Commercial water closets.
4. Flushometer valves.
5. Toilet seats.
6. Fixture carriers.

1.2 DEFINITIONS

A. FRP: Fiberglass-reinforced plastic.

B. PMMA: Polymethyl methacrylate; also known as "acrylic."

C. Standard-Efficiency Flush Volume: 1.6 gal. (6 L) per flush.

D. High-Efficiency Flush Volume: 1.28 gal. (4.8 L) or less per flush.

E. Water Sense Fixture: Water closet and/or flushometer valve/tank certified by the EPA to meet the Water Sense performance criteria.

1.3 ACTION SUBMITTALS

A. Product Data:

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for plumbing fixtures.
2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

B. Shop Drawings:

1. Attachment details.
2. Details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
3. Diagrams for power, signal, and control wiring.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data:

1. For lavatories and faucets.

    a. Servicing and adjustments of automatic faucets.

2. For flushometer valves and electronic sensors to include in operation and maintenance manuals.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials to Owner 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 the amount of each type and size installed.
2. Faucet Cartridges and O-Rings: Equal to 5 percent of the amount of each type and size installed.
3. Flushometer-Valve Repair Kits: Equal to 10 percent of the amount of each type installed, but no fewer than one of each type.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Lavatory faucets, sink faucets, and 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. 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.

2.2 COMMERCIAL LAVATORIES

A. Lavatories, Wall Mounted:

1. Lavatories, Wall Mounted - Vitreous China, Rectangular with self-draining deck:

    a. Fixture:

        1) Standard: ASME A112.19.2/CSA B45.1.
        2) Type: For wall hanging.
        3) Faucet-Hole Location: Top.
        4) Color: White.
        5) Mounting Material: Chair carrier, concealed.

B. Lavatory Faucets, Automatically Operated:

1. Standards: ASME A112.18.1/CSA B125.1 and UL 1951.

2. Operation Type: Electronic sensor operated, mixing.
3. 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.
4. General: Include hot- and cold-water indicators; coordinate faucet inlets with supplies and fixture hole punchings; coordinate outlet with spout and fixture receptor.

C. Lavatory Supply Fittings:

1. NSF Standard: Comply with NSF 61 and NSF 372 for supply-fitting materials that will be in contact with potable water.
2. Standard: ASME A112.18.1/CSA B125.1.
3. 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.
4. Supply Stops: Chrome-plated-brass, one-quarter-turn, ball-type, or compression valve with inlet connection matching supply piping.
5. Operation: Loose key.
6. Risers:

    a. ASME A112.18.6/CSA B125.6, braided or corrugated stainless steel, flexible hose riser.

D. Lavatory Waste Fittings:

1. Standard: ASME A112.18.2/CSA B125.2.
2. Drain: Grid type with NPS 1-1/4 (DN 32) offset and straight tailpiece.
3. Trap:

    a. Size: NPS 1-1/2 by NPS 1-1/4 (DN 40 by DN 32).
    b. Material:

        1) Chrome-plated, two-piece, cast-brass trap, and swivel elbow with 0.032-inch- (0.83-mm-) thick brass tube to wall; and chrome-plated, brass or steel wall flange.

2.3 COMMERCIAL URINALS

A. Urinals, Wall Hung:

1. Urinals, Wall Hung - Washout:

    a. Fixture:

        1) Standards:

            a) ASME A112.19.2/CSA B45.1.
            b) ASME A112.19.5/CSA B45.15.

        2) Material: Vitreous china.
        3) Drain: Separate removable chrome-plated dome strainer with chrome-plated, NPS 1-1/2 (DN 40) tailpiece.

4) Strainer or Trapway: Manufacturer's standard strainer and NPS 1-1/2 (DN 40) tailpiece.
5) Color: White.

b. Waste Fitting:

1) Standard: ASME A112.18.2/CSA B125.2.
2) Trap:

a) Size: NPS 1-1/2 (DN 50).

c. Support: Urinal carrier, concealed floor affixed with steel uprights with hanger and bearing plates.

2.4 FLUSHOMETER VALVES

A. Flushometer Valves, Sensor Operated:

1. Flushometer Valves, Sensor Operated – Self-generating:

a. Source Limitations: Obtain flushometer valve from single source from single manufacturer.
b. Standard: ASSE 1037/ASME 112.1037/CSA B125.37.
c. Minimum Pressure Rating: 125 psig (860 kPa).
d. Features: Include integral check stop and backflow-prevention device.
e. Material: Bronze body with corrosion-resistant components.
f. Exposed Cover Plate-Valve Finish: Brushed stainless steel with solid bronze valve body.
g. Actuator: Self-powered hydroelectric flush valve system with manual flush override. The complete assembly meets or exceeds the requirements of ASSE 1037.
h. Trip Mechanism: Electronic smart sensor with self-adjusting detection range, 6-second detection time to prevent ghost flushing.

2.5 FIXTURE CARRIERS

A. Fixture Carriers - Lavatory:

1. Source Limitations: Obtain lavatory carriers from single source from single manufacturers.
2. Standards:

a. ASME A112.6.1M.
b. ASME A112.6.2.

B. Fixture Carriers - Urinal:

1. Source Limitations: Obtain urinal carriers from single source from single manufacturer.
2. Standard: ASME A112.6.1M.
3. Description: Waste-fitting assembly, as required to match drainage piping material and arrangement with faceplates, couplings, gaskets, and feet; bolts and hardware matching fixture.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine roughing-in of water-supply piping and sanitary drainage and vent piping systems to verify actual locations of piping connections before plumbing fixture installation.

B. Examine walls and floors for suitable conditions where plumbing fixtures will be installed.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF COMMERCIAL PLUMBING FIXTURES

A. Lavatory Installation:

1. Install lavatories level and plumb in accordance with roughing-in drawings.
2. Install supports, affixed to building substrate, for wall-mounted lavatories.
3. Install accessible, wall-mounted lavatories at mounting height in accordance with the Drawings and ICC A117.1.
4. Install water-supply piping with stop on each supply to each lavatory faucet. Install stops in locations that are accessible for ease of operation.
5. Install trap and waste piping on each drain outlet of each lavatory to be connected to sanitary drainage system.
6. 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."
7. Seal joints between lavatories, counters, 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."
8. 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."

B. Urinal Installation:

1. Install urinals level and plumb in accordance with roughing-in drawings.
2. Install wall-hung, back-outlet urinals onto waste-fitting seals and attached to supports.
3. Install wall-hung, bottom-outlet urinals with tubular waste piping attached to supports.
4. Install accessible, wall-mounted urinals at mounting height in accordance with the Drawings and ICC A117.1.
5. Install trap-seal liquid in waterless urinals.
6. Install supports, affixed to building substrate, for wall-hung urinals.
7. Use off-floor carriers with waste fitting and seal for back-outlet urinals.
8. Use carriers without waste fitting for urinals with tubular waste piping.
9. Use chair-type carrier supports with rectangular steel uprights for accessible urinals.
10. Measure support height installation from finished floor, not structural floor.
11. Install flushometer-valve, water-supply fitting on each supply to each urinal.
12. Attach supply piping to supports or substrate within pipe spaces behind fixtures.
13. Install lever-handle flushometer valves for accessible urinals with handle mounted on open side of compartment.

14. Install actuators in locations easily reachable for people with disabilities.
15. Install new batteries in battery-powered, electronic-sensor mechanisms.
16. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations. Install deep-pattern escutcheons if required to conceal protruding fittings. Comply with escutcheon requirements specified in Section 220518 "Escutcheons for Plumbing Piping."
17. Seal joints between urinals, walls, and floors using sanitary-type, one-part, mildew-resistant silicone sealant. Match sealant color to urinal color. Comply with sealant requirements specified in Section 079200 "Joint Sealants."

3.3 INSTALLATION OF PIPING CONNECTIONS

A. Connect plumbing fixtures with water supplies and soil, waste, and vent piping. Use size fittings required to match plumbing fixtures.

B. Comply with water piping requirements specified in Section 221116 "Domestic Water Piping."

C. Comply with soil, waste, and vent piping requirements specified in Section 221316 "Sanitary Waste and Vent Piping."

D. Install protective-shielding pipe covers and enclosures on exposed supplies and waste piping of accessible plumbing fixtures. Comply with requirements in Section 220719 "Plumbing Piping Insulation."

E. Where installing piping adjacent to water closets and urinals allow space for service and maintenance.

3.4 INSTALLATION OF 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 manufacturers, 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.

3.5 INSTALLATION OF CONTROL CONNECTIONS

A. Install control and electrical power wiring to field-mounted control devices.

B. Connect control wiring in accordance with Section 260523 "Control-Voltage Electrical Power Cables."

3.6 ADJUSTING

A. Operate and adjust plumbing fixtures and controls. Replace damaged and malfunctioning plumbing fixtures, fittings, and controls.

B. Adjust water pressure at faucets to produce proper flow.

C. Adjust water pressure at flushometer valves to produce proper flow.

3.7 CLEANING AND PROTECTION

A. After completing installation of plumbing fixtures, inspect and repair damages finishes. Replace any fixtures unable to be repaired to the satisfaction of the Architect.

B. Clean plumbing fixtures and associated faucets, valves, flushometer valves, and fittings with manufacturers' recommended cleaning methods and materials.

C. Provide protective covering for installed plumbing fixtures and associated faucets, valves, flushometer valves, and fittings.

D. Do not allow use of plumbing fixtures for temporary facilities unless approved in writing by the Owner.

END OF SECTION 224200

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SECTION 260100 – GENERAL PROVISIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. This Section is hereby made a part of all other sections of Division 26 – Electrical Work, as if repeated in each.

1.2 DESCRIPTION OF WORK

A. This Division requires the furnishing and installing of complete functioning systems, and each element thereof, as specified or indicated on the Drawings and Specifications or inferred; including every article, device, or accessory (whether specifically called for by item) necessary to facilitate each system's functioning as indicated by the design and the equipment specified. Elements of the work include materials, labor, supervision, supplies, equipment, transportation, and utilities.

B. Provide items, articles, materials, operation, and methods required by drawings and specifications including labor, equipment, supplies, and incidentals necessary for completion of work in Division 26 - Electrical Section.

1. Record documents.

1.3 QUALITY ASSURANCE

A. All permits, licenses and utility fees that are required by governing authorities for the performance of the work shall be procured and paid for by the Contractor.

B. All work shall be performed in compliance with all applicable and governing safety regulations including the regulations of the Occupational and Safety Health Act. All safety lights, signs and guards required for the performance of work shall be provided by the Contractor.

C. All work shall conform to the requirements of all applicable codes, ordinances and regulations with adopted amendments including the rules and regulations of the 2017 National Electrical Code, the latest editions of the National Fire Protection Association, the 2018 International Building Code, 2018 International Mechanical, the 2018 Uniform Plumbing Codes, the 2021 International Energy Conservation Code, O.S.H.A. and all State and local laws, codes, and ordinances.

D. Laws, codes, ordinances, and regulations shall take precedent excepting only where the work called for by the drawings and specifications exceeds by quality and quantity.

E. Fixtures, appliances, equipment, and materials, which are subject to Underwriter’s Laboratory tests, shall bear such approval.

F. Electrical designs are based on the requirements for the specified manufacturers listed on the equipment schedules. Conduit, disconnects, motor starters, breakers, fuses, and wire sizes are selected based on scheduled equipment. Increased current requirements necessitating larger wire, breakers, switches, etcetera, to accommodate any alternate or substitute manufacturer's equipment, other than as shown on drawings shall be provided without any increase in contract price by Contractor furnishing the equipment.

G. Manufacturers, where specifically called for, must provide factory tests, unit installation observations, unit start-up and tests, etcetera, as specified, and submit signed reports to the Construction Inspector upon completion of these services. Subletting of these services will not be permitted. Shop drawing submittals shall be accompanied by a letter of certification from the manufacturer that the specified services shall be provided. Failure to do so shall cause to reject the shop drawing submittals.

H. The contract drawings are in part schematic and intended to convey the scope of work and indicate the general layout, design, and arrangement. The Contractor shall follow these drawings in the layout of his work and shall consult general construction drawings, mechanical and Electrical drawings and all other drawings for this project and shall verify all existing site conditions to determine all conditions affecting the work shown or specified. The contract drawings are not to be scaled, and the Contractor shall verify spaces in which the work is to be installed.

I. Follow drawings in laying out work, check drawings of other trades to verify spaces in which work will be installed and maintain maximum headroom and space conditions at all points. Where headroom or space conditions appear inadequate, the Engineer shall be notified before proceeding with installation.

J. Work in cooperation with one another to fit conduit into the structure as job conditions may demand. All final decisions as to right of way and run of conduit to be made by the Architect or the Owner’s representative.

K. All work shall be performed by trained mechanics of a particular trade involved and done in a neat and skillful manner as approved by the Engineer.
   1. Work shall be performed in cooperation with other trades and scheduled to allow timely and efficient completion of the project.
   2. Furnish other trades advance information on locations and sizes of frames, boxes, sleeves, and openings needed for work, and furnish information and shop drawings necessary to permit other trades affected to install their work properly without delay.
   3. Where there is evidence that the work of one trade will interfere with the work of other trades, all trades shall assist in working out space conditions to make satisfactory adjustments.

L. Work installed before coordinating with other trades causing interference with the work of such other trades shall be changed to correct such conditions without an increase in contract price and as directed by the Engineer.

M. Where specific details and dimensions are not shown in the drawings, the Contractor shall take measurements and make layouts for the proper installation of the work and coordination with all other work on the project. In case of any discrepancies between the drawings and the specifications, it shall be assumed, by the signing of the Contract, that the higher cost (if any difference in costs) is included in the contract price, and the Contractor shall perform the work

in accordance with the drawings or with the specifications, as determined and approved by the Engineer.

N. Definitions:

1. "Concealed" means hidden from sight in chases, furred spaces, shafts, hung ceilings, embedded in construction, or in crawl spaces.
2. "Exposed" means not installed underground or "concealed" as defined above.
3. The words "furnish and install", "provide", "furnish", "install", or equivalent words are used or are understood, to mean the Contractor shall furnish and completely install the system, service, equipment, or material named, together with other associated devices, equipment, material, wiring, conduit, etcetera as required for a complete operating installation, and conforming to the manufacturer's standards and recommendations.
4. It is the intent of the Electrical specifications and drawings to call for finished work, tested and ready for operation.

    a. All apparatus, appliances, materials or work not shown on drawings, but mentioned in specifications, or vice versa, and/or all incidental accessories necessary to make work complete and ready for operation, even though not specified or shown on drawings, shall be furnished, and installed without an increase in contract price.
    b. Should there be discrepancies or questions of intent, refer the matter to the Architect in writing for decision before ordering any equipment or materials, or before starting any related work.

1.4 COORDINATION

A. The Contractor shall visit the site and ascertain the conditions to be encountered while installing the Work under this Division, verify all dimensions and locations before purchasing equipment or commencing work, and make do provision for same in the bid. Failure to comply with this requirement shall not be considered justification for omission, alteration, incorrect or faulty installation of Work under this Division or for additional compensation for Work covered by this Division.

B. The Contractor shall refer to Drawings of the other disciplines and to relevant equipment drawings and shop drawings to determine the extent of clear spaces. The Contractor shall make offsets required to clear equipment, beams, and other structural members; and to facilitate concealing conduit and ductwork in the manner anticipated in the design.

C. The contractor shall provide materials with trim which will fit properly with the types of ceiling, wall, or floor finishes installed.

D. The Contractor shall always maintain a supervisor on the jobsite to coordinate his work with other contractors and subcontractors so that various components of the Electrical systems will be installed at the proper time, will fit the available space, and will allow proper service access to the equipment. Execute the Work in such a manner that the Work of the other contractors and trades will not be handicapped, hindered, or delayed at any time.

E. The work of this Division shall progress according to the "Construction Schedule" as established by the Prime Contractor and his subcontractors and as approved by the Engineer. Cooperate in establishing these schedules and perform the Work under this Division, in a timely manner in conformance with the construction schedule to ensure successful achievement of schedule dates.

1.5 SUBMITTALS

A. Submittals and shop drawings shall not contain the firm name, logo, seal, or signature of the Engineer. They shall not be copies of the work product of the Engineer. If the Contractor desires to use elements of such product, the license agreement for transfer of information obtained from the Engineer must be used.

B. Assemble and submit for review manufacturer product literature for material and equipment to be furnished and/or installed under this Division. Literature shall include shop drawings, manufacturer product data, performance sheets, samples and other submittals required by this Division. Provide a minimum of seven (7) sets. General product catalog data not specifically noted to be part of the specified product will be rejected and returned without review.

C. Separate submittals according to individual specification sections. Only resubmit those sections requested for resubmittal.

D. Provide submittals in sufficient detail to demonstrate compliance with these Contract Documents and the design concept. Highlight, mark, list or indicate the materials, performance criteria and accessories that are being proposed. Illegible submittals will be rejected and returned without review.

E. Refer to individual Sections for additional submittal requirements.

F. Transmit submittals as early as required to support the project schedule. Allow two weeks for Engineer review time, plus to/from mailing time via the Engineer, plus a duplication of this time for resubmittals, if required. Transmit submittals as soon as possible after Notice to Proceed and before Electrical construction starts.

F. Before transmitting submittals and material lists, verify that the equipment submitted is mutually compatible with and suitable for the intended use. Verify that the equipment will fit the available space and maintain manufacturer recommended service clearances. If the size of equipment furnished makes necessary any change in location, or configuration, submit a shop drawing showing the proposed layout.

G. Submittals shall contain the following information:

1. The project name.
2. The applicable specification section and paragraph.
3. Equipment identification acronym as used on the drawings.
4. The submittal dates.
5. The Contractor's stamp, which shall certify that the Contractor has checked the stamped drawings, comply with the Drawings and Specifications, and have been coordinated with other trades.
6. Submittals not so identified will be returned to the Contractor without action.

H. For electronic submittals, Contractor shall submit the documents in accordance with this Section. The contractor shall notify the Engineer and Engineer that the submittals have been posted. Contractor shall include the website, username and password information needed to access the submittals. For submittals sent by e-mail, Contractor shall copy the Engineer and Engineer's designated representatives. The contractor shall allow for the Engineer review time as specified above in the construction schedule. The contractor shall submit only the documents required to purchase the materials and/or equipment in the submittal.

I. The checking and subsequent acceptance by the Engineer and/or Engineer of submittals shall not relieve responsibility from the Contractor for (1) deviations from the Drawings and Specifications; (2) errors in dimensions, details, sizes of equipment, or quantities; (3) omissions of components or fittings; and (4) not coordinating items with actual building conditions and adjacent work. The contractor shall request and secure written acceptance from the Engineer and Engineer prior to implementing any deviation.

1.6 ELECTRONIC DRAWING FILES

A. In preparation of shop drawings or record drawings, Contractor may, at their option, obtain electronic drawing files in AutoCAD or DXF format from the Engineer for a shipping and handling fee of $200 for a drawing set up to 12 sheets and $15 per sheet for each additional sheet. Contact the Engineer for Engineer's written authorization. The contractor shall request and complete the Electronic File Release Agreement form from the Engineer. Send the form along with a check made payable to FSC MEP Engineers, LLC. The contractor shall indicate the desired shipping method and drawing format on the attached form. In addition to payment, the Engineer's release agreement form must be received before electronic drawing files are sent.

1.7 SUBSTITUTIONS

A. Materials, products, and equipment described in the Bidding Documents establish a standard of required function, dimension, appearance, and quality to be met by the proposed substitution.

B. No substitution will be considered prior to receipt of Bids unless a written request for approval to bid has been received by the Engineer at least ten (10) calendar days prior to the date for receipt of Bids. Each such request shall include the name of the material or equipment for which substitution is being requested, and a complete description of the proposed substitution including drawings, cut sheets, performance and test data, and all other information necessary for an evaluation. Include a statement setting forth changes in other materials, equipment, or other work that incorporation of the substitution would require. The burden of proof of the merit of the proposed substitution is upon the proposer. The Engineer's decision to approve or disapprove a substitution in a Bid is final.

C. If the proposed substitution is approved prior to receipt of Bids, such approval will be stated in an Addendum. Bidders shall not rely upon approvals made in any other manner. Verbal approval will not be given.

D. No substitutions will be considered after the Contract is awarded unless specifically provided in the Contract Documents.

1.8 RECORD DOCUMENTS

A. Within 30 days after the date of system acceptance, provide record drawings and indicate installed conditions for the following:

1. Conduit systems, size, and location, for both exterior and interior.
2. Equipment locations (exposed and concealed), dimensioned from prominent building lines.
3. Approved substitutions, Contract Modifications, and actual equipment and materials installed with performance data.

1.9 PAINTING

A. Exposed ferrous surfaces, including conduit, conduit hangers, equipment stands and supports shall be painted by the Electrical Contractor using materials and methods as specified.

B. Factory finishes, shop priming and special finishes are specified in the individual equipment specification sections.

C. Where factory finishes are provided and no additional field painting is specified, marred, or damaged surfaces shall be touched up or refinished to leave a smooth, uniform finish.

PART 2 - PRODUCTS

2.1 GENERAL

A. All materials and equipment shall be new and shall bear the manufacturer’s name, model number, serial number, date of manufacture and other identification marking.

B. All materials and equipment shall be the standard product of the manufacturer regularly engaged in production of the required type of material or equipment for at least 5 years (unless specifically exempted by the Construction Inspector) and shall be manufacturer's latest design having published properties.

2.3 ELECTRICAL EQUIPMENT

A. General: Unless specified or shown otherwise, the Contractor shall furnish the required motors for equipment furnished in the Electrical Work. Motors shall be provided where indicated and as required for the operation of the equipment to be furnished. Motors shall be designed for full voltage starting unless otherwise specified or noted on drawings and shall be suitable for continuous duty at 40°C. ambient and at an altitude of 3300 feet (1000 m) above sea level. All motors shall be selected, designed, and fabricated in conformance with the requirements of NEMA MG 1 standard.

B. Motor Efficiency: NEMA 60 Hz general purpose electric motors shall meet or exceed the specifications of NEMA Premium efficiency levels per NEMA Standards Publication MG 1.

Efficiencies requirements for subtype I, open drip-proof motors rated 600 V or less are as follows:

1. 6 Pole, 1200 rpm.

    a. 1 Motor Horsepower: 82.5% minimum nominal full load efficiency.
    b. 1.5 Motor Horsepower: 86.5% minimum nominal full load efficiency.

2. 4 Pole, 1800 rpm.

    a. 1 Motor Horsepower: 85.5% minimum nominal full load efficiency.
    b. 1.5 Motor Horsepower: 86.5% minimum nominal full load efficiency.
    c. 2 Motor Horsepower: 86.5% minimum nominal full load efficiency.

C. Variable Frequency Drives: All motors utilizing variable frequency drives shall be compatible with the drive and shall meet the requirements of NEMA MG-1 Part 31.40.4.2.

PART 3 – EXECUTION

3.1 EXISTING UTILITIES

A. Schedule and coordinate with the Owner and with the Engineer connection to, or relocation of, or discontinuation of normal utility services from existing utility lines. Premium time required for any such work shall be included in the bid.

B. Existing utilities damaged due to the operations of utility work for this project shall be repaired to the satisfaction of the Owner without additional cost.

C. Utilities shall not be left disconnected at the end of a workday or over a weekend unless authorized by representatives of the Owner or Engineer.

D. Repairs and restoration of utilities shall be made before workers leave the project at the end of the workday in which the interruption takes place.

3.3 CUTTING AND PATCHING

A. The Contractor shall do necessary cutting of walls, floors, ceilings, and roofs.

B. No structural member shall be cut without permission from the Engineer.

C. Cutting shall be done with extreme care and in such a manner that the strength of the structure will not be endangered. Wherever possible, openings in concrete or masonry construction shall be by concrete saw or rotary core drill. Openings in any construction shall be cut to the minimum size required for the installation of the work.

1. Adequate protection should be provided to prevent damage to adjacent areas and to prevent dust from spreading to adjacent areas.

2. The use of jack hammers will not be permitted.

D. Where openings or holes are cut in existing construction and the cutting breaks existing electrical circuitry or control circuitry, or communications, conduit, and wiring, then it shall be the responsibility of the Contractor to have the circuitry, conduit and rewiring re-routed and to complete the circuitry as required and as approved by the Owner. Temporary completion shall be provided where necessary before the permanent re-routing and completion work is finished. All costs for this work shall be the responsibility of the Contractor and no additions will be allowed to the Contract price.

E. Before any cutting, patching, or finishing work is started, dust and moisture protection shall first be installed as required to protect adjacent construction and equipment and to prevent dust spreading from the immediate area where work is being performed.

F. After any work is installed through any opening in walls, partitions, ceilings, or floors, the opening around the work shall be patched to match the existing construction, and the openings around pipe sleeves, and between pipes and sleeves shall be sealed watertight through floors and shall be sealed fireproof and smoke tight through floors, walls, partitions, and ceilings.

3.4 FIRESTOPPING

A. Firestopping is defined herein as the process of furnishing and installing a material, or combination of materials, in various constructions to maintain an effective barrier against the spread of flame, smoke, and gases and to retain the integrity of time-rated construction. It shall be used in specific locations as specified hereinafter.

1. Conduit penetration through floor slab and through time-rated partitions or fire walls.
2. Hanger penetrations through fire rated lid.
3. Opening between floor slabs and curtain walls, including inside hollow curtain walls at the floor slab.
4. Penetrations of vertical service shafts.
5. Openings and penetrations in enclosures with time-rated fire doors.
6. Other locations where specifically shown on drawings or where specified in other sections of these specifications.
7. Openings in non-time-rated construction shall be closed with a compacted fill of ¾ LB density fiberglass and then sealed gas tight.

B. Material for firestopping shall be asbestos free and capable of maintaining an effective barrier against flame, smoke, and gases in compliance with the requirements of ASTM E 814, UL NO. 1479. Firestopping material shall be listed in the "Building Materials Directory" of UL as suitable for firestopping penetrations made by steel, glass, plastic, and insulated conduit. On insulated conduit, the classification must not require removal of insulation. The rating of the firestopping material shall not be less than the rating of the time-rated floor or wall assembly.

C. The installation of fire stopping shall be in accordance with the manufacturer’s recommendations and requirements. Surface to be in contact with firestopping shall be cleaned of dirt, grease, oil, loose materials, rust, or other substance that may affect proper fitting or the required fire resistance.

D. Firestopping materials shall provide an effective barrier regardless of the geometric configurations of the void spaces. Firestopping materials for filling voids in floors having openings of four (4) inches or more shall be installed to support the same load as the floor is designed to support, unless the area is protected by a permanent barrier preventing loading or traffic on the firestopped area.

3.5 ELECTRICAL COORDINATION

A. All control wiring and safety interlock wiring required shall be furnished and installed as specified within these specifications. The control wiring shall include the furnishing and installation of all conduits, boxes, fittings, devices, accessories, wire, and connections required for complete and properly functioning systems. All wiring shall be installed in conduit, and all splices and connections shall be made in approved type enclosures or boxes.

1. If motors or controls are not shown on the Electrical Drawings, it has been assumed that these motors and controls have been wired as part of a piece of package equipment, or that the Contractor will run control wiring.

END OF SECTION 220100

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SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Building wires and cables rated 600 V or less.
2. Connectors, splices, and terminations rated 600 V or less.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

1.3 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 CONDUCTORS AND CABLES

A. Copper Conductors: Complying with ASTM B3 for bare annealed copper and with ASTM B8 and ASTM B496 for stranded conductors.

B. Aluminum Alloy Conductors: Complying with ASTM B800 and ASTM B801.

C. Conductor Insulation: NEMA WC 70, for Types THHN-THWN comply with UL 83. For Type XHHW comply with UL 44. For Type USE and SE comply with UL 854.

D. Multiconductor Cable: NEMA WC 70/ICEA S-95-658 for metal-clad cable, Type MC with ground wire, comply with UL 1569.

2.2 CONNECTORS AND SPLICES

A. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

PART 3 - EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

A. Feeders: Copper for feeders smaller than No. 4 AWG; copper or aluminum for feeders No. 4 AWG and larger. Solid for No. 12 AWG and smaller; stranded for No. 10 AWG and larger.

B. Branch Circuits: Copper. Solid for No. 12 AWG and smaller; stranded for No. 10 AWG and larger.

3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

A. Exposed Feeders: Type THHN-THWN single conductors in raceway.

B. Feeders Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN, single conductors in raceway, or metal-clad cable, Type MC.

C. Exposed Branch Circuits: Type THHN-THWN, single conductors in raceway.

D. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN, single conductors in raceway or metal-clad cable, Type MC.

3.3 INSTALLATION OF CONDUCTORS AND CABLES

A. Conceal cables in finished walls, ceilings, and floors, unless otherwise indicated.

B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.

C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips that will not damage cables or raceway.

D. Install exposed cables parallel and perpendicular to surfaces of exposed structural members and follow surface contours where possible.

E. Support cables according to Division 26 Section "Hangers and Supports for Electrical Systems."

F. Identify and color-code conductors and cables according to Division 26 Section "Identification for Electrical Systems."

3.4 CONNECTIONS

A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

B. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.

1. Use oxide inhibitor in each splice and tap conductor for aluminum conductors.

C. Wiring at Outlets: Install conductor at each outlet, with at least 12 inches (300 mm) of slack.

3.5 FIRESTOPPING

A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly.

3.6 FIELD QUALITY CONTROL

A. Perform tests and inspections and prepare test reports.

B. Tests and Inspections:

1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.

C. Test Reports: Prepare a written report to record the following:

1. Test procedures used.
2. Test results that comply with requirements.
3. Test results that do not comply with requirements and corrective action taken to achieve compliance with requirements.

D. Remove and replace malfunctioning units and retest as specified above.

END OF SECTION 260519

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SECTION 260523 - CONTROL-VOLTAGE ELECTRICAL POWER CABLES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Low-voltage control cabling.
2. Control-circuit conductors.
3. Identification products.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

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.

2.2 PERFORMANCE REQUIREMENTS

A. Flame Travel and Smoke Density in Plenums: As determined by testing identical products according to NFPA 262 by a qualified testing agency. Identify products for installation in plenums with appropriate markings from the applicable testing agency.

1. Flame Travel Distance: 60 inches (1520 mm) or less.
2. Peak Optical Smoke Density: 0.5 or less.
3. Average Optical Smoke Density: 0.15 or less.

B. Flame Travel and Smoke Density for Riser Cables in Non-Plenum Building Spaces: As determined by testing identical products according to UL 1666.

C. Flame Travel and Smoke Density for Cables in Non-Riser Applications and Non-Plenum Building Spaces: As determined by testing identical products according to UL 1685.

2.3 LOW-VOLTAGE CONTROL CABLE

A. Paired Cable: NFPA 70, Type CMG.

1. Multi-pair, twisted, No. 16 AWG, stranded (19x29) tinned-copper conductors.
2. PVC insulation.
3. Unshielded.
4. PVC jacket.
5. Flame Resistance: Comply with UL 1685.

B. Plenum-Rated, Paired Cable: NFPA 70, Type CMP.

1. Multi-pair, twisted, No. 16 AWG, stranded (19x29) tinned-copper conductors.
2. PVC insulation.
3. Unshielded.
4. PVC jacket.
5. Flame Resistance: Comply with NFPA 262.

2.4 CONTROL-CIRCUIT CONDUCTORS

A. Manufacturers: Subject to compliance with requirements, provide products by the following

1. Encore Wire Corporation.
2. General Cable Technologies Corporation.
3. Southwire Company.

B. Class 1 Control Circuits: Stranded copper, Type THHN-2-THWN-2 in raceway, complying with UL 44.

C. Class 2 Control Circuits: Stranded copper, Type THHN-2-THWN-2, in raceway complying with UL 44.

D. Class 3 Remote-Control and Signal Circuits: Stranded copper, Type THHN-2-THWN-2, in raceway complying with UL 44.

E. Class 2 Control Circuits and Class 3 Remote-Control and Signal Circuits That Supply Critical Circuits: Circuit Integrity (CI) cable.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Test cables on receipt at Project site.

3.2 INSTALLATION OF CONDUCTORS AND CABLES

A. Comply with NECA 1 and NFPA 70.

B. General Requirements for Cabling:

1. Terminate all conductors, no cable shall contain unterminated elements. Make terminations only at indicated outlets, terminals, and cross-connect and patch panels.
2. Cables may not be spliced.
3. Secure and support cables at intervals not exceeding 30 inches (760 mm) and not more than 6 inches (150 mm) from cabinets, boxes, fittings, outlets, racks, frames, and terminals.
4. Bundle, lace, and train conductors to terminal points without exceeding manufacturer's limitations on bending radii, but not less than radii specified in BICSI ITSIMM, Ch. 5, "Copper Structured Cabling Systems." Install lacing bars and distribution spools.
5. Do not install bruised, kinked, scored, deformed, or abraded cable. Do not splice cable between termination, tap, or junction points. Remove and discard the cable if damaged during installation and replace it with new cable.
6. Pulling Cable: Comply with BICSI ITSIMM, Ch. 5, "Copper Structured Cabling Systems." Monitor cable pull tensions.
7. Support: Do not allow cables to lay on removable ceiling tiles.
8. Secure: Fasten securely in place with hardware specifically designed and installed to not damage cables.

C. Installation of Control-Circuit Conductors:

1. Install wiring in raceways. Comply with requirements specified in Section 260533 "Raceways and Boxes for Electrical Systems."

D. Open-Cable Installation:

1. Suspend copper cables not in a wireway or pathway a minimum of 8 inches (200 mm) above ceilings by cable supports not more than 30 inches (760 mm) apart.
2. Cable shall not be run through or on structural members or in contact with pipes, ducts, or other potentially damaging items. Do not run cables between structural members and corrugated panels.

E. Separation from EMI Sources:

1. Separation between open communications cables or cables in nonmetallic raceways and unshielded power conductors and electrical equipment shall be as follows:
   a. Electrical Equipment or Circuit Rating Less Than 2 kVA: A minimum of 5 inches (127 mm).
   b. Electrical Equipment or Circuit Rating between 2 and 5 kVA: A minimum of 12 inches (305 mm).
   c. Electrical Equipment or Circuit Rating More Than 5 kVA: A minimum of 24 inches (600 mm).
2. Separation between communications cables in grounded metallic raceways and unshielded power lines or electrical equipment shall be as follows:
   a. Electrical Equipment or Circuit Rating Less Than 2 kVA: A minimum of 2-1/2 inches (64 mm).
   b. Electrical Equipment or Circuit Rating between 2 and 5 kVA: A minimum of 6 inches (150 mm).
   c. Electrical Equipment or Circuit Rating More Than 5 kVA: A minimum of 12 inches (305 mm).

3. Separation between communications cables in grounded metallic raceways and power lines and electrical equipment located in grounded metallic conduits or enclosures shall be as follows:
   a. Electrical Equipment or Circuit Rating Less Than 2 kVA: No requirement.
   b. Electrical Equipment or Circuit Rating between 2 and 5 kVA: A minimum of 3 inches (75 mm).
   c. Electrical Equipment or Circuit Rating More Than 5 kVA: A minimum of 6 inches (150 mm).
4. Separation between Communications Cables and Electrical Motors and Transformers, 5 kVA or 5 HP and Larger: A minimum of 48 inches (1200 mm).
5. Separation between Communications Cables and Fluorescent Fixtures: A minimum of 5 inches (127 mm).

3.3 REMOVAL OF CONDUCTORS AND CABLES

A. Remove abandoned conductors and cables. Abandoned conductors and cables are those installed that are not terminated at equipment and are not identified for future use with a tag.

3.4 CONTROL-CIRCUIT CONDUCTORS

A. Minimum Conductor Sizes:

1. Class 1 remote-control and signal circuits; No 14 AWG.
2. Class 2 low-energy, remote-control, and signal circuits; No. 16 AWG.
3. Class 3 low-energy, remote-control, alarm, and signal circuits; No 12 AWG.

3.5 FIRESTOPPING

A. Comply with BICSI TDMM, "Firestopping" Chapter.

3.6 GROUNDING

A. For low-voltage control wiring and cabling, comply with requirements in Section 260526 "Grounding and Bonding for Electrical Systems."

3.7 IDENTIFICATION

A. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

3.8 FIELD QUALITY CONTROL

A. Perform the following tests and inspections with the assistance of a factory-authorized service representative:

1. Visually inspect cable placement, cable termination, grounding and bonding, equipment, and patch cords, and labeling of all components.

B. End-to-end cabling will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

END OF SECTION 260523

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SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes grounding and bonding systems and equipment.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1.3 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Plans showing dimensioned locations of grounding features.

B. Field quality-control reports.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

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.

2.2 CONDUCTORS

A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.

B. Bare Copper Conductors:

1. Solid Conductors: ASTM B3.
2. Stranded Conductors: ASTM B8.

C. Grounding Bus: Predrilled rectangular bars of annealed copper, 1/4 by 4-inch (6.3 by 100 mm) in cross section, with 9/32-inch (7.14 mm) holes spaced 1-1/8 inch (28 mm) apart. Stand-off insulators for mounting must comply with UL 891 for use in switchboards, 600 V and must be Lexan or PVC, impulse tested at 5000 V.

D. Lead Content: Less than 300 parts per million.

2.3 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. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturers for materials being joined and installation conditions.

C. Mechanical-Type Bus-Bar Connectors: Cast silicon bronze, solderless compression-type wire terminals, and long-barrel, two-bolt connection to ground bus bar.

D. Beam Clamps: Mechanical type, terminal, ground wire access from four directions, with dual, tin-plated or silicon bronze bolts.

E. Cable-to-Cable Connectors: Compression type, copper, or copper alloy.

F. Conduit Hubs: Mechanical type, terminal with threaded hub.

G. Straps: Solid copper, cast-bronze clamp. Rated for 600 A.

H. Water Pipe Clamps:

1. Mechanical type, two pieces with zinc-plated bolts.

a. Material: Tin-plated aluminum.
b. Listed for direct burial.

2. U-bolt type with malleable-iron clamp and copper ground connector rated for direct burial].

I. Lead Content: Less than 300 parts per million.

PART 3 - EXECUTION

3.1 APPLICATIONS

A. Conductors: Install a solid conductor for No. 8 AWG and smaller, and stranded conductors for No. 6 AWG and larger unless otherwise indicated.

B. Grounding Conductors: Green-colored insulation with continuous yellow stripe.

C. Grounding Bus: Install in electrical equipment rooms, in rooms housing service equipment, and elsewhere as indicated.

1. Install the bus horizontally, on insulated spacers 2-inch (50 mm) minimum from wall, 6 inches (150 mm) above finished floor unless otherwise indicated.
2. Where indicated on both sides of doorways, route bus up to top of door frame, across top of doorway, and down; connect to horizontal bus.

D. Conductor Terminations and Connections:

1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.

3.2 EQUIPMENT GROUNDING

A. Install insulated equipment grounding conductors with all feeders and branch circuits.

B. 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. Three-phase motor and appliance branch circuits.
6. Flexible raceway runs.
7. Armored and metal-clad cable runs.

3.3 INSTALLATION

A. Grounding Conductors: Route along the 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. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance except where routed through short lengths of conduit.

C. Grounding and Bonding for Piping:

1. Metal Water Service Pipe: Install insulated copper grounding conductors, in conduit, from building's main service equipment, or grounding bus, to main metal water service entrances to building. Connect grounding conductors to main metal water service pipes; use a bolted clamp connector or bolt a lug-type connector to a pipe flange by using one of the lug bolts of the flange. Where a dielectric main water fitting is installed, connect grounding conductor on street side of fitting. Bond metal grounding conductor conduit or sleeve to conductor at each end.

D. Connections: Make connections so the possibility of galvanic action or electrolysis is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact are galvanically compatible.

1. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer in order of galvanic series.
2. Make connections with clean, bare metal at points of contact.
3. Make aluminum-to-steel connections with stainless steel separators and mechanical clamps.
4. Make aluminum-to-galvanized-steel connections with tin-plated copper jumpers and mechanical clamps.
5. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.

3.4 FIELD QUALITY CONTROL

A. Tests and Inspections:

1. After installing the 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.

B. Grounding system will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

D. Report measured ground resistances that exceed the following values:

1. Power and Lighting Equipment or System with Capacity of 500 kVA and Less: 10 ohms.
2. Power and Lighting Equipment or System with Capacity of 500 to 1000 kVA: 5 ohms.
3. Power and Lighting Equipment or System with Capacity More Than 1000 kVA: 3 ohms.

E. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Architect promptly and include recommendations to reduce ground resistance.

END OF SECTION 260526

SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Hangers and supports for electrical equipment and systems.

1.2 DEFINITIONS

A. EMT: Electrical metallic tubing.

B. IMC: Intermediate metal conduit.

C. RMC: Rigid metal conduit.

1.3 PERFORMANCE REQUIREMENTS

A. Design supports for multiple raceways capable of supporting combined weight of supported systems and its contents.

B. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

C. Rated Strength: Adequate tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project, with a minimum structural safety factor of five times the applied force.

1.4 SUBMITTALS

A. Product Data: For the following:

1. Steel slotted support systems.
2. Nonmetallic slotted support systems.

B. Shop Drawings:

1. Equipment supports.

C. Welding certificates.

1.5 QUALITY ASSURANCE

A. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.

1. Available Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Cooper B-Line, Inc.; a division of Cooper Industries.
   b. Thomas & Betts Corporation.
   c. Unistrut; Tyco International, Ltd.
2. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
3. Nonmetallic Coatings: Manufacturer's standard PVC, polyurethane, or polyester coating applied according to MFMA-4.
4. Painted Coatings: Manufacturer’s standard painted coating applied according to MFMA-4.
5. Channel Dimensions: Selected for applicable load criteria.

B. Nonmetallic Slotted Support Systems: Structural-grade, factory-formed, glass-fiber-resin channels, and angles with 9/16-inch- (14-mm-) diameter holes at a maximum of 8 inches (200 mm) o.c. in at least 1 surface.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Allied Tube & Conduit.
   b. Cooper B-Line, Inc.; a division of Cooper Industries.
   c. Fabco Plastics Wholesale Limited.
   d. Seasafe, Inc.
2. Fittings and Accessories: Products of channel and angle manufacturer and designed for use with those items.
3. Fitting and Accessory Materials: Same as channels and angles, except metal items may be stainless steel.
4. Rated Strength: Selected to suit applicable load criteria.

C. Raceway and Cable Supports: As described in NECA 1 and NECA 101.

D. Conduit and Cable Support Devices: Steel hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.

E. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for non-armored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. The body shall be malleable iron.

F. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.

G. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:

1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened Portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
    a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
        1) Hilti Inc.
        2) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
        3) MKT Fastening, LLC.
        4) Simpson Strong-Tie Co., Inc.; MasterSet Fastening Systems Unit.
2. Mechanical-Expansion Anchors: Insert-wedge-type, stainless steel, for use in hardened Portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.
    a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
        1) Cooper B-Line, Inc.; a division of Cooper Industries.
        2) Empire Tool and Manufacturing Co., Inc.
        3) Hilti Inc.
3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
6. Toggle Bolts: All-steel springhead type.
7. Hanger Rods: Threaded steel.

2.2 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.

B. Materials: Comply with requirements in Division 05 Section "Metal Fabrications" for steel shapes and plates.

PART 3 - EXECUTION

3.1 APPLICATION

A. Comply with NECA 1 and NECA 101 for application of hangers and support for electrical equipment and systems except if requirements in this Section are stricter.

B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, IMC, and RMC as scheduled in NECA 1, where its Table 1 lists maximum spacings less than stated in NFPA 70. Minimum rod size shall be 1/4 inch (6 mm) in diameter.

C. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.

1. Secure raceways and cables to these supports with two-bolt conduit clamps.

3.2 SUPPORT INSTALLATION

A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.

B. Raceway Support Methods: In addition to methods described in NECA 1, EMT, IMC, and RMC may be supported by openings through structure members, as permitted in NFPA 70.

C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb (90 kg).

D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their support to building structural elements by the following methods unless otherwise indicated by code:

1. To Wood: Fasten with lag screws or through bolts.
2. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.

3. To Existing Concrete: Expansion anchor fasteners.
4. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches (100 mm) thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches (100 mm) thick.
5. To Steel: Welded threaded studs complying with AWS D1.1/D1.1M, with lock washers and nuts.
6. To Light Steel: Sheet metal screws.
7. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate by means that meet seismic-restraint strength and anchorage requirements.

E. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

3.3 INSTALLATION OF FABRICATED METAL SUPPORTS

A. Comply with installation requirements in Division 05 Section "Metal Fabrications" for site-fabricated metal supports.

B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.

C. Field Welding: Comply with AWS D1.1/D1.1M.

3.4 PAINTING

A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use the same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.

1. Apply paint with a brush or spray to provide minimum dry film thickness of 2.0 mils (0.05 mm).

B. Touchup: Comply with requirements in Division 09 painting Sections for cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal.

C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION 260529

SECTION 260533 - RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.

1.2 DEFINITIONS

A. EMT: Electrical metallic tubing.

B. ENT: Electrical nonmetallic tubing.

C. EPDM: Ethylene-propylene-diene terpolymer rubber.

D. FMC: Flexible metal conduit.

E. IMC: Intermediate metal conduit.

F. LFMC: Liquid tight flexible metal conduit.

G. LFNC: Liquid tight flexible nonmetallic conduit.

H. RNC: Rigid nonmetallic conduit.

1.3 SUBMITTALS

A. Product Data: For all raceways, wireways, conduit, and fittings, floor boxes, hinged-cover enclosures, and cabinets.

B. Source quality-control test reports.

1.4 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 METAL CONDUIT AND TUBING

A. Rigid Steel Conduit: ANSI C80.1.

B. Aluminium Rigid Conduit : ANSI C80.5.

C. IMC: ANSI C80.6.

D. EMT: ANSI C80.3.

E. FMC: Zinc-coated steel.

F. LFMC: Flexible steel conduit with PVC jacket.

G. Fittings for Conduit (Including all Types and Flexible and Liquid tight), EMT, and Cable: NEMA FB 1; listed for type and size raceway with which used, and for application and environment in which installed.

1. Fittings for EMT: Steel, set-screw type.

H. Joint Compound for Rigid Steel Conduit or IMC: Listed for use in cable connector assemblies and compounded for use to lubricate and protect threaded raceway joints from corrosion and enhance their conductivity.

2.2 BOXES, ENCLOSURES, AND CABINETS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Cooper Crouse-Hinds; Div. of Cooper Industries, Inc.
2. EGS/Appleton Electric.
3. Hoffman.
4. Thomas & Betts Corporation.

B. Sheet Metal Outlet and Device Boxes: NEMA OS 1.

C. Cast-Metal Outlet and Device Boxes: NEMA FB 1, ferrous alloy, Type FD, with gasketed cover.

D. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.

E. Cast-Metal Access, Pull, and Junction Boxes: NEMA FB 1, cast aluminum with gasketed cover.

F. Hinged-Cover Enclosures: NEMA 250, Type 1, with continuous-hinge cover with flush latch, unless otherwise indicated.

1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
2. Nonmetallic Enclosures: Plastic, finished inside with radio-frequency-resistant paint.

G. Cabinets:

1. NEMA 250, Type 1, galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.

2. Hinged door in front cover with flush latch and concealed hinge.
3. Key latch to match panelboards.
4. Metal barriers to separate wiring of different systems and voltage.
5. Accessory feet where required for freestanding equipment.

PART 3 - EXECUTION

3.1 RACEWAY APPLICATION

A. Indoors: Comply with the following applications, unless otherwise indicated:

1. Exposed, Not Subject to Physical Damage: EMT.
2. Exposed, Not Subject to Severe Physical Damage: EMT.
3. Exposed and Subject to Severe Physical Damage: Rigid steel conduit.
4. Concealed in Ceilings and Interior Walls and Partitions: Type EMT, metal-clad cable or Type MC.
5. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.
6. Damp or Wet Locations: Rigid steel conduit.
7. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4, stainless steel in damp or wet locations.

B. Minimum Raceway Size: 1/2-inch (21-mm) trade size.

C. Raceway Fittings: Compatible with raceways and suitable for use and location.

1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings, unless otherwise indicated.

D. Install nonferrous conduit or tubing for circuits operating above 60 Hz. Where aluminum raceways are installed for such circuits and pass-through concrete, install in nonmetallic sleeve.

E. Do not install aluminum conduits in contact with concrete.

3.2 INSTALLATION

A. Raceway to be installed as allowed by NEC.

B. Keep raceways at least 6 inches (150 mm) away from parallel runs of hot-water pipes. Install horizontal raceway runs above water and steam piping.

C. Complete raceway installation before starting conductor installation.

D. Support raceways as specified in Division 26 Section "Hangers and Supports for Electrical Systems."

E. Arrange stub-ups so curved portions of bends are not visible above the finished slab.

F. Install no more than the equivalent of three 90-degree bends in any conduit run except for communications conduits, for which fewer bends are allowed.

G. Conceal conduit and EMT within finished walls, ceilings, and floors, unless otherwise indicated.

H. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors, including conductors smaller than No. 4 AWG.

I. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb (90-kg) tensile strength. Leave at least 12 inches (300 mm) of slack at each end of pull wire.

J. Expansion-Joint Fittings for RNC: Install in each run of aboveground conduit that is located where environmental temperature change may exceed 30 deg F (17 deg C), and that has straight-run length that exceeds 25 feet (7.6 m).

1. Install fitting(s) that provide expansion and contraction for at least 0.00041 inch per foot of length of straight run per deg F (0.06 mm per meter of length of straight run per deg C) of temperature change.
2. Install each expansion-joint fitting with position, mounting, and piston setting selected according to manufacturer's written instructions for conditions at specific location at the time of installation.

K. Flexible Conduit Connections: Use maximum of 72 inches (1830 mm) of flexible conduit for recessed and semi recessed lighting fixtures, equipment subject to vibration, noise transmission, or movement; and for transformers and motors.

L. Recessed Boxes in Masonry Walls: Saw-cut opening for box in center of cell of masonry block and install box flush with surface of wall.

3.3 FIRESTOPPING

A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly.

3.4 PROTECTION

A. Provide final protection and maintain conditions that ensure coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.

1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.

END OF SECTION 260533

SECTION 260544 - SLEEVES AND SLEEVE SEALS FOR ELECTRICAL

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Sleeves for raceway and cable penetration of non-fire-rated construction walls and floors.
2. Grout.
3. Silicone sealants.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 SLEEVES

A. Wall Sleeves:

1. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, zinc coated, plain ends.
2. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral water stop unless otherwise indicated.

B. PVC-Pipe Sleeves: ASTM D 1785, Schedule 40.

C. Molded-PVC Sleeves: With nailing flange for attaching to wooden forms.

D. Molded-PE or -PP Sleeves: Removable, tapered-cup shaped, and smooth outer surface with nailing flange for attaching to wooden forms.

E. Sleeves for Rectangular Openings:

1. Material: Galvanized sheet steel.
2. Minimum Metal Thickness:
   a. For sleeve cross-section rectangle perimeter less than 50 inches (1270 mm) and with no side larger than 16 inches (400 mm), thickness shall be 0.052 inch (1.3 mm).
   b. For sleeve cross-section rectangle perimeter 50 inches (1270 mm) or more and one or more sides larger than 16 inches (400 mm), thickness shall be 0.138 inch (3.5 mm).

2.2 GROUT

A. Description: No shrink; recommended for interior and exterior sealing openings in non-fire-rated walls or floors.

B. Standard: ASTM C 1107/C 1107M, Grade B, post-hardening, and volume-adjusting, dry, hydraulic-cement grout.

C. Design Mix: 5000-psi (34.5-MPa), 28-day compressive strength.

D. Packaging: Premixed and factory packaged.

2.3 SILICONE SEALANTS

A. Silicone Sealants: Single-component, silicone-based, neutral-curing elastomeric sealants of grade indicated below.

1. Grade: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces that are not fire rated.
2. Sealant 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."

B. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, no shrinking foam.

PART 3 - EXECUTION

3.1 SLEEVE INSTALLATION FOR NON-FIRE-RATED ELECTRICAL PENETRATIONS

A. Comply with NECA 1.

B. Comply with NEMA VE 2 for cable tray and cable penetrations.

C. Sleeves for Conduits Penetrating Above-Grade Non-Fire-Rated Concrete and Masonry-Unit Floors and Walls:

1. Interior Penetrations of Non-Fire-Rated Walls and Floors:
   a. Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint. Comply with requirements in Section 079200 "Joint Sealants."
   b. Seal space outside of sleeves with mortar or grout. Pack sealing material solidly between sleeve and wall, so no voids remain. Tool exposed surfaces smooth; protect material while curing.
2. Use pipe sleeves unless penetration arrangements require rectangular sleeved opening.
3. Size pipe sleeves to provide 1/4-inch (6.4-mm) annular clear space between sleeve and raceway or cable unless sleeve seal is to be installed.
4. Install sleeves for wall penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of walls. Cut sleeves to length for mounting flush with both surfaces of walls. Deburr after cutting.
5. Install sleeves for floor penetrations. Extend sleeves installed in floors 2 inches (50 mm) above finished floor level. Install sleeves during erection of floors.

END OF SECTION 260544

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SECTION 260553 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Labels.
2. Bands and tubes.
3. Tapes and stencils.
4. Tags.
5. Signs.
6. Cable ties.
7. Miscellaneous identification products.

B. Related Requirements:

1.2 ACTION SUBMITTALS

A. Product Data:

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for electrical identification products.

B. Identification Schedule: For each piece of electrical equipment and electrical system components to be index of nomenclature for electrical equipment and system components used in identification signs and labels. Use the same designations indicated on Drawings.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Comply with ASME A13.1.

B. Comply with 29 CFR 1910.144 for color identification of hazards; 29 CFR 1910.145 for danger, caution, warning, and safety instruction signs and tags; and the following:

1. Fire-protection and fire-alarm equipment, including raceways, must be finished, painted, or suitably marked safety red.

C. Signs, labels, and tags required for personnel safety must comply with the following standards:

1. Safety Colors: NEMA Z535.1.
2. Facility Safety Signs: NEMA Z535.2.
3. Safety Symbols: NEMA Z535.3.

4. Product Safety Signs and Labels: NEMA Z535.4.
5. Safety Tags and Barricade Tapes for Temporary Hazards: NEMA Z535.5.

D. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, must comply with UL 969.

2.2 COLOR AND LEGEND REQUIREMENTS

A. Raceways and Cables Carrying Circuits at 1000 V or Less:

1. Black letters on orange field.
2. Legend: Indicate voltage and system or service type.

B. Color-Coding for Phase- and Voltage-Level Identification, 1000 V or Less: Use colors listed below for ungrounded service conductors.

1. Color must be factory applied, or field applied for sizes larger than 8 AWG if authorities having jurisdiction permit.
2. Colors for 208Y/120 V Circuits:

a. Phase A: Black.
b. Phase B: Red.
c. Phase C: Blue.

3. Color for Neutral: White or gray.
4. Color for Equipment Grounds: Green with yellow stripe.

C. Warning Label Colors:

1. Identify system voltage with black letters on orange background.

D. Warning labels and signs must 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 A 3 FEET MINIMUM."

E. Equipment Identification Labels:

1. Black letters on white field.

2.3 LABELS

A. Vinyl Wraparound Labels: Preprinted, flexible labels laminated with clear, weather- and chemical-resistant coating and matching wraparound clear adhesive tape for securing label ends.

B. Snap-Around Labels: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeves, with diameters sized to suit diameters and that stay in place by gripping action.

C. Self-Adhesive Wraparound Labels: Preprinted, 3 mil (0.08 mm) thick, vinyl flexible label with acrylic pressure-sensitive adhesive.

1. Self-Lamination: Clear; UV-, weather- and chemical-resistant; self-laminating, protective shield over legend. Labels sized such that clear shield overlaps entire printed legend.
2. Marker for Labels:

a. Machine-printed, permanent, waterproof, black ink recommended by printer manufacturer.

D. Self-Adhesive Labels: Vinyl, thermal, transfer-printed, 3 mil (0.08 mm) thick, multicolor, weather- and UV-resistant, pressure-sensitive adhesive labels, configured for intended use and location.

1. Minimum Nominal Size:

a. 1-1/2 by 6 inches (37 by 150 mm) for raceway and conductors.
b. 3-1/2 by 5 inches (76 by 127 mm) for equipment.
c. As required by authorities having jurisdiction.

2.4 BANDS AND TUBES

A. Snap-Around, Color-Coding Bands: Slit, pretensioned, flexible, solid-colored acrylic sleeves, 2 inches (50 mm) long, with diameters sized to suit diameters and that stay in place by gripping action.

B. Heat-Shrink Preprinted Tubes: Flame-retardant polyolefin tubes with machine-printed identification labels, sized to suit diameter and shrunk to fit firmly. A full shrink recovery occurs at a maximum of 200 deg F (93 deg C). Comply with UL 224.

2.5 TAPES AND STENCILS

A. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.

B. Self-Adhesive Vinyl Tape: Colored, heavy duty, waterproof, fade resistant; not less than 3 mil (0.08 mm) thick by 1 to 2 inch (25 to 50 mm) wide; compounded for outdoor use.

C. Floor Marking Tape: 2-inch (50 mm) wide, 5 mil (0.125 mm) pressure-sensitive vinyl tape, with yellow and black stripes and clear vinyl overlay.

2.6 TAGS

A. Metal Tags: Brass or aluminum, 2 by 2 by 0.05 inch (50 by 50 by 1.3 mm), with stamped legend, punched for use with self-locking cable tie fastener.

B. Nonmetallic Preprinted Tags: Polyethylene tags, 0.015 inch (0.38 mm) thick, color-coded for phase and voltage level, with factory printed permanent designations; punched for use with self-locking cable tie fastener.

2.7 SIGNS

A. Baked-Enamel Signs:

1. Preprinted aluminum signs, high-intensity reflective, punched or drilled for fasteners, with colors, legend, and size required for application.
2. 1/4-inch (6.4 mm) grommets in corners for mounting.
3. Nominal Size: 7 by 10 inches (180 by 250 mm).

B. Laminated Acrylic or Melamine Plastic Signs:

1. Engraved legend.
2. Thickness:

a. For signs up to 20 sq. inch (129 sq. cm), minimum 1/16 inch (1.6 mm) thick.
b. For signs larger than 20 sq. inch (129 sq. cm), 1/8 inch (3.2 mm) thick.
c. Engraved legend with black letters on white face.
d. Punched or drilled for mechanical fasteners with 1/4-inch (6.4 mm) grommets in corners for mounting.
e. Framed with mitered acrylic molding and arranged for attachment to applicable equipment.

2.8 CABLE TIES

A. General-Purpose Cable Ties: Fungus inert, self-extinguishing, one piece, self-locking, and Type 6/6 nylon.

1. Minimum Width: 3/16 inches (5 mm).
2. Tensile Strength at 73 deg F (23 deg C) in accordance with ASTM D638: 12,000 psi (82.7 MPa).
3. Temperature Range: Minus 40 to plus 185 deg F (Minus 40 to plus 85 deg C).
4. Color: Black, except where used for color-coding.

B. Plenum-Rated Cable Ties: Self-extinguishing, UV stabilized, one piece, and self-locking.

1. Minimum Width: 3/16 inches (5 mm).
2. Tensile Strength at 73 deg F (23 deg C) in accordance with ASTM D638: 7000 psi (48.2 MPa).
3. UL 94 Flame Rating: 94V-0.
4. Temperature Range: Minus 50 to plus 284 deg F (Minus 46 to plus 140 deg C).
5. Color: Black.

2.9 MISCELLANEOUS IDENTIFICATION PRODUCTS

A. Paint: Comply with requirements in painting Sections for paint materials and application requirements. Retain 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 PREPARATION

A. Self-Adhesive Identification Products: Before applying electrical identification products, clean substrates of substances that could impair bond, using materials and methods recommended by manufacturers of identification products.

3.2 INSTALLATION

A. Verify and coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and operation and maintenance manual. Use consistent designations throughout Project.

B. Install identifying devices before installing acoustic ceilings and similar concealment.

C. Verify identity of items before installing identification products.

D. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and operation and maintenance manual.

E. Apply identification devices to surfaces that require finish after completing finish work.

F. Install signs with approved legend to facilitate proper identification, operation, and maintenance of electrical systems and connected items.

G. System Identification for Raceways and Cables under 1000 V: Identification must completely encircle cable or conduit. Place identification of two-color markings in contact, side by side.

1. Secure tight to surface of conductor, cable, or raceway.

H. Elevated Components: Increase sizes of labels, signs, and letters to those appropriate for viewing from floor.

I. Accessible Fittings for Raceways: Identify cover of junction and pull box of the following systems with wiring system legend and system voltage. System legends must be as follows:

1. "POWER."

J. Vinyl Wraparound Labels:

1. Secure tight to surface of raceway or cable at location with high visibility and accessibility.
2. Attach labels that are not self-adhesive type with clear vinyl tape, with adhesive appropriate to location and substrate.

K. Snap-Around Labels: Secure tight to surface at location with high visibility and accessibility.

L. Snap-Around Color-Coding Bands: Secure tight to surface at location with high visibility and accessibility.

M. Marker Tapes: Secure tight to surface at location with high visibility and accessibility.

N. Floor Marking Tape: Apply stripes to finished surfaces following manufacturer's instructions.

O. Metal Tags:

1. Place in a location with high visibility and accessibility.
2. Secure using general-purpose or plenum-rated cable ties.

P. Nonmetallic Preprinted Tags:

1. Place in a location with high visibility and accessibility.
2. Secure using general-purpose or plenum-rated cable ties.

Q. Baked-Enamel Signs:

1. Attach signs that are not self-adhesive type with mechanical fasteners appropriate to location and substrate.
2. Unless otherwise indicated, provide single line of text with 1/2 inch (13 mm) high letters on minimum 1-1/2 inch (38 mm) high sign; where two lines of text are required, use signs minimum 2 inches (50 mm) high.

R. Laminated Acrylic or Melamine Plastic Signs:

1. Attach signs that are not self-adhesive type with mechanical fasteners appropriate to location and substrate.
2. Unless otherwise indicated, provide single line of text with 1/2 inch (13 mm) high letters on 1-1/2 inch (38 mm) high sign; where two lines of text are required, use labels 2 inch (50 mm) high.

S. Cable Ties: General purpose, for attaching tags, except as listed below:

1. In Spaces Handling Environmental Air: Plenum rated.

3.3 IDENTIFICATION SCHEDULE

A. Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment. Install access doors or panels to provide a view of identifying devices.

B. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, pull points, and locations of high visibility. Identify by system and circuit designation.

C. Accessible Raceways and Metal-Clad Cables, 1000 V or Less, for Feeder, and Branch Circuits, More Than 30 A and 120 V to Ground: Identify with self-adhesive raceway labels.

1. Locate identification at changes in direction, at penetrations of walls and floors, at 50 ft (15 m) maximum intervals in straight runs, and at 25 ft (7.6 m) maximum intervals in congested areas.

D. Accessible Fittings for Raceways and Cables within Buildings: Identify cover of junction and pull box of the following systems with self-adhesive labels containing wiring system legend and system voltage. System legends must be as follows:

1. "POWER."

E. Power-Circuit Conductor Identification, 1000 V or Less: For conductors in pull and junction boxes, use vinyl wraparound labels to identify phases.

1. Locate identification at changes in direction, at penetrations of walls and floors, at 50 ft (15 m) maximum intervals in straight runs, and at 25 ft (7.6 m) maximum intervals in congested areas.

F. Control-Circuit Conductor Identification: For conductors and cables in pull and junction boxes use self-adhesive labels with conductor or cable designation, origin, and destination.

G. Control-Circuit Conductor Termination Identification: For identification at terminations, provide self-adhesive labels with conductor designation.

H. Auxiliary Electrical Systems Conductor Identification: Marker tape that is uniform and consistent with system used by manufacturers for factory-installed connections.

1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.

I. Workspace Indication: Apply floor marking tape to finished surfaces. Show working clearances in direction of access to live parts. Workspace must comply with NFPA 70 and 29 CFR 1926.403 unless otherwise indicated. Do not install at flush-mounted panelboards and similar equipment in finished spaces. The marking shall include the words: CAUTION! AREA IN FRONT OF ELECTRICAL EQUIPMENT SHALL BE KEPT CLEAR FOR DEPTH: WIDTH: HEIGHT: The marking shall include the dimensions of the depth, width, and height required to be kept clear. It shall be permitted to use one marking for multiple items of equipment if the marking is visible from the working space for each item of equipment. The markings shall be of sufficient durability to withstand the environment involved.

J. Instructional Signs: Self-adhesive labels, including color code for grounded and ungrounded conductors.

K. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Baked-enamel warning signs.

1. Apply to the exterior of the door, cover, or other access.
2. 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.

L. Operating Instruction Signs: Baked-enamel warning signs or Laminated acrylic or melamine plastic signs.

M. Emergency Operating Instruction Signs: Baked-enamel warning signs or Laminated acrylic or melamine plastic signs with white legend on red background with minimum 3/8 inch (10 mm) high letters for emergency instructions at equipment used for power transfer.

N. Equipment Identification Labels:

1. Indoor Equipment: Baked-enamel signs or Laminated acrylic or melamine plastic sign.
2. Equipment to Be Labeled:

a. Panelboards: Typewritten directory of circuits in location provided by panelboard manufacturer. Panelboard identification must be in the form of engraved laminated acrylic or melamine label.
b. Enclosures and electrical cabinets.
c. Access doors and panels for concealed electrical items.
d. Enclosed switches.
e. Enclosed circuit breakers.
f. Enclosed controllers.
g. Variable-speed controllers.
h. Push-button stations.
i. Contactors.
j. Remote-controlled switches, dimmer modules, and control devices.
k. Monitoring and control equipment.

END OF SECTION 260553

SECTION 260800 - COMMISSIONING ELECTRICAL

PART 1 - GENERAL

1.1 SUMMARY

A. The section includes commissioning process requirements for electrical systems.

1.2 DEFINITIONS

A. Commissioning Plan: A document that outlines the organization, schedule, allocation of resources, and documentation requirements of the commissioning process.

B. CxA: Commissioning Authority.

C. Systems, Subsystems, Equipment, and Components: Where these terms are used together or separately, they shall mean "as-built" systems, subsystems, equipment, and components.

1.3 INFORMATIONAL SUBMITTALS

A. Certificates of readiness.

B. Certificates of completion of installation, prestart, and startup activities.

1.4 CONTRACTOR'S RESPONSIBILITIES

A. Perform commissioning tests at the direction of the CxA.

B. Participate in electrical systems, assemblies, equipment, and component maintenance orientation and inspection as directed by the CxA.

C. Provide information requested by the CxA for final commissioning documentation.

1.5 CxA'S RESPONSIBILITIES

A. Provide Project-specific construction checklists and commissioning process test procedures for actual electrical systems, assemblies, equipment, and components to be furnished and installed as part of the construction contract.

B. Direct commissioning testing.

C. Verify testing and adjusting of Work are complete.

D. Provide test data, inspection reports, and certificates in the Systems Manual.

1.6 COMMISSIONING DOCUMENTATION

A. Provide the following information to the CxA for inclusion in the commissioning plan:

1. Plan for delivery and review of submittals, systems manuals, and other documents and reports.
2. Identification of installed systems, assemblies, equipment, and components including design changes that occurred during the construction phase.
3. Process and schedule for completing construction checklists and manufacturer's prestart and startup checklists for electrical systems, assemblies, equipment, and components to be verified and tested.
4. Certificate of completion certifying that installation, prestart checks, and startup procedures have been completed.
5. Certificate of readiness certifying that systems, subsystems, equipment, and associated controls are ready for testing.
6. Test and inspection reports and certificates.
7. Corrective action documents.
8. Verification of testing and adjusting reports.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TESTING PREPARATION

A. Certify that electrical systems, subsystems, and equipment have been installed, calibrated, and started and are operating according to the Contract Documents.

B. Set systems, subsystems, and equipment into operating mode to be tested (e.g., normal shutdown, normal auto position, normal manual position, unoccupied cycle, and alarm conditions).

C. Inspect and verify the position of each device and interlock identified on checklists.

3.2 TESTING VERIFICATION

A. Prior to performance of testing Work, provide copies of reports, sample forms, checklists, and certificates to the CxA.

B. Provide technicians, instrumentation, and tools to verify testing of systems at the direction of the CxA.

3.3 GENERAL TESTING REQUIREMENTS

A. Provide technicians, instrumentation, and tools to perform commissioning tests at the direction of the CxA.

B. The scope of electrical testing shall include entire lighting controls to each space. Testing shall include measuring capacities and effectiveness of operational and control functions.

C. Test all operating modes, interlocks, control responses, and responses to abnormal or emergency conditions, and verify proper response of building automation system controllers and sensors.

D. Tests will be performed using design conditions whenever possible.

1. Simulated conditions may need to be imposed using an artificial load when it is not practical to test under design conditions. Before simulating conditions, calibrate testing instruments. Provide equipment to simulate loads. Set simulated conditions as directed by the CxA and document simulated conditions and methods of simulation. After tests, return settings to normal operating conditions.
2. The CxA may direct that set points be altered when simulating conditions are not practical.
3. The CxA may direct that sensor values be altered with a signal generator when design or simulating conditions and altering set points are not practical.

E. If tests cannot be completed because of a deficiency outside the scope of the electrical system, document the deficiency and report it to the Owner. After deficiencies are resolved, reschedule tests.

3.4 ELECTRICAL SYSTEMS, SUBSYSTEMS, AND EQUIPMENT TESTING PROCEDURES

A. Lighting and Control System Testing: Testing requirements are specified in lighting control Sections. Assist the CxA with preparation of testing plans.

B. Receptacle Testing: Testing requirements are specified in Section 262726 "Wiring Devices." Provide test data to the CxA.

3.5 DEMONSTRATION AND TRAINING

A. Provide training as required by individual Specification Sections. Include instruction for the following as applicable to the system, equipment, or component:

1. Basis of System Design, Operational Requirements, and Criteria: Include the following:

a. System, subsystem, and equipment descriptions.
b. Performance criteria.
c. Operating standards.
d. Regulatory requirements.
e. Equipment function.
f. Operating characteristics.
g. Limiting conditions.

2. Adjustments: Include the following:

a. Alignments.

b. Checking adjustments.
c. Noise and vibration adjustments.
d. Economy and efficiency adjustments.

3. Troubleshooting: Include the following:

a. Diagnostic instructions.
b. Test and inspection procedures.

B. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.

END OF SECTION 260800

SECTION 260923 - LIGHTING CONTROL DEVICES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Indoor occupancy sensors.

B. Related Requirements:

1. Section 262726 "Wiring Devices" for wall-box dimmers, wall-switch occupancy sensors, and manual light switches.

1.2 ACTION SUBMITTALS

A. A.Product Data: For each type of product.

B. Shop Drawings: Show installation details for occupancy and light-level sensors.

1. Interconnection diagrams showing field-installed wiring.
2. Include diagrams for power, signal, and control wiring.

1.3 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For each type of lighting control device to include in emergency, operation, and maintenance manuals.

PART 2 - PRODUCTS

2.1 INDOOR OCCUPANCY SWITCHES

A. Manufacturers: Subject to compliance with requirements, provide products by the following:

1. Watt Stopper.

B. Output: Solid state, with dry contacts rated for 8 amps at 120 volts.

C. Dual-Technology Sensor: Ceiling mounted; detect occupants in coverage area using PIR and ultrasonic detection methods. The technology or combination of technologies that control on-off functions is selectable in the field by operating controls on units.

1. Sensitivity Adjustment: Separate for each sensing technology.
2. Detector Sensitivity: Detect occurrences of 6-inch- (150-mm-) minimum movement of any portion of a human body that presents a target of not less than 36 sq. in. (232 sq. cm), and detect a person of average size and weight moving not less than 12 inches (305 mm) in either a horizontal or a vertical manner at an approximate speed of 12 inches/s (305 mm/s).
3. Detection Coverage (Standard Room): Detect occupancy anywhere within a circular area of 1000 sq. ft. (93 sq. m) when mounted on a 96-inch- (2440-mm-) high ceiling.

PART 3 - EXECUTION

3.1 SENSOR INSTALLATION

A. Coordinate layout and installation of ceiling-mounted devices with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, smoke detectors, fire-suppression systems, and partition assemblies.

B. Install and aim sensors in locations to achieve not less than 90 percent coverage of areas indicated. Do not exceed coverage limits specified in the manufacturer’s written instructions.

3.2 WIRING INSTALLATION

A. Wiring Method: Comply with Section 260519 "Low-Voltage Electrical Power Conductors and Cables." Minimum conduit size is 1/2 inch (13 mm).

B. Splices, Taps, and Terminations: Make connections only on numbered terminal strips in junction, pull, and outlet boxes; terminal cabinets; and equipment enclosures.

3.3 FIELD QUALITY CONTROL

A. Lighting control devices and control systems shall be tested to ensure that control hardware and software are calibrated, adjusted, programmed and in proper working condition in accordance with the construction documents and manufacturer’s installation instructions.

1. After installing switches, and after electrical circuitry has been energized, calibrate units. Calibration shall be finished before functional tests are executed.

2. Functional Tests: Start units to confirm proper unit operation.
    a. Occupancy Switches: Confirm that the placement, sensitivity, and time-out adjustments yield acceptable performance, lights turn off only after space is vacated and do not turn on unless space is occupied.
3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

B. Lighting control devices will be considered defective if they do not pass tests and inspections.

END OF SECTION 260923

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SECTION 262726 - WIRING DEVICES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Receptacles, receptacles with integral GFCI, and associated device plates.
2. GFCI receptacles.
3. Snap switches.
4. Wall-box motion sensors.
5. Wall plates.
6. Surface raceway.

1.2 DEFINITIONS

A. EMI: Electromagnetic interference.

B. GFCI: Ground-fault circuit interrupter.

C. Pigtail: Short lead used to connect a device to a branch-circuit conductor.

D. RFI: Radio-frequency interference.

E. TVSS: Transient voltage surge suppressor.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: List of legends and description of materials and process used for premarking wall plates.

C. Field quality-control test reports.

D. Operation and Maintenance Data: For wiring devices to include in all manufacturers' packing label warnings and instruction manuals that include labeling conditions.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of wiring device and associated wall plate through one source from a single manufacturer. As far as they are available, obtain all wiring devices and associated wall plates from a single manufacturer and one source.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 STRAIGHT BLADE RECEPTACLES

A. Duplex Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 configuration 5-20R, and UL 498.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
   a. Cooper; 5351 (single), 5352 (duplex).
   b. Hubbell; HBL5351 (single), CR5352 (duplex).
   c. Leviton; 5891 (single), 5352 (duplex).
   d. Pass & Seymour; 5381 (single), 5352 (duplex).

2.2 GFCI RECEPTACLES

A. General Description: Straight blade, feed-through type. Comply with NEMA WD 1, NEMA WD 6, UL 498, and UL 943, Class A, and include indicator light that is lighted when device is tripped.

B. Duplex GFCI Convenience Receptacles, 125 V, 20 A:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
   a. Cooper; GF20.
   b. Pass & Seymour; 2084.

2.3 SNAP SWITCHES

A. Comply with NEMA WD 1 and UL 20.

B. Switches, 120/277 V, 20 A:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
   a. Cooper; 2221 (single pole), 2222 (two pole), 2223 (three way), 2224 (four way).
   b. Hubbell; CS1221 (single pole), CS1222 (two pole), CS1223 (three way), CS1224 (four way).
   c. Leviton; 1221-2 (single pole), 1222-2 (two pole), 1223-2 (three way), 1224-2 (four way).

d. Pass & Seymour; 20AC1 (single pole), 20AC2 (two pole), 20AC3 (three way), 20AC4 (four way).

2.4 INDOOR OCCUPANCY SENSORS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Watt Stopper.

B. General Description: Wall- or ceiling-mounting, solid-state units with a separate relay unit.

1. Operation: Unless otherwise indicated, turn lights on when the covered area is occupied and off when unoccupied; with a time delay for turning the lights off, adjustable over a minimum range of 1 to 15 minutes.
2. Sensor Output: Contacts rated to operate the connected relay, complying with UL 773A. Sensor shall be powered from the relay unit.
3. Relay Unit: Dry contacts rated for 20-A ballast load at 120- and 277-V ac, for 13-A tungsten at 120-V ac, and for 1 hp at 120-V ac. Power supply to sensor shall be 24-V dc, 150-mA, Class 2 power source as defined by NFPA 70.
4. Mounting:
   a. Sensor: Suitable for mounting in any position on a standard outlet box.
   b. Relay: Externally mounted through a 1/2-inch (13-mm) knockout in a standard electrical enclosure.
   c. Time-Delay and Sensitivity Adjustments: Recessed and concealed behind the hinged door.
5. Indicator: LED, to show when motion is being detected during testing and normal operation of the sensor.
6. Bypass Switch: Override the on function in case of sensor failure.
7. Automatic Light-Level Sensor: Adjustable from 2 to 200 fc (21.5 to 2152 lx); keep lighting off when selected lighting level is present.

C. Dual-Technology Type: Ceiling mounting; detect occupancy by using a combination of PIR and ultrasonic detection methods in area of coverage. Technology or combination of technologies that controls on-off functions shall be selectable in the field by operating controls on units.

1. Sensitivity Adjustment: Separate for each sensing technology.
2. Detector Sensitivity: Detect occurrences of 6-inch- (150-mm-) minimum movement of any portion of a human body that presents a target of not less than 36 sq. in. (232 sq. cm), and detect a person of average size and weight moving not less than 12 inches (305 mm) in either a horizontal or a vertical manner at an approximate speed of 12 inches/s (305 mm/s).
3. Detection Coverage (Standard Room): Detect occupancy anywhere within a circular area of 1000 sq. ft. (93 sq. m) when mounted on a 96-inch- (2440-mm-) high ceiling.

D. Wall-Switch Sensors:

1. Subject to compliance with requirements, products by one of the following:
   a. Watt Stopper.

2. Description: Adaptive-technology type, 120/277 V, adjustable time delay up to 20 minutes, 180-degree field of view, with a minimum coverage area of 900 sq. ft. (84 sq. m).

2.5 WALL PLATES

A. Single and combination types to match corresponding wiring devices.

1. Plate-Securing Screws: Metal with head color to match plate finish.
2. Material for Finished Spaces: 0.035-inch- (1-mm-) thick, satin-finished stainless steel.
3. Material for Unfinished Spaces: Galvanized steel.

2.6 FINISHES

A. Color: Wiring device catalog numbers in Section above do not designate device color.

B. Device Color:

1. Wiring Devices Connected to Normal Power System: Black unless otherwise indicated or required by NFPA 70 or device listing.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with NECA 1, including the mounting heights listed in that standard, unless otherwise noted.

B. Coordination with Other Trades:

1. Take steps to ensure that devices and their boxes are protected. 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 the 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 just 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. 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 all devices that have been in temporary use during construction or that show signs that they 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 (152 mm) in length.
5. When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, 2/3 to 3/4 of the way around terminal screw.
6. Use a torque screwdriver when a torque is recommended or required by the 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 down, and on horizontally mounted receptacles to the right.

F. Device Plates: Do not use oversized or extra-deep plates. Repair the 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. Group adjacent switches under single, multigang wall plates.

3.2 IDENTIFICATION

A. Comply with Division 26 Section "Identification for Electrical Systems."

1. Receptacles in all areas: Identify panelboard and circuit number from which served. Use printed labels with black lettering and durable wire markers or tags inside outlet boxes.

END OF SECTION 262726

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SECTION 262816 - ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Fusible switches.
2. Nonfusible switches.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of enclosed switch, accessory, and component indicated. Include dimensioned elevations, sections, weights, and manufacturers' technical data on features, performance, electrical characteristics, ratings, accessories, and finishes.

1. Enclosure types and details for types other than NEMA 250, Type 1.
2. Current and voltage ratings.
3. Short-circuit current ratings (interrupting and withstand, as appropriate).

B. Shop Drawings: For enclosed switches.

1. Wiring Diagrams: For power, signal, and control wiring.

1.3 QUALITY ASSURANCE

A. Source Limitations: Obtain enclosed switches, components, and accessories, within same product category, from sole source from single manufacturer.

B. 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.

C. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 FUSIBLE SWITCHES

A. Type GD, General Duty, Single Throw, 240-V ac, 800 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, with cartridge fuse interiors to accommodate specified fuses, lockable handle with capability to accept two padlocks, and interlocked with cover in closed position.

2.2 NONFUSIBLE SWITCHES

A. Type GD, General Duty, Single Throw, 600 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, lockable handle with capability to accept two padlocks, and interlocked with cover in closed position.

2.3 ENCLOSURES

A. Enclosed Switches: 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.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine elements and surfaces to receive enclosed switches for compliance with installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install individual wall-mounted switches with tops at uniform height unless otherwise indicated.

B. Install fuses in fusible devices.

C. Comply with NECA 1.

3.3 IDENTIFICATION

A. Comply with requirements in Section 260553 "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.

3.4 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Acceptance Testing Preparation:

1. Test insulation resistance for each enclosed switch 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 per Acceptance Testing Specification. Certify compliance with test parameters.
2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace them with new units and retest.

D. Enclosed switches will be considered defective if they do not pass tests and inspections.

END OF SECTION 262816

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SECTION 265100 - INTERIOR LIGHTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Interior lighting fixtures, LED arrays and drivers.
2. Lighting fixture supports.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of lighting fixture, arranged in order of fixture designation. Include data on features, accessories, finishes, and the following:

1. Physical description of lighting fixture including dimensions.
2. Drivers.
3. Energy-efficiency data.
4. Life, output (lumens, CCT, and CRI), and energy-efficiency data.
5. For light fixtures submitted in place of the listed manufacturer, provide photometric data and adjustment factors based on laboratory tests, complying with IESNA Lighting Measurements Testing & Calculation Guides, of each lighting fixture type.
   a. For LED luminaires, submit the photometric data in electronic ies format with adjustment factors, complying with IESNA Lighting Measurements Testing & Calculation Guide LM-79, of each lighting fixture.
   b. Manufacturer Certified Data: Photometric data shall be certified by a manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products.

B. Shop Drawings: For nonstandard or custom lighting fixtures. 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.

C. Installation instructions.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified agencies providing photometric data for lighting fixtures.

B. Field quality-control reports.

C. Warranty: Sample special warranty.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For lighting equipment and fixtures to include in emergency, operation, and maintenance manuals.

1. Provide a list of all lamp types used on Project, use ANSI and manufacturers' codes.

1.5 QUALITY ASSURANCE

A. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by manufacturers' laboratories that are accredited under the National Volunteer Laboratory Accreditation Program for Energy Efficient Lighting Products.

B. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by an independent agency, with the experience and capability to conduct the testing indicated, that is an NRTL as defined by OSHA in 29 CFR 1910, complying with the IESNA Lighting Measurements Testing & Calculation Guides.

C. 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.

D. Comply with NFPA 70.

E. Luminaires and lamps shall not exceed hazardous substance concentrations set for in the European Union’s (EU) Restriction of the Use of Certain Hazardous Substances (RoHS) Directive, 2003.

1.6 COORDINATION

A. Coordinate layout and installation of lighting fixtures and suspension system with other construction that penetrates ceilings or is supported by them, including HVAC equipment, fire-suppression system, and partition assemblies.

1.7 WARRANTY

A. Warranty: Manufacturer and Installer agree to repair or replace components of luminaires that fail in materials or workmanship within a specified warranty period.

B. A written warranty shall be included with the luminaire package at the time of shipment which covers repair or replacement of defective parts of the luminaire housing, mounting hardware, optics, driver, and trim. Warranty language shall place no limitations on coverage based on the duration of luminaire operation (e.g., hours per day).

C. Warranty Period:

1. For luminaires incorporating replaceable drivers: Three year(s) from date of Substantial Completion.

2. For luminaires incorporating non-replaceable drivers: Five year(s) from date of Substantial Completion.

D. Special Manufacturer Extended Warranty: Manufacturer warrants that luminaires perform in accordance with specified requirements and agree to provide repair or replacement of products that fail to perform as specified within an extended-warranty period.

1. Extended Warranty Period: Five years from the date of Substantial Completion; full coverage for labor, materials, and equipment.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, provide product 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. Metal Parts: Free of burrs and sharp corners and edges.

C. Sheet Metal Components: Steel unless otherwise indicated. Form and support to prevent warping and sagging.

D. 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.

E. 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 (3.175 mm) minimum unless otherwise indicated.
   b. UV stabilized.
2. Glass: Annealed crystal glass unless otherwise indicated.

F. Factory-Applied Labels: Comply with UL 1598. Include recommended lamps. Labels shall be located where they will be readily visible to service personnel but not seen from normal viewing angles when lamps are in place.

2.3 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Products or components listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction and marked for intended location and application.

B. Luminaires and lamps shall not exceed hazardous substance concentrations set for in the European Union's (EU) Restriction of the Use of Certain Hazardous Substances (RoHS) Directive, 2003.

C. Insulation contact (Type IC): Recessed downlights marketed as Type IC shall be approved for zero clearance insulation cover by an OSHA NRTL laboratory.

2.4 DRIVERS FOR LED LIGHTS

A. LED Drivers shall be Class 2 drivers.

1. The driver shall be clearly marked to indicate Class 2.
2. The driver shall have passed all the testing of ANSI/UL1310 or ANSI/UL6950.

B. Transient Protection: Driver shall comply with ANSI/IEEE C62.41.1-2002 and ANSI/IEEE C62.41.2-2002, Category A operation.

C. LED light engines shall make use of electrical interconnects which allow for replacement of the engine without cutting wires or using solder. Drivers shall be accessible without damage to the luminaire housing, trim, decorative elements, or the carpentry (e.g., ceiling drywall) to which the luminaire is attached.

D. All drivers used within the luminaire shall have a Class A sound rating. drivers should be installed in the luminaire in such a way that in operation, the luminaire will not emit sound exceeding a measured level of 24 dBA.

2.5 LED LIGHTS

A. Performance: Product shall be Energy Star qualified or shall meet the following:

1. CRI for indoor luminaires: 80 (minimum).
2. Color Temperature for indoor luminaires: 3000 K. The luminaire, LED light engine or integrated LED lamp shall also fall within the corresponding 7-step chromaticity quadrangles as defined in ANSI/NEMA/ANSLG C78.377-2008.
3. Off-state Power: Luminaires shall not draw more than 0.5 watts in the off state.
4. Lumen maintenance in situ: 35,000 hours to L70 measured in accordance with current IES LM-80 and TM-21.
5. Power Factor: 0.9 (minimum) at full output. ANSI C82.77-2002 sections 6 and 7.
6. Minimum Luminous Efficacy: 80 initial lumens per watt.
7. Operating Frequency: 120 hz minimum for steady state and dimming operation. Dimming operation, where required, shall meet the requirements at all light output levels.
8. Luminaire shall have a minimum operating temperature of 0°F (-18°C) or below.

B. Dimming, where required: LED lamps shall be capable of continuous dimming, without a flicker or noise from 30-100 percent.

2.6 LIGHTING FIXTURE SUPPORT COMPONENTS

A. Comply with Section 260529 "Hangers and Supports for Electrical Systems" for channel- and angle-iron supports, and nonmetallic channel and angle supports.

B. Wires: ASTM A 641/A 641M, Class 3, soft temper, zinc-coated steel, 12 gage (2.68 mm).

C. Rod Hangers: 3/16-inch (5-mm) minimum diameter, cadmium-plated, threaded steel rod.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine roughing-in for luminaire to verify actual locations of luminaire and electrical connections before luminaire installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Lighting fixtures:

1. Set level, plumb, and square with ceilings and walls unless otherwise indicated.

B. Temporary Lighting: If it is necessary, and approved by Architect, to use permanent luminaires for temporary lighting, install and energize the minimum number of luminaires necessary. When construction is sufficiently complete, remove the temporary luminaires, disassemble, clean thoroughly, install new lamps, and reinstall.

C. Suspended Lighting Fixture Support:

1. Pendants and Rods: Where longer than 48 inches (1200 mm), 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.
4. The new pendant luminaires located at existing plaster ceilings must be independent of the plaster and supported by structural ceiling joists or the structure above. The Contractor should determine the best support method, considering the existing structure, the weight of the pendant luminaires, and the mounting support locations. Care should be taken to minimally disturb the existing plaster and lath ceiling during structural

exploration and luminaire installation. After installing the pendant luminaires, repair the plaster following the Architect's specific instructions.

D. Connect wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

3.3 IDENTIFICATION

A. Install labels with panel and circuit numbers on concealed junction and outlet boxes. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

3.4 FIELD QUALITY CONTROL

A. Tests and Inspections:

1. Perform manufacturer's recommended tests and inspections.
2. Operational Test: After installing luminaires, switches, and accessories, and after electrical circuitry has been energized, test units to confirm proper operation.

3.5 STARTUP SERVICE

A. Perform startup service.

1. Complete installation and startup checks in accordance with manufacturer's published instructions.

B. Burn-in all lamps that require a specific aging period to operate properly, prior to occupancy by Owner.

3.6 ADJUSTING

A. Occupancy Adjustments: Adjust aimable luminaires to suit actual occupied conditions.

B. Luminaire Aiming Adjustments: Provide assistance in adjusting the aiming direction of luminaires to suit occupied conditions.

1. During adjustment, inspect all luminaires. Replace lamps or luminaires that are defective.
2. Parts and supplies must be the manufacturer’s authorized replacement parts and supplies.
3. Adjust aim of luminaires in presence of Architect and Lighting Consultant.

3.7 PROTECTION

A. After installation, protect lighting equipment from construction activities. Remove and replace items that are contaminated, defaced, damaged, or otherwise caused to be unfit for use prior to acceptance by Owner.

END OF SECTION 265100

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Contractor's use of site and premises.
4. Coordination with occupants.
5. Work restrictions.
6. Specification and Drawing conventions.
7. Miscellaneous Provisions

B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.2 PROJECT INFORMATION

A. Project Identification: Kansas City Convention Center
Music Hall & Little Theatre Restroom Upgrades Project
Project No. MAMHADA24

1. Project Location: Kansas City Music Hall
301 W. 13th Street
Kansas City, MO 64105

B. Owner: City of Kansas City

1. Owner's Representative: Charles A. Harris, P.E. LEED AP, Project Manager
General Services Department, Architecture Division
City of Kansas City, MO
414 E. 12th Street, 17th Floor
Kansas City, MO 64106
816-513-2751
charles.harris@kcmo.org

C. Architect: Piper-Wind Architects, Inc.
2121 Central Street, Suite 143
Kansas City, MO 64108
816-474-3050

D. Architect’s Consultants: Architect has retained the following design professionals, who have prepared designated portions of the Contract Documents:

1. Structural Engineer: Leigh & O'Kane, LLC.
   209 Southeast Douglas
   Lee's Summit, MO 64063
   816-444-3144

2. MEP Engineer: FSC, Inc.
   8675 West 96th Street
   Overland Park, KS 66212
   913-722-3473

3. Lighting Consultant: Lightworks, Inc.
   1701 Oak
   Kansas City, MO 64108
   816-640-9948

1.3 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and consists of the following:

1. Upgrade of interior finishes and fixtures in two pairs of restrooms in the Kansas City Music Hall and one pair of restrooms in the Little Theatre. Work includes the replacement of lavatories, urinals, and multiple restroom accessories, the replacement of flooring with new terrazzo flooring, the repair and restoration of existing flooring, the repair of existing finishes, the installation of new light fixtures and the re-lamping of existing light fixtures, metal studs and drywall, stone wall panel installation and repair; door hardware repair; plaster patch and repair, miscellaneous rough and finish carpentry, painting, and other Work indicated in the Contract Documents.

B. Type of Contract:

1. Project will be constructed under a single prime contract.

1.4 CONTRACTOR'S USE OF SITE AND PREMISES

A. Restricted Use of Site: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.

B. Limits on Use of Site: Limit use of Project site to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

1. Driveways, Walkways, and Entrances: Keep driveways, loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or for storage of materials.

   a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
   b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on site.

C. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.

1.5 COORDINATION WITH OCCUPANTS

A. Full Owner Occupancy: Owner will occupy site and existing building(s) during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.

1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without permission from Owner and approval of authorities having jurisdiction.
2. Maintain existing code required egress width at all times when the building is occupied.
3. Limit use of interior building to areas indicated on Drawings. Minimize work in lobbies and public areas so as not to interfere with Owner’s day-to-day operations. Coordinate with Owner all work in public areas.
4. Notify Owner not less than 48 hours in advance of activities that will affect Owner’s operations.

1.6 WORK RESTRICTIONS

A. Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets, work on public streets, rights of way, and other requirements of authorities having jurisdiction.

B. On-Site Work Hours: Limit work in the existing building to normal business working hours of 7:00 a.m. to 5:00 p.m., Monday through Friday, unless otherwise indicated. When work outside of these hours is necessary, coordinate with Owner. The Owner is agreeable to providing extended work hours before 7:00 a.m. or after 5:00 p.m.

C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:

1. Notify Owner (City of Kansas City, Kansas City Convention Center Department and Building Manager) not less than two (2) days in advance of proposed utility interruptions.
2. Obtain Owner's written permission before proceeding with utility interruptions.

D. Noise, Vibration, Dust, and Odors: Coordinate operations that may result in high levels of noise and vibration, dust, odors, or other disruption to Owner occupancy with Owner.

1. Notify Owner (City of Kansas City, Kansas City Convention Center Department and Building Manager) not less than two (2) days in advance of proposed disruptive operations.
2. Obtain Owner's written permission before proceeding with disruptive operations.

E. Smoking and Controlled Substance Restrictions: Use of tobacco products and other controlled substances within the existing building or within 50 feet of entrances, operable windows, or outdoor-air intakes is not permitted.

1.7 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The 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:

1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Division 00 Contracting Requirements: General provisions of the Contract, including General and Supplementary Conditions, apply to all Sections of the Specifications.

C. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

1.8 MISCELLANEOUS PROVISIONS

A. All workers for this project are required to obtain a City of Kansas City, Missouri contractor badge to be worn at all times on all sites.

B. At Music Hall and Little Theatre, NO construction personnel parking, and very limited staging or material storage is available on site. Contractor to make arrangements with the City of Kansas City if a street lane closure is required to accommodate staging and material storage, and shall include any costs associated with any street closure and sidewalk closure permit in their bid. Construction personnel parking is also the responsibility of the Contractor.

C. Music Hall and Little Theatre will remain open for previously scheduled events. Cooperate with Owner during construction operations to minimize conflicts and maximize Owner usage of the facility. Contractor to coordinate with Owner all disruptive construction activities that may result in high levels of noise and vibration, odors, or other disruption to Owner. Those disruptive construction activities include installation of any product or use of any tool that introduces noxious fumes or odors to occupied spaces and saw cutting, jackhammering, or power nailing techniques producing noise and vibration that might be heard in the adjacent rooms. The Owner is agreeable to providing extended work hours before 7:00 am or after 5:00 pm.

D. Temporary storage of materials to be salvaged and reused, as indicated on the Drawings, may be provided on site. City has indicated that the Contractor may have one temporary storage container located at one of the three loading docks during the duration of the project. Contractor to coordinate with City the location to minimize conflicts and maximize City usage of the facility. Any costs associated with the temporary storage trailer and proper storage of the materials to be salvaged and reused shall be included in their bid.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

SECTION 012100 - ALLOWANCES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements governing allowances.

B. Types of allowances include the following:

1. Lump-sum allowances.

1.2 SELECTION AND PURCHASE

A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection, or purchase and delivery, of each product or system described by an allowance must be completed by the Owner to avoid delaying the Work.

B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

C. Purchase products and systems selected by Architect from their designated list of suppliers.

1.3 ACTION SUBMITTALS

A. Submit proposals for purchase of products or systems included in allowances in the form specified for Change Orders.

1.4 INFORMATIONAL SUBMITTALS

A. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

B. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.5 LUMP-SUM ALLOWANCES

A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner or selected by Architect under allowance and shall include taxes, freight, and delivery to Project site.

B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by

Owner or selected by Architect under allowance shall be included as part of the Contract Sum and not part of the allowance.

1.6 ADJUSTMENT OF ALLOWANCES

A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place where applicable. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.

1. Include installation costs in purchase amount only where indicated as part of the allowance.
2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other markups.

B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or Contractor's handling, labor, installation, overhead, and profit.

1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of Work has changed from what could have been foreseen from information in the Contract Documents.
2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

A. The following Allowances are for the designated subcontractor’s cost for necessary material, delivery and applicable taxes as specifically indicated below. The Allowance does NOT include any costs for labor, installation, General Contractor’s (GC) mark-ups as for general conditions,

overhead and profit. All such GC costs and costs for labor and installation shall be included int the GC's Base Bid amount.

B. Allowance No. 1: New Custom Surface-Mounted Light Fixtures, New Custom Pendant Light Fixtures and The Restoration and Re-Lamping of Existing Surface-Mounted Light Fixtures: Lump-Sum Allowance: Include the sum of **$197,000 (one hundred ninety-seven thousand dollars)** for twelve (12) new cast and fabricated art deco custom surface-mounted light fixtures with dentil pattern and chevrons, etched clear diffusers and LED retrofit lamps (Light Fixture Type LS1) as indicated in the Drawings; eight (8) new cast and fabricated art deco custom pendant light fixtures with etched diffuser behind chevron designs with LED retrofit lamps (Light Fixture Type LP2) as indicated in the Drawings; the restoration and re-lamping of existing surface-mounted light fixtures by taking finish down to bare metal and refinishing to match existing surface-mounted light fixtures and to provide new internal lamping system to match new fixtures with LED retrofit lamps, as indicated in the Drawings.

1. This allowance includes material, receiving, and handling costs. This allowance does not include any labor, installation, General Contractor costs and/or mark-ups, such as general conditions, overhead and profit.

2. No amount of this allowance shall be used or considered, in full or in part, to meet the City of Kansas City, Missouri's MBE or WBE project requirements set forth in Specification Section 00210 Instructions to Proposers.

END OF SECTION 012100

SECTION 012200 - UNIT PRICES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for unit prices.

1.2 DEFINITIONS

A. Unit price is a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.3 PROCEDURES

A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.

B. Measurement and Payment: See individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.

C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.

D. List of Unit Prices: Refer to Specification Section 00412 Unit Prices. Contractor to complete 00412 Unit Prices form by providing unit prices as indicated.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012200

SECTION 012300 - ALTERNATES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for alternates.

1.2 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if the Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternates into the Work. No other adjustments are made to the Contract Sum.

1.3 PROCEDURES

A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.

1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated revisions to alternates.

C. Execute accepted alternates under the same conditions as other work of the Contract.

D. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Alternate No. 1: New stone wall panels at lavatories.

1. Base Bid: Patch and reuse existing stone wall panels behind lavatories after plumbing for new lavatories is installed as indicated on the drawings (Refer to drawings A-201, A-203, A-205, A-207, A-208, A-301, A-303, A-306, A-309, A-310, A-401, A-403, A-404, A-405, A-406, and A-407) and as specified (Refer to Specification Section 040140.61 "Stone Repair").
2. Alternate: Replace existing stone wall panels to match existing in lieu of patching and reusing the existing stone wall panels at the lavatories in all three pairs of restrooms as indicated on the drawings (Refer to drawings A-201, A-203, A-205, A-207, A-208, A-301, A-303, A-306, A-309, A-310, A-401, A-403, A-404, A-405, A-406, and A-407) and as specified (Refer to Specification Section 097513 "Stone Wall Facing").

B. Alternate No. 2: New stone wall panels at wall-mounted accessories.

1. Base Bid: Patch and reuse existing stone wall panels where wall-mounted accessories are being relocated as indicated on the drawings (Refer to drawings A-201, A-203, A-205, A-206, A-207, A-208, A-301, A-303, A-305, A-306, A-307, A-309, A-310, A-313, A-401, A-403, A-404, A-405, A-406, and A-407) and as specified (Refer to Specification Section 040140.61 "Stone Repair").
2. Alternate: Replace existing stone wall panels to match existing at all locations in all three pairs of restrooms where wall-mounted accessories are being relocated in lieu of patching and reusing the existing stone wall panels as indicated on the drawings (Refer to drawings A-201, A-203, A-205, A-206, A-207, A-208, A-301, A-303, A-305, A-306, A-307, A-309, A-310, A-313, A-401, A-403, A-404, A-405, A-406, and A-407) and as specified (Refer to Specification Section 097513 "Stone Wall Facing").

END OF SECTION 012300

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for substitutions.

B. Related Requirements:

1. Section 016000 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.2 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.

1.3 ACTION SUBMITTALS

A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Substitution Request Form: Use form provided in Project Manual.
2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

a. Statement indicating why specified product or fabrication or installation method cannot be provided, if applicable.
b. Coordination of information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
c. Detailed comparison of significant qualities of proposed substitutions with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes, such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
e. Samples, where applicable or requested.
f. Certificates and qualification data, where applicable or requested.

g. List of similar installations for completed projects, with project names and addresses as well as names and addresses of architects and owners.
h. Material test reports from a qualified testing agency, indicating and interpreting test results for compliance with requirements indicated.
i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES.
j. Detailed comparison of Contractor's construction schedule using proposed substitutions with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
k. Cost information, including a proposal of change, if any, in the Contract Sum.
l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents, except as indicated in substitution request, is compatible with related materials and is appropriate for applications indicated.
m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.4 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.5 PROCEDURES

A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

1.6 SUBSTITUTIONS

A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 10 days prior to time required for preparation and review of related submittals.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

    a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
    b. Substitution request is fully documented and properly submitted.
    c. Requested substitution will not adversely affect Contractor's construction schedule.
    d. Requested substitution has received necessary approvals of authorities having jurisdiction.
    e. Requested substitution is compatible with other portions of the Work.
    f. Requested substitution has been coordinated with other portions of the Work.
    g. Requested substitution provides specified warranty.
    h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. Substitutions for Convenience: Not allowed.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012500

SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

1.2 MINOR CHANGES IN THE WORK

A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on "Supplemental Design Instruction form included in Project Manual.

1. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.

1.3 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
2. Within 7 days, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.

    a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    c. Include costs of labor and supervision directly attributable to the change.
    d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.

2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Comply with requirements in Section 012500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.

1.4 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Work Change Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on “Change Order” form included in Project Manual.

1.5 WORK CHANGE DIRECTIVE

A. Work Change Directive: Architect may issue a Work Change Directive on “Work Change Directive” form included in Project Manual. Work Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. Work Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Work Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.2 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.

1. Coordinate line items in the schedule of values with items required to be indicated as separate activities in Contractor's construction schedule.
2. Submit the schedule of values to Architect at earliest possible date, but no later than seven days before the date scheduled for submittal of initial Applications for Payment.

B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.

1. Use “Schedule of Values” form included in the Project Manual.
2. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Provide multiple line items for principal subcontract amounts in excess of five percent of the Contract Sum.
3. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.

    a. Differentiate between items stored on-site and items stored off-site.

4. Overhead Costs: Include total cost and proportionate share of general overhead and profit for each line item.
5. Schedule of Values Revisions: Revise the schedule of values when Change Orders or Construction Change Directives result in a change in the Contract Sum. Include at least one separate line item for each Change Order and Construction Change Directive.

1.3 APPLICATIONS FOR PAYMENT

A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.

B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.

C. Application for Payment Forms: Use "Application for Payment" form included in the Project Manual as form for Applications for Payment.

D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.

1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.

E. Transmittal: Submit one digital (PDF) signed and notarized original copy of each Application for Payment to Architect. Include waivers of lien and similar attachments if required.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

F. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.

1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
2. When an application shows completion of an item, submit conditional final or full waivers.
3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
5. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.

G. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:

1. List of subcontractors.
2. Schedule of values.
3. Contractor's construction schedule (preliminary if not final).
4. Products list (preliminary if not final).
5. Submittal schedule (preliminary if not final).
6. List of Contractor's staff assignments.
7. List of Contractor's principal consultants.
8. Copies of building permits.
9. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
10. Initial progress report.
11. Report of preconstruction conference.

12. Certificates of insurance and insurance policies.
13. Performance and payment bonds.
14. Data needed to acquire Owner's insurance.

H. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

I. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

1. Evidence of completion of Project closeout requirements.
2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
3. Updated final statement, accounting for final changes to the Contract Sum.
4. AIA Document G706.
5. AIA Document G706A.
6. AIA Document G707.
7. “Contractor Affidavit for Final Payment” form included in the Project Manual.
8. “Subcontractor Affidavit for Final Payment” form included in the Project Manual.
9. Evidence that claims have been settled.
10. Final liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. General coordination procedures.
2. RFIs.
3. Digital project management procedures.
4. Project meetings.

B. Related Requirements:

1. Section 017300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.

1.2 INFORMATIONAL SUBMITTALS

A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

1. Name, address, telephone number, and email address of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.

1.3 GENERAL COORDINATION PROCEDURES

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

B. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's construction schedule.
2. Preparation of the schedule of values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.

1.4 REQUEST FOR INFORMATION (RFI)

A. General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.

1. Architect will return without response those RFIs submitted to Architect by other entities controlled by Contractor.
2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:

1. Project Name

2. Project Number
3. Date.
4. Name of Contractor.
5. Name of Architect
6. RFI number, numbered sequentially.
7. RFI subject.
8. Specification Section number and title and related paragraphs, as appropriate.
9. Drawing number and detail references, as appropriate.
10. Field dimensions and conditions, as appropriate.
11. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
12. Contractor's signature.
13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.

C. RFI Forms: Software-generated form with substantially the same content as “Request for Interpretation” form inlucded in the Project Manual, acceptable to Architect and Owner.

D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow five (5) working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.

1. The following Contractor-generated RFIs will be returned without action:

a. Requests for approval of submittals.
b. Requests for approval of substitutions.
c. Requests for approval of Contractor's means and methods.
d. Requests for coordination information already indicated in the Contract Documents.
e. Requests for adjustments in the Contract Time or the Contract Sum.
f. Requests for interpretation of Architect's actions on submittals.
g. Incomplete RFIs or inaccurately prepared RFIs.

2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt by Architect of additional information.
3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."

a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within five (5) days of receipt of the RFI response.

E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log monthly on the “Request for Interpretation Log” form included in the Project Manual. Include the following:

1. Project name.
2. Name and address of Contractor.
3. Name and address of Architect.
4. RFI number including RFIs that were returned without action or withdrawn.
5. RFI description.
6. Date the RFI was submitted.
7. Date Architect's response was received.

F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within five (5) days if Contractor disagrees with response.

1.5 DIGITAL PROJECT MANAGEMENT PROCEDURES

A. Use of Architect's Digital Data Files: Digital data files of Architect's CAD drawings may be provided by Architect for Contractor's use during construction.

1. Digital data files may be used by Contractor in preparing coordination drawings, Shop Drawings, and Project record Drawings.
2. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Contract Drawings.
3. Digital Drawing Software Program: Contract Drawings are available in AutoCAD Release 2018.
4. Contractor shall execute a data licensing agreement in the form of Agreement acceptable to Owner and Architect.

B. PDF Document Preparation: Where PDFs are required to be submitted to Architect, prepare as follows:

1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
2. Name file with submittal number or other unique identifier, including revision identifier.
3. Certifications: Where digitally submitted certificates and certifications are required, provide a digital signature with digital certificate on where indicated.

1.6 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.

B. Preconstruction Conference: Owner will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than fifteen (15) days after execution of the Agreement.

1. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Discuss items of significance that could affect progress, including the following:

a. Responsibilities and personnel assignments.
b. Tentative construction schedule.
c. Phasing.
d. Critical work sequencing and long lead items.
e. Designation of key personnel and their duties.
f. Lines of communications.
g. Use of web-based Project software.
h. Procedures for processing field decisions and Change Orders.
i. Procedures for RFIs.
j. Procedures for testing and inspecting.
k. Procedures for processing Applications for Payment.
l. Distribution of the Contract Documents.
m. Submittal procedures.
n. Preparation of Record Documents.
o. Use of the premises[**and existing building**].
p. Work restrictions.
q. Working hours.
r. Owner's occupancy requirements.
s. Responsibility for temporary facilities and controls.
t. Procedures for moisture and mold control.
u. Procedures for disruptions and shutdowns.
v. Construction waste management and recycling.
w. Parking availability.
x. Office, work, and storage areas.
y. Equipment deliveries and priorities.

z. First aid.
aa. Security.
bb. Progress cleaning.

3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity when required by other sections and when required for coordination with other construction.

1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect and Owner of scheduled meeting dates.
2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:

a. Contract Documents.
b. Options.
c. Related RFIs.
d. Related Change Orders.
e. Purchases.
f. Deliveries.
g. Submittals.
h. Review of mockups.
i. Possible conflicts.
j. Compatibility requirements.
k. Time schedules.
l. Weather limitations.
m. Manufacturer's written instructions.
n. Warranty requirements.
o. Compatibility of materials.
p. Acceptability of substrates.
q. Temporary facilities and controls.
r. Space and access limitations.
s. Regulations of authorities having jurisdiction.
t. Testing and inspecting requirements.
u. Installation procedures.
v. Coordination with other work.
w. Required performance results.
x. Protection of adjacent work.
y. Protection of construction and personnel.

3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Progress Meetings: Conduct progress meetings at biweekly intervals.

1. Coordinate dates of meetings with preparation of payment requests.
2. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

    a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

        1) Review schedule for next period.

    b. Review present and future needs of each entity present, including the following:

        1) Interface requirements.
        2) Sequence of operations.
        3) Status of submittals.
        4) Deliveries.
        5) Off-site fabrication.
        6) Access.
        7) Site use.
        8) Temporary facilities and controls.
        9) Progress cleaning.
        10) Quality and work standards.
        11) Status of correction of deficient items.
        12) Field observations.
        13) Status of RFIs.
        14) Status of Proposal Requests.
        15) Pending changes.
        16) Status of Change Orders.
        17) Pending claims and disputes.
        18) Documentation of information for payment requests.

4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.

    a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Contractor's Construction Schedule.
2. Construction schedule updating reports.
3. Daily construction reports.
4. Site condition reports.

1.2 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction Project. Activities included in a construction schedule consume time and resources.

1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
2. Predecessor Activity: An activity that precedes another activity in the network.
3. Successor Activity: An activity that follows another activity in the network.

B. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

C. Event: The starting or ending point of an activity.

D. Float: The measure of leeway in starting and completing an activity.

1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

1.3 INFORMATIONAL SUBMITTALS

A. Format for Submittals: Submit required submittals in the following format:

1. Working electronic copy of schedule file.
2. PDF file.

B. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.

1. Submit a working digital copy of schedule, using software indicated, and labeled to comply with requirements for submittals.

C. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports to contain activity number, activity description, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.

1. Activity Report: List of activities sorted by activity number and then early start date, or actual start date if known.
2. Logic Report: List of preceding and succeeding activities for each activity, sorted in ascending order by activity number and then by early start date, or actual start date if known.
3. Total Float Report: List of activities sorted in ascending order of total float.

D. Construction Schedule Updating Reports: Submit with Applications for Payment.

E. Daily Construction Reports: Submit at monthly intervals.

F. Site Condition Reports: Submit at time of discovery of differing conditions.

1.4 COORDINATION

A. Coordinate Contractor's Construction Schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from entities involved.
2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

1.5 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Computer Scheduling Software: Prepare schedules using current version of a program that is capable of managing construction schedules.

B. Time Frame: Extend schedule from date established for the Notice to Proceed to date of final completion.

1. Contract completion date to not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

C. Activities: Treat each floor or separate area as a separate numbered activity for each main element of the Work. Comply with the following:

1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
2. Procurement Activities: Include procurement process activities for long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
3. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with submittal schedule.
4. Startup and Testing Time: Include no fewer than 15 days for startup and testing.
5. Commissioning Time: Include no fewer than 15 days for commissioning.
6. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
7. Punch List and Final Completion: Include not more than 15 days for completion of punch list items and final completion.

D. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.

1. Phasing: Arrange list of activities on schedule by phase.
2. Work Restrictions: Show the effect of the following items on the schedule:

    a. Coordination with existing construction.
    b. Limitations of continued occupancies.
    c. Uninterruptible services.
    d. Partial occupancy before Substantial Completion.
    e. Use-of-premises restrictions.
    f. Seasonal variations.
    g. Environmental control.

E. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and final completion.

F. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:

1. Unresolved issues.
2. Unanswered Requests for Information.
3. Rejected or unreturned submittals.
4. Notations on returned submittals.
5. Pending modifications affecting the Work and the Contract Time.

G. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.

2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
3. As the Work progresses, indicate final completion percentage for each activity.

H. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, equipment required to achieve compliance, and date by which recovery will be accomplished.

I. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

1. Post copies in Project meeting rooms and temporary field offices.
2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

1.6 GANTT-CHART SCHEDULE REQUIREMENTS

A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's Construction Schedule within 15 days of date established for the Notice to Proceed.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.

1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

1.7 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:

1. List of subcontractors at Project site.
2. List of separate contractors at Project site.
3. Approximate count of personnel at Project site.
4. Equipment at Project site.
5. Material deliveries.
6. High and low temperatures and general weather conditions, including presence of rain or snow.
7. Testing and inspection.
8. Accidents.
9. Meetings and significant decisions.
10. Stoppages, delays, shortages, and losses.
11. Meter readings and similar recordings.
12. Emergency procedures.
13. Orders and requests of authorities having jurisdiction.

14. Change Orders received and implemented.
15. Work Change Directives received and implemented.
16. Services connected and disconnected.
17. Equipment or system tests and startups.
18. Partial completions and occupancies.
19. Substantial Completions authorized.

B. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013200

SECTION 013233 - PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for the following:

1. Preconstruction photographs.
2. Concealed Work photographs.
3. Periodic construction photographs.
4. Final Completion construction photographs.

B. Related Requirements:

1. Section 017700 "Closeout Procedures" for submitting photographic documentation as Project Record Documents at Project closeout.
2. Section 024119 "Selective Demolition" for photographic documentation before selective demolition operations commence.

1.2 INFORMATIONAL SUBMITTALS

A. Digital Photographs: Submit image files within five days of taking photographs.

1. Submit photos electronically.
2. Identification: Provide the following information with each image description in web-based Project management software site:

a. Name of Project.
b. Date photograph was taken.
c. Description of location, vantage point, and direction.

1.3 USAGE RIGHTS

A. Professional photography is not required, but if a professional photographer is used, obtain and transfer copyright usage rights from photographer to Owner for unlimited reproduction of photographic documentation.

1.4 FORMATS AND MEDIA

A. Digital Photographs: Provide color images in PDF format, produced by a digital camera with minimum sensor size of 8 megapixels, and maximum file size of 1MB per image. Use flash in low light levels or backlit conditions.

B. Digital Images: Submit digital media as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.

C. Metadata: Record accurate date and time from camera.

D. File Names: Name media files with date, Project area and sequential numbering suffix.

1.5 CONSTRUCTION PHOTOGRAPHS

A. General: Take photographs with maximum depth of field and in focus.

B. Preconstruction Photographs: Before commencement of the Work, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Architect.

C. Concealed Work Photographs: Before proceeding with installing work that will conceal other work, take photographs sufficient in number, with annotated descriptions, to record nature and location of concealed Work, including, but not limited to, the following:

1. Underslab services.
2. Piping.
3. Electrical conduit.

D. Periodic Construction Photographs: Take as many photos as required to adequately document the Work, but at a minimum, take 20 photographs weekly coinciding with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.

E. Final Completion Construction Photographs: Take as many photos as required to adequately document the Work after date of Substantial Completion for submission as Project Record Documents.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013233

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Submittal schedule requirements.
2. Administrative and procedural requirements for submittals.

1.2 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."

B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

1.3 SUBMITTAL SCHEDULE

A. Submittal Schedule: Submit, as an action submittal, a list of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.

1.4 SUBMITTAL FORMATS

A. Submittal Information: Include the following information in each submittal:

1. Project name.
2. Date.
3. Name of Architect.
4. Name of Contractor.
5. Name of firm or entity that prepared submittal.
6. Names of subcontractor, manufacturer, and supplier.
7. Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier; and alphanumeric suffix for resubmittals.
8. Category and type of submittal.
9. Submittal purpose and description.

10. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
11. Drawing number and detail references, as appropriate.
12. Indication of full or partial submittal.
13. Location(s) where product is to be installed, as appropriate.
14. Other necessary identification.
15. Remarks.
16. Signature of transmitter.

B. Options: Identify options requiring selection by Architect.

C. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Architect on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.

D. Electronic Submittals: Prepare submittals as PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number.

E. Submittals for Utilizing Web-Based Project Management Software: Prepare submittals as PDF files, or other format indicated by Project management software.

1.5 SUBMITTAL PROCEDURES

A. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1. Email: Prepare submittals as PDF package, and transmit to Architect by sending via email. Include PDF transmittal form. Include information in email subject line as requested by Architect.
2. Web-Based Project Management Software: Prepare submittals in PDF form, and upload to web-based Project management software website. Enter required data in web-based software site to fully identify submittal.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 10 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
2. Resubmittal Review: Allow 7 days for review of each resubmittal.

D. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

E. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

F. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

1.6 SUBMITTAL REQUIREMENTS

A. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are unsuitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

    a. Manufacturer's catalog cuts.
    b. Manufacturer's product specifications.
    c. Standard color charts.
    d. Statement of compliance with specified referenced standards.
    e. Testing by recognized testing agency.
    f. Application of testing agency labels and seals.
    g. Notation of coordination requirements.
    h. Availability and delivery time information.

4. For equipment, include the following in addition to the above, as applicable:

    a. Wiring diagrams that show factory-installed wiring.
    b. Printed performance curves.
    c. Operational range diagrams.
    d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.

5. Submit Product Data before Shop Drawings, and before or concurrent with Samples.

B. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

    a. Identification of products.

b. Schedules.
c. Compliance with specified standards.
d. Notation of coordination requirements.
e. Notation of dimensions established by field measurement.
f. Relationship and attachment to adjoining construction clearly indicated.
g. Seal and signature of professional engineer if specified.
h. Two opaque (bond) copies of each submittal. Architect will return one copy.

C. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other materials.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Permanently attach label on unexposed side of Samples that includes the following:

   a. Project name and submittal number.
   b. Generic description of Sample.
   c. Product name and name of manufacturer.
   d. Sample source.
   e. Number and title of applicable Specification Section.
   f. Specification paragraph number and generic name of each item.

3. Email Transmittal: Provide PDF transmittal. Include digital image file illustrating Sample characteristics, and identification information for record.
4. Web-Based Project Management Software: Prepare submittals in PDF form, and upload to web-based Project software website. Enter required data in web-based software site to fully identify submittal.
5. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

   a. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

6. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

   a. Number of Samples: Submit one full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.

7. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

a. Number of Samples: Submit two sets of Samples. Architect will retain one Sample set; remainder will be returned. Mark up and retain one returned Sample set as a project record Sample.

1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

D. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

E. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

F. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.

G. Certificates:

1. Certificates and Certifications Submittals: Submit a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity. Provide a notarized signature where indicated.
2. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
3. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
4. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
5. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
6. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.

H. Test and Research Reports:

1. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for substrate preparation and primers required.

2. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
3. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
4. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
5. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
6. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

    a. Name of evaluation organization.
    b. Date of evaluation.
    c. Time period when report is in effect.
    d. Product and manufacturers' names.
    e. Description of product.
    f. Test procedures and results.
    g. Limitations of use.

1.7 CONTRACTOR'S REVIEW

A. Action Submittals and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.

B. Contractor's Approval: Indicate Contractor's approval for each submittal with a uniform approval stamp. Include name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

    1. Architect will not review submittals received from Contractor that do not have Contractor's review and approval.

1.8 ARCHITECT'S REVIEW

A. Action Submittals: Architect will review each submittal, indicate corrections or revisions required, and return it.

    1. PDF Submittals: Architect will indicate, via markup on each submittal, the appropriate action, as follows:

a. Approved.
b. Approved as Corrected.
c. Revise and Resubmit.
d. Rejected.

2. Submittals by Web-Based Project Management Software: Architect will indicate, on Project management software website, the appropriate action.

a. Actions taken by indication on Project management software website have the following meanings:

1) Approved.
2) Approved as Corrected.
3) Revise and Resubmit.
4) Rejected.

B. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.

D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

E. Architect will return without review submittals received from sources other than Contractor.

F. Submittals not required by the Contract Documents will be returned by Architect without action.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013300

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspection services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
2. Requirements for Contractor to provide quality-assurance and quality-control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

1.2 DEFINITIONS

A. Experienced: When used with an entity or individual, "experienced" unless otherwise further described means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

B. Field Quality-Control Tests and Inspections: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

C. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.

1. Use of trade-specific terminology in referring to a Work result does not require that certain construction activities specified apply exclusively to specific trade(s).

D. Mockups: Physical assemblies of portions of the Work constructed to establish the standard by which the Work will be judged. Mockups are not Samples.

1. Mockups are used for one or more of the following:

a. Verify selections made under Sample submittals.
b. Demonstrate aesthetic effects.
c. Demonstrate the qualities of products and workmanship.
d. Demonstrate successful installation of interfaces between components and systems.
e. Perform preconstruction testing to determine system performance.

2. Product Mockups: Mockups that may include multiple products, materials, or systems specified in a single Section.
3. In-Place Mockups: Mockups constructed on-site in their actual final location as part of permanent construction.

E. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria. Unless otherwise indicated, copies of reports of tests or inspections performed for other than the Project do not meet this definition.

F. Product Tests: Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL) in accordance with 29 CFR 1910.7, by a testing agency accredited in accordance with NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

G. Source Quality-Control Tests and Inspections: Tests and inspections that are performed at the source; for example, plant, mill, factory, or shop.

H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. The term "testing laboratory" has the same meaning as the term "testing agency."

I. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

J. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Contractor's quality-control services do not include contract administration activities performed by Architect.

1.3 CONFLICTING REQUIREMENTS

A. Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements is specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirements. Refer conflicting requirements that are different, but apparently equal, to Architect for clarification before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified is the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.4 INFORMATIONAL SUBMITTALS

A. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

B. Permits, Licenses, and Certificates: For Owner's record, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents established for compliance with standards and regulations bearing on performance of the Work.

1.5 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, telephone number, and email address of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample taking and testing and inspection.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:

1. Statement on condition of substrates and their acceptability for installation of product.
2. Statement that products at Project site comply with requirements.
3. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
4. Results of operational and other tests and a statement of whether observed performance complies with requirements.
5. Other required items indicated in individual Specification Sections.

C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:

1. Statement that equipment complies with requirements.

2. Results of operational and other tests and a statement of whether observed performance complies with requirements.
3. Other required items indicated in individual Specification Sections.

1.6 QUALITY ASSURANCE

A. Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems 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. As applicable, procure products from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.

C. 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.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, applying, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.

F. Specialists: Certain Specification Sections require that specific construction activities be performed by entities who are recognized experts in those operations. Specialists will satisfy qualification requirements indicated and engage in the activities indicated.

1. Requirements of authorities having jurisdiction supersede requirements for specialists.

G. Testing and Inspecting Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspection indicated, as documented in accordance with ASTM E329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect, demonstrate, repair, and perform service on installations of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:

1. Contractor Responsibilities:

a. Provide test specimens representative of proposed products and construction.
b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
c. When testing is complete, remove test specimens and test assemblies, and mockups; do not reuse products on Project.

2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

K. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups of size indicated.
2. Build mockups in location indicated or, if not indicated, as directed by Architect.
3. Notify Architect seven days in advance of dates and times when mockups will be constructed.
4. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed to perform same tasks during the construction at Project.
5. Demonstrate the proposed range of aesthetic effects and workmanship.
6. Obtain Architect's approval of mockups before starting corresponding work, fabrication, or construction.

a. Allow seven days for initial review and each re-review of each mockup.

7. Promptly correct unsatisfactory conditions noted by Architect's preliminary review, to the satisfaction of the Architect, before completion of final mockup.
8. Approval of mockups by the Architect does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
9. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
10. Demolish and remove mockups when directed unless otherwise indicated.

1.7 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspection they are engaged to perform.

2. Costs for retesting and reinspecting construction that replaces or is necessitated by Work that failed to comply with the Contract Documents will be charged to Contractor.

B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities, whether specified or not, to verify and document that the Work complies with requirements.

1. Engage a qualified testing agency to perform quality-control services.

   a. Contractor will not employ same entity engaged by Owner, unless agreed to in writing by Owner.

2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspection will be performed.
3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
4. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

D. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Determine the locations from which test samples will be taken and in which in-situ tests are conducted.
3. Conduct and interpret tests and inspections and state in each report whether tested and inspected Work complies with or deviates from requirements.
4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform duties of Contractor.

E. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."

F. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

G. Contractor's Associated Requirements and Services: Cooperate with agencies and representatives performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspection. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Preliminary design mix proposed for use for material mixes that require control by testing agency.
6. Security and protection for samples and for testing and inspection equipment at Project site.

H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

1.8 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: Owner will engage a qualified special inspector to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, and as follows:

1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
2. Notifying Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Contractor and to authorities having jurisdiction.
4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
6. Retesting and reinspecting corrected Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Architect.
4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

1. Submit log at Project closeout as part of Project Record Documents.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspection, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. Related Requirements:

1. Section 011000 "Summary" for work restrictions and limitations on utility interruptions.

1.2 USE CHARGES

A. Installation, removal, and use charges for temporary facilities to be included in the Contract Sum unless otherwise indicated. Allow other entities engaged in the Project to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Architect, occupants of Project, testing agencies, and authorities having jurisdiction.

B. Water and Sewer Service from Existing System: 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.

C. Electric Power Service from Existing System: 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.

1.3 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. Project Identification and Temporary Signs: Show fabrication and installation details, including plans, elevations, details, layouts, typestyles, graphic elements, and message content.

C. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.

D. Moisture- and Mold-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage and mold. 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 requirements for replacing water-damaged Work.
2. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.
3. Indicate methods to be used to avoid trapping water in finished work.

1.4 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: Comply with applicable provisions in the DOJ's 2010 ADA Standards for Accessible Design and ICC A117.1.

D. Site Utilization Plan: Prepare a written plan for alteration work for whole Project, including each phase or process and protection of surrounding materials during operations. Show compliance with indicated methods and procedures specified in the Drawings, this section and other Sections. Coordinate this whole-Project alteration work program with specific requirements of programs required in other alteration work Sections.

1. Dust and Noise Control: Include locations of proposed temporary dust- and noise-control partitions and means of egress from occupied areas coordinated with continuing on-site operations and other known work in progress.
2. Debris Hauling: Include plans clearly marked to show debris hauling routes, turning radii, and locations and details of temporary protective barriers that are in compliance with indicated methods and procedures specified in the Drawings, this section and other Sections.

E. Fire-Prevention Plan: Prepare a written plan for preventing fires during the Work, including placement of fire extinguishers, fire blankets, rag buckets, and other fire-control devices during each phase or process. Coordinate plan with Owner's fire-protection equipment and requirements. Include fire-watch personnel's training, duties, and authority to enforce fire safety.

F. Safety and Health Standard: Comply with ANSI/ASSP A10.6.

1.5 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 TEMPORARY FACILITIES

A. Common-Use Field Office: Of sufficient size to accommodate needs of construction personnel office activities and to accommodate Project meetings specified in other Division 01 Sections. Keep office clean and orderly. Coordinate field office location with Owner and building management.

2.2 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

B. Permanent HVAC System: If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return-air grille in system and remove at end of construction and clean HVAC system as required in Section 017700 “Closeout Procedures”.

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.

1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property.

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.

C. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.

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. Temporary Heating and Cooling: Utilize permanent HVAC system for temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperature or high humidity.

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.

C. Lighting: Provide temporary lighting 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.

3.4 SUPPORT FACILITIES INSTALLATION

A. Comply with the following:
1. 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.
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. Parking: Designated parking areas for construction personnel will not be provided on-site.

C. Storage and Staging: Coordinate area for storage and staging needs with Owner and building management.

D. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.

1. 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.

2. Maintain and touch up signs so they are legible at all times.

E. 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."

F. Existing Elevator Use: Use of Owner's existing elevators will be permitted, provided elevators are cleaned and maintained in a condition acceptable to Owner and are protected in compliance with methods and procedures specified in the Drawings, this section and other Sections. At Substantial Completion, restore elevators to condition existing before initial use, including replacing worn cables, guide shoes, and similar items of limited life.

1. Do not load elevators beyond their rated weight capacity.
2. Provide protective coverings, barriers, devices, signs, or other procedures that are in compliance with the methods and procedures specified in the Drawings, this section and other Sections to protect elevator car and entrance doors and frame. If, despite such protection, elevators become damaged, engage elevator Installer to restore damaged work so no evidence remains of correction work. Return items that cannot be refinished in field to the shop, make required repairs and refinish entire unit, or provide new units as required.

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. 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.

C. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

D. Temporary Egress: Provide temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction. Provide signage directing occupants to temporary egress.

E. 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.

F. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by Owner and visitors from fumes and noise.

1. Construct dustproof partitions with gypsum wallboard with joints taped on occupied side, and fire-retardant-treated plywood on construction operations side.
2. Where fire-resistance-rated temporary partitions are indicated or are required by authorities having jurisdiction, construct partitions according to the rated assemblies.

3. Provide walk-off mats at each entrance through temporary partition.

G. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.

1. Prohibit smoking in construction areas. Comply with additional limits on smoking specified in other Sections.
2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition in accordance with requirements of authorities having jurisdiction.
3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

H. Temporary Protection of Historic Materials:

1. Protect existing historic materials and finishes indicated to remain against damage and soiling from construction work. Where permitted by Architect, items may be dismantled and taken to a suitable, protected storage location during construction work and reinstalled in their original locations after construction work in the vicinity is complete.
2. Protect existing historic materials and finishes with temporary protections and construction. Do not deface or remove existing materials.
3. Do not attach temporary protection to historic surfaces except as indicated and approved by Architect.
4. Protect stone and terrazzo floors, all existing walls, doors, door jambs, columns, and other surfaces along haul routes from damage, wear, and staining in compliance with methods and procedures specified in the Drawings, this section and other Sections.
5. Protect existing historic materials and finishes during application of chemicals during cleaning or finishing processes. Cover adjacent surfaces with protective materials that are proven to resist chemicals selected for Project unless chemicals being used will not damage adjacent surfaces. Use covering materials and masking agents that are waterproof, UV resistant, and will not stain or leave residue on surfaces to which they are applied. Apply protective materials according to manufacturer's written instructions. Do not apply liquid masking agents or adhesives to painted or porous surfaces. When no longer needed, promptly remove protective materials to prevent staining.
6. Storage: Catalog and store items within a weathertight enclosure where they are protected from moisture, weather, condensation, and freezing temperatures.

    a. Identify each item for reinstallation with a nonpermanent mark to document its original location. Indicate original locations on plans, elevations, sections, or photographs by annotating the identifying marks.
    b. Secure stored materials to protect from theft.
    c. Control humidity so that it does not exceed 85 percent. Maintain temperatures 5 deg F or more above the dew point.

3.6 MOISTURE AND MOLD CONTROL

A. Moisture and Mold Protection: Protect stored materials and installed Work in accordance with Moisture and Mold Protection Plan.

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.

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. 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.

C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

D. 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. 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

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. The Work of This Section Includes: Administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

B. Related Requirements:

1. Section 012500 "Substitution Procedures" for requests for substitutions.

1.2 DEFINITIONS

A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
2. New Products: Items that have not previously been incorporated into another project or facility. Salvaged items or items reused from other projects are not considered new products. Items that are manufactured or fabricated to include recycled content materials are considered new products unless otherwise indicated.
3. Comparable Product: Product by named manufacturer that is demonstrated and approved through the comparable product submittal process described in "Comparable Products" Article, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Basis-of-Design Product Specification: A specification in which a single manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation. Published attributes and characteristics of basis-of-design product establish salient characteristics of products.

1. Evaluating Comparable Products: In addition to the basis-of-design product description, product attributes and characteristics may be listed to establish the significant qualities related to type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other special features and requirements for purposes of evaluating comparable products of additional manufacturers named in the specification.

C. Subject to Compliance with Requirements: Where the phrase "Subject to compliance with requirements" introduces a product selection procedure in an individual Specification Section,

provide products qualified under the specified product procedure. In the event that a named product or product by a named manufacturer does not meet the other requirements of the specifications, select another named product or product from another named manufacturer that does meet the requirements of the specifications; submit a comparable product request or substitution request, if applicable.

D. Comparable Product Request Submittal: An action submittal requesting consideration of a comparable product, including the following information:

1. Identification of basis-of-design product or fabrication or installation method to be replaced, including Specification Section number and title and Drawing numbers and titles.
2. Data indicating compliance with the requirements specified in "Comparable Products" Article.

E. Basis-of-Design Product Specification Submittal: An action submittal complying with requirements in Section 013300 "Submittal Procedures."

F. Substitution: Refer to Section 012500 "Substitution Procedures" for definition and limitations on substitutions.

1.3 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products, using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.

C. Storage:

1. Store products to allow for inspection and measurement of quantity or counting of units.

2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
6. Protect stored products from damage and liquids from freezing.

1.5 PRODUCT WARRANTIES

A. Warranties specified in other Sections are to be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Written standard warranty form furnished by individual manufacturer for a particular product and issued in the name of Owner or endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner and issued in the name of Owner or endorsed by manufacturer to Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Specified Form: When specified forms are included in the Project Manual, prepare a written document, using indicated form properly executed.
3. See other Sections for specific content requirements and particular requirements for submitting special warranties.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties meeting requirements of the Contract Documents.

4. Where products are accompanied by the term "as selected," Architect will make selection.
5. Descriptive, performance, and reference standard requirements in Specifications establish salient characteristics of products.

B. Product Selection Procedures:

1. Sole Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.

    a. Sole product may be indicated by the phrase "Subject to compliance with requirements, provide the following."

2. Sole Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.

    a. Sole manufacturer/source may be indicated by the phrase "Subject to compliance with requirements, provide products by the following."

3. Limited List of Products: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.

    a. Limited list of products may be indicated by the phrase "Subject to compliance with requirements, provide one of the following."

4. Non-Limited List of Products: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed or an unnamed product that complies with requirements.

    a. Non-limited list of products is indicated by the phrase "Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to, the following."
    b. Provision of an unnamed product is not considered a substitution, if the product complies with requirements.

5. Limited List of Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.

    a. Limited list of manufacturers is indicated by the phrase "Subject to compliance with requirements, provide products by one of the following."

6. Non-Limited List of Manufacturers: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed or a product by an unnamed manufacturer that complies with requirements.

a. Non-limited list of manufacturers is indicated by the phrase "Subject to compliance with requirements, available manufacturers whose products may be incorporated in the Work include, but are not limited to, the following."
b. Provision of products of an unnamed manufacturer is not considered a substitution, if the product complies with requirements.

7. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications may additionally indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

a. For approval of products by unnamed manufacturers, comply with requirements in Section 012500 "Substitution Procedures" for substitutions for convenience.

C. Visual Matching Specification: Where Specifications require the phrase "match Architect's sample," provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.

1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 012500 "Substitution Procedures" for proposal of product.

D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or a similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

A. Conditions for Consideration of Comparable Products: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with the following requirements:

1. Evidence that proposed product does not require revisions to the Contract Documents, is consistent with the Contract Documents, will produce the indicated results, and is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those of the named basis-of-design product. Significant product qualities include attributes, such as type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other specific features and requirements.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects, with project names and addresses and names and addresses of architects and owners, if requested.
5. Samples, if requested.

B. Architect's Action on Comparable Products Submittal: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for a comparable product. Architect will notify Contractor of approval or rejection of proposed comparable product within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

1. Architect's Approval of Submittal: Marked with approval notation from Architect's action stamp. See Section 013300 "Submittal Procedures."
2. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.

C. Submittal Requirements, Two-Step Process: Approval by Architect of Contractor's request for use of comparable product is not intended to satisfy other submittal requirements. Comply with specified submittal requirements.

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000

SECTION 017300 - EXECUTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work, including, but not limited to, the following:

1. Installation.
2. Cutting and patching.
3. Progress cleaning.
4. Starting and adjusting.
5. Protection of installed construction.
6. Correction of the Work.

B. Related Requirements:

1. Section 011000 "Summary" for limits on use of Project site.
2. Section 017700 "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, replacing defective work, and final cleaning.
3. Section 024119 "Selective Demolition" for demolition and removal of selected portions of the building.
4. Section 078413 “Penetration Firestopping” for patching penetrations in fire-rated construction.

1.2 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of subsequent work.

B. Patching: Fitting and repair work required to restore construction to original conditions after installation of subsequent work.

1.3 QUALITY ASSURANCE

A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.

1. Structural Elements: When cutting and patching structural elements, or when encountering the need for cutting and patching of elements whose structural function is not known, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.

2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.
3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.
4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

B. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of specified products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials. Use materials that are not considered hazardous.

C. 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 EXAMINATION

A. Existing Conditions: The existence and location of utilities and construction indicated as existing are not guaranteed. Before beginning the Work, investigate and verify the existence and location of utilities, mechanical and electrical systems, and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, gas service piping, and water-service piping; underground electrical services; and other utilities.
2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

C. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

B. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

C. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect in accordance with requirements in Section 013100 "Project Management and Coordination."

3.3 INSTALLATION

A. Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb, and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure satisfactory results as judged by Architect. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations, so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy of type expected for Project.

E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on-site and placement in permanent locations.

F. Tools and Equipment: Select tools or equipment that minimize production of excessive noise levels.

G. Templates: Obtain and distribute to the parties involved templates for Work specified to be factory prepared and field installed. Check Shop Drawings of other portions of the Work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions with manufacturer.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
2. Allow for building movement, including thermal expansion and contraction.
3. Coordinate installation of anchorages. 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.

I. Joints: Make joints of uniform width. Where joint locations in exposed Work are not indicated, arrange joints for the best visual effect, as judged by Architect. Fit exposed connections together to form hairline joints.

J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.4 CUTTING AND PATCHING

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Lead based paint could be encountered throughout the Project site and the Contractor shall conduct all construction activities, including cutting and patching, utilizing proper EPA certified / approved standards and other regulatory standards and guidelines to prevent lead hazards.

C. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

D. Temporary Support: Provide temporary support of Work to be cut.

E. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

F. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching in accordance with requirements in Section 011000 "Summary."

G. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.

H. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
4. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
5. Proceed with patching after construction operations requiring cutting are complete.

I. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as practicable, as judged by Architect. Provide materials and comply with installation requirements specified in other Sections, where applicable.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

    a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
    b. Restore damaged pipe covering to its original condition.

3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even

surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch, corner to corner of wall and edge to edge of ceiling. Provide additional coats until patch blends with adjacent surfaces.

4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.

J. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.5 PROGRESS CLEANING

A. Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, in accordance with regulations.

a. Use containers intended for holding waste materials of type to be stored.

4. Where lead-based paint is encountered, utilize proper EPA certified / approved standards and guidelines to provide containment and post-renovation cleaning to prevent lead hazards.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where Work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces in accordance with written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 015000 "Temporary Facilities and Controls."

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.6 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.

C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Manufacturer's Field Service: Comply with qualification requirements in Section 014000 "Quality Requirements."

3.7 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work.

C. Comply with manufacturer's written instructions for temperature and relative humidity.

3.8 CORRECTION OF THE WORK

A. Repair or remove and replace damaged, defective, or nonconforming Work. Restore damaged substrates and finishes.

1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Repair Work previously completed and subsequently damaged during construction period. Repair to like-new condition.

C. Restore permanent facilities used during construction to their specified condition.

D. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

E. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

F. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 017300

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for Contract closeout, including, but not limited to, the following:

1. Substantial Completion procedures.
2. Final Completion procedures.
3. List of incomplete items.
4. Submittal of Project warranties.
5. Final cleaning.

B. Related Requirements:

1. Section 013233 “Photographic Documentation” for submitting final completion construction photographic documentation.
2. Section 017823 "Operation and Maintenance Data" for additional operation and maintenance manual requirements.
3. Section 017839 "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
4. Section 017900 "Demonstration and Training" for requirements to train Owner's maintenance personnel to adjust, operate, and maintain products, equipment, and systems.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of cleaning agent.

B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.3 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

1.4 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's "punch list"), indicating the value of each item on the list and reasons why the Work is incomplete.

B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction, permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
2. Submit closeout submittals specified in other Division 01 Sections, including Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer's name and model number.
5. Submit testing, adjusting, and balancing records.
6. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Advise Owner of pending insurance changeover requirements.
2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
3. Complete startup and testing of systems and equipment.
4. Perform preventive maintenance on equipment used prior to Substantial Completion.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 017900 "Demonstration and Training."
6. Advise Owner of changeover in utility services.
7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
9. Complete final cleaning requirements.
10. Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect 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 Architect, that must be completed or corrected before certificate will be issued.

1.5 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining Final Completion, complete the following:

1. Submit a final Application for Payment in accordance with Section 012900 "Payment Procedures."
2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list will state that each item has been completed or otherwise resolved for acceptance.
3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect 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.

1.6 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Organization 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.

1. Organize list of spaces in sequential order, proceeding from lowest floor to highest floor, listed by room or space number.
2. Organize items applying to each space by major element, including categories for ceilings, individual walls, floors, equipment, and building systems.
3. Use “Punch List” form included in the Project Manual.
4. Submit list of incomplete items in the following format:

    a. MS Excel Electronic File: Architect will return annotated file.

1.7 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.

C. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

1. Submit on digital media acceptable to Architect.

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. Perform 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 and in compliance with methods and procedures specified in the Drawings, this section and other Sections. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:

    a. Clean Project site of rubbish, waste material, litter, and other foreign substances.
    b. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Restore reflective surfaces to their original condition.
    c. Remove debris and surface dust from limited-access spaces, including plenums, shafts, equipment vaults, attics, and similar spaces.
    d. Clean flooring, removing debris, dirt, and staining; clean in accordance with manufacturer's instructions.
    e. Vacuum and mop concrete.
    f. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean in accordance with manufacturer's instructions if visible soil or stains remain.
    g. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
    h. Remove labels that are not permanent.
    i. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
    j. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.

k. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
l. Clean luminaires, lamps, globes, and reflectors to function with full efficiency.
m. Clean strainers.
n. Leave Project clean and ready for occupancy.

C. Construction Waste Disposal: Comply with waste-disposal requirements in Section 015000 "Temporary Facilities and Controls."

3.2 CORRECTION OF THE WORK

A. Complete repair and restoration operations required by "Correction of the Work" Article in Section 017300 "Execution" before requesting inspection for determination of Substantial Completion.

END OF SECTION 017700

SECTION 017823 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Administrative and procedural requirements for preparing operation and maintenance manuals, including the following:

1. Operation and maintenance documentation directory manuals.
2. Emergency manuals.
3. Systems and equipment operation manuals.
4. Systems and equipment maintenance manuals.
5. Product maintenance manuals.

1.2 CLOSEOUT SUBMITTALS

A. Submit operation and maintenance manuals indicated. Provide content for each manual as specified in individual Specification Sections, and as reviewed and approved at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.

1. Architect will comment on whether content of operation and maintenance submittals is acceptable.
2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.

B. Format: Submit operation and maintenance manuals in the following format:

1. Submit PDF electronic file. Assemble each manual into a composite electronically indexed file. Submit on digital media acceptable to Architect. Enable reviewer comments on draft submittals.

C. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Architect will return copy with comments.

1. Correct or revise each manual to comply with Architect's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's comments and prior to commencing demonstration and training.

D. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

1.3 FORMAT OF OPERATION AND MAINTENANCE MANUALS

A. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.

1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
2. File Names and Bookmarks: Bookmark individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

1.4 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

A. Organization of Manuals: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual to contain the following materials, in the order listed:

1. Title page.
2. Table of contents.
3. Manual contents.

B. Title Page: Include the following information:

1. Subject matter included in manual.
2. Name and address of Project.
3. Name and address of Owner.
4. Date of submittal.
5. Name and contact information for Contractor.
6. Name and contact information for Architect.
7. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
8. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.

D. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

1.5 EMERGENCY MANUALS

A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.

B. Content: Organize manual into a separate section for each of the following:

1. Type of emergency.
2. Emergency instructions.
3. Emergency procedures.

C. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:

1. Fire.
2. Flood.
3. Gas leak.
4. Water leak.
5. Power failure.
6. Water outage.
7. System, subsystem, or equipment failure.
8. Chemical release or spill.

D. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

E. Emergency Procedures: Include the following, as applicable:

1. Instructions on stopping.
2. Shutdown instructions for each type of emergency.
3. Operating instructions for conditions outside normal operating limits.
4. Required sequences for electric or electronic systems.
5. Special operating instructions and procedures.

1.6 SYSTEMS AND EQUIPMENT OPERATION MANUALS

A. Systems and Equipment Operation Manual: Assemble a complete set of data indicating operation of each system, subsystem, and piece of equipment not part of a system. Include information required for daily operation and management, operating standards, and routine and special operating procedures.

B. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:

1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
2. Performance and design criteria if Contractor has delegated design responsibility.
3. Operating standards.

4. Operating procedures.
5. Operating logs.
6. Wiring diagrams.
7. Control diagrams.
8. Piped system diagrams.
9. Precautions against improper use.
10. License requirements including inspection and renewal dates.

C. Descriptions: Include the following:

1. Product name and model number. Use designations for products indicated on Contract Documents.
2. Manufacturer's name.
3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

D. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

E. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

F. Piped Systems: Diagram piping as installed, and identify color coding where required for identification.

1.7 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

A. Systems and Equipment Maintenance Manuals: Assemble a complete set of data indicating maintenance of each system, subsystem, and piece of equipment not part of a system. Include manufacturers' maintenance documentation, preventive maintenance procedures and frequency, repair procedures, wiring and systems diagrams, lists of spare parts, and warranty information.

B. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranties and bonds, as described below.

C. Manufacturers' Maintenance Documentation: Include the following information for each component part or piece of equipment:

1. Standard maintenance instructions and bulletins; include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

    a. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
3. Identification and nomenclature of parts and components.
4. List of items recommended to be stocked as spare parts.

D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:

1. Test and inspection instructions.
2. Troubleshooting guide.
3. Precautions against improper maintenance.
4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
5. Aligning, adjusting, and checking instructions.
6. Demonstration and training video recording, if available.

E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

G. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

H. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.

1.8 PRODUCT MAINTENANCE MANUALS

A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

B. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

C. Product Information: Include the following, as applicable:

1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
4. Material and chemical composition.
5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer's written recommendations and the following:

1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.
5. Repair instructions.

E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 017823

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. 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 Requirements:

1. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.

1.2 CLOSEOUT SUBMITTALS

A. Record Drawings: Comply with the following:

1. Number of Copies: Submit copies of Record Drawings as follows:

a. Initial Submittal:

1) Submit PDF electronic files of scanned record prints.
2) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.

b. Final Submittal:

1) Submit PDF electronic files of scanned Record Prints.
2) Print each drawing, whether or not changes and additional information were recorded.

B. Record Specifications: Submit annotated PDF electronic files of Project's Specifications, including addenda and Contract modifications.

C. Record Product Data: Submit annotated PDF electronic files and directories of each submittal.

1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.

1.3 RECORD DRAWINGS

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

1. Preparation: Mark record prints to show the actual installation, where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding 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 acceptable drawing technique.
c. Record data as soon as possible after obtaining it.
d. Record and check the markup before enclosing concealed installations.
e. Cross-reference record prints to corresponding photographic documentation.

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. Revisions to routing of piping and conduits.
d. Revisions to electrical circuitry.
e. Actual equipment locations.
f. Duct size and routing.
g. Locations of concealed internal utilities.
h. Changes made by Change Order or Work Change Directive.
i. Changes made following Architect's written orders.
j. Details not on the original Contract Drawings.
k. Field records for variable and concealed conditions.
l. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
4. Mark record prints with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at 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.

B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:

1. Format: Annotated PDF electronic file.
2. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
3. Refer instances of uncertainty to Architect for resolution.

C. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Format: Annotated PDF electronic file.
2. Identification: As follows:

a. Project name.
b. Date.
c. Designation "PROJECT RECORD DRAWINGS."
d. Name of Architect.
e. Name of Contractor.

1.4 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 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 Product Data, and Record Drawings where applicable.

B. Format: Submit record specifications as annotated PDF electronic file.

1.5 RECORD PRODUCT DATA

A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and revisions to Project Record Documents as they occur; do not wait until end of Project.

B. 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 Specifications, and Record Drawings where applicable.

C. Format: Submit Record Product Data as annotated PDF electronic file.

1. Include Record Product Data directory organized by Specification Section number and title, electronically linked to each item of Record Product Data.

1.6 MAINTENANCE OF RECORD DOCUMENTS

A. Maintenance of Record Documents: Store Record Documents 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 Architect's reference during normal working hours.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 017839

SECTION 017900 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:

1. Instruction in operation and maintenance of systems, subsystems, and equipment.

1.2 INFORMATIONAL SUBMITTALS

A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.

1. Indicate proposed training modules using manufacturer-produced demonstration and training video recordings for systems, equipment, and products in lieu of video recording of live instructional module.

1.3 QUALITY ASSURANCE

A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.

B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Section 014000 "Quality Requirements," experienced in operation and maintenance procedures and training.

C. Preinstruction Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination."

1.4 COORDINATION

A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.

B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data have been reviewed and approved by Architect.

1.5 INSTRUCTION PROGRAM

A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.

B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:

1. Basis of System Design, Operational Requirements, and Criteria: Include the following:

    a. System, subsystem, and equipment descriptions.
    b. Performance and design criteria if Contractor is delegated design responsibility.
    c. Operating standards.
    d. Regulatory requirements.
    e. Equipment function.
    f. Operating characteristics.
    g. Limiting conditions.
    h. Performance curves.

2. Documentation: Review the following items in detail:

    a. Emergency manuals.
    b. Systems and equipment operation manuals.
    c. Systems and equipment maintenance manuals.
    d. Product maintenance manuals.
    e. Project Record Documents.
    f. Identification systems.
    g. Warranties and bonds.
    h. Maintenance service agreements and similar continuing commitments.

3. Emergencies: Include the following, as applicable:

    a. Instructions on meaning of warnings, trouble indications, and error messages.
    b. Instructions on stopping.
    c. Shutdown instructions for each type of emergency.
    d. Operating instructions for conditions outside of normal operating limits.
    e. Sequences for electric or electronic systems.
    f. Special operating instructions and procedures.

4. Operations: Include the following, as applicable:

    a. Startup procedures.
    b. Equipment or system break-in procedures.

c. Routine and normal operating instructions.
d. Regulation and control procedures.
e. Control sequences.
f. Safety procedures.
g. Instructions on stopping.
h. Normal shutdown instructions.
i. Operating procedures for emergencies.
j. Operating procedures for system, subsystem, or equipment failure.
k. Seasonal and weekend operating instructions.
l. Required sequences for electric or electronic systems.
m. Special operating instructions and procedures.

5. Adjustments: Include the following:

a. Alignments.
b. Checking adjustments.
c. Noise and vibration adjustments.
d. Economy and efficiency adjustments.

6. Troubleshooting: Include the following:

a. Diagnostic instructions.
b. Test and inspection procedures.

7. Maintenance: Include the following:

a. Inspection procedures.
b. Types of cleaning agents to be used and methods of cleaning.
c. List of cleaning agents and methods of cleaning detrimental to product.
d. Procedures for routine cleaning.
e. Procedures for preventive maintenance.
f. Procedures for routine maintenance.
g. Instruction on use of special tools.

8. Repairs: Include the following:

a. Diagnosis instructions.
b. Repair instructions.
c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
d. Instructions for identifying parts and components.
e. Review of spare parts needed for operation and maintenance.

1.6 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Section 017823 "Operation and Maintenance Data."

B. Set up instructional equipment at instruction location.

1.7 INSTRUCTION

A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.

B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

C. Scheduling: Provide instruction at mutually agreed-on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.

1. Schedule training with Owner with at least seven days' advance notice.

D. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.

E. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of a demonstration performance-based test.

F. Cleanup: Collect used and leftover educational materials and give to Owner. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 017900

KANSAS CITY CONVENTION CENTER
MUSIC HALL & LITTLE THEATRE RESTROOM UPGRADES PROJECT
PROJECT NO. MAMHADA24

301 W. 13TH STREET, KANSAS CITY, MISSOURI 64105

FOR CONSTRUCTION
OCTOBER 15, 2025

DRAWING SHEET INDEX:

G-001	COVER SHEET
G-002	GENERAL PROJECT INFORMATION
G-003	FIRE RATED PENETRATION DETAILS
G-004	CONSTRUCTION ACCESS DIAGRAM
G-005	CONSTRUCTION ACCESS DIAGRAM
G-006	CONSTRUCTION ACCESS DIAGRAM
ECA-01	ENERGY CODE ANALYSIS
ECA-02	ENERGY CODE ANALYSIS
ECA-03	ENERGY REPORT
A-101	2600 LEVEL - ARENA/GROUND FLOOR REFERENCE PLAN
A-102	5600 LEVEL - BALCONY PLENUM REFERENCE PLAN
A-201	ENLARGED FLOOR PLANS
A-202	ENLARGED REFLECTED CEILING PLANS
A-203	INTERIOR ELEVATIONS
A-204	INTERIOR ELEVATIONS
A-205	INTERIOR ELEVATIONS
A-206	INTERIOR ELEVATIONS
A-207	INTERIOR ELEVATIONS
A-208	INTERIOR ELEVATIONS
A-209	INTERIOR ELEVATIONS
A-301	ENLARGED FLOOR PLANS
A-302	ENLARGED REFLECTED CEILING PLANS
A-303	INTERIOR ELEVATIONS
A-304	INTERIOR ELEVATIONS
A-305	INTERIOR ELEVATIONS
A-306	INTERIOR ELEVATIONS
A-307	INTERIOR ELEVATIONS
A-308	INTERIOR ELEVATIONS
A-309	INTERIOR ELEVATIONS
A-310	INTERIOR ELEVATIONS
A-311	INTERIOR ELEVATIONS
A-312	INTERIOR ELEVATIONS
A-313	INTERIOR ELEVATIONS
A-314	INTERIOR ELEVATIONS
A-315	INTERIOR ELEVATIONS
A-401	ENLARGED FLOOR PLANS
A-402	ENLARGED REFLECTED CEILING PLANS
A-403	INTERIOR ELEVATIONS
A-404	INTERIOR ELEVATIONS
A-405	INTERIOR ELEVATIONS
A-406	INTERIOR ELEVATIONS
A-407	INTERIOR ELEVATIONS
A-501	DETAILS
A-502	DETAILS
A-503	DETAILS
A-504	DETAILS
A-601	SCHEDULES
S101	ELEVATIONS / SECTIONS
P-201	ENLARGED RESTROOM PLANS - PLUMBING
P-301	ENLARGED RESTROOM PLANS - PLUMBING
P-401	ENLARGED RESTROOM PLANS - PLUMBING
P-500	PLUMBING SCHEDULES, DETAILS
E-201	ENLARGED RESTROOM PLANS - ELECTRICAL
E-301	ENLARGED RESTROOM PLANS - ELECTRICAL
E-401	ENLARGED RESTROOM PLANS - ELECTRICAL
E-600	ELECTRICAL SCHEDULES
E-601	ELECTRICAL SCHEDULES

Architect:

PIPER-WIND ARCHITECTS, Inc.
Eric J Piper, AIA
2121 Central Street, Suite 143 Tel (816) 474-3050
Kansas City, Missouri 64108 Fax (816) 474-3051

I hearby certify that these plans were prepared to the best of my professional knowledge and that I have exercised a professional standard of care in the preparation, completion and submission of these documents. (All A-series sheets.)

Structural Engineer:

LEIGH & O'KANE, LLC.
Adam O'Kane
209 Southeast Douglas Tel (816) 444-3144
Lee's Summit, Missouri 64063

I hearby certify that these plans were prepared to the best of my professional knowledge and that I have exercised a professional standard of care in the preparation, completion and submission of these documents. (All S-series sheets.)

MEP Engineer:

FSC, Inc.
Darren Baker
8675 West 96th Street Tel (913) 722-3473
Overland Park, Kansas 66212 Fax (913) 942-2076

I hearby certify that these plans were prepared to the best of my professional knowledge and that I have exercised a professional standard of care in the preparation, completion and submission of these documents. (All M-series, E-series, P-series sheets.)

Lighting Consultant:

LIGHTWORKS, Inc.
Kathi Vandel
1701 Oak Tel (816) 640-9948
Kansas City, Missouri 64108

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FIRE RATING INFORMATION:

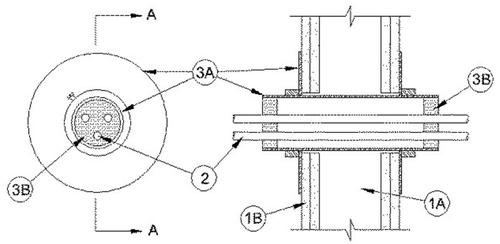
NOTE: THE FIRE RATING INFORMATION SHOWN ON THE DRAWINGS ARE BASED ON AVAILABLE INFORMATION AND LIMITED OBSERVATION OF EXISTING CONDITIONS AND ARE SHOWN TO THE BEST OF OUR KNOWLEDGE. A COMPREHENSIVE SURVEY OF EXISTING CONDITIONS, BOTH VISIBLE AND CONCEALED, HAS NOT BEEN PERFORMED. CONTRACTOR MUST FIELD VERIFY EXISTING CONDITIONS TO DETERMINE IF FIRE RATED CONSTRUCTION IS TO BE USED IN THE AREAS OF WORK.

GENERAL NOTE:
UL DESIGN DETAILS SHOWN ARE PROVIDED AS AN EXAMPLE FOR APPROVED SYSTEMS. CONTRACTOR TO NOTIFY ARCHITECT AND OWNER IF OTHER SYSTEMS ARE TO BE USED.

FIRE RATED PENETRATION DETAIL AT GYPSUM BOARD WALLS:

W-L-3231

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings - 1 and 2 Hr (See Item 1)	F Ratings - 1 and 2 Hr (See Item 1)
T Rating - 0 Hr	FT Rating - 0 Hr
	FH Ratings - 1 and 2 Hr (See Item 1)
	FTH Rating - 0 Hr



Section A-A

1. **Wall Assembly —** The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. **Studs —** Wall framing shall consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3 5/8 in. (92 mm) wide and spaced 24 in. (610 mm) OC.

   B. **Gypsum Board*** — 5/8 in. (16 mm) thick, 4 ft (1219 mm) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300, U400, V400 or W400 Series Designs in the UL Fire Resistance Directory.
   The hourly F and FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.

2. **Cables —** Aggregate cross-sectional area of cables in Smooth Sleeve to be min 8 percent to max 48 percent of the aggregate cross-sectional area of the Smooth Sleeve. Cables to be rigidly supported on both sides of wall assembly. Any combination of the following types and sizes of cables may be used:
   A. Max 200 pair No. 24 AWG (or smaller) copper conductor cable with polyvinyl chloride (PVC) jacketing and insulation.

   B. Max 1/C, 750 kcmil power cable with copper conductors and cross-linked polyethylene (XLPE) jacketing.

   C. Max 3/C No. 2/0 AWG (or smaller) aluminum or copper conductor service entrance cable with PVC insulation and jacket.

   D. Max 3/C No. 8 AWG (or smaller) nonmetallic sheathed (Romex) cable with copper conductors, PVC insulation and jacket.

   E. Max 7/C No. 2/0 AWG (or smaller) multiconductor power and control cables with XLPE or PVC insulation and XLPE or PVC jacket.

   F. Max RG59/U (or smaller) coaxial cable with fluorinated ethylene insulation and jacketing.

   G. Max 62.5/48 fiber optic cable with PVC insulation and jacketing.

   H. Max 4 pair No. 24 AWG (or smaller) copper conductor category 5 with Hylar insulation and jacket

3. **Firestop System —** The firestop system shall consist of the following:
   A. **Firestop Device* —** Smooth steel sleeve device incorporating flat washers secured by sliding compression couplers. Device shall be installed around cables in accordance with the accompanying installation instructions. Device provided in nom 1, 2 and 4 in. (25, 51 and 102 mm) sizes. Max diam o opening in wall for 1, 2 and 4 in. (25, 51 and 102 mm) size devices are 1-1/4, 2-7/16 and 4-1/2 in. (32, 62 and 114 mm) respectively.
   UNIQUE FIRE STOP PRODUCTS INC — Smooth Firestop

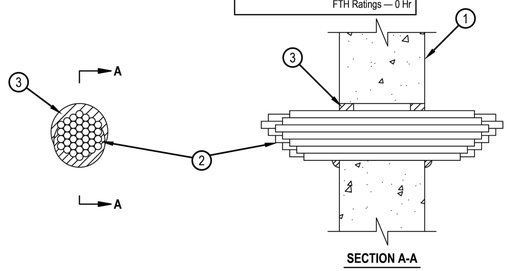
   B. **Fill, Void or Cavity Material* - Putty —** Min 1 in. (25 mm) thickness of fill material applied within the Smooth Sleeve, flush with both ends.

FIRE RATED PENETRATION DETAIL AT CONCRETE AND MASONRY WALLS:

CLASSIFIED C UL US
Classified by Underwriters Laboratories, Inc. to UL 1479 and CAN/ULC-S115

System No. W-J-3190

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings — 2 and 3 Hr (See Item 3)	F Ratings — 2 and 3 Hr (See Item 3)
T Rating — 0 Hr	FT Rating — 0 Hr
	FH Ratings — 2 and 3 Hr (See Item 3)
	FTH Ratings — 0 Hr



SECTION A-A

1. Wall Assembly — Min 6 in. (152 mm) thick lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening is 4 in. (102 mm).
   See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. Cables — Aggregate cross-sectional area of cable in opening to be max 45 percent of the cross-sectional area of the opening. The annular space between the cable bundle and the periphery of the opening to be min 0 in. (point contact) to max 7/8 in. (22 mm) Cables to be tightly bundled and rigidly supported on both sides of the wall assembly.. Any combination of the following types and sizes of copper conductor cables may be used:
   A. Max 7/C No. 12 AWG with polyvinyl chloride (PVC) insulation and jacket.
   B. Max 25 pair No. 24 AWG telephone cable with PVC insulation and jacket.
   C. Max 4 pr No. 22 AWG Cat 5 or Cat 6 computer cables.
   D. Type RG/U coaxial cable with polyethylene (PE) insulation and PVC jacket having a max outside diameter of ½ in. (13 mm).
   E. Max RG 6/U coaxial cable with fluorinated ethylene insulation and jacketing.
   F. Multiple fiber optical communication cable jacketed with PVC and having a max OD of 5/8 in. (16 mm).
   G. Max three copper conductor No. 8 AWG Metal-Clad Cable+.
   H. Max 3/C (with ground) (or smaller) No. 8 AWG copper conductor cable with PVC insulation and jacketing.
   I. Through Penetrating Product* — Any cables, Metal-Clad Cable+ or Armored Cable+ currently Classified under the Through Penetrating Products category.
3. Fill, Void or Cavity Material*— Sealant — Fill material applied within the annulus, flush with both surfaces of wall. A min 5/8 in. (16 mm) thickness of sealant is required for 2 hr F Rating. A min 1 in. (25 mm) thickness of sealant is required for the 3 hr F Rating. An additional 1/2 in. (13 mm) diam bead of fill material shall be applied at the point contact location of cable bundle/concrete interface on both surfaces of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP606, FS-One Sealant or FS-ONE MAX Intumescent Sealant
* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.
+Bearing the UL Listing Mark

CODE INFORMATION:

2018 IBC (INTERNATIONAL BUILDING CODE)

2018 IEBC (INTERNATIONAL EXISTING BUILDING CODE)

2018 IMC (INTERNATIONAL MECHANICAL CODE)

2017 NEC (NATIONAL ELECTRICAL CODE)

2018 UPC (UNIFORM PLUMBING CODE)

2021 IECC (INTERNATIONAL ENERGY CONSERVATION CODE)

2018 IFC (INTERNATIONAL FIRE CODE)

2018 NFPA 101 LIFE SAFETY CODE

2018 IFGC (INTERNATIONAL FUEL GAS CODE)

2009 ANSI A117.1 (ACCESSIBILITY)

2010 AMERICAN'S WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES (ADAAG)

KANSAS CITY ZONING AND DEVELOPMENT CODE

CHAPTER 18, KANSAS CITY BUILDING & REHABILITATION CODE

CHAPTER 88, CODE OF ORDINANCES

2010 ASME A17.1 (AMERICAN SOCIETY OF MECHANICAL ENGINEERS SAFETY CODE FOR ELEVATORS AND ESCALATORS)

ALL GLAZING IN HAZARDOUS LOCATIONS AS DEFINED IN IBC SECTION 2406.4 SHALL COMPLY WITH SECTIONS 2406.1.1 THROUGH 2406.1.4 FOR SAFETY GLAZING.

ALL NEW WORK INCLUDING INTERIOR FINISHES, TRIM AND DECORATIVE MATERIALS SHALL COMPLY WITH IBC CHAPTER 8 FOR INTERIOR FINISHES.

KANSAS CITY CONVENTION CENTER - MUSIC HALL & LITTLE THEATER
301 W. 13TH STREET
KANSAS CITY, MO 64105

EXISTING BUILDING CONSTRUCTION TYPE: II-B
OCCUPANCY CLASSIFICATION: A-4/B
APPROXIMATE BUILDING AREA AFFECTED: 2,924 SF

GENERAL NOTES:

1. All site use shall be coordinated and approved in advance by Owner. All deliveries, materials storage and waste removal are to be coordinated with Owner, Department and Building Manager. Refer to Specifications.
2. Contractor is to field verify all existing conditions prior to beginning work. Report any discrepancies to Architect in writing prior to beginning work in the affected areas. Contractor shall document all existing conditions by photograph and written report. Specifically note all materials or items which are damaged prior to beginning work. Refer to Specifications.
3. Maintain building in weathertight condition during construction. Construct temporary partitions within the existing building to provide a secure enclosure to isolate any demolition or construction work as deemed necessary by the Owner. Coordinate locations with the Owner and maintain means of egress throughout the duration of the work.
4. All required means of egress shall remain open and unobstructed at all times. Temporary construction egress shall be provided in areas in which path of egress is impeded. Overhead protection shall be provided where egress path passes below areas of construction.
5. Maintain integrity of existing fire rated assemblies during demolition and construction phases. Any fireproofing removed as a part of the new work must be replaced with material of the same type and thickness. Any penetrations of existing fire rated partitions shall be sealed with approved fire resistive materials as required to maintain fire separation.
6. Contractor to verify all existing electrical and life safety systems currently installed in the construction area. All existing devices to remain shall be checked and in working condition when project is complete.
7. Verify and maintain the location of existing power, fire alarm, security, communication and data cables so as not to inadvertently interrupt the continuity of their service. Coordinate with the Owner any pre-approved disruption of utility service and life safety systems within the existing building so as to minimize the disruption of services and systems.
8. Electrical Rebate Note:
   The Contractor is to provide the light fixtures model number, wattage, lamp type and count of all light fixtures to be removed and replaced per the electrical drawings to the Owner who intends to seek rebates for light fixtures.

GENERAL DEMOLITION NOTES:

1. Contractor shall employ reasonable means to contain dust and debris due to demolition and construction. Provide temporary protection of all existing interior areas to remain including elevator cabs that will be used to transport materials to construction areas. Provide protection for existing building materials, finishes and equipment from damage due to any demolition or construction related activities performed under this contract. Damage as a result of demolition or construction shall be repaired to match existing condition at no cost to the Owner.
2. Where removal of existing walls, partitions, equipment, etc., disrupts or disturbs existing electrical, mechanical, or plumbing services to areas not designated as construction areas, Contractor shall provide temporary connections complying with all applicable codes as required to ensure uninterrupted service to said areas. Note: No service is to be shut down without prior approval by Owner.
3. Coordinate all demolition / phasing efforts with the Owner's Representative. Every effort shall be made to minimize disruption of facility operation. Excessive noise or vibration shall be pre-approved and coordinated with the Owner's Representatives.
4. Remove all demolition materials from the site unless noted otherwise. The Owner shall reserve the right to salvage any materials. The Contractor shall coordinate with the Owner's Representative any materials to be salvaged for reuse and will be responsible for verifying and maintaining the functional and aesthetic integrity of those materials.
5. Cap all disconnected mechanical piping lines within the wall or below the floor. Repair wall, floor and ceiling penetrations resulting from removal or rerouting of new or existing piping, ductwork, conduit, etc. as required to maintain fire separation. Patch as required to blend seamlessly into adjacent new or existing finishes. Refer to mechanical, electrical and plumbing drawings for additional demolition requirements.

GENERAL NEW CONSTRUCTION NOTES:

1. Contractor to visually inspect and seal with fire resistive material any structural, mechanical, or electrical penetrations in existing elevator hoistways or machine room walls or ceilings. Any penetrations of existing fire rated partitions shall be sealed with approved fire resistive materials as required by code to maintain fire separation.

   Provide fire rated penetration materials at conduit, cable, pipe, and HVAC duct and piping penetrations, such as UL XHEZ.W-J-3109 for concrete or masonry walls, or UL XHEZ.W-L-3231 for gyp. bd. walls, to meet UL 1479 standard for fire tests of through-penetration firestops and maintain integrity and rating of all existing fire rated assemblies. Also refer to section 078413 penetration firestopping for additional information.
2. At wall penetrations, Contractor shall repair all wall surfaces and finishes to match existing material and texture to achieve a uniform appearance without noticeable evidence of joints or patching.
3. Notify Owner, Agency, Department and Building Manager a minimum of 48 hours in advance of disruption of elevator service. Note: No elevator is to be shut down without prior approval by Owner.
4. Notify Owner, Agency, Department and Building Manager a minimum of 48 hours in advance of disruption of building utilities, communications, electrical service or life safety systems. Note: No service is to be shut down without prior approval by Owner.
5. Install and maintain temporary directional signage informing employees and the public of building access, egress and alternate circulation routes required during construction. Relocate signage and update information as necessary for construction stages and phasing.
6. All wall-mounted accessories, devices, appliances and other elements installed on walls indicated to be painted shall be removed, protected and salvaged for reinstallation after painting is completed.

ALTERNATES:

Alternate No. 1: Replace existing stone wall panels to match existing in lieu of patching and reusing the existing stone wall panels at the lavatories in all three pairs of restrooms where indicated on the Drawings (RE: Specifications section 012300 - Alternates).

Alternate No. 2: Replace existing stone wall panels to match existing at all locations in all three pairs of restrooms where wall-mounted accessories are being relocated in lieu of patching and reusing the existing stone wall panels where indicated on the Drawings (RE: Specifications section 012300 - Alternates).

ABBREVIATIONS:

		JT	JOINT
		M.O.	MASONRY OPENING
AFF	ABOVE FINISH FLOOR	MAX	MAXIMUM
ADJ	ADJUSTABLE	MECH	MECHANICAL
ALUM	ALUMINUM	MEP	MECHANICAL, ELECTRICAL, PLUMBING
∠	ANGLE		
APPROX.	APPROXIMATE	MFR	MANUFACTURER
ARCH	ARCHITECT or ARCHITECTURAL	MTL	METAL
@	AT	MIN	MINIMUM
		MISC	MISCELLANEOUS
BTWN	BETWEEN	MTD	MOUNTED
A.O.	BOTTOM OF		
BLDG	BUILDING	N/A	NOT APPLICABLE
		N.I.C.	NOT IN CONTRACT
CLG	CEILING	N.T.S.	NOT TO SCALE
CLR	CLEAR		
CL	CENTERLINE	O.C.	ON CENTER
COL	COLUMN	O.D.	OUTSIDE DIAMETER
CJ	CONTROL JOINT		
CONC	CONCRETE	PERP	PERPENDICULAR
CONT	CONTINUOUS	PL	PLATE
CMU	CONCRETE MASONRY UNIT	PLAM	PLASTIC LAMINATE
D	DEEP	RE:	REFER TO or REFERENCE
DEMO	DEMOLISH or DEMOLITION	REC	RECOMMENDATION
DTL	DETAIL	REINF	REINFORCING
Ø	DIAMETER	REQ	REQUIRED
DN	DOWN	RM	ROOM
DWG	DRAWING	R.O.	ROUGH OPENING
EA	EACH	SIM	SIMILAR
ELEC	ELECTRICAL	S.F.	SQUARE FOOT
ELVTR	ELEVATOR	STD	STANDARD
EQ	EQUAL	S.S.	STAINLESS STEEL
EXIST	EXISTING		
EXP BLT	EXPANSION BOLT	T.O.	TOP OF
EJ	EXPANSION JOINT	TYP	TYPICAL (ALL CONDITIONS NOT OTHERWISE CALLED OUT)
EXT	EXTENSION		
F.O.	FACE OF	U.N.O.	UNLESS NOTED OTHERWISE
FTNG	FOOTING		
FDN	FOUNDATION	VERT	VERTICAL
F.V.	FIELD VERIFY	V.C.T	VINYL COMPOSITION TILE
FIN	FINISH		
F.E.	FIRE EXTINGUISHER	WT	WEIGHT
F.E.C.	FIRE EXTINGUISHER CABINET	W.W.F.	WELDED WIRE FABRIC
F.H.C.	FIRE HOSE CABINET	W	WIDE or WIDTH
		W/	WITH
GA	GAUGE	WD	WOOD
GC	GENERAL CONTRACTOR		
GMU	GLAZED MASONRY UNIT	*REFER TO OTHER DISCIPLINES SHEETS FOR ABBREVIATIONS SPECIFIC TO THOSE DRAWINGS	
GYP BD	GYPSUM BOARD		
H	HIGH/ HEIGHT		
H.M.	HOLLOW METAL		
HOR	HORIZONTAL		

SYMBOLS LEGEND:

- EXISTING WALL TO REMAIN
- EXISTING WALL TO BE REMOVED
- NEW CONSTRUCTION
- EXISTING DOOR TO REMAIN
- EXISTING DOOR TO BE REMOVED
- NEW DOOR
- NEW MILWORK
- ROOM NAME TAG (ROOM NAME / #####)
- KEYNOTE TAG (#)
- DOOR TAG (D#)
- WALL TYPE TAG 1
- WALL TYPE TAG 2
- X'-X" CEILING HEIGHT TAG
- X'-X"(*) DIMENSION TO FINISH FACE
- PT-XX FINISH TAG
- NEW PENDANT LIGHT FIXTURE
- NEW 3" ROUND RECESSED CAN
- NEW ROUND 3" WALL WASH
- NEW COVE LIGHT
- $ EXISTING LIGHT SWITCH TO REMAIN
- $ EXISTING LIGHT SWITCH TO BE REMOVED
- $MS EXISTING COMBINATION LIGHT SWITCH/MOTION SENSOR TO BE REMOVED
- $MS NEW COMBINATION LIGHT SWITCH/MOTION SENSOR

NOTE:
IMAGE PROVIDED BY GOOGLE MAPS

PROJECT LOCATION:
301 W. 13th STREET
KANSAS CITY, MO 64105

1 VICINITY MAP
N.T.S.

PWA

PIPER-WIND ARCHITECTS
2121 CENTRAL STREET, SUITE 143
KANSAS CITY, MISSOURI 64108
TEL. (816) 474-3050
FAX. (816) 474-3051
www.piper-wind.com

STRUCTURAL ENGINEER:
LEIGH & O'KANE
209 SE DOUGLAS
LEE'S SUMMIT, MISSOURI 64063
TEL. (816) 444-3144
www.leok.com

MEP ENGINEER:
FSC, INC.
8675 W. 96TH STREET
OVERLAND PARK, KANSAS 66212
TEL. (913) 722-3473
FAX. (913) 942-2076
www.fsc-inc.com

LIGHTING CONSULTANT:
LIGHTWORKS, INC.
1701 OAK, SUITE 200
KANSAS CITY, MISSOURI 64108
TEL. (816) 640-9948
www.lightworkskc.com

KANSAS CITY CONVENTION CENTER

MUSIC HALL AND LITTLE THEATRE RESTROOM UPGRADES PROJECT
301 W. 13th STREET, KANSAS CITY, MO 64105

FOR CONSTRUCTION

PROJECT NO.	1623.7
DATE	10 / 15 / 2025
DRAWN BY	DK
CHECKED BY	EP
CHECKED BY	
REVISED DATE	DESCRIPTION

SHEET TITLE & NUMBER

GENERAL PROJECT INFORMATION

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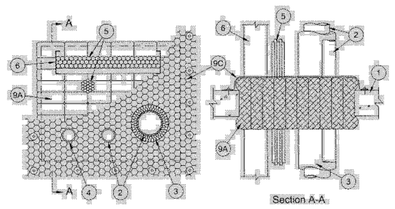
PIPER-WIND ARCHITECTS, INC.

G-002

System No. C-AJ-8093

March 23, 2016

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings — 2 and 3 Hr (See Items 3, 4, 6 and 8)	F Ratings — 2 and 3 Hr (See Items 3, 4, 6 and 8)
T Ratings — 0, 1/4, 1/2, 3/4, 1-1/2 and 2 Hr (See Items 2 through 9)	FT Ratings — 0, 1/4, 1/2, 3/4, 1-1/2 and 2 Hr (See Items 2 through 9)
L Rating At Ambient — Less than 1, 1.6, and 3.2 CFM/sq ft (See Item 2, 4, 5, 6, 8 and 9B)	FH Ratings — 2 and 3 Hr (See Items 3, 4, 6 and 8)
L Rating at 400 F — Less than 1, 1.6, and 2 CFM/sq ft (See Item 2, 4, 5, 6, 8 and 9B)	FTH Ratings — 0, 1/4, 1/2, 3/4, 1-1/2 and 2 Hr (See Items 2 through 9) and 9B)
	L Rating At Ambient — Less than 1, 1.6, and 3.2 CFM/sq ft (See Item 2, 4, 5, 6, 8 and 9B)
	L Rating at 400 F — Less than 1, 1.6, and 2 CFM/sq ft (See Item 2, 4, 5, 6, 8 and 9B)



System tested with a pressure differential of 2.5 Pa between the exposed and the unexposed surfaces with the higher pressure on the exposed side.

1. **Floor or Wall Assembly —** Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m^3) concrete. Wall may also be constructed of any UL Classified **Concrete Blocks***. Max area of opening is 18 sq ft with a max single dim of 6 ft (1.6 m) When any dim exceeds 3 ft (0.76 m), see Item 9C.

   See **Concrete Blocks** (CAZT) category in the Fire Resistance Directory for names of manufacturers.

2. **Metallic Penetrants —** One or more metallic pipes, conduits or tubes to be installed within the opening. Min 1/2 in. (13 mm) clearance between penetrants. Min clearance between penetrants and periphery of opening is 0 in. (point contact) (0 mm). Penetrants rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:

   A. **Steel Pipe —** Nom 12 in. (305 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.

   B. **Iron Pipe —** Nom 12 in. (305 mm) diam (or smaller) cast or ductile iron pipe.

   C. **Conduit —** Nom 6 in. (152 mm) diam (or smaller) rigid steel conduit, nom 4 in. (102 mm) diam (or smaller) electrical metallic tubing (EMT), or nom 4 in. (102 mm) diam (or smaller) steel **Flexible Metal Conduit#**.

   D. **Copper Pipe or Tube —** Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe or Type M (or heavier) copper tube.

Type of Metallic Penetrant	Max Diam of Through Penetrant, in. (mm)	T, FT and FTH Rating, Hr
Steel or Iron Pipe, Conduit or Copper Pipe or Tube	12 (305)	1/4
Steel or Iron Pipe, Conduit or EMT	4 (102)	3/4
Steel or Iron Pipe, Conduit or EMT	2 (51)	2

   The L Rating is Less than 1 CFM/sq ft at ambient and 400 F for metallic penetrants.

3. **Pipe Insulation —** (Optional) - The following types of pipe insulations may be installed on one or more of the metallic pipes or tubing:

   A. **Pipe and Equipment Covering Materials* —** Max 2 in. (51 mm) thick hollow cylindrical heavy density (min 3.5 pcf or 57 kg/m^3) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing tap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product.
   See **Pipe and Equipment Covering Materials** (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.

   B. **Pipe Covering Materials* —** Max 2 in. (51 mm) thick unfaced mineral fiber pipe insulation having a nom density of 3.5 pcf (57 kg/m^3) (or heavier) and sized to the outside diam of the pipe or tube. Pipe insulation secured with min 8 AWG steel wire spaced max 12 in. (305 mm) OC.
   INDUSTRIAL INSULATION GROUP L L C — High Temperature Pipe Insulation 1200, High Temperature Pipe Insulation BWT and High Temperature Pipe Insulation Thermaloc

   C. **Sheathing Material* —** Use in conjunction with Item 3B. Foil-scrim-kraft or all service jacket material shall be wrapped around the outer circumference of the pipe insulation (Item 3B) with the kraft side exposed. Longitudinal and transverse joints sealed with metal fasteners or butt tape.
   See **Sheathing Materials** (BVDV) category in the Building Materials Directory for names of manufacturers. Any sheathing material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.

   D. **Tube Insulation — Plastics## —** Max 1 in. (25 mm) thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam fumished in the form of tubing. When tube insulation is used, nom diam of copper pipe or tube shall not exceed 4 in. (102 mm).
   See **Plastics** (QMFZ2) category in the Plastics Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation meeting the above specifications and having a UL 94 Flammability Classification of 94-5VA may be used.

   E. **Pipe Covering Materials* — Cellular Glass Insulation —** Max 3 in. (76 mm) thick cellular glass units sized to the outside diam of the pipe or tube and supplied in nom 24 in. (610 mm) long half sections or nom 18 in. (457 mm) long segments. Pipe insulation installed on pipe in accordance with the manufacturer's instructions.

   F. **Metal Jacket —** Used in conjunction with Item 3E. Min 12 in. long jacket formed from min 0.010 in. (0.254 mm) thick aluminum sheet cut to wrap tightly around the pipe insulation with a min 2 in. (51 mm) lap and secured using bands and seals of a similar material or min No. 18 AWG steel tie wire. Bands or steel tie wire to be located within 2 in. (51 mm) of each end of the jacket and spaced max 10 in. (254 mm) OC. Jacket installed with edge abutting surface of fill material (Item 9A) on top surface of floor or both surfaces of wall. Metal jacket to be used in addition to any other jacketing material which may be required on the pipe covering.

   G. **Pipe and Equipment Covering Materials* —** Max 3 in. (76 mm) thick hollow cylindrical calcium silicate (min 10.0 pcf or 160 kg/m^3) sized to the outside diam of the pipe or tube. Pipe insulation secured with min 8 AWG steel wire spaced max 12 in. (305 mm) OC. See Pipe and Equipment Covering Materials (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
   When Items 3A or 3D are used, the F and FH Ratings are 2 hr. When other pipe covering materials are used, F and FH Ratings are 3 hr. When Item 3D is used, the T, FT and FTH Ratings are 3/4 hr. When other pipe covering materials are used, T, FT and FTH Ratings are 1-1/2 hr.

4. **Nonmetallic Penetrants —** One or more nonmetallic pipes, conduits or tubes to be installed within the opening. Min clearance between nonmetallic penetrants to be 1 in. (25 mm). Min clearance between nonmetallic and metallic penetrants to be 4 in. (102 mm) Min clearance between penetrants and periphery of opening is 0 in. (0 mm) (point contact). Penetrants rigidly supported on both sides of floor or wall assembly. The following types and sizes of nonmetallic pipes, conduits or tubing may be used:

   A. **Polyvinyl Chloride (PVC) Pipe —** Nom 2 in. (51 mm) diam (or smaller) solid or cellular core Schedule 40 PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

   B. **Chlorinated Polyvinyl Chloride (CPVC) Pipe —** Nom 2 in. (51 mm) diam (or smaller) SDR17 CPVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

   C. **Rigid Nonmetallic Conduit+ —** Nom 2 in. (51 mm) diam (or smaller) Schedule 40 PVC conduit installed in accordance with the National Electrical Code (NFPA 70).

   D. **Electrical Nonmetallic Tubing (ENT)+ —** Nom 2 in. (51 mm) diam (or smaller) corrugated wall ENT formed of polyvinyl chloride (PVC) installed in accordance with the National Electrical Code (NFPA 70).

   E. **Optical Fiber Raceway (OFR)+ —** Nom 2 in. (51 mm) diam (or smaller) OFR formed of either polyvinyl chloride (PVC) or polyvinylidene fluoride (PVDF) installed in accordance with the National Electrical Code (NFPA 70).
   When Item 4 is used, the F, T, FT, FH and FTH Ratings of the firestop system are 2 hr. The L Rating is Less than 1 CFM/sq ft at ambient and 400 F.

5. **Cables —** Nom 4 in. (102 mm) diam (or smaller) tight bundle of cables. Cable bundle spaced min 4 in. (102 mm) from all other penetrants. Clearance between cable bundle and periphery of opening is 0 in. (0 mm) (point contact). Cable bundle rigidly supported on both sides of floor or wall assembly. The following types and sizes of cables may be used:

   A. Max 1/C - 350 kcmil cable with polyvinyl chloride (PVC), cross-linked polyethylene (XLPE) or plenum rated insulation and jacket.

   B. Max 7/C - No. 12 AWG cable with PVC-nylon insulation and PVC jacket.

   C. Max 100 pair - No. 24 AWG copper conductor telephone cable with PVC or plenum rated insulation and jacket.

   D. Max RG/U coaxial cables with fluorinated ethylene or plenum rated jacket and insulation.

   E. Multiple fiber optic cables with PVC or plenum rated insulation.

   F. **Through Penetrating Products* —** Max 2/C with ground No. 12 AWG Metal-Clad Cable+.
   AFC CABLE SYSTEMS INC

   When Item 5A or 5F is used, the T, FT and FTH Ratings are 1/2 hr. When other cables are used, T, FT and FTH Ratings are 3/4 hr. The L Rating is Less than 1.6 CFM/sq ft at ambient and 400 F.

6. **Cable Tray —** Max 30 in. (762 mm) wide by max 6 in. (152 mm) deep open ladder cable tray with channel-shaped side rails formed from min 0.060 in. (1.5 mm) thick (No. 16 MSG) galv steel or min 0.060 in. (1.5 mm) thick aluminum with rungs spaced max 9 in. (227 mm) OC. A max of two cable trays may be installed within the opening with a min separation of 8 in. (204 mm) between trays. The min space between the cable tray and the periphery of the opening is 0 in. (0 mm) (point contact). Cable trays to be rigidly supported on both sides of the floor or wall assembly. Aggregate cross-sectional area of cables in cable tray not to exceed 40 percent of the cross-sectional area of the cable tray based on a max 3 in. (76 mm) cable loading depth within tray. Any combination of the cable types specified in Item 5 may be used. **When width of cable tray exceeds 18 in. (457 mm), the F and FH Ratings are 2 hr. The L Rating is 3.2 CFM/sq ft at ambient and 2 at 400 F when putty is used (See Item 9B).**

7. **Busway+ —** (Not Shown) - Nom 19 in. (483 mm) wide (or smaller) by 5 in. (127 mm) deep "T" shaped aluminum enclosure containing factory-mounted copper bars rated for 600 V, 5000 A or aluminum bars rated for 600 V, 4000 A. A max two busways to be installed within the opening. The annular space between the busway and the periphery of the opening shall be a min 1/2 in. (13 mm) to a max 3-1/2 in. (89 mm). Busways spaced min 6 in. (152 mm) from all other penetrants. Busway to be rigidly supported on both sides of floor or wall assembly. The busway shall bear the UL Listing Mark and shall be installed in accordance with all provisions of the National Electrical Code, NFPA 70. **When busway is used, the T, FT and FTH Ratings are 0 hr.**

8. **Steel Duct —** (Not Shown) - Nom 18 in. (457 mm) diameter (or smaller) No. 28 GA (or heavier) steel duct installed within opening when opening contains no cable tray. A max of two steel ducts may be installed within the through-opening. Ducts to be spaced min 4 in. (102 mm) apart and min 8 in. (204 mm) from insulated penetrants and nonmetallic penetrants. The clearance between the steel duct and the periphery of the opening shall be min 0 in. (0 mm) (point contact). Steel ducts to be rigidly supported on both sides of floor or wall assembly. **When steel duct is used, the F and FH Ratings are 2 hr and the T, FT and FTH Ratings are 0 hr. The L Rating is Less than 1 CFM/sq ft at ambient and 400 F.**

9. **Firestop System —** The firestop system shall consist of the following items:

   A. **Fill, Void or Cavity Materials* - Pillows —** Nom 9 in. (227 mm) long by 4 to 6 in. (102 to 152 mm) wide by 1 to 3 in. (25 to 76 mm) thick plastic covered intumescent pillows. In floors, pillows to be installed lengthwise through opening and positioned to extend a maximum of 2-1/2 in. (64 mm) below the bottom plane of the floor. In walls, pillows to be installed lengthwise through opening and positioned to extend an equal distance from the approximate center line of the wall. Pillows tightly packed into the opening to fill the annular space between the annular space and the penetrating items.
   SPECIFIED TECHNOLOGIES INC — SpecSeal Firestop Pillows

   B. **Fill, Void or Cavity Materials* — Sealant or Putty —** Min 1/2 in. (13 mm) depth of fill material applied at point contact locations between penetrating items and periphery of opening. Additional fill material forced into interstices of grouped cables and grouped cables within cable trays. **For L Ratings, apply nom 3/16 in. (4.8 mm) thick by 4-3/4 in. (121 mm) wide band of putty to top of cables in the cable tray.**
   SPECIFIED TECHNOLOGIES INC — SpecSeal Series 100, 101, 102, 120, 129 or 105 Sealant, SpecSeal LCI Sealant, SpecSeal SILS00 Silicone Firestop Sealant, or SpecSeal Putty

   C. **Wire Mesh —** Nom 1 in. (25 mm) hexagonal wire mesh fabricated from min 20 ga galv steel wire cut to fit the contours of the penetrating items and the opening with a min 2 in. (51 mm) lap beyond the periphery of the opening. Wire mesh secured to both sides of floor or wall by means of 1/4 in. (6 mm) diam by 1-1/2 in. (38 mm) long steel concrete screws in conjunction with 1-1/4 in. (31 mm) diam steel fender washers spaced max 6 in. (152 mm) OC. Any joints within wire mesh shall overlap 2 in. (51 mm) and be secured together by means of No. 20 AWG steel wire spaced 6 in. (152 mm) OC. When both the length and width dimensions of the through opening are less than 36 in. (914 mm) and when the max space between penetrants or between the penetrant and the perimeter of the opening is less than 10 in. (254 mm), the wire mesh is optional. When the area of the opening exceeds 1296 sq in. (0.84 m^2), the gauge of the steel wire mesh shall be increased to min 16 AWG.

   D. **Steel Straps —** (Not shown) — As an alternate to the wire mesh (Item 9C) in wall assemblies, min 1 in. (25 mm) wide by 0.015 in. (0.38 mm) thick steel banding straps sized to lap 2 in. (51 mm) beyond the periphery of the opening may be installed either horizontally or vertically between rows of penetrants with a max on center spacing of 4 in. (102 mm). Steel banding straps secured to concrete with 1/4 in. (6 mm) diam by 1-1/2 in. (38 mm) long steel concrete screws in conjunction with 1-1/4 in. (31 mm) diam steel fender washers.

   E. **Steel Plate —** (Not Shown) - As an alternate to Item 9C or 9D, min 28 GA (or heavier) steel plate sized to lap 2 in. (51 mm) beyond periphery of opening may be installed on minimum one side of floor or wall assembly on either side of assembly. Steel plate secured to concrete with 1/4 in. (6 mm) diam by 1-1/2 in. (38 mm) long steel concrete screws in conjunction with 1-1/4 in. (31 mm) diam steel fender washers. Fasteners spaced 1 in. (25 mm) from each corner and 8 in. (204 mm) center-to-center. **When steel plate is used, the T, FT and FTH Ratings are 0 hr.**

* Bearing the UL Classification Marking

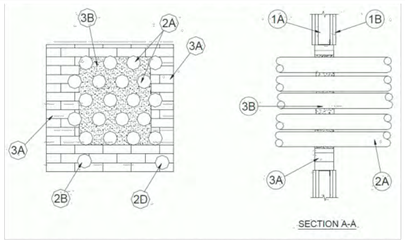
\# Bearing the UL Recognized Components Mark

\+ Bearing the UL Listing Mark

System No. W-L-1526

June 03, 2016

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings — 1 and 2 Hr (See Item 1)	F Ratings — 1 and 2 Hr (See Item 1)
T Ratings — 0 and 1/4 Hr (See Item 2)	FT Ratings — 0 and 1/4 Hr (See Item 2)
L Rating At Ambient — Less Than 1 CFM/sq ft	FH Ratings — 1 and 2 Hr (See Item 1)
L Rating At 400 F — Less Than 1 CFM/sq ft	FTH Ratings — 0 and 1/4 Hr (See Item 2)
	L Rating At Ambient — Less Than 1 CFM/sq ft
	L Rating At 400 F — Less Than 1 CFM/sq ft



1. **Wall Assembly —** The 1 or 2 hr fire rated wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features.

   A. **Studs —** Wall framing shall consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC. Additional framing members shall be used to frame all sides of opening.

   B. **Gypsum Board* —** The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design in the UL Fire Resistance Directory. Max size of opening is 1296 in.^{2} (0.836 m^2) with a max dimension of 36 in. (914 mm).

   The hourly F and FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed. The hourly T, FT and FTH Ratings are 1/4 hr when installed in 2 hr rated walls, and 0 hr when installed in 1 hr rated walls.

2. **Through Penetrants —** One or more pipes, conduit or tubing to be installed within the opening. The space between the pipes, conduit or tubing shall be min 1/2 in. (13 mm) to max 9-1/2 in. (241 mm), except that for copper penetrants, the min annular space shall be 2 in. (51 mm). The space between pipes, conduit or tubing and periphery of opening shall be min 3/4 in. (19 mm) to max 14 in. (356 mm), except that for copper penetrants, the min annular space shall be 2 in. (51 mm). Pipe, conduit or tubing to be rigidly supported on both sides of floor or wall. The following types and sizes of metallic pipes, conduits or tubing may be used:

   A. **Conduit —** Nom 4 in. (102 mm) diam (or smaller) electrical metallic tubing or steel conduit. A maximum of twenty conduit may be installed within the opening.

   B. **Copper Tubing or Pipe —** Nom 4 in. (102 mm) diam (or smaller) Type L (or heavier) copper tubing or Regular (or heavier) copper pipe. A maximum of one copper penetrant may be installed within the opening.

   C. **Steel Pipe —** Nom 8 in. (203 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe. A maximum of one penetrant exceeding 4 in. (102 mm) diam may be installed within the opening.

   D. **Iron Pipe —** Nom 4 in. (102 mm) diam (or smaller) cast or ductile iron pipe.

3. **Firestop System —** The firestop system shall consist of the following:

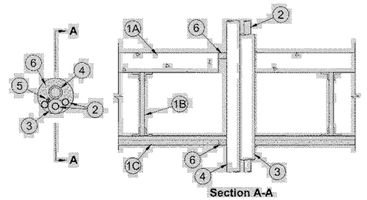
   A. **Fill, Void or Cavity Material* —** Blocks to be firmly packed to fill the opening area between the grouping of conduit (Item 2A) and periphery of opening, and between and around all other individual penetrants to the periphery of the opening. Blocks installed with 5 in. (127 mm) dimension projecting through opening, centered within thickness of wall. In walls greater than 6 in. (152 mm) thick, additional blocks shall be installed or blocks shall be installed with 8 in. (203 mm) dimension projecting through opening, such that blocks are recessed max 1/2 in. (13 mm) from both surfaces of wall. Blocks can be cut to fit around penetrants and within smaller annular spaces.
   3M COMPANY 3M FIRE PROTECTION PRODUCTS — 3M™ Fire Barrier Block B258, 3M™ Fire Barrier Plank PK39

   B. **Fill, Void or Cavity Materials* — Foam —** Fill material installed to fill the entire annular space within and around the grouping of conduit penetrating items to a min thickness of 5 in. (127 mm). Fill material to be forced between blocks and periphery of opening to the max extent possible. Fill material to be injected in-between blocks and penetrants to the full depth of the blocks, as well as in any visible voids/openings between blocks (Item 3A).
   3M COMPANY 3M FIRE PROTECTION PRODUCTS — Fire Barrier Rated Foam, FIP 1-Step

System No. F-E-8003

August 18, 2011

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 1 Hr	F Rating — 1 Hr
T Rating — 3/4 Hr	FT Rating — 3/4 Hr
	FH Rating — 1 Hr
	FTH Rating — 3/4 Hr



1. **Floor-Ceiling Assembly —** The 1 hr fire rated concrete and steel joist Floor-Ceiling assembly shall be constructed of the materials and in the manner described in the individual G500 Series Design in the UL Fire Resistance Directory, as summarized below:

   A. **Concrete Floor —** Normal weight or lightweight (100-150 pcf) concrete over metal lath or steel deck as specified in the individual G500 Series Design. Max diam of floor opening is 4-1/2 in.

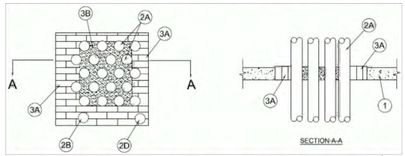
   B. **Joists —** Steel joists or **Structural Steel Members*** as specified in the individual G500 Series Design.

   C. **Gypsum Board* —** Min 5/8 in. thick, screw-attached to furring channels as specified in the individual G500 Series Design. Max diam of ceiling opening is 4-1/2 in.

System No. C-AJ-1668

May 24, 2016

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 2 Hr	F Rating — 2 Hr
T Ratings — 1/4 and 1/2 Hr (See Item 2)	FT Ratings — 1/4 and 1/2 Hr (See Item 2)
L Rating At Ambient — Less Than 1 CFM/sq ft	FH Rating — 2 Hr
L Rating At 400 F — Less Than 1 CFM/sq ft	FTH Ratings — 1/4 and 1/2 Hr (See Item 2)
	L Rating At Ambient — Less Than 1 CFM/sq ft
	L Rating At 400 F — Less Than 1 CFM/sq ft



1. **Floor or Wall Assembly —** Min 4-1/2 in. (114 mm) thick reinforced light weight or normal weight (100-150 pcf or 1600-2400 kg/m^3) concrete. Wall may also be constructed of any UL Classified **Concrete Blocks***. Max size of opening is 1296 in.^{2} (0.836 m^2) with a max dimension of 36 in. (914 mm).
   See **Concrete Blocks** (CAZT) category in the Fire Resistance Directory for names of manufacturers.

2. **Through Penetrants —** One or more pipes, conduit or tubing to be installed within the opening. The space between the pipes, conduit or tubing shall be min 1/2 in. (13 mm) to max 9-1/2 in. (241 mm), except that for copper penetrants, the min annular space shall be 3 in. (76 mm). The space between pipes, conduit or tubing and periphery of opening shall be min 3/4 in. (19 mm) to max 14 in. (356 mm), except that for copper penetrants, the min annular space shall be 2 in. (51 mm). Pipe, conduit or tubing to be rigidly supported on both sides of floor or wall. The following types and sizes of metallic pipes, conduits or tubing may be used:

   A. **Conduit —** Nom 4 in. (102 mm) diam (or smaller) electrical metallic tubing or steel conduit. A maximum of twenty conduit may be installed within the opening.

   B. **Copper Tubing or Pipe —** Nom 4 in. (102 mm) diam (or smaller) Type L (or heavier) copper tubing or Regular (or heavier) copper pipe. A maximum of one copper penetrant may be installed within the opening.

   C. **Steel Pipe —** Nom 8 in. (203 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe. A maximum of one penetrant exceeding 4 in. (102 mm) diam may be installed within the opening.

   D. **Iron Pipe —** Nom 4 in. (102 mm) diam (or smaller) cast or ductile iron pipe.
   The hourly T, FT and FTH Rating is 1/2 hr except that when copper pipe/tube (Items 2B) is used, the hourly T, FT and FTH Rating is 1/4 hr.

3. **Firestop System —** The firestop system shall consist of the following:

   A. **Fill, Void or Cavity Material* —** Blocks to be firmly packed to fill the opening area between the grouping of conduit (Item 2A) and periphery of opening, and between and around all other individual penetrants to the periphery of the opening. Blocks installed with 5 in. (127 mm) dimension projecting through opening, flush with bottom surface of floor or centered in wall. For floors and walls thicker than 5 in. (127 mm), the fire block can be installed flush with either side of floor or wall. In concrete block walls, fire block to fill entire thickness of wall opening unless concrete block is solid filled. Blocks can be cut to fit around penetrants and within smaller annular spaces.

   B. **Fill, Void or Cavity Materials* — Foam —** Fill material installed to fill the entire annular space within and around the grouping of conduit penetrating items to a min thickness of 5 in. (127 mm). Fill material to be forced between blocks and periphery of opening to the max extent possible. Fill material to be injected in-between blocks and penetrants to the full depth of the blocks, as well as in any visible voids/openings between blocks (Item 3A).
   3M COMPANY 3M FIRE PROTECTION PRODUCTS — Fire Barrier Rated Foam, FIP 1-Step

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

Last Updated on 2019-07-29

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- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered Certified.

GENERAL NOTE:
UL DESIGN DETAILS SHOWN ARE PROVIDED AS AN EXAMPLE FOR APPROVED SYSTEMS. CONTRACTOR TO NOTIFY ARCHITECT AND OWNER IF OTHER SYSTEMS ARE TO BE USED.

2. **Through Penetrants —** One or more metallic pipes, conduits or tubing to be installed either concentrically or eccentrically within the opening. Pipes, conduits or tubing to be spaced min 0 in. (point contact) to max 1 in. apart. The space between the pipes, conduits or tubing and the periphery of the opening shall be min 0 in. (point contact) to max 1 in. Penetrants to be located approx midway between joists and rigidly supported on both sides of floor-ceiling assembly. The following types and sizes of metallic pipe, conduits or tubing may be used:

   A. **Steel Pipe —** Nom 3/4 in. diam (or smaller) Schedule 5 (or heavier) steel pipe.

   B. **Iron Pipe —** Nom 3/4 in. diam (or smaller) cast or ductile iron pipe.

   C. **Conduit —** Nom 3/4 in. diam (or smaller) steel conduit or steel electrical metallic tubing.

   D. **Copper Pipe or Tube —** Nom 3/4 in. diam (or smaller) Regular (or heavier) copper pipe or Type L (or heavier) copper tube.

   When metallic pipe, conduit or tubing without insulation is used, T Rating is 1/2 hr. Otherwise, T Rating is 1 hr.

3. **Tube Insulation - Plastics# —** Nom 1/2 in. thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam fumished in the form of tubing. Tube insulation to be installed on a max of two metallic pipes or tubes. Insulated pipe or tubing to spaced 0 in. (point contact) to 1 in. from other through penetrants (Items 2, 4 and 5). The space between the insulated pipe or tube and the periphery of the opening shall be min 0 in. (point contact) to max 1 in.
   See **Plastics** (QMFZ2) category in the Plastics Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation meeting the above specifications and having a UL 94 Flammability Classification of 94-5VA may be used.

4. **Nonmetallic Through Penetrant —** One nonmetallic pipe, conduit or tube to be installed within the firestop system. Pipe, conduit or tube to be spaced min 0 in. (point contact) to max 1 in. from the insulated through penetrants and min 1/2 in. to max 1 in. from non-insulated through penetrants. The space between the pipe, conduit or tube and the periphery of the opening shall be min 0 in. (point contact) to max 1 in. Pipe, conduit or tube to be rigidly supported on both sides of floor-ceiling assembly. One of the following types and sizes of nonmetallic through penetrants may be used:

   A. **Polyvinyl Chloride (PVC) Pipe —** Nom 1-1/4 in. diam (or smaller) Schedule 40 cellular core or solid core PVC pipe for use in vented (drain, waste or vent) or closed (process or supply).

   B. **Chlorinated Polyvinyl (CPVC) Pipe —** Nom 1-1/4 in. diam (or smaller) SDR17 CPVC pipe for use in vented (drain, waste or vent) or closed (process or supply).

   C. **Rigid Nonmetallic Conduit+ —** Nom 1-1/4 in. diam (or smaller) PVC conduit installed in accordance with Article 347 of the National Electrical Code (NFPA 70).

   D. **Electrical Nonmetallic Tubing (ENT) —** Nom 1-1/4 in. diam (or smaller) PVC tubing installed in accordance with Article 331 of the National Electrical Code (NFPA 70).

   E. **Cross Linked Polyethylene (PEX) Tubing —** Nom 1 in. diam (or smaller) SDR9 PEX tubing for use in closed (process or supply) piping systems.

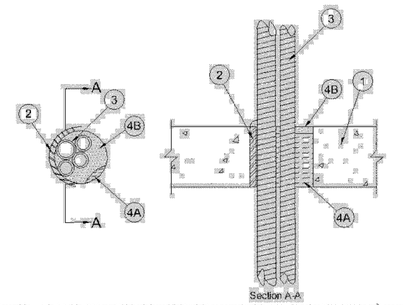
5. **Cables —** Max two 4 pair No. 18 AWG (or smaller) cables with PVC insulation and jacketing. Cables to be spaced min 0 in. (point contact) to max 1 in. from the other through penetrants. The space between the cables and the periphery of the opening shall be min 0 in. (point contact) to max 1 in. Cables to be rigidly supported on both sides of the floor-ceiling assembly.

6. **Fill, Void or Cavity Material* - Sealant —** Min 3/4 in. thickness of fill material applied within the annulus, flush with the top surface of the floor. Min 5/8 in. thickness of fill material applied within the annulus, flush with bottom surface of ceiling. Additional fill material forced into grouped penetrant interstices to max extent possible. At point contact locations, min 1/4 in. diam bead of fill material applied at grouped penetrant bundle/concrete interface and at grouped penetrant bundle/gypsum board interface.
   SPECIFIED TECHNOLOGIES INC — SpecSeal LCI Sealant

System No. C-AJ-1728

July 29, 2019

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 2 and 3 Hr (See Item 3)	F Rating — 2 and 3 Hr (See Item 3)
T Rating — 0 Hr	FT Rating — 0 Hr
	FH Rating — 2 and 3 Hr (See Item 3)
	FTH Rating — 0 Hr
L Rating at Ambient - Less than 1 CFM/sq ft	L Rating at Ambient - Less than 1 CFM/sq ft
L Rating at 400° F - Less than 1 CFM/sq ft	L Rating at 400° F - Less than 1 CFM/sq ft



1. **Floor or Wall Assembly —** Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m^3) concrete floor or min 5 in. (127 mm) thick reinforced lightweight or normal weight wall. Wall may also be constructed of any UL Classified **Concrete Blocks***. Floor may also be constructed of any min 6 in. (152 mm) thick UL Classified hollow-core **Precast Concrete Units***. The max diam of the opening is dependent upon the type of through penetrant (Item 3) used. If flexible steel conduit is installed within the opening, the max diam of the opening is 6 in. (152 mm) If flexible aluminum conduit is installed within the opening, the max diam of the opening is 4 in. (102 mm).
   See **Concrete Blocks** (CAZT) and Precast Concrete Units (CFTV) categories in the Fire Resistance Directory for names of manufacturers.

2. **Steel Sleeve —** (Optional) Nom 6 in. (152 mm) diam (or smaller) Schedule 10 (or heavier) steel sleeve cast or grouted into floor or wall assembly, flush with floor or wall surfaces. The max diam of the steel sleeve is dependent upon the type of through penetrant used. If flexible steel conduit is used, the max diam of the steel sleeve is 6 in. (152 mm). If flexible aluminum conduit is used, the max diam of the steel sleeve is 4 in. (102 mm).

3. **Through Penetrants —** One or more nom 1-1/2 in. (38 mm) diam (or smaller) flexible steel conduit or one or more nom 1 in. (25 mm) diameter (or smaller) flexible aluminum conduit bundled together and installed within the opening. Max diam of through penetrant bundle shall not exceed 4 in. (102 mm) and 2-1/2 in. (64 mm) for flexible steel conduit and flexible aluminum conduit, respectively. The space between the through penetrants shall be a min 0 in. (0 mm, point contact) to a max 1/4 in. (6 mm). The annular space between the through penetrants and periphery of opening shall be min 0 in. (0 mm, point contact) to max 2 in. (51 mm) for flexible steel conduit. The annular space between the through penetrants and periphery of opening shall be min 0 in. (0 mm, point contact) to max 1-1/2 in. (38 mm) for flexible aluminum conduit. Through penetrants to be rigidly supported on both sides of floor or wall assembly.
   See **Flexible Metal Conduit** (DXUZ) category in the Electrical Construction Materials Directory for names of manufacturers.

   The F Rating of the firestop system is dependent upon the type of through penetrant used. If flexible aluminum conduit is used, the F Rating of the firestop system is 2 hr. If flexible steel conduit is used, the F Rating of the firestop system is 3 hr.

4. **Firestop System —** The firestop system shall consist of the following:
   A. **Packing Material —** Min 4 in. (102 mm) thickness of min 4 pcf (64 kg/m^3) mineral wool batt insulation firmly packed into opening as a permanent form. Additional packing material shall be forced into interstices of flexible aluminum conduit to max extent possible. Packing material to be recessed from top surface of floor or from both surfaces of wall and hollow-core precast concrete units as required to accommodate the required thickness of fill material.

   B. **Fill, Void or Cavity Material* — Sealant —** Min 1/2 in. (13 mm) thickness of fill material applied within the annulus, flush with top surface of floor or with both surfaces of wall. At the point contact location between penetrating items and concrete, a min 3/8 in. (10 mm) diam bead of fill material shall be applied at the concrete/penetrating item interface on the top surface of floor and on both surfaces of wall or hollow-core precast concrete units. Additional sealant shall be forced into interstices of through penetrants to max extent possible.
   ECM INDUSTRIES, LLC — FSC-1103

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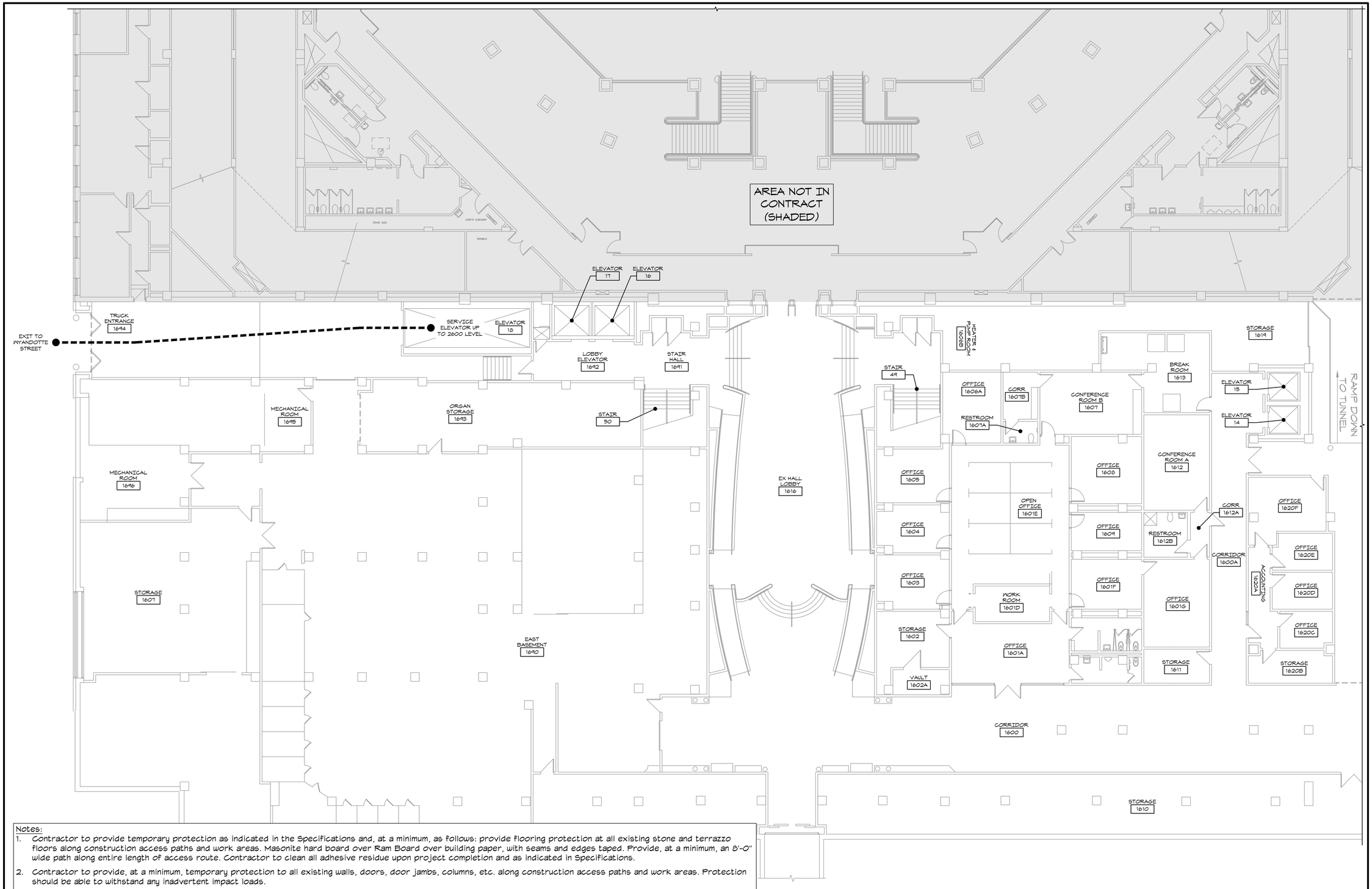

Notes:

1. Contractor to provide temporary protection as indicated in the Specifications and, at a minimum, as follows: provide flooring protection at all existing stone and terrazzo floors along construction access paths and work areas. Masonite hard board over Ram Board over building paper, with seams and edges taped. Provide, at a minimum, an 8'-0" wide path along entire length of access route. Contractor to clean all adhesive residue upon project completion and as indicated in Specifications.
2. Contractor to provide, at a minimum, temporary protection to all existing walls, doors, door jambs, columns, etc. along construction access paths and work areas. Protection should be able to withstand any inadvertent impact loads.
3. Contractor to provide a temporary enclosure inside of passenger elevator #15 of no less than 1/2" plywood for walls and ceiling, with Masonite hard board floor. Floor beneath hardboard should be protected, at a minimum, with one layer of Ram Board over building paper, and walls with blankets hung from existing support eyes that completely cover the existing wall finishes. DO NOT TAPE ANYTHING DIRECTLY TO INTERIOR OF ELEVATOR #15 CAB FLOOR OR WALL FINISHES.
4. Concrete floors in back of house areas and service elevator to be protected with Masonite hard board.
5. Do not exceed weight limit in service elevator #18 or passenger elevator #15 while transporting materials. Listed weight limit of passenger elevator #15 is 3,500 pounds.
6. PASSENGER ELEVATOR #14 IS NOT TO BE USED FOR CONSTRUCTION PURPOSES, INCLUDING, BUT NOT LIMITED TO, PERSONNEL, MATERIAL, OR EQUIPMENT.

1 1600 LEVEL - EXHIBITION MEZZANINE - CONSTRUCTION ACCESS DIAGRAM

3/32"=1'-0" 0' 4' 8' 16' 24' N

STATE OF MISSOURI
ERIC JAY PIPER
NUMBER A-7705
REGISTERED ARCHITECT
10-15-2025

PWA

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KANSAS CITY CONVENTION CENTER

MUSIC HALL AND LITTLE THEATRE
RESTROOM UPGRADES PROJECT
301 W. 13th STREET, KANSAS CITY, MO 64105

FOR CONSTRUCTION

PROJECT NO.	1623.7
DATE	10/15/2025
DRAWN BY	DK
CHECKED BY	EP
CHECKED BY	

REVISED DATE	DESCRIPTION

SHEET TITLE & NUMBER

CONSTRUCTION ACCESS DIAGRAM

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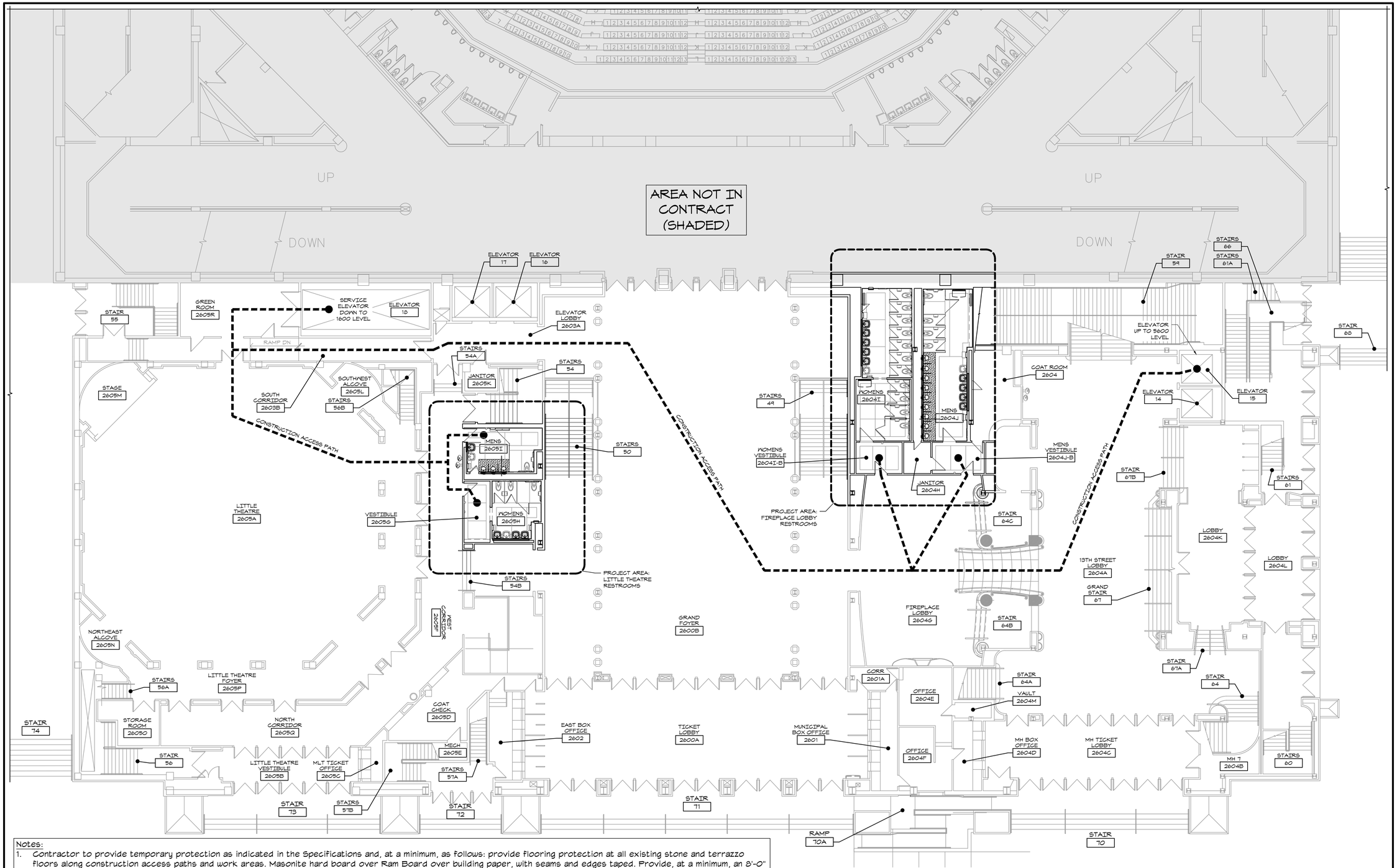
G-004



Notes:

1. Contractor to provide temporary protection as indicated in the Specifications and, at a minimum, as follows: provide flooring protection at all existing stone and terrazzo floors along construction access paths and work areas. Masonite hard board over Ram Board over building paper, with seams and edges taped. Provide, at a minimum, an 8'-0" wide path along entire length of access route. Contractor to clean all adhesive residue upon project completion and as indicated in Specifications.
2. Contractor to provide, at a minimum, temporary protection to all existing walls, doors, door jambs, columns, etc. along construction access paths and work areas. Protection should be able to withstand any inadvertent impact loads.
3. Contractor to provide a temporary enclosure inside of passenger elevator #15 of no less than 1/2" plywood for walls and ceiling, with Masonite hard board floor. Floor beneath hardboard should be protected, at a minimum, with one layer of Ram Board over building paper, and walls with blankets hung from existing support eyes that completely cover the existing wall finishes. DO NOT TAPE ANYTHING DIRECTLY TO INTERIOR OF ELEVATOR #15 CAB FLOOR OR WALL FINISHES.
4. Concrete floors in back of house areas and service elevator to be protected with Masonite hard board.
5. Do not exceed weight limit in service elevator #18 or passenger elevator #15 while transporting materials. Listed weight limit of passenger elevator #15 is 3,500 pounds.
6. PASSENGER ELEVATOR #14 IS NOT TO BE USED FOR CONSTRUCTION PURPOSES, INCLUDING, BUT NOT LIMITED TO, PERSONNEL, MATERIAL, OR EQUIPMENT.

1 — 2600 LEVEL - ARENA/GROUND FLOOR - CONSTRUCTION ACCESS DIAGRAM

3/32"=1'-0"

0 4' 8' 16' 24'

N

PWA

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KANSAS CITY CONVENTION CENTER

MUSIC HALL AND LITTLE THEATRE RESTROOM UPGRADES PROJECT

301 W. 13th STREET, KANSAS CITY, MO 64105

FOR CONSTRUCTION

PROJECT NO.	1623.7
DATE	10 / 15 / 2025
DRAWN BY	DK
CHECKED BY	EP
CHECKED BY	
REVISED DATE	DESCRIPTION

SHEET TITLE & NUMBER

CONSTRUCTION ACCESS DIAGRAM

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G-005

Notes:

1. Contractor to provide temporary protection as indicated in the Specifications and, at a minimum, as follows: provide flooring protection at all existing stone and terrazzo floors along construction access paths and work areas. Masonite hard board over Ram Board over building paper, with seams and edges taped. Provide, at a minimum, an 8'-0" wide path along entire length of access route. Contractor to clean all adhesive residue upon project completion and as indicated in Specifications.
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5. Do not exceed weight limit in service elevator #18 or passenger elevator #15 while transporting materials. Listed weight limit of passenger elevator #15 is 3,500 pounds.
6. PASSENGER ELEVATOR #14 IS NOT TO BE USED FOR CONSTRUCTION PURPOSES, INCLUDING, BUT NOT LIMITED TO, PERSONNEL, MATERIAL, OR EQUIPMENT.

1 — 5600 LEVEL - BALCONY LEVEL PLENUM - CONSTRUCTION ACCESS DIAGRAM

3/32"=1'-0"

0 4 8 16 24'

N

PWA

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FOR CONSTRUCTION

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REVISED DATE	DESCRIPTION

SHEET TITLE & NUMBER

CONSTRUCTION ACCESS DIAGRAM

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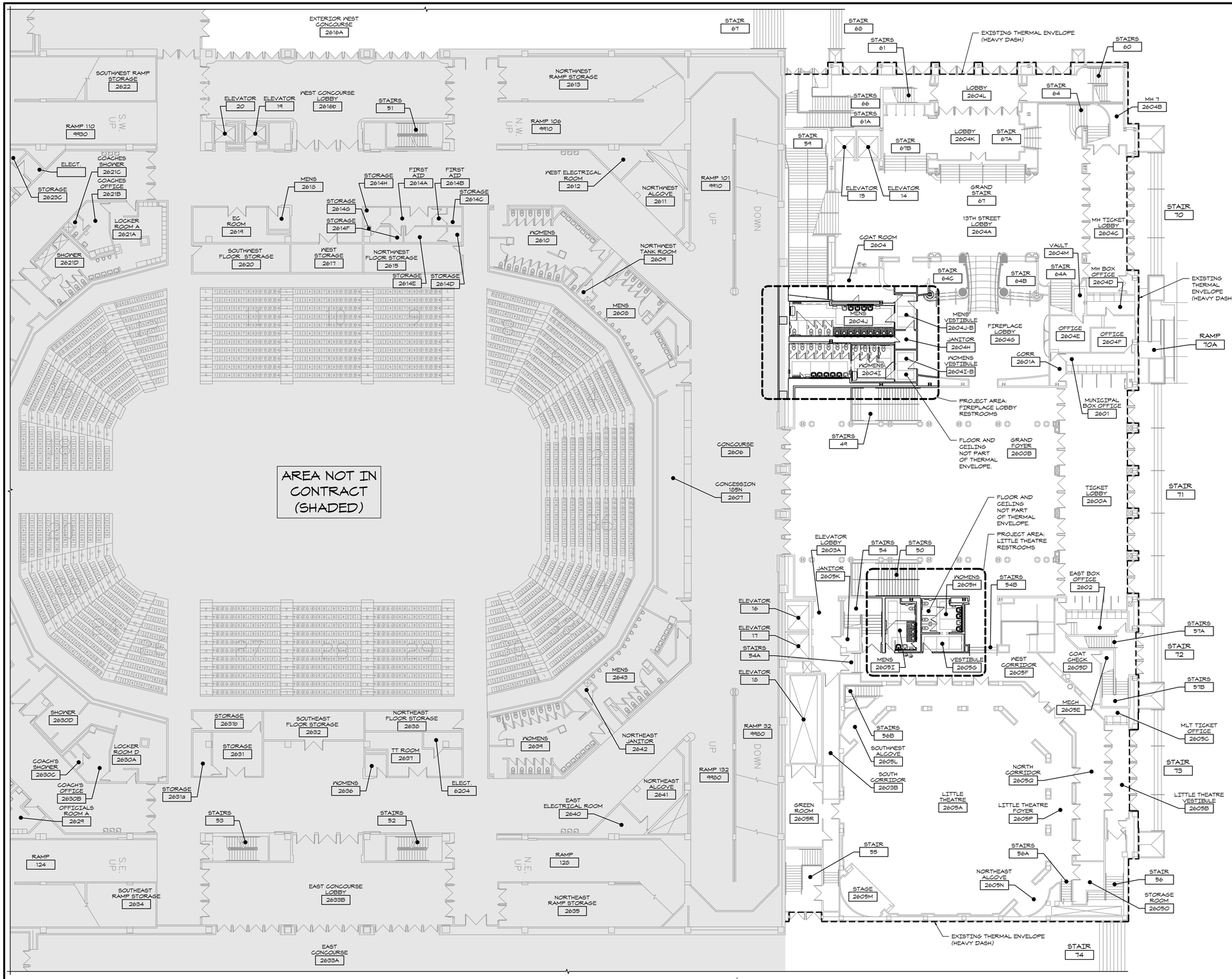
G-006



1 2600 LEVEL - ARENA/GROUND FLOOR - THERMAL ENVELOPE DIAGRAM

1/16"=1'-0"

0 8' 16' 32'

N

ENERGY CODE ANALYSIS

CODE USED: 2021 IECC

COMPLIANCE PATH: PRESCRIPTIVE

CLIMATE ZONE: 4A MIXED HUMID

THERMAL ENVELOPE CERTIFICATE:
NOT REQUIRED AS INFORMATION REQUIRED IN C401.3 IS NOT APPLICABLE TO THIS PROJECT SCOPE.

- THERMAL ENVELOPE IS EXISTING.
- FENESTRATION IS EXISTING.
- BUILDING ENVELOPE AIR LEAKAGE TEST FOR EXISTING BUILDINGS NOT REQUIRED.

PROJECT SCOPE IS FOR ALTERATIONS IN EXISTING BUILDING AND SHALL COMPLY WITH SECTION C503 ALTERATIONS OF THE 2021 IECC.

- NO ADDITIONS OR PROPOSED MODIFICATIONS TO EXISTING BUILDING THERMAL ENVELOPE
- HVAC SYSTEM COMPONENTS ARE EXISTING.
- HOT WATER SYSTEMS ARE EXISTING.
- NEW POWER AND LIGHTING SYSTEMS SHALL COMPLY WITH SECTIONS C405 AND C408 OF THE 2021 IECC AS APPLICABLE.

THIS IS AN EXISTING BUILDING. AS SUCH, IT IS EXEMPT FROM ADDITIONAL EFFICIENCY REQUIREMENTS IN SECTION C406 OF THE 2021 IECC FOR NEW BUILDINGS.

PROJECT ALTERATIONS SHALL NOT MAKE THE EXISTING BUILDING LESS CONFORMING TO THE PROVISIONS OF THE ENERGY CODE THAN THE CONFORMACE LEVEL PRIOR TO THE ALTERATIONS IN ACCORDANCE WITH SECTION C503.1 OF THE 2021 IECC.

COMCHECK INTERIOR LIGHTING COMPLIANCE CERTIFICATE PROVIDED FOR NEW WORK INCLUDING INSPECTION CHECKLIST FOR ITEMS APPLICABLE TO THE SCOPE OF WORK.

COMMISSIONING:
INSPECTIONS SHALL BE PERFORMED BY THIRD PARTY AS APPROVED BY THE BUILDING OFFICIAL.

THIRD PARTY COMMISSIONING AUTHORITY SHALL PROVIDE FINAL REPORT VERIFYING COMPLIANCE.

PWA

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FOR CONSTRUCTION

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DATE	10 / 15 / 2025
DRAWN BY	DK
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CHECKED BY	

REVISED DATE	DESCRIPTION

SHEET TITLE & NUMBER

ENERGY CODE ANALYSIS

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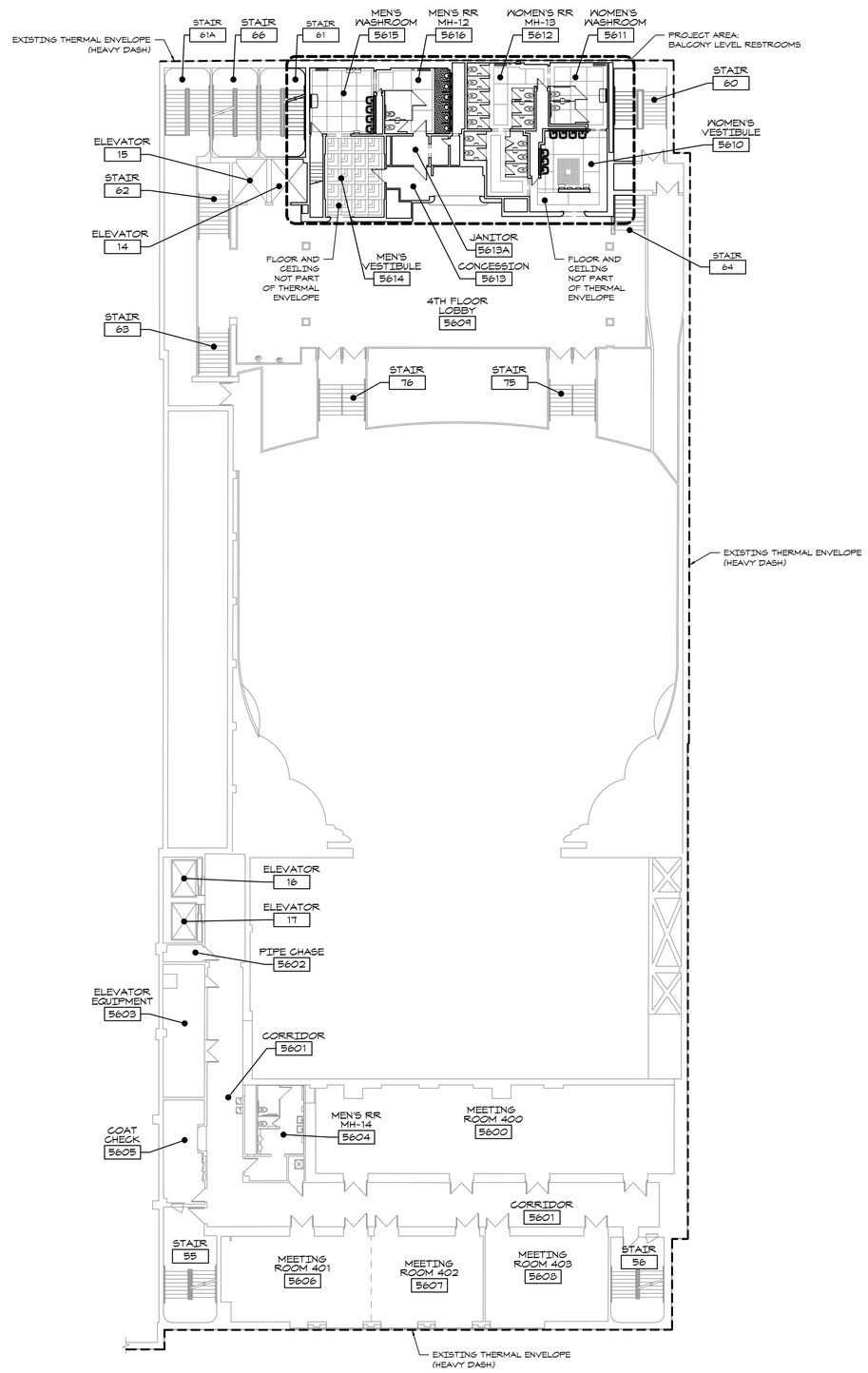
ECA-01



NOTE:
RE: ECA-01 FOR ADDITIONAL ENERGY CODE ANALYSIS INFORMATION.

1 5600 LEVEL - BALCONY LEVEL PLENUM REFERENCE PLAN
1/16"=1'-0"
0 8 16 32

N

STATE OF MISSOURI
ERIC JAY PIPER
NUMBER A-7305
REGISTERED ARCHITECT
10-15-25

PWA

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MUSIC HALL AND LITTLE THEATRE
RESTROOM UPGRADES PROJECT
301 W. 13th STREET, KANSAS CITY, MO 64105

FOR CONSTRUCTION

PROJECT NO.	1623.7
DATE	10 / 15 / 2025
DRAWN BY	DA
CHECKED BY	EP
CHECKED BY	
REVISED DATE	DESCRIPTION

SHEET TITLE & NUMBER

ENERGY CODE ANALYSIS

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ECA-02

COM*check* Software Version COMcheckWeb

Interior Lighting Compliance Certificate

Project Information

Energy Code: 2021 IECC
Project Title: KC MHand LTH restrooms
Project Type: Alteration

Construction Site: Owner/Agent: Designer/Contractor:

Allowed Interior Lighting Power

A Area Category	B Floor Area (ft2)	C Allowed Watts / ft2	D Allowed Watts
1-Common Space Types:Restrooms	1062	0.63	669
2-Common Space Types:Restrooms	1678	0.63	1057
3-Common Space Types:Restrooms	410	0.63	258
		Total Allowed Watts =	1985

Proposed Interior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixture	D Fixture Watt.	E (C X D)
Common Space Types: Restrooms (1062 sq.ft.)				
LC2: LED A Lamp 2.5W:	1	9	4	Exempt
Exemption:Dressing room mirror lighting				
LC5: LED A Lamp 2.5W:	1	203	2	406
LR1: LED A Lamp 2.5W:	1	4	7	28
LS1: LED A Lamp 2.5W:	1	5	7	35
Common Space Types: Restrooms (1678 sq.ft.)				
LC2: LED A Lamp 2.5W:	1	3	4	Exempt
Exemption:Dressing room mirror lighting				
LC5: LED A Lamp 2.5W:	1	400	2	800
LR1: LED A Lamp 2.5W:	1	17	7	119
LS1: LED A Lamp 2.5W:	1	3	7	21
LW1: LED A Lamp 2.5W:	1	5	3	Exempt
Exemption:Dressing room mirror lighting				
Common Space Types: Restrooms (410 sq.ft.)				
LP2: LED PAR 7W:	1	5	30	150
LR1: LED A Lamp 2.5W:	1	1	7	7
			Total Proposed Watts =	1566

Interior Lighting PASSES

Interior Lighting Compliance Statement

Compliance Statement: The proposed interior lighting alteration project represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed interior lighting systems have been designed to meet the 2021 IECC requirements in COM*check* Version COMcheckWeb and to comply with any

applicable mandatory requirements listed in the Inspection Checklist.

Randall D. Raymore Principal — Name - Title
Signature
4/17/2025 — Date

COM*check* Software Version COMcheckWeb

Inspection Checklist

Energy Code: 2021 IECC

Requirements: 100.0% were addressed directly in the COM*check* software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
C103.2 [PR4][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the interior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include interior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	☑Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** SPEC.

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.2.3.1 [EL22][1]	Spaces required to have light-reduction controls have a manual control that allows the occupant to reduce the connected lighting load in a reasonably uniform illumination pattern >= 50 percent.	☑Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C405.2.1, C405.2.1.1 [EL18][1]	Occupancy sensors installed in classrooms/lecture/training rooms, conference/meeting/multipurpose rooms, copy/print rooms, lounges/breakrooms, enclosed offices, open plan office areas, restrooms, storage rooms, locker rooms, corridors, warehouse storage areas, and other spaces <= 300 sqft that are enclosed by floor-to-ceiling height partitions. Reference section language C405.2.1.2 for control function in warehouses and section C405.2.1.3 for open plan office spaces.	☑Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C405.2.1.2 [EL19][1]	Occupancy sensors control function in warehouses: In warehouses, the lighting in aisleways and open areas is controlled with occupant sensors that automatically reduce lighting power by 50% or more within 20 minutes of when the areas are unoccupied. The occupant sensors control lighting in each aisleway independently and do not control lighting beyond the aisleway being controlled by the sensor. Lights not turned off by occupant sensors is done so by time-switch.	☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	**Exception:** Requirement does not apply.
C405.2.1.3 [EL20][1]	Occupant sensor control function in open plan office areas: Occupant sensor controls in open office spaces >= 300 sq.ft. have controls 1) configured so that general lighting can be controlled separately in control zones with floor areas <= 600 sq.ft. within the space, 2) general lighting in each zone permitted to turn on upon occupancy in control zone, 3) automatically turn off general lighting in all control zones within 20 minutes after all occupants have left the space, 4) are configured so that general lighting power in each control zone is reduced by >= 80% of the full zone general lighting power within 20 minutes of all occupants leaving that control zone.	☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	**Exception:** Requirements does not apply.
C405.2.2.1 [EL21][1]	Each area not served by occupancy sensors (per C405.2.1.1) have time-switch controls and functions detailed in sections C405.2.2.1.	☑Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.2.4, C405.2.4.1, C405.2.4.2 [EL23][1]	Daylight zones provided with individual controls that control the lights independent of general area lighting. See code section C405.2.3 Daylight-responsive controls for applicable spaces; C405.2.3.1 Daylight responsive control function and section C405.2.3.2 Sidelit zone.	☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	**Exception:** Requirement does not apply.
C405.2.5 [EL27][1]	Additional interior lighting power allowed for special functions per the approved lighting plans and is automatically controlled and separated from general lighting.	☑Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C405.7 [EL26][1]	Low-voltage dry-type distribution electric transformers meet the minimum efficiency requirements of Table C405.6.	☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	**Exception:** Requirement does not apply.
C405.8 [EL27][1]	Electric motors meet the minimum efficiency requirements of Tables C405.7(1) through C405.7(4). Efficiency verified through certification under an approved certification program or the equipment efficiency ratings shall be provided by motor manufacturer (where certification programs do not exist).	☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	**Exception:** Requirement does not apply.
C405.9.1, C405.9.2 [EL28][1]	Escalators and moving walks comply with ASME A17.1/CSA B44 and have automatic controls configured to reduce speed to the minimum permitted speed in accordance with ASME A17.1/CSA B44 or applicable local code when not conveying passengers.	☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	**Exception:** Requirement does not apply.
C405.10 [EL29][1]	Total voltage drop across the combination of feeders and branch circuits <= 5%.	☑Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C405.1.1 [EL30][1]	At least 90% of dwelling unit permanently installed lighting shall have lamp efficacy >= 65 lm/W or luminaires with efficacy >= 45 lm/W or comply with C405.2.4 or C405.3.	☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	**Exception:** Requirement does not apply.
C405.11, C405.11.1 [EL31][1]	50% of 15/20 amp receptacles installed in enclosed offices, conference rooms, copy rooms, break rooms, classrooms and workstations and > 25% of branch circuit feeders for modular furniture will have automatic receptacle control in accordance with C405.11.1.	☐Complies ☐Does Not ☐Not Observable ☑Not Applicable	**Exception:** Requirement does not apply.

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C303.3, C408.2.5.2 [FI17][1]	Furnished O&M instructions for systems and equipment to the building owner or designated representative.	☑Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.1.1 [FI57][1]	Building operations and maintenance documents will be provided to the owner. Documents will cover manufacturers' information, specifications, programming procedures and means of illustrating to owner how building, equipment and systems are intended to be installed, maintained, and operated.	☑Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.5 [FI16][1]	Furnished as-built drawings for electric power systems within 90 days of system acceptance.	☑Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.3 [FI33][1]	Lighting systems have been tested to ensure proper calibration, adjustment, programming, and operation.	☑Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

STATE OF MISSOURI
RANDALL DARIN RAYMORE
NUMBER E-20786
PROFESSIONAL ENGINEER
10/15/2025

PWA

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KANSAS CITY CONVENTION CENTER
MUSIC HALL AND LITTLE THEATRE RESTROOM UPGRADES PROJECT
301 W. 13th STREET, KANSAS CITY, MO 64105

FOR CONSTRUCTION

PROJECT NO.	23-010-01
DATE	10 / 15 / 2025
DRAWN BY	FSC
CHECKED BY	RDF
CHECKED BY	

REVISED DATE	DESCRIPTION

SHEET TITLE & NUMBER

ENERGY REPORT

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ECA-03

AREA NOT IN CONTRACT (SHADED)

1 2600 LEVEL - ARENA/GROUND FLOOR REFERENCE PLAN
1/16"=1'-0"

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REVISED DATE	DESCRIPTION

SHEET TITLE & NUMBER

2600 LEVEL - ARENA/GROUND FLOOR REFERENCE PLAN

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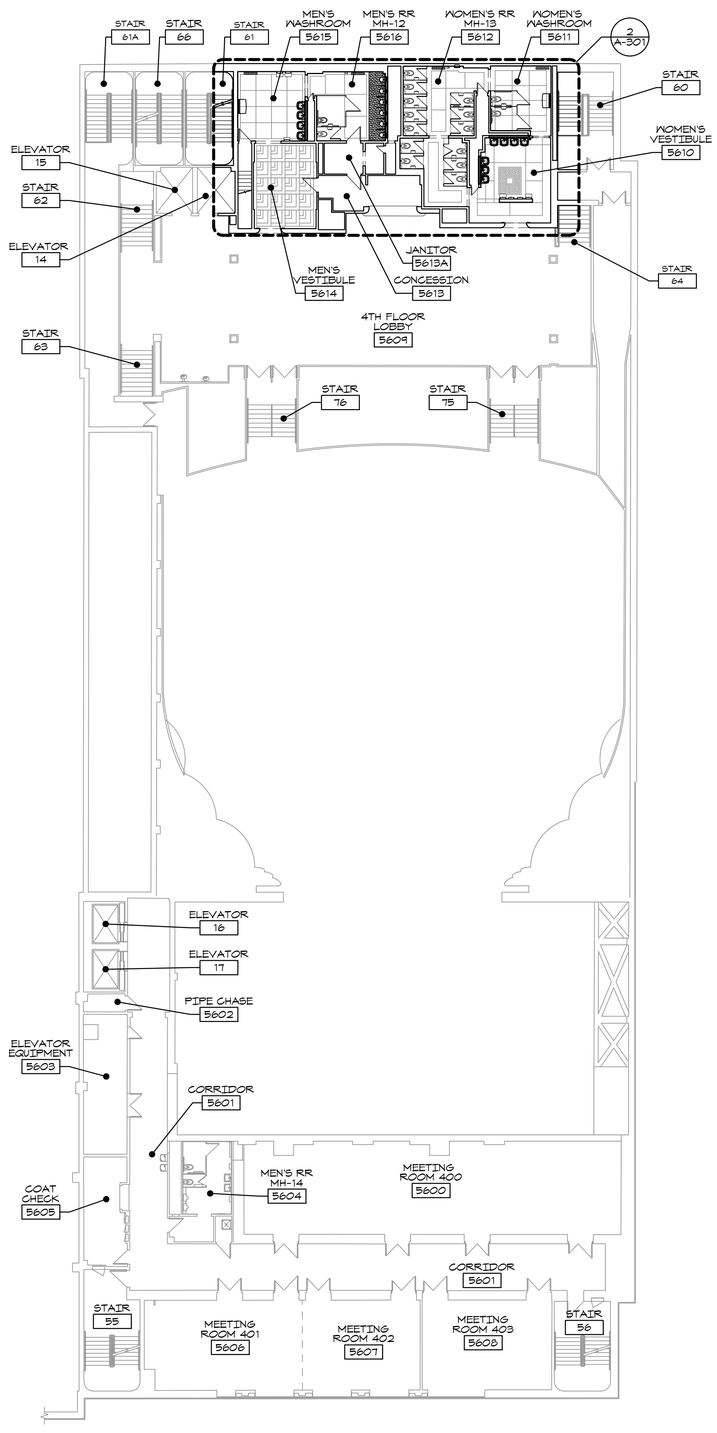
A-101



1 5600 LEVEL - BALCONY LEVEL PLENUM REFERENCE PLAN

1/16"=1'-0"

0 8 16 32

N

STATE OF MISSOURI
ERIC JAY PIPER
NUMBER A-7305
REGISTERED ARCHITECT

PWA

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KANSAS CITY CONVENTION CENTER

MUSIC HALL AND LITTLE THEATRE
RESTROOM UPGRADES PROJECT

301 W. 13th STREET, KANSAS CITY, MO 64105

FOR CONSTRUCTION

PROJECT NO.	1623.7
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CHECKED BY	

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5600 LEVEL - BALCONY PLENUM REFERENCE PLAN

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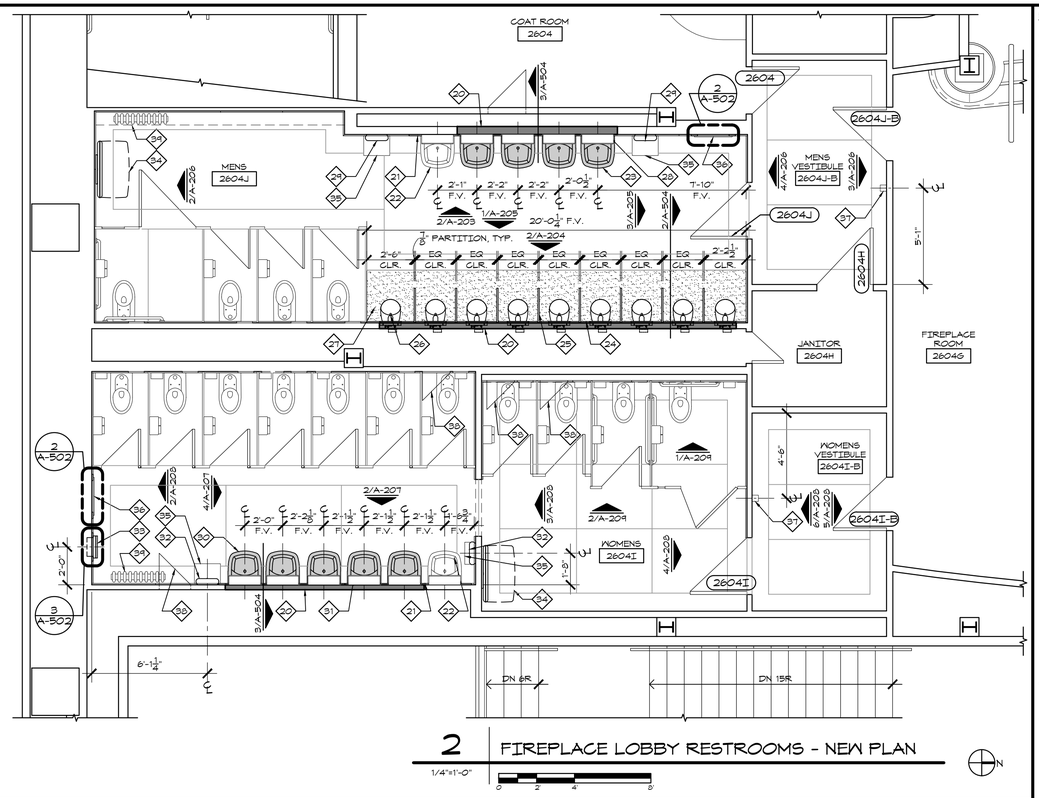
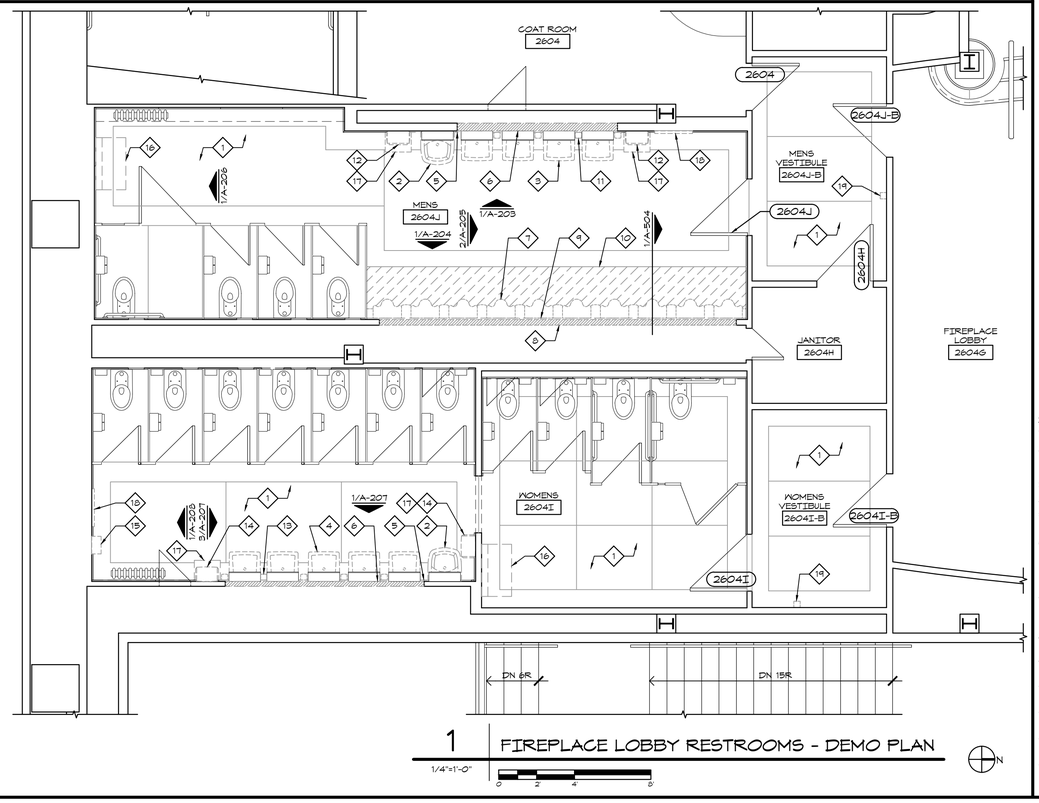
A-102



2 FIREPLACE LOBBY RESTROOMS - NEW PLAN

1/4"=1'-0"



1 FIREPLACE LOBBY RESTROOMS - DEMO PLAN

1/4"=1'-0"

Key Notes:

1. Existing terrazzo flooring to remain, typical
2. Remove existing lavatory & faucet and salvage for reuse
3. Remove (4) exist. lavatories & faucets in Men's Restroom
4. Remove (5) existing lavatories & faucets in Women's Restroom
5. Remove existing stone wall panels behind existing lavatories. Salvage stone panels for reuse
6. Remove section of existing plaster & hollow clay tile wall to accommodate installation of new carriers for lavatories
7. Remove all existing floor-length urinals
8. Remove section of existing plaster & hollow clay tile wall to accommodate installation of carriers for new urinals
9. Remove existing stone wall panels behind existing urinals. Salvage stone panels to be used for patching of existing stone panels to be reinstalled
10. Remove exist. floor tile (approximate area shown hatched). Prep existing sloped topping slab per manufacturer's instructions to receive new self-leveling concrete prior to installation of new terrazzo floor
11. Remove (4) existing soap dispensers in Men's Restroom
12. Remove (2) existing paper towel dispensers in Men's Restroom
13. Remove (5) existing soap dispensers in Women's Restroom
14. Remove (2) existing paper towel dispensers in Women's Restroom.
15. Remove existing feminine product dispenser in Women's Restroom.
16. Remove existing baby changing station.
17. Remove existing waste receptacle and salvage for reuse.
18. Remove existing full-length mirror and 1x blocking behind mirror and salvage mirror for reuse.
19. Remove existing hand sanitizer dispenser and salvage for reuse.
20. Provide new metal studs and header per Structural to support hollow clay tile to remain. After installation of carriers, infill existing wall behind new lavatories and urinals w/ 1/2" cement board over the metal studs and install stone veneer ties to attach stone wall panels. Provide 1" minimum setting space to allow stone wall panels to be reinstalled flush w/ adjacent stone wall panels
21. Patch existing stone wall panels that were removed where holes for existing piping, carrier and other penetrations were located. Prep existing panel to accommodate new lavatory carrier and piping as required. Reinstall existing stone wall panel behind lavatories (RE: G-002 and Specifications section 012300 - Alternates for Alternate No. 1 description)
22. Reinstall salvaged lavatory & faucet in same location after stone wall panel has been reinstalled
23. Install (4) new lavatories and faucets (shaded) in Men's Restroom in same location (at different height) as exist. lavatories that were removed (RE: Plumbing Drawings)
24. Install new stone wall panels to match existing color and finish behind urinals
25. Install new stone partitions to match existing color and finish between urinals
26. Install (9) new urinals. Center new urinal between new stone partitions (RE: Plumbing Drawings)
27. Install new terrazzo flooring (approximate area hatched) per schedule flush and level with existing terrazzo floor. Match terrazzo color and aggregate of existing floor border
28. Install (5) new soap dispensers per schedule (A) in Men's Restroom
29. Install (2) new paper towel dispensers per schedule (C) in Men's Restroom in new location centered on stone wall panel
30. Install (5) new lavatories and faucets (shaded) in Women's Restroom in same location (at different height) as exist. lavatories that were removed (RE: Plumbing Drawings)
31. Install (6) new soap dispensers per schedule (A) in Women's Restroom
32. Install (2) new paper towel dispensers per schedule (C) in Women's Restroom in new location per plan
33. Install new semi-recessed feminine product dispenser per schedule (D) w/ new stone trim panels to match existing stone wall panels behind in Women's Restroom in new location per plan
34. Install new baby changing station per schedule (E) in new location per plan
35. Reinstall salvaged waste receptacle centered below paper towel dispenser
36. Patch plaster wall & stone wall panel where full-length mirror was removed. Reinstall salvaged full-length mirror w/ new stone trim panels to match existing stone wall panels behind mirror in new location centered on existing stone wall panel
37. Reinstall salvaged existing hand sanitizer dispenser at new location per plan and lower height of 46" A.F.F.
38. Paint existing access panel
39. Paint existing radiator

General Notes:

1. Field verify all dimensions & existing conditions.
2. All dimensions of new structure taken from face of framing unless noted otherwise. Dimensions to existing structure taken from finish face of material unless noted otherwise.
3. All new details to match existing unless noted otherwise.
4. All new infill framing to match existing depth unless noted otherwise.
5. All existing accessories installed on stone wall panels outside existing toilet partitions are to be removed and salvaged for reuse unless noted otherwise.
6. All existing stone base and stone wall panels outside of existing toilet partitions to remain are to be patched where wall-mounted accessories were removed, cleaned, restored & refinished to like new condition in place (refer to G-002 and Specifications section 012300 - Alternates for Alternate No. 2 description).
7. All existing stone toilet partitions and stone wall panels within existing toilet partitions to remain are to be cleaned, restored and refinished to like new condition in place.
8. All terrazzo flooring to remain is to be cleaned, restored & refinished to like new condition.
9. All existing door & toilet partition hardware to remain. Clean, refurbish and refinish.
10. All existing toilet partition doors are to be repainted. RE: Interior Elevations and Finish Materials Legend.
11. Patch plaster wall surfaces where all wall-mounted accessories were removed. Prep wall surface for painting (RE: Interior Elevations).
12. Refer to sheet A-601 for Finish Schedule, Finish Materials Legend, Restroom Accessory Schedule and Door Schedule.
13. Refer to sheet G-002 for Add Alternate Summary.

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ENLARGED FLOOR PLANS

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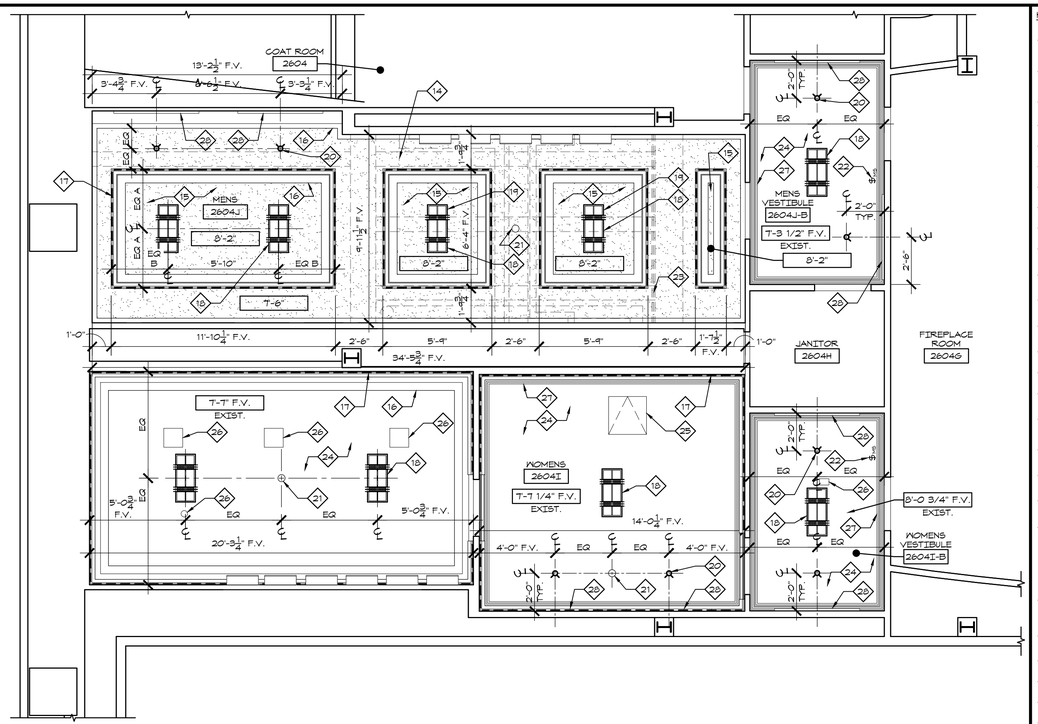
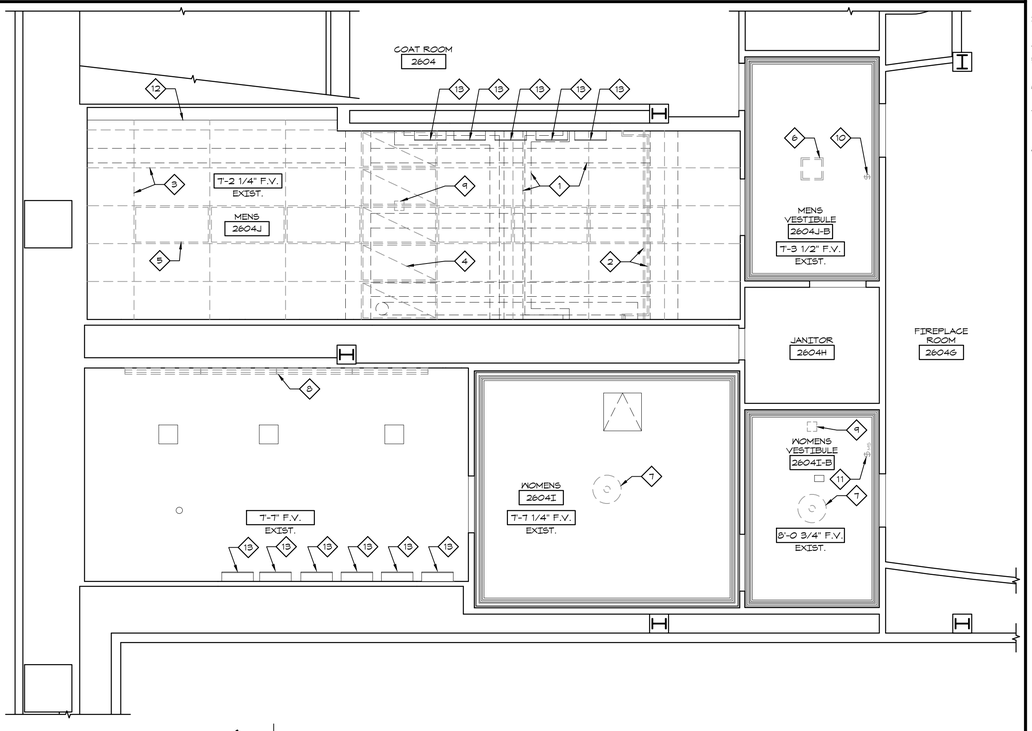


2 FIREPLACE LOBBY RESTROOMS - NEW REFLECTED CEILING PLAN

1/4"=1'-0"



1 FIREPLACE LOBBY RESTROOMS - DEMO REFLECTED CEILING PLAN

1/4"=1'-0"

Key Notes:

1. Existing structural elements, mechanical & electrical equipment above lay-in ceiling to remain, typical.
2. Existing conduit to be relocated to accommodate new coffered ceiling
3. Remove existing lay-in ceiling tiles and grid throughout entire restroom
4. Remove existing diffuser within lay-in ceiling, typical
5. Remove existing light fixtures within lay-in ceiling, typical
6. Remove existing flush-mounted light fixture
7. Remove existing pendant light fixture
8. Remove existing wall-mounted light fixtures
9. Remove existing ceiling-mounted occupancy sensor
10. Remove existing light switch and wall plate
11. Remove existing light switch w/ occupancy sensor and wall plate
12. Existing soffit to remain
13. Existing decorative mirror sconces to be relamped (RE: Electrical)
14. New painted gypsum board ceiling (hatched)
15. New painted gypsum board raised ceiling (hatched)
16. New painted wood crown, typical
17. New linear cove light fixture (dashed) within new painted wood cove trim, typical (RE: Electrical for light fixture)
18. New custom, surface-mounted light fixture to match existing, typical (RE: Details)
19. Center new light fixture within raised ceiling
20. New 3" round wall wash light fixture for artwork, typical (RE: Electrical)
21. Install new ceiling-mounted occupancy sensor (RE: Electrical). Locate sensor in Men's Restroom centered between raised ceiling areas as shown on ceiling plan. Locate sensors in Women's Restroom as shown on ceiling plan
22. Install new combination light switch/motion sensor device with stainless steel wall plate where existing wall switch was removed (RE: Electrical)
23. Relocated existing conduit to accommodate new coffered ceiling
24. Patch & paint existing ceiling, typical
25. Paint existing access panel (PT-14)
26. Paint existing cover plate (PT-13)
27. Paint existing wood crown
28. Artwork, Owner furnished/Owner installed

General Notes:

1. Field verify all dimensions & existing conditions.
2. All dimensions taken from Finish Face of material unless noted otherwise.
3. Lighting fixtures to be selected by Architect and/or Lighting Consultant and installed by Contractor.
4. Locate light fixtures where indicated on the drawings.
5. Center ceiling mounted fixtures in room volume unless noted otherwise.
6. Contractor to renovate existing plaster ceilings to reattach and pull plaster tight to existing metal lath and supports.
7. All existing light fixtures indicated to be relamped or to remain are to be protected from damage during construction.
8. All new trim indicated as painted wood trim is to be constructed from MDF.

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ENLARGED REFLECTED CEILING PLANS

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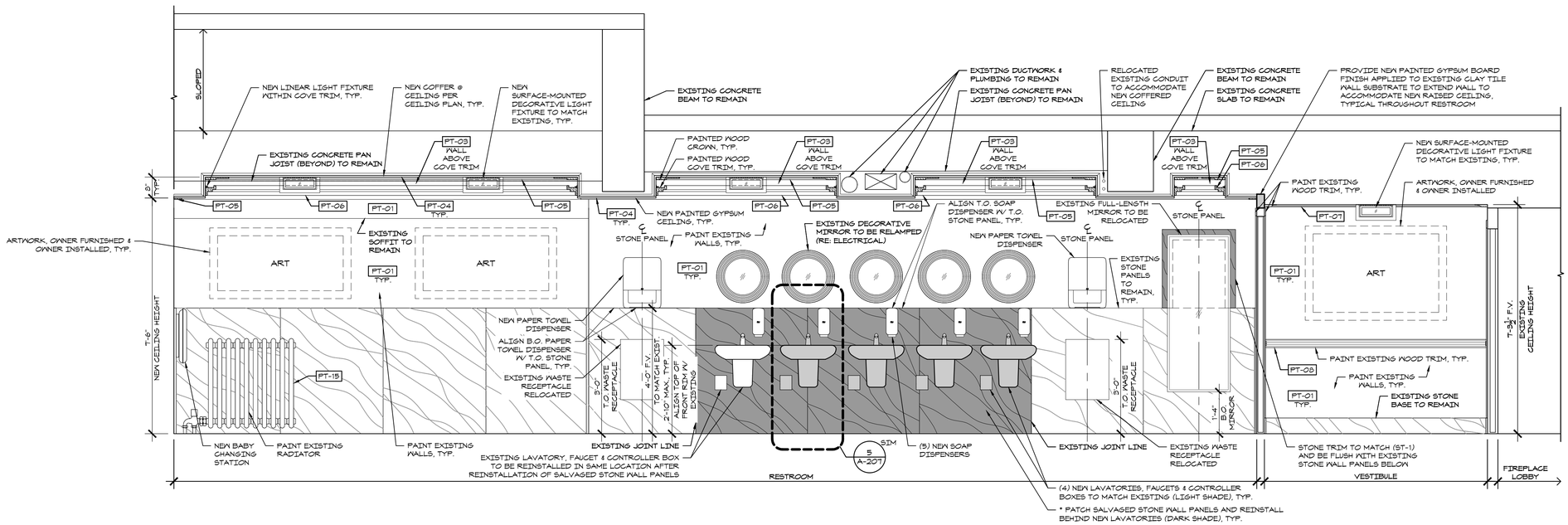
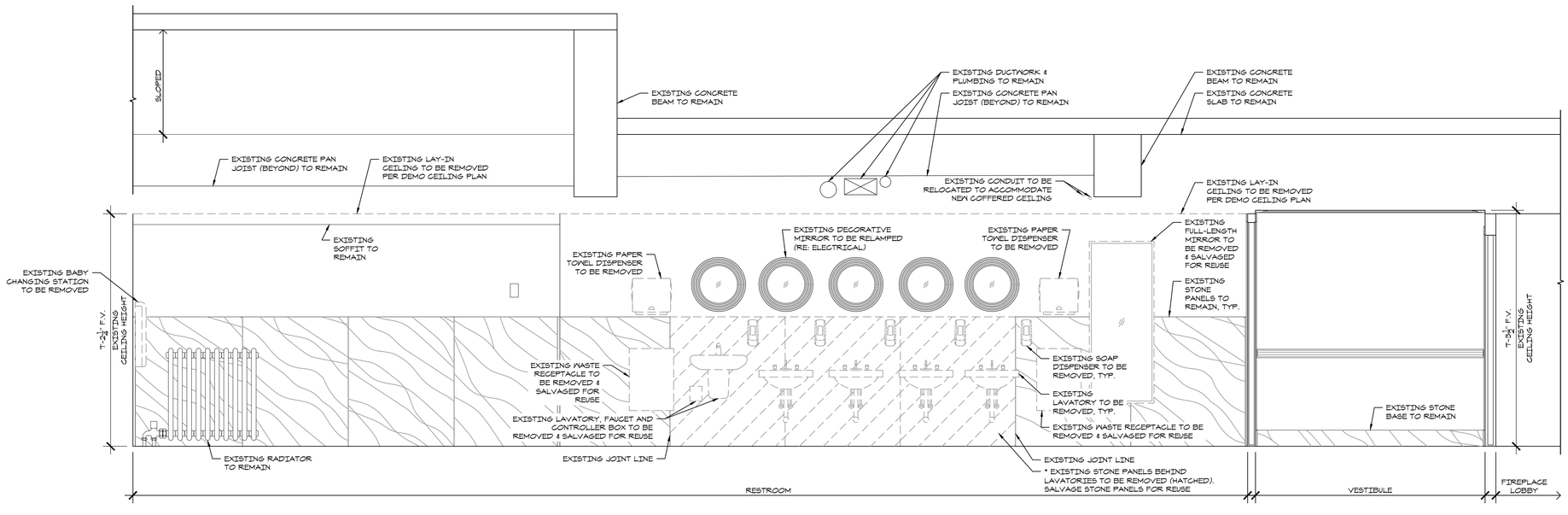
* NOTE:
REFER TO SHEET G-002 AND SPECIFICATIONS SECTION 012300 - ALTERNATES FOR ALTERNATE NO. 1 DESCRIPTION.



2 FIREPLACE LOBBY - MEN'S RESTROOM - WEST NEW INTERIOR ELEVATION

1/2"=1'-0"



1 FIREPLACE LOBBY - MEN'S RESTROOM - WEST DEMO INTERIOR ELEVATION

1/2"=1'-0"

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INTERIOR ELEVATIONS

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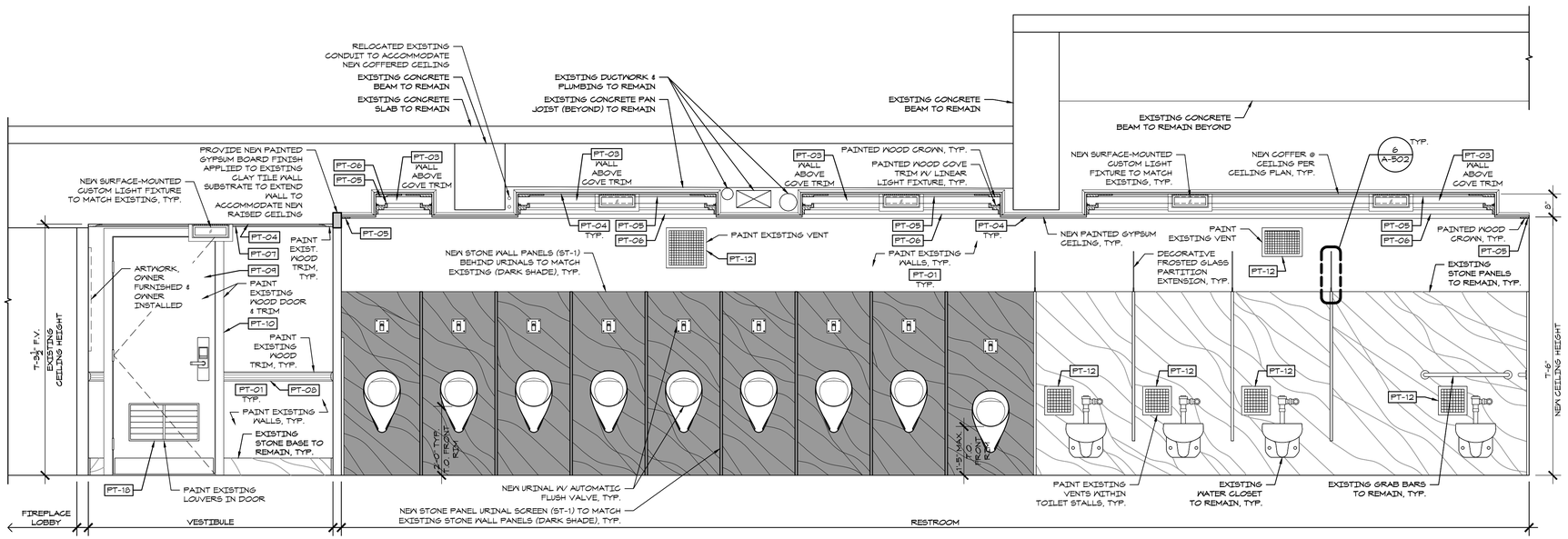
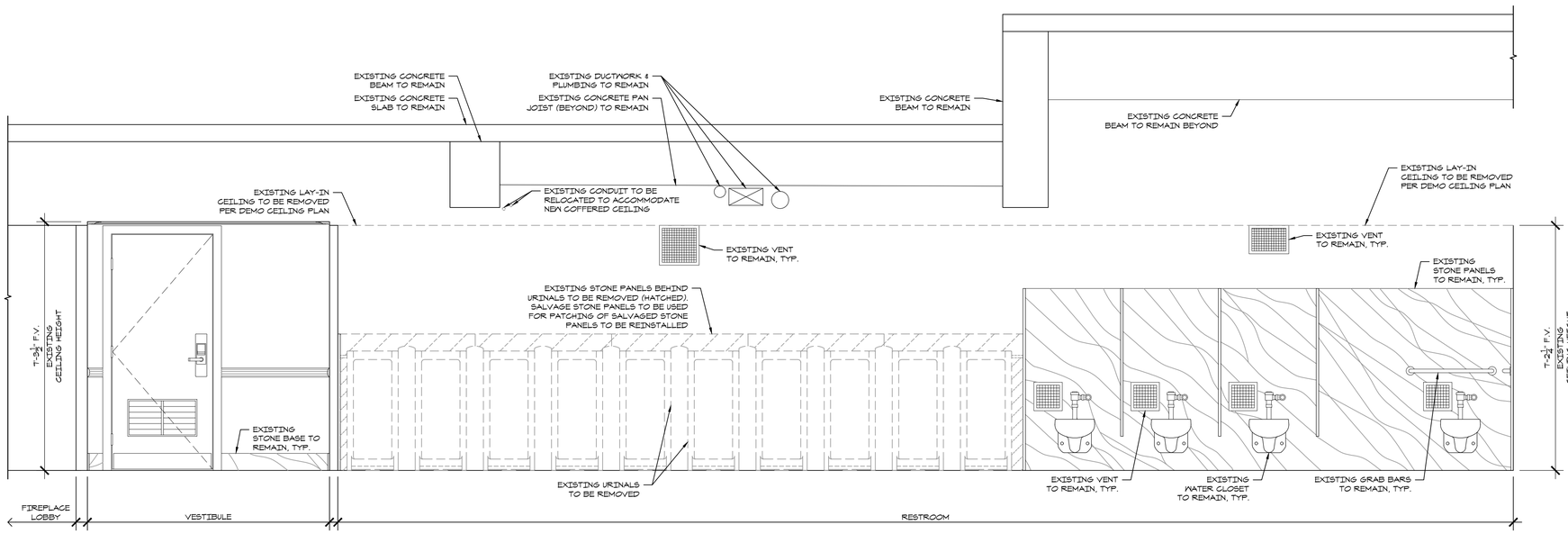


2 FIREPLACE LOBBY - MEN'S RESTROOM - EAST NEW INTERIOR ELEVATION

1/2"=1'-0"



1 FIREPLACE LOBBY - MEN'S RESTROOM - EAST DEMO INTERIOR ELEVATION

1/2"=1'-0"

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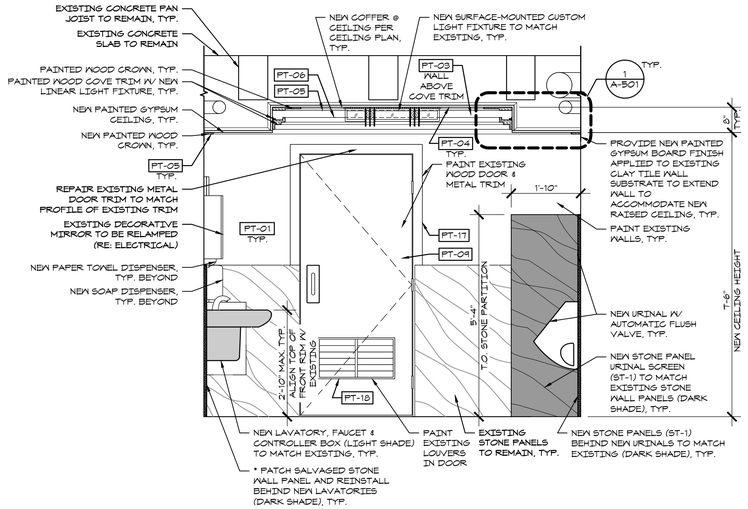

3 FIREPLACE LOBBY - MEN'S RESTROOM - NORTH NEW INTERIOR ELEVATION
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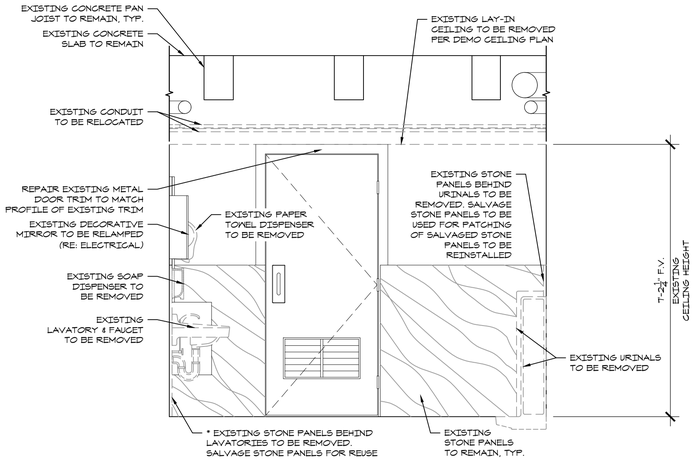
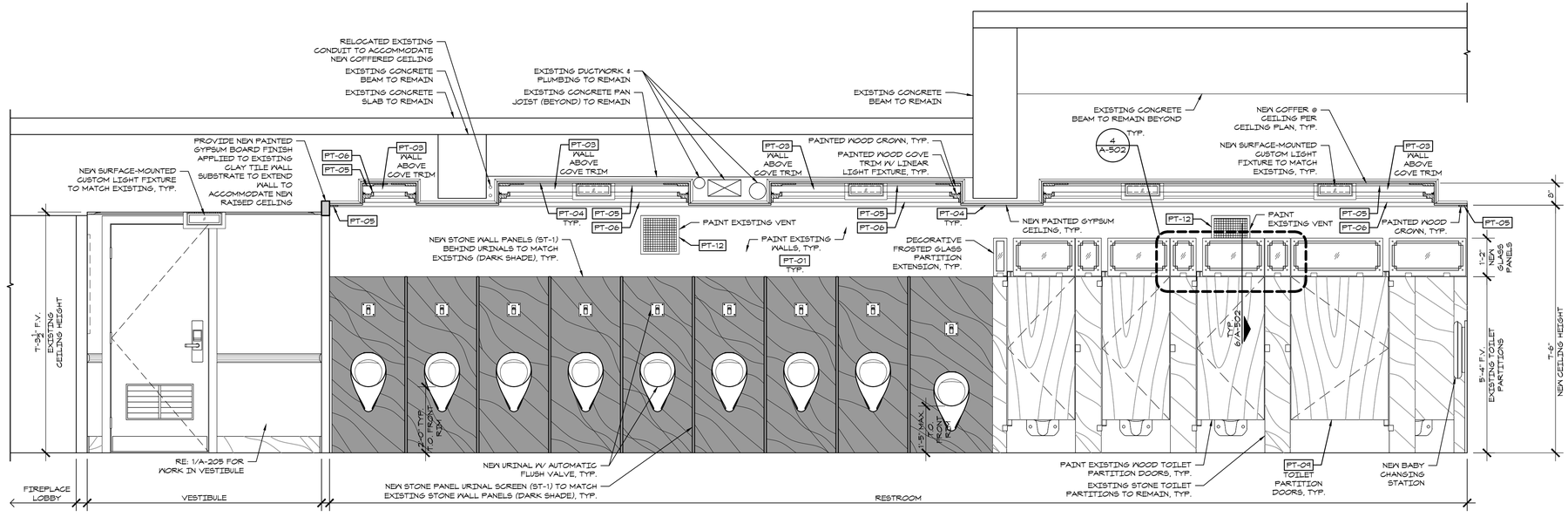


2 FIREPLACE LOBBY - MEN'S RESTROOM - NORTH DEMO INTERIOR ELEVATION
1/2"=1'-0"



1 FIREPLACE LOBBY - MEN'S RESTROOM - EAST NEW INTERIOR ELEVATION
1/2"=1'-0"

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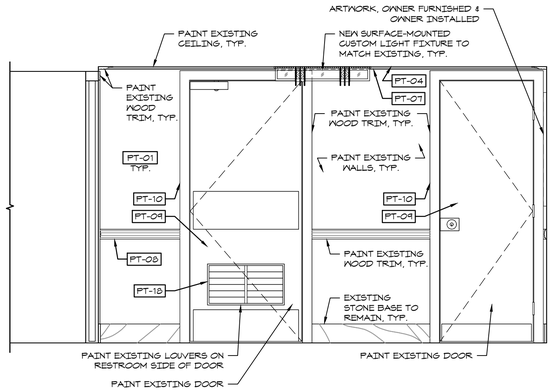
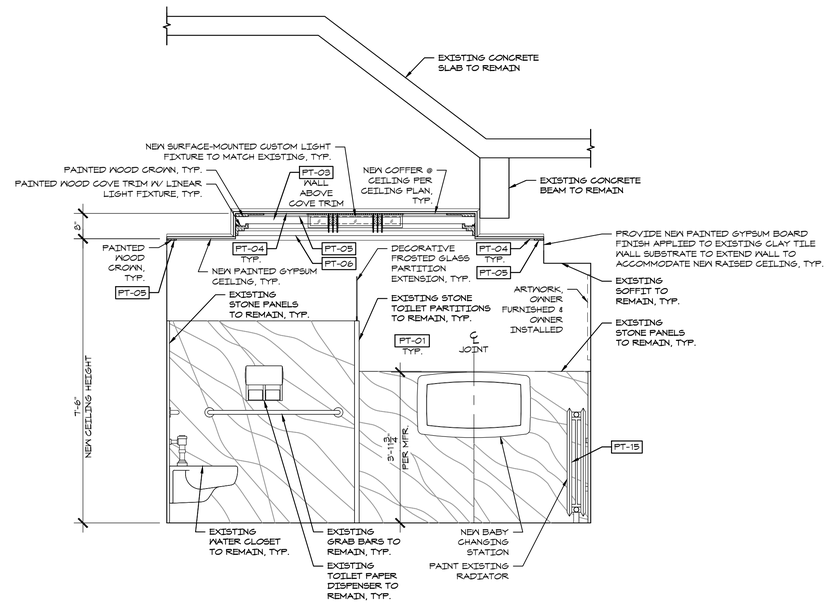


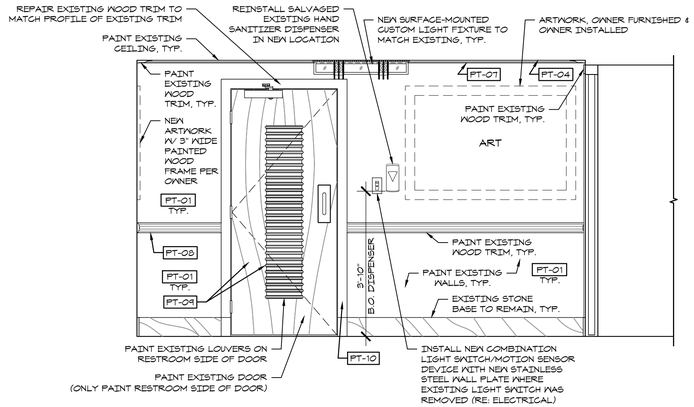
4 FIREPLACE LOBBY - MEN'S RESTROOM
SOUTH NEW INTERIOR ELEVATION @ VESTIBULE

1/2"=1'-0"



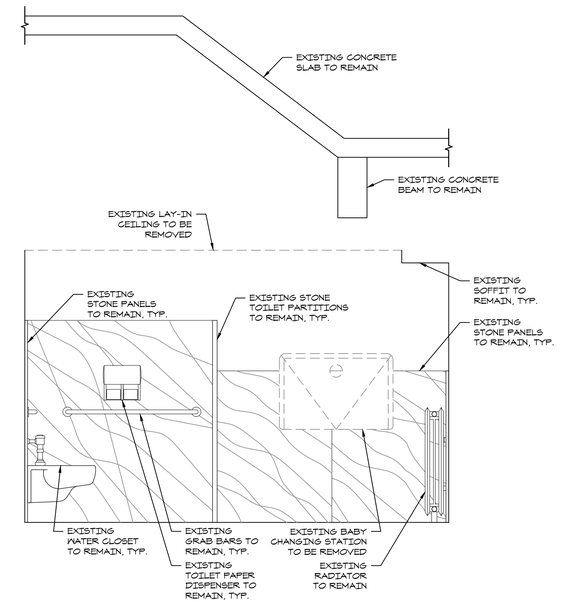
2 FIREPLACE LOBBY - MEN'S RESTROOM - SOUTH NEW INTERIOR ELEVATION

1/2"=1'-0"



3 FIREPLACE LOBBY - MEN'S RESTROOM
NORTH NEW INTERIOR ELEVATION @ VESTIBULE

1/2"=1'-0"



1 FIREPLACE LOBBY - MEN'S RESTROOM - SOUTH DEMO INTERIOR ELEVATION

1/2"=1'-0"

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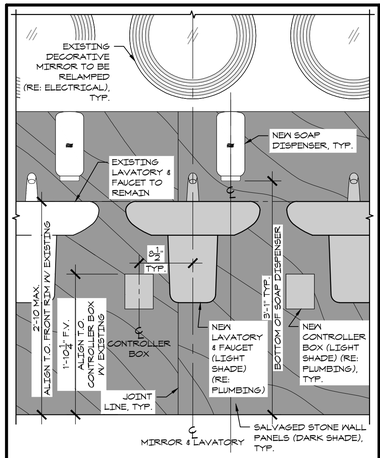
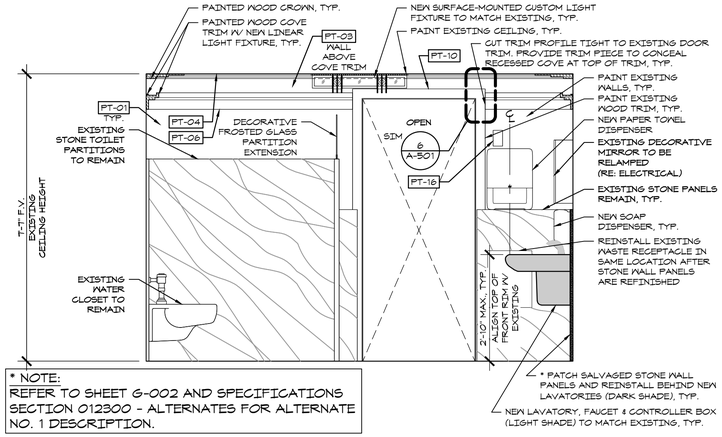
A-206



4 TYP. ENLARGED ELEVATION AT LAVATORY

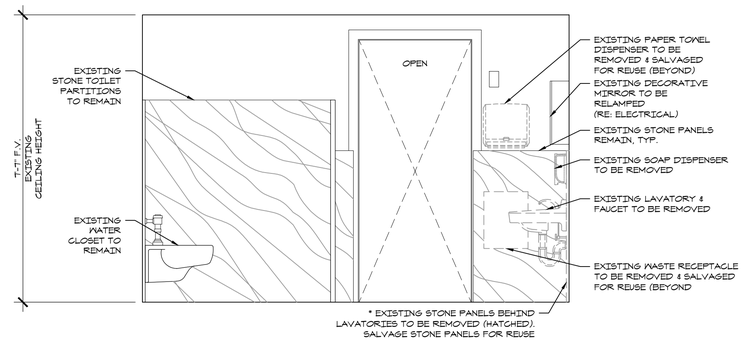
1"=1'-0"



* NOTE:
REFER TO SHEET G-002 AND SPECIFICATIONS SECTION 012300 - ALTERNATES FOR ALTERNATE NO. 1 DESCRIPTION.

4 FIREPLACE LOBBY - WOMEN'S RESTROOM NORTH NEW INTERIOR ELEVATION

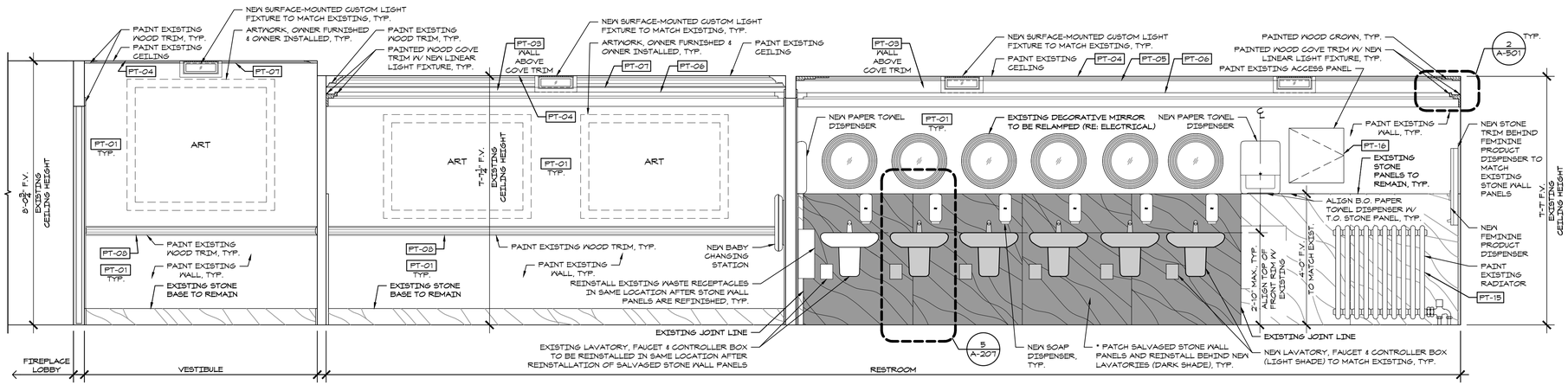
1/2"=1'-0"



3 FIREPLACE LOBBY - WOMEN'S RESTROOM - NORTH DEMO INTERIOR ELEVATION

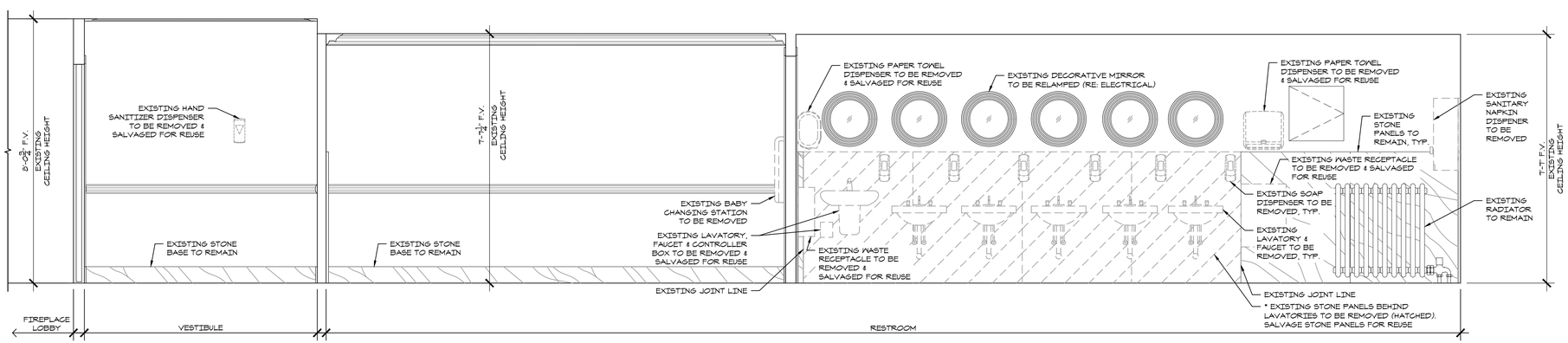
1/2"=1'-0"

* NOTE:
REFER TO SHEET G-002 AND SPECIFICATIONS SECTION 012300 - ALTERNATES FOR ALTERNATE NO. 1 DESCRIPTION.



2 FIREPLACE LOBBY - WOMEN'S RESTROOM - EAST NEW INTERIOR ELEVATION

1/2"=1'-0"



1 FIREPLACE LOBBY - WOMEN'S RESTROOM - EAST DEMO INTERIOR ELEVATION

1/2"=1'-0"

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KANSAS CITY CONVENTION CENTER

MUSIC HALL AND LITTLE THEATRE RESTROOM UPGRADES PROJECT

301 W. 13th STREET, KANSAS CITY, MO 64105

FOR CONSTRUCTION

PROJECT NO.	1623.7
DATE	10 / 15 / 2025
DRAWN BY	DR
CHECKED BY	EP
CHECKED BY	
REVISED DATE	DESCRIPTION

SHEET TITLE & NUMBER

INTERIOR ELEVATIONS

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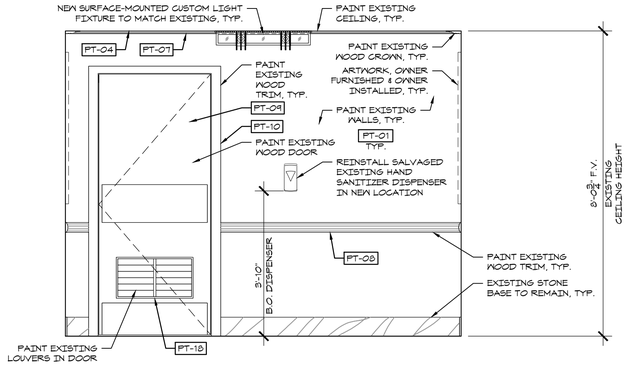
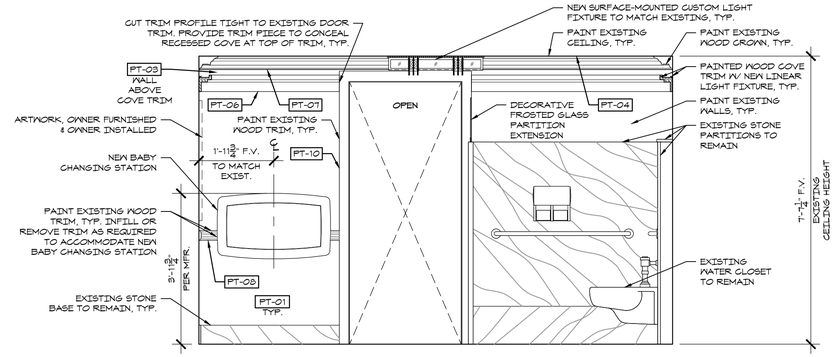
A-207



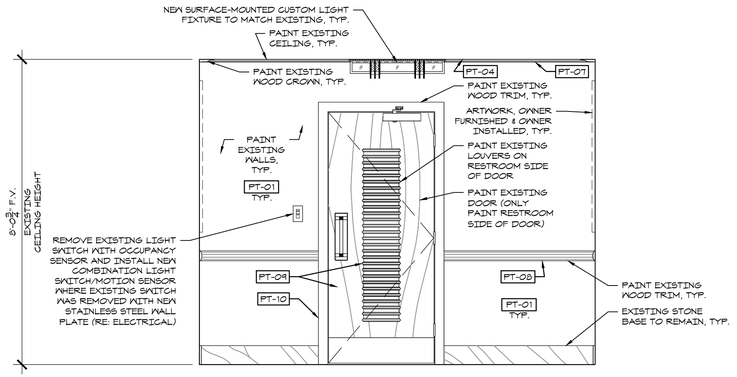
6 FIREPLACE LOBBY - WOMEN'S RESTROOM
SOUTH NEW INTERIOR ELEVATION @ VESTIBULE

1/2"=1'-0"



3 FIREPLACE LOBBY - WOMEN'S RESTROOM - SOUTH NEW INTERIOR ELEVATION

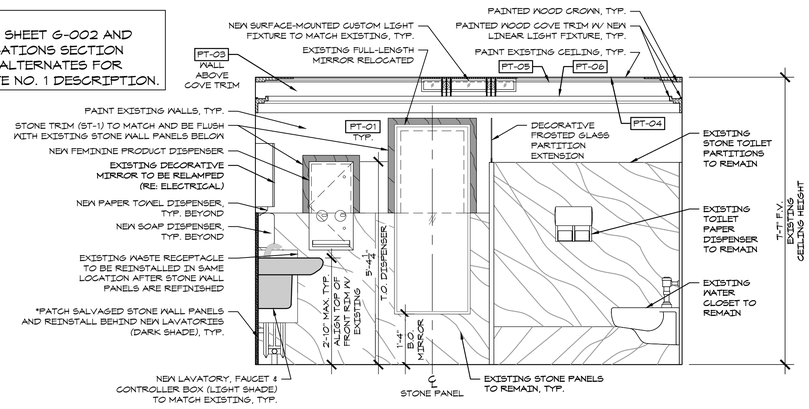
1/2"=1'-0"



5 FIREPLACE LOBBY - WOMEN'S RESTROOM
NORTH NEW INTERIOR ELEVATION @ VESTIBULE

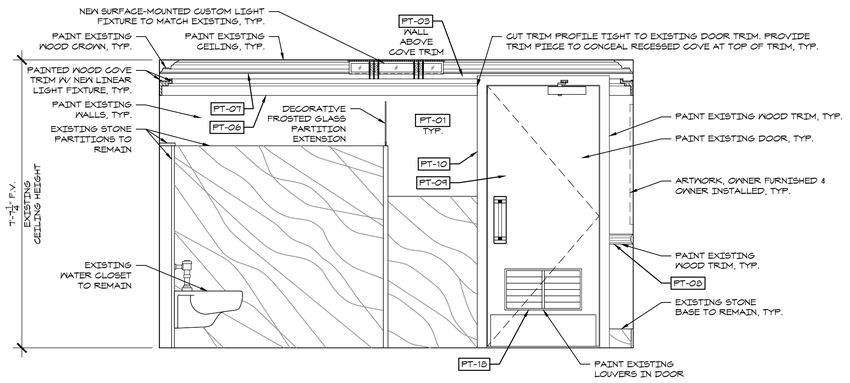
1/2"=1'-0"

* NOTE:
REFER TO SHEET G-002 AND SPECIFICATIONS SECTION 012300 - ALTERNATES FOR ALTERNATE NO. 1 DESCRIPTION.



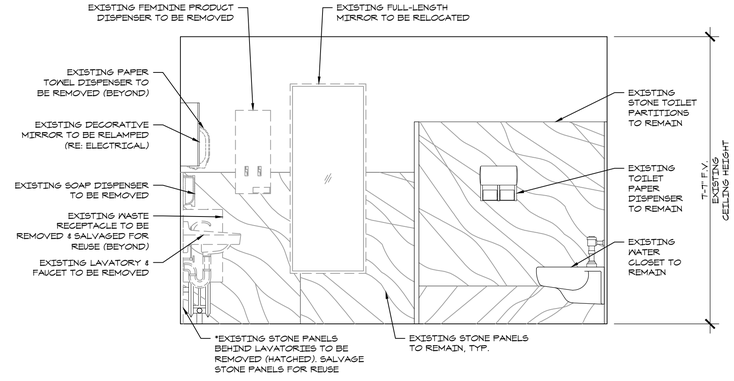
2 FIREPLACE LOBBY - WOMEN'S RESTROOM - SOUTH NEW INTERIOR ELEVATION

1/2"=1'-0"



4 FIREPLACE LOBBY - WOMEN'S RESTROOM - NORTH NEW INTERIOR ELEVATION

1/2"=1'-0"



1 FIREPLACE LOBBY - WOMEN'S RESTROOM - SOUTH DEMO INTERIOR ELEVATION

1/2"=1'-0"

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FOR CONSTRUCTION

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CHECKED BY	
REVISED DATE	DESCRIPTION

SHEET TITLE & NUMBER

INTERIOR ELEVATIONS

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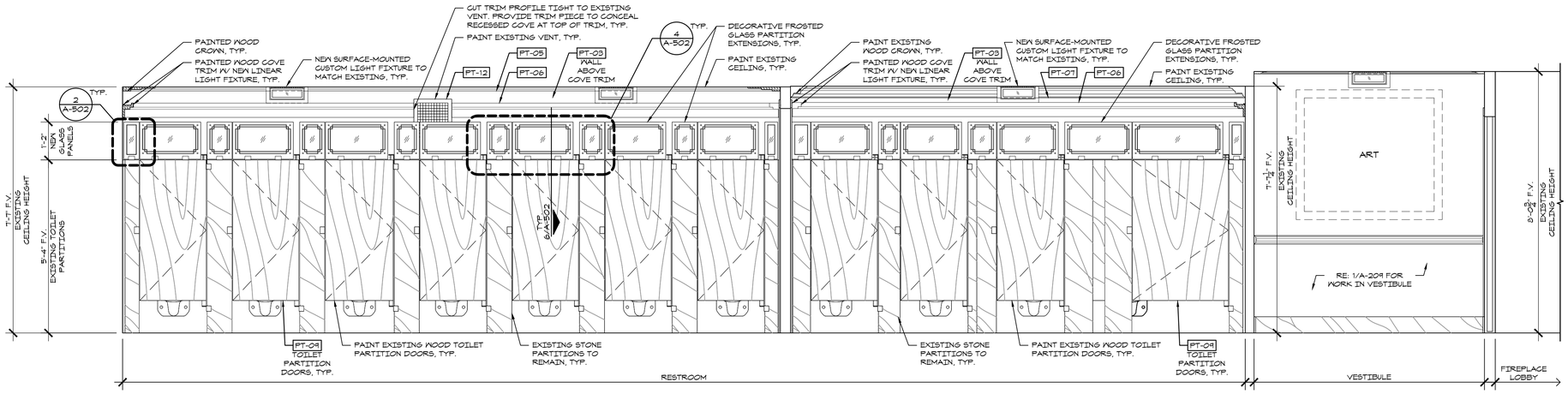
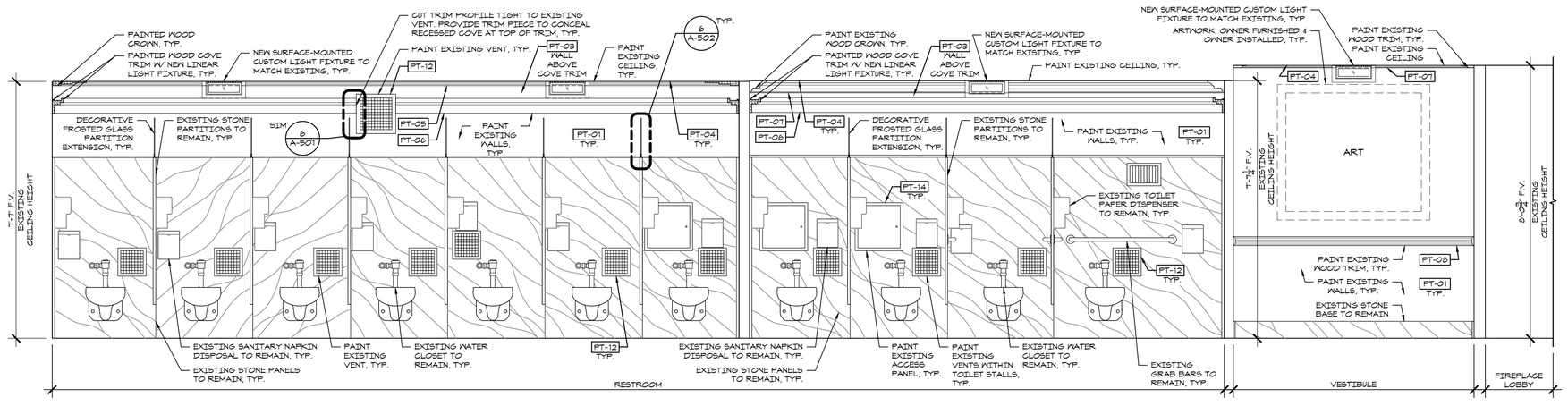
A-208



2 FIREPLACE LOBBY - WOMEN'S RESTROOM - WEST NEW INTERIOR ELEVATION

1/2"=1'-0"



1 FIREPLACE LOBBY - WOMEN'S RESTROOM - WEST NEW INTERIOR ELEVATION

1/2"=1'-0"

STATE OF MISSOURI
ERIC JAY PIPER
NUMBER A-7305
REGISTERED ARCHITECT

PWA

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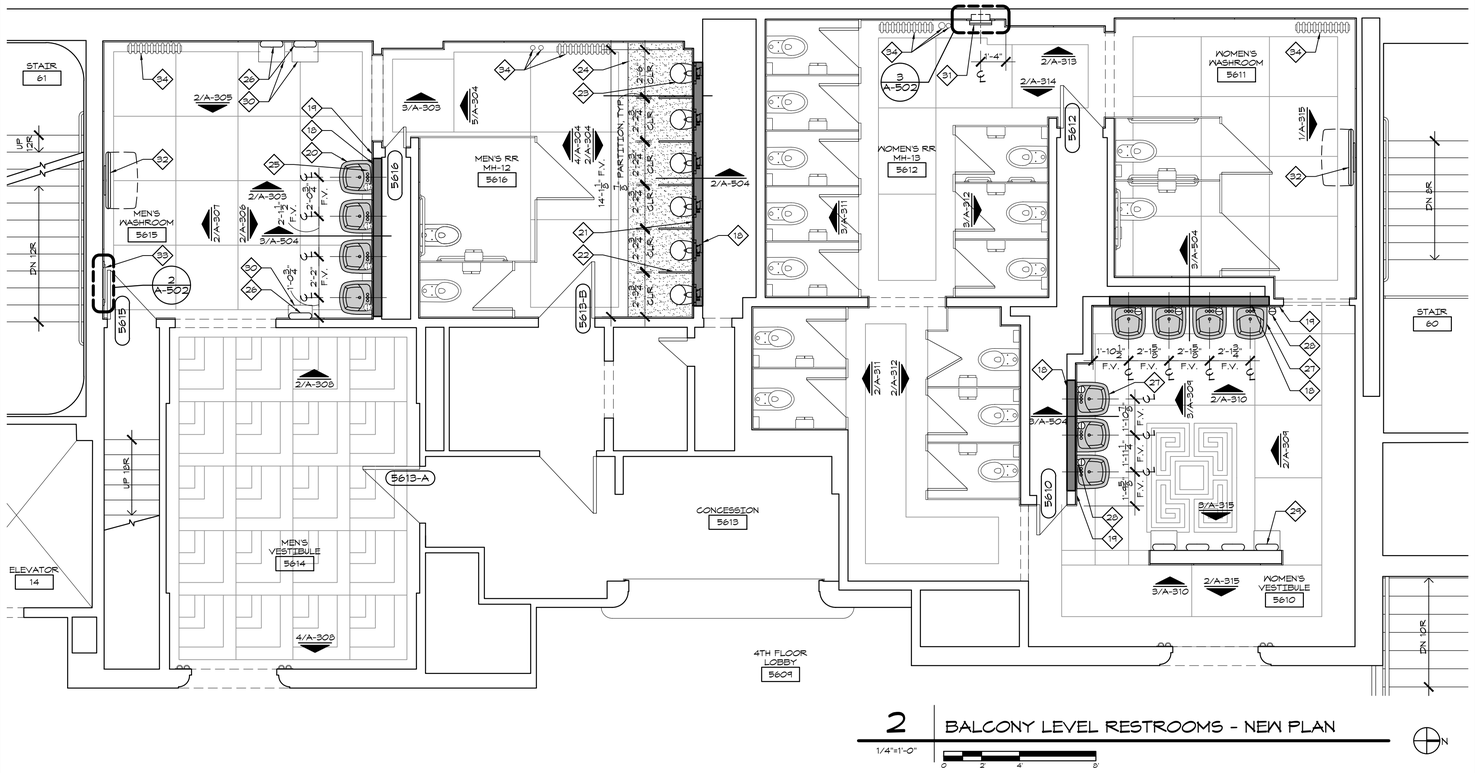
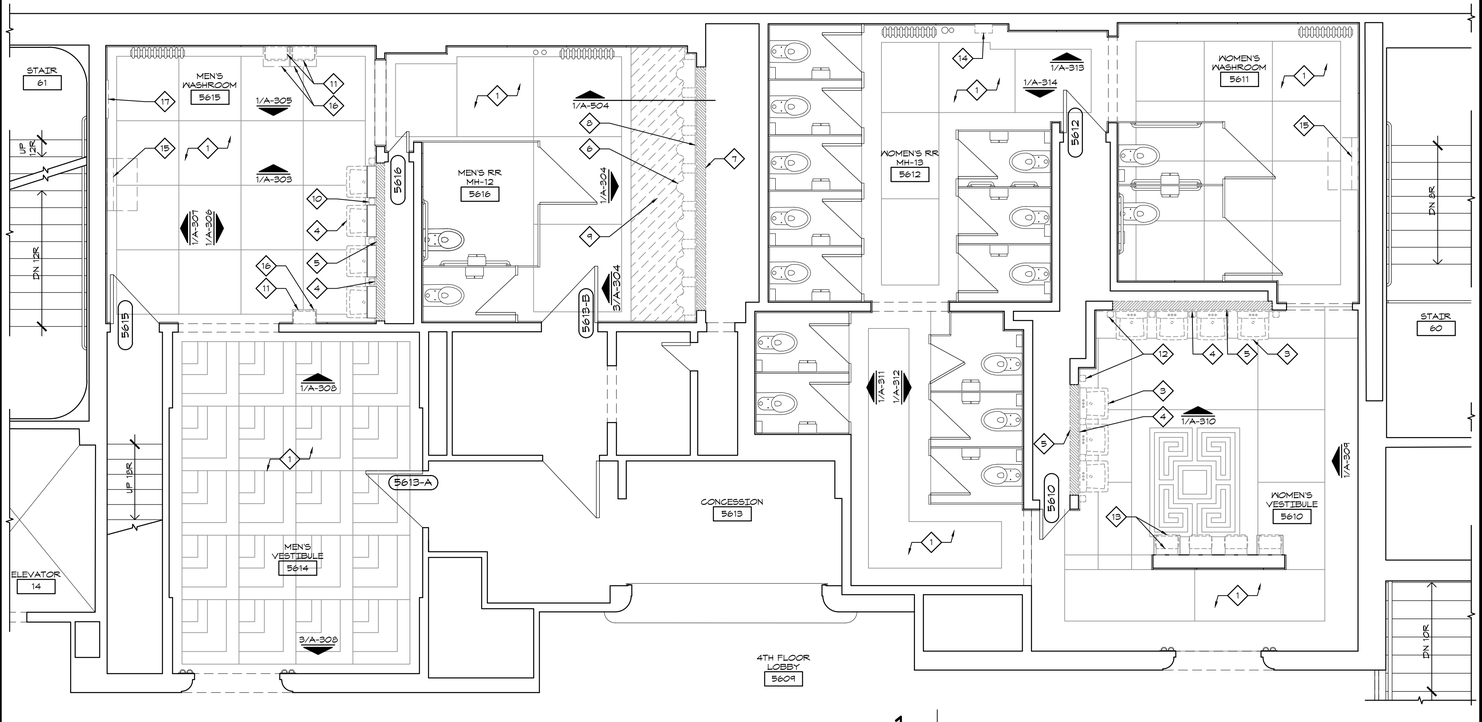


2 BALCONY LEVEL RESTROOMS - NEW PLAN

1/4"=1'-0"



1 BALCONY LEVEL RESTROOMS - DEMO PLAN

1/4"=1'-0"

Key Notes:

1. Existing terrazzo flooring to remain, typical
2. Remove (4) existing lavatories & faucets in Men's Restroom
3. Remove (7) existing lavatories & faucets in Women's Restroom
4. Remove existing stone wall panels behind existing lavatories. Salvage stone panels for reuse
5. Remove section of existing plaster & hollow clay tile wall to accommodate installation of new carriers for lavatories
6. Remove all existing floor-length urinals
7. Remove section of existing plaster & hollow clay tile wall to accommodate installation of carriers for new urinals
8. Remove existing stone wall panels behind existing urinals. Salvage stone panels to be used for patching of existing stone panels to be reinstalled
9. Remove existing floor tile (approximate area shown hatched)
10. Remove (4) existing soap dispensers in Men's Restroom
11. Remove existing paper towel dispenser in Men's Restroom
12. Remove (6) existing soap dispensers in Women's Restroom
13. Remove (4) existing paper towel dispensers & (4) stainless steel, surface-mounted dispensers in Women's Restroom
14. Remove existing feminine product dispenser in Women's Restroom
15. Remove existing baby changing station
16. Remove existing waste receptacle and salvage for reuse
17. Remove existing full-length mirror and salvage for reuse
18. Provide new metal studs and header per Structural to support hollow clay tile to remain. After installation of carriers, infill existing wall behind new lavatories and urinals w/ 1/2" cement board over the metal studs and install stone veneer ties to attach stone wall panels. Provide 1" minimum setting space to allow stone wall panels to be reinstalled flush w/ adjacent stone wall panels
19. Patch existing stone wall panels that were removed where holes for existing piping, carrier and other penetrations were located. Prep existing panel to accommodate new lavatory carrier and piping as required. Reinstall existing stone wall panel behind lavatories (RE: S-002 and Specifications section 012300 - Alternates for Alternate No. 1 description)
20. Install (4) new lavatories and faucets (shaded) in Men's restroom in same location (at different height) as existing lavatories that were removed (RE: Plumbing Drawings)
21. Install new stone wall panels to match existing color and finish behind urinals
22. Install new stone partitions to match existing color and finish between urinals
23. Install (6) new urinals. Center new urinal between new stone partitions (RE: Plumbing Drawings)
24. Install new terrazzo flooring (approximate area hatched). Match terrazzo color and aggregate of existing floor border
25. Install (4) new soap dispensers per schedule (A) in Men's Restroom
26. Install (3) new paper towel dispensers per schedule (C) in new location and different height in Men's Restroom (RE: Interior Elevations)
27. Install (7) new lavatories and faucets (shaded) in Women's Restroom in same location (at different height) as existing lavatories that were removed (RE: Plumbing Drawings)
28. Install (7) new soap dispensers per schedule (A) in Women's Restroom
29. Install (4) new paper towel dispensers per schedule (C) in same location as removed paper towel dispensers (at different height) in Women's Restroom
30. Reinstall salvaged waste receptacle in same location (at different height) below paper towel dispenser after stone wall panels are refinished and reinstalled
31. Install new semi-recessed feminine product dispenser per schedule (D) w/ new stone trim panels to match existing stone wall panels behind in Women's Restroom in new location per plan
32. Install new baby changing station per schedule (E) in new location
33. Patch plaster wall & stone wall panel where full-length mirror was removed. Reinstall salvaged full-length mirror w/ new stone trim panels to match existing stone wall panels behind mirror in new location centered on existing stone wall panel
34. Paint existing radiator and pipes

General Notes:

1. Field verify all dimensions & existing conditions.
2. All dimensions of new structure taken from face of framing unless noted otherwise. Dimensions to existing structure taken from finish face of material unless noted otherwise.
3. All new details to match existing unless noted otherwise.
4. All new infill framing to match existing depth unless noted otherwise.
5. All existing accessories installed on stone wall panels to be removed and salvaged for reuse unless noted otherwise.
6. All existing stone base and stone wall panels outside of existing toilet partitions to remain are to be patched where wall-mounted accessories were removed, cleaned, restored & refinished to like new condition in place (refer to sheet G-002 and Specifications section 012300 - Alternates for Alternate No. 2 description).
7. All existing stone toilet partitions and stone wall panels within existing toilet partitions to remain are to be cleaned, restored and refinished to like new condition in place.
8. All terrazzo flooring to remain is to be cleaned, restored & refinished to like new condition.
9. All existing door & toilet partition hardware to remain. Clean, refurbish and refinish.
10. All existing toilet partition doors are to be repainted. RE: Interior Elevations and Finish Materials Legend.
11. Patch plaster wall surfaces where all wall-mounted accessories were removed. Prep wall surface for painting (RE: Interior Elevations).
12. All existing stainless steel cover plates on the existing walls are to remain and not be painted.
13. Refer to sheet A-601 for Finish Schedule, Restroom Accessory Schedule and Door Schedule.
14. Refer to sheet G-002 for Add Alternate Summary.

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ENLARGED FLOOR PLANS

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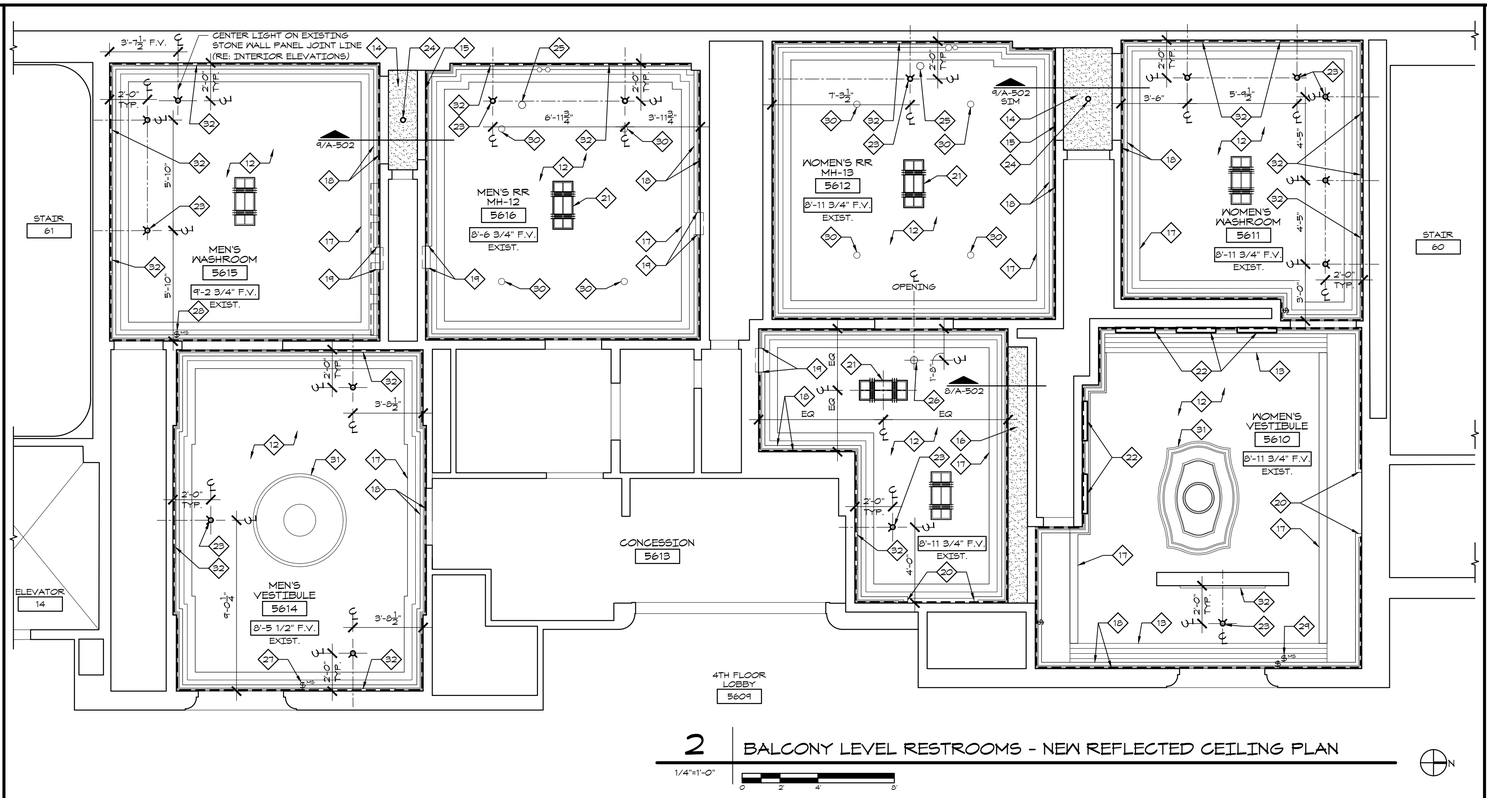
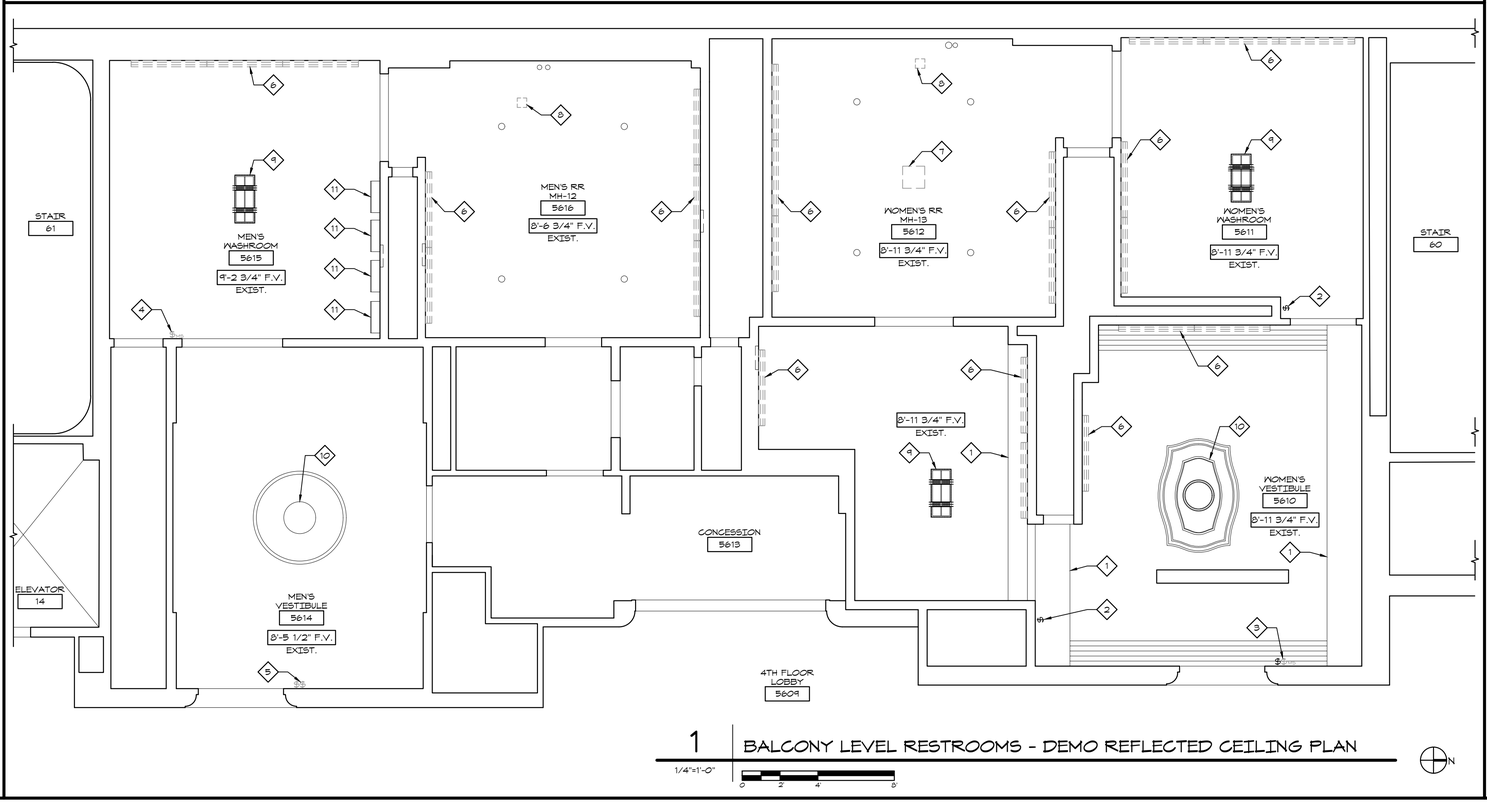
A-301



2 BALCONY LEVEL RESTROOMS - NEW REFLECTED CEILING PLAN

1/4"=1'-0"



1 BALCONY LEVEL RESTROOMS - DEMO REFLECTED CEILING PLAN

1/4"=1'-0"

Key Notes:

1. Existing soffit to remain
2. Existing light switch with motion sensor to remain
3. Remove existing light switch with motion sensor and wall plate. Existing adjacent light switch to remain
4. Remove existing light switch with motion sensor and wall plate
5. Remove existing double light switch and wall plate
6. Remove existing wall-mounted light fixtures
7. Remove existing flush-mounted light fixture
8. Remove existing ceiling-mounted occupancy sensor
9. Existing decorative surface-mounted light fixture to be relamped (RE: Electrical) *new custom, surface-mounted light fixtures to match these light fixtures
10. Existing decorative pendant light fixture to be relamped (RE: Electrical)
11. Existing decorative mirror sconces to be relamped (RE: Electrical)
12. Patch and paint existing ceiling, typical
13. Patch & paint existing ceiling border trim
14. New painted gypsum board ceiling (hatched)
15. New painted gypsum board header
16. New painted gypsum board soffit to extend existing soffit down to bottom of new trim (hatched)
17. New painted wood crown, typical
18. New linear cove light fixture (dashed) within new painted wood cove trim, typical (RE: Electrical for light fixture)
19. Cut two bottom legs of cove trim tight to existing vent. Run two upper legs of cove trim over the top of the existing vent, typical
20. Step cove trim to terminate at existing mirror
21. New custom, surface-mounted light fixture to match existing, typical (RE: Details)
22. New surface-mounted light fixture above mirrors, typical (RE: Electrical)
23. New 3" round wall wash light fixture for artwork, typical (RE: Electrical)
24. New 3" round recessed can light within new gypsum board ceiling (RE: Electrical)
25. Install new ceiling-mounted occupancy sensor (RE: Electrical). Field verify location of existing sensor to be removed and install new sensor in same location
26. Install new ceiling-mounted occupancy sensor (RE: Electrical). Locate new sensor as shown on ceiling plan
27. Install new combination light switch/motion sensor device where existing double wall switch was removed with new double gang, stainless steel wall plate with (1) opening for new switch and (1) blank (RE: Electrical)
28. Install new combination light switch/motion sensor device where existing light switch with occupancy sensor was removed with new stainless steel wall plate (RE: Electrical)
29. Install new combination light switch/motion sensor device where existing light switch with occupancy sensor was removed adjacent to existing light switch. Install new double gang stainless steel wall plate (RE: Electrical)
30. Paint existing cover plate (PT-13)
31. Paint existing light dome at existing pendant light fixture
32. Artwork, Owner furnished/Owner installed

General Notes:

1. Field verify all dimensions & existing conditions.
2. All dimensions taken from finish face of material unless noted otherwise.
3. Lighting fixtures to be selected by Architect and/or Lighting Consultant and installed by Contractor.
4. Locate light fixtures where indicated on the drawings.
5. Center ceiling mounted fixtures in room volume unless noted otherwise.
6. Contractor to renovate existing plaster ceilings to reattach and pull plaster tight to existing metal lath and supports.
7. All existing light fixtures indicated to be relamped or to remain are to be protected from damage during construction.
8. All new trim indicated as painted wood trim is to be constructed from MDF.

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ENLARGED REFLECTED CEILING PLANS

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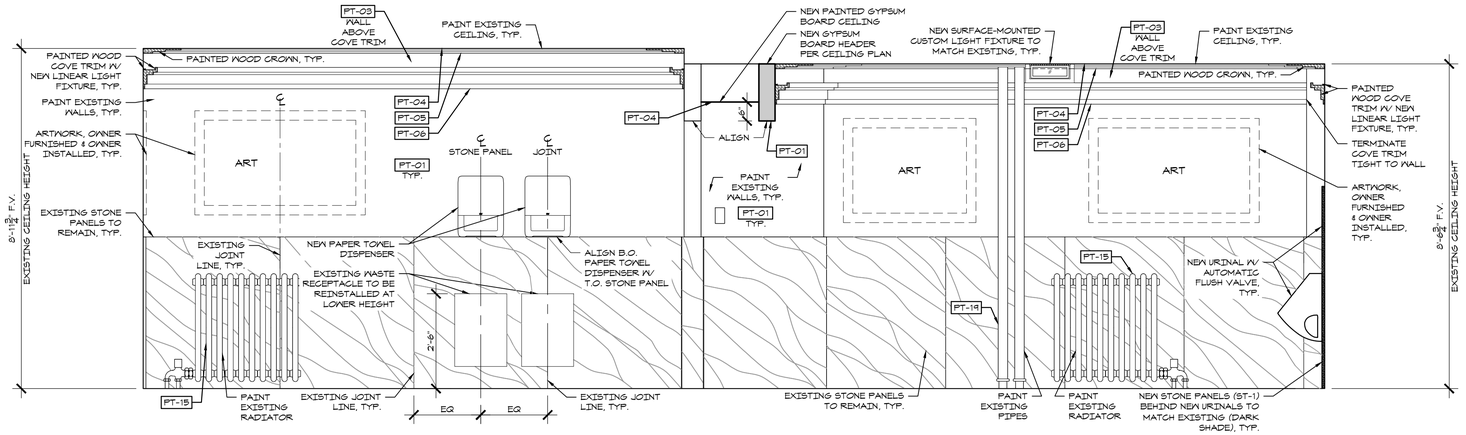
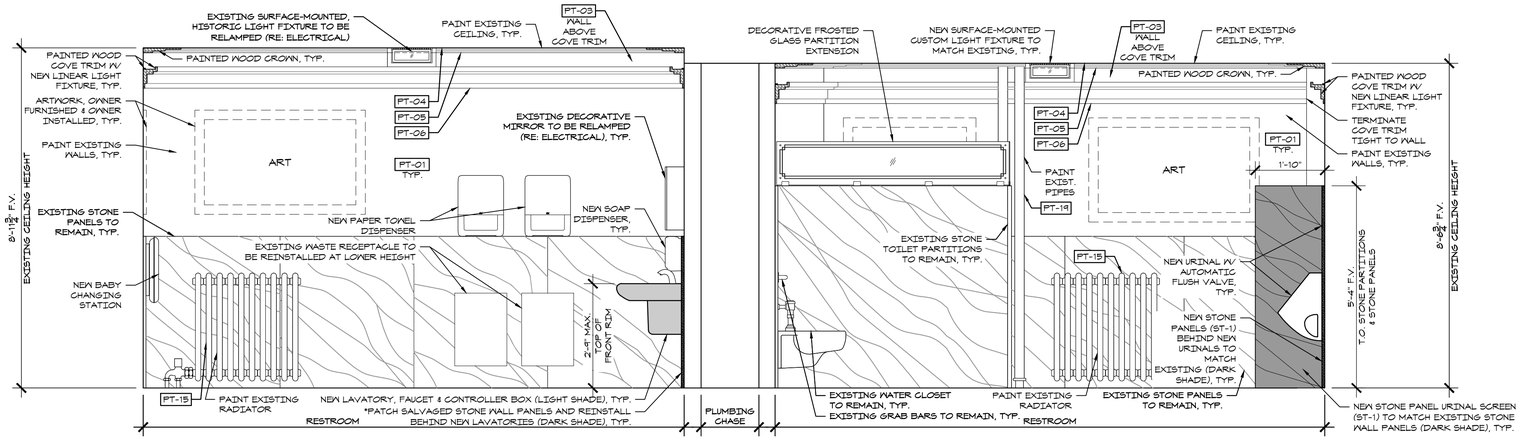
A-302



3 BALCONY LEVEL - MEN'S RESTROOM - WEST NEW INTERIOR ELEVATION

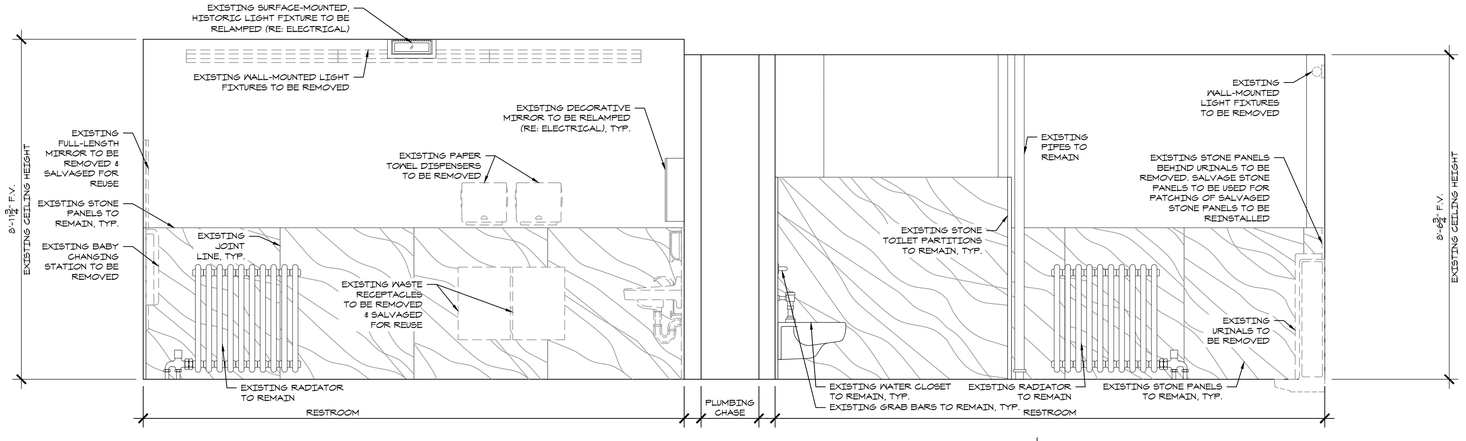
1/2"=1'-0"



2 BALCONY LEVEL - MEN'S RESTROOM - WEST NEW INTERIOR ELEVATION

1/2"=1'-0"

* NOTE:
REFER TO SHEET G-002 AND SPECIFICATIONS SECTION 012300 - ALTERNATES FOR ALTERNATE NO. 1 DESCRIPTION.



1 BALCONY LEVEL - MEN'S RESTROOM - WEST DEMO INTERIOR ELEVATION

1/2"=1'-0"

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MUSIC HALL AND LITTLE THEATRE RESTROOM UPGRADES PROJECT
301 W. 13th STREET, KANSAS CITY, MO 64105

FOR CONSTRUCTION

PROJECT NO.	1623.7
DATE	10/15/2025
DRAWN BY	DR
CHECKED BY	EP
CHECKED BY	
REVISED DATE	DESCRIPTION

SHEET TITLE & NUMBER

INTERIOR ELEVATIONS

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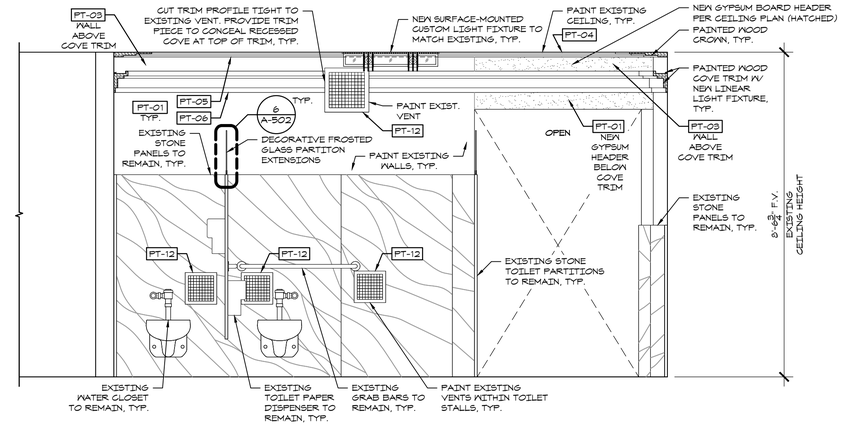
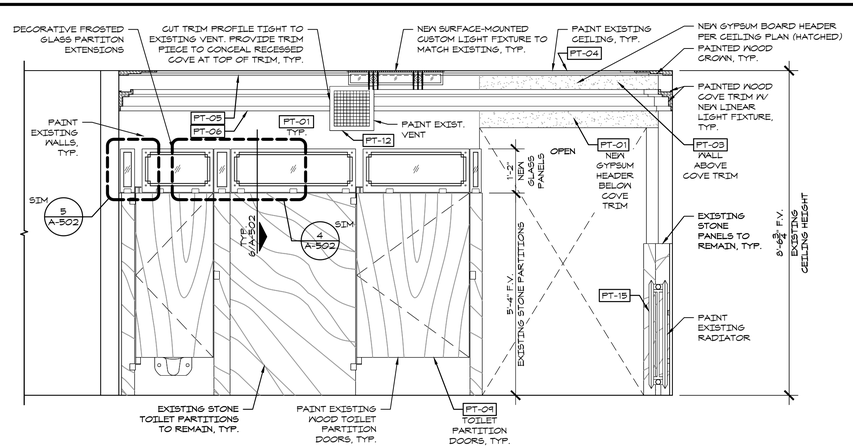
A-303



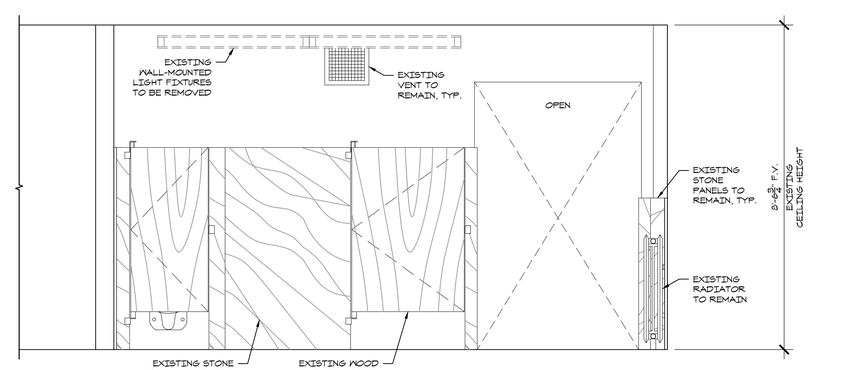
5 BALCONY LEVEL - MEN'S RESTROOM - SOUTH NEW INTERIOR ELEVATION

1/2"=1'-0"



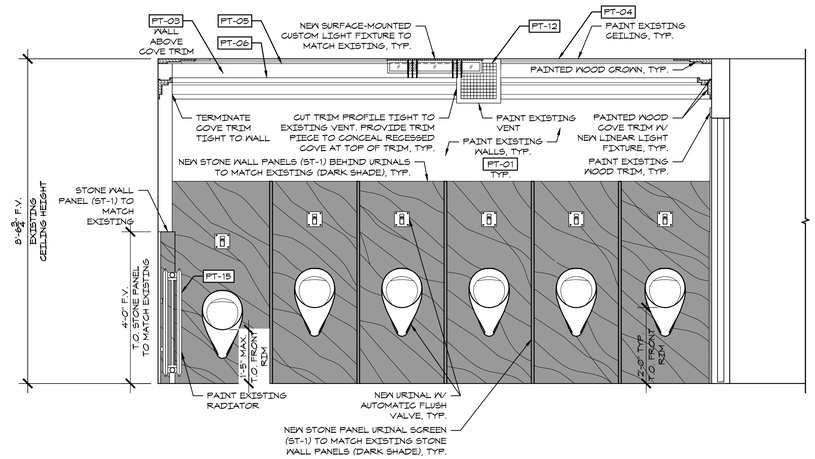
4 BALCONY LEVEL - MEN'S RESTROOM - SOUTH NEW INTERIOR ELEVATION

1/2"=1'-0"



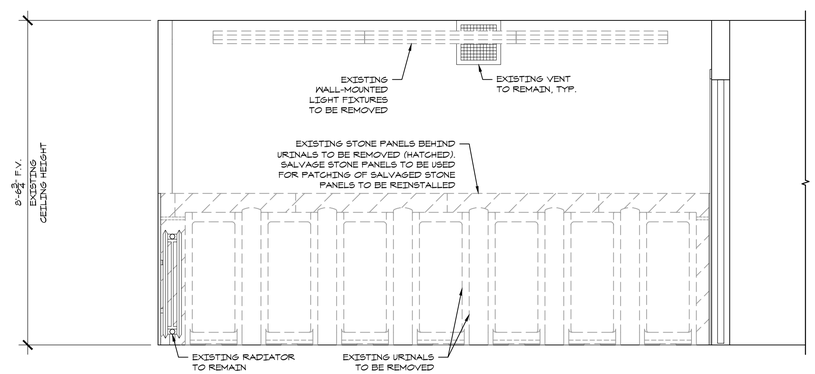
3 BALCONY LEVEL - MEN'S RESTROOM - SOUTH DEMO INTERIOR ELEVATION

1/2"=1'-0"



2 BALCONY LEVEL - MEN'S RESTROOM - NORTH NEW INTERIOR ELEVATION

1/2"=1'-0"



1 BALCONY LEVEL - MEN'S RESTROOM - NORTH DEMO INTERIOR ELEVATION

1/2"=1'-0"

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301 W. 13th STREET, KANSAS CITY, MO 64105

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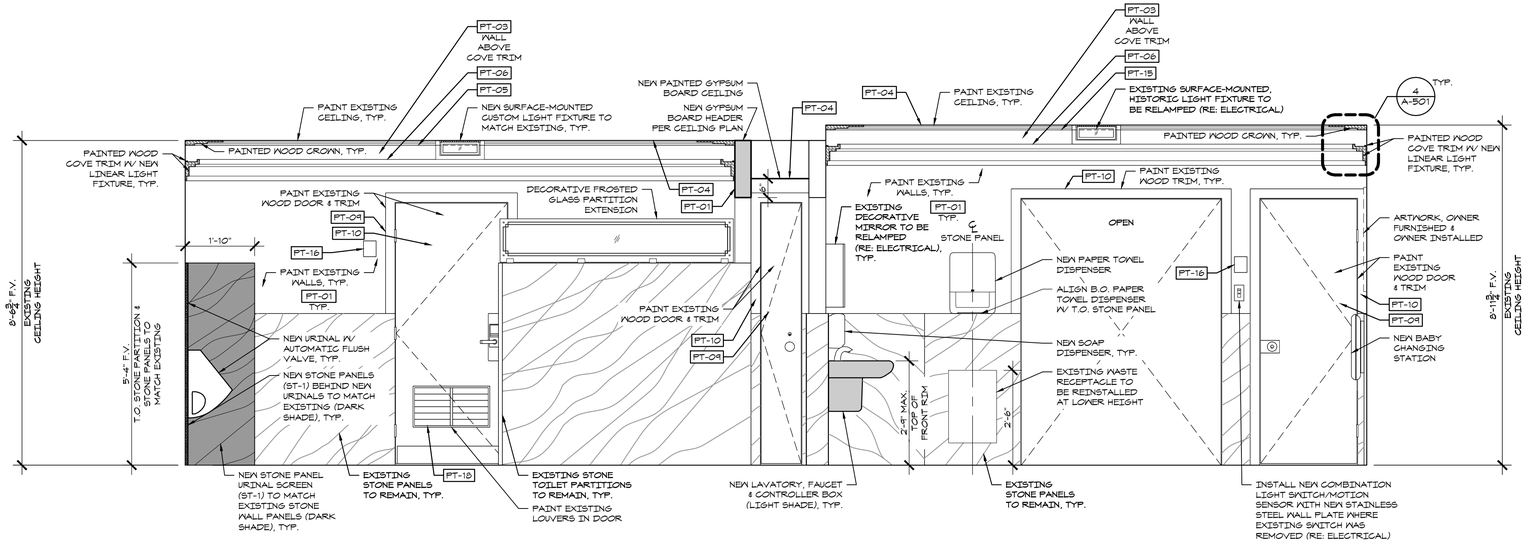
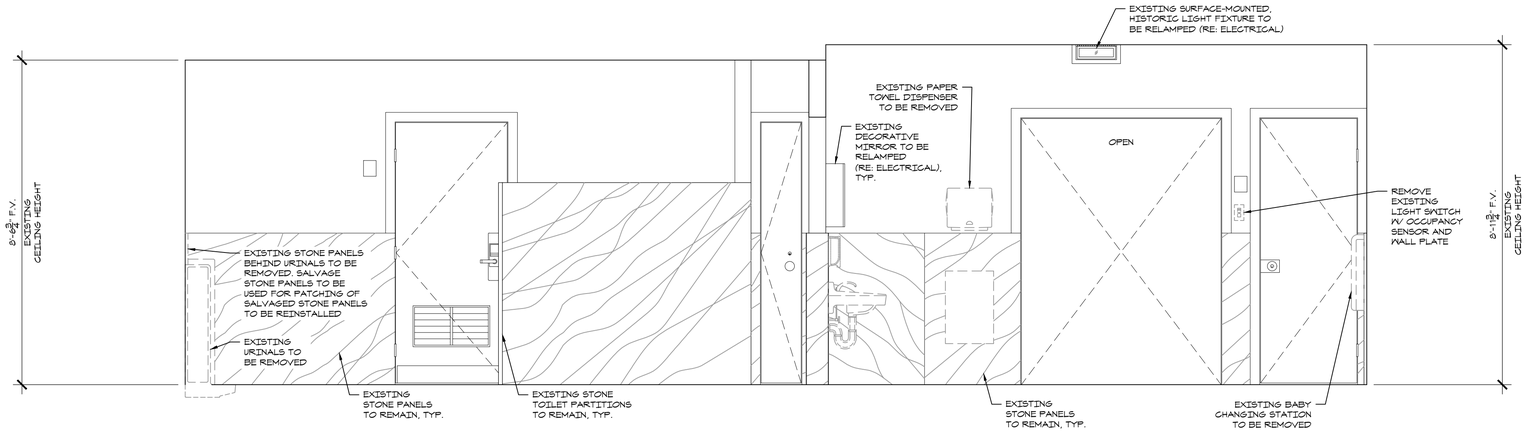


2 BALCONY LEVEL - MEN'S RESTROOM - EAST NEW INTERIOR ELEVATION

1/2"=1'-0"



1 BALCONY LEVEL - MEN'S RESTROOM - EAST DEMO INTERIOR ELEVATION

1/2"=1'-0"

STATE OF MISSOURI
ERIC JAY PIPER
NUMBER A-7305
REGISTERED ARCHITECT

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* NOTE:
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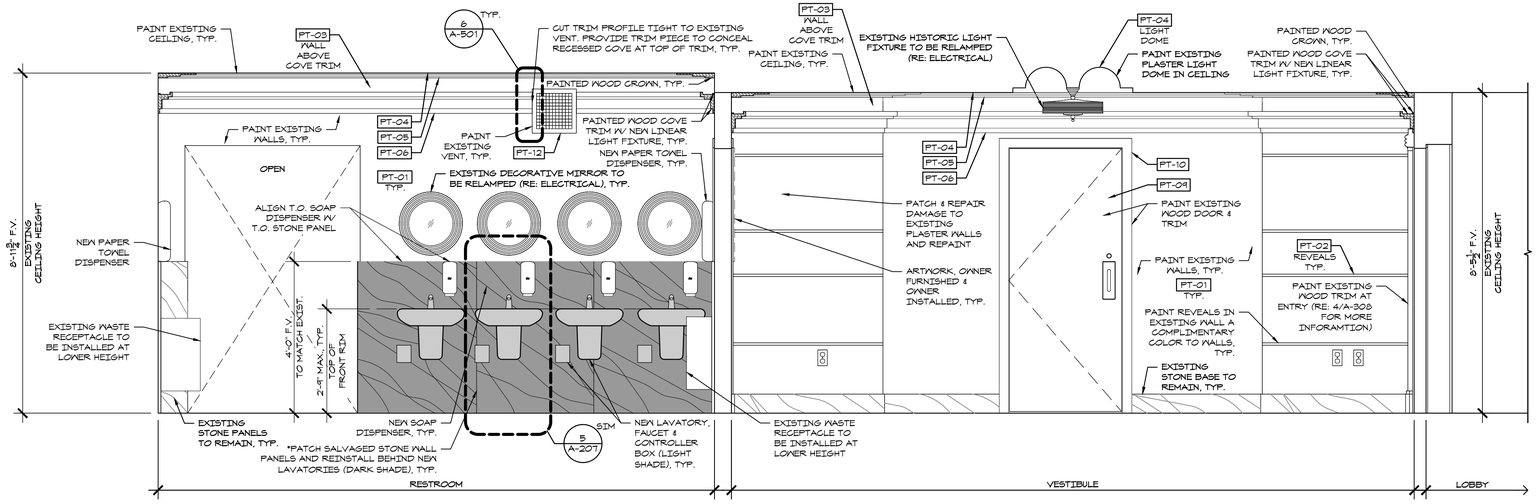
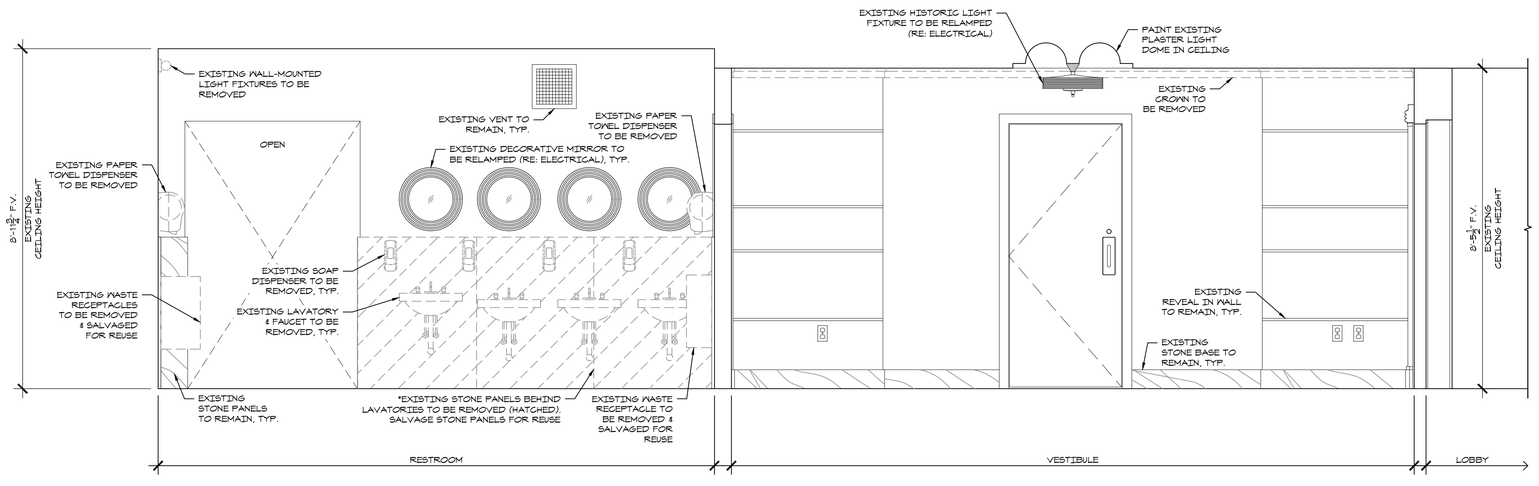


2 BALCONY LEVEL - MEN'S RESTROOM - EAST NEW INTERIOR ELEVATION
1/2"=1'-0"



1 BALCONY LEVEL - MEN'S RESTROOM - NORTH DEMO INTERIOR ELEVATION
1/2"=1'-0"

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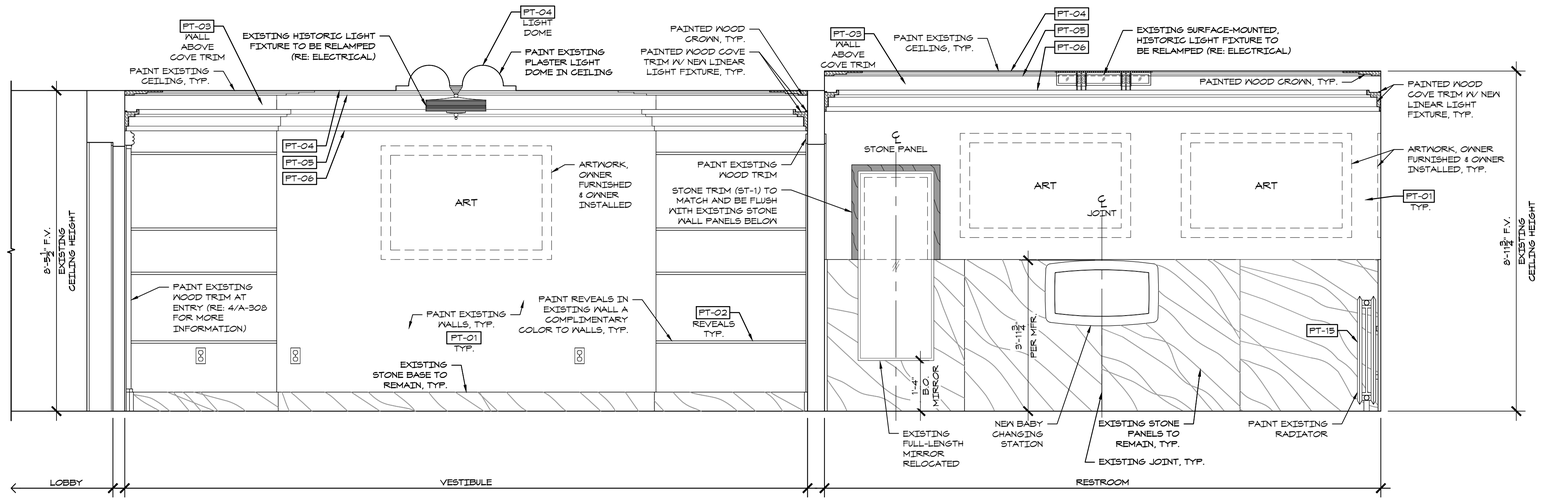
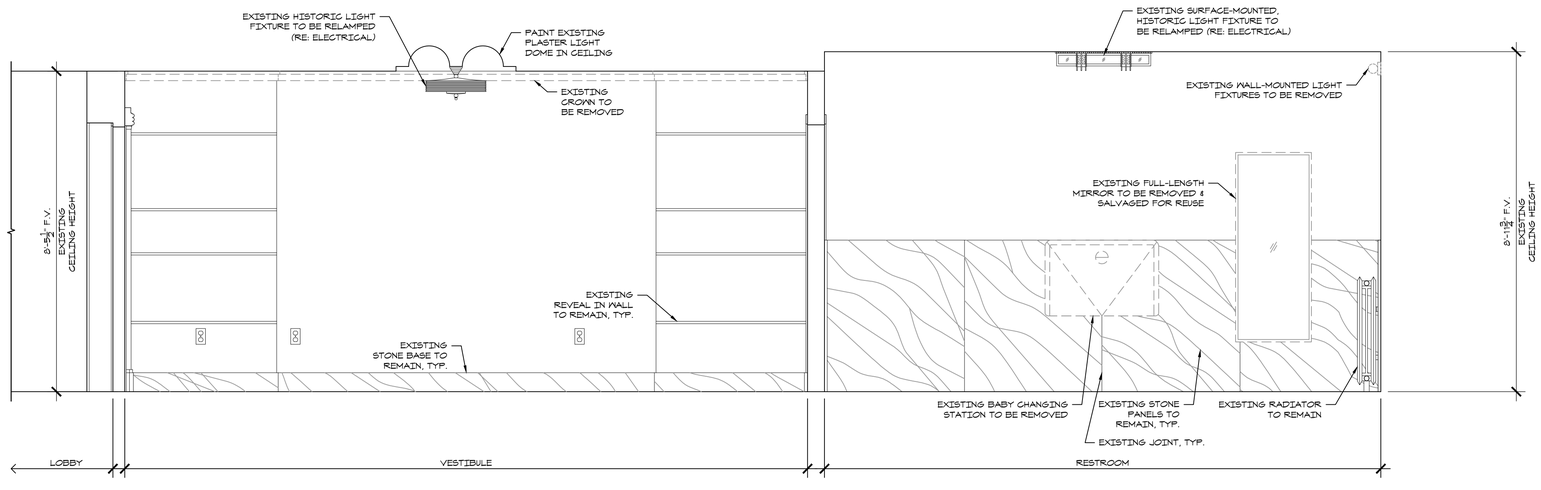


2 BALCONY LEVEL - MEN'S RESTROOM - SOUTH NEW INTERIOR ELEVATION

1/2"=1'-0"



1 BALCONY LEVEL - MEN'S RESTROOM - SOUTH DEMO INTERIOR ELEVATION

1/2"=1'-0"

STATE OF MISSOURI
ERIC JAY PIPER
NUMBER A-7305
REGISTERED ARCHITECT

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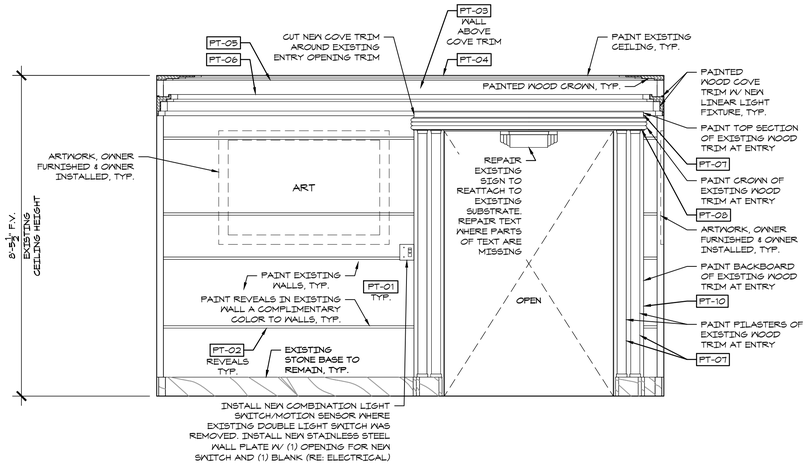
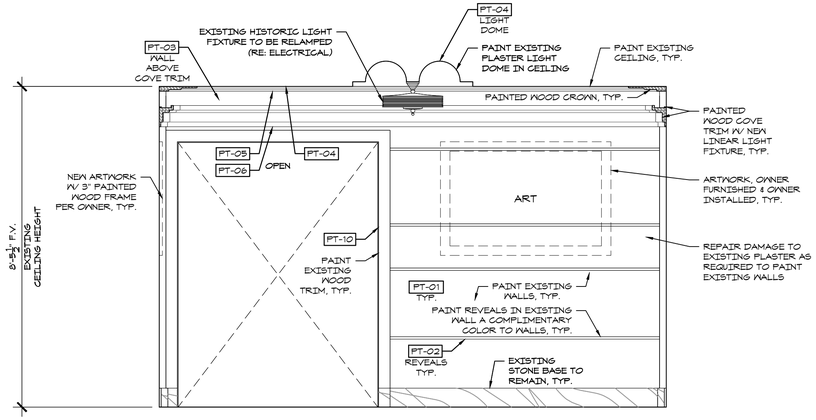


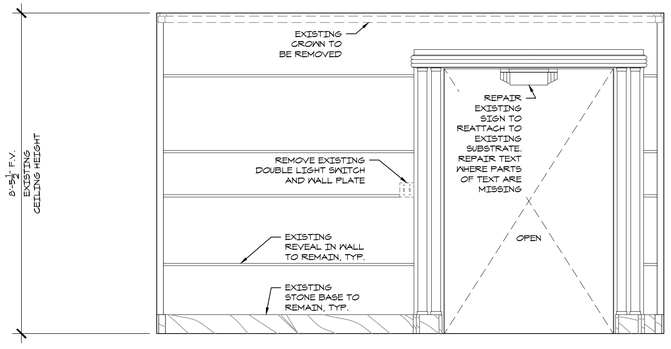
4 BALCONY LEVEL - MEN'S RESTROOM
EAST NEW INTERIOR ELEVATION @ VESTIBULE

1/2"=1'-0"



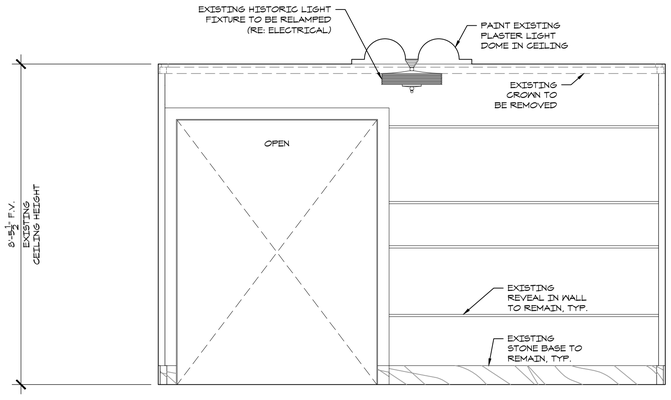
2 BALCONY LEVEL - MEN'S RESTROOM
WEST NEW INTERIOR ELEVATION @ VESTIBULE

1/2"=1'-0"



3 BALCONY LEVEL - MEN'S RESTROOM
EAST DEMO INTERIOR ELEVATION @ VESTIBULE

1/2"=1'-0"



1 BALCONY LEVEL - MEN'S RESTROOM
WEST DEMO INTERIOR ELEVATION @ VESTIBULE

1/2"=1'-0"

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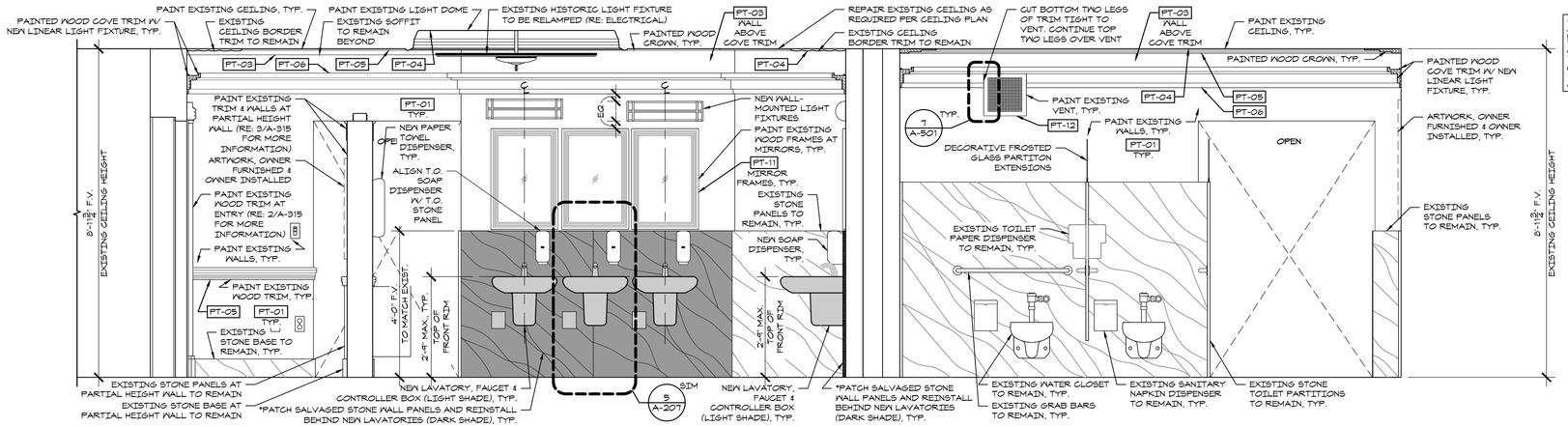
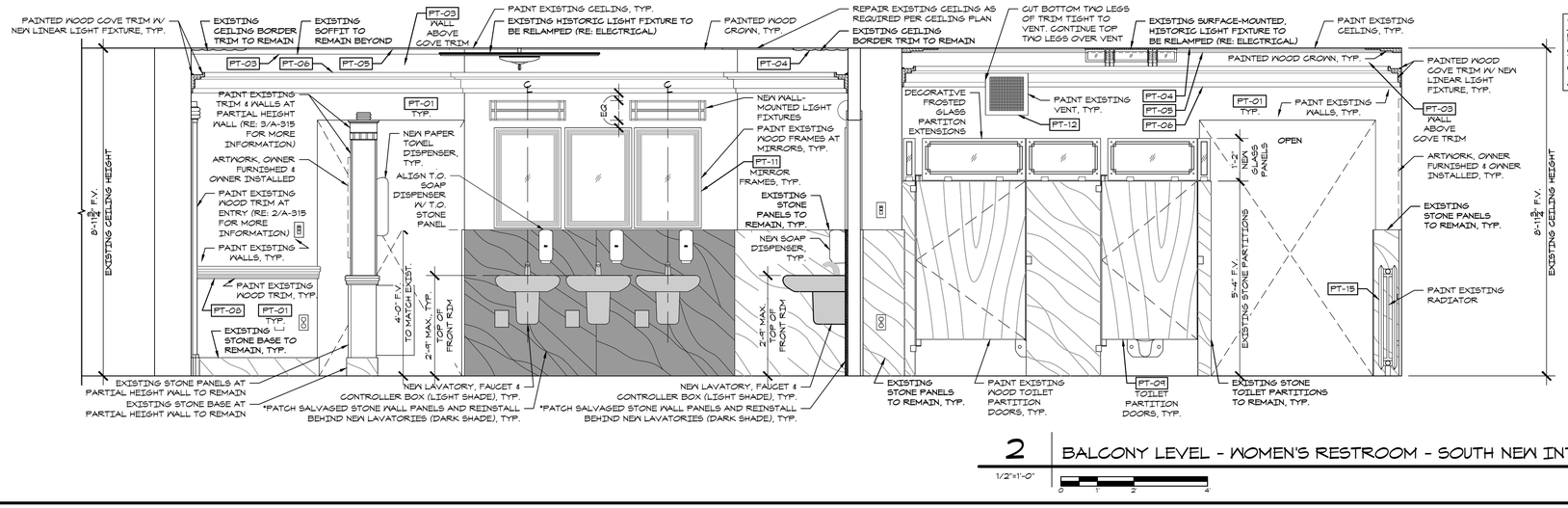


* NOTE:
REFER TO SHEET G-002 AND SPECIFICATIONS SECTION 012300 - ALTERNATES FOR ALTERNATE NO. 1 DESCRIPTION.

3 BALCONY LEVEL - WOMEN'S RESTROOM - SOUTH NEW INTERIOR ELEVATION

1/2"=1'-0"



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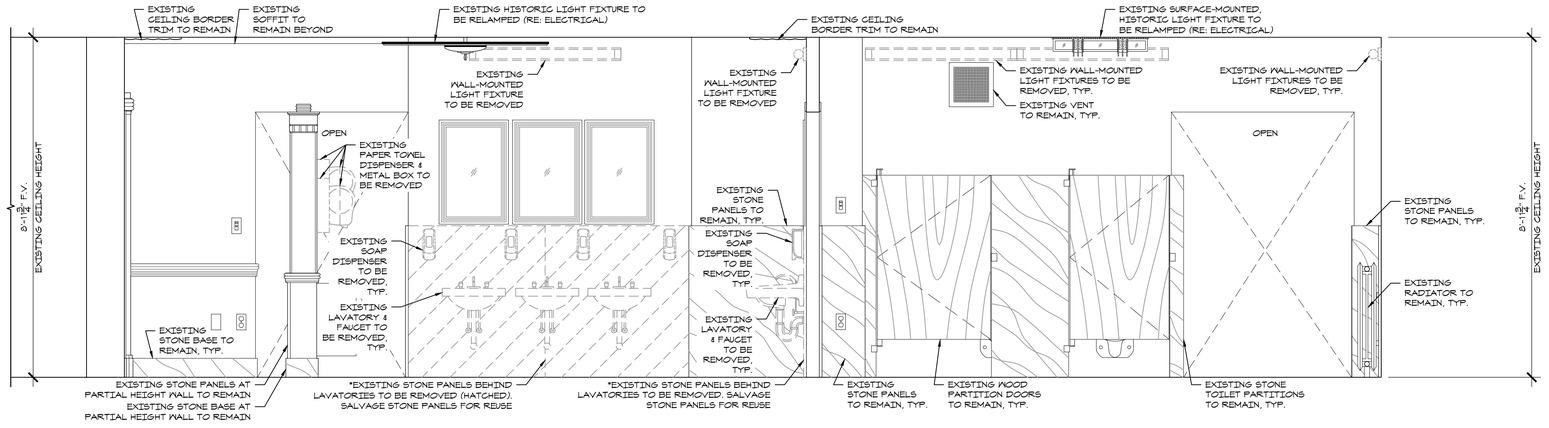
2 BALCONY LEVEL - WOMEN'S RESTROOM - SOUTH NEW INTERIOR ELEVATION

1/2"=1'-0"



1 BALCONY LEVEL - WOMEN'S RESTROOM - SOUTH DEMO INTERIOR ELEVATION

1/2"=1'-0"

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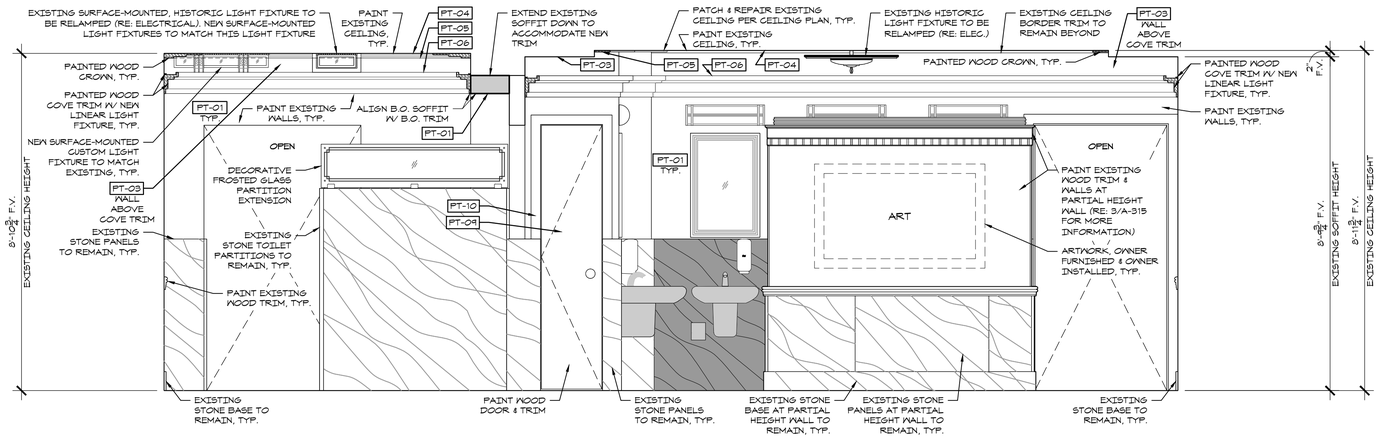
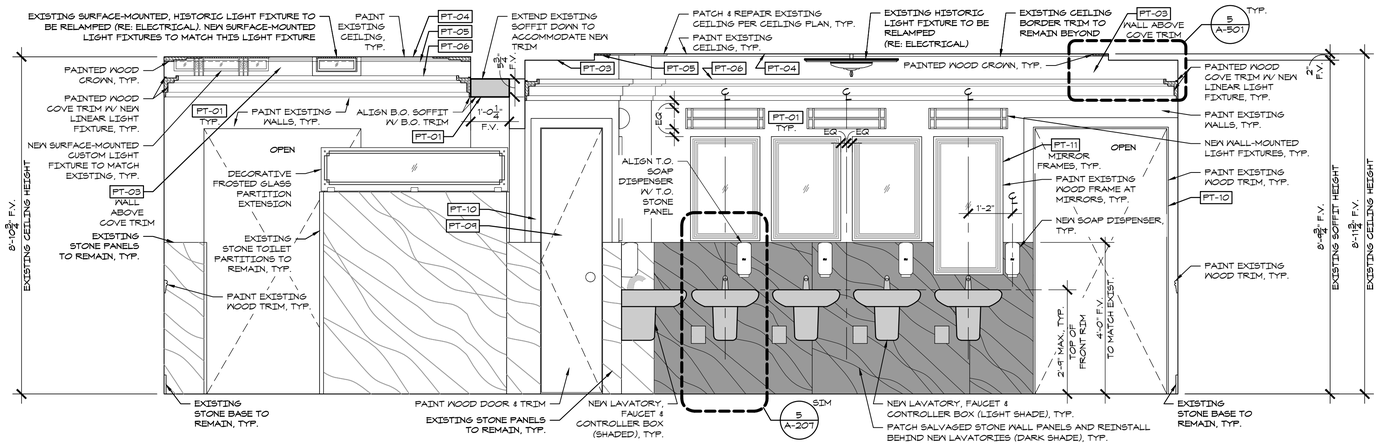


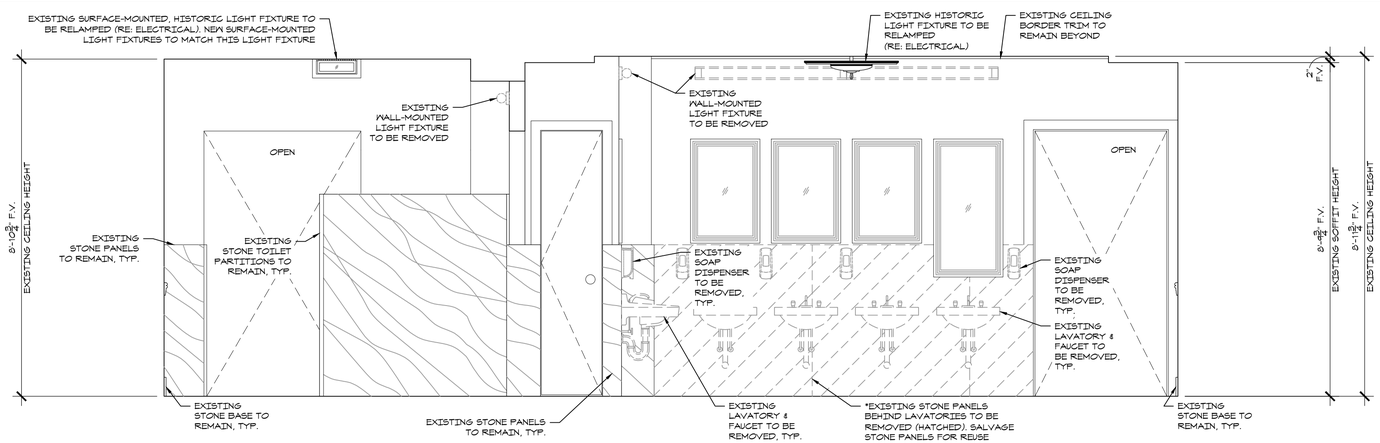
3 BALCONY LEVEL - WOMEN'S RESTROOM - WEST NEW INTERIOR ELEVATION

1/2"=1'-0"



2 BALCONY LEVEL - WOMEN'S RESTROOM - WEST NEW INTERIOR ELEVATION

1/2"=1'-0"



1 BALCONY LEVEL - WOMEN'S RESTROOM - WEST DEMO INTERIOR ELEVATION

1/2"=1'-0"

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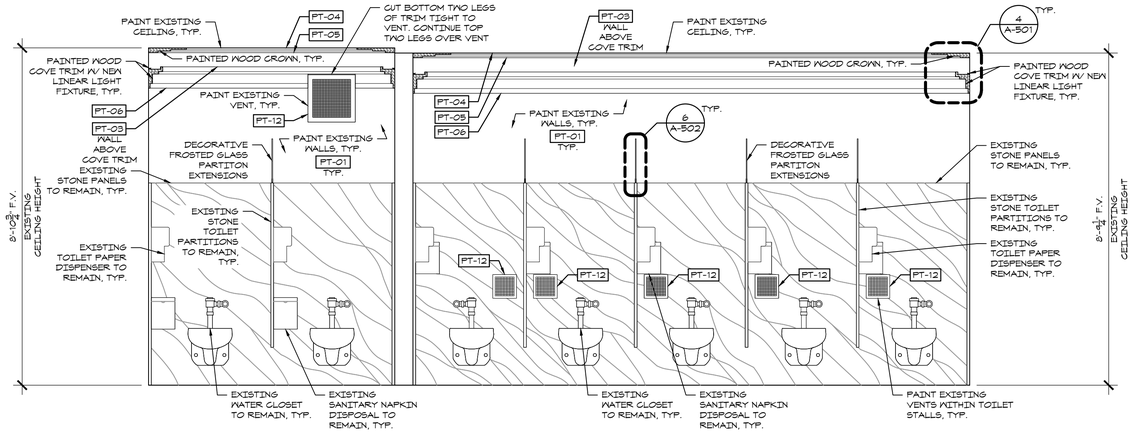
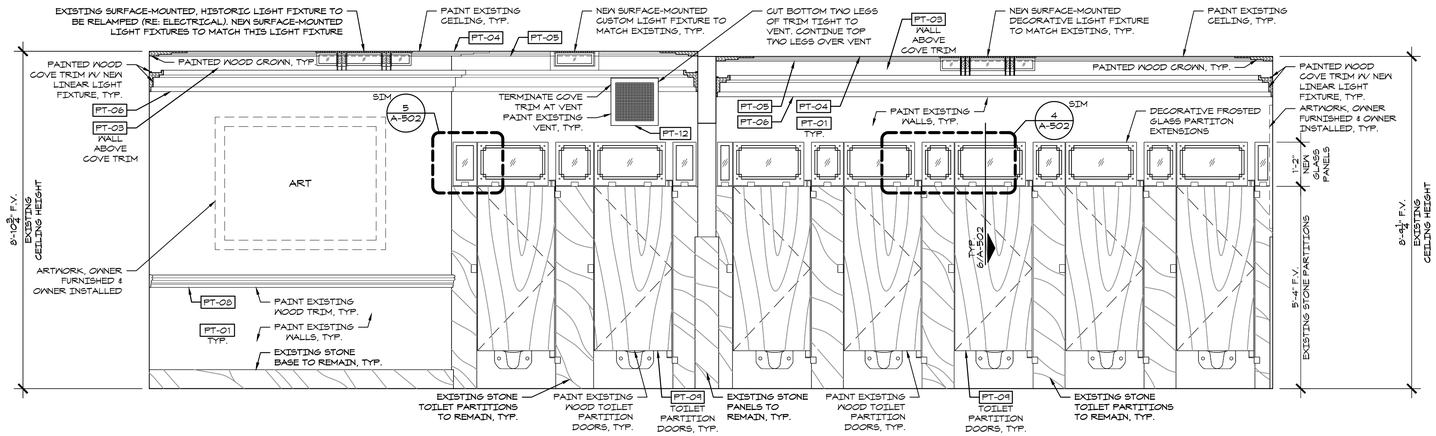


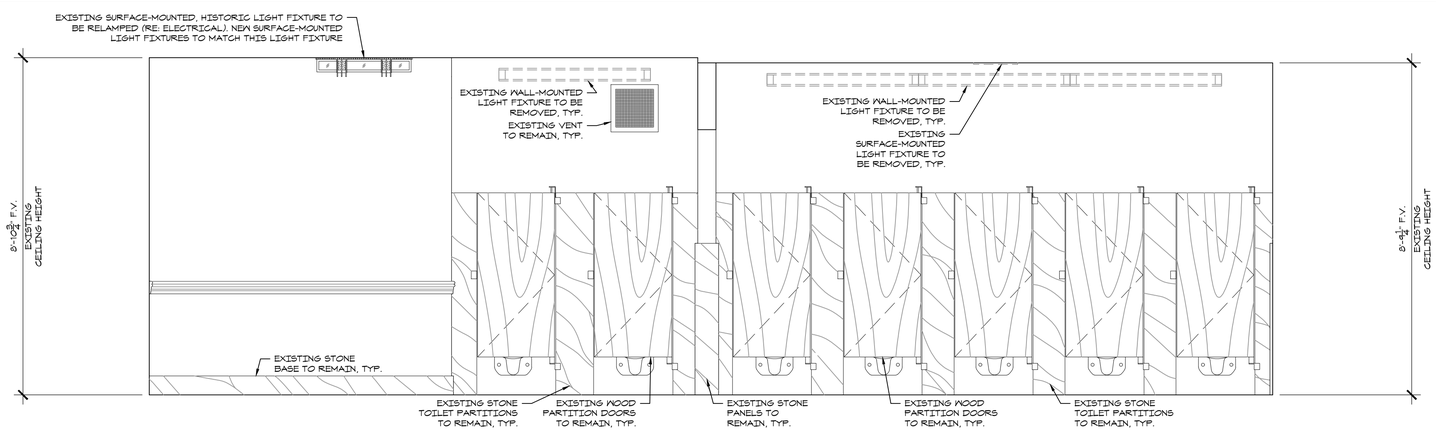
3 BALCONY LEVEL - WOMEN'S RESTROOM - SOUTH NEW INTERIOR ELEVATION

1/2"=1'-0"



2 BALCONY LEVEL - WOMEN'S RESTROOM - SOUTH NEW INTERIOR ELEVATION

1/2"=1'-0"



1 BALCONY LEVEL - WOMEN'S RESTROOM - SOUTH DEMO INTERIOR ELEVATION

1/2"=1'-0"

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DRAWN BY	DK
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REVISED DATE	DESCRIPTION

SHEET TITLE & NUMBER

INTERIOR ELEVATIONS

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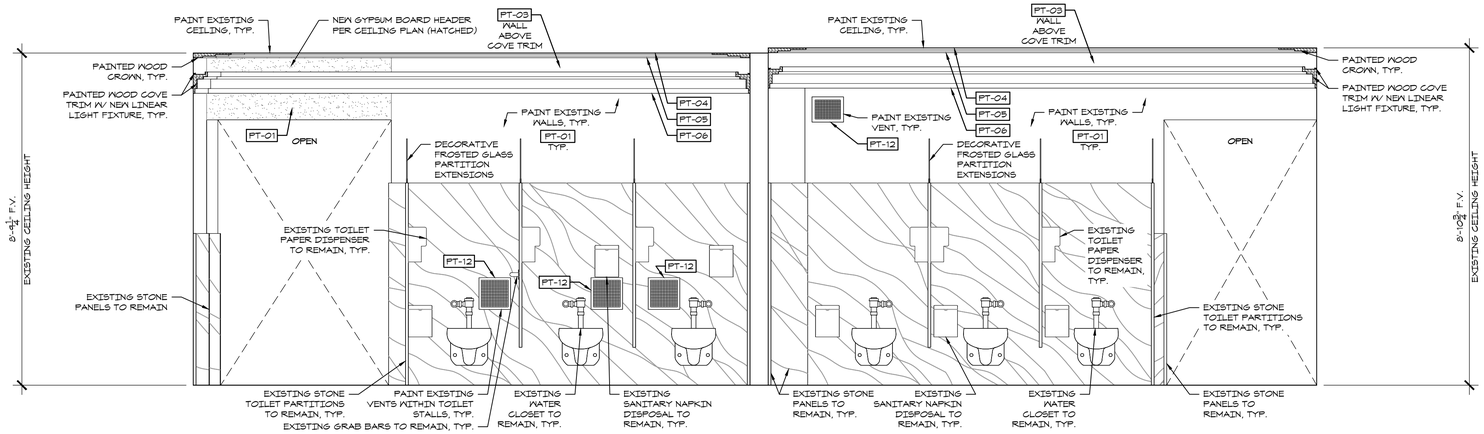
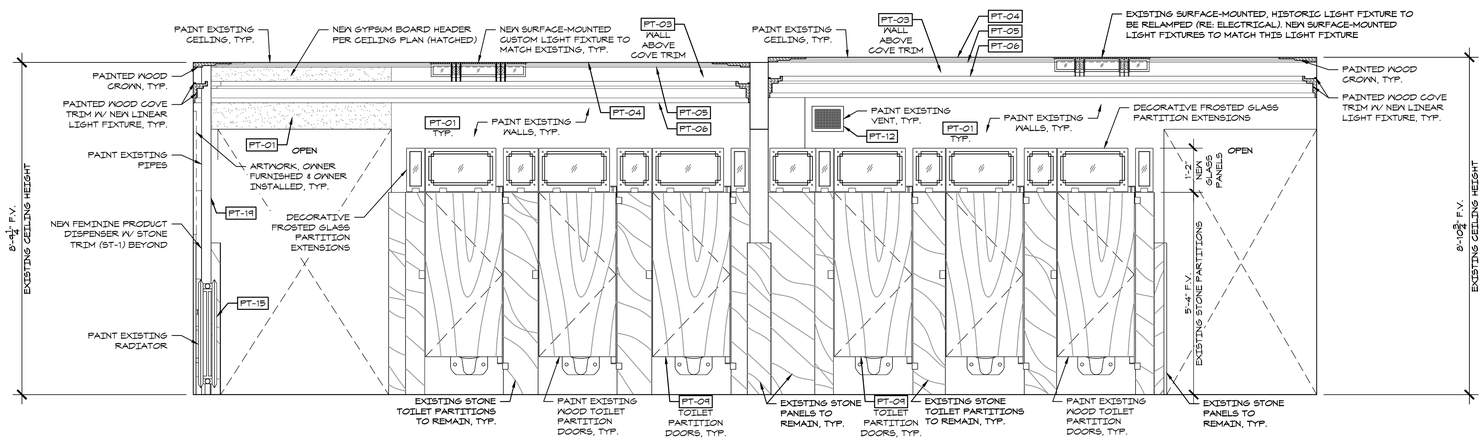


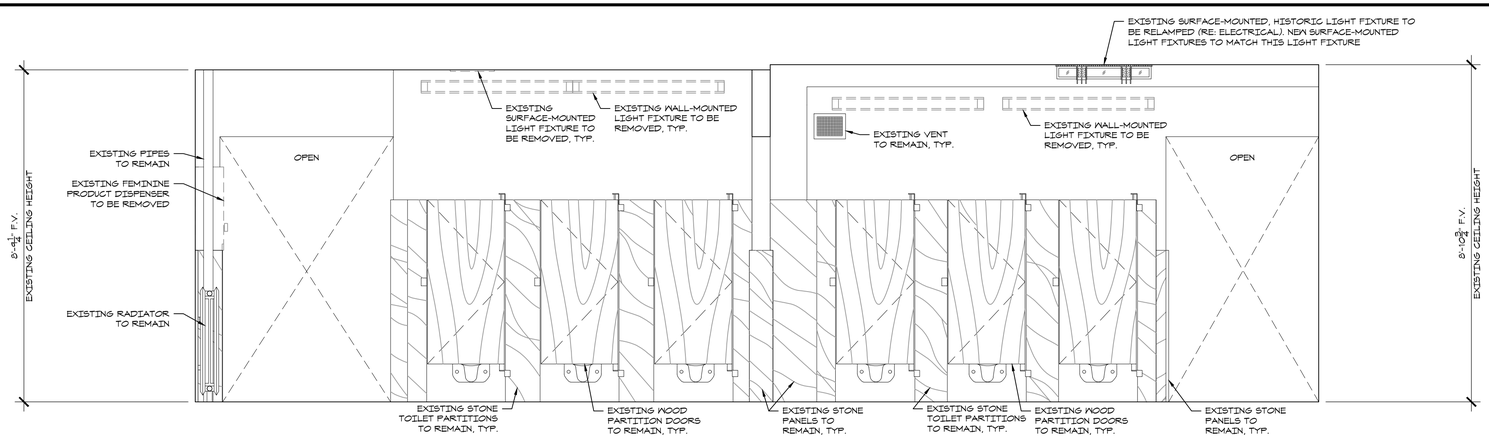
3 BALCONY LEVEL - WOMEN'S RESTROOM - NORTH NEW INTERIOR ELEVATION

1/2"=1'-0"



2 BALCONY LEVEL - WOMEN'S RESTROOM - NORTH NEW INTERIOR ELEVATION

1/2"=1'-0"



1 BALCONY LEVEL - WOMEN'S RESTROOM - NORTH DEMO INTERIOR ELEVATION

1/2"=1'-0"

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KANSAS CITY CONVENTION CENTER

MUSIC HALL AND LITTLE THEATRE RESTROOM UPGRADES PROJECT

301 W. 13th STREET, KANSAS CITY, MO 64105

FOR CONSTRUCTION

PROJECT NO.	1623.7
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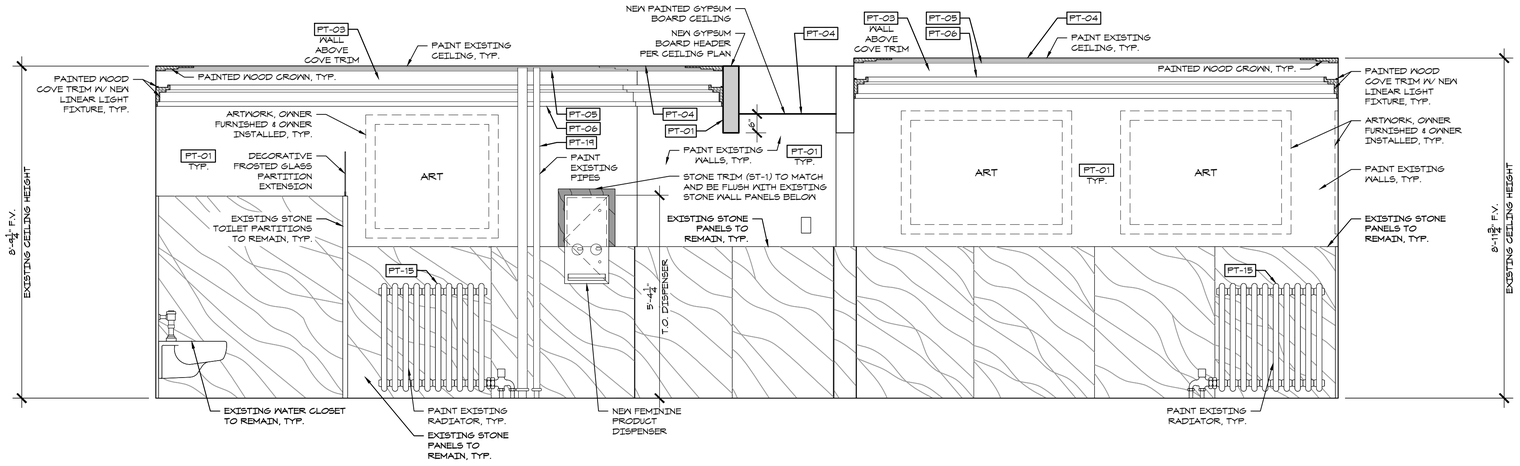
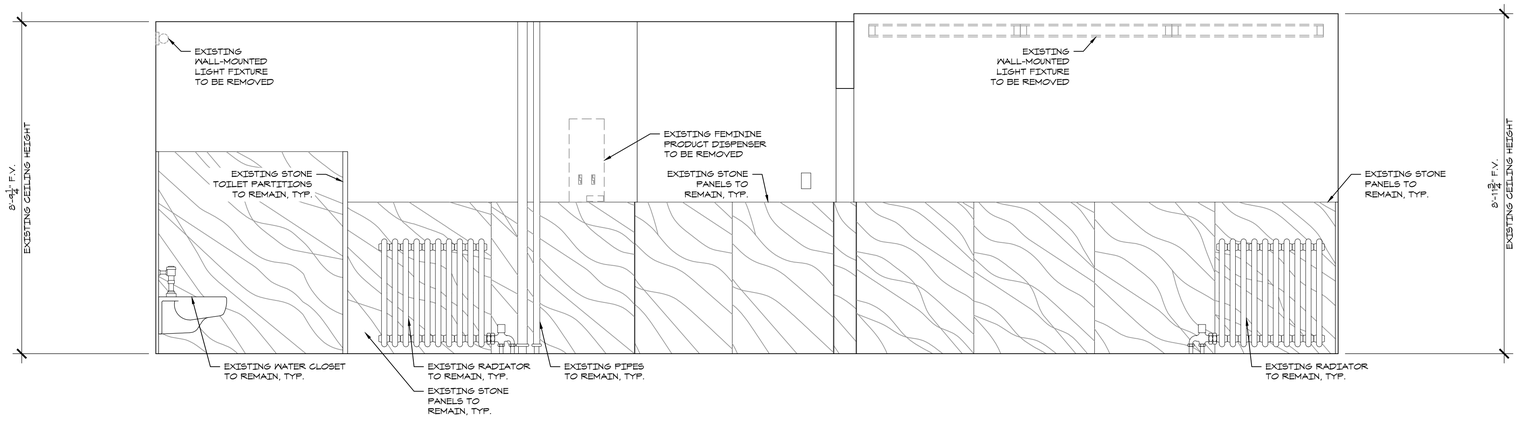


2 BALCONY LEVEL - WOMEN'S RESTROOM - WEST NEW INTERIOR ELEVATION

1/2"=1'-0"



1 BALCONY LEVEL - WOMEN'S RESTROOM - WEST DEMO INTERIOR ELEVATION

1/2"=1'-0"

STATE OF MISSOURI
ERIC JAY PIPER
NUMBER A-7305
REGISTERED ARCHITECT

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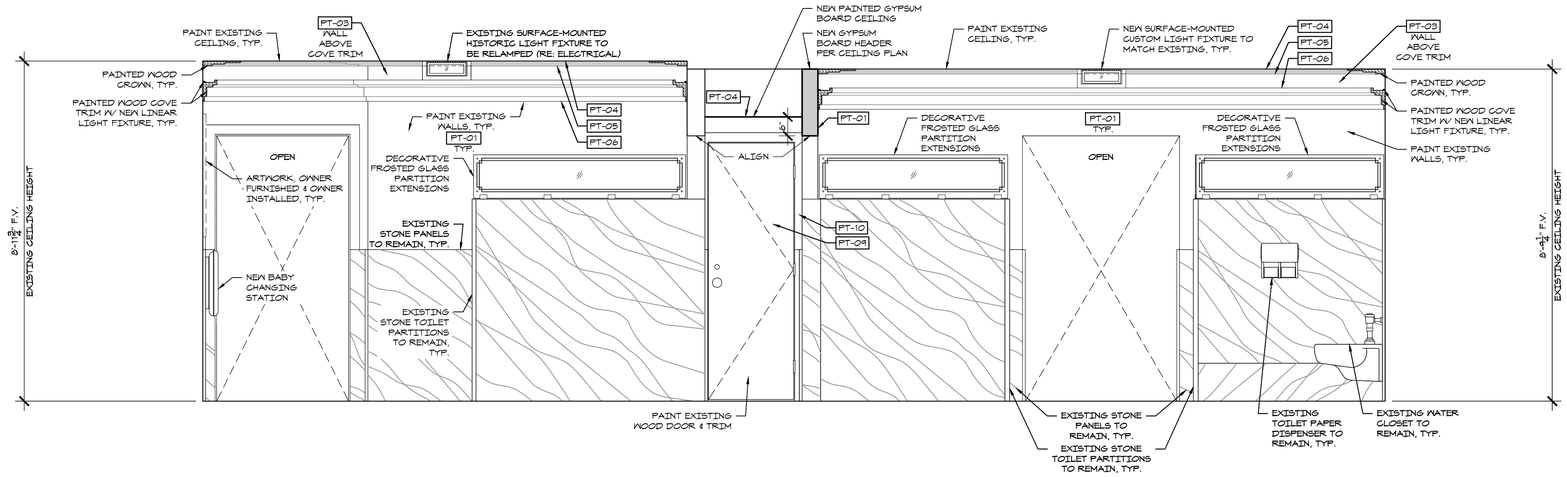
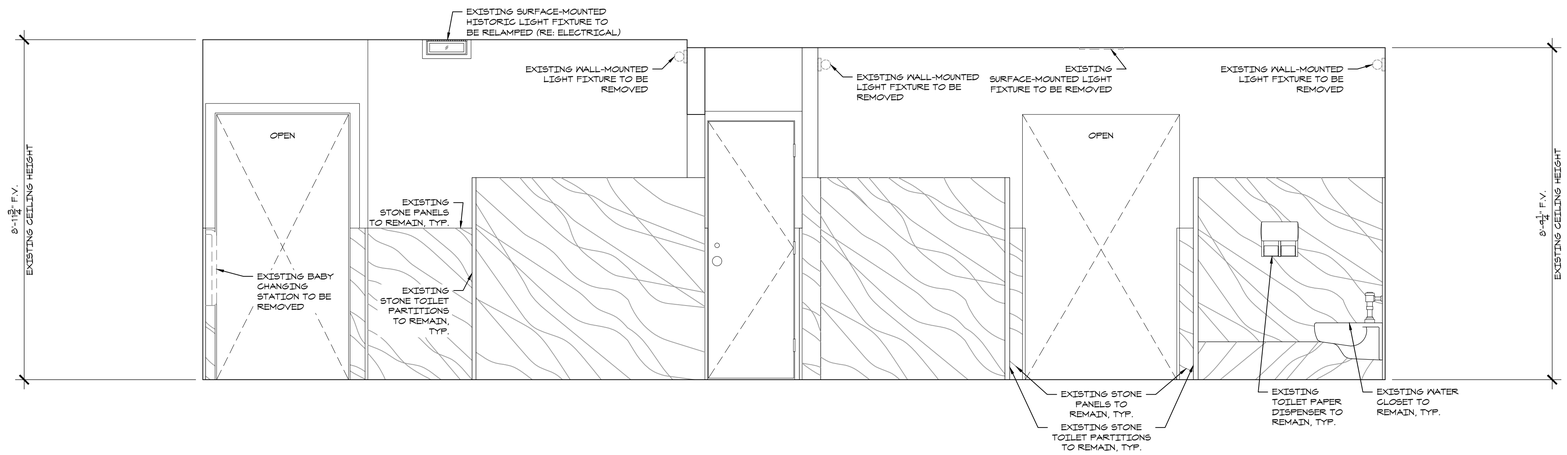


2 BALCONY LEVEL - WOMEN'S RESTROOM - EAST NEW INTERIOR ELEVATION

1/2"=1'-0"



1 BALCONY LEVEL - WOMEN'S RESTROOM - EAST DEMO INTERIOR ELEVATION

1/2"=1'-0"

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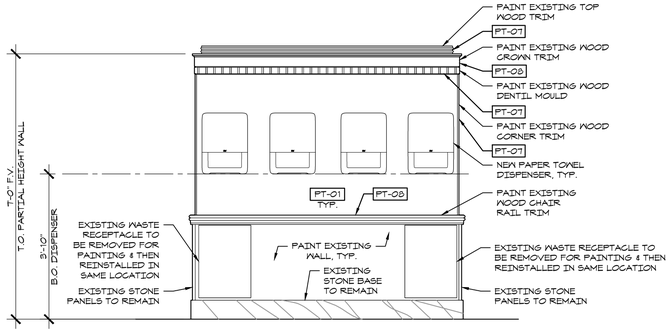
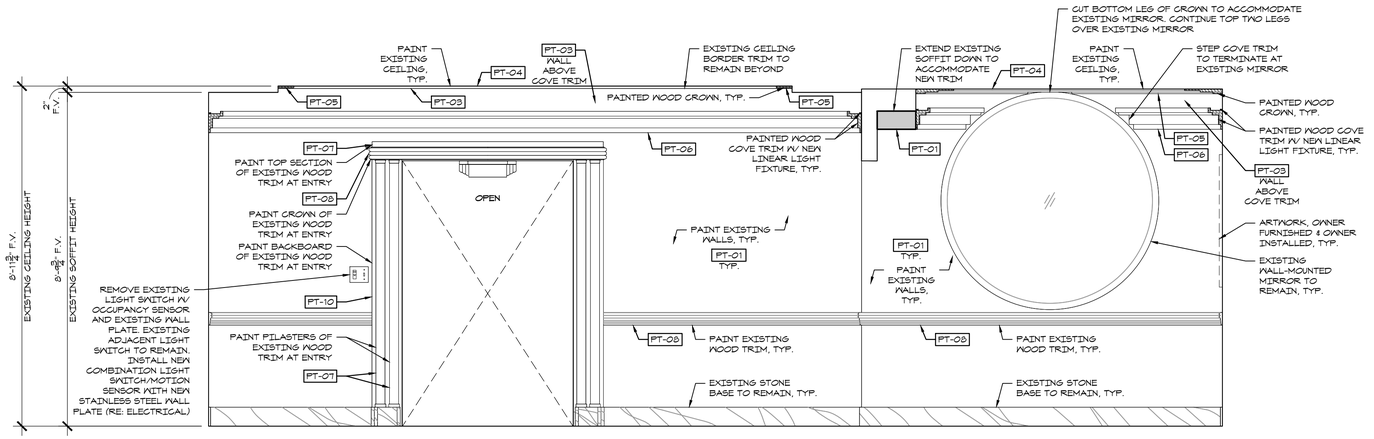


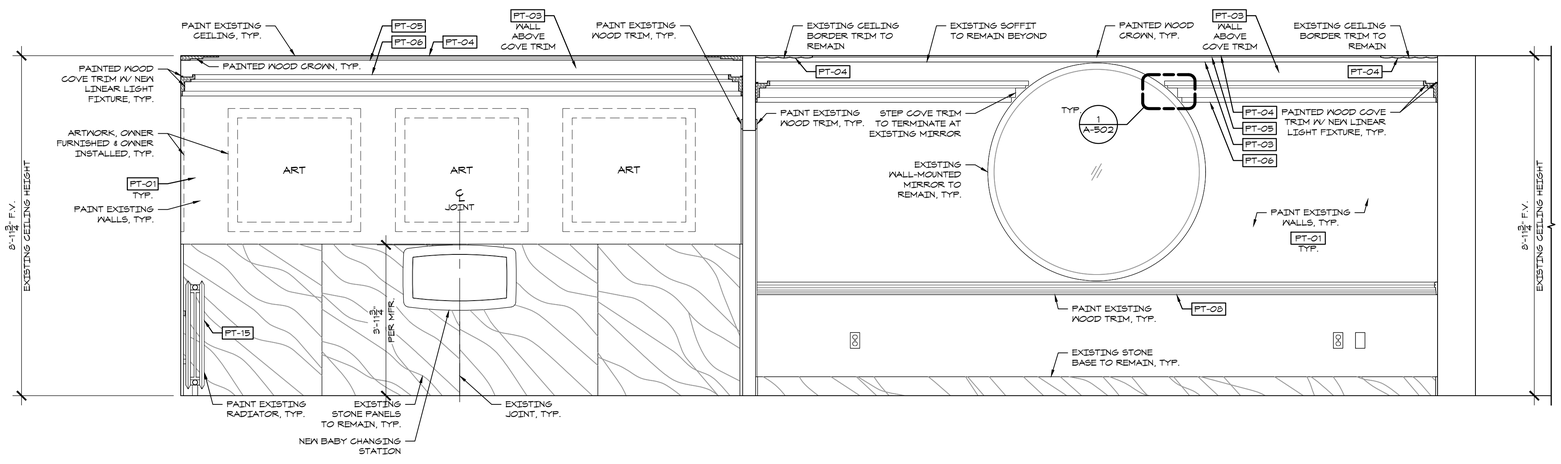
3 BALCONY LEVEL - WOMEN'S RESTROOM
EAST NEW INTERIOR ELEVATION @ PARTIAL HEIGHT WALL

1/2"=1'-0"



2 BALCONY LEVEL - WOMEN'S RESTROOM - EAST NEW INTERIOR ELEVATION

1/2"=1'-0"



1 BALCONY LEVEL - WOMEN'S RESTROOM - NORTH NEW INTERIOR ELEVATION

1/2"=1'-0"

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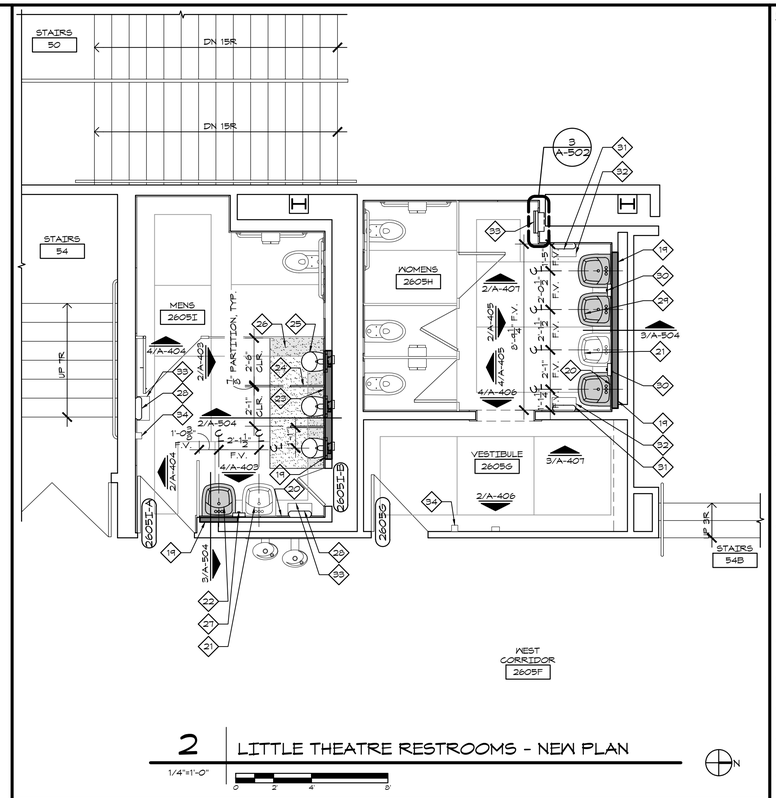
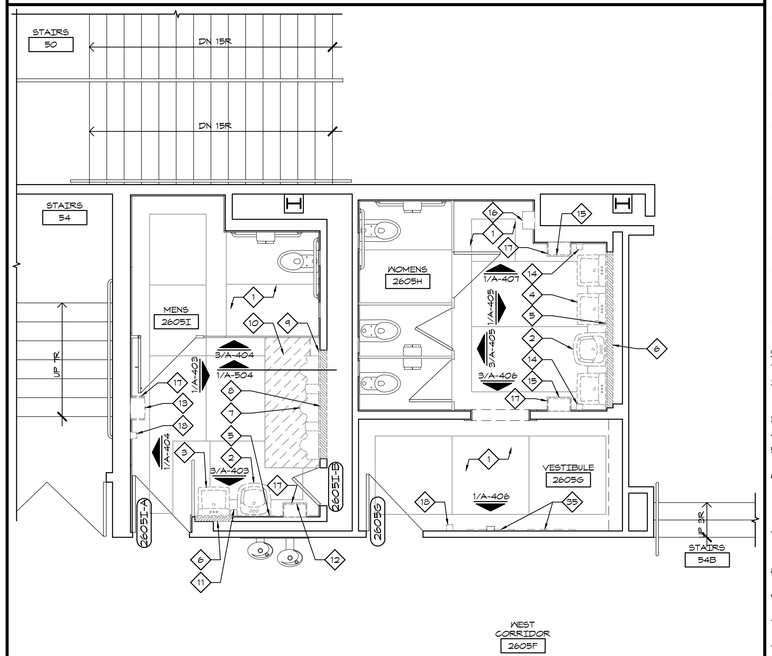


2 LITTLE THEATRE RESTROOMS - NEW PLAN

1/4"=1'-0"



1 LITTLE THEATRE RESTROOMS - DEMO PLAN

1/4"=1'-0"

Key Notes:

1. Existing terrazzo flooring to remain, typical
2. Remove existing lavatory & faucet and salvage for reuse
3. Remove (1) existing lavatory & faucet in Men's Restroom
4. Remove (3) existing lavatories & faucets in Women's Restroom
5. Remove existing stone wall panels behind existing lavatories. Salvage stone panels for reuse
6. Remove section of existing plaster & hollow clay tile wall to accommodate installation of new carriers for lavatories
7. Remove all existing floor-length urinals
8. Remove section of existing plaster & hollow clay tile wall to accommodate installation of carriers for new urinals
9. Remove existing stone wall panels behind existing urinals. Salvage stone panels to be used for patching of existing stone panels to be reinstalled
10. Remove existing floor tile (approximate area shown hatched)
11. Remove (1) existing soap dispenser in Men's Restroom
12. Remove existing paper towel dispenser in Men's Restroom
13. Remove existing paper towel dispenser in Men's Restroom and salvage for reuse
14. Remove (2) existing soap dispensers in Women's Restroom
15. Remove existing paper towel dispenser in Women's Restroom
16. Remove existing feminine product dispenser in Women's Restroom
17. Remove existing waste receptacle and salvage for reuse
18. Remove existing hand sanitizer dispenser and salvage for reuse
19. Provide new metal studs and header per Structural to support hollow clay tile to remain. After installation of carriers, infill existing wall behind new lavatories and urinals w/ 1/2" cement board over the metal studs and install stone veneer ties to attach stone wall panels. Provide 1" minimum setting space to allow stone wall panels to be reinstalled flush w/ adjacent stone wall panels
20. Patch existing stone wall panels that were removed where holes for existing piping, carrier and other penetrations were located. Prep existing panel to accommodate new lavatory carrier and piping as required. Reinstall existing stone wall panel behind lavatories (RE: G-002 and Specifications section 012300 - Alternates for Alternate No. 1 description)
21. Reinstall salvaged lavatory & faucet in same location after new stone wall panel has been installed
22. Install (1) new lavatory and faucet (shaded) in Men's Restroom in same location (at different height) as existing lavatory that was removed (RE: Plumbing Drawings)
23. Install new stone wall panels to match existing color and finish behind urinals
24. Install new stone partitions to match existing color and finish between urinals
25. Install (3) new urinals. Center new urinal between new stone partitions (RE: Plumbing Drawings)
26. Install new terrazzo flooring (approximate area hatched). Match terrazzo color and aggregate of existing floor. Provide new border to match and align w/ existing (shaded & hatched)
27. Install (1) new soap dispenser per schedule (B) in Men's Restroom centered between lavatories
28. Install (2) new paper towel dispensers per schedule (C) in same location as removed paper towel dispenser (at different height) in Men's Restroom
29. Install (3) new lavatories and faucets (shaded) in Women's Restroom in same location (at different height) as existing lavatories that were removed (RE: Plumbing Drawings)
30. Install (2) new soap dispensers per schedule (B) in Women's Restroom
31. Install (2) new paper towel dispensers per schedule (C) in same location as removed paper towel dispenser (at different height) in Women's Restroom
32. Reinstall salvaged waste receptacle in same location (at different height) below paper towel dispenser after stone wall panels are refinished & reinstalled
33. Install new semi-recessed feminine product dispenser per schedule (D) w/ new stone trim panels to match existing stone wall panels behind in Women's Restroom centered on stone panel
34. Patch plaster wall where hand sanitizer dispenser was removed. Lower salvaged hand sanitizer dispenser in Men's Restroom to align bottom of dispenser w/ top of stone wall panel. Lower salvaged hand sanitizer dispenser in Women's Restroom to new lower height of 48" A.F.F.
35. Remove existing, framed photographs, salvage and return to Owner.

General Notes:

1. Field verify all dimensions & existing conditions.
2. All dimensions of new structure taken from face of framing unless noted otherwise. Dimensions to existing structure taken from finish face of material unless noted otherwise.
3. All new details to match existing unless noted otherwise.
4. All new infill framing to match existing depth unless noted otherwise.
5. All existing accessories installed on stone wall panels to be removed and salvaged for reuse unless noted otherwise.
6. All existing stone base and stone wall panels outside of existing toilet partitions to remain are to be patched where wall-mounted accessories were removed, cleaned, restored & refinished to like new condition in place (refer to G-002 and Specifications section 012300 - Alternates for Alternate No. 2 description).
7. All existing stone toilet partitions and stone wall panels within existing toilet partitions to remain are to be cleaned, restored and refinished to like new condition in place.
8. All terrazzo flooring to remain is to be cleaned, restored & refinished to like new condition.
9. All existing door & toilet partition hardware to remain. Clean, refurbish and refinish.
10. All existing toilet partition doors are to be repainted. RE: Interior Elevations and Finish Materials Legend.
11. Patch plaster wall surfaces where all wall-mounted accessories were removed. Prep wall surface for painting (RE: Interior Elevations).
12. Refer to sheet A-601 for Finish Schedule, Restroom Accessory Schedule and Door Schedule.
13. Refer to sheet G-002 for Add Alternate Summary.

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ENLARGED FLOOR PLANS

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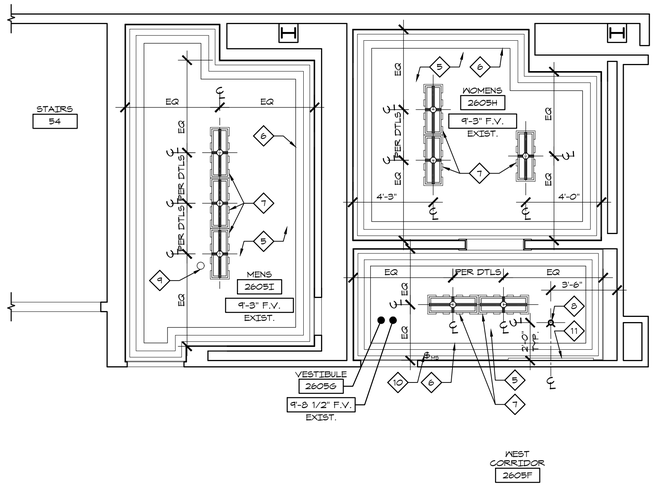


2 LITTLE THEATRE RESTROOMS - NEW REFLECTED CEILING PLAN

1/4"=1'-0"

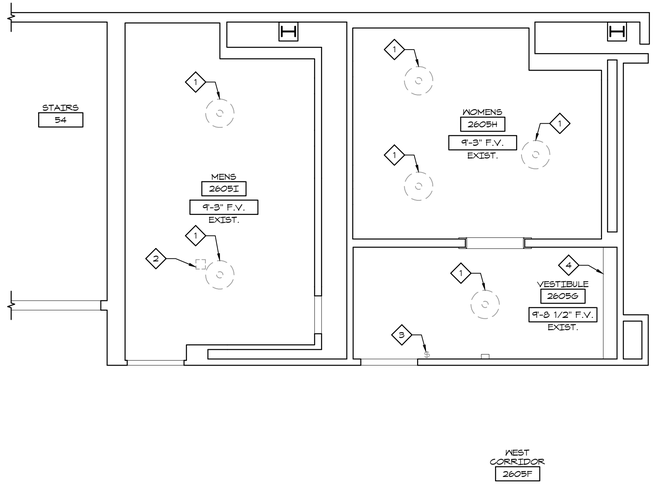
0 2' 4' 8'

Key Notes:

1. Remove existing pendant light fixture
2. Remove existing ceiling-mounted occupancy sensor
3. Remove existing light switch
4. Existing soffit to remain
5. Patch & paint existing ceiling, typical
6. New painted wood crown, typical
7. New custom pendant light fixture (RE: Details)
8. New 3" round wall wash light fixture for artwork, typical (RE: Electrical)
9. Install new ceiling-mounted occupancy sensor (RE: Electrical). Field verify location of existing sensor to be removed and install new sensor in same location
10. Install new combination light switch/motion sensor device where existing wall switch was removed (RE: Electrical)
11. Artwork, Owner furnished/Owner installed

General Notes:

1. Field verify all dimensions & existing conditions.
2. All dimensions taken from finish face of material unless noted otherwise.
3. Lighting fixtures to be selected by Architect and/or Lighting Consultant and installed by Contractor.
4. Locate light fixtures where indicated on the drawings.
5. Center ceiling mounted fixtures in room volume unless noted otherwise.
6. Contractor to renovate existing plaster ceilings to reattach and pull plaster tight to existing metal lath and supports.
7. All new trim indicated as painted wood trim is to be constructed from MDF.



1 LITTLE THEATRE RESTROOMS - DEMO REFLECTED CEILING PLAN

1/4"=1'-0"

0 2' 4' 8'

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ENLARGED REFLECTED CEILING PLANS

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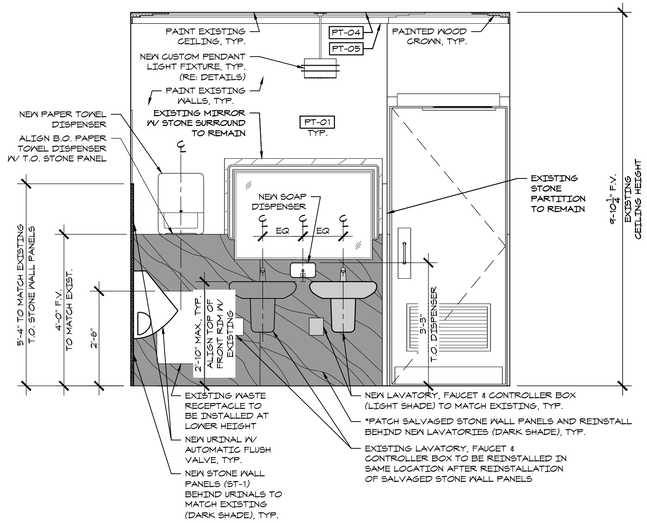
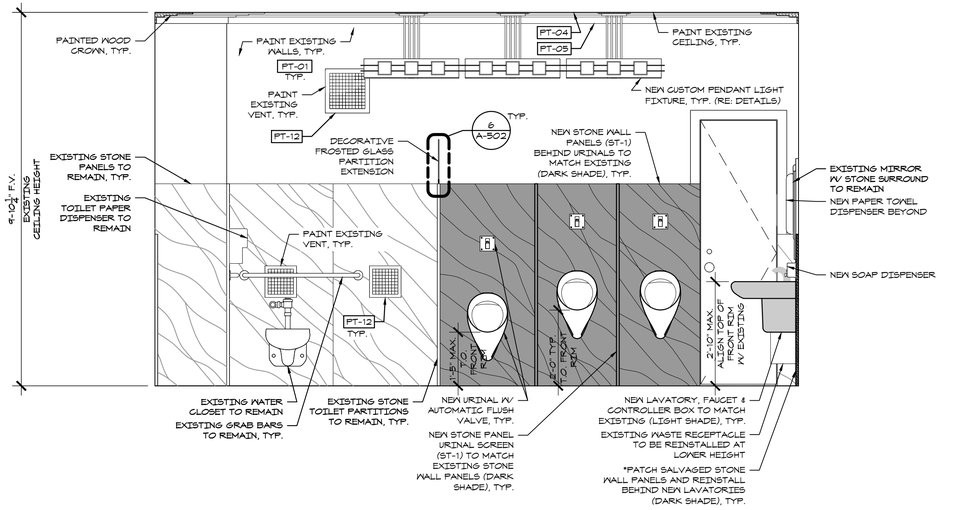
* NOTE:
REFER TO SHEET G-002 AND SPECIFICATIONS SECTION 012300 - ALTERNATES FOR ALTERNATE NO. 1 DESCRIPTION.

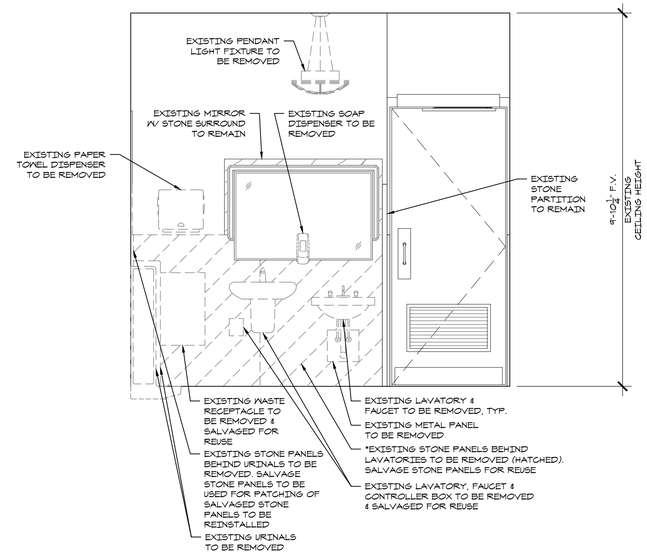


4 LITTLE THEATRE - MEN'S RESTROOM - EAST NEW INTERIOR ELEVATION
1/2"=1'-0"

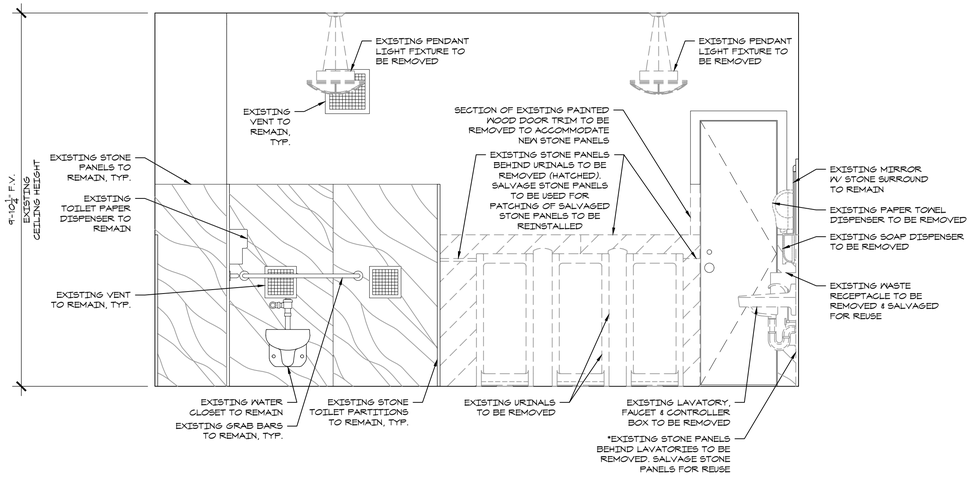
* NOTE:
REFER TO SHEET G-002 AND SPECIFICATIONS SECTION 012300 - ALTERNATES FOR ALTERNATE NO. 1 DESCRIPTION.



2 LITTLE THEATRE - MEN'S RESTROOM - NORTH NEW INTERIOR ELEVATION
1/2"=1'-0"



3 LITTLE THEATRE - MEN'S RESTROOM - EAST DEMO INTERIOR ELEVATION
1/2"=1'-0"



1 LITTLE THEATRE - MEN'S RESTROOM - NORTH DEMO INTERIOR ELEVATION
1/2"=1'-0"

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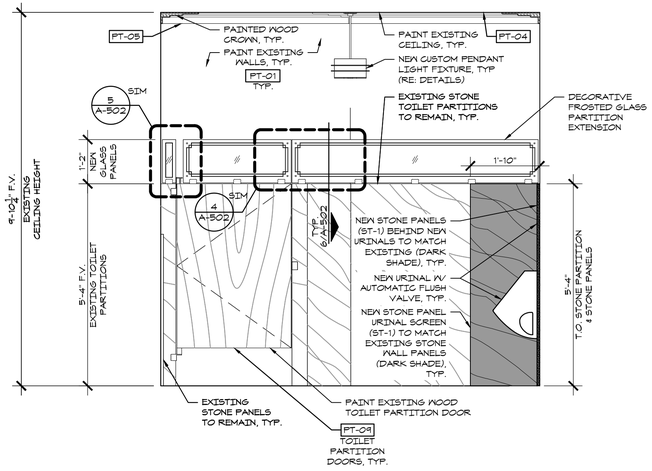
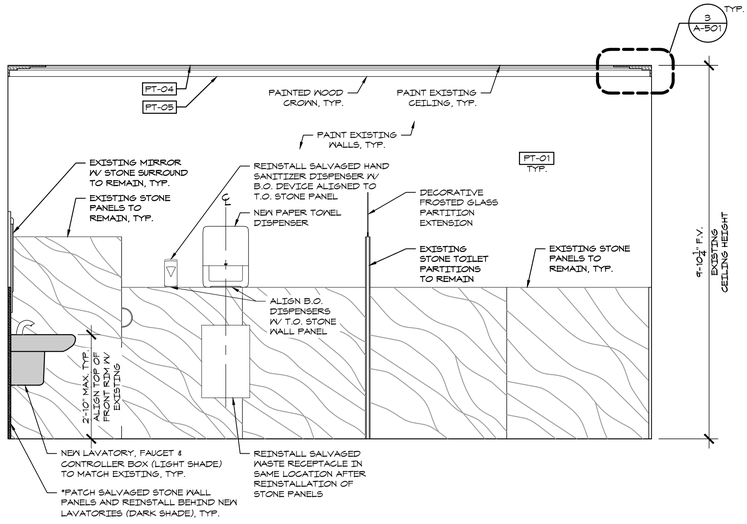


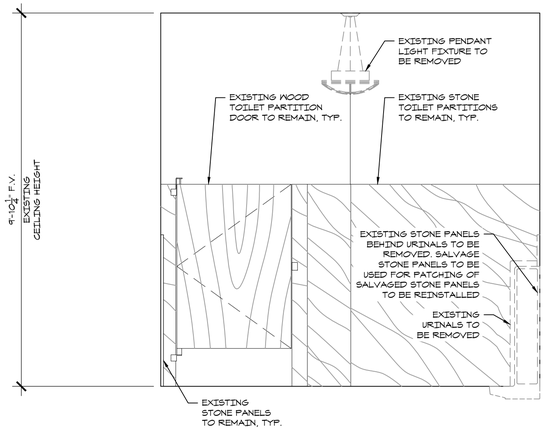
4 LITTLE THEATRE - MEN'S RESTROOM - WEST NEW INTERIOR ELEVATION

1/2"=1'-0"



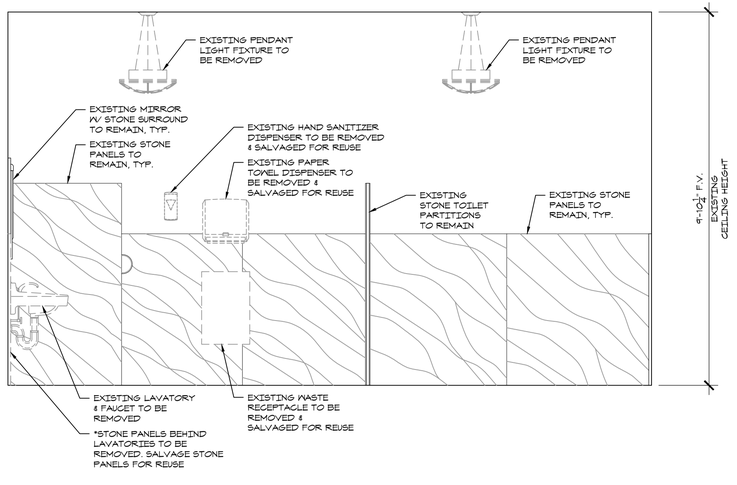
2 LITTLE THEATRE - MEN'S RESTROOM - SOUTH NEW INTERIOR ELEVATION

1/2"=1'-0"



3 LITTLE THEATRE - MEN'S RESTROOM - WEST DEMO INTERIOR ELEVATION

1/2"=1'-0"



1 LITTLE THEATRE - MEN'S RESTROOM - SOUTH DEMO INTERIOR ELEVATION

1/2"=1'-0"

PWA

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MUSIC HALL AND LITTLE THEATRE
RESTROOM UPGRADES PROJECT
301 W. 13th STREET, KANSAS CITY, MO 64105

FOR CONSTRUCTION

PROJECT NO.	1623.7
DATE	10 / 15 / 2025
DRAWN BY	DK
CHECKED BY	EP
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REVISED DATE	DESCRIPTION

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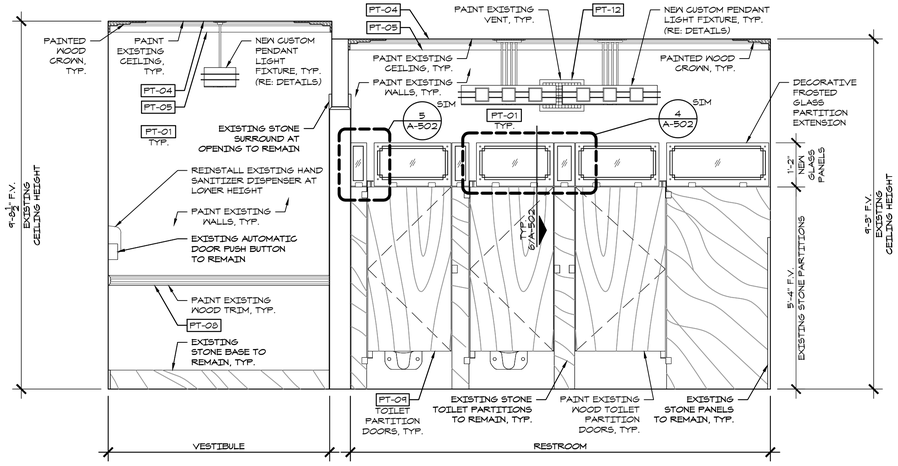
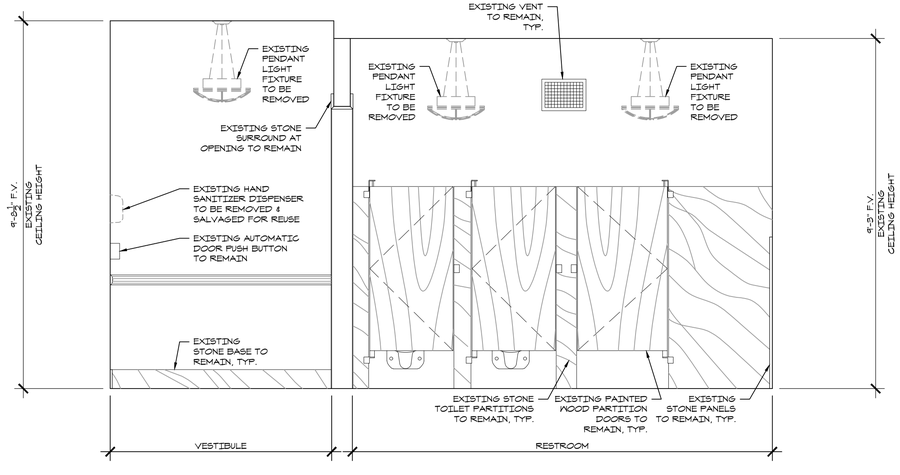
A-404

NOTE:
PAINT EXISTING VENTS WITHIN EXISTING TOILET STALLS



4 LITTLE THEATRE - WOMEN'S RESTROOM - SOUTH NEW INTERIOR ELEVATION

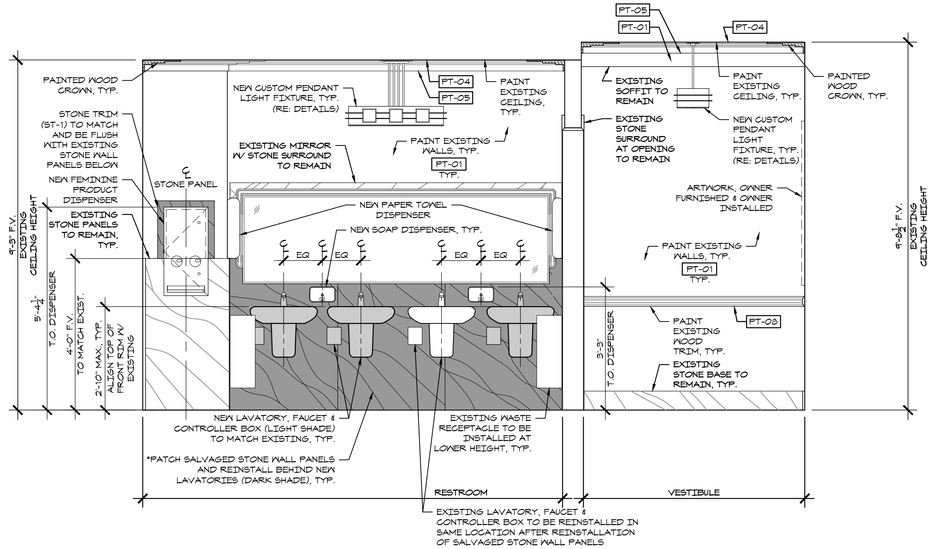
1/2"=1'-0"



3 LITTLE THEATRE - WOMEN'S RESTROOM - SOUTH DEMO INTERIOR ELEVATION

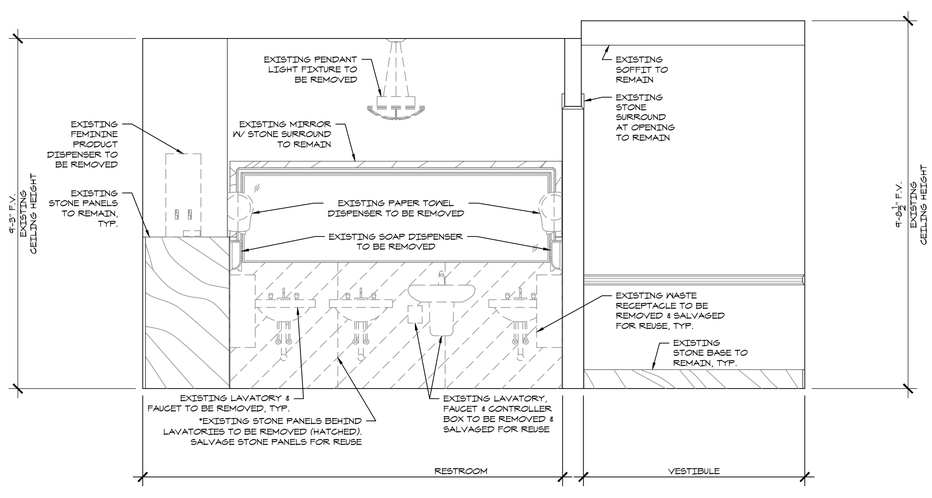
1/2"=1'-0"

* NOTE:
REFER TO SHEET G-002 AND SPECIFICATIONS SECTION 012300 - ALTERNATES FOR ALTERNATE NO. 1 DESCRIPTION.



2 LITTLE THEATRE - WOMEN'S RESTROOM - NORTH NEW INTERIOR ELEVATION

1/2"=1'-0"



1 LITTLE THEATRE - WOMEN'S RESTROOM - NORTH DEMO INTERIOR ELEVATION

1/2"=1'-0"

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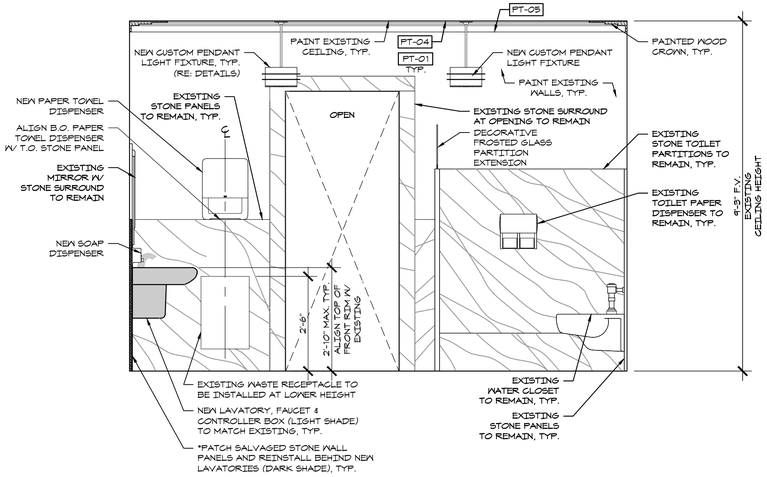
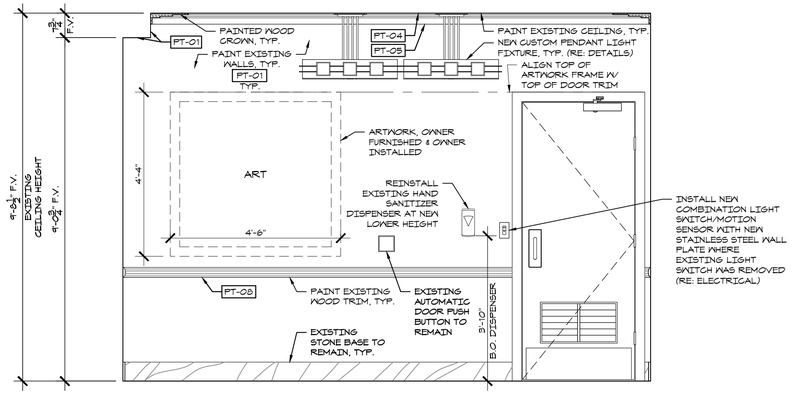


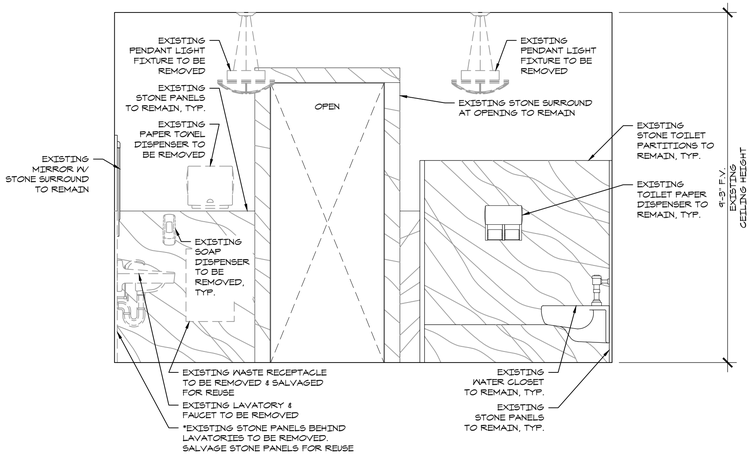
4 | LITTLE THEATRE - WOMEN'S RESTROOM - EAST NEW INTERIOR ELEVATION

1/2"=1'-0"



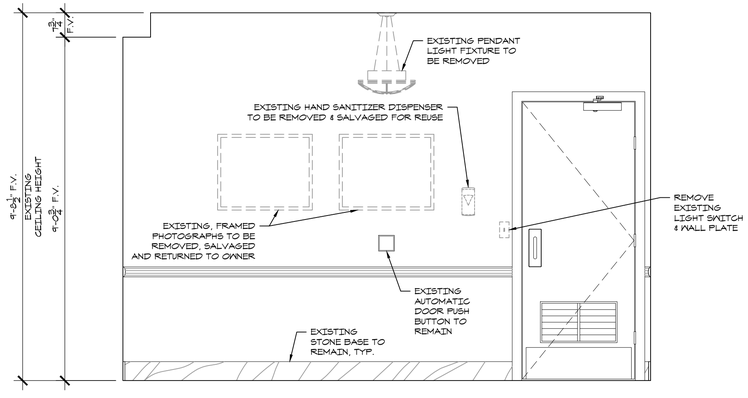
2 | LITTLE THEATRE - WOMEN'S RESTROOM
EAST NEW INTERIOR ELEVATION @ VESTIBULE

1/2"=1'-0"



3 | LITTLE THEATRE - WOMEN'S RESTROOM - EAST DEMO INTERIOR ELEVATION

1/2"=1'-0"



1 | LITTLE THEATRE - WOMEN'S RESTROOM
EAST DEMO INTERIOR ELEVATION @ VESTIBULE

1/2"=1'-0"

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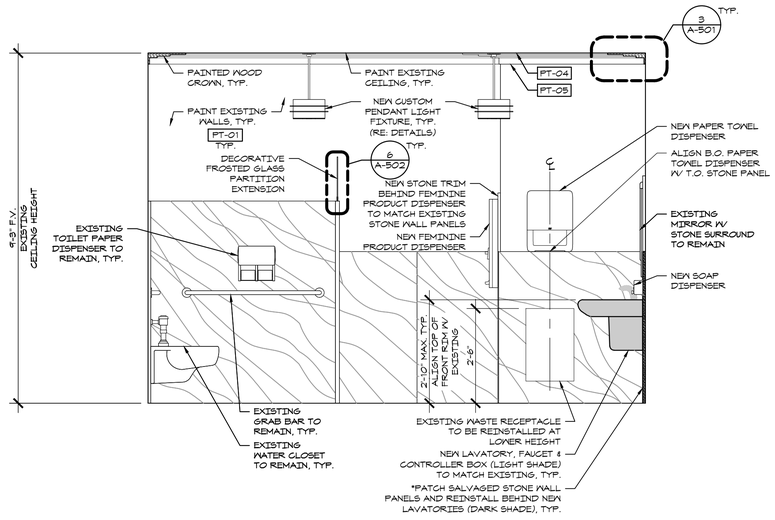
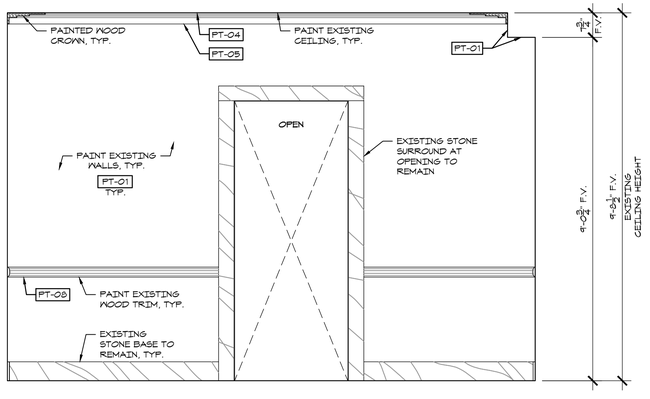
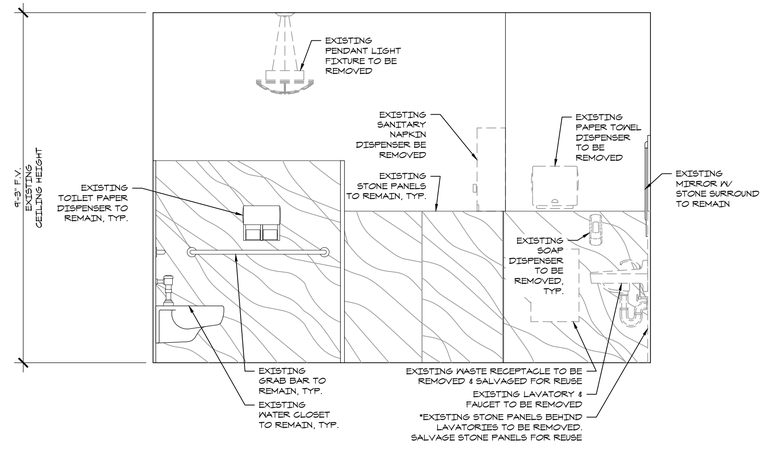


2 LITTLE THEATRE - WOMEN'S RESTROOM - WEST NEW INTERIOR ELEVATION
1/2"=1'-0"



3 LITTLE THEATRE - WOMEN'S RESTROOM WEST NEW INTERIOR ELEVATION @ VESTIBULE
1/2"=1'-0"



1 LITTLE THEATRE - WOMEN'S RESTROOM - WEST DEMO INTERIOR ELEVATION
1/2"=1'-0"

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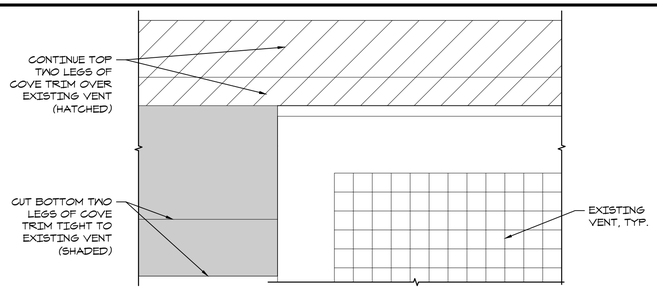
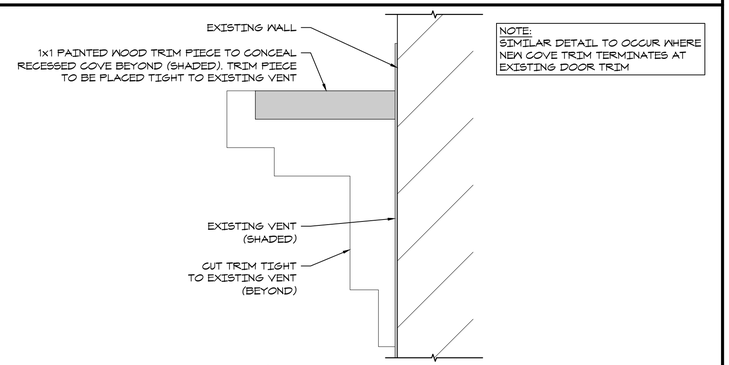
A-407



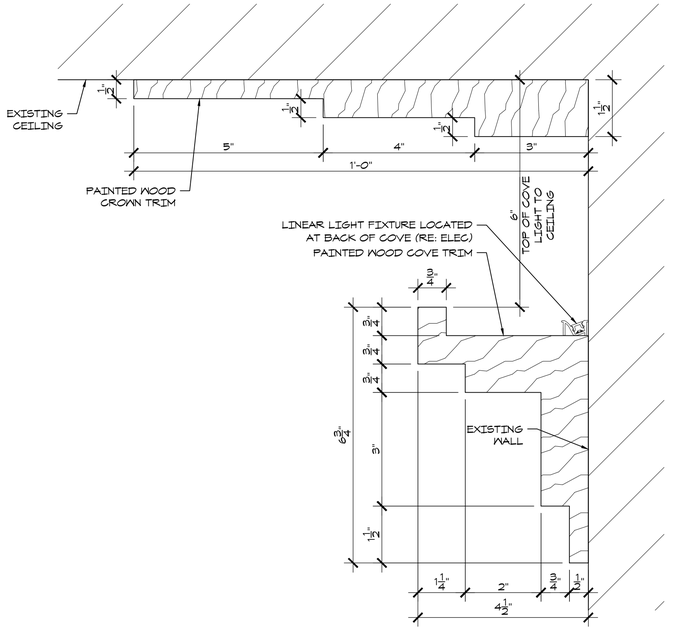
7 DETAIL OF COVE TRIM @ VENTS

6"=1'-0"



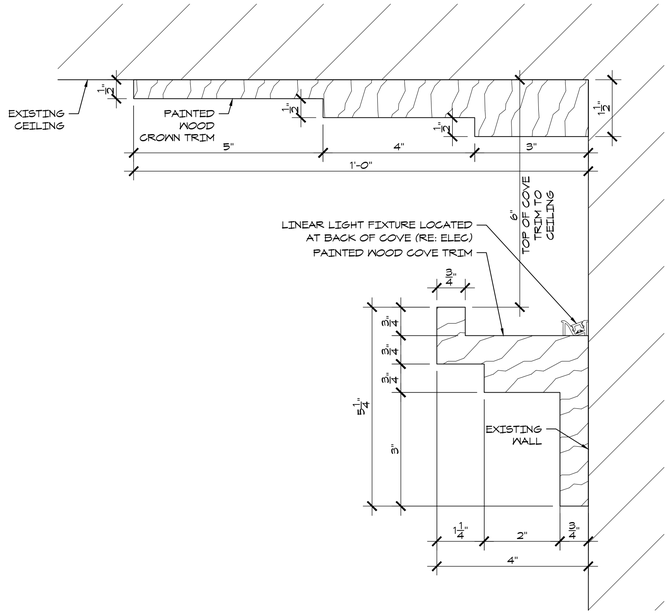
6 DETAIL OF COVE TRIM @ VENTS

6"=1'-0"



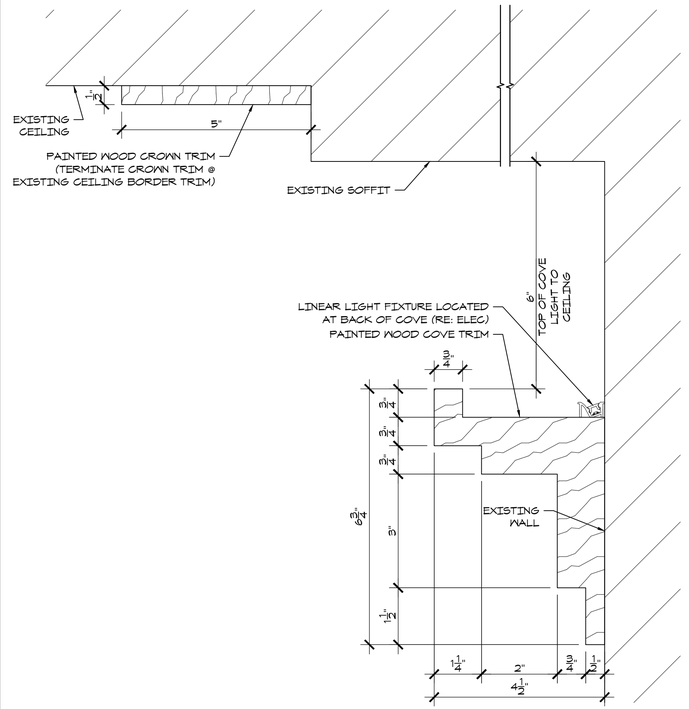
4 BALCONY LEVEL RESTROOMS
DETAIL @ NEW CROWN TRIM & COVE TRIM

6"=1'-0"



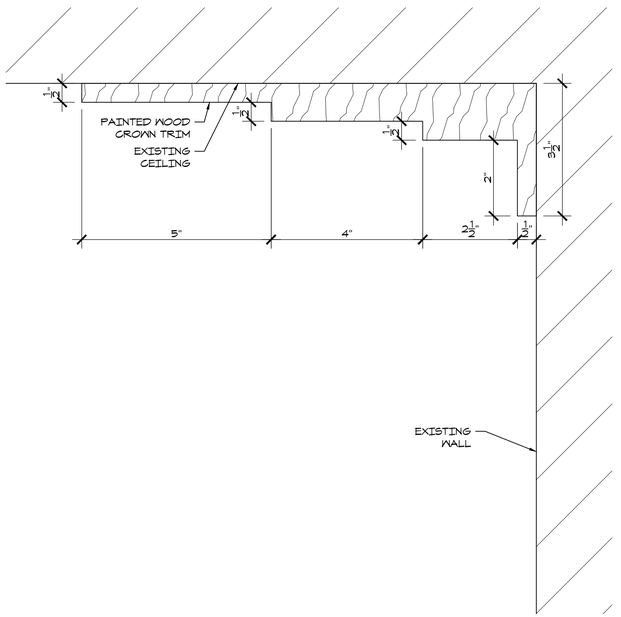
2 FIREPLACE LOBBY - WOMEN'S RESTROOM
DETAIL @ NEW CROWN TRIM & COVE TRIM

6"=1'-0"



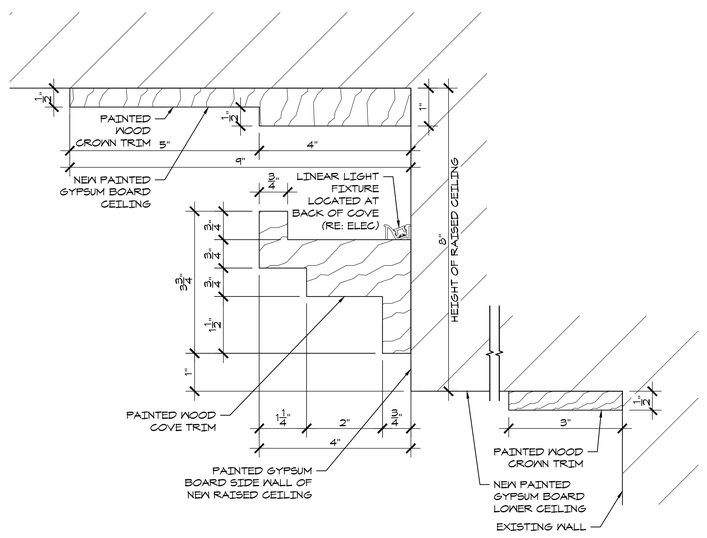
5 BALCONY LEVEL - WOMEN'S VESTIBULE
DETAIL @ NEW CROWN TRIM & COVE TRIM

6"=1'-0"



3 LITTLE THEATRE RESTROOMS
DETAIL @ NEW CROWN TRIM

6"=1'-0"



1 FIREPLACE LOBBY - MEN'S RESTROOM
DETAIL @ NEW CROWN TRIM & COVE TRIM

6"=1'-0"

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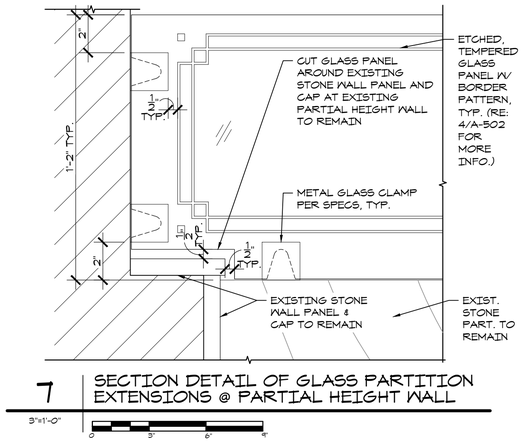
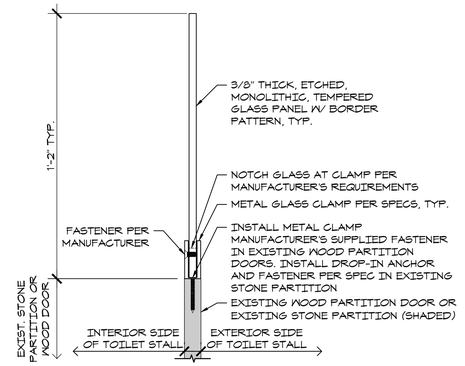


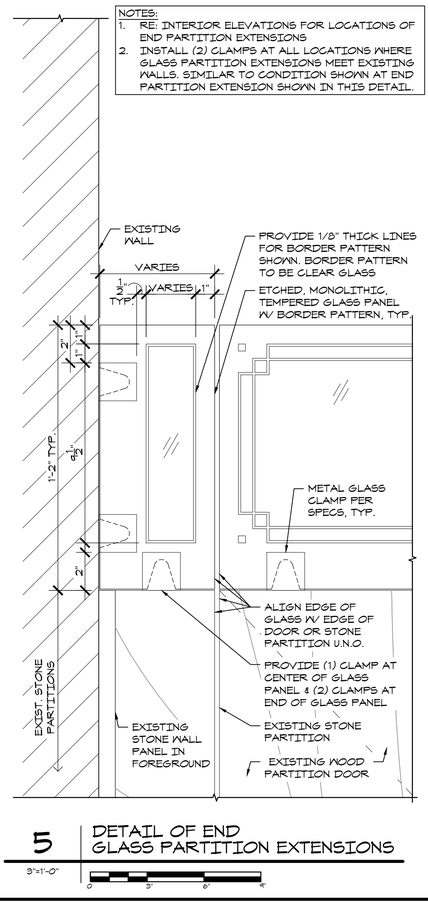
7 SECTION DETAIL OF GLASS PARTITION EXTENSIONS @ PARTIAL HEIGHT WALL

3"=1'-0"



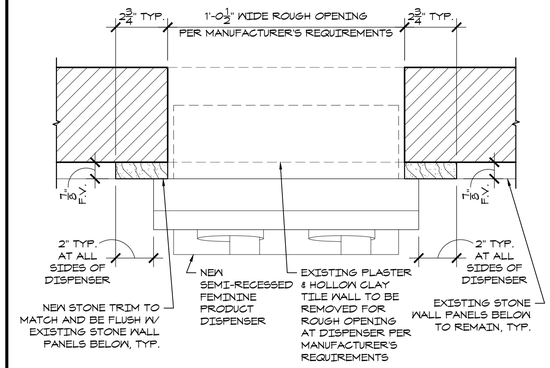
6 SECTION DETAIL OF GLASS PARTITION EXTENSIONS

3"=1'-0"



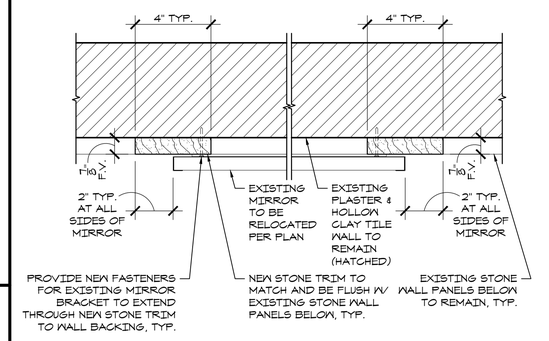
5 DETAIL OF END GLASS PARTITION EXTENSIONS

3"=1'-0"



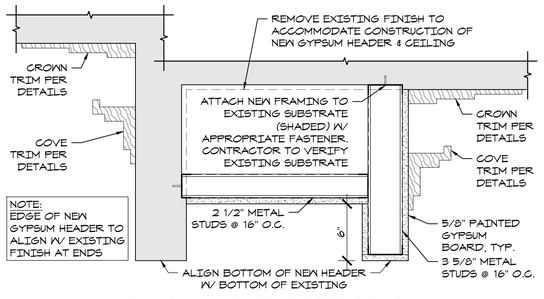
3 DETAIL OF NEW STONE TRIM BEHIND FEMININE PRODUCT DISPENSER

3"=1'-0"



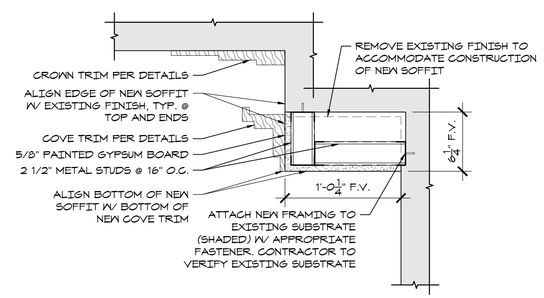
2 DETAIL OF NEW STONE TRIM BEHIND MIRRORS

3"=1'-0"



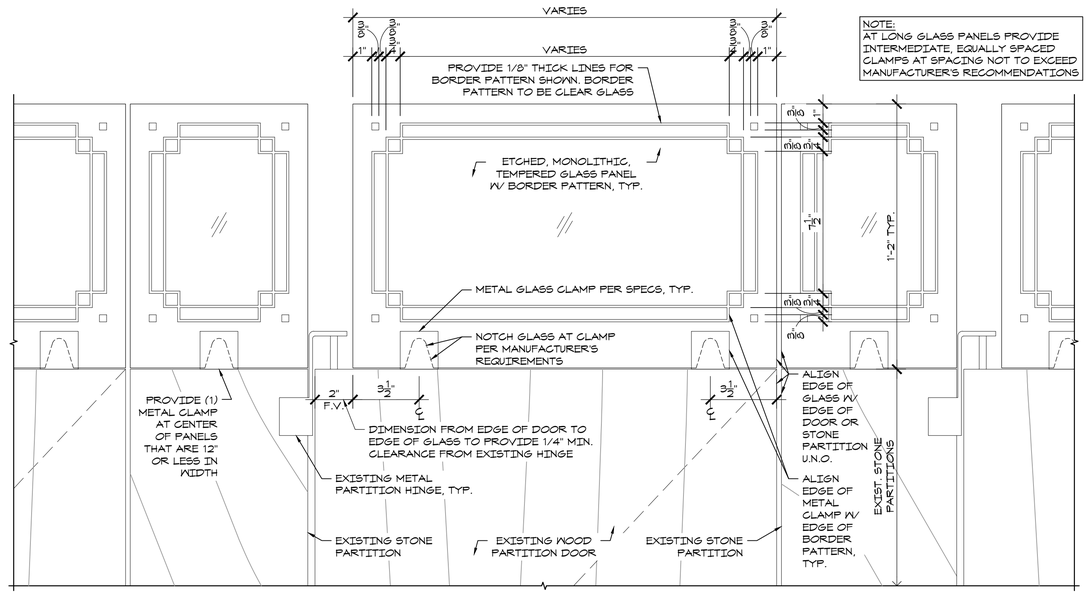
9 BALCONY LEVEL RESTROOMS DETAIL OF GYPSUM HEADER & CEILING

1 1/2"=1'-0"



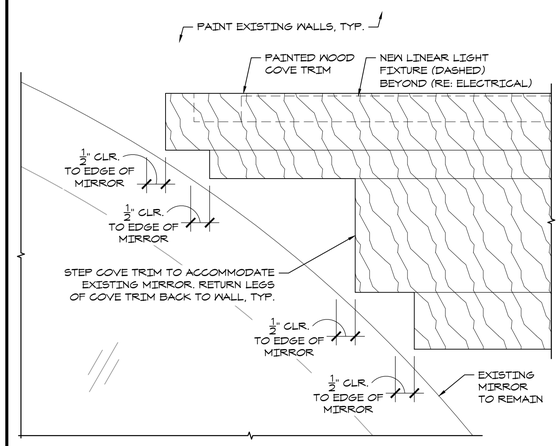
8 BALCONY LEVEL - WOMEN'S RESTROOM DETAIL OF SOFFIT EXTENSION

1 1/2"=1'-0"



4 TYP. DETAIL OF GLASS PARTITION EXTENSIONS

3"=1'-0"



1 BALCONY LEVEL - WOMEN'S RESTROOM DETAIL OF NEW COVE TRIM @ MIRRORS

6"=1'-0"

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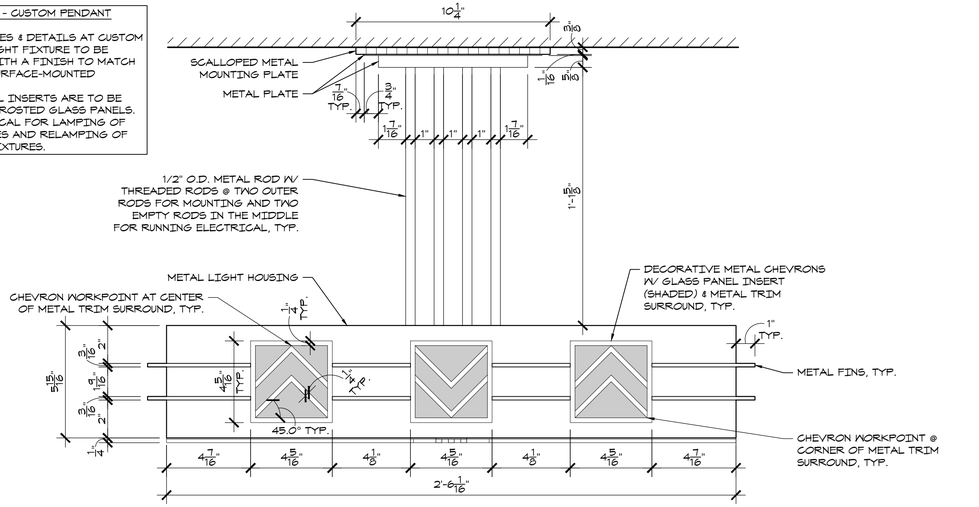
A-502

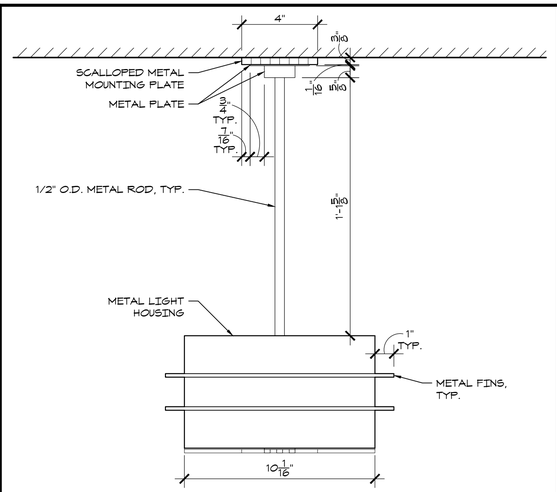
GENERAL NOTES - CUSTOM PENDANT LIGHT FIXTURE:
1. METAL FRAMES & DETAILS AT CUSTOM PENDANT LIGHT FIXTURE TO BE ALUMINUM WITH A FINISH TO MATCH EXISTING SURFACE-MOUNTED FIXTURE.
2. GLASS PANEL INSERTS ARE TO BE 1/8" THICK FROSTED GLASS PANELS.
3. RE: ELECTRICAL FOR LAMPING OF NEW FIXTURES AND RELAMPING OF EXISTING FIXTURES.



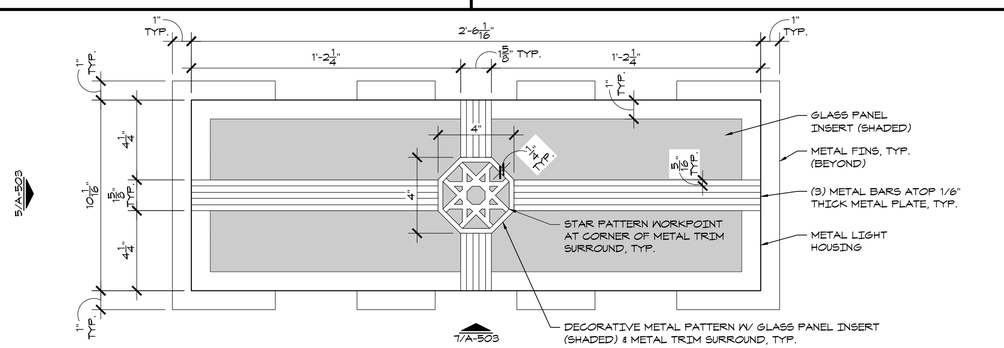
7 TYP. ELEVATION DETAIL OF CUSTOM PENDANT LIGHT FIXTURE - LONG END
3"=1'-0"
LIGHT FIXTURE LOCATED IN LITTLE THEATRE RESTROOMS

NOTE:
NEW PENDANT LIGHT FIXTURE IS TO BE SIMILAR TO THIS EXAMPLE LIGHT FIXTURE LOCATED IN ROOM 0103 AT CITY HALL OF KANSAS CITY, MISSOURI.

6 EXAMPLE IMAGE OF CUSTOM PENDANT LIGHT FIXTURE
LIGHT FIXTURE LOCATED IN LITTLE THEATRE RESTROOMS

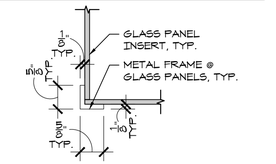


5 TYP. ELEVATION DETAIL OF CUSTOM PENDANT LIGHT FIXTURE - SHORT END
3"=1'-0"
LIGHT FIXTURE LOCATED IN LITTLE THEATRE RESTROOMS

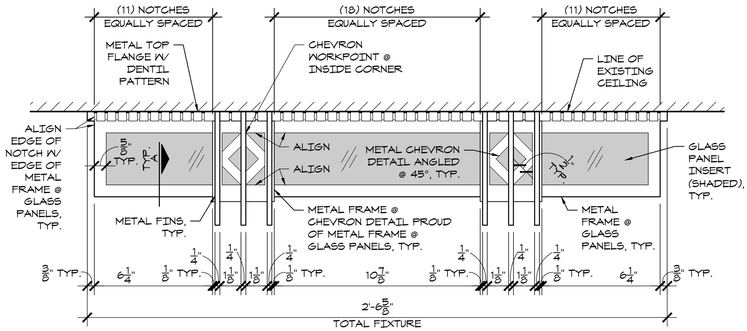


4 TYP. PLAN DETAIL AT BOTTOM (UNDERSIDE) VIEW OF CUSTOM PENDANT LIGHT FIXTURE
3"=1'-0"
LIGHT FIXTURE LOCATED IN LITTLE THEATRE RESTROOMS

GENERAL NOTES - CUSTOM SURFACE-MOUNTED LIGHT FIXTURE:
1. METAL FRAMES & DETAILS AT CUSTOM SURFACE-MOUNTED LIGHT FIXTURE TO BE ALUMINUM WITH A FINISH TO MATCH EXISTING.
2. GLASS PANEL INSERTS ARE TO BE 1/8" THICK FROSTED GLASS PANELS.
3. RE: ELECTRICAL FOR LAMPING OF NEW FIXTURES AND RELAMPING OF EXISTING FIXTURES.

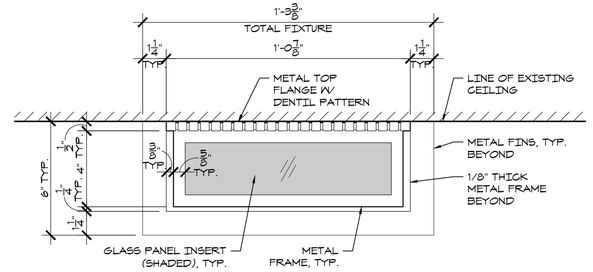


SECTION A
(SCALE 6" = 1'-0")

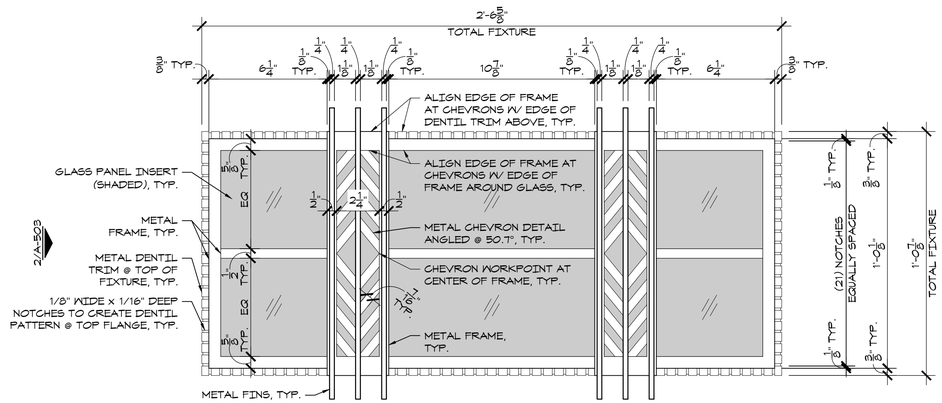


4 TYP. ELEVATION DETAIL OF CUSTOM SURFACE-MOUNTED LIGHT FIXTURE - LONG END
3"=1'-0"
LIGHT FIXTURE LOCATED IN FIREPLACE LOBBY RESTROOMS & BALCONY LEVEL RESTROOMS

3 EXAMPLE IMAGE OF CUSTOM SURFACE-MOUNTED LIGHT FIXTURE
LIGHT FIXTURE LOCATED IN FIREPLACE LOBBY RESTROOMS & BALCONY LEVEL RESTROOMS



2 TYP. ELEVATION DETAIL OF CUSTOM SURFACE-MOUNTED LIGHT FIXTURE - SHORT END
3"=1'-0"
LIGHT FIXTURE LOCATED IN FIREPLACE LOBBY RESTROOMS & BALCONY LEVEL RESTROOMS



1 TYP. PLAN DETAIL AT BOTTOM (UNDERSIDE) VIEW OF CUSTOM SURFACE-MOUNTED LIGHT FIXTURE
3"=1'-0"
LIGHT FIXTURE LOCATED IN FIREPLACE LOBBY RESTROOMS & BALCONY LEVEL RESTROOMS

PWA

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KANSAS CITY CONVENTION CENTER
MUSIC HALL AND LITTLE THEATRE RESTROOM UPGRADES PROJECT
301 W. 13th STREET, KANSAS CITY, MO 64105

FOR CONSTRUCTION

PROJECT NO.	1623.7
DATE	10 / 15 / 2025
DRAWN BY	DK
CHECKED BY	EP
CHECKED BY	
REVISED DATE	DESCRIPTION

SHEET TITLE & NUMBER

DETAILS

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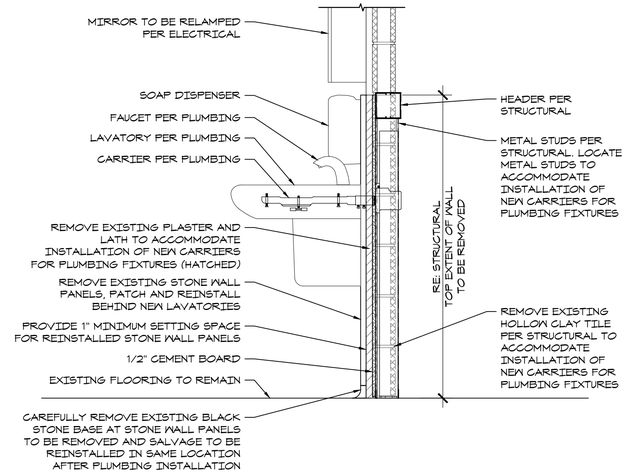
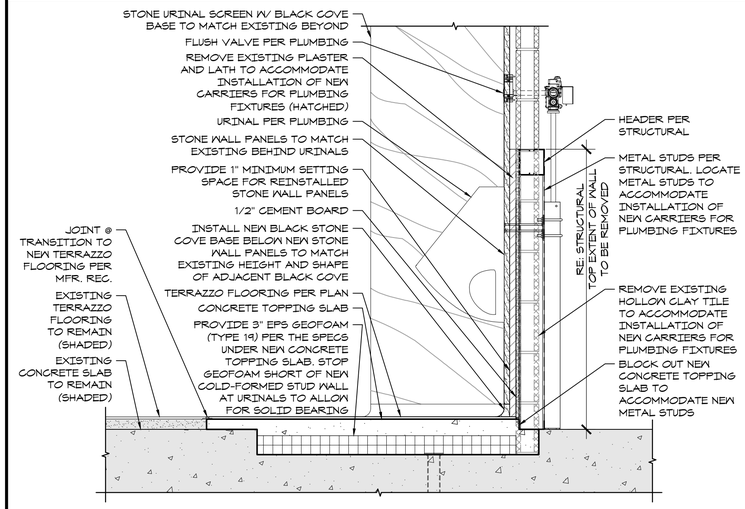
A-503



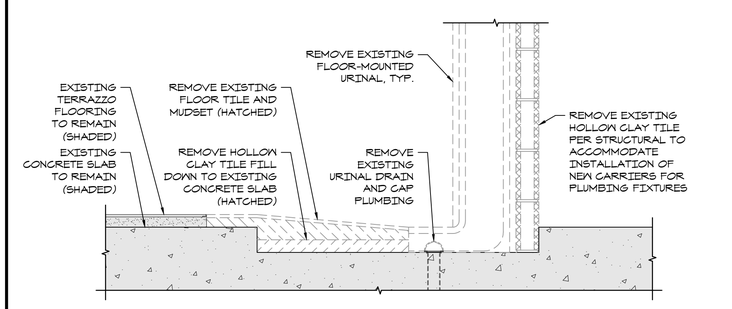
3 TYPICAL DETAIL OF WALL REMOVAL FOR CARRIER INSTALLATION @ LAVATORIES

1"=1'-0"



2 TYPICAL DETAIL OF WALL REMOVAL FOR CARRIER INSTALLATION & NEW FLOOR @ URINALS

1"=1'-0"



1 TYPICAL DEMO DETAIL @ EXISTING URINALS

1"=1'-0"

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A-504

RESTROOM ACCESSORY SCHEDULE

ITEM	MANUFACTURER	PRODUCT #	DESCRIPTION	REMARKS
A	TORK	571608	AUTOMATIC SOAP DISPENSER	
B	BOBRICK	B-2112	MANUAL SOAP DISPENSER	
C	TORK	552538	CONTINUOUS HAND TOWEL DISPENSER	
D	BOBRICK	B-3706346	SEMI-RECESSED FEMININE PRODUCT DISPENSER	A
E	KOALA KARE	KB300-01SS	STAINLESS STEEL BABY CHANGING STATION	

GENERAL NOTES - RESTROOM ACCESSORY SCHEDULE:
1. ALL ACCESSORIES ARE SURFACE MOUNTED UNLESS NOTED OTHERWISE.
2. INSTALL ALL RESTROOM ACCESSORIES TO COMPLY WITH ADA MOUNTING HEIGHT REQUIREMENTS (RE: INTERIOR ELEVATIONS)
3. COORDINATE NECESSARY FASTENERS PER SUBSTRATE THAT ACCESSORY IS BEING MOUNTED TO.
4. REFER TO SPECIFICATIONS FOR FURTHER INFORMATION ON RESTROOM ACCESSORIES.

RESTROOM ACCESSORY SCHEDULE REMARKS:
A. PROVIDE FREE, NO COIN OPERATION FOR FEMININE PRODUCT DISPENSER

2 RESTROOM ACCESSORY SCHEDULE
N.T.S.

FINISH SCHEDULE

ROOM	FLOOR FINISH	WALL BASE	WALL FINISH	CHAIR RAIL TRIM	COVE TRIM	CROWN TRIM	CEILING FINISH	CEILING HEIGHT	NOTES
FIREPLACE LOBBY RESTROOMS									
WOMEN'S 2604I	EXISTING	EXISTING	PT-01 / PT-03	PT-08	PT-06	PT-07	PT-04	T'-T" F.V.	1, 2
WOMEN'S VESTIBULE 2604I-B	EXISTING	EXISTING	PT-01	PT-08	-	PT-05 / PT-07	PT-04	8'-0 3/4" F.V.	1, 3
MEN'S 2604J	EXIST. / TRZ-01	-	ST-01 / PT-01 / PT-03	-	PT-06	PT-05	PT-04	T'-6" / 8'-2"	1, 2
MEN'S VESTIBULE 2604J-B	EXISTING	EXISTING	PT-01	PT-08	-	PT-3	PT-07	T'-3 1/2" F.V.	
BALCONY LEVEL RESTROOMS									
WOMEN'S VESTIBULE 5610	EXISTING	EXISTING	PT-01 / PT-03	PT-08	PT-06	PT-05	PT-04	8'-9 3/4" F.V.	1, 2
WOMEN'S WASHROOM 5611	EXISTING	-	PT-01 / PT-03	-	PT-06	PT-05	PT-04	8'-11 3/4" F.V.	1, 2
WOMEN'S RR MH-13 5612	EXISTING	EXISTING	PT-01 / PT-03	PT-08	PT-06	PT-05	PT-04	8'-9 1/4" F.V. / 8'-10 3/4" F.V.	1, 2
MEN'S VESTIBULE 5614	EXISTING	EXISTING	PT-01 / PT-03	-	PT-06	PT-05	PT-04	8'-5 1/2" F.V.	2, 4
MEN'S WASHROOM 5615	EXISTING	-	PT-01 / PT-03	-	PT-06	PT-05	PT-04	8'-11 3/4" F.V.	1, 2
MEN'S RR MH-12 5616	EXIST. / TRZ-01	-	PT-01 / PT-03	-	PT-06	PT-05	PT-04	8'-6 3/4" F.V.	1, 2
LITTLE THEATRE RESTROOMS									
VESTIBULE 2605G	EXISTING	EXISTING	PT-01	PT-08	-	PT-05	PT-04	9'-8 1/2" F.V.	5
WOMEN'S 2605H	EXISTING	-	PT-01	-	-	PT-05	PT-04	9'-3" F.V.	1
MEN'S 2605I	EXIST. / TRZ-01 / TRZ-02	-	ST-01 / PT-01	-	-	PT-05	PT-04	9'-10 1/4" F.V.	1, 6

GENERAL NOTES:
1. RE: PLANS & INTERIOR ELEVATIONS FOR FURTHER INFORMATION ON THE FINISHES FOR MISCELLANEOUS ITEMS WITHIN THE RESTROOMS.
2. RE: SPECIFICATIONS FOR ADDITIONAL MATERIAL FINISH REQUIREMENTS.
3. WHERE PLANS AND DETAILS SPECIFY TO MATCH EXISTING FINISH, CONTRACTOR TO PROVIDE SAMPLE FOR ARCHITECT'S REVIEW.
4. ALL FINISHES, PAINTS, FLOORING, ETC. TO BE SELECTED BY, REVIEWED AND APPROVED BY ARCHITECT.
5. ALL FINISHES TO BE INSTALLED BY CONTRACTOR UNLESS NOTED OTHERWISE.
6. ALL EXISTING TRIM IS TO BE REPAINTED.

SCHEDULE NOTES:
1. RE: PLANS & INTERIOR ELEVATIONS FOR WORK AT EXISTING STONE WALL PANELS.
2. WALLS BELOW COVE TRIM TO BE PAINTED (PT-01). WALLS ABOVE COVE TRIM TO BE PAINTED (PT-03).
3. NEW WOOD CROWN TRIM IN SOUTH ROOM OF WOMEN'S 2604I TO BE PAINTED (PT-05). EXISTING WOOD CROWN TRIM IN NORTH ROOM OF WOMEN'S 2604I TO BE PAINTED (PT-07).
4. EXISTING REVEALS IN WALLS IN MEN'S VESTIBULE 5614 TO BE PAINTED (PT-02).
5. PAINT EXISTING SOFFIT AT NORTH SIDE OF VESTIBULE 2605G (PT-01).
6. RE: PLANS FOR LOCATIONS OF NEW TERRAZZO FLOOR FINISHES IN MEN'S 2605I.

FINISH MATERIALS LEGEND

TAG	MATERIAL	COLOR / NUMBER	DESCRIPTION
PT-01	PAINT	SW 7587 "ANTIQUE RED"	PAINT FOR EXISTING PLASTER WALLS AND NEW GYPSUM BOARD WALLS BELOW NEW COVE TRIM IN ALL RESTROOMS.
PT-02	PAINT	SILVER (METALLIC)	PAINT FOR EXISTING PLASTER WALL REVEALS IN MEN'S VESTIBULE 5614.
PT-03	PAINT	GOLD RUSH (METALLIC)	PAINT FOR EXISTING PLASTER WALLS ABOVE NEW COVE TRIM IN ALL RESTROOMS WHERE IT IS LOCATED.
PT-04	PAINT	GOLD RUSH (METALLIC)	PAINT FOR EXISTING PLASTER CEILINGS AND NEW GYPSUM BOARD CEILINGS IN ALL RESTROOMS.
PT-05	PAINT	GOLD RUSH (METALLIC)	PAINT FOR NEW MDF CROWN TRIM IN ALL RESTROOMS.
PT-06	PAINT	SILVER (METALLIC)	PAINT FOR NEW MDF COVE TRIM IN ALL RESTROOMS WHERE IT IS LOCATED.
PT-07	PAINT	GOLD RUSH (METALLIC)	PAINT FOR EXISTING WOOD CROWN TRIM IN ALL RESTROOMS WHERE IT IS LOCATED.
PT-08	PAINT	SILVER (METALLIC)	PAINT FOR EXISTING WOOD CHAIR RAIL TRIM IN ALL RESTROOMS WHERE IT IS LOCATED.
PT-09	PAINT	SW 6990 "CAVIAR"	PAINT FOR ALL EXISTING WOOD DOORS AND WOOD TOILET PARTITION DOORS THAT ARE TO BE PAINTED.
PT-10	PAINT	SW 6990 "CAVIAR"	PAINT FOR ALL EXISTING WOOD DOOR TRIM THAT IS TO BE PAINTED.
PT-11	PAINT	SW 6990 "CAVIAR"	PAINT FOR ALL EXISTING WOOD MIRROR FRAMES IN WOMEN'S VESTIBULE 5610.
PT-12	PAINT	GOLD RUSH (METALLIC)	PAINT FOR ALL EXISTING METAL VENTS INSTALLED IN EXISTING PLASTER WALLS AND EXISTING STONE WALL PANELS.
PT-13	PAINT	GOLD RUSH (METALLIC)	PAINT FOR ALL EXISTING METAL COVER PLATES INSTALLED ON CEILINGS IN RESTROOMS.
PT-14	PAINT	GOLD RUSH (METALLIC)	PAINT FOR ALL EXISTING METAL ACCESS PANELS IN RESTROOMS.
PT-15	PAINT	SILVER (METALLIC)	PAINT FOR ALL EXISTING RADIATORS IN RESTROOMS.
PT-16	PAINT	SW 7587 "ANTIQUE RED"	PAINT FOR ALL EXISTING METAL COVER PLATES INSTALLED ON WALLS IN RESTROOMS.
PT-17	PAINT	SW 6990 "CAVIAR"	PAINT FOR ALL EXISTING METAL DOOR TRIM THAT IS TO BE PAINTED.
PT-18	PAINT	SW 6990 "CAVIAR"	PAINT FOR ALL EXISTING METAL LOUVERS WITHIN EXISTING DOORS THAT ARE TO BE PAINTED.
PT-19	PAINT	SW 7587 "ANTIQUE RED"	PAINT FOR ALL EXISTING PAPER-LINED PIPE INSULATION IN RESTROOMS.
ST-01	STONE WALL PANELS	MATCH EXISTING	NEW STONE WALL PANELS AND URINAL SCREENS TO MATCH EXISTING & TO BE INSTALLED WHERE SHOWN IN DRAWINGS.
TRZ-01	TERRAZZO FLOORING	MATCH EXISTING	TERRAZZO FLOORING TO MATCH EXISTING BORDER COLOR IN ALL MEN'S RESTROOMS.
TRZ-02	TERRAZZO FLOORING	MATCH EXISTING	TERRAZZO FLOORING TO MATCH EXISTING FIELD COLOR IN MEN'S 2605I.

GENERAL NOTES:
1. RE: SPECIFICATIONS FOR ADDITIONAL MATERIAL FINISH REQUIREMENTS.
2. RE: INTERIOR ELEVATIONS FOR LOCATIONS OF PAINT COLORS INDICATED IN FINISH MATERIALS LEGEND.

1 FINISH SCHEDULE
N.T.S.

INTERIOR DOOR SCHEDULE

ROOM NAME	TAG	DOOR			FRAME		TRIM		NOTES
		TYPE	NOMINAL DOOR SIZE (WxH)	FINISH	TYPE	FINISH	TYPE	FINISH	
FIREPLACE LOBBY RESTROOMS									
COAT ROOM 2604	2604	EXIST.	EXIST. 2'-6" x 6'-11"	PT-09	EXIST.	PT-09	EXIST.	PT-10	1, 3
JANITOR 2604H	2604H	EXIST.	EXIST. 3'-0" x 6'-11"	PT-09	EXIST.	PT-09	EXIST.	PT-10	1, 3, 6
WOMEN'S 2604I	2604I	EXIST.	EXIST. 3'-0" x 6'-11"	PT-09	EXIST.	PT-09	EXIST.	PT-10	6
WOMEN'S VESTIBULE 2604I-B	2604I-B	EXIST.	EXIST. 2'-10" x 6'-8"	PT-09	EXIST.	PT-09	EXIST.	PT-10	1, 2, 3
MEN'S 2604J	2604J	EXIST.	EXIST. 3'-0" x 6'-11"	PT-09	EXIST.	PT-09	EXIST.	PT-17	6
MEN'S VESTIBULE 2604J-B	2604J-B	EXIST.	EXIST. 2'-10" x 6'-6"	PT-09	EXIST.	PT-09	EXIST.	PT-17	1, 2, 3
BALCONY LEVEL RESTROOMS									
WOMEN'S VESTIBULE 5610	5610	EXIST.	EXIST. 1'-7" x 7'-0"	PT-09	EXIST.	PT-09	EXIST.	PT-10	1, 3
WOMEN'S RR MH-13 5612	5612	EXIST.	EXIST. 2'-3" x 6'-10"	PT-09	EXIST.	PT-09	EXIST.	PT-10	1, 3
CONCESSION 5613	5613-A	EXIST.	EXIST. 3'-0" x 7'-0"	PT-09	EXIST.	PT-09	EXIST.	PT-10	1, 3
CONCESSION 5613	5613-B	EXIST.	EXIST. 3'-0" x 6'-11"	PT-09	EXIST.	PT-09	EXIST.	PT-10	1, 3, 6
MEN'S WASHROOM 5615	5615	EXIST.	EXIST. 2'-7" x 7'-0"	PT-09	EXIST.	PT-09	EXIST.	PT-10	1, 3
MEN'S RR MH-12 5616	5616	EXIST.	EXIST. 1'-1" x 6'-11"	PT-09	EXIST.	PT-09	EXIST.	PT-10	1, 3
LITTLE THEATRE RESTROOMS									
VESTIBULE 2605G	2605G	EXIST.	EXIST. 3'-0" x 7'-4"	EXIST.	EXIST.	EXIST.	EXIST.	EXIST.	7
MEN'S 2605I	2605I-A	EXIST.	EXIST. 3'-0" x 7'-4"	EXIST.	EXIST.	EXIST.	EXIST.	EXIST.	7
MEN'S 2605I	2605I-B	EXIST.	EXIST. 2'-0" x 7'-0"	PT-09	EXIST.	PT-09	EXIST.	PT-10	4, 5

GENERAL NOTES:
A. ALL EXISTING DOOR HARDWARE IS TO BE CLEANED, REFURBISHED AND REFINISHED.
B. RE: FINISH MATERIALS LEGEND FOR FINISHES INDICATED IN SCHEDULE.
C. RE: SPECIFICATIONS FOR ADDITIONAL MATERIAL FINISH REQUIREMENTS.
D. CONTRACTOR TO FIELD VERIFY SIZE OF EXISTING DOORS AND FRAMES AND EXISTING DOOR AND FRAME CONSTRUCTION.

SCHEDULE NOTES:
1. PAINT ONLY VESTIBULE / RESTROOM SIDE OF EXISTING DOOR.
2. PAINT EXISTING LOUVERS ON ONLY VESTIBULE SIDE OF DOOR.
3. PAINT EXISTING TRIM ON ONLY VESTIBULE / RESTROOM SIDE OF DOOR.
4. PAINT ONLY RESTROOM SIDE OF EXISTING DOOR.
5. PAINT EXISTING TRIM ON ONLY RESTROOM SIDE OF DOOR.
6. PAINT EXISTING METAL LOUVERS WITHIN DOOR (PT-18).
7. NO FINISH WORK IS TO OCCUR AT DOOR.

3 DOOR SCHEDULE
N.T.S.

PWA

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SCHEDULES

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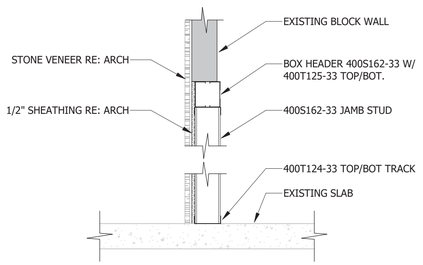
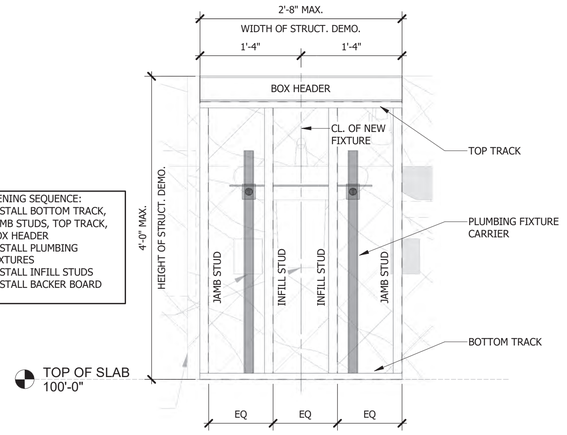
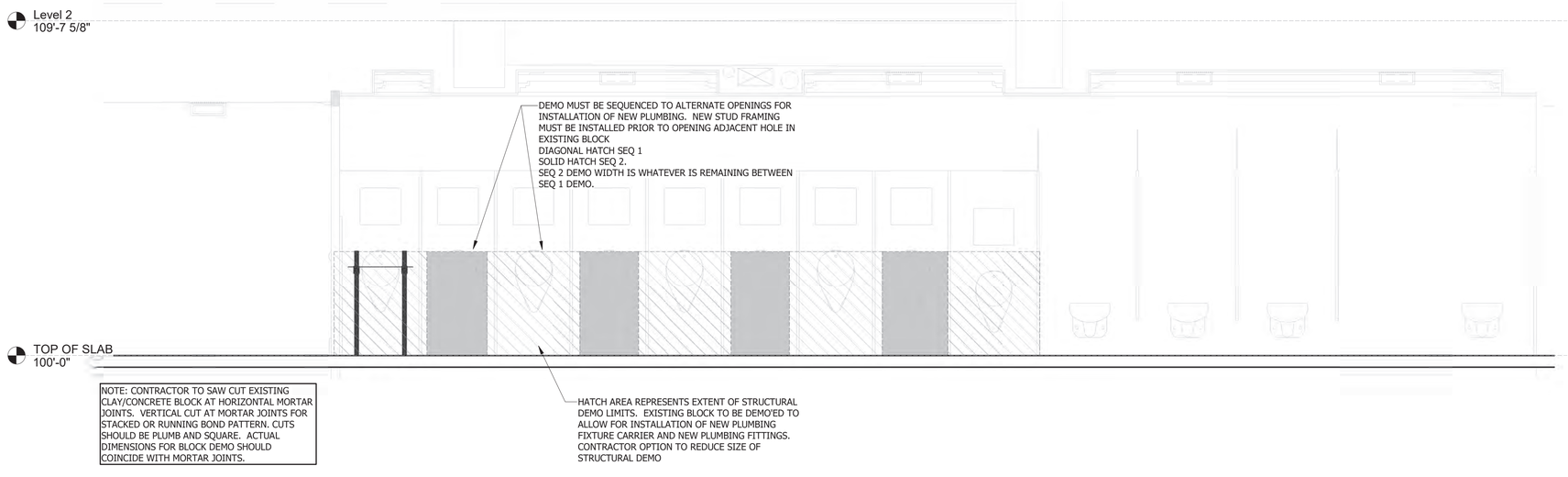


3 INFILL SECTION
1" = 1'-0"

INFILL OPENING SEQUENCE:
1. INSTALL BOTTOM TRACK, JAMB STUDS, TOP TRACK, BOX HEADER
2. INSTALL PLUMBING FIXTURES
3. INSTALL INFILL STUDS
4. INSTALL BACKER BOARD

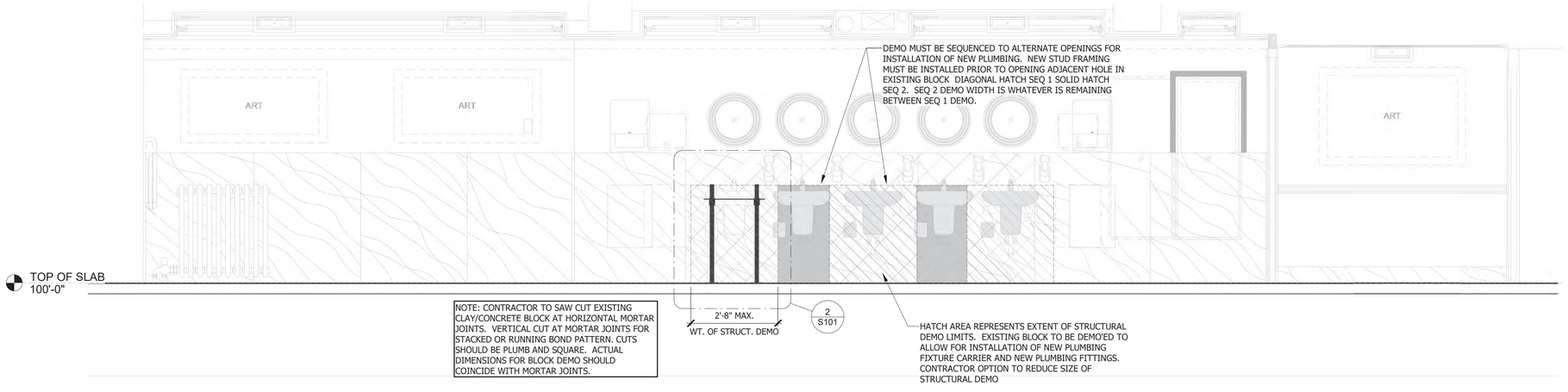


2 TYPICAL FIXTURE OPENING FRAMING
1" = 1'-0"



NOTE: CONTRACTOR TO SAW CUT EXISTING CLAY/CONCRETE BLOCK AT HORIZONTAL MORTAR JOINTS. VERTICAL CUT AT MORTAR JOINTS FOR STACKED OR RUNNING BOND PATTERN. CUTS SHOULD BE PLUMB AND SQUARE. ACTUAL DIMENSIONS FOR BLOCK DEMO SHOULD COINCIDE WITH MORTAR JOINTS.

4 TYPICAL RESTROOM URNIAL REPLACEMENT
1/2" = 1'-0"



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1 TYPICAL RESTROOM SINK REPLACEMENT
1/2" = 1'-0"

PWA

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KANSAS CITY CONVENTION CENTER

MUSIC HALL AND LITTLE THEATRE RESTROOM UPGRADES PROJECT

301 W. 13th STREET, KANSAS CITY, MO 64105

FOR CONSTRUCTION

PROJECT NO.	T623.7
DATE	10 / 15 / 2025
DRAWN BY	AO
CHECKED BY	AO
CHECKED BY	
REVISED DATE	DESCRIPTION

SHEET TITLE & NUMBER

ELEVATION / SECTIONS

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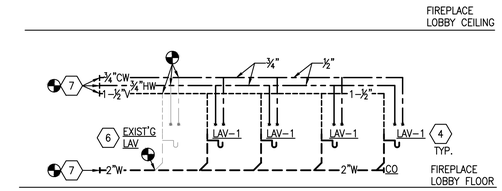
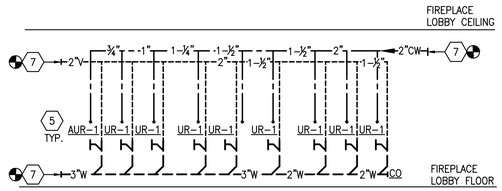
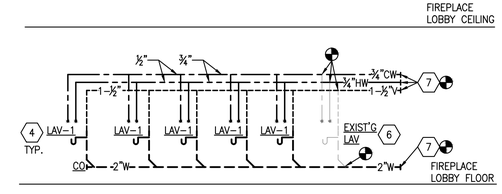
S101



MEN'S RESTROOM LAVATORY RISER



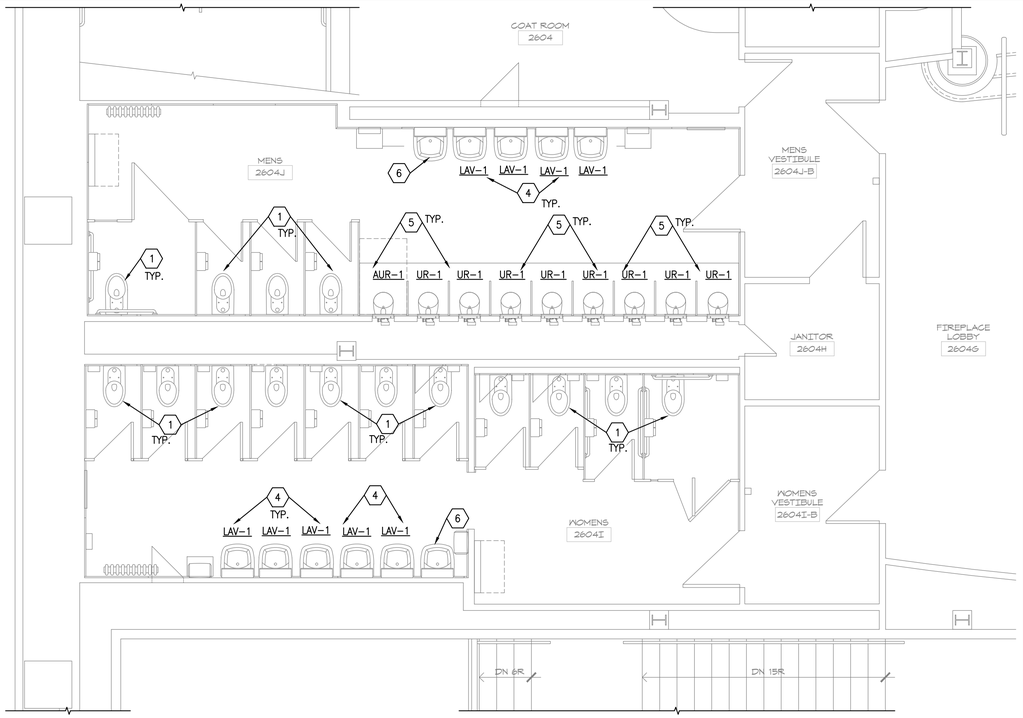
MEN'S RESTROOM URINAL RISER



WOMEN'S RESTROOM LAVATORY RISER

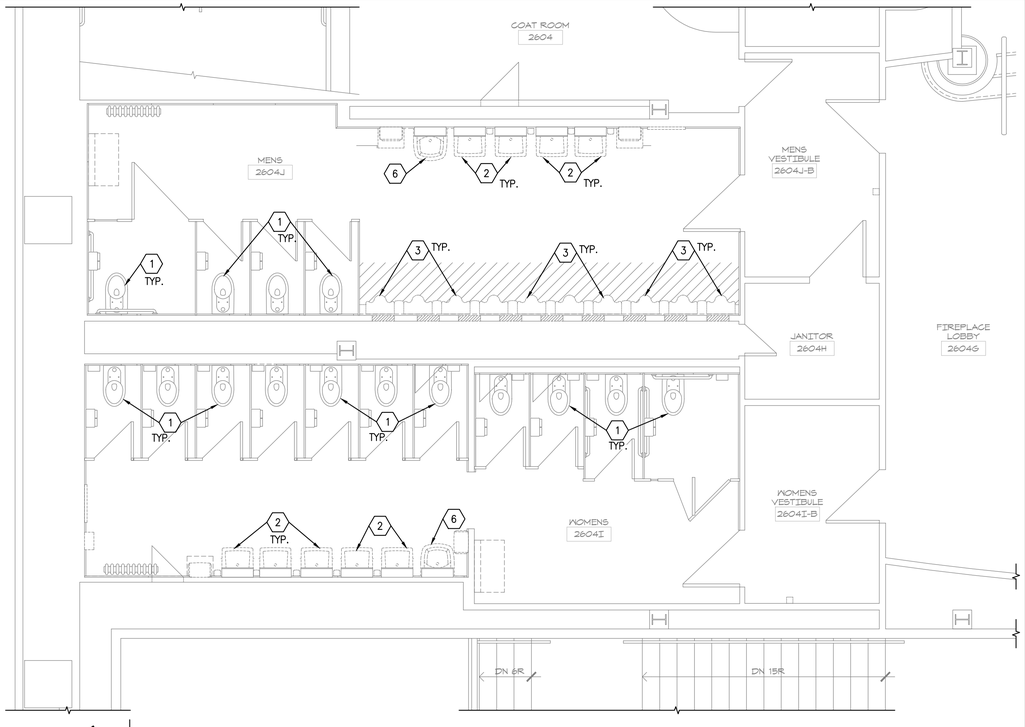
3 NOT TO SCALE

PLUMBING RISERS - FIREPLACE LOBBY RESTROOMS



2 1/4"=1'-0"

PLUMBING NEW WORK ENLARGED FIREPLACE LOBBY RESTROOMS



1 1/4"=1'-0"

PLUMBING DEMOLITION ENLARGED FIREPLACE LOBBY RESTROOMS

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KEYED NOTES:

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5. PROVIDE NEW NEW WATER, WASTE AND VENT LINES WITH ASSOCIATED CARRIER IN CHASE TO SERVE NEW URINALS BACK TO MAINS. REFER TO RISERS ON THIS SHEET FOR PIPING.
6. EXISTING LAV, FAUCET, CONTROLLER & ASSOCIATE COMPONENTS TO REMAIN AND BE RECONNECTED UNDER NEW WORK.
7. CONNECT TO EXISTING PIPES IN CHASE.

STATE OF MISSOURI
RANDALL DARIN KEMPKER
NUMBER E-20788
PROFESSIONAL ENGINEER
10/15/2025

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KANSAS CITY CONVENTION CENTER

MUSIC HALL AND LITTLE THEATRE
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301 W. 13th STREET, KANSAS CITY, MO 64105

FOR CONSTRUCTION

PROJECT NO.	23-010-01
DATE	10 / 15 / 2025
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CHECKED BY	RDK
CHECKED BY	

REVISED DATE	DESCRIPTION

SHEET TITLE & NUMBER

ENLARGED RESTROOM PLANS PLUMBING

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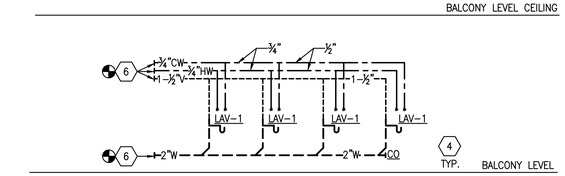
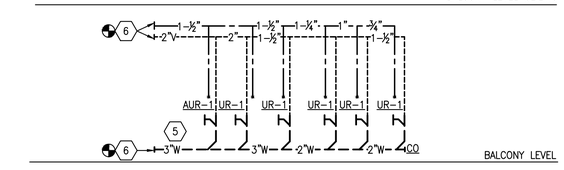
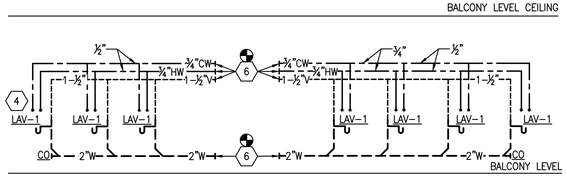
P-201



MEN'S RESTROOM LAVATORY RISER



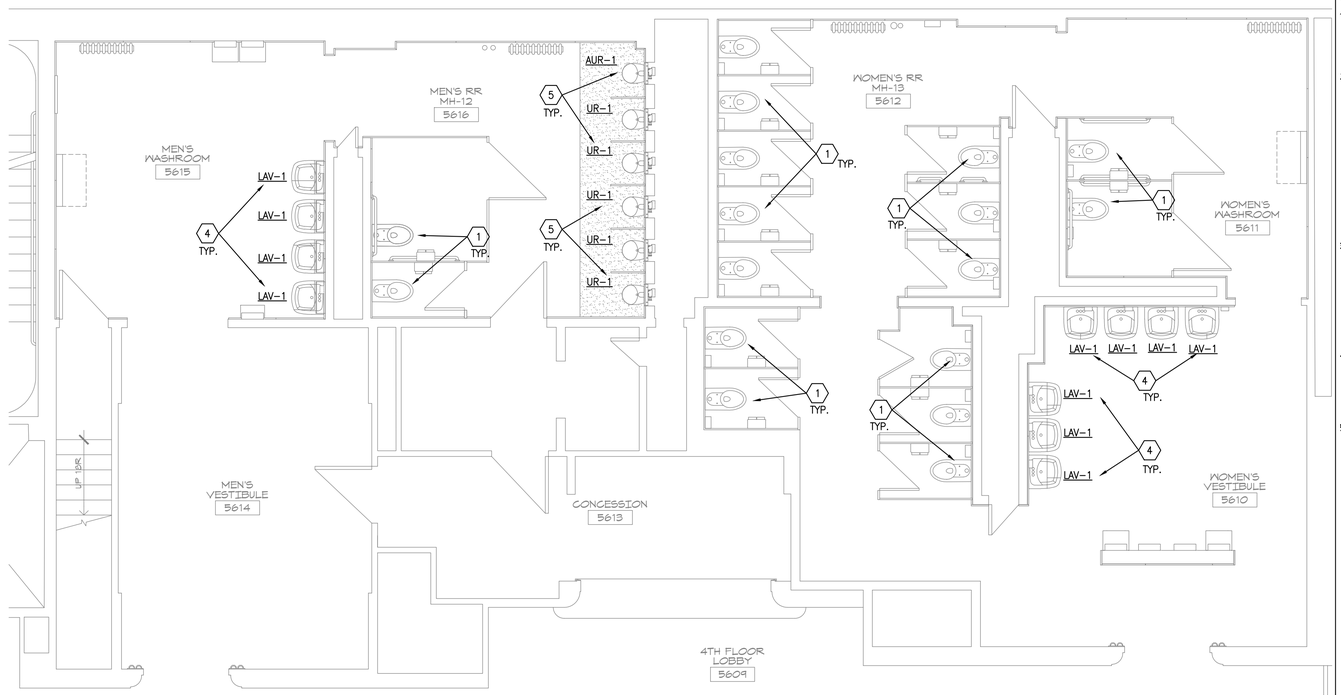
MEN'S RESTROOM URINAL RISER



WOMEN'S RESTROOM LAVATORY RISER

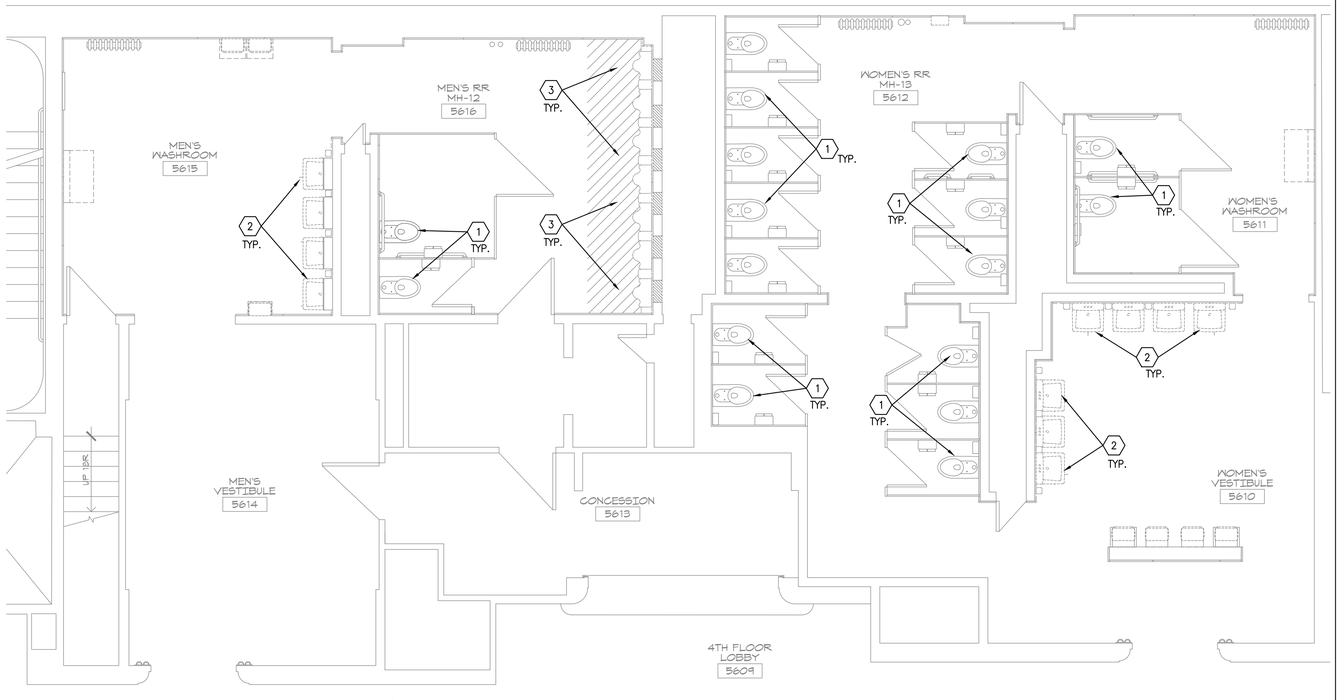
3 PLUMBING RISERS - BALCONY LEVEL RESTROOMS

NOT TO SCALE



2 PLUMBING NEW WORK ENLARGED BALCONY LEVEL RESTROOMS

1/4"=1'-0"



1 PLUMBING DEMOLITION ENLARGED BALCONY LEVEL RESTROOMS

1/4"=1'-0"

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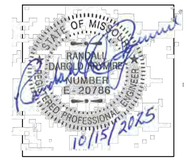
6. CONNECT TO EXISTING PIPES IN CHASE.



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FOR CONSTRUCTION

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REVISED DATE	DESCRIPTION

SHEET TITLE & NUMBER

ENLARGED RESTROOM PLANS PLUMBING

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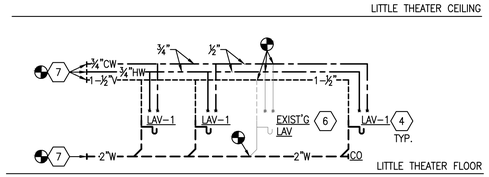
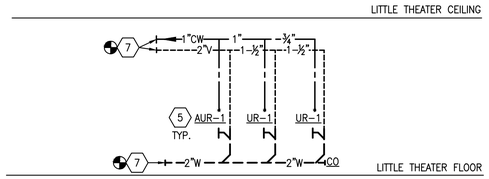


WOMEN'S RESTROOM LAVATORY RISER



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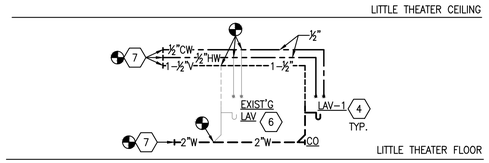
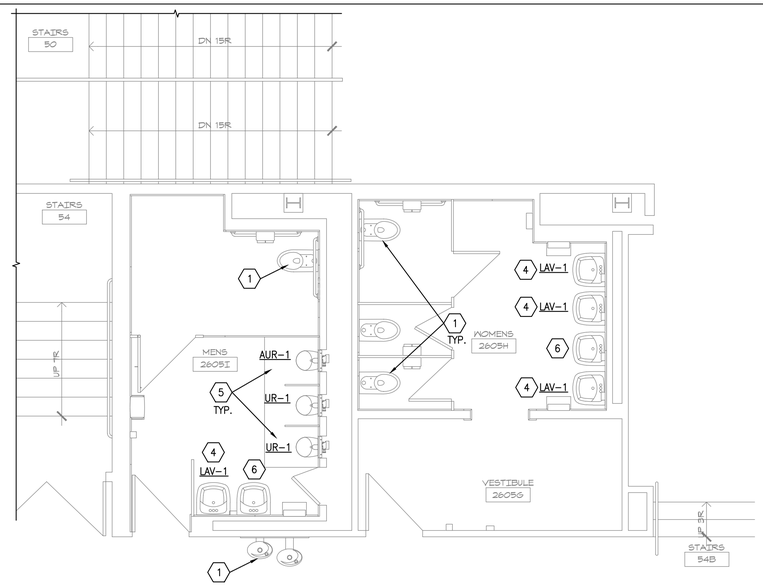


MEN'S RESTROOM LAVATORY RISER

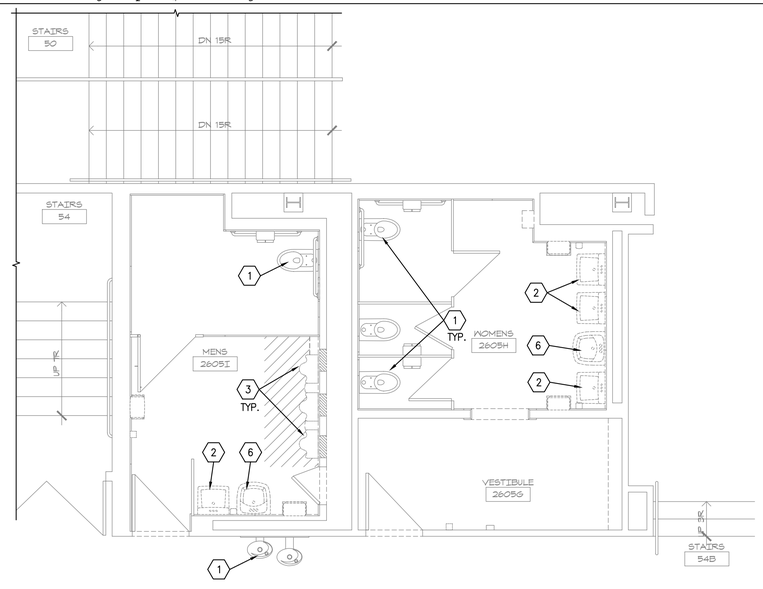
3 PLUMBING RISERS - LITTLE THEATRE RESTROOMS

NOT TO SCALE



2 PLUMBING NEW WORK ENLARGED LITTLE THEATRE RESTROOMS

1/4"=1'-0"



1 PLUMBING DEMOLITION ENLARGED LITTLE THEATRE RESTROOMS

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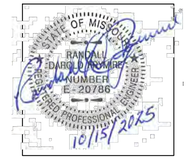

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FOR CONSTRUCTION

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CHECKED BY	

REVISED DATE	DESCRIPTION

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ENLARGED RESTROOM PLANS PLUMBING

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P-401

PLUMBING FIXTURE SCHEDULE

FIXTURES IN THIS SCHEDULE OR THEIR APPROVED EQUIVALENT ARE PROVIDED BY THE PLUMBING CONTRACTOR. ANY CONFLICTS BETWEEN MODEL NUMBER AND DESCRIPTION THE DESCRIPTION SHALL PREVAIL. SUBMIT SHOP DRAWINGS ON EACH OF THESE ITEMS. REFER TO SPECIFICATIONS FOR FURTHER INFORMATION AND INSTALLATION REQUIREMENTS. VERIFY ROUGH-IN REQUIREMENTS WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS AND INSTALL PER MANUFACTURER'S RECOMMENDATIONS. REFER TO THE ARCHITECTURAL DRAWINGS FOR THE PLUMBING FIXTURE MOUNTING HEIGHTS.

TYPE MARK	DESCRIPTION	PIPE SIZE CONNECTION				
		COLD WATER	HOT WATER	MIXED WATER	WASTE	VENT
LAV-1	WALL HUNG LAVATORY: AMERICAN STANDARD MURRO WALL HUNG LAVATORY WITH EVERCLEAN, 0955.001EC CENTER HOLE ONLY WITH OVERFLOW, VITREOUS CHINA, RECESSED SELF-DRAINING DECK, WALL SUPPORT, VITREOUS CHINA 0059.020EC SHROUD, ADA COMPLIANT. FAUCET: TOTO TEL101-ET SERIES, FAUCET SHALL BE DECK MOUNTED ECOPOWER FAUCET, HYDROPOWER SELF-GENERATING, ECOPOWER SYSTEM, POLISH CHROME FINISH. THERMOSTATIC MIXING VALVE: TOTO ET OPTION, ANTI-SCALD THERMOSTATIC MIXING VALVE WITH SELF-ADJUSTING SENSOR. CARRIER: ZURN Z1231EZ UNIVERSAL CONCEALED ARM SYSTEM FOR WALL HUNG LAVATORIES, RECTANGULAR STEEL UPRIGHTS WITH WELDED FEET, CAST IRON ADJUSTABLE HEATERS, CONCEALED ARMS, STEEL SLEEVES, ALIGNMENT TRUSS AND MOUNTING FASTENERS.	1/2"	1/2"	--	2"	1-1/2"
WCO	WALL CLEANOUT: ZURN Z1446, CLEANOUT SHALL BE COATED CAST IRON BODY CLEANOUT TEE, WITH ABS TAPERED THREADED COUNTER SUNK PLUG, STAINLESS STEEL ROUND WALL ACCESS COVER AND SCREW. IF WALL CLEANOUTS ARE REQUIRED, COORDINATE WALL CLEANOUT LOCATIONS WITH ARCHITECT PRIOR TO INSTALLATION.	--	--	--	2" 3"	--
CO	CLEANOUT: ZURN CLEANOUT PLUG WITH ABS TAPERED THREADED COUNTER SUNK PLUG.	--	--	--	2" 3"	--
AUR-1	URINAL: TOTO UT104EV, WALL MOUNTED, VITREOUS CHINA, ADA COMPLIANT, 0.5 GPF LOW CONSUMPTION WASHOUT URINAL, 3/4" BACK SPUD INLET, REFERENCE ARCHITECTURAL PLAN FOR MOUNTING HEIGHTS TO MEET STANDARD AND ADA REQUIREMENTS. VALVE: TOTO TEU3LA11#SS, ECOPOWER ULTRA HIGH EFFICIENCY URINAL FLUSH VALVE 0.5 GPF, ADA COMPLIANT, SELF POWERED HYDROELECTRIC FLUSH VALVE SYSTEM, 4"x4" COVER PLATE, SMART SENSOR WITH SELF-ADJUSTING DETECTION RANGE, SOLENOID WITH SELF-CLEANING MECHANISM, MANUAL OVERRIDE BUTTON. CARRIER: ZURN Z1222 WALL URINAL SUPPORT SYSTEM WITH TOP SUPPORT PLATE, STEEL UPRIGHTS WITH WELDED FEET, SUPPORT PLATE AND MOUNTING FASTENERS.	3/4"	--	--	2"	1-1/2"
UR-1	URINAL: TOTO UT104EV, WALL MOUNTED, VITREOUS CHINA, ADA COMPLIANT, 0.5 GPF LOW CONSUMPTION WASHOUT URINAL, 3/4" BACK SPUD INLET, REFERENCE ARCHITECTURAL PLAN FOR MOUNTING HEIGHTS TO MEET STANDARD AND ADA REQUIREMENTS. VALVE: TOTO TEU3LA11#SS, ECOPOWER ULTRA HIGH EFFICIENCY URINAL FLUSH VALVE 0.5 GPF, ADA COMPLIANT, SELF POWERED HYDROELECTRIC FLUSH VALVE SYSTEM, 4"x4" COVER PLATE, SMART SENSOR WITH SELF-ADJUSTING DETECTION RANGE, SOLENOID WITH SELF-CLEANING MECHANISM, MANUAL OVERRIDE BUTTON. CARRIER: ZURN Z1222 WALL URINAL SUPPORT SYSTEM WITH TOP SUPPORT PLATE, STEEL UPRIGHTS WITH WELDED FEET, SUPPORT PLATE AND MOUNTING FASTENERS.	3/4"	--	--	2"	1-1/2"

PWA

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KANSAS CITY CONVENTION CENTER
MUSIC HALL AND LITTLE THEATRE RESTROOM UPGRADES PROJECT
301 W. 13th STREET, KANSAS CITY, MO 64105

FOR CONSTRUCTION

PROJECT NO.	23-010-01
DATE	10 / 15 / 2025
DRAWN BY	FSC
CHECKED BY	RDM
CHECKED BY	

REVISED DATE	DESCRIPTION

SHEET TITLE & NUMBER

PLUMBING SCHEDULES, DETAILS

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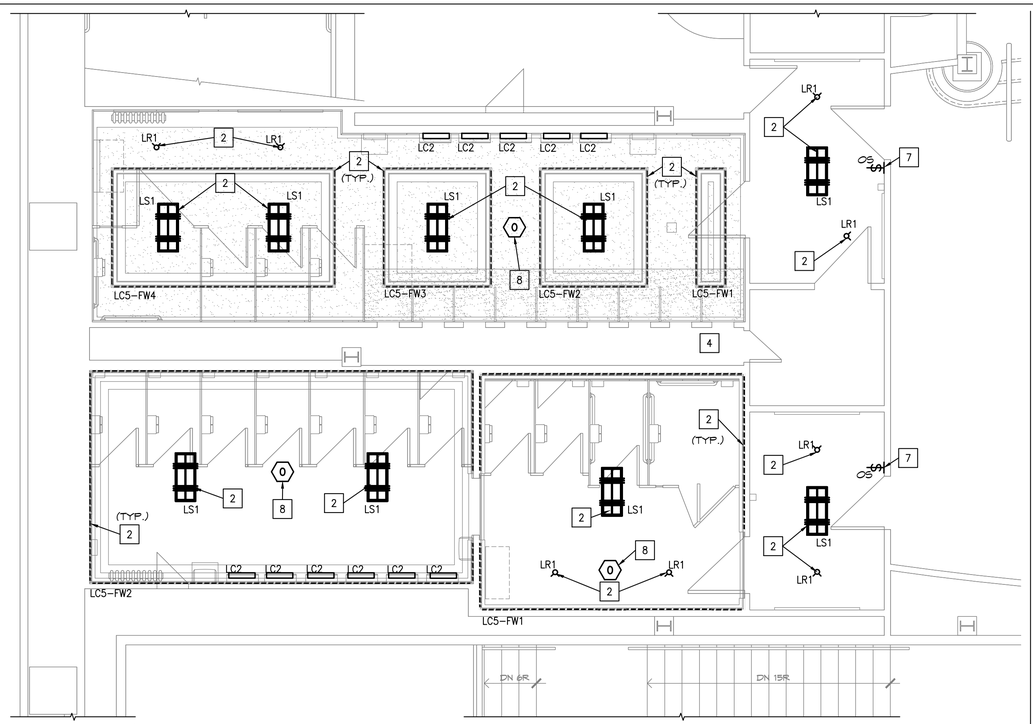
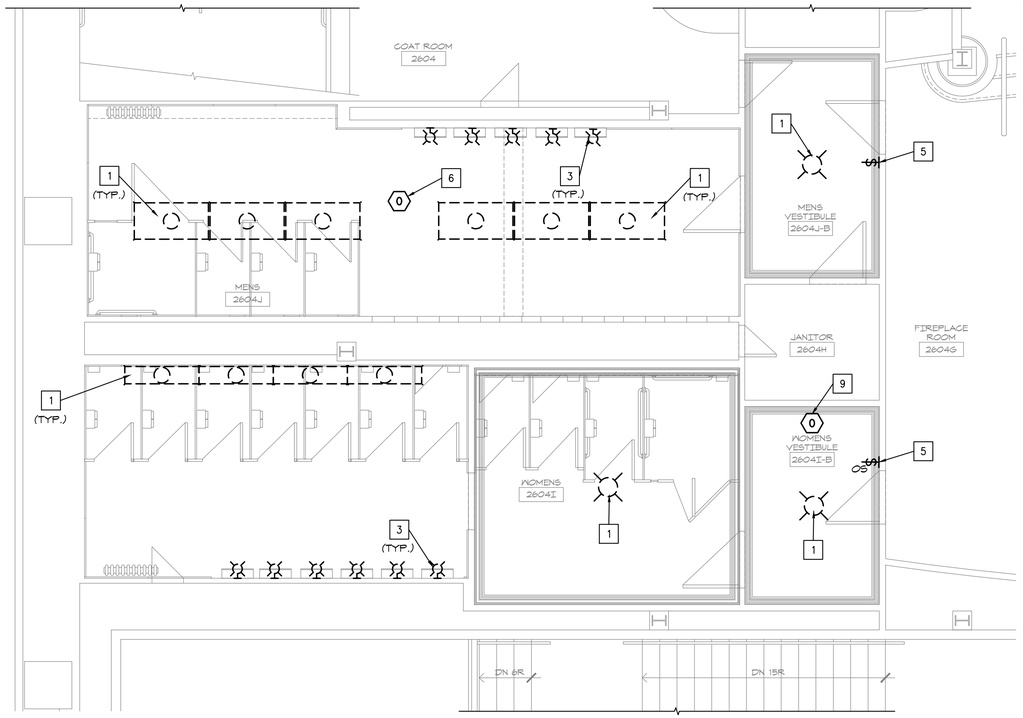
P-500



2 ELECTRICAL NEW WORK ENLARGED FIREPLACE LOBBY RESTROOMS

1/4"=1'-0"



1 ELECTRICAL DEMOLITION ENLARGED FIREPLACE LOBBY RESTROOMS

1/4"=1'-0"

GENERAL NOTES:

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2. DRAWINGS ARE DIAGRAMMATIC ONLY. THE INFORMATION SHOWN IS INTENDED TO EXPRESS THE GENERAL LAYOUT OF THE EXISTING SPACE AND THE GENERAL SCOPE OF WORK TO BE PERFORMED. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS AT THE PROJECT SITE. CONTRACTOR SHALL PERFORM THE WORK AS REQUIRED TO MEET THE EXISTING CONDITIONS AND THE INTENT OF THE WORK INDICATED. CONTRACTOR SHALL NOTIFY THE OWNER AND ENGINEER OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.
3. ALL EXISTING EQUIPMENT, PIPING, DUCTWORK, CONDUITS, DEVICES AND GENERAL CONSTRUCTION FEATURES, ETC. ARE NOT SHOWN ON THE PLANS. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO AVOID INTERFERENCES AND DISRUPTIONS TO OTHER SYSTEMS WHICH MAY AFFECT NORMAL DAILY OPERATION.
4. CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE AND MUNICIPAL LAWS, REGULATIONS, CODES AND ORDINANCES. CONTRACTOR SHALL PAY FOR ALL PERMITS AND FEES ASSOCIATED WITH THIS WORK.
5. CONTRACTOR SHALL COORDINATE INSTALLATION OF ALL COMPONENTS FROM ALL TRADES WITH THE DETAILED CEILING DESIGN AS SHOWN ON ARCHITECTURAL PLANS TO MAINTAIN FINISHED CEILING HEIGHTS AND TYPES IN VARIOUS AREAS OF EACH RESTROOM.
6. CONTRACTOR TO PROVIDE EXISTING LIGHT FIXTURES MODEL NUMBER, WATTAGE, LAMP TYPE AND COUNT TO THE OWNER WHO INTENDS TO SEEK REBATE FOR LIGHT FIXTURES.
7. COORDINATE WITH ARCHITECTURAL RCPs AND INTERIOR ELEVATIONS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED FIXTURES AND DEVICES AND ALL WALL MOUNTED FIXTURES AND DEVICES.
8. REFER TO SHEET E-600 FOR ELECTRICAL LEGEND.

KEYED NOTES:

1. DEMOLISH LIGHT FIXTURES, MAINTAIN EXISTING CIRCUITS TO FEED NEW LIGHT FIXTURES.
2. REFER TO ARCHITECTURAL DRAWINGS FOR LIGHT FIXTURE LOCATION AND DETAILS. EXTEND EXISTING CIRCUITS TO FEED NEW LIGHT FIXTURES. FIELD VERIFY.
3. EXISTING DECORATIVE MIRROR/LIGHT TO REMAIN PER ARCHITECT. REMOVE AND REPLACE EXISTING BACK LIGHT FIXTURE. REFER TO SHEET E-601 FOR DETAILS.
4. LIGHT FIXTURE DRIVERS TO BE INSTALLED INSIDE MECHANICAL CHASE, COORDINATE IN FIELD WITH PLUMBING/MECHANICAL DEVICES/ PIPES IN THE CHASE.
5. DEMOLISH EXISTING WALL SWITCH AND WALL PLATE, MAINTAIN CIRCUITS FOR NEW SENSOR.
6. DEMOLISH EXISTING CEILING OCCUPANCY SENSOR, MAINTAIN CIRCUITS FOR NEW SENSOR.
7. PROVIDE A NEW 2-RELAY WALL SWITCH WITH AN OCCUPANCY SENSOR, WATTSTOPPER MODEL #DSW-302-BK. COORDINATE WITH OWNER FOR CONTROL SCENARIO. PROVIDE NEW STAINLESS STEEL WALL PLATE. COORDINATE FINISHES WITH ARCHITECTS.
8. PROVIDE NEW CEILING MOUNTED OCCUPANCY SENSOR FROM WATTSTOPPER MODEL # LMDC-100-BK. EXTEND EXISTING WIRES TO NEW LOCATION, COORDINATE FINISHES WITH ARCHITECTS.
9. DEMOLISH EXISTING CEILING OCCUPANCY SENSOR AND CIRCUITRY. PATCH CEILING PER ARCHITACT.

STATE OF MISSOURI
RANDALL DARIN MOMPER
NUMBER E-20780
PROFESSIONAL ENGINEER
10/15/2025

PWA

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ENLARGED RESTROOM PLANS ELECTRICAL

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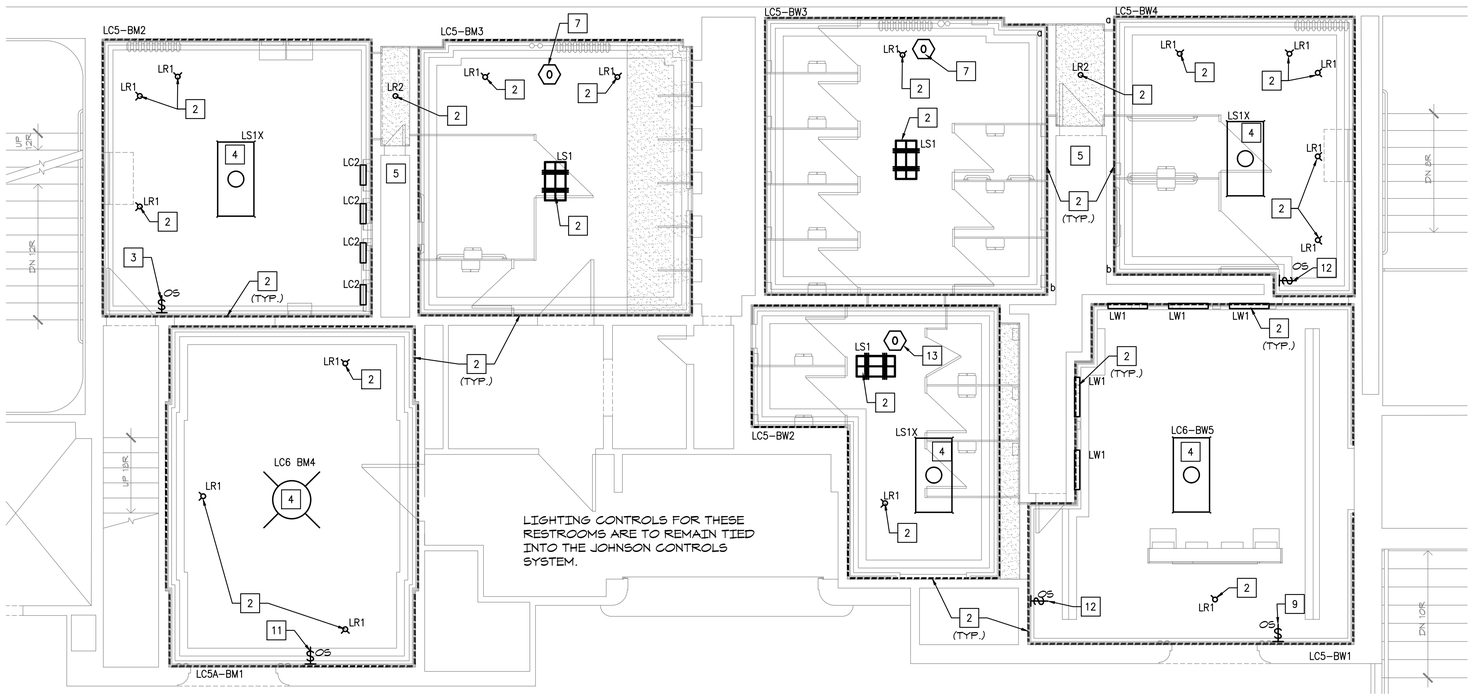
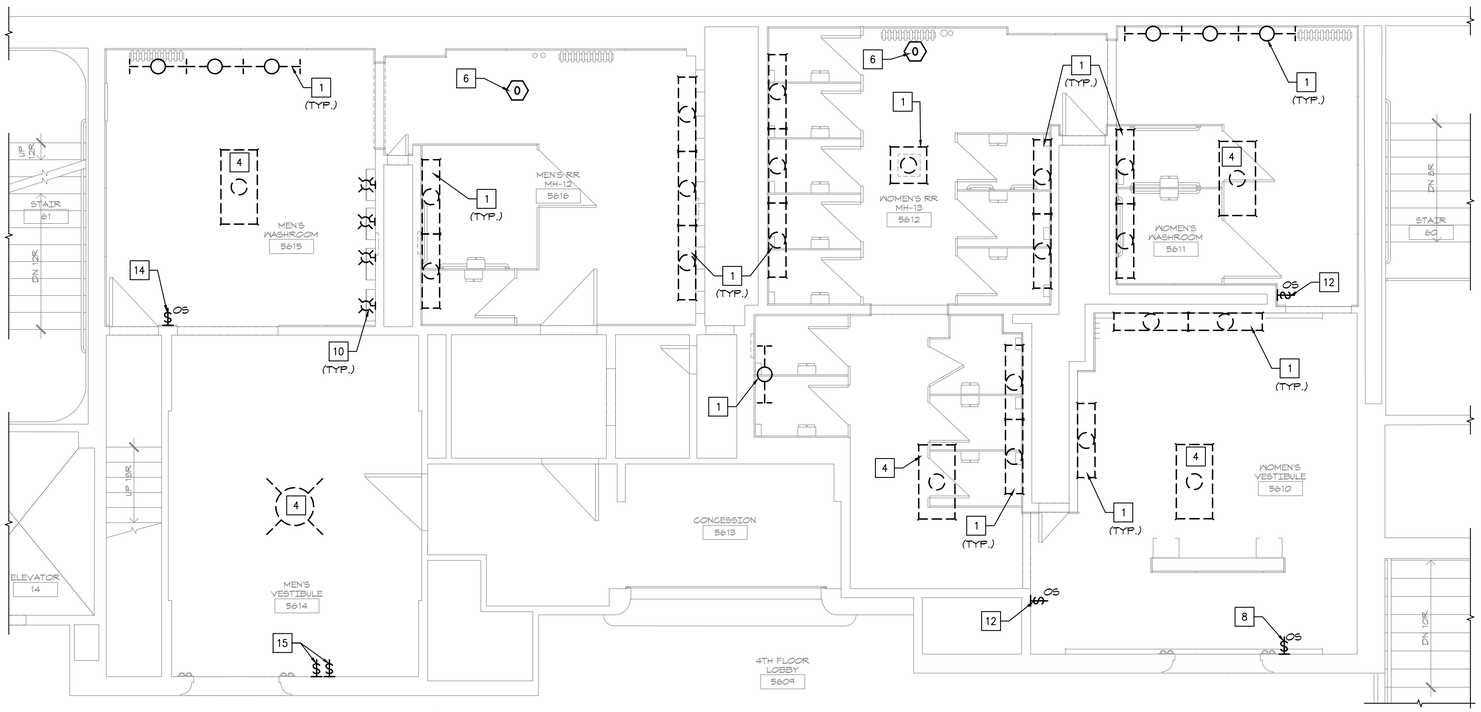
E-201



2 ELECTRICAL NEW WORK ENLARGED BALCONY LEVEL RESTROOMS

1/4"=1'-0"



1 ELECTRICAL DEMOLITION ENLARGED BALCONY LEVEL RESTROOMS

1/4"=1'-0"

KEYED NOTES:

1. DEMOLISH LIGHT FIXTURES, MAINTAIN EXISTING CIRCUITS TO FEED NEW LIGHT FIXTURES.
2. REFER TO ARCHITECTURAL DRAWINGS FOR LIGHT FIXTURE LOCATION AND DETAILS. EXTEND EXISTING CIRCUITS TO FEED NEW LIGHT FIXTURES. FIELD VERIFY.
3. PROVIDE A NEW WALL SWITCH WITH AN OCCUPANCY SENSOR, WATTSTOPPER MODEL #DSW-301-BK. PROVIDE NEW STAINLESS STEEL WALL PLATE. COORDINATE FINISHES WITH ARCHITECTS.
4. EXISTING LIGHT FIXTURE TO REMAIN. RELAMP WITH LED LAMP AS PER THE LIGHT FIXTURE SCHEDULE.
5. LIGHT FIXTURE DRIVERS TO BE INSTALLED INSIDE MECHANICAL CHASE, COORDINATE IN FIELD WITH PLUMBING/MECHANICAL DEVICES/ PIPES IN THE CHASE.
6. DEMOLISH OCCUPANCY SENSOR, MAINTAIN EXISTING CIRCUITS TO FEED NEW SENSOR.
7. PROVIDE NEW CEILING MOUNTED OCCUPANCY SENSOR IN SAME LOCATION AS EXISTING SENSOR, WATTSTOPPER MODEL # LMDC-100-BK. COORDINATE FINISHES WITH ARCHITECTS.
8. EXISTING DOUBLE GANG WALL SWITCH WITH OCCUPANCY SENSOR AND (1) SNAP SWITCH. DEMOLISH EXISTING WALL SWITCH WITH OCCUPANCY SENSOR. EXISTING SNAP SWITCH WITH EXISTING STAINLESS STEEL WALL PLATE TO REMAIN.
9. PROVIDE A NEW 2-RELAY WALL SWITCH WITH AN OCCUPANCY SENSOR, WATTSTOPPER MODEL #DSW-302-BK. COORDINATE WITH OWNER FOR CONTROL SCENARIO. EXISTING STAINLESS STEEL WALL PLATE WILL REMAIN. COORDINATE FINISHES WITH ARCHITECTS.
10. EXISTING DECORATIVE MIRROR/LIGHT TO REMAIN PER ARCHITECT. REMOVE AND REPLACE EXISTING BACK LIGHT FIXTURE AND INSTALL THE NEW LIGHT. REFER TO SHEET E601 FOR DETAILS.
11. PROVIDE A NEW 2-RELAY WALL SWITCH WITH AN OCCUPANCY SENSOR, WATTSTOPPER MODEL #DSW-302-BK. COORDINATE WITH OWNER FOR CONTROL SCENARIO. PROVIDE NEW STAINLESS STEEL WALL PLATE FOR 2-GANG BOX WITH SINGLE SWITCH. COORDINATE FINISHES WITH ARCHITECTS.
12. EXISTING LIGHT SWITCH WITH OCCUPANCY SENSOR AND EXISTING WALL PLATE TO REMAIN.
13. PROVIDE NEW CEILING MOUNTED OCCUPANCY SENSOR, WATTSTOPPER MODEL # LMDC-100-BK. COORDINATE FINISHES AND EXACT LOCATIONS WITH ARCHITECTS.
14. DEMOLISH EXISTING WALL SWITCH OCCUPANCY SENSOR AND EXISTING WALL PLATE, MAINTAIN EXISTING CIRCUITS TO FEED NEW SENSOR.
15. DEMOLISH EXISTING DOUBLE GANG SNAP WALL SWITCHES AND EXISTING STAINLESS STEEL WALL PLATE. MAINTAIN EXISTING CIRCUITS TO FEED NEW SENSOR.

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STATE OF MISSOURI
RANDALL DARIUS MOORE
NUMBER E-20780
REGISTERED PROFESSIONAL ENGINEER
10/15/2025

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KANSAS CITY CONVENTION CENTER

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RESTROOM UPGRADES PROJECT
301 W. 13th STREET, KANSAS CITY, MO 64105

FOR CONSTRUCTION

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CHECKED BY	

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ENLARGED RESTROOM PLANS ELECTRICAL

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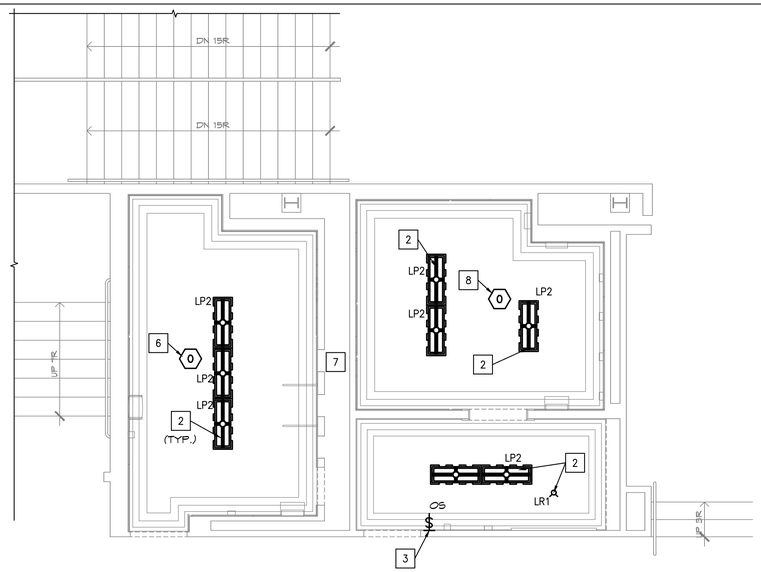
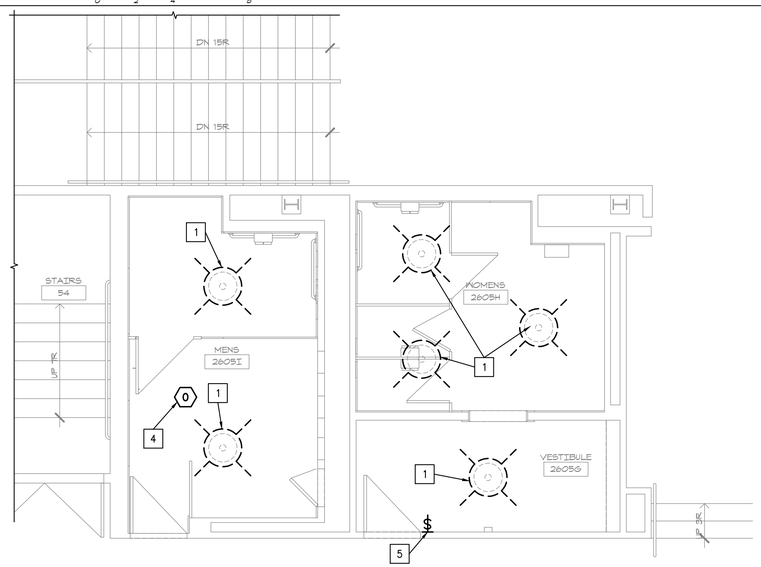
E-301



LIGHTING CONTROLS FOR THESE RESTROOMS IS TO REMAIN TIED INTO THE JOHNSON CONTROLS SYSTEM.

2 ELECTRICAL NEW WORK ENLARGED LITTLE THEATRE RESTROOMS

1/4"=1'-0"



1 ELECTRICAL DEMOLITION ENLARGED LITTLE THEATRE RESTROOMS

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3. PROVIDE A NEW WALL SWITCH WITH AN OCCUPANCY SENSOR, WATTSTOPPER MODEL #DSW-301-BK. PROVIDE NEW STAINLESS STEEL WALL PLATE. COORDINATE FINISHES WITH ARCHITECTS.
4. DEMOLISH EXISTING OCCUPANCY SENSOR, MAINTAIN CIRCUITS FOR NEW SENSOR.
5. DEMOLISH EXISTING WALL SWITCH AND EXISTING WALL PLATE, MAINTAIN CIRCUITS FOR NEW SWITCH.
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7. LIGHT FIXTURE DRIVERS TO BE INSTALLED INSIDE MECHANICAL CHASE, COORDINATE IN FIELD WITH PLUMBING/MECHANICAL DEVICES/ PIPES IN THE CHASE.
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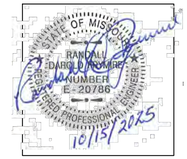

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ENLARGED RESTROOM PLANS ELECTRICAL

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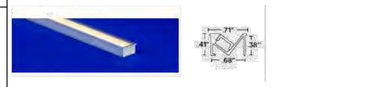
E-401

LIGHTING FIXTURE SCHEDULE

SYMBOL	MANUFACTURER	MODEL #	LAMP	COLOR TEMP	DIMMING	WATTS	VOLTAGE	FINISH	DESCRIPTION	LOCATION	NOTES
LC2	OPTIC ARTS BY LUMINII	KBL W VB XX 38SO 30K 3SF WH IMS / MC-KBL-2SF-BSAP-VB-SM-38-SA DRIVER: PS-UNI-D-60-24	LED, NOMINAL 416 LMN PER FT	3000K, 80CRI	N/A	3.7W PER FT	120/277	FLEXIBLE ALUMINUM CHANNEL	NOMINAL .63" WIDE BY .678" FLEXIBLE 3 SIDE EMITTING FROSTED LENS, FIELD BENDABLE. REMOTE POWER SUPPLY WITH ON/OFF CONTROL CAPABILITY. PROVIDE POWER FEEDS FOR A COMPLETE SYSTEM. COORDINATE WITH CONTROL SYSTEM. ENCAPSULATED LED WET LOCATION LISTED. REFER TO PLANS FOR CONTINUOUS RUN LENGTHS AND PROVIDE MANUFACTURER SHOP DRAWINGS OF CONTINUOUS RUNS FOR REVIEW AND APPROVAL. FIXTURE TO BE CUT IN THE FIELD PER MANUFACTURER'S RECOMMENDATIONS.	MIRROR BACKLIGHTING	1
LC5	Q TRAN	KCKR-01-SW 2.0HE 30 DRY DF S1A/P1A XX XX WH CL2 832 ST (PLAN LENGTH) O DRIVER: QZ 192 AND 288W UNV 24V	LED, NOMINAL 123 LMN PER FT	3000K, 98CRI	N/A	2.0W PER FT	120/277	EXTRUDED ALUMINUM CHANNEL	NOMINAL .71" WIDE BY 41" TALL LINEAR ANGLED CHANNEL WITH FROSTED LENS AND LED STRIP. REMOTE POWER SUPPLY WITH ON/OFF CONTROL CAPABILITY. PROVIDE POWER FEEDS FOR A COMPLETE SYSTEM. COORDINATE WITH CONTROL SYSTEM. REFER TO PLANS FOR CONTINUOUS RUN LENGTHS AND PROVIDE MANUFACTURER SHOP DRAWINGS OF CONTINUOUS RUNS FOR REVIEW AND APPROVAL.	COVE LIGHTING	1
LC5A	Q TRAN	KCKR-01-SW 4.0HE 30 DRY DF S1A/P1A XX XX WH CL2 832 ST (PLAN LENGTH) O DRIVER: QZ 192 AND 288W UNV 24V	LED, NOMINAL 252 LMN PER FT	3000K, 98CRI	N/A	4.0W PER FT	120/277	EXTRUDED ALUMINUM CHANNEL	NOMINAL .71" WIDE BY 41" TALL LINEAR ANGLED CHANNEL WITH FROSTED LENS AND LED STRIP. REMOTE POWER SUPPLY WITH ON/OFF CONTROL CAPABILITY. PROVIDE POWER FEEDS FOR A COMPLETE SYSTEM. COORDINATE WITH CONTROL SYSTEM. REFER TO PLANS FOR CONTINUOUS RUN LENGTHS AND PROVIDE MANUFACTURER SHOP DRAWINGS OF CONTINUOUS RUNS FOR REVIEW AND APPROVAL.	COVE LIGHTING	1
LC6	Q TRAN	WALA-FC-SW / BN-SB-SST-16' / DRY / 30 / 4.0 / ENC/TL / X X X CL XX DRIVER: QZLP 25W UNV 24W	LED, NOMINAL 271 LMN PER FT	3000K, 98CRI	N/A	4.0W PER FT	120/277	EXTRUDED ALUMINUM CHANNEL	NOMINAL .4" WIDE BY .4" TALL LINEAR CHANNEL WITH FROSTED LENS AND LED STRIP. REMOTE POWER SUPPLY WITH ON/OFF CONTROL CAPABILITY. PROVIDE POWER FEEDS FOR A COMPLETE SYSTEM. COORDINATE WITH CONTROL SYSTEM. TAPE WET LOCATION LISTED. REFER TO PLANS FOR CONTINUOUS RUN LENGTHS AND PROVIDE MANUFACTURER SHOP DRAWINGS OF CONTINUOUS RUNS FOR REVIEW AND APPROVAL. FIXTURE TO BE CUT IN THE FIELD PER MANUFACTURER'S RECOMMENDATIONS.	REPLACEMENT COVE LIGHTING	1
LP2	CUSTOM	CUSTOM	LED, 2000 LMNS	3000K	N/A	30W	120/277	ALUMINUM	NOMINAL 1' X 2.5' CUSTOM DECORATIVE PENDANT FIXTURE. (RE: SPECIFICATION SECTIONS 012100 - ALLOWANCES AND 265100 ELECTRICAL LIGHTING).	LITTLE THEATER RESTROOMS PENDANT	1
LR1	USAI LIGHTING	B3RWRT 20X3 30KS W2-D1 SC SC RT UNV D6E	LED, NOMINAL 2475 LMNS	3000K, 80CRI	N/A	20W	120/277	CONDUIT SILVER	NOMINAL 3" DIAMETER BY 5-1/2" DEEP RECESSED WALL WASH DOWNLIGHT WITH REMODEL HOUSING AND INTEGRAL DRIVER.	ALL ARTWORK LOCATIONS INDICATED ON DRAWINGS	
LR2	USAI LIGHTING	B3RDF 09X1 30KS 65 SF SC SC FT UNV D6E	LED NOMINAL 711 LMNS	3000K, 80CRI	N/A	9 W	120/277	CONDUIT SILVER	NOMINAL 3" DIAMETER BY 4" RECESSED DOWNLIGHT WITH NEW HOUSING AND INTEGRAL DRIVER. PROVIDE WITH 65 DEGREE DISTRIBUTION.	BALCONY WOMEN AND MENS RESTROOMS PORTAL	
LS1	CUSTOM	CUSTOM	LED, 2000 LMNS	3000K	N/A	30W	120/277	TO MATCH EXISTING	NOMINAL 1' X 2.5' CUSTOM DECORATIVE SURFACE MOUNTED HISTORIC FIXTURE TO BE RELICATED. LS1X EXISTING FIXTURES TO BE REPLICATED AND RELAMPED WITH LED. NEW FIXTURES TO MATCH. (RE: SPECIFICATION SECTIONS 012100 - ALLOWANCES AND 265100 ELECTRICAL LIGHTING).	SURFACE DECORATIVE	1
LW1	SPI LIGHTING	A1W10857 L22W PT46 120-277 3000K DF80 VAN	LED, 1501 LMNS	3000K, 90CRI	N/A	22W	120/277	ALUMINUM (METALLIC TEXTURED)	NOMINAL 6.5" X 25" X 4" DECORATIVE WALL SCONCE WITH FORMED OPAL ACRYLIC LENS AND METAL ELEMENTS.	BALCONY WOMENS SCONCE	1



GENERAL NOTES:

A. MANUFACTURER TO PROVIDE PROJECT SPECIFIC SHOP DRAWINGS SHOWING EXACT MOUNTING, FINISH, LENGTH, SHAPE AND LAMPING OF LUMINAIRE. VERIFY CEILING CONDITIONS AND COORDINATE LIGHT FIXTURE MOUNTING HARDWARE AND TRIMS NEEDED TO SUIT CEILING CONDITIONS PRIOR TO ORDERING.

B. VERIFY FINISH AND COLOR WITH ARCHITECT PRIOR TO PLACING ORDER.

LUMINAIRE SCHEDULE NOTES:

1. REFER TO DETAILS FOR SPECIFIC MOUNTING LOCATIONS AND DETAILS.
2. TRIM TYPE AND FINISH NOTED, BUT SHALL BE REVIEWED AND APPROVED BY OTHERS TO ENSURE COMPATIBILITY WITH SURROUNDING ARCHITECTURAL FINISH AND MATERIALS.

GENERAL NOTES:

1. THE LIGHTING FIXTURE SCHEDULE IS CREATED BY THE LIGHTING CONSULTANT. FOR MORE INFORMATION CONTACT LIGHTWORKS, INC.

2. FOR THE CUSTOM LIGHT FIXTURES; REFER TO SHEET A-503 FOR MORE DETAILS.

LIGHTING LEGEND

UPPER CASE LETTER INDICATES FIXTURE TYPE, LOWER CASE LETTER INDICATES SWITCHING DESIGNATION & UPPER CASE LETTER WITH NUMBER INDICATES CIRCUIT NUMBER

- RECESSED OR PENDANT MOUNT LIGHT WITH FIXTURE MARK.
- LIGHT WITH FIXTURE MARK, WALL BRACKET
- 12x48 LIGHT FIXTURE
- 24x48 LIGHT FIXTURE
- LED COVE LIGHT
- CUSTOM SURFACE MOUNTED LIGHT FIXTURE
- CUSTOM PENDANT MOUNTED LIGHT FIXTURE
- MIRROR LIGHT FIXTURE
- WALL WASH LIGHT FIXTURE
- WALL SWITCH SINGLE POLE, CENTER 46" A.F.F.
- WALL SWITCH THREE - WAY, CENTER 46" A.F.F.
- WALL SWITCH FOUR - WAY, CENTER 46" A.F.F.
- COMBINATION OCCUPANCY SENSOR/SWITCH
- OCCUPANCY SENSOR - CEILING MOUNTED
- OCCUPANCY SENSOR - WALL MOUNTED
- ELECTRICAL NOTE

STATE OF MISSOURI · KATHI S. KINDER · NUMBER PE-2001014833 · REGISTERED PROFESSIONAL ENGINEER · 10/15/2025

PWA

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www.lightworkskc.com

KANSAS CITY CONVENTION CENTER

MUSIC HALL AND LITTLE THEATRE RESTROOM UPGRADES PROJECT

301 W. 13th STREET, KANSAS CITY, MO 64105

FOR CONSTRUCTION

PROJECT NO.	23-010-01
DATE	10 / 15 / 2025
DRAWN BY	FSC
CHECKED BY	RDF
CHECKED BY	

REVISED DATE	DESCRIPTION

SHEET TITLE & NUMBER

ELECTRICAL SCHEDULES

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PIPER-WIND ARCHITECTS, INC.

E-600

MUSIC HALL RESTROOM COVE LENGTHS

LC5 COVE

** ALL LENGTHS TO BE FIELD VERIFIED. **

Room	Cove Name	ft	in	Overall length (inches)	Overall length in ft	Load (wattage/ft)	Sub-Total Load (w)	Total Load (w)
Fireplace Lobby Womens	FW1	48	6	582	48.50	2	97.00	
Fireplace Lobby Womens	FW2	58	6	702	58.50	2	117.00	
TOTAL FIREPLACE LOBBY WOMENS							214.00	
Fireplace Lobby Mens	FM1	14	10	178	14.83	2	29.67	
Fireplace Lobby Mens	FM4	23	1	277	23.08	2	46.17	
Fireplace Lobby Mens	FM2	23	1	277	23.08	2	46.17	
Fireplace Lobby Mens	FM3	35	3	423	35.25	2	70.50	
TOTAL FIREPLACE LOBBY MENS							192.50	
TOTAL FIRESIDE COVE								**406.50**
Balcony Womens	BW1	65	6	786	65.50	2	131.00	
Balcony Womens	BW2	47	7	571	47.58	2	95.17	
Balcony Womens	BW3	58	1	697	58.08	2	116.17	
Balcony Womens	BW4	53	10	646	53.83	2	107.67	
TOTAL BALCONY WOMENS							675.00	
Balcony Mens	BM1	61	7	739	61.58	2	123.17	
Balcony Mens	BM2	56	7	679	56.58	2	113.17	
Balcony Mens	BM3	56	10	682	56.83	2	113.67	
TOTAL BALCONY MENS							350.00	
TOTAL BALCONY COVE								**1200**

LC5 DRIVER

Driver Name	Driver Wattage	Driver Low Voltage 24V Load (W)	Each circuit (96w max)	24V Driver Line Voltage Load (A)	Driver Spec
D1ab	192	97.00	48.50	2.02	QZ-192W-UNV-24V-PH-WH
D2ab	192	117.00	58.50	2.44	QZ-192W-UNV-24V-PH-WH
D3a		29.67	14.83	0.62	
D3b	288	46.17	23.08	0.96	QZ-288W-UNV-24V-PH-WH
D3c		46.17	23.08	0.96	
D4ab	192	70.50	35.25	1.47	QZ-192W-UNV-24V-PH-WH
D5abc	288	131.00	43.67	1.82	QZ-288W-UNV-24V-PH-WH
D6ab	192	95.17	47.58	1.98	QZ-192W-UNV-24V-PH-WH
D7ab	192	116.17	58.08	2.42	QZ-192W-UNV-24V-PH-WH
D8ab	192	107.67	53.83	2.24	QZ-192W-UNV-24V-PH-WH
D10ab	192	123.17	61.58	2.57	QZ-192W-UNV-24V-PH-WH
D11ab	192	113.17	56.58	2.36	QZ-192W-UNV-24V-PH-WH
D12ab	192	113.67	56.83	2.37	QZ-192W-UNV-24V-PH-WH

LC2 DECORATIVE WALL SCONCE RE-LIGHT

Room	Name	Diameter (inches)	Overall length (inches)	Overall length in ft	Load (wattage/ft)	Sub-Total Load (w)	Total Load (w)
Fireplace Lobby Womens Sconces - qty of 6	FW3	21	126	10.50	3.7	38.85	
Fireplace Lobby Mens Sconces - qty of 5	FM4	21	105	8.75	3.7	32.38	
Balcony Mens Sconces - qty of 4	BM4	21	84	7.00	3.7	25.90	
TOTAL DECORATIVE WALL SCONCE RELIGHTING							**97.13**

LC2 DRIVER

Driver Name	Driver Wattage	Driver Low Voltage 24V Load (W)	Each circuit (96w max)	24V Driver Line Voltage Load (A)	Driver Spec
D13	96	38.85	19.43	0.81	PS-UNI-D-60-24
D14	96	32.38	16.19	0.67	PS-UNI-D-60-24
D15	96	25.90	12.95	0.54	PS-UNI-D-60-24

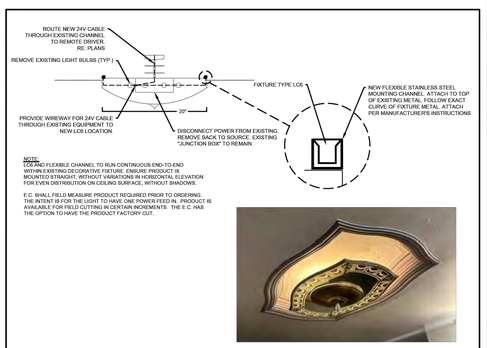
LC6 DECORATIVE CEILING RE-LIGHT

Room	Name	Diameter (inches)	Overall length (inches)	Overall length in ft	Load (wattage/ft)	Sub-Total Load (w)	Total Load (w)
Balcony Womens Decorative Ceiling Re-light	BW5	22	22	1.83	4	7.33	
Balcony Mens Decorative Ceiling Re-light	BM4	22	22	1.83	4	7.33	
TOTAL DECORATIVE CEILING RELIGHTING							**14.67**

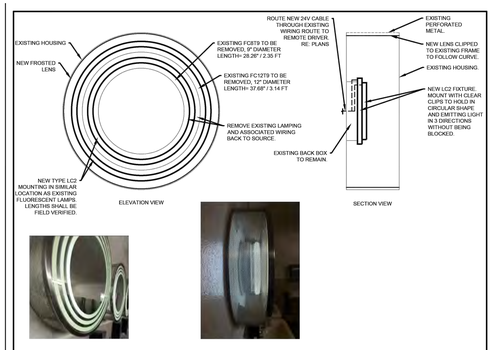
LC6 DRIVER

Driver Name	Driver Wattage	Driver Low Voltage 24V Load (W)	Each circuit (96w max)	24V Driver Line Voltage Load (A)	Driver Spec
D9	60	7.33	3.67	0.06	QZLP-25W-UNV-24V-010-WH-X
D13	60	7.33	3.67	0.06	QZLP-25W-UNV-24V-010-WH-X

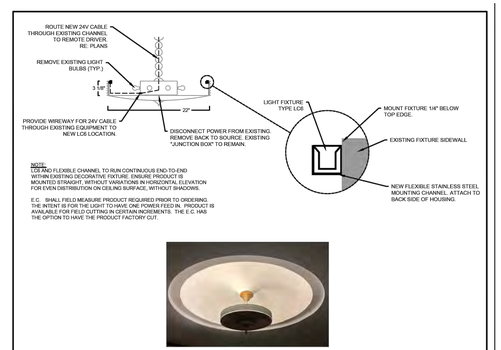
ALL LENGTHS TO BE FIELD VERIFIED.



X WOMEN'S BALCONY DECORATIVE FIXTURE DETAIL FOR RE-LIGHTING — SCALE: NO SCALE



X CIRCULAR MIRROR LIGHT DETAIL — SCALE: NO SCALE



X MEN'S BALCONY DECORATIVE FIXTURE DETAIL FOR RE-LIGHTING — SCALE: NO SCALE

LIGHTWORKS DETAIL — 05.07.2025

LIGHTWORKS DETAIL — 05.07.2025

LIGHTWORKS DETAIL — 05.07.2025

LIGHTWORKS INC. DESIGN+ENGINEERING
3616 MAIN · WESTON, MISSOURI 64098
PH: 816.640.9940 · FAX: 816.640.9970

GENERAL NOTES:

1. THE COVE LENGTHS TABLE IS CREATED BY THE LIGHTING CONSULTANT. FOR MORE INFORMATION CONTACT LIGHTWORKS, INC.

2. LIGHT FIXTURE MOUNTING DETAILS CREATED BY THE LIGHTING CONSULTANT. FOR MORE INFORMATION CONTACT LIGHTWORKS, INC."

STATE OF MISSOURI · KATHI S. SANDEL · NUMBER E-20001 · REGISTERED PROFESSIONAL ENGINEER · 10/15/2025

PWA

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REVISED DATE	DESCRIPTION

SHEET TITLE & NUMBER

ELECTRICAL SCHEDULES

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E-601

CONTRACT ESCALATION CONTACTS

This attachment establishes the operational, service/technical and contractual escalation contacts for the CONTRACTOR and the CITY.

CONTRACTOR'S day-to-day point of contact for operational related issues is:

Vazquez Commercial Contracting, LLC
Joe C. Vazquez
joev@vazquezcc.com
816-569-6869

CONTRACTOR'S day-to-day point of contact for service/technical related issues is:

Vazquez Commercial Contracting, LLC
Brian Frasier
Brianf@vazquezcc.com
816-905-7752

CONTRACTOR'S day-to-day point of contact for contract related issues is:

Vazquez Commercial Contracting, LLC
Brian Frasier
Brianf@vazquezcc.com
816-905-7752

CITY'S day-to-day point of contact for operational related issues is:

City of Kansas City, Missouri – General Services Department
Charles A. Harris, PE, LEED AP
charles.harris@kcmo.org
(816) 513-2751

CITY'S day-to-day point of contact for service/technical related issues is:

City of Kansas City, Missouri – General Services Department
Charles A. Harris, PE, LEED AP
charles.harris@kcmo.org
(816) 513-2751

CITY'S day-to-day point of contact for contract related issues is:

Quintin Leaders
Contract Administration, Procurement Services Division
(816) 513-0837
Quintin.leaders@kcmo.org