

SECTION 905 -- PROPOSAL (CONTINUED)

I (We) hereby certify by digital signature and electronic submission via Bid Express of the Section 905 proposal below, that all certifications, disclosures and affidavits incorporated herein are deemed to be duly executed in the aggregate, fully enforceable and binding upon delivery of the bid proposal. I (We) further acknowledge that this certification shall not extend to the bid bond or alternate security which must be separately executed for the benefit of the Commission. This signature does not cure deficiencies in any required certifications, disclosures and/or affidavits. I (We) also acknowledge the right of the Commission to require full and final execution on any certification, disclosure or affidavit contained in the proposal at the Commission's election upon award. Failure to so execute at the Commission's request within the time allowed in the Standard Specifications for execution of all contract documents will result in forfeiture of the bid bond or alternate security.

Bidder acknowledges receipt of and has added to and made a part of the proposal and contract documents the following addendum (addenda):

ADDENDUM NO.	<u>1</u>	DATED	<u>11/17/2025</u>	ADDENDUM NO.	_____	DATED	_____
ADDENDUM NO.	_____	DATED	_____	ADDENDUM NO.	_____	DATED	_____
ADDENDUM NO.	_____	DATED	_____	ADDENDUM NO.	_____	DATED	_____

Number

Description

- 1 Added Advertisement; Added Document 00 91 13-A; Added Section 10 27 00; Replaced Document 00 01 10 with same; Replace Document 00 01 15 with same; Replace Document 00 21 13 with same; Replace Document 00 22 13 with same; Replace Section 08 41 13 with same; Replace Section 08 81 26 with same; Replace Section 09 30 00 with same; Replace section 09 54 26 with same; Replace Section 10 28 00 with same; Replace Section 22 02 50 with same; Replace Section 23 02 50 with same; Replace Section 23 20 60 with same; Replace Section 23 21 00 with same; Replace Section 23 21 20 with same; Replace Section 23 89 30 with same; Revised or Added Plan Sheet Nos. 2, 6, 11, 12, 15, 15.1, 16-17, 19, 28, 31-34, 36-38, 41-42, 46-51 & 56; Amendment EBSx Download Required.

TOTAL ADDENDA: 1

(Must agree with total addenda issued prior to opening of bids)

Respectfully Submitted,

DATE _____

Contractor

BY _____

Signature

TITLE _____

ADDRESS _____

CITY, STATE, ZIP _____

PHONE _____

FAX _____

E-MAIL _____

(To be filled in if a corporation)

Our corporation is chartered under the Laws of the State of _____ and the names, titles and business addresses of the executives are as follows:

President

Address

Secretary

Address

Treasurer

Address

The following is my (our) itemized proposal.

BWO-9021-25(014)/ 503251302000

Hinds County(ies)

Revised 01/26/2016

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 901 - ADVERTISEMENT

Electronic bids will be received by the Mississippi Transportation Commission at 10:00 o'clock A.M., Tuesday, November 25, 2025, from the Bid Express Service and shortly thereafter publicly read on the Sixth Floor for:

Administration Building 2nd Floor Renovation, known as State Project No. BWO-9021-25(014) / 503251302 in Hinds County.

The attention of bidders is directed to the predetermined minimum wage rate set by the U. S. Department of Labor under the Fair Labor Standards Act.

Plans and specifications are on file in the offices of the Mississippi Department of Transportation.

Contractors may request permission to bid online at <http://shop.mdot.ms.gov> at no cost. Upon approval, Contractors shall be eligible to submit a bid using Bid Express at <http://bidx.com>. Specimen proposals may be viewed and downloaded online at no cost at <http://mdot.ms.gov> or purchased online at <http://shop.mdot.ms.gov> at a cost of Ten Dollars (\$10.00) per proposal plus a small convenience fee. Cash or checks will not be accepted as payment.

Plans must be purchased online at [<https://shop.mdot.ms.gov>](https://shop.mdot.ms.gov). Costs of plans will be on a per sheet basis plus a small convenience fee. If you have any questions, you can contact the MDOT Plans Print Shop at (601) 359-7460, or e-mail at plans@mdot.state.ms.us. Plans will be shipped upon receipt of payment. Cash or checks will not be accepted as payment.

Bid bond, signed or countersigned by a Mississippi Agent or Qualified Nonresident Agent, with Power of Attorney attached, a Cashier's check or Certified Check for five (5%) percent of bid, payable to STATE OF MISSISSIPPI, must accompany each proposal.

The attention of bidders is directed to the provisions of Subsection 102.07 pertaining to irregular proposals and rejection of bids.

BRAD WHITE
EXECUTIVE DIRECTOR

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**ADDENDUM No. 1
DOCUMENT 00 91 13-A**

DATE: NOVEMBER 12, 2025

PROJECT: ADMINISTRATION BUILDING 2ND FLOOR RENOVATION

PROJECT NUMBER: BWO-9021-25(014) / 503251-302000

Plan Holders:

The following changes and clarifications are hereby made a part of and take precedence over conflicting sections of the original Bidding Documents.

PERTAINING TO THE SPECIFICATIONS:

- 1.1 Add the following specification in its entirety:
 - A. Division 10 – 10 27 00 Pedestal Type Access Flooring
- 1.2 The following specifications have been modified:
 - A. Division 00 – 00 01 10 Table of Contents
 - 00 01 15 List of Drawing Sheets
 - 00 21 13 Instructions to Bidders
 - 00 22 13 Supplementary Instructions to Bidders
 - B. Division 08 – 08 41 13 Aluminum-Framed Entrances and Storefront
 - 08 81 26 Interior Glass and Glazing
 - C. Division 09 – 09 30 00 Tiling
 - 09 54 26 Suspended Wood Ceilings
 - D. Division 10 – 10 28 00 Toilet, Bath, and Laundry Accessories
 - E. Division 22 – 22 02 50 Plumbing Insulation
 - F. Division 23 – 23 02 50 Mechanical Insulation
 - 23 20 60 Mechanical Pipes and Pipe Fittings
 - 23 21 00 Mechanical Valves
 - 23 21 20 Mechanical Piping Specialties
 - 23 89 30 Variable Air Volume Boxes

PERTAINING TO THE DRAWINGS:

- 1.3 Sheet – G-002 – PROJECT DATA
- 1.4 Sheet – A-121 – RCP - SECOND FLOOR

- 1.5 Sheet – A-400 – ENLARGED FLOOR PLAN – MILLWORK
- 1.6 Sheet – A-401 – ENLARGED FLOOR PLAN - RESTROOMS
- 1.7 Sheet – A-502 – DETAILS – PARTITION TYPES/MICS. DETAILS
- 1.8 Sheet – A-503 – DETAILS – MICELLANEOUS
a. Sheet has been added.
- 1.9 Sheet – A-550 – DETAILS – MILLWORK
- 1.10 Sheet – A-600 – SCHEDULE – DOOR, WINDOW, LOUVER
- 1.11 Sheet – I-101 – FINISH PLAN – FIRST FLOOR
- 1.12 Sheet – M-001 – PROJECT INFO & GENERAL NOTES – HVAC
- 1.13 Sheet – M-101 – HVAC PLAN - SECOND FLOOR – DUCTWORK
- 1.14 Sheet – M-102 – HVAC PLAN - SECOND FLOOR - DUCTWORK PART A
- 1.15 Sheet – M-103 – HVAC PLAN - SECOND FLOOR - DUCTWORK PART B
- 1.16 Sheet – M-201 – HVAC PLAN - SECOND FLOOR – PIPING
- 1.17 Sheet – M-203 – HVAC PLAN - SECOND FLOOR - PIPING PART B
- 1.18 Sheet – M-301 – ENLARGED PLANS - HAVC
- 1.19 Sheet – M-401 – SECTIONS & RISERS – HVAC
- 1.20 Sheet – M-601 – SCHEDULES - HVAC
- 1.21 Sheet – M-602 – SCHEDULES - HVAC
- 1.22 Sheet – E-001 – ELECTRICAL LEGEND & NOTES
- 1.23 Sheet – E-002 – SCHEDULES
- 1.24 Sheet – ED-101 – ELECTRICAL DEMOLITION
- 1.25 Sheet – E-101 – FLOOR PLAN – LIGHTING
- 1.26 Sheet – E-201 – FLOOR PLAN - POWER OVERALL
- 1.27 Sheet – E-202 – FLOOR PLAN - MECHANICAL CONNECTIONS
- 1.28 Sheet – E-405 – DETAILS

END OF SECTION

DOCUMENT 00 01 10

TABLE OF CONTENTS

PROJECT:

ADMINISTRATION BUILDING 2nd FLOOR
RENOVATION
JACKSON, HINDS COUNTY, MISSISSIPPI

PROJECT NUMBER:

BWO-9021-25(014) 503251

DATE:

10-20-25 (Revised 11-12-2025 via Addendum 1)

DESCRIPTION A: This Work shall consist of all construction work necessary in constructing the Administration Building 2nd Floor Renovation in Jackson, Hinds County, Mississippi, in accordance with these Specifications and conforming with the Drawings.

It is the intention of these Specifications to provide the necessary items and instruction for a building renovation including all code compliance. Omission of items or instruction necessary or considered standard good practice for the proper installation and construction of the building renovation shall not relieve the Contractor of furnishing and installing such items and conforming to the building codes having jurisdiction.

DOCUMENT NUMBER	DOCUMENT TITLE
	DIVISION 00 PROCUREMENT AND CONTRACTING REQUIREMENTS
	INTRODUCTORY INFORMATION
00 01 07	SEAL PAGE
00 01 10	TABLE OF CONTENTS
00 01 15	LIST OF DRAWING SHEETS
	BIDDING REQUIREMENTS
00 21 13	INSTRUCTION TO BIDDERS
00 22 13	SUPPLEMENTARY INSTRUCTIONS TO BIDDERS
	CONTRACTING REQUIREMENTS
00 72 00	GENERAL CONDITIONS
	AIA DOCUMENT A201™ - 2007 AMENDED
00 91 13	ADDENDA
SECTION NUMBER	SPECIFICATION SECTION TITLE
	DIVISION 01 – GENERAL REQUIREMENTS
01 10 00	SUMMARY
01 25 00	SUBSTITUTION PROCEDURES
01 26 00	CONTRACT MODIFICATION PROCEDURES

01 29 00	PAYMENT PROCEDURES
01 31 00	PROJECT MANAGEMENT AND COORDINATION
01 32 00	CONSTRUCTION PROGRESS DOCUMENTATION
01 32 33	PHOTOGRAPHIC DOCUMENTATION
01 33 00	SUBMITTAL PROCEDURES
01 35 16	ALTERATION PROJECT PROCEDURES
01 40 00	QUALITY REQUIREMENTS
01 42 00	REFERENCES
01 45 23	TESTING AND INSPECTION SERVICES - CONTRACTOR
01 50 00	TEMPORARY FACILITIES AND CONTROLS
01 60 00	PRODUCT REQUIREMENTS
01 73 00	EXECUTION
01 74 19	CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL
01 77 00	CLOSEOUT PROCEDURES
01 78 23	OPERATION AND MAINTENANCE DATA
01 78 39	PROJECT RECORD DOCUMENTS
01 79 00	DEMONSTRATION AND TRAINING
01 91 00	GENERAL COMMISSIONING REQUIREMENTS
01 91 13.13	GENERAL COMMISSIONING REQUIREMENTS FOR FUNCTIONAL PERFORMANCE TESTING
	DIVISION 02 - EXISTING CONDITIONS
02 41 00	DEMOLITION
	DIVISIONS 06 – WOOD, PLASTICS, AND COMPOSITES
06 20 00	FINISH CARPENTRY
	DIVISION 07 - THERMAL AND MOISTURE PROTECTION
07 84 00	FIRESTOPPING
07 92 13	EXTERIOR JOINT SEALANTS
07 92 16	INTERIOR JOINT SEALANTS
	DIVISION 08 – OPENINGS
08 11 13	HOLLOW METAL (HM) DOORS AND FRAMES
08 14 16	FLUSH WOOD DOORS
08 41 13	ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS
08 41 18	INTERIOR ALUMINUM STOREFRONT
08 71 00	DOOR HARDWARE
08 81 26	INTERIOR GLASS AND GLAZING
	DIVISION 09 - FINISHES
09 22 16	NON-STRUCTURAL METAL FRAMING
09 29 00	GYPSON WALLBOARD

09 30 00	TILING
09 51 00	ACOUSTICAL CEILINGS MATERIALS (AM)
09 54 26	SUSPENDED WOOD CEILINGS
09 65 13	RESILIENT BASE (RB)
09 65 19	RESILIENT TILE FLOORING (RT)
09 68 13	TILE CARPETING
09 91 23	INTERIOR PAINTING
	DIVISION 10 – SPECIALITIES
10 21 13	SOLID PLASTIC TOILET COMPARTMENTS
10 27 00	PEDESTAL TYPE ACCESS FLOORING
10 28 00	TOILET, BATH, AND LAUNDRY ACCESSORIES
	DIVISION 12 - FURNISHINGS
12 21 13	HORIZONTAL LOUVER BLINDS
12 36 63	SOLID SURFACE FABRICATIONS (SSF)
12 48 13	ENTRANCE FLOOR MATS AND FRAMES
	DIVISION 21 - FIRE SUPPRESSION
21 00 10	FIRE PROTECTION GENERAL PROVISIONS
21 00 30	BASIC FIRE PROTECTION REQUIREMENTS
21 00 50	FIRE PROTECTION MATERIALS AND METHODS
21 13 30	WET PIPE SPRINKLER SYSTEM
	DIVISION 22 – PLUMBING
22 00 10	PLUMBING GENERAL PROVISIONS
22 00 20	BASIC PLUMBING REQUIREMENTS
22 00 30	PLUMBING SUBMITTALS AND SHOP DRAWINGS
22 00 40	PLUMBING CLOSE-OUT REQUIREMENTS
22 00 50	BASIC PLUMBING MATERIALS AND METHODS
22 01 40	PLUMBING SUPPORTS AND ANCHORS
22 01 90	PLUMBING IDENTIFICATION
22 02 50	PLUMBING INSULATION
22 08 00	PLUMBING SYSTEM COMMISSIONING
22 10 60	PIPES AND PIPE FITTINGS
22 11 00	PLUMBING VALVES
22 11 20	PLUMBING PIPING SPECIALTIES
22 31 70	ELECTRICAL REQUIREMENTS
22 44 30	PLUMBING SPECIALTIES
22 44 40	PLUMBING FIXTURES, TRIM AND ACCESSORIES

	DIVISION 23 - HEATING, VENTILATING, AND AIR-CONDITIONING
23 00 10	MECHANICAL GENERAL PROVISIONS
23 00 20	BASIC MECHANICAL REQUIREMENTS
23 00 30	MECHANICAL SUBMITTALS AND SHOP DRAWINGS
23 00 35	MECHANICAL SYSTEMS AND EQUIPMENT WARRANTIES
23 00 40	MECHANICAL CLOSE-OUT REQUIREMENTS
23 00 50	BASIC MECHANICAL MATERIALS AND METHODS
23 01 40	SUPPORTS AND ANCHORS
23 01 70	ELECTRICAL REQUIREMENTS
23 01 90	MECHANICAL IDENTIFICATION
23 02 40	MECHANICAL SOUND AND VIBRATION CONTROL
23 02 50	MECHANICAL INSULATION
23 08 00	HVAC SYSTEM COMMISSIONING
23 08 10	BUILDING AUTOMATION SYSTEM COMMISSIONING
23 09 00	BUILDING AUTOMATION SYSTEM - GENERAL
23 09 13	BAS BASIC MATERIALS AND DEVICES
23 09 16	BAS OPERATOR INTERFACES
23 09 19	BAS FIELD PANELS
23 09 23	BAS COMMUNICATION DEVICES
23 09 26	BAS SOFTWARE AND PROGRAMMING
23 09 90	TESTING, ADJUSTING AND BALANCING
23 20 60	MECHANICAL PIPES AND PIPE FITTINGS
23 21 00	MECHANICAL VALVES
23 21 20	MECHANICAL PIPING SPECIALTIES
23 38 90	DUCTWORK
23 39 10	DUCTWORK ACCESSORIES
23 48 85	AIR CLEANING/TREATMENT
23 48 89	BI-POLAR IONIZATION AIR PURIFICATION SYSTEM
23 78 55	AIR HANDLING UNITS
23 86 70	PACKAGED AIR CONDITIONERS
23 89 30	VARIABLE AIR VOLUME BOXES
	DIVISION 26 – ELECTRICAL
26 05 05	SELECTIVE DEMOLITION FOR ELECTRICAL
26 05 19	LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES
26 05 26	GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS
26 05 29	HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS
26 05 33.13	CONDUIT FOR ELECTRICAL SYSTEMS
26 05 33.16	BOXES FOR ELECTRICAL SYSTEMS
26 05 53	IDENTIFICATION FOR ELECTRICAL SYSTEMS
26 08 00	ELECTRICAL SYSTEM COMMISSIONING
26 27 23	INDOOR SERVICE POLES
26 27 26	WIRING DEVICES
26 51 00	INTERIOR LIGHTING
	DIVISION 27 COMMUNICATIONS

27 10 00	STRUCTURED CABLING

	APPENDIX
	COMMISSIONING PLAN
	DIVISIONS 50 MDOT PROCUREMENT AND CONTRACTING FORMS

(REVISIONS TO THE ABOVE WILL BE INDICATED ON THE SECOND SHEET
OF SECTION 905 AS ADDENDA)

END OF TABLE OF CONTENTS

DOCUMENT 00 01 15

LIST OF DRAWING SHEETS

1.01 LIST OF DRAWINGS

- A. List of Drawings: Drawings consist of the following Contract Drawings and other drawings of type indicated:

WORKING NUMBER	SHEET NUMBER	DESCRIPTION
G-001	1	COVER SHEET
G-002	2	PROJECT DATA
G-003	3	SITE PLAN – SITE ACCESS
AD-100	4	SCHEDULE - DEMOLITION
AD-101	5	DEMOLITION PLAN - SECOND FLOOR
AD-121	6	DEMOLITION RCP - SECOND FLOOR
AD-201	7	DEMOLITION ELEVATIONS & ENLARGED PLAN
A-101	8	LIFE SAFETY PLAN - SECOND FLOOR
A-111	9	FLOOR PLAN - SECOND FLOOR
A-121	10	RCP - SECOND FLOOR
A-400	11	ENLARGED FLOOR PLAN - MILLWORK
A-401	12	ENLARGED FLOOR PLAN - RESTROOMS
A-500	13	DETAILS - WALL CONSTRUCTION
A-501	14	DETAILS - INTERIOR FRAMING
A-502	15	DETAILS - PARTITION TYPES/MISC. DETAILS
A-503	15.1	DETAILS - MISCELLANEOUS
A-550	16	DETAILS - MILLWORK
A-600	17	SCHEDULE - DOOR, WINDOW, LOUVER
A-700	18	DETAILS - DOOR, WINDOW, LOUVER
I-101	19	FINISH PLAN - SECOND FLOOR
I-102	20	FINISH PLAN - THIRD FLOOR
FP-001	21	PROJECT INFO & GENERAL NOTES - FIRE PROTECTION
FP-101	22	FIRE PROTECTION PLAN - SECOND FLOOR
P-001	23	PROJECT INFO & GENERAL NOTES - PLUMBING
P-002	24	PROJECT INFO - LEGENDS - PLUMBING
P-101	25	PLUMBING PLAN - SECOND FLOOR
P-301	26	ENLARGED PLANS - PLUMBING
P-501	27	DETAILS & SCHEDULES - PLUMBING
M-001	28	PROJECT INFO & GENERAL NOTES - HVAC
M-002	29	PROJECT INFO & LEGENDS - HVAC
MD-101	30	DEMOLITION PLAN - HVAC - FIRST FLOOR
M-101	31	HVAC PLAN - SECOND FLOOR - DUCTWORK
M-102	32	HVAC PLAN - SECOND FLOOR - DUCTWORK PART A
M-103	33	HVAC PLAN - SECOND FLOOR - DUCTWORK PART B
M-201	34	HVAC PLAN - SECOND FLOOR - PIPING
M-202	35	HVAC PLAN - SECOND FLOOR - PIPING PART A
M-203	36	HVAC PLAN - SECOND FLOOR - PIPING PART B
M-301	37	ENLARGED PLANS - HVAC
M-401	38	SECTIONS & RISERS - HVAC

M-501	39	DETAILS - HVAC
M-502	40	DETAILS - HVAC
M-601	41	SCHEDULES - HVAC
M-602	42	SCHEDULES - HVAC
M-701	43	HVAC CONTROLS
M-702	44	HVAC CONTROLS
M-703	45	HVAC CONTROLS
E-001	46	ELECTRICAL LEGEND & NOTES
E-002	47	SCHEDULES
ED-101	48	ELECTRICAL DEMOLITION
E-101	49	FLOOR PLAN - LIGHTING
E-201	50	FLOOR PLAN - POWER OVERALL
E-202	51	FLOOR PLAN - MECHANICAL CONNECTIONS
E-401	52	DETAILS
E-402	53	DETAILS - L3 ELEC ROOM
E-403	54	DETAILS - L2 ELEC ROOM
E-701	55	FIRE ALARM
E-901	56	SPECIAL SYSTEMS - COMMUNICATIONS PLAN

END OF DOCUMENT

DOCUMENT 00 21 13

INSTRUCTIONS TO BIDDERS

PART 1 - GENERAL

1.01 QUESTIONS

- A. Questions Regarding Bidding: Bidders are advised that all questions that arise regarding the contract documents (proposal) or plans on this project shall be directed to the www.gomdot.com current letting webpage. Click on the call number for this project to open an email form to submit your question. Questions must be submitted by 8:00 a.m. on the day prior to the letting. Answers to questions will be posted by 6:00 p.m. on the day prior to the letting. Answers can be viewed by clicking on Q&A link under the Proposal Addenda column.
- B. It shall be the Bidders responsibility to familiarize themselves with the questions and answers that have been submitted on this project. Bidders are advised that by signing the contract documents for this project, they agree that the on-line Questions and Answers submitted on this project shall be added to and made part of the official contract.

1.02 BIDDER'S QUALIFICATIONS

- A. Prequalification of Bidders: Refer to Mississippi Standard Specifications for Road and Bridge Construction 2017 Edition Section 102 – Bidding Requirements and Conditions, Subsection 102.01 – Prequalification of Bidders.

1.03 NON-RESIDENT BIDDER

- A. Consideration of Proposals: Refer to Mississippi Standard Specifications for Road and Bridge Construction 2017 Edition Section 103 – Award and Execution of Contract, Subsection 103.01 – Consideration of Proposal.

1.04 CONDITIONS OF WORK

- A. Each Bidder must fully inform themselves of all conditions relating to the construction of the Project and employment of labor thereon. Failure to do so will not relieve a successful Bidder of obligations to furnish all material and labor necessary to carry out the provisions of the Contract. Insofar as possible, the Bidder must employ methods, or means, which will not cause interruption of, or interference with, the work of any other Bidder or Contractor.

1.05 EXAMINATION OF PROPOSAL AND SITE

- A. Examination of proposal and Site: Refer to Mississippi Standard Specifications for Road and Bridge Construction 2017 Edition Section 102 – Bidding Requirements and Conditions, Subsection 102.05 – Examination of Plans, Specifications, Special Provisions, Notice to Bidders and Site Work.
- B. There will be no Pre-Bid Meeting, but failure to visit the site prior to submitting a bid will in no way relieve the successful Bidder from furnishing materials or performing work required to complete Work in accordance with Drawings and Project Manual (Proposal).
- C. Schedule a Site Visit: Contact Mr. Jim Jordan - Central Service Director, Tel. Office: 601-359-9776, Cell: 601-946-7276, no later than 11-19-2025.

1.06 LAWS AND REGULATIONS

- A. Laws and Regulations: Refer to Mississippi Standard Specifications for Road and Bridge Construction 2017 Edition Section 107 – Legal Relations and Responsibility to Public, Subsection 107.01 – Laws to be Observed.

1.07 BID DOCUMENT

- A. The amount for Bid Document (Proposal) is indicated in the advertisement for Bids. Selected plan rooms will be issued one set of documents without charge.

1.08 METHOD OF BIDDING

- A. Lump sum, single bids received on a general contract will include general, mechanical and electrical construction (including Pay Items) and work shown on Drawings or specified in the Project Manual (Proposal).

1.09 PROPOSAL FORMS

- A. Preparation of Proposal: Refer to Mississippi Standard Specifications for Road and Bridge Construction 2017 Edition Section 102 – Bidding Requirements and Conditions, Subsection 102.06 – Preparation of Proposal.

1.10 SUBSTITUTIONS

- A. No substitutions, qualifications or redefining of the Specification requirements are allowed to be marked on the Proposal Form, unless specifically required by the Bid Documents. Refer to Section 01 25 00 entitled Substitution Procedures which covers procedures after the award of Contract. .

1.11 ADDENDA

- A. Addenda to the Drawings or Project Manual issued before or during the time of bidding shall be included in the proposal and become a part of the Contract.
- B. If the Proposal, Section 905, does not contain acknowledgement of receipt and addition to the Proposal and Contract Documents of all addenda issued prior to opening of bids will be considered irregular and may be rejected.

1.12 BIDDER IDENTIFICATION

- A. Signature: The Proposal Form shall be signed, by any individual authorized to enter into a binding agreement for the Business making the bid proposal.
- B. Legal Address: The address appearing on the Proposal Form should be the same address exact as recorded at the Secretary of State <https://corp.sos.ms.gov/corp/portal/c/page/corpBusinessIdSearch/portal.aspx?#clear=1> which should be the same as you applied for at the Mississippi Board of Contractors <http://www.msdoc.us/>
- C. Certificate of Responsibility Number(s): The Certificate of Responsibility Number(s) appearing on the Proposal Form should be the same number appearing in the current Mississippi State Board of Contractors Roster.

1.13 BID SECURITY

- A. Proposal Guaranty: Refer to Mississippi Standard Specifications for Road and Bridge Construction 2017 Edition Section 102 – Bidding Requirements and Conditions, Subsection 102.08 – Proposal Guaranty with the exception that the first and second paragraphs in Subsection 102.08 on page 20 should be deleted and substitute:
 - 1. No proposal will be considered unless accompanied by certified check, cashier's check or bid bond, made payable to the State of Mississippi, in an amount of not less than five percent (5%) of the total amount of the proposal offered. The guaranty shall be evidence of good faith that, if awarded the contract, the bidder will execute the contract and give performance and payment contract bond(s) as stipulated in Subsection 103.05.1, 103.05.2, and as required by law.
 - 2. If a bid bond is offered as guaranty, the bond must be made by a Surety acceptable to the Executive Director and signed or countersigned by a Mississippi Agent or Qualified Nonresident Agent and the Bidder. Such bid bond shall also conform to the requirements and conditions stipulated in Subsection 103.05.2, applicable.

1.14 POWER OF ATTORNEY

- A. Power of Attorney: Refer to Mississippi Standard Specifications for Road and Bridge Construction 2017 Edition Section 103 – Award and Execution of Contract, Subsection 103.05 – Requirement of Contract Bond.

1.15 SUBMITTAL

- A. Delivery of Proposals: Refer to Mississippi Standard Specifications for Road and Bridge Construction 2017 Edition Section 102 – Bidding Requirements and Conditions, Article 102.09 – Delivery of Proposal.

1.16 MODIFICATION TO BID

- A. A Bidder may NOT MODIFY the bid prior to the scheduled closing time indicated in the Advertisement for Bids in the following manner:
 - 1. Notification on Envelope: A modification may NOT be written on the outside of the sealed envelope containing the bid.
 - 2. Facsimile: A facsimile (fax) will NOT be acceptable.

1.17 OPENING OF BIDS

- A. Public Opening of Proposal: Refer to Mississippi Standard Specifications for Road and Bridge Construction 2017 Edition Section 102 – Bidding Requirements and Conditions, Subsection 102.12 – Public Opening of Proposal.

1.18 IRREGULARITIES

- A. Irregular Proposals: Refer to Mississippi Standard Specifications for Road and Bridge Construction 2017 Edition Section 102 – Bidding Requirements and Conditions, Subsection 102.07 – Irregular Proposal. Proposals will be considered irregular and may be rejected for any of the following reasons:
1. If the proposal is on a form other than that furnished by the Department, or if the form is altered or any part thereof is detached except that is allowed.
 2. If there are unauthorized additions, conditions or alternate bids, or irregularities of any kind that may tend to make the proposal incomplete, indefinite, or ambiguous as to its meaning.
 3. If the bidder adds any provisions reserving the right to accept or reject an award, or to enter into a Contract pursuant to an award.
 4. If the proposal, Section 905, does not contain acknowledgement of receipt and addition to the proposal and contract documents of all addenda.
 5. Failure to execute required affidavits, certificates, etc., and furnish proposal guaranty.
 6. The Commission reserves the right, for any reason, to reject any or all proposals, to waive technicalities or irregularities, or to advertise for new proposals, and the decision of the Commission to reject any bid or proposal shall not be cause for any liability or damage against the Commission, the Department, or any of its officers or employees.

1.19 PROTEST

- A. Any protest must be delivered in writing to the Owner prior to the Award Date.

1.20 ERRORS

- A. Any claim of error and request for release from bid must be delivered in writing to the Owner within twenty-four (24) hours after the bid opening. The Bidder shall provide sufficient documentation with the written request clearly proving an error was made.

1.21 AWARD OF CONTRACT

- A. Award of Contract: Refer to Mississippi Standard Specifications for Road and Bridge Construction 2017 Edition Section 103 – Award and Execution of Contract, Subsection 103.02 – Award of Contract.
- B. Consideration of Proposal: Refer to Mississippi Standard Specifications for Road and Bridge Construction 2017 Edition Section 103 – Award and Execution of Contract, Subsection 103.01 – Consideration of Proposal.

1.22 FAILURE TO ENTER INTO A CONTRACT

- A. Failure to Execute Contract: Refer to Mississippi Standard Specifications for Road and Bridge Construction 2017 Edition Section 103 – Award and Execution of Contract, Subsection 103.08 – Failure to Execute Contract.

1.23 SECURITY FOR FAITHFUL PERFORMANCE

- A. Requirements of Contract Bonds: Refer to Mississippi Standard Specifications for Road and Bridge Construction 2017 Edition Section 103 – Award and Execution of Contract, Subsection 103.05 – Requirement of Contract Bond.

1.24 BIDDER'S CHECKLIST

A. Proposal Form:

1. Base Bid:
☐ Fill-in the amount of the base bid in numbers.
2. Alternates:
☐ Fill-in each alternates amount in numbers.
3. Certification Form (State Non-Collusion Certificate)
☐ Certification (regarding Non-Collusion, Debarment and Suspension, etc). Form has been executed in duplicate.
4. Acceptance:
☐ Proposal is signed by authorized person.
☐ Name of Business. - complete spelling of bidder's name and address – exact as recorded at the Secretary of State <https://corp.sos.ms.gov/corp/portal/c/page/corpBusinessIdSearch/portal.aspx?clear=1> which should be the same as you applied for at the Mississippi Board of Contractors <http://www.msdoc.us/>
☐ Legal address of the business listed above (at SOS and Contractor's Board).
☐ Correct Certificate of Responsibility Number(s) as it appears in the current Mississippi State Board of Contractors Roster.
5. Certificate of Responsibility Number(s):
☐ Base Bid is under \$50,000 and no number is required.
☐ Base Bid is under \$50,000 and the statement "bid does not exceed \$50,000" is on the outside of the sealed envelope.
☐ Base Bid is equal to or over \$50,000 and number is required.
☐ Joint Venture and *joint venture* number is required.
 Or
☐ Joint Venture participants' numbers are required.

B. Bid Security

1. Bid Bond:
☐ Included Bid Bond payable to the STATE OF MISSISSIPPI with Project number identified thereon,
 Or
☐ Included Certified Check payable to the STATE OF MISSISSIPPI with Project number identified thereon.
2. Power of Attorney:
☐ Included Power of Attorney.

C. Non-Resident Bidder

1. Preference Law:
☐ Attached a Copy of Non-Resident Bidder's Preference Law.
 Or
☐ Attached a Statement.

D. Subcontractors' Name

1. Subcontractor:
() List Mechanical, Plumbing, and/or Electrical Subcontractor regardless of cost.
* List name even for under \$50,000.
* Fire Protection Sprinkler Contractors do not have to be listed.
* If there is a separate HVAC/Plumbing Sub-Contractor, so notate as mentioned herein.
* If Mechanical, Plumbing, and/or Electrical Subcontractor is performed by the General Contractor, be sure the General has COR for said discipline.
* If there is no Mechanical, Plumbing, and/or Electrical Sub-Contractor listed, then use of Sub-Contractor to perform such scope will not be permitted.

E. Subcontractors' COR Number

1. Certificate of Responsibility
() List certificate of responsibility Number for all listed Sub-Contractors over \$50,000 as required by State Board of Contractors.
* If under \$50,000 – so notate on the COR line “under \$50,000” (or can still show COR Number)

END OF DOCUMENT

DOCUMENT 00 22 13

SUPPLEMENTARY INSTRUCTIONS TO BIDDERS

1.01 INSTRUCTIONS TO BIDDERS

- A. Instructions to Bidders for Project consist of the following:

1.02 WORK IN PROXIMITY OF HIGH VOLTAGE POWER LINES

- A. Contractor's Responsibility for Utility Property and Services: Refer to Mississippi Standard Specifications for Road and Bridge Construction 2017 Edition Section 107 – Legal Relations and Responsibility to Public, Subsection 107.18 – Contractor's Responsibility for Utility Property and services.

1.03 PLANT PEST QUARANTINE INFORMATION

- A. Quarantine Information: Refer to Mississippi Standard Specifications for Road and Bridge Construction 2017 Edition Section 107 – Legal Relations and Responsibility to Public, Subsection 107.22.7 – Quarantine Information.

1.04 PROMPT PAYMENT

- A. General: Refer to Mississippi Standard Specifications for Road and Bridge Construction 2017 Edition Section 108 – Prosecution and Progress, Subsection 108.01.1 – General.

1.05 ALTERATIONS IN BIDDING PROCESS

- A. Preparation of Proposal: Refer to Mississippi Standard Specifications for Road and Bridge Construction 2017 Edition Section 102 – Bidding Requirements and Conditions, Subsection 102.06 – Preparation of Proposal.

1.06 CONTRACT TIME

- A. It is anticipated that the Notice of Award will be issued by not later than December 9, 2025, and the date for Notice to Proceed and Beginning of Contract Time will be January 15, 2026.
- B. The calendar date for completion of this Contract shall be January 15, 2027, which date or extended date as provided in Article 8 - TIME shall be the end of contract time
- C. Construction Schedule: Refer to Mississippi Standard Specifications for Road and Bridge Construction 2017 Edition Section 108 – Prosecution and Progress (as amended).
- D. A Construction Schedule as described in Section 01 32 00-Construction Progress Documentation of these Specifications will be required for building construction.

1.07 SUBCONTRACTING

- A. The Bidder is specifically advised that any person, firm or other party to whom it proposes to award a subcontract must be acceptable to the Owner. The total allowable subcontract amount shall not exceed **sixty percent (60%) of the Contract Sum**, excluding the value of any "Specialty Items" listed below:
1. Building related Items, Materials, or Systems:
 - a. Plumbing Items
 - b. Heating, Ventilating and Air Conditioning Items
 - c. Electrical Items
 - d. Thin-Set Tiling
 2. These items are not to be confused with Division 10 – Specialties of the Specifications.

END OF DOCUMENT

SECTION 08 41 13
ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 GENERAL

1.1 REFERENCE STANDARDS

- A. AAMA 501.4 - Recommended Static Test Method for Evaluating Window Wall, Curtain Wall and Storefront Systems Subjected to Seismic and Wind-Induced Inter-Story Drift; 2018.
- B. AAMA 503 - Voluntary Specification for Field Testing of Newly Installed Storefronts, Curtain Walls and Sloped Glazing Systems; 2014.
- C. AAMA 611 - Specification for Anodized Architectural Aluminum; 2024.
- D. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.
- E. ASTM B456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium; 2017 (Reapproved 2022).
- F. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 2023.
- G. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018 (Reapproved 2024).
- H. ASTM C1184 - Standard Specification for Structural Silicone Sealants; 2023.
- I. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2023).
- J. ASTM E783 - Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors; 2002 (Reapproved 2018).
- K. ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference; 2015 (Reapproved 2023).
- L. ASTM E1886 - Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials; 2019.
- M. ASTM E1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes; 2023.
- N. NFRC 100 - Procedure for Determining Fenestration Product U-factors; 2023.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.3 SUMMARY

- A. Section Includes: Kawneer Architectural Aluminum Storefront Systems, including perimeter trims, stools, accessories, shims and anchors, and perimeter sealing of storefront units.

- 1. Types of Kawneer Aluminum Storefront Systems include:

- a. Trifab® Versaglaze® 451T Framing System - 2" x 4.5" (50.8 mm x 152.4 mm) nominal dimension; Thermal; Center Plane; Screw Spline Fabrication
 - b. 350 Heavy Wall Swing Door - Medium Style

- B. B. Related Sections:

- 1. 079213 "Exterior Joint Sealants"
 - 2. 079216 "Interior Joint Sealants"
 - 3. 088126 "Interior Glass and Glazing"

1.4 DEFINITIONS

- A. Definitions: For fenestration industry standard terminology and definitions refer to American Architectural Manufacturers Association (AAMA) – AAMA Glossary (AAMA AG).

1.5 PERFORMANCE REQUIREMENTS

- A. Storefront System Performance Requirements:

- 1. Wind loads: Provide storefront system; include anchorage, capable of withstanding wind load design pressures.
 - 2. Air Leakage: The test specimen shall be tested in accordance with ASTM E 283. Air Leakage rate shall not exceed 0.06 cfm/ft² (0.3 l/s · m²) at a static air pressure differential of 6.2 psf (300 Pa) with interior seal, or, rate shall not exceed 0.06 cfm/ft² (0.3 l/s · m²) at a static air pressure differential of 1.6 psf (75 Pa) without interior seal.
 - 3. Water Resistance: The test specimen shall be tested in accordance with ASTM E331. There shall be no leakage at a minimum static air pressure differential of 15 psf (720 Pa) as defined in AAMA 501.4. Uniform Load: A static air design load of 30 psf (1436 Pa) shall be applied in the positive and negative direction in accordance with ASTM E 330. There

shall be no deflection in excess of $L/175$ of the span of any framing member. At a structural test load equal to 1.5 times the specified design load, no glass breakage or permanent set in the framing members in excess of 0.2% of their clear spans shall occur.

4. Energy Efficiency:

- a. Thermal Transmittance (U-Factor): When tested to AAMA specification 507 or NFRC 100 the thermal transmittance (U-Factor) shall not be more than:

1.6 SUBMITTALS

- A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, hardware, finishes, and installation instructions for each type of aluminum-framed storefront system indicated.
- B. Shop Drawings: Include plans, elevations, sections, details, hardware, and attachments to other work, operational clearances and installation details.
- C. Samples for Initial Selection: For units with factory-applied color finishes including samples of hardware and accessories involving color selection.
- D. Samples for Verification: For aluminum-framed storefront system and components required.
- E. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency for each type, of aluminum-framed storefront.
- F. Other Action Submittals:
 - 1. Entrance Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of entrance door hardware, as well as procedures and diagrams. Coordinate final entrance door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of entrance door hardware.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: An installer which has had successful experience with installation of the same or similar units required for the project and other projects of similar size and scope.
- B. Manufacturer Qualifications: A manufacturer capable of providing aluminum-framed storefront system that meet or exceed performance requirements indicated and of documenting this performance by inclusion of test reports, and calculations.
- C. Source Limitations: Obtain aluminum-framed storefront system through one source from a single manufacturer.

- D. Product Options: Drawings indicate size, profiles, and dimensional requirements of aluminum-framed storefront system and are based on the specific system indicated. Refer to Division 01 Section "Product Requirements". Do not modify size and dimensional requirements.
 - 1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.
- E. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Build mockup for type(s) of storefront elevation(s) indicated, in location(s) shown on Drawings.
- F. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination".

1.8 PROJECT CONDITIONS

- A. Field Measurements: Verify actual dimensions of aluminum-framed storefront openings by field measurements before fabrication and indicate field measurements on Shop Drawings.

1.9 WARRANTY

- A. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty.
 - 1. Warranty Period: Two (2) years from Date of Substantial Completion of the project provided however that the Limited Warranty shall begin in no event later than six months from date of shipment by manufacturer.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Storefront Framing

- 1. Base:
 - a. Trifab® Versaglaze® 451T Framing System
 - 1) 2" x 4.5" (50.8 mm x 152.4 mm) nominal dimension
 - 2) Thermal
 - 3) Glass: Center Plane
 - 4) Screw Spline Fabrication

2. Optional:
 - a. EFCO Corporation
 - b. Oldcastle Building Envelope
 - c. YKK

B. Storefront Entrance

1. Base:
 - a. Kawneer - 350 Heavy Wall Swing Door
 - 1) Medium Style
2. Optional:
 - a. EFCO Corporation
 - b. Oldcastle Building Envelope
 - c. YKK

2.2 MATERIALS

- A. Aluminum Extrusions: Alloy and temper recommended by aluminum storefront manufacturer for strength, corrosion resistance, and application of required finish and not less than 0.070" wall thickness at any location for the main frame and complying with ASTM B221: 6063-T6 alloy and temper.
- B. Fasteners: Aluminum, nonmagnetic stainless steel or other materials to be non-corrosive and compatible with aluminum window members, trim hardware, anchors, and other components.
- C. Anchors, Clips, and Accessories: Aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron complying with ASTM B633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.
- D. Reinforcing Members: Aluminum, nonmagnetic stainless steel, or nickel/chrome-plated steel complying with ASTM B456 for Type SC 3 severe service conditions, or zinc-coated steel or iron complying with ASTM B633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.
- E. Sealant: For sealants required within fabricated storefront system, provide permanently elastic, non-shrinking, and non-migrating type recommended by sealant manufacturer for joint size and movement.

- F. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of storefront members are nominal and in compliance with AA Aluminum Standards and Data.

2.3 STOREFRONT FRAMING SYSTEM

A. Thermal Barrier:

1. Trifab® Versaglaze® 601T:

- a. Kawneer IsoLock™ Thermal Break with a nominal 1/4" (6.4 mm) separation consisting of a two-part chemically curing, high-density polyurethane, which is mechanically and adhesively joined to aluminum storefront sections.

- B. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials. Where exposed shall be stainless steel.

- C. Perimeter Anchors: When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.

- D. Packing, Shipping, Handling and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

- E. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle storefront material and components to avoid damage. Protect storefront material against damage from elements, construction activities, and other hazards before, during and after storefront installation.

2.4 GLAZING SYSTEMS

- A. Glazing: As specified in Division 088123 "Exterior Glass and Glazing"

- B. Glazing Gaskets: Manufacturer's standard compression types; replaceable, extruded EPDM rubber.

- C. Spacers and Setting Blocks: Manufacturer's standard elastomeric type.

- D. Bond-Breaker Tape: Manufacturer's standard TFE-fluorocarbon or polyethylene material to which sealants will not develop adhesion.

- E. Glazing Sealants: For structural-sealant-glazed systems, as recommended by manufacturer for joint type, and as follows:

- 1. Structural Sealant: ASTM C1184, single-component neutral-curing silicone formulation that is compatible with system components with which it comes in contact, specifically

formulated and tested for use as structural sealant and approved by a structural-sealant manufacturer for use in aluminum-framed systems indicated.

- a. Color: Black
2. Weatherseal Sealant: ASTM C920 for Type S, Grade NS, Class 25, Uses NT, G, A, and O; single-component neutral-curing formulation that is compatible with structural sealant and other system components with which it comes in contact; recommended by structural-sealant, weatherseal-sealant, and aluminum-framed-system manufacturers for this use.
3. Color: Matching structural sealant.

2.5 STOREFRONT ENTRANCE SYSTEM

- A. 350 Heavy Wall Swing Door:
 1. Medium stile
 2. Vertical face dimension: 3-1/2" 3.5 inch
 3. Depth: 2" 1.75 inch
 4. Bottom Rail: 6-1/2" (165.1 mm)
 5. High-traffic applications
- B. Major portions of the door members shall be 0.125" 0.13 inch nominal thickness.
- C. Glazing molding shall be 0.05" 0.05 inch thick.
- D. Glazing gaskets shall be either EPDM elastomeric extrusions or a thermoplastic elastomer.
- E. Structural silicone sealant to be Dow Corning 983, 995 or Tremco Proglaze SSG.

2.6 HARDWARE

- A. General Requirements
 1. Provide manufacturer's standard hardware.
 2. Hardware shall be fabricated from aluminum, stainless steel, or other corrosion-resistant material that is compatible with aluminum.
 3. Hardware shall be designed to smoothly operate, tightly close, and securely lock aluminum framed entrance doors.
- B. Standard Hardware

1. Weather-Stripping:
 - a. Meeting stiles on pairs of doors shall be equipped with an adjustable astragal using wool pile with polymeric fin.
 - b. The door weathering on a single-acting offset pivot or butt hung door and frame (single or pairs) shall be comprised of a thermoplastic elastomer weathering on a tubular shape with a semi-rigid polymeric backing.
2. Sill Sweep Strips:
 - a. EPDM blade gasket sweep strip in an aluminum extrusion applied to the interior exposed surface of the bottom rail with concealed fasteners (necessary to meet specified performance tests)
3. Threshold:
 - a. Extruded aluminum
 - b. One piece per door opening
 - c. Ribbed surface
4. Continuous Hinge
5. Pull: (60 inch Ladder Type) style match door finish
6. Exit Device:
 - a. Sargent 8400AD Concealed Rod Exit Device
7. Concealed Closer
8. Cylinder(s)/Thumbturn: Kawneer Standard

2.7 ACCESSORY MATERIALS

- A. Joint Sealants: For installation at perimeter of aluminum-framed systems, as specified in Division 07 Section "Joint Sealants".

2.8 FABRICATION

- A. Framing Members, General: Fabricate components that, when assembled, have the following characteristics:
 1. Profiles that are sharp, straight, and free of defects or deformations.

2. Accurately fit joints; make joints flush, hairline and weatherproof.
 3. Means to drain water passing joints, condensation within framing members, and moisture migrating within the system to exterior.
 4. Physical and thermal isolation of glazing from framing members.
 5. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
 6. Provisions for field replacement of glazing.
 7. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.
- B. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.
- C. Storefront Framing: Fabricate components for assembly using manufacturer's standard installation instructions.
- D. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.9 ALUMINUM FINISHES

- A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
- B. Factory Finishing:
1. Kawnear Permanodic® AA-M10C21A44, AAMA 611, Architectural Class I Dark Bronze Anodic Coating (Color #40 Dark Bronze).
 2. **Kawnear Permanodic® AA-M10C21A41, AAMA 611, Architectural Class I Clear Anodic Coating (Color #14 Clear). (ADDENDUM #1)**

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work. Verify rough opening dimensions, levelness of sill plate and operational clearances. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure a coordinated, weather tight door installation.

1. Masonry Surfaces: Visibly dry and free of excess mortar, sand, and other construction debris.
2. Wood Frame Walls: Dry, clean, sound, well nailed, free of voids, and without offsets at joints. Ensure that nail heads are driven flush with surfaces in opening and within 3 inches of opening.
3. Metal Surfaces: Dry; clean; free of grease, oil, dirt, rust, corrosion, and welding slag; without sharp edges or offsets at joints.
4. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with Drawings, Shop Drawings, and manufacturer's written instructions for installing aluminum framed storefront system, accessories, and other components.
- B. Install aluminum-framed storefront system level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction.
- C. Set sill members in bed of sealant or with gaskets, as indicated, for weather tight construction.
- D. Install aluminum-framed storefront system and components to drain condensation, water penetrating joints, and moisture migrating within aluminum-framed storefront system to the exterior.
- E. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

3.3 FIELD QUALITY CONTROL

- A. Field Tests: Architect shall select storefront units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter caulked and cured. Conduct tests for air infiltration and water penetration with manufacturer's representative present. Tests not meeting specified performance requirements and units having deficiencies shall be corrected as part of the contract amount.
 1. Testing: Testing shall be performed by a qualified independent testing agency. Refer to Testing Section for payment of testing and testing requirements. Testing Standard per AAMA 503, including reference to ASTM E783 for Air Infiltration Test and ASTM E1105 Water Infiltration Test.

- a. Air Infiltration Tests: Conduct tests in accordance with ASTM E783. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance requirements or 0.09 cfm/ft², whichever is greater.
 - b. Water Infiltration Tests: Conduct tests in accordance with ASTM E1105. No uncontrolled water leakage is permitted when tested at a static test pressure of two-thirds the specified water penetration pressure but not less than 6.2 psf (300 Pa).
- B. Manufacturer's Field Services: Upon Owner's written request, provide periodic site visit by manufacturer's field service representative.

3.4 ADJUSTING, CLEANING, AND PROTECTION

- A. Clean aluminum surfaces immediately after installing aluminum-framed storefronts. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.
- B. Clean glass immediately after installation. Comply with glass manufacturer's written recommendations for final cleaning and maintenance. Remove nonpermanent labels, and clean surfaces.
- C. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

END OF SECTION

SECTION 08 81 26
INTERIOR GLASS AND GLAZING

PART 1 - GENERAL

1.1 REFERENCE STANDARDS

- A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.
- B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test; 2015 (Reaffirmed 2020).
- C. ASTM C1036 - Standard Specification for Flat Glass; 2025.
- D. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2025.
- E. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass; 2024.
- F. ASTM C1503 - Standard Specification for Silvered Flat Glass Mirror; 2024.
- G. ASTM E413 - Classification for Rating Sound Insulation; 2022.
- H. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2025.
- I. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2022.
- J. NFPA 257 - Standard on Fire Test for Window and Glass Block Assemblies; 2022.
- K. UL 5 - Surface Metal Raceways and Fittings; Current Edition, Including All Revisions.
- L. UL 9 - Standard for Fire Tests of Window Assemblies; Current Edition, Including All Revisions.
- M. UL 10B - Standard for Fire Tests of Door Assemblies; Current Edition, Including All Revisions.
- N. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.

1.2 SUMMARY

- A. Furnish labor, materials, tools, equipment, and services for Interior Glass and Glazing in accordance with provisions of Contract Documents.
- B. Completely coordinate with work of other trades.

1.3 QUALITY ASSURANCE

- A. Glass Standards:

B. Flat Glass:

1. ASTM C1036 Standard Specification for Flat Glass.
2. Float glass: Type I, Quality q3 and Class 1 unless otherwise indicated.
3. Figured glass: Type II, Quality q7, Form 3 and Class 1, Finish f1 and Pattern p2 unless otherwise indicated.
4. Mirror glass and one-way vision glass: Type I, Quality q1 or q2, Class 1 and coated for purpose.

C. Flat Glass, Heat Treated, Coated and Uncoated:

1. ASTM C1048 Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass.
2. Heat strengthened glass: Kind HS, Type I, Quality q3, Class 1 and Condition A unless otherwise indicated.
3. Tempered glass: Kind FT, Type I, Quality q3, Class 1 and Condition A unless otherwise indicated.
4. Heat strengthened - tempered glass: Kind HS-FT, Type 1, Quality q3 and Condition A unless otherwise indicated.

D. Mirror Glass:

1. ASTM C1503;
2. Quality: Mirror select.
3. F.S.DD-M-00411B (1).

E. Fire Rated Assemblies:

1. Where glazing products are used in fire-rated assemblies, comply with requirements of specific assembly specified in other sections of these Specifications.
2. Underwriters Laboratories, Inc. (UL):
 - a. UL 9 - Fire Tests of Window Assemblies.
 - b. UL 10B - Fire Tests of Door Assemblies.
 - c. UL 10C - Positive Pressure Fire Tests of Door Assemblies.
3. Fire Protective Rated Glass:

- a. Each lite shall bear permanent, non-removable label of UL certifying use in tested and rated fire protective assemblies.
- 4. Door Assemblies:
 - a. Comply with NFPA 80 and listed and labeled by testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, tested in accordance to NFPA 252.
 - b. Positive Pressure Compliance: UL 10C.
 - c. Fire Protective Glazing Products for Door Assemblies: Products identical to those tested per UL 10B, labeled and listed by UL 5. Window Assemblies:
 - d. Complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 257.
 - e. Positive Pressure Compliance: UL 10C.
- 5. Laminated Glass:
 - a. ASTM C1172 Standard Specification for Laminated Architectural Flat Glass.
 - b. Laminated Glass Design Guide, by the Glass Association of North America (GANA).
- 6. Glazing Standards:
 - a. Glazing Manual, by the Glass Association of North America (GANA).

1.4 SUBMITTALS

- A. Samples:
 - 1. Provide one (1) 12 IN x 12 IN example of each specified type of glass.
- B. Contract Closeout Information:
 - 1. Warranties.

1.5 WARRANTY

- A. Written warranty signed by manufacturer or fabricator.
- B. Laminated Glass:

1. Five (5) years against deterioration including edge separation, delamination that materially obstructs vision through glass, and blemishes exceeding those allowed by referenced laminated glass standard.

C. Fire-rated Ceramics:

1. Five (5) year manufacturer's standard warranty.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Glass Products:

1. Base:
 - a. AGC Industries
2. Optional:
 - a. Guardian Industries
 - b. Pilkington
 - c. Vitro Glass
 - d. Saint-Gobain

B. Etched/ Frosted Glass and Etched Patterned Glass:

1. Base:
 - a. Carvart
2. Optional:
 - a. Skyline
 - b. Goldray.

2.2 MATERIALS

A. Glass Materials:

1. Comply with indicated standards.
2. See Glass Types Schedule for listing of types.
3. Materials specified in Glass Types Schedules are minimum acceptable products.

4. Single manufacturer produce individual glass types used in fabrication of insulating units.
5. Manufacturer or fabricator determine if materials should be heat strengthened or fully tempered at non-hazardous locations that do not require safety glazing and provide accordingly.

B. Glazing Compounds:

1. Nonsag, nonstain type.
2. Pigmented to match frame units not requiring painting.
3. Compatible with adjacent surfaces.
4. For use in setting glass: Neutral-cure Silicone sealant.
5. Sealant tape:
 - a. Butyl rubber sealant tape or ribbon having a continuous neoprene shim.
 - b. Gaskets:
 - 1) Polyvinyl chloride or neoprene.
 - 2) Extruded, flexible, of profile and hardness required to receive glass and provide a watertight installation.

C. Installation Setting Blocks and Spacers:

1. Neoprene, compatible with sealants used.
2. Setting blocks: 80-90 durometer.
3. Spacers: 40-50 durometer.
4. Compressible filler stock: Closed cell jacketed rod stock of synthetic rubber or plastic foam.
5. Shims, clips, springs, angles, beads, attachment screws and other miscellaneous items: As indicated or required.

2.3 GLASS TYPES SCHEDULE

- A. Refer to Interior Glass Types Schedule for basic description of mark numbers indicated on Drawing.
- B. Refer to Drawings for depiction of unit sizes and locations.
- C. Upgrade basic type conditions in accordance with following rules:

1. Heat treatment upgrade based on physical size of unit:
2. Heat strengthened or fully tempered units between 55 and 70 SQFT .
3. Fully temper units exceeding 70 SQFT .
 - a. Strengthen annealed glass where units exceed length or width limitations or both as recommended by glass manufacturer.
4. Heat treatment upgrade based on locations which are potentially hazardous to occupants:
 - a. Upgrade units to fully tempered, Kind FT, glass as required by any one of following:
 - 1) When required by local Codes.
 - 2) When specifically indicated on Drawings.
 - 3) Locations requiring Safety Glass, Kind FT, by 16 CFR 1201 and ANSI Z97.1:
 - (a) Units installed in doors, sash, transom or other operable units.
5. Units where any part of unit is within 18 IN , measured vertically, above a floor line, sidewalk, paver, or other walking surface located within 3 FT of the glass unit, measured horizontally.
6. Units in sidelights and other units located adjacent to and within 48 IN of either jamb of door or other operable units; this includes adjacent lites that are in perpendicular plane to door.
7. Other conditions requiring heat treatment upgrades:
 - a. Units which will be exposed to irregular sun or shade combinations or both shall be Kind HS or better.
 - b. Where glass manufacturer recommends heat treatment coatings or tints specified.
 - c. Where required to resist lateral loads.

2.4 INTERIOR GLASS TYPES SCHEDULE

A. Glass Type - GL1-T: Tempered:

1. Tempered float glass – clear, ASTM C104B, Condition A, Type 1, Class 2, Quality 03, 1/2-inch thick. Provide safety glazing labelling

B. Glass Type - GL2-T: Laminated and Tempered Safety Glass:

1. Tempered, laminated float glass – clear, ASTM E413-87, 1/2" overall - 1/4" glass, .045" PVB, 1/4" glass. Edge finish: Ground finish at butt joint edges with silicone seal.
- C. Glass Type - GL3-F: Frosted/Tempered:
 1. Tempered float glass – frosted, ASTM C104B, Condition A, Type 1, Class 2, Quality 03, 1/2-inch thick. Provide safety glazing labelling
- D. Glass Type - GL4-T: Tempered: **(ADDENDUM #1)**
 1. Tempered float glass – tinted: grey, ASTM C104B, Condition A, Type 1, Class 2, Quality 03, 1/2-inch thick. Provide safety glazing labelling
- E. Tempered Glazing: All glazing designated to be tempered shall be horizontally tempered.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine framing or glazing channel surfaces, backing, stop design, and conditions under which glazing is to be installed.

3.2 INSTALLATION

- A. Do not install glass with edge damage.
- B. Contractor is responsible for correct glass size for each opening, within tolerances and dimensions established.
- C. Comply with recommendations of manufacturers, except where more stringent requirements are indicated.
- D. Comply with GANA Glazing Manual.
- E. Install sealants as recommended by sealant manufacturer.
- F. Install setting blocks in adhesive or sealant.
- G. Provide spacers inside and out, of proper size and spacing, for glass size, except where gaskets are used for glazing.
- H. Minimum Bite:
 1. Monolithic, 6 MM glass: 10 MM minimum bite.
 2. For other sizes: Refer to Table C of AAMA's Aluminum Curtain Wall Design Manual, Volume 6, Glass and Glazing.

- I. Sealant Depth: Equal to sealant width.
- J. Prevent sealant exudation from glazing channels.
 - 1. Leave void at heel or install filler at jambs and head.
 - 2. Do not leave void or install filler at sill.
- K. Miter cut and bond gasket ends together at corners.
- L. Immediately after installation, attach crossed streamers to framing held away from glass.
- M. Do not apply anything to surfaces of glass.
- N. Install spandrel units from exterior of building.
- O. Installation of Mirrors:
 - 1. Mastic Attachment: Install mirrors with mirror adhesive applied to back of mirror and pressed against substrate as recommended by mirror supplier.
- P. Installation of Glass below guard rail glass:
 - 1. Attach using metal standoffs, white. Match the standoffs and glass that is used in guard rail system.
- Q. Installation of glass using a cable suspension system:
 - 1. Base: Arakawagrip
 - 2. Floor Tensioner, Midway Grippers, Ceiling Grippers and 1/16" 7x7 weave cable, stainless steel.
 - 3. Contractor to verify with manufacturer that the hardware will work with weight of the glass prior to installation.
 - 4. Manufacturer to pre-drill holes for midway grippers. Provide clear plastic gasket between metal and glass.
- R. Remove and replace damaged glass.

3.3 CLEANING AND PROTECTION

- A. Wash and polish glass on both faces not more than 7 days prior to final completion of work in each area.

B. Comply with glass manufacturer's recommendations and GANA 01-0300.

END OF SECTION

SECTION 09 30 00
TILING

PART 1 - GENERAL

1.1 REFERENCE STANDARDS

- A. ANSI A108.5 - Setting of Ceramic Tile with Dry-Set Cement Mortar, Modified Dry-Set Cement Mortar, EGP (Exterior Glue Plywood) Modified Dry-Set Cement Mortar, or Improved Modified Dry-Set Cement Mortar; 2023.
- B. ANSI A108.10 - American National Standard Specifications for Installation of Grout in Tilework; 2017 (Reaffirmed 2022).
- C. ANSI A108.13 - American National Standard for Installation of Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone; 2005 (Reaffirmed 2021).
- D. ANSI A118.1 - American National Standard Specifications for Dry-Set Cement Mortar; 2023.
- E. ANSI A118.3 - American National Standard Specifications for Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy and Water Cleanable Tile-Setting Epoxy Adhesive; 2021.
- F. ANSI A118.4 - American National Standard Specifications for Modified Dry-Set Cement Mortar; 2023.
- G. ANSI A118.6 - American National Standard Specifications for Standard Cement Grouts for Tile Installation; 2019.
- H. ANSI A118.7 - American National Standard Specifications for High Performance Cement Grouts for Tile Installation; 2019.
- I. ANSI A118.10 - American National Standard Specifications for Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation; 2023.
- J. ANSI A118.12 - American National Standard Specifications for Crack Isolation Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation; 2014 (Reaffirmed 2024).
- K. ANSI A118.15 - American National Standard Specifications for Improved Modified Dry-Set Cement Mortar; 2023.
- L. ANSI A136.1 - American National Standard Specifications for Organic Adhesives for Installation of Ceramic Tile; 2020.
- M. ANSI A137.1 - American National Standard Specifications for Ceramic Tile; 2022.

- N. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2025.
- O. ASTM C373 - Standard Test Methods for Determination of Water Absorption and Associated Properties by Vacuum Method for Pressed Ceramic Tiles and Glass Tiles and Boil Method for Extruded Ceramic Tiles and Non-tile Fired Ceramic Whiteware Products; 2018 (Reapproved 2023).
- P. ASTM C627 - Standard Test Method for Evaluating Ceramic Floor Tile Installation Systems Using the Robinson-Type Floor Tester; 2018.
- Q. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018 (Reapproved 2024).
- R. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2021.
- S. ASTM D4068 - Standard Specification for Chlorinated Polyethylene (CPE) Sheeting for Concealed Water-Containment Membrane; 2017 (Reapproved 2022).
- T. ASTM D4397 - Standard Specification for Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications; 2016 (Reapproved 2023).
- U. ASTM D4551 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Flexible Concealed Water-Containment Membrane; 2022.
- V. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2023.
- W. ASTM E413 - Classification for Rating Sound Insulation; 2022.
- X. ASTM E492 - Standard Test Method for Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine; 2025.
- Y. ASTM E989 - Standard Classification for Determination of Single-Number Metrics for Impact Noise; 2021.

1.2 SUMMARY

- A. Furnish labor, materials, tools, equipment, and services for Tile, as indicated, in accordance with provisions of Contract Documents.
- B. Completely coordinate with work of other trades.

1.3 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
 - 1. Minimum ten (10) years of experience in manufacture of tile, setting and grout materials.

B. Installer Qualifications:

1. Specializing in tile work having minimum of five (5) years successful documented experience with work comparable to that required for this Project.

C. Single Source Responsibility:

1. Obtain each type and color tile material required from single source.
2. Provide compatible materials for tile system.

D. Certifications:

1. Submit Master Grade Certificate for each type of ceramic, quarry, and paver tile in accordance with requirements of ANSI A137.1.
2. Submit manufacturer's certifications that mortars, adhesives, and grouts are suitable for intended use.

E. Tile Council of North America (TCNA):

1. Handbook for Ceramic, Glass and Stone Tile Installation, latest edition.

F. Tile Council of North America (TCNA): HB-GP

1. Handbook for Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs Installation

G. Ceramic Tile Institute of America (CTIOA).

H. ASTM International (ASTM):

1. ASTM C373 Water Absorption, Bulk Density, Apparent Porosity, and Apparent Specific Gravity of Fired Whiteware Products.
2. ASTM C623 Young's Modulus, Shear Modulus, and Poisson's Ratio for Glass and Glass-Ceramics by Resonance.
3. ASTM C627 Robinson Floor Test for Tile Service Level.
4. ASTM D4068 Standard Specification for Chlorinated Polyethylene (CPE) Sheeting for Concealed Water-Containment Membrane.
5. ASTM D4551 Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Flexible Concealed Water-Containment Membrane.
6. ASTM E90 and ASTM E413 for STC (Sound Transmission Class).

7. ASTM E492 and ASTM E989 for IIC (Impact Insulation Class) - Sound Deadening Underlayments.

I. American National Standards Institute (ANSI):

1. ANSI A108.5 Installation of Ceramic tile with Dry-Set Portland Cement or Latex-Portland Cement.
2. ANSI A108.10 Installation of Grout in Tilework.
3. ANSI A108.13 Installation of Membranes for Thin-Set Ceramic Tile.
4. ANSI A108.17 Installation of Crack Isolation Membranes for Thin-set Ceramic Tile and Dimension Stone.
5. ANSI A108.19 - Interior Installlation of Gauged Porcelain Tiles and Gauged Tile Panels/Slabs
6. ANSI A118.1 Standard Dry-Set Cement Mortars.
7. ANSI A118.3 Chemical Resistant, Water-Cleanable, Tile-Setting and-Grouting Epoxy and Water-Cleanable Tile-Setting Epoxy Adhesive.
8. ANSI A118.4 Modified Dry-Set Cement Mortar.
9. ANSI A118.7 High Performance Cement Grouts.
10. ANSI A118.10 Load-Bearing, Bonded Waterproofing Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation.
11. ANSI A118.12 Crack Isolation Membranes for Thin-set Ceramic Tile and Dimension Stone Installation.
12. ANSI A118.15 Improved Modified Dry-Set Cement Mortars.
13. ANSI A136.1 Organic Adhesives for Installation of Ceramic Tile.
14. ANSI A137.1 Ceramic Tile.

1.4 SUBMITTALS

A. Shop Drawings:

1. Indicate tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, movement joints, thresholds, ceramic accessories, and setting methods and details.

B. Samples:

1. Two samples of each tile specified in Finish Legend.
2. Grout: Submit manufacturer's full range of standard and designated color samples for each type for Architect's selection.
3. Trim: Submit sample of each type and color.
4. Transition and Edge Protection Profiles: Submit sample of each type and color.
5. Edging and Finishing profiles: Submit sample of each type and color.
6. Prefabricated expansion and movement joints: Submit sample of each type and color.
7. Threshold: Submit 6 IN full profile sample of each type.

C. Project Information:

1. Installation methods.
2. Manufacturer's Certificate: For each shipment, type and composition of tile provide a Master Grade Certificate signed by manufacturer and installer certifying products meet or exceed specified requirements of ANSI A137.1-2012.

D. Contract Closeout Information:

1. Maintenance Data:
 - a. Include recommended cleaning methods, cleaning materials, stain removal methods, and polishes and waxes.
 - b. See Section 01 78 23.

1.5 EXTRA MATERIAL

- A. Provide 5% of each type, color or size of tile specified.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Ceramic Tile:

1. Base:
 - a. As specified on Interior Drawings and Finish Legend.

B. Porcelain Tile:

1. Base:
 - a. As specified on Interior Drawings and Finish Legend.

C. Quarry tile:

1. Base:
 - a. As specified on Interior Drawings and Finish Legend.

D. Thresholds:

1. Base:
 - a. As specified on Interior Drawings and Finish Legend.

E. Accessories:

1. Base:
 - a. Schluter Systems LP.
2. Optional:
 - a. Custom Building Products.
 - b. Mapei Americas
 - c. Laticrete

2.2 DESIGN CRITERIA

A. Ceramic Tile:

1. Comply with ANSI A137.1 American National Standard Specifications for Ceramic Tile for types, compositions, and grades of tile indicated.
2. Furnish tile complying with Standard Grade requirements unless otherwise indicated.
3. ANSI Standard for Tile Installation Materials: Comply with ANSI standard referenced with products and materials indicated for setting and grouting.

B. Colors, Textures, and Patterns:

1. Where manufacturer's standard products are indicated for tile, grout, and other products requiring selection of colors, surface textures, patterns, and other appearance characteristics, provide specific products or materials complying with following requirements:

- a. Match Architect's sample.

C. Factory Mounting:

1. Provide back face or edge mounted tile assemblies as standard with manufacturer unless another mounting method is indicated.
2. Do not use back mounted or edge mounted tile assemblies for swimming pools, exterior applications or wet areas.

D. Grout Release:

1. Factory applied temporary protective coating.
2. Provide where indicated under tile type, protect exposed surfaces of tile against adherence of mortar and grout by pre-coating with a continuous film of petroleum paraffin wax, applied hot.
3. Do not coat unexposed tile surfaces.

2.3 MATERIALS

A. Ceramic Wall Tile:

1. Grade: ANSI A137.1; 5.0 to 10.0 PCT water absorption.
2. Size: As indicated on Finish Schedule.
3. Edge: Cushioned.
4. Finish: Glazed.
5. Color: To be selected.

B. Porcelain Tile:

1. Acceptable Manufacturer: As specified in Drawing I-001 Interior Notes and Finish Legend.
2. Porcelain Tile: Porcelain based, impervious unglazed ceramic, through body color.
3. Water Absorption: Less than 0.1 PCT maximum, ASTM C373.
4. Finish: Matte.

C. Trim:

1. Provide necessary caps, stops, returns, trimmers and other shapes to complete installation.

2. Color and finish to match adjacent tile unless shown otherwise.

D. Mortar, Grout, and Adhesive Manufacturer:

1. Setting materials: As required by installation Method, See Part 3.
 - a. Custom Building Products
 - b. Laticrete International, Inc.
 - c. Mapei Corporation
 - d. Schluter Systems

E. Mortar - Thick Set

1. Portland Cement Mortar:
 - a. Description: Site mix of Portland cement, sand and water as specified.
2. Portland Cement Mortar with Latex Additive:
 - a. Portland Cement: ASTM C150, Type I, from one source only, non-staining and non-air-entraining.
 - b. Supplemental cementitious materials derived from coal fired power plant wastes shall not have a mercury content >5.5ppb.
 - c. Fly ash shall not be a byproduct of municipal solid waste incinerators
 - d. Mortar Sand: ASTM C144, free of deleterious materials, well graded.
 - e. Setting Bed Sand: ASTM C136, 100 PCT passing No. 4 sieve.
 - f. Latex Additive:
 - 1) Description: Latex additive serving as replacement for gaging water, for use with site mixed portland cement mortar.
 - 2) Quantity: As recommended by latex additive manufacturer to produce workable consistency.
 - 3) Acceptable Products:
 - (a) CustomFloat Bedding Mortar mixed with Acrylic Mortar Admix 1:1 water by Custom Building Products.
 - (b) 3701 Mortar Admix by Laticrete.

(c) Planicrete 50 by Mapei.

F. Mortar - Thin Set:

1. Portland Cement with Latex Additive:
 - a. Latex additive and site mixed Cement mortar.
 - b. Comply with ANSI A118.4.
 - c. Acceptable Products:
 - 1) CustomCrete Latex Mortar Admix with site mixed mortar by Custom Building Products.
 - 2) Keracrete System consisting of KER 303 Latex mixed with 1:1 sand/cement blend by Mapei.
2. Dry-set Cement Mortar for Large Format Tile **(ADDENDUM #1)**
 - a. Improved modified dry-set cement mortar
 - b. Comply with ANSI A118.15
 - c. Acceptable Products:
 - 1) Schluter ALL-SET

G. Epoxy Adhesive:

1. Multi-component, factory prepared, 100 PCT epoxy resin and hardener with sand or mineral filler material.
2. Comply with ANSI A118.3 for thin-set applications for chemical resistant, water cleanable quarry tile installations.

H. Latex Modified Grout:

1. Description: Latex-modified, factory blended, mildew resistant, sanded, grout consisting of cement, graded quartz and additives; comply with ANSI A118.7.
2. Latex Additive: Type as recommended by latex mortar manufacturer.
3. Acceptable Products:
 - a. Polyblend Sanded Tile Grout by Custom Building Products.

- b. Satillo Grout Mix with Acrylic Mortar Admix 1:1 with water by Custom Building Products.
 - c. 500 Series Sanded Grout Mixed with 1776 Grout Admix Plus by Laticrete.
 - d. KER 200 polymer-modified sanded grout by Mapei.
- I. Unsanded Latex Modified Grout for Wall Tile (Joints under 1/8IN):
- 1. Description: Latex-modified, factory blended, mildew resistant, non-sanded, grout consisting of cement and additives; comply with ANSI A118.6.
 - 2. Latex Additive: Type as recommended by latex mortar manufacturer.
 - 3. Color: To be selected.
 - 4. Acceptable Products:
 - a. Polyblend Non-Sanded Tile Grout by Custom Building Products.
 - b. White Dry Tile Grout by Custom Building Products.
 - c. 644 White Dry-Set Grout mixed with 17765 Grout Admix Plus by Laticrete.
 - d. 1600 Series Tri-Poly Fortified Non Sanded Grout by Laticrete.
 - e. KER 800 polymer-modified unsanded grout by Mapei.
- J. Epoxy Grout for Floor Tile and Shower Walls:
- 1. Multi-component, factory prepared, 100 PCT epoxy resin and hardener with sand or mineral filler material.
 - 2. Comply with ANSI A118.3.
 - 3. Color: To be selected.
 - 4. Color: As specified in Drawing I-001 Interior Notes and Finish Legend..
 - 5. Acceptable Products:
 - a. 100 PCT Solids Epoxy Grout by Custom Building Products.
 - b. Latapoxy SP-100 Stainless Epoxy Grout by Laticrete.
 - c. Latapoxy SP-100 Vertical Grade Epoxy Grout by Laticrete.
 - d. Kerapoxy Chemical Resistant Grout by Mapei.

K. Polymer Modified Sanded Grout for walls:

1. Description: Proprietary cement/sand compound
2. Compressive Strength: 3000 PSI at 24 HRS.
3. Color: To be selected
4. Acceptable Products:
 - a. Polyblend Sanded Tile Grout by Custom Building Products.
 - b. 1500 Series Tri-Poly Fortified Sanded Grout by Laticrete.

L. Waterproofing Membrane:

1. Description: Trowel applied elastomeric compound.
2. Acceptable Products:
 - a. Mapelastic 315 by Mapei.
3. Accessories:
 - a. Preformed fiberglass mesh coving, inside and outside corners, and drain fittings.
 - b. Preformed expansion joint flashing.

M. MCrack Isolation Membrane:

1. Description: Trowel applied elastomeric compound.
2. Acceptable Products:
 - a. PRP 315 by Mapei.

N. Sound Isolation Membrane:

1. Sound deadening underlayment exceeding IIC, Impact Insulation Class, standard of 50 and Sound Transmission Class (STC) standard of 56.
2. Acceptable Products:
 - a. No.18 Sound Control Underlayment by Laticrete.
 - b. Mapei Kerafonic two component sound deadening mortar underlayment.
 - c. Mapei Mapelastic SM sheet membrane sound deadening underlayment.

- d. Nobleseal SIS by The Noble Company, Grand Haven, MI.
- e. Dal Sound by Dal Tile.

O. Uncoupling Membrane: **(ADDENDUM #1)**

- 1. Polyethylene membrane underlayment with an anchoring fleece laminated to the underside
- 2. Acceptable Product:
 - a. Schlüter - DITRA
- 3. Location:
 - a. Floor locations with tile slabs.

P. Tile Backer Board:

- 1. Moisture-resistant treated gypsum core, glass mats both sides, and vinyl, water barrier coating on finished side.
 - a. Conventional cement-board and green-board products are not acceptable.
- 2. Thickness: 1/2 IN
- 3. Mold-resistance score: 10 per ASTM D3273.
- 4. Base Product: DensShield Tile Backer by Georgia Pacific.
 - a. Include Level 5 finish at non-tiled portions.
- 5. Optional Products:
 - a. Fiberock Interior Panel, Aqua-Tough by USG.
 - b. GlasRoc Tile Backer by Certainteed.
- 6. TBB wallboard scheduled in Fire Rated Walls:
 - a. Approved fire resistive products with comparable moisture-resistance.
 - b. Base Product: DensShield Fireguard Tile Backer by Georgia Pacific.

Q. Accessories:

- 1. Fasteners: Corrosion resistant type required by board manufacturer for securing units.
- 2. Joint Reinforcement Tape: As recommended by board manufacturer.

3. Vapor Retarder:

- a. Comply with ASTM D4397.
- b. Thickness and maximum permeance rating:
 - 1) 4.0 mils, 0.19 perms .
- c. Vapor retarder tape:
 - 1) For sealing joints and penetrations in vapor retarder.
 - 2) Pressure-sensitive type recommended by manufacturer.

R. Reinforcing Mesh:

1. Size: 2 IN x 2 IN weave of 16/16 wire size.
2. Fabric: Welded, galvanized.

S. Joint Sealant:

1. Two component polyurethane sealant, ASTM C920, Type M, self-leveling, for horizontal joints, Type II, non-sag, for vertical joints as specified in Section 07 92 16.
2. Color: Match grout.
3. Sealant:
 - a. Chemically compatible with tile, mortar, and grout.
 - b. Physically and chemically capable to withstand local environmental conditions.

T. Joint Backing:

1. Closed cell foam polyethylene.

U. Prefabricated Sealant Joint:

1. Prefabricated aluminum joint with two part, chemically curing non-sag polyurethane sealant.
2. Height as required by tile by 8 FT lengths.
3. Aluminum: Clear anodized.
4. Sealant: Match grout.
5. PolyBlend Ceramic Tile Caulk by Custom Building Products.

V. Expansion and Control Joints for Thin-set and/or Thickset Applications:

1. Main Material:
 - a. Roll-formed stainless steel
 - b. Extruded aluminum
 - c. Extruded rigid PVC
2. Profiles joined by soft CPE movement joint material, with integral perforated anchoring legs for setting joint into setting bed.
3. Height: As required to suit application.
4. Color: As selected by Architect.
5. Schlüter - DILEX-F, DILEX-BWS **(ADDENDUM #1)**

W. Corner Joints:

1. Extruded rigid coved wall corner, with integral perforated anchoring legs.
2. Floor leg height: As required to suit application.
3. Wall leg height: As required to suit application.
4. Material: Aluminum.
5. Schlüter - DILEX-EKE **(ADDENDUM #1)**

X. Decorative Wall Corner and Edge Trim:

1. Aluminum wide profile, decorative outside wall corner trim, with integral perforated anchoring leg.
2. Height: As required to suit application.
3. Material:
 - a. Aluminum.
4. Acceptable Products:
 - a. Schlüter - FINEC-SQ **(ADDENDUM #1)**
5. Location:

- a. Provide at all wall tile locations that have an exposed tile edge at the outside corner or an exposed tile edge on the wall.

Y. Edge and Transition Strips:

1. Solid brass, extruded aluminum, or roll-formed stainless steel edge strips, 1/8 IN wide at top edge; height as indicated.
2. Height: As required to suit application.
3. Finish:
 - a. Clear-satin anodized aluminum.
4. Schlüter - SCHIENE M

Z. Setting Buttons:

1. Plastic buttons of thickness required for joint size indicated to maintain uniform joint width.

AA. Grout Release Agents:

1. Protect exposed surfaces of tile against adherence of mortar and grout.
2. Compatible with tile, mortar and grout.
3. Petroleum-Paraffin Wax:
 - a. Fully refined, tasteless, odorless, containing at least 0.5 PCT oil with a melting point of 120 to 140 DEGF per ASTM D87.
4. Manufacturer's standard proprietary liquid coating specially formulated and recommended for use as temporary protective coating for tile.

BB. Penetrating Sealer:

1. Water-based sealer capable of repelling dirt, oil and stains from tile and grout surfaces.
2. Low odor, pH-neutral and non abrasive.
3. Vapor open, non-film forming.
4. Stain Resistance per Ceramic Tile Institute CTI-072: Excellent.
5. Compatible with tile types scheduled.
6. Aqua Mix Sealer's Choice Gold Penetrating Sealer by Custom Building Products.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Comply with requirements of referenced standards and recommendations of material manufacturers for environmental conditions before, during, and after installation.
- B. Verify concrete floor surfaces are suitable for tile installation.
 - 1. Firm, dry, clean and free of oily or waxy films, mortar and soil.
 - 2. Grounds, anchors, plugs, hangers, bucks, electrical and mechanical work in or behind tile installed.
 - 3. Verify limits of moisture and alkalinity are within levels tolerated by Tile manufacturer and setting materials manufacturer.
 - 4. Verify areas to receive tile installed by thin bed method have wood float finish, are true within 1/4 IN in 10 FT and are pitched to drains where required.
 - a. Areas with tile slabs should be 1/8 IN in 10 FT.
- C. Correct unsatisfactory conditions and proceed with installation only after substrate deficiencies have been corrected and surfaces are acceptable.
- D. Start of work constitutes acceptance of surfaces, and waiver of claim that surfaces are unsuitable.

3.2 PREPARATION

- A. Prepare surfaces in accordance with manufacturers' instructions for setting materials or additives used.
- B. Acid based cleaners are not permitted.
- C. Completely remove curing compounds or other substances that would interfere with proper bond of setting materials.
- D. Do not seal substrate unless required by manufacturer.
- E. Prime substrate when required by manufacturer.
- F. Factory Blending:
 - 1. Blend tile in factory and package accordingly so tile are uniform in color range as those throughout packaging and match approved samples.
 - 2. If not factory blended, return to manufacturer or blend tiles at project site before installing.

G. Field Applied Grout Release product, Temporary Protective Coating:

1. Petroleum paraffin wax or proprietary grout release formulation.
2. Provide where specified or required to prevent adhesion or staining of exposed tile surfaces by grout.
3. Precoat exposed surfaces of tile with continuous film of temporary protective coating.
4. Do not coat unexposed tile surfaces.

3.3 INSTALLATION

A. Tile Backer Board:

1. Place and fasten with galvanized or resin coated gypsum board screws at 8 IN OC in field of panel and 6 IN OC at edges.
2. Provide 1/4 IN gap above floor or fixture lip for installation of flexible calking.
3. Maintain manufacturer's required space between board edges.
4. Fill joints by applying tile setting material and joint reinforcement.

B. Membrane:

1. Install membrane with products or methods approved in writing by membrane manufacturer.
2. Flash membrane to cure prior to setting tile.
3. Do not allow construction traffic on membrane.

C. Waterproofing:

1. Install waterproofing in accordance with manufacturer's instructions.
2. Return waterproofing vertically at adjacent walls in accordance with manufacturer details, to minimum height of 4 IN .
3. Flood test waterproof membranes after fully cured.
4. Field Quality Control water test when required.

D. Tile Installation, General:

1. Install tile materials in accordance with ANSI A137.1-2012, ANSI and TCNA specifications, and TCNA Handbook for Ceramic Tile Installation, with exception of more stringent requirements of manufacturer or these Specifications.
2. Cut and fit tile tight to penetrations, protrusions and vertical interruptions and seal.
 - a. See Section 07 92 16.
3. Form corners and bases neatly.
4. Work tile joints uniform in width, subject to variance in tolerance allowed in tile size.
5. Make joint watertight, without voids, cracks, excess mortar, or grout.
6. Prepare surface, fit, set, bond, grout and clean in accordance with applicable requirements of ANSI standards and Tile Council of North America.
7. Where accent tiles are of a lesser thickness than surrounding field tiles, increase bedding thickness as required to achieve flush alignment between finished faces of accent tiles and adjacent field tiles.
8. Where tile has an exposed edge, provide a metal transition strip.
 - a. Top edge of tile when tile is not full height or side ed: Schlüter - JOLLY

E. Layout:

1. Lay out work to pattern indicated so full tile or joint is centered on each wall.
 - a. Lay out tile to minimize cutting and to avoid tile less than half size.
2. Continue pattern through openings.
3. For heights stated in feet and inches, use courses of full tile to produce nearest attainable heights without cutting tile.
4. Align joints in tile in both directions.
5. Align joints between wall, floor and base tile.
6. Make joints between sheets of tile same width as joints within sheet.
7. File edges of cut tile smooth and even.
8. Cut and fit tile at penetrations through tile.
9. Grind edges of tile abutting built-in items.

10. Fit tile at outlets, piping and other penetrations so plates, collars, or covers overlap tile.
11. Extend tile work into recesses and under or behind equipment and fixtures, to form complete covering without interruption, except as otherwise indicated.
12. Accurately form intersections and returns.
13. Form internal corners and external corners square.

F. Thick Bed Method, Horizontal Surfaces

1. Apply slurry bond coat approximately 1/16 IN thick to substrate surface using flat trowel.
2. Place thick bed mortar, 1-1/4 IN thick nominally onto slurry bond coat while coat is still wet and tacky.
3. Spread prepared mortar approximately one-half desired bed thickness and then lay reinforcing mesh.
4. Rod and compact mortar with steel trowel.
5. Before placing tiles on green or wet screed bed, apply slurry bond coat approximately 1/16 IN thick to mortar using flat trowel.
6. Apply mortar skim coat to back of each tile or sheet of tile immediately prior to placing.
7. Place tiles in wet slurry coat before surface dries maintaining uniform joints.
8. After each tile or sheet of tiles is laid, level surface and embed tiles.
9. Pitch surface to drain where required.
10. On hardened screed or mortar bed, install tiles by thin bed method.
11. Sound tiles after setting. Replace hollow sounding tiles.
12. Clean excess mortar or adhesive from surface of tile while mortar is fresh.

G. Thin Set Method, Floors and Walls:

1. Apply mortar or adhesive with notched trowel using scraping motion to work material into contact with surface to be covered.
 - a. Maintain 90 PCT coverage on back of tile and fully bed corners.
2. Apply only as much mortar or adhesive as can be covered within time recommended by mortar or adhesive manufacturer.

3. When installing large tiles, ceramics or mosaics, trowel small quantity of mortar or adhesive onto back of each tile or sheet of tiles.
4. Set tiles in place and level surface of tile.
5. Align tile to show uniform joints and set until firm.
6. Clean excess mortar or adhesive from surface of tile while mortar is fresh.
7. Allow face mounted tile to set until firm before removing paper and before grouting.
8. Sound tile after setting. Replace hollow sounding tiles.

H. Grouting:

1. Allow tiles to set before grouting.
2. Install in accordance with grout manufacturer's recommendations and ANSI A108.10.
3. Clean excess grout from surface as work progresses.
4. Cure after grouting by covering with kraft or construction paper for 72 HRS.
5. Install sealant in vertical wall joints at interior corners.

I. Movement Joints:

1. Comply with TCNA EJ171.
2. Coordinate with Drawings.
3. Locate movement joints where indicated.
4. Where not indicated, locate movement joints directly over following substrate conditions:
 - a. Changes in substrate material.
 - b. Over control joints, expansion joints and seismic joints in substrate.
 - c. Over construction joints in substrate.
 - d. At junctures where floors meet walls and other restraining elements such as curbs, columns, bases, and wall corners.
 - e. At other locations recommended by TCNA EJ171 Movement Joint requirements.
5. Locate additional movement joints per following:
 - a. Exterior: 12 FT.

- b. Interior: 25 FT
 - c. Interior, where exposed to direct sunlight or moisture: 12 FT
 - 6. Joint Width: In accordance with TCNA EJ171.
 - 7. Rake or cut control joints through setting bed to supporting slab or structure.
 - 8. Maintain joints free of mortar.
 - 9. Fill joints with self-leveling polyurethane sealant and backing material.
 - a. See Section 07 92 16.
 - 10. Provide sealant material at items penetrating tile work, unless otherwise indicated.
 - 11. Apply sealant to junction of tile and dissimilar materials and junction of dissimilar planes.
 - a. Seal tile to outlets, piping and other penetrations.
 - 12. Fill joints around water closets with white silicone sealant.
 - a. See Section 07 92 16.
 - 13. Use manufacturer's expansion joint flashing when covering expansion joints with waterproof or crack isolation membranes.
- J. Penetrating Sealer:
- 1. Surface Preparation:
 - a. Verify tile and grout are fully cured.
 - b. Verify surfaces are dry, clean and free of waxes, sealers and finishes.
 - c. Test product in obscure area to produce desirable results.
 - 2. Apply Penetrating Sealer to tiled surfaces, unless otherwise noted.
 - a. Application of penetrating sealer is not necessary where epoxy grouts are used.
 - b. Apply in accordance with Manufacturer's instructions.
 - 3. Test after 2 HRS by applying drops of water on surface.
 - a. If water penetrates, apply an additional coat of sealer.
 - 4. Remove visible residue within 60 minutes after application.

3.4 CLEANING

- A. Perform cleaning while mortar is fresh before hardening on surfaces.
- B. Wash tile diagonally across joints.
- C. Polish with clean dry cloth.
- D. Remove grout haze following recommendation of mortar additive manufacturer.
- E. Remove residual waxes or grout release agent, temporary protective coatings, by method recommended by coating manufacturer.
 - 1. Confirm acceptability with brick and grout manufacturer.
 - 2. Trap and remove coating to prevent it from clogging floor drains.

3.5 PROTECTION AND REPAIR

- A. Prohibit traffic on floor finish for 72 HRS after installation.
- B. Where temporary use of new floors is unavoidable, supply large, flat boards or plywood panels for walkways over kraft paper.
- C. Contractor responsible for replacing broken, cracked, chipped, stained, or damaged tiles.

END OF SECTION

SECTION 09 54 26
SUSPENDED WOOD CEILINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Wood veneer Panels and Baffles.

1.2 REFERENCE STANDARDS

- A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025.
- B. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels; 2019 (Reapproved 2025).
- C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.
- D. ASTM E580/E580M - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions; 2024a.
- E. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2023.
- F. CISCA (WC) - Wood Ceilings Technical Guidelines; 2009.

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Sequence work to ensure ceilings are not installed until building is enclosed, dust generating activities have terminated, and overhead work is completed.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Shop Drawings: Indicate attachment of wood ceiling components to grid, accessory attachments, junctions with other ceiling finishes, and mechanical and electrical items installed in the ceiling.
- C. Product Data: Provide data on wood ceiling components and suspension system components.
- D. Samples: Submit two samples illustrating material and finish of wood ceiling components.
- E. Test Reports: Certified test data from an independent test agency verifying that panels meet specified requirements for acoustical performance.

- F. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.
- G. Manufacturer's qualification statement.
- H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 - Product Requirements for additional provisions.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing work of the type specified and with at least 2 years experience.
- B. Single Source Responsibility: Provide acoustic wood ceilings from a single manufacturer with at least 5 years of prior experience fabricating projects of similar size and complexity.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver wood ceiling components to project site in original, unopened packages.
- B. Store in fully enclosed space, flat, level and off the floor.

1.7 FIELD CONDITIONS

- A. Do not install suspended wood ceiling system until wet construction work is complete and permanent heat and air conditioning is installed and operating.
- B. Maintain room temperature between 60 degrees F and 86 degrees F and relative humidity between 35 to 55 percent before, during, and after installation.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Suspended Acoustical Wood Ceilings:
 - 1. SoundPly® acoustic panels manufactured by Navy Island Inc., 275 Marie Avenue E, St. Paul, MN 55118, Ph. (651) 451-4454, email soundply@navyisland.com

2.2 SUSPENDED WOOD CEILING SYSTEM

- A. Wood Veneer Panels Type 4: Class A Mineral Wool core with wood veneer finish.
 - 1. Panel Size: See drawings w 1/8 inch open revel.
 - 2. Panel/Plank Thickness: 3/4 inch.

3. Veneer Species: Red oak.
 - a. Veneer Cut: Quarter cut.
 - b. Veneer Matching: Random matched.
 - c. End Matching: Manufacturer's recommended matching.
 - d. Factory Finish: Clear sealer.
4. Perforations: The perforations must be clean without rounded edges or grain pull out between perforations.
 - a. Shape: Circular.
 - b. Size: .02" inch diameter.
 - c. Surface Pattern: Offset Pattern.
5. Products:
 - a. Alta LRM Ceiling Panels - LR-M19 (3/4") .

2.3 FABRICATION

- A. Shop fabricate wood ceiling components to the greatest extent possible.
- B. Fabricate components to allow access to ceiling plenum as required.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Do not install ceiling until after interior wet work is dry.

3.2 PREPARATION

- A. Coordinate the location of hangers with other work.
- B. Layout wood ceiling components in pattern according to reflected ceiling plan and as shown on shop drawings.
- C. Acclimate wood ceiling materials by removing from packaging in installation area a minimum of 48 hours prior to installation.

3.3 INSTALLATION

- A. General: Install suspended wood ceiling system in accordance with CISCA (WC).
- B. Suspension System:
 - 1. Install suspension system in accordance with ASTM C636/C636M, ASTM E580/E580M, and manufacturer's instructions and as supplemented in this section.
 - 2. 15/16" heavy duty suspended grid, which allow for accessible plenum space.
 - a. Ceiling Panels installed using Torsion Springs and saddles.
 - b. Ceiling Baffels installed using Direct to grid X-Hanger assembly.
 - 3. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of ____.
 - 4. Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
- C. Wood Ceiling:
 - 1. Install wood ceilings in accordance with manufacturer's instructions.
 - 2. Fit wood components in place, free from damaged edges or other defects detrimental to appearance and function.
 - 3. Install components in uniform plane, and free from twist, warp, and dents.
 - 4. Install clips, stabilizer bars, and other attachments as indicated to secure wood ceiling components tight to the grid system.

3.4 CLEANING

- A. See Section 01 70 00 - Execution and Closeout Requirements for additional requirements.
- B. Clean and touch up minor finish damage. Remove and replace components that cannot be successfully cleaned and repaired.

END OF SECTION

SECTION 10 27 00
PEDESTAL TYPE ACCESS FLOORING

PART 1 GENERAL

1.1 REFERENCE STANDARDS

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.
- B. ASTM E136 - Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750 Degrees C; 2024c.
- C. NFPA 75 - Standard for the Fire Protection of Information Technology Equipment; 2024.
- D. NFPA 99 - Health Care Facilities Code; 2024, with Errata.

1.2 SECTION INCLUDES

- A. Work of this section includes, but is not limited to: access floor panels and floor coverings

1.3 RELATED SECTIONS

- A. Electrical contractor shall provide necessary material and labor to electrically connect the access floor to the building, see Division 26.

1.4 ENVIRONMENTAL CONDITIONS FOR STORAGE AND INSTALLATION

- A. Area to receive the access floor shall be enclosed and maintained at ambient temperature between 35° to 95° F, and at humidity level between 20% to 80% relative, and shall remain within these environmental limits throughout installation and occupancy. All laminated floor panels shall be stored and maintained within these limits upon delivery to storage sites. All bare floor panels shall be stored in this environment at least 24 hours before installation begins.

1.5 PERFORMANCE CERTIFICATION

- A. Product tests shall be witnessed and certified by independent engineering and testing laboratory based in the U.S. with a minimum of five years experience testing access floor components in accordance CISCA "Recommended Test Procedures for Access Floors".

1.6 PERFORMANCE REQUIREMENTS

- A. Floor Panels:
 - 1. Concentrated Load: Panel shall be capable of supporting a concentrated load of 1250 lbs. placed on a one square inch area (using a round or square indenter) at any location on the

panel with a maximum top surface deflection of 0.100 inches. Panel shall not exceed a permanent set of 0.010 inches, after the load is removed. Panel shall demonstrate ductility by being loaded to a deflection of [0.100] inches without incurring damage.

2. Uniform Load: Panel shall be capable of supporting a uniform load of 300 lbs. placed on a one square foot area at any location on the panel with a maximum top surface deflection of 0.060 inches. Panel shall not exceed a permanent set of 0.010 inches, after the load is removed. Note: The uniform load rating of an access floor panel as specified herein should not be confused with the "uniform live load" as specified in seismic zone applications.
3. Ultimate Load: Panel shall be capable of withstanding a minimum concentrated load of 3750 lbs. applied onto a one square inch area (using a round or square indenter) at any location on the panel without failure. Failure is defined as the point at which the panel will no longer accept the load. Certified test shall be provided attesting to this ultimate load.
4. Rolling Load: Panel and supporting understructure shall be able to withstand the following rolling loads at any location on the panel without developing a local and overall surface deformation greater than 0.040 inches. Note: wheel 1 and wheel 2 tests shall be performed on two separate panels.

Wheel 1: Size: 3" dia x 1 13/16" wide; Load: 1000 lbs.; Passes: 10

Wheel 2: Size: 6" dia x 1 1/2" wide ; Load: 800 lbs.; Passes: 10,000

5. Impact Load: Panel and supporting understructure shall be capable of supporting an impact load of 150 lbs. dropped from a height of 36 inches onto a one square inch area (using a round or square indenter) at any location on the panel.
6. Panel Drop Test: Panel shall be capable of being dropped face up onto to a concrete slab from a height of 36", after which it shall continue to meet all load performance requirements as previously defined.
7. Panel Cutout: Panel with 8" diameter cutout shall be capable of withstanding an ultimate load without failure of 1800 lbs. anywhere on the panel.
8. Flammability: System shall meet Class A Flame spread requirements for flame spread and smoke development. Tests shall be performed in accordance with ASTM E84-1998, Standard Test Method for Surface Burning Characteristics for Building Materials.
9. Combustibility: Access floor panels shall qualify as noncombustible by demonstrating compliance with requirements of ASTM E136, Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 1382 degrees Fahrenheit.

1.7 DESIGN REQUIREMENTS:

- A. Access floor system, where indicated on the design documents, shall consist of modular and removable cementitious filled welded steel or wood core filled panels supported on all four edges by structural steel members which are designed to bolt onto adjustable height pedestal assemblies forming a modular grid pattern.
- B. Panel shall be easily removed by one person with a lifting device and shall be interchangeable except where cut for special conditions.
- C. Quantities, finished floor heights (FFH) and location of accessories shall be as specified on the contract drawings.

1.8 SUBMITTALS FOR REVIEW

- A. Detail sheets, for each proposed product type, which provide the necessary information to describe the product and its performance.
- B. Test reports, certified by an independent testing laboratory with a minimum of five years experience testing access floor components in accordance Cisca Recommended Test Procedures, certifying that component parts perform as specified.

1.9 SUBMITTALS FOR INFORMATION

- A. Manufacturer's installation instructions and guidelines.
- B. Manufacturer's Owner Manual outlining recommended care and maintenance procedures.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Access floor system shall be equal to access flooring manufactured by Tate Access Floors, Inc. and shall consist of a floor equal to ConCore 1250 panel supported by a bolted stringer understructure system or the Haworth TecFlor 1250 panel supported by bolted stringer understructure system.
- B. Alternative products shall meet or exceed the feature requirements as indicated herein and the performance requirements as outlined in section 1.6 and must follow substitution guidelines.

2.2 PANEL COMPONENTS

- A. Floor Panels:
 - 1. Floor Panels: Shall consist of a top steel sheet welded to a formed steel bottom pan filled internally by a lightweight cementitious material. Mechanical or adhesive methods for attachment of the steel top and bottom sheets are unacceptable.

2. Cementitious fill material shall be totally encased within the steel welded shell except where cut for special conditions. For cementitious panel cut-outs provide a "C" channel over the cut edge to keep the composite cementitious fill from falling out.
3. GrateAire Panels: Die cast aluminum grate panels designed for static and rolling loads shall be interchangeable with standard field panels. Grate panels shall have 56% open area with the following air distribution capability: 2837 cfm at 0.1-inch of H₂O (static pressure). Grate panels shall have the following load bearing capacities:
 - a. Concentrated load: Shall be capable of supporting a concentrated load of 1000 lbs. placed on a one square inch area, using a round or square indenter, at any location on the panel with a maximum beam deflection of [0.100] inches. Panel shall not exceed a permanent set of [0.010] inches after the load is removed.
 - b. Uniform load: 250 lbs./ft.²
 - c. Ultimate load: 2500 lbs.
 - d. Rolling Load: Grate panel and supporting understructure shall be able to withstand the following rolling loads at any location on the panel without developing a local and overall surface deformation greater than 0.040 inches. Note: wheel 1 and wheel 2 tests shall be performed on two separate panels.

 Wheel 1: Size: 3" dia x 1 13/16" wide; Load: 1000 lbs.; Passes: 10

 Wheel 2: Size: 6" dia x 1 1/2" wide; Load: 800 lbs.; Passes: 10,000
 - e. Impact load: 100 lbs.

2.3 ACCESSORIES

- A. Provide manufacturer's standard steps, ramps, fascia plate, perimeter support, and grommets where indicated on the contract drawings.
- B. Provide 10 spare floor panels for each type used in the project for maintenance stock. Deliver to project in manufacturer's standard packaging clearly marked with the contents.
- C. Provide 1 panel lifting devices.
- D. When applicable provide manufacturer's standard underfloor air systems components (including, grilles, diffusers and perforated floor panels) where indicated on the contract drawings.

2.4 FINISHES

- A. Finish the surface of floor panels with floor covering material as indicated on the contract drawings. Where floor coverings are by the access floor manufacturer, the type, color and

pattern shall be selected from manufacturer's standard. All storage and installation areas furnished with laminated floor panels must be maintained at ambient temperature between 35° to 95° F and at humidity level between 20% to 80% relative and shall remain within these ranges through installation and occupancy.

- B. LVT flooring
 - 1. Meets ASTM F 1700, Class III, Type B performance
 - 2. Static Load Limit (ASTM F970): 250 psi
 - 3. Base Product: See Finish Schedule
- C. The Panel shall be factory laminated with monolithic edge
- D. Laminate floor coverings shall have an edge condition that is integral to the tile. Separate edge trim pieces are not acceptable.
- E. Vinyl edge trim option for laminate and all other tile coverings shall be applied to the panel's top surface and shall not wrap around the panel's edge.
- F. Surface to Ground Resistance of Conductive Laminate Covering: Not less than 25,000 ohms (2.5×10^4), nor more than 1,000,000 ohms (1.0×10^6), as determined by testing in accordance with the test method for conductive flooring specified in Chapter 3 of NFPA 99, but modified to place one electrode on the floor surface and to attach one electrode to the understructure. Resistance shall be tested at 500 volts.

2.5 FABRICATION TOLERANCES

- A. Floor panel flatness measured on a diagonal: $\pm 0.035"$
- B. Floor panel flatness measured along edges: $\pm 0.025"$
- C. Floor panel width or length of required size: $\pm 0.010"$
- D. Floor panel squareness tolerance: $\pm 0.015"$

PART 3 – EXECUTION

3.1 PREPARATION

- A. Examine structural subfloor for unevenness, irregularities and dampness that would affect the quality and execution of the work. Do not proceed with installation until structural floor surfaces are level, clean, and dry as completed by others.
- B. Concrete sealers, if used, shall be identified and proven to be compatible with pedestal adhesive. Verify that adhesive achieves bond to slab before commencing work.

- C. Verify dimensions on contract drawings, including level of interfaces including abutting floor, ledges and doorsills.
- D. The General Contractor shall provide clear access, dry subfloor area free of construction debris and other trades throughout installation of access floor system. Area to receive access floor shall be enclosed and be maintained at a temperature range of 35° to 95° F and a humidity range of 20% to 80% relative. All laminated floor panels shall be stored and maintained in this environment upon delivery to storage sites. Bare access floor panels must be stored in this environment at least 24 hours before installation begins.

3.2 INSTALLATION

- A. Installation of access floor shall be coordinated with other trades to maintain the integrity of the installed system. All traffic on access floor shall be controlled by access floor installer. No traffic but that of access floor installers shall be permitted on any floor area for 24 hours to allow the pedestal adhesive to set. Access floor panels shall not be removed by other trades for 72 hours after their installation.
- B. Floor system and accessories shall be installed under the supervision of the manufacturer's authorized representative and according to manufacturer's recommendations.
- C. No dust or debris producing operations by other trades shall be allowed in areas where access floor is being installed to ensure proper bonding of pedestals to subfloor.
- D. Access floor installer shall keep the subfloor broom clean as installation progresses.
- E. Partially complete floors shall be braced against shifting to maintain the integrity of the installed system where required.
- F. Additional pedestals as needed shall support panels where floor is disrupted by columns, walls, and cutouts.
- G. Understructure shall be aligned such that all uncut panels are interchangeable and fit snugly but do not bind when placed in alternate positions.
- H. Finished floor shall be level, not varying more than 0.062" in 10 feet or 0.125" overall.
- I. Acceptance: General contractor shall accept floor in whole or in part prior to allowing use by other trades.
- J. Access floor shall be installed under the direction of an experienced supervisor according to manufacturer instructions and recommendations.
- K. Access floor installer shall be responsible for removing any debris created by floor installation and leaving area in a clean condition.

L. General Contractor shall be responsible for protecting finished access floor from damage and misuse by other trades.

M. Schedule

1. A. Product is to be installed on 2nd floor, Room #208. See Finish S

END OF SECTION

SECTION 10 28 00
TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 GENERAL

1.1 REFERENCE STANDARDS

- A. ASTM C1036 - Standard Specification for Flat Glass; 2025.
- B. ASTM C1503 - Standard Specification for Silvered Flat Glass Mirror; 2024.

1.2 SECTION INCLUDES

- A. Commercial toilet accessories.

1.3 1.RELATED REQUIREMENTS

- A. Section 10 21 13 Solid Plastic Toilet Compartments

1.4 REFERENCE STANDARDS

- A. ASTM C1036 - Standard Specification for Flat Glass; 2016.
- B. ASTM C1503 - Standard Specification for Silvered Flat Glass Mirror; 2018.

1.5 SUBMITTALS

- A. Product Data: Manufacturer's product and technical data indicating compliance with these specifications and shop drawings for the fabrication and installation of all toilet accessories. Show all anchorage and other necessary items including mounting heights.
- B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.
 - 1. Identify locations using room designations indicated.
 - 2. Identify products using designations indicated.
- C. Warranty: Sample of special warranty.
- D. Closeout Submittals: Maintenance Data.
- E. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention.

1.6 QUALITY ASSURANCE

- A. Provide products of the same manufacturer for each type of accessory unit and for units exposed in the same areas, unless otherwise acceptable to the MDOT Architect. Stamped names or labels on exposed faces of units will not be permitted, except where otherwise indicated.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Upon receipt of toilet accessories and other materials, examine the shipment for damage and completeness. Materials shall be stored in a clean, dry place. Stack all materials to prevent damage.

1.8 WARRANTY

- A. Special Mirror Warranty: Manufacturer's standard form in which manufacturer agrees to replace mirrors that develop visible silver spoilage defects and that fail in materials or workmanship within specified warranty period.

- 1. Warranty Period: 15 years from date of Completion.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings (Bradley Washroom Accessories Division, P.O. Box 309, Menomonee Falls, WI 53051. Tel. (414) 354-0100) or comparable product by one of the following:
- B. Commercial Toilet, Shower, and Bath Accessories:
 - 1. AJW Architectural Products; www.ajw.com
 - 2. American Specialties, Inc; www.americanspecialties.com

2.2 COMMERCIAL TOILET ACCESSORIES

- A. Toilet Paper Dispenser: Double roll, surface mounted bracket type, stainless steel.
 - 1. Products:
 - a. Bradley model 5263
- B. Paper Towel Dispenser: Folded paper type, thermoplastic polymer, surface-mounted, with viewing slots on sides as refill indicator and tumbler lock.
 - 1. Capacity: 400 multifold minimum.

2. Products:
 - a. Bradley Corporations; Model 2442-10
- C. Robe Hook: Heavy-duty aluminum, single-prong, rectangular-shaped bracket and backplate for concealed attachment, satin finish
 1. Peter Pepper; Model 2140
- D. Mirrors: Stainless steel framed, 1/4 inch thick annealed float glass; ASTM C1036.
 1. Annealed Float Glass: Silvering, protective and physical characteristics in compliance with ASTM C1503.
 2. Size: 18" x 36".
 3. Products:
 - a. Bradley Corporations; 781 Series
- E. Seat Cover Dispenser: Stainless steel, surface-mounted, reloading by concealed opening at base, tumbler lock.
 1. Minimum capacity: 250 seat covers.
 2. Products:
 - a. Bradley Corporation; Model 5831
- F. Grab Bars: Stainless steel, smooth surface.
 1. Standard Duty Grab Bars:
 - a. Push/Pull Point Load: 250 pound-force, minimum.
 - b. Dimensions: 1-1/4 inch outside diameter, minimum 0.05 inch wall thickness, exposed flange mounting, 1-1/2 inch clearance between wall and inside of grab bar.
 - c. Finish: Satin.
 - d. Length and Configuration: As indicated on drawings.
 - e. Products:
 - 1) Bradley Corporation
- G. Napkin Disposal: Stainless steel, surface-mounted,

1. Products:
 - a. Bradley Corporation; Model 4781-11
 - b. Finish: Satin

H. Waste Receptacle: Stainless steel, Recessed

1. **Products:**
 - a. **Bradley Corporation; Model 3A05**
 - b. **Finish: Satin**

PART 3 EXECUTION

3.1 3.1 EXAMINATION

- A. A. Verify existing conditions before starting work.
- B. B. Verify exact location of accessories for installation.
- C. C. Verify that field measurements are as indicated on drawings.

3.2 3.2 PREPARATION

- A. A. Deliver inserts and rough-in frames to site for timely installation.
- B. B. Provide templates and rough-in measurements as required.

3.3 3.3 INSTALLATION

- A. A. Install accessories in accordance with manufacturers' instructions in locations indicated on drawings.
- B. B. Install plumb and level, securely and rigidly anchored to substrate.
- C. C. Mounting Heights: As required by accessibility regulations, unless otherwise indicated.
 1. 1. Grab Bars: As indicated on drawings.
 2. 2. Other Accessories: As indicated on drawings.

3.4 3.4 PROTECTION

- A. A. Protect installed accessories from damage due to subsequent construction operations.

END OF SECTION

SECTION 22 02 50
PLUMBING INSULATION

PART 1 - GENERAL

1.1 REFERENCE STANDARDS

- A. ASTM C547 - Standard Specification for Mineral Fiber Pipe Insulation; 2022a.
- B. ASTM C552 - Standard Specification for Cellular Glass Thermal Insulation; 2022.
- C. ASTM C1126 - Standard Specification for Faced or Unfaced Rigid Cellular Phenolic Thermal Insulation; 2024.

1.2 SCOPE

- A. It is intended that all storm drain piping above slab on grade and all domestic water piping above slab on grade throughout this project be insulated, except as specifically stated otherwise hereafter.
- B. Insulation shall include all insulating materials their applications, bands, tie wire, and weather protection for all pipe, fittings, valves, and equipment as indicated and as specified herein.
- C. Piping systems requiring insulation, types of insulation required, and insulation thickness shall be as listed herein. All fittings, flanges, and valves (except valve stems, hand wheels, and operators) in piping systems requiring insulation shall be insulated unless otherwise specified. Fitting, flange, and valve insulation shall be premolded, precut, or job-fabricated insulation of the same thickness and conductivity as used on adjacent piping. Insulation exterior shall be cleanable, grease resistant, non-flaking and non-peeling.

PART 2 - PRODUCTS

2.1 PIPING INSULATION

- A. Fiberglass pipe insulation (FG)
 - 1. Insulation shall have a thermal conductivity $k=0.23$ at 75 degrees Fahrenheit.
 - 2. Insulation shall include a white ASJ with self-sealing overlap joints and seams.
 - 3. Insulation shall be equal to Johns Manville "Micro-Lok" or approved equal.
- B. Flexible elastomeric pipe insulation (FU)
 - 1. Insulation shall have a thermal conductivity $k=0.25$ at 75 degrees Fahrenheit.
 - 2. Insulation shall be equal to Armacell "AP Armaflex".

C. Cellular Glass (CG)

1. Insulation shall have a thermal conductivity $k=0.35$ (density 8.5 pcf nominal).
2. Insulation shall be equal to Foamglass

D. Phenolic (P)

1. Insulation shall have a thermal conductivity $k=0.15$ (density 10 pcf nominal)
2. Insulation shall be equal to Insul-Phen.

E. PVC pipe and fitting covers.

1. Pipe and fitting covers shall be 20 mill thick flame retardant PVC. Fitting covers shall be neat, tight fitting radius type.
2. Pipe and fitting covers shall be equal to Zeston type 300 or approved equal.

PART 3 - EXECUTION

3.1 GENERAL INSULATION INSTALLATION REQUIREMENTS

- A. The insulation shall be applied by licensed insulation applicators and all work shall be performed in a neat and workmanlike manner.
- B. No insulation shall be applied over pipes, fittings, or other surfaces, which are not clean.
- C. Insulation shall be applied after pipes have been thoroughly tested and proven tight by the CONTRACTOR.
- D. Piping insulation thru rated walls shall be coordinated with Section Basic Mechanical Materials and Methods and approved pipe sleeve and fire stop with UL Listing.
- E. Color coding of piping systems shall be in accordance with Sections Basic Mechanical Materials and Methods and Mechanical Identification. Piping identification after color coding shall be as specified in Section Mechanical Identification.
- F. Insulation shall be clean and dry when installed and during the application of any finish.
- G. Install materials neatly with smooth and even surfaces with jackets drawn tight and smoothly cemented down on longitudinal and end laps.
- H. Scrap pieces shall not be used where a full length section will fit.
- I. . Pipe insulation shall be continuous through sleeves, wall and ceiling openings.

- J. A PVC grommet shall be utilized at metal stud penetrations of piping, and insulation shall be installed snug to both sides of penetration with ends of piping insulation vapor sealed if specified.
- K. Piping and ductwork shall be individually insulated.
- L. Chrome plated pipes and pipes used solely for fire protection shall not be insulated.
- M. Vapor Barrier Installation
 - 1. A complete moisture and vapor seal shall be provided wherever insulation terminates against metal hangers, anchors and other projections through insulation on cold surfaces for which a vapor seal is specified as identified in Part 3 paragraph 3.03 of this specification section.
 - 2. Seam and fitting covers shall be sealed with two (2) generous brush coat of fire resistant vapor barrier coating, applied at all longitudinal and circumferential laps.
 - 3. Ends of sections of insulation that butt against flanges, unions, valves, and fittings, and joints at intervals of not more than 12-feet on continuous runs of pipe shall be coated with a vapor barrier coating.
 - 4. Breaks and punctures in the jacket material shall be patched by wrapping a strip of jacket material around the pipe and cementing, coating as specified for butt strips. The patch shall extend not less than 1½" past the break in both directions.
 - 5. At penetrations such as thermometers, valve stems, etc., the voids in the insulation shall be filled with vapor barrier coating and the penetration sealed with a brush coat of the same coating.
 - 6. PVC fitting jackets in concealed applications shall be with a strip of insulation jacket and brush coat of vapor barrier sealant.
 - 7. PVC fitting jackets in exposed applications shall be neatly covered with a PVC/vinyl tape neatly smoothed.
- N. Installation at Hangers and Anchors
 - 1. Pipe insulation shall be continuous through pipe hangers.
 - 2. Where pipe is supported by the insulation, galvanized sheet metal shields or saddles 12-inches long shall be provided. Shields/saddles shall be 20 gauge galvanized sheet metal for pipes 6" and smaller and 18 gauge for pipes 8" and larger.
 - 3. Where shields are used on pipes 2-inches and larger, insulation inserts shall be provided at points of hangers and supports.

- a. Insulation inserts shall be of calcium silicate, cellular glass (minimum 8 pcf), molded glass fiber (minimum 8 pcf), or other approved material of the same thickness as adjacent insulation.
 - b. Inserts shall have sufficient compressive strength to adequately support the pipe without compressing the inserts to a thickness less than the adjacent insulation.
 - c. Insulation inserts shall cover the bottom half of the pipe circumference 180 degrees and be not less in length than the protection shield.
 - d. Vapor barrier facing of the insert shall be of the same material as the facing on the adjacent insulation.
 - e. Seal inserts into the insulation with vapor barrier coating.
4. Where protection saddles are used, fill all voids with the same insulation material as used on the adjacent pipe.
 5. Insulate and vapor seal insulation at anchors same as piping for a distance not less than four times insulation thickness to prevent condensation.

3.2 PIPING INSULATION INSTALLATION

A. Fiberglass pipe insulation (FG):

1. Install insulation with longitudinal laps and butt strips additionally smoothly secured with Benjamin-Foster 85-20 adhesive.
2. Fittings and valves on pipe shall be similarly insulated with thickness equal to the adjacent pipe.

B. Flexible elastomeric pipe insulation (FU):

1. Miter 90-degree turns and elbows, tees, and valve insulation.
2. Secure longitudinal joints with vinyl tape on 9-inch centers.
3. Bond cuts, butt joints, ends, and longitudinal joints with adhesive. After adhesive cures, apply 2-inch wide pressure sensitive adhesive vinyl tape over bonded cuts, joints, and ends.

C. PVC pipe and fitting covers:

1. PVC pipe and fitting covers shall be installed with a smooth appearance and no visible wrinkles.

2. All longitudinal seams shall be installed such the joints facing up or to the back of the finished product.
3. All longitudinal and circumferential PVC jacket joints and connections shall be spot welded every 12" with Perma Weld Adhesive and subsequently neatly sealed with tight fitting pressure sensitive vinyl tape, installed without wrinkles.
4. See Section Mechanical Identification for color coding of factory PVC jackets in exposed applications.

D. Metal Jacket Installation:

1. Metal jackets shall have side and end laps at least 2 inches wide with the cut edge of the side lap turned under one inch to provide a smooth edge.
2. Secure jackets in place with aluminum or stainless steel bands on 9-inch centers.
3. Place laps to shed water.
4. Seal laps with weatherproof coating.
5. Where pipes penetrate exterior walls, continue the increased insulation thickness required for piping exposed to weather and the metal jackets through the sleeve to a point 2 inches beyond the interior surface of the wall.
6. In outside locations protect fittings, flanges, and valves with a weatherproof coating prior to installation of metal covers. Secure metal covers for fittings, flanges, and valves in place with metal bands and seal with a weatherproof coating.

3.3 PIPING INSULATION MATERIAL TYPE, SERVICE JACKET, VAPOR BARRIER, AND THICKNESS CHARTS

DOMESTIC COLD WATER						
MATERIAL ("A")	TYPE OF SERVICE JACKET ("B")	VAPOR BARRIER REQUIRED	INSULATION THICKNESS (INCHES) FOR PIPE SIZE			NOTES
			1/2"- 1-1/4"	1-1/2"- 3"	3-1/2"- 6"	
FG	B	YES	1	1.5	1.5	1,2,3,4,5,6
FU	C	NO	1	1.5	1.5	
P	B	NO	0.5	1	1	
CG	A	YES	1	1.5	1.5	

DOMESTIC HOT WATER AND RECIRC.						
MATERIAL ("A")	TYPE OF SERVICE JACKET ("B")	VAPOR BARRIER REQUIRED	INSULATION THICKNESS (INCHES) FOR PIPE SIZE			NOTES
			1/2"-	1-1/2"-	3-1/2"-	
			1-1/4"	3"	6"	
FG	B	YES	1	1.5	1.5	1,2,3,4,5,6
FU	C	NO	1	1.5	1.5	
P	B	NO	0.5	1	1	
CG	A	YES	1	1.5	1.5	
AIR CONDITIONING CONDENSATE DRAINS INSIDE BUILDING						
MATERIAL ("A")	TYPE OF SERVICE JACKET ("B")	VAPOR BARRIER REQUIRED	INSULATION THICKNESS (INCHES) FOR PIPE SIZE			NOTES
			1/2"-	1-1/2"-	3-1/2"-	
			1-1/4"	3"	6"	
FU	C	NO	0.75	1	1	4
RAIN LEADER (INCLUDING UNDERSIDE OR ROOF DRAIN)						
MATERIAL ("A")	TYPE OF SERVICE JACKET ("B")	VAPOR BARRIER REQUIRED	INSULATION THICKNESS (INCHES) FOR PIPE SIZE			NOTES
			3"-	8"-	12"-	
			6"	10"	30"	
FG	B	NO	1	1	1	2,4
FU	C	NO	0.75	0.75	0.75	
"A" - INSULATION MATERIAL						
ABBREVIATION		MATERIAL	SPECIFICATION		TYPE	CLASS/ GRADE
FU		FLEXIBLE UNICELLULAR	ASTM C534		-	-

FG	FIBERGLASS	ASTM C547	I	1
P	PHENOLIC	ASTM C552	-	-
CG	CELLULAR GLASS	ASTM C1126	III	1
"B" - TYPE OF SERVICE JACKET REQUIRED				
A	FOIL BACKED ALL SERVICE JACKET (ASJ)			
B	PAPER ASJ			
C	NONE			

A. Insulation Charts Notes:

1. Flexible unicellular insulation shall be utilized on domestic piping concealed within interior and exterior walls and plumbing chases.
2. Higher density insulation inserts shall be utilized on all piping larger than 1-1/2" size, at all hanger/saddle supports.
3. Insulation located outside shall be one inch thicker than shown in tables.
4. A full coverage color-coded pvc jacket shall be required on insulated piping and fittings exposed in mechanical rooms, in crawlspace, and in interior exposed applications. See Section Plumbing Identification for color requirements.
5. Provide metal jackets over insulation on all piping exposed to outdoor weather.
6. All potable water piping outside, exposed to view in finished spaces, in crawlspace, within mechanical/equipment rooms, etc. shall be insulated with phenolic or "Foamglas".

END OF SECTION

SECTION 23 02 50
MECHANICAL INSULATION

PART 1 - GENERAL

1.1 REFERENCE STANDARDS

- A. ASTM C547 - Standard Specification for Mineral Fiber Pipe Insulation; 2022a.
- B. ASTM C552 - Standard Specification for Cellular Glass Thermal Insulation; 2022.
- C. ASTM C1126 - Standard Specification for Faced or Unfaced Rigid Cellular Phenolic Thermal Insulation; 2024.
- D. ASTM E2336 - Standard Test Methods for Fire Resistive Grease Duct Enclosure Systems; 2020.
- E. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015, with Editorial Revision (2021).
- F. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2024.
- G. UL 181 - Standard for Factory-Made Air Ducts and Air Connectors; Current Edition, Including All Revisions.

1.2 SCOPE

- A. It is intended that all heating and/or air conditioning ductwork and piping above slab on grade throughout this project be insulated, except as specifically stated otherwise hereafter.
- B. Insulation shall include all insulating materials their applications, bands, tie wire, and weather protection for all pipe, fittings, valves, and equipment as indicated and as specified herein.
- C. Piping systems requiring insulation, types of insulation required, and insulation thickness shall be as listed herein. All fittings, flanges, and valves (except valve stems, hand wheels, and operators) in piping systems requiring insulation shall be insulated unless otherwise specified. Fitting, flange, and valve insulation shall be premolded, precut, or job-fabricated insulation of the same thickness and conductivity as used on adjacent piping. Insulation exterior shall be cleanable, grease resistant, non-flaking and non-peeling.

PART 2 - PRODUCTS

2.1 PIPING INSULATION

- A. Fiberglass pipe insulation (FG):
 - 1. Insulation shall have a thermal conductivity $k=0.23$ at 75 degrees Fahrenheit.

2. Insulation shall include a white ASJ with self-sealing overlap joints and seams.
 3. Insulation shall be equal to Johns Manville "Micro-Lok" or approved equal.
- B. Flexible elastomeric pipe insulation (FU):
1. Insulation shall have a thermal conductivity $k=0.25$ at 75 degrees Fahrenheit.
 2. Insulation shall be equal to Armacell "AP Armaflex".
- C. Cellular Glass (CG):
1. Insulation shall have a thermal conductivity $k=0.35$ (density 8.5 pcf nominal).
 2. Insulation shall be equal to Foamglass
- D. Phenolic (P):
1. Insulation shall have a thermal conductivity $k=0.15$ (density 10 pcf nominal)
 2. Insulation shall be equal to Insul-Phen.
- E. PVC pipe and fitting covers:
1. Pipe and fitting covers shall be 20 mill thick flame retardant PVC. Fitting covers shall be neat, tight fitting radius type.
 2. Pipe and fitting covers shall be equal to Zeston type 300 or approved equal.
- F. Custom Removable/Re-useable Piping Covers:
1. Insulation Encapsulating Material/Covering: Silicone or Teflon impregnated fiberglass fabric with a minimum density of 16 ounces per square yard.
 2. Insulation Material: 1000 degree F elevated temperature blanket with a 1.1 pcf density. Insulation shall have a thermal conductivity $k=0.28$ at 100 degrees Fahrenheit.
 3. Thread: Teflon coated fiberglass with a 20 lb tensile strength and 1500 yards/lb weight. Stapled or "hot-ringed" covers are not acceptable.
 4. Covers shall be equal to Advance Thermal Corp. or approved equal.

2.2 DUCTWORK INSULATION

- A. Rectangular Ductwork Interior Acoustical Liner:
1. See Section Ductwork.

B. External Ductwrap Insulation (Ductwrap):

1. Insulation shall be 2-1/3" thick and 3/4 pcf density fiberglass material with FSK facing. The "k" factor at 75° F., mean temperature shall not exceed 0.31 and shall meet NFPA 90A & 90B Standards.

C. Dual Wall Round and/or Oval Ductwork Insulation:

1. See Section Ductwork.

D. Rigid Board Insulation (Board):

1. Insulation shall be one inch (1") thick with FSK outer skin and black matte durable finish meeting the requirements of ASTM G21 and G22.
2. Insulation shall be equal to Knauf "Ductboard M" or CertainTeed "Ductboard with Enhanced Facing".

E. Fire Wrap Insulation:

1. Insulation system shall be tested and classified to provide 2-hour clearance to combustible construction and a 2 hour fire rating per ASTM E2336.
2. Insulation shall be equal to "FireMaster FastWrap XL" by Thermal Ceramics.

PART 3 - EXECUTION

3.1 GENERAL INSULATION INSTALLATION REQUIREMENTS

- A. The insulation shall be applied by licensed insulation applicators and all work shall be performed in a neat and workmanlike manner.
- B. No insulation shall be applied over pipes, fittings, or other surfaces, which are not clean.
- C. Insulation shall be applied after pipes have been thoroughly tested and proven tight by the CONTRACTOR.
- D. Piping insulation thru rated walls shall be coordinated with Section Basic Mechanical Materials and Methods and approved pipe sleeve and fire stop with UL Listing.
- E. Color coding of piping systems shall be in accordance with Sections Basic Mechanical Materials and Methods and Mechanical Identification. Piping identification after color coding shall be as specified in Section Mechanical Identification.
- F. Insulation shall be clean and dry when installed and during the application of any finish.

- G. Install materials neatly with smooth and even surfaces with jackets drawn tight and smoothly cemented down on longitudinal and end laps.
- H. Scrap pieces shall not be used where a full length section will fit.
- I. Pipe insulation shall be continuous through sleeves, wall and ceiling openings.
- J. Piping and ductwork shall be individually insulated.
- K. Equipment nameplates, access plates in fan housings and ductwork and the like for ventilating and air heating systems, shall not be insulated but insulation must be carefully beveled and sealed around it.
- L. Ductwork insulation shall be continuous through sleeves, wall and ceiling openings except at fire dampers in ductwork systems.
- M. Vapor Barrier Installation:
 - 1. A complete moisture and vapor seal shall be provided wherever insulation terminates against metal hangers, anchors and other projections through insulation on cold surfaces for which a vapor seal is specified as identified in Part 3 paragraph 3.03 of this specification section.
 - 2. Seam and fitting covers shall be sealed with two (2) generous brush coat of fire resistant vapor barrier coating, applied at all longitudinal and circumferential laps.
 - 3. Ends of sections of insulation that butt against flanges, unions, valves, and fittings, and joints at intervals of not more than 12-feet on continuous runs of pipe shall be coated with a vapor barrier coating.
 - 4. Breaks and punctures in the jacket material shall be patched by wrapping a strip of jacket material around the pipe and cementing, coating as specified for butt strips. The patch shall extend not less than 1½" past the break in both directions.
 - 5. At penetrations such as thermometers, valve stems, etc., the voids in the insulation shall be filled with vapor barrier coating and the penetration sealed with a brush coat of the same coating.
 - 6. PVC fitting jackets in concealed applications shall be with a strip of insulation jacket and brush coat of vapor barrier sealant.
 - 7. PVC fitting jackets in exposed applications shall be neatly covered with a PVC/vinyl tape neatly smoothed.
- N. Installation at Hangers and Anchors:
 - 1. Pipe insulation shall be continuous through pipe hangers.

2. Where pipe is supported by the insulation, galvanized sheet metal shields or saddles 12-inches long shall be provided. Shields/saddles shall be 20 gauge galvanized sheet metal for pipes 6" and smaller and 18 gauge for pipes 8" and larger.
3. Where shields are used on pipes 2-inches and larger, insulation inserts shall be provided at points of hangers and supports.
 - a. Insulation inserts shall be of calcium silicate, cellular glass (minimum 8 pcf), molded glass fiber (minimum 8 pcf), or other approved material of the same thickness as adjacent insulation.
 - b. Inserts shall have sufficient compressive strength to adequately support the pipe without compressing the inserts to a thickness less than the adjacent insulation.
 - c. Insulation inserts shall cover the bottom half of the pipe circumference 180 degrees and be not less in length than the protection shield.
 - d. Vapor barrier facing of the insert shall be of the same material as the facing on the adjacent insulation.
 - e. Seal inserts into the insulation with vapor barrier coating.
4. Where protection saddles are used, fill all voids with the same insulation material as used on the adjacent pipe.
5. Insulate and vapor seal insulation at anchors same as piping for a distance not less than four times insulation thickness to prevent condensation.

3.2 PIPING INSULATION INSTALLATION

A. Fiberglass pipe insulation (FG):

1. Install insulation with longitudinal laps and butt strips additionally smoothly secured with Benjamin-Foster 85-20 adhesive.
2. Fittings and valves on pipe shall be similarly insulated with thickness equal to the adjacent pipe.

B. Flexible elastomeric pipe insulation (FU):

1. Miter 90-degree turns and elbows, tees, and valve insulation.
2. Secure longitudinal joints with vinyl tape on 9-inch centers.
3. Bond cuts, butt joints, ends, and longitudinal joints with adhesive. After adhesive cures, apply 2-inch wide pressure sensitive adhesive vinyl tape over bonded cuts, joints, and ends.

C. PVC pipe and fitting covers:

1. PVC pipe and fitting covers shall be installed with a smooth appearance and no visible wrinkles.
2. All longitudinal seams shall be installed such the joints facing up or to the back of the finished product.
3. All longitudinal and circumferential PVC jacket joints and connections shall be spot welded every 12" with Perma Weld Adhesive and subsequently neatly sealed with tight fitting pressure sensitive vinyl tape, installed without wrinkles.
4. See Section Mechanical Identification for color coding of factory PVC jackets in exposed applications.

D. Metal Jacket Installation:

1. Metal jackets shall have side and end laps at least 2 inches wide with the cut edge of the side lap turned under one inch to provide a smooth edge.
2. Secure jackets in place with aluminum or stainless steel bands on 9-inch centers.
3. Place laps to shed water.
4. Seal laps with weatherproof coating.
5. Where pipes penetrate exterior walls, continue the increased insulation thickness required for piping exposed to weather and the metal jackets through the sleeve to a point 2 inches beyond the interior surface of the wall.
6. In outside locations protect fittings, flanges, and valves with a weatherproof coating prior to installation of metal covers. Secure metal covers for fittings, flanges, and valves in place with metal bands and seal with a weatherproof coating.

E. Custom Removable/Re-useable Piping Covers:

1. Fabricate such that allowances are made to cover all protrusions including valve bonnets, handles, etc. Packing glands shall not be covered.
2. Overlap adjoining permanent insulations a minimum of 2" and the overlapping section shall be full thickness of the blanket.
3. Inside and outside surfaces of the covers shall completely encapsulate the entire insulation core to form a weatherproof assembly.

3.3 PIPING INSULATION MATERIAL TYPE, SERVICE JACKET, VAPOR BARRIER, AND THICKNESS CHARTS

CHILLED WATER						
MATERIAL ("A")	TYPE OF SERVICE JACKET ("B")	VAPOR BARRIER REQUIRED	INSULATION THICKNESS (INCHES) FOR PIPE SIZE			NOTES
			1/2"- 3"	3-1/2"- 6"	8"- 10"	
CG	A	YES	2	2.5	3.5	1,2,4,5,6,
FU	C	NO	1	-	-	7,8,10
P	A	YES	1	1.5	2	

3.4 CONDENSER WATER

HEATING WATER						
MATERIAL ("A")	TYPE OF SERVICE JACKET ("B")	VAPOR BARRIER REQUIRED	INSULATION THICKNESS (INCHES) FOR PIPE SIZE			NOTES
			1/2"- 3"	3-1/2"- 6"	8"- 10"	
FG	B	YES	1.5	2	2	1,2,4,5,6,
FU	C	NO	1	-	-	7,8
P	B	YES	1	1	1.5	
CG	A	YES	2	2.5	2.5	

AIR CONDITIONING CONDENSATE DRAINS INSIDE BUILDING							
MATERIAL ("A")	TYPE OF SERVICE JACKET ("B")	VAPOR BARRIER REQUIRED	INSULATION THICKNESS (INCHES) FOR PIPE SIZE			NOTES	
			1/2"-	1-1/2"-	3-1/2"-		
			1-1/4"	3"	6"		
FU	C	NO	0.75	1	1	9	
"A" - INSULATION MATERIAL							
ABBREVIATION	MATERIAL	SPECIFICATION		TYPE		CLASS/GRADE	
FU	FLEXIBLE UNICELLULAR	ASTM C 534		-		-	
FG	FIBERGLASS	ASTM C547		I		1	
P	PHENOLIC	ASTM C552		-		-	
CG	CELLULAR GLASS	ASTM C1126		III		1	
"B" - TYPE OF SERVICE JACKET REQUIRED							
A	FOIL BACKED ALL SERVICE JACKET (ASJ)						
B	PAPER ASJ						
C	NONE						

A. Insulation Charts Notes:

- Higher density insulation inserts shall be utilized on all HVAC piping larger than 1-1/2" size, at all hanger/saddle supports.
- Insulation located outside shall be one inch thicker than shown in table.
- Liquid refrigerant piping on heat pump systems where changeover valve is located in condensing unit, where recommended by manufacturer or where required to prevent condensation, shall be insulated same as refrigerant suction piping.
- A full coverage color-coded pvc jacket shall be required on insulated piping and fittings exposed in mechanical rooms, in crawlspace, and in interior exposed applications. See Section Mechanical Identification for color requirements.

5. Provide metal jackets over insulation on all piping exposed to outdoor weather.
6. All HVAC piping outside, exposed to view in finished spaces, in crawlspace, within mechanical/equipment rooms, etc. shall be insulated with phenolic or "Foamglas".
7. Flexible unicellular insulation may be utilized only on HVAC piping run outs, 1" or smaller, to individual equipment. This type installation shall be limited to a maximum of 10' linear feet for each unit and allowed only in concealed applications.
8. All valves and piping specialties requiring routine maintenance and adjustment shall be insulated with removable/reusable covers. Thickness shall be 2" up through 2" pipe sizes and 3" on piping 2-1/2" and larger.
9. Drain piping in concealed applications may be insulated with flexible unicellular or fiberglass insulation.
10. Chilled water over 10" with fiberglass insulation shall be 4.5".

3.5 DUCTWORK INSULATION INSTALLATION

A. Rectangular Ductwork Interior Acoustical Liner:

1. See Section Ductwork.

B. External Ductwrap Insulation:

1. Insulation shall be installed in a manner to prevent compression of the insulation.
2. When ductwork (rectangular or flat oval) with any vertical or bottom side is greater than 18", install pins and clips in a 12" o.c. grid, with pins within 4" of any longitudinal edge. Excess length of pins shall be snipped and top of pin/washer covered with pressure UL 181 pressure sensitive tape.
3. All longitudinal and circumferential insulation seams shall be sealed with 3" wide pressure sensitive tape bearing the UL 181 label.

C. Dual Wall Round and/or Oval Ductwork Insulation:

1. See Section Ductwork.

D. Rigid Board Insulation:

1. Insulation shall be installed in a manner to prevent compression of the insulation.
2. When ductwork (rectangular or flat oval) with any vertical or bottom side is greater than 18", install pins and clips in a 12" o.c. grid, with pins within 4" of any longitudinal

edge. Excess length of pins shall be snipped and top of pin/washer covered with pressure UL 181 pressure sensitive tape.

3. All longitudinal and circumferential insulation seams shall be sealed with 3" wide pressure sensitive tape bearing the UL 181 label.

E. EFire Wrap Insulation:

1. Install per instructions specified in an ICC-ES building code report and manufacturer's recommendations to provide specified fire rating.

3.6 DUCTWORK INSTALLATION APPLICATIONS

DUCTWORK INSULATION MATERIAL, THICKNESS, AND VAPOR BARRIER CHART				
DUCTWORK TYPE AND FUNCTION	INSULATION MATERIAL	VAPOR BARRIER REQ'D	INSULATION THICKNESS (INCHES)	NOTES
RECTANGULAR LOW PRESSURE SUPPLY	DUCT WRAP	YES	2.33	1
ROUND/OVAL LOW PRESSURE SUPPLY	DUCT WRAP	YES	2.33	2
RECTANGULAR LOW PRESSURE RETURN	DUCT WRAP	YES	2.33	1
ROUND/OVAL LOW PRESSURE RETURN	DUCT WRAP	YES	2.33	
RECTANGULAR LOW PRESSURE EXHAUST AIR	SEE NOTES	-	-	3
ROUND/OVAL LOW PRESSURE EXHAUST AIR	NONE	-	-	4
RECTANGULAR	DUCT WRAP	YES	2.33	1

LOW PRESSURE OUTSIDE AIR				
ROUND/OVAL	DUCT WRAP	YES	2.33	2
LOW PRESSURE OUTSIDE AIR				
RECTANGULAR LOW PRESSURE TRANSFER AIR	DUCT WRAP	-	-	
ROUND/OVAL LOW PRESSURE TRANSFER AIR	DUCT WRAP	YES	2.33	
RECTANGULAR KITCHEN HOOD EXHAUST AIR	FIRE WRAP	YES	SEE NOTES	6
ROUND KITCHEN HOOD EXHAUST AIR	FIRE WRAP	YES	SEE NOTES	6
RECTANGULAR KITCHEN HOOD MAKE-UP SUPPLY AIR	DUCT WRAP	YES	2.33	
RECTANGULAR MEDIUM PRESSURE SUPPLY AIR	DUCT WRAP	YES	2.33	1
ROUND/OVAL MEDIUM PRESSURE SUPPLY AIR	DUCT WRAP	YES	2.33	2
RECTANGULAR MEDIUM PRESSURE OUTSIDE AIR	DUCT WRAP	YES	2.33	1
ROUND/OVAL MEDIUM PRESSURE OUTSIDE AIR	DUCT WRAP	YES	2.33	2

TRANSFER AND RETURN AIR GRILLE PLENUM BOXES	DUCT WRAP	YES	2.33	5
MISCELLANEOUS DUCTWORK AND ACCESSORIES	DUCT WRAP	YES	2.33	4

A. Chart Notes:

1. See Ductwork Section for ductwork located outdoors.
2. See Section Ductwork for double wall sandwich insulation required for dual wall ductwork.
3. See Section Ductwork for acoustical internal insulation required.
4. Miscellaneous Insulation and Acoustical Treatment Requirements:
 - a. Air Distribution Devices (Grilles, Registers and Diffusers):
 - 1) The concealed frame and housing of all such devices above ceilings, in attics, walls, crawlspaces, etc., shall be factory insulated.
 - 2) When factory insulation is not available, ductwrap insulation shall be installed on any concealed frame, housings, plenums, etc.
 - b. Fire, Smoke, Combination Fire/Smoke shall be insulated per detail on Drawings and Damper Manufacturer's recommendations.
 - c. Control and Manual dampers shall be insulated such that automatic or manual operator is not impeded.
 - d. Dryer exhaust ductwork routed concealed indoors, in walls, attics, etc., shall be insulated.
5. See Details on Drawings for more information and construction requirements.
6. Kitchen hood exhaust ductwork insulation thickness varies by application and manufacturer. Provide thickness as required to meet specified fire resistance rating.

3.7 EQUIPMENT INSULATION INSTALLATION

A. Flexible elastomeric pipe insulation (FU):

1. Miter 90-degree turns and elbows, tees, and valve insulation.
2. Secure longitudinal joints with vinyl tape on 9-inch centers.
3. Bond cuts, butt joints, ends, and longitudinal joints with adhesive. After adhesive cures, apply 2-inch wide pressure sensitive adhesive vinyl tape over bonded cuts, joints, and ends.

END OF SECTION

SECTION 23 20 60
MECHANICAL PIPES AND PIPE FITTINGS

PART 1 - GENERAL

1.1 SCOPE

- A. Provide all material, equipment and labor, etc., required to complete installation specified and/or shown or scheduled on Contract Drawings.
- B. Work included: Pipes, fittings, unions, couplings, flanges, gaskets, and other materials and instructions.

1.2 PIPING SCHEDULE

- A. Piping systems for this project shall include the following:
 - 1. Condensate Drain Piping.
 - 2. HVAC Piping

1.3 MANUFACTURER'S ASSISTANCE

- A. Manufacturer shall provide, if required, to the CONTRACTOR a factory trained service man to properly train CONTRACTOR'S personnel in all phases of installation.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

- A. All piping installed on this project shall be new and of full weight and size indicated and of proper specification for service intended. Only domestic pipe may be used. Pipe and pipe fittings for the various systems shall be as follows:
- B. Condensate Drain Piping:
 - 1. Condensate drain piping routed indoors shall be type "L" or "M" hard drawn copper.
 - 2. Piping in R/A plenum space shall be galvanized steel, type "L" hard drawn copper, cast iron, or flame retardant polypropylene.
 - 3. Piping exposed outside of building shall be Schedule 40 galvanized steel with threaded joints and fittings, or Schedule 40 PVC with solvent weld joints and fittings, paying close attention to spacing of piping supports in Section Supports and Anchors.
- C. HVAC and Service Piping:

1. 2" and smaller HVAC piping inside building shall be type "L" hard copper with 95/5 soldered joints/fittings.
2. 2 ½" and larger HVAC piping inside building shall be Schedule 40 ASTM A53 steel pipe with welded joints and flanges at all valves, specialties, etc. or mechanical roll grooved joints and fittings as Victaulic.
3. "T-drill", "pulled" taps/outlets or weld-o-let/saddle taps shall NOT be utilized, only full body fittings will be allowed.
4. At CONTRACTOR's option, 4" and smaller HVAC piping may be Type "L" hard copper with specialty piping system connections such as "ProPress" by Viega.
5. At building entrance, from outside building to above finished floor piping shall be stainless steel without joints. Riser shall be equal to Ames IBR.

2.2 PIPE FITTINGS, UNIONS, FLANGES, AND GASKETS

- A. All fittings shall conform to pipe as to black steel, galvanized steel, copper, PVC or cast iron, etc. or as indicated. Fittings and accessories shall have equal or greater pressure rating than piping specified for particular application.
- B. . Malleable steel fittings shall be minimum 150 psi class.
- C. Steel pipe unions shall be malleable iron having bronze-to-iron ground joints.
- D. Steel nipples shall be extra heavy type. All thread nipples prohibited. Provide a minimum of 1" of bare pipe between threaded ends of nipples.
- E. Flange bolts: Galvanized Alloy steel, ASTM #A-196, Galvanized GR. B-7; nuts' ASTM-#s-194, GR. 2-H; both hex head style.
- F. Flange gaskets serving piping below 250 degrees Fahrenheit shall be synthetic composition type; serving above 250 degrees F gaskets shall be corrugated metallic type. Utilize gasket suitable for service intended.
- G. Couplings, steel pipe malleable iron, Grade II.
- H. Provide factory made reducers and increasers, and nipples of comparable materials as the piping. The use of bushings is not acceptable to obtain reduction or increase in sizes.
- I. Galvanized steel pipe shall be assembled with galvanized screw fittings unless specifically indicated otherwise.

2.3 DIELECTRIC FITTINGS

- A. Provide where copper and ferrous metal are joined.
 - 1. 2 inch and less: Threaded dielectric union.
 - 2. 2-1/2 inch and larger: Flange union with dielectric gasket and bolt sleeves.
 - 3. Temperature Rating, degree F: 210 for water systems.

PART 3 - EXECUTION

3.1 PIPING INSTALLATION

- A. General:
 - 1. Arrange and install piping approximately as indicated, straight, plumb and as direct as possible; form right angles or parallel lines with building walls. Keep pipes close to walls, partitions, ceilings, offset only where necessary to follow walls as directed. Locate groups of pipes parallel to each other; space them at distance to permit applying full insulation and to permit access for servicing valves. The PROFESSIONAL reserves the right to require this CONTRACTOR to make minor changes in pipe locations where conflicts occur with other trades or equipment. Such changes shall be made without extra cost to OWNER.
 - 2. Install horizontal piping as high as possible without sags or humps. Grade drainage piping at uniform slope of 1/8" per foot minimum and maximum 1/4" per foot, or as noted. Where this is impossible, maintain slope as directed, but in no case less than 1/16" per foot. Pitch piping in direction of flow.
 - 3. When piping is cut, it shall be reamed with pipe reamer and all burrs, scale, trash and foreign matter removed. If any piping is found installed without being reamed, cleaned, deburred, etc., or in any way contrary to above, it shall be sufficient reason for related erected piping to be removed, inspected by the PROFESSIONAL, corrected and reinstalled, all at CONTRACTOR'S expense.
 - 4. Where size changes on horizontal lines, use reducing fittings; bushings are prohibited. On liquid lines have eccentricity down, hold the top level. On gas or vapor lines have eccentricity up, hold the bottom level.
 - 5. Sufficient space shall be allowed in erecting piping for proper application of thermal installations including fittings. In no case shall any insulation be cut or reduced thickness because of inadequate space.
 - 6. Offset equipment connections to allow valving off for maintenance and repair with minimal removal of piping.

7. Locate valves for easy access and operation. Concealed valves shall be provided access doors. Do not locate any valves with stems below horizontal.
8. Install gauges, thermometers, valves and other devices with due regard for ease in reading or operating and maintaining said devices. Locate and position thermometers and gauges to be easily read by operator or staff standing on floor or walkway provided. Servicing shall not require dismantling adjacent equipment or pipe work.
9. Furnish and install unions or mating flanges at all connections to each piece of equipment conveniently located to facilitate quick and easy disconnecting of equipment. Flanges or union connections shall be used on both sides of traps, control valves, pressure reducing valves and meters and the like.
10. Steam piping shall be run utilizing eccentric reducers with the bottom installed flat.

B. Steel Piping:

1. Where piping is threaded, dies shall be clean and sharp. Threads shall conform to ANSI B2.1; joint compound shall be applied to male threads only and joints made up so no more than three threads show. Coat exposed threads or steel pipe with joint compound and red lead paint for corrosion protection. The caulking of these joints will not be tolerated. Pipe joint compound must be approved by the PROFESSIONAL.
2. Where welding is specified or done, it shall be by electric arc by mechanics skilled in operation and holding a test certificate acceptable to the ENGINEER. All scale and flux shall be removed from piping after welding. Welding, beveling, spacing and other details shall conform to ANSI B31.1.

C. Copper Piping:

1. Copper tubing shall be thoroughly reamed, cleaned with steel wool or emery cloth and a non-corrosive flux used before soldering or bracing.
2. Copper tubing shall be thoroughly reamed and deburred before joining with specialty piping systems such as Viega "Pro-Press".
3. Where solder joints are specified, use solder having 95% tin and 5% antimony. Each roll of solder shall be clearly stamped as to grade and content.
4. Where brazing joints are specified, use a brazing filler metals having a melting point above 1100 degrees Fahrenheit and containing at least 5% silver.
5. Where copper tubing extends through concrete slab on grade, tubing shall have an "Armaflex" or "Rubatex" type.

6. Provide PVC isolation wrap where copper pipe extends through masonry walls to connect plumbing fixtures or valves, etc.

3.2 PIPE EXPANSION

- A. In the installation of all pipe runs where shown or where necessary, install swing joints, flexible couplings, turns, expansion loop or long offsets to allow for expansion. Broken pipe or fittings due to rigid connections must be removed and replaced at no additional cost to the OWNER.
- B. All lines shall be securely anchored where required. Where such anchors occur, they shall be securely fastened to the steel or concrete structure of the building in a manner approved by the PROFESSIONAL. Drawings shall be submitted before installation.

3.3 TESTS

- A. Cooperation/Scheduling:
 1. The ARCHITECT shall be notified no less than ninety-six (96) hours prior to any pipe test. The ARCHITECT shall also be notified in adequate time for an inspection of the test before the test is completed. The PRIME CONTRACTOR'S Superintendent shall be responsible for administering and witnessing all tests, log it for permanent record and transmit to ARCHITECT at completion of project. The PRIME CONTRACTOR'S Superintendent shall keep this on-going log on jobsite and shall include the following:
 - a. Date of Test
 - b. Duct/Piping Description (EX: "Sanitary Sewer")
 - c. Location (EX: "Northwest Quadrant First Level")
 - d. Results (EX: "Held 10 feet of head for eight hours without leakage", etc.)
 - e. Contractor's/Superintendent's Witness Initials
- B. Tests shall be as follows: (New and Existing Modified Piping shall be tested and all leaks repaired)
 1. Gravity Flow Condensate Drain piping above and below slab: Minimum 10 feet static head and as required by ASA-A40.8 or local code, for a minimum period of four (4) hours, without discernible loss. All below grade piping and joints shall be clearly visible during test.
 2. Refrigerant piping: 450 psig nitrogen for 8 hour period. Test piping with all piping accessories such as charging valves and filter/driers in place, unless not recommended by equipment manufacturer's installation instructions. Refrigerant piping shall be left with

minimum 60 psi pressure during all phases of construction such that leaks can be promptly identified and remedied.

3. Chilled and Heating Water piping: 1.5 times maximum operating pressure for 8 hour period. Test piping with all piping accessories such as valves and filter/driers in place, unless not recommended by equipment manufacturer's installation instructions. Refrigerant piping shall be left with minimum 60 psi pressure during all phases of construction such that leaks can be promptly identified and remedied.

3.4 SYSTEM CLEANING, TREATMENT AND PROTECTION

A. All HVAC piping systems shall be cleaned as follows:

1. All piping shall be cleaned of iron cutting and other debris as installed into the system. Piping received with heavy mill scale shall not be installed in the system. Particular attention shall be given to coils, valve seats and glands, pump mechanical seals and packing glands, strainers, etc., such that surfaces are clean and free of all foreign materials.
2. At completion of the piping hook-up, after pressure tests and prior to operation of any equipment, the CONTRACTOR shall thoroughly flush the piping system with clean water to remove any debris remaining in piping.
 - a. Initial Flushing: Remove loose dirt, and scale, metal chips, weld beads, rust, and like deleterious substances without damage to any system component. Bypass factory cleaned equipment unless acceptable means of protection are provided and subsequent inspection of hide-out areas takes place. Isolate or protect clean system components, including pumps and pressure vessels, and remove any components, which may be damaged. Open all valves, drains, vents, and strainers at all system levels.
 - b. Remove plugs, caps, spool pieces, and components to facilitate early debris carrying velocity of six (6') feet per second, if possible.
 - c. Connect dead end supply and return headers as necessary. Flush bottoms of risers. Install temporary strainers where necessary to protect down-stream equipment. Supply and remove flushing water and drainage by various type hose, temporary and permanent piping and CONTRACTOR'S booster pumps. Flush until clean as approved by the PROFESSIONAL.
3. After the system has been thoroughly flushed with clean water, the system shall be filled and vented with clean water and a sufficient concentration of Anderson Chemical Company's detergent type system cleanser. Circulation shall be provided by the installed circulating pumps. System shall then be circulated for not less than 24 hours. During

circulation of detergent, 2-way valves, etc., shall be operated such that solution shall reach all branches, bypasses, etc. After 24 hours detergent cleaning, system shall be drained and flushed with clean water until all detergent has been removed and water runs clear. Strainers shall be checked and cleaned.

- a. System shall then be filled with clear water, vented and pressurized such that 4 psig is obtained at the highest point of the system.
4. Cleaning: Using products specified in Section Pipe and Pipe Fittings, circulate systems as normal temperature to remove adherent organic soil, hydrocarbons, flux, pipe mill varnish, pipe joint compounds, iron oxide, and like deleterious substances not removed by initial flushing, without chemical or mechanical damage to any system component. Removal of tightly adherent mill scale is not required. Keep isolated equipment which is "clean" and where dead end debris accumulation cannot occur. Sectionalize system is possible, to circulate at velocities not less than six (6') feet per second. Circulate each section for not less than 24 hours. Blow down all strainers, or remove and clean as frequently as necessary. Drain and prepare for final flushing.
5. See Section Chemical Treatment for more information.

END OF SECTION

SECTION 23 21 00
MECHANICAL VALVES

PART 1 - GENERAL

1.1 REFERENCE STANDARDS

- A. NSF 61 - Drinking Water System Components - Health Effects; 2024.

1.2 SCOPE

- A. Provide all material, equipment and labor, etc., required to complete installation as specified herein and/or shown or scheduled on Contract Drawings.

1.3 APPLICABLE STANDARDS

- A. Insofar as possible, all valves of the same type shall be of the same manufacturer.

1.4 VALVE DESCRIPTION AND IDENTIFICATION

- A. Valves shall have name or trademark of manufacturer and working pressure cast or stamped on valve body.
- B. Valve hand wheels shall be oriented when installed to provide maximum accessibility for operation.
- C. Valve discs shall be the manufacturer's standard material for the service in which the valve is used unless otherwise indicated under the individual type valve specification.

PART 2 - PRODUCTS (OTHER VALVES FROM THOSE LISTED MAY BE SUBMITTED FOR APPROVAL)

2.1 HVAC PIPING VALVES

- A. Ball Valves: (Utilized for all shutoff and isolation valves in 2" and smaller applications unless otherwise indicated):
 - 1. Valves 2" and smaller shall be two-piece brass or stainless steel construction, 1-1/4" extended operating handle of non-thermal conductive material, chrome plated ball with full port, P.T.F.E. seals and seats. Heavy duty steel handle with vinyl grip, quarter turn operation. Valves shall have solder end connections. Valves shall be suitable for working pressure of 200 psig and maximum 250° F.
- B. Butterfly Valves 2-1/2" to 12":
 - 1. Manual Operation Type:

- a. Lug type with cast iron body, one piece stainless steel stem, with aluminum bronze disc. Valve shall be suitable for constant 200 psi positive shut-off and 225 degrees Fahrenheit temperature application. The valve liner design shall be such that it shall serve as a flange seal and no separate gasket shall be required. Provide valve with replaceable EPDM seat. Where installed in insulated piping, provide with extended neck.
 - b. Provide gear operators with hand wheel on all HVAC piping 6" and larger when located within 6 feet of standing access height.
 - c. Provide gear operators with adjustable sprocket rim and chain on all HVAC piping 6" and larger when located more than 6 feet above standing access height. Chain length shall be provided to allow operation of valve at standing access height.
2. Valves shall be equal to the following:
- a. Manual Operation Type
 - 1) 4" and smaller - Nibco LD2000
 - 2) 6" and larger - Nibco LD2000-5 with memory stop and adjustable sprocket rim and chain where access is above 6 foot standing height.

C. Silent Check Valves:

- 1. Silent check valves 2" and smaller shall be horizontal or vertical silent spring check type. Valves shall be rated for 200# WOG. Valves shall be NSF 61 compliant and contain less than 0.25% lead (Pb) by weight.
- 2. Silent check valves 2-1/2" and larger shall be iron body, 125 lb flanged connection ends, stainless steel spring, bronze trim, 200 psig working pressure, globe style valve body. Valves shall be equal to Mueller model 105MAP.

D. Balancing Valves:

- 1. Automatic Balancing Flow Restrictor Type:
 - a. Combination balancing, flow control and positive shut-off valves shall incorporate a stainless steel spring and plunger loaded flow control device to automatically provide flow setpoint within +/- 5% with a wide range of system pressure range fluctuation. Provide factory assembled packages with all devices connected to a common piping arrangement for simple two-point piping connection to each assembly. Water pressure drop through entire flow restrictor/shut-off valve assembly shall not exceed 5 feet.

- 1) Valve shall be equal to Griswold PIC-V. Provide supply connection with full port ball valve, with 1-1/4" extended handle, two (2) P/T extended ports with union end connections. Provide flow restrictor cartridge and metal I.D. tag assembly.
- b. All shut-off valves, strainers and flow control assemblies shall be pipe size (not necessarily control valve size) as indicated on Drawings to each unit. Balancing valve assemblies, with flow restrictor, shut-off valves and P/T ports, shall be factory assembled as a single unit for ease of field installation. See detail on Drawings.
- c. Provide all supply and return connections to water source heat pump coils with 12" long full pipe size stainless steel flexible hose sets, rated for minimum 250 psi.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Installation shall be such that the valve can be fully opened and have at least 6" clearance beyond valve stem handle and sufficient clearance to remove stem for repair.
- B. Locate and orient valves to permit proper operation and access for maintenance of packing, seat and disc. Generally locate valve stems in overhead piping in horizontal position. Provide a union adjacent to one end of all threaded end valves. Control valves usually require reducers to connect to pipe sizes shown on the drawings. Install butterfly valves with the valve open as recommended by the manufacturer to prevent binding of the disc in the seat.

3.2 DISCHARGE FROM SAFETY AND/OR RELIEF VALVES

- A. Relief valves relieving steam, gas of any type, including compressed air, or liquid above 120 degrees Fahrenheit., shall be piped full size to outside building or as indicated so that discharge cannot hit any person or structure.

3.3 RELIEF VALVE CAPACITY

- A. Valve relieving capacity shall meet all code requirements and also be equal to at least 1.25 of possible heat input to be relieved.

END OF SECTION

SECTION 23 21 20
MECHANICAL PIPING SPECIALTIES

PART 1 - GENERAL

1.1 REFERENCE STANDARDS

- A. ASTM B62 - Standard Specification for Composition Bronze or Ounce Metal Castings; 2017 (Reapproved 2025).

1.2 SCOPE

- A. Provide all labor, equipment, materials, etc., required to complete installation as specified herein and/or shown or scheduled on Contract Drawings.
- B. Work Included: Piping specialties to connect fire protection and plumbing equipment.

PART 2 - PRODUCTS

2.1 THERMOMETERS

- A. Light powered, liquid crystal display, °F or °C selector switch and 6" brass stem with adjustable angle as required to read display from eyelevel.
- B. Separable Socket (Well): Brass, extension neck type to clear pipe insulation.
- C. Equal to Weiss Instruments, Inc "Digital Vari-angle" or Weksler "AAD" series.
- D. Provide all thermometers located outdoors with waterproof cover equal to Weiss DVC-4.

2.2 PRESSURE GAUGES

- A. Glycerin filled gauge with all 300 series stainless steel moving parts.
- B. 4-1/2" diameter dial with white enameled aluminum face and black graduations and numerals.
- C. Equal to Weksler model AY24.

2.3 AIR VENTS

- A. Air vents shall be installed where shown on Drawings and/or on all high points of liquid piping mains to insure complete elimination of air. Air vents shall be Crane Company, Sarco, or approved equal. Air vents on top of main risers shall have the capacity to eliminate at least 12 CFM of air when operating at 20 psi. Other air vents shall have capacity to eliminate at least 3 CFM of air when operating at 20 psi.
- B. Automatic air vents shall be Spirotherm model Spirotop VTP.

- C. Wherever vents are installed over finished floors or ceilings, an emergency overflow connection to outside or to nearest accessible drain shall be provided. This drain shall be type "L" copper tubing.
- D. Provide air vents on liquid lines at top connection to coils and where shown. Provide manual 1/4" brass cock where vent point is concealed.

2.4 STRAINERS (Y OR BASKET TYPE)

- A. Circulating Liquid Services: Rated 125 PSIG saturated steam.
 - 1. 2-1/2 inch and larger: Flanged, iron body.
 - 2. 2-inch and smaller: Cast iron or bronze.
- B. Screens: Bronze, model metal or 18-8 stainless steel, free area not less than 2-1/2 times pipe area, with perforations as follows:
 - 1. Liquid service: 0.045 inch diameter perforations.
 - 2. On unit 4" and larger provide manufacturers standard Gusset plate and control rod, retaining ring and mating flange.
- C. Suction Diffusers: Specified in Section HVAC Pumps.
 - 1. 2-inch and smaller: Iron, ASTM A116 Grade B, or bronze, ASTM B62 body with screwed connections.
- D. Provide valved blow down on all strainers, minimum 3/4" size, with capped hose thread end connection unless otherwise noted.

2.5 EXPANSION LOOPS

- A. See Drawings for models and sizes required.

2.6 WATER FLOW MEASURING DEVICES (REQUIRED AT ALL FLOOR MOUNTED HVAC PUMPS, BOILER AND WHERE SHOWN ON BRANCH CONDENSER WATER MAINS ON DRAWINGS)

- A. Minimum overall accuracy plus or minus two percent over a range of 70 to 110 percent of design flow. Select devices for not less than 110 percent of design flow rate. Maximum pressure drop of water flow measuring device shall be four (4) feet head at design flow thru pipe size indicated.
- B. Venturi Type: Bronze, cast steel, or cast iron with bronze throat, with valved pressure sensing taps upstream and at the throat. Gerand style VW-For as approved.
- C. Flow Measuring Device Identification:

1. Metal tag attached by chain to the device.
2. Include meter or equipment number, manufacturer's name, meter model, flow rate factor and design flow rate in gpm.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. All equipment shall be installed as per manufacturer's recommendation and applicable codes and standards. Provide appurtenances as required for a complete system. Provide all appurtenances as indicated on Contract Drawings, where specified or not.

END OF SECTION

SECTION 23 89 30
VARIABLE AIR VOLUME BOXES

PART 1 - GENERAL

1.1 REFERENCE STANDARDS

- A. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2024.

1.2 SCOPE

- A. Variable air volume boxes (VAV's), including induction units, and constant and variable volume units, with or without heating coils, and fan-powered reheat VAV's.

1.3 APPLICABLE STANDARDS

- A. Air Diffusion Council Test Code:
 - 1. 1062R4.....Certification, Rating, and Test Manual (1977)
- B. Air Conditioning and Refrigeration Institute (ARI):
 - 1. 445-75.....Standard for Room Air Induction Units
- C. U. S. Department of Commerce, National Bureau of Standards (NBS), Commercial Standard.
- D. Underwriters Laboratories, Inc. (UL):
 - 1. 181-74.....Factory Made Air Duct Materials

PART 2 - PRODUCTS

2.1 VARIABLE AIR VOLUME BOXES (VAV'S)

- A. General: Factory built, pressure independent units, factory set volume, suitable for single or dual duct applications, as indicated. Clearly show on each unit the unit number and factory set air volume corresponding to the contract drawings. Coordinate flow controller sequence and damper operation details with the drawings and Section Controls and Instrumentation.
- B. Test and Rating Standard: ADC Test Code 1062R4, tested in an ADC certified laboratory and ASHRAE Standard 36B.
 - 1. Maximum pressure drop: As shown on the drawings.
 - 2. Maximum room sound levels: Not to exceed criteria as scheduled for the inlet pressure shown on drawings or not less than 1-1/2 inches wg, if not shown. Provide VAV sound attenuators where necessary to comply with the noise criteria. Sound tests and correction of deficiencies are specified in Section Testing, Adjusting and Balancing.

- C. Casing: Construction shall be single wall construction casing. Construct portions of casing exposed to high upstream static pressures of die cast aluminum, 22 gage galvanized sheet metal, or equivalent strength aluminum sheet. Downstream portions of casing maybe constructed of not lighter than 26 gage galvanized steel sheet or equivalent strength aluminum sheet. All joints and seams shall be either welded or sealed. Provide hanger brackets for attachment of supports.
 - 1. Insulation material: Suitable to provide required acoustic performance, thermal insulation and prevent sweating. Meet the requirements of NFPA 90A, one inch minimum thickness, secured to supporting surfaces in such a manner that it will not sag, delaminate or settle. Comply with UL Standard 181 for erosion. Surfaces, including edges, shall be faced with perforated metal or coated so that material will not be detached by the air stream.
 - 2. Removable Panels: Provide panels large enough for access to all moving parts (except neoprene bellows when bellows are the only moving part) for inspection, adjustment and maintenance without disconnecting ducts. Panels shall be flush, gasketed airtight and shall require no tool other than a screwdriver to remove.
 - 3. Total Leakage from Casing: Not to exceed 1 percent of the nominal capacity of the unit when subjected to a static pressure of 1/2-inch water gage, with all outlets sealed shut and inlets fully opened.
- D. Construct dampers and other internal devices of corrosion resisting materials, which do not require lubrication or other periodic maintenance.
 - 1. Air volume damper shall be rigid butterfly type with neoprene gasket sealer. Damper leakage rate shall not exceed 3 percent of total specified CFM at 3.0 inches w.g.
- E. Single Duct VAV's: Provide manufacturer's standard cataloged and factory mounted heating coil where indicated on the drawings.
 - 1. Variable volume units (VAV): Externally powered, variable volume, with field adjustable maximum and minimum set points.
 - a. Volume damper or bellows: Provide internal or external factory mounted damper operator.
 - b. Variable constant volume controller: To provide constant output (specific percentage of maximum specified flow) called for by the room thermostat, plus or minus 5 percent regardless of variations in inlet static pressure up to 3 inches water gage. Controller set points shall be factory adjusted and field resettable through use of an integral scale. Provide flow measuring taps and unit mounted calibration chart for field calibration of the controller.

- c. External differential pressure taps (separate from the control pressure taps) shall be provided for airflow measurement with a 0-1 inch gauge. Each VAV shall have a flow chart attached.
- d. Discharge and radiated sound levels shall not exceed values on drawings.
- e. VAV's shall be pressure independent and capable of resetting air flow between present maximum and minimum as determined by the space thermostat regardless of changes in system air pressure. Devices using cfm limiters will not be acceptable.
- f. VAV's shall be complete with factory furnished and installed actuators. 23 09 00 Controls Contractor shall coordinate with the Division 23 HVAC contractor to have controller and actuator factory mounted
- g. See control specifications for operating requirements.

PART 3 - EXECUTION

3.1 INSTALLATION

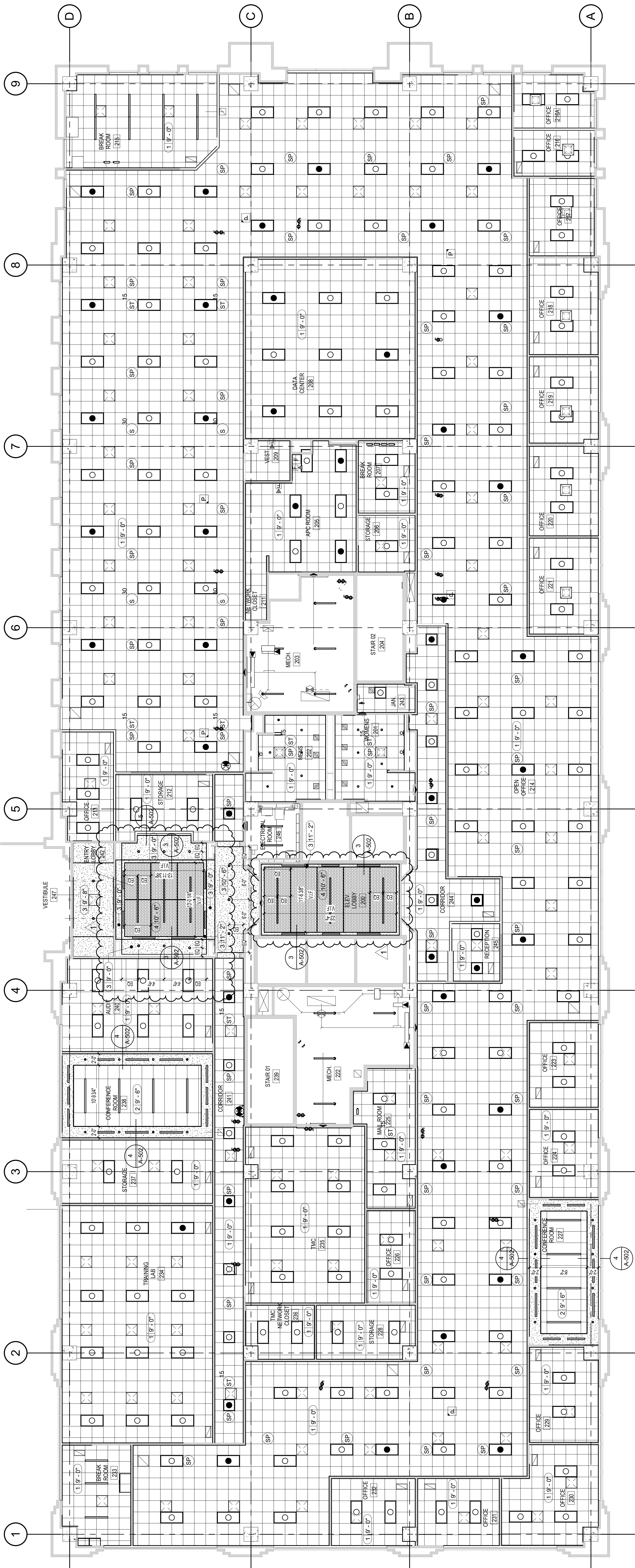
- A. Install VAV's as per detail(s) on Contract Drawings. Hang VAV's adequately from building structure.
- B. Locate VAV's to provide a straight section of inlet duct for proper functioning of volume controls per manufacturer's recommendations and detail on drawings..

3.2 COORDINATION

- A. Coordinate factory mounting of actuators and controls with EMS vendor.
- B. Coordinate location of controls and actuators with space and each unit such that controls for initial TAB and future Owner maintenance are easily accessible.

END OF SECTION

STATE	PROJECT NO.
MISS.	BWO-9021-25(014)



1 RCP - SECOND FLOOR
1/8" = 1'-0"

GENERAL NOTES - REFLECTED CEILING PLAN

- A. ALL CEILINGS ARE TO BE ACOUSTICAL TILE (ACT) TYPE 1 UNLESS OTHERWISE NOTED.
- B. CEILING HEIGHTS TO BE 8'-0" UNLESS OTHERWISE NOTED.
- C. CONTRACTOR TO COORDINATE WITH MECHANICAL AND ELECTRICAL DRAWINGS FOR ITEMS LOCATED IN CEILING NOT SHOWN ON THIS SHEET.
- D. IF ACCESS PANELS ARE INDICATED OR REQUIRED, CONSULT ARCHITECT PRIOR TO PLACEMENT.
- E. ADVISE THE OWNER THAT AN 18" MIN. VERTICAL CLEARANCE SHALL BE MAINTAINED BETWEEN THE BOTTOM OF SPRINKLER HEADS AND THE TOP OF ANY FILES, SHELVING, LOOKERS, ETC.
- F. OBJECTS WHICH OCCUR ON OR IN AN IN CEILING TILES ARE TO BE LOCATED AT THE CENTER OF THE TILE UNLESS OTHERWISE NOTED.
- G. IN REFERENCE TO PLASTER OR GYPSUM BOARD CEILINGS, OBJECTS WHICH OCCUR BETWEEN TWO LIGHT FIXTURES ARE TO BE EQUALLY SPACED AND ALIGNED WITH THE CENTER OF LIGHT FIXTURES, UNLESS OTHERWISE NOTED.
- H. IN REFERENCE TO GENERAL NOTE G, CHECK WITH FURNITURE AND MILLWORK.
- I. SPRINKLER HEAD LOCATIONS ARE NOT INDICATED ON THIS CEILING PLAN. THE CONTRACTOR SHALL INSTALL SUFFICIENT HEADS IN ALL SPACES TO PROVIDE COVERAGE AT 100% AUTOMATIC SPRINKLER COVERAGE AS DERIVED IN NFPA STANDARD 13.

LEGEND - REFLECTED CEILING PLAN

TYPE 1 (ACT 1)
2X6 ACT
CEILING TILE

TYPE 2 (ACT 2)
2X6 ACT
CEILING TILE

TYPE 3
GYPSUM BOARD

TYPE 4
ACOUST. CEILING
PANEL SYSTEM

OPEN, OPEN TO
STRI. ABOVE

TYPE 3
GYPSUM BOARD

TYPE 1 (ACT 1)
2X6 ACT
CEILING TILE

TYPE 2 (ACT 2)
2X6 ACT
CEILING TILE

TYPE 4
ACOUST. CEILING
PANEL SYSTEM

2X2 LIGHT FIXTURE IN ACOUSTICAL PANEL
CEILING SYSTEM

2X4 LIGHT FIXTURE IN ACOUSTICAL PANEL
CEILING SYSTEM

CEILING FINISH / CEILING HEIGHT

SUSPENDED LIGHT FIXTURE

WALL MOUNTED LIGHT FIXTURE

COVE LINEAR LIGHT FIXTURE

UNDER CABINET LIGHT FIXTURE

RECESSED LIGHT FIXTURE

RECESSED WALL WASH LIGHT FIXTURE

LINEAR LIGHT FIXTURE

DRUM PENDANT LIGHT FIXTURE

EXIT SIGN

OCCUPANCY SENSOR

SMOKE DETECTOR (REFER TO F.A.D.W.S.)

FIRE SPRINKLER HEAD

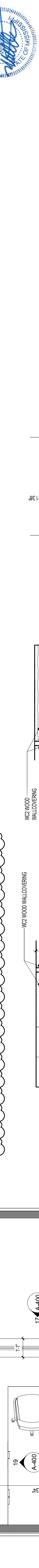
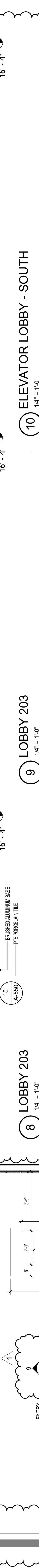
SUPPLY DIFFUSER

RETURN DIFFUSER

EXHAUST FAN



ADMINISTRATION BUILDING 2ND FLOOR RENOVATION		Project Number: BWO-9021-25(014)	WORKING NUMBER A-121
RCP - SECOND FLOOR		FILENAME: BWO-9021-25(014)-A-121.dgn	SHEET NUMBER 6 of 58
COUNTY: HINDS		DESIGN TEAM	CDFL
REVISION		CHECKED	DATE: 10/20/2025
BY	JWR	DATE	11/12/25
#1 / ADDENDUM		DATE	11/12/25
		DATE	
		DATE	

[illegible]

QUARTZ COUNTERTOP

PMZ COUNTERTOP

PULL DOWN CABINETS

Level 2

16' - 4"

2'6"

14' A-550

13' A-550

4'0"

3'0"

COUNTERTOP

ISLAND

PROFILE

RECEPTION 244

1/4" = 1'-0"

PAINT P1

QUARTZ COUNTERTOP

RIGID TAMBOUR
PANEL WALNUT
SQUARES PROFILE

Level 2

16' - 4"

2'-0"

4'-0"

3'-0"

13

A-550

Technical drawing of a reception desk. The drawing shows a side view of the desk with a curved front edge. A vertical dimension line on the left indicates a height of 9'-11 3/4" from the "FACE OF SEAT BELOW" to the top of the desk. A horizontal dimension line above the desk indicates a width of 1'-10 1/8". A callout bubble labeled "A-400" points to a circular feature on the desk. A callout bubble labeled "A-100" points to a circular feature on the wall above the desk. The desk has a dark, solid-colored top and a lighter-colored base.

0/20/2025 12:00 PM BW-09021-25(014)(A)-400.0.0

14

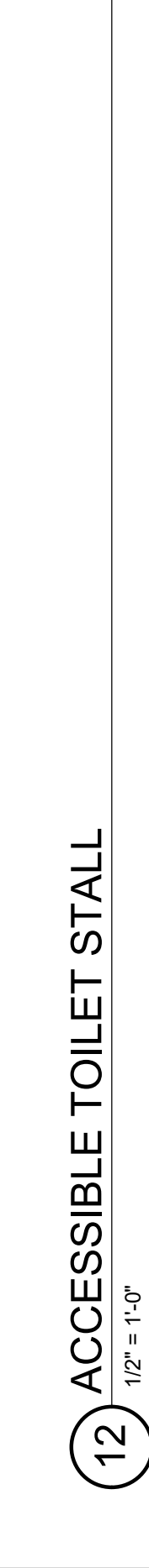
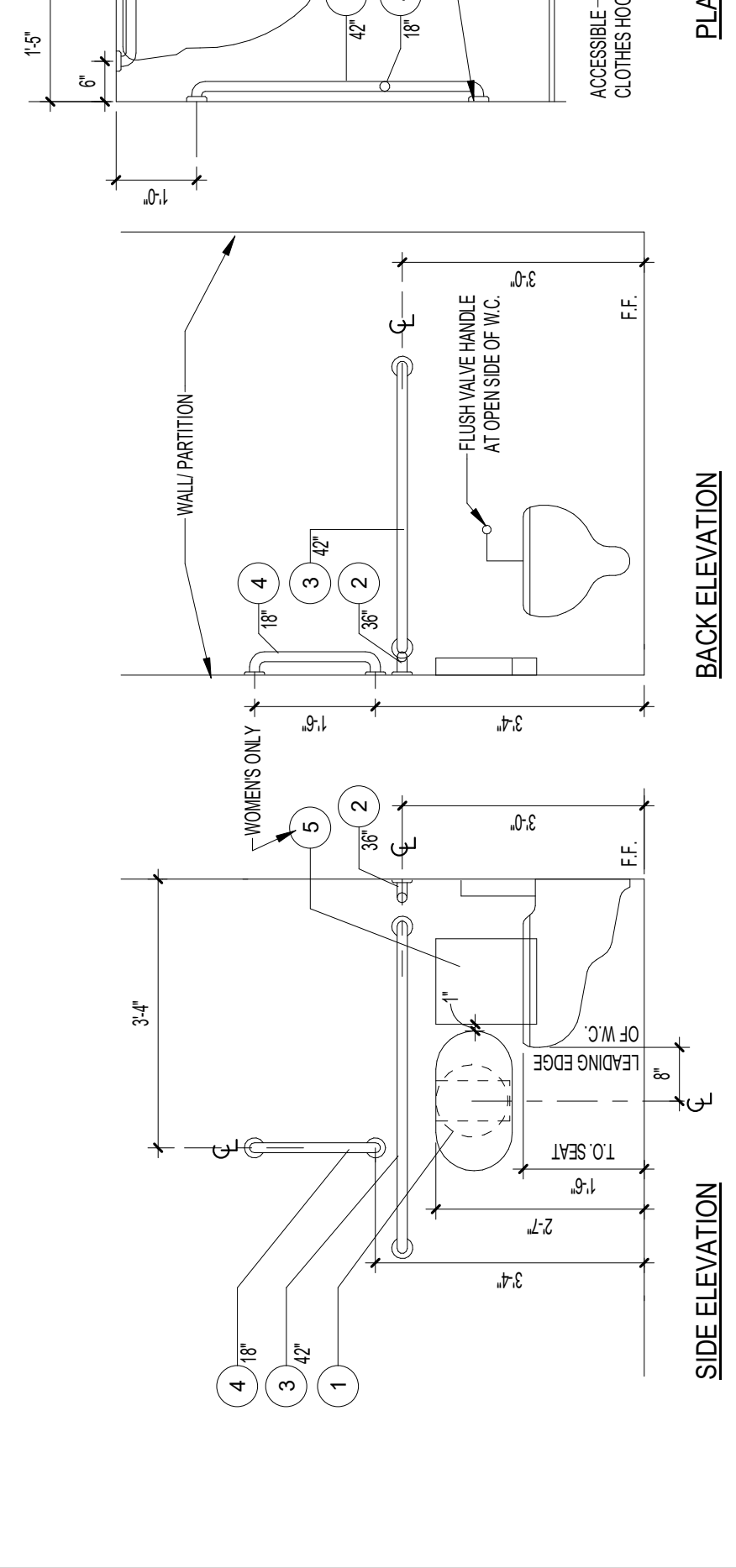
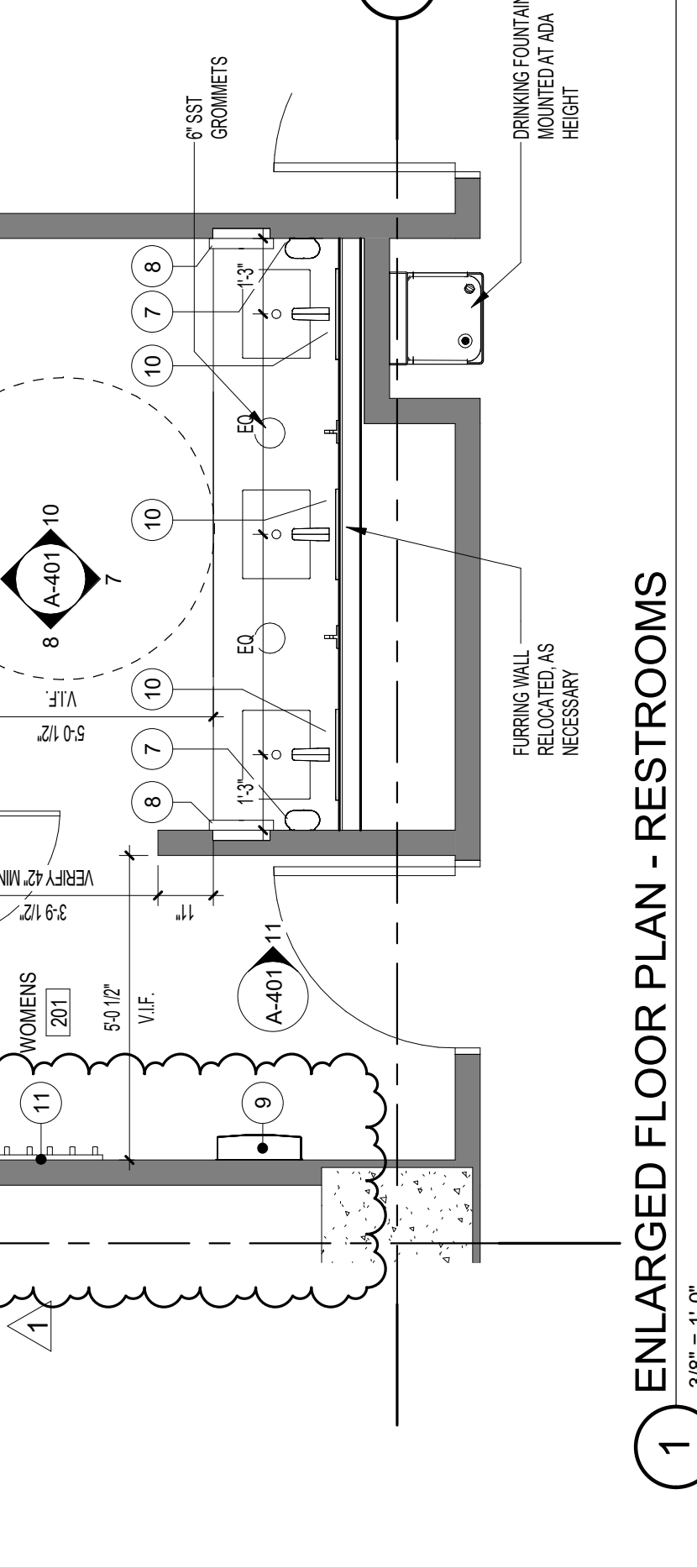
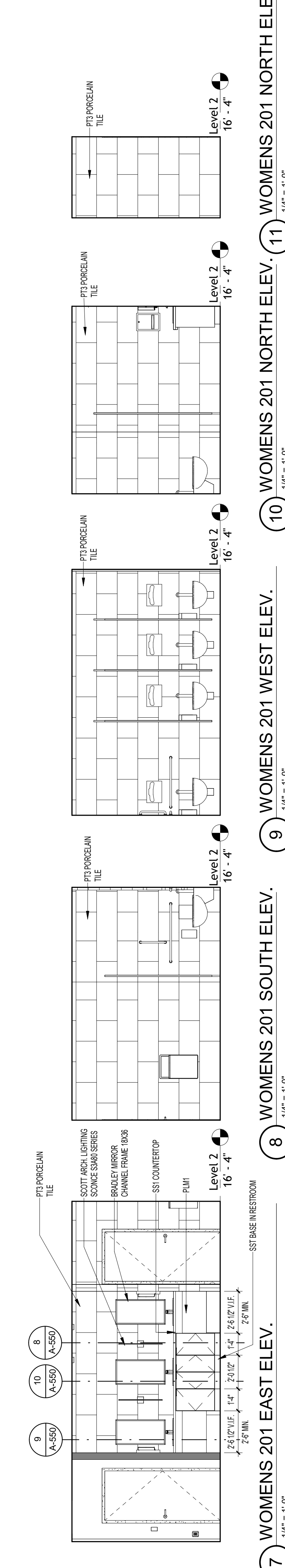
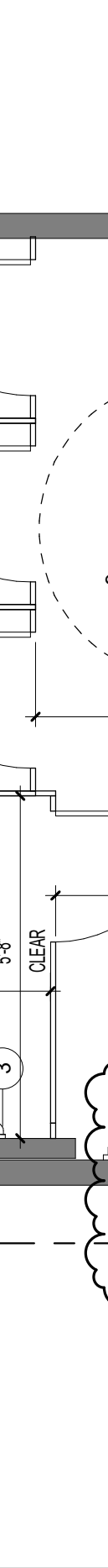
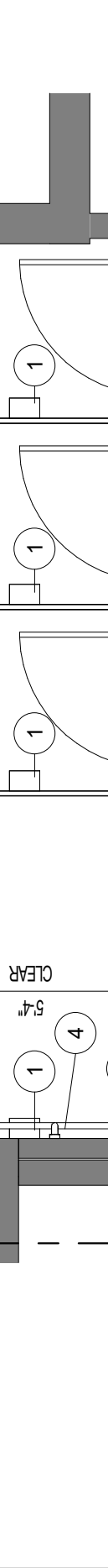
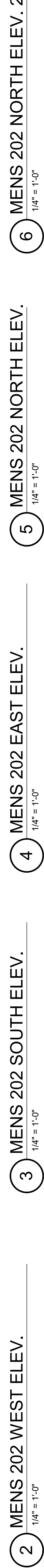
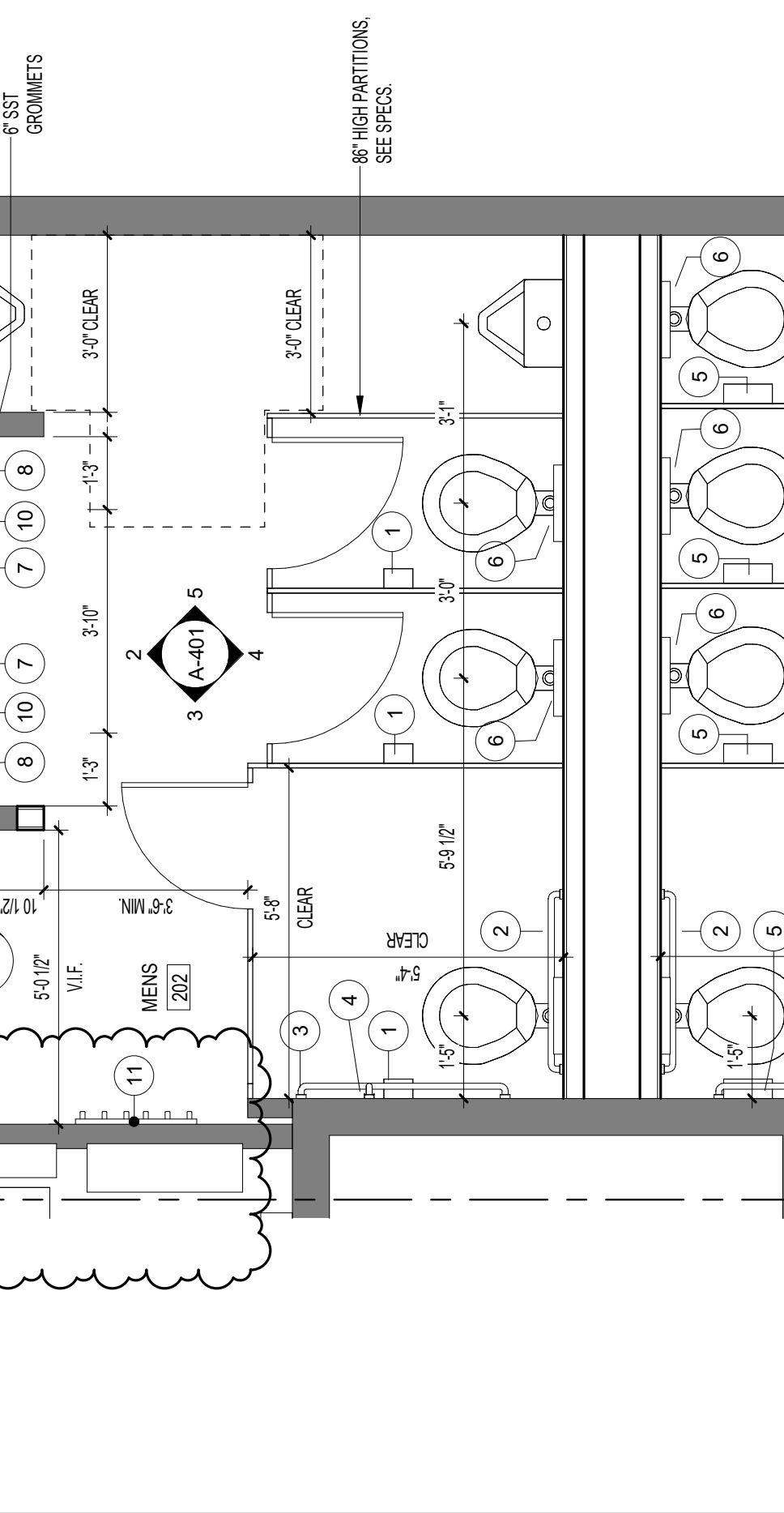
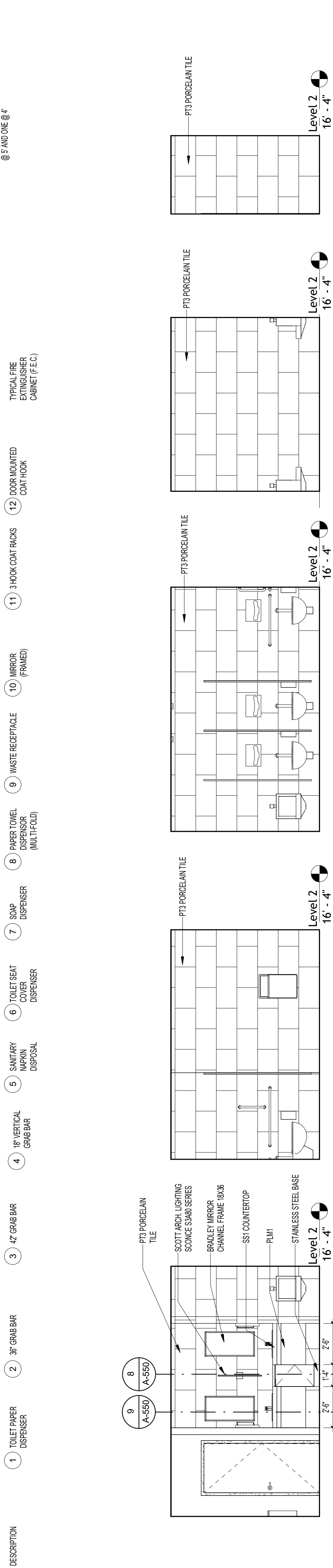
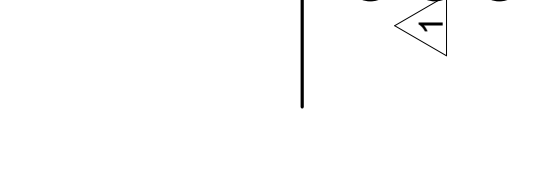
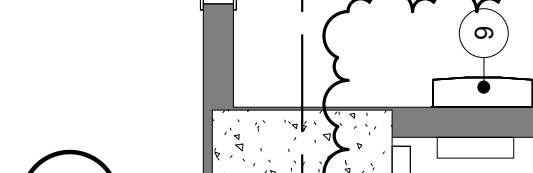
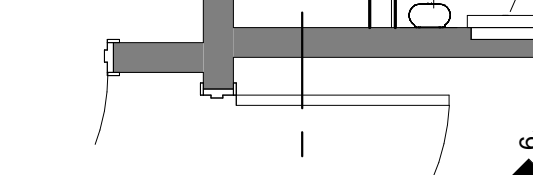
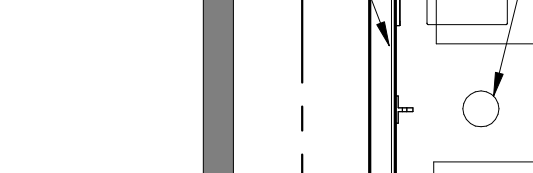
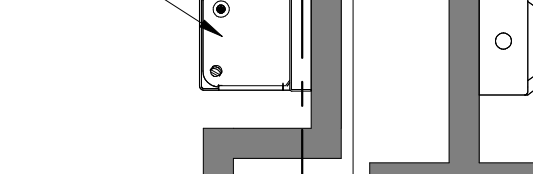
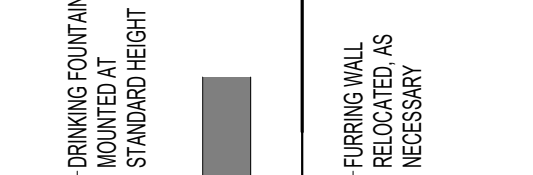
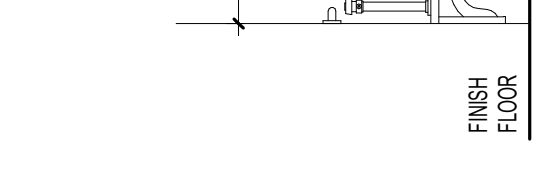
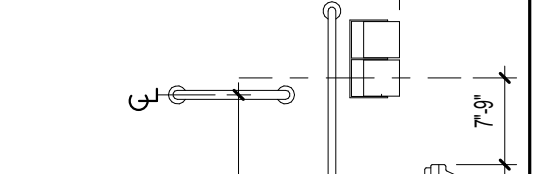
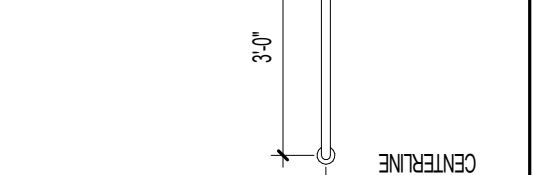
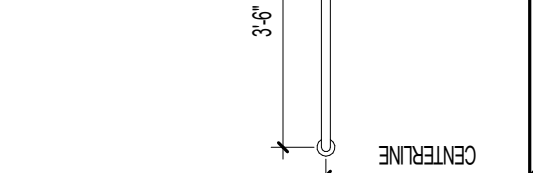
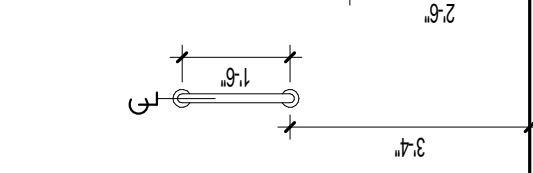
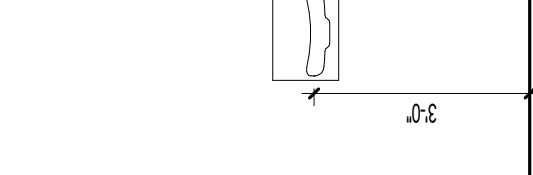
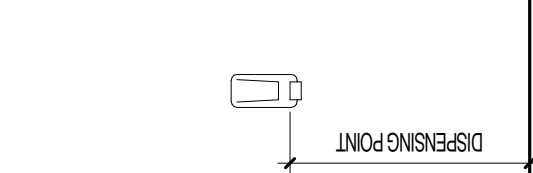
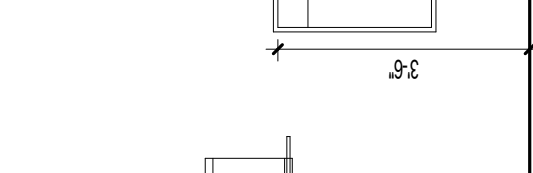
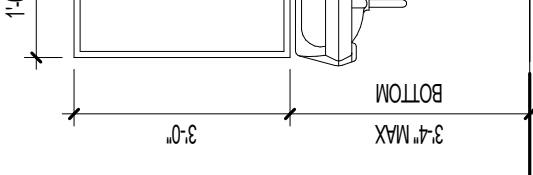
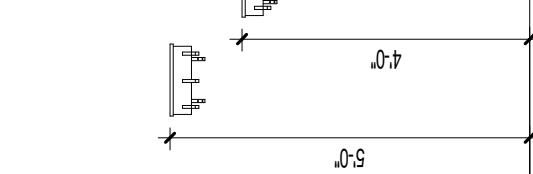
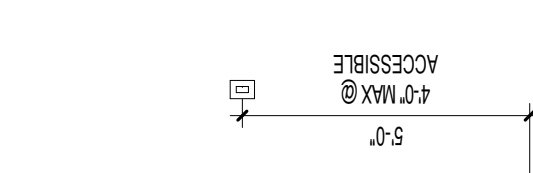
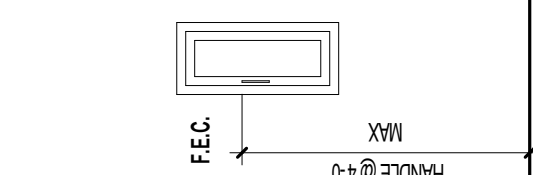
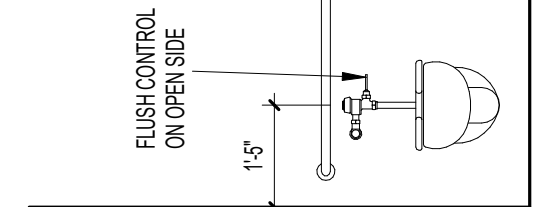
ENLARG

$3,98" \approx 1'-0"$

STATE	PROJECT NO.
MISS.	BWO-9021-25(014)

LEGEND - TOILET ACCESSORIES

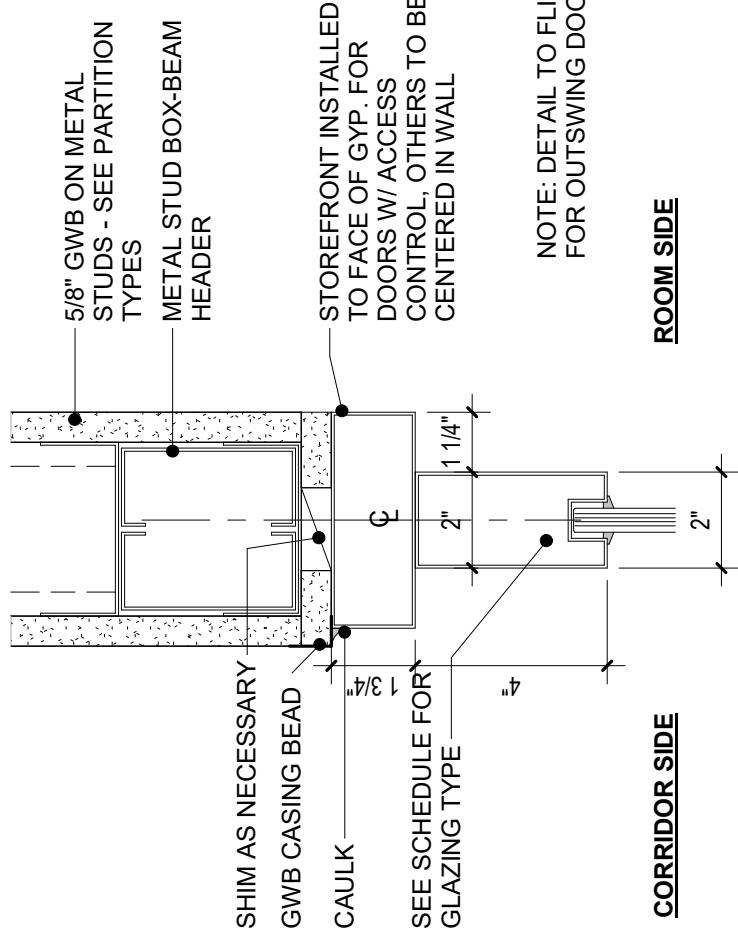
- 1 SURFACE MOUNTED DOUBLE ROLL TOILET TISSUE DISPENSER
- 2 36" ADA GRAB BAR
- 3 42" ADA GRAB BAR
- 4 18" VERTICAL ADA GRAB BAR
- 5 SANITARY NAPKIN DISPOSAL
- 6 TOILET SEAT DISPENSER
- 7 SOAP DISPENSER (N.I.C.)
- 8 SEMI-RECESSED TRI-FOLD PAPER TOWEL DISPENSER
- 9 WASTE RECEPTACLE
- 10 MIRROR, BRADLEY CHANNEL FRAME 18"x36" MODEL 781 SERIES
- 11 (2) PETER PEPPER 3 HOOK COAT RACK MODEL 1140, ONE MOUNTED @ 5' AND ONE @ 4'



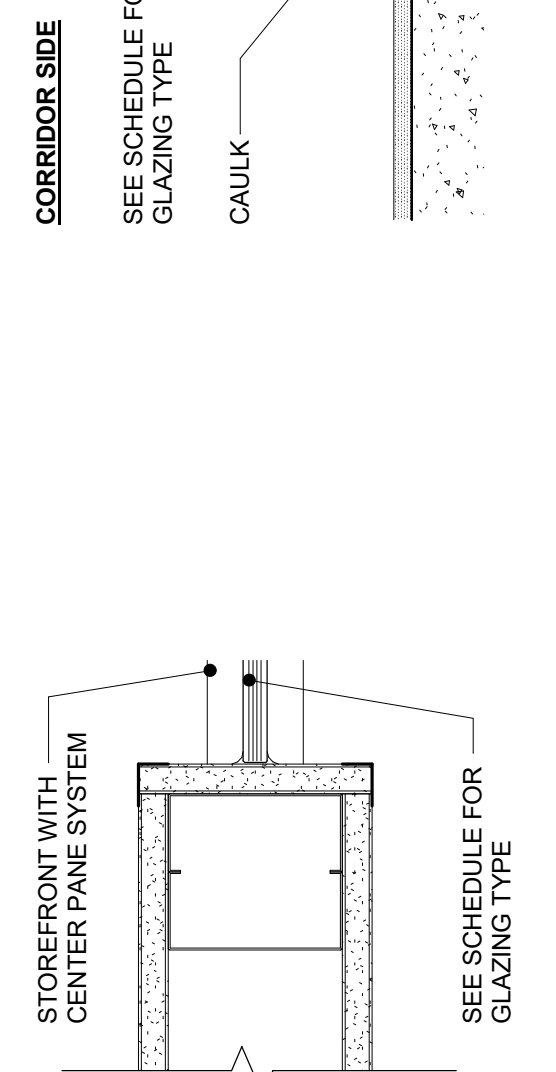
ADMINISTRATION BUILDING 2ND FLOOR RENOVATION		ENLARGED FLOOR PLAN - RESTROOMS		Project Number: BWO-9021-25(014)		COUNTY: HINDS		WORKING NUMBER A-401		SHEET NUMBER 12 of 58	
BY JMR		REVISION #1 / ADDENDUM		DATE 11/12/25		FILENAME: BWO-9021-25(014)A-401.dgn		DESIGN TEAM CDFL		CHECKER DATE: 10/20/2025	



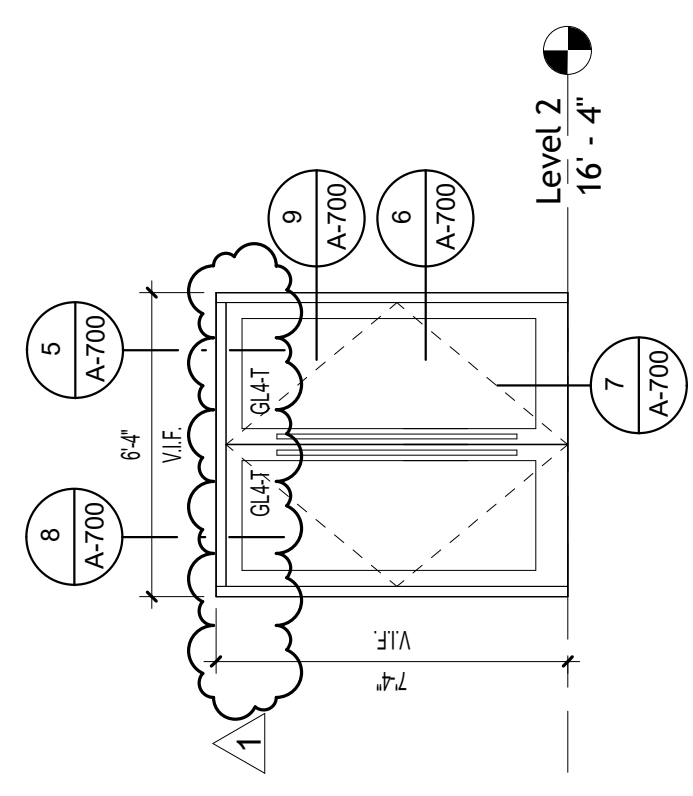
DOOR SCHEDULE																
DOOR NUMBER	TYPE	DOOR			FIRE RATING	FRAME					DOOR NUMBER					
		SIZE HEIGHT	THICKNESS	MATERIAL		FINISH	TYPE	MATERIAL	FINISH	DETAILS						
										HEAD		JAMB	SILL DETAIL	HARDWARE	COMMENTS	
200	D4	6'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	5	EXISTING	200
200A	D4	6'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	5	EXISTING	200A
201	D1	3'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	14	EXISTING	201
202	D1	3'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	14	EXISTING	202
203	D4	6'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	7	EXISTING	203
204	D1	3'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	4	EXISTING	204
205	D1	3'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	15	EXISTING	205
206	D1	3'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	20	EXISTING	206
207	D1	3'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	10	EXISTING	207
208	D2	3'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	20	EXISTING	208
208A	D2	3'-0"	7'-0"	0'-1'3/4"							EXISTING	4/A-600	5/A-600	20	EXISTING	208A
209	G1	3'-0"	8'-3 1/2"								EXISTING	4/A-600	5/A-600	17	EXISTING	209
211	D1	3'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	15	EXISTING	211
212	D1	3'-0"	7'-0"	0'-1'3/4"		WOOD	STAIN			F1	HM	4/A-600	5/A-600	18	EXISTING	212
213	D1	3'-0"	7'-0"	0'-1'3/4"		WOOD	STAIN			F1	HM	4/A-600	5/A-600	20	EXISTING	213
215	D2	3'-0"	7'-0"	0'-1'3/4"		WOOD	STAIN			F1	HM	4/A-600	5/A-600	20	EXISTING	215
216	D1	3'-0"	7'-0"	0'-1'3/4"		WOOD	STAIN			F1	HM	4/A-600	5/A-600	20	EXISTING	216
216A	D1	3'-0"	7'-0"	0'-1'3/4"		WOOD	STAIN			F1	HM	4/A-600	5/A-600	20	EXISTING	216A
217	D1	3'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	20	EXISTING	217
218	D1	3'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	18	EXISTING	218
219	D1	3'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	20	EXISTING	219
220	D1	3'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	20	EXISTING	220
221	D1	3'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	20	EXISTING	221
222	D4	6'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	6	EXISTING	222
223	D1	3'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	20	EXISTING	223
224	D1	3'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	20	EXISTING	224
225	D1	3'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	20	EXISTING	225
226	D1	3'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	20	EXISTING	226
226A	D1	3'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	20	EXISTING	226A
227	G1	3'-0"	6'-11"								EXISTING	4/A-600	5/A-600	15	EXISTING	227
228	D1	3'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	20	EXISTING	228
229	D1	3'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	20	EXISTING	229
230	D1	3'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	18	EXISTING	230
231	D1	3'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	20	EXISTING	231
232	D1	3'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	20	EXISTING	232
233	D1	3'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	20	EXISTING	233
233A	D1	3'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	20	EXISTING	233A
234	D1	3'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	20	EXISTING	234
235	G1	3'-0"	6'-11"								EXISTING	4/A-600	5/A-600	17	EXISTING	235
236	D1	3'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	15	EXISTING	236
237	D1	3'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	20	EXISTING	237
238	D1	3'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	4	EXISTING	238
239	D1	3'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	20	EXISTING	239
240	D1	3'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	8	EXISTING	240
241	D2	3'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	10	EXISTING	241
241A	D1	3'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	8	EXISTING	241A
242	D3	5'-11"	7'-1 1/2"							SF-5	ALUM	8/A-700	9/A-700	1	EXTERIOR	242
242A	D3	5'-11"	7'-0"							SF-5	ALUM	8/A-700	9/A-700	1	EXTERIOR	242A
243	D1	3'-0"	7'-0"	0'-1'3/4"							PT	4/A-600	5/A-600	16	EXISTING	243
244	G1	3'-0"	6'-11 1/2"			ALUM.	ANOD.			SF-1	ALUM	1/A-600	2/A-600	3	ACCESS CONTROL	244
244A	D2	3'-0"	7'-0"	0'-1'3/4"		WOOD	PT			F1	HM	4/A-600	5/A-600	8	ACCESS CONTROL	244A
244B	G1	3'-0"	6'-11 1/2"			ALUM.	ANOD.			SF-2	ALUM	1/A-600	2/A-600	3	ACCESS CONTROL	244B
245	D2	3'-0"	7'-0"	0'-1'3/4"		WOOD	STAIN			F1	HM	4/A-600	5/A-600	18	ACCESS CONTROL	245
246	D1	3'-0"	7'-0"	0'-1'3/4"						F1	HM	4/A-600	5/A-600	10	EXISTING	246
247	D3	5'-11"	7'-0"			ALUM.	ANOD.			SF-5	ALUM	5/A-700	6/A-700	1	EXTERIOR ACCESS CONTROL	247
247A	D3	5'-11"	7'-0"			ALUM.	ANOD.			SF-5	ALUM	5/A-700	6/A-700	1	EXTERIOR ACCESS CONTROL	247A



1 INTERIOR STOREFRONT HEAD
3" = 1'-0"

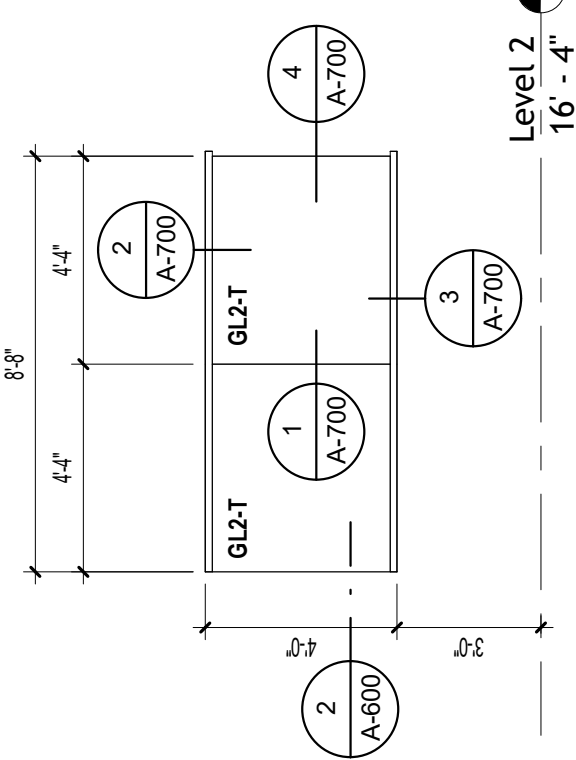


2 INTERIOR STOREFRONT JAMB
3" = 1'-0"

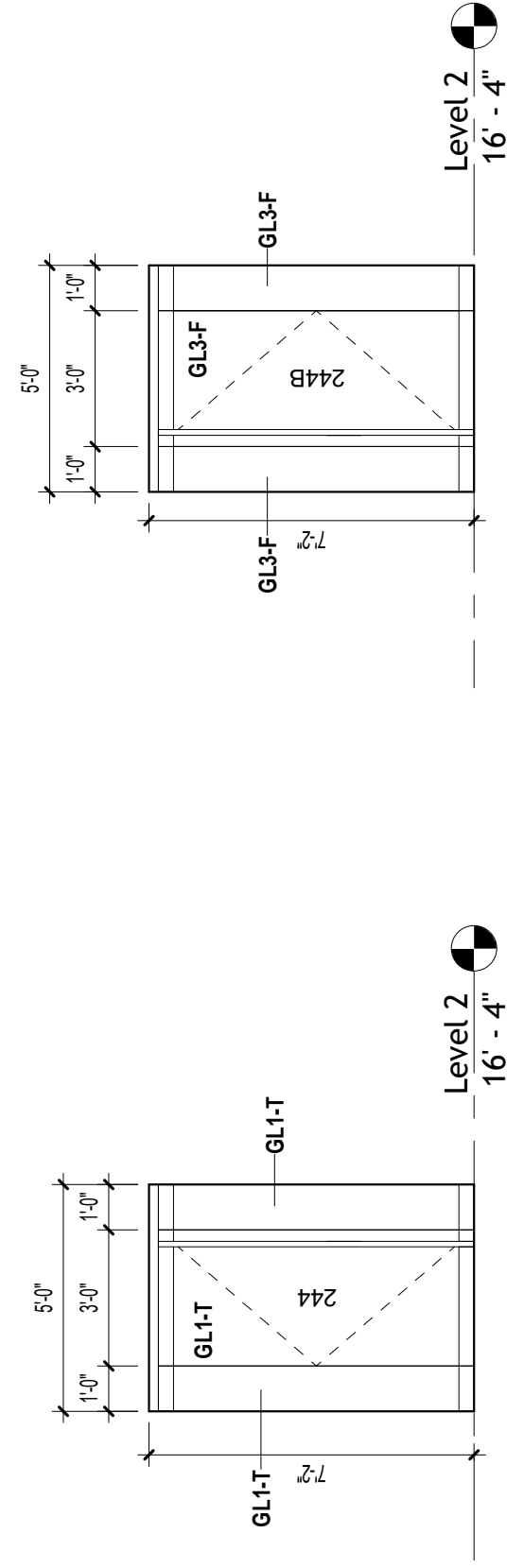


3 EXT. STOREFRONT - SF-5
1/4" = 1'-0"

INT. STOREFRONT - SF- 3
1/4" = 1'-0"

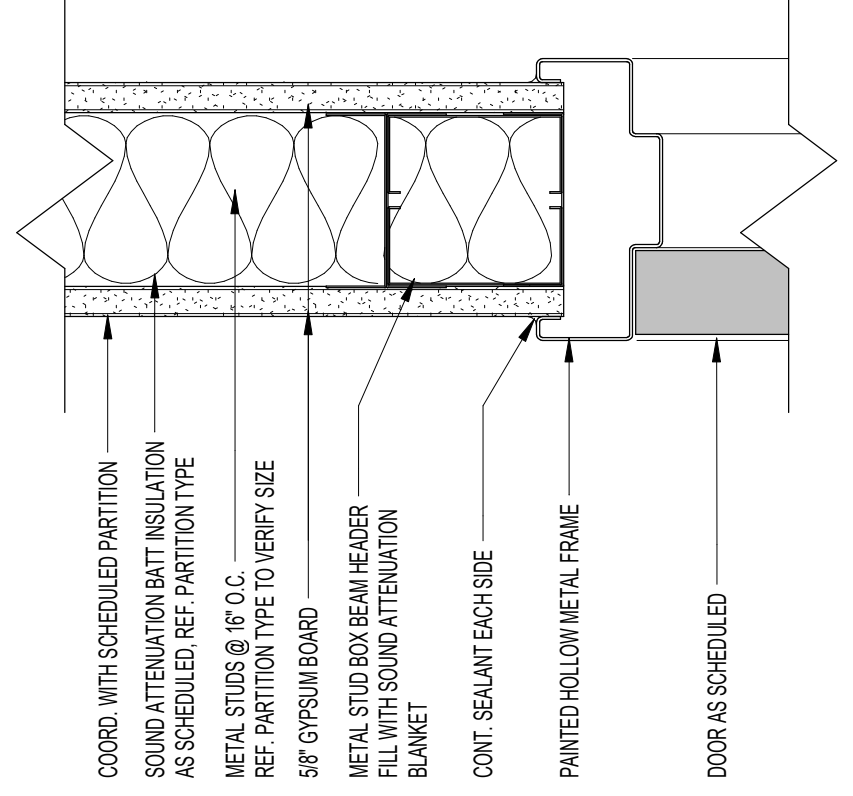


INT. STOREFRONT - SF-1
1/4" = 1'-0"

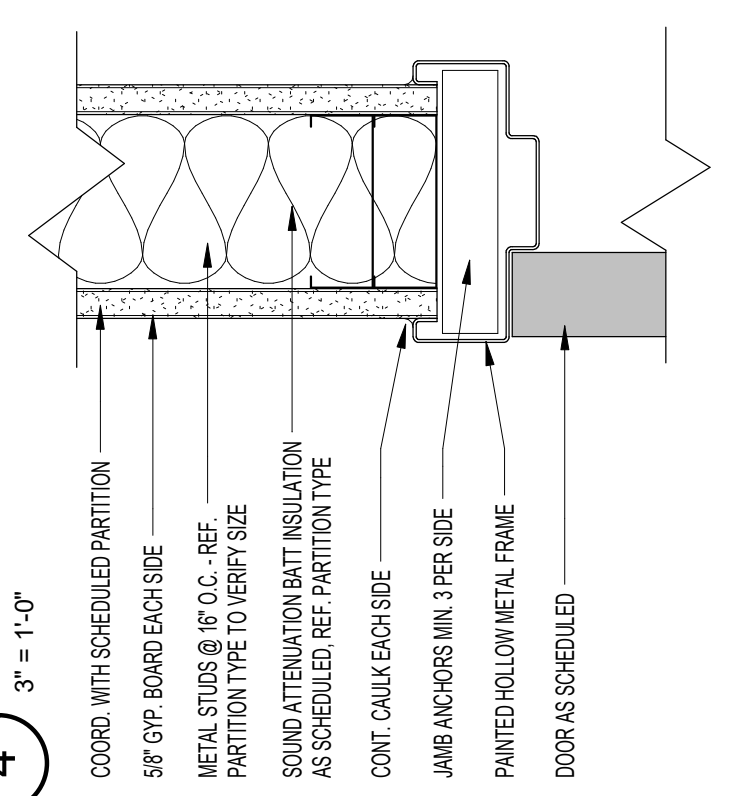


INT. STOREFRONT - SF-2
1/4" = 1'-0"

4 HM DOOR HEAD - INTERIOR
3" = 1'-0"

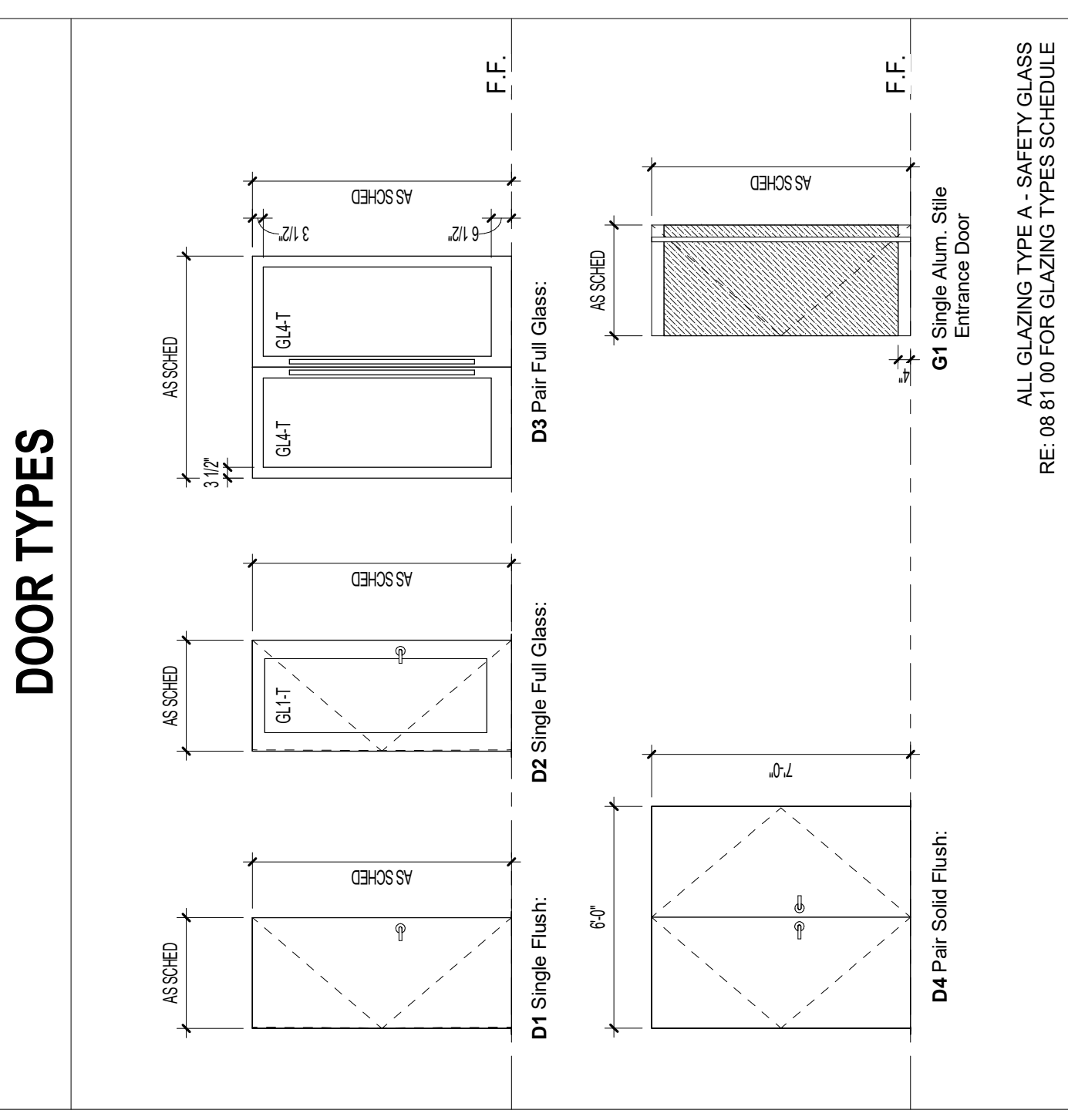


5 HM DOOR JB GWB
3" = 1'-0"

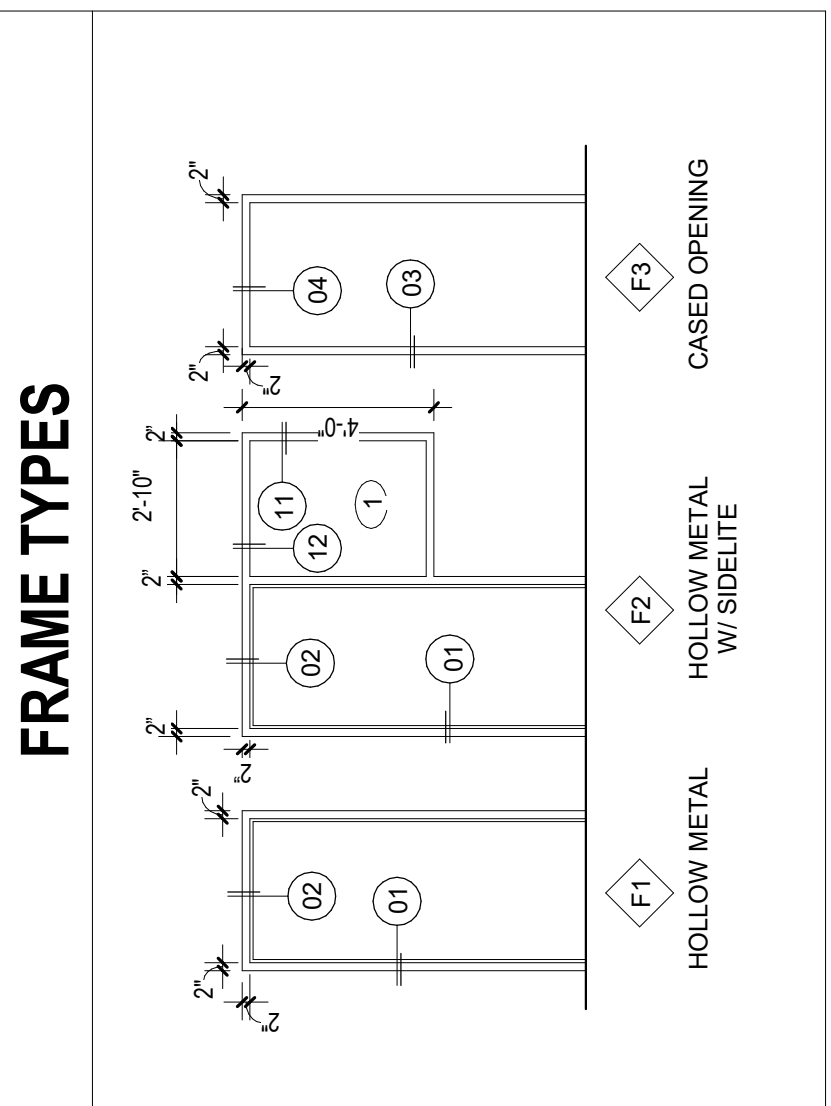


INT. STOREFRONT - SF-4
1/4" = 1'-0"

DOOR TYPES



FRAME TYPES

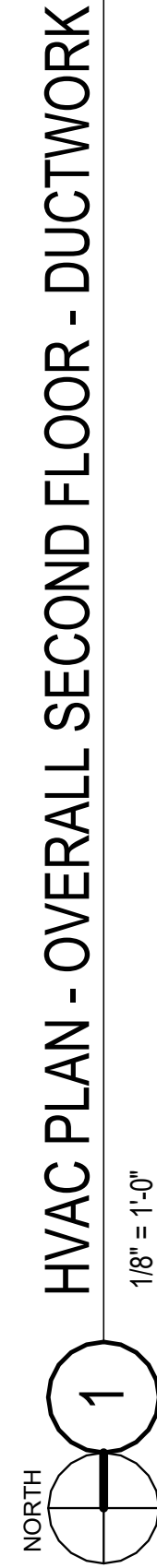


BY	JWR	REVISION	#1 / ADDENDUM	DATE	11/12/25
Project Number: BWO-9021-25(014)					
COUNTY: HINDS					
FILENAME: BWO-9021-25(014)A-600.dgn					
DESIGN TEAM CDFL CHECKED DATE: 10/20/2025					
WORKING NUMBER A-600					
SHEET NUMBER 17 of 58					

ADMINISTRATION BUILDING 2ND FLOOR RENOVATION					
SCHEDULE - DOOR, WINDOW, LOWER					
Project Number: BWO-9021-25(014)					
COUNTY: HINDS					
FILENAME: BWO-9021-25(014)A-600.dgn					
DESIGN TEAM CDFL CHECKED DATE: 10/20/2025					
WORKING NUMBER A-600					
SHEET NUMBER 17 of 58					



1 NEW CONDENSING UNIT ASSOCIATED WITH INDOOR COMPUTER ROOM UNIT. LOCATE IN SAME LOCATION AS EXISTING. MODIFY ROOF MOUNTING AS REQUIRED FOR NEW UNITS. RECONNECT TO EXISTING ELECTRICAL SERVICE.



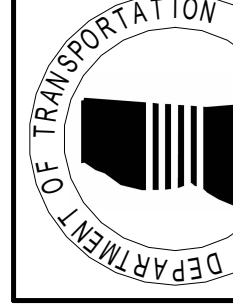
HVAC PLAN - SECOND FLOOR - DUCTWORK

Project Number: BWO-9021-25(014)

COUNTY: HINDS

FILENAME: BWO-9021-25(014)M-101.dgn

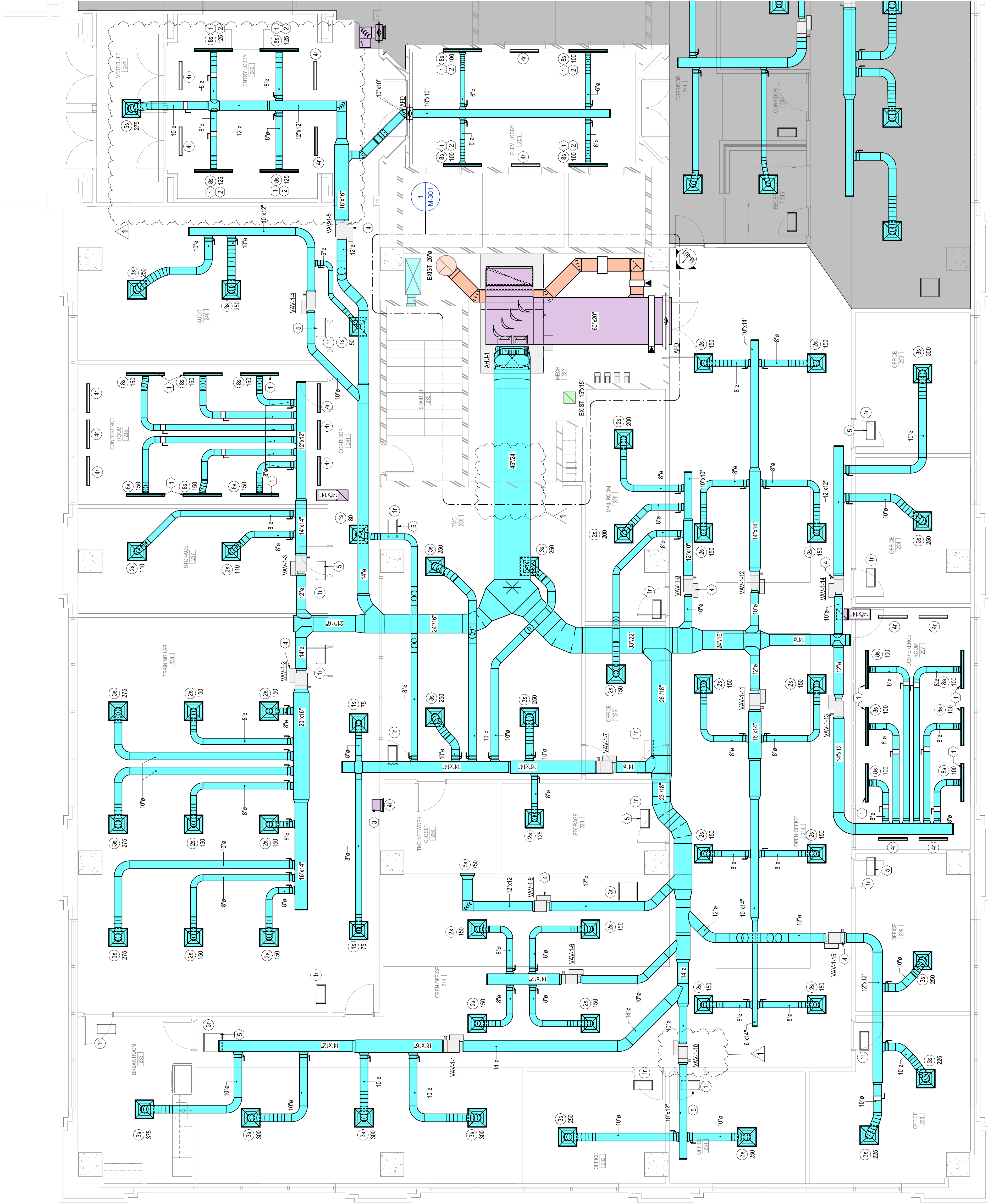
DESIGN TEAM	CDFL	CHECKED	DL	DATE: 10/20/2025
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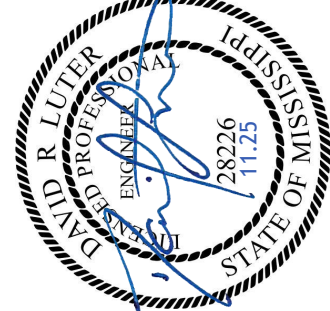
STATE	PROJECT NO.
MISS.	BWO-9021-25(014)

PLAN NOTES

1. PROVIDE AND INSTALL BONDED REMOTE CABLE DAMPER ACCESSORY TO ALLOW OPERATION OF DAMPER THROUGH FACE OF SUPPLY - SEE DETAIL
2. PROVIDE WITH FACTORY CUSTOM COLOR POWDER COAT FINISH COORDINATE FINISH COLOR WITH ARCH.
3. TRANSFER AIR DUCT TO PLENUM SPACE
4. TYPICAL VARIABLE VOLUME AIR TERMINAL UNIT - SEE DETAIL
5. MANUFACTURER'S RETURN AIR CANOPY ACCESSORY - SEE DETAIL

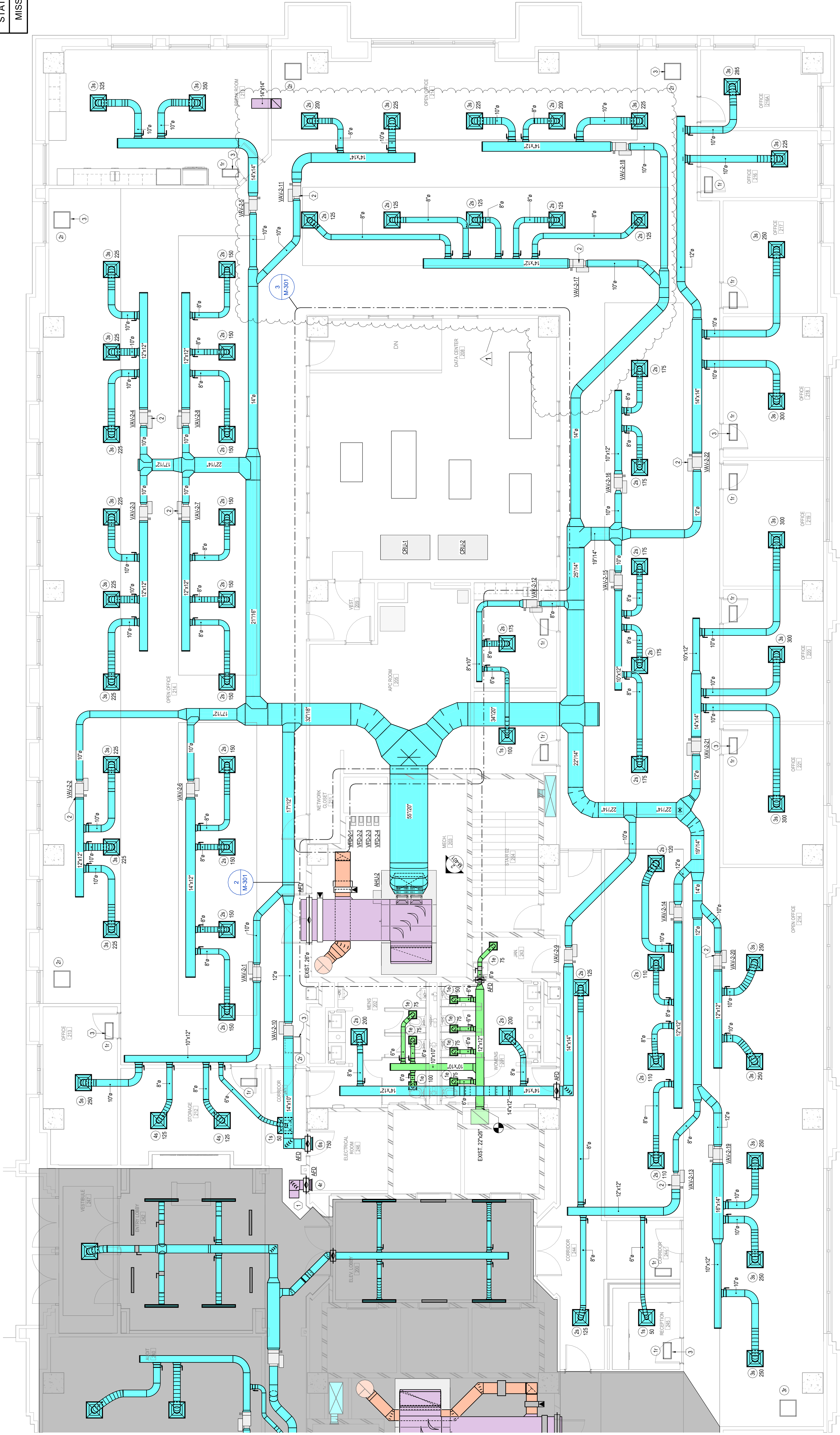


HVAC PLAN - SECOND FLOOR - DUCTWORK PART A
3/16" = 1'-0"



ADMINISTRATION BUILDING 2ND FLOOR RENOVATION		HVAC PLAN - SECOND FLOOR- DUCTWORK PART A	
BY	REVISION	Project Number: BWO-9021-25(014)	COUNTY: HINDS
DRL	#1 / ADDENDUM	FILENAME: BWO-9021-25(014)M-102.dgn	DATE: 10/20/2025
		DESIGN TEAM: CDFL	CHECKED: DL
		WORKING NUMBER: M-102	SHEET NUMBER: 32 of 58

STATE	PROJECT NO.
MISS.	BWO-9021-25(014)



PLAN NOTES

- 1 TRANSFER AIR DUCT TO PLENUM SPACE.
- 2 TYPICAL VARIABLE VOLUME AIR TERMINAL UNIT. SEE DETAIL.
- 3 TYPICAL - ALL RETURN GRILLES INTO PLENUM SHALL INCLUDE EITHER RETURN AIR BOOT OR GRILLE MANUFACTURERS RETURN AIR CANOPY ACCESSORY - SEE DETAIL.

NORTH

1

3/16" = 1'-0"

HVAC PLAN - SECOND FLOOR - DUCTWORK PART B

ADMINISTRATION BUILDING 2ND FLOOR
RENOVATION

HVAC PLAN - SECOND FLOOR- DUCTWORK PART B

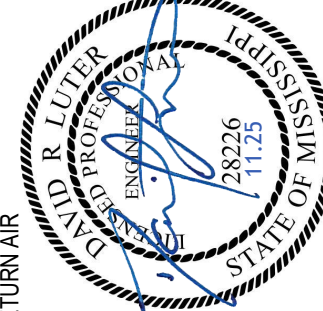
Project Number: BWO-9021-25(014)

COUNTY: HINDS

FILENAME:	BWO-9021-25(014)M-103.dgn
DESIGN TEAM:	CDFL
CHECKED:	DL
DATE:	10/20/2025

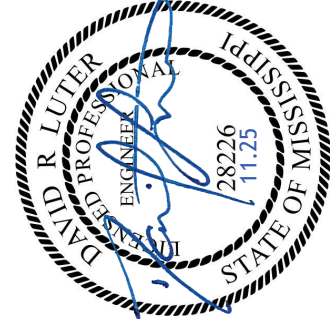
Working Number M-103

SHEET NUMBER	33 of 58
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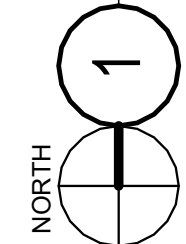
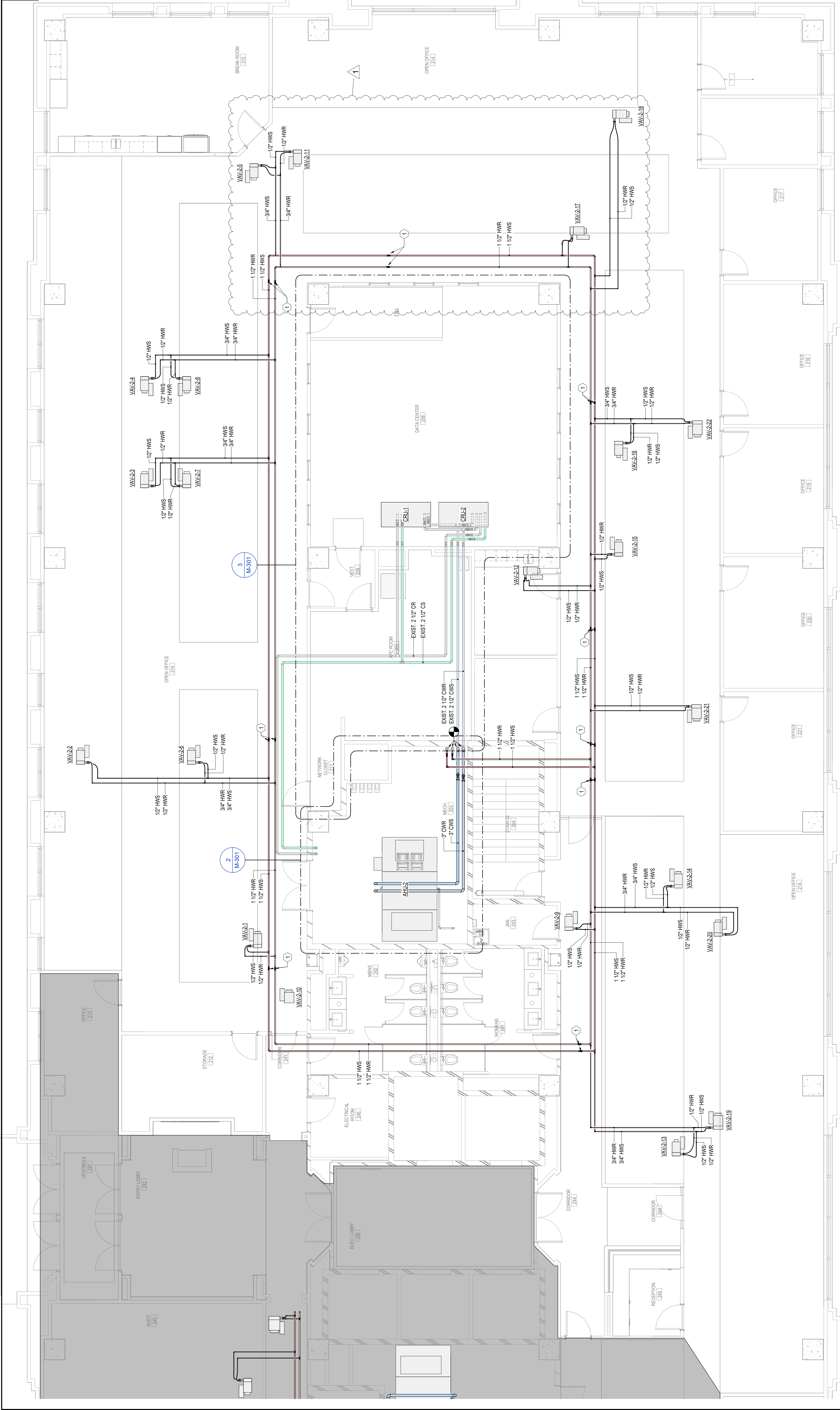




HVAC PLAN - SECOND FLOOR - PIPING

[illegible]

STATE	PROJECT NO.
MISS.	BWO-9021-25(014)

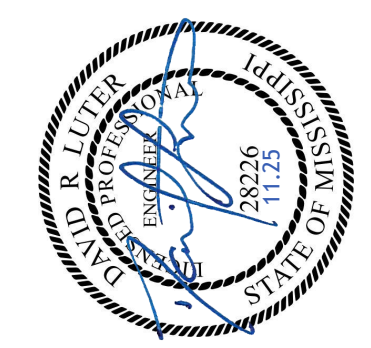


HVAC PLAN - SECOND FLOOR - PIPING PART B

3/16" = 1'-0"

PLAN NOTES

- 1 FULL PORT ISOLATION VALVES THIS LOCATION.



ADMINISTRATION BUILDING 2ND FLOOR RENOVATION		HVAC PLAN - SECOND FLOOR - PIPING PART B		Project Number: BWO-9021-25(014)		COUNTY: HINDS		WORKING NUMBER M-203		SHEET NUMBER 36 of 58	
BY		REVISION		FILENAME: BWO-9021-25(014)M-203.dgn		DATE: 10/20/2025		DESIGN TEAM: CDFL		CHECKED: DL	
DRL		#1 / ADDENDUM		DATE: 11/11/23		DATE: 11/11/23		DATE: 11/11/23		DATE: 11/11/23	

ASHRAE 62.1 CALCS - AHU-1					
SPACE IDENTITY PARAMETERS			CALCULATED OUTSIDE AIR VALUES		
Space Name	# of Ppl (Pz)	Area (Az)	(Rp x Pz)	(Ra x Az)	Vbz
VAV-1-1 BREAK ROOM OFFICE	1 4	205 R² 686 R²	5 CFM 20 CFM	12 CFM 36 CFM	17 CFM 56 CFM 74 CFM
VAV-1-2 CORRIDOR TRAINING LAB	0 10	211 R² 1,104 R²	0 CFM 50 CFM	13 CFM 66 CFM	13 CFM 125 CFM
VAV-1-3 CONFERENCE ROOM CORRIDOR STORAGE	10 0 0	383 R² 136 R² 289 R²	50 CFM 0 CFM 0 CFM	24 CFM 8 CFM 17 CFM	74 CFM 8 CFM 17 CFM 99 CFM
VAV-1-4 CORRIDOR ROOM	1 3	86 R² 424 R²	0 CFM 15 CFM	5 CFM 25 CFM	5 CFM 40 CFM 46 CFM
VAV-1-5 ELEV LOBBY LOBBY LOBBY CORRIDOR VESTIBULE	2 3 0 0	305 R² 345 R² 124 R² 142 R²	10 CFM 15 CFM 0 CFM 0 CFM	18 CFM 21 CFM 7 CFM 9 CFM	26 CFM 30 CFM 8 CFM 10 CFM 80 CFM
VAV-1-6 OFFICE	3	534 R²	15 CFM	32 CFM	47 CFM
VAV-1-7 STORAGE TMC	0 5	161 R² 645 R²	0 CFM 25 CFM	10 CFM 39 CFM	10 CFM 64 CFM 73 CFM
VAV-1-8 MAIL ROOM OFFICE	2 1	218 R² 139 R²	10 CFM 5 CFM	13 CFM 8 CFM	23 CFM 13 CFM 36 CFM
VAV-1-10 OFFICE OFFICE OFFICE	1 1 1	169 R² 170 R² 266 R²	5 CFM 5 CFM 5 CFM	10 CFM 10 CFM 16 CFM	15 CFM 15 CFM 21 CFM 51 CFM
VAV-1-11 OFFICE	4	909 R²	20 CFM	55 CFM	75 CFM
VAV-1-12 OFFICE	4	771 R²	20 CFM	46 CFM	66 CFM
VAV-1-13 CONFERENCE ROOM OFFICE	10 1	312 R² 188 R²	50 CFM 5 CFM	19 CFM 12 CFM	69 CFM 17 CFM 86 CFM
VAV-1-14 OFFICE OFFICE	1 1	181 R² 182 R²	5 CFM 5 CFM	11 CFM 11 CFM	16 CFM 16 CFM

ASHRAE 62.1 CALCS - AHU-2					
SPACE IDENTITY PARAMETERS			CALCULATED OUTSIDE AIR VALUES		
Space Name	# of Ppl (Pz)	Area (Az)	(Rp x Pz)	(Ra x Az)	Vbz
VAV-2-1 CORRIDOR	1	61 ft²	0 CFM	4 CFM	4 CFM
VAV-2-1 OFFICE	1	163 ft²	5 CFM	10 CFM	15 CFM
VAV-2-2 STORAGE	0	183 ft²	0 CFM	11 CFM	11 CFM
VAV-2-2 OPEN OFFICE	4	518 ft²	20 CFM	31 CFM	31 CFM
VAV-2-3 OPEN OFFICE	3	351 ft²	15 CFM	21 CFM	36 CFM
VAV-2-4 OPEN OFFICE	4	464 ft²	20 CFM	28 CFM	48 CFM
VAV-2-5 BREAK ROOM	3	446 ft²	15 CFM	27 CFM	42 CFM
VAV-2-6 OPEN OFFICE	4	814 ft²	20 CFM	49 CFM	69 CFM
VAV-2-7 OPEN OFFICE	3	547 ft²	15 CFM	33 CFM	48 CFM
VAV-2-8 OPEN OFFICE	3	539 ft²	15 CFM	32 CFM	47 CFM
VAV-2-9 MENS	1	184 ft²	0 CFM	0 CFM	0 CFM
VAV-2-9 WOMENS	1	192 ft²	0 CFM	0 CFM	0 CFM
VAV-2-11 OPEN OFFICE	4	632 ft²	20 CFM	38 CFM	58 CFM
VAV-2-12 COPY ROOM	1	121 ft²	5 CFM	7 CFM	12 CFM
VAV-2-12 JAN	0	59 ft²	0 CFM	0 CFM	0 CFM
VAV-2-12 STAR1/2	0	149 ft²	0 CFM	9 CFM	9 CFM
VAV-2-12 STORAGE	0	100 ft²	0 CFM	6 CFM	6 CFM
VAV-2-13 CORRIDOR	0	434 ft²	0 CFM	26 CFM	26 CFM
VAV-2-13 RECEPTION	1	85 ft²	5 CFM	5 CFM	10 CFM
VAV-2-14 OPEN OFFICE	5	598 ft²	25 CFM	33 CFM	58 CFM
VAV-2-15 OPEN OFFICE	4	765 ft²	20 CFM	46 CFM	66 CFM
VAV-2-16 OPEN OFFICE	3	560 ft²	15 CFM	34 CFM	48 CFM
VAV-2-17 OPEN OFFICE	3	502 ft²	15 CFM	30 CFM	45 CFM
VAV-2-18 OPEN OFFICE	3	469 ft²	15 CFM	28 CFM	43 CFM
VAV-2-19 OPEN OFFICE	5	627 ft²	25 CFM	38 CFM	63 CFM
VAV-2-20 OPEN OFFICE	3	380 ft²	15 CFM	22 CFM	37 CFM
VAV-2-21 OFFICE	1	183 ft²	5 CFM	11 CFM	16 CFM
VAV-2-21 OFFICE	1	191 ft²	5 CFM	11 CFM	16 CFM
VAV-2-21 OFFICE	1	200 ft²	5 CFM	12 CFM	17 CFM
VAV-2-22 OFFICE	1	201 ft²	5 CFM	12 CFM	17 CFM
VAV-2-22 OFFICE	1	156 ft²	5 CFM	9 CFM	14 CFM
VAV-2-22 OFFICE	1	127 ft²	5 CFM	8 CFM	13 CFM
VAV-2-22 OFFICE	2	114 ft²	10 CFM	7 CFM	17 CFM
					61 CFM
					992 CFM

- [A] REMARKS:**
- PROVIDE WITH DX EVAPORATOR COIL AND APPROPRIATELY SIZED MANUFACTURERS MATCHING AIR-COOLED REWATE CONDENSER. SEE PLANS FOR CONDENSER LOCATION.
 - REMOTE CONDENSER TO INCLUDE HAL GUARDS, REFRIGERANT ISOLATION VALVES, CHARGING PORTS, HEAD PRESSURE CONTROL, TXV WITH SIGHT GLASS AND MOISTURE INDICATOR.
 - PROVIDE WITH 2-WAY FULLY MODULATING CONTROL VALVE ON CHILLED WATER.
 - PROVIDE WITH INSULATED CHILLED WATER PIPING KIT WITH UNION CONNECTIONS.
 - PROVIDE WITH EC VARIABLE SPEED SUPPLY FANS.
 - PROVIDE IN DOWNFLOW CONFIGURATION WITH FLOOR STAND AND TRIM TO MATCH RAISED FLOOR HEIGHT.
 - PROVIDE ACCESS DOORS WITH SAFETY LATCHES AND SERVICE LIGHTS.
 - PROVIDE FLOAT SWITCH INSIDE DRAIN PAN TO SHUT DOWN UNIT UPON ACTIVATION.
 - PROVIDE WITH MERV4 PRE-FILTERS + MERV-13 FINAL FILTERS AND DIRTY FILTER PRESSURE SWITCH.
 - PROVIDE WITH INFRARED HUMIDIFIER, FILL WATER FILTER, AND STEAM DISPERSION ASSEMBLY.
 - PROVIDE ONBOARD CONTROLLER WITH AUTO SWITCHOVER FROM CHILLED WATER TO DX. INTEGRATED HUMIDIFIER AND REHEAT CONTROL.
 - PROVIDE WITH BACNET BMS INTERFACE.
 - PROVIDE WITH LEAK DETECTION.
 - PROVIDE WITH UNIT-MOUNTED SMOKE DETECTION WITH SHUT DOWN INTERLOCK.
 - PROVIDE WITH INSULATED DRAIN PAN OF STAINLESS STEEL CONSTRUCTION.
 - PROVIDE WITH FACTORY MOUNTED DISCONNECT.

ASHRAE 62.1 CALCS - AHU-2					
SPACE IDENTITY PARAMETERS			CALCULATED OUTSIDE AIR VALUES		
Space Name	# of Ppl (Pz)	Area (Az)	(Rp x Pz)	(Ra x Az)	Vbz

ASHRAE 62.1 CALCS - AHU-2					
SPACE IDENTITY PARAMETERS			CALCULATED OUTSIDE AIR VALUES		
Space Name	# of Ppl (Pz)	Area (Az)	(Rp x Pz)	(Ra x Az)	Vbz

ASHRAE 62.1 CALCS - AHU-2					
SPACE IDENTITY PARAMETERS			CALCULATED OUTSIDE AIR VALUES		
Space Name	# of Ppl (Pz)	Area (Az)	(Rp x Pz)	(Ra x Az)	Vioz

ASHRAE 62.1 CALCS - AHU-2					
SPACE IDENTITY PARAMETERS			CALCULATED OUTSIDE AIR VALUES		
Space Name	# of Ppl (Pz)	Area (Az)	(Rp x Pz)	(Ra x Az)	Vbz

STATE	PROJECT NO.
MISS.	BWO-9021-25(014)

MECHANICAL CONNECTION SCHEDULE

TAG	DESCRPT ION	VOLTAGE	POLES	MCA	MOCP	PANEL	FEEDER SIZE	DISCONNECT
M1	CRU-1	480 V	3	0 A	0 A		REUSE EXISTING	REUSE EXISTING
M2	CRU-2	480 V	3	0 A	0 A		REUSE EXISTING	REUSE EXISTING
M3	VFD-1-1	480 V	3	0 A	15 A	H2A	3#1/2.#12N.#12G.1/2"	30A3P
M4	VFD-1-2	480 V	3	0 A	15 A	H2A	3#1/2.#12N.#12G.1/2"	30A3P
M5	VFD-1-3	480 V	3	0 A	15 A	H2A	3#1/2.#12N.#12G.1/2"	30A3P
M6	VFD-1-4	480 V	3	0 A	15 A	H2A	3#1/2.#12N.#12G.1/2"	30A3P
M7	VFD-2-1	480 V	3	0 A	15 A	H2A	3#1/2.#12N.#12G.1/2"	30A3P
M8	VFD-2-2	480 V	3	0 A	15 A	H2A	3#1/2.#12N.#12G.1/2"	30A3P
M9	VFD-2-3	480 V	3	0 A	15 A	H2A	3#1/2.#12N.#12G.1/2"	30A3P
M10	VFD-2-4	480 V	3	0 A	15 A	H2A	3#1/2.#12N.#12G.1/2"	30A3P
M11	SF-1-1	480 V	3	5 A	15 A	H2A	3#1/2.#12N.#12G.1/2"	FED FROM VFD-1-1
M12	SF-1-2	480 V	3	5 A	15 A	H2A	3#1/2.#12N.#12G.1/2"	FED FROM VFD-1-2
M13	SF-1-3	480 V	3	5 A	15 A	H2A	3#1/2.#12N.#12G.1/2"	FED FROM VFD-1-3
M14	SF-1-4	480 V	3	5 A	15 A	H2A	3#1/2.#12N.#12G.1/2"	FED FROM VFD-1-4
M15	SF-2-1	480 V	3	5 A	15 A	H2A	3#1/2.#12N.#12G.1/2"	FED FROM VFD-2-1
M16	SF-2-2	480 V	3	5 A	15 A	H2A	3#1/2.#12N.#12G.1/2"	FED FROM VFD-2-2
M17	SF-2-3	480 V	3	5 A	15 A	H2A	3#1/2.#12N.#12G.1/2"	FED FROM VFD-2-3
M18	SF-2-4	480 V	3	5 A	15 A	H2A	3#1/2.#12N.#12G.1/2"	FED FROM VFD-2-4
M19	VAV-1-1	277 V	1	1 A	15 A	H2A	1#1/2.#12N.#12G.1/2"	PROVIDED BY MECHANICAL
M20	VAV-1-2	277 V	1	1 A	15 A	H2A	1#1/2.#12N.#12G.1/2"	PROVIDED BY MECHANICAL
M21	VAV-1-3	277 V	1	1 A	15 A	H2A	1#1/2.#12N.#12G.1/2"	PROVIDED BY MECHANICAL
M22	VAV-1-4	277 V	1	1 A	15 A	H2A	1#1/2.#12N.#12G.1/2"	PROVIDED BY MECHANICAL
M23	VAV-1-5	277 V	1	1 A	15 A	H2A	1#1/2.#12N.#12G.1/2"	PROVIDED BY MECHANICAL
M24	VAV-1-6	277 V	1	1 A	15 A	H2A	1#1/2.#12N.#12G.1/2"	PROVIDED BY MECHANICAL
M25	VAV-1-7	277 V	1	1 A	15 A	H2A	1#1/2.#12N.#12G.1/2"	PROVIDED BY MECHANICAL
M26	VAV-1-8	277 V	1	1 A	15 A	H2A	1#1/2.#12N.#12G.1/2"	PROVIDED BY MECHANICAL
M27	VAV-1-9	277 V	1	1 A	15 A	H2A	1#1/2.#12N.#12G.1/2"	PROVIDED BY MECHANICAL
M28	VAV-1-10	277 V	1	1 A	15 A	H2A	1#1/2.#12N.#12G.1/2"	PROVIDED BY MECHANICAL
M29	VAV-1-11	277 V	1	1 A	15 A	H2A	1#1/2.#12N.#12G.1/2"	PROVIDED BY MECHANICAL
M30	VAV-1-12	277 V	1	1 A	15 A	H2A	1#1/2.#12N.#12G.1/2"	PROVIDED BY MECHANICAL
M31	VAV-1-13	277 V	1	1 A	15 A	H2A	1#1/2.#12N.#12G.1/2"	PROVIDED BY MECHANICAL
M32	VAV-1-14	277 V	1	1 A	15 A	H2A	1#1/2.#12N.#12G.1/2"	PROVIDED BY MECHANICAL
M33	VAV-1-15	277 V	1	1 A	15 A	H2A	1#1/2.#12N.#12G.1/2"	PROVIDED BY MECHANICAL
M34	VAV-2-1	277 V	1	1 A	15 A	H2A	1#1/2.#12N.#12G.1/2"	PROVIDED BY MECHANICAL
M35	VAV-2-2	277 V	1	1 A	15 A	H2A	1#1/2.#12N.#12G.1/2"	PROVIDED BY MECHANICAL
M36	VAV-2-3	277 V	1	1 A	15 A	H2A	1#1/2.#12N.#12G.1/2"	PROVIDED BY MECHANICAL
M37	VAV-2-4	277 V	1	1 A	15 A	H2A	1#1/2.#12N.#12G.1/2"	PROVIDED BY MECHANICAL
M38	VAV-2-5	277 V	1	1 A	15 A	H2A	1#1/2.#12N.#12G.1/2"	PROVIDED BY MECHANICAL
M39	VAV-2-6	277 V	1	1 A	15 A	H2A	1#1/2.#12N.#12G.1/2"	PROVIDED BY MECHANICAL
M40	VAV-2-7	277 V	1	1 A	15 A	H2A	1#1/2.#12N.#12G.1/2"	PROVIDED BY MECHANICAL
M41	VAV-2-8	277 V	1	1 A	15 A	H2A	1#1/2.#12N.#12G.1/2"	PROVIDED BY MECHANICAL
M42	VAV-2-9	277 V	1	1 A	15 A	H2A	1#1/2.#12N.#12G.1/2"	PROVIDED BY MECHANICAL
M43	VAV-2-10	277 V	1	1 A	15 A	H2A	1#1/2.#12N.#12G.1/2"	PROVIDED BY MECHANICAL
M44	VAV-2-11	277 V	1	1 A	15 A	H2A	1#1/2.#12N.#12G.1/2"	PROVIDED BY MECHANICAL
M45	VAV-2-12	277 V	1	1 A	15 A	H2A	1#1/2.#12N.#12G.1/2"	PROVIDED BY MECHANICAL
M46	VAV-2-13	277 V	1	1 A	15 A	H2A	1#1/2.#12N.#12G.1/2"	PROVIDED BY MECHANICAL
M47	VAV-2-14	277 V	1	1 A	15 A	H2A	1#1/2.#12N.#12G.1/2"	PROVIDED BY MECHANICAL
M48	VAV-2-15	277 V	1	1 A	15 A	H2A	1#1/2.#12N.#12G.1/2"	PROVIDED BY MECHANICAL
M49	VAV-2-16	277 V	1	1 A	15 A	H2A	1#1/2.#12N.#12G.1/2"	PROVIDED BY MECHANICAL
M50	VAV-2-17	277 V	1	1 A	15 A	H2A	1#1/2.#12N.#12G.1/2"	PROVIDED BY MECHANICAL
M51	VAV-2-18	277 V	1	1 A	15 A	H2A	1#1/2.#12N.#12G.1/2"	PROVIDED BY MECHANICAL
M52	VAV-2-19	277 V	1	1 A	15 A	H2A	1#1/2.#12N.#12G.1/2"	PROVIDED BY MECHANICAL
M53	VAV-2-20	277 V	1	1 A	15 A	H2A	1#1/2.#12N.#12G.1/2"	PROVIDED BY MECHANICAL
M54	VAV-2-21	277 V	1	1 A	15 A	H2A	1#1/2.#12N.#12G.1/2"	PROVIDED BY MECHANICAL
M55	VAV-2-22	277 V	1	1 A	15 A	H2A	1#1/2.#12N.#12G.1/2"	PROVIDED BY MECHANICAL

GENERAL NOTES:
A. PROVIDE AN EXTRA 5% STOCK OF ALL KELVIX LIGHTING AND REQUIRED ACCESSORIES FOR SPARES

LIGHT FIXTURE SCHEDULE

TYPE	VOLTAGE	LOAD	MANUFACTURER	MODEL NUMBER	DESCRIPTION	CCT	LUMENS	CRI
A	277 V	21 VA	H.E. WILLIAMS	PT-22-L26/840-RA-DIM-UNV	2X2 RECESSED TROFFER, FLAT PANEL, 0-10V DIMMING	4000 K	2600 lm	80
AE	277 V	21 VA	H.E. WILLIAMS	PT-22-L26/840-RA-DIM-UNV	2X2 RECESSED TROFFER, FLAT PANEL, 0-10V DIMMING, ON EMERGENCY POWER	4000 K	2600 lm	80
B	277 V	32 VA	H.E. WILLIAMS	PT-24-L36/840-RA-DIM-UNV	2X4 RECESSED TROFFER, FLAT PANEL, 0-10V DIMMING	4000 K	3763 lm	80
BE	277 V	32 VA	H.E. WILLIAMS	PT-24-L61/840-RA-DIM-UNV	2X4 RECESSED TROFFER, FLAT PANEL, 0-10V DIMMING, ON EMERGENCY POWER	4000 K	6000 lm	80
C	277 V	24 VA	H.E. WILLIAMS	2DR-L20-9-40-DIM-UNV-R-W-OF-WH-WH-MWT	2" RECESSED DOWNLIGHT WITH REGRESSED LENS, ACT CEILING	4000 K	1500 lm	80
CE	277 V	24 VA	H.E. WILLIAMS	2DR-L20-9-40-DIM-UNV-R-W-OF-WH-WH-MWT	2" RECESSED DOWNLIGHT WITH REGRESSED LENS, ACT CEILING, ON EMERGENCY POWER	4000 K	1500 lm	80
D	277 V	24 VA	H.E. WILLIAMS	2DR-L20-9-40-DIM-UNV-R-W-OF-WH-WH-MWT	2" RECESSED DOWNLIGHT WITH REGRESSED LENS, HARD CEILING	4000 K	2000 lm	80
D35	277 V	24 VA	H.E. WILLIAMS	2DR-L20-9-40-DIM-UNV-R-W-OF-WH-WH-MWT	2" RECESSED DOWNLIGHT WITH REGRESSED LENS, HARD CEILING, ON EMERGENCY POWER	4000 K	2000 lm	80
DE	277 V	24 VA	H.E. WILLIAMS	2DR-L20-9-40-DIM-UNV-R-W-OF-WH-WH-MWT	2" RECESSED DOWNLIGHT WITH REGRESSED LENS, HARD CEILING	3500 K	2000 lm	80
F	277 V	33 VA	H.E. Williams	75R-4-L50/840-DIM-UNV	75R ROUND LENS LED STRIP, PENDANT MOUNTED	4000 K	2000 lm	80
G4	277 V	18 VA	LEDALITE	3901L94022QS404DE1NNNC	4-FT LINEAR LENSED, GRAY TRIM, 0-10V DIMMER, SOFFIT	4000 K	5000 lm	80
G6	277 V	28 VA	LEDALITE	3901L94022QS406DE1NNNC	6-FT LINEAR LENSED, GRAY TRIM, 0-10V DIMMER, SOFFIT	4000 K	2178 lm	90
G8	277 V	37 VA	LEDALITE	3901L94022QS408DE1NNNC	8-FT LINEAR LENSED, GRAY TRIM, 0-10V DIMMER, SOFFIT	4000 K	3388 lm	90
H	277 V	24 VA	SCOTT ARCH LIGHTING	S3A81-L24-40K-BA	34" BRUSHED ALUMINUM WALL MOUNTED SCONCE	4000 K	4477 lm	90
JE	277 V	25 VA	CAMMAN LIGHTING	W610-2-4-LN-35K-CLV-MV-PAL	ELEVATOR LOBBY SCONCE, INDIRECT LIGHT, ON EMERGENCY POWER	4000 K	1608 lm	80
L	277 V	19 VA	COLOMBIA	CUC3-CS-ED120	3-FT UNDER CABINET LIGHT	4000 K	1177 lm	90
M	277 V	7 VA	KELVIX	DV35K-24V	ELEVATOR & ENTRY LOBBY COVE LIGHTING - KELVIX TAPE LIGHT, 700LM/FT, 6.6W/FT, MOUNT IN CHANNEL	3500 K	700 lm	90
N	277 V	4 VA	KELVIX	DK35K-24V	ENTRY LOBBY WALL LIGHTING - KELVIX TAPE LIGHT, 400LM/FT, 3.9W/FT, MOUNT IN CHANNEL CH-014-C-FR-PV, ULV96 POWER SUPPLY	3500 K	400 lm	90
P1	277 V	4 VA	FRY-REGLET	LED FLATBASE	RECEPTION DESK HIGHLIGHT - FRY REGLET CHANNEL WITH INTEGRAL TAPE LIGHT AND LINEARdrive 100/M DRIVER, 3.82W/FT, 550lm/FT, COORDINATE INSTALL WITH ARCHITECTURAL	4000 K	550 lm	80
P2	277 V	4 VA	FRY REGLET	LI MILLWORK MID F8	ENTRY LOBBY UP/DOWN WALL GRAZE - FRY REGLET CHANNEL WITH INTEGRAL TAPE LIGHT AND LINEARdrive 100/M DRIVER, 3.82W/FT, 550lm/FT, COORDINATE INSTALL WITH ARCHITECTURAL	3500 K	550 lm	80
Q8	277 V	37 VA	LEDALITE	TM-0-1-L-940-N-B-F-F-30-N-NN-08-D-E-1-N-NN-B	8FT PENDANT MOUNTED LINEAR, BLACK FINISH	4000 K	7540 lm	90
X1	277 V	5 VA	Dual-Life	LE-RNE	EXIT SIGN WITH INTEGRAL BATTERY, SEE LEGEND FOR MORE DETAILS.			
X2	277 V	5 VA	Dual-Life	LE-RNE	EXIT SIGN WITH INTEGRAL BATTERY, 2 SIDED, SEE LEGEND FOR MORE DETAILS.			

Lighting Calculations			
#	Space	Average	Max/Min

200	ELEV LOBBY	15 fc	7.0
201	WOMENS	32 fc	8.1
202	MENS	27 fc	6.5
203	MECH.	41 fc	2.2
205	APC ROOM	55 fc	3.1
206	STORAGE	20 fc	2.8
207	BREAK ROOM	34 fc	1.9
212	STORAGE	23 fc	2.8
213	OFFICE	34 fc	3.2
214	OPEN OFFICE	36 fc	16.7
215	BREAK ROOM	33 fc	7.2
216	OFFICE	33 fc	2.6
216A	OFFICE	29 fc	3.1
217	OFFICE	27 fc	3.1
218	OFFICE	23 fc	4.4
219	OFFICE	25 fc	4.0
220	OFFICE	24 fc	4.1
221	OFFICE	24 fc	3.5
223	OFFICE	25 fc	3.2
224	OFFICE	25 fc	6.9
225	MAIL ROOM	31 fc	2.9
226	OFFICE	31 fc	2.3
227	CONFERENCE ROOM	51 fc	2.7
228	STORAGE	26 fc	2.1
229	OFFICE	24 fc	3.8
230	OFFICE	26 fc	4.0
231	OFFICE	26 fc	3.2
232	OFFICE	27 fc	3.2
233	BREAK ROOM	23 fc	4.8
234	TRAINING LAB	33 fc	3.8
235	TMC	32 fc	4.1
236	TMC NETWORK CLOSET	34 fc	1.9
237	STORAGE	17 fc	4.9
238	CONFERENCE ROOM	31 fc	10.0
240	AUDIT	38 fc	3.8
241	CORRIDOR	27 fc	4.9
242	ENTRY LOBBY	22 fc	9.9
243	JAN	26 fc	2.3
244	CORRIDOR	32 fc	2.6
245	RECEPTION	43 fc	1.9
246	ELECTRICAL ROOM	51 fc	2.2
247	VESTIBULE	21 fc	14.6

Branch Panel: H2A

Location: ELECTRICAL ROOM 246
Supply From:
Mounting: Surface
Enclosure: Type 1

AIC Rating:
Main Type: MLO
Main Rating: 225 A
MCB Rating: 225 A

Volts: 480/277 V/lye
Phases: 3
Wires: 4

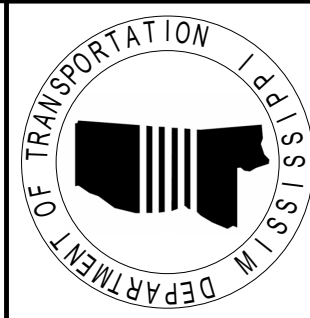
CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
1	VFD-1-1	15 A	3	1330 VA	1386 VA			15 A	VFD-2-1	22
2	-	-	-					-	-	23
3	-	-	-					-	-	24
4	VFD-1-2	15 A	3	1386 VA	1386 VA	1330 VA	1386 VA	15 A	VFD-2-2	25
5	-	-	-					-	-	26
6	-	-	-					-	-	27
7	VFD-1-3	15 A	3	1386 VA	1386 VA	1386 VA	1386 VA	15 A	VFD-2-3	28
8	-	-	-					-	-	29
9	-	-	-					-	-	30
10	VFD-1-4	15 A	3	1386 VA	1386 VA	1386 VA	1386 VA	15 A	VFD-2-4	31
11	-	-	-					-	-	32
12	-	-	-					-	-	33
13	VAV	15 A	1	1662 VA	1662 VA	1386 VA	1386 VA	15 A	VAV	34
14	VAV	15 A	1	277 VA	2770 VA	1386 VA	1386 VA	15 A	VAV	35
15	VAV	15 A	1	277 VA	2770 VA	2216 VA	3410 VA	15 A	LIGHTING	36
16	LIGHTING	20 A	1	823 VA	3240 VA			15 A	LIGHTING	37
17	LIGHTING	20 A	1		1662 VA			15 A	VAV	38
18										39
19										40
20										41
21										42
Total Load:				18416 VA	17032 VA	16652 VA				
Total Amps:				67 A	62 A	60 A				

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
HVAC	43337 VA	80.00%	34670 VA	Total Conn. Load: 52100 VA
Other	879 VA	100.00%	879 VA	Total Est. Demand: 45004 VA
				Total Conn. Current: 63 A
				Total Est. Demand Current: 55 A

Notes:





MISSISSIPPI
DEPARTMENT OF TRANSPORTATION

ADMINISTRATION BUILDING 2ND FLOOR
RENOVATION

SCHEDULES

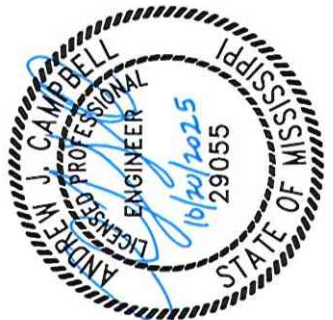
Project Number: BWO-9021-25(014)

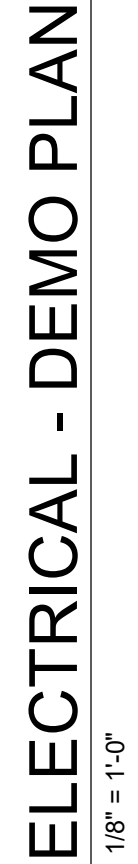
COUNTY: HINDS

WORKING NUMBER
E-002

FILENAME: BWO-9021-25(014)E-002.dgn
DESIGN TEAM: CDPL
CHECKER: DATE: 10/20/2025

SHEET NUMBER
47 of 58





KEY NOTES	
Key Value	Keynote Text
1	DEMO CIRCUIT BACK TO NEAREST JUNCTION BOX. PRESERVE AND PROTECT FOR REUSE
2	DEMOLISH DEVICES IN WALLS TO BE REMOVED.

F. TYPICAL. ALL EXISTING COMMUNICATIONS OUTLETS INSTALLED IN WALLS THAT ARE TO BE DEMOLISHED THROUGHOUT THE SECOND FLOOR ARE TO BE DEMOLISHED. REMOVE EXISTING DEVICE, COVERPLATE AND CABLEING BACK TO THE SOURCE.

G. TYPICAL. FOR EXISTING CABLE TRAY. MAINTAIN AND PROTECT DURING DEMOLITION AND RENOVATION ACTIVITIES.

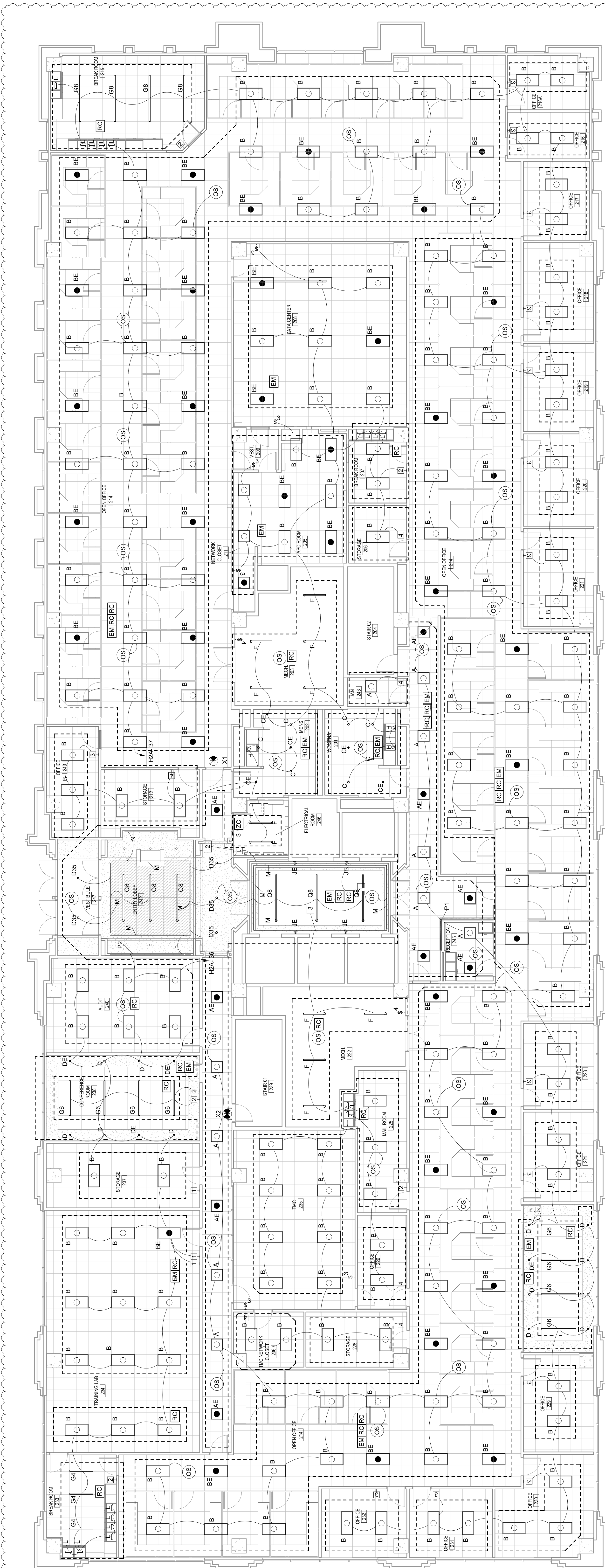
H. DEMOLISH EXISTING ELECTRICAL CIRCUITS AND SUPPORTING INFRASTRUCTURE NOT TO BE REUSED IN MECHANICAL ROOMS. COORDINATE WITH MECHANICAL CONTRACTOR.

I. EXISTING LIGHTING FIXTURES SHALL BE DEMOLISHED UNLESS NOTED OTHERWISE. CIRCUITRY SHALL BE REUSED. SEE E-101 FOR LAYOUT.

J. PROTECT AND VENTILATE ELECTRICAL EQUIPMENT IN ELECTRICAL ROOMS DURING CONSTRUCTION

[illegible]

STATE	PROJECT NO.
MISS.	BWO-9021-25(014)



LIGHTING - SECOND FLOOR

1/8" = 1'-0"

- GENERAL NOTES:
- A. CIRCUITING IS SHOWN FOR SEPARATION OF CIRCUITS ONLY. PROVIDE QUANTITY OF CONDUCTORS AS REQUIRED.
 - B. TYPICAL DASHED LINE INDICATES BOUNDARY OF LIGHTING ZONE. COORDINATE CONTROLS BASED ON ZONING.
 - C. GRAYED OUT COMPONENTS ARE EXISTING TO REMAIN AND COMPONENTS COLORED BLACK ARE NEW UNLESS NOTED OTHERWISE.
 - D. CONTRACTOR CAN REUSE EXISTING HOMERUNS, CONDUITS, & CONDUCTORS FROM 27TV LIGHTING CIRCUITS.
 - E. EMERGENCY FIXTURES INCLUDING EXIT SIGNS ARE TO BE CONNECTED TO NEAREST UNSWITCHED EMERGENCY LIGHTING CIRCUIT.
 - F. EMERGENCY FIXTURES DURING NORMAL STATE WILL DIM TO ~30% WHEN NO OCCUPANCY IS DETECTED. IN EMERGENCY STATE, EMERGENCY FIXTURES WILL RETURN TO 100%. SEE DETAIL 1/E-405.
 - G. ZONE CONTROLLERS ARE CONNECTED TO THE LIGHTING NETWORK VIA CATV.
 - H. SEE DETAIL 2/M-703 FOR ENERGY USAGE TRACKING.

KEY NOTES	
Key Value	Keynote Text
1	MOUNT ON WALL ABOVE THE DOOR
2	MOUNT LOBBY DIMMER IN ELECTRICAL ROOM WITH A PERMANENT LABEL
3	SEE DETAIL 2/E-405 FOR MORE INFORMATION

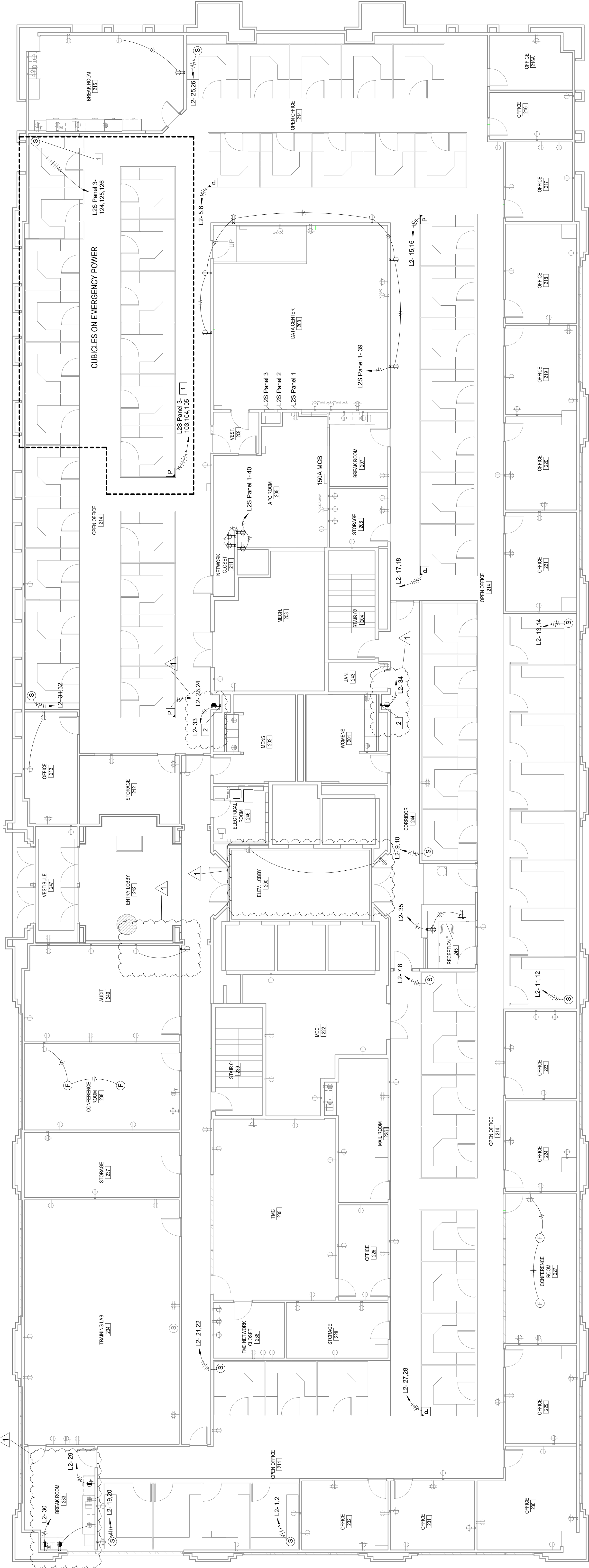
LIGHTING CONTROLS SCHEDULE			
SYMBOL	MANUFACTURER	PART NUMBER	DESCRIPTION

OS	WATTSTOPPER	LMDC-100	DLM OCCUPANCY SENSOR	OS
RC	WATTSTOPPER	LMRC-211	DIMMING ROOM CONTROLLER	RC
ZC	WATTSTOPPER	LMZC-301	ZONE CONTROLLER	ZC
EM	WATTSTOPPER	ELCU-200	EMERGENCY RELAY	EM
1	WATTSTOPPER	LMSW-211-W	1B 1R DIMMING SWITCH	1
2	WATTSTOPPER	LMDW-211-W	1B 1R DT DIMMING SWITCH	2
3	WATTSTOPPER	DW-311-W	DIMMING SENSOR SWITCH	3
4	WATTSTOPPER	DSW-301-W	OCCUPANCY SWITCH	4
\$			SINGLE POLE SWITCH	\$
\$3			3 WAY SWITCH	\$ 3



ADMINISTRATION BUILDING 2ND FLOOR RENOVATION		FLOOR PLAN - LIGHTING	
BY	REVISION	Project Number: BWO-9021-25(014)	COUNTY: HINDS
	#1 / Addendum 1	FILENAME: BWO-9021-25(014)E-101.dgn	WORKING NUMBER E-101
11/1/22		DESIGN TEAM CDPL	SHEET NUMBER 49 of 58
02		CHECKED	DATE: 10/20/2025

STATE	PROJECT NO.
MISS.	BWO-9021-25(014)



POWER

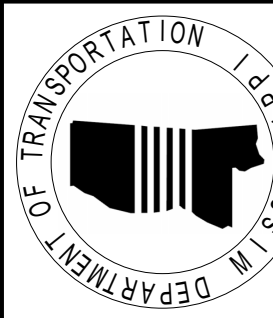
1/8" = 1'-0"

GENERAL NOTES:

- A. TYPICAL. IN WALLS THAT ARE NOT TO BE DEMOLISHED. ALL EXISTING RECEPTACLES IN FINISHED SPACES ARE TO BE REPLACED. REMOVE EXISTING DEVICE AND COVERPLATE AND REPLACE WITH NEW WHITE DEVICE AND WHITE COVERPLATE. REUSE EXISTING CIRCUITS AND JUNCTION BOX. NEW DEVICE SHALL HAVE THE SAME FORM AND FEATURES (e.g. QUAD, GFCI, ETC.) AS THE DEVICE IT REPLACES. ALL ORANGE ISOLATED GROUND DEVICES SHOULD BE REPLACED WITH A WHITE ISOLATED GROUND DEVICE MARKED WITH A TRIANGLE AND PROVIDED A WHITE COVERPLATE.
- B. GRAVED OUT COMPONENTS ARE EXISTING TO REMAIN AND COMPONENTS COLORED BLACK ARE NEW UNLESS NOTED OTHERWISE.
- C. UTILIZE EXISTING POWERPOLE CIRCUIT
- D. COORDINATE WITH SYSTEMS FURNITURE MANUFACTURER FOR CONNECTIONS

Key Value	Keynote Text
1	USE ONE DEDICATED CIRCUIT FOR EMERGENCY POWER FROM NEAREST 120V 20A EMERGENCY PANEL
2	120V PROVISIONS FOR WATER FOUNTAIN

ADMINISTRATION BUILDING 2ND FLOOR RENOVATION		FLOOR PLAN - POWER OVERALL	
Project Number: BWO-9021-25(014)		COUNTY: HINDS	
FILENAME: BWO-9021-25(014)-E-201.dgn		DATE: 11/17/25	
DESIGN TEAM: CDFL		CHECKED: DATE: 10/20/2025	
WORKING NUMBER E-201		SHEET NUMBER 50 of 58	

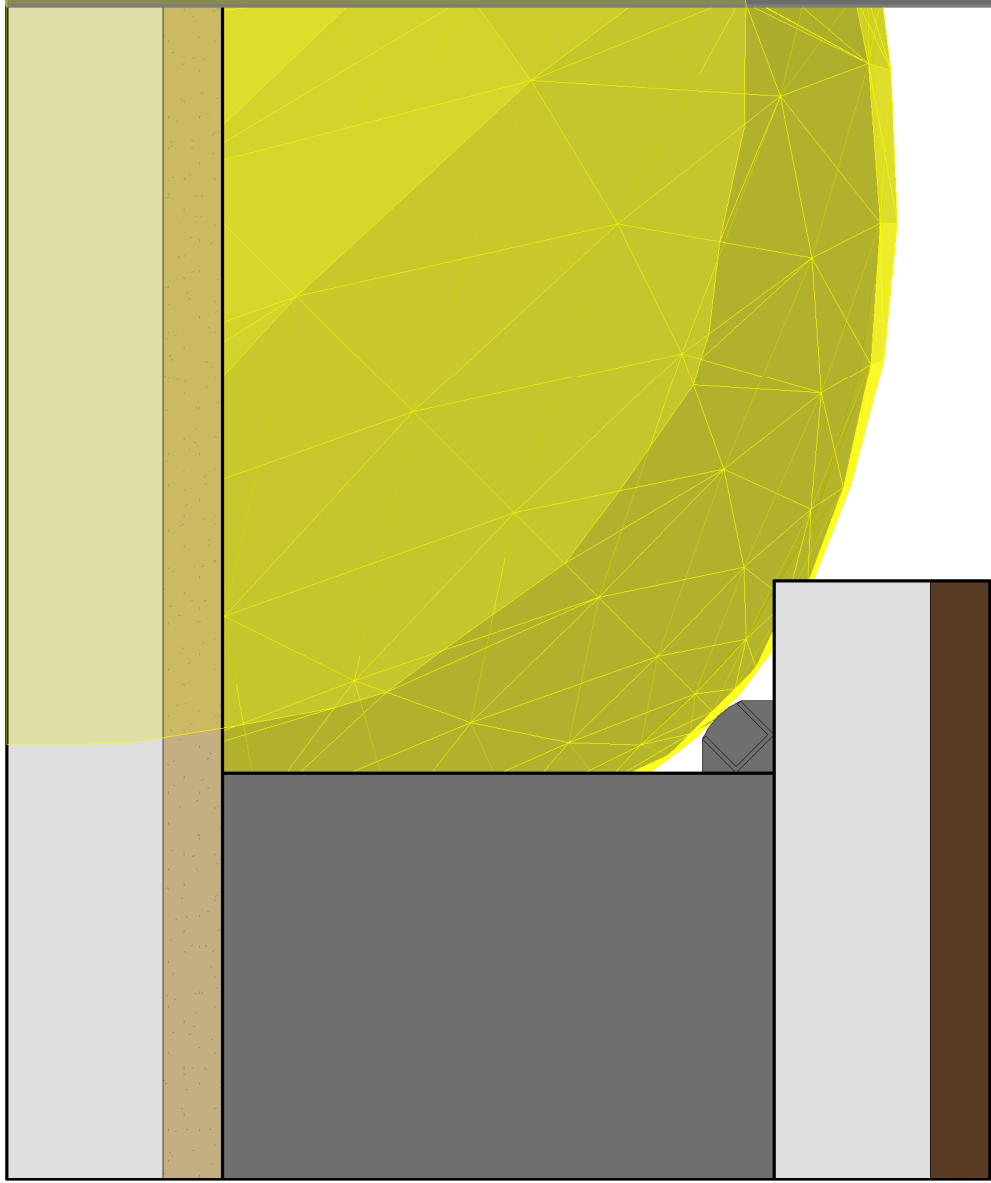



$$\underline{1/8'' = 1'-0''}$$

GENERAL NOTES:
A. COORDINATE EXACT LOCATION OF MECHANICAL EQUIPMENT WITH MECHANICAL CONTRACTOR

[illegible]

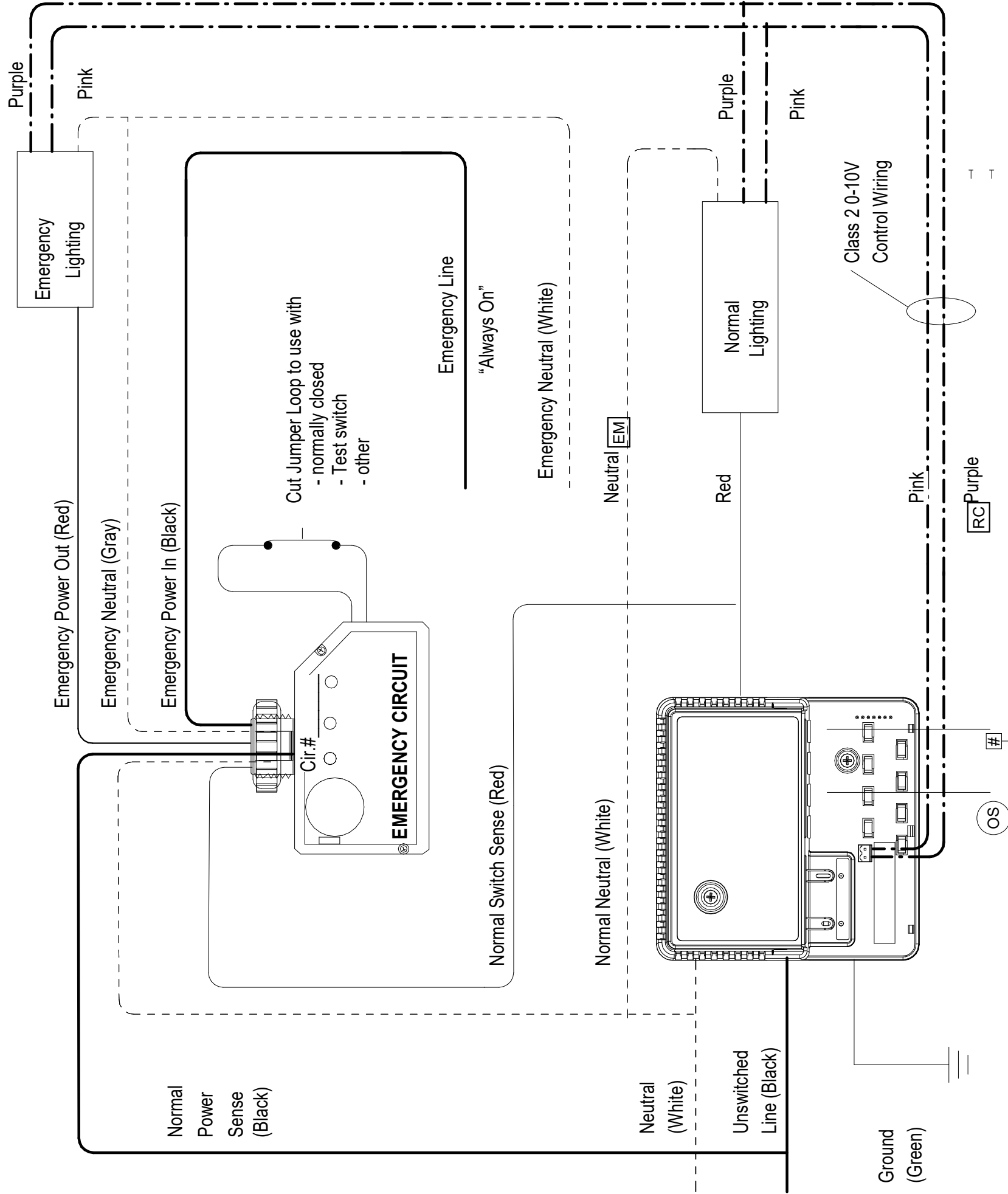
STATE	PROJECT NO.
MISS.	BWO-9021-25(014)



ENTRY & ELEV LOBBY COVE LIGHTING

2
E-405

1
E-405



EMERGENCY LIGHTING DETAIL

1 1/2" = 1'-0"

BY	REVISION	DETAILS	ADMINISTRATION BUILDING 2ND FLOOR RENOVATION
	#1 / Addendum 1		
11/1/23	023		
DATE	FILENAME:	Project Number: BWO-9021-25(014)	WORKING NUMBER
	DESIGN TEAM	CDFL	E-405
	CHECKED	Checker	SHEET NUMBER
	DATE: 10/20/2025		56 of 58