



BID #8242

HUMANITIES DEPARTMENT OFFICE ALTERATIONS

BUYER: Denise Williams

ADVERTISED DATE: Thursday, April 16, 2026

SITE WALK-THROUGH Monday, April 20, 2026 at 10AM EST
Essex County College
Purchasing Department, Conference Room, 6th Floor,
Room 6110

LAST DAY FOR QUESTIONS: Tuesday, April 21, 2026 at 9:00 AM EST

BID DUE DATE AND TIME: Tuesday, April 28, 2026 at 10:00 AM EST

Issued by: Essex County College
Purchasing Department
303 University Ave.
6th Floor
Newark, NJ 07102
Purchasing@essex.edu
www.essex.edu

INTRODUCTION

DESCRIPTION OF ESSEX COUNTY COLLEGE

Essex County College is accredited by the Middle States Commission on Higher Education and is licensed by the State of New Jersey through the Office of the Secretary of Higher Education to operate and award Associate Degrees and Certificates.

MISSION

Essex County College is an open-access community college that serves the diverse needs of students through comprehensive educational programs, training, and continuing education. Essex County College is dedicated to academic excellence and the success of its students.

VISION

A Beacon for Education and Knowledge, Essex County College attracts people who seek a better life through education. We transform lives, broaden learning and empower students to achieve their full potential. Our College community and graduates are change agents and leaders who contribute to the health, vitality, and advancement of society.

Essex County College Strategic Plan is available via [ACCESS-TO-SUCCESS-Strategic-Plan-2024-2029.pdf \(essex.edu\)](#)

OVERVIEW

Essex County College reserves the right to reject any and all proposals and the right at its option to waive or refuse to waive any defect or informality in any proposals. All responsive proposals received will be subjected to an evaluation by qualified personnel. Respondents should submit sufficient information to enable the evaluation committee to fully ascertain each respondent's capability to perform the requirements contemplated by this solicitation. All commitments made in the proposals shall become a part of any resultant contract. Proposals will not be received after such date and time indicated in the solicitation. The College reserves the right to cancel this bid at any time without cost or obligation.

Only a purchase order authorizes the performance of services. Essex County College is not responsible for services performed without an authorized Purchase Order. This is being solicited through a Fair and Open process by N.J.S.A.19:44A-20 et seq. The College is exempt from any local, state, or federal sales, use, or excise taxes.

DESCRIPTION OF THE PROJECT

Alteration of approximately 26,000 SF of offices, including select removal of masonry and framed partitions, new framed partitions, interior storefront, operable partition, finishes, electrical distribution, and lighting. The work also includes modifications to plumbing and HVAC within the work area.

The project duration is 180 calendar days from Notice To Proceed (NTP).

EVALUATION AND CONSIDERATION OF BIDS

Incomplete, unsigned, modifications of forms or missing forms will **disqualify the proposal in its entirety**. The College will not request or accept corrections, substitutions, or supplemental forms after the submission deadline.

It is the intent of Essex County College to award a contract to the lowest responsible bidder. Whenever two or more quotations or bids of equal amounts are the lowest quotations or bids submitted by responsible parties, the county college may award the contract to any one of such parties, as in its discretion, it may determine.

KEY DATES

Advertised Date: Thursday, April 16, 2026

Site Walk Through: Monday, April 20, 2026 at 10AM EST
Essex County College – Purchasing Department Conference
Room, 6th Floor, Room 6110
303 University Avenue, Newark, New Jersey, 07102
(In-person attendance is not mandatory but is strongly recommended. Failure to attend does not relieve the bidder of any obligations or requirements)

Last Day for Questions: Tuesday, April 21, 2026 at 9:00 AM EST

Bid Due Date and Time: Tuesday, April 28, 2026 at 10:00 AM EST
(Bid opening date will be conducted virtually via Zoom)

Zoom Meeting ID: 910 3772 1599

Zoom Password: 995373

Link: <https://essex->

[edu.zoom.us/j/91037721599?pwd=KMG4DIWPRfNpqIVYvai0UHIVH4lgwO.1](https://essex-edu.zoom.us/j/91037721599?pwd=KMG4DIWPRfNpqIVYvai0UHIVH4lgwO.1)

PROPOSAL SUBMITTAL

Submission by fax or e-mail is NOT PERMITTED.

All responses shall be made in accordance with guidance received from the Purchasing Department and shall be returned to the address below in sealed envelopes bearing on the outside the name of the vendor:

For USPS/Hand delivery, the mailing address is:

Ms. Denise Williams
Essex County College
303 University Avenue,
Purchasing Department
6th Floor, Room #6106
Newark, New Jersey, 07102
RE: BID #8242 - Humanities Department Office Alterations

CONTACT FOR ALL QUESTIONS

The specific section, bid number, and page number to which each question refers are to be indicated. The College will have a reasonable amount of time to respond to questions or concerns. It is the College's intent to respond to all appropriate questions and concerns; however, the College reserves the right to decline to respond to any question or concern.

Any response by the College to inquiries from one respondent will be furnished to all vendors as an amendment or clarification to this bid, if this information is necessary for submitting qualifications or if the lack of such information would be prejudicial to a uniform response.

As a courtesy if not bidding, please respond No-Bid with brief explanation via e-mail to purchasing@essex.edu

From the date of issuance of this Bid until the final selection is made, proposers shall not contact any public employee/official who is involved in any way with the Bid, including but not limited to employees/officials of Essex County College or any consultant or advisor thereof.

The College shall not be obligated to explain the results of the evaluation process to any Respondent.

Inquiries on matters requiring further clarification concerning the contents of this document should be directed in written form via email to:

Ms. Denise Williams
Purchasing
RE: BID #8242 - Humanities Department Office Alterations
E-mail: purchasing@essex.edu

BID FORMAT

Vendors must include one (1) original clearly marked as “Original” and One (1) hard copy of their bid and one (1) electronic copy on a portable USB flash drive. **Do not add passwords to the USB flash drive.**

INSURANCE REQUIREMENTS

The insurance documents include but are not limited to the following coverages. The successful bidder shall provide coverage so that all insurance coverage must be in effect no later than 12:01 A.M. EST at the start of the day of the contract and remain in effect for the duration of the contract, including any extensions.

1. The coverage maintained by the Contractor shall be written by companies licensed to do business in the State of New Jersey and maintaining an AM BEST rating of A- or better with a financial size rating of Class IX or larger. *All insurance shall contain a waiver of subrogation against the Owner.*
2. Commercial General Liability insurance is written on an occurrence form including independent contractor liability, products/completed operations liability, and contractual liability, covering but not limited to the liability assumed under the indemnification provisions of this contract. ***Coverage for bodily injury and property damage claims arising out of the professional acts of the general contractor and subcontractors shall also be included.*** The policy shall not include any endorsement that restricts or reduces coverage as provided by the ISO CG0001 form without the approval of the Owner. Commercial General Liability:

The minimum limits of liability shall not be less than a combined single limit of one million dollars (\$1,000,000) per occurrence, two million dollars (\$2,000,000) general aggregate, two million dollars (\$2,000,000) product/completed operations aggregate. The Products and Completed Operations insurance shall be maintained for one (1) year or more after final payment. A “per project endorsement” shall be included, so that the general aggregate limit applies solely to the project that is the subject of this contract.

3. Commercial Auto Liability: Liability covering owned, non-owned, and hired vehicles. The limits of liability shall not be less than a combined single limit of one million dollars (\$1,000,000) per occurrence.
4. Professional Liability with limits not less than \$1,000,000 per occurrence.
5. Excess Liability applying excess of primary to the commercial general liability, commercial automobile liability, and employer’s liability insurance shall be provided with minimum limits (\$1,000,000) per occurrence and a (\$1,000,000) general aggregate.

6. Worker's Compensation: Worker's Compensation Insurance applicable to the laws of the State of New Jersey and other State or Federal jurisdictions required to protect the employees of the Contractor and any Subcontractor who will be engaged in the performance of this Contract. The certificate must so indicate that no proprietor, partner, executive officer, or member is excluded. This insurance shall include Employers' Liability Protection with a limit of liability not less than one million dollars (\$1,000,000) bodily injury, each occurrence, one million dollars (\$1,000,000) disease, each employer, and one million dollars (\$1,000,000) disease, aggregate limit. Including the employer's liability insurance under the umbrella insurance can satisfy the limit requirements.
7. The General Liability Insurance General Aggregate and Excess Liability limits shall apply and be written exclusively, in total, to this Project only. A per-project endorsement for all coverage and limits must be included in each policy.
 - Bodily injury and property damage insurance policies shall be so written as to provide coverage for special hazards where such hazards will be incidental to subcontractors' work.
8. The contractor and subcontractor shall list, for all liability policies, with the exception of Worker's Compensation on the certificate of insurance, all additional insureds including:
 - Essex County College
 - Name of Architects and their consultants
 - Name of Construction Manager & their consultants
 - Owners consultants, other consultants, agents, and employees, including its individual members.

REQUIRED INSURANCE REQUIREMENT

1. The General Contractor is required to purchase a Builder's Risk policy for the scope of the contract. The General Contractor is required to purchase an owner-contractor protective liability policy with minimum limits of \$1M for each occurrence-bodily injury and property damage with a \$2M General Aggregate- per location-per project.

The Contractor is responsible for purchasing both a Builder's Risk policy for renovations and an Owner Contractor Protective liability policy to be in force at the time the project begins and in effect after it has concluded. OCP coverage provides project owners with additional coverage beyond what they may receive if they are named as additional insured on a contractor's commercial general liability policy. OCP coverage helps to reduce the project owner's liability on a construction project and includes:

- Dedicated coverage limits specifically for the project owner
- Primary coverage for the owner without contribution from the owner's other insurance or the contractor's general liability coverage

FREQUENTLY ASKED QUESTIONS

BID #8242

HUMANITIES DEPARTMENT OFFICE ALTERATIONS

TO: All Bidders

NOTICE: The following are frequently asked questions submitted. The information contained herein supplements and/or supersedes the specific parts of the documents referred to in each item and shall be attached and becomes a part thereof. All other provisions shall remain in full force and effect as set forth on the original documents.

Question 1: Please provide the item name or model number for the acoustical panels, as the details on the drawings are insufficient.

ACOUSTICAL PANELS

 BASIS OF DESIGN:

ATS ACOUSTICS, ORIGINAL ACOUSTIC PANELS, 2" THICK X 36" X 36"
COLOR TO BE SELECTED BY ARCHITECT
SUSPEND 6" BELOW CONC W/ ATS ACOUSTICAL CLOUD INSTALLATION
HARDWARE

Answer: The acoustical panels are ATS original series (fabric-wrapped fiberglass panels), 2" thick, with fabric color to be selected by architect. Provide ATS's ceiling cloud hardware (clip / eyelet combination).

Question 2: Please advise on contact information of existing Building Vendors like Fire Alarm, Roofer, Sprinkler, BMS/controls, etc.

Answer:

- The Fire Alarm system: JCI/Simplex
- The BMS controls: Siemens
- Fire Sprinkler System: JCI/Simplex
- Roofing: Sky General Construction (maintenance and repairs only)
- Data Vendor: JCT

Question 3: Is there an allowance? If so, is it to be included in the base bid?

Answer: Please refer to the Bid Price Sheet.

Question 4: Does this project have a PLA?

Answer: No

Question 5: What is the budget?

Answer: The College is not disclosing the budget.

Question 6: Who pays for permits?

Answer: The Newark Building Department waives the College permit fees

Question 7: Who pays for special inspections if needed?

Answer: The contractor shall pay fees and will be reimbursed by the College.

Question 8: Are temp partitions required? If so where?

Answer: See section 01500 – Temporary Facilities. Temporary partitions are required on the main entrance of the Red Area and on the stairways leading to the second floor.

Question 9: Will a temp fence be required?

Answer: No

Question 10: Please provide the existing BMS vendor's name/email/phone contact information for the building.

Answer: Please refer to question #2. The phone number and email contact will be shared with the awarded vendor.

Question 11: Please provide name/email/phone contact information for the Data/LV vendor for this facility.

Answer: Please refer to question #2. The phone number and email contact will be shared with the awarded vendor.

Question 12: Please provide the name/email/phone contact information for the sprinkler vendor for this facility.

Answer: Please refer to question #2. The phone number and email contact will be shared with the awarded vendor.

Question 13: Please provide the name/email/phone contact information for the fire alarm vendor for this facility.

Answer: Please refer to question #2. The phone number and email contact will be shared with the awarded vendor.

Question 14: Who terminates the jack side and patch panel side? Is it turnkey by GC or is the wire and terminations all by owner?

Answer: Low voltage cabling and terminations all by Owner. J-hooks/trays/pathways by GC.

Question 15: For data/tele/security card access, is this backbone by GC and final devices by owner or complete turnkey by GC? Please provide current vendor if applicable.

Answer: Devices installation & programming by Owner. Low voltage cabling by Owner. J-hooks/trays/pathways by GC.

Question 16: Will the building be vacant?

Answer: The building will not be vacant. The work area will be vacant.

Question 17: Is this project regular working hours

Answer: Normal working hours are 7:00 am to 5:00 pm. Work outside these hours, including weekend, is permitted with Owner approval.

Question 18: Estimated start date of this project?

Answer: Start date of project is based on Notice to Proceed.

Question 19: Will there be a moisture test required to the concrete slab?

Answer: Yes. Contractor must perform slab moisture testing per flooring manufacturer requirements.

Question 20: What is the building keying system we are to match?

Answer: Existing system: Best Lock, SFIC.

Question 21: The plans call out ¼" skim coat of existing slab, Is there a spec? What is the square footage of this area?

Answer: See Section 035416 – Hydraulic Cement Underlayment for skim material specifications. The square footage shall be assumed to be the entire work area (26,517 SF).

Question 22: Does existing ductwork to remain have to be cleaned and tested with a report filed for record?

Answer: Yes. Existing ductwork to remain must be cleaned and provide field report of testing for record.

Question 23: Will a GPR be required?

Answer: GC is responsible to verify existing conditions. Ground Penetrated Radar (GPR) shall be performed only if required due to unforeseen slab conflicts or as directed by Owner/Engineer.

Question 24: Does the work to replace existing doors include the removal of the existing doors and frames?

Answer: Yes. Contractor shall remove all existing doors and frames at openings scheduled for new doors and frames.

Question 25: Please let me know if this bid requires DPMC certification for the prime bidder?

Answer: No.

Question 26: Do I need to include resumes?

Answer: No.

FORMS THAT MUST BE COMPLETED AND SUBMITTED

BIDDERS CHECKLIST

Bid #8242 - Humanities Department Office Alterations

Bidder is instructed to complete, sign, and return the following documents as a part of its proposal. **Initial next to the items and include the checklist in your submission. Do not modify/change any forms.**

NON-COMPLIANCE WARNING

Incomplete, unsigned, modifications of forms or missing forms will **disqualify the proposal in its entirety.**

The College will not request or accept corrections, substitutions, or supplemental forms after the submission deadline.

MANDATORY FORMS MUST BE SUBMITTED WITH YOUR BID RESPONSE

_____	Bidders Checklist
_____	Bid Pricing Form
_____	Response Sheet
_____	Non-Collusion Affidavit
_____	Statement of Ownership Disclosure
_____	Affirmative Action Compliance Notice
_____	Employee or Relative Disclosure Requirement Form
_____	Prevailing Wage Qualification Form
_____	Public Works Employers Form
_____	Mandatory Equal Employment Opportunity (EEO) Form
_____	New Jersey Anti-Discrimination Provision
_____	Americans with Disabilities Act of 1990
_____	Bid Bond
_____	Consent of Surety
_____	Surety Disclosure Statement and Certification
_____	Contractor Questionnaire / Certification
_____	Disclosure of investigation and actions involving bidder
_____	Trade Reference
_____	Consent to Thirty-Day Extension
_____	Addendum(s)
_____	Vendor Information Form
_____	Equipment Certification

_____	Bidder's Certification
_____	List of Subcontractors
_____	List of Subcontractor documents only if subcontractors are submitted. <i>(where applicable (DPMC, DPMC 701, NJ Prevailing Wage Public Works Contract Registration Certificate, Business Registration Certificate, Equal Employment Opportunity, NJ Anti-Discrimination, Americans with Disabilities Act of 1990))</i>
_____	W9 Form (download from the IRS website and submit with the package)
_____	Federally Funded Procurements
_____	Certification Regarding Lobbying
_____	Disclosure of Lobbying Activities. <i>(Only submit with the bid if your company is disclosing lobbying activities)</i>
_____	Appendix A Optional Site Visit <i>(Only submit with the bid if your company visited the site)</i>
_____	Lowest Bidder Prevailing Wage Certification
_____	Acknowledgement Record
_____	USB Flash Drive. Please do not add passwords to the USB flash drive.
_____	Certification of Non-Debarment For Federal Government Contracts
_____	One (1) original clearly marked as "Original"
_____	One (1) Copy of the bid documents. The copies need to be identical to the original.

ITEMS MUST BE PROVIDED PRIOR TO THE TIME A CONTRACT IS AWARDED:

_____	State of New Jersey Business Registration Certificate (BRC)
_____	Payment Bond
_____	Performance Bond
_____	Copy of Public Works Contractor Registration Certificate (PWCR) - State on New Jersey Department of Labor, Divisions of Wage and Hour Compliance (P. L. 1999 Chapter 238) for the bidder, and the designated subcontractors, effective on the date of bid, prior to award of contract
_____	Certificate of Liability Insurance
_____	Disclosure of Investment Activities in Iran
_____	Certification of Non-Involvement in Prohibited Activities in Russia or Belarus
_____	Initial Project Workforce Report Construction (Form AA-201) – Construction only
_____	Monthly Project Workforce Report Construction (Form AA-202) – Construction only

Name of Representative	Phone #	&	Fax #

Name of Firm

BID PRICE SHEET

BID #8242 - Humanities Department Office Alterations

BASE BID

ALLOWANCE: Add to the Base Bid \$75,000 (Seventy-Five Thousand Dollars) This allowance includes material cost, receiving, handling, and installation, labor, and Contractor overhead and profit.

Allowance #1 to be used (or not) at the Owner's discretion. Any unused portion of the allowances above are to be returned to the Owner at the completion of the project by credit change order.

BASE BID: \$ _____

CONTINGENCY ALLOWANCE # 1 General Allowance: \$ 75,000.00

TOTAL BASE BID IN FIGURES Including Allowances \$ _____

TOTAL BASE BID (Including Allowances) IN WORDS: _____

Company Name

Company Representative (sign)

Street Address

Company Representative (print)

City State Zip Code

Date Telephone# Fax#

Tax ID#

E-Mail

RESPONSE SHEET

Bid #8242 - Humanities Department Office Alterations

Company Profile

_____ Company Name

_____ Year Incorporation

_____ Total Number of Employees

1) Days and Hours of Operation: _____

2) Emergency Contact & Phone Number:

3) Do you accept purchase orders? _____

4) Do you have additional opportunities/benefits to offer students at the college? _____

5) Do you stay involved during the construction process? _____

6) Do you have prior experience working with Essex County College? If yes, please describe the work performed _____

7) How do you handle changes or unforeseen issues, such as budget changes, design modifications, or construction delays? _____

NON-COLLUSION AFFIDAVIT

State of _____

County of _____

I, _____ residing in _____
(name of affiant) (name of municipality)

in the County of _____ and State of _____, of full age,

being duly sworn according to the law on my oath depose and say that:

I am _____ of the firm of _____
(title or position) (name of firm)

_____ the bidder making this Proposal for the bid

entitled _____, and that I executed the said proposal with
(title of bid proposal)

full authority to do so; that said bidder has not directly or indirectly entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free, competitive bidding in connection with the above-named project; and that all statements contained in the said proposal and in this affidavit are true and correct, and made with full knowledge that the Board of Trustees of Essex County College relies upon the truth of the statements contained in said Proposal and in the statements contained in this affidavit in awarding the contract for the said project.

I further warrant that no person or selling agency has been employed or retained to solicit or secure such contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, except bona fide employees or bona fide established commercial or selling agencies maintained by

_____.
(name of firm)

Authorized Bidder's Representative Signature

Type or print the name of the representative

STATEMENT OF OWNERSHIP DISCLOSURE

N.J.S.A. 52:25-24.2 (P.L. 1977, c.33, as amended by P.L. 2016, c.43)

This statement shall be completed, certified, and included with all bid and proposal submissions. Failure to submit the required information is cause for automatic rejection of the bid or proposal.

Name of Organization: _____

Organization Address: _____

Part I Check the box that represents the type of business organization:

- ☐ Sole Proprietorship (skip Parts II and III, execute certification in Part IV)
- ☐ Non-Profit Corporation (skip Parts II and III, execute certification in Part IV)
- ☐ For-Profit Corporation (any type) ☐ Limited Liability Company (LLC)
- ☐ Partnership ☐ Limited Partnership ☐ Limited Liability Partnership (LLP)
- ☐ Other (be specific): _____

Part II

- ☐ The list below contains the names and addresses of all stockholders in the corporation who own 10% or more of its stock, of any class, or of all individual partners in the partnership who own a 10% or greater interest therein, or of all members in the limited liability company who owns a 10% or greater interest therein, as the case may be. (**COMPLETE THE LIST BELOW IN THIS SECTION**)

OR

- ☐ No one stockholder in the corporation owns 10% or more of its stock, of any class, no individual partner in the partnership owns a 10% or greater interest therein, or no member in the limited liability company owns a 10% or greater interest therein, as the case may be. (**SKIP TO PART IV**)

(Please attach additional sheets if more space is needed):

Name of Individual or Business Entity	Address

PART III DISCLOSURE OF 10% OR GREATER OWNERSHIP IN THE STOCKHOLDERS, PARTNERS, OR LLC MEMBERS LISTED IN PART II

If a bidder has a direct or indirect parent entity which is publicly traded, and any person holds a 10 percent or greater beneficial interest in the publicly traded parent entity as of the last annual federal Security and Exchange Commission (SEC) or foreign equivalent filing, ownership disclosure can be met by providing links to the website(s) containing the last annual filing(s) with the federal Securities and Exchange Commission (or foreign equivalent) that contain the name and address of each person holding a 10% or greater beneficial interest in the publicly traded parent entity, along with the relevant page numbers of the filing(s) that contain the information on each such person. Attach additional sheets if more space is needed.

Website (URL) containing the last annual SEC (or foreign equivalent) filing	Page #'s

Please list the names and addresses of each stockholder, partner, or member owning a 10 percent or greater interest in any corresponding corporation, partnership, and/or limited liability company (LLC) listed in Part II other than for any publicly traded parent entities referenced above. The disclosure shall be continued until names and addresses of every noncorporate stockholder, and individual partner, and member exceeding the 10 percent ownership criteria established pursuant to N.J.S.A. 52:25-24.2 has been listed. **Attach additional sheets if more space is needed.**

Stockholder/Partner/Member and Corresponding Entity Listed in Part II	Address

PART IV Certification

I, (Name of Authorized Agent) being duly sworn upon my oath, hereby represent that the foregoing information and any attachments thereto to the best of my knowledge are true and complete. I acknowledge that the Board of Trustees of Essex County College is relying on the information contained herein and that thereby acknowledge that I am under continuing obligation from the date of this certification through the completion of any contracts with the College to notify the College in writing of any changes to answers and information contained herein. I acknowledge that I am aware that it is a criminal offense to make a false statement or misrepresentation in this certification, and if I do so, I recognize that I am subject to criminal prosecution under the law and that it will also constitute a material breach of my agreement(s) with Essex College and that the College at its option may declare any contract(s) resulting from this certification void and unenforceable.

Name of Authorized Agent

Title

Signature

Date

AFFIRMATIVE ACTION COMPLIANCE NOTICE

N.J.S.A. 10:5-31 and N.J.A.C. 17:27

This form is a summary of the successful vendor's requirement to comply with the requirements of N.J.S.A. 5-31 and N.J.A.C. 17:27-1 et seq.

The successful vendor shall submit to the public agency, after notification of award but prior to execution of this contract, one of the following three documents as forms of evidence:

[] A COPY OF AN EMPLOYEE INFORMATION REPORT (FORM AA302) PROVIDED BY THE DIVISION AND DISTRIBUTED TO THE PUBLIC AGENCY TO BE COMPLETED BY THE CONTRACTOR IN ACCORDANCE WITH N.J.A.C. 17:27-4;

OR

[] A COPY OF A VALID LETTER THAT THE CONTRACTOR IS OPERATING UNDER AN EXISTING FEDERALLY APPROVED OR SANCTIONED AFFIRMATIVE ACTION PROGRAM (GOOD FOR ONE YEAR FROM THE DATE OF THE LETTER);

OR

[] A COPY OF A CERTIFICATE OF EMPLOYEE INFORMATION REPORT (CEIR) APPROVAL, ISSUED IN ACCORDANCE WITH N.J.A.C. 17:27-4.

The successful vendor may obtain the Affirmative Action Employee Information Report (AA302) from the contracting unit during normal business hours.

The successful vendor(s) must submit the copies of the AA302 Report to the Division of Contract Compliance and Equal Employment Opportunity in Public Contracts (Division). The Public Agency copy is submitted to the public agency, and the vendor copy is retained by the vendor.

The undersigned vendor certifies that he/she is aware of the commitment to comply with the requirements of N.J.S.A. 10:5-31 and N.J.A.C. 17:27.1 et seq. and agrees to furnish the required forms of evidence.

The undersigned vendor further understands that his/her Bi/Proposal shall be rejected as non-responsive if said contractor fails to comply with the requirements of N.J.S.A. 10:5-31 and N.J.A.C. 17:27-1 et seq.

I CERTIFY THAT THE ABOVE INFORMATION IS CORRECT AND AUTHORIZED BY THE FOLLOWING SIGNATURE FOR COMPLIANCE AS SPECIFIED IF AWARDED THIS CONTRACT.

COMPANY NAME: _____

PRINT NAME: _____

TITLE: _____

SIGNATURE: _____

DATE: _____ Bid/Proposal # **BID #8242**

EMPLOYEE OR RELATIVE DISCLOSURE REQUIREMENT

This form is to be completed by all bidders seeking the award of any contract. No bidder shall be awarded any contract nor shall any agreement be entered into for the performance of any work or the furnishing of any materials or supplies, the cost of which is to be paid with or out of any public funds by Essex County College, unless prior to the receipt of the bid or accompanying the bid, the bidder has submitted a statement setting for the information solicited below.

1. State if you or your employees (if known) are currently employed at Essex County College.

Yes _____ No _____

If so, please indicate the name and position held at Essex County College.

2. State if any shareholder who owns 10% or more of your stock, if a corporation or partner who holds 10% or more of an interest, if a partnership, is currently employed at Essex County College. Yes _____ No _____

If so, please indicate the name and position held at Essex County College

3. State if you, or any stockholder, who owns 10% or more of your stock, if a corporation, or any partner who owns 10% or more of an interest, if a partnership, as the case may be, has any relatives employed at the College? Yes _____ No _____

If yes, please indicate their names and the nature of the relationship (e.g., brother, cousin, parent, or child).

By: _____
(Name of Contractor)

(Address)

WAGE RATE REQUIREMENTS

PART 1 - PREVAILING WAGE RATES

- A. In accordance with The New Jersey Prevailing Wage Act (N.J.S.A. 34:11-56.25 et seq.), each Contractor and Subcontractor shall comply with the following:
1. Pay to all workmen engaged in the performance of services directly upon the work not less than the prevailing rates of wages.
 2. Before each Application for Payment, furnish the Owner with an affidavit stating that all workmen have been paid the prevailing rate of wages.
 3. Keep an accurate record showing the name, craft, or trade and actual hourly rate of wages paid to each workman employed by him in connection with this work. Preserve records for 2 years from date of payment.
 4. Upon request, the Contractor and Subcontractor shall file written statements certifying to the amounts then due and owing to any and all workmen for wages due on account of the work. The statement shall set forth the names of the person whose wages are unpaid and the amount due to each. The statements shall be verified by the oaths of the Contractor or Subcontractor, as the case may be.
 5. Post the prevailing wage rates for each craft and classification involved in the work, including the effective date of any changes thereof, in prominent and easily accessible places at the site of the work and at such place, or places as used to pay workmen their wages.
- B. The current prevailing wage rates, as applicable for this Project, are to be obtained by the Bidder. Registration Application forms and copies of the "The Public Works Contractor Registration Act" may be obtained by contacting:

Contractor Registration Unit, New Jersey Department of Labor,
Division of Wage and Hour Compliance, PO Box 389, Trenton, NJ
08625

Telephone – (609) 292-9464, fax (609) 633-8591

PREVAILING WAGE QUALIFICATION FORM

Bidder's past record under the New Jersey Prevailing Wage Act (N.J.S.A. 34: 11-56.25 to 56.46 inclusive) and all acts amendatory thereof and supplemental thereto.

Special Instructions: Answer each question with a "yes" or "no" entered in the space provided and furnish additional information when required.

1. Has the bidder been notified by the Commissioner of Labor and Industry by notice issue pursuant to N.J.S.A. 34:11-56.37 that he or she has been blacklisted for failure to pay the prevailing wages as reacquired by the New Jersey Prevailing Wage Act? _____
2. Has any person having an "interest" in the Bidder within the meaning of N.J.S.A. 34: 11-56.38 been blacklisted as aforesaid? _____
3. Has any person having an interest in the Bidder within the meaning of N.J.S.A. 34: 11-56.38 had any "interest" as aforesaid, in any firm corporation or partnership been blacklisted as aforesaid? _____
4. If the answer to any of the aforesaid questions is "yes" annex a full statement showing the date of the action taken by the Commissioner of Labor and Industry, the subsequent action, if any, taken with respect to such action of the Commissioner, the name of the person, firm, corporation or partnership blacklisted by the Commissioner and nature, character, and extent of the interest existing between the bidder and the name which was blacklisted as aforesaid.
5. If awarded this contract, (pursuant to N.J.A.C. 12:60-2.1 and 6.1 effective March 1, 1992) the bidder agrees to provide "Certified Copies" of all applicable "Payroll Records" for each pay period within ten (10) days of the payment of wages. All records shall be made available for inspection to all interested parties during normal business hours by the College.

"Payroll Record" means a form satisfactory to the Commissioner, wherein is shown employee information such as name, address, social security number, craft or trade, together with the actual hourly rate of pay, actually daily, overtime, and weekly hours worked in each craft or trade, gross pay, itemized deductions and net pay paid to the employee; such record shall also include:

- A. Any fringe benefits paid to approved plans, funds, or programs on behalf of the employee; and
- B. Fringe benefits paid in cash to the employee

NOTE: The College reserves the right to withhold progress and/or final payment(s) until all records have been received by the Purchasing Department.

Acknowledgment of the above:

By: _____

Firm: _____

Title: _____

PUBLIC WORKS EMPLOYERS FORM

NOTICE FOR CERTIFIED PAYROLL RECORDS

Please be advised that effective February 18, 1992 Regulation N.J.A.C. 12:60-2.1 and 6.1 of the New Jersey Prevailing Wage Act, N.J.S.A. 34:11-56.25 et. seq requires that all public works employers shall submit a certified Payroll record to the public body or lessor which contracted for the public work project each payroll period within ten (10) days of the payment of wages.

The public body shall receive, file, and make available for inspection during normal business hours the certified payroll records. A copy of the certified payroll form may be obtained by contacting the New Jersey Department of Labor, Division of Workplace Standards, Public Contracts Section, CN 389, Trenton, NJ 08625-0389, telephone number (609) 292-2259.

[Department of Labor & Workforce Development | Public Works Contractors Required to Report Certified Payroll Records Online Starting August 15](#)

I have read the above statement and am aware of my responsibilities:

Contractor Signature

Date

Payroll on this project will be on _____ **basis.**
Weekly *Bi-Weekly*

MANDATORY EQUAL EMPLOYMENT OPPORTUNITY LANGUAGE

N.J.S.A. 10:5-31 et seq. (P.L. 1975, C. 127)

N.J.A.C. 17:27-1.1 et seq.

CONSTRUCTION CONTRACTS

During the performance of this contract, the contractor agrees as follows:

The contractor or subcontractor, where applicable, will not discriminate against any employee or applicant for employment because of age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality, or sex. Except with respect to affectional or sexual orientation and gender identity or expression, the contractor will ensure that equal employment opportunity is afforded to such applicants in recruitment and employment and that employees are treated during employment, without regard to their age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex. Such equal employment opportunity shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Public Agency Compliance Officer setting forth provisions of this nondiscrimination clause.

The contractor or subcontractor, where applicable will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex.

The contractor or subcontractor will send to each labor union, with which it has a collective bargaining agreement, a notice, to be provided by the agency contracting officer, advising the labor union or workers' representative of the contractor's commitments under this act and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

The contractor or subcontractor, where applicable, agrees to comply with any regulations promulgated by the Treasurer, pursuant to N.J.S.A. 10:5-31 et seq., as amended and supplemented from time to time and the Americans with Disabilities Act.

When hiring or scheduling workers in each construction trade, the contractor or subcontractor agrees to make good faith efforts to employ minority and women workers in each construction trade consistent with the targeted employment goal prescribed by N.J.A.C. 17:27-7.2; provided, however, that the Dept. of LWD, Construction EEO Monitoring Program, may, in its discretion, exempt a contractor or subcontractor from compliance with the good faith procedures prescribed by the following provisions, A, B, and C, as long as the Dept. of LWD, Construction EEO Monitoring Program is satisfied that the contractor or subcontractor is employing workers provided by a union which provides evidence, in accordance with standards prescribed by the Dept. of LWD, Construction EEO Monitoring Program, that its percentage of active "card-carrying" members who are minority and women workers is equal to or greater than the targeted employment goal established in accordance with N.J.A.C. 17:27-7.2. The contractor or subcontractor agrees that a good faith effort shall include compliance with the following procedures:

- A) If the contractor or subcontractor has a referral agreement or arrangement with a union for a construction trade, the contractor or subcontractor shall, within three business days of the contract award, seek assurances from the union that it will cooperate with the contractor or subcontractor as it fulfills its affirmative action obligations under this contract and in accordance with the rules promulgated by the Treasurer pursuant to N.J.S.A. 10:5-31 et. seq., as supplemented and amended from time to time and the Americans with Disabilities Act. If the contractor or subcontractor is unable to obtain said assurances from the construction trade union at least five business days prior to the commencement of construction work, the contractor or subcontractor agrees to afford equal employment opportunities to minority and women workers directly, consistent with this chapter. If the contractor's or subcontractor's prior experience with a construction trade union, regardless of whether the union has provided said assurances, indicates a significant possibility that the trade union will not refer sufficient minority and women workers consistent with affording equal employment opportunities as specified in this chapter, the contractor or subcontractor agrees to be prepared to provide such opportunities to minority and women workers directly, consistent with this chapter, by complying with the hiring or scheduling procedures prescribed under (B) below; and the contractor or subcontractor further agrees to take said action immediately if it determines that the union is not

referring minority and women workers consistent with the equal employment opportunity goals set forth in this chapter.

- B) If good faith efforts to meet targeted employment goals have not or cannot be met for each construction trade by adhering to the procedures of (A) above, or if the contractor does not have a referral agreement or arrangement with a union for a construction trade, the contractor or subcontractor agrees to take the following actions:
- (1) To notify the public agency compliance officer, the Dept. of LWD, Construction EEO Monitoring Program, and minority and women referral organizations listed by the Division pursuant to N.J.A.C. 17:27-5.3, of its workforce needs, and request referral of minority and women workers;
 - (2) To notify any minority and women workers who have been listed with it as awaiting available vacancies;
 - (3) Prior to the commencement of work, request that the local construction trade union refer minority and women workers to fill job openings, provided the contractor or subcontractor has a referral agreement or arrangement with a union for the construction trade;
 - (4) To leave standing requests for additional referral to minority and women workers with the local construction trade union, provided the contractor or subcontractor has a referral agreement or arrangement with a union for the construction trade, the State Training and Employment Service and other approved referral sources in the area;
 - (5) If it is necessary to lay off some of the workers in a given trade on the construction site, layoffs shall be conducted in compliance with the equal employment opportunity and non-discrimination standards set forth in this regulation, as well as with applicable Federal and State court decisions;
 - (6) To adhere to the following procedure when minority and women workers apply or are referred to the contractor or subcontractor:
 - (i) The contractor or subcontractor shall interview the referred minority or women worker.
 - (ii) If said individuals have never previously received any document or certification signifying a level of qualification lower than that required in order to perform the work of the construction trade, the contractor or subcontractor shall in good faith determine the qualifications of such individuals. The contractor or subcontractor shall hire or schedule those individuals who satisfy appropriate qualification standards in conformity with the equal employment opportunity and non-discrimination principles set forth in this chapter. However, a contractor or subcontractor shall determine that the individual at least possesses the requisite skills, and experience recognized by a union, apprentice program, or a referral agency, provided the referral agency is acceptable to the Dept. of LWD, Construction EEO Monitoring Program. If necessary, the contractor or subcontractor shall hire or schedule minority and women workers who qualify as trainees pursuant to these rules. All of the requirements, however, are limited by the provisions of (C) below.
 - (iii) The name of any interested women or minority individual shall be maintained on a waiting list and shall be considered for employment as described in (i) above, whenever vacancies occur. At the request of the Dept. of LWD, Construction EEO Monitoring Program, the contractor or subcontractor shall provide evidence of its good faith efforts to employ women and minorities from the list to fill vacancies.
 - (iv) If, for any reason, said contractor or subcontractor determines that a minority individual or a woman is not qualified or if the individual qualifies as an advanced trainee or apprentice, the contractor or subcontractor shall inform the individual in writing of the reasons for the determination, maintain a copy of the determination in its files, and send a copy to the public agency compliance officer and to the Dept. of LWD, Construction EEO Monitoring Program.

(7) To keep a complete and accurate record of all requests made for the referral of workers in any trade covered by the contract, on forms made available by the Dept. of LWD, Construction EEO Monitoring Program and submitted promptly to the Dept. of LWD, Construction EEO Monitoring Program upon request.

- C) The contractor or subcontractor agrees that nothing contained in (B) above shall preclude the contractor or subcontractor from complying with the union hiring hall or apprenticeship policies in any applicable collective bargaining agreement or union hiring hall arrangement, and, where required by custom or agreement, it shall send journeymen and trainees to the union for referral, or to the apprenticeship program for admission, pursuant to such agreement or arrangement. However, where the practices of a union or apprenticeship program will result in the exclusion of minorities and women or the failure to refer minorities and women consistent with the targeted county employment goal, the contractor or subcontractor shall consider for employment persons referred pursuant to (B) above without regard to such agreement or arrangement; provided further, however, that the contractor or subcontractor shall not be required to employ women and minority advanced trainees and trainees in numbers which result in the employment of advanced trainees and trainees as a percentage of the total workforce for the construction trade, which percentage significantly exceeds the apprentice to journey worker ratio specified in the applicable collective bargaining agreement, or in the absence of a collective bargaining agreement, exceeds the ratio established by practice in the area for said construction trade. Also, the contractor or subcontractor agrees that, in implementing the procedures of (B) above, it shall, where applicable, employ minority and women workers residing within the geographical jurisdiction of the union.

After notification of award, but prior to signing a construction contract, the contractor shall submit to the public agency compliance officer and the Dept. of LWD, Construction EEO Monitoring Program an initial project workforce report (Form AA-201) electronically provided to the public agency by the Dept. of LWD, Construction EEO Monitoring Program, through its website, for distribution to and completion by the contractor, in accordance with N.J.A.C. 17:27-7. The contractor also agrees to submit a copy of the Monthly Project Workforce Report once a month thereafter for the duration of this contract to the Dept. of LWD, Construction EEO Monitoring Program, and to the public agency compliance officer.

The contractor agrees to cooperate with the public agency in the payment of budgeted funds, as is necessary, for on-the-job and/or off-the-job programs for outreach and training of minorities and women.

- D) The contractor and its subcontractors shall furnish such reports or other documents to the Dept. of LWD, Construction EEO Monitoring Program as may be requested by the Dept. of LWD, Construction EEO Monitoring Program from time to time in order to carry out the purposes of these regulations, and public agencies shall furnish such information as may be requested by the Dept. of LWD, Construction EEO Monitoring Program for conducting a compliance investigation pursuant to N.J.A.C. 17:27-1.1 et seq.

This Agreement entered into as of the day and year have first written above.

Company Representative (print)

Company Representative (sign)

Company Name:_____

NEW JERSEY ANTI-DISCRIMINATION PROVISIONS

N.J.S.A. 10:2-1 ET SEQ.

Pursuant to N.J.S.A. 10:2-1, if awarded a contract, the contractor agrees that:

- a. In the hiring of persons for the performance of work under this contract or any subcontract hereunder, or for the procurement, manufacture, assembling, or furnishing of any such materials, equipment, supplies, or services to be acquired under this contract, no contractor, nor any person acting on behalf of such contractor or subcontractor, shall, by reason of race, creed, color, national origin, ancestry, marital status, gender identity or expression, affectional or sexual orientation or sex, discriminate against any person who is qualified and available to perform the work to which the employment relates;
- b. No contractor, subcontractor, nor any person on his behalf shall, in any manner, discriminate against or intimidate any employee engaged in the performance of work under this contract or any subcontract hereunder, or engaged in the procurement, manufacture, assembling, or furnishing of any such materials, equipment, supplies or services to be acquired under such contract, on account of race, creed, color, national origin, ancestry, marital status, gender identity or expression, affectional or sexual orientation or sex;
- c. There may be deducted from the amount payable to the contractor by the contracting public agency, under this contract, a penalty of \$50.00 for each person for each calendar day during which such person is discriminated against or intimidated in violation of the provisions of the contract; and
- d. This contract may be canceled or terminated by the contracting public agency, and all money due or to become due hereunder may be forfeited, for any violation of this section of the contract occurring after notice to the contractor from the contracting public agency of any prior violation of this section of the contract.

(name of firm)

Authorized Bidder's Representative Signature

Type or print the name of the representative

AMERICANS WITH DISABILITIES ACT OF 1990

Equal Opportunity for Individuals with Disability

The contractor and the owner do hereby agree that the provisions of Title 11 of the Americans with Disabilities Act of 1990 (the "Act") (*42 U.S.C. 5121 01 et seq.*), which prohibits discrimination on the basis of disability by public entities in all services, programs, and activities provided or made available by public entities, and the rules and regulations promulgated pursuant there unto, are made a part of this contract. In providing any aid, benefit, or service on behalf of the owner pursuant to this contract, the contractor agrees that the performance shall be in strict compliance with the Act. In the event that the contractor, its agents, servants, employees, or subcontractors violate or are alleged to have violated the Act during the performance of this contract, the contractor shall defend the owner in any action or administrative proceeding commenced pursuant to this Act. The contractor shall indemnify, protect, and save harmless the owner, its agents, servants, and employees from and against any and all suits, claims, losses, demands, or damages, of whatever kind or nature arising out of or claimed to arise out of the alleged violation. The contractor shall, at its own expense, appear, defend, and pay any and all charges for legal services and any and all costs and other expenses arising from such action or administrative proceeding or incurred in connection therewith. In any and all complaints brought pursuant to the owner's grievance procedure, the contractor agrees to abide by any decision of the owner which is rendered pursuant to said grievance procedure. If any action or administrative proceeding results in an award of damages against the owner, or if the owner incurs any expense to cure a violation of the ADA which has been brought pursuant to its grievance procedure, the contractor shall satisfy and discharge the same at its own expense.

The owner shall, as soon as practicable after a claim has been made against it, give written notice thereof to the contractor along with full and complete particulars of the claim, if any action or administrative proceeding is brought against the owner or any of its agents, servants, and employees, the owner shall expeditiously forward or have forwarded to the contractor every demand, complaint, notice, summons, pleading, or other process received by the owner or its representatives.

It is expressly agreed and understood that any approval by the owner of the services provided by the contractor pursuant to this contract will not relieve the contractor of the obligation to comply with the Act and to defend, indemnify, protect, and save harmless the owner pursuant to this paragraph.

It is further agreed and understood that the owner assumes no obligation to indemnify or save harmless the contractor, its agents, servants, employees and subcontractors for any claim which may arise out of their performance of this Agreement. Furthermore, the contractor expressly understands and agrees that the provisions of this indemnification clause shall in no way limit the contractor's obligations assumed in this Agreement, nor shall they be construed to relieve the contractor from any liability, nor preclude the owner from taking any other actions available to it under any other provisions of the Agreement or otherwise at law.

(name of firm)

Authorized Bidder's Representative Signature

Type or print name of representative

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned, _____ as
Principal, and _____ as Surety, is
hereby held and firmly bound unto _____ as Owner, in the Penal Sum of
_____ (\$ _____) for the payment of which, well and
truly to be made, we hereby jointly and severally bind ourselves, successors, and assigns.
Signed this _____ day of _____ 20____

The condition of the above obligation is such that whereas the Principal has submitted to
a certain bid attached hereto and hereby made a part of hereof, to enter into a contract in writing for the

NOW, THEREFORE,

- A) If said bid shall be rejected or in the alternative,
- B) If said bid shall be accepted and the Principal shall execute and deliver a contract properly completed in accordance with the said bid and shall furnish a bond for his faithful performance of the said contract, and the payment of all persons performing labor or furnishing materials in the connection therewith, and shall in all other respects perform the agreement created by the acceptance of the said bid,

Then this obligation shall be void, otherwise the same shall remain in full force and effect; it is expressly understood and agreed that the liability of the surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its bond shall be in no way impaired or affected by any extension of the time within which the Owner may accept such bid, and Surety does hereby waive notice of any such extension. '

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

Principal

BY: _____
Witness

Surety

BY: _____
Witness

Attorney-in-Fact

CONSENT OF SURETY

A performance bond will be required from the successful contractor on this project, and consequently, all bidders shall submit, with their bid, a consent of surety in substantially the following form:

To: _____
(Owner)

Re: _____
(Contractor)

(Project Description)

This is to certify that the _____
(Surety Company)

Will provide to _____ a performance bond in
(Owner)

The full amount of awarded contract if the said contractor is awarded a contract for the above project.

(CONTRACTOR)

(Authorized Agent of Surety Company)

Date: _____

**CONSENT OF SURETY MUST BE SIGNED BY AN AUTHORIZED AGENT OR REPRESENTATIVE OF
A SURETY COMPANY AUTHORIZED TO DO BUSINESS IN NEW JERSEY AND NOT BY THE
INDIVIDUAL OR COMPANY REPRESENTATIVE SUBMITTING THE BID/PROPOSAL.**

PAYMENT BOND INCORPORATING THIS LANGUAGE

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: that

(Name of Contractor)

(Address of Contractor)

a _____ hereinafter-called Principal,
(Corporation, Partnership or Individual)

and _____
(Name of Surety)

(Address of Surety)

Hereinafter called Owner, in the penal sum of _____
_____ Dollars, \$(_____)

In lawful money of the United States, for the payment of which sum will and truly be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with

Dated the _____ day of _____, 20____, a copy of which is hereto attached and made a part hereof for the construction of:

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms, subcontractors, and corporations furnishing materials for or performing labor in the prosecution of the work provided for in such contract, and any authorized extension or modification thereof, including all amounts due for materials, lubricant, oil gasoline, coal and coke repairs on machinery, equipment and tools consumed or used in connection with the construction of such work, and all insurance premiums on said work, and for all labor used to perform such work whether by the subcontractor or otherwise, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said Surety, for value, received hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the contract or to the work to be performed thereunder of the specifications accompanying the same shall in any wise affect its obligation on this bond, and it does hereby waive notice of any such change, the extension of time, alteration or addition to the terms of the contract or the work or the specifications.

PROVIDED, FURTHER, that no final settlement between Essex County College and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in _____ counterparts,
(Number)

each one of which shall be deemed an original, this the _____ day of _____, 20__

ATTEST:

(Principal Secretary)
(SEAL)

(Principal)

BY: _____

(Address)

(Witness as to Principal)

(Address)

(Surety)

ATTEST:

(Surety Secretary)

BY: _____
(Attorney-in Fact)

(SEAL)

(Witness as to Surety)

(Address)

NOTE: Date of Bond must not be before date of Contract. If Contractor is Partnership,
All partners should execute the bond.

IMPORTANT: Surety companies executing bonds and Consent of Surety Form herein must be licensed to transact
business in the State of New Jersey.

SURETY DISCLOSURE STATEMENT AND CERTIFICATION

_____, surety(ies) on the attached bond, hereby certifies (y) the following:

- (1) The surety meets the applicable capital and surplus requirements of R.S.17: 17-6 or R.S.17: 17-7 as of the surety's most current annual filing with the New Jersey Department of Insurance.
- (2) The capital (where applicable) and surplus, as determined in accordance with the applicable laws of this State, of the surety(ies) participating in the issuance of the attached bond is (are) in the following amount(s) as of the calendar year ended December 31, _____ (most recent calendar year for which capital and surplus amounts are available), which amounts have been certified as indicated by certified public accountants (indicating separately for each surety that surety's capital and surplus amounts, together with the name and address of the firm of certified public accounts that shall have certified those amounts):

_____.

- (3) (a) Concerning each surety participating in the issuance of the attached bond that has received from the United States Secretary of the Treasury and certificate of authority pursuant to 31 U.S.C. §9305, the underwriting limitation established therein and the date as of which that limitation was effective is as follows (indicating for each such surety that surety's underwriting limitation and the effective date thereof):

_____.

(b) Concerning each surety participating in the issuance of the attached bond that has not received such a certificate of authority from the United States Secretary of the Treasury, the underwriting limitation of that surety as established pursuant to R.S.17:18-9 as of (date on which such limitation was so established is as follows: (indicating for each such surety that surety's underwriting limitation and the date on which that limitation was established):

_____.

- (4) The amount of the bond to which this statement and certification is attached is
\$ _____.

(5) If, under one or more contracts of reinsurance, the amount of the bond indicated under item (4) above exceeds the total underwriting limitation of all sureties on the bond as outlined in items (3)(a) or (3)(b) above, or both, then for each such contract of reinsurance:

(a) The name and address of each such reinsurer under that contract and the amount of that reinsurer's participation in the contract is as follows:

_____ ; and

(b) Each surety that is a party to any such contract of reinsurance certifies that each reinsurer listed under item (5) (a) satisfies the credit for reinsurance requirement established under P.L. 1993, c.243 (C.17:51B-1 et seq.) and any applicable regulations in effect as of the date on which the bond to which this statement and certification are attached shall have been filed with the appropriate public agency.

CERTIFICATE

(To be completed by an authorized certifying agent for each surety on the bond)

I _____, as _____
(Name of agent) (Title of agent)

for _____, a corporation/mutual
(Name of surety)

Insurance company/other (indicating type of business organization) (circle one) domicile

in _____, DO HEREBY CERTIFY that, to the
(State of domicile)

best of my knowledge, the foregoing statements made by me are true and ACKNOWLEDGE that, if any of those statements are false, this bond is VOID.

**THIS STATEMENT AND CERTIFICATION SHALL BE COMPLETE IN ALL RESPECTS AND DULY
ACKNOWLEDGED ACCORDING TO LAW AND ATTACHED TO THE PAYMENT OR
PERFORMANCE BOND.**

CERTIFICATION OF NON-DEBARMENT
FOR FEDERAL GOVERNMENT CONTRACTS
N.J.S.A. 52:32-44.1 (P.L. 2019, c.406)

This certification shall be completed, certified to, and submitted to the contracting unit prior to contract award, except for emergency contracts where submission is required prior to payment.

PART I: VENDOR INFORMATION	
Individual or Organization Name	
Physical Address of Individual or Organization	
Unique Entity ID (if applicable)	
CAGE/NCAGE Code (if applicable)	
Check the box that represents the type of business organization:	

- ☐ Sole Proprietorship (skip Parts III and IV) ☐ Non-Profit Corporation (skip Parts III and IV)
- ☐ For-Profit Corporation (any type) ☐ Limited Liability Company (LLC) ☐ Partnership
- ☐ Limited Partnership ☐ Limited Liability Partnership (LLP)
- ☐ Other (be specific): _____

PART II – CERTIFICATION OF NON-DEBARMENT: Individual or Organization			
I hereby certify that the individual or organization listed above in Part I is not debarred by the federal government from contracting with a federal agency. I further acknowledge: that I am authorized to execute this certification on behalf of the above-named organization; that the Essex County College is relying on the information contained herein and that I am under a continuing obligation from the date of this certification through the date of contract award by Essex County College to notify the Essex County College in writing of any changes to the information contained herein; that I am aware that it is a criminal offense to make a false statement or misrepresentation in this certification, and if I do so, I am subject to criminal prosecution under the law and that it will constitute a material breach of my agreement(s) with the Essex County College permitting the Essex County College to declare any contract(s) resulting from this certification void and unenforceable.			
Full Name (Print):		Title:	
Signature:		Date:	

PART III – CERTIFICATION OF NON-DEBARMENT: Individual or Entity Owning Greater than 50 Percent of Organization

Section A (Check the Box that applies)

☐	Below is the name and address of the stockholder in the corporation who owns more than 50 percent of its voting stock, or of the partner in the partnership who owns more than 50 percent interest therein, or of the member of the limited liability company owning more than 50 percent interest therein, as the case may be.

Name of Individual or Organization	

Physical Address	

OR

☐	No one stockholder in the corporation owns more than 50 percent of its voting stock, or no partner in the partnership owns more than 50 percent interest therein, or no member in the limited liability company owns more than 50 percent interest therein, as the case may be.

Section B (Skip if no Business entity is listed in Section A above)

☐	Below is the name and address of the stockholder in the corporation who owns more than 50 percent of the voting stock of the organization's parent entity, or of the partner in the partnership who owns more than 50 percent interest in the organization's parent entity, or of the member of the limited liability company owning more than 50 percent interest in organization's parent entity, as the case may be.

Stockholder/Partner/Member Owning Greater Than 50 Percent of Parent Entity	

Physical Address	

OR

☐	No one stockholder in the parent entity corporation owns more than 50 percent of its voting stock, no partner in the parent entity partnership owns more than 50 percent interest therein, or no member in the parent entity limited liability company owns more than 50 percent interest therein, as the case may be.

Section C – Part III Certification

I hereby certify that no individual or organization that is debarred by the federal government from contracting with a federal agency owns greater than 50 percent of the **Organization listed above in Part I** or, if applicable, owns greater than 50 percent of a parent entity of

<name of organization>. I further acknowledge: that I am authorized to execute this certification on behalf of the above-named organization; that the **Essex County College** is relying on the information contained herein and that I am under a continuing obligation from the date of this certification through the date of contract award **Essex County College** to notify the **Essex County College** in writing of any changes to the information contained herein; that I am aware that it is a criminal

offense to make a false statement or misrepresentation in this certification, and if I do so, I am subject to criminal prosecution under the law and that it will constitute a material breach of my agreement(s) with the **Essex County College**, permitting the **Essex County College** to declare any contract(s) resulting from this certification void and unenforceable.

Full Name (Print):		Title:	
Signature:		Date:	

Part IV – CERTIFICATION OF NON-DEBARMENT: Contractor – Controlled Entities

Section A

☐	Below is the name and address of the corporation(s) in which the Organization listed in Part I owns more than 50 percent of voting stock, or of the partnership(s) in which the Organization listed in Part I owns more than 50 percent interest therein, or of the limited liability company or companies in which the Organization listed above in Part I owns more than 50 percent interest therein, as the case may be.
Name of Business Entity	Physical Address
Add additional sheets if necessary	
OR	
☐	The Organization listed above in Part I does not own greater than 50 percent of the voting stock in any corporation and does not own greater than 50 percent interest in any partnership or any limited liability company.

Section B (skip if no business entities are listed in Section A of Part IV)

☐	Below are the names and addresses of any entities in which an entity listed in Part III A owns greater than 50 percent of the voting stock (corporation) or owns greater than 50 percent interest (partnership or limited liability company).
Name of Business Entity Controlled by Entity Listed in Section A of Part IV	Physical Address
Add additional Sheets if necessary	
OR	

☐	No entity listed in Part III A owns greater than 50 percent of the voting stock in any corporation or owns greater than 50 percent interest in any partnership or limited liability company.		
Section C – Part IV Certification			
I hereby certify that the Organization listed above in Part I does not own greater than 50 percent of any entity that that is debarred by the federal government from contracting with a federal agency and, if applicable, does not own greater than 50 percent of any entity that in turns owns greater than 50 percent of any entity debarred by the federal government from contracting with a federal agency. I further acknowledge: that I am authorized to execute this certification on behalf of the above-named organization; that the Essex County College is relying on the information contained herein and that I am under a continuing obligation from the date of this certification through the date of contract award by Essex County College to notify the Essex County College in writing of any changes to the information contained herein; that I am aware that it is a criminal offense to make a false statement or misrepresentation in this certification, and if I do so, I am subject to criminal prosecution under the law and that it will constitute a material breach of my agreement(s) with the Essex County College, permitting the Essex County College to declare any contract(s) resulting from this certification void and unenforceable.			
Full Name (Print):		Title:	
Signature:		Date:	

CONTRACTOR QUESTIONNAIRE/CERTIFICATION

Name of Company _____

Street Address _____ P.O. Box _____

City, State, Zip _____

Business Phone Number () _____ Extension _____

Emergency Phone Number () _____ Fax Number () _____

E-Mail _____

FEIN No. _____

QUESTIONNAIRE

1. How many years have you been engaged in the contracting business under your present firm or trading name?
_____ Years

2. Have you ever failed to complete any work awarded to your company?

☐ Yes

☐ No

If yes, explain _____

3. Have you ever defaulted on a contract?

☐ Yes

☐ No

If yes, explain _____

4. Have you or other principals of your company been debarred, suspended, proposed for debarment, declared ineligible, or voluntary excluded from participation in any public works projects by any federal, state, or local agencies?

☐ Yes

☐ No

If yes, explain _____

Certifications

- **Debarment**

I certify that the entity listed on the form or any person employed by this entity, are not presently on the following:

- New Jersey Department of Treasury – Consolidated Debarment Report
- New Jersey Department of Labor – Prevailing Wage Debarment List
- Federal Debarred Vendor List – Excluded Parties List System

- **Direct/Indirect Interest**

I declare and certify that no member of the Essex County College, nor any officer or employee or person whose salary is payable in whole or in part by said College or their immediate family members are directly or indirectly interested in this bid or in the supplies, materials, equipment, work or services to which it relates, or in any portion of profits thereof. If a situation so exists where a College member, employee, officer of the College has an interest in the bid, etc., then please attach a letter of explanation to this document, duly signed by the president of the firm or company.

I certify that I am not an official or employee of the Essex County College.

- **Gifts; Gratuities; Compensation**

I declare and certify that no person from my firm, business, corporation, association or partnership offered or paid any fee, commission or compensation, or offered any gift, gratuity or other thing of value to any school official, College member or employee of the Essex County College.

- **False Material Representation**

I further certify that I understand that it is a crime in the second degree in New Jersey to knowingly make a material representation that is false in connection with the negotiation, award or performance of a government contract.

Name of Company

President or Authorized Agent

Signature

DISCLOSURE OF INVESTIGATION AND ACTIONS INVOLVING BIDDER

The bidder shall provide a detailed description of any investigation, or litigation, including administrative complaints or other administrative proceedings, involving any public sector clients during the past five years including the nature and status of the investigation, and, for any litigation, the caption of the action, a brief description of the action, the date of inception, current status, and, if applicable, disposition.

Investigation:

Indicate "NONE" in the "Person or Entity" field if no investigation where undertaken.

The Name of Person or Business Entity	
Date of Inception	
Caption of Action	
Brief Description of the action	
Current Status	
Disposition Status (if applicable)	

All Answers to the above shall be submitted and certified by the principal/partner of the bidding entity authorized to do so.

I certify that all answers submitted above are true and correct:

Name of Company _____

Officer of the Bidder's name _____

Officer of the Bidder's Signature _____

***Attach/Add Investigation Information**

**TRADE REFERENCES – FOR PROJECTS OF A SIMILAR SCOPE AND NATURE TO BE
PROVIDED BY EACH BIDDER FOR THE PROJECT CONTRACT**

Bidders are to provide evidence of satisfactory completion of work of similar nature as outlined in the bid from a **minimum of three (3) similar contracts** with educational institutions, preferably in New Jersey, **within the past five (5) years.** **Incomplete, unsigned, or missing forms will disqualify the proposal in its entirety. The College will not request or accept corrections, substitutions, or supplemental forms after the submission deadline. DO NOT WRITE SEE ATTACHED. Complete this document.**

NAME OF COMPANY: _____

#1: PROJECT TITLE: _____

LOCATION: _____ \$VALUE: _____

CLIENT NAME: _____

CLIENT ADDRESS: _____

CLIENT PHONE NUMBER: _____ E-MAIL: _____

#2: PROJECT TITLE: _____

LOCATION: _____ \$VALUE: _____

CLIENT NAME: _____

CLIENT ADDRESS: _____

CLIENT PHONE NUMBER: _____ E-MAIL: _____

CONTACT PERSON NAME (FIRST AND LAST NAME) _____

#3: PROJECT TITLE: _____

LOCATION: _____ \$VALUE: _____

CLIENT NAME: _____

CLIENT ADDRESS: _____

CLIENT PHONE NUMBER: _____ E-MAIL: _____

CONTACT PERSON NAME (FIRST AND LAST NAME) _____

#4: PROJECT TITLE: _____

LOCATION: _____ \$VALUE: _____

CLIENT NAME: _____

CLIENT ADDRESS: _____

CLIENT PHONE NUMBER: _____ E-MAIL: _____

CONTACT PERSON NAME (FIRST AND LAST NAME) _____

#5: PROJECT TITLE: _____

LOCATION: _____ \$VALUE: _____

CLIENT NAME: _____

CLIENT ADDRESS: _____

CLIENT PHONE NUMBER: _____ E-MAIL: _____

CONTACT PERSON NAME (FIRST AND LAST NAME) _____

Signature _____ Date: _____

Name of Company _____

Street Address _____ P.O. Box _____

City, State, Zip _____

Business Phone Number () _____ Extension _____

Emergency Phone Number () _____

Fax Number () _____ E-Mail _____

FEIN No. _____

CONSENT TO THIRTY-DAY EXTENSION FOR AWARDED OF BIDS

In accordance with the provisions of N.J.S.A. 18A:64a-25.18, Essex County College hereby requests that any bidder who so chooses consent to the extension and holding of its bid price from sixty (60) to ninety (90) days. The ninety-day period shall be computed commencing with the date designated as the final date for receipt of the bid due date. The College, in its sole discretion, may award a contract or reject all bids at any date up until the expiration date. If the bidder consents to the extension, it may not make any claim for an increase in its bid quote, whether based on materials, labor, an extension of time, or any other factor.

If your firm agrees to consent to hold its bid pricing, please sign the below acknowledgment.

Do you give consent: Yes _____ No _____

Acknowledged for: _____
(Name of Bidder/Company)

(Signature of Authorized Representative)

Date

Name (Print)

Title

ACKNOWLEDGMENT OF RECEIPT OF ADDENDA

BID #8242 - Humanities Department Office Alterations

NOTE: This form must be submitted whether or not addenda were issued. **If no addenda were issued, check the “No Addenda were received” box and complete the signature section.**

Incomplete, unsigned, or missing forms will disqualify the proposal in its entirety. The College will not request or accept corrections, substitutions, or supplemental forms after the submission deadline.

The undersigned Bidder hereby acknowledges receipt of the following Addenda:

<u>Addendum Number</u>	<u>Date</u>	<u>Acknowledge Receipt (initial)</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

☐ No Addenda were received or included with the bid package:

Acknowledged for: _____
(Name of Bidder/Company)

(Signature of Authorized Representative)

Date

Name (Print)

Title

VENDOR REGISTRATION FORM

MAILING ADDRESS FOR PURCHASE ORDERS:

Company Name (as recorded with IRS): _____ DBA: _____

Mailing Name: _____

Street Address: _____ Suite: _____ PO Box: _____

City: _____ State: _____ Zip: _____

MAILING ADDRESS FOR PAYMENTS (if different from above):

Company Name (as recorded with IRS): _____

Mailing Name: _____

Street Address: _____ Suite: _____ PO Box: _____

City: _____ State: _____ Zip: _____

SALES CONTACT INFORMATION:

Name: _____ Title: _____

Phone: _____ Fax: _____

E-mail: _____ Website: _____

Taxpayer Identification Number (TIN): _____

☐ Taxpayer Identification Number (TIN) for Profit Organizations

☐ Taxpayer Identification Number (TIN) for Non-Profit Organization

**NOTE: W-9 FORM MUST BE INCLUDED
NON-PROFIT ORGANIZATIONS - LETTER OF THE 501(C)(3) IS REQUIRED**

ACCOUNTS RECEIVABLE CONTACT INFORMATION:

Name: _____ Title: _____

Phone: _____ Fax: _____

E-mail: _____

EQUIPMENT CERTIFICATION

The undersigned Bidder hereby certifies as follows:

The bidder owns, controls, or has proof of lease of all the necessary equipment required to accomplish the work described in the specifications. To the extent that said equipment is not currently owned or under lease by the bidder, attached hereto is documentation from that owner or leasing organization that states the equipment will be available as required by the bidder upon award of a contract.

Name of Bidder: _____

By: _____
(Signature)

Name of above: _____
(Print)

Title: _____

Date: _____

BIDDERS' CERTIFICATION

State of _____)

County of _____)

The undersigned, having knowledge of and authority to bind the BIDDER to the information herein, hereby swears, upon his oath, according to law,

1. I am the undersigned, who, on behalf of the BIDDER and with full authority to do so, has executed this Certification in connection with its Bid;
2. That the BIDDER is registered with the State of New Jersey, Department of the Treasury, Division of Revenue (ATTACH COPY OF BUSINESS REGISTRATION CERTIFICATE);
3. That the BIDDER is authorized by the New Jersey Department of the Treasury to perform work in New Jersey (ATTACH COPY OF CERTIFICATE OF AUTHORITY TO PERFORM WORK IN NEW JERSEY); and
4. The BIDDER has not, directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with the within Bid;
5. I further warrant that, no person or selling agency has been employed, or retained, to solicit, or secure, such contract upon an agreement or understanding for a commission, percentage, brokerage or contingent fee, except bona fide employee or bona fide established commercial or selling agencies identified as follows:

6. The BIDDER is not, as of this date, and has not been at any time within three (3) years immediately preceding the date on which Bids were received, included on the New Jersey State Treasurer's List of Debarred, Suspended or Disqualified Bidders; the BIDDER hereby acknowledges that it may be debarred, suspended or disqualified from contracting with the OWNER if it commits any of the acts listed in N.J.A.C. 7:1-5.2 and further acknowledges its obligation to notify the OWNER immediately if it appears that said BIDDER may be added to any such list.
7. All statements and representations contained in the BIDDER's Bid are true, complete and correct, and made with full knowledge that the OWNER shall rely upon same in awarding a public contract for the Work as defined in the Contract Documents.

Bidder's Authorized Representative
(MUST BE PRINCIPAL OWNER OR OFFICER OF BIDDER):

Signature

Print or Type Name and Title

The College hereby certifies that the NJ State Treasury Department debarment list has been checked by the issuing buyer and the successful bidder is not debarred.

Signature

Print or Type Name and Title

LIST OF SUBCONTRACTORS PURSUANT TO N.J.S.A. 18A:64A-25.25

The Bidder confirms that the Subcontractors listed below will be awarded the subcontract for the work identified if the Bidder is awarded the contract for the Project. Essex will not accept any change from the Subcontractors listed unless the listed Subcontractor provides Essex with a letter authorizing the Bidder to award a subcontract to another company. Essex has the right to reject any subcontractor with no impact on to project schedule or bid amount.

The Bidder confirm that the Subcontractors are not on the New Jersey State Debarment List.

* Certification for all **PRIME SUBCONTRACTORS** required to be named under P.L. 2000, C.72 (N.J.S.A.18A:7G-1 ET AL), where applicable (DPMC, DPMC 701, NJ Prevailing Wage Public Works Contract Registration Certificate, Business Registration Certificate, Equal Employment Opportunity, NJ Anti-Discrimination, Americans with Disabilities Act of 1990).

PLUMBING:

Company Name: _____

City/State: _____

Phone: _____

Contact: _____

Bid Amount: _____

HVAC:

Company Name: _____

City/State: _____

Phone: _____

Contact: _____

Bid Amount: _____

ELECTRICAL:

Company Name: _____

City/State: _____

Phone: _____

Contact: _____

Bid Amount: _____

STRUCTURAL STEEL:

Company Name: _____

City/State: _____

Phone: _____

Contact: _____

Bid Amount: _____

Certification for all PRIME SUBCONTRACTORS required to be named under P.L. 2000, C.72 (N.J.S.A.18A:7G-1 ET AL), where applicable (DPMC, DPMC 701, NJ Prevailing Wage Public Works Contract Registration Certificate, Business Registration Certificate, Equal Employment Opportunity, NJ Anti-Discrimination, Americans with Disabilities Act of 1990).



Did you provide the following documents for ALL the subcontractors you have listed above?

Yes or No

- ☐ Public Works Contract Registration Certificate
- ☐ Business Registration Certificate
- ☐ Equal Employment Opportunity
- ☐ NJ Anti-Discrimination
- ☐ Americans with Disabilities Act of 1990

**Request for Taxpayer
Identification Number and Certification**

Go to www.irs.gov/FormW9 for instructions and the latest information.

Give form to the
requester. Do not
send to the IRS.

Before you begin. For guidance related to the purpose of Form W-9, see *Purpose of Form*, below.

Print or type. See Specific Instructions on page 3.	1 Name of entity/individual. An entry is required. (For a sole proprietor or disregarded entity, enter the owner's name on line 1, and enter the business/disregarded entity's name on line 2.)	
	2 Business name/disregarded entity name, if different from above.	
	3a Check the appropriate box for federal tax classification of the entity/individual whose name is entered on line 1. Check only one of the following seven boxes. ☐ Individual/sole proprietor ☐ C corporation ☐ S corporation ☐ Partnership ☐ Trust/estate ☐ LLC. Enter the tax classification (C = C corporation, S = S corporation, P = Partnership) _____ Note: Check the "LLC" box above and, in the entry space, enter the appropriate code (C, S, or P) for the tax classification of the LLC, unless it is a disregarded entity. A disregarded entity should instead check the appropriate box for the tax classification of its owner. ☐ Other (see instructions) _____	4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3): Exempt payee code (if any) _____ Exemption from Foreign Account Tax Compliance Act (FATCA) reporting code (if any) _____ (Applies to accounts maintained outside the United States.)
	3b If on line 3a you checked "Partnership" or "Trust/estate," or checked "LLC" and entered "P" as its tax classification, and you are providing this form to a partnership, trust, or estate in which you have an ownership interest, check this box if you have any foreign partners, owners, or beneficiaries. See instructions _____ ☐	
	5 Address (number, street, and apt. or suite no.). See instructions.	6 City, state, and ZIP code
7 List account number(s) here (optional)		
Requester's name and address (optional)		

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN*, later.

Note: If the account is in more than one name, see the instructions for line 1. See also *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number	
OR	
Employer identification number	

Part II Certification

Under penalties of perjury, I certify that:

- The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
- I am not subject to backup withholding because (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
- I am a U.S. citizen or other U.S. person (defined below); and
- The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and, generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here	Signature of U.S. person	Date

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to www.irs.gov/FormW9.

What's New

Line 3a has been modified to clarify how a disregarded entity completes this line. An LLC that is a disregarded entity should check the appropriate box for the tax classification of its owner. Otherwise, it should check the "LLC" box and enter its appropriate tax classification.

New line 3b has been added to this form. A flow-through entity is required to complete this line to indicate that it has direct or indirect foreign partners, owners, or beneficiaries when it provides the Form W-9 to another flow-through entity in which it has an ownership interest. This change is intended to provide a flow-through entity with information regarding the status of its indirect foreign partners, owners, or beneficiaries, so that it can satisfy any applicable reporting requirements. For example, a partnership that has any indirect foreign partners may be required to complete Schedules K-2 and K-3. See the Partnership Instructions for Schedules K-2 and K-3 (Form 1065).

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS is giving you this form because they

must obtain your correct taxpayer identification number (TIN), which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (interest earned or paid).
- Form 1099-DIV (dividends, including those from stocks or mutual funds).
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds).
- Form 1099-NEC (nonemployee compensation).
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers).
- Form 1099-S (proceeds from real estate transactions).
- Form 1099-K (merchant card and third-party network transactions).
- Form 1098 (home mortgage interest), 1098-E (student loan interest), and 1098-T (tuition).
- Form 1099-C (canceled debt).
- Form 1099-A (acquisition or abandonment of secured property).

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

Caution: If you don't return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See *What is backup withholding*, later.

By signing the filled-out form, you:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued);
2. Certify that you are not subject to backup withholding; or
3. Claim exemption from backup withholding if you are a U.S. exempt payee; and
4. Certify to your non-foreign status for purposes of withholding under chapter 3 or 4 of the Code (if applicable); and
5. Certify that FATCA code(s) entered on this form (if any) indicating that you are exempt from the FATCA reporting is correct. See *What is FATCA Reporting*, later, for further information.

Note: If you are a U.S. person and a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

Definition of a U.S. person. For federal tax purposes, you are considered a U.S. person if you are:

- An individual who is a U.S. citizen or U.S. resident alien;
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States;
- An estate (other than a foreign estate); or
- A domestic trust (as defined in Regulations section 301.7701-7).

Establishing U.S. status for purposes of chapter 3 and chapter 4 withholding. Payments made to foreign persons, including certain distributions, allocations of income, or transfers of sales proceeds, may be subject to withholding under chapter 3 or chapter 4 of the Code (sections 1441–1474). Under those rules, if a Form W-9 or other certification of non-foreign status has not been received, a withholding agent, transferee, or partnership (payor) generally applies presumption rules that may require the payor to withhold applicable tax from the recipient, owner, transferor, or partner (payee). See Pub. 515, *Withholding of Tax on Nonresident Aliens and Foreign Entities*.

The following persons must provide Form W-9 to the payor for purposes of establishing its non-foreign status.

- In the case of a disregarded entity with a U.S. owner, the U.S. owner of the disregarded entity and not the disregarded entity.
- In the case of a grantor trust with a U.S. grantor or other U.S. owner, generally, the U.S. grantor or other U.S. owner of the grantor trust and not the grantor trust.
- In the case of a U.S. trust (other than a grantor trust), the U.S. trust and not the beneficiaries of the trust.

See Pub. 515 for more information on providing a Form W-9 or a certification of non-foreign status to avoid withholding.

Foreign person. If you are a foreign person or the U.S. branch of a foreign bank that has elected to be treated as a U.S. person (under Regulations section 1.1441-1(b)(2)(iv) or other applicable section for chapter 3 or 4 purposes), do not use Form W-9. Instead, use the appropriate Form W-8 or Form 8233 (see Pub. 515). If you are a qualified foreign pension fund under Regulations section 1.897(i)-1(d), or a partnership that is wholly owned by qualified foreign pension funds, that is treated as a non-foreign person for purposes of section 1445 withholding, do not use Form W-9. Instead, use Form W-8EXP (or other certification of non-foreign status).

Nonresident alien who becomes a resident alien. Generally, only a nonresident alien individual may use the terms of a tax treaty to reduce or eliminate U.S. tax on certain types of income. However, most tax treaties contain a provision known as a saving clause. Exceptions specified in the saving clause may permit an exemption from tax to continue for certain types of income even after the payee has otherwise become a U.S. resident alien for tax purposes.

If you are a U.S. resident alien who is relying on an exception contained in the saving clause of a tax treaty to claim an exemption from U.S. tax on certain types of income, you must attach a statement to Form W-9 that specifies the following five items.

1. The treaty country. Generally, this must be the same treaty under which you claimed exemption from tax as a nonresident alien.
2. The treaty article addressing the income.
3. The article number (or location) in the tax treaty that contains the saving clause and its exceptions.
4. The type and amount of income that qualifies for the exemption from tax.
5. Sufficient facts to justify the exemption from tax under the terms of the treaty article.

Example. Article 20 of the U.S.-China income tax treaty allows an exemption from tax for scholarship income received by a Chinese student temporarily present in the United States. Under U.S. law, this student will become a resident alien for tax purposes if their stay in the United States exceeds 5 calendar years. However, paragraph 2 of the first Protocol to the U.S.-China treaty (dated April 30, 1984) allows the provisions of Article 20 to continue to apply even after the Chinese student becomes a resident alien of the United States. A Chinese student who qualifies for this exception (under paragraph 2 of the first Protocol) and is relying on this exception to claim an exemption from tax on their scholarship or fellowship income would attach to Form W-9 a statement that includes the information described above to support that exemption.

If you are a nonresident alien or a foreign entity, give the requester the appropriate completed Form W-8 or Form 8233.

Backup Withholding

What is backup withholding? Persons making certain payments to you must under certain conditions withhold and pay to the IRS 24% of such payments. This is called "backup withholding." Payments that may be subject to backup withholding include, but are not limited to, interest, tax-exempt interest, dividends, broker and barter exchange transactions, rents, royalties, nonemployee pay, payments made in settlement of payment card and third-party network transactions, and certain payments from fishing boat operators. Real estate transactions are not subject to backup withholding.

You will not be subject to backup withholding on payments you receive if you give the requester your correct TIN, make the proper certifications, and report all your taxable interest and dividends on your tax return.

Payments you receive will be subject to backup withholding if:

1. You do not furnish your TIN to the requester;
2. You do not certify your TIN when required (see the instructions for Part II for details);
3. The IRS tells the requester that you furnished an incorrect TIN;
4. The IRS tells you that you are subject to backup withholding because you did not report all your interest and dividends on your tax return (for reportable interest and dividends only); or
5. You do not certify to the requester that you are not subject to backup withholding, as described in item 4 under "By signing the filled-out form" above (for reportable interest and dividend accounts opened after 1983 only).

Certain payees and payments are exempt from backup withholding. See *Exempt payee code*, later, and the separate Instructions for the Requester of Form W-9 for more information.

See also *Establishing U.S. status for purposes of chapter 3 and chapter 4 withholding*, earlier.

What Is FATCA Reporting?

The Foreign Account Tax Compliance Act (FATCA) requires a participating foreign financial institution to report all U.S. account holders that are specified U.S. persons. Certain payees are exempt from FATCA reporting. See *Exemption from FATCA reporting code*, later, and the Instructions for the Requester of Form W-9 for more information.

Updating Your Information

You must provide updated information to any person to whom you claimed to be an exempt payee if you are no longer an exempt payee and anticipate receiving reportable payments in the future from this person. For example, you may need to provide updated information if you are a C corporation that elects to be an S corporation, or if you are no longer tax exempt. In addition, you must furnish a new Form W-9 if the name or TIN changes for the account, for example, if the grantor of a grantor trust dies.

Penalties

Failure to furnish TIN. If you fail to furnish your correct TIN to a requester, you are subject to a penalty of \$50 for each such failure unless your failure is due to reasonable cause and not to willful neglect.

Civil penalty for false information with respect to withholding. If you make a false statement with no reasonable basis that results in no backup withholding, you are subject to a \$500 penalty.

Criminal penalty for falsifying information. Willfully falsifying certifications or affirmations may subject you to criminal penalties including fines and/or imprisonment.

Misuse of TINs. If the requester discloses or uses TINs in violation of federal law, the requester may be subject to civil and criminal penalties.

Specific Instructions

Line 1

You must enter one of the following on this line; **do not** leave this line blank. The name should match the name on your tax return.

If this Form W-9 is for a joint account (other than an account maintained by a foreign financial institution (FFI)), list first, and then circle, the name of the person or entity whose number you entered in Part I of Form W-9. If you are providing Form W-9 to an FFI to document a joint account, each holder of the account that is a U.S. person must provide a Form W-9.

• **Individual.** Generally, enter the name shown on your tax return. If you have changed your last name without informing the Social Security Administration (SSA) of the name change, enter your first name, the last name as shown on your social security card, and your new last name.

Note for ITIN applicant: Enter your individual name as it was entered on your Form W-7 application, line 1a. This should also be the same as the name you entered on the Form 1040 you filed with your application.

• **Sole proprietor.** Enter your individual name as shown on your Form 1040 on line 1. Enter your business, trade, or "doing business as" (DBA) name on line 2.

• **Partnership, C corporation, S corporation, or LLC, other than a disregarded entity.** Enter the entity's name as shown on the entity's tax return on line 1 and any business, trade, or DBA name on line 2.

• **Other entities.** Enter your name as shown on required U.S. federal tax documents on line 1. This name should match the name shown on the charter or other legal document creating the entity. Enter any business, trade, or DBA name on line 2.

• **Disregarded entity.** In general, a business entity that has a single owner, including an LLC, and is not a corporation, is disregarded as an entity separate from its owner (a disregarded entity). See Regulations section 301.7701-2(c)(2). A disregarded entity should check the appropriate box for the tax classification of its owner. Enter the owner's name on line 1. The name of the owner entered on line 1 should never be a disregarded entity. The name on line 1 should be the name shown on the income tax return on which the income should be reported. For

example, if a foreign LLC that is treated as a disregarded entity for U.S. federal tax purposes has a single owner that is a U.S. person, the U.S. owner's name is required to be provided on line 1. If the direct owner of the entity is also a disregarded entity, enter the first owner that is not disregarded for federal tax purposes. Enter the disregarded entity's name on line 2. If the owner of the disregarded entity is a foreign person, the owner must complete an appropriate Form W-8 instead of a Form W-9. This is the case even if the foreign person has a U.S. TIN.

Line 2

If you have a business name, trade name, DBA name, or disregarded entity name, enter it on line 2.

Line 3a

Check the appropriate box on line 3a for the U.S. federal tax classification of the person whose name is entered on line 1. Check only one box on line 3a.

IF the entity/individual on line 1 is a(n) . . .	THEN check the box for . . .
• Corporation	Corporation.
• Individual or	Individual/sole proprietor.
• Sole proprietorship	
• LLC classified as a partnership for U.S. federal tax purposes or	Limited liability company and enter the appropriate tax classification:
• LLC that has filed Form 8832 or 2553 electing to be taxed as a corporation	P = Partnership, C = C corporation, or S = S corporation.
• Partnership	Partnership.
• Trust/estate	Trust/estate.

Line 3b

Check this box if you are a partnership (including an LLC classified as a partnership for U.S. federal tax purposes), trust, or estate that has any foreign partners, owners, or beneficiaries, and you are providing this form to a partnership, trust, or estate, in which you have an ownership interest. You must check the box on line 3b if you receive a Form W-8 (or documentary evidence) from any partner, owner, or beneficiary establishing foreign status or if you receive a Form W-9 from any partner, owner, or beneficiary that has checked the box on line 3b.

Note: A partnership that provides a Form W-9 and checks box 3b may be required to complete Schedules K-2 and K-3 (Form 1065). For more information, see the Partnership Instructions for Schedules K-2 and K-3 (Form 1065).

If you are required to complete line 3b but fail to do so, you may not receive the information necessary to file a correct information return with the IRS or furnish a correct payee statement to your partners or beneficiaries. See, for example, sections 6698, 6722, and 6724 for penalties that may apply.

Line 4 Exemptions

If you are exempt from backup withholding and/or FATCA reporting, enter in the appropriate space on line 4 any code(s) that may apply to you.

Exempt payee code.

- Generally, individuals (including sole proprietors) are not exempt from backup withholding.
- Except as provided below, corporations are exempt from backup withholding for certain payments, including interest and dividends.
- Corporations are not exempt from backup withholding for payments made in settlement of payment card or third-party network transactions.
- Corporations are not exempt from backup withholding with respect to attorneys' fees or gross proceeds paid to attorneys, and corporations that provide medical or health care services are not exempt with respect to payments reportable on Form 1099-MISC.

The following codes identify payees that are exempt from backup withholding. Enter the appropriate code in the space on line 4.

1—An organization exempt from tax under section 501(a), any IRA, or a custodial account under section 403(b)(7) if the account satisfies the requirements of section 401(f)(2).

- 2—The United States or any of its agencies or instrumentalities.
- 3—A state, the District of Columbia, a U.S. commonwealth or territory, or any of their political subdivisions or instrumentalities.
- 4—A foreign government or any of its political subdivisions, agencies, or instrumentalities.
- 5—A corporation.
- 6—A dealer in securities or commodities required to register in the United States, the District of Columbia, or a U.S. commonwealth or territory.
- 7—A futures commission merchant registered with the Commodity Futures Trading Commission.
- 8—A real estate investment trust.
- 9—An entity registered at all times during the tax year under the Investment Company Act of 1940.
- 10—A common trust fund operated by a bank under section 584(a).
- 11—A financial institution as defined under section 581.
- 12—A middleman known in the investment community as a nominee or custodian.
- 13—A trust exempt from tax under section 664 or described in section 4947.

The following chart shows types of payments that may be exempt from backup withholding. The chart applies to the exempt payees listed above, 1 through 13.

IF the payment is for . . .	THEN the payment is exempt for . . .
• Interest and dividend payments	All exempt payees except for 7.
• Broker transactions	Exempt payees 1 through 4 and 6 through 11 and all C corporations. S corporations must not enter an exempt payee code because they are exempt only for sales of noncovered securities acquired prior to 2012.
• Barter exchange transactions and patronage dividends	Exempt payees 1 through 4.
• Payments over \$600 required to be reported and direct sales over \$5,000 ¹	Generally, exempt payees 1 through 5. ²
• Payments made in settlement of payment card or third-party network transactions	Exempt payees 1 through 4.

¹ See Form 1099-MISC, Miscellaneous Information, and its instructions.

² However, the following payments made to a corporation and reportable on Form 1099-MISC are not exempt from backup withholding: medical and health care payments, attorneys' fees, gross proceeds paid to an attorney reportable under section 6045(f), and payments for services paid by a federal executive agency.

Exemption from FATCA reporting code. The following codes identify payees that are exempt from reporting under FATCA. These codes apply to persons submitting this form for accounts maintained outside of the United States by certain foreign financial institutions. Therefore, if you are only submitting this form for an account you hold in the United States, you may leave this field blank. Consult with the person requesting this form if you are uncertain if the financial institution is subject to these requirements. A requester may indicate that a code is not required by providing you with a Form W-9 with "Not Applicable" (or any similar indication) entered on the line for a FATCA exemption code.

A—An organization exempt from tax under section 501(a) or any individual retirement plan as defined in section 7701(a)(37).

B—The United States or any of its agencies or instrumentalities.

C—A state, the District of Columbia, a U.S. commonwealth or territory, or any of their political subdivisions or instrumentalities.

D—A corporation the stock of which is regularly traded on one or more established securities markets, as described in Regulations section 1.1472-1(c)(1)(i).

E—A corporation that is a member of the same expanded affiliated group as a corporation described in Regulations section 1.1472-1(c)(1)(i).

F—A dealer in securities, commodities, or derivative financial instruments (including notional principal contracts, futures, forwards, and options) that is registered as such under the laws of the United States or any state.

G—A real estate investment trust.

H—A regulated investment company as defined in section 851 or an entity registered at all times during the tax year under the Investment Company Act of 1940.

I—A common trust fund as defined in section 584(a).

J—A bank as defined in section 581.

K—A broker.

L—A trust exempt from tax under section 664 or described in section 4947(a)(1).

M—A tax-exempt trust under a section 403(b) plan or section 457(g) plan.

Note: You may wish to consult with the financial institution requesting this form to determine whether the FATCA code and/or exempt payee code should be completed.

Line 5

Enter your address (number, street, and apartment or suite number). This is where the requester of this Form W-9 will mail your information returns. If this address differs from the one the requester already has on file, enter "NEW" at the top. If a new address is provided, there is still a chance the old address will be used until the payor changes your address in their records.

Line 6

Enter your city, state, and ZIP code.

Part I. Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. If you are a resident alien and you do not have, and are not eligible to get, an SSN, your TIN is your IRS ITIN. Enter it in the entry space for the Social Security number. If you do not have an ITIN, see *How to get a TIN* below.

If you are a sole proprietor and you have an EIN, you may enter either your SSN or EIN.

If you are a single-member LLC that is disregarded as an entity separate from its owner, enter the owner's SSN (or EIN, if the owner has one). If the LLC is classified as a corporation or partnership, enter the entity's EIN.

Note: See *What Name and Number To Give the Requester*, later, for further clarification of name and TIN combinations.

How to get a TIN. If you do not have a TIN, apply for one immediately. To apply for an SSN, get Form SS-5, Application for a Social Security Card, from your local SSA office or get this form online at www.SSA.gov. You may also get this form by calling 800-772-1213. Use Form W-7, Application for IRS Individual Taxpayer Identification Number, to apply for an ITIN, or Form SS-4, Application for Employer Identification Number, to apply for an EIN. You can apply for an EIN online by accessing the IRS website at www.irs.gov/EIN. Go to www.irs.gov/Forms to view, download, or print Form W-7 and/or Form SS-4. Or, you can go to www.irs.gov/OrderForms to place an order and have Form W-7 and/or Form SS-4 mailed to you within 15 business days.

If you are asked to complete Form W-9 but do not have a TIN, apply for a TIN and enter "Applied For" in the space for the TIN, sign and date the form, and give it to the requester. For interest and dividend payments, and certain payments made with respect to readily tradable instruments, you will generally have 60 days to get a TIN and give it to the requester before you are subject to backup withholding on payments. The 60-day rule does not apply to other types of payments. You will be subject to backup withholding on all such payments until you provide your TIN to the requester.

Note: Entering "Applied For" means that you have already applied for a TIN or that you intend to apply for one soon. See also *Establishing U.S. status for purposes of chapter 3 and chapter 4 withholding*, earlier, for when you may instead be subject to withholding under chapter 3 or 4 of the Code.

Caution: A disregarded U.S. entity that has a foreign owner must use the appropriate Form W-8.

Part II. Certification

To establish to the withholding agent that you are a U.S. person, or resident alien, sign Form W-9. You may be requested to sign by the withholding agent even if item 1, 4, or 5 below indicates otherwise.

For a joint account, only the person whose TIN is shown in Part I should sign (when required). In the case of a disregarded entity, the person identified on line 1 must sign. Exempt payees, see *Exempt payee code*, earlier.

Signature requirements. Complete the certification as indicated in items 1 through 5 below.

1. Interest, dividend, and barter exchange accounts opened before 1984 and broker accounts considered active during 1983. You must give your correct TIN, but you do not have to sign the certification.

2. Interest, dividend, broker, and barter exchange accounts opened after 1983 and broker accounts considered inactive during 1983. You must sign the certification or backup withholding will apply. If you are subject to backup withholding and you are merely providing your correct TIN to the requester, you must cross out item 2 in the certification before signing the form.

3. Real estate transactions. You must sign the certification. You may cross out item 2 of the certification.

4. Other payments. You must give your correct TIN, but you do not have to sign the certification unless you have been notified that you have previously given an incorrect TIN. "Other payments" include payments made in the course of the requester's trade or business for rents, royalties, goods (other than bills for merchandise), medical and health care services (including payments to corporations), payments to a nonemployee for services, payments made in settlement of payment card and third-party network transactions, payments to certain fishing boat crew members and fishermen, and gross proceeds paid to attorneys (including payments to corporations).

5. Mortgage interest paid by you, acquisition or abandonment of secured property, cancellation of debt, qualified tuition program payments (under section 529), ABL accounts (under section 529A), IRA, Coverdell ESA, Archer MSA or HSA contributions or distributions, and pension distributions. You must give your correct TIN, but you do not have to sign the certification.

What Name and Number To Give the Requester

For this type of account:	Give name and SSN of:
1. Individual	The individual
2. Two or more individuals (joint account) other than an account maintained by an FFI	The actual owner of the account or, if combined funds, the first individual on the account ¹
3. Two or more U.S. persons (joint account maintained by an FFI)	Each holder of the account
4. Custodial account of a minor (Uniform Gift to Minors Act)	The minor ²
5. a. The usual revocable savings trust (grantor is also trustee)	The grantor-trustee ¹
b. So-called trust account that is not a legal or valid trust under state law	The actual owner ¹
6. Sole proprietorship or disregarded entity owned by an individual	The owner ³
7. Grantor trust filing under Optional Filing Method 1 (see Regulations section 1.671-4(b)(2)(i)(A)) ⁴	The grantor ⁴

For this type of account:	Give name and EIN of:
8. Disregarded entity not owned by an individual	The owner
9. A valid trust, estate, or pension trust	Legal entity ⁴
10. Corporation or LLC electing corporate status on Form 8832 or Form 2553	The corporation
11. Association, club, religious, charitable, educational, or other tax-exempt organization	The organization
12. Partnership or multi-member LLC	The partnership
13. A broker or registered nominee	The broker or nominee
14. Account with the Department of Agriculture in the name of a public entity (such as a state or local government, school district, or prison) that receives agricultural program payments	The public entity
15. Grantor trust filing Form 1041 or under the Optional Filing Method 2, requiring Form 1099 (see Regulations section 1.671-4(b)(2)(ii)(B)) ⁵	The trust

¹ List first and circle the name of the person whose number you furnish. If only one person on a joint account has an SSN, that person's number must be furnished.

² Circle the minor's name and furnish the minor's SSN.

³ You must show your individual name on line 1, and enter your business or DBA name, if any, on line 2. You may use either your SSN or EIN (if you have one), but the IRS encourages you to use your SSN.

⁴ List first and circle the name of the trust, estate, or pension trust. (Do not furnish the TIN of the personal representative or trustee unless the legal entity itself is not designated in the account title.)

⁵ **Note:** The grantor must also provide a Form W-9 to the trustee of the trust.

⁶ For more information on optional filing methods for grantor trusts, see the instructions for Form 1041.

Note: If no name is circled when more than one name is listed, the number will be considered to be that of the first name listed.

Secure Your Tax Records From Identity Theft

Identity theft occurs when someone uses your personal information, such as your name, SSN, or other identifying information, without your permission to commit fraud or other crimes. An identity thief may use your SSN to get a job or may file a tax return using your SSN to receive a refund.

To reduce your risk:

- Protect your SSN,
- Ensure your employer is protecting your SSN, and
- Be careful when choosing a tax return preparer.

If your tax records are affected by identity theft and you receive a notice from the IRS, respond right away to the name and phone number printed on the IRS notice or letter.

If your tax records are not currently affected by identity theft but you think you are at risk due to a lost or stolen purse or wallet, questionable credit card activity, or a questionable credit report, contact the IRS Identity Theft Hotline at 800-908-4490 or submit Form 14039.

For more information, see Pub. 5027, Identity Theft Information for Taxpayers.

Victims of identity theft who are experiencing economic harm or a systemic problem, or are seeking help in resolving tax problems that have not been resolved through normal channels, may be eligible for Taxpayer Advocate Service (TAS) assistance. You can reach TAS by calling the TAS toll-free case intake line at 877-777-4778 or TTY/TDD 800-829-4059.

Protect yourself from suspicious emails or phishing schemes.

Phishing is the creation and use of email and websites designed to mimic legitimate business emails and websites. The most common act is sending an email to a user falsely claiming to be an established legitimate enterprise in an attempt to scam the user into surrendering private information that will be used for identity theft.

The IRS does not initiate contacts with taxpayers via emails. Also, the IRS does not request personal detailed information through email or ask taxpayers for the PIN numbers, passwords, or similar secret access information for their credit card, bank, or other financial accounts.

If you receive an unsolicited email claiming to be from the IRS, forward this message to phishing@irs.gov. You may also report misuse of the IRS name, logo, or other IRS property to the Treasury Inspector General for Tax Administration (TIGTA) at 800-366-4484. You can forward suspicious emails to the Federal Trade Commission at spam@uce.gov or report them at www.ftc.gov/complaint. You can contact the FTC at www.ftc.gov/idtheft or 877-IDTHEFT (877-438-4338). If you have been the victim of identity theft, see www.IdentityTheft.gov and Pub. 5027.

Go to www.irs.gov/identitytheft to learn more about identity theft and how to reduce your risk.

Privacy Act Notice

Section 6109 of the Internal Revenue Code requires you to provide your correct TIN to persons (including federal agencies) who are required to file information returns with the IRS to report interest, dividends, or certain other income paid to you; mortgage interest you paid; the acquisition or abandonment of secured property; the cancellation of debt; or contributions you made to an IRA, Archer MSA, or HSA. The person collecting this form uses the information on the form to file information returns with the IRS, reporting the above information. Routine uses of this information include giving it to the Department of Justice for civil and criminal litigation and to cities, states, the District of Columbia, and U.S. commonwealths and territories for use in administering their laws. The information may also be disclosed to other countries under a treaty, to federal and state agencies to enforce civil and criminal laws, or to federal law enforcement and intelligence agencies to combat terrorism. You must provide your TIN whether or not you are required to file a tax return. Under section 3406, payors must generally withhold a percentage of taxable interest, dividends, and certain other payments to a payee who does not give a TIN to the payor. Certain penalties may also apply for providing false or fraudulent information.

BUSINESS REGISTRATION CERTIFICATE (BRC)

The State of New Jersey rules generally **DOES NOT** allow the College to issue a **Purchase Order, nor can any payments be processed to vendors**, if a Business Registration Certificate is not provided.

NOTICE TO VENDOR

In accordance with provisions of P.L. 2004C.57, N.J.S.A. 52:32-44, any business entering into a contract (i.e. Purchase Order, Blanket Purchase Order, Fair, and Open Bid, etc.) with a local contracting agency is required to be registered with the New Jersey Division of Revenue and must provide proof of a Business Registration Certificate (BRC).

Essex County College is required to obtain, and maintain a record of BRCs from all vendors with purchases **15% of the Bidding Threshold**. The mandatory collection and record-keeping of this information promote transparency in the process of awarding public contracts.

- If you are a registered vendor, please furnish a copy. (see sample attached)
- You may obtain a certificate online by accessing the following link:
https://www1.state.nj.us/TYTR_BRC/jsp/BRCLLoginJsp.jsp
- If you are not registered, you will need to complete **FORM NJ-REG**.
- For more information on how to obtain a certificate, visit:
<http://www.state.nj.us/treasury/revenue/busregcert.shtml>
or by calling NJ State Treasury Department at (609) 292-9292.

DISCLOSURE OF INVESTMENT ACTIVITIES IN IRAN

Bidder Name:	

Part 1: Certification

BIDDERS ARE TO COMPLETE PART 1 BY CHECKING **EITHER BOX.**

Pursuant to Public Law 2012, c. 25, any person or entity that submits a bid or proposal or otherwise proposes to enter into or renew a contract must complete the certification below to attest, under penalty of perjury, that neither the person or entity, nor any of its parents, subsidiaries, or affiliates, is identified on the Department of Treasury's Chapter 25 list as a person or entity engaging in investment activities in Iran. The Chapter 25 list is found on the Division's website at www.state.nj.us/treasury/purchase/pdf/Chapter25List.pdf. Bidders must review this list prior to completing the below certification. Failure to complete the certification may render a bidder's proposal non-responsive. If the Director finds a person or entity to be in violation of law, s/he shall take action as may be appropriate and provided by law, rule or contract, including but not limited to, imposing sanctions, seeking compliance, recovering damages, declaring the party in default and seeking debarment or suspension of the party

CHECK THE APPROPRIATE BOX:

☐

I certify, pursuant to Public Law 2012, c. 25, that neither the bidder listed above nor any of the bidder's parents, subsidiaries, or affiliates is listed on the N.J. Department of the Treasury's list of entities determined to be engaged in prohibited activities in Iran pursuant to P.L. 2012, c. 25 ("Chapter 25 List"). I further certify that I am the person listed above, or I am an officer or representative of the entity listed above and am authorized to make this certification on its behalf. I will skip Part 2 and sign and complete the Certification below.

OR

☐

I am unable to certify as above because the bidder and/or one or more of its parents, subsidiaries, or affiliates is listed on the Department's Chapter 25 list. I will provide a detailed, accurate and precise description of the activities in Part 2 below sign and complete the Certification below. Failure to provide such will result in the proposal being rendered as nonresponsive and appropriate penalties, fines and/or sanctions will be assessed as provided by law.

Part 2 – Additional Information

PLEASE PROVIDE FURTHER INFORMATION RELATED TO INVESTMENT ACTIVITIES IN IRAN. You must provide a detailed, accurate and precise description of the activities of the bidding person/entity, or one of its parents, subsidiaries or affiliates, engaging in the investment activities in Iran on additional sheets provided by you.

Part 3: Certification

I, being duly sworn upon my oath, hereby represent and state that the foregoing information and any attachments there to the best of my knowledge are true and complete. I attest that I am authorized to execute this certification on behalf of the above-referenced person or entity. I acknowledge that the *Essex County College* is relying on the information contained herein and thereby acknowledge that I am under a continuing obligation from the date of this certification through the completion of any contracts with *Essex County College* to notify the College in writing of any changes to the answers of information contained herein. I acknowledge that I am aware that it is a criminal offense to make a false statement or misrepresentation in this certification, and if I do so, I recognize that I am subject to criminal prosecution under the law and that it will also constitute a material breach of my agreement(s) with the *College* and that the College at its option may declare any contract(s) resulting from this certification void and unenforceable.

Full Name (Print):		Title:	
Signature:		Date:	

SAMPLE CERTIFICATE OF EMPLOYEE INFORMATION REPORT

Certification 111XX

CERTIFICATE OF EMPLOYEE INFORMATION REPORT

INITIAL

This is to certify that the contractor listed below has submitted an Employee Information Report pursuant to N.J.A.C. 17:27-1.1 et. seq. and the State Treasurer has approved said report. This approval will remain in effect for the period of 15-DEC-20XX to 15-DEC-20XX

SAMPLE COMPANY, INC.
33 WEST STATE STREET
TRENTON, NJ 08625

VOID



State Treasurer

FORM AA-201
Revised 11/11

STATE OF NEW JERSEY

DEPARTMENT OF LABOR & WORKFORCE DEVELOPMENT
CONSTRUCTION EEO COMPLIANCE MONITORING PROGRAM

INITIAL PROJECT WORKFORCE REPORT CONSTRUCTION

Official Use Only

Assignment

Code

For instructions on completing the form, go to: http://www.state.nj.us/treasury/contract_compliance/pdf/aa201ins.pdf

1. FID NUMBER		2. CONTRACTOR ID NUMBER		5. NAME AND ADDRESS OF PUBLIC AGENCY AWARDED CONTRACT Name: Address:									
3. NAME AND ADDRESS OF PRIME CONTRACTOR (Name) (Street Address) (City) (State) (Zip Code)				CONTRACT NUMBER DATE OF AWARD DOLLAR AMOUNT OF AWARD									
4. IS THIS COMPANY MINORITY OWNED [] OR WOMAN OWNED []				6. NAME AND ADDRESS OF PROJECT Name: Address:				7. PROJECT NUMBER					
9. TRADE OR CRAFT				COUNTY				8. IS THIS PROJECT COVERED BY A PROJECT LABOR AGREEMENT (PLA)? YES ☐					
				PROJECTED TOTAL EMPLOYEES				PROJECTED MINORITY EMPLOYEES					
				MALE FEMALE				MALE FEMALE					
				J AP J AP				J AP J AP					
1. ASBESTOS WORKER								PROJECTED PHASE - IN DATE				PROJECTED COMPLETION DATE	
2. BRICKLAYER OR MASON													
3. CARPENTER													
4. ELECTRICIAN													
5. GLAZIER													
6. HVAC MECHANIC													
7. IRONWORKER													
8. OPERATING ENGINEER													
9. PAINTER													
10. PLUMBER													
11. ROOFER													
12. SHEET METAL WORKER													
13. SPRINKLER FITTER													
14. STEAMFITTER													
15. SURVEYOR													
16. TILER													
17. TRUCK DRIVER													
18. LABORER													
19. OTHER													
20. OTHER													

I hereby certify that the foregoing statements made by me are true. I am aware that if any of the foregoing statements are willfully false, I am subject to punishment.

(Signature)

10. (Please Print Your Name)

(Title)

(Area Code)

(Telephone Number)

(Ext.)

(Date)

State Of New Jersey

Department of Labor & Workforce Development
Construction EEO Compliance Monitoring Program

MONTHLY PROJECT WORKFORCE REPORT - CONSTRUCTION

For instructions on completing the form, go to:

http://www.state.nj.us/treasury/contract_compliance/pdf/aa202ins.pdf

1. Name and address of Prime Contractor		2. Contractor ID Number	3. FID or SS Number
(NAME)		4. Reporting Period	
(ADDRESS)		5. Public Agency Awarding Contract	
(CITY)		Date of Award	
(STATE)		6. Name and Location of Project	
(ZIP CODE)		County	7. Project ID Number

8. CONTRACTOR NAME (LIST PRIME CONTRACTOR WITH SUBS FOLLOWING)	9. PERCENT OF WORK COMPLETED	10. TRADE OR CRAFT	CLASSI- FICATION (SEE REVERSE)	11. NUMBER OF EMPLOYEES						12. TOTAL	13. WORK HOURS				14. % OF WORK HRS				15. CUM. WORK HRS			16. CUM. % OF W/H	
				A.	B.	C.	D.	E.	F.	NO. OF MIN. EMP.	TOTAL WORK HOURS	A. MIN. W/H	B. FEMALE W/H	A. % OF MIN. W/H	B. % OF FEMALE W/H	TOTAL WORK HOURS	A. MIN. HOURS	B. FEMALE HOURS	A. % OF MIN. W/H	B. % OF FEM. W/H			
				TOTAL	BLACK	HISPANIC	AMERICAN INDIAN	ASIAN	FEMALES														
			J																				
			AP																				
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			AP																				

17. COMPLETED BY (PRINT OR TYPE)

(NAME)	(SIGNATURE)	(TITLE)
(AREA CODE)	(TELEPHONE NUMBER)	(EXT.)
(DATE)		

DEPT. OF LABOR & WORKFORCE DEVELOPMENT CONSTRUCTION EEO COMPLIANCE MONITORING PROGRAM

FEDERALLY FUNDED PROCUREMENTS

Federal Equal Opportunity Notification

It is against the law for this recipient of Federal financial assistance to discriminate on the following bases: against any individual in the United States, on the basis of race, color, religion, sex, national origin, age, disability, political affiliation or belief; and against any beneficiary of programs financially assisted under Title 1 of the Workforce Investment Act of 1998 (WIA) on the basis of the beneficiary's citizenship/status as a lawfully admitted immigrant authorized to work in the United States, or his or her participation in any WIA Title I financially assisted program or activity. The recipient must not discriminate in any of the following areas: deciding who will be admitted, or have access, to any WIA Title I Financially assisted program or activity; providing opportunities in or treating any person with regard to, such a program or activity; or making employment decisions in the administration of, or in connection with, such a program or activity. If you think that you have been subjected to discrimination under a WIA Title I financially assisted program or activity, you may file a complaint within 180 days from the date of the alleged violation with either: the recipient's Equal Opportunity Officer (or the person whom the recipients has designated for this purpose); or the Director, Civil Rights Center (CRC) US Department of Labor, 200 Constitution Avenue NW, Room N-4123, Washington DC 20210. If you file your complaint with the recipient, you must wait either until the recipient issues a written Notice of Final Action or until 90 days have passed (whichever is sooner), before filing with the Civil Rights Center (see address above). If the recipient does not give you a written Notice of Final Action within 90 days of the day on which you filed your complaint, you do not have to wait for the recipient to issue that Notice before filing a complaint with the CRC. However, you must file your CRC Complaint within 30 days of the 90-day deadline (in other words, with 120 days after the day on which you filed your complaint with the recipient). If the recipient does give you a written Notice of Final Action on your complaint, but you are dissatisfied with the decision of resolution, you may file a complaint with CRC. You must file your CRC Complaint within 30 days of the date on which you received the Notice of Final Action.

Copeland "Anti-Kickback" Act (18 U.S.C. 874 and 40 U.S.C. 276c)

Contracts and sub-grants in excess of \$2,000 for construction or repairs awarded by recipients and sub-recipients must include a provision for compliance with Copeland "Anti-Kickback" Act (18 U.S.C 874) as supplemented by Department of Labor regulations (29 CFR Part 3 - Bidders and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States). The Act provides that each Bidder or sub-recipient shall be prohibited from inducing, by any means any person employed in the construction, completion or repair of public work, to give up any part of the compensation to which he is otherwise entitled.

Davis-Bacon Act, as amended (40 U.S.C 276a to a-7)

When required by Federal program legislation, all construction contracts awarded by the recipients and sub-recipients of more than \$2,000 shall include a provision for compliance with the Davis-Bacon Act (40 U.S.C 276a to a-7) and as supplemented by the Department of Labor regulations (29 CFR Part 5 – Labor Standards Provision Application to Contracts Governing Federally Financed and Assisted Construction). Under this Act, Bidders shall be required to pay wages to laborers and mechanics at a rate not less than the minimum wages specific in a wage determination made by the Secretary of Labor. In addition, Bidders shall be required to pay wages not less than once a week.

Contract Work Hours and Safety Standards Act (40 U.S.C. 327-333)

Where applicable, all contracts awarded by recipients in excess of \$2,000 for construction contracts and in excess of \$2,500 for other contracts that involve the employment of mechanics or laborers must include a provision for compliance with Sections 102 and 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 327-333) as supplemented by the Department of Labor regulations (29 DRF Part 5). Under Section 102 of the Act, each Bidder shall be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided the worker is compensated at a rate of not less than 1 ½ times the basic rate of pay for all hours worked in excess of 40 hours in the work week.

Section 107 of the Act is applicable to construction work and provides that no laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous. These requirements do not apply to the purchase of supplies or materials or articles ordinarily available on the open market, or contracts from transportation or transmission of intelligence.

Rights to Inventions Made Under Contract or Agreement

Contracts or agreements for the performance of experimental, developmental or research work must provide for the rights of the Federal Government and the recipient in any resulting invention in accordance with 37 CFR Part 401 – Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements, and any implementing regulations promulgated by the awarding agency.

Clean Air Act (42 U.S.C. 7401 et seq.) and Federal Water Pollution Control Act (33 U.S.C. 1251 et seq.) As amended, Contracts and sub grants of amounts in excess of \$100,000 shall contain a provision that requires the recipient to agree to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C 7401 et seq.) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251 et seq.) Violations shall be reported to ED and the Regional Office of the Environmental Protection Agency (EPA).

Byrd Anti-Lobbying Amendment (31 U.S.C 1352)

Vendor contract awards in excess of \$100,000 shall file the attached certification. Each tier certifies to the tier above that it will not and has not used Federal appropriation funds to pay any person or organization for influencing or attempting an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier shall also disclose any lobbying with non- Federal funds that takes place in connection with obtaining any Federal award. The disclosures are forwarded from tier to tier up to the recipient.

Debarment and Suspension (E.O. 12549 and E.O. 12689)

A contract award (see 2 CFR 180.220) must not be made to parties listed on the government wide exclusion in the System for Award Management (SAM) in accordance with the OMB guidelines at 2 CFR 180 that implement Executive Orders 12549 (3 CFR part 1986 Comp., p 189) and 12689 (CFR Part 1989 Comp., p 235). Debarment and Suspension. SAM Exclusions contains the names and parties debarred, suspended or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549. (Ref 2 CFR 200.212).

CERTIFICATION

*By signing below, vendors certify that they will comply with the following regulations when federal funds are used. **The College will indicate on the purchase order when the funding source is federal.** If the contract exceeds \$100,000, a “Certification Regarding Lobbying” and, if applicable, the “Disclosure of Lobbying Activities” must be submitted (forms to be provided separately).*

Signature

Date

Name (Print)

Title

Firm Name

Email

CERTIFICATION REGARDING LOBBYING

The undersigned certifies, to the best of his or her knowledge and belief, that:

- (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment or modification of any Federal contract, grant, loan, or cooperative agreement.
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities," in accordance with its instructions.
- (3) The undersigned shall require that the language of this certification be included in the award documents of all sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub- recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, United States Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

Organization: _____

Street address: _____

City, State, Zip: _____

CERTIFIED BY: (type or print)

TITLE:

(signature)

(date)

Approved
by OMB

(Only submit this form with the bid if your company is disclosing
lobbying activities)

0348-0046

Disclosure of Lobbying Activities

Complete this form to disclose lobbying activities pursuant to 31
U.S.C. 1352 (See reverse for public burden disclosure)

1. Type of Federal Action: a. contract _____ b. grant c. cooperative agreement d. loan e. loan guarantee f. loan insurance	2. Status of Federal Action: a. bid/offer/application _____ b. initial award c. post-award	3. Report Type: a. initial filing _____ b. material change For material change only: Year _____ quarter _____ Date of last report _____
4. Name and Address of Reporting Entity: ☐ Prime ☐ Subawardee Tier _____, if Known: Congressional District, if known:		5. If Reporting Entity in No. 4 is Subawardee, Enter Name and Address of Prime: Congressional District, if known:
6. Federal Department/Agency:		7. Federal Program Name/Description: CFDA Number, if applicable: _____
8. Federal Action Number, if known:		9. Award Amount, if known: \$
10. a. Name and Address of Lobbying Registrant (if individual, last name, first name, MI):		b. Individuals Performing Services (including address if different from No. 10a) (last name, first name, MI):
11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.		Signature: _____ Print Name: _____ Title: _____ Telephone No.: _____ Date: _____
Federal Use Only		Authorized for Local Reproduction Standard Form - LLL (Rev. 7-97)

INSTRUCTIONS FOR COMPLETION OF SF-LLL, DISCLOSURE OF LOBBYING ACTIVITIES

This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of a covered Federal action, or a material change to a previous filing, pursuant to title 31

U.S.C. section 1352. The filing of a form is required for each payment or agreement to make payment to any lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a covered Federal action. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. Identify the type of covered Federal action for which lobbying activity is and/or has been secured to influence the outcome of a covered Federal action.
2. Identify the status of the covered Federal action.
3. Identify the appropriate classification of this report. If this is a followup report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last previously submitted report by this reporting entity for this covered Federal action.
4. Enter the full name, address, city, State and zip code of the reporting entity. Include Congressional District, if known. Check the appropriate classification of the reporting entity that designates if it is, or expects to be, a prime or subaward recipient. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the 1st tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.
5. If the organization filing the report in item 4 checks "Subawardee," then enter the full name, address, city, State and zip code of the prime Federal recipient. Include Congressional District, if known.
6. Enter the name of the federal agency making the award or loan commitment. Include at least one organizational level below agency name, if known. For example, Department of Transportation, United States Coast Guard.
7. Enter the Federal program name or description for the covered Federal action (item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans, and loan commitments.
8. Enter the most appropriate Federal identifying number available for the Federal action identified in item 1 (e.g., Request for Proposal (RFP) number; Invitations for Bid (IFB) number; grant announcement number; the contract, grant, or loan award number; the application/proposal control number assigned by the Federal agency). Included prefixes, e.g., "RFP-DE-90-001."
9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitment for the prime entity identified in item 4 or 5.
10. (a) Enter the full name, address, city, State and zip code of the lobbying registrant under the Lobbying Disclosure Act of 1995 engaged by the reporting entity identified in item 4 to influence the covered Federal action.

(b) Enter the full names of the individual(s) performing services, and include full address if different from 10(a). Enter Last Name, First Name, and Middle Initial (MI).
11. The certifying official shall sign and date the form, print his/her name, title, and telephone number.

According to the Paperwork Reduction Act, as amended, no persons are required to respond to a collection of information unless it displays a valid OMB control Number. The valid OMB control number for this information collection is OMB No. 0348-0046. Public reporting burden for this collection of information is estimated to average 10 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget,

Paperwork Reduction Project (0348-0046), Washington, DC 20503



CERTIFICATION OF NON-INVOLVEMENT IN PROHIBITED ACTIVITIES IN RUSSIA OR BELARUS

Pursuant to N.J.S.A. 52:32-60.1, et seq. ([L. 2022, c. 3](#)) any person or entity (hereinafter “Vendor”) that seeks to enter into or renew a contract with a State agency for the provision of goods or services, or the purchase of bonds or other obligations, must complete the certification below indicating whether or not the Vendor is identified on the Office of Foreign Assets Control (OFAC) Specially Designated Nationals and Blocked Persons list, available here: <https://sanctionssearch.ofac.treas.gov/>. If the Department of the Treasury finds that a Vendor has made a certification in violation of the law, it shall take any action as may be appropriate and provided by law, rule or contract, including but not limited to, imposing sanctions, seeking compliance, recovering damages, declaring the party in default and seeking debarment or suspension of the party.

I, the undersigned, certify that I have read the definition of “Vendor” below, and have reviewed the Office of Foreign Assets Control (OFAC) Specially Designated Nationals and Blocked Persons list, and having done so certify:

(Check the Appropriate Box)

- ☐ A That the Vendor is not identified on the [OFAC Specially Designated Nationals and Blocked Persons list on account of activity related to Russia and/or Belarus](#).
- OR**
- ☐ B That I am unable to certify as to “A” above, because the Vendor is identified on the [OFAC Specially Designated Nationals and Blocked Persons list on account of activity related to Russia and/or Belarus](#).
- OR**
- ☐ C That I am unable to certify as to “A” above, because the Vendor is identified on the [OFAC Specially Designated Nationals and Blocked Persons list](#). However, the Vendor is engaged in activity related to Russia and/or Belarus consistent with federal law, regulation, license or exemption. A detailed description of how the Vendor’s activity related to Russia and/or Belarus is consistent with federal law is set forth below.

(Attach Additional Sheets If Necessary.)

Signature of Vendor’s Authorized Representative

Date

Print Name and Title of Vendor’s Authorized Representative

Vendor’s FEIN

Vendor’s Name

Vendor’s Phone Number

Vendor’s Address (Street Address)

Vendor’s Fax Number

Vendor’s Address (City/State/Zip Code)

Vendor’s Email Address

ⁱ Vendor means: (1) A natural person, corporation, company, limited partnership, limited liability partnership, limited liability company, business association, sole proprietorship, joint venture, partnership, society, trust, or any other nongovernmental entity, organization, or group; (2) Any governmental entity or instrumentality of a government, including a multilateral development institution, as defined in Section 1701(c)(3) of the International Financial Institutions Act, 22 U.S.C. 262r(c)(3); or (3) Any parent, successor, subunit, direct or indirect subsidiary, or any entity under common ownership or control with, any entity described in paragraph (1) or (2).

CHAPTER 60
PREVAILING WAGES FOR PUBLIC WORKS
SUBCHAPTER 9. ASSURANCES FOR PAYMENT OF PREVAILING WAGE

N.J.A.C. 12:60-9.1

N.J.A.C. 12:60-9.1 Certification by bidder with lowest bid by 10 percent or more

(a) When a public body engages in competitive bidding for public work subject to the provisions of the New Jersey Prevailing Act (PWA), the person who makes the lowest bid for the contract by 10 percent or more under the amount of the next lowest bid shall prior to award of the contract certify to the public body on the form found at N.J.A.C. 12:60 Appendix that the prevailing wage rates required by the PWA shall be paid in performing the work under the contract.

(b) If the bidder does not provide the certification required pursuant to (a) above prior to the award of the contract, the public body shall award the contract to the next lowest responsible and responsive bidder.

N.J.A.C. 12:60-9.2

N.J.A.C. 12:60-9.2 Required contract provisions concerning payment of prevailing wage

(a) Every contract for the performance of public work shall contain the following contract provisions:

1. "Attached hereto and incorporated herein is(are) the Department of Labor and Workforce Development prevailing wage determination(s) for the locality and craft(s) that will be employed in the performance of work under this contract. It is hereby stipulated that each individual who performs work under this contract shall be paid not less than the prevailing wage rate to which that worker is entitled under the New Jersey Prevailing Wage Act, as reflected in the appropriate Department of Labor and Workforce Development prevailing wage determination"; and
2. "In the event it is found that any worker employed by the contractor or any subcontractor covered by this contract has been paid a rate of wages less than the prevailing wage rate required to be paid by this contract, the public body, the lessee to whom the public body is leasing a property or premises or the lessor from whom the public body is leasing or will be leasing a property or premises may terminate the contractor's or subcontractor's right to proceed with the work, or such part of the work as to which there has been a failure to pay required wages, and to prosecute the work to completion or otherwise. The contractor and his sureties shall be liable to the public body, any lessee to whom the public body is leasing a property or premises, or to any lessor from whom the public body is leasing or will be leasing a property or premises for any excess costs occasioned by the termination of the contractor's or subcontractor's right to proceed with the work, or such part of the work as to which there has been a failure to pay required wages."

N.J.A.C. 12:60-9 App.

N.J.A.C. 12:60-9 App.

(See form on next page)

Essex County College

LOWEST BIDDER PREVAILING WAGE CERTIFICATION

In the matter of an award of a contract for public work for a project described as: [Enter project description below]

STATE OF NEW JERSEY
DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
DIVISION OF WAGE & HOUR COMPLIANCE
Certification of Lowest Bidder

_____, of full age and under oath, duly provides the following sworn statement:

(1) I am the owner and/or highest-ranking official or officer of a company or firm named (insert name below):

which holds a currently valid public works contractor registration pursuant to the New Jersey Public Works Contractor Registration Act, N.J.S.A. 34:11-56.48 et seq., certificate number _____.

(2) I submitted a bid for a contract award in the above identified project and the public body has informed me that I am the lowest bidder by 10 percent or more as compared to the next lowest bid submitted.

(3) The amount of my bid does include paying the prevailing wage rate to all workers who perform work on the project at rates of pay, including both base wage and fringe benefits, set forth in applicable Wage Determinations, (1) for the appropriate locality, (2) for the appropriate work classification (e.g., carpenter, electrician, mason, plumber), and (3) for the appropriate job title (e.g., Apprentice, Journeyman, Forman), published by the New Jersey Department of Labor and Workforce Development (NJDOL) pursuant to the New Jersey Prevailing Wage Act (NJPWA), N.J.S.A. 34:11-56.25 et seq., and corresponding NJDOL rules, N.J.A.C. 12:60.

I certify under penalty of perjury that the foregoing statements made by me are true. I am aware that if any of the foregoing statements made by me are false, I am subject to punishment. See N.J.S.A. 2C:28-1 et seq., specifically, N.J.S.A. 2C:28-3, within the New Jersey Code of Criminal Justice.

Dated: _____ Signature: _____

Title: _____

ACKNOWLEDGEMENT RECORD

BID #8242 - Humanities Department Office Alterations

TO ALL CONTRACTORS/WORKERS

Pursuant to AHERA (Asbestos Hazard Emergency Response Act) Regulations, you are hereby informed that the Owner has conducted an inspection of its buildings for asbestos containing building materials. A Management Plan has been developed and approved. The plan identifies asbestos containing building materials, assesses their friability (the potential to be crumbled or reduced to powder by hand pressure), and recommends action based upon the potential release of asbestos fibers.

You are hereby informed that you have the right to inspect the Management Plan prior to the commencement of your work. You are also directed to inform the Owner if you are going to be working in an area that may cause you to disturb any existing asbestos containing building materials.

Your signature below acknowledges that you have been informed prior to the commencement of work and you have been made aware of your rights under the AHERA Regulations. Each Prime Contractor shall notify his subcontractors of the above notification.

Name (printed)

Signature

Company Name (printed)

Date

CONTRACT LANGUAGE YOU MUST READ

CONTRACT TERMS AND CONDITIONS

The Bidder and the Owner agree to the following terms and conditions. The bid documents and the contract terms and conditions constitute the agreement between the parties.

The word “bid” / “proposal” / “quote” herein is intended to be all-inclusive of any and all types of bids, proposals, etc., to be submitted.

- A. It is the bidder's responsibility to present bids/proposals/quotes to the owner before or at the time and the place designated. Bids/Proposals may be hand-delivered or mailed; however, the owner disclaims any responsibility for bids/proposals forwarded by regular or overnight mail. Bids/Proposals sent by express mail or delivery service must either
 1. Include the designation, above on the outside of the express mail or service envelope; or
 2. Must be in a separate envelope inside the delivery envelope and the envelope marked as required above. Bids/Proposals/Quotes received after the designated time and date will be returned unopened.
- B. Sealed bids/proposals forwarded to the owner before the time of opening of bids/proposals may be withdrawn upon written application of the bidder who shall be required to produce evidence showing that the individual is or represents the principal or principals involved in the bid/proposal. Once bids/proposals have been opened, they shall remain firm for sixty (60) calendar days.
- C. More than one bid/proposal/quote from an individual, any business entity, regardless of structure, or association under the same names shall not be considered.
- D. All prices and amounts must be written in ink or preferably machine-printed. Bids/Proposals/Quotes containing any conditions, omissions, unexplained erasures or alterations, items not called for in the bid proposal form, attachment of additive information not required by the specifications, or irregularities of any kind, may be cause for rejection by the owner following applicable law. Any changes, whiteouts, strikeouts, etc. in the bid/proposal must be initialed in ink by the person signing the bid/proposal.
- E. Each bid/proposal/quote form must give the full business name and address, business phone, fax, e-mail, and the contact person of the bidder, and be signed by an authorized representative as follows:
 1. Bids/Proposals/Quotes by partnerships must be signed in the partnership name by one of the members of the partnership or by an authorized representative, followed by the signature and designation of the person signing.
 2. Bids/Proposals/Quotes by corporations must be signed in the legal name of the corporation, followed by the name of the State in which incorporated, and must contain the signature and designation of the president, secretary, or other person authorized to bind the corporation in the matter.
 3. Bids/Proposals/Quotes by sole-proprietorship shall be signed by the proprietor.
 4. When requested, satisfactory evidence of the authority of the officer signing shall be furnished.
- F. Bidder should be aware of the following statutes that represent “Truth in Contracting” laws:
 1. N.J.S.A. 2C:21-34, et seq. governs false contract payment claims and representations by bidders. It is a serious crime for the bidder to knowingly submit a false contract payment claim and/or knowingly make a material misrepresentation.
 2. N.J.S.A. 2C:27-10 provides that a public servant commits a crime if said public servant solicits or receives a benefit directly or indirectly, for an official act performed or to be performed by a public servant, which is a violation of official duty.
 3. N.J.S.A. 2C:27-11 provides that a bidder commits a crime if a said person, directly or indirectly, confers or agrees to confer any benefit not allowed by law to a public servant.
 4. The bidder should consult the statutes or legal counsel for further information.
- G. LICENSING
The contractor represents that it possesses any license or permits that may be required to perform its Contract work.
- H. OSHA
The contractor shall comply with all applicable requirements of the Occupational Safety and Health Act, 29 U.S.C. 15, in the performance of the work and services of this Contract.

I. APPLICABLE STATE LAW REGARDING CLAIMS

This Contract is subject to all provisions of the New Jersey Tort Claims Act, N.J.S.A. 59:1-1 et seq., and the New Jersey Contractual Liability Act, N.J.S.A. 59:13-1 et seq.

- J. **Pay-to-Play Disclosure** - Business entities are advised of their responsibility to file an annual disclosure statement of political contributions with the New Jersey Election Law Enforcement Commission (ELEC) pursuant to N.J.S.A. 19:44A-20.27 if they receive contracts in excess of \$50,000 from public entities in a calendar year. Business entities are responsible for determining if filing is necessary. Additional information on this requirement is available from ELEC at 888-313-3532 or www.elec.state.nj.us.
- K. Official Request for Bid/Proposal/Quotes packages is available from the owner's website at purchasing@essex.edu with a non-refundable fee mentioned on the Legal Notice to Bidders to prospective respondents. All addenda are posted on this site. Potential respondents are cautioned that they respond at their own risk if a third party supplied the specifications that may or may not be complete. The owner is not responsible for the third-party-provided documents. Respondents are urged to register their contact information on the owner's website so that the college can send any addenda to these specifications to them.

BID SECURITY AND BONDING REQUIREMENTS

A. BID GUARANTEE

Bidder shall submit with the bid/proposal a certified check, cashier's check, or bid bond in the amount of ten percent (10%) of the total price bid, but not in excess of \$20,000, payable unconditionally to the owner. When submitting a Bid Bond, it shall contain Power of Attorney for the full amount of the Bid Bond from a surety company authorized to do business in the State of New Jersey and acceptable to the owner. *The check or bond of the bidder to whom the contract is awarded shall be retained until a contract is executed and the required performance bond or other security is submitted.* The check or bond of the successful bidder shall be forfeited if the bidder fails to enter into a contract pursuant to N.J.S.A. 18A:64A-25.16.

The Bid Bond shall include a valid Power of Attorney authorizing the Attorney-in-Fact to execute the documents. Failure to submit a bid guarantee shall result in the rejection of the bid/proposal.

B. CONSENT OF SURETY

Bidder shall submit with the bid a Certificate (Consent) of Surety with Power of Attorney for the full amount of bid price from a Surety Company authorized to do business in the State of New Jersey, and acceptable to the owner stating that it will provide said bidder with a Performance Bond in the full amount of the bid. This certificate shall be obtained in order to confirm that the bidder to whom the contract is awarded will furnish Performance and Payment Bonds from an acceptable surety company on behalf of said bidder, any or all subcontractors or by each respective subcontractor, or by any combination thereof which results in performance security equal to the total amount of the contract, pursuant to N.J.S.A. 18A:64A-25.17.

The Consent of Surety shall include a valid Power of Attorney authorizing the Attorney-in-Fact to execute the documents. Failure to submit a Consent of Surety form shall result in rejection of the bid/proposal.

C. PERFORMANCE BOND

The successful bidder shall simultaneously with the delivery of the executed contract, submit an executed bond in the amount of one hundred percent (100%) of the acceptable bid as security for the faithful performance of this contract.

The performance bond provided shall not be released until final acceptance of the whole work and then only if any liens or claims have been satisfied. The surety on such bond or bonds shall be a duly authorized surety company authorized to do business in the State of New Jersey pursuant to N.J.S.A. 17:31-5. For multi-year contracts, the Performance Bond may be resubmitted each year on the Contract Anniversary Date for the amount remaining on the contract.

Failure to submit this with the executed contract shall be cause for declaring the contract null and void pursuant to N.J.S.A. 18A:64A-25.17.

D. LABOR AND MATERIAL (PAYMENT) BOND

The successful bidder shall with the delivery of the performance bond submit an executed payment bond to guarantee payment to laborers and suppliers for the labor and material used in the work performed under the

contract.

Failure to submit a labor and material bond with the performance bond shall be cause for declaring the contract null and void.

E. MAINTENANCE BOND

Upon acceptance of the work by the owner, the contractor shall submit a maintenance bond (N.J.S.A. 18A:64A-25.17) in an amount not to exceed 100% of the project costs guaranteeing against the defective quality of work or materials for the period of one year.

REVISIONS AND ADDENDA

- A. The bidder understands and agrees that its bid/proposal/quote is submitted based on the specifications prepared by the owner. The bidder accepts the obligation to become familiar with these specifications.
- B. Bidders are expected to examine the specifications and related bid/proposal/quote documents with care and observe all their requirements. Ambiguities, errors, or omissions noted by bidders should be promptly reported in writing to the contracting agent. Any prospective bidder who wishes to challenge a bid/proposal/quote specification shall file such challenges in writing with the contracting agent no less than three business days before the opening of the bids/proposals. *Challenges filed after that time shall be considered void and have no impact on the county college or the award of a contract. In the event, that the bidder fails to notify the owner of such ambiguities, errors, or omissions, the bidder shall be bound by the requirements of the specifications and the bidder's submitted bid/proposal.*
- C. No oral interpretation and or clarification of the meaning of the specifications for any goods and services will be made to any bidder. Such request shall be in writing and addressed to the owner's representative stipulated in the specification. To be given consideration, *a written request must be received at least three (3) business days before the date fixed for the opening of the bid/proposal/quote for goods and services, and construction bids.*
- D. *All revisions and addenda to the specifications and notice will be in writing and will be provided through an advertisement in The Star-Ledger, sent to potential bidders who provided a physical mail address when obtaining a copy of the bid/proposal package, or had submitted a bid/proposal submission. All addenda so issued shall become part of the specification and bid/proposal/quote documents and shall be acknowledged by the bidder in the bid by completing the Acknowledgement of Receipt of Addenda form. The owner's interpretations or corrections thereof shall be final.*

When issuing addenda, the College shall provide required notice before the official receipt of bids/proposals/quotes to any person who has submitted a bid/proposal/quote or who has received a bid/proposal/quote package. They will be sent from certified mail or by certified facsimile transmission.

E. Discrepancies in Bids/Proposals/Quotes

1. If the amount shown in words and its equivalent in figures do not agree, the written words shall be binding. Ditto marks are not considered writing or printing and shall not be used.
2. If there is a discrepancy between the unit prices and the extended totals, the unit prices shall prevail. In the event there is an error in the summation of the extended totals, the computation by the owner of the extended totals shall govern.

F. Optional Pre-Bid/Proposals Conference

Attendance is not mandatory but is strongly recommended. Failure to attend does not relieve the bidder of any obligations or requirements

BRAND NAMES, STANDARDS OF QUALITY, AND PERFORMANCE

- A. Brand names and/or descriptions used in these specifications are to acquaint bidders with the types of goods and services desired and will be used as a standard by which goods and services offered as equivalent will be evaluated.
- B. When a specification uses "brand name or equivalent," the listed brand name shall serve as a reference or point of comparison for the functional or operational characteristic desired for the good or service being requested. Where a bidder submits an equivalent, it shall be the responsibility of the bidder to document the equivalence claim.

Failure to submit such documentation shall be grounds for rejection of the claim of equivalence.

- C. In submitting its bid, the bidder certifies that the goods and services to be furnished will not infringe upon any valid patent or trademark and that the successful bidder shall, at its own expense, defend any actions or suits charging such infringement, and will save the owner harmless from any damages resulting from such infringement.
- D. The contractor shall guarantee any or all goods and services supplied under these specifications. Defective or inferior goods shall be replaced at the expense of the contractor. The contractor will be responsible for return freight or restocking charges.

INSURANCE REQUIREMENTS

- E. Contractor's General Liability Policy must use Endorsement CG 20 10 (10.01) or its equivalent in combination with Endorsement CG 20 37 (10.01) or its equivalent. The Contractor's General Liability Policy shall be primary and non-contributing to any other insurance available to the Owner and the Additional Insureds.
- F. Contractor's General Liability policy must not include the following endorsements/exclusions or equivalent: CG 22 94 or CG 22 95 (Damage to Work Performed By Subcontractors Exclusion), CG 21 29 (Contractual Limitation Endorsement), or CG 24 26 (Amendment of Insured Contract Definition).
- G. All insurance obtained by the Contractor shall include a waiver of subrogation by the Contractor. Contractor shall require all insurance policies obtained by subcontractors to contain a waiver of subrogation by subcontractors.
- H. The coverages maintained by the Contractor shall be written by companies licensed to do business in the state of New Jersey and maintaining an AM BEST rating of A- or better with a financial rating of CLASS IX or larger.
- I. Each insurance obtained by Contractor shall contain the following wording verbatim:

“Essex County College” is interested in the maintenance of this insurance and it is agreed that this insurance will not be cancelled, materially changed, or not renewed without at least thirty (30) days advance written notice to Essex County College, 330 University Avenue, Newark, New Jersey 07102, Attn: Mr. Jamel Green, Comptroller/Deputy CFO, by certified mail – return receipt requested.”
- J. Copies of all insurance policies and/or certificates of insurance evidencing insurance provided by the Contractor shall, prior to the commencement of any Work at the Site, be furnished to Owner at:

Essex County College
330 University Avenue
Newark, New Jersey 07102
Attn: Mr. Ketan Gandhi, CFO

In the event of failure of the Contractor to furnish and maintain said insurance and to furnish satisfactory evidence thereof, the Owner shall have the right (but not the obligation) to take out and maintain the same for all parties on behalf of the Contractor who agrees to pay the cost thereof to the Owner upon demand. The procurement of insurance by Owner on behalf of Contractor shall not be deemed to be a waiver of the requirements of this Article 14, and shall not preclude the Owner from exercising other rights under the Contract Documents.

- K. **Waiver of Subrogation:** The Contractor hereby, on behalf of itself and any of its insurance carriers, successors, assignees, subcontractors, suppliers and vendors, waives and relinquishes any and all rights of subrogation arising in any way from or related to this Agreement or the Project, including but not limited to claims against Essex County College, Architect and Engineer, their consultants, separate contractors, and any of their subcontractors, sub-subcontractors, agents and employees. The Contractor shall require of the Contractor's subcontractors, agents and employees, by appropriate written agreements, similar waivers in favor of the parties enumerated herein.

INDEMNIFICATION

To the fullest extent permitted by law, the Contractor will defend, indemnify and save harmless Owner, Owner's Representative, Architect, their affiliates and agents, their respective members, officers, directors, and employees, (each an "Indemnitee", collectively the "Owner Indemnitees") from and against any and all liability (including, but not limited to, statutory liability), loss, damages, interest, judgments, claims and liens growing out of, and any and all costs and expenses (including, but not limited to, attorneys' fees and disbursements) arising out of or incurred in connection

with, any and all claims, demands, suits, actions, and/or proceedings which shall be made or brought against any of the Owner Indemnitees and without any contribution from any Indemnitee or insurer thereof for or in relation to: (a) any (or any alleged) injury to, or death of, any person or persons (including, but not limited to, officers, directors, and employees of any of the Owner Indemnitees or of Contractor or its Subcontractors) or any (or any alleged) damage to or loss of the use of property (including, but not limited to, property of any of the Owner Indemnitees) or otherwise, arising out of or in connection with the performance of the Work and which shall be (or shall be alleged to be) in whole or in part due to or the result of any act, omission, negligence, carelessness, or unlawful conduct on the part of Contractor, its agents, or subcontractors, or anyone directly or indirectly employed by any of them, or a default of Contractor in performance of any of its obligations hereunder; and (b) any infringement or alleged infringement of any patent, trademark, or copyright growing out of the performance of the Work and/or the use therein of any material, equipment, or process supplied by or through Contractor. The contractor's agreement to defend and indemnify extends to the Owner Indemnitee's concurrent or partial negligence, whether actual or alleged, to the fullest extent permitted by law. Notwithstanding anything to the contrary herein, the Contractor shall have no indemnity obligation under this paragraph to the extent such claim, loss, liability, damage, cost, or expense arises out of the sole proven negligence or unlawful conduct of an Owner Indemnitee.

The Contractor shall indemnify and hold harmless all of the Owner Indemnitees from and against any costs, and expenses (including reasonable attorney's fees) incurred by any of the Owner Indemnitees in enforcing any of the Contractor's defense, indemnity, and hold-harmless obligations under this Agreement.

LIABILITY FOR DEFECTIVE SERVICES:

Notwithstanding any payment or payments by Owner hereunder, Contractor shall be liable to Owner for all injuries sustained by Owner, its employees, officers, trustees, officials, directors, managers, and agents' employees, and any third party, by reason of any failure of Contractor to properly discharge its contractual obligations to Owner, its unsafe activities, its negligence, or its intention misconduct.

PRICING INFORMATION FOR PREPARATION OF BIDS/PROPOSALS

- A. The owner is exempt from any local, state, or federal sales, use, or excise tax. The owner will not pay for N.J. State Sales and Use Tax that is included in any invoices.
- B. Estimated Quantities: The owner has attempted to identify the item(s) and the estimated amounts of each item bid/proposal/quote to cover its requirements; however, experience shows that the amount ordered may be different than that submitted for bidding. The right is reserved to decrease or increase the quantities specified in the specifications. NO MINIMUM PURCHASE IS IMPLIED OR GUARANTEED.
- C. The contractor shall be responsible for obtaining any applicable permits or licenses from any government entity that has jurisdiction to require the same. All bids/proposals/quotes submitted shall have included this cost.
- D. Bidders shall insert prices for furnishing goods and services required by these specifications. Prices shall be net, including any charges for packing, crating, containers, etc. All transportation charges shall be fully prepaid by the contractor, F.O.B. destination, and placement at locations specified by the owner. As specified, placement may require inside deliveries. No additional charges will be allowed for any transportation costs resulting from partial shipments made for the contractor's convenience.
- E. In the event of a public emergency declared at the local, state, or federal level before the expiration of the contract, if the owner opts to extend the terms and conditions of the contract, the contractor agrees to extend the terms and conditions of this specification, whether existing or expiring for no longer than six months, for construction for the duration of the emergency.

APPLICABLE LAW

This Contract and all litigation arising from or related to the Contract shall be governed by the County Colleges Contracts Law, N.J.S.A. 18A:64A-25.1 *et seq.*, and shall be governed by the applicable laws, and regulations, of the State of New Jersey without reference to conflict of laws principles. The Contractor shall comply with all applicable federal, state, and local laws, rules, and regulations. To the extent that applicable law requires that certain language be included in the Contract, such language shall be deemed included by reference.

CONTRACT MODIFICATIONS

The owner reserves the right to issue Contract modifications, subject to mutual agreement between the Parties as to an equitable adjustment of the Contractor's compensation. All such amendments shall be in writing. Where the Parties cannot agree upon an equitable adjustment, the Owner may direct that the modification be implemented and adjust

compensation in a reasonable matter as the Owner sees fit. In such circumstance, Contractor shall comply with the modification and, if so inclined, pursue a claim against Owner. In order for the Contractor to pursue such a claim, it must have notified the Owner in writing of its intent to do so within seven business days of its receipt of the written directive from the Owner to proceed over the Contractor's objection. All Contract modifications must be signed by the Owner's Representative designated below on behalf of the Owner.

WAIVER BY OWNER

Notwithstanding any language found elsewhere in the Contract, the Owner shall not be deemed to have waived any right of Owner or requirement of Contractor unless such waiver is found in a writing signed by the Owner's Representative designated below and specifically and expressly stating the precise nature of the intended waiver. No such waiver by the Owner shall be implied.

INTERPRETATION

If any provision in this Contract is found to be ambiguous, it is agreed that such ambiguity need not be resolved against the drafter.

COUNTERPARTS

This Contract may be executed in any number of counterparts and all of such counterparts shall for all purposes constitute one agreement binding on the parties hereto, notwithstanding that all Parties are not signatories to the same counterpart. For purposes of this Contract, a counterpart signed by facsimile or other electronic means shall constitute an original. Any Party delivering an executed counterpart of this Contract by electronic means shall, if requested, also deliver an original executed counterpart, but the failure to deliver an originally executed counterpart shall not affect the validity of this Contract.

STATUTORY AND OTHER REQUIREMENTS

The following are mandatory requirements of this bid and contract.

A. MANDATORY AFFIRMATIVE ACTION CERTIFICATION

No firm may be issued a contract unless it complies with the affirmative action provisions of N.J.S.A. 10:5-31 and N.J.A.C. 17:27 as administered by the Division of Purchase & Property Contract Compliance and Audit Unit (Division) and provided below. The contract will include the language included in this specification.

1. Goods, General Services, Professional Service, and Construction Contracts

Each contractor shall submit to the public agency, after notification of award but prior to execution of a goods and services contract, one of the following three documents:

- a. A Letter of Federal Approval indicating that the vendor is under an existing federally approved or sanctioned affirmative action program. A copy of the approval letter must be provided by the vendor to the Public Agency and the Division. This approval letter is valid for one year from the date of issuance.
- b. A Certificate of Employee Information Report (hereafter "Certificate"), issued in accordance with N.J.A.C. 17:27. The vendor must provide a copy of the Certificate to the Public Agency as evidence of its compliance with the regulations. The Certificate represents the review and approval of the vendor's Employee Information Report, Form AA-302 by the Division.
- c. The successful bidder shall complete an Initial Employee Report, Form AA-302, and submit it to the Division with a check or money order for \$150.00 made payable to "Treasurer, State of NJ" and forward a copy of the Form to the Public Agency. Upon submission and review by the Division, the Report shall constitute evidence of compliance with the regulations

B. NEW JERSEY ANTI-DISCRIMINATION

The contract for this bid shall require that the Contractor agrees not to discriminate in employment and agrees to abide by all anti-discrimination laws including but not limited to N.J.S.A. 10:2-1 as included in Attachment B of this document.

C. AMERICANS WITH DISABILITIES ACT OF 1990

Discrimination on the basis of disability in contracting for the purchase of goods and services is prohibited. If awarded the contract, the Contractor is required to comply with requirements related to the Americans with

Disabilities Act as provided in this specification as Attachment C. The Contractor is obligated to comply with the Act and to hold the owner harmless for any violations committed under the contract.

D. STATEMENT OF OWNERSHIP

N.J.S.A. 52:25-24.2 provides that no business organization regardless of the form of ownership shall be awarded any contract for the performance of any work or the furnishing of any goods and services, unless, **prior to the receipt of the bid or accompanying the bid** of said business organization, bidders shall submit a statement setting forth the names and addresses of all persons and entities that own ten percent or more of its stock or interest of any type at all levels of ownership. The disclosure shall be continued until names and addresses of every non-corporate stockholder, and individual partner, and member exceeding the ten percent ownership, has been listed.

The included Statement of Ownership shall be completed and attached to the bid proposal. This requirement applies to all forms of business organizations, including, but not limited to, corporations and partnerships, publicly-owned corporations, limited partnerships, limited liability corporations, limited liability partnerships, sole proprietorship, and Subchapter S corporations. Failure to submit a disclosure document shall result in rejection of the bid as it cannot be remedied after bids have been opened.

Not-for-profit entities should fill in their name, check the not-for-profit box, and certify the form. No other information is necessary.

E. PROOF OF BUSINESS REGISTRATION

Pursuant to N.J.S.A. 52:32-44, Essex County College is prohibited from entering into a contract with an entity unless the bidder/proposer/contractor and each subcontractor that is required by law to be named in a bid/proposal/contract have a valid Business Registration Certificate on file with the Division of Revenue and Enterprise Services within the Department of the Treasury.

Prior to contract award or authorization, the Contractor shall provide the Contracting Agency with its proof of business registration and that of any named subcontractor(s). Subcontractors named in a bid or other proposal shall provide proof of business registration to the bidder, who in turn, shall provide it to the Contracting Agency prior to the time a contract, purchase order, or another contracting document is awarded or authorized.

During the course of contract performance:

1. the Contractor shall not enter into a contract with a subcontractor unless the subcontractor first provides the Contractor with valid proof of business registration.
2. the Contractor shall maintain and submit to the Contracting Agency a list of subcontractors and their addresses that may be updated from time to time.
3. the Contractor and any subcontractor providing goods or performing services under the contract, and each of their affiliates, shall collect and remit to the Director of the Division of Taxation in the Department of the Treasury, the use tax due pursuant to the Sales and Use Tax Act, (N.J.S.A. 54:32B-1) on all sales of tangible personal property delivered into the State. Any questions in this regard can be directed to the Division of Taxation at (609) 292-6400. Form NJ-REG can be filed online at www.state.nj.us/treasury/revenue/busregcert.shtml.

Before final payment is made under the contract, the Contractor shall submit to the Contracting Agency a complete and accurate list of all subcontractors used and their addresses.

Pursuant to N.J.S.A. 54:49-4.1, a business organization that fails to provide a copy of business registration as required, or that provides false business registration information, shall be liable for a penalty of \$25 for each day of violation, not to exceed \$50,000, for each proof of business registration not properly provided under a contract with a contracting agency.

Emergency Purchases or Contracts

For purchases of an emergent nature, the Contractor shall provide its Business Registration Certificate within two weeks from the date of purchase or execution of the contract or before paying for goods or services, whichever is earlier.

F. DISCLOSURE OF INVESTMENT ACTIVITIES IN IRAN

N.J.S.A. 52:32-55 prohibits State and local public contracts with persons or entities engaging in certain investment activities in the energy or finance sectors of Iran. Bidders must indicate if they comply with the law by certifying

the form. Pursuant to N.J.S.A.18A:64A-25.43, the owner is required to notify the New Jersey Attorney General if it determines a false certification has been submitted.

G. PURCHASE ORDER REQUIRED

No contractor or vendor shall commence any project, provide any service or deliver any goods until he/she receives an approved purchase order authorizing work to begin or goods to be delivered.

H. DEBARMENT, SUSPENSION, OR DISQUALIFICATION – Federal Executive Orders #12549, #12689, and N.J.S.A. 52:32-44.1 (P.L. 2019, c.406).

Essex County College will not enter into a contract for work with any person, company, or firm that is on the State Department of Labor and Workforce Development; Prevailing Wage Debarment List, the State of New Jersey Consolidated Debarment Report; and the Federal Debarred Vendor List – Exclude Parties List System. (www.state.nj.us/treasury/debarred).

All bidders are required to submit a sworn statement indicating whether or not the bidder is, at the time of the bid, included on the State Department of Labor and Workforce Development; Prevailing Wage Debarment List, or the State of New Jersey Consolidated Debarment Report, or the Federal Debarred Vendor List – Excluded Parties List System.

I. QUALIFICATION OF BIDDERS – CONTRACTOR QUESTIONNAIRE CERTIFICATION FORM

Essex County College may make such investigations as it seems necessary to determine the ability of the bidder to perform the terms of the contract. The bidder shall complete a Contractor Questionnaire Certification Form and return same with the proposal and shall furnish all information to the College that the College may require to determine the Contractor's ability to perform the duties and obligations as outlined in these specifications.

All bidders are reminded that proposals may be rejected as not being responsive, therefore bidders are asked to complete the Questionnaire and to provide any supporting documents with the proposal package.

J. NOTICE OF EQUIPMENT AND MATERIALS CHANGES

The contractor shall notify Essex County College of impending changes in or discontinuation of models or specifications in materials or equipment known to him at the time of delivery and to deliver only the latest model and design of equipment specified at the time of delivery unless notified otherwise by the College.

K. WARRANTY

The Contractor will replace without charge for materials, labor, or transportation any and all parts found defective within one year from the date of final acceptance.

If equipment fails to function properly for any reason whatsoever (other than negligence on the part of a College employee) within the first thirty days after delivery, it shall be replaced with new equipment under the conditions of warranty and manufacturer's guarantee as stated for new equipment or replacement.

SERVICE

During the warranty period, the Contractor will furnish field service within a twenty-four (24) hour period. The Contractor will provide loaner equipment, comparable to the equipment furnished, at no cost to Essex County College, if any equipment breakdown occurs which cannot be repaired within the twenty-four (24) hour service period.

The Contractor shall provide at the time of delivery, service and operational manuals, schematics, parts lists, and any other technical data on each category of equipment purchased; listing the manufacturer's name, model number, and modifications. All the above data shall correspond to the equipment purchased.

Vehicles and equipment are to receive pre-delivery inspection and service according to the manufacturer's specifications.

Operation instructions and manuals will be provided by the Contractor's representative to Essex County College personnel at the time of equipment delivery.

L. DOCUMENTS

A certificate of ownership will be furnished.

Vehicles shall conform to Motor Vehicle Laws of the State of New Jersey and State inspection to be acquired before acceptance by the College.

In addition to equipment specified in basic specifications, vehicles shall be equipped with all other standard equipment as specified by the manufacturer and must be so equipped and constructed to permit Gross Vehicle Weight specified. Equipment shall be equipped following federal regulations, including OSHA.

M. AUTHORITY OF ESSEX COUNTY COLLEGE

On all questions concerning the interpretations of specifications, the acceptability, quality of materials of items furnished and work performed the classification of materials, the execution of the work, and the determination of payment due or to become due, the decision of the Essex County College Board of Trustees, or its designate, shall be final and binding.

N. FORCE MAJEURE

As used in this Agreement, an event of "Force Majeure" shall mean any event that: (a) prevents the affected Party (the "Affected Party") from performing its obligations under this Agreement or complying with any conditions required by the other Party under this Agreement, and (b) is unforeseeable and is beyond the reasonable control of and not the result of the fault or negligence of the Affected Party or such Affected Party's Personnel (or their Affiliates), and (c) could not have been prevented by the Affected Party's or its Personnel's (or their Affiliates) exercise of reasonable diligence. For purposes of clause (b) above, the following events shall be considered to be beyond the reasonable control of an Affected Party or its Personnel: war, civil insurrection, flash floods, hurricanes, tornadoes, typhoons, lightning strikes, earthquakes, epidemics, quarantines, embargoes, riots, and sabotage. Notwithstanding anything in this Section to the contrary, in no instance will the following be considered events beyond Contractor's reasonable control or constitute a Force Majeure event: (i) strikes or labor disturbances involving the employees of Contractor or any of its Subcontractors or caused by any violation by Contractor or its Subcontractors of any labor agreements; (ii) price fluctuations with respect to labor or materials, supplies or components of equipment related to items to be supplied by Contractor under this Agreement; (iii) mere economic hardship (including as suffered by the Affected Party or its Personnel or any of their Affiliates), or (iv) normal climatic conditions (based upon a one hundred year period) at the Project Site.

Burden of Proof. The burden of proof as to whether a Force Majeure event has occurred shall be upon the party claiming a Force Majeure event.

Excused Performance. If the Affected Party is rendered wholly or partly unable to perform its obligations under this Agreement because of a Force Majeure event, such Affected Party will be excused from whatever performance is affected by the Force Majeure Event to the extent so affected, provided that:

1. the Affected Party, within twenty-four (24) hours after knowing of the occurrence of the Force Majeure event, gives the other Party written notice describing the particulars of the occurrence;
2. the suspension of performance resulting from such Force Majeure event shall be of no greater scope and no longer duration than is reasonably required by the Force Majeure event;
3. no obligations of either Party which arose before the occurrence causing the suspension of performance are excused as a result of the occurrence;
4. the Affected Party must continue to perform its obligations under this Agreement to the extent possible, and the Affected Party must use all reasonable efforts to overcome, mitigate and remedy the damages, delays, and effects of the Force Majeure and its inability to perform its obligations under this Agreement as a result thereof; and
5. when the Affected Party is able to resume the performance of its obligations hereunder, that Party shall give the other Party written notice to that effect and shall promptly resume such performance.

O. SUBCONTRACTS

Prior to awarding any subcontract, the Contractor shall notify the Owner and Architect or Engineer of the name of each proposed subcontractor and the amount of the subcontract. The owner shall have the right to reject any subcontractor who does not establish to the satisfaction of the Owner its experience, competence, and financial ability to perform the Work. Owner agrees to act diligently upon receipt from Contractor of the names of proposed subcontractors and shall not delay the award of any subcontract to a subcontractor deemed acceptable to Owner.

If Owner disapproves of a proposed subcontractor, it may direct the Contractor to award such work to an alternate subcontractor of the Owner's choosing provided that if an increase in the cost of performing the Work or furnishing the materials caused by the award of a such subcontract to the alternate subcontractor shall result, Owner, shall have the option to permit the original subcontractor to work or approve a Change Order in accordance with "Changes in the Work" herein, and an appropriate adjustment of the Contract Sum.

By appropriate written agreement, the Contractor shall require each subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by the terms of the Contract Documents, and to assume toward the Contractor all obligations and responsibilities which the Contractor assumes toward the Owner. The Contractor shall make available to each subcontractor copies of the Contract Documents to which the subcontractor will be bound.

All subcontracts and purchase orders shall include provisions that: (a) they are assignable to Owner, or another contractor designated by Owner, without consent of the subcontractor; (b) that upon such an assignment becoming effective such subcontractor will be bound to Owner or such contractor designated by Owner as fully and in the same manner as such subcontractor is bound to Contractor under such subcontract; and (c) that upon such assignment becoming effective all sureties of the obligations of such subcontractor shall be bound to Owner or such contractor designated by Owner as fully and in the same manner as such sureties are bound to the Contractor. The assignment of such subcontracts shall not become effective unless an event of default has occurred hereunder and Owner has terminated this Contract.

The Contractor shall include in its subcontracts all requirements concerning affirmative action and equal employment opportunity set forth in "Equal Employment Opportunity and Affirmative Action Requirements" set forth, and require that subcontractors submit all applicable forms.

The Contractor shall include in its subcontracts the dispute resolution provisions herein.

P. ASSIGNMENT

Owner and Contractor each bind themselves, their successors, assigns and legal representatives to the other party hereto, and to the successors, assigns, and legal representatives of such other party in respect to all covenants, agreements, and obligations contained in the Contract Documents. However, the obligations of the Contractor arising hereunder may not be assigned without the Owner's prior written consent. Contractor further agrees to insert in all subcontracts the requirement that the subcontract shall not be assigned other than to the Owner or to another Contractor designated by the Owner without the Owner's prior written consent.

Q. PROHIBITED INTEREST

No official of the College who is authorized in such capacity and on the behalf of the College to negotiate, make, accept or approve, or to take part in negotiating, making, accepting, or approving any material or supply contract or any subcontract in connection with the furnishings of supplies and/or equipment, shall become directly or indirectly interested personally in this contract or in any part thereof.

R. THE COLLEGE RESERVES

The right to cancel part of all of the awards in the event of a failure by the Contractor to deliver the materials as required and/or the failure to furnish materials as specified.

In case of rejection or non-delivery, the College may procure the articles or services from other sources and hold the Contractor responsible for any excess cost occasioned thereby as well as up to 15% for any and all fees, legal and otherwise.

S. MAINTENANCE OR RECORDS

Pursuant to N.J.A.C. 17:44-2.2, the Contractor shall maintain all documents related to products, transactions, or services under this contract for a period of five (5) years from the date of final payment. Such records shall be made available to the New Jersey Office of the State Comptroller upon request.

DOCUMENT CHECKLIST

The bidder shall complete and sign the Bid/Proposal/Quote Submission Document Checklist and include it in the bid/proposal/quote submission. For construction bids, failure to submit the checklist is a fatal defect and the bid will be rejected. This document serves as a guide to bidders of the documents that are required to be submitted with the bid/proposal/quote.

A. NON-COLLUSION AFFIDAVIT

The Affidavit shall be properly executed and submitted with the bid proposal.

B. NEW JERSEY WORKER AND COMMUNITY RIGHT TO KNOW ACT

The manufacturer or supplier of chemical substances or mixtures shall label them in accordance with N.J. Worker and Community Right to Know Law (N.J.S.A. 34:5A-1 et seq., and N.J.A.C. 8:59 et seq). All direct use containers shall bear a label indicating the chemical name(s) and Chemical Abstracts Service number(s) of all hazardous substances in the container, and all other substances which are among the five most predominant substances in the container, or their trade secret registry number(s) pursuant to N.J.A.C. 8:59-5. "Container" means a receptacle used to hold a liquid, solid or gaseous substance such as bottles, bags, barrels, cans, cylinders, drums, and cartons. (N.J.A.C. 8:59-1.3). Further, all applicable Material Safety Data Sheets (MSDS) - hazardous substance fact sheets - must be furnished. All containers which are stored at an owner's facilities by the Contractor or subcontractors shall display RTK labeling. Vendors with questions concerning labeling should contact the New Jersey Department of Health and Senior Services Right to Know Program for assistance in developing proper labels. www.nj.gov/health/workplacehealthandsafety/right-to-know/.

C. PREVAILING WAGE ACT

Pursuant to N.J.S.A. 34:11-56.25 et seq., contractors on projects for public work shall adhere to all requirements of the New Jersey Prevailing Wage Act. The Contractor shall be required to submit a certified payroll record to the owner within ten (10) days of the payment of the wages. In the event it is found that any worker, employed by the Contractor or any subcontractor has been paid a rate of wages less than the prevailing wage required to be paid, the owner may terminate the Contractor's or subcontractor's right to proceed with the work, or such part of the work as to which there has been a failure to pay required wages and prosecute the work to completion.

The Contractor is also responsible for obtaining and submitting all subcontractors' certified payroll records within the aforementioned period. The Contractor shall submit said certified payrolls in the form outlined in N.J.A.C. 12:60-2.1(c). It is the Contractor's responsibility to obtain any additional copies of the certified payroll form to be submitted by contacting the New Jersey Department of Labor and Workforce Development, Division of Workplace Standards. Additional information is available at http://lwd.dol.state.nj.us/labor/wagehour/wagerate/pwr_construction.html.

D. PUBLIC WORKS CONTRACTOR REGISTRATION ACT

N.J.S.A. 34:11-56.48 et seq. requires that a general or prime contractor and any listed subcontractors named in the contractor's bid proposal shall possess a certificate *at the time the bid proposal is submitted*. After the bid, and proposals are received and before the award of the contract, the successful contractor shall submit a copy of the contractor's certification along with those of all listed subcontractors. All non-listed subcontractors and lower-tier sub-subcontractors shall be registered before starting work on the project. It is the general contractor's responsibility that all non-listed sub-contractors at any tier have their certificate before starting work on the job.

Under the law, a "contractor" is "a person, partnership, association, joint-stock company, trust, corporation or other legal business entity or successor thereof who enters into a contract" which is subject to the provisions of the New Jersey Prevailing Wage Act [N.J.S.A. 34:11-56.25, et seq.] It applies to contractors based in New Jersey or another state.

To register, a contractor must provide the State Department of Labor and Workforce Development with a full and accurately completed application form.

The form is available online at www.state.nj.us/labor/lssc/lspubcon.html.

N.J.S.A. 34:11-56.55 specifically prohibits accepting applications for registration as a substitute for a certificate of registration.

E. EQUIPMENT CERTIFICATION

Bidder shall certify on the Equipment Certification form that they control or have access to the equipment necessary to do the required work if awarded the contract. If the bidder does not own or lease the equipment, a certification from the owner of the equipment that the bidder will have access to the equipment is required with the bid/proposal.

METHOD OF CONTRACT AWARD

A. The length of the contract shall be stated in the technical specifications. Please see Section "Termination of Contract" for additional information.

B. Depending on the nature of the bid and as the college determines in its best interest, the college may award the bid

as per N.J.S.A. 18A:64A-25.1 et seq.

- C. The form of contract shall be submitted by the owner to the successful bidder. Terms of the specifications/bid package prevail. Bidder exceptions must be formally accepted by the owner; material exceptions shall not be approved.
- D. The successful bidder/respondent shall complete the W-9 Form and submit it to the college before the contract award. The form is available at the following link: www.irs.gov/pub/irs-pdf/fw9.pdf.

Continuation of the terms of the contract beyond the fiscal year is contingent on the availability of funds in the following year's budget. In the event of the unavailability of such funds, the owner reserves the right to cancel the contract.

CAUSES FOR REJECTING BIDS AND APPEAL OF DECISIONS

- A. No bid/proposal/quote shall be accepted which does not conform to the specifications. Nothing contained in this specification shall be construed as depriving any county college of the right to reject all bids/proposals.
- B. Bidder acknowledges that this bid and the award of a contract are governed by the County College Contracts Law, N.J.S.A. 18A:64A-25.1 et seq. and that any legal challenges to the bidding process, the award of contract, or the rejection of any bids shall be pursued before the Board of Trustees of Essex County College following P.L. 1994, Ch. 48, Sec 6f and the Rules Governing Hearings Before the Board of Trustees of Essex County College.
- C. If a Bidder challenges or protests the award of a Bid, it shall reimburse the Owner for all costs, expenses, and losses incurred by the Owner, including all attorney's fees, because of such challenge or protest, except to the extent that the Bidder may be adjudicated to be a prevailing party against the Owner as to such challenge or protest. Under no circumstances shall the Owner reimburse to any party any fees, costs, or expenses related to a bid challenge or protest.

TERMINATION OF CONTRACT

- A. **Termination for Convenience.** The owner may terminate this Agreement for convenience without cause at any time upon ten days' written notice. Upon receipt of the notice, the Contractor shall discontinue its Work, remove its equipment, materials, and employees from the site and take such action as necessary to terminate its agreements with subcontractors and suppliers. The Contractor shall then promptly deliver to the Owner a statement covering the balance owed under this Agreement for Work completed and materials ordered prior to receiving the notice of termination for convenience, for demobilization, and for any other costs for which it is liable to others by reason of such termination. Under no circumstances will Contractor be entitled to any lost profits by reason of termination for convenience. If the Owner terminates this Agreement pursuant to the provision entitled "Termination for Cause" and it is ultimately decided by a court of law or an arbitration panel that the Contractor has not failed to comply with any of the provisions of this Agreement or should not have had this Agreement terminated for cause, such termination shall be treated as a Termination for Convenience pursuant to this Clause and Contractor shall have no further or additional recourse in connection with such termination.
- B. **Termination for Cause.** The owner shall have the right to terminate this Contract after giving ten days' written notice of termination to the Contractor in the event of any default by the Contractor.
- C. **Default.** It shall be considered a default by the Contractor whenever the Contractor shall:
 - 1. declare bankruptcy, become insolvent, or assign its assets for the benefit of its creditors;
 - 2. disregard or violate provisions of the Contract Documents or fail to prosecute the work according to the agreed Schedule of Completion, including extensions thereof;
 - 3. fail to provide a qualified superintendent, competent workers or subcontractors, or proper materials, or fail to make prompt payment therefor;
 - 4. shall repeatedly refuse or fail to supply enough properly skilled workers or proper materials;
 - 5. repeatedly disregards applicable laws, statutes, ordinances, codes, rules, and regulations, or lawful orders of a public authority.
- D. In the event of termination of the Contract by the Owner because of default by the Contractor, the Owner may take possession of the Work and all materials and equipment thereon and may finish the Work by whatever method and means it may select.

- E. Upon termination of the Contract by the Owner, no further payments shall be due to the Contractor until the Work is completed. If the unpaid balance of the contract price shall exceed the cost of completing the Work including all overhead costs, the excess shall be paid to the Contractor. If the cost of completing the Work shall exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The cost incurred by the Owner, as herein provided, and the damage incurred through the Contractor's default shall be certified by the Owner.

DISPUTE RESOLUTION PROCEDURES

- A. The Contractor shall give Owner written notice within three (3) days after the happening of any event which the Contractor believes may give rise to a claim by the Contractor or its subcontractors for an increase in compensation or an extension of the time of performance. Within ten (10) days after the happening of such event, the Contractor shall supply Owner with a statement supporting the claim, which statement shall include Contractor's detailed estimate of any change in compensation and the time of performance occasioned thereby. If requested by Owner in writing, the Contractor shall substantiate its claim with payroll documents, paid invoices, receipts, records of performance and other documents satisfactory to Owner and subject to Owner verification. Owner shall not be liable for, and the Contractor waives, any claim or potential claim of the Contractor of which the Contractor knew and which was not reported by the Contractor in accordance with the provisions of this Article. The Contractor agrees to continue performance of the Work during the time any claim hereunder is pending. Owner shall not be bound to any adjustments in compensation or time performance for the Contractor's claim unless expressly agreed to by Owner in writing.
- B. To the greatest extent permitted by law, notwithstanding the fact that a dispute, controversy or question shall have arisen in the interpretation of any provision of this Agreement, the performance of any Work, the delivery of any material, the payment of any moneys to the Contractor, or otherwise, the Contractor agrees that it will not directly or indirectly stop or delay any Work or part of its Work on its part required to be performed or stop or delay the delivery of any materials on its part required to be furnished hereunder, pending the determination of such dispute or controversy. Failure of the Contractor to continue proceeding diligently with the performance of Work shall constitute a material breach of contract, regardless of the ultimate decision on the dispute, it being understood and agreed that any controversy between the parties shall not be deemed a basis to delay or suspend the Work, unless directed otherwise by the Owner.
- C. All claims, disputes, and other matters in question between the Owner and the Contractor arising out of or relating to this Contract or any breach thereof, except for claims which have been waived by the acceptance of Final Payment, shall be submitted to mediation within thirty days after a final determination is made by the Owner with regard to the claim, dispute or matter. The mediator shall be selected by mutual agreement between the parties or by the American Arbitration Association if an agreement cannot be reached among the parties. The mediation shall be conducted at the Essex County College, Newark, New Jersey. The cost of the mediation shall be borne equally among the parties. The mediation shall be attended by an executive officer of the Contractor who shall have full authority to act for and bind the Contractor and with duly authorized representatives of the Owner. Mediation shall be a condition precedent to arbitration.
- D. All claims, disputes, and other matters in question between the Owner and the Contractor arising out of or relating to this Contract or any breach thereof, not settled by mediation, shall be decided by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association and applicable State statutes then in effect unless the parties mutually agree otherwise. The scope of the authority of the arbitrators in issuing any award shall be limited by any statute or regulation which governs the liability or damages from the Owner. The award rendered by the arbitrators in any such arbitration proceeding shall be final and binding, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.
- E. The parties acknowledge that by choosing arbitration as their sole means of dispute resolution, they are waiving their right to trial, whether by jury or by a judge and agree to submit all statutory, contractual, and equitable claims that may arise out of this Contract and the performance of the Work to binding arbitration. The parties further acknowledge that they are choosing arbitration, in part, in order to expedite the disposition of any disputes and, toward that end, they agree to work cooperatively with the arbitrator to limit discovery while preserving their rights to effectuate a thorough prosecution of their claims and/or defense against any claims that may be raised in the arbitration.
- F. Notice of the demand for arbitration shall be filed in writing with the other party to this agreement and the American Arbitration Association. The demand for arbitration shall be made within a reasonable time after the

claim, dispute, or another matter in question has arisen, and in no event shall it be made before the mediation has been requested or after the date when the institution of legal or equitable proceedings based on such claim, dispute or other matter in question would be barred by the applicable statute of limitations.

- G. The Owner, at its sole discretion, may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided, however, that (1) the arbitration agreement governing the other arbitration permits consolidation, and (2) the arbitrations to be consolidated substantially invoke common questions of law or fact.
- H. The mediation and arbitration process shall not affect the Owner's right to terminate the Contractor's Work, in whole or part, whether for the Owner's convenience or due to the Contractor's default; and/or otherwise act in the public interest

DELIVERY

- A. Deliveries must be made within the time specified by the College on the order. Under no circumstances will a purchase order be valid for a period in excess of 90 days, unless otherwise specified. Such time shall be computed on the basis of the number of stated calendar days from the date on the order or as agreed prior to the date on the order. If delivery is not made within such time, the College reserves the right to cancel the order and upon specific agreement, a new purchase order may be issued or placed the order as stated herein. Packages will NOT be received by Essex County College unless all delivery charges have been paid.
- B. Bidders shall acquaint themselves with conditions to be found at the site and shall assume all responsibility at no cost to the College for placing and installing the equipment furnishings in the locations required. All finished surfaces shall be cleaned and polished by the Contractor prior to final payment.
- C. DELIVERY TIME. Unless otherwise stipulated:
 - 1. Deliveries shall be made between 8:30 A.M. and 4:00 P.M. Monday through Friday at the College Receiving Department or as otherwise specified.

NOTE: The College will be closed on Fridays during July and August; therefore, deliveries shall be made between 8:30 A.M. and 4:00 P.M. Monday through Thursday.
 - 2. The College reserves the right to reject any delivery made before or after the aforesaid times unless the schedule(s) provides(s) for different delivery times.
 - 3. All areas affected by delivery shall remain unobstructed so "business" can operate as usual unless otherwise stated by the College.
- D. All containers are to be removed from the building(s) and campus.
- E. When the bid standard in the purchase order is "as per sample," delivery shall conform to such sample when it was new and unused. Unless otherwise stated in the purchase order, deliveries must consist only of new and unused merchandise.
- F. The vendor accepts responsibility for damages to persons and property that may result from any act of his or his agent in making deliveries.
- G. Where possible all goods delivered are to be manufactured or produced in the United States or its territorial possessions.
- H. Open market orders are subject to audit by the Purchasing Department as to the reasonableness and justness of the prices charged.
- I. EXCESS ON ORDER Only the College reserves the right to require any specified additional delivery on any item in excess of the quantity originally ordered.
- J. NOTICE TO VENDORS. Vendors are authorized to ship only those items covered by the contract. If a review of material received indicates that material other than that covered by the contract has been ordered and delivered, the Director of Purchasing will take such steps as are necessary to have the material returned regardless of the time lapsed between the date of delivery and discovery of the violation. Full credit will be demanded. Compliance with this requirement is the full responsibility of the vendor Violation of this clause may also result in the removal of the offending vendor's name from the mailing list for a period of up to three years.

PAYMENT

- A. No payment will be made unless duly authorized by the owner's authorized representative and accompanied by proper documentation.
- B. Payment will be made following the owner's policy and procedures. Invoices shall specify, in detail, the period for which payment is claimed, the Purchase Order number, the services performed during the prescribed period, the amount claimed, and the correlation between the services claimed and this proposal.
- C. Purchase Order (P.O.) Number must appear on all invoices and must be submitted to the Accounts Payable Department at accountspayable@essex.edu.
- D. The owner may withhold all or partial payments on account of subsequently discovered evidence including but not limited to the following:
 - 1. Deliverables not complying with the project specification;
 - 2. Claims filed or responsible evidence indicating the probability of filing claims;
 - 3. A reasonable doubt that the contract can be completed for the balance then unpaid.

When the above grounds are removed, payment shall be made for amounts withheld because of them.

- E. Public funds may be used to pay only for goods delivered or services rendered. The owner shall not pay penalties and/or interest on overdue bills unless otherwise required by law. No employee is authorized to sign a letter of credit or any other document that represents a legal commitment on the part of the owner to pay additional fees.
- F. **Owner's right to withhold payment:** The owner shall have the right to withhold payment to the Contractor in the event that a 10-day cure notice has been issued to the Contractor and the required cure has yet to be fully implemented. Such payment withholding shall be in such amount to cover 120% of the Owner's estimated cost of having to implement the needed cure at its cost. Where a termination notice has been issued to Contractor, no further payment shall issue to Contractor, except in accordance with the termination-for-cause provision elsewhere in this Contract. Where Contractor has caused the Owner to be exposed to third-party claims, Owner shall have the right to withhold payment in an amount equal to 120% of the estimated liability of the Owner on such claims.

CONTRACT RENEWAL OR EXTENSION

In the event, the Contract has an extension or renewal option by the Owner and the Owner determines that it is in its best interest to extend or renew the contract, the Contractor will be so notified in writing at least 30 days prior to the expiration date of the existing Contract. In the event that Owner determines to exercise the renewal or extension option, the Contractor agrees to provide the Services for the period of renewal or extension determined by the Owner. The Contractor agrees to pay at least the minimum wage, as such rate may be increased over the term of the Contract, as may be extended at the sole discretion of the Owner in accordance with the provisions of the Request for Bids.

OTHER PROVISIONS

- A. Both parties agree to comply with all requirements of the Federal Health Insurance Portability and Accountability Act of 1996 ("HIPAA") as may be amended from time to time, and the corresponding HIPAA regulations for the confidentiality and security of medical information. If awarded the bid, the Contractor shall:
 - 1. Not use or disclose protected health information other than as permitted or required by law
 - 2. Use appropriate safeguards to protect the confidentiality of the information
 - 3. Report any use or disclosure not permitted

The Contractor, by execution of the contract, shall thereby indemnify and hold the owner harmless from all liabilities, claims, actions, costs, and penalties that may be incurred as the result of the failure of the Contractor to comply with the requirements of the Health Insurance Portability and Accountability Act (HIPAA) or any other statute or case law protecting the privacy of persons using its services.

- B. The owner shall retain all of its rights and interest in all documents and property both hard copy and digital furnished by the owner to the successful bidder (contractor) to assist the Contractor in the performance of this contract. None of the documents and/or property shall, without the written consent of the owner, be disclosed to others or used by the Contractor, or permitted by the Contractor to be used by their parties at any time except in the performance of the resulting contract.

The Contractor shall not have the right to use, sell, or disclose the total of the interim or final work products, or make them available to third parties, without the prior written consent of the owner. Any information supplied to the owner may be required to be supplied on CD/DVD or USB flash drive media compatible with Microsoft Windows, and Microsoft Office Suite 2010 or greater.

- C. Under state and federal statutes, certain government records are protected from public disclosure (e.g., HIPPA, FERPA, and others). The owner, the Contractor, and any subcontractors have a responsibility and an obligation to safeguard from public access student and employee personal information with which it has been entrusted when disclosure thereof would violate a student's right under the federal Family Educational Rights and Privacy Act (FERPA) and the employee's reasonable expectation of privacy. All payroll, personnel, and health insurance-related files are confidential. According to the New Jersey Open Public Records Act (OPRA), the owner retains the right to make any public disclosure under the law unless a claim of confidentiality under OPRA is made and sustained by the college. Also, among government records deemed confidential is administrative or technical information regarding computer hardware, software, and networks that, if disclosed, would jeopardize computer security. The Contractor and any subcontractor(s) are prohibited from the sale or distribution of all supplied information to any third party.
- D. Proof of licensure for any activity regulated by the State of New Jersey and required to do the work required under this specification, for either the firm or the person responsible for the work, shall be provided as required by the owner.

CONSTRUCTION REQUIREMENTS

THE CONTRACT DOCUMENTS

- A. The Contract Documents consist of this Contract, the Bid Specifications and Bidder's Price Proposal, the Technical Specifications and Contract Drawings, all written modifications issued after execution of this Contract, and the exhibits and forms attached hereto. These documents form the Contract, and all are fully a part of the Contract as if attached to this Agreement or repeated herein.

The Contract includes the following:

- A. This Contract
 - B. Bidder's Price Proposal.
 - C. Technical Specifications.
 - D. Drawings
 - E. Establishment of Targeted Goals for Construction Contractors and Subcontractors
 - F. Initial Project Workforce Report, Form AA-201
 - G. Monthly Project Workforce Report, Form AA-202
- B. The Contract Documents are complementary and cumulative, and what is called for one shall be as binding as if called for by all. To the extent of any direct conflict or inconsistency between any of the Contract Documents, the Contractor shall immediately seek clarification from the Architect and notify the Owner that clarification has been requested. In the event that the Architect fails to clarify such discrepancy within a reasonable time under the circumstances, the Contractor shall proceed with the Work and give precedence to the Contract Documents in the following order of priority:
- i. Modifications issued after execution of this Construction Contract;
 - ii. This Construction Contract;
 - iii. Clarifications and/or Addenda issued prior to the execution of the Construction Contract, with the Clarifications/ Addenda bearing the latest date taking precedence;
 - iv. The Drawings and Specifications set forth in the Project Manual.

In resolving any conflicts among the Contract Documents, the Contract Documents shall be given precedence based on the order in which they are set forth immediately above and the more stringent requirements beneficial to the interests of the Owner shall control, as reasonably determined by the Owner

- C. The Contractor represents and warrants to the Owner that the Contractor has (a) examined the Contract Documents, the job site, the surroundings, and local conditions, and (b) made all investigations it deems necessary or appropriate for a full understanding of the scope of the Work to be performed, and (c) examined all other documents and data which it deems necessary or appropriate to establish the Contract Sum. The Contractor acknowledges that it considers the foregoing factors sufficient and is not relying upon any representations or warranties of the Owner except as expressly herein set forth.
- D. The Contractor shall carefully study and compare the Contract Documents with each other and with any other information furnished by the Owner and shall promptly report to the Owner and the Architect or Engineer errors, inconsistencies, or omissions discovered. The Contractor shall not be liable to the Owner or Architect for damage resulting from errors, inconsistencies, or omissions in the Contract Documents unless the Contractor recognized such error, inconsistency, or omission and knowingly failed to report it to the Architect or Engineer. If the Contractor performs any construction activity knowing it involves a recognized error, inconsistency, or omission that should reasonably have been recognized or have been discovered by a prudent and experienced Contractor in advance, without such notice to the Architect or Engineer, the Contractor shall assume complete responsibility for such performance and shall bear an appropriate amount of the attributable costs for correction.
- E. The Contractor shall take field measurements and verify field conditions and compare such field measurements and conditions with the Contract Documents before commencing activities. Errors, inconsistencies, or omissions discovered shall be reported to the Owner and Architect or Engineer at once.

THE WORK

- A. The Contractor shall perform all the work required by the Contract Documents, including the Technical Specifications and the Drawings (the "Work") for the Project, and complete the Work within the time frame set forth in the approved Project Schedule, which shall be prepared by Contractor and approved by Owner and Architect or Engineer as set herein.
- B. The intent of the Contract Documents is to include within Contractor's scope of Work the obligation to perform and to provide all labor, supervision, materials, supplies, insurance, tools, equipment, licenses, taxes, approvals, transportation, field surveying, and other services and items as are necessary to satisfactorily complete the Work. The intent of the Contract Documents is to also include within the Contractor's scope of work all testing required by the Project's Drawings and Specifications and all applicable building codes, state, county or municipal law. Further, the Owner in its sole discretion shall have the right to conduct additional testing to verify that the Work is performed in accordance with the Contract Documents. The Contractor shall not be relieved of its obligation to perform the Work in accordance with the Contract Documents either by activities of the Architect, Owner's Representative or Owner, in the administration of this Contract, or by tests, inspections or approvals performed by persons other than the Contractor. Matters not expressly included in the Contract Documents, but which are reasonably inferable therefrom as being necessary to produce Work in accordance with the Contract Documents, shall be deemed as part of the Work. For purposes of this section, the scope of the Work shall be deemed to include: (1) items commonly associated with items of Work shown; and (2) items commonly associated with the indicated purpose or quality. Notwithstanding anything to the contrary herein, the Contractor shall not be obligated to pay for the cost of any permits necessary to perform the Work that are issued by any state, county, or municipal government entity.
- C. The Contractor agrees to furnish its best skill, judgment, and efficient business administration in performing its obligations under the Contract. The Contractor agrees to maintain an adequate supply of workers and proper materials on the job site at all times, to perform the Work in the best and soundest way, and to cooperate with the Architect or Engineer, in order to complete the Work expeditiously in accordance with the Contract Documents.
- D. The Contractor shall provide competent supervision of all phases of the Work and shall cause the Work to be performed in strict and complete compliance with the Drawings and Specifications and all things indicated and reasonably implied therefrom. The Contractor shall act as the project manager to coordinate all work by subcontractors, attend all job meetings with the Owner and Architect or Engineer and periodically render reports to the Owner and Architect or Engineer on the progress of the Work.
- E. Contractor shall furnish to Owner and Architect or Engineer, prior to commencement of work and within twenty days from date hereof, a Construction Progress Schedule is broken down by stages and, after the issuance of any Change Order, shall furnish to Owner a revision of such Schedule. The Progress Schedule shall indicate the dates for the starting and completion of the various stages of construction (and shall be revised as required by the conditions of the Work, subject to the Owner's approval). The Contractor shall maintain the progress of the Work in accordance with the Construction Progress Schedule, as the same may be revised. In order to comply with the Construction Progress Schedule, the Contractor will ensure that all subcontracts clearly state that the requirements of the Construction Progress Schedule must be met.
- F. The Contractor shall perform its obligations hereunder in strict compliance with all applicable laws, ordinances, rules, regulations, orders, statutes, codes, and requirements of the Board of Fire Underwriters and all federal, state, municipal, and other governmental entities having jurisdiction over the Project. The Contractor shall apply for and obtain all licenses and permits required in connection with the Work and, unless otherwise stated in the Contract Documents, shall be responsible for the fees associated with such permits. Contractor warrants that, when completed, the Project shall be in compliance with all laws in effect at the time of completion. Changes in costs reasonably incurred by Contractor resulting from changes in any governmental requirements effective after the date of this Agreement (including interpretation by governmental officials which increase or decrease costs) shall be covered by a Change Order.
- G. With respect to any work performed by Contractor for which Owner has agreed to issue a change order, Contractor covenants to maintain complete and accurate books of account showing the costs of the Project, which books shall, at all reasonable times, be open to inspection by Owner and Architect or Engineer.

TIME OF COMMENCEMENT, SUBSTANTIAL COMPLETION, AND LIQUIDATED DAMAGES

- A. **Substantial Completion.** Within ten calendar days from the delivery of a notice from Owner to Contractor to proceed (the "Notice to Proceed") Contractor shall commence performance of the Work and, subject to authorized adjustments, Substantial Completion shall be achieved.

- B. **Punch List Completion Within Sixty Days Of Substantial Completion.** The Contractor shall complete all Contract Work within sixty days after the Substantial Completion as determined by the Architect or Engineer. If there is any item of equipment that cannot be obtained and installed within the aforesaid period of time, the Contractor shall so inform the Owner and Architect upon receipt of notice of Substantial Completion, and request additional time, which may be considered for that specific item.
- C. **Liquidated Damages.** The Contractor acknowledges and agrees that time is of the essence. If the Contractor shall neglect, fail or refuse to achieve Substantial Completion by the date set forth above, as may be extended by written Change Order, the Contractor does hereby agree, as a part of the consideration for the awarding of this Contract, to pay to the Owner, as liquidated damages and not as a penalty, the sum of Five Hundred Dollars (\$500) for each calendar day beyond the date of Substantial Completion. Said amount of liquidated damages is agreed upon because of the impracticability and difficulty of fixing and ascertaining the true value of damage which the Owner will sustain by failure of the Contractor to complete the Work in a timely fashion.
- D. **Delay:** If the Contractor is delayed in achieving Substantial Completion of the Work by Force Majeure, by the acts of or failure to act by the Owner, Owner's Consultant's or Owner's separate contractors, or by the failure of governmental entities to process or issue permits, approvals, licenses or ordinances within customary time periods, or other causes beyond the Contractor's control that delaying the Contractor in achieving Substantial Completion of the Work, in the extension of the Substantial Completion Date, Contractor shall give notice to Owner promptly and in no event later than three (3) calendar days of the delay causing event. Contractor's sole remedy for any (i) delay in the commencement, prosecution, or completion of the Work, (ii) hindrance, interference, suspension, or obstruction in the performance of the Work, (iii) loss of productivity, or (iv) other similar claims (items i through iv herein collectively referred to in this section as "Delays"), whether or not such Delays are foreseeable, shall be an extension of time to complete the Work. The Contractor further acknowledges and agrees that adjustments in the Contract Time will be permitted for a delay only to the extent such delay (i) is not caused, or could not have been anticipated, by the Contractor, (ii) could not be limited or avoided by the Contractor's timely notice to the Owner of the delay or reasonable likelihood that a delay will occur, and (iii) is of a duration not less than one (1) day. In no event shall the Contractor be entitled to any other compensation or recovery of any damages in connection with any Delays including without limitation, consequential damages, lost opportunity costs, impact damages, or other similar remuneration. Failure by Contractor to provide notice to Owner in accordance herein constitutes a waiver by Contractor of any right to a time extension.

CONTRACT SUM

- A. The Owner shall pay the Contractor for the performance of the Work, subject to additions and deductions by Change Order as provided in the Contract Documents, the total Contract Sum Such Contract Sum includes, without limitation, all labor, materials, tools, equipment, water, heat, power, transportation, facilities (temporary or otherwise), equipment rental costs and all other services necessary for the proper construction and completion of the Project in accordance with the Contract Documents.
- B. The Contract Sum is determined based upon a stipulated sum.
- C. The **Bid Price Proposal**, upon which the Contractor was determined to be the successful lowest responsible bidder to perform the Work as set forth in the **Technical Specifications**, and the **Drawings**. Any questions which arise as to the work to be performed under this Contract shall be determined by the Architect or Engineer with reference to the Bid Price Proposal Sheet, the Technical Specifications, and the Drawings.

PROGRESS PAYMENTS

- A. Based upon Applications for Payment submitted to the Architect or Engineer by the Contractor, issued in such form as acceptable to the Architect or Engineer, and Certificates for Payment issued by the Architect or Engineer, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided in the Contract Documents.

- B. **Schedule of Values.** The Contractor shall promptly prepare and present to the Owner a proposed Schedule of Values allocating the actual cost of the Work among the different elements of the Work. If requested by the Owner, the Contractor shall provide additional detail and supporting data as the Owner may require substantiating the accuracy of the Schedule of Values. The Contractor shall not front-end load its schedule of values by increasing any element thereof in excess of the actual cost, and such acts shall constitute a material breach of this Agreement. The Contractor's Schedule of Values shall be used in determining the amounts payable to the Contractor hereunder, but only after it has been acknowledged in writing by the Owner. The Schedule of Values may be amended when mutually acknowledged in writing by the Owner and Contractor.
- C. **Work Performed and Off-Site Materials.** Payments to the Contractor shall be based upon Work actually performed, installed, and approved by the Architect or Engineer and materials stored off-site, provided, however, that with respect to materials stored off-site, the following conditions shall have been satisfied: (a) Owner shall be furnished with an original invoice from the material supplier certifying that the price of such materials has been paid in full by Contractor; (b) Owner shall receive a warranty bill of sale for such materials; (c) Owner shall have received a certificate evidencing that such materials are insured against loss on an all risk basis with Owner listed as the named insured; (d) such materials shall be clearly and visibly marked and tagged so as to indicate that title thereto is vested in Owner; (e) Architect or Engineer shall have inspected and approved such materials for incorporation into the Project; (f) Owner shall have received an effective waiver of all liens and rights to assert liens from the owner and lessor of the property upon which such materials are stored; (g) Owner shall have received an Affidavit from Contractor certifying that such materials will be incorporated into the work; (h) a retainage of ten percent (10%) shall be withheld from each payment for stored materials, in addition to the normal retainage withheld.
- D. **Applications for Payment.** At least fourteen days before each payment is due, the Contractor shall furnish to the Architect or Engineer an itemized Application for Payment showing the value of Work performed through the end of the calendar month. The Contractor acknowledges that the Architect's or Engineer's approval and/or signature of the Contractor's Application shall not relieve or decrease the Contractor's obligations under the Contract. Upon the Architect's or Engineer's approval of the Contractor's Application, the Architect or Engineer shall forward such Application to the Owner.
- E. **Certification Relating to Applications for Payment.** Each Application for Payment shall be notarized and bear the signature of the Contractor's Project Manager or of a more senior representative of the Contractor, which signature shall constitute the Contractor's representation to the Owner that the Work indicated in the Application has progressed to the level represented, has been properly and timely performed as required herein, that no Work has been included in the Application for Payment contrary to the request of the Owner, or contrary to any provision of the Contract Documents, that expenses and costs claimed in the Application have been actually incurred, that all obligations of the Contractor covered by prior Applications have been paid in full, and that, to the best of the Contractor's knowledge, information and informed belief, the amount requested is currently due and owing, there being no reason known to the Contractor that payment of any portion thereof should be withheld. Submission of the Contractor's Application for Final Payment shall further constitute the Contractor's representation to the Owner that, upon receipt from the Owner of the amount requested, all obligations of the Contractor to others incurred in connection with the Project will be paid in full within ten work-days of such receipt. In the event that the Owner becomes informed that any of the foregoing representations by the Contractor are wholly or partially inaccurate, the Owner may withhold payment of sums then or in the future otherwise due to the Contractor until the inaccuracy, and the cause thereof is corrected to the Owner's reasonable satisfaction.
- F. **Lien Releases and Verified List of Subcontractors.** Each Application for Payment shall be accompanied by the Contractor's and subcontractors' lien releases and partial waivers of lien **that are conditioned upon the Contractor's receipt of payment from the Owner,** for the full amount of the payments made through the date of the Application for Payment and to be made under the current Application for Payment and the Work covered thereby. Provision of such lien releases and waivers of claim shall be a condition precedent to the Owner's duty to make payments to the Contractor. The Contractor's application for Final Payment shall be accompanied by final lien releases and waivers of claim from the Contractor and all subcontractors together with a verified list of all subcontractors, including suppliers of materials and systems incorporated into the Work. Provision of such final lien releases and waivers of claim and the verified list shall be a condition precedent to Final Payment to the Contractor.
- G. **Discharge of Lien Claims.** If any subcontractor refuses to furnish such evidence required by Owner, Contractor may be required to either withhold payment from such subcontractor or furnish a bond, as approved by Owner, in a form satisfactory to Owner, to indemnify them against any such lien. In the event a subcontractor or material supplier files a lien against the Project, the Contractor shall promptly cause such lien to be formally released, bonded against, or satisfied, and shall reimburse the Owner for all costs and expenses, including, but not limited to, reasonable attorneys' fees, and bonding and title indemnity expenses incurred by it in contesting, discharging,

releasing or satisfying such lien or defending or otherwise participating in such suit. Owner shall have the right to retain out of any payment then or thereafter to become due to Contractor 150% of the amount claimed to indemnify Owner against any lien that may appear in favor of any person claiming by or under the Contractor, which amount shall include reasonable allowances for the estimated costs, including, but not limited to, attorneys' fees to defend any action in connection therewith or deposits which need to be made to have such lien released against the Project. Contractor shall similarly indemnify and protect and defend Owner in respect of any lien in favor of any person claiming by or under it, including, among others, its subcontractors or its and their material suppliers that may appear after final payment is made.

- H. **Payment of Applications for Payment.** Once the Contractor's Application for Payment has been certified by the Owner following approval by the Architect or Engineer, the Owner shall authorize payment to the Contractor at the next scheduled public meeting and issue payment during the Owner's next payment cycle following the meeting at which payment was authorized. If the Application is not in proper order or is not supported by all required documentation, then the Owner shall notify the Contractor of such deficiency, and the time for payment of such Application, or any applicable part thereof, shall be extended by the amount of time required to cure such deficiencies.
- I. **Withholding of Payment.** Any provision of the Contract Documents notwithstanding, the Owner shall not be obligated to make a payment or payments to the Contractor that is otherwise due if, and for so long as, any one or more of the conditions set forth in this paragraph exists:
- (i) Contractor's Application for Payment is not in the form or supported by the documentation required by this Agreement.
 - (ii) Any part of such payment is attributable to Work which is defective or not strictly conforming to the requirements of the Contract Documents.
 - (iii) Contractor has failed to make payments promptly to its subcontractors, consultants, employees, or others performing services in connection with the Project.
 - (iv) Reasonable evidence exists of damage or loss to Owner or to a third-party to whom Owner is or may be liable unless such liability has been accepted by Contractor's insurer.
 - (v) Reasonable evidence exists that the Work cannot be completed within the Contract Time and that the unpaid balance would be inadequate to cover actual damages or, if applicable, liquidated damages, for the anticipated delay.
 - (vi) Reasonable evidence exists that the Work cannot be completed for the unpaid balance of the Contract Sum.
 - (vii) Contractor is in default of any material obligations under the Contract Documents, after written notice by the Owner of such default to Contractor, and the Contractor has been given a reasonable opportunity to cure such default.

In the event that any of the foregoing conditions exist, the Owner shall be entitled to withhold from any sum then due or thereafter to become due, including from retained sums, an amount sufficient in the reasonable judgment of the Owner to satisfy, discharge and defend against such claims and to make good any losses, prospective losses, costs, attorney's fees, and other expenses which may result from the existence of such conditions. All other amounts due to the Contractor shall be paid as and when due.

- J. **Retainage.** The owner shall withhold ten percent of each progress payment due to the Contractor. Upon completion of fifty percent (50%) of the Work, retainage will be reduced to five percent until Substantial Completion of the Work. Owner may retain any such additional sums following Substantial Completion as Architect recommends is required to complete the Work. All amounts retained by Owner shall be retained until Final Completion of the Work and Contractor has signed its General Release and Final Waiver of Lien; provided, however, that Owner may, at its option, reduce or release retention for those subcontractors mutually agreed to by Owner and Contractor who have completed their portion of the Work provided that (i) such work has been approved by Architect or Engineer; (ii) each such subcontractor has signed a General Release and Final Lien Waiver; (iii) the Work is progressing satisfactorily in accordance with the Construction Progress Schedule; and (iv) such reduction or release does not, in Owner's opinion, increase Owner's financial risk on the Project. As a condition of the release of any retention to a subcontractor before the completion of the project, the subcontractor shall agree that the period of duration of any warranties made by it will not commence until the completion of all the Work.
- K. **"Final Completion"** shall be defined as such time as Contractor obtains a final Certificate of Completion from Architect or Engineer, and the Contractor submits to the Owner and Owner approves: (a) Release and Final Lien Waivers from Contractor and all subcontractors and material suppliers, in form and substance satisfactory to Owner; (b) Contractor's affidavit that all payrolls, bills for materials and equipment, and other indebtedness incurred by, through or under Contractor in connection with the Work (excluding Work pursuant to warranties and guaranties), have been paid or otherwise satisfied or, if not so paid or satisfied, that amounts satisfactory to

Owner, in Owner's sole discretion, have been withheld to protect itself from any claims resulting therefrom, including, but not limited to, attorney's fees; (c) all Contractor's as built drawings, records and related data have been delivered to Owner; (d) all guarantees and warranties to which Owner is entitled hereunder have been submitted; (e) all other customary permits, approvals, certificates and authorizations required by any authority having jurisdiction over the Project have been issued; and (f) all other documentation reasonably required by Owner has been supplied.

- L. The acceptance of final payment shall constitute a waiver of all claims by the Contractor except those previously made in writing and identified by the Contractor as unsettled at the time of the final Application for Payment.
- M. Disputes regarding whether the Owner has failed to make payments in accordance with the Contract Documents may be submitted to the process of alternative dispute resolution set herein.

CHANGES IN THE WORK

- A. No one other than the Owner shall have the right to require or instruct the Contractor to make any changes, deletions, or addition to the Work that will result in a Change Order (as that term is defined in the General Conditions) or will result in a change to the Contract Sum. Any such changes, deletions, or additions authorized by Owner must be in writing and signed by a duly authorized representative of Owner which change order shall first be approved by a resolution of the governing body of Owner.
- B. The provisions of the Contract Documents shall not be changed, amended, waived, or otherwise modified in any respect except by an executed Change Order. No person is authorized on behalf of the Owner to orally change, amend, waive, or otherwise modify the terms of the Contract Documents or any of the Contractor's duties or obligations under or arising out of the Contract Documents. Any change, waiver, approval, or consent granted to the Contractor shall be limited to the specific matters stated in writing signed by the Owner, and shall not relieve the Contractor of any other duties and obligations under the Contract Documents. No "constructive" changes will be allowed.
- C. A Change Order is a written instrument signed by the Owner and the Contractor stating their agreement upon all of the following: (i) the change in the Work; (ii) the amount of the adjustment, if any, of the Contract Sum, and (iii) the extent of the adjustment, if any, of the Contract Time. A change in the Contract Sum or the Contract Time shall only be accomplished only by Change Order. No course of conduct or dealing between the parties, nor express or implied acceptance or alterations or additions to the Work, shall be the basis of any claim to an increase in any amounts due under the Contract Documents or a change in any time period provided for in the Contract Documents.
- D. Owner, without invalidating this Agreement, may at any time direct changes in the Work, consisting of additions, deletions or other revisions. All such required changes in the Work shall only be memorialized in a written Change Order signed by Contractor and by Owner, and executed in the manner set forth in the following sections. Contractor hereby waives any claim to additional compensation or an extension of time for additional Work performed without a corresponding fully executed Change Order.
- E. With respect to any change in the Work proposed by Owner, the Contractor agrees to exercise its best efforts to furnish to Owner within ten (10) calendar days of Owner's request, a signed Change Order Proposal, in a form satisfactory to Owner, setting forth in detail, with suitable breakdowns by trades and work classifications, and using the unit price and/or other costing method specified by Owner, Contractor's estimate of: (1) the cost or savings of the Change Order, which costs shall be at the best price obtainable for, and shall reflect the most economical manner of affecting, such change; and (2) the changes in the Project Schedule (including required interim or milestone dates, the Substantial Completion Date and/or Final Completion Date) which would result from implementation of Contractor's Change Order proposal. If Owner approves Contractor's Change Order proposal, Contractor shall issue a written change order to be signed by a duly authorized representative of Owner, which change order shall first be approved by a resolution of the governing body of the Owner, and the dates of Substantial Completion and Final Completion, the Contract Sum, and the Contract Documents, as the case may be, shall be adjusted, if required, in accordance with the terms of such Change Order. All other terms and conditions of this Construction Agreement shall remain in full force and effect.

- F. Agreement on any Change Order shall constitute a final settlement of all matters relating to the change in the Work that is the subject of the Change Order, including, without limitation, all direct and indirect costs and consequential damages associated with such change and any and all adjustments to the Contract Sum and the construction schedule.
- G. The owner reserves the right to award separate contracts for the performance of any work not included in the Work described in the Contract Documents.

ADDITIONAL OBLIGATIONS OF CONTRACTOR

- A. The Contractor shall comply with the County College Contracts Law, N.J.S.A. 18A:64A-25.1 et seq., and all applicable New Jersey State Statutes, Administrative Regulations, and Proclamations, including the payment of any prevailing wage rates required by law.
- B. The Contractor acknowledges that the Work will be performed in and around an active college campus and that it must cooperate fully with the Owner and Architect or Engineer with respect to any and all directives required to ensure the safety of students, staff, and the public.
- C. The Contractor shall confine operations at the site to areas permitted by the Owner and Architect or Engineer and applicable ordinances and permits and shall not unreasonably encumber the site with its equipment and materials.
- D. The Contractor shall require all personnel, including subcontractors, working on the site to carry a photo ID identifying which entity the employee works for, and said ID shall be visible at all times the employee is on the site or College grounds.
- E. The Contractor shall keep the site and surrounding areas free from the accumulation of waste material and rubbish caused by its operations under this Contract. At the end of each working day, the Contractor is responsible for leaving the site in clean and good condition. At the completion of the Work, the Contractor shall remove from and about the Project any (including but not limited to solid waste, recycling, or any hazardous materials) waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials.
- F. Smoking, drinking of alcoholic beverages, and use of illegal drugs on or near the site are strictly prohibited.

CONTRACTOR'S WARRANTIES, GUARANTY, AND OBLIGATIONS TO REPAIR FAULTY WORK

- A. Unless a longer period of time is designated in the Contract Documents or required by existing law or judicial determination, the Contractor hereby guarantees all Work performed under the Contract Documents against defects due to faulty or defective materials or workmanship, or failure of the Work to conform to the Contract Documents, as shall appear within a period of one year from the date of Final Completion of the Project. The Contractor shall require a similar warranty in all subcontracts, including the requirement that the Owner is reimbursed for any damage or loss to the Work resulting from such defects. Contractor agrees to repair or remove or replace as directed by Owner all Work which is defective or which fails to conform to the Contract Documents; to repair, remove and replace as directed by Owner all damaged portions of the Work resulting from or which is incidental to defects in the Work as stated above, or failure of the Work to conform to the Contract Documents. All repairs, removals, and replacements must be commenced after written notice from Owner as soon as reasonably practicable having due regard to the circumstances and the nature of the defect and workmen and materials sufficient in the opinion of Owner, in Owner's sole discretion, must be furnished to ensure prompt completion thereof. Should Contractor fail to proceed in accordance with the provisions of this section, Owner without further notice to Contractor may furnish all labor and material necessary for said repairs, or removals and replacements. The Contractor agrees that the repair, replacement, or removal of such faulty or defective material or workmanship shall be at no cost to Owner and further that Owner shall be reimbursed for any damage or loss to the Work resulting from such defects sustained by Owner.
- B. The Contractor shall deliver to the Owner all warranties and guarantees, together with appropriate assignments, as provided in the Contract Documents, at the time and in the manner that may be prescribed therein. Notwithstanding anything to the contrary in the General Conditions, the warranties and guarantees of the Contractor and all subcontractors and suppliers under this section shall extend to all materials purchased by the Contractor pursuant to the provisions thereof and shall be for the benefit of the Owner.
- C. The Contractor shall make repairs promptly upon notification by the Owner. If the Contractor fails to make the necessary repairs within three days after due notice from the Architect or Engineer, the College may make the needed repairs and the cost of same will be deducted from the Contract Balance, provided, however, that in case of

an emergency wherein the opinion of the Architect or Engineer serious loss or damage may occur, College may make repairs without previous notice and at the expense of the Contractor.

- D. The Contractor shall promptly correct or remove from the premises all work, materials or equipment determined by the Architect or Engineer as failing to conform to the Contract Documents, whether such work or materials or equipment have been incorporated into the Project or not, and whether observed before or after Substantial Completion. The Contractor shall commence replacement and re-execution of the Work in conformance with the Contract Documents within three days of written notice. The Contractor shall bear the full expense of the replacement and re-execution of the Work, as well as making good all Work of whatever kind destroyed or damaged by such removal or replacement.
- E. Investigations, Tests, Reports: During construction or period of guarantees, if the Owner, Architect, or Engineer finds what appears to be defective work or improper functioning of any material, equipment, or systems installed, the Contractor will be liable for all reasonable inspection fees incurred by Architect or Engineer to inspect the work or material, equipment, or systems in question and install similar work and apparatus in conformity with requirements of the Contract, and to make tests and to file complete reports as directed to establish such conformity.

SAFETY

- A. In accordance with generally accepted construction practices, the Contractor shall be solely and completely responsible for conditions at the job site, including the safety of all persons and property affected directly or indirectly by the Contractor's operations during the performance of the work. This requirement shall apply continuously 24 hours per day until acceptance of the work by the Owner. The owner's responsibility to observe the Contractor's performance is not intended to include a review of the adequacy of the Contractor's safety measures in, on, or near the job site.
- B. The Contractor shall conform to and comply with all laws and regulations concerning occupational safety including the Occupational Safety & Health Act of 1970 and standards promulgated thereunder. The Contractor shall conform to regulations concerning Material Safety Data Sheets, labeling of hazardous materials, and training of employees.
- C. Hazardous Substances. "Hazardous Substance" means any and all chemicals, constituents, contaminants, pollutants, materials (including but not limited to petroleum or petroleum products), and wastes and any other carcinogenic, corrosive, ignitable, radioactive, reactive, toxic or otherwise hazardous substances, mixtures (whether solids, liquids, gases), daughter or degradation products or any similar substances now or at any time subject to regulation, control, remediation or otherwise addressed under all applicable environmental laws, codes, and regulations that are in effect or considered to be hazardous or otherwise harmful to human health or the environment under such environmental laws, codes, and regulations.
 - 1. Preventative Measures; Notice Requirements. The Contractor will take all measures necessary to prevent the release of any Hazardous Substances at the Project or adjacent areas in violation of applicable legal requirements. The Contractor will immediately notify the Owner of (a) any releases of Hazardous Substances that occur in connection with the performance of the Work; (b) any and all material violations and any and all investigations, actions, claims, suits, notices of violation, fines, penalties, orders, and other proceedings related to material violations or alleged material violations of any environmental laws, codes, regulations, including but not limited to Permits issued thereunder, which are asserted against Contractor or any of Contractor's Personnel in connection with the Work or their activities on or in connection with the Project; (c) and Contractor's discovery of any Hazardous Substances at the Project or adjacent areas.
 - 2. Contractor Releases; Removal Obligations. The Contractor will be responsible for removing from the Project and areas adjacent thereto, and for properly disposing of, in a manner acceptable to the Owner and in compliance with this Agreement, applicable legal requirements and all applicable Permits, all Hazardous Substances generated, released, or accumulated by Contractor or any Subcontractor in the course of performing the Work.
 - 3. Pre-Existing Hazardous Substances. In the event Contractor encounters on the Project material reasonably believed to be a Hazardous Substance that existed prior to the date of this Agreement, the Contractor will immediately cease performance of any Work in the area affected and report the condition to Owner in writing. The Contractor will not thereafter resume the performance of the Work in the affected area except with the prior written permission of the Owner.

LIMITATIONS ON LIABILITY

- A. The Contractor agrees that there is no Contractual limitation upon its contractual liability to the Owner. Owner shall have no liability to Contractor for consequential damages, punitive damages, special damages, speculative damages, unforeseeable damages, lost profits, unabsorbed overhead, and delay damages.

LIMITATION OF ARCHITECT'S OR ENGINEER'S RESPONSIBILITY

- A. Neither the Architect nor Engineer's authority to act under this Contract, nor any decision made by the Architect or Engineer in good faith either to exercise or not exercise authority shall give rise to any duty or responsibility of the Architect or Engineer to the Contractor, any subcontractor, manufacturer, fabricator, supplier or distributor, or any of their agents or employees or any other person performing any of the work under the Contract.
- B. The Architect or Engineer will not be responsible for the Contractor's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto. The Architect or Engineer will not be responsible for the Contractor's failure to perform the Work in accordance with the Contract.
- C. The Architect or Engineer will not be responsible for the acts or omissions of the Contractor or any of its subcontractors, or the agents or employees of the Contractor or its subcontractors, or any other persons at the site or otherwise performing any of the work under the Contract.

NOTICE TO CONTRACTORS

The Essex County College requires as a condition precedent to acceptance of proposals, a sworn statement executed by, or on behalf of, the person, firm association, or corporation to whom such contract is to be awarded, certifying that such person, firm, association, or corporation has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with such contract. The form for this sworn statement is included in the proposal and shall be properly executed in order to have the proposal considered. Failure to execute the Equal Employment Opportunities, Non-Collusion Statement, Statement of Ownership Disclosure, Affirmative Action, Business Registration Certificate, and other specified prerequisites will automatically disqualify the proposal.

Project Manual

Project:

“Essex County College – Humanities Department Office Alterations”

*303 University Avenue
Newark, NJ 07102*

Owner:

Essex County College

*303 University Avenue
Newark, NJ 07102*

Architect:



One Katherine Street
Little Ferry, NJ 07643

tel: 201.641.0600
fax: 201.641.0626

www.aiarchs.com

Anthony Iovino, AIA NJ#11720

Issued for Bid: _____

Set No. _____

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SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Project information.
 - 2. Work covered by Contract Documents.
 - 3. Work performed by Owner.
 - 4. Contractor's use of site and premises.
 - 5. Coordination with occupants.
 - 6. Work restrictions.
 - 7. Specification and Drawing conventions.
 - 8. Miscellaneous provisions.
- B. Related Requirements:
 - 1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.
 - 2. Section 017300 "Execution" for coordination of Owner-installed products.

1.3 PROJECT INFORMATION

- A. Project Identification: 2448 – Essex County College Humanities Department Office Alterations
- B. Owner: Essex County College
1-55 Market Street
Newark, New Jersey 07103
- C. Architect: Arcari + Iovino Architects
1 Katherine Street
Little Ferry, New Jersey 07643

1.4 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of Project is defined by the Contract Documents and includes, but is not limited to, the following:
 - 1. Alteration of approximately 26,000 SF of offices, including select removal of masonry and framed partitions, new framed partitions, interior storefront, operable partition, finishes, electrical distribution, and lighting. The work also includes modifications to plumbing and HVAC within the work area.
- B. Type of Contract:
 - 1. Project will be constructed under a single prime contract.

1.5 WORK PERFORMED BY OWNER

- A. Cooperate fully with Owner, so work may be carried out smoothly, without interfering with or delaying Work under this Contract or work by Owner. Coordinate the Work of this Contract with work performed by Owner.
- B. Concurrent Work: Owner will perform the following construction operations at Project site. Those operations will be conducted simultaneously with Work under this Contract.
 - 1. Owner will install wiring for IT and security systems above the new ceiling prior to the installation of the new ceiling.

1.6 CONTRACTOR'S USE OF SITE AND PREMISES

- A. Restricted Use of Site: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.
- B. Limits on Use of Site: Limit use of Project site to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
 - 1. Driveways, Walkways and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or for storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- C. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.
- D. Condition of Existing Grounds: Maintain portions of existing grounds, landscaping, and hardscaping affected by construction operations throughout construction period. Repair damage caused by construction operations.

1.7 COORDINATION WITH OCCUPANTS

- A. Partial Owner Occupancy: Owner will occupy the premises during entire construction period, with the exception of areas under construction. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's operations. Maintain existing exits unless otherwise indicated.
 - 1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and authorities having jurisdiction.
 - 2. Provide not less than 72 Insert number hours' notice to Owner of activities that will affect Owner's operations.

1.8 WORK RESTRICTIONS

- A. Comply with restrictions on construction operations.
 - 1. Comply with limitations on use of public streets, work on public streets, rights of way, and other requirements of authorities having jurisdiction.

- B. On-Site Work Hours: Limit work to between 7:00 a.m. to 5:00 p.m., Monday through Friday, unless otherwise indicated. Work hours may be modified to meet Project requirements if approved by Owner and authorities having jurisdiction.
- C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging for temporary utility services according to requirements indicated:
 - 1. Notify Owner not less than two days in advance of proposed utility interruptions.
 - 2. Obtain Owner's written permission before proceeding with utility interruptions.
- D. Noise, Vibration, Dust, and Odors: Coordinate operations that may result in high levels of noise and vibration, dust, odors, or other disruption to Owner occupancy with Owner.
 - 1. Notify Owner not less than two days in advance of proposed disruptive operations.
 - 2. Obtain Owner's written permission before proceeding with disruptive operations.
- E. Smoking and Controlled Substance Restrictions: Use of tobacco products, alcoholic beverages, and other controlled substances on Owner's property is not permitted.
- F. Employee Screening: Comply with Owner's requirements for drug and background screening of Contractor personnel working on Project site.
 - 1. Maintain list of approved screened personnel with Owner's representative.

1.9 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
 - 1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
 - 2. Text Color: Text used in the Specifications, including units of measure, manufacturer and product names, and other text may appear in multiple colors or underlined as part of a hyperlink; no emphasis is implied by text with these characteristics.
 - 3. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 00 Contracting Requirements: General provisions of the Contract, including General and Supplementary Conditions, apply to all Sections of the Specifications.
- C. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- D. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
 - 1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
 - 2. Abbreviations: Materials and products are identified by abbreviations scheduled on Drawings.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

SECTION 012100 - ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements governing allowances.
- B. Types of allowances include the following:
 - 1. Contingency allowances.
- C. Related Requirements:
 - 1. Section 012600 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.

1.3 DEFINITIONS

- A. Allowance: A quantity of work or dollar amount included in the Contract, established in lieu of additional requirements, used to defer selection of actual materials and equipment to a later date when direction will be provided to Contractor. If necessary, additional requirements will be issued by Change Order.

1.4 SELECTION AND PURCHASE

- A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection, or purchase and delivery, of each product or system described by an allowance must be completed by the Owner to avoid delaying the Work.
- B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.
- C. Purchase products and systems selected by Architect from the designated supplier.

1.5 ACTION SUBMITTALS

- A. Submit proposals for purchase of products or systems included in allowances in the form specified for Change Orders.

1.6 INFORMATIONAL SUBMITTALS

- A. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.
- B. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.
- C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.7 CONTINGENCY ALLOWANCES

- A. Use the contingency allowance only as directed by Architect for Owner's purposes and only by Change Orders that indicate amounts to be charged to the allowance.
- B. Contractor's overhead, profit, and related costs for products and equipment ordered by Owner under the contingency allowance are included in the allowance and are not part of the Contract Sum. These costs include delivery, installation, insurance, equipment rental, and similar costs.
- C. Change Orders authorizing use of funds from the contingency allowance will include Contractor's related costs and reasonable overhead and profit.
- D. At Project closeout, credit unused amounts remaining in the contingency allowance to Owner by Change Order.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

- A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

- A. Allowance No. 1: Contingency Allowance: Include a contingency allowance of \$75,000.00 for use according to Owner's written instructions.
 - 1. This allowance includes material cost, receiving, handling, and installation, labor, and Contractor overhead and profit.

END OF SECTION 012100

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.
- B. Related Requirements:
 - 1. Document 002600 "Procurement Substitution Procedures" for requirements for substitution requests prior to award of Contract.
 - 2. Section 012100 "Allowances" for products selected under an allowance.
 - 3. Section 016000 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.3 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents.
 - 1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
 - 2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 ACTION SUBMITTALS

- A. Substitution Requests: Submit documentation identifying product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Substitution Request Form: Use form acceptable to Architect.
 - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified product or fabrication or installation method cannot be provided, if applicable.
 - b. Coordination of information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitutions with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes, such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.

- e. Samples, where applicable or requested.
 - f. Certificates and qualification data, where applicable or requested.
 - g. List of similar installations for completed projects, with project names and addresses as well as names and addresses of architects and owners.
 - h. Material test reports from a qualified testing agency, indicating and interpreting test results for compliance with requirements indicated.
 - i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES.
 - j. Detailed comparison of Contractor's construction schedule using proposed substitutions with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
 - k. Cost information, including a proposal of change, if any, in the Contract Sum.
 - l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents, except as indicated in substitution request, is compatible with related materials and is appropriate for applications indicated.
 - m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
- a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
 - b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.5 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.6 PROCEDURES

- A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

1.7 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.
 - 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - b. Substitution request is fully documented and properly submitted.
 - c. Requested substitution will not adversely affect Contractor's construction schedule.
 - d. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - e. Requested substitution is compatible with other portions of the Work.
 - f. Requested substitution has been coordinated with other portions of the Work.

- g. Requested substitution provides specified warranty.
 - h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- B. Substitutions for Convenience: Architect will consider requests for substitution if received within 60 days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Architect.
 - 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 - b. Requested substitution does not require extensive revisions to the Contract Documents.
 - c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - d. Substitution request is fully documented and properly submitted.
 - e. Requested substitution will not adversely affect Contractor's construction schedule.
 - f. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - g. Requested substitution is compatible with other portions of the Work.
 - h. Requested substitution has been coordinated with other portions of the Work.
 - i. Requested substitution provides specified warranty.
 - j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012500

SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for handling and processing Contract modifications.
- B. Related Requirements:
 - 1. Section 012500 "Substitution Procedures" for administrative procedures for handling requests for substitutions made after the Contract award.
 - 2. Section 013100 "Project Management and Coordination" for requirements for forms for contract modifications provided as part of web-based Project management software.

1.3 MINOR CHANGES IN THE WORK

- A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710.

1.4 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
 - 2. Within time specified in Proposal Request or 10 days, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include costs of labor and supervision directly attributable to the change.
 - d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 - e. Quotation Form: Use forms acceptable to Architect.
- B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Comply with requirements in Section 012500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
7. Proposal Request Form: Use form acceptable to Architect.

1.5 ADMINISTRATIVE CHANGE ORDERS

- A. Allowance Adjustment: See Section 012100 "Allowances" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect actual costs of allowances.

1.6 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Work Change Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on AIA Document G701.
- B. When a change in the Work includes a category or categories of Work both added to and deducted from the Contract, the total quantities of added Work and of deleted Work shall be determined separately for each category and the appropriate unit price or net cost of the Work shall be applied to the difference between the two total quantities.
- C. Unit prices shall be inclusive of all costs and shall be applied to units of measure as defined in the Specifications for each category of Work.
- D. For all extra Work performed by Contractor, the gross cost to the Owner shall include the net cost of the Work to the Contractor plus an allowance for overhead and profit (inclusive of bond and insurance) not to exceed 15% of the net cost.
- E. For all extra Work performed by a Subcontractor, the gross cost to the Owner shall include the net cost of the Work to the Subcontractor plus an allowance for overhead and profit not to exceed 10% of the net cost, plus the Contractor's overhead and profit (inclusive of bond and insurance) not to exceed 10% of the Subcontractor's cost (for a maximum aggregate total of 21%).
- F. Net cost of extra Work shall be the actual or pro-rated cost of:
 1. Labor, including foreman, at the prevailing rate of wages, contributions and taxes.
 2. Materials entering permanently into the Work, including delivery to the site.
 3. The ownership or rental cost of construction equipment and expendable tools, pro-rated for the time necessary for the Work.
 4. Power and consumable supplies for the operation of power equipment, pro-rated for the time necessary for the Work. Insurance and Bonds.
- G. Gross costs shall be net costs plus the allowances described above, such allowances being inclusive, of all cost of superintendence, supervision, engineering, overhead, profit, administrative and site office expenses and all other general expenses

1.7 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: Architect may issue a Construction Change Directive on AIA Document G714. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 - 1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
 - 1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.
- B. Related Requirements:
 - 1. Section 012100 "Allowances" for procedural requirements governing the handling and processing of allowances.
 - 2. Section 012600 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
 - 3. Section 013200 "Construction Progress Documentation" for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.

1.3 DEFINITIONS

- A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.
 - 1. Coordinate line items in the schedule of values with items required to be indicated as separate activities in Contractor's construction schedule.
 - 2. Submit the schedule of values to Architect at earliest possible date, but no later than fifteen days before the date scheduled for submittal of initial Applications for Payment.
 - 3. First payment application will not be approved until the Submittal Schedule, Quality Control Plan, Construction Schedule, etc. are received and approved.
- B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.
 - 1. Identification: Include the following Project identification on the schedule of values:
 - a. Project name and location.
 - b. Owner's name.
 - c. Owner's Project number.
 - d. Name of Architect.
 - e. Architect's Project number.
 - f. Contractor's name and address.
 - g. Date of submittal.
 - 2. Arrange schedule of values consistent with format of AIA Document G703.

3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Provide multiple line items for principal subcontract amounts in excess of five percent of the Contract Sum.
4. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
 - a. Differentiate between items stored on-site and items stored off-site.
5. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
6. Purchase Contracts: Provide a separate line item in the schedule of values for each Purchase contract. Show line-item value of Purchase contract. Indicate Owner payments or deposits, if any, and balance to be paid by Contractor.
7. Overhead Costs, Separate Line Items: Show cost of temporary facilities and other major cost items that are not direct cost of actual work-in-place as separate line items.
8. Temporary Facilities: Show cost of temporary facilities and other major cost items that are not direct cost of actual work-in-place as separate line items.
9. Schedule of Values Revisions: Revise the schedule of values when Change Orders or Construction Change Directives result in a change in the Contract Sum. Include at least one separate line item for each Change Order and Construction Change Directive.
10. Refer to the sample form at the end of this section. Line items should be modified based on the specific requirements of the project. Items listed with percentage values are required and indicate the minimum value acceptable unless otherwise agreed to by Architect during review of Schedule of Values submittal.

1.5 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments, as certified by Architect and paid for by Owner.
 1. Submit an updated construction schedule each month with the Application for Payment. If there are no changes from the previously issued schedule, resubmission is not required. If the work is 14 or more calendar days behind the current schedule, submission of a separate recovery schedule is also required prior to approval of the Application of Payment.
 2. Submit Daily Construction Reports with each Application for Payment covering the entire billing period of that application.
 3. Submit Construction Photos with each Application for Payment covering the entire billing period of that application.
 4. Submit Lien Waivers with each Application for Payment.
 5. Submit an updated RFI Log each month with the Application for Payment.
 6. Submit an updated Change Order Log each month with the Application for Payment.
- B. Payment Application Times: Submit Application for Payment to Architect by the 1st of the month. The period covered by each Application for Payment is one month, ending on the last day of the month.
 1. Submit pencil copy of Application for Payment seven days prior to due date for review by Architect.
- C. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 as form for Applications for Payment.
 1. Other Application for Payment forms proposed by the Contractor may be acceptable to Architect and Owner. Submit forms for approval with initial submittal of schedule of values.
- D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.

1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
 2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
 3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
 4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.
- E. **Stored Materials:** Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.
1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment for stored materials.
 2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
 3. Provide summary documentation for stored materials indicating the following:
 - a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
 - b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
 - c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.
- F. **Transmittal:** Submit three signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required. If Owner will accept electronic processing with digital signatures, email the Application for Payment to the Architect for signature.
1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- G. **Waivers of Mechanic's Lien:** With each Application for Payment, submit waivers of mechanic's lien from subcontractors for construction period covered by the previous application.
1. Lien Waivers shall be provided for all Subcontractors stating that they have been paid through the end date of the previous Application for Payment.
 2. When an application shows completion of an item, submit conditional final or full waivers.
 3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
 5. **Waiver Forms:** Submit executed waivers of lien on forms acceptable to Owner.
- H. **Initial Application for Payment:** Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
1. List of subcontractors.
 2. Schedule of values.
 3. Contractor's construction schedule (preliminary if not final).
 4. Schedule of unit prices.
 5. Submittal schedule (preliminary if not final).
 6. List of Contractor's staff assignments.
 7. List of Contractor's principal consultants.
 8. Copies of building permits.
 9. Certificates of insurance and insurance policies.
 10. Performance and payment bonds.
 11. Data needed to acquire Owner's insurance.

- I. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
 - 1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
 - a. Complete administrative actions, submittals, and Work preceding this application, as described in Section 017700 "Closeout Procedures."
 - 2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- J. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
 - 1. Evidence of completion of Project closeout requirements.
 - 2. Certification of completion of final punch list items.
 - 3. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
 - 4. Updated final statement, accounting for final changes to the Contract Sum.
 - 5. AIA Document G706.
 - 6. AIA Document G706A.
 - 7. AIA Document G707.
 - 8. Evidence that claims have been settled.
 - 9. Waivers and releases.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

Sample of Schedule of Values

Items in bold are required, modify all other line items to suit project requirements

Item	Work Description
1	Mobilization
2	Bond (amount must match cancelled check to Bond Company)
3	General Conditions
4	Submittals
5	Submittal Schedule (0.25% min)
6	Coordination Drawings (0.25% min)
7	Mockup (0.25% min)
8	Photo Documentation (0.25% min)
9	Construction Schedules (0.50% min)
10	Daily Construction Reports (0.50% min)
11	Quality Control Plan (0.25% min)
12	Engineering & layout
	<u>Division 2 Site Work</u>
13	Site Clearing
14	Building Excavation
15	Temporary Security Fencing
16	Concrete sidewalk
	<u>Division 3 Concrete</u>
17	Slab on Grade
18	Slab rebar
19	6" crushed stone
	<u>Division 5 Metals</u>
20	Exterior metal framing materials
21	Exterior metal framing labor
22	Steel shop drawings
23	Steel materials
24	Steel erection
25	Metal fabrication
	<u>Division 6 Wood and Plastic</u>
26	Wood blocking
27	Sheathing
	<u>Division 7 Thermal and Moisture Protection</u>
28	Bituminous dampproofing
29	Building insulation
30	Flashing and trim
31	Roof specialties
32	Roof accessories
33	Joint sealants
34	Vapor barrier
35	Fireproofing

Division 8 Doors and Windows

- 36 Wood doors materials
- 37 Wood doors labor
- 38 Access doors
- 39 Storefront system materials
- 40 Storefront system labor
- 41 Curtainwall system materials
- 42 Curtainwall system labor
- 43 Door hardware materials
- 44 Door hardware labor
- 45 Glazing materials
- 46 Glazing labor

Division 9 Finishes

- 47 Interior framing materials
- 48 Interior framing labor
- 49 GWB materials
- 50 GWB labor
- 51 Ceramic Tile
- 52 ACT materials
- 53 ACT labor
- 54 Terrazzo Tile materials
- 55 Terrazzo Tile labor
- 56 Vinyl base materials
- 57 Vinyl base labor
- 58 Paint exterior
- 59 Paint interior

Division 12 Furnishings

- 60 Millwork

Division 15 Mechanical

- 61 HVAC submittals
- 62 HVAC materials
- 63 HVAC labor
- 64 Ductwork materials
- 65 Ductwork labor
- 66 Piping Materials
- 67 Piping labor
- 68 Plumbing Submittals
- 69 Plumbing materials
- 70 Plumbing labor
- 71 Underground piping

Division 16 Electrical

- 72 Electrical submittals
- 73 Lighting materials
- 74 Lighting labor

75	Power materials
76	Power labor
77	Electric service materials
78	Electric service labor
79	Fire alarm materials
80	Fire alarm labor
81	Punch List (0.25% min)
82	As-built Drawings (0.25% min)

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project, including, but not limited to, the following:
 - 1. General coordination procedures.
 - 2. Coordination drawings.
 - 3. RFIs.
 - 4. Digital project management procedures.
 - 5. Web-based Project management software package.
 - 6. Project meetings.
- B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.
- C. Related Requirements:
 - 1. Section 013200 "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
 - 2. Section 017300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
 - 3. Section 017700 "Closeout Procedures" for coordinating closeout of the Contract.

1.3 DEFINITIONS

- A. RFI: Request for Information. Request from Owner, Construction Manager, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

1.4 INFORMATIONAL SUBMITTALS

- A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
 - 1. Name, address, telephone number, and email address of entity performing subcontract or supplying products.
 - 2. Number and title of related Specification Section(s) covered by subcontract.
 - 3. Drawing number and detail references, as appropriate, covered by subcontract.

- B. Key Personnel Names: Prior to starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses, cellular telephone numbers, and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.
 - 1. Provide copy of the list to Owner, Architect, Construction Manager, etc. Post copies of list in the temporary field office. Keep list current at all times.

1.5 GENERAL COORDINATION PROCEDURES

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations included in different Sections that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in sequence required to obtain the best results, where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of Contractor's construction schedule.
 - 2. Preparation of the schedule of values.
 - 3. Installation and removal of temporary facilities and controls.
 - 4. Delivery and processing of submittals.
 - 5. Preinstallation conferences.
 - 6. Project closeout activities.
 - 7. Startup and adjustment of systems.

1.6 COORDINATION DRAWINGS

- A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely indicated on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.
 - 1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
 - a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
 - b. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
 - c. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
 - d. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
 - e. Indicate required installation sequences.

- f. Indicate dimensions shown on Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternative sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.
- B. Coordination Drawing Organization: Organize coordination drawings as follows:
 1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
 2. Plenum Space: Indicate subframing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within plenums to accommodate layout of light fixtures and other components indicated on Drawings. Indicate areas of conflict between light fixtures and other components.
 3. Mechanical Rooms: Provide coordination drawings for mechanical rooms, showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.
 4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
 5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
 6. Mechanical and Plumbing Work: Show the following:
 - a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
 - b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.
 - c. Fire-rated enclosures around ductwork.
 7. Electrical Work: Show the following:
 - a. Runs of vertical and horizontal conduit 1-1/4 inches in diameter and larger.
 - b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire-alarm locations.
 - c. Panel board, switchboard, switchgear, transformer, busway, generator, and motor-control center locations.
 - d. Location of pull boxes and junction boxes, dimensioned from column center lines.
 8. Fire-Protection System: Show the following:
 - a. Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.
 9. Review: Architect will review coordination drawings to confirm that, in general, the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Architect determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Architect will so inform Contractor, who shall make suitable modifications and resubmit.
- C. Coordination Digital Data Files: Prepare coordination digital data files according to the following requirements:
 1. File Submittal Format: Submit or post coordination drawing files using PDF format.

1.7 REQUEST FOR INFORMATION (RFI)

- A. General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
 1. Architect will return without response those RFIs submitted to Architect by other entities controlled by Contractor.
 2. Coordinate and submit RFIs in a prompt manner to avoid delays in Contractor's work or work of subcontractors.

3. Any RFI not submitted on the required form (AIA Document G716) or that does not list the specific documents researched for the answer will not be reviewed.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
1. Project name.
 2. Owner name.
 3. Owner's Project number.
 4. Name of Architect.
 5. Architect's Project number.
 6. Date.
 7. Name of Contractor.
 8. RFI number, numbered sequentially.
 9. RFI subject.
 10. Specification Section number and title and related paragraphs, as appropriate.
 11. Drawing number and detail references, as appropriate.
 12. Field dimensions and conditions, as appropriate.
 13. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 14. Contractor's signature.
 15. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
 - a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.
- C. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.
1. The following Contractor-generated RFIs will be returned without action:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for approval of Contractor's means and methods.
 - d. Requests for coordination information already indicated in the Contract Documents.
 - e. Requests for adjustments in the Contract Time or the Contract Sum.
 - f. Requests for interpretation of Architect's actions on submittals.
 - g. Incomplete RFIs or inaccurately prepared RFIs.
 2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt by Architect of additional information.
 3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."
 - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 5 days of receipt of the RFI response.
- D. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log with each Application for Payment. Include the following:
1. Project name.
 2. Name and address of Contractor.
 3. Name and address of Architect.
 4. RFI number, including RFIs that were returned without action or withdrawn.
 5. RFI description.
 6. Date the RFI was submitted.
 7. Date Architect's response was received.
 8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.

- E. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within three days if Contractor disagrees with response.

1.8 DIGITAL PROJECT MANAGEMENT PROCEDURES

- A. Use of Architect's Digital Data Files: Digital data files of Architect's CAD drawings **may be obtained from the Architect for a fee** for Contractor's use during construction. If interested, Contractor must complete the required AIA release form and submit payment for each individual file (A.100, A.102, A.103, etc.) prior to the release of documents.
 - 1. Digital data files may be used by Contractor in preparing coordination drawings, Shop Drawings, and Project Record Drawings.
 - 2. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Contract Drawings.
 - 3. Digital Drawing Software Program: Contract Drawings are available in AutoCAD dwg format.
 - 4. Contractor shall execute a data licensing agreement in the form of AIA Document C106 Digital Data Licensing Agreement.
- B. PDF Document Preparation: Where PDFs are required to be submitted to Architect, prepare as follows:
 - 1. Assemble complete submittal package into a single indexed file, incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
 - 2. Name file with submittal number or other unique identifier, including revision identifier.
 - 3. Certifications: Where digitally submitted certificates and certifications are required, provide a digital signature with digital certificate on where indicated.

1.9 PROJECT MEETINGS

- A. General: Architect will schedule and conduct meetings and conferences at Project site unless otherwise indicated.
 - 1. Minutes: Architect will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner, Construction Manager, and Contractor, within five days of the meeting.
- B. Preconstruction Conference: Architect will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.
 - 1. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 2. Minutes: Architect will record and distribute meeting minutes.
- C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity when required by other Sections and when required for coordination with other construction.
 - 1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect and Owner of scheduled meeting dates.
 - 2. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
 - 3. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.

4. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- D. Progress Meetings: Architect will conduct progress meetings at biweekly intervals.
1. Minutes: Architect will record and distribute the meeting minutes to each party present and to parties requiring information.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Startup construction schedule.
 - 2. Contractor's Construction Schedule.
 - 3. Construction schedule updating reports.
 - 4. Daily construction reports.
 - 5. Site condition reports.
 - 6. Unusual event reports.
- B. Related Requirements:
 - 1. Section 012900 "Payment Procedures" for schedule of values and requirements for use of cost-loaded schedule for Applications for Payment.
 - 2. Section 014000 "Quality Requirements" for schedule of tests and inspections.

1.2 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction Project. Activities included in a construction schedule consume time and resources.
 - 1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
 - 2. Predecessor Activity: An activity that precedes another activity in the network.
 - 3. Successor Activity: An activity that follows another activity in the network.
- B. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine the critical path of Project and when activities can be performed.
- C. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
- D. Event: The starting or ending point of an activity.
- E. Float: The measure of leeway in starting and completing an activity.
 - 1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
 - 2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
 - 3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.
- F. Resource Loading: The allocation of labor and equipment necessary for completing an activity as scheduled.

1.3 INFORMATIONAL SUBMITTALS

- A. Format for Submittals: Submit required submittals in the following format:
 - 1. PDF file.
- B. Startup construction schedule.
- C. Startup Network Diagram: Of size required to display entire network for entire construction period. Show logic ties for activities.
- D. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.
- E. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports to contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.
 - 1. Activity Report: List of activities sorted by activity number and then early start date, or actual start date if known.
 - 2. Logic Report: List of preceding and succeeding activities for each activity, sorted in ascending order by activity number and then by early start date, or actual start date if known.
 - 3. Total Float Report: List of activities sorted in ascending order of total float.
- F. Construction Schedule Updating Reports: Submit with each Application for Payment. If no schedule update is submitted, the GC
- G. Daily Construction Reports: Submit with each Application for Payment covering the entire billing period of that application.
- H. Site Condition Reports: Submit at time of discovery of differing conditions.
- I. Unusual Event Reports: Submit at time of unusual event.

1.4 COORDINATION

- A. Coordinate Contractor's Construction Schedule with the schedule of values, submittal schedule, progress reports, payment requests, and other required schedules and reports.
 - 1. Secure time commitments for performing critical elements of the Work from entities involved.
 - 2. Coordinate each construction activity in the network with other activities, and schedule them in proper sequence.

1.5 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.
- B. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Final Completion.
 - 1. Contract completion date to not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

- C. Activities: Comply with the following:
1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
 2. Temporary Facilities: Indicate start and completion dates for the following as applicable:
 - a. Securing of approvals and permits required for performance of the Work.
 - b. Temporary facilities.
 - c. Owner interfaces and furnishing of items.
 - d. Regulatory agency approvals.
 - e. Punch list.
 3. Procurement Activities: Include procurement process activities for the following long lead-time items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
 4. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with submittal schedule.
 5. Startup and Testing Time: Include no fewer than 15 days for startup and testing.
 6. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
 7. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and Final Completion.
- D. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
1. Work Restrictions: Show the effect of the following items on the schedule:
 - a. Coordination with existing construction.
 - b. Limitations of continued occupancies.
 - c. Uninterruptible services.
 - d. Use-of-premises restrictions.
 - e. Seasonal variations.
 - f. Environmental control.
- E. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion.
- F. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue updated schedule with each Application for Payment.
1. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
- G. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, equipment required to achieve compliance, and date by which recovery will be accomplished.

1.6 CPM SCHEDULE REQUIREMENTS

- A. Prepare network diagrams using AON (activity-on-node) format.
- B. Startup Network Diagram: Submit diagram within 10 days of date established for the Notice to Proceed. Outline significant construction activities for the first 90 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

- C. CPM Schedule: Prepare Contractor's Construction Schedule using a time-scaled CPM network analysis diagram for the Work.
 1. Submit CPM schedule no later than 30 days after date established for the Notice to Proceed. Initial Application for Payment will not be approved before submission of the Construction Schedule.
 - a. Failure to include any work item required for performance of this Contract must not excuse Contractor from completing all work within applicable completion dates.
 2. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
 3. Use "one workday" as the unit of time for individual activities. Indicate nonworking days and holidays incorporated into the schedule to coordinate with the Contract Time.

- D. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the startup network diagram, prepare a skeleton network to identify probable critical paths.
 1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:
 - a. Preparation and processing of submittals.
 - b. Mobilization and demobilization.
 - c. Purchase of materials.
 - d. Delivery.
 - e. Fabrication.
 - f. Utility interruptions.
 - g. Installation.
 - h. Work by Owner that may affect or be affected by Contractor's activities.
 - i. Testing and inspection.
 - j. Punch list and Final Completion.
 - k. Activities occurring following Final Completion.
 2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates to be consistent with Contract milestone dates.
 3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
 4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.
 - a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.

- E. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using a network fragment to demonstrate the effect of the proposed change on the overall Project schedule.

- F. Initial Issue of Schedule: Prepare initial network diagram from a sorted activity list indicating straight "early start-total float." Identify critical activities. Prepare tabulated reports showing the following:
 1. Contractor or subcontractor and the Work or activity.
 2. Description of activity.
 3. Main events of activity.
 4. Immediate preceding and succeeding activities.
 5. Early and late start dates.
 6. Early and late finish dates.
 7. Activity duration in workdays.
 8. Total float or slack time.
 9. Average size of workforce.
 10. Dollar value of activity (coordinated with the schedule of values).

- G. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:
 1. Identification of activities that have changed.

2. Changes in early and late start dates.
3. Changes in early and late finish dates.
4. Changes in activity durations in workdays.
5. Changes in the critical path.
6. Changes in total float or slack time.
7. Changes in the Contract Time.

1.7 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
 1. List of subcontractors at Project site.
 2. List of separate contractors at Project site.
 3. Approximate count of personnel at Project site.
 4. Equipment at Project site.
 5. Material deliveries.
 6. High and low temperatures and general weather conditions, including presence of rain or snow.
 7. Testing and inspection.
 8. Accidents.
 9. Meetings and significant decisions.
 10. Unusual events.
 11. Stoppages, delays, shortages, and losses.
 12. Emergency procedures.
 13. Orders and requests of authorities having jurisdiction.
 14. Change Orders received and implemented.
 15. Construction Change Directives received and implemented.
 16. Services connected and disconnected.
 17. Equipment or system tests and startups.
 18. Partial completions and occupancies.
 19. Substantial Completions authorized.
- B. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.
- C. Unusual Event Reports: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, responses by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.
 1. Submit unusual event reports directly to Owner within one day of an occurrence. Distribute copies of report to parties affected by the occurrence.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013200

SECTION 013233 - PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
 - 1. Preconstruction photographs.
 - 2. Concealed Work photographs.
 - 3. Periodic construction photographs.
 - 4. Time-lapse sequence construction photographs.
 - 5. Final Completion construction photographs.
- B. Related Requirements:
 - 1. Section 017700 "Closeout Procedures" for submitting photographic documentation as Project Record Documents at Project closeout.
 - 2. Section 024119 "Selective Demolition" for photographic documentation before selective demolition operations commence.

1.2 INFORMATIONAL SUBMITTALS

- A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.
- B. Digital Photographs: Submit image files within three days of taking photographs.
 - 1. Submit photos on CD-ROM or thumb-drive. Include copy of key plan indicating each photograph's location and direction.
 - 2. Identification: Provide the following information with each image description in file metadata tag:
 - a. Name of Project.
 - b. Name and contact information for photographer.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Date photograph was taken.
 - f. Description of location, vantage point, and direction.
 - g. Unique sequential identifier keyed to accompanying key plan.

1.3 FORMATS AND MEDIA

- A. Digital Photographs: Provide color images in JPG format, produced by a digital camera with minimum sensor size of 12 megapixels, and at an image resolution of not less than 3200 by 2400 pixels. Use flash in low light levels or backlit conditions.
- B. Digital Images: Submit digital media as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
- C. Metadata: Record accurate date and time from camera.
- D. File Names: Name media files with date, Project area and sequential numbering suffix.

1.4 CONSTRUCTION PHOTOGRAPHS

- A. General: Take photographs with maximum depth of field and in focus.
 - 1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- B. Preconstruction Photographs: Before commencement of the Work, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Architect.
 - 1. Flag construction limits before taking construction photographs.
 - 2. Take 20 photographs of existing buildings either on or adjoining property, to accurately record physical conditions at start of construction.
 - 3. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.
- C. Concealed Work Photographs: Before proceeding with installing work that will conceal other work, take photographs sufficient in number, with annotated descriptions, to record nature and location of concealed Work, including, but not limited to, the following:
 - 1. Above-ceiling work.
 - 2. Piping.
 - 3. Electrical conduit.
 - 4. Waterproofing and weather-resistant barriers.
- D. Periodic Construction Photographs: Take 50 photographs monthly coinciding with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken. Submit photos each month with the Application for Payment.
- E. Final Completion Construction Photographs: Take 20 photographs after date of Substantial Completion for submission as Project Record Documents. Architect will inform photographer of desired vantage points.
- F. Additional Photographs: Architect may request photographs in addition to periodic photographs specified.
 - 1. Three days' notice will be given, where feasible.
 - 2. In emergency situations, take additional photographs within 24 hours of request.
 - 3. Circumstances that could require additional photographs include, but are not limited to, the following:
 - a. Immediate follow-up when on-site events result in construction damage or losses.
 - b. Extra record photographs at time of final acceptance.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013233

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Submittal schedule requirements.
 - 2. Administrative and procedural requirements for submittals.
- B. Related Requirements:
 - 1. Section 012900 "Payment Procedures" for submitting Applications for Payment and the schedule of values.
 - 2. Section 013100 "Project Management and Coordination" for submitting coordination drawings and subcontract list and for requirements for web-based Project software.
 - 3. Section 013200 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
 - 4. Section 013233 "Photographic Documentation" for submitting preconstruction photographs, periodic construction photographs, and Final Completion construction photographs.
 - 5. Section 014000 "Quality Requirements" for submitting test and inspection reports, and schedule of tests and inspections.
 - 6. Section 017700 "Closeout Procedures" for submitting closeout submittals and maintenance material submittals.
 - 7. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

1.2 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

1.3 SUBMITTAL SCHEDULE

- A. Submittal Schedule: Submit, as an action submittal, a list of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.
 - 1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
 - 2. Initial Submittal Schedule: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.

3. Final Submittal Schedule: Submit concurrently with the first complete submittal of Contractor's construction schedule.
 - a. Submit revised submittal schedule as required to reflect changes in current status and timing for submittals.
4. Format: Arrange the following information in a tabular format:
 - a. Scheduled date for first submittal.
 - b. Specification Section number and title.
 - c. Submittal Category: Action; informational.
 - d. Name of subcontractor.
 - e. Description of the Work covered.
 - f. Scheduled date for Architect's final release or approval.
 - g. Scheduled dates for purchasing.
 - h. Scheduled date of fabrication.
 - i. Scheduled dates for installation.
 - j. Activity or event number.

1.4 SUBMITTAL FORMATS

- A. Submittal Information: Include the following information in each submittal:
 1. Project name.
 2. Date.
 3. Name of Architect.
 4. Name of Contractor.
 5. Name of firm or entity that prepared submittal.
 6. Names of subcontractor, manufacturer, and supplier.
 7. Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier and alphanumeric suffix for resubmittals.
 8. Category and type of submittal.
 9. Submittal purpose and description.
 10. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
 11. Drawing number and detail references, as appropriate.
 12. Indication of full or partial submittal.
 13. Location(s) where product is to be installed, as appropriate.
 14. Other necessary identification.
 15. Remarks.
 16. Signature of transmitter.
- B. Options: Identify options requiring selection by Architect.
- C. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Architect on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.
- D. Electronic Submittals: Prepare submittals as PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number.

1.5 SUBMITTAL PROCEDURES

- A. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1. Email: Prepare submittals as PDF package and transmit to Architect by sending via email. Include PDF transmittal form. Include information in email subject line as requested by Architect.
 - a. Architect will return annotated file. Annotate and retain one copy of file as a digital Project Record Document file.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
 3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
 4. Coordinate transmittal of submittals for related parts of the Work specified in different Sections, so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
 1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 3. Resubmittal Review: Allow 15 days for review of each resubmittal.
 4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow 21 days for initial review of each submittal.
- D. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
 1. Note date and content of previous submittal.
 2. Note date and content of revision in label or title block, and clearly indicate extent of revision.
 3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.
- E. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- F. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

1.6 SUBMITTAL REQUIREMENTS

- A. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
 1. If information must be specially prepared for submittal because standard published data are unsuitable for use, submit as Shop Drawings, not as Product Data.
 2. Mark each copy of each submittal to show which products and options are applicable.
 3. Include the following information, as applicable:
 - a. Manufacturer's catalog cuts.
 - b. Manufacturer's product specifications.
 - c. Standard color charts.

- d. Statement of compliance with specified referenced standards.
 - e. Testing by recognized testing agency.
 - f. Application of testing agency labels and seals.
 - g. Notation of coordination requirements.
 - h. Availability and delivery time information.
 - 4. For equipment, include the following in addition to the above, as applicable:
 - a. Wiring diagrams that show factory-installed wiring.
 - b. Printed performance curves.
 - c. Operational range diagrams.
 - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
 - 5. Submit Product Data before Shop Drawings, and before or concurrently with Samples.
- B. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
- 1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Identification of products.
 - b. Schedules.
 - c. Compliance with specified standards.
 - d. Notation of coordination requirements.
 - e. Notation of dimensions established by field measurement.
 - f. Relationship and attachment to adjoining construction clearly indicated.
 - g. Seal and signature of professional engineer if specified.
 - 2. Sheet Size: Except for templates, patterns, and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 24 by 36 inches.
- C. Samples: Submit Samples for review of type, color, pattern, and texture for a check of these characteristics with other materials.
- 1. Transmit Samples that contain multiple, related components, such as accessories together in one submittal package.
 - 2. Identification: Permanently attach label on unexposed side of Samples that includes the following:
 - a. Project name and submittal number.
 - b. Generic description of Sample.
 - c. Product name and name of manufacturer.
 - d. Sample source.
 - e. Number and title of applicable Specification Section.
 - f. Specification paragraph number and generic name of each item.
 - 3. Email Transmittal: Provide PDF transmittal. Include digital image file illustrating Sample characteristics and identification information for record.
 - 4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 - 5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units, showing the full range of colors, textures, and patterns available.
 - a. Number of Samples: Submit one full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
 - 6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

- a. Number of Samples: Submit two sets of Samples. Architect will retain one Sample set; remainder will be returned.
 - 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
 - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.
- D. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.
- E. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.
- F. Certificates:
 - 1. Certificates and Certifications Submittals: Submit a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity. Provide a notarized signature where indicated.
 - 2. Installer Certificates: Submit written statements on manufacturer's letterhead, certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
 - 3. Manufacturer Certificates: Submit written statements on manufacturer's letterhead, certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
 - 4. Material Certificates: Submit written statements on manufacturer's letterhead, certifying that material complies with requirements in the Contract Documents.
 - 5. Product Certificates: Submit written statements on manufacturer's letterhead, certifying that product complies with requirements in the Contract Documents.
 - 6. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of AWS B2.1/B2.1M on AWS forms. Include names of firms and personnel certified.
- G. Test and Research Reports:
 - 1. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for substrate preparation and primers required.
 - 2. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
 - 3. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
 - 4. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
 - 5. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
 - a. Name of evaluation organization.

- b. Date of evaluation.
- c. Time period when report is in effect.
- d. Product and manufacturers' names.
- e. Description of product.
- f. Test procedures and results.
- g. Limitations of use.

1.7 CONTRACTOR'S REVIEW

- A. Action Submittals and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
- B. Contractor's Approval: Indicate Contractor's approval for each submittal with a uniform approval stamp. Include name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.
 - 1. Architect will not review submittals received from Contractor that do not have Contractor's review and approval.

1.8 ARCHITECT'S REVIEW

- A. Action Submittals: Architect will review each submittal, indicate corrections or revisions required, and return.
 - 1. PDF Submittals: Architect will indicate, via markup on each submittal, the appropriate action.
- B. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
- C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.
- D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- E. Architect will discard submittals received from sources other than Contractor.
- F. Submittals not required by the Contract Documents will be returned by Architect without action.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013300

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspection services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specific quality-assurance and quality-control requirements for individual work results are specified in their respective Specification Sections. Requirements in individual Sections may also cover production of standard products.
 - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements for Contractor to provide quality-assurance and quality-control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

1.2 DEFINITIONS

- A. Experienced: When used with an entity or individual, "experienced," unless otherwise further described, means having successfully completed a minimum of **five** previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.
- B. Field Quality-Control Tests and Inspections: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- C. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, subcontractor, or sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.
 - 1. Use of trade-specific terminology in referring to a Work result does not require that certain construction activities specified apply exclusively to specific trade(s).
- D. Product Tests: Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL) in accordance with 29 CFR 1910.7, by a testing agency accredited in accordance with NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- E. Source Quality-Control Tests and Inspections: Tests and inspections that are performed at the source (e.g., plant, mill, factory, or shop).
- F. Testing Agency: An entity engaged to perform specific tests, inspections, or both. The term "testing laboratory" has the same meaning as the term "testing agency."

- G. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work, to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- H. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work, to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Contractor's quality-control services do not include contract administration activities performed by Architect.

1.3 CONFLICTING REQUIREMENTS

- A. Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements is specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, inform the Architect regarding the conflict and obtain clarification prior to proceeding with the Work. Refer conflicting requirements that are different, but apparently equal, to Architect for clarification before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified is the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.4 REPORTS AND DOCUMENTS

- A. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
 - 1. Name, address, telephone number, and email address of technical representative making report.
 - 2. Statement on condition of substrates and their acceptability for installation of product.
 - 3. Statement that products at Project site comply with requirements.
 - 4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 - 5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 - 6. Statement of whether conditions, products, and installation will affect warranty.
 - 7. Other required items indicated in individual Specification Sections.
- B. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
 - 1. Name, address, telephone number, and email address of factory-authorized service representative making report.
 - 2. Statement that equipment complies with requirements.
 - 3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 - 4. Statement of whether conditions, products, and installation will affect warranty.
 - 5. Other required items indicated in individual Specification Sections.

1.5 QUALITY ASSURANCE

- A. Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, applying, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

1.6 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
 - 1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspection they are engaged to perform.
- B. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."
- D. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.
- E. Contractor's Associated Requirements and Services: Cooperate with agencies and representatives performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
 - 1. Access to the Work.
 - 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 - 3. Adequate quantities of representative samples of materials that require testing and inspection. Assist agency in obtaining samples.
- F. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
 - 1. Date test or inspection was conducted.
 - 2. Description of the Work tested or inspected.
 - 3. Date test or inspection results were transmitted to Architect.
 - 4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's **and authorities' having jurisdiction** reference during normal working hours.
 - 1. Submit log at Project closeout as part of Project Record Documents.

3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspection, sample-taking, and similar services, repair damaged construction and restore substrates and finishes.
 - 1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

SECTION 014200 - REFERENCES

PART 1 - GENERAL

1.1 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.
- C. "Directed": A command or instruction by Architect. Other terms, including "requested," "authorized," "selected," "required," and "permitted," have the same meaning as "directed."
- D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms, including "shown," "noted," "scheduled," and "specified," have the same meaning as "indicated."
- E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.
- H. "Provide": Furnish and install, complete and ready for the intended use.
- I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.2 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.
 - 1. For standards referenced by applicable building codes, comply with dates of standards as listed in building codes.

- C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
 - 1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.3 ABBREVIATIONS AND ACRONYMS

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they are to mean the recognized name of the entities indicated in Gale's "Encyclopedia of Associations: National Organizations of the U.S." or in Columbia Books' "National Trade & Professional Associations of the United States."
- B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they are to mean the recognized name of the entities in the following list. This information is believed to be accurate as of the date of the Contract Documents.
 - 1. ICC - International Code Council; www.iccsafe.org.
 - 2. ICC-ES - ICC Evaluation Service, LLC; www.icc-es.org.
- C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they are to mean the recognized name of the entities in the following list. Information is subject to change and is up to date as of the date of the Contract Documents.
 - 1. CPSC - U.S. Consumer Product Safety Commission; www.cpsc.gov.
 - 2. DOC - U.S. Department of Commerce; www.commerce.gov.
 - 3. DOE - U.S. Department of Energy; www.energy.gov.
 - 4. DOJ - U.S. Department of Justice; www.ojp.usdoj.gov.
 - 5. DOS - U.S. Department of State; www.state.gov.
 - 6. EPA - United States Environmental Protection Agency; www.epa.gov.
 - 7. NIST - National Institute of Standards and Technology; www.nist.gov.
 - 8. OSHA - Occupational Safety & Health Administration; www.osha.gov.
 - 9. TRB - Transportation Research Board; National Cooperative Highway Research Program; The National Academies; www.trb.org.
 - 10. USACE - U.S. Army Corps of Engineers; www.usace.army.mil.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 014200

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Requirements:
 - 1. Section 011000 "Summary" for work restrictions and limitations on utility interruptions.

1.2 USE CHARGES

- A. Installation, removal, and use charges for temporary facilities to be included in the Contract Sum unless otherwise indicated. Allow other entities engaged in the Project to use temporary services and facilities without cost, including, but not limited to, Architect, testing agencies, and authorities having jurisdiction.
- B. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
- C. Electric Power Service from Existing System: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

1.3 INFORMATIONAL SUBMITTALS

- A. Site Utilization Plan: Show temporary facilities, temporary utility lines and connections, staging areas, construction site entrances, vehicle circulation, and parking areas for construction personnel.
- B. Implementation and Termination Schedule: Within 15 days of date established for commencement of the Work, submit schedule indicating implementation and termination dates of each temporary utility.
- C. Project Identification and Temporary Signs: Show fabrication and installation details, including plans, elevations, details, layouts, typestyles, graphic elements, and message content.
- D. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.
- E. Moisture- and Mold-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage and mold. Describe delivery, handling, storage, installation, and protection provisions for materials subject to water absorption or water damage.
 - 1. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and requirements for replacing water-damaged Work.
 - 2. Indicate sequencing of work that requires water and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.
 - 3. Indicate methods to be used to avoid trapping water in finished work.

- F. Dust- and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust- and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Include the following:
 - 1. Locations of dust-control partitions at each phase of work.
 - 2. HVAC system isolation schematic drawing.
 - 3. Location of proposed air-filtration system discharge.
 - 4. Waste-handling procedures.
 - 5. Other dust-control measures.
- G. Noise and Vibration Control Plan: Identify construction activities that may impact the occupancy and use of existing spaces within the building or adjacent existing buildings, whether occupied by others, or occupied by Owner. Include the following:
 - 1. Methods used to meet the goals and requirements of Owner.
 - 2. Concrete cutting method(s) to be used.
 - 3. Location of construction devices on the site.
 - 4. Show compliance with the use and maintenance of quieted construction devices for the duration of the Project.
 - 5. Indicate activities that may disturb building occupants and that are planned to be performed during non-standard working hours as coordinated with Owner.

1.4 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.
- C. Accessible Temporary Egress: Comply with applicable provisions in ICC A117.1.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Wood Enclosure Fence: Plywood, 8 feet high, framed with four 2-by-4-inch rails, with preservative-treated wood posts spaced not more than 8 feet apart.
- B. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10-mil minimum thickness, with flame-spread rating of 15 or less in accordance with ASTM E84 and passing NFPA 701 Test Method 2.
- C. Dust-Control Adhesive-Surface Walk-Off Mats: Provide mats, minimum 36 by 60 inches.

2.2 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.
- B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
 - 1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.

2. Heating, Cooling, and Dehumidifying Units: Listed and labeled for type of fuel being consumed, by a qualified testing agency acceptable to authorities having jurisdiction, and marked for intended location and application.
 3. Permanent HVAC System: If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return-air grille in system and remove at end of construction and clean HVAC system as required in Section 017700 "Closeout Procedures."
- C. Air-Filtration Units: Primary and secondary HEPA-filter-equipped portable units with four-stage filtration. Provide single switch for emergency shutoff. Configure to run continuously.

PART 3 - EXECUTION

3.1 TEMPORARY FACILITIES, GENERAL

- A. Conservation: Coordinate construction and use of temporary facilities with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.
1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property.

3.2 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
1. Locate facilities to limit site disturbance as specified in Section 011000 "Summary."
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.
- C. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.
1. Prior to commencing work, isolate the HVAC system in area where work is to be performed in accordance with coordination drawings.
 - a. Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.
 - b. Maintain negative air pressure within work area, using HEPA-equipped air-filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete.
 2. Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust-containment devices.
 3. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.

3.3 TEMPORARY UTILITY INSTALLATION

- A. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

3.4 SUPPORT FACILITIES INSTALLATION

- A. Parking: Use designated areas of Owner's existing parking areas for construction personnel.
- B. Storage and Staging: Use designated areas of Project site for storage and staging needs.
- C. Waste Disposal Facilities:
 - 1. Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Section 017300 "Execution."
- D. Existing Elevator Use: Use of Owner's existing elevators will be permitted, provided elevators are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore elevators to condition existing before initial use, including replacing worn cables, guide shoes, and similar items of limited life.
 - 1. Do not load elevators beyond their rated weight capacity.
 - 2. Provide protective coverings, barriers, devices, signs, or other procedures to protect elevator car and entrance doors and frame. If, despite such protection, elevators become damaged, engage elevator Installer to restore damaged work, so no evidence remains of correction work. Return items that cannot be refinished in field to the shop, make required repairs and refinish entire unit, or provide new units as required.

3.5 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
 - 1. Where access to adjacent properties is required in order to affect protection of existing facilities, obtain written permission from adjacent property owner to access property for that purpose.
- B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
 - 1. Comply with work restrictions specified in Section 011000 "Summary."
- C. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals, so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using materials approved by authorities having jurisdiction.
- D. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each workday.
- E. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- F. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
 - 1. Where heating or cooling is needed and permanent enclosure is incomplete, insulate temporary enclosures.

- G. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by Owner from fumes and noise.
 - 1. Construct dustproof partitions with two layers of 6-mil polyethylene sheet on each side. Cover floor with two layers of 6-mil polyethylene sheet, extending sheets 18 inches up the sidewalls. Overlap and tape full length of joints. Cover floor with fire-retardant-treated plywood.
 - a. Construct vestibule and airlock at each entrance through temporary partition with not less than 48 inches between doors. Maintain water-dampened foot mats in vestibule.
 - 2. Seal joints and perimeter. Equip partitions with gasketed dustproof doors and security locks where openings are required.
 - 3. Protect air-handling equipment.
 - 4. Provide walk-off mats at each entrance through temporary partition.

3.6 MOISTURE AND MOLD CONTROL

- A. Moisture and Mold Protection: Protect stored materials and installed Work in accordance with Moisture and Mold Protection Plan.
 - 1. Control moisture and humidity inside building by maintaining effective dry-in conditions.
 - 2. Use temporary or permanent HVAC system to control humidity within ranges specified for installed and stored materials.
 - 3. Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water limits.
 - a. Hygroscopic materials that may support mold growth, including wood and gypsum-based products, that become wet during the course of construction and remain wet for 24 hours are considered defective and require replacing.
 - b. Measure moisture content of materials that have been exposed to moisture during construction operations or after installation. Record readings beginning at time of exposure and continuing daily for 48 hours. Identify materials containing moisture levels higher than allowed. Report findings in writing to Architect.
 - c. Remove and replace materials that cannot be completely restored to their manufactured moisture level within 48 hours.

3.7 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
 - 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
 - 1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.

2. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700 "Closeout Procedures."

END OF SECTION 015000

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. The Work of This Section Includes: Administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.
- B. Related Requirements:
 - 1. Section 011000 "Summary" for Contractor requirements related to Owner-furnished products.
 - 2. Section 012100 "Allowances" for products selected under an allowance.
 - 3. Section 012500 "Substitution Procedures" for requests for substitutions.
 - 4. Section 014200 "References" for applicable industry standards for products specified.
 - 5. Section 017700 "Closeout Procedures" for submitting warranties.

1.2 DEFINITIONS

- A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into another project or facility. Salvaged items or items reused from other projects are not considered new products. Items that are manufactured or fabricated to include recycled content materials are considered new products unless otherwise indicated.
 - 3. Comparable Product: Product by named manufacturer that is demonstrated and approved through the comparable product submittal process described in "Comparable Products" Article, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Basis-of-Design Product Specification: A specification in which a single manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation. Published attributes and characteristics of basis-of-design product establish salient characteristics of products.
 - 1. Evaluating Comparable Products: In addition to the basis-of-design product description, product attributes and characteristics may be listed to establish the significant qualities related to type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other special features and requirements for purposes of evaluating comparable products of additional manufacturers named in the specification. Manufacturer's published attributes and characteristics of basis-of-design product also establish salient characteristics of products for purposes of evaluating comparable products.
- C. Subject to Compliance with Requirements: Where the phrase "Subject to compliance with requirements" introduces a product selection procedure in an individual Specification Section, provide products qualified under the specified product procedure. In the event that a named product or product by a named manufacturer does not meet the other requirements of the specifications, select another named product or

product from another named manufacturer that does meet the requirements of the specifications; submit a comparable product request or substitution request, if applicable.

- D. Comparable Product Request Submittal: An action submittal requesting consideration of a comparable product, including the following information:
 - 1. Identification of basis-of-design product or fabrication or installation method to be replaced, including Specification Section number and title and Drawing numbers and titles.
 - 2. Data indicating compliance with the requirements specified in "Comparable Products" Article.
- E. Basis-of-Design Product Specification Submittal: An action submittal complying with requirements in Section 013300 "Submittal Procedures."
- F. Substitution: Refer to Section 012500 "Substitution Procedures" for definition and limitations on substitutions.

1.3 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.
- B. Identification of Products: Except for required labels and operating data, do not attach or imprint manufacturer or product names or trademarks on exposed surfaces of products or equipment that will be exposed to view in occupied spaces or on the exterior.
 - 1. Labels: Locate required product labels and stamps on a concealed surface, or, where required for observation following installation, on a visually accessible surface that is inconspicuous.
 - 2. Equipment Nameplates: Provide a permanent nameplate on each item of service- or power-operated equipment. Locate on a visually accessible but inconspicuous surface. Include information essential for operation, including the following:
 - a. Name of product and manufacturer.
 - b. Model and serial number.
 - c. Capacity.
 - d. Speed.
 - e. Ratings.

1.4 COORDINATION

- A. Modify or adjust affected work as necessary to integrate work of approved comparable products and approved substitutions.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products, using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
 - 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 - 2. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.

3. Inspect products on delivery to determine compliance with the Contract Documents and that products are undamaged and properly protected.

C. Storage:

1. Provide a secure location and enclosure at Project site for storage of materials and equipment.
2. Store products to allow for inspection and measurement of quantity or counting of units.
3. Store materials in a manner that will not endanger Project structure.
4. Store products that are subject to damage by the elements under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation and with adequate protection from wind.
5. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
7. Protect stored products from damage and liquids from freezing.

1.6 PRODUCT WARRANTIES

- A. Warranties specified in other Sections are to be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
1. Manufacturer's Warranty: Written standard warranty form furnished by individual manufacturer for a particular product and issued in the name of Owner or endorsed by manufacturer to Owner.
 2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner and issued in the name of Owner or endorsed by manufacturer to Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 2. Specified Form: When specified forms are included in the Project Manual, prepare a written document, using indicated form properly executed.
 3. See other Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Section 017700 "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 2. Owner reserves the right to limit selection to products with warranties meeting requirements of the Contract Documents.
 3. Where products are accompanied by the term "as selected," Architect will make selection.
 4. Descriptive, performance, and reference standard requirements in Specifications establish salient characteristics of products.

5. Or Equal: For products specified by name and accompanied by the term "or equal," "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.
 - a. Submit additional documentation required by Architect in order to establish equivalency of proposed products. Unless otherwise indicated, evaluation of "or equal" product status is by Architect, whose determination is final.
- B. Product Selection Procedures:
 1. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications may additionally indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.
 - a. For approval of products by unnamed manufacturers, comply with requirements in Section 012500 "Substitution Procedures" for substitutions for convenience.
- C. Visual Matching Specification: Where Specifications require the phrase "match Architect's sample," provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
 1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 012500 "Substitution Procedures" for proposal of product.
- D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or a similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

- A. Conditions for Consideration of Comparable Products: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with the following requirements:
 1. Evidence that proposed product does not require revisions to the Contract Documents, is consistent with the Contract Documents, will produce the indicated results, and is compatible with other portions of the Work.
 2. Detailed comparison of significant qualities of proposed product with those of the named basis-of-design product. Significant product qualities include attributes such as type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other specific features and requirements.
 3. Evidence that proposed product provides specified warranty.
 4. List of similar installations for completed projects, with project names and addresses and names and addresses of architects and owners, if requested.
 5. Samples, if requested.
- B. Architect's Action on Comparable Products Submittal: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for a comparable product. Architect will notify Contractor of approval or rejection of proposed comparable product within [15] days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
 1. Architect's Approval of Submittal: Marked with approval notation from Architect's action stamp. See Section 013300 "Submittal Procedures."

2. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.
- C. Submittal Requirements, Single-Step Process: When acceptable to Architect, incorporate specified submittal requirements of individual Specification Section in combined submittal for comparable products. Approval by Architect of Contractor's request for use of comparable product and of individual submittal requirements will also satisfy other submittal requirements.

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000

SECTION 017300 - EXECUTION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work, including, but not limited to, the following:
 - 1. Construction layout.
 - 2. Field engineering.
 - 3. Installation.
 - 4. Cutting and patching.
 - 5. Coordination of Owner's portion of the Work.
 - 6. Progress cleaning.
 - 7. Starting and adjusting.
 - 8. Protection of installed construction.
 - 9. Correction of the Work.
- B. Related Requirements:
 - 1. Section 011000 "Summary" for coordination of and limits on use of Project site.
 - 2. Section 017700 "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, replacing defective work, and final cleaning.

1.2 DEFINITIONS

- A. Cutting: Removal of in-place construction necessary to permit installation or performance of subsequent work.
- B. Patching: Fitting and repair work required to restore construction to original conditions after installation of subsequent work.

1.3 QUALITY ASSURANCE

- A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
 - 1. Structural Elements: When cutting and patching structural elements, or when encountering the need for cutting and patching of elements whose structural function is not known, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.
 - 2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.
 - 3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.
 - 4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in

Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

- B. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of specified products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Comply with requirements specified in other Sections.
- B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
 - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials. Use materials that are not considered hazardous.
- C. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
 - 1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 - 2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 - 3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- B. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- B. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

- C. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect in accordance with requirements in Section 013100 "Project Management and Coordination."

3.3 CONSTRUCTION LAYOUT

- A. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- B. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

3.4 FIELD ENGINEERING

- A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
 - 1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect before proceeding.
 - 2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.
- B. Benchmarks: Establish and maintain a minimum of [two] permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.
 - 1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
 - 2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
 - 3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

3.5 INSTALLATION

- A. Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - 1. Make vertical work plumb, and make horizontal work level.
 - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 - 3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
 - 4. Maintain minimum headroom clearance of 96 inches in occupied spaces and 90 inches in unoccupied spaces, unless otherwise indicated on Drawings.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure satisfactory results as judged by Architect. Maintain conditions required for product performance until Substantial Completion.

- D. Conduct construction operations, so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy of type expected for Project.
- E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on-site and placement in permanent locations.
- F. Tools and Equipment: Select tools or equipment that minimize production of excessive noise levels.
- G. Templates: Obtain and distribute to the parties involved templates for Work specified to be factory prepared and field installed. Check Shop Drawings of other portions of the Work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions with manufacturer.
 - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
 - 2. Allow for building movement, including thermal expansion and contraction.
 - 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- I. Joints: Make joints of uniform width. Where joint locations in exposed Work are not indicated, arrange joints for the best visual effect, as judged by Architect. Fit exposed connections together to form hairline joints.

3.6 CUTTING AND PATCHING

- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Temporary Support: Provide temporary support of Work to be cut.
- C. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- D. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching in accordance with requirements in Section 011000 "Summary."
- E. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.
- F. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 4. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 5. Proceed with patching after construction operations requiring cutting are complete.
- G. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as practicable, as judged by Architect. Provide materials and comply with installation requirements specified in other Sections, where applicable.
1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
 - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
 - b. Restore damaged pipe covering to its original condition.
 3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch, corner to corner of wall and edge to edge of ceiling. Provide additional coats until patch blends with adjacent surfaces.
 4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
 5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.
- H. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.7 COORDINATION OF OWNER'S PORTION OF THE WORK

- A. Site Access: Provide access to Project site for Owner's construction personnel.
1. Provide temporary facilities required for Owner-furnished, Owner-installed products.
 2. Refer to Section 011000 "Summary" for other requirements for Owner-furnished, Owner-installed products.
- B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction personnel.
1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.
 2. Preinstallation Conferences: Include Owner's construction personnel at preinstallation conferences covering portions of the Work that are to receive Owner's work. Attend preinstallation conferences conducted by Owner's construction personnel if portions of the Work depend on Owner's construction.

3.8 PROGRESS CLEANING

- A. Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
 - 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 - 2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F (27 deg C).
 - 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, in accordance with regulations.
 - a. Use containers intended for holding waste materials of type to be stored.
 - 4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where Work is in progress to the level of cleanliness necessary for proper execution of the Work.
 - 1. Remove liquid spills promptly.
 - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces in accordance with written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 015000 "Temporary Facilities and Controls."
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- J. Limiting Exposures: Supervise construction operations to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.9 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.

- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: Comply with qualification requirements in Section 014000 "Quality Requirements."

3.10 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work.
- C. Comply with manufacturer's written instructions for temperature and relative humidity.

3.11 CORRECTION OF THE WORK

- A. Repair or remove and replace damaged, defective, or nonconforming Work. Restore damaged substrates and finishes.
 - 1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- B. Repair Work previously completed and subsequently damaged during construction period. Repair to like-new condition.
- C. Restore permanent facilities used during construction to their specified condition.
- D. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
- E. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
- F. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 017300

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for Contract closeout, including, but not limited to, the following:
 - 1. Substantial Completion procedures.
 - 2. Final Completion procedures.
 - 3. List of incomplete items.
 - 4. Submittal of Project warranties.
 - 5. Final cleaning.
- B. Related Requirements:
 - 1. Section 012900 "Payment Procedures" for requirements for Applications for Payment for Substantial Completion and Final Completion.
 - 2. Section 017839 "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.

1.2 DEFINITIONS

- A. List of Incomplete Items: Contractor-prepared list of items to be completed or corrected, prepared for the Architect's use prior to Architect's inspection, to determine if the Work is substantially complete.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of cleaning agent.
- B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.4 CLOSEOUT SUBMITTALS

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.
- C. Field Report: For pest-control inspection.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Schedule of Maintenance Material Items: For maintenance material submittal items required by other Sections.

1.6 SUBSTANTIAL COMPLETION PROCEDURES

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's "punch list"), indicating the value of each item on the list and reasons why the Work is incomplete.
- B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
 - 1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction, permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 - 2. Submit closeout submittals specified in other Division 01 Sections, including Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
 - 3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - 4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer's name and model number.
 - a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section.
 - 5. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
- C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
 - 1. Advise Owner of pending insurance changeover requirements.
 - 2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
 - 3. Complete startup and testing of systems and equipment.
 - 4. Perform preventive maintenance on equipment used prior to Substantial Completion.
 - 5. Advise Owner of changeover in utility services.
 - 6. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
 - 7. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 - 8. Complete final cleaning requirements.
 - 9. Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
 - 1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
 - 2. Results of completed inspection will form the basis of requirements for Final Completion.

1.7 FINAL COMPLETION PROCEDURES

- A. Submittals Prior to Final Completion: Before requesting final inspection for determining Final Completion, complete the following:
 - 1. Submit a final Application for Payment in accordance with Section 012900 "Payment Procedures."
 - 2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list will state that each item has been completed or otherwise resolved for acceptance.
 - 3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
- B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
 - 1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.8 LIST OF INCOMPLETE ITEMS

- A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
 - 1. Organize list of spaces in sequential order, listed by room or space number.
 - 2. Organize items applying to each space by major element, including categories for ceilings, individual walls, floors, equipment, and building systems.
 - 3. Include the following information at the top of each page:
 - a. Project name.
 - b. Date.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Page number.

1.9 SUBMITTAL OF PROJECT WARRANTIES

- A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.
- B. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
- C. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
 - a. Clean Project site of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - d. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - e. Remove debris and surface dust from limited-access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - f. Clean flooring, removing debris, dirt, and staining; clean in accordance with manufacturer's instructions.
 - g. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials.
 - h. Remove labels that are not permanent.
- C. Construction Waste Disposal: Comply with waste-disposal requirements in Section 015000 "Temporary Facilities and Controls."

3.2 CORRECTION OF THE WORK

- A. Complete repair and restoration operations required by "Correction of the Work" Article in Section 017300 "Execution" before requesting inspection for determination of Substantial Completion.

END OF SECTION 017700

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for Project Record Documents, including the following:
 - 1. Record Drawings.
 - 2. Record Product Data.
 - 3. Miscellaneous record submittals.
- B. Related Requirements:
 - 1. Section 017300 "Execution" for final property survey.
 - 2. Section 017700 "Closeout Procedures" for general closeout procedures.

1.3 CLOSEOUT SUBMITTALS

- A. Record Drawings: Comply with the following:
 - 1. Number of Copies: Submit copies of Record Drawings as follows:
 - a. Initial Submittal:
 - 1) Submit PDF electronic files of scanned record prints.
 - 2) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
 - b. Final Submittal:
 - 1) Submit PDF electronic files of scanned Record Prints and two set(s) of file prints.
- B. Record Product Data: Submit annotated PDF electronic files and directories of each submittal.

1.4 RECORD DRAWINGS

- A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.
 - 1. Preparation: Mark record prints to show the actual installation, where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Accurately record information in an acceptable drawing technique.
 - c. Record data as soon as possible after obtaining it.
 - d. Record and check the markup before enclosing concealed installations.

- e. Cross-reference record prints to corresponding photographic documentation.
 2. Content: Types of items requiring marking include, but are not limited to, the following:
 - a. Dimensional changes to Drawings.
 - b. Revisions to details shown on Drawings.
 - c. Depths of foundations.
 - d. Locations and depths of underground utilities.
 - e. Revisions to routing of piping and conduits.
 - f. Revisions to electrical circuitry.
 - g. Actual equipment locations.
 - h. Duct size and routing.
 - i. Locations of concealed internal utilities.
 - j. Changes made by Change Order or Construction Change Directive.
 - k. Changes made following Architect's written orders.
 - l. Details not on the original Contract Drawings.
 - m. Field records for variable and concealed conditions.
 - n. Record information on the Work that is shown only schematically.
 3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
 4. Mark record prints with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
 5. Mark important additional information that was either shown schematically or omitted from original Drawings.
 6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:
1. Format: Annotated PDF electronic file.
 2. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
 3. Refer instances of uncertainty to Architect for resolution.
- C. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize record prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
 2. Format: Annotated PDF electronic file.
 3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
 4. Identification: As follows:
 - a. Project name.
 - b. Date.
 - c. Designation "PROJECT RECORD DRAWINGS."
 - d. Name of Architect.
 - e. Name of Contractor.

1.5 RECORD PRODUCT DATA

- A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and revisions to Project Record Documents as they occur; do not wait until end of Project.

- B. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
 - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 - 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
 - 3. Note related Change Orders and Record Drawings where applicable.
- C. Format: Submit Record Product Data as annotated PDF electronic file.
 - 1. Include Record Product Data directory organized by Specification Section number and title, electronically linked to each item of Record Product Data.

1.6 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.
- B. Format: Submit miscellaneous record submittals as PDF electronic file.
 - 1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

1.7 MAINTENANCE OF RECORD DOCUMENTS

- A. Maintenance of Record Documents: Store Record Documents in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 017839

SECTION 024119 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Demolition and removal of selected portions of building or structure.

B. Related Requirements:

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

1.2 DEFINITIONS

- A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged or reinstalled.
- B. Remove and Reinstall: Detach items from existing construction, in a manner to prevent damage, prepare for reuse, and reinstall where indicated.
- C. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.

1.3 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.
1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.4 INFORMATIONAL SUBMITTALS

- A. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property, for dust control and for noise control. Indicate proposed locations and construction of barriers.
- B. Predemolition Photographs or Video: Show existing conditions of adjoining construction, including finish surfaces, that might be misconstrued as damage caused by salvage and demolition operations. Comply with Section 013233 "Photographic Documentation." Submit before Work begins.
- C. Warranties: Documentation indicating that existing warranties are still in effect after completion of selective demolition.

1.5 FIELD CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
 - 1. Before selective demolition, Owner will remove the following items:
 - a. Furniture.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
 - 1. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Maintain fire-protection facilities in service during selective demolition operations.

1.6 COORDINATION

- A. Arrange selective demolition schedule so as not to interfere with Owner's operations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI/ASSP A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that service lines within affected areas have been disconnected and capped before starting selective demolition operations.
- B. Review Project Record Documents of existing construction or other existing condition and hazardous material information provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.

- C. Perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
 - 1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.
- D. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs or video.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.
 - 1. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
 - 2. Disconnect, demolish, and remove plumbing and HVAC systems, equipment, and components indicated on Drawings to be removed.
 - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
 - b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material and leave in place.
 - c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
 - d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
 - e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
 - f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
 - g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material and leave in place.

3.3 PROTECTION

- A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 - 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 - 2. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 - 3. Cover and protect furniture, furnishings, and equipment that have not been removed.
 - 4. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 015000 "Temporary Facilities and Controls."

- B. Remove temporary barricades and protections where hazards no longer exist.

3.4 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
 - 1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
 - 2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
 - 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 - 4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
 - 5. Maintain fire watch during and for at least two hours after flame-cutting operations.
 - 6. Maintain adequate ventilation when using cutting torches.
 - 7. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 - 8. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 - 9. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 - 10. Dispose of demolished items and materials promptly. Comply with requirements in Section 017419 "Construction Waste Management and Disposal."
- B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
- C. Removed and Reinstalled Items:
 - 1. Clean and repair items to functional condition adequate for intended reuse.
 - 2. Pack or crate items after cleaning and repairing. Identify contents of containers.
 - 3. Protect items from damage during transport and storage.
 - 4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, and then remove masonry between saw cuts.
- B. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, and then break up and remove.
- C. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings." Do not use methods requiring solvent-based adhesive strippers.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove demolition waste materials from Project site and dispose of them in an EPA-approved construction and demolition waste landfill acceptable to authorities having jurisdiction.
 - 1. Do not allow demolished materials to accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Burning: Do not burn demolished materials.

3.7 CLEANING

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

END OF SECTION 024119

SECTION 033000 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Concrete standards.
2. Concrete materials.
3. Admixtures.
4. Accessories.
5. Repair materials.
6. Concrete mixture materials.
7. Concrete mixture class types.
8. Concrete mixing.

1.2 DEFINITIONS

A. Cementitious Materials: Portland cement or blended hydraulic cement alone or in combination with one or more of the following:

1. Fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.

B. Water/Cementitious Materials (w/cm) Ratio: The ratio by weight of mixing water to cementitious materials.

1.3 ACTION SUBMITTALS

A. Product Data:

1. Portland cement.
2. Aggregates.
3. Admixtures:
 - a. Include limitations of use. Admixtures that do not comply with reference ASTM International requirements must be submitted with test data for approval.
4. Repair materials.

B. Design Mixtures: For each concrete mixture, include the following:

1. Mixture identification.
2. Compressive strength at 28 days or other age as specified.
3. Compressive strength required at stages of construction.
4. Durability exposure classes for Exposure Categories F, S, W, and C.
5. Maximum w/cm ratio.
6. Calculated equilibrium and fresh density for lightweight concrete.
7. Slump or slump flow limit.
8. Air content.

9. Nominal maximum aggregate size.
10. Intended placement method.
11. Submit adjustments to design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant changes.

C. Shop Drawings:

1. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.
 - a. Location of construction joints is subject to approval of the Architect.

D. Concrete Schedule: For each location of each class of concrete indicated in "Concrete Mixture Class Types" Article, including the following:

1. Concrete class designation.
2. Location within Project.
3. Exposure class designation.
4. Formed surface finish designation and final finish.
5. Final finish for floors.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For the following:

1. Installer: Include copies of applicable ACI certificates.

B. Material Certificates: For each of the following:

1. Cementitious materials.
2. Admixtures.
3. Floor and slab treatments.
4. Repair materials.

C. Research Reports:

1. For concrete admixtures in accordance with ICC's Acceptance Criteria AC198.
2. For sheet vapor retarder/termite barrier, showing compliance with ICC's Acceptance Criteria AC380.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A qualified Installer who employs Project personnel qualified as an ACI-certified Concrete Flatwork Associate and Concrete Flatwork Finisher and a supervisor who is a certified ACI Advanced Concrete Flatwork Finisher/Technician or an ACI Concrete Flatwork Finisher with experience installing and finishing concrete.

1. Post-Installed Concrete Anchors Installers: ACI-certified Adhesive Anchor Installer.

B. Ready-Mixed Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94/C94M requirements for production facilities and equipment.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Comply with ASTM C94/C94M and ACI 301 (ACI 301M).

PART 2 - PRODUCTS

2.1 CONCRETE STANDARDS

- A. ACI Publications: Comply with ACI 301 (ACI 301M) unless modified by requirements in the Contract Documents.

2.2 CONCRETE MATERIALS

- A. Source Limitations:

1. Obtain all concrete mixtures from a single ready-mixed concrete manufacturer for entire Project.
2. Obtain each type of admixture from single source from single manufacturer.

- B. Cementitious Materials:

1. Portland Cement: ASTM C150/C150M, Type III.

- C. Normal-Weight Aggregates:

1. Coarse Aggregate: ASTM C33/C33M, Class 3S.
2. Maximum Coarse-Aggregate Size: 3/4 inch (19 mm).
3. Fine Aggregate: ASTM C33/C33M.

2.3 ADMIXTURES

- A. Air-Entraining Admixture: ASTM C260/C260M.

- B. Chemical Admixtures: Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C494/C494M, Type A.

- C. Mixing Water for Concrete Mixtures and Water Used to Make Ice: ASTM C1602/C1602M. Include documentation of compliance with limits for alkalis, sulfates, chlorides, or solids content of mixing water from Table 2 in ASTM C1602/C1602M.

2.4 CURING MATERIALS

- A. Moisture-Retaining Cover: ASTM C171, polyethylene film burlap-polyethylene sheet.

- B. Water: Potable water that does not cause staining of the surface.

2.5 ACCESSORIES

- A. Bonding Agent: ASTM C1059/C1059M, Type II, nonredispersible, acrylic emulsion or styrene butadiene.

2.6 REPAIR MATERIALS

- A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch (3 mm) and that can be feathered at edges to match adjacent floor elevations.
 - 1. Cement Binder: ASTM C150/C150M portland cement or hydraulic or blended hydraulic cement, as defined in ASTM C219.
 - 2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
 - 3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3 to 6 mm) or coarse sand, as recommended by underlayment manufacturer.
 - 4. Compressive Strength: Not less than 4100 psi (29 MPa) at 28 days when tested in accordance with ASTM C109/C109M.

2.7 CONCRETE MIXTURE MATERIALS

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, in accordance with ACI 301 (ACI 301M).
 - 1. Use a qualified testing agency for preparing and reporting proposed mixture designs, based on laboratory trial mixtures.
- B. Admixtures: Use admixtures in accordance with manufacturer's written instructions.

2.8 CONCRETE MIXTURE CLASS TYPES

- A. Class D: Normal-weight concrete.
 - 1. Exposure Class: ACI 318 (ACI 318M) Class F1.
 - 2. Minimum Compressive Strength: 3000 psi (20.7 MPa) at 28 days.
 - 3. Air Content:
 - a. Total air content must not exceed 3 percent for concrete used in trowel-finished floors.
 - 4. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.

2.9 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete in accordance with ASTM C94/C94M and furnish delivery ticket.
- B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete in accordance with ASTM C94/C94M. Mix concrete materials in appropriate drum-type batch machine mixer.

1. For mixer capacity of 1 cu. yd. (0.76 cu. m) or smaller, continue mixing at least 1-1/2 minutes, but not more than five minutes after ingredients are in mixer, before any part of batch is released.
2. For mixer capacity larger than 1 cu. yd. (0.76 cu. m), increase mixing time by 15 seconds for each additional 1 cu. yd. (0.76 cu. m).
3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixture time, quantity, and amount of water added. Record approximate location of final deposit in structure.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of Conditions:

1. Before placing concrete, verify that installation of concrete forms, accessories, reinforcement, and embedded items is complete and that required inspections have been performed.
2. Do not proceed until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Provide reasonable auxiliary services to accommodate field testing and inspections, acceptable to testing agency, including the following:

1. Daily access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Secure space for storage, initial curing, and field curing of test samples, including source of water and continuous electrical power at Project site during site curing period for test samples.
4. Security and protection for test samples and for testing and inspection equipment at Project site.

3.3 TOLERANCES

A. Comply with ACI 117 (ACI 117M).

3.4 INSTALLATION OF CAST-IN-PLACE CONCRETE

A. Before placing concrete, verify that installation of formwork, reinforcement, embedded items, and vapor retarder is complete and that required inspections are completed.

1. Immediately prior to concrete placement, inspect vapor retarder for damage and deficient installation, and repair defective areas.
2. Provide continuous inspection of vapor retarder during concrete placement and make necessary repairs to damaged areas as Work progresses.

B. Notify Architect and testing and inspection agencies 24 hours prior to commencement of concrete placement.

C. Water addition in transit or at the Project site must be in accordance with ASTM C94/C94M and must not exceed the permitted amount indicated on the concrete delivery ticket.

- D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness.
1. If a section cannot be placed continuously, provide construction joints as indicated.
 2. Deposit concrete to avoid segregation.
 3. Deposit concrete in horizontal layers of depth not to exceed formwork design pressures and in a manner to avoid inclined construction joints.
 4. Consolidate placed concrete with mechanical vibrating equipment in accordance with ACI 301 (ACI 301M).
 - a. Do not use vibrators to transport concrete inside forms.
 - b. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches (150 mm) into preceding layer.
 - c. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity.
 - d. At each insertion, limit duration of vibration to time necessary to consolidate concrete, and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.
- E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
1. Do not place concrete floors and slabs in a checkerboard sequence.
 2. Consolidate concrete during placement operations, so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
 3. Maintain reinforcement in position on chairs during concrete placement.
 4. Screed slab surfaces with a straightedge and strike off to correct elevations.
 5. Level concrete, cut high areas, and fill low areas.
 6. Slope surfaces uniformly to drains where required.
 7. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface.
 8. Do not further disturb slab surfaces before starting finishing operations.

3.5 INSTALLATION OF JOINTS

- A. Construct joints true to line, with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Coordinate with floor slab pattern and concrete placement sequence.
1. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- C. Doweled Joints:
1. Install dowel bars and support assemblies at joints where indicated on Drawings.

3.6 APPLICATION OF FINISHING FLOORS AND SLABS

- A. Float Finish:
1. When bleedwater sheen has disappeared and concrete surface has stiffened sufficiently to permit operation of specific float apparatus, consolidate concrete surface with power-driven floats or by hand floating if area is small or inaccessible to power-driven floats.
 2. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture and complies with ACI 117 (ACI A117M) tolerances for conventional concrete.

3. Apply float finish to surfaces to receive trowel finish.

B. Trowel Finish:

1. After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel.
2. Continue troweling passes and restraighen until surface is free of trowel marks and uniform in texture and appearance.
3. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
4. Do not add water to concrete surface. Use of an approved finishing aid is acceptable.
5. Do not apply troweled finish to concrete, which has a total air content greater than 3 percent.
6. Apply a trowel finish to surfaces to be covered with resilient flooring or another thin-film-finish coating system.
7. Finish surfaces to the following tolerances, in accordance with ASTM E1155 (ASTM E1155M), for a randomly trafficked floor surface:
 - a. Slabs on Ground:
 - 1) Specified overall values of flatness, F_F 35; and of levelness, F_L 25; with minimum local values of flatness, F_F 24; and of levelness, F_L 17.
 - b. Suspended Slabs:
 - 1) Specified overall values of flatness, F_F 35; and of levelness, F_L 20; with minimum local values of flatness, F_F 24; and of levelness, F_L 15.

3.7 APPLICATION OF FINISHING FORMED SURFACES

A. As-Cast Surface Finishes:

1. ACI 301 (ACI 301M) Surface Finish SF-1.0: As-cast concrete texture imparted by form-facing material.
 - a. Patch voids larger than 1-1/2 inches (38 mm) wide or 1/2 inch (13 mm) deep.
 - b. Remove projections larger than 1 inch (25 mm).
 - c. Tie holes do not require patching.
 - d. Surface Tolerance: ACI 117 (ACI 117M), Class D.
 - e. Apply to concrete surfaces for metal lap pan deck formed surfaces and those surfaces that are buried or covered with subsequent installed surfaces.

3.8 APPLICATION OF CONCRETE CURING

A. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

1. Comply with ACI 301 (ACI 301M) for cold weather protection during curing.
2. Comply with ACI 301 (ACI 301M) and ACI 305.1 (ACI 305.1M) for hot-weather protection during curing.
3. Maintain moisture loss no more than 0.2 lb/sq. ft. x h (1 kg/sq. m x h), calculated in accordance with ACI 305R, before and during finishing operations.

B. Curing Formed Surfaces: Comply with ACI 308.1 (ACI 308.1M) as follows:

1. Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces.

2. If forms remain during curing period, moist cure after loosening forms.
3. If removing forms before end of curing period, continue curing for remainder of curing period as follows:
 - a. Continuous Fogging: Maintain standing water on concrete surface until final setting of concrete.
 - b. Continuous Sprinkling: Maintain concrete surface continuously wet.
 - c. Absorptive Cover: Pre-dampen absorptive material before application; apply additional water to absorptive material to maintain concrete surface continuously wet.
 - d. Water-Retention Sheetting Materials: Cover exposed concrete surfaces with sheetting material, taping, or lapping seams.
 - e. Membrane-Forming Curing Compound: Apply uniformly in continuous operation by power spray or roller in accordance with manufacturer's written instructions.
 - 1) Recoat areas subject to heavy rainfall within three hours after initial application.
 - 2) Maintain continuity of coating and repair damage during curing period.

C. Curing Unformed Surfaces: Comply with ACI 308.1 (ACI 308.1M) as follows:

1. Begin curing after finishing concrete.
2. Interior Concrete Floors:
 - a. Floors to Receive Floor Coverings Specified in Other Sections: Contractor has option of the following:
 - 1) Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive.
 - a) Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
 - b) Cure for not less than seven days.

3.9 INSTALLATION OF CONCRETE SURFACE REPAIRS

A. Defective Concrete:

1. Repair and patch defective areas when approved by Architect.
2. Remove and replace concrete that cannot be repaired and patched to meet specification requirements.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of 1 part portland cement to 2-1/2 parts fine aggregate passing a No. 16 (1.18-mm) sieve, using only enough water for handling and placing.

C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks in excess of 0.01 inch (0.25 mm) spalls, air bubbles exceeding surface finish limits, honeycombs, rock pockets, fins and other projections on the surface exceeding surface finish limits, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch (13 mm) in any dimension to solid concrete.
 - a. Limit cut depth to 3/4 inch (19 mm).
 - b. Make edges of cuts perpendicular to concrete surface.

- c. Clean, dampen with water, and brush-coat holes and voids with bonding agent.
 - d. Fill and compact with patching mortar before bonding agent has dried.
 - e. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
- 2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement, so that, when dry, patching mortar matches surrounding color.
 - a. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching.
 - b. Compact mortar in place and match surrounding surface.
- 3. Repair defects on concealed formed surfaces that will affect concrete's durability and structural performance, as determined by Architect.

D. Repairing Unformed Surfaces:

- 1. Test unformed surfaces, such as floors and slabs, for finish, and verify surface tolerances specified for each surface.
 - a. Correct low and high areas.
 - b. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
- 2. Repair finished surfaces containing surface defects, including spalls, popouts, honeycombs, rock pockets, crazing, and cracks in excess of 0.01 inch (0.25 mm) wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width.
- 3. After concrete has cured at least 14 days, correct high areas by grinding.
- 4. Correct localized low areas during, or immediately after, completing surface-finishing operations by adding patching mortar.
 - a. Finish repaired areas to blend into adjacent concrete.
- 5. Correct other low areas scheduled to receive floor coverings with a repair underlayment.
 - a. Prepare, mix, and apply repair underlayment and primer in accordance with manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
 - b. Feather edges to match adjacent floor elevations.
- 6. Repair defective areas, except random cracks and single holes 1 inch (25 mm) or less in diameter, by cutting out and replacing with fresh concrete.
 - a. Remove defective areas with clean, square cuts, and expose steel reinforcement with at least a 3/4-inch (19-mm) clearance all around.
 - b. Dampen concrete surfaces in contact with patching concrete and apply bonding agent.
 - c. Mix patching concrete of same materials and mixture as original concrete, except without coarse aggregate.
 - d. Place, compact, and finish to blend with adjacent finished concrete.
 - e. Cure in same manner as adjacent concrete.
- 7. Repair random cracks and single holes 1 inch (25 mm) or less in diameter with patching mortar.
 - a. Groove top of cracks and cut out holes to sound concrete, and clean off dust, dirt, and loose particles.
 - b. Dampen cleaned concrete surfaces and apply bonding agent.
 - c. Place patching mortar before bonding agent has dried.
 - d. Compact patching mortar and finish to match adjacent concrete.

- e. Keep patched area continuously moist for at least 72 hours.
- E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.
- F. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.10 PROTECTION

- A. Protect concrete surfaces as follows:
 - 1. Protect from petroleum stains.
 - 2. Diaper hydraulic equipment used over concrete surfaces.
 - 3. Prohibit vehicles from interior concrete slabs.
 - 4. Prohibit use of pipe-cutting machinery over concrete surfaces.
 - 5. Prohibit placement of steel items on concrete surfaces.
 - 6. Prohibit use of acids or acidic detergents over concrete surfaces.
 - 7. Protect liquid floor treatment from damage and wear during the remainder of construction period. Use protective methods and materials, including temporary covering, recommended in writing by liquid floor treatments installer.

END OF SECTION 033000

SECTION 035416 - HYDRAULIC CEMENT UNDERLAYMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Polymer-modified, self-leveling, hydraulic cement underlayment for application below interior floor coverings.

1.2 ACTION SUBMITTALS

A. Product Data: For the following:

1. Hydraulic cement underlayment.
2. Primer.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Installer who is approved by manufacturer for application of underlayment products required for this Project.

1.5 FIELD CONDITIONS

A. Environmental Limitations: Comply with manufacturer's written instructions for substrate temperature, ventilation, ambient temperature and humidity, and other conditions affecting underlayment performance.

1. Place hydraulic cement underlayments only when ambient temperature and temperature of substrates are between 50 and 80 deg F (10 and 27 deg C).

PART 2 - PRODUCTS

2.1 HYDRAULIC CEMENT UNDERLAYMENTS

A. Hydraulic Cement Underlayment: Polymer-modified, self-leveling, hydraulic cement product that can be applied in minimum uniform thickness of 1/4 inch (6 mm) and that can be feathered at edges to match adjacent floor elevations.

1. Basis of Design Product: ARDEX K15
2. Cement Binder: ASTM C150/C150M, portland cement, or hydraulic or blended hydraulic cement as defined by ASTM C219.

3. Compressive Strength: Not less than 5,500 psi (38 MPa) at 28 days when tested according to ASTM C109/C109M.
 4. Underlayment Additive: Resilient-emulsion product of underlayment manufacturer, formulated for use with underlayment when applied to substrate and conditions indicated.
- B. Water: Potable and at a temperature of not more than 70 deg F (21 deg C).
- C. Primer: Basis of Design Product: ARDEX P 51 Primer

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for conditions affecting performance of the Work.
- B. Proceed with application only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare and clean substrate according to manufacturer's written instructions.
1. Treat nonmoving substrate cracks according to manufacturer's written instructions to prevent cracks from telegraphing (reflecting) through underlayment.
 2. Fill substrate voids to prevent underlayment from leaking.
- B. Concrete Substrates: Mechanically remove, according to manufacturer's written instructions, laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants that might impair underlayment bond.
1. Moisture Testing: Perform tests so that each test area does not exceed 1000 sq. ft. (304.8 sq. m), and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.
 - a. Anhydrous Calcium Chloride Test, ASTM F1869: Proceed with installation only after substrates do not exceed a maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. (1.36 kg of water/100 sq. m) in 24 hours.
- C. Adhesion Tests: After substrate preparation, test substrate for adhesion with underlayment according to manufacturer's written instructions.

3.3 INSTALLATION

- A. Mix and install underlayment components according to manufacturer's written instructions.
1. Close areas to traffic during underlayment installation and for time period after installation recommended in writing by manufacturer.
 2. Coordinate installation of components to provide optimum adhesion to substrate and between coats.
 3. At substrate expansion, isolation, and other moving joints, allow joint of same width to continue through underlayment.

- B. Apply primer over prepared substrate at manufacturer's recommended spreading rate.
- C. Install underlayment to produce uniform, level surface.
 - 1. Feather edges to match adjacent floor elevations.
- D. Cure underlayment according to manufacturer's written instructions. Prevent contamination during installation and curing processes.
- E. Do not install floor coverings over underlayment until after time period recommended in writing by underlayment manufacturer.
- F. Remove and replace underlayment areas that evidence lack of bond with substrate, including areas that emit a "hollow" sound when tapped.

3.4 INSTALLATION TOLERANCES

- A. Finish and measure surface, so gap at any point between gypsum cement underlayment surface and an unleveled, freestanding, 10-foot- (3.05-m-) long straightedge resting on two high spots and placed anywhere on the surface does not exceed 1/8 inch (3 mm).

3.5 PROTECTION

- A. Protect underlayment from concentrated and rolling loads for remainder of construction period.

END OF SECTION 035416

SECTION 055213 - PIPE AND TUBE RAILINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Steel railings.

1.2 COORDINATION

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of anchorages for railings. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

1.3 ACTION SUBMITTALS

- A. Product Data:
 - 1. Manufacturer's product lines of mechanically connected railings.
 - 2. Fasteners.
 - 3. Nonshrink, nonmetallic grout.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Protect mechanical finishes on exposed surfaces of railings from damage by applying a strippable, temporary protective covering before shipping.

1.5 FIELD CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with railings by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Railings, including attachment to building construction, withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

1. Handrails and Top Rails of Guards:
 - a. Uniform load of 50 lbf/ ft. (0.73 kN/m) applied in any direction.
 - b. Concentrated load of 200 lbf (0.89 kN) applied in any direction.
 - c. Uniform and concentrated loads need not be assumed to act concurrently.
2. Infill of Guards:
 - a. Concentrated load of 50 lbf (0.22 kN) applied horizontally on an area of 1 sq. ft. (0.093 sq. m).
 - b. Infill load and other loads need not be assumed to act concurrently.

2.2 METALS, GENERAL

- A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.
- B. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails unless otherwise indicated.

2.3 STEEL RAILINGS

- A. Source Limitations: Obtain each type of railing from single source from single manufacturer.
- B. Pipe: ASTM A53/A53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.
- C. Cast Iron Fittings: Either gray iron, ASTM A48/A48M, or malleable iron, ASTM A47/A47M, unless otherwise indicated.

2.4 FASTENERS

- A. Fastener Materials:
 1. Ungalvanized-Steel Railing Components: Plated steel fasteners complying with ASTM F1941/F1941M, Class Fe/Zn 5 for zinc coating.
 2. Finish exposed fasteners to match appearance, including color and texture, of railings.
- B. Fasteners for Anchoring Railings to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction and capable of withstanding design loads.
- C. Fasteners for Interconnecting Railing Components:
 1. Provide concealed fasteners for interconnecting railing components and for attaching them to other work, unless otherwise indicated.
 2. Provide square or hex socket flat-head machine screws for exposed fasteners unless otherwise indicated.

2.5 MISCELLANEOUS MATERIALS

- A. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout, complying with ASTM C1107/C1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.6 FABRICATION

- A. General: Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.
- B. Shop assemble railings to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations.
 - 1. Clearly mark units for reassembly and coordinated installation.
 - 2. Use connections that maintain structural value of joined pieces.
- C. Cut, drill, and punch metals cleanly and accurately.
 - 1. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm) unless otherwise indicated.
 - 2. Remove sharp or rough areas on exposed surfaces.
- D. Form work true to line and level with accurate angles and surfaces.
- E. Fabricate connections that are exposed to weather in a manner that excludes water.
 - 1. Provide weep holes where water may accumulate.
 - 2. Locate weep holes in inconspicuous locations.
- F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.
- G. Connections: Fabricate railings with welded or nonwelded connections unless otherwise indicated.
- H. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove flux immediately.
- I. At exposed connections, finish exposed welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Finish #2 welds; good appearance, completely sanded joint, some undercutting and pinholes okay.
- J. Nonwelded Connections: Connect members with concealed mechanical fasteners and fittings. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.
 - 1. Fabricate splice joints for field connection, using an epoxy structural adhesive, if this is manufacturer's standard splicing method.
- K. Form changes in direction as follows:
 - 1. By flush bends or by inserting prefabricated flush-elbow fittings.

- L. Bend members in jigs to produce uniform curvature for each configuration required. Maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.
- M. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.
- N. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work.
 - 1. Fabricate anchorage devices capable of withstanding loads imposed by railings.
 - 2. Coordinate anchorage devices with supporting structure.
- O. For railing posts set in concrete, provide stainless steel sleeves not less than 6 inches (150 mm) long with inside dimensions not less than 1/2 inch (13 mm) greater than outside dimensions of post, with metal plate forming bottom closure.

2.7 STEEL AND IRON FINISHES

- A. For nongalvanized-steel railings, provide nongalvanized ferrous-metal fittings, brackets, fasteners, and sleeves; however, hot-dip galvanize anchors to be embedded in exterior concrete or masonry.
- B. Primer Application: Apply shop primer to prepared surfaces of railings unless otherwise indicated. Comply with requirements in SSPC-PA 1 for shop painting. Primer need not be applied to surfaces to be embedded in concrete or masonry.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Perform cutting, drilling, and fitting required for installing railings.
 - 1. Fit exposed connections together to form tight, hairline joints.
 - 2. Install railings level, plumb, square, true to line; without distortion, warp, or rack.
 - 3. Set railings accurately in location, alignment, and elevation; measured from established lines and levels.
 - 4. Do not weld, cut, or abrade surfaces of railing components that are coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
 - 5. Set posts plumb within a tolerance of 1/16 inch in 3 feet (2 mm in 1 m).
 - 6. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet (6 mm in 3.5 m).
- B. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.
- C. Adjust railings before anchoring to ensure matching alignment at abutting joints.
- D. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

3.2 RAILING CONNECTIONS

- A. Nonwelded Connections: Use mechanical or adhesive joints for permanently connecting railing components. Use wood blocks and padding to prevent damage to railing members and fittings. Seal recessed holes of exposed locking screws, using plastic cement filler colored to match finish of railings.
- B. Welded Connections: Use fully welded joints for permanently connecting railing components. Comply with requirements for welded connections in "Fabrication" Article, whether welding is performed in the shop or in the field.

3.3 ANCHORING POSTS

- A. Form or core-drill holes not less than 5 inches (125 mm) deep and 3/4 inch (20 mm) larger than OD of post for installing posts in concrete. Clean holes of loose material, insert posts, and fill annular space between post and concrete with nonshrink, nonmetallic grout, mixed and placed to comply with anchoring material manufacturer's written instructions.
- B. Leave anchorage joint exposed with anchoring material flush with adjacent surface.

3.4 PROTECTION

- A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.
- B. Restore finishes damaged during installation and construction period, so no evidence remains of correction work. Return items that cannot be refinished in the field to the shop; make required alterations and refinish entire unit, or provide new units.

END OF SECTION 055213

SECTION 064116 - PLASTIC-LAMINATE-CLAD ARCHITECTURAL CABINETS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Plastic-laminate-clad architectural cabinets.
 - 2. Cabinet hardware and accessories.
 - 3. Miscellaneous materials.
- B. Related Requirements:
 - 1. Section 123661.16 "Solid Surfacing Countertops."

1.2 COORDINATION

- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to support loads imposed by installed and fully loaded cabinets.

1.3 ACTION SUBMITTALS

- A. Product Data:
 - 1. Plastic-laminate-clad architectural cabinets.
 - 2. Cabinet hardware and accessories.
 - 3. Miscellaneous materials.
- B. Product Data Submittals: For each product.
- C. Shop Drawings:
 - 1. Include plans, elevations, sections, and attachment details.
 - 2. Show large-scale details.
 - 3. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
 - 4. Show locations and sizes of cutouts and holes for items installed in plastic-laminate architectural cabinets.
- D. Samples: For each exposed product and for each color and texture specified, in manufacturer's or manufacturer's standard size.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For manufacturer.

1.5 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver cabinets until painting and similar finish operations that might damage architectural cabinets have been completed in installation areas. Store cabinets in installation areas or in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

1.7 FIELD CONDITIONS

- A. Environmental Limitations without Humidity Control: Do not deliver or install cabinets until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature and relative humidity at levels planned for building occupants during the remainder of the construction period.
- B. Field Measurements: Where cabinets are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 - 1. Locate concealed framing, blocking, and reinforcements that support cabinets by field measurements before being enclosed/concealed by construction, and indicate measurements on Shop Drawings.
- C. Established Dimensions: Where cabinets are indicated to fit to other construction, establish dimensions for areas where cabinets are to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

PART 2 - PRODUCTS

2.1 PLASTIC-LAMINATE-CLAD ARCHITECTURAL CABINETS

- A. Quality Standard: Unless otherwise indicated, comply with the Architectural Woodwork Standards for grades of cabinets indicated for construction, finishes, installation, and other requirements.
 - 1. The Contract Documents contain requirements that are more stringent than the referenced quality standard. Comply with requirements of Contract Documents in addition to those of the referenced quality standard.
- B. Architectural Woodwork Standards Grade: Custom.
- C. Type of Construction: Frameless.
- D. Door and Drawer-Front Style: Flush overlay.
- E. High-Pressure Decorative Laminate: ISO 4586-3, grades as indicated or if not indicated, as required by quality standard.
 - 1. Basis of Design Manufacture: Formica.

F. Exposed Surfaces:

1. Plastic-Laminate Grade: HGS.
2. Edges: Grade HGS.
3. Pattern Direction: Vertically for drawer fronts, doors, and fixed panels.

G. Semiexposed Surfaces:

1. Surfaces Other Than Drawer Bodies: Thermally fused laminate panels.
2. Drawer Sides and Backs: Thermally fused laminate panels with PVC or polyester edge banding.
3. Drawer Bottoms: Thermally fused laminate panels.

H. Concealed Backs of Panels with Exposed Plastic-Laminate Surfaces: High-pressure decorative laminate, ISO 4583-3, grade to match exposed surface.

I. Drawer Construction: Fabricate with exposed fronts fastened to subfront with mounting screws from interior of body.

1. Join subfronts, backs, and sides with glued rabbeted joints supplemented by mechanical fasteners.

J. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:

1. As selected by Architect from laminate manufacturer's full range:

2.2 WOOD MATERIALS

A. Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of architectural cabinet and quality grade specified unless otherwise indicated.

1. Wood Moisture Content: 5 to 10 percent.
2. Medium-Density Fiberboard (MDF): ANSI A208.2, Grade 130.
3. Particleboard (Medium Density): ANSI A208.1, Grade M-2.
4. Softwood Plywood: DOC PS 1, medium-density overlay.
5. Thermally Fused Laminate (TFL) Panels: Particleboard or MDF finished with thermally fused, melamine-impregnated decorative paper.

2.3 CABINET HARDWARE AND ACCESSORIES

A. Butt Hinges: 2-3/4-inch (70-mm), five-knuckle steel hinges made from 0.095-inch- (2.4-mm-) thick metal, and as follows:

1. Semiconcealed Hinges for Flush Doors: ANSI/BHMA A156.9, B01361.

B. Wire Pulls: Back mounted, solid metal, 5 inches (127 mm) long, 2-1/2 inches (63.5 mm) deep, and 5/16 inch (8 mm) in diameter.

C. Adjustable Shelf Standards and Supports: ANSI/BHMA A156.9, B04071; with shelf rests, B04081

D. Drawer Slides: ANSI/BHMA A156.9.

1. Heavy-Duty (Grade 1HD-100 and Grade 1HD-200): Side mount.

- a. Type: Full extension.
 - b. Material: Zinc-plated ball bearing slides.
 - c. Motion Feature: Self-closing mechanism.
- 2. General-purpose drawers more than 3 inches (75 mm) high, but not more than 6 inches (150 mm) high and not more than 24 inches (600 mm) wide, provide 75 lb (34 kg) load capacity.
- E. Door and Drawer Silencers: ANSI/BHMA A156.16, L03011.
- F. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with ANSI/BHMA A156.18 for ANSI/BHMA finish number indicated.
 - 1. Bright Chromium Plated: ANSI/BHMA 625 for brass or bronze base; ANSI/BHMA 651 for steel base.
- G. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in ANSI/BHMA A156.9.

2.4 MISCELLANEOUS MATERIALS

- A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln-dried to less than 15 percent moisture content.
- B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.

Adhesive for Bonding Plastic Laminate: Type II water-resistant type as selected by fabricator to comply with requirements.

- 1. Adhesive for Bonding Edges: Hot-melt adhesive.

2.5 FABRICATION

- A. Fabricate architectural cabinets to dimensions, profiles, and details indicated.
- B. Complete fabrication, including assembly and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
- C. Shop-cut openings to maximum extent possible to receive hardware, appliances, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Before installation, condition cabinets to humidity conditions in installation areas for not less than 72 hours.

3.2 INSTALLATION

- A. Assemble cabinets and complete fabrication at Project site to extent that it was not completed in the shop.
- B. Anchor cabinets to anchors or blocking built in or directly attached to substrates. Secure with wafer-head cabinet installation screws.
- C. Install cabinets level, plumb, and true in line to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm) using concealed shims.
 - 1. Scribe and cut cabinets to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
 - 2. Install cabinets without distortion so doors and drawers fit openings and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
 - 3. Fasten wall cabinets through back, near top and bottom, and at ends not more than 16 inches (400 mm) o.c. with No. 10 wafer-head screws sized for not less than 1-1/2-inch (38-mm) penetration into wood framing, blocking, or hanging strips.

3.3 ADJUSTING AND CLEANING

- A. Repair damaged and defective cabinets, where possible, to eliminate functional and visual defects. Where not possible to repair, replace architectural cabinets. Adjust joinery for uniform appearance.
- B. Clean, lubricate, and adjust hardware.
- C. Clean cabinets on exposed and semiexposed surfaces.

END OF SECTION 064116

SECTION 078413 - PENETRATION FIRESTOPPING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Penetration firestopping systems.
 - 2. Penetrations in fire-resistance-rated walls.
 - 3. Penetrations in smoke barriers.

1.2 ACTION SUBMITTALS

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

1.3 INFORMATIONAL SUBMITTALS

- A. Listed System Designs: For each penetration firestopping system, for tests performed by a qualified testing agency.

1.4 CLOSEOUT SUBMITTALS

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

1.5 FIELD CONDITIONS

- A. Environmental Limitations: Do not install penetration firestopping systems when ambient or substrate temperatures are outside limits permitted by penetration firestopping system manufacturers or when substrates are wet because of rain, frost, condensation, or other causes.
- B. Install and cure penetration firestopping system materials in accordance with manufacturer's written instructions using natural means of ventilations or, where this is inadequate, forced-air circulation.

1.6 COORDINATION

- A. Coordinate construction of openings and penetrating items to ensure that penetration firestopping systems can be accessed and installed in accordance with specified firestopping system design.
- B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate penetration firestopping systems.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS: Obtain penetration firestopping systems for each type of opening indicated from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics:

1. A qualified testing agency, acceptable to authorities having jurisdiction, will perform penetration firestopping system tests.
2. Test in accordance with testing standards referenced in "Penetration Firestopping Systems" Article. Provide rated systems complying with the following requirements:
 - a. Penetration firestopping systems installed with products bearing the classification marking of a qualified testing agency.
 - 1) UL in its online directory "Product iQ."
 - 2) Intertek Group in its "Directory of Building Products."
 - 3) FM Approvals in its "Approval Guide."

B. Provide components for each penetration firestopping system that, upon curing, do not re-emulsify, dissolve, leach, break down, or otherwise deteriorate over time from exposure to atmospheric moisture, sweating pipes, ponding water, or other forms of moisture characteristic during and after construction.

C. Provide components for each penetration firestopping system that do not contain ethylene glycol.

D. Provide components for each penetration firestopping system that are sufficiently flexible to accommodate movement, such as pipe vibration, water hammer, thermal expansion, and other normal building movement without damage.

E. Provide components for each penetration firestopping system that are appropriately tested for the thickness and type of insulation utilized.

2.3 PENETRATION FIRESTOPPING SYSTEMS

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

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

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

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

1. L-Rating: Not exceeding 5.0 cfm/sq. ft. (0.025 cu. m/s per sq. m) of penetration opening and no more than 50-cfm (0.024-cu. m/s) cumulative total for any 100 sq. ft. (9.3 sq. m) at both ambient and elevated temperatures.
- D. Exposed Penetration Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, when tested in accordance with ASTM E84 or UL 723.

2.4 ACCESSORIES

- A. Provide components for each penetration firestopping system that are needed to install fill materials and to maintain ratings required. Use only those components specified by penetration firestopping system manufacturer and approved by qualified testing and inspecting agency for conditions indicated, including but not limited to:
1. Permanent forming/damming/backing materials.
 2. Substrate primers.
 3. Collars.
 4. Steel sleeves.

2.5 FILL MATERIALS

- A. Latex Sealants: Single-component latex formulations that do not re-emulsify after cure during exposure to moisture.
- B. Firestopping Devices: Factory-assembled collars formed from galvanized steel and lined with intumescent material sized to fit specific diameter of penetrant.
- C. Intumescent Putties: Nonhardening, water-resistant, intumescent putties containing no solvents or inorganic fibers.
- D. Intumescent Wrap Strips: Single-component intumescent elastomeric strips for use around combustible penetrants.
- E. Pillows/Bags: Compressible, removable, and reusable intumescent pillows encased in fire-retardant polyester or glass-fiber cloth. Where exposed, and when required by a listed system, cover openings with steel-reinforcing wire mesh to protect pillows/bags from being easily removed or dislodged.
- F. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam.
- G. Silicone Sealants: Single-component, silicone-based, neutral-curing elastomeric sealants.
- H. Thermal and Endothermic Wraps: Flexible, insulating, and fire-resistant protective wraps tested and listed for up to 2-hour fire ratings in accordance with ASTM E814 or UL 1479; for protecting membrane penetrations of utility boxes, critical electrical circuits, communications lines, and fuel lines, and for thermal barrier and circuit integrity protection in accordance with ASTM E1725 or UL 1724.
- I. Fire-Rated Cable Sleeve Kits: Complete kits designed for new or existing cable penetrations through walls which accept standard accessories.
- J. Retrofit Device for Cable Bundles: Factory-made, intumescent, collar-like device for firestopping existing over-filled cable sleeves and capable of being installed around projecting sleeves and cable bundles.

- K. Wall-Opening Protective Materials: Intumescent, non-curing putty pads or self-adhesive inserts for protection of electrical switch and receptacle boxes.
- L. Firestopping Plugs: Flexible, re-enterable, intumescent, foam-rubber plug for use in blank round openings and cable sleeves.
- M. Fire-Rated Cable Grommet: Molded two-piece grommet made of plenum-grade polymer and foam inner core for sealing small cable penetrations in gypsum walls up to 1/2 inch (13 mm) in diameter.

2.6 MIXING

- A. Penetration Firestopping Materials: For those products requiring mixing before application, comply with penetration firestopping system manufacturer's written instructions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other items or procedures needed to produce products of uniform quality with optimum performance characteristics for application indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning: Before installing penetration firestopping systems, clean out openings in accordance with manufacturer's written instructions and with the following requirements:
 - 1. Remove foreign materials from substrate surfaces that could interfere with adhesion of penetration firestopping materials.
 - 2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with penetration firestopping materials. Remove loose particles remaining from cleaning operation.
 - 3. Remove laitance and form-release agents from concrete.
- B. Prime substrates in accordance with penetration firestopping system manufacturer's written installation instructions, using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

3.3 INSTALLATION

- A. General: Install penetration firestopping systems in accordance with manufacturer's written installation instructions and published drawings for products and applications.
- B. Install forming materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.

1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not forming permanent components of firestopping.
- C. Install fill materials by proven techniques to produce the following results:
1. Fill voids and cavities formed by openings, forming materials, accessories, and penetrating items to achieve required fire-resistance ratings.
 2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
 3. For fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 IDENTIFICATION

- A. Wall Identification: Permanently label walls containing penetration firestopping systems with the words "FIRE AND/OR SMOKE BARRIER - PROTECT ALL OPENINGS," using lettering not less than 3 inches (76 mm) high and with minimum 0.375-inch (9.5-mm) strokes.
1. Locate in accessible floor-ceiling space at 15 ft. (4.57 m) from end of wall and at intervals not exceeding 30 ft. (9.14 m).

3.5 FIELD QUALITY CONTROL

- A. Owner will engage a qualified inspection agency to conduct and report on inspections in accordance with ASTM E2174.
- B. Where deficiencies are found or penetration firestopping system is damaged or removed because of testing, repair or replace penetration firestopping system to comply with requirements.
- C. Proceed with enclosing penetration firestopping systems with other construction only after inspection reports are issued and installations comply with requirements.

3.6 CLEANING AND PROTECTION

- A. Clean off excess fill materials adjacent to openings as the Work progresses by methods and with cleaning materials that are approved in writing by penetration firestopping system manufacturers and that do not damage materials in which openings occur.
- B. Provide final protection and maintain conditions during and after installation that ensure that penetration firestopping systems are without damage or deterioration at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, immediately cut out and remove damaged or deteriorated penetration firestopping material and install new materials to produce systems complying with specified requirements.

END OF SECTION 078413

SECTION 078443 - JOINT FIRESTOPPING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Joints in or between fire-resistance-rated construction.
 - 2. Joints in smoke barriers.
- B. Related Requirements:
 - 1. Section 078413 "Penetration Firestopping" for penetrations in fire-resistance-rated walls, horizontal assemblies, and smoke barriers and for wall identification.
 - 2. Section 092216 "Non-Structural Metal Framing" for firestop tracks for metal-framed partition heads.

1.2 ACTION SUBMITTALS

- A. Product Data:
 - 1. For each type of product.
- B. Product Schedule: For each joint firestopping system. Include location, illustration of firestopping system, and design designation of qualified testing agency.

1.3 INFORMATIONAL SUBMITTALS

- A. Listed System Designs: For each joint firestopping system, for tests performed by a qualified testing agency.

1.4 CLOSEOUT SUBMITTALS

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

1.5 FIELD CONDITIONS

- A. Environmental Limitations: Do not install joint firestopping systems when ambient or substrate temperatures are outside limits permitted by joint firestopping system manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.
- B. Install and cure joint firestopping systems in accordance with manufacturer's written installation instructions using natural means of ventilation or, where this is inadequate, forced-air circulation.

1.6 COORDINATION

- A. Coordinate construction of joints to ensure that joint firestopping systems can be installed in accordance with specified firestopping system design.

- B. Coordinate sizing of joints to accommodate joint firestopping systems.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

- A. Obtain joint firestop systems for each type of joint opening indicated from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics:
 - 1. A qualified testing agency, acceptable to authorities having jurisdiction, will perform joint firestopping system tests.
 - 2. Test in accordance with testing standards referenced in "Joint Firestopping Systems" Article. Provide rated systems complying with the following requirements:
 - a. Joint firestop systems installed with products bearing the classification marking of a qualified product certification agency in accordance with listed system designs published by a qualified testing agency.
 - 1) UL in its online directory "Product iQ."
- B. Rain/Water Resistance: For perimeter fire-barrier system applications, where inclement weather or greater-than-transient water exposure is expected, use products that dry rapidly and cure in the presence of atmospheric moisture sufficient to pass ASTM D6904 early rain-resistance test (24-hour exposure).

2.3 JOINT FIRESTOPPING SYSTEM TYPES

- A. General: Systems that resist spread of fire, passage of smoke and other gases, and maintain original fire-resistance rating of assemblies in or between which joint firestopping systems are installed. Joint firestopping systems must accommodate building movements without impairing their ability to resist the passage of fire and hot gases.
 - 1. Joint firestopping systems that are compatible with one another, with the substrates forming openings, and with penetrating items, if any.
 - 2. Provide products that, upon curing, do not re-emulsify, dissolve, leach, break down, or otherwise deteriorate over time from exposure to atmospheric moisture, sweating pipes, ponding water or other forms of moisture.
 - 3. Provide firestop products that do not contain ethylene glycol.
- B. Joints in or between Fire-Resistance-Rated Construction: Provide joint firestopping systems with ratings determined in accordance with ASTM E1966 or UL 2079, with published L-Ratings for ambient and elevated temperatures as evidence of the ability of the fire-resistive joint system to restrict the movement of smoke.
 - 1. Fire-Resistance Rating: Equal to or exceeding the fire-resistance rating of the wall, floor, or roof in or between which it is installed.
- C. Joints in Smoke Barriers: Provide joint firestopping systems with ratings determined in accordance with UL 2079 based on testing at a positive pressure differential of 0.30 inch wg (74.7 Pa).
 - 1. L-Rating: Not exceeding 5.0 cfm/ft. (0.00775 cu. m/s x m) of joint at both ambient and elevated temperatures.

2.4 ACCESSORIES

- A. Provide components of joint firestopping systems, including primers and forming materials, that are needed to install elastomeric fill materials and to maintain ratings required. Use only components specified by joint firestopping system manufacturer and approved by the qualified testing agency for conditions indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for joint configurations, substrates, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning: Before installing joint firestopping systems, clean joints in accordance with fire-resistive joint system manufacturer's written installation instructions and the following requirements:
 - 1. Remove foreign materials from substrate surfaces that could interfere with adhesion of elastomeric fill materials or compromise fire-resistive rating.
 - 2. Clean joint substrates to produce clean, sound surfaces capable of developing optimum bond with elastomeric fill materials. Remove loose particles remaining from cleaning operation.
 - 3. Remove laitance and form-release agents from concrete.
- B. Prime substrates in accordance with joint firestopping system manufacturer's written installation instructions, using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.
- C. Apply a suitable bond breaker to prevent three-sided adhesion in applications where condition occurs.

3.3 INSTALLATION

- A. General: Install joint firestopping systems in accordance with manufacturer's written installation instructions and published drawings for products and applications indicated.
- B. Install forming materials and other accessories of types required to support elastomeric fill materials during their application and in position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.
 - 1. After installing elastomeric fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of fire-resistive joint system.
- C. Install elastomeric fill materials for joint firestopping systems by proven techniques to produce the following results:
 - 1. Apply elastomeric fill in voids and cavities formed by joints and forming materials as required to achieve fire-resistance ratings indicated.
 - 2. Apply elastomeric fill materials so they contact and adhere to substrates formed by joints.
 - 3. For elastomeric fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 IDENTIFICATION

- A. Wall Identification: Permanently label walls containing firestopping systems with the words "FIRE AND/OR SMOKE BARRIER - PROTECT ALL OPENINGS," using lettering not less than 3 inches (76 mm) high and with minimum 0.375-inch (9.5-mm) strokes.
 - 1. Locate in accessible concealed floor, floor-ceiling, or attic space at 15 ft. (4.57 m) from end of wall and at intervals not exceeding 30 ft. (9.14 m).
- B. Joint Identification: Identify joint firestopping systems with legible metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches (150 mm) of joint edge, so labels are visible to anyone seeking to remove joint firestopping system. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:
 - 1. The words "Warning - Joint Firestopping - Do Not Disturb. Notify Building Management of Any Damage."
 - 2. Contractor's name, address, and phone number.
 - 3. Designation of applicable testing agency.
 - 4. Date of installation.
 - 5. Manufacturer's name.
 - 6. Installer's name.

3.5 CLEANING AND PROTECTION

- A. Clean off excess elastomeric fill materials adjacent to joints as the Work progresses by methods and with cleaning materials that are approved in writing by joint firestopping system manufacturers and that do not damage materials in which joints occur.
- B. Provide final protection and maintain conditions during and after installation that ensure joint firestopping systems are without damage or deterioration at time of Substantial Completion. If damage or deterioration occurs despite such protection, cut out and remove damaged or deteriorated joint firestopping systems immediately and install new materials to produce joint firestopping systems complying with specified requirements.

END OF SECTION 078443

SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Silicone joint sealants.
 - 2. Latex joint sealants.

1.2 ACTION SUBMITTALS

- A. Product Data:
 - 1. Silicone joint sealants.
 - 2. Latex joint sealants.
- B. Samples: Manufacturer's standard color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

1.3 CLOSEOUT SUBMITTALS

- A. Manufacturers' special warranties.
- B. Installer's special warranties.

1.4 QUALITY ASSURANCE

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

1.5 FIELD CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
 - 1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F (5 deg C).
 - 2. When joint substrates are wet.
 - 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 - 4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

- A. Obtain joint sealants from single manufacturer for each sealant type.

2.2 JOINT SEALANTS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.
- B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.3 SILICONE JOINT SEALANTS

- A. Silicone, S, NS, 50, NT: Single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 50, Use NT.
 - 1. Basis of Design Product: Dow, Dowsil 795.

2.4 LATEX JOINT SEALANTS

- A. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C834, Type OP, Grade NF.
 - 1. Basis of Design: DAP, Alex Ultra Latex.

2.5 JOINT-SEALANT BACKING

- A. Sealant Backing Material, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backings: ASTM C1330, Type C (closed-cell material with a surface skin), and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

2.6 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
 - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 - 2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:
 - a. Concrete.
 - b. Masonry.
 - c. Gypsum Board.
 - 3. Remove laitance and form-release agents from concrete.
 - 4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
 - a. Metal.
 - b. Glass.
- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

- C. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - 1. Do not leave gaps between ends of sealant backings.
 - 2. Do not stretch, twist, puncture, or tear sealant backings.
 - 3. Remove absorbent sealant backings that have become wet before sealant application, and replace them with dry materials.
- D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 - 1. Place sealants so they directly contact and fully wet joint substrates.
 - 2. Completely fill recesses in each joint configuration.
 - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- E. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants in accordance with requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
 - 1. Remove excess sealant from surfaces adjacent to joints.
 - 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
 - 3. Provide concave joint profile in accordance with Figure 8A in ASTM C1193 unless otherwise indicated.
 - a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

3.4 CLEANING

- A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION 079200

SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Interior standard hollow-metal doors and frames.
- B. Related Requirements:
 - 1. Section 081416 "Wood Doors" for wood doors installed in hollow metal frames.
 - 2. Section 087100 "Door Hardware" for door hardware for hollow-metal doors.

1.2 DEFINITIONS

- A. Minimum Thickness: Minimum thickness of base metal without coatings in accordance with NAAMM-HMMA 803 or ANSI/SDI A250.8.

1.3 COORDINATION

- A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.
- B. Coordinate requirements for installation of door hardware, electrified door hardware, and access control and security systems.

1.4 ACTION SUBMITTALS

- A. Product Data:
 - 1. Interior standard hollow-metal doors and frames.
- B. Product Data Submittals: For each product.
 - 1. Include construction details, material descriptions, core descriptions, and finishes.
- C. Shop Drawings: Include the following:
 - 1. Elevations of each door type.
 - 2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
 - 3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
 - 4. Locations of reinforcement and preparations for hardware.
 - 5. Details of each different wall opening condition.
 - 6. Details of electrical raceway and preparation for electrified hardware, access control systems, and security systems.
 - 7. Details of anchorages, joints, field splices, and connections.
 - 8. Details of accessories.
 - 9. Details of moldings, removable stops, and glazing.

- D. Product Schedule: For hollow-metal doors and frames, prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final door hardware schedule.

1.5 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For each type of fire-rated hollow-metal door and frame assembly for tests performed by a qualified testing agency indicating compliance with performance requirements.

1.6 CLOSEOUT SUBMITTALS

- A. Record Documents: For fire-rated doors, list of door numbers and applicable room name and number to which door accesses.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver hollow-metal doors and frames palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.
 - 1. Provide additional protection to prevent damage to factory-finished units.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- C. Store hollow-metal doors and frames vertically under cover at Project site with head up. Place on minimum 4-inch- (102-mm-) high wood blocking. Provide minimum 1/4-inch (6-mm) space between each stacked door to permit air circulation.

PART 2 - PRODUCTS

2.1 HOLLOW METAL DOORS AND FRAMES

- A. Basis of Design: Curries 767 Series

2.2 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings and temperature-rise limits indicated on Drawings, based on testing at positive pressure in accordance with NFPA 252 or UL 10C.
 - 1. Smoke- and Draft-Control Door Assemblies: Listed and labeled for smoke and draft control by a qualified testing agency acceptable to authorities having jurisdiction, based on testing in accordance with UL 1784 and installed in compliance with NFPA 105.

2.3 INTERIOR STANDARD STEEL DOORS AND FRAMES

- A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.
- B. Heavy-Duty Doors and Frames: ANSI/SDI A250.8, Level 2; ANSI/SDI A250.4, Level B.
 - 1. Doors:
 - a. Type: As indicated in the Door and Frame Schedule on Drawings.
 - b. Thickness: 1-3/4 inches (44.5 mm).
 - c. Face: Uncoated steel sheet, minimum thickness of 0.042 inch (1.0 mm).
 - d. Edge Construction: Model 1, Full Flush.
 - e. Edge Bevel: Provide manufacturer's standard beveled or square edges.
 - f. Top Edge Closures: Close top edges of doors with flush closures of same material as face sheets. Seal joints against water penetration.
 - g. Bottom Edges: Close bottom edges of doors where required for attachment of weather stripping with end closures or channels of same material as face sheets. Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape.
 - h. Core: Manufacturer's Standard.
 - i. Fire-Rated Core: Manufacturer's standard core for fire-rated and temperature-rise-rated doors.
 - 2. Frames:
 - a. Materials: Uncoated steel sheet, minimum thickness of 0.053 inch (1.3 mm).
 - b. Construction: Face welded.
 - 3. Exposed Finish: Prime.

2.4 FRAME ANCHORS

- A. Jamb Anchors:
 - 1. Type: Anchors of minimum size and type required by applicable door and frame standard, and suitable for performance level indicated.
 - 2. Quantity: Minimum of three anchors per jamb, with one additional anchor for frames with no floor anchor. Provide one additional anchor for each 24 inches (610 mm) of frame height above 7 feet (2.1 m).
 - 3. Postinstalled Expansion Anchor: Minimum 3/8-inch- (9.5-mm-) diameter bolts with expansion shields or inserts, with manufacturer's standard pipe spacer.
- B. Material: ASTM A879/A879M, Commercial Steel (CS), 04Z (12G) coating designation; mill phosphatized.
 - 1. For anchors built into exterior walls, steel sheet complying with ASTM A1008/A1008M or ASTM A1011/A1011M; hot-dip galvanized in accordance with ASTM A153/A153M, Class B.

2.5 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

- B. Inserts, Bolts, and Fasteners: Hot-dip galvanized in accordance with ASTM A153/A153M.
- C. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.
- D. Mineral-Fiber Insulation: ASTM C665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E136 for combustion characteristics.
- E. Glazing: Comply with requirements in Section 088000 "Glazing."

2.6 FABRICATION

- A. Hollow-Metal Frames: Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as frames.
 - 1. Sidelite and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by welding.
 - 2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
 - 3. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.
 - a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
 - b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.
- B. Hardware Preparation: Factory prepare hollow-metal doors and frames to receive templated mortised hardware, and electrical wiring; include cutouts, reinforcement, mortising, drilling, and tapping in accordance with ANSI/SDI A250.6, the Door Hardware Schedule on Drawings, and templates.
 - 1. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
 - 2. Comply with BHMA A156.115 for preparing hollow-metal doors and frames for hardware.
- C. Glazed Lites: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with mitered hairline joints.
 - 1. Provide stops and moldings flush with face of door, and with square stops unless otherwise indicated.
 - 2. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames. Provide loose stops and moldings on inside of hollow-metal doors and frames.
 - 3. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.
 - 4. Provide stops for installation with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches (230 mm) o.c. and not more than 2 inches (51 mm) o.c. from each corner.

2.7 STEEL FINISHES

- A. Factory Finish: Clean, pretreat, and apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat, complying with ANSI/SDI A250.3.

- 1. Color and Gloss: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces. Touch up factory-applied finishes where spreaders are removed.
- B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.2 INSTALLATION

- A. Install hollow-metal doors and frames plumb, rigid, properly aligned, and securely fastened in place. Comply with approved Shop Drawings and with manufacturer's written instructions.
- B. Hollow-Metal Frames: Comply with ANSI/SDI A250.11.
 - 1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces without damage to completed Work.
 - a. Where frames are fabricated in sections, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces. Touch-up finishes.
 - b. Install frames with removable stops located on secure side of opening.
 - 2. Fire-Rated Openings: Install frames in accordance with NFPA 80.
 - 3. Floor Anchors: Secure with postinstalled expansion anchors.
 - a. Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.
 - 4. Solidly pack mineral-fiber insulation inside frames.
 - 5. Installation Tolerances: Adjust hollow-metal frames to the following tolerances:
 - a. Squareness: Plus or minus 1/16 inch (1.6 mm), measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - b. Alignment: Plus or minus 1/16 inch (1.6 mm), measured at jambs on a horizontal line parallel to plane of wall.
 - c. Twist: Plus or minus 1/16 inch (1.6 mm), measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - d. Plumbness: Plus or minus 1/16 inch (1.6 mm), measured at jambs at floor.
- C. Hollow-Metal Doors: Fit and adjust hollow-metal doors accurately in frames, within clearances specified below.

1. Non-Fire-Rated Steel Doors: Comply with ANSI/SDI A250.8.
 2. Fire-Rated Doors: Install doors with clearances in accordance with NFPA 80.
 3. Smoke-Control Doors: Install doors in accordance with NFPA 105.
- D. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
- E. Installation Tolerances: Adjust hollow-metal frames to the following tolerances:
1. Squareness: Plus or minus 1/16 inch (1.6 mm), measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 2. Alignment: Plus or minus 1/16 inch (1.6 mm), measured at jambs on a horizontal line parallel to plane of wall.
 3. Twist: Plus or minus 1/16 inch (1.6 mm), measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 4. Plumbness: Plus or minus 1/16 inch (1.6 mm), measured at jambs at floor.
- F. Glazing: Comply with installation requirements in Section 088000 "Glazing" and with hollow-metal manufacturer's written instructions.

3.3 REPAIR

- A. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

END OF SECTION 081113

SECTION 081416 - FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Solid-core five-ply flush wood veneer-faced doors and transom panels for transparent finish.
2. Light frames and louvers.

B. Related Requirements:

1. Section 081213 "Hollow Metal Frames".
2. Section 088000 "Glazing" for glass view panels in flush wood doors.
3. Section 099123 "Interior Painting" for field finishing doors.

1.2 ACTION SUBMITTALS

A. Product Data:

1. Solid-core five-ply flush wood veneer-faced doors and transom panels for transparent finish.
2. Light frames and louvers.

B. Product Data Submittals: For each product, including the following:

1. Door core materials and construction.
2. Door edge construction
3. Factory-machining criteria.
4. Factory-priming specifications.

C. Shop Drawings: Indicate location, size, and hand of each door; elevation of each type of door; construction details not covered in Product Data; and the following:

1. Door schedule indicating door location, type, size, fire protection rating, and swing.
2. Door elevations, dimension and locations of hardware, lite cutouts, and glazing thicknesses.
3. Details of electrical raceway and preparation for electrified hardware, access control systems, and security systems.
4. Dimensions and locations of blocking for hardware attachment.
5. Dimensions and locations of mortises and holes for hardware.
6. Clearances and undercuts.
7. Requirements for veneer matching.
8. Doors to be factory primed and application requirements.

1.3 INFORMATIONAL SUBMITTALS

A. Sample Warranty: For special warranty.

1.4 CLOSEOUT SUBMITTALS

- A. Special warranties.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Comply with requirements of referenced standard and manufacturer's written instructions.
- B. Package doors individually in cardboard cartons, and wrap bundles of doors in plastic sheeting.
- C. Mark each door on bottom rail with opening number used on Shop Drawings.

1.6 FIELD CONDITIONS

- A. Environmental Limitations:
 - 1. Do not deliver or install doors until wet-work in spaces is complete and dry, and HVAC system is operating and maintaining temperature and relative humidity at levels designed for building occupants for the remainder of construction period.

1.7 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Delamination of veneer.
 - b. Warping (bow, cup, or twist) more than 1/4 inch (6.4 mm) in a 42-by-84-inch (1067-by-2134-mm) section.
 - c. Telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch (0.25 mm in a 76.2-mm) span.
 - 2. Warranty Period for Solid-Core Interior Doors: Life of installation.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

- A. Obtain flush wood doors and wood paneling from single manufacturer.

2.2 FLUSH WOOD DOORS AND FRAMES, GENERAL

- A. Quality Standard: In addition to requirements specified, comply with ANSI/WDMA I.S. 1A.

2.3 SOLID-CORE FIVE-PLY FLUSH WOOD DOORS AND TRANSOM PANELS FOR OPAQUE FINISH

- A. Interior Doors, Solid-Core Five-Ply for Opaque Finish:

1. Basis of Design manufacturer: Jeld-Wen, Inc.
2. Performance Grade: ANSI/WDMA I.S. 1A Heavy Duty.
3. ANSI/WDMA I.S. 1A Quality Grade: Custom.
4. Faces: Any closed-grain hardwood of mill option.
5. Exposed Vertical and Top Edges: Any closed-grain hardwood.
6. Core for Non-Fire-Rated Doors:
 - a. ANSI A208.1, Grade LD-2 particleboard.
 - 1) Blocking: Provide wood blocking in particleboard-core doors as follows:
 - a) 5-inch (125-mm) top-rail blocking, in doors indicated to have closers.
 - b) 5-inch (125-mm) bottom-rail blocking, in exterior doors and doors indicated to have kick, mop, or armor plates.
 - 2) Provide doors with glued-wood-stave or WDMA I.S. 10 structural-composite-lumber cores instead of particleboard cores for doors scheduled to receive exit devices in Section 087100 "Door Hardware."
 - b. Glued wood stave.
 - c. WDMA I.S. 10 structural composite lumber.
 - 1) Screw Withdrawal, Door Face: 475 lbf (2110 N).
 - 2) Screw Withdrawal, Vertical Door Edge: 475 lbf (2110 N).
 - d. Either glued wood stave or WDMA I.S. 10 structural composite lumber.
7. Construction: Five plies, hot-pressed bonded (vertical and horizontal edging is bonded to core), with entire unit abrasive planed before veneering.

2.4 LIGHT FRAMES

- A. Wood Beads for Light Openings in Wood Doors: Provide manufacturer's standard wood beads unless otherwise indicated.
 1. Wood Species: Species compatible with door faces.
 2. Profile: Flush rectangular beads.

2.5 FABRICATION

- A. Factory fit doors to suit frame-opening sizes indicated.
 1. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.
 2. Comply with NFPA 80 requirements for fire-rated doors.
- B. Factory machine doors for hardware that is not surface applied.
 1. Locate hardware to comply with DHI-WDHS-3.
 2. Comply with final hardware schedules, door frame Shop Drawings, ANSI/BHMA-156.115-W, and hardware templates.
 3. Coordinate with hardware mortises in metal frames, to verify dimensions and alignment before factory machining.
 4. For doors scheduled to receive electrified locksets, provide factory-installed raceway and wiring to accommodate specified hardware.
- C. Transom and Side Panels:
 1. Fabricate matching panels with same construction, exposed surfaces, and finish as specified for associated doors.
 2. Finish bottom edges of transoms and top edges of rabbeted doors same as door stiles.
 3. Fabricate door and transom panels with full-width, solid-lumber meeting rails.
 4. Provide factory-installed spring bolts for concealed attachment into jambs of metal door frames.
- D. Openings: Factory cut and trim openings through doors.

1. Light Openings: Trim openings with moldings of material and profile indicated.

2.6 FACTORY PRIMING

- A. Doors for Opaque Finish: Factory prime faces, all four edges, edges of cutouts, and mortises with one coat of wood primer specified in Section 099123 "Interior Painting."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine doors and installed door frames, with Installer present, before hanging doors.
 1. Verify that installed frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
 2. Reject doors with defects.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Hardware: For installation, see Section 087100 "Door Hardware."
- B. Install doors to comply with manufacturer's written instructions and referenced quality standard, and as indicated.
- C. Install frames level, plumb, true, and straight.
 1. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches (3.2 mm in 2400 mm).
 2. Anchor frames to anchors or blocking built in or directly attached to substrates.
 - a. Secure with countersunk, concealed fasteners and blind nailing.
 - b. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork.
 - 1) For factory-finished items, use filler matching finish of items being installed.
- D. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.

3.3 ADJUSTING

- A. Operation: Rehang or replace doors that do not swing or operate freely.
- B. Finished Doors: Replace doors that are damaged or that do not comply with requirements. Doors may be repaired or refinished if Work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION 081416

SECTION 084113 - ALUMINUM-FRAMED INTERIOR STOREFRONTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Aluminum-framed interior storefront systems.

1.2 ACTION SUBMITTALS

- A. Product Data:
 - 1. Aluminum-framed interior storefront systems.
- B. Product Data Submittals: For each product.
 - 1. Construction details, material descriptions, dimensions of individual components and profiles, and finishes.
 - 2. Operating characteristics, electrical characteristics, and furnished accessories.
- C. Shop Drawings:
 - 1. Plans, elevations, sections, full-size details, and attachments to other work.
 - 2. Full-size isometric details of each type of vertical-to-horizontal intersection of aluminum-framed entrance and storefront systems, showing the following:
 - a. Joinery, including concealed welds.
 - b. Anchorage.
 - c. Glazing.

1.3 INFORMATIONAL SUBMITTALS

- A. Quality-Control Program: Developed specifically for Project, including fabrication and installation, in accordance with recommendations in ASTM C1401. Include periodic quality-control reports.
- B. Qualification Statements:
 - 1. For Installer
- C. Sample Warranties: For aluminum-framed entrance and storefront systems.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For aluminum-framed entrance and storefront systems.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications:
 - 1. Entity that employs installers and supervisors who are trained and approved by manufacturer.

- B. Product Options: Information on Drawings and in Specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction.
 - 1. Do not change intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If changes are proposed, submit comprehensive explanatory data to Architect for review.

1.6 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of aluminum-framed entrance and storefront systems that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures.
 - b. Faulty operation.
 - 2. Warranty Period: 5 years from date of Substantial Completion.
- B. Special Finish Warranty, Anodized Finishes: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of anodized finishes within specified warranty period.
 - 1. Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Delta E units when tested in accordance with ASTM D 2244.
 - b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D 4214.
 - c. Cracking, peeling, or chipping.
 - 2. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

- A. Obtain all components of aluminum-framed entrance and storefront system, including framing and accessories, from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. General Performance: Comply with performance requirements specified, as determined by testing of aluminum-framed entrance and storefront systems representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.
 - 1. Aluminum-framed entrance and storefront systems to withstand movements of supporting structure, including, but not limited to, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.
 - 2. Failure also includes the following:
 - a. Glass breakage.
 - b. Noise or vibration created by wind and thermal and structural movements.
 - c. Loosening or weakening of fasteners, attachments, and other components.
- B. Structural Loads:
 - 1. Lateral Loads: Five psf (24.4 kg/sm)
- C. Deflection of Framing Members Supporting Glass: At wind load, as follows:
 - 1. Deflection Normal to Wall Plane: Limited to 1/175 of clear span.

2. Deflection Parallel to Glazing Plane: Limited to amount not exceeding that which reduces glazing bite to less than 75 percent of design dimension and that which reduces edge clearance between framing members and glazing or other fixed components to less than 1/8 inch (3.2 mm).
- D. Structural: Test in accordance with ASTM E330/E330M as follows:
1. When tested at positive and negative lateral load design pressures, storefront assemblies, including entrance doors, do not evidence deflection exceeding specified limits.
 2. When tested at 150 percent of positive and negative lateral load design pressures, storefront assemblies, including entrance doors and anchorage, do not evidence material failures, structural distress, or permanent deformation of main framing members exceeding 0.2 percent of span.
 3. Test Durations: Not less than 10 seconds.
- E. Seismic Performance: Aluminum-framed entrance and storefront systems to withstand the effects of earthquake motions determined in accordance with ASCE/SEI 7.

2.3 ALUMINUM-FRAMED ENTRANCE AND STOREFRONT SYSTEMS

- A. Basis of Design: As indicated on the drawings.
- B. Framing Members: Manufacturer's extruded- or formed-aluminum framing members of thickness required and reinforced as required to support imposed loads.
1. Interior Framing Construction: Nonthermal.
 2. Glazing System: Retained mechanically with gaskets on four sides.
 3. Glazing Plane: Center.
 4. Finish: Clear anodic finish.
 5. Fabrication Method: Field-fabricated stick system.
 6. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
 7. Steel Reinforcement: As required by manufacturer.
- C. Backer Plates: Manufacturer's standard, continuous backer plates for framing members, if not integral, where framing abuts adjacent construction.
- D. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.
- E. Doors: Manufacturer's standard glazed entrance doors for manual-swing or automatic operation.
1. Door Construction: 1-3/4-inch (44.5-mm) overall thickness, with minimum 0.125-inch- (3.2-mm-) thick, extruded-aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated and fillet welded or that incorporate concealed tie rods.
 2. Door Design: Wide stile; 5-inch (127-mm) nominal width.
 3. Glazing Stops and Gaskets: Square, snap-on, extruded-aluminum stops and preformed gaskets.
 4. Finish: Match adjacent storefront framing finish.

2.4 DOOR HARDWARE

- A. Door Hardware: Hardware is specified in Section 087100 "Door Hardware."

2.5 GLAZING

- A. Glazing: Comply with Section 088000 "Glazing."

- B. Glazing Gaskets: Manufacturer's standard sealed-corner pressure-glazing system of black, resilient elastomeric glazing gaskets, setting blocks, and shims or spacers.

2.6 MATERIALS

- A. Sheet and Plate: ASTM B209 (ASTM B209M).
- B. Extruded Bars, Rods, Profiles, and Tubes: ASTM B221 (ASTM B221M).
- C. Structural Profiles: ASTM B308/B308M.
- D. Steel Reinforcement:
 - 1. Structural Shapes, Plates, and Bars: ASTM A36/A36M.
 - 2. Cold-Rolled Sheet and Strip: ASTM A1008/A1008M.
 - 3. Hot-Rolled Sheet and Strip: ASTM A1011/A1011M.
- E. Steel Reinforcement Primer: Manufacturer's standard zinc-rich, corrosion-resistant primer complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods in accordance with recommendations in SSPC-SP COM, and prepare surfaces in accordance with applicable SSPC standard.

2.7 ACCESSORIES

- A. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.
 - 1. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.
 - 2. Reinforce members as required to receive fastener threads.
- B. Anchors: Three-way adjustable anchors with minimum adjustment of 1 inch (25.4 mm) that accommodate fabrication and installation tolerances in material and finish compatible with adjoining materials and recommended by manufacturer.
 - 1. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts complying with ASTM A123/A123M or ASTM A153/A153M requirements.
- C. Bituminous Paint: Cold-applied asphalt-mastic paint containing no asbestos, formulated for 30-mil (0.762-mm) thickness per coat.

2.8 FABRICATION

- A. Form or extrude aluminum shapes before finishing.
- B. Fabricate components that, when assembled, have the following characteristics:
 - 1. Profiles that are sharp, straight, and free of defects or deformations.
 - 2. Accurately fitted joints with ends coped or mitered.
 - 3. Physical and thermal isolation of glazing from framing members.
 - 4. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
 - 5. Provisions for field replacement of glazing from exterior.
 - 6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

- C. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.
- D. Storefront Framing: Fabricate components for assembly using shear-block system or screw-spline system
- E. Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.
 - 1. Provide compression weather stripping at fixed stops.
- F. Hardware Installation: Factory install entrance door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed entrance door hardware before applying finishes.
- G. After fabrication, clearly mark components to identify their locations in Project in accordance with Shop Drawings.

2.9 ALUMINUM FINISHES

- A. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm thicker.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF ALUMINUM-FRAMED ENTRANCE AND STOREFRONT SYSTEMS

- A. Comply with manufacturer's written instructions.
- B. Do not install damaged components.
- C. Fit joints to produce hairline joints free of burrs and distortion.
- D. Rigidly secure nonmovement joints.
- E. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.
- F. Seal perimeter and other joints watertight unless otherwise indicated.
- G. Metal Protection:
 - 1. Where aluminum is in contact with dissimilar metals, protect against galvanic action by painting contact surfaces with materials recommended by manufacturer for this purpose or by installing nonconductive spacers.
 - 2. Where aluminum is in contact with concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.
- H. Set continuous sill members and flashing in full sealant bed, as specified in Section 079200 "Joint Sealants," to produce acoustic installation.

- I. Install joint filler behind sealant as recommended by sealant manufacturer.
- J. Install components plumb and true in alignment with established lines and grades.
- K. Install operable units level and plumb, securely anchored, and without distortion.
- L. Install doors to produce smooth operation and tight fit at contact points.
 - 1. Field-Installed Entrance Door Hardware: Install surface-mounted entrance door hardware in accordance with entrance door hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.
- M. Install glazing as specified in Section 088000 "Glazing."

3.3 ERECTION TOLERANCES

- A. Install aluminum-framed entrance and storefront systems to comply with the following maximum tolerances:
 - 1. Plumb: 1/8 inch in 10 feet (3.2 mm in 3 m); 1/4 inch in 40 feet (6.35 mm in 12.2 m).
 - 2. Level: 1/8 inch in 20 feet (3.2 mm in 6 m); 1/4 inch in 40 feet (6.35 mm in 12.2 m).
 - 3. Alignment:
 - a. Where surfaces abut in line or are separated by reveal or protruding element up to 1/2 inch (12.7 mm) wide, limit offset from true alignment to 1/16 inch (1.6 mm).
 - b. Where surfaces are separated by reveal or protruding element from 1/2 to 1 inch (12.7 to 25.4 mm) wide, limit offset from true alignment to 1/8 inch (3.2 mm).
 - c. Where surfaces are separated by reveal or protruding element of 1 inch (25.4 mm) wide or more, limit offset from true alignment to 1/4 inch (6 mm).
 - 4. Location: Limit variation from plane to 1/8 inch in 12 feet (3.2 mm in 3.6 m); 1/2 inch (12.7 mm) over total length.

END OF SECTION 084113

SECTION 084113.13 – FIRE-RATED ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Fire-rated aluminum-framed entrance and storefront systems.

1.2 ACTION SUBMITTALS

- A. Product Data:
 - 1. Fire-rated aluminum-framed entrance and storefront systems.
- B. Product Data Submittals: For each product.
 - 1. Construction details, material descriptions, dimensions of individual components and profiles, and finishes.
 - 2. Operating characteristics, electrical characteristics, and furnished accessories.
 - 3. Include fire-resistance ratings and temperature-rise ratings
- C. Shop Drawings:
 - 1. Plans, elevations, sections, full-size details, and attachments to other work.
 - 2. Details of provisions for assembly expansion and contraction and for draining moisture occurring within the assembly to the exterior.
 - 3. Full-size isometric details of each type of vertical-to-horizontal intersection of aluminum-framed entrance and storefront systems, showing the following:
 - a. Joinery, including concealed welds.
 - b. Anchorage.
 - c. Expansion provisions.
 - d. Glazing.
 - 4. Connection to and continuity with adjacent thermal, weather, air, and vapor barriers.
 - 5. Point-to-point wiring diagrams showing the following:
 - a. Power requirements for each electrically operated door hardware.
 - b. Location and types of switches, signal device, conduit sizes, and number and size of wires.
 - 6. Signed and sealed by the qualified professional engineer responsible for their preparation.
- D. Entrance Door Hardware Schedule: Prepared by or under 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.

1.3 INFORMATIONAL SUBMITTALS

- A. Quality-Control Program: Developed specifically for Project, including fabrication and installation, in accordance with recommendations in ASTM C1401. Include periodic quality-control reports.
- B. Qualification Statements:
 - 1. For Installer
- C. Sample Warranties: For fire-rated aluminum-framed entrance and storefront systems.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For fire-rated aluminum-framed entrance and storefront systems.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications:
 - 1. Entity that employs installers and supervisors who are trained and approved by manufacturer.
- B. Product Options: Information on Drawings and in Specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction.
 - 1. Do not change intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If changes are proposed, submit comprehensive explanatory data to Architect for review.

1.6 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of aluminum-framed entrance and storefront systems that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures.
 - b. Faulty operation of doors and door hardware.
 - c. Deterioration of metals, metal finishes, and other materials beyond normal use.
 - 2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

- A. Obtain all components of aluminum-framed entrance and storefront system, including framing and accessories, from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. General Performance: Comply with performance requirements specified, as determined by testing of aluminum-framed entrance and storefront systems representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.
 - 1. Aluminum-framed entrance and storefront systems to withstand movements of supporting structure, including, but not limited to, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.
 - 2. Failure also includes the following:
 - a. Glass breakage.
 - b. Noise or vibration created by wind and thermal and structural movements.
 - c. Loosening or weakening of fasteners, attachments, and other components.
- B. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings and temperature-rise limits indicated on Drawings, based on testing at positive pressure in accordance with NFPA 252 or UL 10C.

1. Smoke- and Draft-Control Door Assemblies: Listed and labeled for smoke and draft control by a qualified testing agency acceptable to authorities having jurisdiction, based on testing in accordance with UL 1784 and installed in compliance with NFPA 105.
- C. Structural Loads:
1. Lateral Loads: Five psf (24.4 kg/sm)
- D. Deflection of Framing Members Supporting Glass: At wind load, as follows:
1. Deflection Normal to Wall Plane: Limited to 1/175 of clear span.
 2. Deflection Parallel to Glazing Plane: Limited to amount not exceeding that which reduces glazing bite to less than 75 percent of design dimension and that which reduces edge clearance between framing members and glazing or other fixed components to less than 1/8 inch (3.2 mm).
- E. Structural: Test in accordance with ASTM E330/E330M as follows:
1. When tested at positive and negative lateral load design pressures, storefront assemblies, including entrance doors, do not evidence deflection exceeding specified limits.
 2. When tested at 150 percent of positive and negative lateral load design pressures, storefront assemblies, including entrance doors and anchorage, do not evidence material failures, structural distress, or permanent deformation of main framing members exceeding 0.2 percent of span.
 3. Test Durations: Not less than 10 seconds.
- F. Seismic Performance: Aluminum-framed entrance and storefront systems to withstand the effects of earthquake motions determined in accordance with ASCE/SEI 7.

2.3 FIRE-RATED ALUMINUM-FRAMED ENTRANCE AND STOREFRONT SYSTEMS

- A. Basis of Design: As indicated on drawings.
- B. Framing Members: Fire resistive, temperature rise framing system rated for 60 minutes, as required to support imposed loads.
1. Internal framing: Internal tube steel framing shall conform to ASTM A501. Formed steel retainers shall be galvanized conforming to ASTM A527.
 2. Insulation: The framing system shall insulate against the effects of fire, smoke and heat transfer from either side. The perimeter of the framing system to the rough opening shall be firmly packed with mineral wool fire stop insulation or appropriately rated intumescent sealant.
 3. Glazing System: As indicated in specification Section 088813"Fire-Rated Glazing".
 4. Finish: Clear anodic finish.
 5. Fabrication Method: Field-fabricated stick system.
 6. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
- C. Backer Plates: Manufacturer's standard, continuous backer plates for framing members, if not integral, where framing abuts adjacent construction.
- D. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.
- E. Entrance Doors: Manufacturer's standard glazed entrance doors for manual-swing or automatic operation.
1. Door Construction: 1-3/4-inch (44.5-mm) overall thickness, with minimum 0.125-inch- (3.2-mm-) thick, extruded-aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated and fillet welded or that incorporate concealed tie rods.
 2. Door Design: Wide stile; 5-inch (127-mm) nominal width.
 3. Glazing Stops and Gaskets: Square, snap-on, extruded-aluminum stops and preformed gaskets.
 4. Finish: Match adjacent storefront framing finish.

2.4 ENTRANCE DOOR HARDWARE

- A. Entrance Door Hardware: Hardware not specified in this Section is specified in Section 087100 "Door Hardware.").
- B. General: Provide entrance door hardware and entrance door hardware sets indicated in door and frame schedule for each entrance door, to comply with requirements in this Section.
 - 1. Entrance Door Hardware Sets: Provide quantity, item, size, finish or color indicated.
 - 2. Opening-Force Requirements:
 - a. Egress Doors: Not more than 15 lbf (67 N) to release the latch and not more than 30 lbf (133 N) to set the door in motion and not more than 15 lbf (67 N) to open the door to its minimum required width.
 - b. Accessible Interior Doors: Not more than 5 lbf (22.2 N) to fully open door.
- C. Designations: Requirements for design, grade, function, finish, quantity, size, and other distinctive qualities of each type of entrance door hardware are indicated in "Entrance Door Hardware Sets" Article. Products are identified by using entrance door hardware designations as follows:
 - 1. References to BHMA Standards: Provide products complying with these standards and requirements for description, quality, and function.
- D. Continuous-Gear Hinges: BHMA A156.26.
- E. Mortise Auxiliary Locks: BHMA A156.5, Grade 1.
- F. Panic Exit Devices: BHMA A156.3, Grade 1, listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing in accordance with UL 305.
- G. Cylinders:
 - 1. To be provided by Owner
- H. Strikes: Provide strike with black-plastic dust box for each latch or lock bolt; fabricated for aluminum framing.
- I. Operating Trim: BHMA A156.6.
- J. Closers: BHMA A156.4, Grade 1, with accessories required for a complete installation, sized as required by door size, exposure to weather, and anticipated frequency of use; adjustable to comply with field conditions and requirements for opening force.
- K. Door Gasketing: ANSI/BHMA A156.22; with resilient or flexible seal strips that are easily replaceable and readily available from stocks maintained by manufacturer.
 - 1. Maximum Air Leakage: When tested in accordance with ASTM E283/E283M with tested pressure differential of 0.3 inch wg (75 Pa), as follows:
 - a. Smoke-Rated Gasketing: 0.3 cfm/sq. ft. (3 cu. m per minute/sq. m) of door opening.
- L. Thresholds: BHMA A156.21 raised thresholds beveled with a slope of not more than 1:2, with maximum height of 1/2 inch (12.7 mm).

2.5 MATERIALS

- A. Sheet and Plate: ASTM B209 (ASTM B209M).
- B. Extruded Bars, Rods, Profiles, and Tubes: ASTM B221 (ASTM B221M).

- C. Structural Profiles: ASTM B308/B308M.
- D. Steel Reinforcement:
 - 1. Structural Shapes, Plates, and Bars: ASTM A36/A36M.
 - 2. Cold-Rolled Sheet and Strip: ASTM A1008/A1008M.
 - 3. Hot-Rolled Sheet and Strip: ASTM A1011/A1011M.
- E. Steel Reinforcement Primer: Manufacturer's standard zinc-rich, corrosion-resistant primer complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods in accordance with recommendations in SSPC-SP COM, and prepare surfaces in accordance with applicable SSPC standard.

2.6 ACCESSORIES

- A. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.
 - 1. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.
 - 2. Reinforce members as required to receive fastener threads.
 - 3. Use exposed fasteners with countersunk Phillips screw heads, finished to match framing system.
- B. Anchors: Three-way adjustable anchors with minimum adjustment of 1 inch (25.4 mm) that accommodate fabrication and installation tolerances in material and finish compatible with adjoining materials and recommended by manufacturer.
- C. Bituminous Paint: Cold-applied asphalt-mastic paint containing no asbestos, formulated for 30-mil (0.762-mm) thickness per coat.

2.7 FABRICATION

- A. Form or extrude aluminum shapes before finishing.
- B. Fabricate components that, when assembled, have the following characteristics:
 - 1. Profiles that are sharp, straight, and free of defects or deformations.
 - 2. Accurately fitted joints with ends coped or mitered.
 - 3. Physical and thermal isolation of glazing from framing members.
 - 4. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
 - 5. Provisions for field replacement of glazing from exterior.
 - 6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.
- C. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.
- D. Storefront Framing: Fabricate components for assembly using manufacturer's standard method.
- E. Entrance Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.
 - 1. At interior and exterior doors, provide compression weather stripping at fixed stops.
- F. Entrance Doors: Reinforce doors as required for installing entrance door hardware.
 - 1. At pairs of exterior doors, provide sliding-type weather stripping retained in adjustable strip and mortised into door edge.

2. At exterior doors, provide weather sweeps applied to door bottoms.

- G. Entrance Door Hardware Installation: Factory install entrance door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed entrance door hardware before applying finishes.
- H. After fabrication, clearly mark components to identify their locations in Project in accordance with Shop Drawings.

2.8 ALUMINUM FINISHES

- A. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF ALUMINUM-FRAMED ENTRANCE AND STOREFRONT SYSTEMS

- A. Comply with manufacturer's written instructions.
- B. Do not install damaged components.
- C. Fit joints to produce hairline joints free of burrs and distortion.
- D. Rigidly secure nonmovement joints.
- E. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.
- F. Fire-Rated Openings: Install frames in accordance with NFPA 80.
- G. Metal Protection:
 - 1. Where aluminum is in contact with dissimilar metals, protect against galvanic action by painting contact surfaces with materials recommended by manufacturer for this purpose or by installing nonconductive spacers.
 - 2. Where aluminum is in contact with concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.
- H. Set continuous sill members in full sealant bed, as specified in Section 078443 "Joint Firestopping" to produce fire-rated installation.
- I. Install joint filler behind sealant as recommended by sealant manufacturer.
- J. Install components plumb and true in alignment with established lines and grades.
- K. Install operable units level and plumb, securely anchored, and without distortion.

- L. Install entrance doors to produce smooth operation and tight fit at contact points.
 - 1. Field-Installed Entrance Door Hardware: Install surface-mounted entrance door hardware in accordance with entrance door hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.
- M. Install glazing as specified in Section 088000 "Glazing."

3.3 ERECTION TOLERANCES

- A. Install aluminum-framed entrance and storefront systems to comply with the following maximum tolerances:
 - 1. Plumb: 1/8 inch in 10 feet (3.2 mm in 3 m); 1/4 inch in 40 feet (6.35 mm in 12.2 m).
 - 2. Level: 1/8 inch in 20 feet (3.2 mm in 6 m); 1/4 inch in 40 feet (6.35 mm in 12.2 m).
 - 3. Alignment:
 - a. Where surfaces abut in line or are separated by reveal or protruding element up to 1/2 inch (12.7 mm) wide, limit offset from true alignment to 1/16 inch (1.6 mm).
 - b. Where surfaces are separated by reveal or protruding element from 1/2 to 1 inch (12.7 to 25.4 mm) wide, limit offset from true alignment to 1/8 inch (3.2 mm).
 - c. Where surfaces are separated by reveal or protruding element of 1 inch (25.4 mm) wide or more, limit offset from true alignment to 1/4 inch (6 mm).
 - 4. Location: Limit variation from plane to 1/8 inch in 12 feet (3.2 mm in 3.6 m); 1/2 inch (12.7 mm) over total length.

END OF SECTION 084113.13

SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Hinges.
2. Bored locks.
3. Exit devices and auxiliary items.
4. Surface closers.
5. Wall- and floor-mounted stops.
6. Overhead stops and holders.
7. Door gasketing.
8. Thresholds.
9. Metal protective trim units.
10. Silencers

B. Related Requirements:

1. Section 084113.13 "Fire-Rated Aluminum-Framed Entrances and Storefronts" for entrance door hardware.

1.2 COORDINATION

- A. Installation Templates: Distribute for doors, frames, and other work specified to be factory prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.
- B. Existing Openings: Where hardware components are scheduled for application to existing construction or where modifications to existing door hardware are required, field-verify existing conditions and coordinate installation of door hardware to suit opening conditions and to provide proper door operation.

1.3 ACTION SUBMITTALS

A. Product Data:

1. Hinges.
2. Bored locks.
3. Exit devices and auxiliary items.
4. Surface closers.
5. Wall- and floor-mounted stops.
6. Overhead stops and holders.
7. Door gasketing.
8. Thresholds.
9. Metal protective trim units.
10. Silencers

B. Product Data Submittals: For each product.

- C. Door Hardware Schedule: Prepared by or under the supervision of Installer's Architectural Hardware Consultant. Coordinate door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
1. Submittal Sequence: Submit door hardware schedule concurrent with submissions of product data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate the fabrication of other work that is critical in Project construction schedule.
 2. Format: Use same scheduling sequence and format and use same door numbers as in door hardware schedule in the Contract Documents.
 3. Content: Include the following information:
 - a. Identification number, location, hand, fire rating, size, and material of each door and frame.
 - b. Locations of each door hardware set, cross-referenced to Drawings on floor plans and to door and frame schedule.
 - c. Complete designations, including name and manufacturer, type, style, function, size, quantity, function, and finish of each door hardware product.
 - d. Fastenings and other installation information.
 - e. Explanation of abbreviations, symbols, and designations contained in door hardware schedule.
 - f. Mounting locations for door hardware.
 - g. List of related door devices specified in other Sections for each door and frame.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Test Reports: For compliance with accessibility requirements, for tests performed by manufacturer and witnessed by a qualified testing agency, for door hardware on doors located in accessible routes.
- C. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each type of door hardware to include in maintenance manuals.
- B. Schedules: Final door hardware schedule.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Supplier of products and an employer of workers trained and approved by product manufacturers and of an Architectural Hardware Consultant who is available during the course of the Work to consult Contractor, Architect, and Owner about door hardware and keying.
 1. Warehousing Facilities: In Project's vicinity.
 2. Scheduling Responsibility: Preparation of door hardware and keying schedule.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lockup for door hardware delivered to Project site.

- B. Tag each item or package separately with identification coordinated with the final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package.

1.8 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures, including excessive deflection, cracking, or breakage.
 - b. Faulty operation of doors and door hardware.
 - c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.
 - 2. Warranty Period: Three years from date of Substantial Completion unless otherwise indicated below:
 - a. Exit Devices: Two years from date of Substantial Completion.
 - b. Manual Closers: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

- A. Obtain each type of door hardware from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Door Assemblies: Where fire-rated doors are indicated, provide door hardware complying with NFPA 80 that is listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure in accordance with NFPA 252 or UL 10C.
- B. Smoke- and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that complies with requirements of assemblies tested in accordance with UL 1784 and installed in compliance with NFPA 105.
 - 1. Air-Leakage Rate: Maximum air leakage of 0.3 cfm per sq. ft. (3 cu. m per minute/sq. m) at the tested pressure differential of 0.3 inch wg (75 Pa) of water.
- C. Means of Egress Doors: Latches do not require more than 15 lbf (67 N) to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.
- D. Accessibility Requirements: For door hardware on doors in an accessible route, comply with ICC A117.1.
 - 1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf (22.2 N).
 - 2. Comply with the following maximum opening-force requirements:
 - a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf (22.2 N) applied perpendicular to door.
 - b. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.

3. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch (13 mm) high.
4. Adjust door closer sweep periods so that, from an open position of 90 degrees, the door will take at least 5 seconds to move to a position of 12 degrees from the latch.
5. Adjust spring hinges so that, from an open position of 70 degrees, the door will take at least 1.5 seconds to move to the closed position.

2.3 HINGES

- A. Hinges: ANSI/BHMA A156.1. Provide template-produced hinges for hinges installed on hollow-metal frames.

1. Basis of Design: As indicated on drawings.

2.4 MECHANICAL LOCKS AND LATCHES

- A. Lock Functions: As indicated in door hardware schedule.

- B. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:

1. Bored Locks: Minimum 1/2-inch (13-mm) latchbolt throw.

- C. Lock Backset: 2-3/4 inches (70 mm) unless otherwise indicated.

- D. Lock Trim:

1. Description: As indicated on drawings.
2. Levers: Cast.
3. Escutcheons (Roses): Cast.

- E. Strikes: Provide manufacturer's standard strike for each lock bolt or latchbolt complying with requirements indicated for applicable lock or latch and with strike box and curved lip extended to protect frame; finished to match lock or latch.

1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.

- F. Bored Locks: ANSI/BHMA A156.2, Grade 1, Series 4000.

1. Basis of Design: As indicated on drawings.

2.5 EXIT DEVICES AND AUXILIARY ITEMS

- A. Exit Devices and Auxiliary Items: ANSI/BHMA A156.3.

1. Basis of Design: As indicated on drawings.

2.6 SURFACE CLOSERS

- A. Surface Closers: ANSI/BHMA A156.4; rack-and-pinion hydraulic type with adjustable sweep and latch speeds controlled by key-operated valves and forged-steel main arm. Comply with manufacturer's written instructions for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.
 - 1. Basis of Design: As indicated on drawings.

2.7 MECHANICAL STOPS AND HOLDERS

- A. Wall- and Floor-Mounted Stops: ANSI/BHMA A156.16.
 - 1. Basis of Design: As indicated on drawings.

2.8 OVERHEAD STOPS AND HOLDERS

- A. Overhead Stops and Holders: ANSI/BHMA A156.8.
 - 1. Basis of Design: As indicated on drawings.

2.9 METAL PROTECTIVE TRIM UNITS

- A. Metal Protective Trim Units: ANSI/BHMA A156.6; fabricated from 0.050-inch- (1.3-mm-) thick stainless steel; with manufacturer's standard machine or self-tapping screw fasteners.
 - 1. Basis of Design: As indicated on drawings.

2.10 DOOR SILENCERS

- A. Door Silencers: ANSI/BHMA A156.16; fabricated from rubber and set in pre-drilled holes in frame.
 - 1. Basis of Design: As indicated on drawings.

2.11 FABRICATION

- A. Base Metals: Produce door hardware units of base metal indicated, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and ANSI/BHMA A156.18.
- B. Fasteners: Provide door hardware manufactured to comply with published templates prepared for machine, wood, and sheet metal screws. Provide screws that comply with commercially recognized industry standards for application intended; however, aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware unless otherwise indicated.
 - 1. Spacers or Sex Bolts: For through bolting of hollow-metal doors.
 - 2. Gasketing Fasteners: Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

2.12 FINISHES

- A. Provide finishes complying with ANSI/BHMA A156.18 as indicated in door hardware schedule.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Steel Frames: For surface-applied door hardware, drill and tap doors and frames in accordance with ANSI/SDI A250.6.
- B. Wood Doors: Comply with door and hardware manufacturers' written instructions.

3.3 INSTALLATION

- A. Mounting Heights: Mount door hardware units at heights to comply with the following unless otherwise indicated or required to comply with governing regulations.
 - 1. Standard Steel Frames: ANSI/SDI A250.8.
 - 2. Wood Doors: DHI's "Recommended Locations for Architectural Hardware for Wood Flush Doors."
- B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work. Do not install surface-mounted items until finishes have been completed on substrates involved.
 - 1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
 - 2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.
- C. Hinges: Install types and in quantities indicated in door hardware schedule, but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches (760 mm) of

door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.

- D. Lock Cylinders: Install construction cores to secure building and areas during construction period.
- E. Stops: Provide wall stops for doors unless overhead type stops are indicated in door hardware schedule.
- F. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.
 - 1. Do not notch perimeter gasketing to install other surface-applied hardware.
- G. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.

3.4 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
 - 1. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.

3.5 CLEANING AND PROTECTION

- A. Clean adjacent surfaces soiled by door hardware installation.
- B. Clean operating items as necessary to restore proper function and finish.
- C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

3.6 MAINTENANCE SERVICE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

3.7 DEMONSTRATION

- A. Train Owner's maintenance personnel to adjust, operate, and maintain door hardware.

END OF SECTION 087100

SECTION 088000 - GLAZING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Glass products.
 - 2. Laminated glass
 - 3. Glazing tapes.
 - 4. Miscellaneous glazing materials.
- B. Related Requirements:
 - 1. Section 088813 "Fire-Rated Glazing."

1.2 DEFINITIONS

- A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.
- B. Glass Thicknesses: Indicated by thickness designations in millimeters in accordance with ASTM C1036.
- C. IBC: International Building Code.

1.3 COORDINATION

- A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances to achieve proper safety margins for glazing retention under each design load case, load case combination, and service condition.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For manufacturers of fabricated glass units
- B. Product Certificates: For glass.
- C. Product Test Reports: For fabricated glass, for tests performed by a qualified testing agency.
- D. Sample Warranties: For special warranties.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect glazing materials in accordance with manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

1.7 FIELD CONDITIONS

- A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.

- 1. Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or are below 40 deg F (4.4 deg C).

1.8 WARRANTY

- A. Manufacturer's Special Warranty for Laminated Glass: Manufacturer agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.

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

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations for Glazing Accessories: For each product and installation method, obtain from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.
- B. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.
- C. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:
 - 1. For monolithic-glass lites, properties are based on units with lites 6 mm thick.
 - 2. For laminated-glass lites, properties are based on products of construction indicated.
 - 3. Visible Reflectance: Center-of-glazing values, in accordance with NFRC 300.
- D. Acoustic Performance

1. Interior Glazing: 37 STC.

2.3 GLASS PRODUCTS, GENERAL

- A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.
 1. NGA Publications: "Laminated Glazing Reference Manual" and "Glazing Manual."
- B. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.
- C. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass that complies with performance requirements and is not less than thickness indicated.

2.4 GLASS PRODUCTS

- A. Fully Tempered Float Glass: ASTM C1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.

2.5 LAMINATED GLASS

- A. Laminated Glass: ASTM C1172. Use materials that have a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after fabrication and installation.
 1. Construction: Lamine glass with polyvinyl butyral interlayer to comply with interlayer manufacturer's written instructions.
 2. Interlayer Thickness: Provide thickness not less than that indicated and as needed to comply with requirements.
 3. Interlayer Color: Clear.

2.6 GLAZING TAPES

- A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C1281 and AAMA 800 for products indicated below:
 1. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
- B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:
 1. AAMA 810.1, Type 1, for glazing applications in which tape acts as primary sealant.
 2. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

2.7 MISCELLANEOUS GLAZING MATERIALS

- A. General: Provide products of material, size, and shape complying with referenced glazing standard, recommended in writing by manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.
- B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
- C. Setting Blocks:
 - 1. Type recommended in writing by sealant or glass manufacturer.
- D. Spacers:
 - 1. Type recommended in writing by sealant or glass manufacturer.
- E. Edge Blocks:
 - 1. Type recommended in writing by sealant or glass manufacturer.

2.8 FABRICATION OF GLAZING UNITS

- A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:
 - 1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
 - 2. Minimum required face and edge clearances.
 - 3. Effective sealing between joints of glass-framing members.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.
- B. Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that leave visible marks in the completed Work.

3.3 GLAZING, GENERAL

- A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

- B. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass includes glass with edge damage or other imperfections that, when installed, could weaken glass, impair performance, or impair appearance.
- C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.
- D. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- F. Provide spacers for glass lites where length plus width is larger than 50 inches (1270 mm).
 - 1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
 - 2. Provide 1/8-inch- (3-mm-) minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.
- G. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and in accordance with requirements in referenced glazing publications.
- H. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.
- I. Set glass lites with proper orientation so that coatings face exterior or interior as specified.

3.4 GASKET GLAZING (DRY)

- A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.
- B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.
- C. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended in writing by gasket manufacturer.
- D. Install gaskets so they protrude past face of glazing stops.

3.5 CLEANING AND PROTECTION

- A. Immediately after installation, remove nonpermanent labels and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent

intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.

1. If, despite such protection, contaminating substances do contact with glass, remove substances immediately as recommended in writing by glass manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.
- C. Remove and replace glass that is damaged during construction period.
- D. Wash glass on both exposed surfaces not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

3.6 MONOLITHIC GLASS SCHEDULE

- A. Clear Glass Type GL-1: Fully tempered float glass.

1. Minimum Thickness: 6 mm.
2. Safety glazing required.
3. Glass: Clear float glass.

3.7 LAMINATED GLASS SCHEDULE

- A. Clear Laminated Glass Type GL-3: Two plies of fully tempered float glass.

1. Minimum Thickness of Outer Glass Ply: 6 mm.
2. Minimum Thickness of Inner Glass Ply: 3 mm.
3. Interlayer Thickness: 0.030 inch (0.76 mm).
4. Safety glazing required.

END OF SECTION 088000

SECTION 088813 - FIRE-RATED GLAZING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Fire-resistance-rated glazing.

1.2 DEFINITIONS

- A. Fire-Resistance-Rated Glazing: Glazing that prevents spread of fire and smoke and radiant heat and complies with requirements for rated walls and rated openings; capable of blocking radiant heat
- B. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.
- C. Glass Thicknesses: Indicated by thickness designations in millimeters in accordance with ASTM C1036.

1.3 COORDINATION

- A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Glass Samples: For each type of glass product; 12 inches (300 mm) square.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Certificates: For each type of glass and glazing product.
- C. Sample Warranties: For special warranties.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs glass installers for this Project who are certified under the NGA's Certified Glass Installer Program.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Protect glazing materials in accordance with manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

1.8 FIELD CONDITIONS

- A. Environmental Limitations: Do not deliver or install fire-resistant glazing until spaces are enclosed and weathertight and temporary HVAC system is operating and maintaining ambient temperature conditions at occupancy levels during remainder of construction period.

1.9 WARRANTY

- A. Manufacturer's Special Warranty for Laminated Glass: Manufacturer agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.

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

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

- A. Glass: For each glass type, obtain from single source from single manufacturer.
- B. Glazing Accessories: For each product and installation method, obtain from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. General: Installed glazing systems shall withstand normal thermal movement and impact loads (where applicable) without failure, including loss or glass breakage attributable to defective manufacture, fabrication, or installation; deterioration of glazing materials; or other defects in construction.

2.3 GLASS PRODUCTS, GENERAL

- A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organization below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.

1. NGA Publications: "Laminated Glazing Reference Manual" and "Glazing Manual."

- B. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, type of glass, glass thickness, and safety glazing standard with which glass complies.

2.4 GLASS PRODUCTS

- A. Laminated Glass: ASTM C1172. Use materials that have a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after fabrication and installation.
 - 1. Construction: Laminate glass with polyvinyl butyral interlayer unless fire-protection or fire-resistance rating is based on another product.
 - 2. Interlayer Thickness: Provide thickness as needed to comply with requirements.
 - 3. Interlayer Color: Clear unless otherwise indicated.

2.5 FIRE-RESISTANCE-RATED GLAZING GL-2

- A. General: Listed and labeled by a testing agency acceptable to authorities having jurisdiction, for fire-resistance ratings indicated, based on testing in accordance with ASTM E119 or UL 263.
- B. Fire-Resistance-Rated Glazing Labeling: Permanently mark fire-resistance-rated glazing with certification label of a testing agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, test standard, that glazing is approved for use in walls, and fire-resistance rating in minutes.
- C. Fire-Resistance-Rated Framing and Doors: Fire-resistance-rated glazing with 60-, 90-, and 120-minute ratings requires framing and doors from glass supplier, tested as an assembly complying with ASTM E119 or UL 263.
- D. Fire-Resistance-Rated Laminated Glass with Intumescent Interlayers: Laminated glass made from multiple plies of uncoated, clear float glass; with intumescent interlayers; complying with 16 CFR 1201, Category II.
 - 1. Basis of Design: Safti-First, Superlite II-XLM 60

2.6 GLAZING ACCESSORIES

- A. Provide glazing gaskets, glazing sealants, glazing tapes, setting blocks, spacers, edge blocks, and other glazing accessories that are compatible with glazing products and each other and are approved by testing agencies that listed and labeled fire-resistant glazing products with which products are used for applications and fire-protection ratings indicated.
- B. Glazing Sealants for Fire-Rated Glazing Products: Neutral-curing silicone glazing sealant complying with ASTM C920, Type S, Grade NS, Class 50, Use NT. Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated.
 - 1. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range of industry colors.
- C. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C1281 and AAMA 800 for products indicated below:
 - 1. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.
- D. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:
 - 1. AAMA 810.1, Type 1, for glazing applications in which tape acts as primary sealant.

2.7 MISCELLANEOUS GLAZING MATERIALS

- A. General: Provide products of material, size, and shape complying with referenced glazing standard, recommended in writing by manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.
- B. Cylindrical Glazing Sealant Backing: ASTM C1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.
- C. Perimeter Insulation for Fire-Resistance-Rated Glazing: Product that is approved by testing agency that listed and labeled fire-resistant glazing product with which it is used for application and fire-protection rating indicated.

2.8 FABRICATION OF GLAZING UNITS

- A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine framing, glazing channels, and stops, with Installer present, for compliance with manufacturing and installation tolerances, including those for size, squareness, and offsets at corners, and for compliance with minimum required face and edge clearances.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.
- B. Examine glazing units to locate fire side and protected side. Label or mark units as needed so that fire side and protected side are readily identifiable. Do not use materials that leave visible marks in the completed Work.

3.3 GLAZING, GENERAL

- A. Use methods approved by testing agencies that listed and labeled fire-resistant glazing products.
- B. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials unless more stringent requirements are indicated, including those in referenced glazing publications.
- C. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.

- D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.
- E. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- G. Provide spacers for glass lites where length plus width is larger than 50 inches (1270 mm).
 - 1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
 - 2. Provide 1/8-inch- (3-mm-) minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.
- H. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and in accordance with requirements in referenced glazing publications.
- I. Set glass lites with proper orientation so that coatings face fire side or protected side as specified.

3.4 TAPE GLAZING

- A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.
- B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.
- C. Cover vertical framing joints by applying tapes to heads and sills first and then to jambs. Cover horizontal framing joints by applying tapes to jambs and then to heads and sills.
- D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.
- E. Do not remove release paper from tape until right before each glazing unit is installed.
- F. Center glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.
- G. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.5 CLEANING AND PROTECTION

- A. Immediately after installation, remove nonpermanent labels and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent

intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.

1. If, despite such protection, contaminating substances do contact with glass, remove substances immediately as recommended in writing by glass manufacturer.
- C. Remove and replace glass that is damaged during construction period.
- D. Wash glass on both exposed surfaces not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

END OF SECTION 088813

SECTION 092216 - NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Framing systems.

1.2 ACTION SUBMITTALS

- A. Product Data:
 - 1. Framing systems.

1.3 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each type of code-compliance certification for studs and tracks.
- B. Evaluation Reports: For post-installed anchors, from ICC-ES or other qualified testing agency acceptable to authorities having jurisdiction.

1.4 QUALITY ASSURANCE

- A. Code-Compliance Certification of Studs and Tracks: Provide documentation that framing members are certified according to the product-certification program of the Steel Framing Industry Association.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Notify manufacturer of damaged materials received prior to installation.
- B. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Protect cold-formed metal framing from corrosion, deformation, and other damage during delivery, storage, and handling as required by AISI S202, "Code of Standard Practice for Cold-Formed Steel Structural Framing."

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

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

- B. Horizontal Deflection: For wall assemblies, limited to 1/240 of the wall height based on horizontal loading of 5 lbf/sq. ft. (239 Pa).
- C. Design framing systems in accordance with AISI S220, "North American Specification for the Design of Cold-Formed Steel Framing - Nonstructural Members," unless otherwise indicated.
- D. Design Loads: As indicated on architectural Drawings or 5 lbf/sq. ft. (239 Pa) minimum as required by the IBC.
- E. Design framing systems to accommodate deflection of primary building structure and construction tolerances and to withstand design loads with a maximum deflection of <Insert inches (mm)>.

2.2 FRAMING SYSTEMS

- A. Framing Members, General: Comply with AISI S220 for conditions indicated.
 - 1. Steel Sheet Components: Comply with AISI S220 requirements for metal unless otherwise indicated
- B. Studs and Track: AISI S220.
 - 1. Minimum Base-Steel Thickness: As required by performance requirements for horizontal deflection.
 - 2. Depth: As indicated on Drawings.
- C. Firestop Tracks: Top track manufactured to allow partition heads to expand and contract with movement of structure while maintaining continuity of fire-resistance-rated assembly indicated; in thickness not less than indicated for studs and in width to accommodate depth of studs.
- D. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.
 - 1. Minimum Base-Steel Thickness: 0.0296 inch (0.752 mm).
- E. Cold-Rolled Furring Channels: 0.053-inch (1.34-mm) uncoated-steel thickness, with minimum 1/2-inch- (13-mm-) wide flanges.
 - 1. Depth: 3/4 inch (19 mm).
 - 2. Furring Brackets: Adjustable, corrugated-edge-type steel sheet with minimum uncoated-steel thickness of 0.0329 inch (0.8 mm).
 - 3. Tie Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper, 0.062-inch- (1.59-mm-) diameter wire, or double strand of 0.048-inch- (1.21-mm-) diameter wire.

2.3 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards.
 - 1. Fasteners for Steel Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance of the Work.

- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. Installation Standard: ASTM C754.
- B. Install framing and accessories plumb, square, and true to line, with connections securely fastened.
- C. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.
- D. Install bracing at terminations in assemblies.

3.3 INSTALLATION OF FRAMING SYSTEMS

- A. Install framing system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
 - 1. Single-Layer Application: 16 inches (406 mm) o.c. unless otherwise indicated.
- B. Install studs so flanges within framing system point in same direction.
- C. Install tracks at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings except where partitions are indicated to terminate otherwise. Continue framing around ducts that penetrate partitions above ceiling.
 - 1. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install track section (for cripple studs) at head and secure to jamb studs.
 - a. Install two studs at each jamb unless otherwise indicated.
 - b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch (13-mm) clearance from jamb stud to allow for installation of control joint in finished assembly.
 - c. Extend jamb studs through suspended ceilings and attach to underside of overhead structure.
 - 2. Other Framed Openings: Frame openings other than door openings the same as required for door openings unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
 - 3. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.
 - a. Firestop Track: Where indicated, install to maintain continuity of fire-resistance-rated assembly indicated.
- D. Direct Furring:
 - 1. Attach to concrete or masonry with stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches (610 mm) o.c.
- E. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch (3 mm) from the plane formed by faces of adjacent framing.

3.4 FIELD QUALITY CONTROL

- A. Installation Tolerances: Install suspension systems that are level to within 1/8 inch in 12 feet (3 mm in 3.6 m) measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

END OF SECTION 092216

SECTION 092900 - GYPSUM BOARD

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Interior gypsum board.

B. Related Requirements:

1. Section 092216 "Non-Structural Metal Framing" for non-structural steel framing and suspension systems that support gypsum board panels.

1.2 ACTION SUBMITTALS

A. Product Data: For the following:

1. Gypsum wallboard.
2. Impact Resistant Gypsum board, Type X.
3. Interior trim.
4. Joint treatment materials.
5. Sound-attenuation blankets.

1.3 DELIVERY, STORAGE AND HANDLING

- A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

1.4 FIELD CONDITIONS

- A. Environmental Limitations: Comply with ASTM C840 requirements or gypsum board manufacturer's written instructions, whichever are more stringent.
- B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.
- C. Do not install panels that are wet, moisture damaged, and mold damaged.
1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

- A. Obtain each type of gypsum panel and joint finishing material from single source with resources to provide products of consistent quality in appearance and physical properties.

2.2 PERFORMANCE REQUIREMENTS

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

2.3 GYPSUM BOARD, GENERAL

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

2.4 INTERIOR GYPSUM BOARD

- A. Gypsum Wallboard: ASTM C1396/C1396M.
 - 1. Basis of Design: USG Sheetrock Brand
 - 2. Thickness: 1/2 inch (12.7 mm).
 - 3. Long Edges: Tapered.
- B. Impact-Resistant Gypsum Board: ASTM C1396/C1396M gypsum board, tested in accordance with ASTM C1629/C1629M.
 - 1. Basis of Design: USG Sheetrock Brand, Mold Tough VHI Firecode X.
 - 2. Core: 5/8 inch (15.9 mm), Type X.
 - 3. Surface Abrasion: ASTM C1629/C1629M, meets or exceeds Level 2 requirements.
 - 4. Indentation: ASTM C1629/C1629M, meets or exceeds Level 2 requirements.
 - 5. Soft-Body Impact: ASTM C1629/C1629M, meets or exceeds Level 3 requirements.
 - 6. Hard-Body Impact: ASTM C1629/C1629M, meets or exceeds Level 3 requirements in accordance with test in Annex A1.
 - 7. Long Edges: Tapered.
 - 8. Mold Resistance: ASTM D3273, score of 10 as rated in accordance with ASTM D3274.

2.5 TRIM ACCESSORIES

- A. Interior Trim: ASTM C1047.
 - 1. Material: Paper-faced galvanized-steel sheet.
 - 2. Shapes:
 - a. Cornerbead.
 - b. LC-Bead: J-shaped; exposed long flange receives joint compound.

2.6 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C475/C475M.
- B. Joint Tape:
 - 1. Interior Gypsum Board: Paper.
- C. Joint Compound for Interior Gypsum Board: For each coat, use formulation that is compatible with other compounds applied on previous or for successive coats.
 - 1. Prefilling: At open joints, rounded or beveled panel edges, and damaged surface areas, use setting-type taping compound.
 - 2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use drying-type, all-purpose compound.
 - a. Use setting-type compound for installing paper-faced metal trim accessories.
 - 3. Fill Coat: For second coat, use drying-type, all-purpose compound.
 - 4. Finish Coat: For third coat, use drying-type, all-purpose compound.

2.7 AUXILIARY MATERIALS

- A. Provide auxiliary materials that comply with referenced installation standards and manufacturer's written instructions.
- B. Steel Drill Screws: ASTM C1002 unless otherwise indicated.
- C. Sound-Attenuation Blankets: ASTM C665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.
 - 1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.
- D. Thermal Insulation: As specified in Section 072100 "Thermal Insulation."
- E. Vapor Retarder: As specified in Section 072600 "Vapor Retarders."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates including welded hollow-metal frames and support framing, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION AND FINISHING OF PANELS, GENERAL

- A. Comply with ASTM C840.

- B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
- C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch (1.5 mm) of open space between panels. Do not force into place.
- D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.
- E. Form control and expansion joints with space between edges of adjoining gypsum panels.
- F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
 - 1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. (0.7 sq. m) in area.
 - 2. Fit gypsum panels around ducts, pipes, and conduits.
 - 3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- (6.4- to 9.5-mm-) wide joints to install sealant.
- G. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.
- H. Install sound attenuation blankets before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

3.3 INSTALLATION OF INTERIOR GYPSUM BOARD

- A. Single-Layer Application:
 - 1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.
 - 2. On partitions/walls, apply gypsum panels vertically (parallel to framing) unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.
 - a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
 - b. At stairwells and other high walls, install panels horizontally unless otherwise indicated or required by fire-resistance-rated assembly.
 - 3. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

3.4 INSTALLATION OF TRIM ACCESSORIES

- A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
- B. Interior Trim: Install in the following locations:
 - 1. Cornerbead: Use at outside corners unless otherwise indicated.

2. LC-Bead: Use at exposed panel edges.

3.5 FINISHING OF GYPSUM BOARD

- A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.
- B. Prefill open joints, rounded or beveled edges, and damaged surface areas.
- C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.
- D. Gypsum Board Finish Levels: Finish panels to levels indicated below and in accordance with ASTM C840:
 1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
 2. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.
 - a. Primer and its application to surfaces are specified in Section 099123 "Interior Painting."

3.6 PROTECTION

- A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.
- B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- C. Remove and replace panels that are wet, moisture damaged, and mold damaged.
 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 092900

SECTION 095113 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Acoustical panels.
 - 2. Metal suspension system.
- B. Products furnished, but not installed under this Section, include anchors, clips, and other ceiling attachment devices to be cast in concrete.

1.2 ACTION SUBMITTALS

- A. Product Data:
 - 1. Acoustical panels.
 - 2. Metal suspension system.
- B. Samples: For each exposed product and for each color and texture specified, 6 inches (150 mm) in size.

1.3 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
 - 1. Ceiling suspension-system members.
 - 2. Structural members to which suspension systems will be attached.
 - 3. Method of attaching hangers to building structure.
 - 4. Carrying channels or other supplemental support for hanger-wire attachment where conditions do not permit installation of hanger wires at required spacing.
 - 5. Size and location of initial access modules for acoustical panels.
 - 6. Items penetrating finished ceiling and ceiling-mounted items including the following:
 - a. Lighting fixtures.
 - b. Mechanical Units.
 - c. Perimeter moldings.
 - 7. Show operation of hinged and sliding components covered by or adjacent to acoustical panels.
 - 8. Minimum Drawing Scale: 1/4 inch = 1 foot (1:48).
- B. Product Test Reports: For each acoustical panel ceiling, for tests performed by manufacturer and witnessed by a qualified testing agency.
- C. Evaluation Reports: For each acoustical panel ceiling suspension system and anchor and fastener type, from ICC-ES.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For finishes to include in maintenance manuals.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Acoustical Ceiling Units: Full-size panels equal to 2 percent of quantity installed.
 - 2. Suspension-System Components: Quantity of each exposed component equal to 2 percent of quantity installed.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical panels, suspension-system components, and accessories to Project site and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.
- B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.

1.7 FIELD CONDITIONS

- A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

- A. Source Limitations for Ceiling System: Obtain each type of acoustical ceiling panel and its supporting suspension system from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Flame-Spread Index: Class A in accordance with ASTM E1264.
 - 2. Smoke-Developed Index: 50 or less.

2.3 ACOUSTICAL PANELS CLG-1

- A. Basis of Design: As indicated on drawings.

- B. Acoustical Panel Standard: Provide manufacturer's standard panels in accordance with ASTM E1264 and designated by type, form, pattern, acoustical rating, and light reflectance unless otherwise indicated.
- C. Classification: Provide panels as follows:
 - 1. Mineral Fiber with painted surface, lightly textured.
- D. Color: White.
- E. Light Reflectance (LR): Not less than 0.80.
- F. Ceiling Attenuation Class (CAC): Not less than 35.
- G. Noise Reduction Coefficient (NRC): Not less than 0.50.
- H. Edge/Joint Detail: Angled reveal sized to fit flange of exposed suspension-system members.
- I. Thickness: 5/8 inch (15 mm).
- J. Modular Size: 24 by 24 inches (610 by 610 mm).
- K. Antimicrobial Treatment: Manufacturer's standard broad spectrum, antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested in accordance with ASTM D3273, ASTM D3274, or ASTM G21 and evaluated in accordance with ASTM D3274 or ASTM G21.

2.4 METAL SUSPENSION SYSTEM CLG-1

- A. Basis of Design: As indicated on drawings.
- B. Wide-Face, Single-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet electrolytically zinc coated, with prefinished flanges of width indicated.
 - 1. Structural Classification: Heavy-duty system.
 - 2. Face Finish: Painted white.

2.5 ACCESSORIES

- A. Attachment Devices: Size for five times the design load indicated in ASTM C635/C635M, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.
- B. Wire Hangers, Braces, and Ties: Provide wires as follows:
 - 1. Zinc-Coated, Carbon-Steel Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper.
 - 2. Size: Wire diameter sufficient for its stress at three times hanger design load (ASTM C635/C635M, Table 1, "Direct Hung") will be less than yield stress of wire, but not less than 0.106-inch- (2.69-mm-) diameter wire.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.
- B. Examine acoustical panels before installation. Reject acoustical panels that are wet, moisture damaged, or mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders unless otherwise indicated, and comply with layout shown on reflected ceiling plans.
- B. Layout openings for penetrations centered on the penetrating items.

3.3 INSTALLATION OF ACOUSTICAL PANEL CEILINGS

- A. Install acoustical panel ceilings in accordance with ASTM C636/C636M and manufacturer's written instructions.
- B. Suspend ceiling hangers from building's structural members and as follows:
 - 1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
 - 2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 - 3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension-system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
 - 4. Secure wire hangers to ceiling-suspension members and to supports above with a minimum of three tight turns. Connect hangers directly to structure or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
 - 5. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, postinstalled mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
 - 6. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
 - 7. Space hangers not more than 48 inches (1200 mm) o.c. along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 8 inches (200 mm) from ends of each member.
 - 8. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.

- C. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.
 - 1. Screw attach moldings to substrate at intervals not more than 16 inches (400 mm) o.c. and not
 - 2. Do not use exposed fasteners, including pop rivets, on moldings and trim.
- D. Install suspension-system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- E. Install acoustical panels with undamaged edges and fit accurately into suspension-system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide precise fit.
 - 1. For reveal-edged panels on suspension-system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.
 - 2. Paint cut edges of panel remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.

3.4 ERECTION TOLERANCES

- A. Suspended Ceilings: Install main and cross runners level to a tolerance of 1/8 inch in 12 feet (3 mm in 3.6 m), non-cumulative.
- B. Moldings and Trim: Install moldings and trim to substrate and level with ceiling suspension system to a tolerance of 1/8 inch in 12 feet (3 mm in 3.6 m), non-cumulative.

3.5 CLEANING

- A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension-system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage.
- B. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 095113

SECTION 096513 - RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Vinyl base.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples for Verification: For each type of product indicated and for each color, texture, and pattern required in manufacturer's standard-size Samples, but not less than 12 inches (300 mm) long.
- C. Product Schedule: For resilient base and accessory products. Use same designations indicated on Drawings.

1.4 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Furnish not less than 10 linear feet (3 linear m) for every 500 linear feet (150 linear m) or fraction thereof, of each type, color, pattern, and size of resilient product installed.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F (10 deg C) or more than 90 deg F (32 deg C).

1.6 FIELD CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F (21 deg C) or more than 95 deg F (35 deg C), in spaces to receive resilient products during the following periods:
 - 1. 48 hours before installation.
 - 2. During installation.
 - 3. 48 hours after installation.

- B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F (13 deg C) or more than 95 deg F (35 deg C).
- C. Install resilient products after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 VINYL BASE B-1

- A. Basis of Design: As indicated on drawing.
- B. Product Standard: ASTM F1861, Type TV (vinyl, thermoplastic).
 - 1. Group: I (solid, homogeneous).
 - 2. Style and Location:
 - a. Style B, Cove: Provide in areas with resilient floor coverings.
- C. Minimum Thickness: 0.125 inch (3.2 mm).
- D. Height: 4 inches (102 mm).
- E. Lengths: Coils in manufacturer's standard length.
- F. Outside Corners: Preformed.
- G. Inside Corners: Preformed.
- H. Colors and Patterns: As indicated on drawings.

2.2 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by resilient-product manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
 - 1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

1. Installation of resilient products indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.
- B. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- C. Do not install resilient products until materials are the same temperature as space where they are to be installed.
 1. At least 48 hours in advance of installation, move resilient products and installation materials into spaces where they will be installed.
- D. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.

3.3 RESILIENT BASE INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient base.
- B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.
- C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.
- D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
- E. Do not stretch resilient base during installation.
- F. Preformed Corners: Install preformed corners before installing straight pieces.

3.4 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.
- B. Perform the following operations immediately after completing resilient-product installation:
 1. Remove adhesive and other blemishes from surfaces.
 2. Sweep and vacuum horizontal surfaces thoroughly.
 3. Damp-mop horizontal surfaces to remove marks and soil.
- C. Protect resilient products from marks, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

END OF SECTION 096513

SECTION 096516 - RESILIENT SHEET FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Unbacked vinyl sheet flooring.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each exposed product and for each color, texture, and pattern specified, in manufacturer's standard size, but not less than 6-by-9-inch (150-by-230-mm) sections.
- C. Welded-Seam Samples: For seamless-installation technique indicated and for each resilient sheet flooring product, color, and pattern required; with seam running lengthwise and in center of [6-by-9-inch (150-by-230-mm) Sample applied to a rigid backing and prepared by Installer for this Project.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each type of resilient sheet flooring to include in maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials from the same product run that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Resilient Sheet Flooring: Furnish not less than 10 linear feet (3 linear m) for every 500 linear feet (150 linear m) or fraction thereof, in roll form and in full roll width for each type, color, and pattern of flooring installed.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are competent in techniques required by manufacturer for resilient sheet flooring installation and seaming method indicated.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Store resilient sheet flooring and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F (10 deg C) or more than 90 deg F (32 deg C). Store rolls upright.

1.9 FIELD CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F (21 deg C) or more than 85 deg F (29 deg C), in spaces to receive resilient sheet flooring during the following periods:
 - 1. 48 hours before installation.
 - 2. During installation.
 - 3. 48 hours after installation.
- B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F (13 deg C) or more than 95 deg F (35 deg C).
- C. Close spaces to traffic during resilient sheet flooring installation.
- D. Close spaces to traffic for 48 hours after resilient sheet flooring installation.
- E. Install resilient sheet flooring after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: For resilient sheet flooring, as determined by testing identical products according to ASTM E648 or NFPA 253 by a qualified testing agency.
 - 1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

2.2 UNBACKED VINYL SHEET FLOORING

- A. Basis of Design: As indicated on drawings.
 - 1. Product Standard: ASTM F1913.
 - 2. Thickness: 0.080 inch (2.0 mm).
 - 3. Wearing Surface: Smooth.
 - 4. Sheet Width: 6.6 feet (2.0 m).
 - 5. Seamless-Installation Method: Heat welded.
 - 6. Colors and Patterns: As indicated by manufacturer's designations.

2.3 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by resilient sheet flooring manufacturer for applications indicated.

- B. Adhesives: Water-resistant type recommended by flooring and adhesive manufacturers to suit resilient sheet flooring and substrate conditions indicated.
- C. Seamless-Installation Accessories:
 - 1. Heat-Welding Bead: Manufacturer's solid-strand product for heat welding seams.
 - a. Colors: Match flooring.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
 - 1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient sheet flooring.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare substrates according to resilient sheet flooring manufacturer's written instructions to ensure adhesion of resilient sheet flooring.
- B. Concrete Substrates: Prepare according to ASTM F710.
 - 1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
 - 2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by resilient sheet flooring manufacturer. Do not use solvents.
 - 3. Alkalinity and Adhesion Testing: Perform tests recommended by resilient sheet flooring manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than 9 pH.
 - 4. Moisture Testing: Perform tests so that each test area does not exceed 200 sq. ft. (18.6 sq. m), and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.
 - a. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. (1.36 kg of water/92.9 sq. m) in 24 hours.
 - b. Relative Humidity Test: Using in-situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.
- C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- D. Do not install resilient sheet flooring until materials are the same temperature as space where they are to be installed.
 - 1. At least 48 hours in advance of installation, move flooring and installation materials into spaces where they will be installed.
- E. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient sheet flooring.

3.3 RESILIENT SHEET FLOORING INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient sheet flooring.
- B. Unroll resilient sheet flooring and allow it to stabilize before cutting and fitting.
- C. Lay out resilient sheet flooring as follows:
 - 1. Maintain uniformity of flooring direction.
 - 2. Minimize number of seams; place seams in inconspicuous and low-traffic areas, at least 6 inches (152 mm) away from parallel joints in flooring substrates.
 - 3. Match edges of flooring for color shading at seams.
 - 4. Avoid cross seams.
- D. Scribe and cut resilient sheet flooring to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.
- E. Extend resilient sheet flooring into toe spaces, door reveals, closets, and similar openings.
- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on resilient sheet flooring as marked on substrates. Use chalk or other nonpermanent marking device.
- G. Adhere resilient sheet flooring to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.
- H. Seamless Installation:
 - 1. Heat-Welded Seams: Comply with ASTM F1516. Rout joints and heat weld with welding bead to fuse sections permanently into a seamless flooring installation. Prepare, weld, and finish seams to produce surfaces flush with adjoining flooring surfaces.

3.4 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protecting resilient sheet flooring.
- B. Perform the following operations immediately after completing resilient sheet flooring installation:
 - 1. Remove adhesive and other blemishes from surfaces.
 - 2. Sweep and vacuum surfaces thoroughly.
 - 3. Damp-mop surfaces to remove marks and soil.
- C. Protect resilient sheet flooring from marks, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- D. Cover resilient sheet flooring until Substantial Completion.

END OF SECTION 096516

SECTION 096519 - RESILIENT TILE FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

- 1. Solid vinyl floor tile.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples for Verification: Full-size units of each color and pattern of floor tile required.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each type of floor tile to include in maintenance manuals.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Floor Tile: Furnish one box for every 50 boxes or fraction thereof, of each type, color, and pattern of floor tile installed.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are competent in techniques required by manufacturer for floor tile installation and seaming method indicated.
 - 1. Engage an installer who employs workers for this Project who are trained or certified by floor tile manufacturer for installation techniques required.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store floor tile and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F (10 deg C) or more than 90 deg F (32 deg C). Store floor tiles on flat surfaces.

1.8 FIELD CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F (21 deg C) or more than 95 deg F (35 deg C), in spaces to receive floor tile during the following periods:
 - 1. 48 hours before installation.
 - 2. During installation.
 - 3. 48 hours after installation.
- B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F (13 deg C) or more than 95 deg F (35 deg C).
- C. Close spaces to traffic during floor tile installation.
- D. Close spaces to traffic for 48 hours after floor tile installation.
- E. Install floor tile after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: For resilient floor tile, as determined by testing identical products according to ASTM E648 or NFPA 253 by a qualified testing agency.
 - 1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

2.2 SOLID VINYL FLOOR TILE LVT-1

- A. Basis of Design: As indicated on drawings.
- B. Tile Standard: ASTM F1700.
 - 1. Class: Class III, Printed Film Vinyl Tile.
 - 2. Type: B, Embossed Surface.
- C. Thickness: 0.1575 inch (4 mm).
- D. Size: 7.25 by 48 inches (184 by 1219 mm).
- E. Colors and Patterns: As indicated by manufacturer's designations.

2.3 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by floor tile manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by floor tile and adhesive manufacturers to suit floor tile and substrate conditions indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
 - 1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of floor tile.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare substrates according to floor tile manufacturer's written instructions to ensure adhesion of resilient products.
- B. Concrete Substrates: Prepare according to ASTM F710.
 - 1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
 - 2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by floor tile manufacturer. Do not use solvents.
 - 3. Alkalinity and Adhesion Testing: Perform tests recommended by floor tile manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than 9 pH.
 - 4. Moisture Testing: Perform tests so that each test area does not exceed 200 sq. ft. (18.6 sq. m), and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.
 - a. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. (1.36 kg of water/92.9 sq. m) in 24 hours.
 - b. Relative Humidity Test: Using in-situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.
- C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- D. Do not install floor tiles until materials are the same temperature as space where they are to be installed.
 - 1. At least 48 hours in advance of installation, move resilient floor tile and installation materials into spaces where they will be installed.
- E. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient floor tile.

3.3 FLOOR TILE INSTALLATION

- A. Comply with manufacturer's written instructions for installing floor tile.

- B. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.
 - 1. Lay tiles in pattern indicated.
- C. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.
 - 1. Lay tiles in pattern of colors and sizes indicated.
- D. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.
- E. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.
- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent marking device.
- G. Adhere floor tiles to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.4 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protecting floor tile.
- B. Perform the following operations immediately after completing floor tile installation:
 - 1. Remove adhesive and other blemishes from surfaces.
 - 2. Sweep and vacuum surfaces thoroughly.
 - 3. Damp-mop surfaces to remove marks and soil.
- C. Protect floor tile from marks, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- D. Cover floor tile until Substantial Completion.

END OF SECTION 096519

SECTION 096813 - TILE CARPETING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Modular carpet tile.
- B. Related Requirements:
 - 1. Section 024119 "Selective Demolition" for removing existing floor coverings.
 - 2. Section 096513 "Resilient Base and Accessories" for resilient wall base and accessories installed with carpet tile.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include manufacturer's written data on physical characteristics, durability, and fade resistance.
 - 2. Include manufacturer's written installation recommendations for each type of substrate.
- B. Shop Drawings: For carpet tile installation, plans showing the following:
 - 1. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet tiles.
 - 2. Carpet tile type, color, and dye lot.
 - 3. Type of subfloor.
 - 4. Type of installation.
 - 5. Pattern of installation.
 - 6. Pattern type, location, and direction.
 - 7. Pile direction.
 - 8. Type, color, and location of insets and borders.
 - 9. Type, color, and location of edge, transition, and other accessory strips.
 - 10. Transition details to other flooring materials.
- C. Samples: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.
 - 1. Carpet Tile: Full-size Sample.
 - 2. Exposed Edge, Transition, and Other Accessory Stripping: 12-inch- (300-mm-) long Samples.
- D. Samples for Verification: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.
 - 1. Carpet Tile: Full-size Sample.
 - 2. Exposed Edge, Transition, and Other Accessory Stripping: 12-inch- (300-mm-) long Samples.

- E. Product Schedule: For carpet tile. Use same designations indicated on Drawings.

1.4 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For carpet tile, for tests performed by a qualified testing agency.
- B. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For carpet tiles to include in maintenance manuals. Include the following:
 - 1. Methods for maintaining carpet tile, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
 - 2. Precautions for cleaning materials and methods that could be detrimental to carpet tile.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Carpet Tile: Full-size units equal to 5 percent of amount installed for each type indicated, but not less than 10 sq. yd. (8.3 sq. m).

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Comply with the Carpet and Rug Institute's CRI 104.

1.8 FIELD CONDITIONS

- A. Comply with the Carpet and Rug Institute's CRI 104 for temperature, humidity, and ventilation limitations.
- B. Environmental Limitations: Do not deliver or install carpet tiles until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at levels planned for building occupants during the remainder of the construction period.
- C. Do not install carpet tiles over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive and concrete slabs have pH range recommended by carpet tile manufacturer.

1.9 WARRANTY

- A. Special Warranty for Carpet Tiles: Manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within specified warranty period.
 - 1. Warranty does not include deterioration or failure of carpet tile due to unusual traffic, failure of substrate, vandalism, or abuse.
 - 2. Failures include, but are not limited to, the following:
 - a. More than 10 percent edge raveling, snags, and runs.
 - b. Dimensional instability.
 - c. Excess static discharge.
 - d. Loss of tuft-bind strength.

- e. Loss of face fiber.
 - f. Delamination.
3. Warranty Period: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 CARPET TILE C-1 and C-2

- A. Basis of Design: As indicated on drawings.
- B. Fiber Content: 100 percent nylon 6, 6.
- C. Pile Characteristic: Patterned loop.
- D. Density: 5,225 (194.15 kg/m³).
- E. Pile Thickness: 0.124" (3.15 mm).
- F. Stitches: 10.66 (41.97 per 10 cm).
- G. Gage: 1/12 (47.24 per 10 cm).
- H. Surface Pile Weight: 18 oz/yd² (610 g/m²).
- I. Primary Backing/Backcoating: Manufacturer's standard composite materials.
- J. Backing System: Infinity® 2 Modular, rEvolve® II Modular.
- K. Size: 24 by 24 inches (610 by 610 mm).
- L. Applied Treatments:
 - 1. Soil-Resistance Treatment: Manufacturer's standard treatment.
 - 2. Antimicrobial Treatment: Manufacturer's standard treatment that protects carpet tiles as follows:
 - a. Antimicrobial Activity: Not less than 2-mm halo of inhibition for gram-positive bacteria, not less than 1-mm halo of inhibition for gram-negative bacteria, and no fungal growth, according to AATCC 174.
- M. Performance Characteristics:
 - 1. Appearance Retention Rating: Heavy traffic, 3.0 minimum according to ASTM D7330.
 - 2. Critical Radiant Flux Classification: Not less than 0.22 W/sq. cm according to NFPA 253.
 - 3. Dry Breaking Strength: Not less than 100 lbf (445 N) according to ASTM D2646.
 - 4. Tuft Bind: Not less than 5 lbf (22 N) according to ASTM D1335.
 - 5. Dimensional Tolerance: Within 1/32 inch (0.8 mm) of specified size dimensions, as determined by physical measurement.
 - 6. Dimensional Stability: 0.2 percent or less according to ISO 2551 (Aachen Test).
 - 7. Colorfastness to Crocking: Not less than 4, wet and dry, according to AATCC 165.
 - 8. Colorfastness to Light: Not less than 4 after 40 AFU (AATCC fading units) according to AATCC 16, Option E.
 - 9. Electrostatic Propensity: Less than 3.5kV according to AATCC 134.

2.2 INSTALLATION ACCESSORIES

- A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation indicated in specification Section 035416 "Hydraulic Cement Underlayment".
- B. Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive type to suit products and subfloor conditions indicated, that comply with flammability requirements for installed carpet tile, and are recommended by carpet tile manufacturer for releasable installation.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet tile performance.
- B. Examine carpet tile for type, color, pattern, and potential defects.
- C. Concrete Slabs: Verify that finishes comply with requirements specified in Section 033000 "Cast-in-Place Concrete" and that surfaces are free of cracks, ridges, depressions, scale, and foreign deposits.
 - 1. Moisture Testing: Perform tests so that each test area does not exceed 1000 sq. ft. (304.8 sq. m) and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.
 - a. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. (1.36 kg of water/92.9 sq. m) in 24 hours.
 - b. Relative Humidity Test: Using in situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.
 - c. Perform additional moisture tests recommended in writing by adhesive and carpet tile manufacturers. Proceed with installation only after substrates pass testing.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. General: Comply with the Carpet and Rug Institute's CRI 104 and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile.
- B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch (3 mm) wide or wider, and protrusions more than 1/32 inch (0.8 mm) unless more stringent requirements are required by manufacturer's written instructions.
- C. Concrete Substrates: Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by adhesive and carpet tile manufacturers.
- D. Metal Substrates: Clean grease, oil, soil and rust, and prime if recommended in writing by adhesive manufacturer. Rough sand painted metal surfaces and remove loose paint. Sand aluminum surfaces, to remove metal oxides, immediately before applying adhesive.

- E. Broom and vacuum clean substrates to be covered immediately before installing carpet tile.

3.3 INSTALLATION

- A. General: Comply with the Carpet and Rug Institute's CRI 104, Section 10, "Carpet Tile," and with carpet tile manufacturer's written installation instructions.
- B. Installation Method: Glue down; install every tile with full-spread, releasable, pressure-sensitive adhesive.
- C. Maintain dye-lot integrity. Do not mix dye lots in same area.
- D. Maintain pile-direction patterns indicated on Drawings.
- E. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet tile manufacturer.
- F. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- G. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on carpet tile as marked on subfloor. Use nonpermanent, nonstaining marking device.
- H. Install pattern parallel to walls and borders.

3.4 CLEANING AND PROTECTION

- A. Perform the following operations immediately after installing carpet tile:
 - 1. Remove excess adhesive and other surface blemishes using cleaner recommended by carpet tile manufacturer.
 - 2. Remove yarns that protrude from carpet tile surface.
 - 3. Vacuum carpet tile using commercial machine with face-beater element.
- B. Protect installed carpet tile to comply with the Carpet and Rug Institute's CRI 104, Section 13.7.
- C. Protect carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

END OF SECTION 096813

SECTION 099123 - INTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Primers.
 - 2. Water-based finish coatings.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
 - 1. Include preparation requirements and application instructions.
 - 2. Indicate VOC content.
- B. Samples for Verification: For each type of paint system and each color and gloss of topcoat.
 - 1. Submit Samples on rigid backing, 8 inches (200 mm) square.
 - 2. Apply coats on Samples in steps to show each coat required for system.
 - 3. Label each coat of each Sample.
 - 4. Label each Sample for location and application area.
- C. Product Schedule: Use same designations indicated on Drawings and in the Interior Painting Schedule to cross-reference paint systems specified in this Section. Include color designations.

1.4 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Paint Products: 5 percent, but not less than 1 gal. (3.8 L) of each material and color applied.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).
 - 1. Maintain containers in clean condition, free of foreign materials and residue.
 - 2. Remove rags and waste from storage areas daily.

1.6 FIELD CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).

- B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures of less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain each paint product from single source from single manufacturer.

2.2 PAINT PRODUCTS, GENERAL

- A. Material Compatibility:
 - 1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 - 2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.
- B. Colors: As selected by Architect from manufacturer's full range.

2.3 PRIMERS

- A. Interior/Exterior Latex Block Filler: Water-based, high-solids, emulsion coating formulated to bridge and fill porous surfaces of exterior concrete masonry units in preparation for specified subsequent coatings.
 - 1. Basis of Design: Benjamin-Moore, Ultra Spec Masonry High Build Block Filler.
- B. Interior Latex Primer Sealer: Water-based latex sealer used on new interior plaster, concrete, and gypsum wallboard surfaces.
 - 1. Basis of Design: Benjamin-Moore, Insl-x Prime All.
- C. Alkyd Primer for Wood: Solvent-based, modified-alkyd primer formulated for resistance to extractive bleeding, mold, and microbes; for hiding stains; and for use on interior wood subject to extractive bleeding.
 - 1. Basis of Design: Benjamin-Moore, Fresh Start All-Purpose Primer.
- D. Alkyd Quick-Dry Primer for Metal: Corrosion-resistant, solvent-based, modified-alkyd primer; lead and chromate free; formulated for quick-drying capabilities and for use on cleaned, interior steel surfaces.
 - 1. Basis of Design: Benjamin Moore, Corotech Prep All Universal Metal Primer.

2.4 WATER-BASED FINISH COATS

- A. Interior, Latex, High-Performance Architectural Coating, Eggshell: High-performance architectural latex coating providing a significantly higher level of performance than conventional latex paints in the areas of scrub resistance, burnish resistance, and ease of stain removal.
 - 1. Basis of Design: Benjamin Moore, Scuff-X
 - 2. Gloss and Sheen Level: Manufacturer's standard eggshell finish.
- B. Interior, Latex, High-Performance Architectural Coating, Semigloss: High-performance architectural latex coating providing a significantly higher level of performance than conventional latex paints in the areas of scrub resistance, burnish resistance, and ease of stain removal.

1. Basis of Design: Benjamin Moore, Scuff-X
2. Gloss Level: Manufacturer's standard semigloss finish.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 1. Masonry (Clay and CMUs): 12 percent.
 2. Gypsum Board: 12 percent.
- C. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.
- D. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.
- E. Proceed with coating application only after unsatisfactory conditions have been corrected.
 1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations applicable to substrates and paint systems indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
- C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
 1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
- D. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceeds that permitted in manufacturer's written instructions.
- E. Steel Substrates: Remove rust, loose mill scale, and shop primer, if any. Clean using methods recommended in writing by paint manufacturer but not less than the following:
 1. SSPC-SP 11.
- F. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
- G. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

3.3 INSTALLATION

- A. Apply paints according to manufacturer's written instructions.
 - 1. Use applicators and techniques suited for paint and substrate indicated.
 - 2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 - 3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
 - 4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
 - 5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
- B. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- C. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- D. Painting Fire-Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:
 - 1. Paint the following work where exposed in occupied spaces:
 - a. Uninsulated metal piping.
 - b. Uninsulated plastic piping.
 - c. Pipe hangers and supports.
 - d. Metal conduit.
 - e. Plastic conduit.
 - f. Other items as directed by Architect.
 - 2. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.

3.4 FIELD QUALITY CONTROL

- A. Dry-Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry-film thickness.
 - 1. Contractor shall touch up and restore painted surfaces damaged by testing.
 - 2. If test results show that dry-film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry-film thickness that complies with paint manufacturer's written recommendations.

3.5 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
 - 1. Do not clean equipment with free-draining water and prevent solvents, thinners, cleaners, and other contaminants from entering into waterways, sanitary and storm drain systems, and ground.
 - 2. Dispose of contaminants in accordance with requirements of authorities having jurisdiction.
 - 3. Allow empty paint cans to dry before disposal.
 - 4. Collect waste paint by type and deliver to recycling or collection facility.

- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 INTERIOR PAINTING SCHEDULE

- A. Concrete and CMU Substrates:
 - 1. High-Performance Architectural Latex System:
 - a. Block Filler: Interior/exterior latex block filler.
 - b. Prime Coat: Alkali-resistant, water-based primer.
 - c. Intermediate Coat: Matching topcoat.
 - d. Topcoat: Interior, latex, high-performance architectural coating, eggshell.
- B. Steel Substrates:
 - 1. High-Performance Architectural Latex System:
 - a. Prime Coat: Alkyd quick-dry primer for metal.
 - b. Intermediate Coat: Matching topcoat.
 - c. Topcoat: Topcoat: Interior, latex, high-performance architectural coating, semigloss.
- C. Finish Carpentry: Wood trim and doors.
 - 1. High-Performance Architectural Latex System:
 - a. Prime Coat: Interior latex primer for wood.
 - b. Intermediate Coat: Matching topcoat.
 - c. Topcoat: Interior, latex, high-performance architectural coating, eggshell.
- D. Gypsum Board Substrates:
 - 1. High-Performance Architectural Latex System:
 - a. Prime Coat: Interior latex primer sealer.
 - b. Intermediate Coat: Matching topcoat.
 - c. Topcoat: Interior, latex, high-performance architectural coating, eggshell.

END OF SECTION 099123

SECTION 101419 - DIMENSIONAL LETTER SIGNAGE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Dimensional characters.
 - a. Cast dimensional characters.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For signs.
 - 1. Include fabrication and installation details and attachments to other work.
 - 2. Show sign mounting heights, locations of supplementary supports to be provided by other installers, and accessories.
 - 3. Show message list, typestyles, graphic elements, and layout for each sign at least half size.
- C. Samples for Initial Selection: For each type of sign assembly, exposed component, and exposed finish.
 - 1. Include representative Samples of available typestyles and graphic symbols.

1.3 FIELD CONDITIONS

- A. Field Measurements: Verify locations of electrical service embedded in permanent construction by other installers by field measurements before fabrication, and indicate measurements on Shop Drawings.

1.4 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Deterioration of finishes beyond normal weathering.
 - b. Separation or delamination of sheet materials and components.
 - 2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 DIMENSIONAL CHARACTERS

- A. Cast Characters: Characters with uniform faces, sharp corners, and precisely formed lines and profiles, and as follows:
 - 1. Character Material: Cast aluminum.
 - 2. Character Height: As indicated on Drawings.
 - 3. Thickness: Manufacturer's standard for size of character.

4. Finishes: to be selected by Architect from:
 - a. Powder-Coat Finish: Manufacturer's standard, in color as selected by Architect from manufacturer's full range.
5. Mounting: Concealed studs.
6. Typeface: To be determined.

2.2 DIMENSIONAL CHARACTER MATERIALS

- A. Aluminum Castings: ASTM B26, alloy and temper recommended by sign manufacturer for casting process used and for type of use and finish indicated.

2.3 ACCESSORIES

- A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signs, noncorrosive and compatible with each material joined, and complying with the following:
 1. Use concealed fasteners and anchors unless indicated to be exposed.
 2. Sign Mounting Fasteners:
 - a. Concealed Studs: Concealed (blind), threaded studs welded or brazed to back of sign material, screwed into back of sign assembly, or screwed into tapped lugs cast integrally

2.4 FABRICATION

- A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.
 1. Preassemble signs and assemblies in the shop to greatest extent possible. Disassemble signs and assemblies only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation; apply markings in locations concealed from view after final assembly.
 2. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.
 3. Comply with AWS for recommended practices in welding and brazing. Provide welds and brazes behind finished surfaces without distorting or discoloring exposed side. Clean exposed welded and brazed connections of flux, and dress exposed and contact surfaces.
 4. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.
 5. Internally brace dimensional characters for stability, to meet structural performance loading without oil-canning or other surface deformation, and for securing fasteners.
 6. Provide rabbets, lugs, and tabs necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match sign finish.
 7. Castings: Fabricate castings free of warp, cracks, blowholes, pits, scale, sand holes, and other defects that impair appearance or strength. Grind, wire brush, sandblast, and buff castings to remove seams, gate marks, casting flash, and other casting marks before finishing.

2.5 GENERAL FINISH REQUIREMENTS

- A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

- C. Directional Finishes: Run grain with long dimension of each piece and perpendicular to long dimension of finished trim or border surface unless otherwise indicated.
- D. Organic, Anodic, and Chemically Produced Finishes: Apply to formed metal after fabrication but before applying contrasting polished finishes on raised features unless otherwise indicated.

2.6 ALUMINUM FINISHES

- A. Baked-Enamel or Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 1.5 mils. Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.
- B. Verify that sign-support surfaces are within tolerances to accommodate signs without gaps or irregularities between backs of signs and support surfaces unless otherwise indicated.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF DIMENSIONAL CHARACTERS

- A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.
 - 1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
 - 2. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.
 - 3. Corrosion Protection: Coat concealed surfaces of exterior aluminum in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.
- B. Mounting Methods:
 - 1. Concealed Studs: Using a template, drill holes in substrate aligning with studs on back of sign. Remove loose debris from hole and substrate surface.
 - a. Thin or Hollow Surfaces: Place sign in position and flush to surface, install washers and nuts on studs projecting through opposite side of surface, and tighten.

3.3 ADJUSTING AND CLEANING

- A. Remove and replace damaged or deformed characters and signs that do not comply with specified requirements. Replace characters with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.
- B. Remove temporary protective coverings and strippable films as signs are installed.

- C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions, and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

END OF SECTION 101419

SECTION 101423.16 - ROOM-IDENTIFICATION PANEL SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes room-identification signs that are directly attached to the building.

1.3 DEFINITIONS

- A. Accessible: In accordance with the accessibility standard.

1.4 COORDINATION

- A. Furnish templates for placement of electrical service embedded in permanent construction by other installers.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For room-identification signs.
 - 1. Include fabrication and installation details and attachments to other work.
 - 2. Show sign mounting heights, locations of supplementary supports to be provided by other installers, and accessories.
 - 3. Show message list, typestyles, graphic elements, including raised characters and Braille, and layout for each sign at least half size.
- C. Samples: For each type of sign assembly showing all components and with the required finish(es), in manufacturer's standard size unless otherwise indicated and as follows:
 - 1. Room-Identification Signs: Full-size Sample.
- D. Product Schedule: For room-identification signs. Use same designations indicated on Drawings or specified.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For manufacturer.
- B. Sample Warranty: For special warranty.

1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For signs to include in maintenance manuals.

1.8 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Deterioration of finishes beyond normal weathering.
 - b. Deterioration of embedded graphic image.
 - c. Separation or delamination of sheet materials and components.
 - 2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Accessibility Standard: Comply with applicable provisions in ICC A117.1.

2.2 ROOM-IDENTIFICATION SIGNS

- A. Room-Identification Sign: Sign with smooth, uniform surfaces; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:
 - 1. Basis of Design: Designer Sign Systems or approved equal.
 - 2. Laminated-Sheet Sign: Photopolymer face sheet with raised graphics laminated to phenolic backing sheet to produce composite sheet.
 - a. Composite-Sheet Thickness: As indicated on Drawings.
 - b. Surface-Applied Graphics: Applied paint.
 - c. Color(s): As selected by Architect from manufacturer's full range.
 - 3. Mounting: Surface mounted to wall with two-face tape.
 - 4. Text and Typeface: Typeface as selected by Architect from manufacturer's full range. Finish raised characters to contrast with background color, and finish Braille to match background color.

2.3 SIGN MATERIALS

- A. Acrylic Sheet: ASTM D4802, category as standard with manufacturer for each sign, Type UVF (UV filtering).
- B. Paints and Coatings for Sheet Materials: Inks, dyes, and paints that are recommended by manufacturer for optimum adherence to surface and are UV and water resistant for colors and exposure indicated.

2.4 ACCESSORIES

- A. Two-Face Tape: Manufacturer's standard high-bond, foam-core tape, 0.045 inch (1.14 mm) thick, with adhesive on both sides.

2.5 FABRICATION

- A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.
 - 1. Preassemble signs and assemblies in the shop to greatest extent possible. Disassemble signs and assemblies only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation; apply markings in locations concealed from view after final assembly.
 - 2. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.
 - 3. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.
 - 4. Provide rabbets, lugs, and tabs necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match sign finish.

2.6 GENERAL FINISH REQUIREMENTS

- A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.
 - 1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
 - 2. Install signs so they do not protrude or obstruct according to the accessibility standard.
 - 3. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.
- B. Accessibility: Install signs in locations on walls as indicated on Drawings and according to the accessibility standard.
- C. Mounting Methods:
 - 1. Two-Face Tape: Clean bond-breaking materials from substrate surface and remove loose debris. Apply tape strips symmetrically to back of sign and of suitable quantity to support weight of sign without slippage. Keep strips away from edges to prevent visibility at sign edges. Place sign in position, and push to engage tape adhesive.

3.2 ADJUSTING AND CLEANING

- A. Remove and replace damaged or deformed signs and signs that do not comply with specified requirements. Replace signs with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.
- B. Remove temporary protective coverings and strippable films as signs are installed.
- C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions, and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

END OF SECTION 101423.16

SECTION 102239 - FOLDING PANEL PARTITIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Operable acoustical panel partitions.

B. Related Requirements:

1. Section 055000 "Metal Fabrications" for supports that attach supporting tracks to overhead structural system.
2. Section 092900 "Gypsum Board" for sound barrier construction above the ceiling at track.

1.2 DEFINITIONS

- A. STC: Sound Transmission Class.

1.3 ACTION SUBMITTALS

A. Product Data:

1. Operable acoustical panel partitions.

B. Shop Drawings: For operable panel partitions.

1. Include plans, elevations, sections, attachment details, and numbered panel installation sequence.
2. Indicate stacking and operating clearances. Indicate location and installation requirements for hardware and track, blocking, and direction of travel.
3. Include diagrams for power, signal, and control wiring.

C. Samples: For each type of exposed material, finish, covering, or facing, prepared on Samples of size indicated below:

1. Panel Facing Material: Manufacturer's standard-size unit, not less than 3 inches (75 mm) square.
2. Panel Edge Material: Not less than 3 inches (75 mm) long.

1.4 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Partition track, track supports and bracing, switches, turning space, and storage layout.
2. Suspended ceiling components.
3. Structural members to which suspension systems will be attached.
4. Size and location of initial access modules for acoustical tile.
5. Items penetrating finished ceiling including the following:

- a. Lighting fixtures.
 - b. HVAC ductwork, outlets, and inlets.
 - c. Speakers.
 - d. Smoke detectors.
 - e. Access panels.
- 6. Plenum acoustical barriers.
- B. Setting Drawings: For embedded items and cutouts required in other work.
- C. Qualification Data: For Installer.
- D. Seismic Qualification Certificates: For operable panel partitions, tracks, accessories, and components, from manufacturer. Include seismic capacity of partition assemblies to remain in vertical position during a seismic event and the following:
 - 1. Basis for Certification: Indicate whether certification is based on analysis, testing, or experience data, in accordance with ASCE/SEI 7.
 - 2. Detailed description of partition anchorage devices on which the certification is based and their installation requirements.
- E. Product Certificates: For each type of operable panel partition.
- F. Product Test Reports: For each operable panel partition, for tests performed by a qualified testing agency.
- G. Sample Warranty: For manufacturer's special warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For operable panel partitions to include in maintenance manuals.
 - 1. In addition to items specified in Section 017823 "Operation and Maintenance Data," include the following:
 - a. Panel finish facings and finishes for exposed trim and accessories. Include precautions for cleaning materials and methods that could be detrimental to finishes and performance.
 - b. Seals, hardware, track, track switches, carriers, and other operating components.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same production run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Panel Finish-Facing Material: Furnish full width in quantity to cover both sides of two panels when installed.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Protectively package and sequence panels in order for installation. Clearly mark packages and panels with numbering system used on Shop Drawings. Do not use permanent markings on panels.

1.9 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of operable panel partitions that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Faulty operation of operable panel partitions.
 - b. Deterioration of metals, metal finishes, and other materials beyond normal use.
 - 2. Warranty Period: 12 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Operable panel partitions are to withstand the effects of earthquake motions determined in accordance with ASCE/SEI 7.
 - 1. The term "withstand" means "the partition panels will remain in place without separation of any parts when subjected to the seismic forces specified."
- B. Acoustical Performance: Provide operable panel partitions tested by a qualified testing agency for the following acoustical properties in accordance with test methods indicated:
 - 1. Sound-Transmission Requirements: Operable panel partition assembly tested for laboratory sound-transmission loss performance in accordance with ASTM E90, determined by ASTM E413, and rated for not less than the STC indicated.
- C. Fire-Test-Response Characteristics: Provide panels with finishes complying with one of the following as determined by testing identical products by a testing and inspecting agency acceptable to authorities having jurisdiction:
 - 1. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - a. Flame-Spread Index: 25 or less.
 - b. Smoke-Developed Index: 450 or less.
 - 2. Fire Growth Contribution: Complying with acceptance criteria of local code and authorities having jurisdiction when tested in accordance with NFPA 265 Method B Protocol or NFPA 286.

2.2 OPERABLE ACOUSTICAL PANEL PARTITIONS

- A. Operable Acoustical Panel Partitions: Partition system, including panels, seals, finish facing, suspension system, operators, and accessories.

1. Basis of Design: Modernfold, Acousti-Seal Legacy Single-Panel.
- B. Panel Operation: Manually operated, individual panels.
- C. Panel Construction: As required to support panel from suspension components and with reinforcement for hardware attachment. Fabricate panels with tight hairline joints and concealed fasteners. Fabricate panels so finished in-place partition is rigid; level; plumb; aligned, with tight joints and uniform appearance; and free of bow, warp, twist, deformation, and surface and finish irregularities.
- D. Dimensions: Fabricate operable acoustical panel partitions to form an assembled system of dimensions indicated and verified by field measurements.
 1. Panel Width: As indicated.
- E. STC: Not less than 52.
- F. Panel Weight: 11 lb/sq. ft. (55 kg/sq. m) maximum.
- G. Panel Thickness: Nominal dimension of 3 inches (77 mm).
 1. Steel Frame: Steel sheet, manufacturer's standard nominal minimum thickness for uncoated steel.
 2. Steel Face/Liner Sheets: Tension-leveled steel sheet, manufacturer's standard minimum nominal thickness for uncoated steel.
 3. Medium-Density Fiberboard: ANSI A208.2.
- H. Panel Closure: Manufacturer's standard unless otherwise indicated.
 1. Initial Closure: Hinged jamb closure.
 2. Final Closure: Hinged jamb closure.
- I. Hardware: Manufacturer's standard as required to operate operable panel partition and accessories; with decorative, protective finish.
 1. Hinges: Manufacturer's standard.
- J. Finish Facing: Vinyl-coated fabric wall covering.

2.3 SEALS

- A. Description: Seals that produce operable panel partitions complying with performance requirements and the following:
 1. Manufacturer's standard seals unless otherwise indicated.
 2. Seals made from materials and in profiles that minimize sound leakage.
 3. Seals fitting tight at contact surfaces and sealing continuously between adjacent panels and between operable panel partition perimeter and adjacent surfaces, when operable panel partition is extended and closed.
- B. Vertical Seals: Deep-nesting, interlocking astragals mounted on each edge of panel, with continuous, resilient acoustical seal.
- C. Horizontal Top Seals: Continuous-contact, resilient seal exerting uniform constant pressure on track.
- D. Horizontal Bottom Seals:

1. Resilient, mechanical, retractable, constant-force-contact seal exerting uniform constant pressure on floor when extended, ensuring horizontal and vertical sealing and resisting panel movement.
 - a. Automatically Operated for Acoustical Panels: Extension and retraction of bottom seal automatically operated by movement of partition, with operating range not less than [1 inch (25 mm)] [1-1/2 inches (38 mm)] [2 inches (50 mm)] between retracted seal and floor finish.

2.4 PANEL FINISH FACINGS

- A. Description: Finish facings for panels that comply with indicated fire-test-response characteristics and that are factory applied to operable panel partitions with appropriate backing, using mildew-resistant nonstaining adhesive as recommended by facing manufacturer's written instructions.
 1. Apply one-piece, seamless facings free of air bubbles, wrinkles, blisters, and other defects, with no gaps or overlaps. Horizontal seams are not permitted. Tightly secure and conceal raw and selvage edges of facing for finished appearance.
 2. Where facings with directional or repeating patterns or directional weave are indicated, mark facing top and attach facing in same direction.
 3. Match facing pattern 72 inches (1830 mm) above finished floor.
- B. Vinyl-Coated Fabric Wall Covering: Manufacturer's standard, mildew-resistant, washable, vinyl-coated fabric wall covering; complying with WA-101, Type III-Heavy Duty; Class A.
 1. Total Weight: 30 OZ (850 g) / SY.
 2. Antimicrobial Treatment: Additives capable of inhibiting growth of bacteria, fungi, and yeasts.
 3. Color/Pattern: As selected by Architect from manufacturer's full range.

2.5 SUSPENSION SYSTEMS

- A. Tracks: Steel mounted directly to overhead truss support system provided by partition manufacturer, designed for operation, size, and weight of operable panel partition indicated. Size track to support partition operation and storage without damage to suspension system, operable panel partitions, or adjacent construction. Limit track deflection to no more than 0.10 inch (2.54 mm) between bracket supports. Provide a continuous system of track sections and accessories to accommodate configuration and layout indicated for partition operation and storage.
- B. Carriers: Trolley system as required for configuration type, size, and weight of partition and for easy operation; with ball-bearing wheels.
 1. Multidirectional Carriers: Capable of negotiating intersections without track switches.
- C. Track Intersections, Switches, and Accessories: As required for operation, storage, track configuration, and layout indicated for operable panel partitions, and compatible with partition assembly specified. Fabricate track intersections and switches from steel or aluminum.
 1. L Intersections: Allow panels to change 90 degrees in direction of travel.
 2. T Intersections: Allow panels to pass through or change 90 degrees to another direction of travel.
- D. Aluminum Finish: Mill finish or manufacturer's standard, factory-applied, decorative finish unless otherwise indicated.
- E. Steel Finish: Manufacturer's standard, factory-applied, corrosion-resistant, protective coating unless otherwise indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine flooring, floor levelness, structural support, and opening, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of operable panel partitions.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF OPERABLE PANEL PARTITIONS

- A. Install operable panel partitions and accessories after other finishing operations, including painting, have been completed in area of partition installation.
- B. Install panels in numbered sequence indicated on Shop Drawings.
- C. Broken, cracked, chipped, deformed, or unmatched panels are not acceptable.
- D. Broken, cracked, deformed, or unmatched gasketing or gasketing with gaps at butted ends is not acceptable.
- E. Light-Leakage Test: Illuminate one side of partition installation and observe vertical joints and top and bottom seals for voids. Adjust partitions for alignment and full closure of vertical joints and full closure along top and bottom seals.

3.3 ADJUSTING

- A. Adjust operable panel partitions, hardware, and other moving parts to function smoothly, and lubricate as recommended by manufacturer.
- B. Verify that safety devices are properly functioning.

3.4 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain operable panel partitions.

END OF SECTION 102239

SECTION 104413 - FIRE PROTECTION CABINETS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Fire-protection cabinets for the following:

a. Portable fire extinguisher.

B. Related Requirements:

1. Section 104416 "Fire Extinguishers" for portable, hand-carried fire extinguishers accommodated by fire-protection cabinets.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Show door hardware, cabinet type, trim style, and panel style. Include roughing-in dimensions and details showing semirecessed-mounting method and relationships of box and trim to surrounding construction.

B. Shop Drawings: For fire-protection cabinets.

1. Include plans, elevations, sections, details, and attachments to other work.

C. Samples: For each type of exposed finish required.

D. Product Schedule: For fire-protection cabinets. Indicate whether recessed, semirecessed, or surface mounted. Coordinate final fire-protection cabinet schedule with fire-extinguisher schedule to ensure proper fit and function.

1.3 CLOSEOUT SUBMITTALS

A. Maintenance Data: For fire-protection cabinets to include in maintenance manuals.

1.4 COORDINATION

A. Coordinate size of fire-protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.

B. Coordinate sizes and locations of fire-protection cabinets with wall depths.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain fire-protection cabinets, accessories, and fire extinguishers from single source from single manufacturer.

2.2 FIRE-PROTECTION CABINET

- A. Cabinet Type: Suitable for fire extinguisher.
 - 1. Basis of Design: Larsen's Manufacturing Company, Architectural Series, 2409-R5.
- B. Cabinet Construction: Nonrated.
- C. Cabinet Material: Cold-rolled steel sheet.
- D. Semirecessed Cabinet: One-piece combination trim and perimeter door frame overlapping surrounding wall surface, with exposed trim face and wall return at outer edge (backbend).
 - 1. Rolled-Edge Trim: 1-1/2-inch (64-mm) backbend depth.
- E. Cabinet Trim Material: Steel sheet.
- F. Door Material: Steel sheet.
- G. Door Style: Vertical duo panel with frame.
- H. Door Glazing: Tempered float glass (clear).
- I. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.
 - 1. Provide projecting lever handle with cam-action latch.
 - 2. Provide continuous hinge, of same material and finish as trim, permitting door to open 180 degrees.
- J. Accessories:
 - 1. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location.
 - a. Identify fire extinguisher in fire-protection cabinet with the words "FIRE EXTINGUISHER."
 - 1) Location: Applied to cabinet door.
 - 2) Application Process: Decals.
 - 3) Lettering Color: Red.
 - 4) Orientation: Vertical.
- K. Materials:
 - 1. Cold-Rolled Steel: ASTM A1008/A1008M, Commercial Steel (CS), Type B.

- a. Finish: Baked enamel, TGIC polyester powder coat, HAA polyester powder coat, epoxy powder coat, or polyester/epoxy hybrid powder coat, complying with AAMA 2603.
 - b. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 - c. Color: As selected by Architect from manufacturer's full range.
2. Tempered Float Glass: ASTM C1048, Kind FT, Condition A, Type I, Quality q3, 3 mm thick, Class 1 (clear).

2.3 FABRICATION

- A. Fire-Protection Cabinets: Provide manufacturer's standard box (tub) with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.
 1. Weld joints and grind smooth.
 2. Miter corners and grind smooth.
 3. Provide factory-drilled mounting holes.
- B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles.
 1. Fabricate door frames with tubular stiles and rails and hollow-metal design, minimum 1/2 inch (13 mm) thick.
 2. Miter and weld perimeter door frames and grind smooth.
- C. Cabinet Trim: Fabricate cabinet trim in one piece with corners mitered, welded, and ground smooth.

2.4 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM's AMP 500, "Metal Finishes Manual for Architectural and Metal Products," for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces of fire-protection cabinets from damage by applying a strippable, temporary protective covering before shipping.
- C. Finish fire-protection cabinets after assembly.
- D. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine walls and partitions for suitable framing depth and blocking where semirecessed cabinets will be installed.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare recesses for semirecessed fire-protection cabinets as required by type and size of cabinet and trim style.

3.3 INSTALLATION

- A. General: Install fire-protection cabinets in locations and at mounting heights indicated or, if not indicated, at height indicated below:
 - 1. Fire-Protection Cabinet Mounting Height: 42 inches (1067 mm) above finished floor to top of fire extinguisher.
- B. Fire-Protection Cabinets: Fasten cabinets to structure, square and plumb.
 - 1. Unless otherwise indicated, provide semi-recessed fire-protection cabinets.
- C. Identification:
 - 1. Apply decals at locations indicated.

3.4 ADJUSTING AND CLEANING

- A. Remove temporary protective coverings and strippable films, if any, as fire-protection cabinets are installed unless otherwise indicated in manufacturer's written installation instructions.
- B. Adjust fire-protection cabinet doors to operate easily without binding. Verify that integral locking devices operate properly.
- C. On completion of fire-protection cabinet installation, clean interior and exterior surfaces as recommended by manufacturer.
- D. Touch up marred finishes, or replace fire-protection cabinets that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by fire-protection cabinet and mounting bracket manufacturers.
- E. Replace fire-protection cabinets that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 104413

SECTION 104416 - FIRE EXTINGUISHERS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes portable, hand-carried.
- B. Owner-Furnished Material: Hand-carried fire extinguishers.
- C. Related Requirements:
 - 1. Section 104413 "Fire Protection Cabinets."

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include rating and classification, material descriptions, dimensions of individual components and profiles, and finishes for fire extinguishers.
- B. Product Schedule: For fire extinguishers. Coordinate final fire-extinguisher schedule with fire-protection cabinet schedule to ensure proper fit and function. Use same designations indicated on Drawings.

1.3 INFORMATIONAL SUBMITTALS

- A. Warranty: Sample of special warranty.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For fire extinguishers to include in maintenance manuals.

1.5 COORDINATION

- A. Coordinate type and capacity of fire extinguishers with fire-protection cabinets to ensure fit and function.

1.6 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace fire extinguishers that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Failure of hydrostatic test according to NFPA 10 when testing interval required by NFPA 10 is within the warranty period.
 - b. Faulty operation of valves or release levers.
 - 2. Warranty Period: Six years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."
- B. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.

2.2 PORTABLE, HAND-CARRIED FIRE EXTINGUISHERS

- A. Fire Extinguishers: Type, size, and capacity for each fire-protection cabinet indicated.
 - 1. Basis of Design: Larsen's Manufacturing Company, MP Series.
 - 2. Source Limitations: Obtain fire extinguishers, fire-protection cabinets, and accessories, from single source from single manufacturer.
 - 3. Valves: Manufacturer's standard.
 - 4. Handles and Levers: Manufacturer's standard.
 - 5. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B, and bar coding for documenting fire-extinguisher location, inspections, maintenance, and recharging.
- B. Multipurpose Dry-Chemical Type in Steel Container: UL-rated 2-A:10-B:C, 5-lb (2.3-kg) nominal capacity, with monoammonium phosphate-based dry chemical in enameled-steel container.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine fire extinguishers for proper charging and tagging.
 - 1. Remove and replace damaged, defective, or undercharged fire extinguishers.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Install fire extinguishers in locations indicated and in compliance with requirements of authorities having jurisdiction.

END OF SECTION 104416

SECTION 123661.16 - SOLID SURFACING COUNTERTOPS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Solid surface material countertops.
 - 2. Solid surface material backsplashes.
 - 3. Solid surface material end splashes.

1.2 ACTION SUBMITTALS

- A. Product Data: For countertop materials.
- B. Shop Drawings: For countertops. Show materials, finishes, edge and backsplash profiles, methods of joining, and cutouts for plumbing fixtures.
 - 1. Show locations and details of joints.
 - 2. Show direction of directional pattern, if any.
- C. Samples: For the following products:
 - 1. Countertop material, 6 inches (150 mm) square.

1.3 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For fabricator.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For solid surface material countertops to include in maintenance manuals. Include Product Data for care products used or recommended by Installer and names, addresses, and telephone numbers of local sources for products.

1.5 QUALITY ASSURANCE

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

1.6 FIELD CONDITIONS

- A. Field Measurements: Verify dimensions of countertops by field measurements after base cabinets are installed but before countertop fabrication is complete.

1.7 COORDINATION

- A. Coordinate locations of utilities that will penetrate countertops or backsplashes.

PART 2 - PRODUCTS

2.1 SOLID SURFACE COUNTERTOP MATERIALS

- A. Solid Surface Material: Homogeneous-filled plastic resin complying with ISFA 2-01.
 - 1. Basis of Design: As indicated on drawings.
 - 2. Type: Provide Standard type unless Special Purpose type is indicated.
 - 3. Colors and Patterns: As indicated on drawings.

2.2 FABRICATION

- A. Fabricate countertops according to solid surface material manufacturer's written instructions and to the AWI/AWMAC/WI's "Architectural Woodwork Standards."
 - 1. Grade: Custom.
- B. Configuration:
 - 1. Front: Straight, slightly eased at top.
 - 2. Backsplash: Straight, slightly eased at corner.
 - 3. End Splash: Matching backsplash.
- C. Countertops:
 - 1. 1/2-inch- (12.7-mm-) thick, solid surface material with front edge built up with same material.
- D. Backsplashes: 1/2-inch- (12.7-mm-) thick, solid surface material.
- E. Fabricate tops with shop-applied edges unless otherwise indicated. Comply with solid surface material manufacturer's written instructions for adhesives, sealers, fabrication, and finishing.
 - 1. Fabricate with loose backsplashes for field assembly.
- F. Joints:
 - 1. Fabricate countertops without joints.
 - 2. Fabricate countertops in sections for joining in field.
 - a. Joint Locations: Not within 18 inches (450 mm) of a sink and not where a countertop section less than 36 inches (900 mm) long would result, unless unavoidable.
- G. Cutouts and Holes:
 - 1. Counter-Mounted Plumbing Fixtures: Prepare countertops in shop for field cutting openings for counter-mounted fixtures. Mark tops for cutouts and drill holes at corners of cutout locations. Make corner holes of largest radius practical.

2.3 INSTALLATION MATERIALS

- A. Adhesive: Product recommended by solid surface material manufacturer.
- B. Sealant for Countertops: Comply with applicable requirements in Section 079200 "Joint Sealants."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates to receive solid surface material countertops and conditions under which countertops will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of countertops.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install countertops level to a tolerance of 1/8 inch in 8 feet (3 mm in 2.4 m), 1/4 inch (6 mm) maximum. Do not exceed 1/64-inch (0.4-mm) difference between planes of adjacent units.
- B. Fasten countertops by screwing through corner blocks of base units into underside of countertop. Predrill holes for screws as recommended by manufacturer. Align adjacent surfaces and, using adhesive in color to match countertop, form seams to comply with manufacturer's written instructions. Carefully dress joints smooth, remove surface scratches, and clean entire surface.
- C. Bond joints with adhesive and draw tight as countertops are set. Mask areas of countertops adjacent to joints to prevent adhesive smears.
 - 1. Clamp units to temporary bracing, supports, or each other to ensure that countertops are properly aligned and joints are of specified width.
- D. Install backsplashes and end splashes by adhering to wall and countertops with adhesive. Mask areas of countertops and splashes adjacent to joints to prevent adhesive smears.
- E. Install aprons to backing and countertops with adhesive. Mask areas of countertops and splashes adjacent to joints to prevent adhesive smears. Fasten by screwing through backing. Predrill holes for screws as recommended by manufacturer.
- F. Complete cutouts not finished in shop. Mask areas of countertops adjacent to cutouts to prevent damage while cutting. Make cutouts to accurately fit items to be installed, and at right angles to finished surfaces unless beveling is required for clearance. Ease edges slightly to prevent snipping.
- G. Apply sealant to gaps at walls; comply with Section 079200 "Joint Sealants."

END OF SECTION 123661.16

SECTION 15000 – SPECIAL REQUIREMENTS FOR MECHANICAL AND ELECTRICAL WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. All of the Project "General Documents" apply to work specified: consult with them in detail for applicable instructions.
- B. Where items of the "General Document" are repeated in this Section of the Specifications, it is intended to qualify or to call particular attention to them; it is not intended that any other parts of the "General Document" shall be assumed to be omitted if not repeated herein.
- C. This Section applies equally and specifically to all Contractors and Subcontractors supplying labor and/or equipment and/or materials as required under the Heating, Ventilating and Air Conditioning, Plumbing, Sprinkler and Electrical Sections of the Specifications.

1.2 DEFINITIONS

- A. "The Contractor" or "Each Contractor" means specifically, the Contractor or Subcontractor working under his respective Section (Heating, Ventilating and Air Conditioning, Plumbing, Sprinkler or Electrical) of this Specification.
- B. "Piping" includes, in addition to pipe, all fittings, valves, hangers and other accessories related to such piping.
- C. "Concealed" means hidden from sight as in chases, furred spaces, shafts, hung ceilings, or embedded in construction.
- D. "Exposed" means "not concealed" as defined above. Work in trenches, crawl spaces and tunnels shall be considered "exposed" unless otherwise specifically noted.
- E. "HVAC" means Heating, Ventilating and Air Conditioning.
- F. "Plumbing Contractor" means the Contractor doing Plumbing Work.
- G. "Sprinkler Contractor" means the Contractor doing all the Fire Protection including Sprinkler Work.

1.3 CODES AND STANDARDS

- A. New Jersey Uniform Construction Code.
- B. International Building Code NJ edition 2021.
- C. National Electric Code 2020.
- D. International Mechanical Code 2021.
- E. International Fuel Gas Code 2021.
- F. ASME American Society of Mechanical Engineers.
- G. ANSI American National Standards Institute.
- H. ASTM American Society for Testing Materials.
- I. NEMA National Electrical Manufacturers Association.
- J. ASHRAE Standard 90.1 2019
- K. SMACNA Sheet Metal and Air Conditioning Contractors National Association, Inc.
- L. ARI Air Conditioning and Refrigeration Institute.

- M. UL Underwriters' Laboratories.
- N. AMCA Air Moving and Conditioning Association.
- O. AABC Associated Air Balance Council.
- P. Local Water Company Rules and Regulations.
- Q. NFPA 13.
- R. National Standard Plumbing Code 2021.

1.4 INTENT

- A. It is the intention of the Specifications and Drawings to call for finished work, tested and ready for operation. All materials, equipment and apparatus shall be new and of first-class quality.
- B. Any apparatus, appliance, material, or work not shown on Drawings, but mentioned in the Specifications, or vice versa, or any incidental accessories, or minor detail not shown but necessary to make the work complete and perfect in all respects and ready for operation, even if not particularly specified, shall be provided without additional expense to the Owner.

1.5 DRAWINGS

- A. The Drawings are generally diagrammatic and are intended to convey the scope of work and indicate general arrangement of equipment; ducts, conduits, piping and fixtures.
- B. The locations of all items shown on the Drawings or called for in the Specifications that are not definitely fixed by dimensions are approximate only. The exact locations necessary to secure the best conditions and results must be determined at the project and shall have the approval of the Architect before being installed. Do not scale Drawings.
- C. Follow Drawings in laying out work and check Drawings of other trades to verify spaces in which work will be installed. Maintain maximum headroom and space conditions at all points. Where headroom and space conditions appear inadequate, Architect shall be notified before proceeding with installation.
- D. If directed by the Architect, without extra charge, make reasonable modifications in the layout as needed to prevent conflict with work of other trades or for proper execution of the work.
- E. Piping or ductwork connected to the equipment may require different size connections than indicated on the Drawings. The Contractor shall provide transition pieces as required at the equipment.

1.6 COORDINATION AND FIELD MEASUREMENTS

- A. Avoid space conflict with other trades.
- B. Submit the equipment and material required in accordance with field measurements taken at the proper time during the construction progress.

1.7 EQUIPMENT AND MATERIALS

- A. All equipment and materials required for installation under these Specifications shall be new and without blemish or defect. All electrical equipment shall bear labels attesting to Underwriters' Laboratories approval. Where no specific indication as to the type of quality of the material or equipment is indicated, a first class standard article shall be furnished.
- B. All equipment of one type (such as fan, coils, etc.) shall be the product of the same manufacturer.

1.8 SHOP DRAWINGS

- A. As and when required by the General Conditions, submit electronically PDF shop drawings of all equipment, materials, piping, sleeves, conduit, ductwork and wiring diagrams and further obtain written comments "No Exception" or "Exception as Noted" for same from the Architect, before installing any of these items.
- B. For piping, sheet metal, sleeve layout and reflected ceiling plan shop drawings, utilize CAD drawings. After the PDF is noted and corrected by the Engineer, it will be returned. Then the required resubmittal shall be prepared.
- C. Shop drawings shall consist of manufacturer's certified scale drawings, cuts, or catalogs, including descriptive literature and complete certified characteristics of equipment, showing dimensions, capacity, code requirements, motor and drive testing, as indicated on the Drawings or Specifications.
- D. Certified performance curves for all pumping and fan equipment shall be submitted for review.
- E. Samples of materials or equipment, when requested by the Architect, shall be submitted for review.
- F. Samples, drawings, specifications, catalogs, etc., submitted for review, shall be properly labeled indicating project name, specific service for which material or equipment is to be used, Section and Article number of Specifications.
- G. Catalogs, pamphlets, or other documents submitted to describe items on which review is being requested, shall be specific and identification in catalog, pamphlet, etc., of item submitted shall be clearly made in ink. Data of a general nature will not be accepted.

The following is the meaning of the comments indicated on the Engineer's shop drawing review stamp. The review of a shop drawing shall not be considered as a guarantee of measurements or building conditions. Where drawings are reviewed, said review does not in any way relieve responsibility, or necessity, of furnishing material or performing work as required by the Contract Drawings and Specifications.

- 1. "Reviewed" means that the shop drawing is correct as to performance, capacity, etc. and in substantial conformance with the contract documents.
 - 2. "Rejected" means that the shop drawing does not comply or conform to the contract documents. Fabrication or purchase may not commence.
 - 3. "Revise and Resubmit" means that the comments and/or correction are so extensive and important that the reviewer wants to see how the comments and/or corrections are resolved prior to release for fabrication and/or purchase. Fabrication and/or purchase may not commence.
 - 4. "Furnish as Corrected" means that comments and/or corrections are minimal and do not drastically impact on the performance, capacity, layout, etc. Fabrication and/or purchase may commence as long as all comments are addressed to the Engineer's satisfaction.
 - 5. Note that the comments "Reviewed" or "Furnish as Corrected" marked on the shop drawings or other information submitted in accordance with the requirements hereinbefore specified does not assure that the Engineer, Architect, or any other Owner's representative attests to the dimensional accuracy or dimensional suitability of the material or equipment involved or the mechanical performance of equipment. Comments on the shop drawings does not invalidate the Plans and Specifications if the shop drawings are in conflict with the Plans and Specifications.
- I. Failure to submit shop drawings in ample time for checking shall not entitle an extension of Contract time

and no claim for extension by reason of such default will be allowed.

- J. Prior to submission of shop drawings, thoroughly check each shop drawing, reject those not conforming to the Specifications and indicate (by signature) that the shop drawings submitted meet Contract Requirements.
- K. All shop drawings showing routing of ductwork, piping and conduit, shall not be less than 1/4" = 1'-0" scale.
- L. Incorporate this numbering system to help keep track of shop drawing submittals:
 - M..... HVAC Shop Drawings
 - E.....Electrical Shop Drawings
 - P.....Plumbing Shop Drawings
 - SP.....Sprinkler Shop Drawings
- M. Concurrent numbers shall follow the prefix letter. Example: H-1, H-2, etc. In addition, shop drawings requiring resubmission should bear the number of the original submission and bear a suffix as follows: H-1A (second submission), H-1B (third submission), etc.
- N. Label resubmitted shop drawings with a stamp indicating the submittal number, for example: SECOND SUBMISSION; THIRD SUBMISSION, etc., and send separate transmittals for each item being submitted so that one transmittal does not cover more than one specific item or group of items from one manufacturer.
- O. Before request for acceptance and final payment for the work, write a letter to the Architect stating that all shop drawings have been brought to a condition "No Exception" or "No Exception as Noted." Any outstanding shop drawings must be brought to that condition before the project can be accepted.

1.9 RECORD DRAWINGS

- A. Furnish record drawings as described in the General Conditions.
- B. During construction, keep an accurate record of all deviations between the work as shown on the Drawings and that which is actually installed.
- C. Secure from the Architect, a complete set of CAD drawings of the Drawings and note thereon all changes. Make a complete record of all changes and revisions in the original design which exist in the completed work.
- D. Furnishing above transparencies and preparing these Record Drawings shall be at no additional cost to the Owner. When all revisions showing the work as finally installed are made, the corrected Mylar transparencies shall be submitted for review by the Architect.
- E. After review of the "Record Drawings" transparencies by the Architect, provide the Owner with one set of blackline prints and Mylar transparencies, at no additional cost to the Owner.

1.10 LAWS, ORDINANCES, PERMITS AND FEES

- A. Give all necessary notices, obtain all permits and pay governmental taxes, fees and other costs in connection with the work; file all necessary plans, prepare all documents and obtain all necessary approvals of all governmental departments having jurisdiction for all combustion and refrigeration equipment such as boilers, furnaces, oil burners, refrigeration condensing units, chillers and air handling units. Obtain all required Certificates of Inspection for the work and deliver to the Architect before request for acceptance and final payment for the work.

- B. Include in the work, without extra cost to the Owner, any labor, materials, services, apparatus, drawings, (in addition to Contract Drawings and Documents) in order to comply with all applicable laws, ordinances, rules and regulations, whether or not shown on Drawings and/or specified.
- C. All Materials furnished and all work installed shall comply with the rules and recommendations of the National Fire Protection Association, with all requirements of local utility companies, with the recommendations of the fire insurance rating organization having jurisdiction and with the requirements of all governmental agencies having jurisdiction.
- D. All equipment manufacturers are cautioned to provide internal factory restraints where necessary to comply with the seismic requirements of the New Jersey Uniform Construction Code.

1.11 INDEMNIFICATION

- A. Pay all royalties and defend all suits or claims for infringement of any patent rights and save the Owner harmless from loss on account thereof.
- B. If process or article specified is an infringement of a patent, promptly notify the Architect in writing and any necessary changes shall be as provided in the Contract for changes in the work to avoid infringement. If the Contractor performs any work specified, knowing it to be an infringement of patent, he shall bear all costs arising there from.
- C. Take out all necessary insurance, free of extra charge and agree to indemnify and save harmless the Owner, Architect and Consulting Engineers against loss or expense, by reason of the liability imposed by law upon such party for damages because of bodily injuries, including death at any time resulting there from, accidentally sustained by any person or persons or on account of damage to property arising out of or in consequence of the performance of this Contract, whether such injuries to persons or damage to property are due or claimed to be due to any negligence in the performance of the Contract by the Owner, Architect or Consulting Engineers, or their employees or agents.

1.12 ORGANIZATION OF WORK

- A. Coordinate and perform the work called for under this Contract simultaneously with the work of other trades such as not to delay the overall progress of the work. Furnish promptly to other trades involved at the project, all information and measurements relating to the work which they may require. Cooperate with them in order to secure the harmony necessary in the interest of the project as a whole.
- B. Furnish and install all work so as to meet all construction schedules.
- C. Keep a competent superintendent in charge of the work at all times. Such superintendent shall be replaced if unsatisfactory to the Owner.
- D. Maintain a complete file of shop drawings at all times available to the Owner's representative.
- E. Where items of equipment and/or materials are indicated in the Specifications as being furnished by other trades for installation, assume responsibility for the unloading of such equipment and/or materials from the delivery trucks and for providing safe storage for same as required pending installation.
- F. Where the work is to be installed in close proximity to work of other trades, or where there is evidence that the work will interfere with work of other trades, assist in working out space conditions to make a

satisfactory adjustment. If installations are made before coordination with other trades, make all necessary changes in the work without extra charge to the Owner.

- G. Before submitting shop drawings for sleeves, piping and ductwork, the Heating, Ventilating and Air Conditioning Subcontractor shall prepare combined 1/4" = 1' - 0" scale shop drawings for piping and ductwork indicating location of piping and ductwork with dimensions for each floor and Mechanical Rooms. A CAD file of these shop drawings shall be given to the Electrical Contractor.
- H. The Electrical Contractor shall indicate the location of all lighting fixtures, conduit runs on these shop drawings. The Electrical Contractor shall then forward this shop drawing file to the Plumbing Contractor. The Plumbing Contractor shall indicate his work and forward to the Sprinkler Contractor, who shall indicate his work.
- I. The Heating, Ventilating and Air Conditioning Contractor shall arrange a Coordination Meeting with the other Contractors under the supervision of the General Contractor. After coordination, each Contractor shall sign the CAD file. The Heating, Ventilating and Air Conditioning Contractor shall submit these drawings to the Architect for review and he shall call any conflicts that could not be resolved in the coordination meetings and/or deviation from original design, to the Architect's attention. After receiving written review from the Architect, each Contractor shall prepare/revise their required shop drawings.

1.13 TEMPORARY OPENINGS

- A. Ascertain, from examination of the Architectural Drawings, whether any special temporary openings in the building will be required for the admission of apparatus provided under the Contract and notify the Architect accordingly. In the event of failure to give sufficient notice to the Architect in time to arrange for these openings during construction, assume all costs of providing such openings thereafter.

1.14 PIPE EXPANSION

- A. All pipe connections shall be installed to allow for freedom of movement of the piping during the expansion and contraction without springing. Swing joints, ball joints, expansion loops and expansion joints with proper anchors and guides shall be provided where necessary and/or when shown on the Drawings. Anchors and guides shall be subject to the review of the Architect.

1.15 SCAFFOLDING, RIGGING, HOISTING

Provide all scaffolding, rigging, hoisting and services necessary for erection and delivery into the premises of all equipment and materials furnished under this Section of the Specifications and remove same from premises when no longer required.

- A. In the event that supplementary bracing of the basic building structure is required to assure a secure rigging procedure and a secure route for the equipment being handled, assume full responsibility for such supplementary bracing, including its engineering in accordance with applicable codes.

1.16 BASES AND SUPPORTS

- A. The material standards for Concrete bases are specified under "Cast-In-Place Concrete". Each Contractor shall furnish dimensioned drawings of the concrete bases they are providing, to the Architect for approval. Steel dowels, sleeves and anchor bolts shall be furnished and set by the Contractor.

1.17 SLEEVES, PIPE AND CONDUIT INSERTS AND ANCHOR BOLTS

- A. Provide and assume responsibility for the location and maintenance in proper position of all sleeves, inserts and anchor bolts required for the work. In the event that failure to do so requires cutting and patching of finished work, it shall be done without additional cost to the Owner.

- B. All pipes and conduits passing through masonry walls or partitions shall be provided with sleeves having an internal diameter larger than the outside diameter of the pipe or insulation enclosing the pipe or conduit. Sleeves shall be Schedule 40 black steel pipe.
- C. Sleeves through foundation walls shall be James B. Clow & Sons No. F-1430 or F-1435 cast iron wall sleeve with intermediate integral flange. Sleeves shall be set with ends flush with each face of wall. The space between sleeve and pipe shall be packed with oakum to within 2" of each face of the wall. The remaining space shall be packed and made watertight with a waterproof compound.
- D. Sleeves through concrete floors or interior masonry walls shall be Schedule 40 black steel pipe, set flush with finished wall surfaces, but extending 1/2" above finished floors. The open sleeve space shall be packed with non-combustible materials.
- E. Sleeves through non-masonry partitions shall be 22 gauge galvanized sheet steel, set flush with finished surfaces of partitions.
- F. Inserts shall be individual type of malleable iron construction with accommodation for removable nuts and threaded rods up to 3/4" diameter, permitting lateral adjustment, except as otherwise noted. Individual inserts shall be Grinnell Fig. 279 up to 5" pipe and conduit, Fig. 282.6" and up to 8" pipe and conduit, Fig. 152 above 8" and up to 12" pipe and conduit. For Figures 282 and 152, they shall come with an opening at the tip to allow reinforcing rods up to 1/2" diameter to be passed through the insert body. Rods shall extend a minimum of 4" on either side of the insert.
- G. In general, all piping and conduit shall be supported from structural steel building members only or approved malleable steel insets imbedded in concrete pours.
- H. Where revisions are required and are approved, piping and conduit 3" and smaller may be supported at intermediate points by Phillips' 3/4" expansion bolts with lead shields, provided main supports are welded to structural steel and are not more than twenty feet on center. Intermediate supports, for pipe 4" and larger shall be attached to concrete by means of 4" x 4" x 3/8" clip knee angles with 3/4" expansion bolt in shear and supporting rod at 90 degrees from another bolt.
- I. Piping and conduit 3" and smaller shall be supported from existing slab by "Phillips" 3/4" expansion bolts with lead shields. Piping 4" and larger shall be supported by means of 4" x 4" x 3/8" clip knee angle with 3/4" expansion bolt in shear and supporting rod at 90 degrees from another bolt.
- J. Provide sleeves for pipes passing through roofs. Sleeves passing thru roofs shall be as detailed on drawings, extending min. 12" above finished roof. All pipes passing through roofs shall be a minimum of 10" from walls or other construction to permit proper flashing. Provide counter flashing.
- K. Where sleeves pass through waterproofed floors, they shall be IPS brass pipe sleeves of the required diameter, brazed at the bottom to 18" x 18", 16-ounce copper flashing for bond with waterproofing. The tops of sleeves shall extend 1/2" above floors.
- L. No ductwork, piping, conduit or equipment shall be supported from corrugated decking construction or from cold-formed metal framing. Provide supplementary steel to support ductwork, piping, conduit or equipment. Supplemental steel members shall be welded to building structural steel.
- M. All hangers, rods and supports shall be installed prior to any construction fireproofing.
- N. The required fire resistance rating of floor or floor/ceiling assemblies and walls shall be maintained where a penetration is made for electrical, mechanical, plumbing pipes, conduits, ducts and systems. Firestopping shall be provided at openings around vents, pipes, ducts, conduits at floor levels and walls with non-

combustible materials, such as rock wool or equal.

- O. For openings around pipes and conduits and/or sleeves, 3M Product Caulk CP 25 and Putty 303 is approved equal.

1.18 ESCUTCHEONS

- A. Provide escutcheons on pipes wherever they pass through ceilings, walls or partitions.
- B. Escutcheons on pipes passing through outside walls shall be Ritter Pattern and Casting Co., No. 1, solid, cast brass, flat type secured to pipe with set screw.
- C. Escutcheons for pipes passing through floors shall be Ritter Pattern and Casting Co., No. 36A, split-hinged, cast brass type, designed to fit pipe on one end and cover sleeve projecting through floor on the other end.
- D. Escutcheons for pipes passing through interior walls, partitions and ceilings shall be Ritter pattern and Casting Co., No. 3A, split-hinged, cast brass chromium plated type.

1.19 MANUFACTURER'S IDENTIFICATION

- A. Manufacturer's nameplate, name or trademark, shall be permanently affixed to all equipment and material furnished under this Specification. Where such equipment is in a finished occupied space, the nameplate shall be in a concealed but accessible location. The nameplate of a Subcontractor or Distributor will not be acceptable.

1.20 EQUIPMENT NAMEPLATES

- A. Provide for each item of equipment, including panelboards, disconnects, breakers, starters, switches and all control devices, pumps, fans, compressors, boilers, etc., a permanently attached nameplate made of black surface, white core laminated bakelite with incised letters. Subcontractor furnishing equipment shall provide nameplate. Pneumatic, electric and mechanically actuated gauges shall have a brief, but complete description of their function. Stating the air pressure or voltage range alone is not acceptable. Nameplates shall be a minimum of 3" long by 1-1/2" wide and shall bear the equipment name and item number of 1/2" high white letters as designated in the equipment schedule. Mounting screws shall have chrome plated acorn headed screws.

1.21 TAGS AND CHARTS

Furnish and attach to each valve as hereinafter specified, a 1-1/2" diameter brass tag with 1/2" indented numerals filled with durable black compound. Tags shall be securely attached to stems of valves with copper wire and "S" hooks.

- A. Valve charts shall consist of schematic drawings of piping layouts, showing and identifying each valve and describing the function. Upon completion of the work, one (1) copy of each chart, sealed to rigid backboard with clear lacquer placed under glass and framed, shall be hung in a conspicuous location in the main equipment room, unless otherwise directed by the Architect. Two (2) additional unmounted copies in 8-1/2" x

11" leather ring binders shall be delivered to the Architect. Also furnish three (3) copies of schematic flow chart with corresponding valve numbers noted on chart.

Provide tags for the following valves:

1. Zone control, bypass, shut-off, check and balancing valves.
2. Building and area shut-off and balancing valves.
3. Control, bypass, shutoff, balancing and drain valves for major pieces of equipment such as boilers,

domestic hot water heaters, heat exchangers, refrigeration machines, pumps, heating, ventilating and air conditioning units, cooling towers, etc.

4. System drain valves, safety and relief valves. Vacuum breakers.

1.22 IDENTIFICATION

- A. Identification shall be in accordance with "Scheme for Identification of Piping System, ANSI A13.1 and OSHA safety color regulation.
- B. Markers shall be snap-on type as manufactured by Seton Nameplate Corp., New Haven, Conn. (Setmark System) or approved equal. Markers shall completely encircle the pipe with a substantial overlap. No adhesive shall be used. They shall be manufactured of U.L. approved, self- extinguishing plastic. When the pipe including insulation (if any) is larger than 6 inches diameter and larger, markers shall be strap-on type.
- C. Provide identification for new and altered piping, ductwork and conduit for electrical work.
- D. Pipe shall be lettered and valves tagged in accordance with the schedule below. Lettering shall be located near each valve and branch connection and at intervals of not over 40 feet (10 feet on fire lines) on straight runs of pipe. Provide flow arrows for all piping at each marker. Adjacent to the legend, stencil the size of the pipe, conduit or ductwork. Letter colors are as follows: yellow with black letters, green with white letters, blue with white letters and red with white letters.

STENCIL AND VALVE TAG SCHEDULE

<u>Service Stencil Designation</u>	<u>Tag Color</u>	<u>Designation</u>
Cold Water Cold Water	Green	C.W.
Hot Water (Plumbing) F.Hot Water Deg. F.	Yellow	H.W. Deg.
Sanitary Sewer San. Sewer	Green	----
Storm Sewer Storm Sewer	Green	----
Refrigerant Suction	Green	RS
Refrigerant Liquid	Green	RL
Refrigerant Hot Gas	Green	RHG
Vent Piping Vent	Green	----
Air Conditioning Drain	Green	----
Safety Valve Discharge Safety V. Discharge	Yellow	S.V.D.
Heating Hot Water Supply Heat. Hot Water Sup.	Green	H.H.W.S.
Heating Hot Water Return Heat. Hot Water Ret.	Green	H.H.W.R.

Chilled Water Supply	Green	CHWS
Chilled Water Demand	Green	CHWS
Chemical Water Treatment Chemical W.T.	Green	C.W.T.
Air Conditioned Supply Air		
A.C. Supply Air	Green	----
Return Air R.A.	Green	----
Exhaust Air E.A.	Yellow	----
Outside Air O.A.	Green	----
Mixed Air M.A.	Green	----

- E. Pumps and other equipment shall have nameplates to show the number, if any and service.
- F. "HIGH VOLTAGE" in black letters two inches high, stenciled at 10-foot intervals over a continuous painted orange background.
- G. Except where other means of identification are specified, electric cabinets, switchboards, motor control centers, transformers, system control boards, disconnecting switches, remote control switches, individual motor starters and motor control pushbutton stations shall be stenciled to show the service and number, if any, of the equipment controlled, as appropriate. Panelboards and other electrical equipment located in finished areas, such as offices, shall have the identification placed on the inside of the cabinet doors.
- H. Cabinets housing 480V/277 volt panelboards shall have "480/277 volt" stenciled in 2-inch high yellow letters on the inside of the cabinet doors.
- I. Cabinet housing emergency lighting panelboards shall have the word "EMERGENCY" in 2-inch high red letters on the outside of the cabinet, in addition to other lettering required above.
- J. The bolted covers of housing for disconnecting switches or links in bus ducts between network transformers and switchboards shall be lettered to identify the equipment within.
- K. Serial numbers shall be stenciled on the tanks and covers of transformers having their nameplates attached to the high voltage switch chamber covers.

1.23 DRIP PANS

- A. Examine the drawings and in cooperation with the Electrical Work confirm the final location of all electrical equipment to be installed in the vicinity of piping. Plan and arrange all overhead piping no closer than two feet from a vertical line to electric switchboards, panelboards, or similar equipment.
- B. Where the installation of piping does not comply with the requirements of foregoing paragraph,

the piping shall be relocated to achieve compliance.

C. Provide copper gutters as follows:

1. Provide a gutter of 16 ounce cold roller copper under every pipe which is within 2'-0" (two feet) of being vertically over any motor, electrical controllers, switchboards, panelboards, or the like.
2. Each gutter shall be soldered and made watertight, properly suspended; and carefully pitched to a convenient point for draining. Provide a 3/4 inch drain to nearest floor drain or slop sink.
3. In lieu of such separate gutters, a continuous protecting sheet of similar construction, adequately supported and braced, properly rimmed, pitched and drained, may be provided over any such motor and extending 2'-0" in all directions beyond the motor, over which such piping has to run.

1.24 TOOLS

- A. All special tools for proper operation and maintenance of the equipment shall be delivered to the Owner's representative and a receipt requested for same at no additional cost to the Owner.

1.25 QUIET OPERATION

All equipment and material shall operate under all conditions of load without any sound or vibration which, in the opinion of the Architect, is objectionable. Where sound or vibration conditions arise which are considered objectionable by the Architect, eliminate same in a manner reviewed by the Architect, at no additional cost.

1.26 CLEANING, PIPING, DUCTS AND EQUIPMENT

- A. Clean all piping, ducts and equipment of all foreign substances inside and out before being placed in operation.
- B. If any part of a system should be stopped by foreign matter after being placed in operation, the system shall be disconnected, cleaned and reconnected wherever necessary to locate and remove obstructions. Any work damaged in the course of removing obstructions shall be repaired when the system is reconnected at no additional cost to the Owner.
- C. During construction, properly cap all pipes and equipment nozzles so as to prevent the entrances of sand, dirt, etc.

1.27 DELIVERY OF MATERIAL

- A. Deliver the material and store same in spaces indicated by the Architect and assume full responsibility for damage to structure caused by any overloading of the material.

1.28 PAINTING

- A. Paint all exposed unpainted, non-insulated, non-galvanized, ferrous metal surfaces of pipes, conduits, ducts, equipment, fixtures, hangers, supports and accessories, including those portions of electrical panels and their doors that are exposed to view into the complete building with one prime coat and one finish coat of acrylic paint in a color selected by Architect.
- B. The inside of all ductwork where visible through openings shall be painted with two prime coats

of dull black paint.

- C. Nameplates on all equipment shall be cleaned and left free of paint.

1.29 LUBRICATION

- A. Assume responsibility that all rotating equipment is properly lubricated as soon as it is connected by the Electrical Contractor before operation of this equipment is started. Assume responsibility for any damage to any equipment that is turned on without previously having been oiled or greased when connected up.

1.30 EXCAVATION AND BACKFILL

- A. All excavation and backfill, shall be done by the each Contractor in accordance with Division 2 Standards.

1.31 TESTS

- A. All piping, wiring and equipment shall be tested as specified under the various sections of the work. Labor, materials, instruments and power required for testing shall be furnished under the respective sections of the Specification.
- B. Tests shall be performed to satisfaction of the Architect. The Architect will be present at such test, when he deems necessary and such other parties as may have legal jurisdiction.
- C. Pressure tests shall be applied to piping only before connection of equipment and installation of insulation. In no case shall piping, equipment, or accessories be subjected to pressure exceeding their rating.
- D. All defective work shall be promptly repaired or replaced and the test shall be replaced until the particular system and component parts thereof receive the approval of the Engineer.
- E. Any damages resulting from tests shall be repaired or replaced and the tests shall be repeated until the particular system and component parts thereof receive the approval of the Engineer.
- F. The duration of tests shall be as determined by all authorities having jurisdiction, but in no case less than the time prescribed in each Section of the Specification.
- G. Equipment and systems which normally operate during certain seasons of the year shall be tested during the appropriate seasons. Tests shall be performed on individual equipment, systems and their controls. Whenever the equipment or system under test is interrelated with and depends upon the operation of other equipment, systems and controls for proper operation, functioning and performance, the latter shall be operated simultaneously with the equipment or system being tested.
- H. The electrical work shall include providing any assistance (such as removal of switchboard and panelboard trims and covers, pull and junction box covers, etc.) deemed necessary by the Architect to check compliance with the Drawings and Specifications.

1.32 OPERATING INSTRUCTIONS

- A. Two months prior to the completion of all work and the final inspection of the installation by the Owner, five (5) copies of a complete Instruction Manual, bound in booklet form and suitably indexed, shall be submitted to the Architect for review. All written material contained in the

manual shall be typewritten or printed.

B. The manual shall contain the following items:

Table of Contents (HVAC and Electrical)

- I. Introduction - Explanation of Manual and its use.
- II. Description of Systems
 - 1. Complete schematic drawings of all systems
 - 2. Functional and sequential description of all systems.
 - 3. Relationship of system where applicable to the supervisory data system.
- III. Systems Operation
 - 1. Start-up procedures.
 - 2. Shut-down procedures.
 - 3. Reset and adjustment and balancing procedures.
 - 4. Seasonal operation.
 - 5. All posted instruction charts.
- IV. Maintenance
 - 1. Cleaning and replacement - lines, components, filters, strainers, etc.
 - 2. Lubrication.
 - 3. Charging and filling.
 - 4. Purging and draining.
 - 5. Systems trouble shooting charts.
 - 6. Instruments checking and calibration.
 - 7. Procedures for checking out functions with remote (Supervisory Data Console) indication and control.
 - 8. Recommended list of spare parts.
- V. Listing of Manufacturers
- VI. Manufacturer's Data (Where multiple model, type and size listings are included, clearly and conspicuously indicate those that are pertinent to this installation.)
 - 1. Description - Literature, drawings, illustrations, certified performance charts, technical data, etc.
 - 2. Operation.
 - 3. Maintenance - including complete trouble shooting charts.
 - 4. Parts List.
 - 5. Names, addresses and telephone numbers of local recommended repair and service companies.
 - 6. Guarantee data.
 - 7. Model No. and Serial No. of all equipment.

1.33 TRAINING OF OWNER'S PERSONNEL

- A. This article supplements any training called for in other Divisions or Sections.
- B. The Contractors will thoroughly train the Owner's personnel in Testing and Balancing.
- C. Training will take the form of four (4) four-hour classroom sessions to introduce the operation, maintenance, and management personnel to the manuals, drawings, and other

documents and aids available to operate and maintain the equipment and systems. All sessions shall be videotaped by the relevant sub-contractor. The tapes shall be turned over to the Owner with the O/M manual.

- D. Factory specialists in the area of major equipment and systems will present sessions on their specific equipment or system, or both.
- E. Extensive hands-on training will be conducted so that actual operation and maintenance of the equipment and systems can be the responsibility of these personnel at the completion of the project.

TYPICAL TRAINING AGENDA

1. Walk-through of building (Project)
 2. Start-up Procedures
 - a. Seasonal Considerations
 - b. Check List
 - c. Emergency Procedures
 3. Operation Procedure
 - a. Occupancy Consideration
 - b.
 - c. Seasonal Considerations (Changeover)
 - d. Manual/Automatic
 - e. Emergency
 4. Shut Down
 - a. Check List
 - b. Normal
 - c. Emergency
 5. Maintenance (list major equipment systems)
 - a. Routine
 - b. Periodic
 - c. Service
 - d. Lubrication
 - e. Overhaul
 - f. Factory
 6. Warranties
 - a. What they cover
 - b. How to use them
 7. Spare Parts
 8. Tools
 - a. Normal tools, supplies and equipment
 - b. Special tools
 9. Hands-on operation of equipment and systems
- G. After completion of all work and all tests and at such time as designated by the Architect, provide the necessary skilled personnel to operate the entire installation for a period of two (2)

consecutive days, eight (8) hours each.

- H. During the operating period, verify the previous training of the Owner's representatives in the complete operation, adjustment and maintenance of the entire installation before turning over the operation of the installation to the Owner.

1.34 GUARANTEE

- A. The Contractor guarantees by his acceptance of the Contract that all work installed will be free from any and all defects and that all apparatus will develop capacities and characteristics specified and that if during a period of two years from date of Substantial Completion of work any such defects in workmanship, material or performance appear, he shall immediately replace, repair, or otherwise correct the defect or deficiency without cost to the Owner within a reasonable time. Notify the Architect in writing of the time required to do work. For heating systems the guarantee period must include two continuous heating seasons from November 1st to April 1st. For cooling systems the guarantee period must include two continuous cooling season from May 1st to October 1st.
- B. Replace or repair to the satisfaction of the Owner any and all damage done to the building or its contents or to the work of other trades in consequence of work performed in fulfilling guarantee.
- C. This Article is general in nature and will not waive stipulations of other claims which specify guarantee periods in excess of two (2) years.

1.35 OPERATION PRIOR TO COMPLETION

- A. The Owner may require operation of parts or all of the installation for the beneficial occupancy prior to final completion and acceptance of the building.
- B. The operation shall not be construed to mean acceptance of the work by the Owner. The Owner will furnish supervisory personnel to direct operation of the entire system and the Contractor shall continue to assume this responsibility until final acceptance.

1.36 ELECTRICAL WORK

- A. The Electrical Contractor shall install and do all power wiring for all electrical devices, motor starters and unmounted motors, furnished to him at the job site by other trades.
- B. The Heating, Ventilating and Air Conditioning Contractor shall provide all wiring for the Automatic Temperature Controls and condenser water treatment controls, except as otherwise specified herein.
- C. For single phase motors which are not interlocked with other motors and which have temperature control or motor control devices in the power circuit, all installation and wiring shall be done by the Electrical Contractor.
- D. For all other motors, temperature control wiring and motor control wiring, including wiring for interlocking shall be provided by the Section providing the motors, including the installation of all control devices.
- E. Electrically operated equipment supplied by other trades, which are required to be installed and power wired by the Electrical Contractor, shall be delivered with detailed instructions for their installation and wiring in sufficient time and proper sequence to meet the work schedule.

- F. Furnish all electrical motors, all starters and all other motor control devices for motor driven equipment required for the work. The Electrical Contractor shall provide all code required disconnects. The setting of all motors required for mechanical equipment shall be included as part of the mechanical work.

Equipment which includes a number of correlated electrical control devices mounted in a single enclosure or on a common base with equipment, shall be supplied for installation completely wired as a unit with terminal boxes and ample leads ready for external wiring.

- G. All electrical items called for as part of the mechanical work shall conform to NEMA Standards, to the requirements of the National Fire Protection Association and to requirements of any local electrical code authority having jurisdiction, any field modifications required to insure such conformance shall be included as part of the mechanical work.
- H. The purchase and delivery of floor mounted motor starter equipment shall include the purchase and delivery of channel sills for mounting the starter equipment.
- I. Whether or not shown on drawings, all fan motors shall have disconnect switches, provided by Electrical Contractor.
- J. The supplying of any and all "field instruction" diagrams deemed necessary by the Architect for the complete delineation of electrical wiring for mechanical equipment shall be included as part of the mechanical work. The above requirements shall be met regardless of any assignment between trades of the responsibility for the purchase of electric motors and associated starters and control devices.
- K. The drawings describing the electrical/or the mechanical work may include explanatory wiring diagrams indicating the function intended for the motor control circuits of certain specific motors. The "field instructions" wiring diagrams required as part of the mechanical work shall conform to these intended functions.

1.37 ELECTRIC MOTORS

- A. Each Contractor shall provide all electric motors required for driving all motor driven equipment required to be furnished under this Section of the Specification.
- B. Except as otherwise indicated on the drawings all motors shall be designed for 3 phase, 60 cycle alternating current operation with 208 volts across the motor terminals, except that unless otherwise specified herein, all motors 1/3 HP and smaller shall be designed for single phase, 60 cycle alternating current at 120 volts across the terminals. Before ordering motors, ascertain the actual voltages and other current characteristics that will be available and permissible for each motor. Report the same in writing to the Architect and obtain approval before ordering motors. The designation of current characteristics in these Specifications does not relieve the responsibility for ascertaining the actual conditions of electric service available for each motor or for the proper operation of all motors under the actual conditions.
- C. The speed, horsepower, type and other essential data for each motor, if not given under paragraphs describing the various motor driven apparatus, or in the schedules on the drawings shall be obtained from the manufacturer of the respective apparatus and shall be submitted to the Architect for his review. All two speed motors shall be single winding type.
- D. Provide oversized motor junction box for 2 speed motors.

- E. All motors shall be built in accordance with the latest rules of the National Electrical Manufacturers Association and of the Institute of Electrical and Electronic Engineers and also as hereinafter specified.
- F. Motors 1/2 HP and larger shall have Class B insulation. All motors shall be rated for continuous duty and shall be designed for temperature rises not to exceed 55 Degrees C. for fully enclosed type, 55 Degrees C. for splashproof types and 40 Degrees C. for all other motors except as otherwise specified herein. Motors shall be capable of withstanding momentary overloads of fifty percent (50%) without injurious heating. They shall operate without excessive heating, flashing or sparking under any conditions within the specified capacity of load and speed. All motors shall operate quietly and shall be replaced if, in the Architect's opinion, they do not do so. All motors which are in the airstream of air conditioning units, shall be totally enclosed type.
- G. Motors 1/2 HP and larger shall have ball or roller bearings with pressure grease lubrication, except where otherwise noted.
- H. Direct connected motors shall be furnished without an adjustable base. All motors connected to driven equipment by belt shall be furnished with adjustable sliding bases, except fractional motors with slotted mounting holes.
- I. All motor leads shall be permanently identified and supplied with connectors.
- J. Motors shall have nameplates giving manufacturer's name, serial number, horsepower, speed, voltage, phase and current characteristics.
- K. The insulation resistance between static conductors and frames of motors at the time of final inspection shall be not less than one-half megohm.
- L. All motors shall be of the proper type for the duty and shall have sufficient torque to start and run the equipment to which they are connected and starting currents and running currents shall not exceed the limits imposed by the laws or rules and regulations of the public authorities having jurisdiction or of the electrical utility company. All motors shall have sufficient horsepower capacity and rated duty to operate the apparatus to which they are connected so as to give the speeds and performance specified, but the horsepower shall be in no case less than that stated herein or shown on the drawings. A schedule giving the characteristics of the motors proposed for each type of service shall be submitted to the Architect for approval.
- M. The maximum full load speed of each direct connected motor shall be suitable for the equipment it drives.
- N. Except where V-Belt drive is specified, the fan wheels for ventilating fans shall be mounted on the motor shafts, which shall be designed for this duty.
- O. All motors, except motors furnished as an integral part of equipment and factory installed on the equipment, shall be of same manufacture.
- P. Polyphase motors shall be squirrel cage induction high efficiency energy saver type, suitable for the starting torque and current requirements.
- Q. Single phase motors shall be of the capacitor start induction run or split phase type as required for proper operation of the driven equipment.
- R. All motors shall be premium efficiency motors in accordance with ASHRAE and NEMA standards.

1.38 INDIVIDUAL MOTOR STARTERS

- A. Each Contractor shall furnish and turn over to the Electrical Contractor, who shall erect and provide power wiring for same, motor starting equipment for motors provided as part of the work. If a motor is replaced (even same HP), provide new starter for that motor.
- B. For each motor 1/3 HP or smaller, starters shall be manual, with thermal overload protection, and pilot light, except that where interlocking or automatic control (other than for unit and cabinet heaters) is required, starters shall be 120 volts combination circuit breaker and magnetic starter with pilot light.
- C. For each motor 1/2 HP and over, starters shall be combination unfused switch and magnetic across-the line. All magnetic starters shall have 3 thermal overcurrent-units. Provide 460/120 volt transformers for control circuits with a fused secondary.
- D. For motors requiring electric interlock, or automatic control features, starters shall be equipped with the necessary auxiliary contacts, or terminals to provide the control features desired. Such starters shall be provided with "hand-off-auto" selection pushbuttons mounted in cover. For two speed motors, provide "high-low-off- auto" four position selector switch. In hand" position, all controls and safeties shall be operative.
- E. In addition to any auxiliary contacts required for interlocking purposes, each magnetic starter shall be equipped with one normally open auxiliary control circuit contact either for "sealing in" or as a spare for future use.
- F. Transformer type, pilot lights shall be provided for all magnetic starters and for all remote control stations. Pilot light shall be mounted on cover and shall have 6 volt bulb.
- G. For two speed motors, provide a pilot light for each speed. For starters for 10 HP and over, provide adjustable 20 second time delay between Hi and Low Speed.
- H. Each starter shall be clearly identified after installation by engraved nameplates. The nameplates shall be bakelite black plates with 1/2" high white letters and shall be securely fastened to starter or to wall immediately below same. Sections furnishing starter shall provide nameplates.
- I. The Electrical Contractor shall install all starting equipment except starters specified to the factory mounted and wired as part of the equipment, and shall do all wiring necessary to supply power to the starter, including connections from the starters to the motors. All selector switches and pilot lights required in accordance with the preceding information, shall be flush mounted in the cover of its respective starter.
- J. All enclosures shall be NEMA Type I sheet steel, with hinged cover, for general purpose indoor application, unless otherwise indicated. Enclosures shall be arranged for equipment or wall mounting. Weatherproof NEMA Type 4 enclosures shall be provided for all outdoor starters.
- K. Three phase motors under 40HP shall be furnished with full voltage, combination unfused/fused (refer to electrical drawings) switch and magnetic, across-the-line starters. Three phase motors 40HP and over shall be furnished with reduced voltage, combination unfused/fused (refer to electrical drawings) switch and magnetic starters of the auto transformer closed transition type.
- L. All starters, except those furnished as an integral part of equipment and factory installed on the equipment, shall be of the same manufacture.

1.39 MOTOR CONTROLLERS

- A. Furnish motor controllers which are not under the starter cover, required for remote control of motors. Motor controllers shall be defined as devices for motor control, such as pushbuttons, switches, etc.
- B. Unless otherwise noted, motor controllers shall be housed in NEMA Type 1 general purpose enclosure. Outdoor controllers shall be provided with weatherproof NEMA Type 3 enclosures.
- C. The controllers to be installed in finished areas shall be flush mounted.
- D. The Electrical Contractor shall provide wiring for motor controllers.
- E. All motor controllers shall be minimum NEMA size, regardless of the actual duty they are required to perform.
- F. Pushbuttons shall be of the normal duty spring return momentary type.
- G. Selector switches shall be equipped with nameplates indicating the function of each of their positions as noted in the list of electric motors and motor controls.
- H. Pilot lights shall be transformer type with 6 volt bulbs and shall be equipped with nameplates indicating the operating conditions they annunciate as noted in the list of electric motors and motor controls.
- I. Pushbuttons shall be equipped with nameplates indicating their functions as noted in the list of electric motors and motor controls.

Devices such as pushbuttons, pilot lights and selector switches, where mounted in enclosures other than the cover of the starter, shall be equipped with nameplates indicating the motor with which they are associated.

END OF SECTION

SECTION 15400 - PLUMBING

PART 1 - GENERAL

1.1 GENERAL CONDITIONS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections apply to work specified in this Section; consult them in detail for applicable instructions.
- B. Manufacturers referenced in the technical specifications are for the purpose of establishing a standard of quality. Alternate manufacturers providing the same quality equipment will be given consideration by the Engineer and Architect if they are notified in writing in accordance with the Related Documents and Section 1.04 of these specifications.

1.2 DESCRIPTION

- A. **WORK INCLUDED:** Provide all labor, materials, equipment, plant, tools, and management services for proper and complete execution of all Plumbing work. Without restricting the generality of the foregoing, the following items of work are included:
 - 1. Demolition and removal of existing plumbing work, and connections and piping.
 - 3. Perform all cutting & patching, and fire caulking/sealing for plumbing installation.
 - 4. Plumbing Contractor shall be responsible for coordination of all work with all other trades to avoid conflicts.
 - 5. Temporary water service as required to perform the work.
 - 6. Sleeves for pipes passing through walls and partitions.
 - 7. Perform cleaning and protection of your work.
 - 8. Access doors where required in walls and ceilings for installation by appropriate surface Contractor.
 - 9. Removal of all debris and rubbish related to this work.
- B. **WORK EXCLUDED** and included in other Sections:
 - 1. All power wiring to motors and starters, under "Electrical".
 - 2. HVAC work, under "HVAC".

1.3 CODES AND QUALITY ASSURANCE

- A. The Contractor is responsible for performing all work in a neat, workmanlike manner. All operating procedures shall be strictly adhered to. Each Bidder shall visit the site and become informed as to the conditions of the premises and the extent and character of the work required. No consideration will be granted for any alleged misunderstanding of the Work to be done.
- B. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- C. All Plumbing work, equipment and apparatus shall conform to the most recent requirements of the following:

2021 International Building Code
2021 International Mechanical Code
2021 International Fuel Gas Code
ASHRAE Standard 90.1 2019 Energy Standard
Local Codes and Utility Requirements
NFPA - National Fire Protection Association

2021 National Standard Plumbing Code
AMCA - Air Movement and Control Association, Inc.
SMACNA - Sheet Metal and Air Conditioning Contractors National Association, Inc.
ASHRAE - American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc.
ASTM - American Society for Testing and Materials
NEC - National Electrical Code of the NFPA 2017
ASME - American Society of Mechanical Engineers
ADC - Air Diffusion Council
AABC - Associated Air Balance Council
ARI - Air Conditioning and Refrigeration Institute
National Board of Fire Underwriters
UL - Underwriters' Labs.
Requirements of the Owner's Insurance Underwriter

Without additional cost to the Owner, provide such other labor and materials as are required to complete the Work of this Section in accordance with the regulations of the current editions of these codes, and the requirements of governmental agencies having jurisdiction, regardless of whether such materials and labor are called for elsewhere in these Specifications. These rules, regulations and codes shall govern as a minimum standard. In the event of conflict with the Contract Drawings or Specifications requiring workmanship or material of a higher quality than required by the above-mentioned rules, regulations, codes and authorities, the most stringent of these documents shall govern.

- D. During this work, the Contractor shall be responsible for maintaining safety among persons in his employ in accordance with the standards set by the OCCUPATIONAL SAFETY AND HEALTH ACT of 1970. The Engineer and Architect shall be held harmless for any accident, injury, or any other incident resulting from non-compliance with these or any other standards.
- E. Engineering Drawings are schematic with regard to exact locations and dimensions. Review all Drawings provided, including; Architectural and Structural Drawings, reflected ceiling plans, Plumbing, Fire Protection, HVAC, and Electrical Drawings, to confirm all requirements and identify all constraints. The Contractor shall coordinate his work with that of all other trades to avoid conflicts. It is the Contractor's responsibility to confirm that all equipment will fit. Any discrepancies or inconsistencies are to be reported immediately to the Architect and Engineer for clarification. Refer to the actual dimensions on the Architectural Drawings and successive related shop drawings.
- F. Examination of the site shall be made by the Contractor, who shall compare it with the Drawings and Specifications and who shall satisfy himself as to the conditions under which the work is to be performed. No allowance shall subsequently be made for any extra expense incurred due to failure or neglect to make such examination.
- G. During the execution of work under this Contract the Contractor shall be responsible for protecting any equipment or structures in the work and adjacent areas.
- H. Secure and pay for required authorizations from governmental agencies having jurisdiction.
- I. All Work shall be guaranteed to be free from leaks or defects. Any defective materials or workmanship as well as damage to the work of all trades resulting from the same shall be replaced or repaired as directed for the duration of stipulated guarantee periods.
- J. COORDINATION: Each Contractor shall be responsible for coordinating their work with that of all other trades. No installation shall take place without approval of onsite entity (General Contractor, Construction Manager, etc.) responsible for coordination. Any work installed without approval and which interferes with the work of other trades that have been approved shall be removed and replaced at the Contractor's expense.
- K. EXPOSED PIPING, DUCTWORK AND CONDUIT: There shall be no exposed piping, ductwork or conduit of any sort; plumbing, fire protection, HVAC or electrical, whether implied by the MEP drawings or not, unless expressly approved by the Architect.

1.4 SUBMITTALS

- A. Comply with pertinent provisions of all the General Conditions.
- B. Product data: In accordance with procedures outlined in the General Conditions, submit:
 - 1. Materials list of items proposed to be provided under this Section, with sources of supply and manufacture;
 - 2. Manufacturers' specifications, catalog cuts and other data needed to prove compliance with the specified requirements. Include shop standards for equipment, piping, cuts of hangers, clips, supports, attachments, anchors, etc., labeled as to the respective conditions or locations to which they apply.
 - 3. Product substitutions are to be requested in writing, and only in conformance with General Conditions procedures. At the time of submission of cuts for review for all substitutions, clearly indicate Specification Section, provide complete information on the original product and the proposed product for review, and all deviations.
 - a. Any substitutions requested by a contractor are to include all costs for related changes by other contractors. It is the responsibility of the contractor requesting the change to coordinate with any other trade impacted by the substitution.
- C. Samples:
 - 1. Provide Samples of items scheduled to be exposed in the final structure.
 - 2. When specifically, so requested by the Contractor and permitted by the Engineer, authorized samples will be returned to the Contractor for installation in the Work.
- D. Shop Drawings:
 - 1. Before fabrication or purchase of any work, major equipment or controls, prepare and submit for review, shop drawings of major equipment and scale layout and design of the complete domestic water, sanitary, and storm systems in accordance with General Conditions and Related Documents. Include all access provisions, etc. Coordinate all of the above with all other trades.
 - 2. Prepare and submit Shop Drawings, showing at a scale not smaller than $\frac{1}{4}'' = 1'-0''$ all details of items to be shop fabricated under this Section. Maximum sheet size 30" x 42".
 - 3. Clearly identify by circle and by note "DEVIATION" and by note "INTERFERENCE", in large bold lettering, and deviations from Drawings and Specifications and any potential or unresolved interference condition and assume full responsibility for failure to do so.
 - 4. Submittal shall confirm fabrication and installation is in accordance with recommendations and applicable standards.
 - 5. For mandatory coordination of all work, including that which penetrates structural members, consult all applicable General Conditions.
- E. Installation Requirements: Furnish and erect all equipment, piping, hangers, vents, and all accessories specified, indicated on the drawings or required to assure proper operation of all systems installed under this Section and of all connected equipment furnished under other Sections of these Specifications but requiring services furnished under this Section.
- F. Manuals: Upon completion of this portion of the Work, and as a condition of its acceptance, deliver to the Engineer four copies of an operation and maintenance manual compiled in accordance with the provisions of the General Conditions, and these Specifications. Include in each manual:
 - 1. Copy of the authorized Record Documents of this portion of the Work.
 - 2. Copies of all warranties and guarantees.
- G. As-built Drawings (maintain in accordance with requirements of the General Conditions): Concurrent with the progress of the Work, the Contractor shall maintain a set of as-built record prints noting in red all changes in the Work. Upon completion of the Work this marked up set of prints is to be turned over to the Owner for his records.
- H. All required permits, fees and inspections shall be arranged and paid for by the Contractor. The Contractor shall present to the Owner, properly signed, all required certificates of final inspection and authorization before the Work will be accepted as complete.

1.5 PRODUCT HANDLING

- A. General Protection: Do not allow equipment, insulation material, piping or associated items to become wet, soiled or covered with ice or snow. Comply with manufacturer's recommendations for handling, storage and protection during installation.

PART 2 - PRODUCTS

2.1 PLUMBING FIXTURES

- A. Provide plumbing fixtures as shown on the Drawings with all hangers, supports and stops as required by code for a complete installation.
- B. Provide fixtures per schedule on drawings complying with latest edition of NSPC.

2.2 MATERIALS

- A. All materials entering into this work shall be new and shall be of the best of their respective kinds and shall be installed in a neat and workmanlike manner. The Contractor shall be entirely responsible for all apparatus, equipment, and appurtenances furnished by him or his Sub-Contractors in connection with this work and special care shall be taken to protect all parts thereof in such manner as may be necessary or as directed. This protection shall include covers, crating, sheds, or other means to prevent dirt, plaster, grit or other foreign substances from entering piping, fixtures or equipment. Special care shall be taken to keep all open ends of pipes, etc. closed while in storage or during installation. He shall be responsible for and shall make good any damages without additional cost.
- B. SOIL, VENT AND WASTE PIPING
 - 1. Cast iron – no hub
- C. COPPER HOT AND COLD WATER DOMESTIC SERVICE PIPING:
 - 1. Provide type L complying with ASTM-B-88.
 - 2. Fittings shall be 150 psi rated cast brass soldered type.
 - 3. Soldered joints shall be made with a LEAD FREE SOLDER.
 - 4. All under-slab copper piping shall be soft, type K with NO JOINTS.
 - 5. Alternate piping materials and methods as approved by Engineer.
- D. DIELECTRIC PIPE FITTINGS
 - 1. Provide at all connections between dissimilar metals (e.g. steel, copper, iron, etc.), nylon insulator, Buna-N gasket, maximum temperature 210° F, 250 psig pressure rating, conforming to ANSI B16.39, B2.1 and B1.201 and Federal Specification WWU-531E and WWU-516B.

2.3 VALVE AND PIPING IDENTIFICATION

- A. Identify piping with pipe identification labels.
- B. Valves shall be designated by distinguishing numbers and/or letters on required chart(s) and/or diagram(s).

2.4 VALVES - Provide UL Approved:

- A. GATE VALVES: Provide solid wedge disc, rising stem, 200# WOG; non-rising stem valves may be used only where there is insufficient clearance.
 - 1. 3" and smaller, rising stem: Provide Crane #428, bronze, screwed.
 - 2. 3" and smaller, non-rising stem: Provide Crane #438, bronze, screwed.
 - 3. 4" and larger: Provide Crane #465-1/2, IBBM, flanged, non-rising stem.
- B. BALL VALVES: Provide glass filled TFE seats suitable for 200° F water:

1. 2" and smaller: Provide Nibco, bronze, screwed.
 2. 2-1/2" and larger: Provide Nibco, iron body, flanged, 200# WOG.
- C. BUTTERFLY VALVES: Provide in water lines, gear or lever operated, quarter turn flangeless type butterfly valves of the wafer stud, lug or alternate bolt wafer type, cast iron body per ATSM A126, aluminum bronze disc per ASTM B148 C95400, type 416 stainless steel stem ASTM A582 type 416 and TFE bushings. These valves shall be rated 150 psi, bi-directional differential pressure, with a 150 psi dead end service rating. The cast iron body shall have extended neck for 2" insulation. No exposed fasteners in the waterway to pin the disc to the stem will be acceptable. Liner shall be elastomer, reinforced with a phenolic backing ring and able to be field replaceable. Positive stem retention required. All gear operators are mounted directly to the valve, totally exposed, life-time lubricated and gasketed, weatherproof, high strength body, iron segment gears and high strength worm gears. Handwheel operators to be standard. NIBCO, APCO or Owner authorized equivalent.
- D. CHECK VALVES:
1. 3" and smaller: Provide Crane #37, bronze, screwed, Y-pattern, 200# WOG, swing check type.
 2. 4" and larger: provide Crane #373, IBBM, flanged, 200# WOG.
- E. GAS COCKS: Gas cocks DeZurick No. 425 with RS-49 plug seal, screwed.
- F. STRAINERS: Provide Y-pattern, 200# WOG, 20 mesh monel screen:
1. 3" and smaller: Provide Crane #988-1/2, screwed.
 2. 4" and larger: Provide Crane #989-1/2, flanged.
- G. PRESSURE REGULATORS
1. Provide Mueller H-9000, or Wilkins series 500, all bronze.
 2. Install with brass strainer upstream of regulator.
- H. PARTITION STOP VALVES: Provide Chicago Faucet #1771, loose key type.
- I. BALANCING COCKS: Provide DeZurick #400.
- J. CLEANOUTS: Provide cleanouts on all soil, waste and roof drain lines, at ends of all lines, at all changes in direction exceeding 45 degrees, where leaving the building, and not over 50 ft. apart at all horizontal or vertical runs.
1. Floors:
 - a. Provide Smith #4023 or Josam #8330 with round nickel-bronze top in finished room floors.
 - b. Provide Smith #4223 or Josam #8090-CAL with round cast iron top in unfinished room floors.
 - c. Provide "flush-with-floor" type cleanouts, with adjustable watertight covers and integral anchoring flange with clamping collar where waterproofing membrane is used.
 2. Finished walls:
 - a. Provide Smith #4532 or Josam #8790-4 with round chrome plated or stainless steel access plate and screw.
 3. Provide cleanout plugs of extr a heavy bronze.
- K. VENT LINES: Where small vent lines pass through roof structures, provide pipe increasers as required by local code.
- 2.5 PIPE HANGERS
- A. PIPING
1. Provide VMC (Vibration Mountings & Controls Inc.) Series SH spring flex hangers with appropriate split ring or trapeze type connectors.
 2. Provide seismic restraints for all piping hangers longer than 12". All seismic restraints shall be in accordance with BOCA.

- B. Where hangers are of the specific length requiring seismic support of pipes, provide VMC series RSH-30A hangers with pipe sleeves and 45-degree seismic restraint cables.
- C. Paint hangers per instruction of the Architect.

2.6 INSULATION

- A. Insulate all liquid lines in accordance with ASHRAE/IES 90.1-2019 table 9-1, but as a minimum, hot domestic water piping shall be insulated with 1 ½" thick insulation. Cold water piping above 40° F shall have a minimum of 1" thick insulation. Owens Corning Fiberglas "25ASJ/SSL." Provide plastic covers for all elbows, T's and other joints and changes in direction. Insulation shall have outer PVC jacket and label and arrow.
- B. Under sinks, insulate all exposed hot water and cold water piping and valves, and drain piping with "Handi Lav-Guard" insulation kits made by Truebro Inc., PO Box 429, Ellington, CT, 06029. (860) 875-2868, or authorized equal.

2.7 SLEEVES

- A. Where pipes pass through concrete, masonry, or stud walls, provide "Sperzel" rustproof "Crete-Sleeve" of the size required.

2.8 ACCESS DOORS

- A. Access panels of the types shown on the drawings, in ceramic tile, gypsum wallboard, or other finished surface, required for access to valves, etc. on plumbing lines, will be furnished by this Contractor and installed by the Contractor for the applicable surface.
- B. It shall be the Plumbing Contractor's responsibility to take a count of all such panels required, transmit this information to the respective Contractor and see that they are installed where required, so that no plumbing equipment is left in an inaccessible location.

2.9 WATER HAMMER ARRESTORS

- A. Provide water hammer arrestors on hot and cold water lines, Smith Hydrotrol 5000 series.
 - 1. Install in upright position at all quick closing valves, solenoids, isolated plumbing fixtures, and supply headers at plumbing fixture groups.
 - 2. Locate and size in accordance with Plumbing and Drainage Institute Standard WH-201.
 - 3. Install water hammer arrestors behind access panels.

2.10 OTHER MATERIALS

- A. Provide all other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the authorization of the Engineer.

PART 3 - EXECUTION

3.1 TEMPORARY WATER, POWER AND LIGHTING

- A. Provide temporary water service as required to perform the Work, and for all trades.
- B. Provide local temporary lighting as required for performance of the work of this section.
- C. It is the Contractor's responsibility to run power from point of availability as provided in the Electrical Work, to the point of Plumbing work usage.

3.2 EXISTING CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.3 PLUMBING SYSTEM PREPARATION AND LAYOUT

- A. Refer to Architectural Drawings for exact locations and dimensions.
- B. Layout the plumbing system in careful coordination with the Drawings, determining proper elevations for all components of the system and using only the minimum number of bends to produce a satisfactorily functioning system.
- C. Coordination:
 - 1. Coordinate as necessary with other Sections to assure proper and adequate provision in the work of those Sections for interface with the work of this Section. Coordinate the installation of items with the schedule for work of other trades to prevent unnecessary delays in the total work.
 - 2. Where devices and equipment are not specifically located on the Drawings, locate as determined in the field by the Architect. Where plumbing fixtures and equipment are installed without such specific direction, relocate as directed by the Architect and at no additional cost to the Owner.
 - 3. Verify all measurements at the Site. No extra compensation will be allowed because of differences between work shown on the Drawings and actual measurements at the site of construction.
 - 4. Where items are shown in conflict with locations of structural members and mechanical or other equipment, provide required supports to clear the encroachment.
 - 5. Coordinate equipment locations and sizes with trades responsible for constructing the walls, floors and ceilings in which they are to be mounted.
- D. Data indicated on the Drawings and in these Specifications are intended to convey the Engineer's intentions only, as such their accuracy is not warranted. The exact locations, distances, levels, and other conditions will be governed by actual construction and the Drawings and Specifications should be used only for guidance in such regard.

3.4 INSTALLATION OF PIPING AND EQUIPMENT

- A. GENERAL:
 - 1. Thoroughly clean items before installation. Cap pipe openings to exclude dirt until fixtures are installed and final connections have been made.
 - 2. Cut pipe accurately, and work into place without springing or forcing, properly clearing windows, doors, and other openings. Excessive cutting or other weakening of the building will not be permitted.
 - 3. Show no tool marks or threads on exposed plated, polished, or enameled connections from fixtures. Tape all finished surfaces to prevent damage during construction.
 - 4. Make changes in directions with fittings; make changes in main sizes with eccentric reducing fittings. Unless otherwise noted, install water supply and return piping with straight side of eccentric fittings at top of the pipe.
 - 5. All drainage piping shall be run as straight as possible. Run horizontal sanitary and storm drainage piping at a uniform grade of 1/8" per ft. unless otherwise noted. Make change in direction of drainage piping by appropriate use of 45° wyes, long turn tee wyes, long sweep quarter, sixth, eighth, or sixteenth bends except where space conditions require, short turn sanitary tees may be used on vertical lines only.
 - 6. Provide sufficient swing joints, ball joints, expansion loops, and devices necessary for a flexible piping system.
 - 7. Support piping independently at pumps, coils, tanks, and similar locations, so that weight of pipe will not be supported by the equipment.
 - 8. Securely bolt all equipment, isolators, hangers, and similar items in place.

9. Support each item independently from other pipes. Do not use wire for hanging or strapping pipes.
10. Provide complete dielectric insulating couplings between ferrous and non-ferrous metals.
11. Provide union and shut off valves suitably located to facilitate maintenance and removal of equipment and apparatus.
12. All water piping shall be concentrated and run as direct as possible but parallel to construction and ABOVE CEILING in all finished rooms. Water supply lines to wall hung fixtures, or to fixtures set near or against the wall shall be stubbed through the wall and not up through the floor.
13. Water supply pipes throughout the building shall be located within the building in such a manner as to provide thorough protection from freezing.
14. All water piping shall be run level and generally free of traps and unnecessary bends arranged to conform to the building requirements and to suit the necessities of clearances for other mechanical and electrical work.
15. All piping shall have reducing or increasing fittings where any change in the pipe sizes occur. No bushings of any nature will be allowed.
16. No valve stems shall be installed below the centerline of the piping it serves.
17. Run vent piping with elbows at changes of direction or grade to drain out condensation.
18. Cleanouts shall be provided where required by code. Cleanouts shall be installed at all changes in direction, at the base of all leaders and where shown on the Drawings.
19. Underground cleanouts shall be extended to the finished floor with long radius fittings.

B. CHASES, SLOTS, AND OPENINGS

1. Chases, slots and openings in floor, walls, or partitions will be built in by each Contractor in his respective material as shown on the drawings and as directed as the work progresses. This Contractor shall familiarize himself with the size of chases, slots, and openings to be provided by other Contractors, to receive his work and shall see that they are properly located and of proper size. This Contractor shall provide all chase access doors for installation by Drywall or Masonry Contractor. If these chases have to be cut after walls are built he shall provide same as required. This Contractor shall install his work sufficiently in advance of the building construction to permit his work to be built into walls, floors, and partitions to eliminate unnecessary cutting of construction work.
2. He shall not cut any chases or any structural members without first securing the approval of the Architect and Engineer.

C. PLUMBING FIXTURE INSTALLATION:

1. Set fixtures level and in proper alignment with respect to walls and floors, and with fixtures spaced equally or as indicated.
2. Provide supplies in proper alignment with fixtures and with each other.
3. Provide flush valves in alignment with the fixture, without vertical or horizontal offsets.
4. Grout wall and floor mounted fixtures watertight where the fixtures are in contact with walls and floors.
5. Caulk deck-mounted trim at the time of assembly. Caulk self-rimming sinks.

D. CONTROL WIRING: Furnish all necessary control wiring to provide complete functioning equipment and systems, as required by, and to the standards of, all applicable codes and requirements.

E. BRANCH VALVING:

1. Install shutoff valves at every bathroom, classroom, mechanical equipment room, and any other room or area with one or more plumbing or water consuming fixtures to facilitate the immobilization of all fixtures for maintenance without the immobilization of any other room or area's fixtures or equipment.
2. Shut off valves shall be installed on both cold water and hot water piping branches as described above, whether shown on the drawings or not.

F. EXCAVATION AND BACKFILLING: This Contractor shall do all excavating and backfilling necessary for installation of his work and in accordance with the Contract Documents and all applicable codes and standards.

- G. EQUIPMENT ACCESS: Install piping, equipment, and accessories to permit access for maintenance. Relocate items as necessary to provide such access, and without additional cost to the Owner.
- H. For electrically operated equipment, verify the electrical characteristics actually available for the work of this Section, and provide equipment meeting those characteristics.

3.5 PIPE JOINTS

A. COPPER TUBING

- 1. Cut square, remove burrs, and clean inside of female fitting to a bright finish.
 - a. Apply solder flux with brush to tubing.
 - b. Remove internal parts of solder-end valves prior to soldering.
- 2. Provide dielectric unions at points of connection of copper tubing to ferrous piping and equipment.
- 3. For joining copper tubing, use:
 - a. Water piping 3" and smaller: 95-5 solder.
 - b. Water piping larger than 3": Sil-fos" brazing.
- 4. Use only LEAD-FREE SOLDER.

B. SCREWED PIPING

- 1. Deburr cuts.
 - a. Do not ream exceeding internal diameter of the pipe.
 - b. Thread to requirements of ANSI B2.1.
- 2. Use teflon tape on male thread prior to joining other services.

C. SOLVENT CEMENTED JOINTS

- 1. Deburr Cuts and apply solvent with brush to tubing. Cement coating is to be complete and uniform on both fittings.
- 2. Provide screwed connections at points of connection of PVC tubing to ferrous tubing.

D. LEAKY JOINTS

- 1. Remake with new material.
- 2. Remove leaking section and/or fitting as directed.
- 3. Do not use thread cement or sealant to tighten joints.

3.6 PIPE SUPPORTS

- A. Support suspended piping with clevis or trapeze hangers and rods.

- B. Space hangers and support for horizontal steel pipes according to the following schedule:

Pipe size:	Maximum spacing on centers:
¾" and smaller:	10'-0"
1" and greater:	12'-0"

- C. Space hangers and supports for horizontal copper tubing according to the following schedule:

Tube size:	Maximum spacing on centers:
1 ¼" and smaller:	6'-0"
1 ½" and over:	10'-0"

- D. Cast Iron Soil Pipe: at 5 foot intervals and behind every hub.

- E. Space hangers and supports for horizontal PVC pipe four feet maximum for all sizes.

- F. Support vertical piping with riser clamps secured to the piping and resting on the building structure.

- G. Provide insulation continuous through hangers and rollers. Protect insulation by galvanized steel shields.

- H. Arrange pipe supports to prevent excessive deflection, and to avoid excessive bending stress.

- I. It is the option of the Contractor to fasten piping directly to walls above ceilings, support from walls above ceilings or support it from building structures above ceilings.
- J. MATERIALS: All hangers and supports shall be as manufactured by VMC, Inc.

3.7 SLEEVES AND OPENINGS

- A. Provide sleeves for each pipe passing through walls, partitions, floors and ceilings.
 - 1. For uninsulated pipe, provide sleeves two pipe sizes larger than the pipe passing through, or provide a minimum of 1/2" clearance between inside and outside of the pipe.
 - 2. For insulated pipe, provide sleeves of adequate size to accommodate the full thickness of pipe covering, with clearance for packing and caulking.
- B. Caulk the space between sleeve and pipe or pipe covering, using a non-combustible, permanently plastic, waterproof, non-staining compound which leaves a smooth finished appearance, or pack with noncombustible cotton, rope, or fiberglass to within 1/2" of both wall faces.
- C. FINISH AND ESCUTCHEONS
 - 1. Smooth up rough edges around sleeves with plaster or spackling compound.
 - 2. Provide 1" wide chrome or nickel-plated escutcheons on all pipes exposed to view where passing through walls, floors, partitions, ceilings, and similar locations.
 - a. Size the escutcheons to fit pipe and a covering.
 - b. Hold escutcheons in place with set screws.
- D. INTUMESCENT FIRE BARRIER PLASTIC PIPE CAULKING: Provide where plastic pipe penetrates a rated wall, intumescent-type sealant complying with UL Fire Resistance Directory and ULC Volume 3 Fire Resistance Ratings, UL classified for use with PVC, CPVC, CCPVC, ABS, CCABS, PVDF, PP, PB and FRPP, HILTI FS-ONE or authorized equal.

3.8 CLEANOUTS

- A. Secure the Architect's approval of locations for cleanouts in finished areas prior to installation.
- B. Cleanout sizes shall conform to NSPC.
- C. Make cleanouts accessible. After pressure tests are made and authorized, thoroughly graphite the cleanout threads.
- D. Provide cleanouts every 50' on 5" pipe and under, and every 100' on 6" pipe and larger.

3.9 VALVES

- A. Provide valves in water and gas systems. Locate and arrange so as to give complete regulation of apparatus, equipment, and fixtures.
- B. Provide valves in at least the following locations:
 - 1. In branches and/or headers of water piping servicing a group of fixtures.
 - 2. On both sides of all apparatus and equipment.
 - 3. For shutoff of risers and branch mains.
 - 4. For flushing and sterilizing the system.
 - 5. Where shown on the Drawings.
 - 6. At all low points of each water system.
 - 7. At all 90 degree "Tee" branches or connections.
- C. Locate valves for easy accessibility and maintenance.
- D. Identify all valves with brass, die stamped identification tags.

3.10 TESTING, ADJUSTING AND BALANCING

- A. Advise Architect in writing when systems and equipment are ready for testing, adjusting and balancing for Architect to schedule required inspection to verify that systems are in proper condition and to schedule testing and balancing work.
- B. Provide personnel and equipment, and arrange for and pay the costs of, all required tests and inspections required by authorized representatives of the manufacturers of the equipment and governmental agencies having jurisdiction.
- C. Immediately prior to beginning of testing and balancing, provide the following:
 - 1. Adjust all balancing cocks, valves and dampers open.
 - 2. Fill, vent and clean all water systems.
 - 3. Place all equipment in operating condition.
 - 4. Clean all strainers.
- D. Where tests show materials or workmanship deficient, replace or repair as necessary, and repeat the tests until the specified standards are achieved at no extra cost to Owner.
- E. TESTING OF SANITARY AND STORM DRAINAGE SYSTEM
 - 1. Upon completion of all rough plumbing, wastes and vents, this Contractor shall test same to roof. The entire new drainage system must be tested by the Plumbing Contractor who shall close the end of the house drain, all vertical lines and branches, to fixtures to points above the finished floors and beyond the finished face of the walls and partitions. If the drain or any part of the system is to be tested separately, there must be a head of water at least 10 feet above all parts of the work so tested, held for a minimum of one (1) hour, and special provision must be made for all parts including all joints and connections in at least one test.
- F. GENERAL REQUIREMENTS FOR TESTING
 - 1. Should a leak occur during any test, the system shall be drained, the leaking fitting removed, the pipe thoroughly cleaned, and new fittings installed according to these specifications. Reheating leaking fittings in the line will not be permitted.
 - 2. All defects disclosed as the result of tests shall be remedied and defective work or material shall be replaced and tests repeated.
 - 3. All tests shall be performed as required and until satisfactory results are achieved, and no pipe shall be concealed until authorized by the Architect.
 - 4. Expense involved in making a separate test or tests shall be paid for by the PC when it is required to separately test any of the plumbing system so as to advance the progress of the construction work. Any test made will not be construed as an acceptance of any material so tested or will it affect the guarantee of the work. All leaks which appear because of these tests shall be repaired by the Plumbing Contractor.
 - 5. All testing shall be completed before insulation is applied, and underground piping shall be tested before any backfilling.

3.11 CLEANING

- A. In addition to requirements SECTION 01700 – Contract Closeout, clean work furnished and installed as part of the Plumbing Work, including but not limited to equipment, control panels and devices.
- B. Comply with requirements specified in SECTION 01500 – Construction Facilities and Temporary Controls for cleaning during construction.
 - 1. Remove debris, leftover piping, tubing, metal, insulation, cartons, papers, etc., resulting from Plumbing Work.

3.12 DEMONSTRATION

- A. Prior to Final Completion, thoroughly demonstrate and instruct Owner's designated representatives in care and operation of all plumbing systems and equipment provided in Plumbing Work Prime Contract. Provide necessary skilled labor to operate all systems for not less than 5 days and provide required instruction.
 - 1. In addition to Prime Contractor's instruction, arrange for technically qualified factory representatives to train Owner's representative in care, maintenance, and operation of following manufacturer's equipment and systems.
 - 2. Coordinate and schedule time and place of all training through Architect at Owner's convenience.
 - 3. Submit letters verifying satisfactory completion of all instruction including date of instruction, names of persons in attendance and countersigned by authorized representative of Owner.
 - 4. Until final acceptance, Prime Contractor retains full responsibility for systems, even though operated by Owner's personnel during instruction, unless otherwise agreed in writing.
 - 5. During instruction, provide list, sealed in clear plastic, outlining operating, maintenance, and starting precautions and procedures to be followed by Owner for operating systems and equipment.

3.13 PROTECTION

- A. Maintenance of Systems During Temporary Use
 - 1. Lubricate bearings in Plumbing Work systems during temporary use.
 - 2. Maintain limit controls, overload devices, and safety controls in operating condition during use

3.14 GUARANTEE

- A. Guarantee all Plumbing work for a period of one year after date of completion as measured from date of acceptance by the Owner. Promptly repair and make good any damage to his or the work of other Contractors or Subcontractors during that period that may be caused by defective materials or workmanship. Correct any defects in materials and workmanship without further expense to the Owner. Deliver said written guarantee at time of Owner's acceptance.

3.15 DEBRIS REMOVAL

- A. Routinely remove, in an orderly and efficient manner, (and cart away and dispose of, by legal means, off the site and premises), all debris related to work of this Section; worksite and staging areas shall be kept clear of all debris on a daily basis.

END OF SECTION

SECTION 15600 - HVAC

PART 1 - GENERAL

1.1 GENERAL CONDITIONS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections apply to work specified in this Section; consult them in detail for applicable instructions.
- B. Manufacturers referenced in the technical specifications are for the purpose of establishing a standard of quality. Alternate manufacturers providing the same quality equipment will be given consideration by the Engineer and Architect if they are notified in writing.

1.2 DESCRIPTION

- A. **WORK INCLUDED:** Provide all labor, materials, equipment, plant, tools, and management services for proper and complete execution of all HVAC work. Without restricting the generality of the foregoing, the following items of work are included:
 - 1. Provide new, complete HVAC systems for new I.T. room split system with indoor wall mounted unit and outdoor condensing unit, piping, filters, controls, transformers, wiring, and all necessary accessories to complete the system.
 - 2. Provide new exhaust fan with all its respective accessories for new Art Studio 1157A.
 - 3. Provide new air distribution including diffusers, ductwork, dampers, turning vanes, collars, registers, grilles, air transfers were indicated on the drawings.
 - 4. Furnish and install volume dampers as shown on the drawing and/or as required to balance system.
 - 5. Furnish and install Fire Dampers in all fire rated walls and ceilings whether or not shown on drawings.
 - 6. Provide shop drawings for all piping, controls, mechanical equipment and accessories being installed.
 - 7. Furnish and install all necessary hanger and supports.
 - 8. Alterations, removals and disposals, either indicated or as required whether or not shown on the drawings.
 - 9. Cutting and rough patching.
 - 10. Engage the services of an approved air balancing company to balance the systems and issue an air/balancing report.
 - 11. Obtain and pay for all necessary permits, inspections and certificates required in connection with this work.
 - 12. Guarantee all work for a period of one year from the final date of acceptance.
 - 13. As built drawings.
 - 14. Owner training.
 - 15. Debris removal.
- B. **WORK INCLUDED IN OTHER SECTIONS:** The following items of work shall be provided under other sections:
 - 1. Finished patching and painting.

1.3 CODES AND QUALITY ASSURANCE

- A. The Contractor is responsible for performing all work in a neat, workmanlike manner. All operating procedures shall be strictly adhered to. Each Bidder shall visit the site and become informed as to the conditions of the premises and the extent and character of the work required. No consideration will be granted for any alleged misunderstanding of the Work to be done.
- B. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- C. All HVAC work, equipment and apparatus shall conform to the most recent requirements of the following:

NJUCC - New Jersey Uniform Construction Code
 2021 International Building Code
 2021 International Mechanical Code
 ASHRAE Standard 90.1 2019 Energy Standard
 ADA - Americans with Disabilities Act
 Local Codes and Utility Requirements
 NFPA - National Fire Protection Association
 NSPC - National Standard Plumbing Code
 AMCA - Air Movement and Control Association, Inc.
 SMACNA - Sheet Metal and Air Conditioning Contractors National Association, Inc.
 ASHRAE - American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc.
 ASTM - American Society for Testing and Materials
 NEC - National Electrical Code of the NFPA 2014
 ASME - American Society of Mechanical Engineers
 National Fuel Gas Code
 ADC - Air Diffusion Council
 AABC - Associated Air Balance Council
 ARI - Air Conditioning and Refrigeration Institute
 National Board of Fire Underwriters
 UL - Underwriters' Labs.
 Requirements of the Owner's Insurance Underwriter

Without additional cost to the Owner, provide such other labor and materials as are required to complete the Work of this Section in accordance with the regulations of the current editions of these codes, and the requirements of governmental agencies having jurisdiction, regardless of whether such materials and labor are called for elsewhere in these Specifications. These rules, regulations and codes shall govern as a minimum standard. In the event of conflict with the Contract Drawings or Specifications requiring workmanship or material of a higher quality than required by the above-mentioned rules, regulations, codes and authorities, the most stringent of these documents shall govern.

- D. During this work, the Contractor shall be responsible for maintaining safety among persons in his employ in accordance with the standards set by the OCCUPATIONAL SAFETY AND HEALTH ACT of 1970. The Engineer and Architect shall be held harmless for any accident, injury, or any other incident resulting from non-compliance with these or any other standards.
- E. Drawings are schematic with regard to exact locations and dimensions. Review all Drawings provided, including; Architectural and Structural Drawings, reflected ceiling plans, Plumbing,

HVAC, and Electrical Drawings, to confirm all requirements and identify all constraints. The Contractor shall coordinate his work with that of all other trades to avoid conflicts. It is the Contractor's responsibility to confirm that all equipment will fit. Any discrepancies or inconsistencies are to be reported immediately to the Architect and Engineer for clarification. Refer to the actual dimensions on the Architectural Drawings and successive related shop drawings. Exact locations of diffusers, registers, thermostats shall be directed by Architect.

- F. Examination of the site shall be made by the Contractor, who shall compare it with the Drawings and Specifications and who shall satisfy himself as to the conditions under which the work is to be performed. No allowance shall subsequently be made for any extra expense incurred due to failure or neglect to make such examination.
- G. During the execution of work under this Contract the Contractor shall be responsible for protecting any equipment or structures in the work and adjacent areas.
- H. Secure and pay for required authorizations from governmental agencies having jurisdiction.
- I. All Work shall be guaranteed to be free from leaks or defects. Any defective materials or workmanship as well as damage to the work of all trades resulting from the same shall be replaced or repaired as directed for the duration of stipulated guarantee periods.
- J. COORDINATION: Each Contractor shall be responsible for coordinating their work with that of all other trades. No installation shall take place without approval of onsite entity (General Contractor, Construction Manager, etc.) responsible for coordination. Any work installed without approval and which interferes with the work of other trades that have been approved shall be removed and replaced at the Contractor's expense.
- K. EXPOSED PIPING, DUCTWORK AND CONDUIT: There shall be no exposed piping, ductwork or conduit of any sort in areas with hung ceilings, whether implied by the MEP drawings or not, unless expressly approved by the Architect.

1.4 SUBMITTALS

- A. Comply with pertinent provisions of the General Conditions.
- B. Product data: In accordance with procedures outlined in the General Conditions, submit:
 - 1. Materials list of items proposed to be provided under this Section, with sources of supply and manufacture;
 - 2. Manufacturers' specifications, catalog cuts and other data needed to prove compliance with the specified requirements. Include shop standards for ductwork fabrication, cuts of duct hangers, clips, supports, attachments, anchors, etc., labeled as to the respective conditions or locations to which they apply.
 - 3. Product substitutions are to be requested in writing, and only in conformance with General Conditions procedures. At the time of submission of cuts for review for all substitutions, clearly indicate Specification Section, provide complete information on the original product and the proposed product for review, and all deviations.
 - a. Designs are based on a particular manufacturer as shown on the drawing. The structural design, equipment layout, electric systems, gas piping, efficiencies, rebates and aesthetic considerations, are based upon the manufacturer shown on the drawings. While other manufacturers equipment which is mentioned in the

specifications may have the same output (tons, CFM, BTUH etc.) they may not have the same weight, dimensions, efficiencies or electrical or gas requirements. Therefore, if ANY equipment is submitted OTHER THAN those models shown ON THE DRAWINGS, the contractor shall be required to pay for ALL designs, material, labor and equipment required to modify structure, equipment layout, electric, gas, aesthetic, efficiencies (including extra operating costs over a 25-year period) and rebates which are incurred by using said equipment.

C. Samples:

1. Provide Samples of items scheduled to be exposed in the final structure.
2. When specifically requested by the Contractor and permitted by the Engineer, authorized samples will be returned to the Contractor for installation in the Work.

D. Shop Drawings:

1. Before fabrication or purchase of any work, major equipment or controls, prepare and submit for review, shop drawings of ductwork and major equipment in accordance with "General Conditions". Include all fire dampers, access provisions, etc. Coordinate all of the above with all other trades.
2. Prepare and submit Shop Drawings, showing at a scale not smaller than $\frac{1}{4}" = 1'-0"$ all details of items to be shop fabricated under this Section. Maximum sheet size 30" x 42".
3. Clearly identify by circle and by note "DEVIATION" and by note "INTERFERENCE", in large bold lettering, and deviations from Drawings and Specifications and any potential or unresolved interference condition and assume full responsibility for failure to do so.
4. Submittal shall confirm fabrication and installation is in accordance with recommendations and applicable standards.
5. For mandatory coordination of all work, including that which penetrates structural members, consult General Conditions.

E. Installation Requirements: Furnish and erect all ductwork, hangers, dampers, and all accessories specified, indicated on the drawings or required to assure proper operation of all systems installed under this Section and of all connected equipment furnished under other Sections of these Specifications but requiring services furnished under this Section.

F. Manuals: Upon completion of this portion of the Work, and as a condition of its acceptance, deliver to the Engineer four copies of an operation and maintenance manual compiled in accordance with the provisions of the General Conditions, and these Specifications. Include in each manual:

1. Copy of the authorized Record Documents of this portion of the Work.
2. Copies of all warranties and guarantees.

G. As-built Drawings (maintain in accordance with "General Conditions"): Concurrent with the progress of the Work, the Contractor shall maintain a set of as-built record prints noting in red all changes in the Work. Upon completion of the Work this marked up set of prints is to be turned over to the Owner for his records.

H. All required permits, fees and inspections shall be arranged and paid for by the Contractor. The Contractor shall present to the Owner, properly signed, all required certificates of final inspection and authorization before the Work will be accepted as complete.

1.5 PRODUCT HANDLING

- A. General Protection: Do not allow equipment, insulation material, or associated items to become wet, soiled or covered with ice or snow. Comply with manufacturer's recommendations for handling, storage and protection during installation.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Provide only materials that are new, of the type and quality specified. Where no standards have been established for such materials, provide only materials bearing the UL Label.

2.2 RECTANGULAR DUCTWORK

- A. Sheet metal construction shall conform to this Section and applicable requirements of:
 - SMACNA 15D High Pressure Duct Construction Standards
 - SMACNA 15D Low Pressure Duct Construction Standards
 - SMACNA Ducted Electric Heat Guide for Air Handling Systems
 - SMACNA Fire Damper Guide for Air Handling Systems.
- B. Except where noted otherwise, sheet metal ductwork shall be constructed of galvanized steel sheets, ASTM A525, A527 and A90.
- C. Ductwork shall be detailed and fabricated to keep resistance losses to a minimum. Provide double thickness airfoil type turning vanes for square elbows and use gradual transformations and offsets. Where radius type elbows are used, minimum throat radius shall be equal to the duct width.
- D. Duct, plenum and casing access doors, whether or not shown on the Drawings, shall be provided for access to control and indicating instruments, dampers, both sides of coils and filters and to any other device requiring inspection or maintenance. Hardware shall be as manufactured by Ventfabrics, Inc. or authorized equal.
- E. Provide splitter dampers to adjust the air volume in the branch ductwork of all duct systems. Dampers shall have an indicating and locking device. Dampers in rectangular ductwork shall be blade type. Provide single blade damper up to 12" size and opposed blade type dampers in ducts over 12" size. Damper construction shall be as recommended in the applicable SMACNA duct manual.
- F. Provide test openings with covers for taking pressure and velocity readings as required for balancing and adjusting the air system.
- G. Fans units shall be isolated from ductwork and casings with waterproof and fire resistant fabric connections, Ventfabrics Inc. or authorized equal. Connectors shall have minimum of 3" between metal ends with approximately 1-1/2" of slack and shall be arranged to prevent vibration transmission from fans and units to the ductwork or casing.
- H. Rectangular ductwork shall be constructed in accordance with SMACNA LP Duct Manual and SMACNA Standards 15d for minimum of 2" W.G. static pressure positive, and 2" W.G. negative, including metal gauges, reinforcing, fittings, connections, access doors and other accessories.

- I. Where space permits, duct elbows shall have a centerline radius and 1-1/2 times the dimensions of the duct in the plane of the bend. Where space does not permit use of this radius, a minimum radius of 1.25 may be used without using concentric splitters, or else turning vanes with square elbows shall be used. Turning vanes shall be of the double walled type of Tuttle & Bailey, or authorized equal make, spaced in accordance with duct size.

Shop fabricated turning vanes may be submitted for authorization before erection. Ducts up to 13" deep shall have 2" radius blades on 2" centers, ducts from 13" to 24" shall have 3" radius blades on 3" centers. Where concentric splitters are used, the radii of the bends shall be carefully located for low loss elbows. All elbows shall be made to produce no greater air resistance than elbow with 1.25 radius.

- J. Interior of return air duct shall be painted black at areas inside return air grilles only.

2.3 INTERIOR DUCTWORK INSULATION

- A. Provide insulation for all concealed supply ductwork and all outside air ductwork. Ductwork located in hung ceiling, mechanical, and plenum spaces shall be considered concealed.
- B. Insulate with a flexible fiberglass insulation. "Ductwrap", 1.5" thick, 3/4 pound per cubic foot density, "K" value at 75° F, maximum 0.26 BTU/HR/SF/degrees F/HR with factory applied reinforced multi-purpose foil-skrim-kraft (SFK) aluminum foil vapor barrier and vinyl covered for systems conveying air at less than room temperature.
- C. Insulation for concealed ductwork shall be secured to the ductwork with adhesive, Benjamin Foster 81-91, or authorized equal. Apply adhesive in strips with a minimum 50% coverage. Seal all joints with 3" wide strips of the facing material applied using Benjamin Foster 81-91 on both surfaces.
- D. Acceptable Manufacturers:
 - 1. Certainteed Corp., Valley Forge, PA
 - 2. Owens-Corning Fiberglas Corp., Toledo, OH
 - 3. Armstrong Cork Co., Lancaster, PA
- E. Adhesives and insulation materials: composite fire and smoke hazard ratings maximum 25 for Flame Spread and 50 for Fuel Contributed and Smoke Developed. Adhesives to be waterproof.

2.4 FLEXIBLE RUN-OUTS

- A. Flexible runouts to diffusers shall be permitted only to expeditiously locate diffusers in the ceiling grid not as a substitution for rigid duct; maximum length 6'-0". Flexible duct shall not be used in rigid hung ceilings.

Flexible metal duct shall be all-metal, bendable, self-supporting and mechanically interlocked to be totally leak proof under operating conditions without manufacturing use of adhesives.

Flexible ducts shall be type AL006 uninsulated or Type AL006-150 insulated as made by United Sheet metal or approved equal. The flexible run-outs shall take all bends without kinking. The run-outs shall be flame resistant, shall have a low friction loss, and shall have working pressure minimum of 10 inch W.G. Flexible run-outs shall be no longer

than 4'-0" and shall comply with Local Union Requirements. Any additional lengths necessary to connect the flexible duct to the high or medium pressure ductwork shall be made with spiral lockseam sheet metal duct of the same size as the flexible ductwork.

Clevaform type S and Type SFV as made by Clevaflex is approved equal.

- B. The flexible run-out duct shall meet all requirements of the National Fire Protection Association 90A - Latest Edition.

Flame spread not over 25, smoke developed not over 50.

- C. Each flexible run-out duct shall be sealed to its male outlets on both ends with 3M EC-800 sealer, or sealing compound as recommended by the flexible air duct manufacturer. The flexible air duct shall be sealed and covered to a minimum depth of 2 inches of its mating metal coupling, branch take-off lap or duct at each of its ends. A Wraplock Ideal No. 5900 Strap-Clamp shall be furnished and installed at each end of the flexible duct.
- D. Complete installation shall be airtight.

2.5 FIRE DAMPERS

- A. Fire dampers and sleeve installation shall be in accordance with NFPA_90A recommendations and shall bear U.L. Label in compliance with U.L. 555.
- B. Clearly indicate fire damper location on shop drawings. Provide access doors in the ducts and furnish access doors or panels at building construction at each damper of sufficient size and type to permit inspection and replacement of linkage. Assume responsibility to coordinate all locations of duct access doors with the General Contractor to conform with whatever architectural access openings may be necessary and furnish access doors or panels in building construction. Provide shop drawings indicating location of access panels or doors for Architect's approval.
- C. It is the intention of these plans and specifications to be complete. However, it is the responsibility of this Section, as being completely cognizant of local regulations, to determine where fire dampers are required and to advise the Architect prior to construction as to any discrepancies or questions in the plans or specifications.
- D. Fire dampers shall be enclosed in sleeve of fourteen gage metal set and grouted into fire partitions. Sleeve shall be secured at both sides of fire partitions with 1-1/2 x 1-1/2 x 1/4 ga. mounting angles secured to sleeves only. Provide duct breakaway connections, see detail on drawings.
- E. It is the intention of these plans and specifications to be complete. However, it is the responsibility of this section as being completely cognizant of local regulations, to determine where fire dampers are required and to advise the Architect prior to construction as to any discrepancies or questions in the plans of specifications.

Furnish fire dampers if not already required by regulations as listed below:

At each penetration of shaft wall.

At each penetration of a required fire partition or fire wall.

At each penetration of rated floor/slab or floor/ceiling assembly.

- F. Fire dampers shall be "Fire Seal" as made by Air Balance, Inc. or approved equal, U.L. labeled.

Used For	Fire Damper
Rectangular Square	Type B
Low Pressure Ductwork	Model 119BL
Low, Medium or High	Type C
Pressure Round Duct	Model 119-CL

2.6 ACCESS DOORS IN SHEET METAL WORK

- A. Wherever necessary in ductwork, casings or sheet metal partitions, provide suitable access doors and frames to permit inspections, operation and maintenance of all valves, coils, humidifiers, controls, smoke dampers, smoke detectors, fire dampers, filters, bearings, traps, or other apparatus concealed behind the sheet metal work. All such doors shall be of double construction of not less than No. 20 gauge sheet metal and shall have sponge rubber gaskets around their entire perimeter. Doors in insulated ducts of insulated casings shall have rigid fiberglass insulation between the metal panels.
- B. All access doors in sheet metal ducts shall be hung on heavy flat hinges and shall be secured in the closed position by means of cast zinc clinching type latches. Where space conditions preclude hinges, use four heavy window type latches. Doors into ducts shall in general not be smaller than 18" x 18" except for access door to fire dampers which will depend on size of fire damper.
- C. In no case shall access to any items of equipment requiring inspection, adjustment, or servicing require the removal of nuts, bolts, screws, wing nuts, wedges, or any other screwed or loose device.
- D. Each sheet metal chamber shall have access doors for access to all parts of the system. Doors shall be fitted with cast zinc door latches, two per door. Latches shall be operable from both sides of casing. Hinges shall be extra heavy, zinc plated hinges, minimum of two per door. The doors shall be felted or provided with rubber gaskets so as to make them air-tight. The doors shall be made with inner and outer shells 2 inches apart so that they may be properly insulated and properly operated. Doors shall be a minimum size of 20" x 48".
- E. Hinges shall be Ventlok No. 150 or 260 with or without screw holes or approved equal. Latch or walk-in access doors shall be No. 260 as made by Ventlok Co. or approved equal. Latch for access door in ductwork shall be Ventlok No. 100 or approved equal.

2.7 PIPING

- A. A/C unit drain: Type "L" copper pipe with wrought copper 95-5 soldered fittings.
- B. Refrigerant: ACR copper tubing with 300 lb. brazed fittings.
- C. Provide dielectric connects between pipe materials

2.8 REFRIGERANT PIPE INSULATION

- A. The following piping shall be covered with cellular insulation with vapor barrier of following thickness:

<u>Service</u>	<u>Thickness</u>
A/C Unit Condensate Drain Lines Within Building	1/2"
Refrigerant Suction and Liquid	1"

- B. Insulation shall be a flexible, closed-cell elastomeric pipe insulation: AP Armaflex, AC Accoflex. Adhesive shall be Armaflex 520. 520 Black or 520 BLV Adhesive. The insulation must conform to ASTM C534 Grade 1, Type 1.
- C. Insulation materials shall have a closed cell structure to prevent moisture from wicking, which makes it an efficient insulation.
- D. Insulation materials shall be manufactured without the use of CFC's, HFC's or HCFC's. It is also formaldehyde free, low VOCs, fiber free, dust free, and resists mold and mildew.
- E. Insulation materials shall have a flame-spread index of less than 25 and a smoke- developed index of less than 50 as tested in accordance with ASTM E 84. In addition, the products, when tested, shall not melt or drip flaming particles, and the flame shall not be progressive.
- F. Insulation materials shall have a maximum thermal conductivity of 0.27 Btu-in/h-ft²-°F at a 75°F mean temperature as tested in accordance with ASTM C 177 or ASTM C 518.
- G. Insulation materials shall have a maximum water vapor transmission of 0.08 perm-inches when tested in accordance with ASTM E 96, Procedure A.
- H. All refrigerant copper lines must be free of extraneous chemicals such as corrosive cleaners or building materials' dust prior to the installation of the insulation. The insulation must be clean and dry prior to installation.
- I. Refrigerant pipe shall be sealed while slipping on insulation to prevent foreign matter from entering the tube.
- J. Insulation is to be slid onto pipe; longitudinal slitting of the insulation is not allowed except on mitered sections. Insulation shall be pushed onto pipe, not pulled.
- K. Insulation shall be mitered, pre-adhered and longitudinally slit inside throat to fit out all P-traps, tees and elbows or bends over 90°.
- L. All butt joints and mitered seams shall be adhered with full coverage of adhesive on both surfaces insulation shall not be stretched when adhering.
- M. Insulation must be installed in an adequately ventilated area. It may be necessary to increase insulation thickness if adequate ventilation is not present. Do not crowd the insulation, allow for adequate air movement.

- N. At the beginning, at every 12 to 18 feet, and at the ends of piping runs, the insulation shall be adhered directly to the copper using a 2" strip of adhesive. Insulation should not be adhered to the pipe at the extreme low points in any piping run.
- O. Saddles shall be installed under all insulated lines at unistrut clamps, clevis hangers, or locations where insulation may be compressed.
 - 1. Armafix IPH or NPH insulation pipe hangers can be installed at the compression locations and the seams shall be sealed with Armaflex 520, 520 Black or 520 BLV contact adhesive. To minimize the movement of Armafix, it is recommended that a pair of non-skid pads be adhered to the clamps. In addition to prevent loosening of the clamps. In addition, to prevent loosening of the clamps, use of an anti-vibratory fastener, such as a nylon-locking nut, is also recommended.
 - 2. Wood dowels or blocks, or a thickness equal to the insulation, can be inserted and must be completely sealed into the insulation at the saddle locations. All seams shall be sealed with Armaflex 520, 520 Black or 520 BLV contact adhesive.
 - 3. Hangers clamped directly to the pipe shall be insulated over the hanger; insulation shall be fully adhered to the hanger. In addition, hangers with double rods shall be insulated between the rods. All seams of the insulation shall be sealed with adhesive.
- P. All insulation exposed to sunlight or installed outdoors shall be protected with two coats of WB Armaflex Finish or weather resistant coating.

PART 3 - FANS AND HVAC EQUIPMENT

3.1 GENERAL REQUIREMENTS

- A. The following requirements apply in general to all equipment specified. Certain items may not appropriately apply to every piece of equipment.
- B. Provide required copies of manufacturers catalog or data sheets for each piece of equipment showing illustrations, details, sizes, dimensions, performance characteristics, wiring diagrams, controls and other pertinent details.
- C. All main service supplies shall match the characteristics in the Drawings.
- D. All equipment wires, and electrical fittings shall be copper only.
- E. All motors shall be built and tested in accordance with the latest standards of NEMA, ANSI, IEEE and the National Electric Code, as applicable, and shall be energy efficient motors of NEMA Design A or B. Minimum motor full load power factor shall be 85%. Motors shall be capable of a minimum 20 second stall at locked rotor without damaging the insulation or windings.
- F. Based on 1800 RPM, 3 phase operation for all HVAC equipment, motors shall be guaranteed by the motor manufacturer and when tested in accordance with IEEE Test #112A, Method B, shall be as follows:

TEFC HORSEPOWER RATING	DRIP PROOF EFFICIENCY	EFFICIENCY
1 - 3	86.5%	88.5%
3	86.5%	88.5%
5	87.5%	88.5%
7 1/2 - 10	89.5%	91.0%
15 - 20	91.0%	91.7%
25 - 40	93.0%	93.0%
50 - 75	94.1%	94.5%

- G. Provide gaskets installed to prevent leakage between each filter and between the filter and its supporting frame. Filter efficiencies shall be average atmospheric dust spot efficiencies tested in accordance with ASHRAE Standard 52-76.
- H. Fans shall be tested and rated in accordance with the applicable AMCA Standard Test Code and Certified Ratings Program, and shall bear the AMCA Certified Rating Seal.
- I. Motor drives shall be protected by belt guards furnished by the equipment manufacturer in accordance with SMACNA and OSHA requirements.

SECTION 16000 - ELECTRICAL

PART 1 - GENERAL

1.1 GENERAL CONDITIONS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections apply to work specified in this Section; consult them in detail for applicable instructions.
- B. Manufacturers referenced in the technical specifications are for the purpose of establishing a standard of quality. Alternate manufacturers providing the same quality equipment will be given consideration by the Engineer and Owner if they are notified in writing at the time of bid.

1.2 DESCRIPTION

- A. **WORK INCLUDED:** Provide all labor, materials, equipment, plant, tools, and management services for proper and complete execution of all Electrical Lighting, Power and Telephone Work. Any items not specifically shown on the Drawings or called for in the Specifications shall be furnished by the Contractor when required for a complete installation in accordance with good construction practices. Without restricting the generality of the foregoing, the following items of work are included:
 - 1. New lighting fixtures and controls.
 - 2. New panel board.
 - 3. New receptacles.
 - 4. New Branch circuits.
 - 5. New Feeders (CU)
 - 6. Emergency lighting and power.
 - 7. Outlets, receptacles, switches and wiring.
 - 8. Power wiring of all HVAC, plumbing and Owner supplied equipment.
 - 9. Hangers, anchors, cutting, patching, pass through and watertight sleeves, chases, supports for fixtures, backboards, and other electrical materials and equipment, including fire cutoffs, in association therewith.
 - 10. Fire alarm modification to existing Simplex system.
 - 11. Miscellaneous low voltage systems and wiring.
 - 12. Empty conduits for other low voltage systems.
 - 13. Lighting fixtures, wiring, time clocks and contactors where required.
 - 14. Disconnects (Fused and Safety) for motors, unit heaters, transformers, pumps, and other equipment.
 - 15. Motor starters for equipment including exhaust fans when not otherwise provided. Coordinate with other trades and Owner supplied equipment vendors.
 - 16. Temporary power and lighting for construction and all trades.
 - 17. Lighting fixtures, feeds, final connections, etc., for all interior and exterior building mounted lighting.
 - 18. Maintenance and removal of all temporary light and power.
 - 19. Provide access doors where required in walls and ceilings for installation by Drywall or Masonry Contractor.
 - 20. All written operating and maintenance instructions.
 - 21. Arrange and pay for all required permits, fees and inspections.
 - 22. Removal of debris related to this work.
 - 23. Coordinate with work of all other Sections.
- B. **WORK EXCLUDED** and included in other Sections & Divisions:
 - 1. HVAC control wiring (HVAC Section).

1.3 CODES AND QUALITY ASSURANCE

- A. The Contractor is responsible for performing all work in a neat, workmanlike manner. All operating procedures shall be strictly adhered to. Each Bidder shall visit the site and become informed as to the conditions of the premises and the extent and character of the work required. No consideration will be granted for any alleged misunderstanding of the Work to be done.
- B. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section. Standards herein apply to similar work performed under other Sections.
- C. All electrical work, equipment and apparatus shall conform to the most recent requirements of the following:
 - NJUCC - New Jersey Uniform Construction Code
 - 2020 National Electrical Code
 - 2021 International Building Code
 - 2021 International Mechanical Code
 - NFPA 70, 90A, 91, and 101 - National Fire Protection Association, and any other applicable NFPA standards.
 - NEMA - National Electric Manufacturers Association
 - Electrical Utility
 - Local Codes and Governmental Agencies
 - NBFU - National Board of Fire Underwriters
 - ANSI - American National Standards Institute
 - IPCEA - Insulated Power Cables Engineers Association
 - ASTM - American Society for Testing and Materials
 - UL - Underwriters' Laboratories
 - Requirements of the Owner's Insurance Underwriter
- D. Without additional cost to the Owner, provide such other labor and materials as are required to complete the work of this Section in accordance with the requirements of governmental agencies having jurisdiction, regardless of whether such materials and labor are called for elsewhere in these Specifications.
- E. Electrical Drawings are symbolic and diagrammatic in nature and are intended to show only the general scheme, equipment involved, and the approximate locations of outlets and equipment. Review all Drawings provided including, Architectural Drawings, reflected ceiling plans, Plumbing, Fire Protection, Electrical and HVAC Drawings to confirm all requirements. Prior to accepting a contract for the Work, it is the Contractor's responsibility to confirm that all equipment will fit. Any discrepancies or inconsistencies are to be reported immediately to the Owner and the Engineer for clarification. No extras or allowances will be made for such items after bid submission. For exact locations, refer to the Architectural Drawings.
- F. Examination of the site shall be made by the Contractor, who shall compare it with the Drawings and Specifications and who shall satisfy himself as to the conditions under which the work is to be performed. No allowance shall subsequently be made for any extra expense incurred due to failure or neglect to make such examination.
- G. Secure and pay for required authorizations from governmental agencies having jurisdiction.
- H. All Work shall be guaranteed to be free from leaks or defects. Any defective materials or workmanship as well as damage to the work of all trades resulting from the same shall be replaced or repaired as directed for the duration of stipulated guarantee periods.
- I. COORDINATION: Each Contractor shall be responsible for coordinating their work with that of all other trades. No installation shall take place without approval of onsite entity (General Contractor, Construction Manager, etc.) responsible for coordination. Any work installed without approval and which interferes with the work of other trades that have been approved shall be removed and replaced at the Contractor's expense.

- J. EXPOSED PIPING, DUCTWORK AND CONDUIT: There shall be no exposed piping, ductwork or conduit of any sort; plumbing, fire protection, HVAC or electrical, whether implied by the MEP drawings or not, unless expressly approved by the Architect.

1.4 SUBMITTALS

- A. Provide the following in addition to and/or coordination with the General Conditions of this specification:
- B. Product data: Within 14 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
1. Materials list of items proposed to be provide under this Section, with sources of supply and manufacture.
 2. Manufacturer's specifications, catalog cuts and other data needed to prove compliance with the specified requirements;
 3. Product substitutions are to be requested in writing, and only in conformance with General Conditions procedures. At the time of submission of cuts for review for all substitutions, clearly indicate Specification Section, provide complete information on the original product and the proposed product for review, and all deviations.
Any substitutions requested by a contractor are to include all costs for related changes by other contractors. It is the responsibility of the contractor requesting the change to coordinate with and cover all costs for any other trade impacted by the substitution.
- C. Samples:
1. When so requested by the Engineer, promptly provide Samples of items scheduled to be exposed in the final structure.
 2. When specifically so requested by the Contractor and authorized by the Engineer, authorized Samples will be returned to the Contractor for installation on the Work.
- D. Manuals: Upon Completion of this portion of the Work, and as a condition of its acceptance, deliver to the Engineer four copies of an operation and maintenance manual compiled in accordance with the provisions of the General Conditions, and these specifications. Include within each manual:
1. Copy of the authorized Record Documents of this portion of the Work.
 2. Copies of all circuit directories.
 3. Copies of all warranties and guarantees.
- E. As-Built Drawings: concurrent with the progress of the Work, the Contractor shall maintain a set of as built record drawings noting in red all changes in the Work. Upon completion of the Work, a sepia set is to be turned over to the Owner for his records.
- F. All required electrical permits, fees and inspections shall be arranged and paid for by the Contractor. The Contractor shall present to the Owner, properly signed, all required certificates of final inspection and approval before the work will be accepted as complete.

1.5 LABELING OF PANELS AND CIRCUITS

- A. Mount a typewritten directory behind glass or plastic on the inside of each panel door and, on the directory, show the circuit number and complete description of all outlets on each circuit. Coordinate all labeling with HVAC, Plumbing and other trades to assure uniform nomenclature.
- B. On face of all panels and electrical apparatus provide black plastic laminate name tag, securely fastened, and showing complete identification.
- C. Provide 1/2" high letters on each panel and cabinet and 3/4" on switchboard, indicating voltage present.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Packing and Shipping: Ship materials in manufacturer's containers, fully identified with manufacturer's name, trade name, type class, style, model, grade, size and color.
- B. Storage and Protection:
 - 1. Store materials, equipment, fixtures, pipe, fittings, attachments, under cover, off ground in original containers as applicable, and protect from physical and weather damage while in storage and during construction.
 - 2. Furnish extra materials identified in technical sections, in original manufacturer's containers and packaging, to Owner at location identified. Obtain receipt from owner upon delivery of extra materials and send copy of receipt to Architect.
 - 3. Replace or repair damaged, rusted, corroded or otherwise unusable materials physically damaged or weather damaged equipment as determined by Architect, at no change in Contract Sum.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Provide only materials that are new, of the type and quality specified. Where standards have been established for such materials, provide only materials bearing the UL Label, or complying with NEMA and NEC standards.
- B. PRODUCT HANDLING: General Protection: Do not allow products and materials to become wet, soiled or covered with ice or snow. Comply with manufacturer's recommendations for handling, storage and protection during installation.

2.2 GROUNDING SYSTEM

- A. Ground all equipment, including service entrances, switches, panelboards, transformers, conduit systems, motors, and other apparatus, by conduit or conductor to cold water main or to independent grounding electrode, using ground clamps manufactured by Burndy or T&B, and authorized by the power company and/or local code official. NOTE: EMT tubing is not acceptable as a ground path.
- B. Ground all electrical equipment in accordance with all provisions of the National Electrical Code, including lighting fixtures, motors, conduits, panelboards, transformers, and all other Non-Current carrying parts of electrical equipment.
- C. Make meg ground tests to measure ground resistance, and provide not more than 10 ohms resistance, adding ground rods as required to achieve that level. Make ground rods accessible for inspection.
- D. Interior systems equipment grounding electrode conductors shall be sized per National Electrical Code Section 250, for runs less than 100 feet. When run exceeds 100 feet, grounding conductor size shall be increased to the next larger size. Busway grounds shall be sized equal or greater than bus ground conductor and as shown.
- E. Special Grounding connections for telephone system, signal systems, portable equipment and similar systems shall be as recommended by the manufacturers.
- F. Ground connections shall be made with mechanical pressure type ground clamp. O.Z., Burndy or authorized equal of proper size for the ground conductor and pipe connected. All surfaces shall be scraped clean and bright, firm mechanical connection secured and all exposed surfaces finally coated with asphaltic or glyptal paint. All ground clamps shall be equipped with compression type cable lugs, independent of the compression device clamping the pipe or rod. All grounding cable connections and splices embedded in concrete or underground shall be phosphor copper brazed and tinned or welded with the exothermic Cadweld process and wrapped with tape. Exposed connections shall be compression type to permit removal for individual ground tests. All compression connections shall have at least two studs or compression points for each conductor.

- G. Grounding conductors shall be 600 volt, type "T" green. Equipment grounding connections shall be bare copper in accordance with the latest revision of A.S.T.M. designations B3 and B8. All open bare grounding cable (#6 A.W.G. minimum) shall be secured in place with cast, one hole, malleable, clamps and clamp backs and bolts.
- H. All grounding connections shall be executed with the same thorough workmanship as the connections for normal current carrying parts.

2.3 DISTRIBUTION SYSTEM

A. Identification/locations:

1. Identify all panelboards, cabinets, safety switches, and other apparatus used for operation and control of circuits, appliances, and equipment.
2. Provide plastic laminate nameplates, black face with white core letters, showing proper and complete identification.

B. Wiring devices:

1. Provide heavy duty, back wired duplex receptacles of 3-pole grounding type with the third pole U-shaped and grounded to the conduit system.
2. Receptacles shall be "Decora".
3. Outlets are to be recessed, unless specifically noted on the plans.
4. Provide tumbler switches of commercial grade, 20 amp, 120/277 V ac.
5. Switches shall be "Decora".
6. Switches are to be recessed.
7. Device Plates: Cover plates shall be provided for all outlets and designed for the particular device being used. At locations where more than one switch and/or outlet occur, cover plates shall be ganged or combination type as required. Including ganging together with low voltage devices. Weatherproof receptacles shall have flush cast box and hinged gasketed cover, Pass & Seymour No. 3780-SC, or authorized equal.
8. Provide ground fault receptacles or circuit breakers where noted and indicated on drawings.
9. In cases where a single outlet is served by one 20 AMP circuit, provide 20 AMP rated receptacle.

C. Above floor raceways:

1. Provide the following raceway methods:
 - a. Type "MC" cable concealed in walls and above ceilings.
 - b. Type EMT feeders for house risers and where feeders and branch circuits are run exposed.
 - c. Similar cost and labor saving materials will be considered if submitted for approval by owner.
2. Provide deep boxes with 1" and larger conduit.
3. For lighting outlets, provide standard 4" octagon or square units, with 3/8" malleable iron fixture studs and box hangers where required.
4. For switches and receptacles, provide standard gang switch boxes or architectural surface mounted boxes, except for non-Architectural exposed work provide pressed steel boxes with galvanized or cadmium plated steel covers.
5. Provide boxes 4" square by 1-1/2" deep, except for boxes at ends of run where containing a single device. These may be No. 180 handy boxes if permitted by the governing code.
6. For pull boxes, provide galvanized code-gage sheet steel units built from authorized Drawings, with screwed-on covers, of size and shape required to accommodate wires without crowding, and to suit the location.
7. All troughs and gutters are to be as manufactured by Square "D". No troughs, wireways, or gutters shall be fabricated by the Contractor without submitting drawings showing details of construction, method of fastening, gauge of metal, paint specifications, etc., for approval.
8. Provide sleeves, chases and fire stops where conduits pass through floors and walls, and where required.
9. Where shown on Drawings, provide empty conduits for future Owner, telephone company, or others' use.

10. Provide pull wires and junction boxes or LBs in ALL empty conduit runs. Place junction boxes so that 100' of fish line can be used to pull wires if required.

D. Conductors:

1. For line voltages, provide 600 V insulated copper wire and cable, NEC standard, of types specified below for different applications, with UL label, and color coded as required by governmental agencies having jurisdiction.
2. With conductors No. 4 and larger, provide insulating bushings or insulating sleeves.
3. For all wire and cable provide THWN insulation, 75° C. Identify feeder neutrals with white tape.
4. Provide stranded wire, in all sizes.
5. Use only copper wires and cables.
6. Install plenum wire and cable wherever required by code.
7. For all 20 AMP circuits over 100 feet, use #10 AWG only, over 200 feet use #8 AWG only.

E. Exterior and Water Tight Junction Boxes

1. At all termination and intermediate junction points on exterior conduits, but not greater than 100 feet apart, provide a watertight/raintight Crouse Hinds type WDB box.
2. Install boxes flush with surface and provide appropriate conduit openings.
3. Seal all conduits entering box.

2.4 PANEL BOARDS

- A. Dead-front panelboards incorporating the number, rating and type of circuit breakers or fused switches as noted herein and as shown on the contract drawings shall be provided in general purpose enclosures for either surface or flush mounting.
- B. Panelboards and circuit breakers shall be as manufactured by Square D, General Electric, Seimens or Eaton.
- C. Panels shall consist of factory completed dead-front assemblies of sheet steel cabinets, main buses, over-current and switching units and sheet steel trim.
- D. Boxes shall be fabricated from unpainted, galvanized code gauge sheet steel having multiple knockouts, except where noted, with lapped and riveted or welded corner construction. Boxes shall be of sufficient size to provide a minimum gutter space of four inches at the side and six inches at top and bottom. Multisection panelboards shall be provided with a minimum top and bottom gutter space of 8 inches. Where feeder cables supplying a panel are carried through its box to supply other panels the box shall be provided with a separate barriered side gutter. Cables shall be bundled, routed and supported within the gutters. This wiring space shall be in addition to the minimum gutter space specified above. A minimum of four interior mounting studs shall be provided.
- E. Trims shall be fabricated from code gauge galvanized sheet steel. Trims shall be fastened to cabinets by means of machine screws with captive nuts or clamps and shall be self-supporting on the cabinet after trim holding screws have been removed. Trim for flush panels shall overlap its respective box by at least 3/4 inch all around. Surface trim shall have the same width and height as its respective box. Doors and trims shall each be in one piece so designed that door will close without a rabbet.
- F. Doors shall be fabricated from the same material as the panel trim and shall be fastened thereto by continuous concealed hinges. Doors shall be so installed that no live parts are exposed when the door is opened. They shall be complete with flush type combination lock and catch with key. Doors over 48 inches high shall be provided with vault handle, built-in locks and three point catch fastening door at top, bottom and centers. All panels shall be keyed alike.
- G. Backbox interiors, inside trim, door and exterior shall be painted with a rust inhibiting phosphatized coating after pickling and finished in ANSI-61 grey enamel. A typewritten directory, eight inches by ten inches,

with metal frame and clear plastic face shall be furnished and installed upon the inside of the door of each panelboard, indicating the room or area and the service controlled by each circuit.

- H. Bus bars shall be copper and extend the full height of the panel without reduction. Bus ampacity shall be as shown on the contract drawings with buses sized for each ampacity in accordance with Underwriters' Laboratories Standards. Buses shall be arranged for sequence phasing of branch circuits. Circuit loading shall be distributed evenly over all phases. Drawing branch circuit numbers are for identification purposes and not for sequences of actual connections. The neutral bus shall have a suitable lug for each outgoing branch circuit requiring a neutral connection.
- I. Neutral bus shall be full size and electrically isolated from the cabinet. Panels shall be provided with a neutral bus where shown on the contract drawings. Busing shall be braced throughout to conform to industry standard practice governing short circuit stresses in panelboards. Bracing shall be equivalent to, or compatible with, the rated interrupting capacity of the smallest over-current device in that panelboard. Spaces for future devices shall be bussed for the maximum device that can be fitted into them with suitable insulation and bracing to maintain proper short circuit rating. All provisions shall be made for ready insertion of a future protective device.
- J. All interiors shall be completely factory assembled with switching and protective devices, connectors, etc. They shall be so designed that switching and protective devices can be replaced without disturbing adjacent units and without removing the main bus connectors and shall be so designed that circuits may be changed without machining, drilling or tapping. Branch circuits shall be arranged using double row construction.
- K. Multiple section panels shall have sub-feed lugs with full capacity taps to adjacent panel sections.
- L. Panelboards shall be of the bolted circuit breaker type with single, two and three pole branches of quantity, interrupting capacity and trip setting as noted in the contract documents. Panelboards shall be furnished with main overcurrent interrupting devices consisting of circuit breakers or quick-make, quick-break,
- J. Multiple cable lugs for incoming feeder cables shall be furnished where required. Lugs shall be secured to bus by stud bolts. Where several panels are fed by one feeder, solid tap connections shall be made in separate side gutters as required with tap connectors. Suitable lugs or connectors shall be provided for connecting feeders. Tap connections to multiple lug feeders shall be made to all lugs at each tap joint.

2.5 CIRCUIT BREAKERS

- A. Circuit breakers shall be of the molded case, bolted in type consisting of the number of poles and ampere ratings as noted on the drawings. Two and three pole breakers shall be of the common trip type. Handle extensions or tie bars converting single pole units to multipole operation will not be accepted.
- B. Circuit breakers shall be of the indicating type providing "on", "off" position of the operating handle. When the breaker is tripped the handle shall assume a position between "on" and "off" positions. Breakers shall be of the quick-make and quick-break type toggle mechanism with inverse time trip characteristics and shall be trip-free on overload or short circuit. Automatic release shall be secured by a bimetallic thermal element releasing the mechanism latch. In addition, a magnetic armature shall be provided to trip the breaker instantaneously for short circuit currents above the overload range.
- C. Circuit breakers shall be rated for the voltage of the circuit on which they are used. Circuit breakers with 225 ampere or larger frame sizes shall have interchangeable trips.
- D. Locking tabs shall be provided on all circuit breakers serving emergency lighting, fire alarm system, security systems and other emergency or critical equipment. A total of 20 spare locking tabs shall be furnished to the Owner.
 - 1. 120/208 volt, three phase, four wire system.

- a. Single and multiple pole - 100 ampere frame, 15-100 ampere trip as shown on the contract drawings, 10,000 amperes RMS symmetrical interrupting capacity, Westinghouse Type BAB, or approved equal by General Electric, Square D or Cutler Hammer.
 - b. Multiple pole - 225 ampere frame, 125-225 ampere trip as shown on the Westinghouse Type KB, or approved equal by General Electric, Square D or Cutler Hammer.
 - c. Multiple pole - 400 ampere frame, 250-400 ampere trip as shown on the contract drawings, 42,000 amperes RMS symmetrical interrupting capacity, Westinghouse Type LB, or approved equal by General Electric, Square D or Cutler Hammer.
2. Where higher short circuit ratings are indicated on drawings or required by the authorities having jurisdiction the higher ratings shall govern.

2.6 LIGHTING FIXTURES

- A. Provide fixtures in accordance with the fixture schedule shown on the electrical drawings.

2.7 GENERAL LIGHTING FIXTURE INSTRUCTIONS

- A. Provide all lamps and accessories, such as strips, yokes, mounting plates, frames, nipples or brackets, shall be provided for proper and complete installation. Acrylic lenses and louvers must meet the requirements of UL and BOCA Basic Building Code. All new lighting fixtures shall be Energy Star rated.
- B. Recessed fixtures:
 - 1. Provide units having an attached pull box, and with UL label.
 - 2. Provide local label in addition if so required by governmental agencies having jurisdiction.
 - 3. Provide fixtures authorized for direct contact with insulation where in direct contact with insulation.
 - 4. Orient fixtures with elliptical beam spreads with the long axis oriented as recommended by the manufacturer for each specific condition.
 - 5. All ballasts must have low noise ratings.
 - 6. Provide all lamps rated at 130 Volts.

2.8 EMERGENCY LIGHTING SYSTEMS

- A. Provide self contained battery back-up units where indicated on the drawings and schedules.
- B. Provide lighting fixtures with integral battery packs for operation of lamps in the event of normal power failure where indicated on the drawings and schedules.

2.9 LIGHTING SWITCHING

- A. Provide individual light switches where indicated on Drawings.
- B. Provide timers and contactors for exterior lighting as required.

2.10 MOTOR STARTERS

- A. Provide magnetic motor starters when required and not supplied by the equipment manufacturers. Coordinate with all other Contracts. HVAC units are to be supplied with integral starters. Exhaust fans are to be provided with magnetic motor starters by the Electrical Contractor. Confirm status for all other equipment.
- B. Units are to be NEMA rated as motor starters and sized to the proper horsepower with thermal overloads on all three legs.
- C. Units are to be in NEMA 1 (Indoor) or NEMA 3 (Outdoor) enclosures with stop/start buttons in the proper locations when required. OL resets to be in cover.

- D. Control circuits to be a maximum of 120 V when push buttons are used. Lower voltage coils may be required in specialized control circuits. Supply transformers as needed.
- E. Provide auxiliary contacts for control circuits as required.

2.11 SAFETY SWITCHES

- A. Provide fusible and non-fusible safety switches of heavy duty type, horsepower rated, quick-make and quick-break design, externally operated with provision for padlocking.
- B. Provide enclosures clearly marked for maximum voltage, current, and horsepower rating, and use:
 - 1. Indoor: NEMA type 1.
 - 2. Outdoor: NEMA type 3R, raintight.
- C. For switches having dual ratings (higher rating when used with dual-element fuses), provide ratings indicated on a metal plate riveted or otherwise permanently fastened to the enclosure.
- D. Provide at all rooftop units, exhaust fans, unit heaters, hot water heaters, pumps and other HVAC equipment, as required to comply with local codes. Coordinate with HVAC Contractor to confirm equipment type being provided and to assure completeness of final installation.
- E. Provide at supply of transformers only when transformer is not in the same room as the supply circuit breaker.

2.12 POWER WIRING OF EQUIPMENT

- A. Provide feeders, connection and disconnects for all HVAC equipment including air handlers, condensers, and fans.
- B. Air conditioning and low voltage heating equipment (below 110V) controls, panels, motor controls, thermostats, and control devices will be under HVAC work, provide 115V feeds where required, coordinate with HVAC Contractor.
- C. Provide feeders and connection for all Plumbing equipment.
- D. Provide feeders and switches when required, and connection for all equipment provided by others, including motorized doors, partitions, bleachers etc.

2.13 EMPTY CONDUIT SYSTEMS

- A. Provide underground conduit systems for telephone and CATV entrances into buildings (2 of each)
- B. Provide main mounting panel consisting of 3/4" x 4' x 8' fire retardant plywood panels, secured to wall, with a minimum of 4 anchoring bolts of an approved type. Provide at telephone room, coordinate installation locations in the field.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 PREPARATION

- A. Coordinate:

1. Coordinate as necessary with other Sections.
 2. Coordinate the installation of electrical items with the schedule for work of other Sections to prevent unnecessary delays in the total Work.
 3. Where lighting fixtures and other electrical items are shown in conflict with locations of structural members and mechanical or other equipment, provide required supports and wiring to clear the encroachment.
- B. Data indicated on the Drawings and in these Specifications are as exact as could be secured, but their absolute accuracy is not warranted. The exact locations, distances, levels, and other conditions will be governed by actual construction and the Drawings and Specifications should be used only for guidance in such regard.
- C. Where outlets and equipment are not specifically located on the Drawings, locate as determined in the field by the Architect. Where outlets and equipment are installed without such specific direction, relocate as directed by the Architect and at no additional cost to the Owner.
- D. Verify all measurements at the building. No extra compensation will be allowed because of differences between work shown on the Drawings and actual measurements at the site of construction.
- E. The Electrical Drawings are diagrammatic, but are required to be followed as closely as actual construction and work of other Sections will permit. Where deviations are required to conform with actual construction and the work of other Sections, make such deviations without additional cost to the Owner.

3.3 TEMPORARY POWER AND LIGHTING

- A. GENERAL: In coordination with and in addition to the General Conditions of these Specifications provide the following:
1. Provide temporary power and lighting to all areas of construction. All work areas must have 2 120V Duplex GFI outlets available within 80 feet.
 2. Minimum lighting level to be 40 F.C. at work areas.
- B. MAINTENANCE:
1. The temporary wiring system shall be maintained by the Electrical Contractor, including lamp replacement, fuses, circuit breakers, sockets, plugs, receptacles, etc. as required during construction of the project shall be maintained by the Electrical Contractor. In addition, Contractor shall insure that temporary wiring is not used for heating.
 2. Should any part of the permanent electric system be used during building operations, the Electrical Contractor shall make all replacements made necessary by such use and shall be responsible for all damage to existing electric systems used, and shall make good such damage to the satisfaction of the Engineer.
 3. When the electrical lines are no longer required, they shall be removed and any part or parts of the grounds or building disturbed or damaged shall be brought back to their original condition.
 4. All temporary electrical equipment (feeders, wiring, panels, lighting, outlets, distribution equipment, etc.) shall be removed.
- C. WIRING:
1. All wire shall be insulated and shall be installed without hazardous conditions of any nature. Installation shall be in accordance with article 305 of the NEC and the Federal Register Safety and Health Regulations for construction. Wire sizes shall provide a minimum of 110 volts at all outlets under all conditions of operation.
 2. GROUND: Provide ground fault protection per code for all receptacles either via GFI circuit breakers or GFI receptacles.
 3. VOLTAGE DROP: Feeders and branches shall be of sufficient size to insure correct operation of all connected equipment and to meet code.
 4. POWER OUTLETS: 208 Volts, 3 phase power outlets shall be provided as required.

3.4 MASONRY AND OTHER PENETRATIONS

- A. Provide sleeves and or patching for each conduit passing through walls, partitions, floors, roofs, and ceilings.
 - 1. Set conduit sleeves in place before concrete is placed, wherever possible.
 - 2. Provide sleeves two pipe sizes larger than the conduit passing through, or provide a minimum of 1/2" clearance between inside and outside of the conduit.
 - 3. Provide waterproof installation for sleeves in floors, see Drawing details.
- B. Caulk the space between sleeve or wall and conduit, using a noncombustible, permanently plastic, waterproof, non-staining compound which leaves a smooth finished appearance, or pack with noncombustible mineral wool, or fiberglass to within 1/2" of both wall faces, and provide the waterproof compound described herein. Smooth up rough edges around sleeves.
- C. Provide all cutting and patching, fire caulking and sealing, to standards of other Sections and Divisions and all applicable codes.
- D. Where conduits and other work of this section pass through fire rated walls, provide proper fire stops to maintain rating in accordance with local codes.
- E. Where conduits pierce the roof, provide 24 gage galvanized iron roof jacks and flashing collar brazed onto the conduits and covering the top of the roof jacks.
- F. Caulk all floor penetrations with fire retardant material meeting ASTM E-814 and UL 1479 Fire Test Standards. Metcaulk or authorized equal.
- G. Do not run conduit in the cavity of any exterior brick or block walls, masonry or masonry veneer walls.

3.5 INSTALLATION OF RACEWAYS AND FITTINGS

- A. Where conduit is installed concealed in walls or above the ceiling, or exposed in work areas, provide rigid galvanized conduit where appropriate.
 - 1. Paint or wrap elbows.
 - 2. Seal joints to prevent entrance of water.
 - 3. Provide ground wire of proper size.
 - 4. Use nylon (rather than steel) fish tape.
- B. Where conduit is exposed in work areas, provide rigid galvanized conduit. Coordinate all exposed conduit with Architect.
 - 1. Seal joints to prevent entrance of water.
 - 2. Provide ground wire of proper size.
 - 3. Use nylon (rather than steel) fish tape.
- C. Run all conduit parallel to or at right angle with lines of the building.
 - 1. Make bends with standard conduit elbows or conduit bent to not less than the same radius.
 - 2. Make bends free from dents and flattening.
- D. Securely and rigidly support conduits throughout the Work.
- E. Exposed conduit and raceway on trusswork shall be mounted above chords or held tight to truss, mount on least populous side of member. Special care shall be taken to conceal all raceways in all areas.
- F. All conduit shall be 10' lengths and each 10' length shall contain the Underwriter's label showing the conduit has been manufactured for that purpose. Conduit shall be sized as required by latest National or Local Code applicable for equivalent number of THW conductors. The type to be used and their installation shall be as in item G below.

- G. In general, provide all conduit to 5'-0" beyond building for outside work (except service), and provide junction box of suitable size, with cover on nearest convenient, interior and location, generally shown, cap conduit or interconnect outboard to the sitework conduit.
- H. Galvanized heavy wall steel conduit shall be used for all sweeps, and for above floor conduit extensions from the sweeps to the panels or outlet boxes. (No PVC is to be used above ground for powered electrical circuits.)
- I. Expansion Fittings: All conduit crossing expansion joints shall be provided with expansion fittings located adjacent to the point of their crossing such joints. Expansion fittings shall be of the same size as the conduit in which they occur. Conduits shall be solidly anchored within 24" of both ends of all expansion fittings, and jumpered with O.Z. type "BJ" bonding jumper.
- J. Flexible Steel Conduit: Use 1/2" minimum, except where noted otherwise. Flexible conduit shall be used for the following applications only:
 - 1. For final connection to motor terminal box, max. length 18"
 - 2. For final connection to outlets on vibrating equipment
 - 3. From outlet box to recessed lighting fixture minimum 4', maximum 6' length.
 - 4. For short connections as authorized by the Engineer.
 - 5. For expansion joint crossings.
 - 6. For weatherproof installations, with polyvinyl sheathing, similar to American Metal Hose "Sealtite" type "UA" or equal.
- K. PVC Conduits: With proper size equipment ground wires and galvanized steel elbows, for the panel feeder conduits, branch circuit conduits and telephone conduits, under the floor slab.

3.6 INSTALLATION OF LIGHTING FIXTURES

- A. General:
 - 1. Lighting and Fixtures shall, by definition, include all lighting assemblies used for general, accent, or decorative illumination. Lighting fixtures shall be furnished and installed by the Electrical Contractor. The Electrical Contractor shall be completely responsible for all lighting fixtures from the time of receipt until the finished building is turned over to the Owner (See Electrical Drawings for fixture location, type, manufacturer, etc.)
 - 2. The Electrical Contractor shall obtain shop drawings, approvals, order and receive all lighting fixtures that are delivered to the job site, inspect same, and refer all claims for shortage and/or damage to the shipper immediately for all required adjustments.
 - 3. All damaged and/or missing fixtures and lamps shall be replaced and repaired by the Electrical Contractor at his expense. All lighting fixtures shall be stored in one area. The Electrical Contractor shall coordinate with the General Contractor's Job Superintendent to establish this storage area in the best possible location.
 - 4. The Electrical Contractor shall keep the fixture supplier informed so that all fixtures can be delivered to the job site when required.
- B. Install lighting fixtures complete and ready for service in accordance with the Drawings:
 - 1. Continuous fixtures shall be wired from one outlet located at the end of the specific row and wired through the chassis connecting the indicated circuit as shown on the drawings. The Electrical Contractor shall be responsible for investigation with the Electrical Inspection Authorities to assure that through-chassis wiring is permitted. If through-chassis wiring is permitted, no compensation for error of drawings as to the actual number of outlets required.
 - 2. Wire fixtures with fixture wiring of at least 105° C rating. Where fixtures are mounted in continuous rows, provide conductors in wiring channels of the same size as the circuit wires supplying the row of fixtures.
 - 3. Use only bonderized, galvanized, or sherardized steel for fixture installation for protection against rust and corrosion, and install fluorescent fixtures straight and true with reference to walls.

4. Install all lighting fixtures, so that the weight of the fixture is supported, either directly or indirectly, by a sound and safe structural member of the building, using adequate number and type of hangers and fasteners to assure safe installation.
 - a. Screwed fastenings and toggle bolts through ceiling material or wall paneling are not acceptable.
 - b. Do not support from sub-purlins of panelized roof systems.
5. Single fixtures shall have an outlet box provided for each fixture unless within 4'-0" of outlet box, accessible per code.
6. Special Mounting: When mounting fixtures to rocklath, acoustical or gypsum board ceilings, the Electrical Contractor shall provide and install mounting hardware or angles and secure the fixtures to framework above. When mounting surface or pendant type fixture to metal lath and plaster, they shall be secured per code. When locating outlets in suspended grid ceilings, the Electrical Contractor shall consult and cooperate with the Acoustical Contractor to assure correct placement of fixtures in the grid. Authorized slips may be used as fixture support below suspended grid ceilings when the "T" bars are adequate to support the load, with the cost of such additional support by the Electrical Contractor. For gypsum board ceilings, coordinate location with reflected ceiling plans.
7. Plaster Rings, when recessed fixtures require plaster frame or ring, the Electrical Contractor shall deliver them to the General Contractor 30 days prior to the lathing operation.
8. The Electrical Contractor shall not install any fixtures until the ceiling Contractor has provided adequate support to the suspended ceiling, as necessary. In the event of inadequate support, the job superintendent shall be notified by the Electrical Contractor. After adequate support has been provided, the Electrical Contractor may proceed to install fixtures. Adequate support means a minimum of a wire on the grid at each corner of fixture.
9. Recessed Fixtures: Fixtures shall not leak light to below and all trim shall be tight to ceiling.
10. Adjust all adjustable type, to highlight, "appointments" generally in direction of arrows on plan.

C. Controls:

1. Provide all required relays, contactors, room controllers,, timers, switches and control wiring
2. Jumpers from terminals, transponders, loop cable, and central processor will be by others.
3. Generally, boxes shall be located in concealed locations or at 7 1/2' height in finished areas, accessible for connections or in unfinished areas. Contractor is to determine actual number of wires based on final authorized control equipment.

3.7 INSTALLATION OF POWER EQUIPMENT

- A. Provide power wiring for panels and equipment as shown on the Drawings or as required for a complete installation.
- B. Connections to miscellaneous building equipment:
 1. Wire to, and connect to, all items of building equipment provided under this and other sections of this contract not specifically described but to which electrical power is required.
 2. Coordinate as necessary with other trades and suppliers to verify types, numbers, and locations of equipment.
- C. Provide motor starters and switches mounted in NEMA type 1 or type 3R enclosures for Exhaust Fans and any other equipment not provided with starters by the manufacturer.

3.8 INSTALLATION OF CONDUCTORS

- A. The minimum conductor size will be No. 12 for all branch circuits. When necessary use larger wire sizes to prevent voltage drops.
 1. Where wire size is not shown, install conductors sized to loads.
 2. Where conduit size is not shown, size to wire and load.
 3. Provide code-sized conduit for number and size wires shown or required, unless a larger size conduit is shown on the Drawings.
 4. Support all conduit, junction boxes, etc., from building structure only.

5. Color code: Insulation is to be colored as follows:
 - a. 120/208 volt system:

"A" phase	- Black
"B" phase	- Red
"C" phase	- Blue
Neutral Conductor	- White
 - b. 480/277 volt system:

"A" phase	- Brown
"B" phase	- Orange
"C" phase	- Yellow
Neutral Conductor	- Grey
 - c. Equipment Ground Conductor(all systems)

	- Green
- B. All branch circuits to be rigid conduit or EMT in accordance with other Sections of this Specification.
 1. Exception: flexible metal conduit will be allowed for tap connections to the lighting fixtures to allow the fixtures to be lifted out of the way. 3/8" minimum diameter with high-temp wiring, to be allowed as per code.
 2. Other wiring methods as authorized by the Engineer.
- C. Use identified (white) neutrals and color-coded phase wires for all branch circuit wiring.
 1. Make splices electrically and mechanically secure with pressure-type connectors.
 - a. For wires size 6 AWG and smaller, provide "Scotch-Lock" type connectors.
 - b. For wire size 4 AWG and larger, provide Burndy "Versitaps" and heavy-duty connectors, or T & B "Lock Tite" connectors.
 2. Insulate splices with a minimum of three half-lapped layers of Scotch Brand No.33 vinyl-plastic electrical tape where insulation is required.
- D. Tape all joints with rubber tape 1-1/2 times the thickness of the conductor insulation, then cover with the friction tape or the vinyl-plastic electrical tape specified above.
- E. The Drawings are a general indication of the direction of home runs. Continue all such home runs to the panel as though the routes were shown completely.

3.9 INSTALLATION OF WIRING DEVICES

- A. Mounting Height: (Outlets) - The Electrical Contractor is to coordinate locations of all outlets on walls, columns, etc. with field conditions, so that the outlet does not occur at junction of different materials in wall finishes, on molding, break in wall surface, or other unsuitable locations. Note: Mounting height is the distance from finished floor line to center line of outlet. All heights and locations shall be verified with Architect before installation.

3.10 INSTALLATIONS OF OUTLETS AND BOXES

- A. Outlets:
 1. Install to bear evenly and truly, secured on axis of supporting members.
 2. Where boxes are back of finished surface, use recessed boxes and proper length screws, of size to form shoulder at exact point to retain switch in position. Use no wooden wedges, shims or blocks for truing up.
- B. Outlet Boxes:
 1. Locations indicated for local wall switches are subject to modifications. At or near doors install switch on side opposite hinge. Verify final door hinge location in field prior to switch outlet installation.

2. Set boxes square and true with building finish. Erect wall and switch outlets in advance of furring and fireproofing. Secure to building structure or steel by adjustable strap irons.
3. Verify locations of outlets and switches in finished rooms with drawings of interior details and finish. In centering outlets and locating boxes allow for overhead pipes, ducts and mechanical equipment, variations in fireproofing and plastering, window and door trim, paneling, hung ceilings, and the like, and correct any inaccuracy resulting from failure to do so without expense to Owner.

C. Ceiling Outlet Boxes:

1. Install flush with ceiling. Bar hangers or chain suspension from the joists shall be used in the stock areas. Pull chain cords shall be continuous, complete with bell and no more than 6'-0" from floor.
2. Boxes shall be secured with lead anchors or beam clamps as required with all thread rod or authorized equal. A workmanlike installation shall prevail.

D. Junction and Pull Boxes:

1. Provide pull boxes wherever necessary to facilitate pulling of wire and/or as indicated on Drawings. Coordinate location with other trades to assure that covers will be fully accessible, free from any and all obstruction when building is complete.
2. Junction and pull boxes shall be located so as not to be exposed in finished areas. (Preferred location in accessible ceiling spaces).
3. Support junction and pull boxes directly to building structure with no weight bearing on conduits.
4. Outlet boxes for lighting fixtures recessed in hung ceilings shall be accessible through opening created by removal of fixture or adjacent ceiling tile.

3.11 SUPPORTS, INSERTS AND HANGERS

- A. The Electrical Contractor shall provide all supports, inserts, and hangers for conduits, cables, lighting fixtures, cabinets and other electrical equipment. Inserts and hangers shall be Powerstrut, Kindorf, Unistrut, or Elcen.
- B. Pipe straps shall be used for wall mounting conduit. Pipe straps shall be used for wall mounting conduit. Pipe straps shall be steel, single hole type. Pipe straps, fixtures and cabinets shall be secured to the wall by means of screws, toggle bolts, lag screws in metal expansion shield or other authorized method. Wooden plugs shall not be used.
- C. All overhead conduit shall be supported from the structural beams. Grouped conduit supports shall be steel channel attached to structural beams with proper size beam clamps. Channel may be suspended below structural beams with proper size beam clamps and 3/8" continuous threaded hanger rods installed (maximum) 2'-0" on center for the entire length of channel. Conduit shall be secured to channel with single bolt 2 piece channel pipe clamps for 1-1/4" and larger conduits and strut clips similar to "Caddy" number 12MFA clips for 1" and smaller conduits. Individually supported conduits shall be secured to structural beams with proper size beam clamps and one piece pipe hanger clamps with closure bolt similar to "Kindorf" 6HB series, for 1-1/4" and larger conduits, and combination conduit hanger clamps similar to "Caddy" #16-M-5-8 for 1" and smaller conduits.
- D. Welded studs may be used for attachment to steel members, but conduits shall not be welded directly. Tie wire shall not be used to support or secure conduit.
- E. Authorized manufacturers of channel are Powerstrut, Unistrut, and Kindorf. Authorized manufacturers of conduit clamps are Powerstrut, Unistrut, Kindorf, Minerallac, and Caddy.
- F. NOTE: Electrical Contractor shall be responsible for determining proper size clamps for the various conduit sizes and beam flange thickness encountered.
- G. Conduits shall not be supported by ceiling grid. They shall be supported directly by the building structure.
- H. Pass raceways over water, steam or other piping where pull boxes are not required. No raceway within three inches of steam and hot water pipes, or appliances, except at crossings where raceway shall be at least one inch from pipe cover. Install raceway to prevent collection of trapped condensation and be devoid of traps.

3.12 INSTALLATION OF PANELS

- A. Unless otherwise shown on the Drawings, install panels with the top of the trim 6'-3" above the finished floor.
- B. Mount a typewritten directory behind glass or plastic on the inside of each panel door and, on the directory, show the circuit number and complete description of all outlets on each circuit.
- C. Panelboard Spare Conduits shall be furnished and installed by the Electrical Contractor when a panel is either recessed, or furred-in. These conduits shall be sized to provide capacity for future wiring of all spares within the panel. Run conduits from panel to accessible ceiling space. Provide a minimum of 3 1" conduits per panel.
- D. Cabinets for relays may be appended to panels cabinets or may be separate. Where necessary, they shall be full width. Cabinets shall include hinged door and latch.
- E. Panels shall be recessed in corridors and wherever possible.

3.13 TESTING AND INSPECTION

- A. Provide personnel and equipment, make required tests, and secure required approvals from the Engineer and governmental agencies having jurisdiction.
- B. Make written notice to the Engineer adequately in advance of each of the following stages of construction:
 - 1. When all rough-in is complete, but not covered;
 - 2. At completion of the work of this Section.
- C. When material and/or workmanship is found not in compliance with the specified requirements, then within three days after receipt of notice of such noncompliance, remove the non-complying items from the job site and replace them with items complying with the specified requirements, all at no additional cost to the Owner.
- D. Upon completion of work, test installation for ground and short circuits. Test all feeders and 10% of each of other electrical system wiring. If tests indicate faults, further tests shall be conducted as required by the Engineer. Resistance between conductors and between conductors and ground:

No. 12	1,000,000 OHMS
No. 10 & No. 8	250,000 OHMS
No. 6, 4, & 3	100,000 OHMS
No. 2, 1, 1/0, 2/0 & 3/3	50,000 OHMS
No. 4/0, 250,300,350 & 500 MCM	25,000 OHMS
No. 750 MCM and larger	12,000 OHMS

3.14 DEBRIS REMOVAL

- A. Routinely remove, in an orderly and efficient manner, and cart away and dispose of, by legal means, off the site and premises (exceptions only to Owner provided dumpsters), all debris related to work of this Section; work site and staging areas shall be kept clear of all debris on a daily basis; permit no debris accumulation which poses any threat to life safety or property. Non-conformance with the foregoing Contract requirements will be subject to all remedies established by the Project "General Documents."

3.15 PROJECT COMPLETION

- A. Upon completion of the work of this Section, thoroughly clean all exposed portions of the electrical installation, removing all traces of soil, labels, grease, oil, and other foreign material, and using only the type cleaner recommended by the manufacturer of the item being cleaned.

- B. Thoroughly indoctrinate the Owner's operation and maintenance personnel in the operation and maintenance of all equipment installed under this Section. A one day session is to be scheduled at the conclusion of this project for this purpose.

END OF SECTION

ESSEX COUNTY COLLEGE HUMANITIES DEPARTMENT OFFICE ALTERATIONS

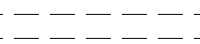
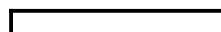
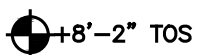
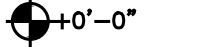
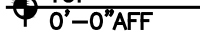
1-55 MARKET STREET, NEWARK, NJ 07102



1 LOCATION MAP
N.T.S.

AF	Above Ceiling Floor	FA	Fire Alarm	NIC	Not In Contract
ACT	Acoustic Ceiling Tile	FE	Fire Extinguisher	NIS	Not To Scale
ADJ	Adjustable	FT	Fin Tube	NJ	Number
ALUM	Aluminum	FOB	Face of Block/Brick	NOM	Nominal
AN	And	FOW	Face of Wall	OC	On Center
APPROX	Approximate	FI	Finish, Finished	OPG	Opening
ARCH	Architect(ural)	FIX	Fixture	OD	Outside Diameter
AT	At	FL	Full Height	OPP SIM	Opposite Similar
AUX	Auxiliary	FP	Fireproof, Fireproofing	OPP HND	Opposite Handed
BET	Between	FLN	Fire Rated	PARL	Partial
BLD	Beam	FLR	Floor	PTD	Painted
BMS	Building	FLD	Floor Drain	PLYWD/PLWD	Plywood
BLK	Block	FTG	Footling	P LAM	Plastic Lamine
BLKG	Blocking	G	Gas	PREP	Preparation
BOD	Board	GA	Gauge	PSI	Pounds Per Square Inch
BOT	Bottom	GC	General Contractor	PSF	Pounds Per Square Foot
B.O.B.	Bottom of	GEN	General	R	Riser
CAB	Cabinet	GL	Glass	R	Roof Drain
CAT	Catalog	GR	Gypsum	REC	Recessed/Reception
CLG	Ceiling	GW/GYP BD	Grout/Gypsum Wall Board	REC	Recessed Ceiling Plin
CJ	Control Joint	GFCI	Ground Fault Current Interrupt	REINF	Reinforce(d) (ing)
CJ & E	Control Joint	HC	Handicapped	RELOC	Relocate
C.O.	Clean Out	HDWR	Hardware	REQ/REQD	Require
CLO	Clear	HDWD	Hardwood	RES	Resilient
CMU	Concrete Masonry Unit	HVAC	Heating/Ventilation & Air Conditioning	RO	Rough Opening
CONC	Concrete	H/HT	Height	SCH	Schedule
COORD	Coordinate	HM	Hollow Metal	SEP	Separate
CORR	Corridor	HR	Hour	SIM	Similar
COW	Cold Water	HOR/HORIZ	Horizontal	SPEC	Specification
COL	Column	HTR	Hot Water	SF	Square Feet
CONST	Construction	ID	Inside Diameter	STL	Stainless Steel
CONT	Continuous	INSUL	Insulation	STR	Structural, Structure
CONTR	Contractor	INT	Interior	SW	Switch
CER	Ceramic	INCL	Include (d)(ing)	SQ	Square
D	Deep	INLV	Insert	SUSP	Suspended
DN	Down	INT	Interior	SYN	Synthetic
DET	Detail/Detector	JT	Joint	THK	Thick
DIA/Ø	Diameter	JT-BOX	Joint Junction Box	T.O.	Top Of
DN	Dimension	LBS	Pounds	T	Typical
DWG	Drawing	LEV	Level, Leg Vertical	TEMP	Temperd
DAG	Diagonal	LT	Light		
DISP	Dispenser	LAM	Lamine		
E	East	MAS	Masonry	UNO	Unless Noted Otherwise
ELEC	Electric, Electrical	MATL	Material	UL	Underwriter's Laboratories
ELEV	Elevation (Feet & Inches)	MTL	Metal		
EQUIP	Equipment	MIN	Minimum	VERT	Vertical
EQ	Equal	MAX	Maximum	VFT	Verify In Field
EACH	Each	MFR	Manufacturer	VCT	Verify Composite Tile
EXT	Exterior	MTR	Mounted	W	Wide
EXO	Existing			WWF	Welded Wire Fabric
EXP	Expansion Joint			W/ W/O	With, Without
EXT	Exterior			WD	Wood
EIFS	Exterior Insulation Finish System			WP	Work Point

4 ABBREVIATIONS

	EXISTING CONSTRUCTION TO BE DEMOLISHED
	EXISTING WALL TO REMAIN
	NEW WALL CONSTRUCTION
	CEILING HEIGHT ABOVE TOP OF SLAB
	SPOT ELEVATION TAG
	ELEVATION DATUM TAG
	INDICATES EXISTING TO REMAIN
	INDICATES NEW
	INDICATES RELOCATED
	EXISTING DOOR TO BE REMOVED
	NEW DOOR
	ELEVATION KEY
	SECTION KEY

2 DRAWING SYMBOLS

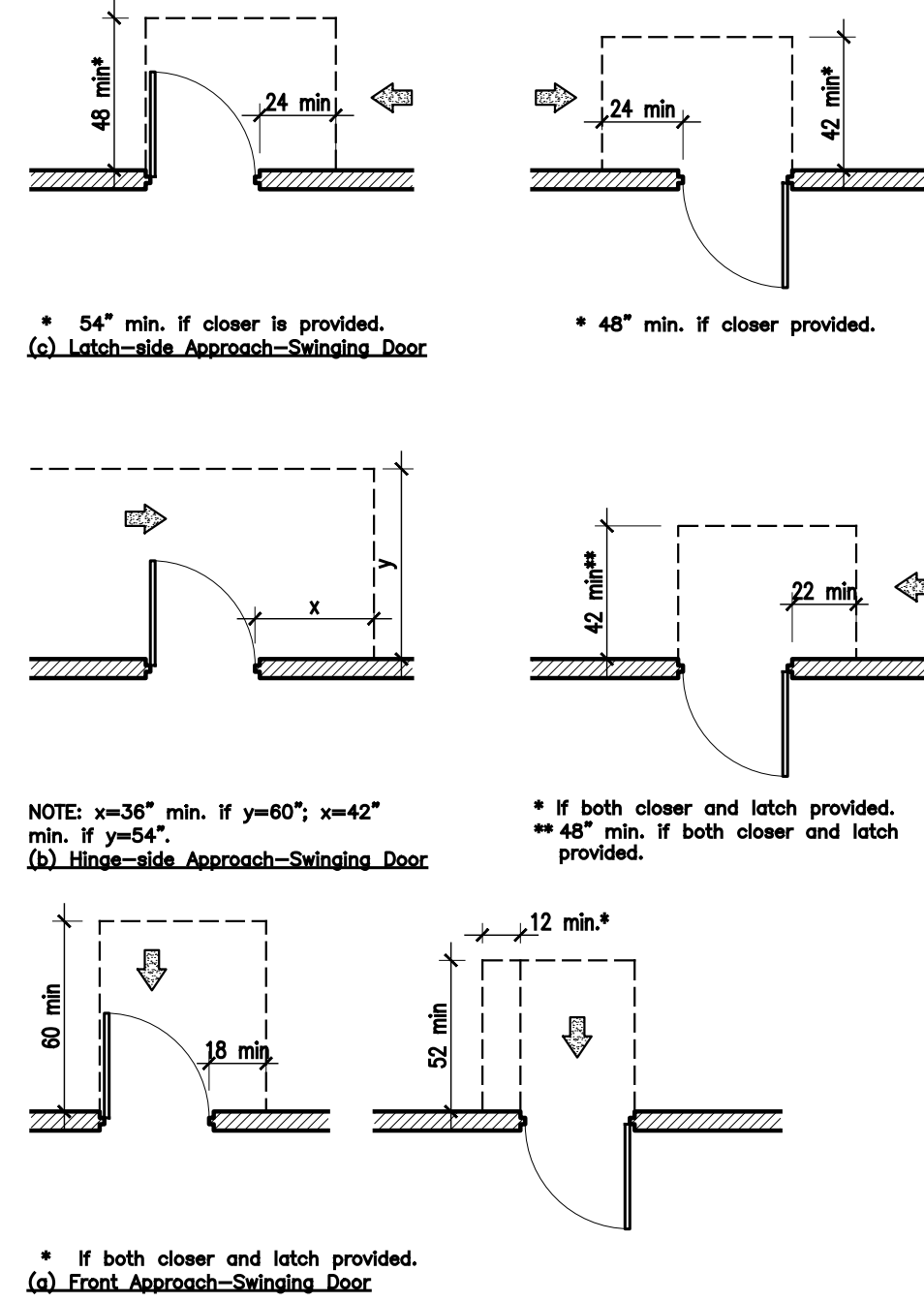
ARCHITECTURAL

G.001	LOCATION MAP, SYMBOLS, DOOR MANEUVERING CLEARANCES, ABBREVIATIONS, & DRAWING LIST
G.002	CODE REVIEW & EGROSS PLAN
D.100	DEMOLITION FLOOR & CEILING PLANS
A.101	CONSTRUCTION PLAN
A.111	REFLECTED CEILING PLAN
A.411	INTERIOR ELEVATIONS & MILLWORK
A.421	PARTITION TYPES AND DETAILS, FOLDING PARTITION DETAILS
A.501	DOOR SCHEDULE & DETAILS, STOREFRONT ELEVATION & DETAILS
A.502	DOOR SCHEDULE & DETAILS, STOREFRONT ELEVATION & DETAILS
A.601	FINISH & SIGNAGE PLAN

PLUMBING

P.101	PLUMBING DEMOLITION PLAN
P.102	PLUMBING PLAN
P.201	PLUMBING DETAILS
P.301	PLUMBING SPECIFICATIONS

5 DRAWING LIST



3 DOOR MANEUVERING CLEARANCES

MECHANICAL

M.101	MECHANICAL DEMOLITION PLAN
M.102	MECHANICAL SECOND AND ROOF DEMOLITION PLAN
M.201	MECHANICAL FIRST FLOOR PLAN
M.202	MECHANICAL SECOND AND ROOF NEW WORK PLAN
M.301	MECHANICAL SCHEDULES
M.401	MECHANICAL DETAILS

ELECTRICAL

E.101	ELECTRICAL DEMOLITION PLAN
E.102	ELECTRICAL LIGHTING PLAN
E.103	ELECTRICAL POWER PLAN
E.201	ELECTRICAL DETAILS & SCHEDULES
E.301	ELECTRICAL SPECIFICATIONS

FIRE ALARM - FOR COORDINATION ONLY, NOT IN SCOPE

FA.101 FIRE ALARM PLAN

FA.201 FIRE ALARM DETAILS

NOTES:

- 1) ALL FIRE ALARM AND SPEAKER WORK TO BE PROVIDED BY OWNER'S VENDORS.
- 2) DETAILS, PLANS ETC. SHALL NOT BE SCALED OFF DRAWINGS.
- 3) ALL EXISTING CONDITIONS MUST BE VERIFIED IN FIELD.
- 4) NOTIFY ARCHITECT IN WRITING OF ANY DISCREPANCIES.
- 5) GC TO COORDINATE SEQUENCE OF WORK AS REQUIRED FOR INSTALLATION OF ALL ITEMS/EQUIPMENT.
- 6) GC IS RESPONSIBLE FOR ALL INFORMATION CONTAINED IN THE CONSTRUCTION DOCUMENTS AND MUST COORDINATE BETWEEN ALL TRADES TO PROVIDE INTENDED RESULT.

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HUMANITIES DEPARTMENT
OFFICE ALTERATIONS

1-55 MARKET STREET

NEWARK, NJ

arcari iovino
+ ARCHITECTS PC

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CERTIFICATE OF AUTHORITY
NJ#119536278

EDWARD ARCARI NJ#12306
ANTHONY IOVINO NJ#11720

Omdex Incorporated
Consulting Engineers



21 Cross Avenue
Midland Park, NJ 07432-1811
(201) 444-0753 FAX (201) 444-0839

BRIAN PASECHNICK NJ#48111

LOCATION MAP, SYMBOLS,
DOOR MANEUVERING CLEARANCES,
ABBREVIATIONS, & DRAWING LIST

SCALE: AS NOTED

DATE: 03.09.2026

FILE: 2448\Current\ G.001

SHEET NO:

G.001

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CODE REVIEW

Project Name: Essex County College Humanities Department Office Renovations

Location: 1-55 Market Street, Newark NJ

Architects: Arcari & Iovino Architects
One Katherine Street
Little Ferry, NJ 07643
201.641.0600

Applicable Code: 2025 NJ Rehabilitation Subcode (NJAC 5:23-6)
2021 International Building Code, New Jersey Edition
2017 ICC/ANSI A117-1 Barrier Free Subcode UCC-NJ 5:23 Sub-Chapter 7
2021 International Mechanical Code
2021 International Fuel Gas Code
2019 Energy Code Version of ASHRAE 90.1
2021 National Standard Plumbing Code
2020 National Electrical Code

Description of Work: The work consist of alterations to the work area, as defined in the rehab subcode, including new partitions, doors, windows, lighting and finishes.

Work Area:

Existing (alteration) 26, 517 sq. feet

IBC 2021, NJ EDITION

CHAPTER 3 - USE AND OCCUPANCY CLASSIFICATION

304.1 Use Group B
Construction Type Req. I-B
Non-Sprinklered

CHAPTER 6 - TYPES OF CONSTRUCTION

Table 601- Fire Resistant Ratings Required (Type I-B)

	Required	Proposed
Structural Frame:	2 hrs	2 hrs
Bearing Walls:		
Exterior:	2 hrs	2 hrs
Interior:	2 hrs	2 hrs
Nonbearing Walls		
Partitions Exterior:	0 hrs	0 hrs
Partitions Interior:	0 hrs	0 hrs
Floor Construction:	2 hrs	2 hrs
Roof Construction:	1 hrs	1 hrs

Table 705.5 Fire Resistant Rating for exterior walls based on sep. distance

≥ 30'-0" 0 Req. 0 Proposed

CHAPTER 7 - FIRE RESISTANT MATERIALS AND CONSTRUCTION

707 Fire Barriers
707.5 Continuity
-Extend from top of Floor/Ceiling Assembly below to underside floor or roof deck above and be securely attached there to.
-Make continuous through concealed spaces
707.6 Openings
Openings in Fire Barrier shall be protected in accordance with Section 716
707.7 Penetrations
Penetrations of Fire Barriers shall comply with Section 713
707.8 Joints
Joints made in or between Fire Barriers shall comply with Section 714
713.4 Fire Resistance Rating
Shaft enclosure shall have Fire-Resistance Rating of not less than 1 Hour where connecting less than 4 stories
708 Fire Partitions
Table 1018.1 Corridor Fire-Resistance Rating without Sprinkler System: 1-Hour
709 Smoke Barrier - Not Required
716 Opening Protectives
Table 716.1(2) Opening Fire Protection Assemblies

	Wall Rating	Door Rating
Fire Barriers	1 HR	1HR

CHAPTER 8 - Interior Finishes

Table 803.13 - Interior Wall Ceiling Finish Req. by OCC. (B use, Non-Sprinklered)

Exit Enclosure/ Exit Passageway Class A
Corridors Class B
Rooms/ Enclosed Spaces Class C

CHAPTER 9 - FIRE PROTECTION SYSTEMS

903 Automatic Sprinkler System
Required: NO
Provided: NO

906 Fire Extinguishers
Required: YES
Provided: YES

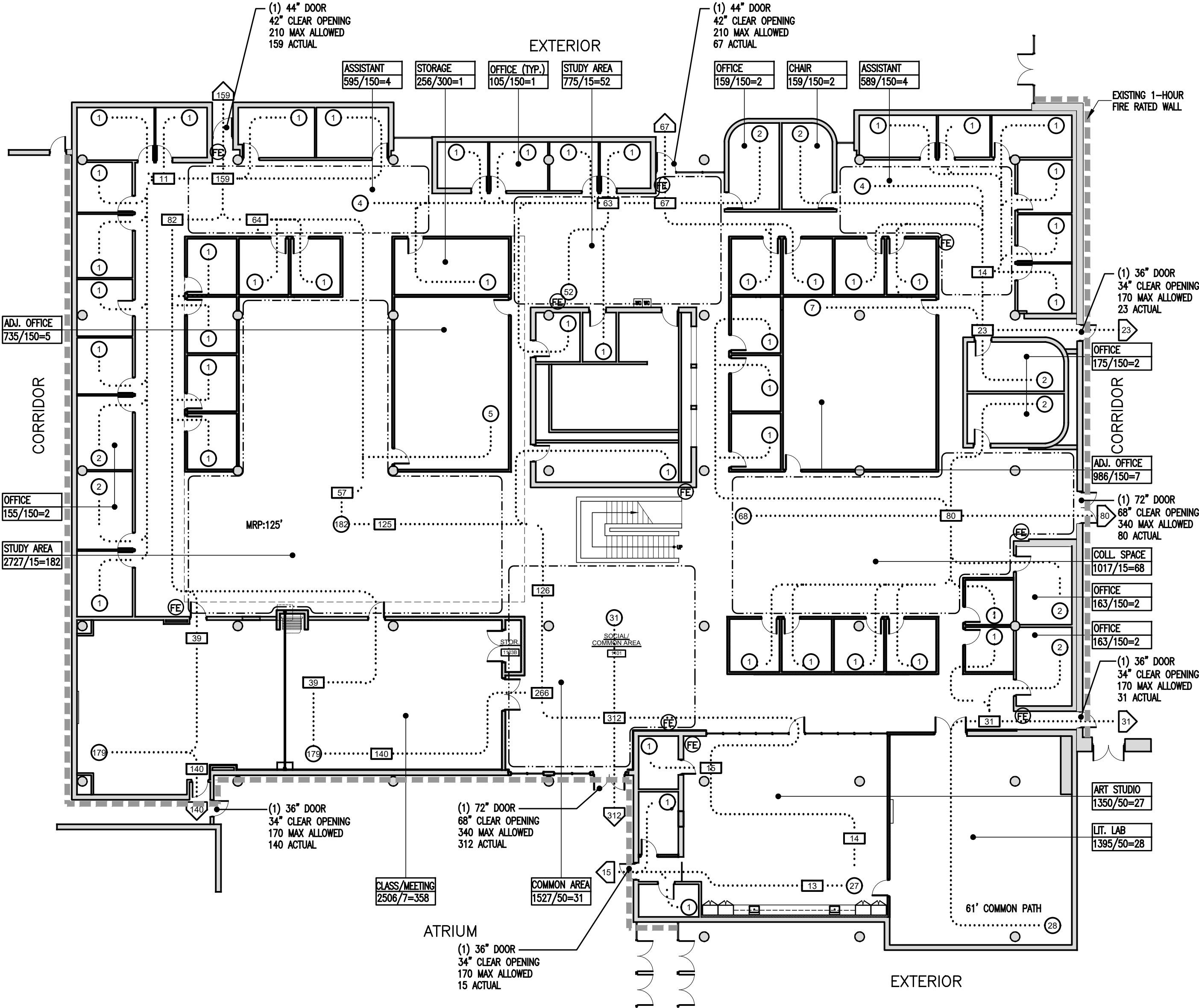
Table 906.3(1):

	Required	Provided
Min. Extinguisher Rating:	2A	2A
Max. Floor Area Per Unit of A:	3,000 SF	1,326 SF
Max. Travel Distance To Extinguisher:	75 FT	Complies

CHAPTER 10 - MEANS OF EGRESS

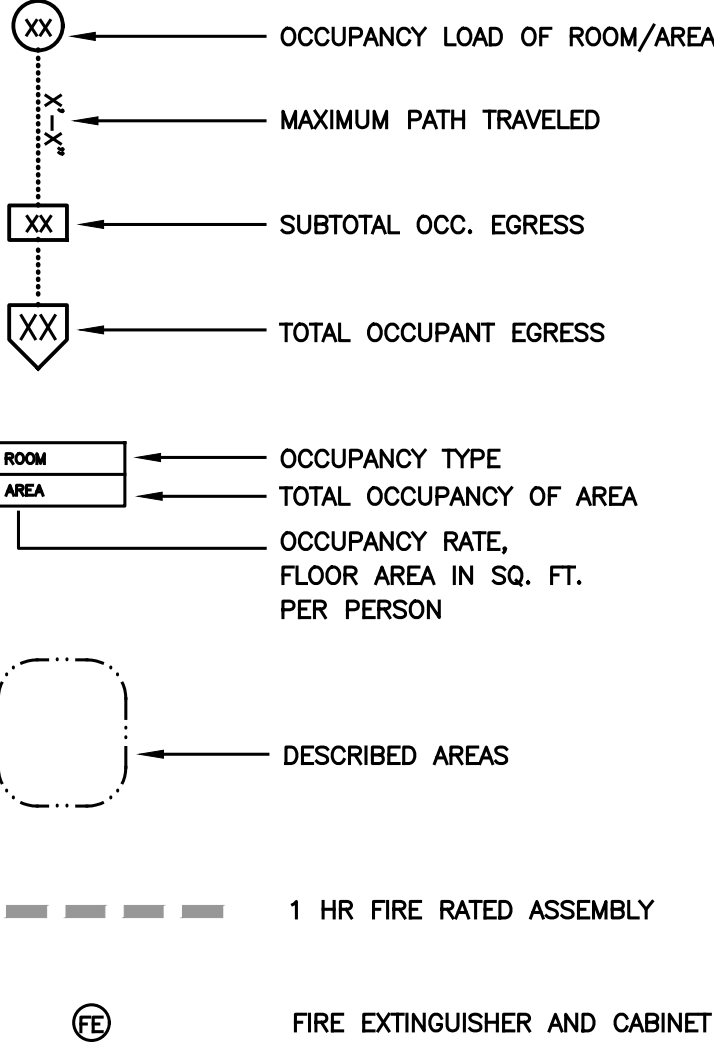
1004 Occupant Load
Work Area: Table 1004.1.2
827 People

1005.3	Egress Width	Required	Provided
1005.3.2	Other Egress Components	.2" Min	Complies
1006	Number of Exits/ Continuity Table 1006.3.1 (501-1000 occupants)	Min 3 exits/flr	Complies
1006.2.1	Spaces with One Exit Group B, Non-Sprinklered	49 Occ/75'	Complies
1017	Exit Access Travel Distance Table 1017.2Non-sprinklered)	200' Max	125' Actual



1 EGRESS PLAN
SCALE 1/16"=1'-0"

EGRESS LEGEND



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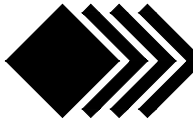
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arcari iovino
+ ARCHITECTS PC

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BRIAN PASECHNICK NJ#48111

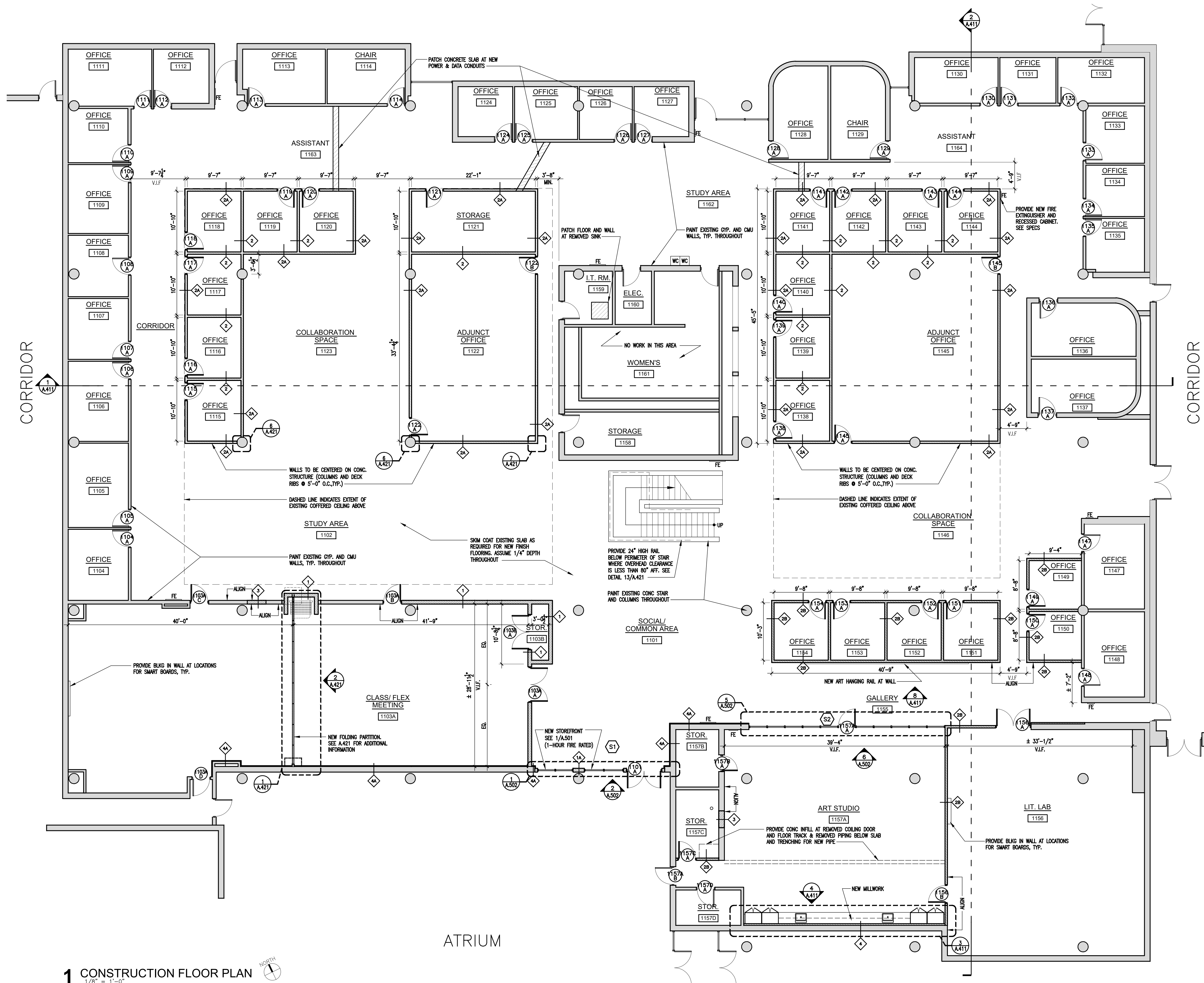
CODE REVIEW &
EGRESS PLAN

SCALE: AS NOTED
DATE: 03.09.2026
FILE: 2448(Current\ G.002

SHEET NO:
G.002

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LEGEND				
	EXISTING STRUCTURE TO REMAIN			
	EXISTING STRUCTURE TO BE DEMOLISHED			
	EXISTING DOOR & FRAME TO BE REMOVED			
	EXISTING FIRE EXTINGUISHER TO BE REMOVED			
	EXISTING SUSPENDED CEILING GRID AND TILE ABOVE TO BE REMOVED.			
DEMOLITION NOTES				
1. DEMOLITION PLAN IS INTENDED TO INDICATE MINIMUM DEMOLITION WORK. COMPARE THE PLANS WITH THE EXISTING CONDITIONS TO DETERMINE THE AMOUNT OF WORK AFFECTED. 2. CONTRACTOR SHALL REPAIR OR REPLACE AT THE DIRECTION OF THE ARCHITECT, ANY AND ALL EQUIPMENT, APPARATUS, PARTS OF THE BUILDING, PROPERTY OF THE OWNER NOT SPECIFIED TO BE DEMOLISHED, AND NOT SPECIFIED TO BE REMOVED, BUT WHICH ARE DAMAGED DURING THE PROGRESS OF, AND AS A RESULT OF, THE WORK OF THIS SECTION. MAKE ANY AND ALL SUCH REPAIRS, REPLACEMENTS, AND RECTIFICATION TO RESTORE THE DAMAGED PORTIONS OR ITEMS TO AT LEAST THEIR ORIGINAL CONDITION AT THE TIME OF DAMAGE, AND WITHOUT EXTRA COST. 3. CONTRACTOR SHALL FURNISH AND MAINTAIN TEMPORARY TYPES OF PROTECTION (FENCES, SIGNS, BARRICADES, ETC.) AS NECESSARY TO ADEQUATELY PROTECT AND PREVENT ACCIDENTAL INJURY TO THE PUBLIC AND OWNER'S PERSONNEL. CONTRACTOR SHALL KEEP TRESPASSERS OFF WORK AREAS. PROPERLY SECURE WORK AREAS FROM ENTRY WHEN WORK IS NOT IN PROGRESS. 4. REMOVE, RELOCATE, RE-ROUTE, TERMINATE OR CAP AS REQUIRED ALL PLUMBING, MECHANICAL, ELECTRICAL, OR OTHER ENGINEERED WORK LOCATED IN EXISTING WALLS, PARTITIONS, FLOORS OR CEILINGS TO BE REMOVED AND WHERE NEW OPENINGS ARE TO BE CUT. CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF DEMOLITION BETWEEN DRAWINGS. 5. TEMPORARY PARTITIONS SHALL BE CONSTRUCTED AS REQUIRED TO KEEP DUST AND DIRT FROM ADJOINING SPACES AND HVAC DUCTS. 6. ALL EMERGENCY EXITS SHALL BE KEPT CLEAR AND ACCESSIBLE AT ALL TIMES. 7. UNLESS NOTED OTHERWISE ON DRAWINGS OR SPECIFICATIONS, ALL EXISTING WORK DISTURBED BY THE REMOVAL, RELOCATION, OR NEW INSTALLATION OF PLUMBING, ELECTRICAL, MECHANICAL OR STRUCTURAL WORK SHALL BE PATCHED TO MATCH ORIGINAL WORK. 8. UNLESS NOTED OTHERWISE ON DRAWINGS OR SPECIFICATIONS, CONTRACTOR SHALL REMOVE EXISTING APPLIED FLOOR AND WALL FINISHES WHERE NEW FLOOR AND WALL FINISHES ARE NOTED ON THE FINISH DRAWINGS. 9. WHERE WALLS ARE REMOVED, CONTRACTOR SHALL INSURE THAT ALL FINISHED SURFACES ARE LEVEL WITH ADJACENT SURFACES. 10. ALL DEMOLITION WORK, WHICH CREATES DISTURBING NOISE, SHALL BE PERFORMED AS PER THE OWNER'S INSTRUCTIONS. THE REMOVAL OF DEBRIS AND EQUIPMENT MUST BE ARRANGED TO AVOID ANY INCONVENIENCE TO OWNER. 11. ALL MATERIAL DEBRIS AND RUBBISH RESULTING FROM DEMOLITION WORK SHALL BE CLEANED UP AND REMOVED FROM BUILDING AND SITE AND LEGALLY DISPOSED OF. LEAVE ALL AREAS OF WORK IN "BROOM CLEAN" CONDITION. 12. CONTRACTOR SHALL SCHEDULE WORK SO AS TO IMPOSE A MINIMUM OF HARSHNESS ON THE PRESENT OPERATION OF THE FACILITIES AND THE PERFORMANCE OF THE WORK OF THE OTHER TRADES. 13. CONTRACTOR SHALL EXECUTE THE DEMOLITION IN A CAREFUL AND ORDERLY MANNER WITH THE LEAST POSSIBLE DISTURBANCE TO THE PUBLIC, AS MUTUALLY AGREED UPON WITH THE OWNER.				
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ESSEX COUNTY COLLEGE HUMANITIES DEPARTMENT OFFICE ALTERATIONS 1-55 MARKET STREETNEWARK, NJ + ARC HITECTS PC ONE KATHERINE STREET LITTLE FERRY, NJ 07643 201 641 0600 WWW.AIARCHS.COM CERTIFICATE OF AUTHORITY NJ#119536278 EDWARD ARCARI ANTHONY IOVINO NJ#112306 NJ#11720 Omdex Incorporated Consulting Engineers  21 Cross Avenue Midland Park, NJ 07432-1811 (201) 444-0753 FAX (201) 444-0839 BRIAN PASECHNICK NJ#48111 DEMOLITION FLOOR & CEILING PLAN <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"><tr><td style="width: 60%; padding: 5px;"> SCALE: AS NOTED DATE: 03.09.2026 FILE: 2448/Current/D.100 </td><td style="width: 40%; padding: 5px; text-align: center;"> SHEET NO: D.100 </td></tr></table> © 2026 arcari + iovino ARCHITECTS PC			SCALE: AS NOTED DATE: 03.09.2026 FILE: 2448/Current/D.100	SHEET NO: D.100
SCALE: AS NOTED DATE: 03.09.2026 FILE: 2448/Current/D.100	SHEET NO: D.100			



LEGEND

AREA NOT IN SCOPE OF WORK

EXISTING WALLS

NEW WALLS

NOTE

1) ALL EXISTING FIRE EXTINGUISHERS/CABINETS TO REMAIN

ART HANGING RAIL

BASIS OF DESIGN: STARS CLIP PRO, WALL MOUNTABLE ALUMINUM RAIL THAT CAN CARRY AN 45KG PER LINEAR METRE. GC TO PROVIDE SOLID BLOCKING FOR MOUNTING.

MOUNTING HEIGHT: 8'-10"

REFER TO 9/A.411 FOR DETAIL

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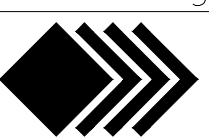
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BRIAN PASECHNICK NJ#48111

CONSTRUCTION PLAN

SCALE: AS NOTED
DATE: 03.09.2026
FILE: 2448/Current A.101

SHEET NO:
A.101

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CEILING LEGEND

- SPECIFIED CEILING TILE IN SUSPENDED GRID. GRID TO BE CENTERED IN ROOM UNLESS OTHERWISE NOTED.
- L1 LINEAR RECESSED LED FIXTURE
- L2 LINEAR SURFACE MOUNTED LED FIXTURE
- L3 LINEAR ACOUSTIC PENDANT D/I LED FIXTURE (BOT OF FIXTURE @ 10' AFF)
- L4 LINEAR WALL MOUNTED LED FIXTURE
- L5 2X2 RECESSED LED FIXTURE
- L6 2X4 RECESSED LED FIXTURE
- L7 2'X4' RECESSED LED FIXTURE
- L8 LINEAR UNDER CAB LED FIXTURE
- EM EMERGENCY LIGHT
- EX EXIT LIGHT
- EL X'-X" AFF CEILING HEIGHT ABOVE FINISHED FLOOR

SEE ELECTRICAL DRAWING FOR THE COMPLETE LIGHTING FIXTURE SCHEDULE

ACOUSTICAL PANELS

BASIS OF DESIGN:
ATS ACOUSTICS, ORIGINAL ACOUSTIC PANELS, 2" THICK X 36" X 36"
COLOR TO BE SELECTED BY ARCHITECT
SUSPEND 6" BELOW CONC W/ ATS ACOUSTICAL CLOUD INSTALLATION HARDWARE

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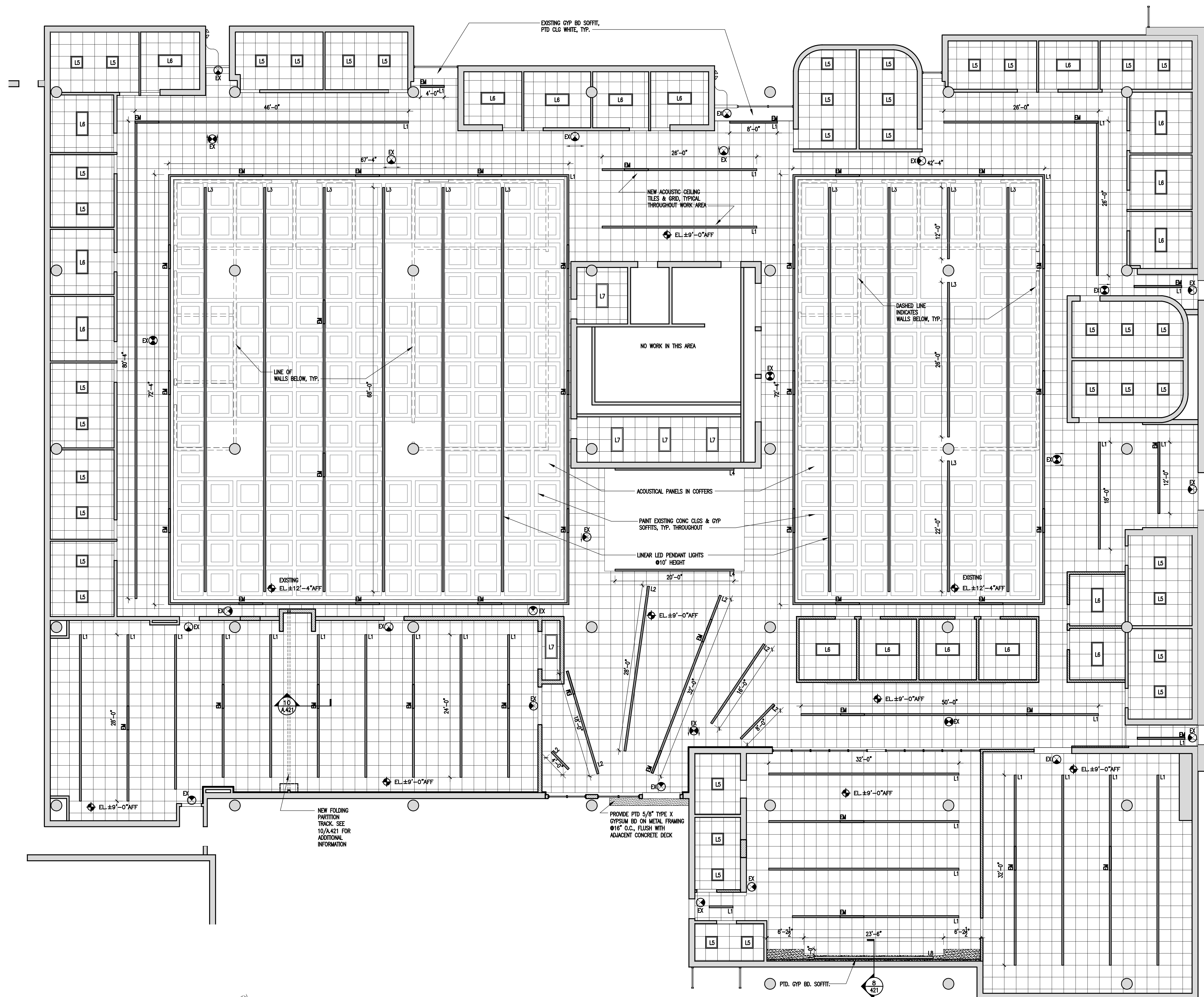
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REFLECTED CEILING PLAN

SCALE: AS NOTED
DATE: 03.09.2026
FILE: 2448(Current) A.111

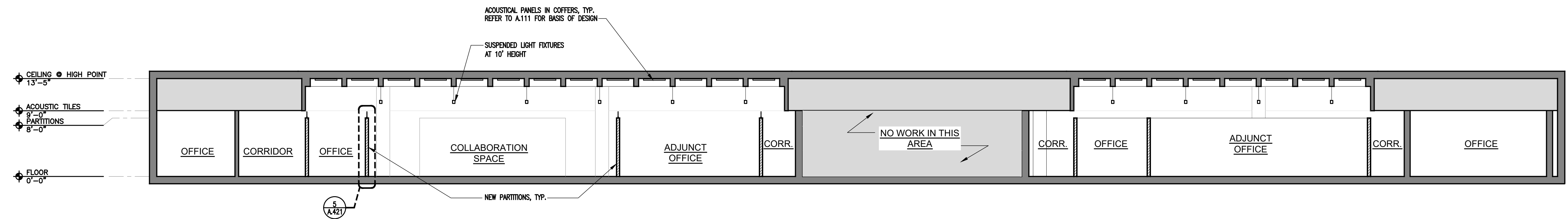
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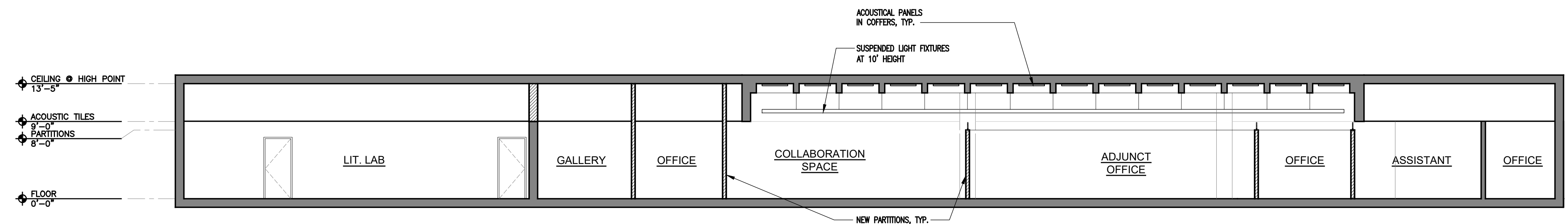


1 REFLECTED CEILING PLAN
1/8" = 1'-0"

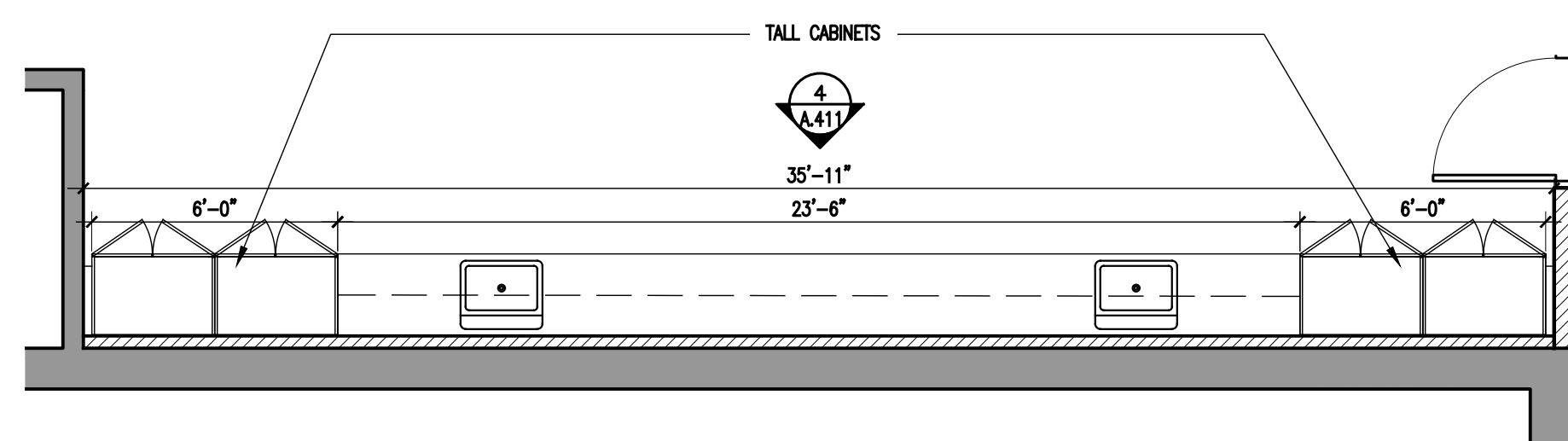




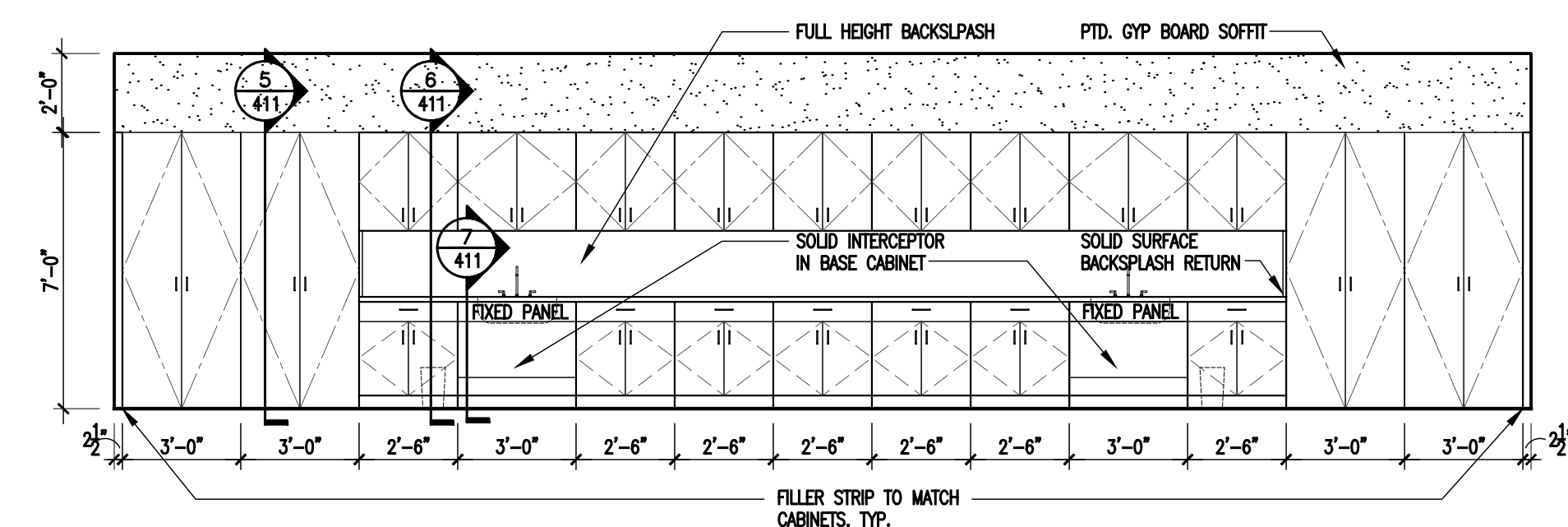
1 SECTION
1/8" = 1'-0"



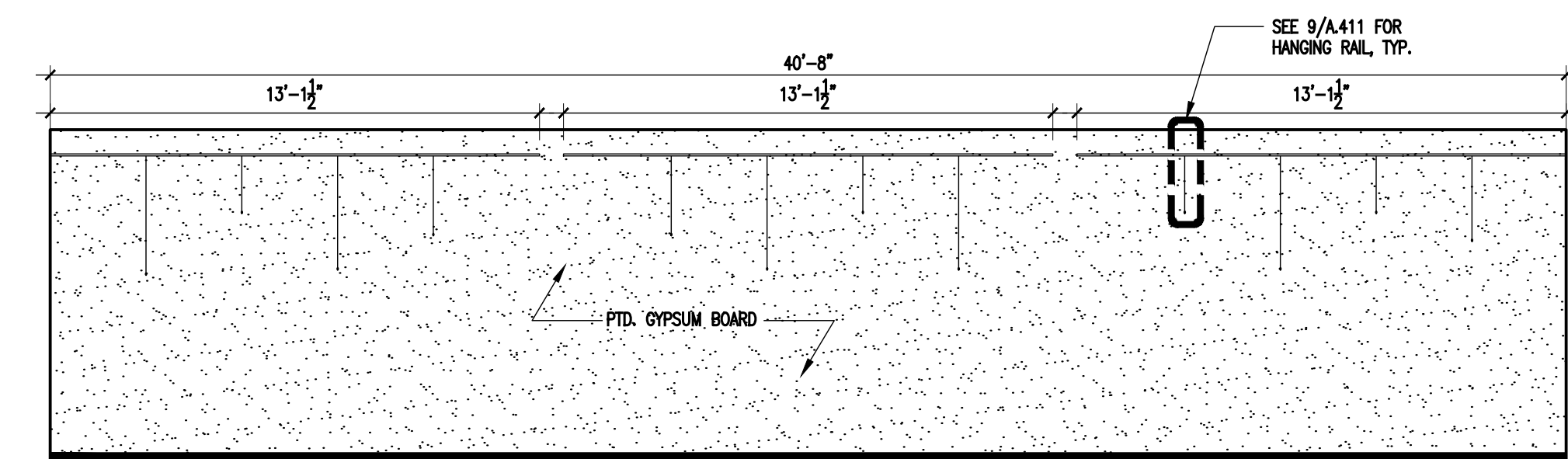
2 SECTION
1/8" = 1'-0"



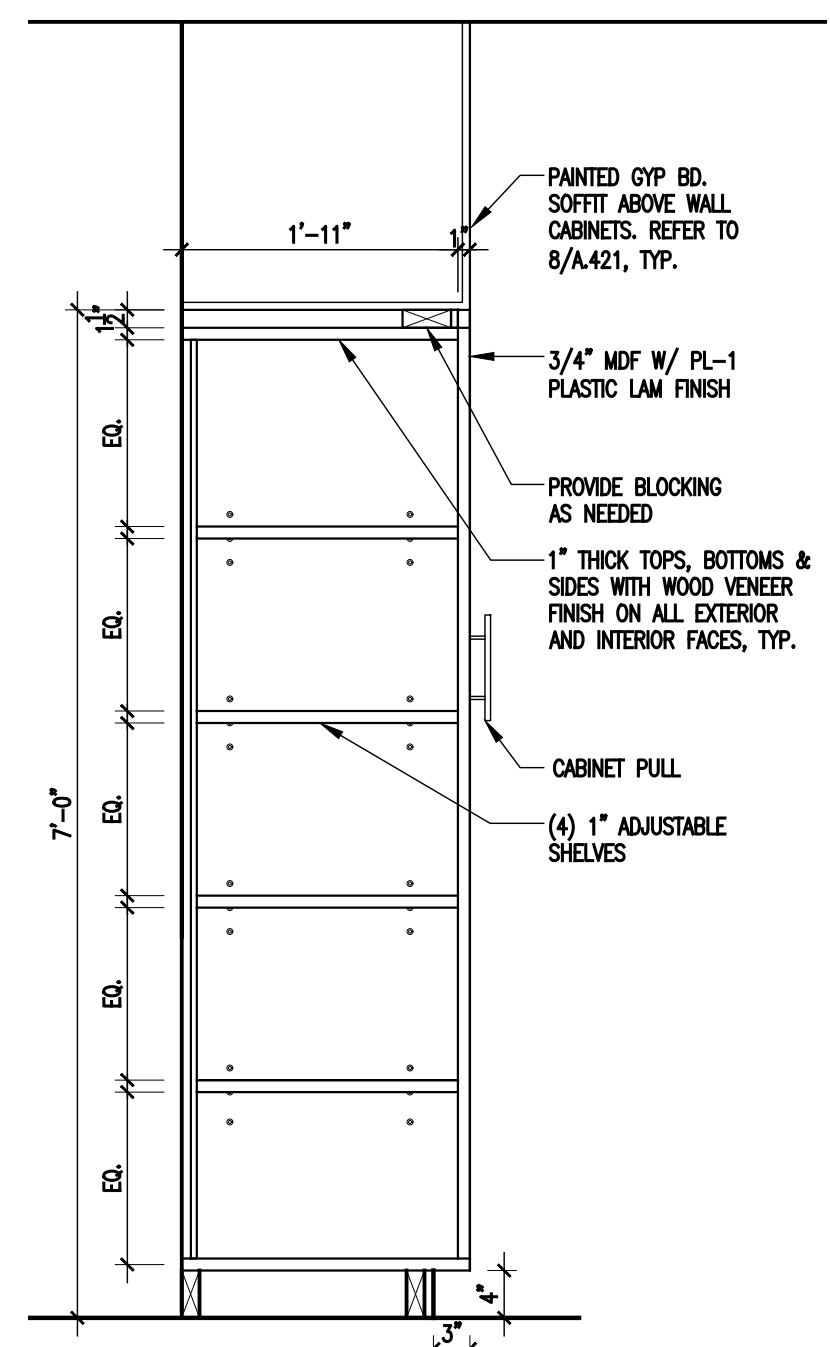
3 ENLARGED PLAN @ ART STUDIO MILLWORK
1/4" = 1'-0"



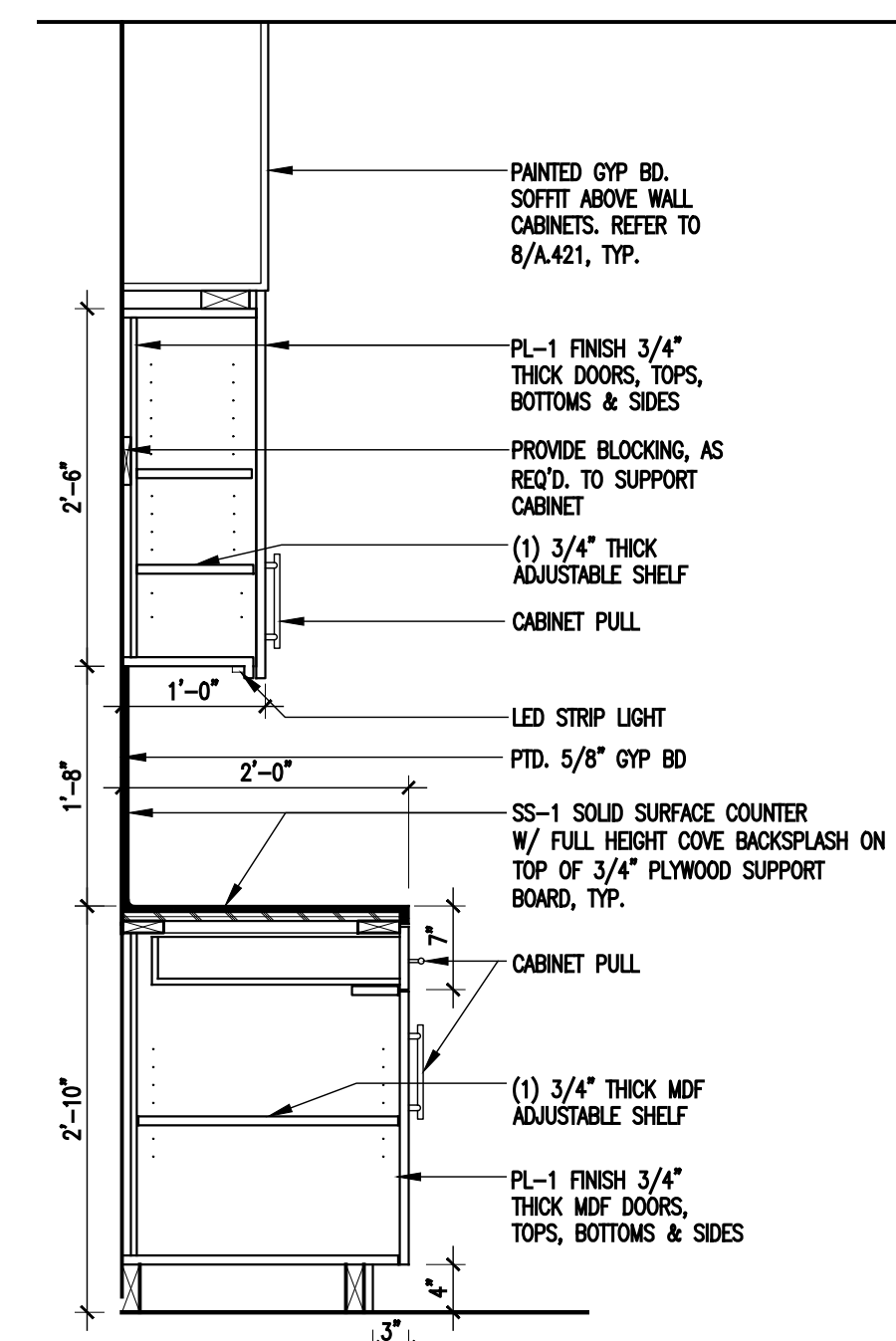
4 INTERIOR ELEVATIONS @ MILLWORK
1/4" = 1'-0"



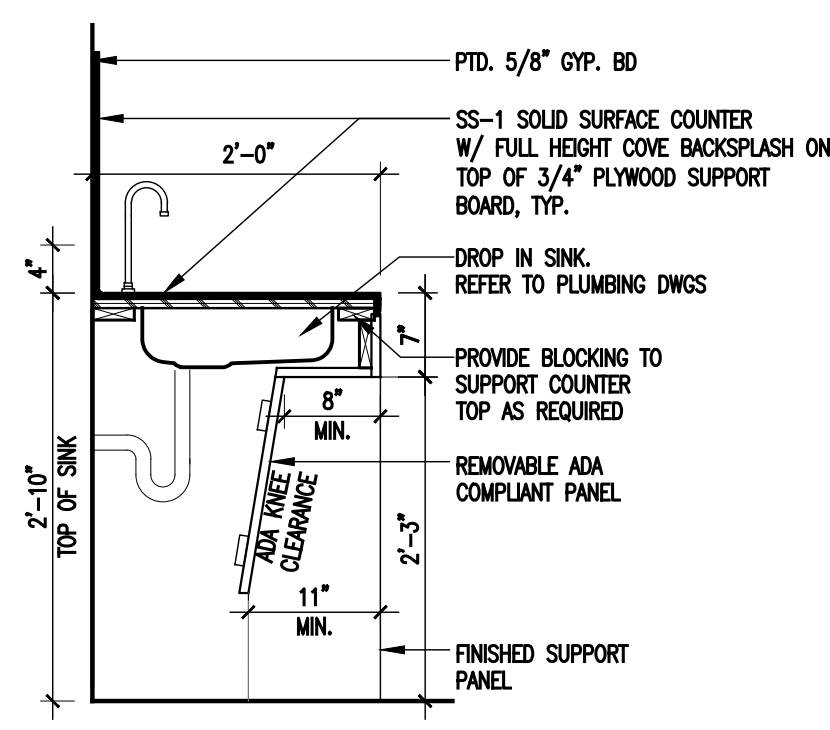
8 INTERIOR ELEVATIONS @ GALLERY
1/4" = 1'-0"



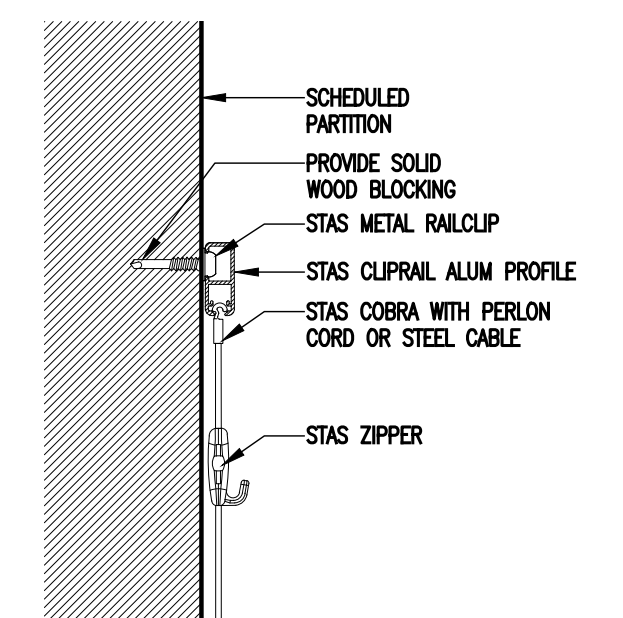
5 TYP. SECTION @ TALL CABINET
3/4" = 1'-0"



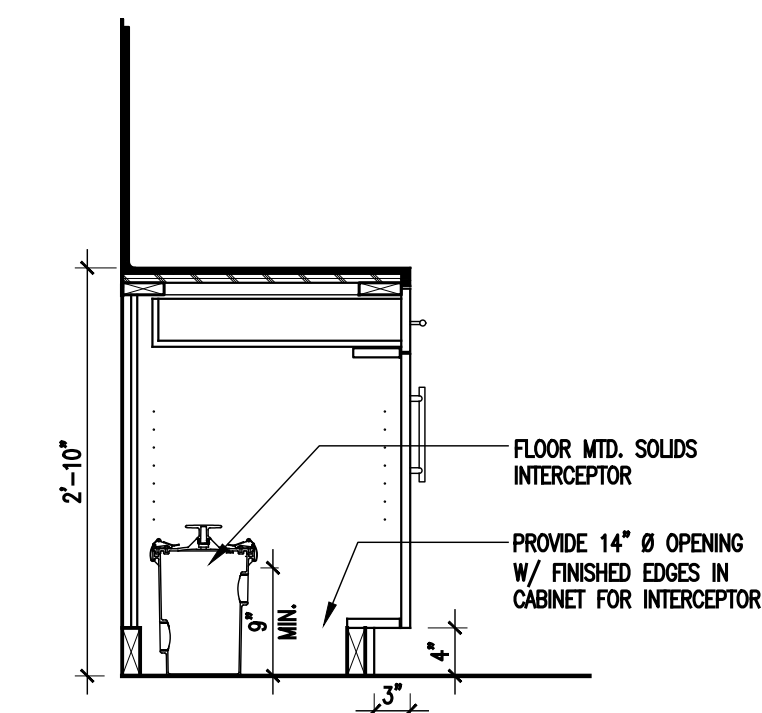
6 TYP. SECTION @ MILLWORK
3/4" = 1'-0"



7 TYP. SECTION @ ADA SINK
3/4" = 1'-0"



9 SECTION @ HANGING RAIL
3" = 1'-0"



10 TYP. SECTION @ SOLIDS INTERCEPTOR
3/4" = 1'-0"

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OFFICE ALTERATIONS

1-55 MARKET STREET NEWARK, NJ

arcari iovino
+ ARCHITECTS PC

ONE KATHERINE STREET
LITTLE FERRY, NJ 07643
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CERTIFICATE OF AUTHORITY
NJ#119536278 EDWARD ARCARI NJ#12306
ANTHONY IOVINO NJ#11720

Omdex Incorporated
Consulting Engineers

21 Cross Avenue
Midland Park, NJ 07432-1811
(201) 444-0753 FAX (201) 444-0839

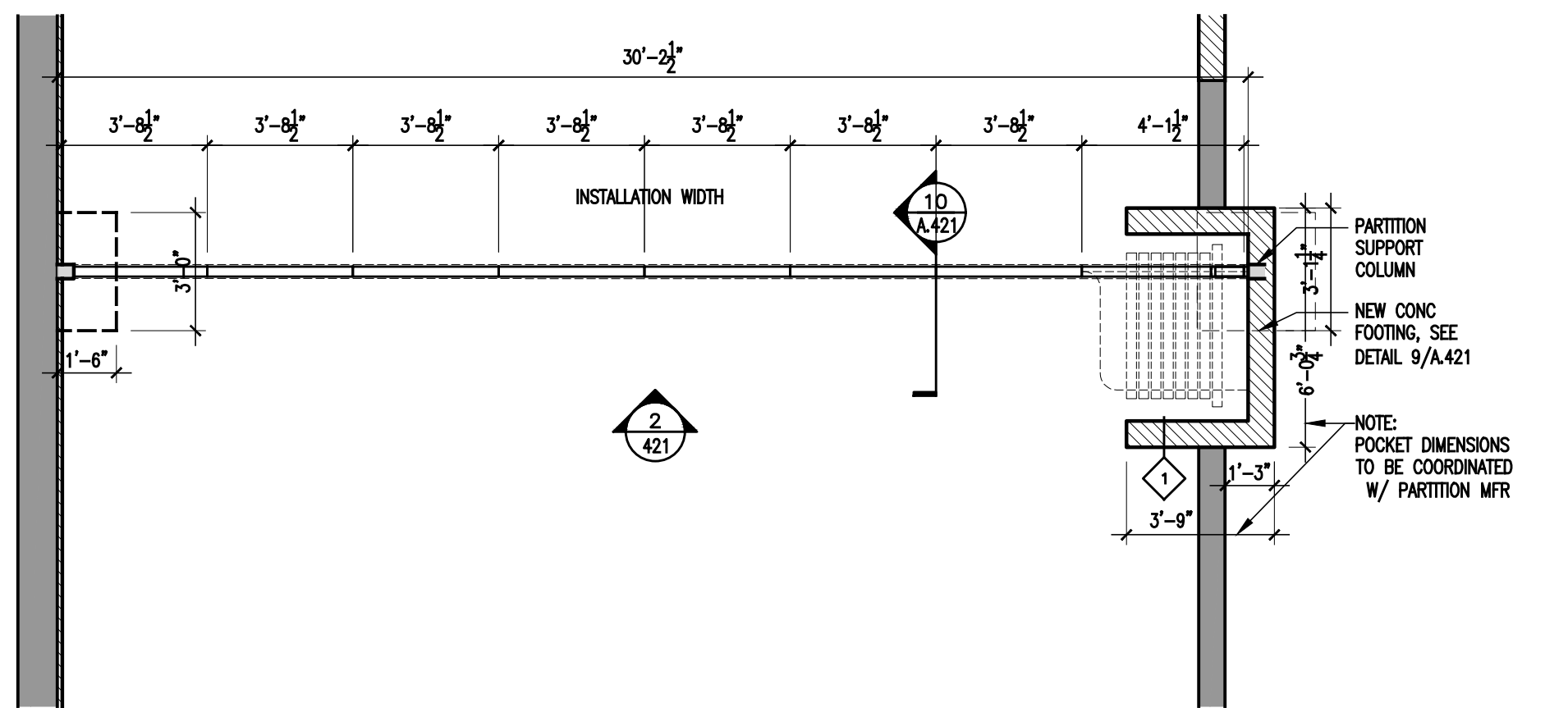
BRIAN PASECHNICK NJ#48111

INTERIOR ELEVATIONS
& MILLWORK

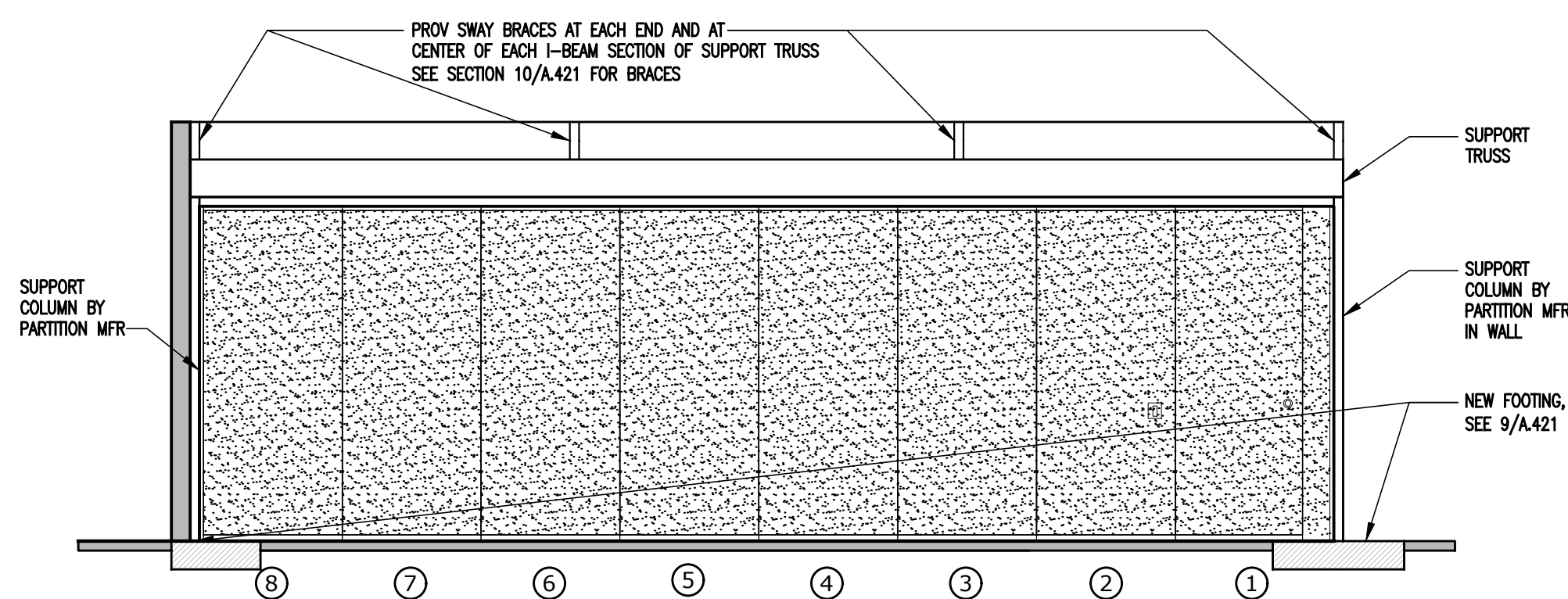
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FILE: 2448(Current) A.411

SHEET NO:
A.411

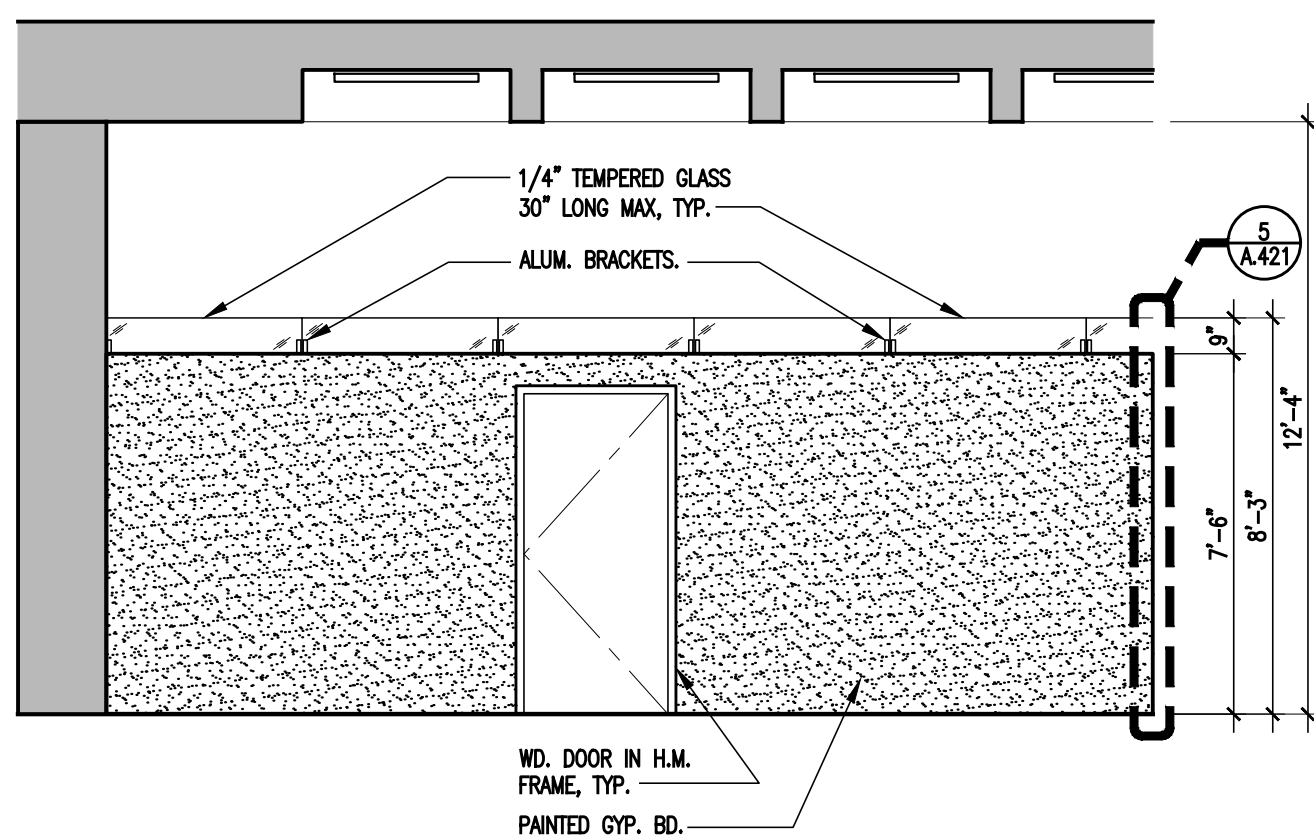
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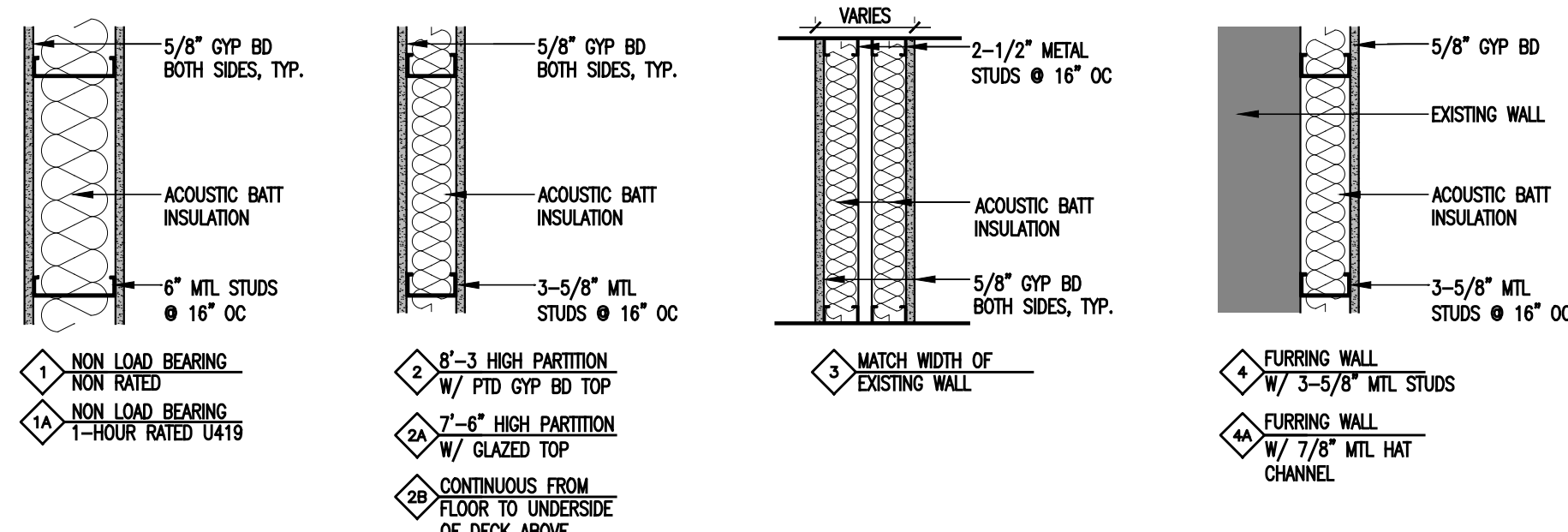
1 OPERABLE PARTITION PLAN
SCALE 1/4"=1'-0"



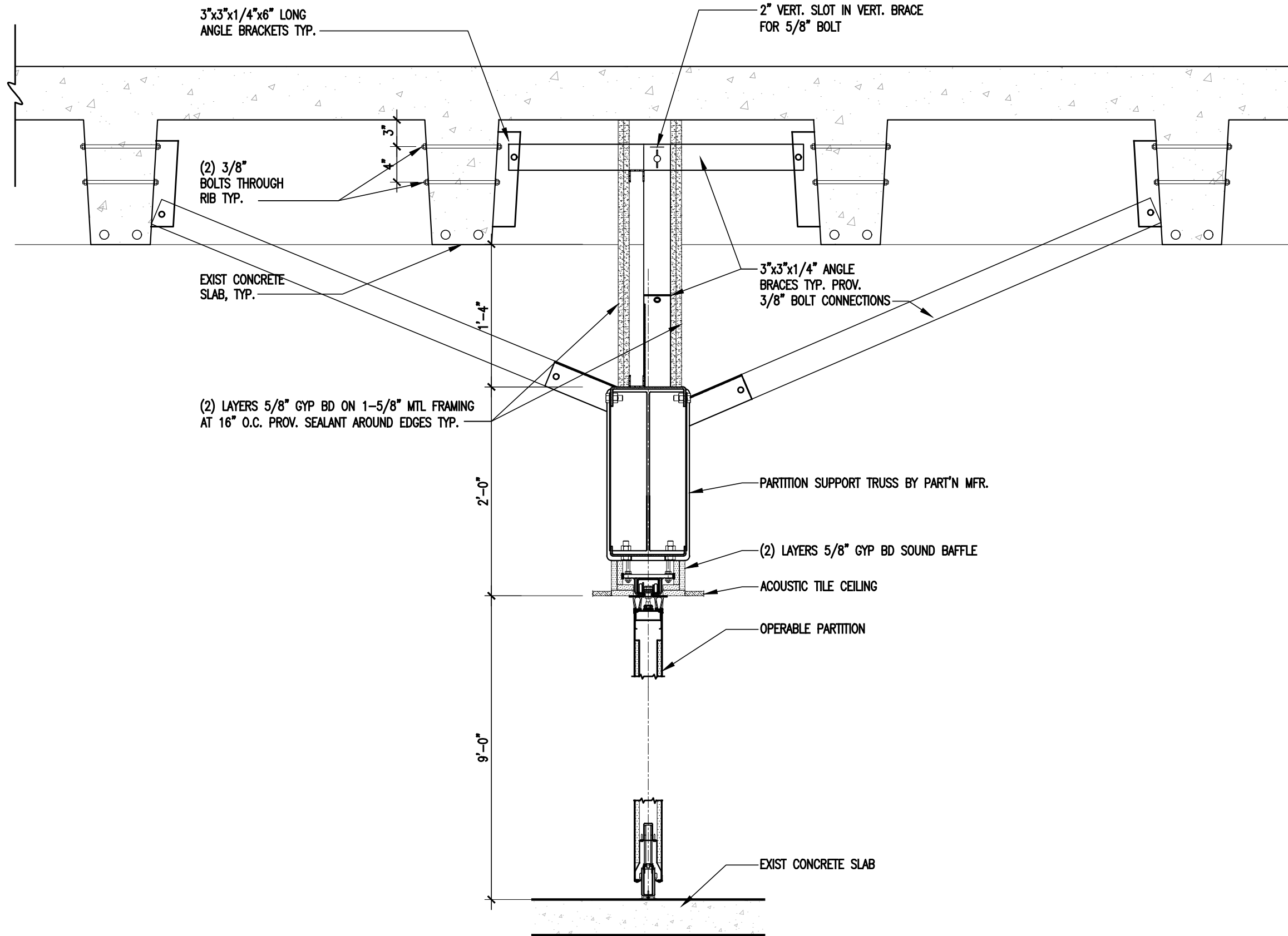
2 OPERABLE PARTITION ELEVATION
SCALE 1/4"=1'-0"



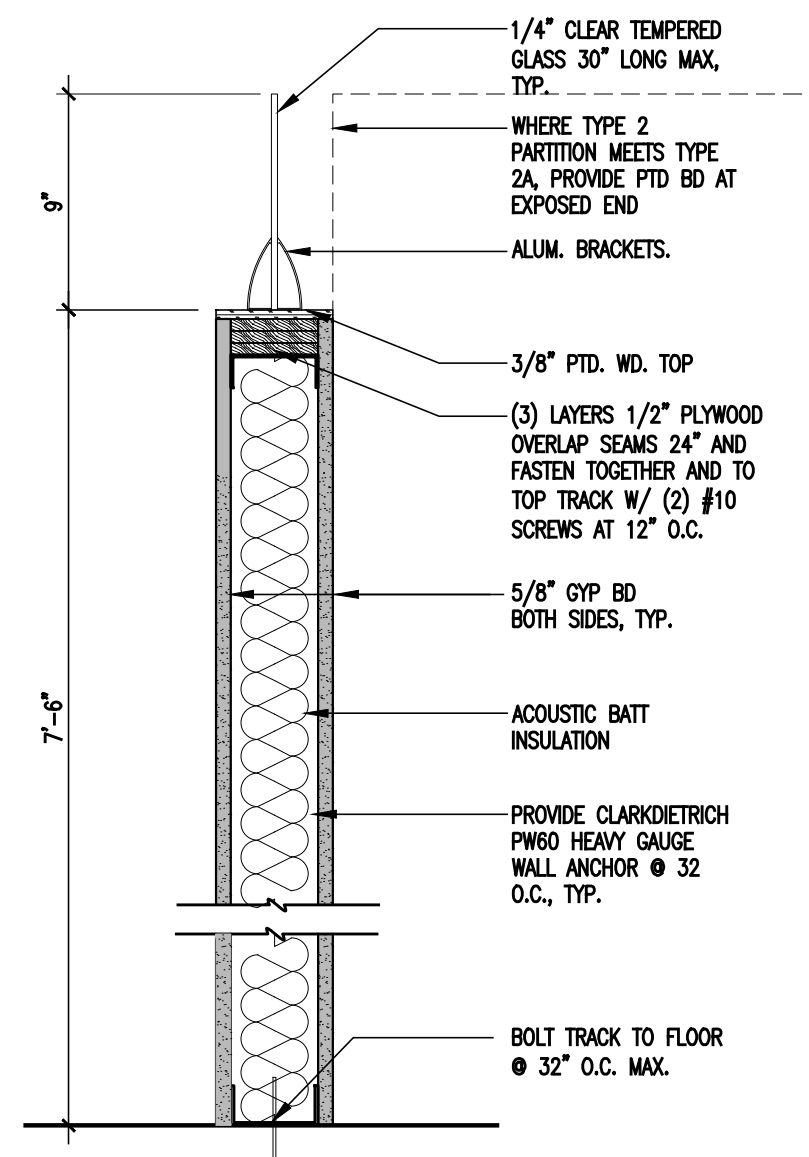
3 TYP OPEN OFFICE WALL ELEVATION
SCALE 1/4"=1'-0"



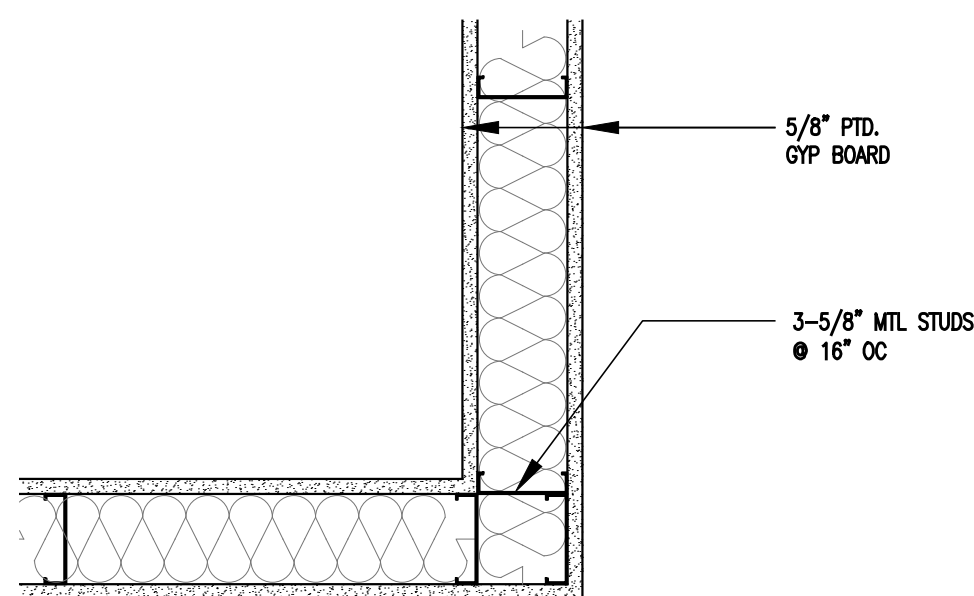
4 TYPICAL PARTITION DETAILS
SCALE 1"=1'-0"



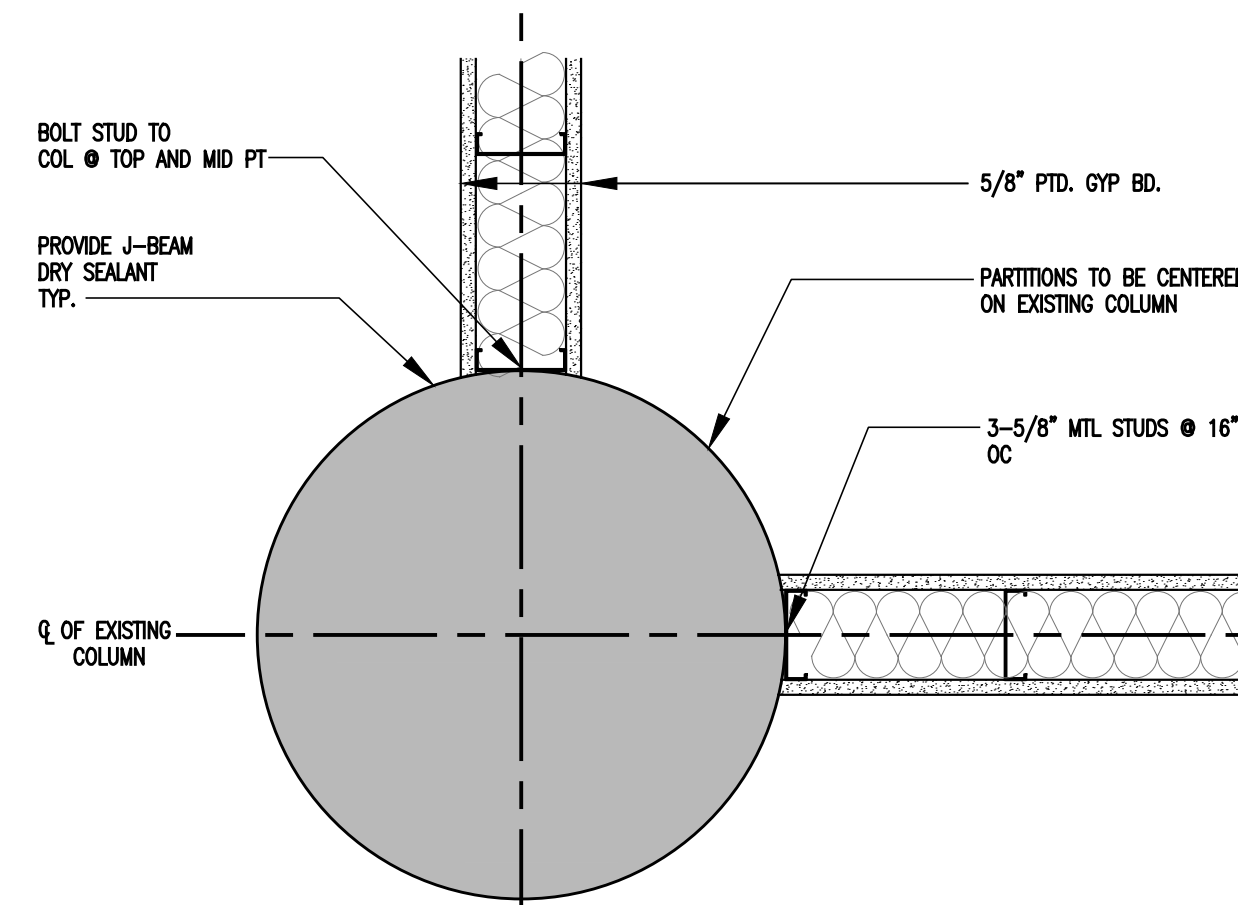
10 SECTION AT OPERABLE PARTITION
SCALE 1"=1'-0"



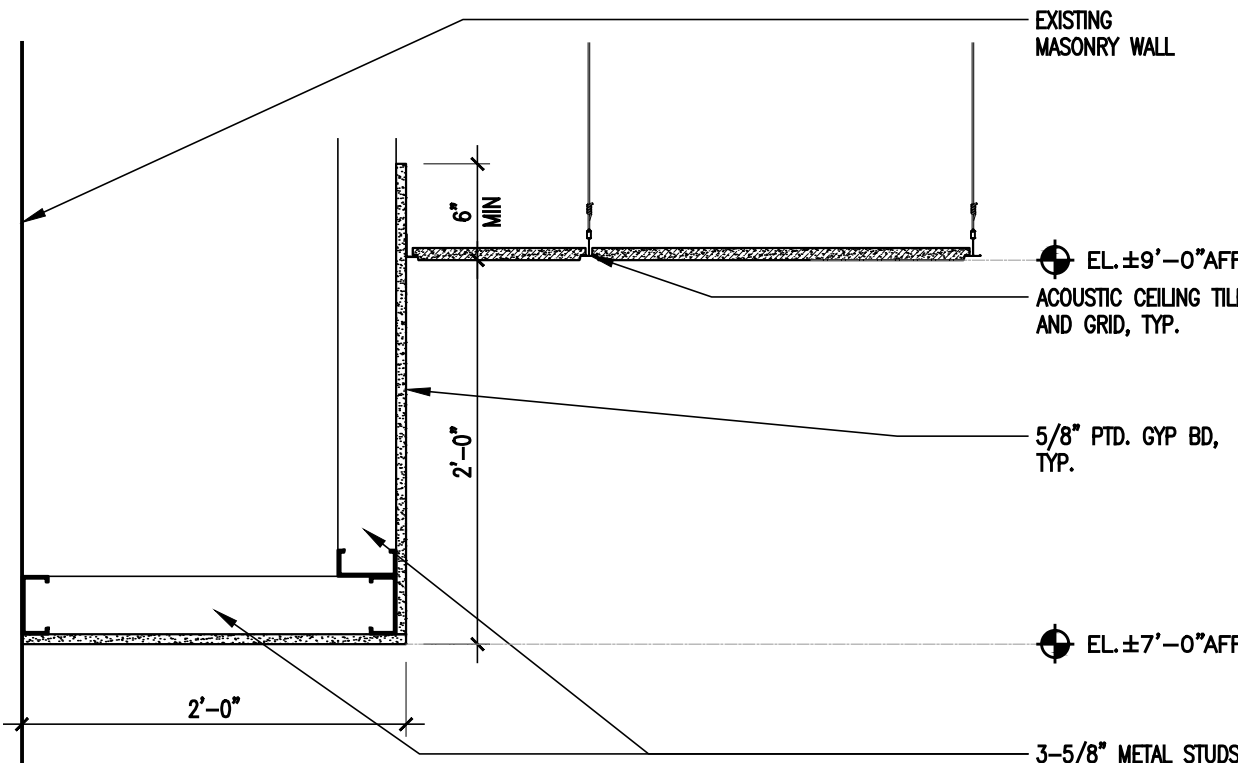
5 SECTION @ TYPE 2A PARTITION
SCALE 1-1/2"=1'-0"



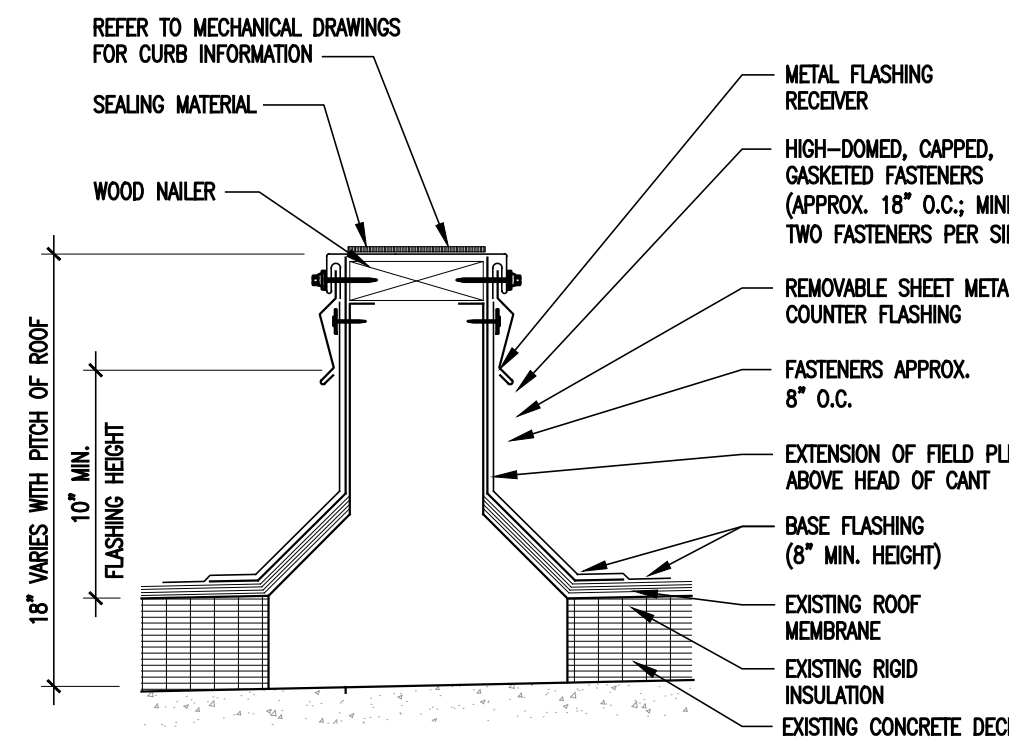
7 CORNER DETAIL
SCALE 1-1/2"=1'-0"



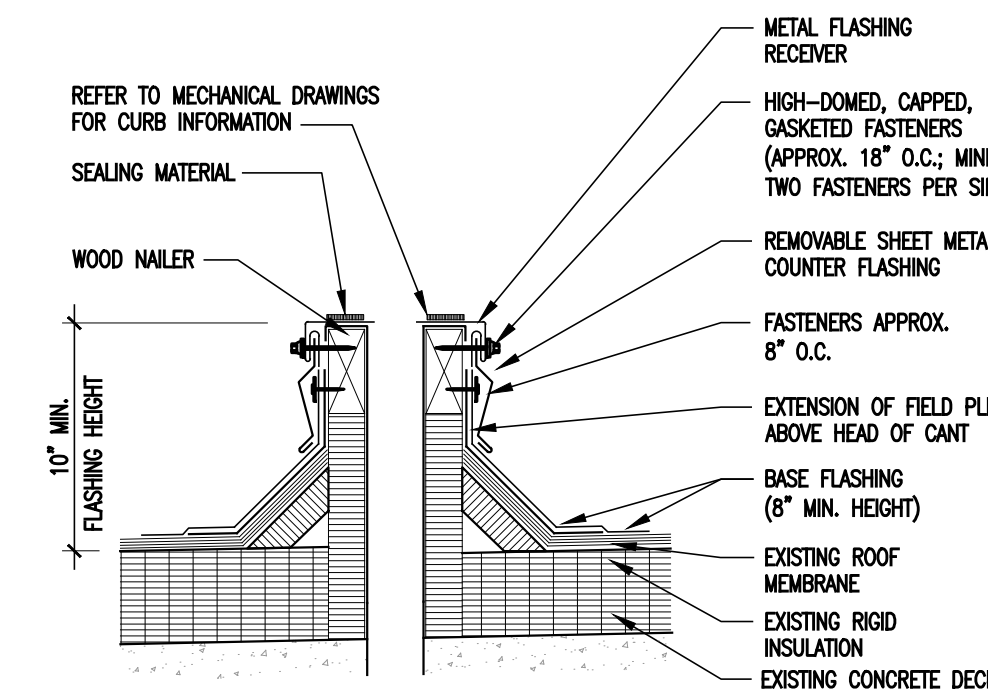
6 CORNER DETAIL @ EXISTING COLUMN
SCALE 1-1/2"=1'-0"



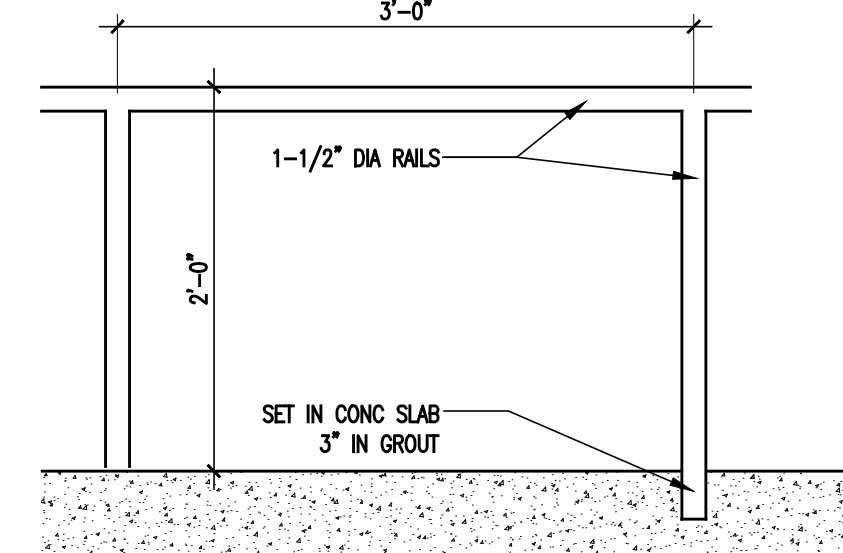
8 SECTION @ SOFFIT
SCALE 1"=1'-0"



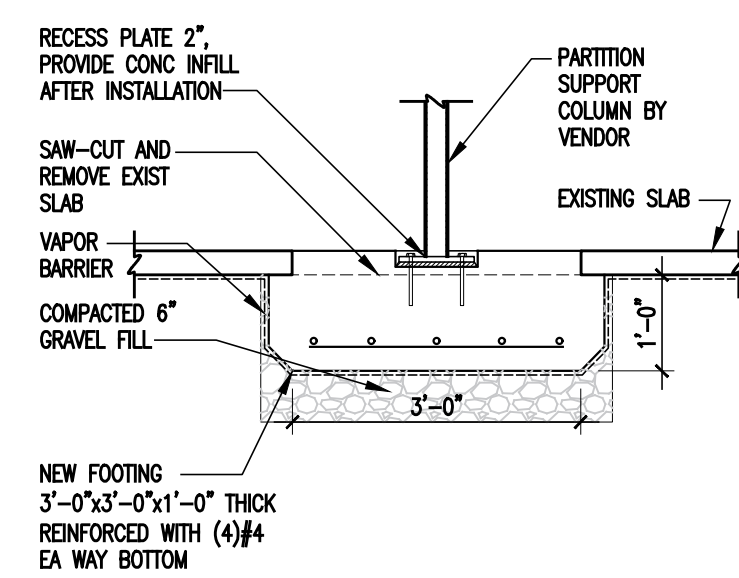
12 EQUIPMENT RAIL DETAIL
SCALE 1-1/2"=1'-0"



11 ROOF CURB DETAIL
SCALE 1-1/2"=1'-0"



13 RAILING DETAIL
SCALE 1/2"=1'-0"



9 FOOTING DETAIL
SCALE 1/2"=1'-0"

NOTES:

- 1) ALL WALL TYPES ARE CONTINUOUS FROM FLOOR TO UNDERSIDE OF DECK/STRUCTURE ABOVE, UNLESS OTHERWISE NOTED.
- 2) FIREPROOFING MATERIALS MUST MEET THE REQUIREMENTS LISTED IN THE ASSOCIATED UL DESIGNS INDICATED ON THE DRAWINGS.
- 3) PROVIDE FIRE RESISTIVE JOINT ASSEMBLIES (FLOOR, WALLS, AND CEILING) AT ALL RATED WALLS.
- 4) PROVIDE AND INSTALL UL APPROVED FIRESTOPPING AT ALL PENETRATIONS THROUGH RATED ASSEMBLIES.
- 5) PROVIDE FIRE DAMPERS AT ALL HVAC PENETRATIONS THROUGH RATED WALLS.

OPERABLE PARTITION

BASIS OF DESIGN:
MODERNFOLD'S ACOUSTI-SEAL, THE INDUSTRIAL STANDARD.
REFER TO SPECIFICATION SECTION 102239

03.09.2026 ISSUED FOR BIDDING

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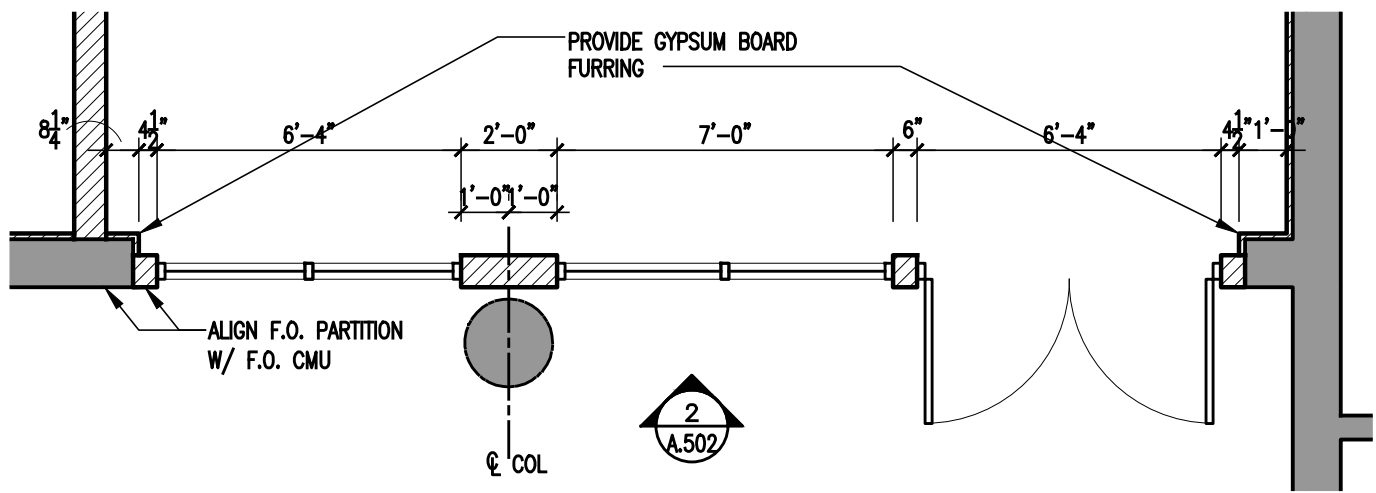
BRIAN PASECHNICK NJ#48111

**PARTITION TYPES AND DETAILS,
FOLDING PARTITION DETAILS**

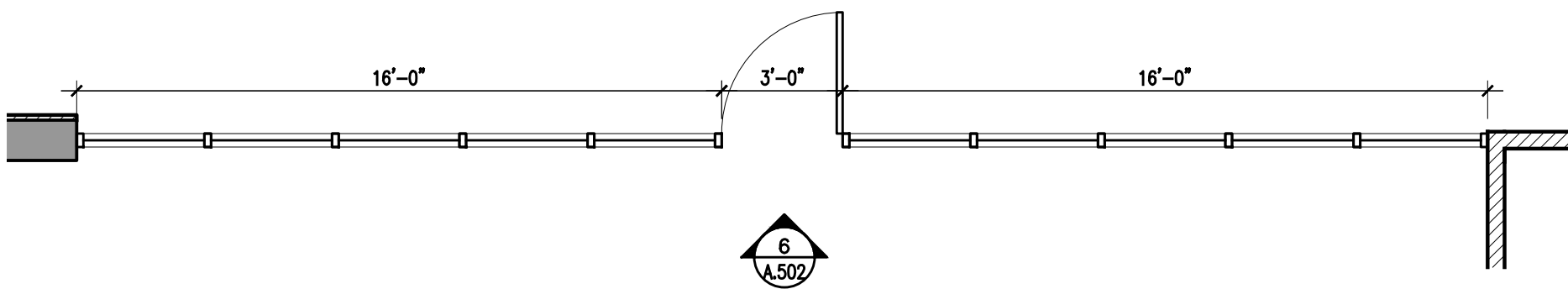
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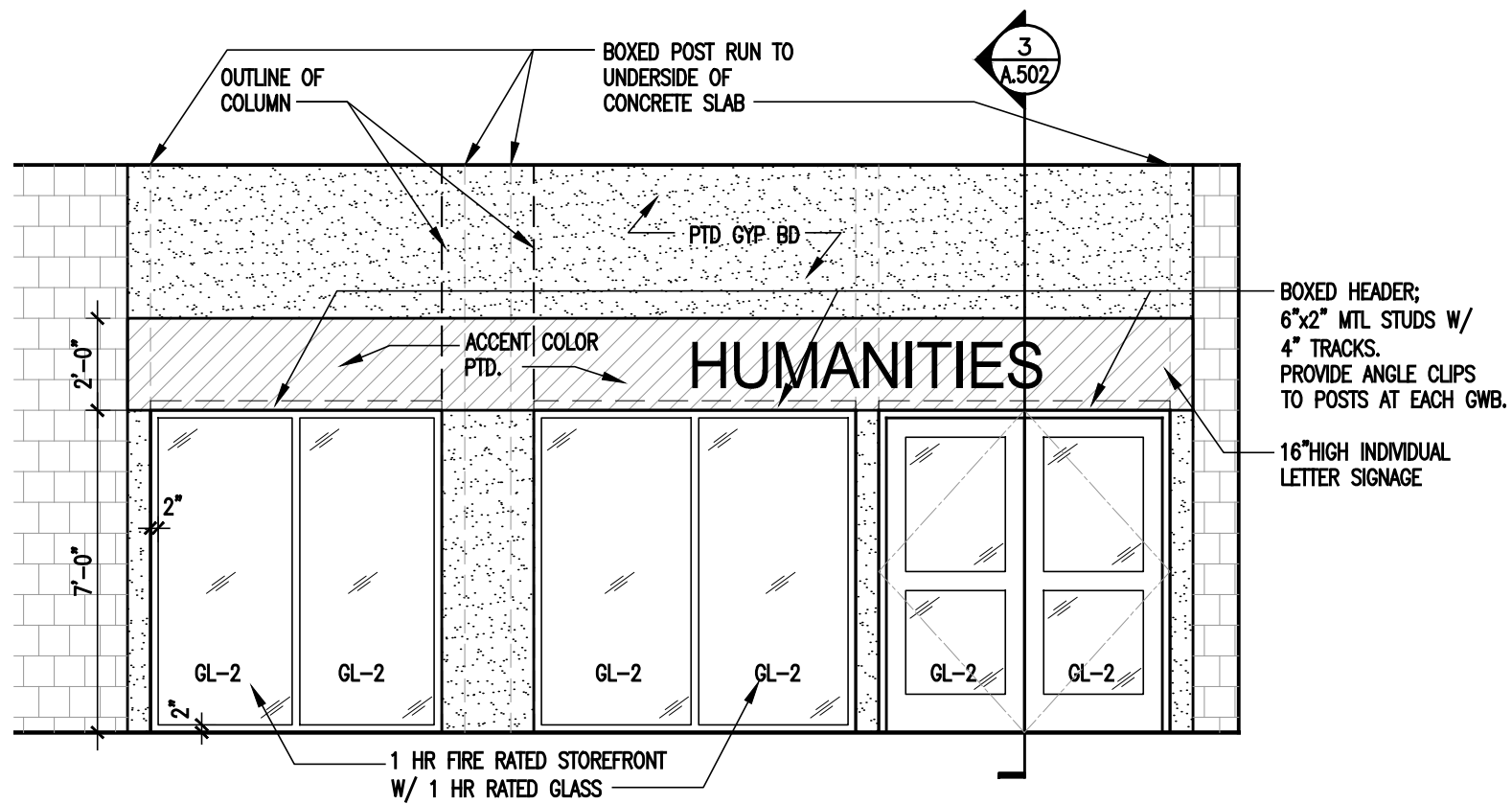
DOOR SCHEDULE																																		
		LOCATION		DOOR									FRAME				DETAILS						HARDWARE						REMARKS					
NO.	FROM	TO	EXTERIOR	INTERIOR	SINGLE	PAIR	SWING	TYPE	DOOR MAT'L	DOOR THK.	WIDTH (LEAF)	HEIGHT (LEAF)	TYPE	MAT'L	WALL MAT'L	DEPTH (V.I.F.)	HEAD	JAMB	SILL	FIRE RATING	LOCK FUNCTION	HINGES	LOCKSET	EXIT DEVICE	CLOSER	THRESHOLDS	KICK PLATE	SILENCERS	DOOR STOP	COORDINATE FRAME AND DOOR SIZES WITH PLANS.	NO.			
1101A	ATRIUM	1101	-	-	-	-	LHR/RHR	D	AL/GL	1 3/4"	6'-0"	7'-0"	-	AL	REFER TO A.502				1HR	A	B	-	B	A	-	B	A	-	-	-	-		1101A	
1103AA	1101	1103A	-	-	-	-	LHR/RHR	C	WD	1 3/4"	6'-0"	6'-10"	B	HM	GWB	8 1/4"	4A	5A	6A	-	-	B	A	-	B	A	-	-	-	-	-		1103AA	
1103AB	1102	1103A	-	-	-	-	LHR	B	WD	1 3/4"	3'-0"	6'-10"	B	HM	GWB	8 1/4"	4B	5B	6A	-	-	B	A	-	A	-	-	-	-	-	-		1103AB	
1103AC	1102	1103A	-	-	-	-	RHR	B	WD	1 3/4"	3'-0"	6'-10"	B	HM	GWB	8 1/4"	4B	5B	6A	-	-	B	A	-	A	-	-	-	-	-	-		1103AC	
1103AD	CORR	1103A	-	-	-	-	LHR	B	HM	1 3/4"	3'-0"	6'-10"	B	HM	GWB	8 1/4"	4B	5B	6A	1HR	B	A	-	A	-	-	-	-	-	-	-		1103AD	
1103BA	1103A	1103B	-	-	-	-	LHR/RHR	A	WD	1 3/4"	6'-0"	6'-10"	A	HM	GWB	8 1/4"	4A	5A	-	-	-	C	A	-	-	-	-	-	-	-	-		1103BA	
1104A	1102	1104	-	-	-	-	RH	A	WD	1 3/4"	3'-0"	6'-10"	B	HM	GWB	5 7/8"	4B	5B	-	-	-	A	A	A	-	-	-	-	-	-	-		1104A	
1105A	1102	1105	-	-	-	-	LH	A	WD	1 3/4"	3'-0"	6'-10"	B	HM	GWB	5 7/8"	4B	5B	-	-	-	A	A	A	-	-	-	-	-	-	-		1105A	
1106A	CORR	1106	-	-	-	-	RH	A	WD	1 3/4"	3'-0"	6'-10"	B	HM	GWB	5 7/8"	4B	5B	-	-	-	A	A	A	-	-	-	-	-	-	-		1106A	
1107A	CORR	1107	-	-	-	-	LH	A	WD	1 3/4"	3'-0"	6'-10"	B	HM	GWB	5 7/8"	4B	5B	-	-	-	A	A	A	-	-	-	-	-	-	-		1107A	
1108A	CORR	1108	-	-	-	-	RH	A	WD	1 3/4"	3'-0"	6'-10"	B	HM	GWB	5 7/8"	4B	5B	-	-	-	A	A	A	-	-	-	-	-	-	-		1108A	
1109A	CORR	1109	-	-	-	-	RH	A	WD	1 3/4"	3'-0"	6'-10"	B	HM	GWB	5 7/8"	4B	5B	-	-	-	A	A	A	-	-	-	-	-	-	-		1109A	
1110A	CORR	1110	-	-	-	-	LH	A	WD	1 3/4"	3'-0"	6'-10"	B	HM	GWB	5 7/8"	4B	5B	-	-	-	A	A	A	-	-	-	-	-	-	-		1110A	
1111A	CORR	1111	-	-	-	-	RH	A	WD	1 3/4"	3'-0"	6'-10"	B	HM	GWB	5 7/8"	4B	5B	-	-	-	A	A	A	-	-	-	-	-	-	-		1111A	
1112A	CORR	1112	-	-	-	-	LH	A	WD	1 3/4"	3'-0"	6'-10"	B	HM	GWB	5 7/8"	4B	5B	-	-	-	A	A	A	-	-	-	-	-	-	-		1112A	
1113A	1163	1113	-	-	-	-	LH	A	WD	1 3/4"	3'-0"	6'-10"	B	HM	GWB	5 7/8"	4B	5B	-	-	-	A	A	A	-	-	-	-	-	-	-		1113A	
1114A	CORR	1114	-	-	-	-	RH	A	WD	1 3/4"	3'-0"	6'-10"	B	HM	GWB	5 7/8"	4B	5B	-	-	-	A	A	A	-	-	-	-	-	-	-		1114A	
1115A	CORR	1115	-	-	-	-	LH	A	WD	1 3/4"	3'-0"	6'-8"	A	HM	GWB	5 7/8"	4C	5A	-	-	-	A	A	A	-	-	-	-	-	-	-		1115A	
1116A	CORR	1116	-	-	-	-	RH	A	WD	1 3/4"	3'-0"	6'-8"	A	HM	GWB	5 7/8"	4C	5A	-	-	-	A	A	A	-	-	-	-	-	-	-		1116A	
1117A	CORR	1117	-	-	-	-	LH	A	WD	1 3/4"	3'-0"	6'-8"	A	HM	GWB	5 7/8"	4C	5A	-	-	-	A	A	A	-	-	-	-	-	-	-		1117A	
1118A	CORR	1118	-	-	-	-	RH	A	WD	1 3/4"	3'-0"	6'-8"	A	HM	GWB	5 7/8"	4C	5A	-	-	-	A	A	A	-	-	-	-	-	-	-		1118A	
1119A	1163	1119	-	-	-	-	LH	A	WD	1 3/4"	3'-0"	6'-8"	A	HM	GWB	5 7/8"	4C	5A	-	-	-	A	A	A	-	-	-	-	-	-	-		1119A	
1120A	1163	1120	-	-	-	-	RH	A	WD	1 3/4"	3'-0"	6'-8"	A	HM	GWB	5 7/8"	4C	5A	-	-	-	A	A	A	-	-	-	-	-	-	-		1120A	
1121A	1163	1121	-	-	-	-	RH	A	WD	1 3/4"	3'-0"	6'-8"	A	HM	GWB	5 7/8"	4C	5A	-	-	-	C	A	A	-	-	-	-	-	-	-	A	B	1121A
1122A	1123	1122	-	-	-	-	RH	A	WD	1 3/4"	3'-0"	6'-8"	A	HM	GWB	5 7/8"	4C	5A	-	-	-	A	A	A	-	-	-	-	-	-	-	A	B	1122A
1122B	1162	1122	-	-	-	-	RH	A	WD	1 3/4"	3'-0"	6'-8"	A	HM	GWB	5 7/8"	4C	5A	-	-	-	A	A	A	-	-	-	-	-	-	-	-		1122B
1124A	CORR	1124	-	-	-	-	RH	A	WD	1 3/4"	3'-0"	6'-10"	B	HM	GWB	5 7/8"	4B	5B	-	-	-	A	A	A	-	-	-	-	-	-	-	-		1124A
1125A	CORR	1125	-	-	-	-	LH	A	WD	1 3/4"	3'-0"	6'-10"	B	HM	GWB	5 7/8"	4B	5B	-	-	-	A	A	A	-	-	-	-	-	-	-	-		1125A
1126A	1162	1126	-	-	-	-	RH	A	WD	1 3/4"	3'-0"	6'-10"	B	HM	GWB	5 7/8"	4B	5B	-	-	-	A	A	A	-	-	-	-	-	-	-	-		1126A
1127A	1162	1127	-	-	-	-	LH	A	WD	1 3/4"	3'-0"	6'-10"	B	HM	GWB	5 7/8"	4B	5B	-	-	-	A	A	A	-	-	-	-	-	-	-	-		1127A
1128A	1162	1128	-	-	-	-	RH	A	WD	1 3/4"	3'-0"	6'-10"	B	HM	GWB	5 7/8"	4B	5B	-	-	-	A	A	A	-	-	-	-	-	-	-	-		1128A
1129A	1164	1129	-	-	-	-	LH	A	WD	1 3/4"	3'-0"	6'-10"	B	HM	GWB	5 7/8"	4B	5B	-	-	-	A	A	A	-	-	-	-	-	-	-	-		1129A
1130A	1164	1130	-	-	-	-	RH	A	WD	1 3/4"	3'-0"	6'-10"	B	HM	GWB	5 7/8"	4B	5B	-	-	-	A	A	A	-	-	-	-	-	-	-	-		1130A
1131A	1164	1131	-	-	-	-	LH	A	WD	1 3/4"	3'-0"	6'-10"	B	HM	GWB	5 7/8"	4B	5B	-	-	-	A	A	A	-	-	-	-	-	-	-	-		1131A
1132A	1164	1132	-	-	-	-	LH	A	WD	1 3/4"	3'-0"	6'-10"	B	HM	GWB	5 7/8"	4B	5B	-	-	-	A	A	A	-	-	-	-	-	-	-	-		1132A
1133A	CORR	1133	-	-	-	-	RH	A	WD	1 3/4"	3'-0"	6'-10"	B	HM	GWB	5 7/8"	4B	5B	-	-	-	A	A	A	-	-	-	-	-	-	-	-		1133A
1134A	CORR	1134	-	-	-	-	RH	A	WD	1 3/4"	3'-0"	6'-10"	B	HM	GWB	5 7/8"	4B	5B	-	-	-	A	A	A	-	-	-	-	-	-	-	-		1134A
1135A	CORR	1135	-	-	-	-	LH	A	WD	1 3/4"	3'-0"	6'-10"	B	HM	GWB	5 7/8"	4B	5B	-	-	-	A	A	A	-	-	-	-	-	-	-	-		1135A
1136A	CORR	1136	-	-	-	-	RH	A	WD	1 3/4"	3'-0"	6'-10"	B	HM	GWB	5 7/8"	4B	5B	-	-	-	A	A	A	-	-	-	-	-	-	-	-		1136A
1137A	CORR	1137	-	-	-	-	LH	A	WD	1 3/4"	3'-0"	6'-10"	B	HM	GWB	5 7/8"	4B	5B	-	-	-	A	A	A	-	-	-	-	-	-	-	-		1137A
1138A	CORR	1138	-	-	-	-	RH	A	WD	1 3/4"	3'-0"	6'-8"	A	HM	GWB	5 7/8"	4C	5A	-	-	-	A	A	A	-	-	-	-	-	-	-	-		1138A
1139A	CORR	1139	-	-	-	-	LH	A	WD	1 3/4"	3'-0"	6'-8"	A	HM	GWB	5 7/8"	4C	5A	-	-	-	A	A	A	-	-	-	-	-	-	-	-		1139A
1140A	CORR	1140	-	-	-	-	RH	A	WD	1 3/4"	3'-0"	6'-8"	A	HM	GWB	5 7/8"	4C	5A	-	-	-	A	A	A	-	-	-	-	-	-	-	-		1140A
1141A	1164	1141	-	-	-	-	LH	A	WD	1 3/4"	3'-0"	6'-8"	A	HM	GWB	5 7/8"	4C	5A	-	-	-	A	A	A	-	-	-	-	-	-	-	-		1141A
1142A	1164	1142	-	-	-	-	RH	A	WD	1 3/4"	3'-0"	6'-8"	A	HM	GWB	5 7/8"	4C	5A	-	-	-	A	A	A	-	-	-	-	-	-	-	-		1142A
1143A	1164	1143	-	-	-	-	LH	A	WD	1 3/4"	3'-0"	6'-8"	A	HM	GWB	5 7/8"	4C	5A	-	-	-	A	A	A	-	-	-	-	-	-	-	-		1143A
1144A	1164	1144	-	-	-	-	RH	A	WD	1 3/4"	3'-0"	6'-8"	A	HM	GWB	5 7/8"	4C	5A	-	-	-	A	A	A	-	-	-	-	-	-	-	-		1144A
1145A	1146	1145	-	-	-	-	LH	A	WD	1 3/4"	3'-0"	6'-8"	A	HM	GWB	5 7/8"	4C	5A	-	-	-	A	A	A	-	-	-	-	-	-	-	-</		



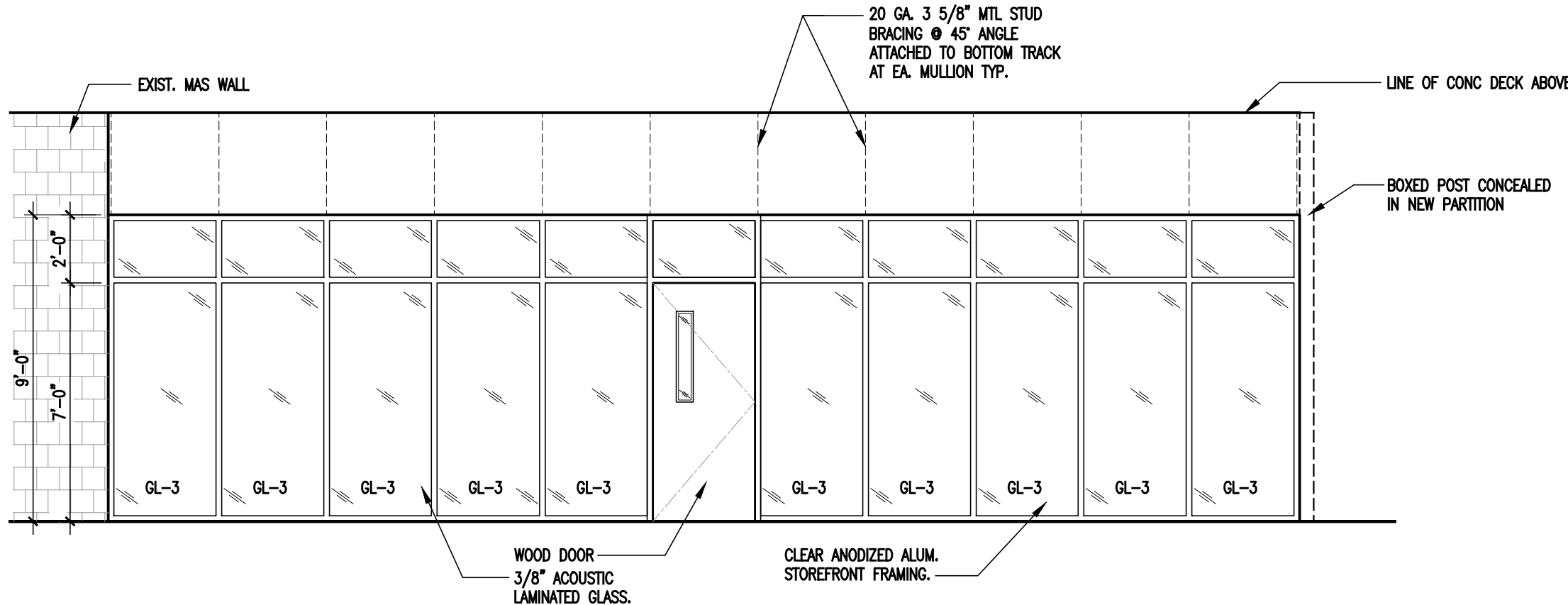
1 ENLARGED PLAN @ ENTRANCE STOREFRONT
1/4"=1'-0"



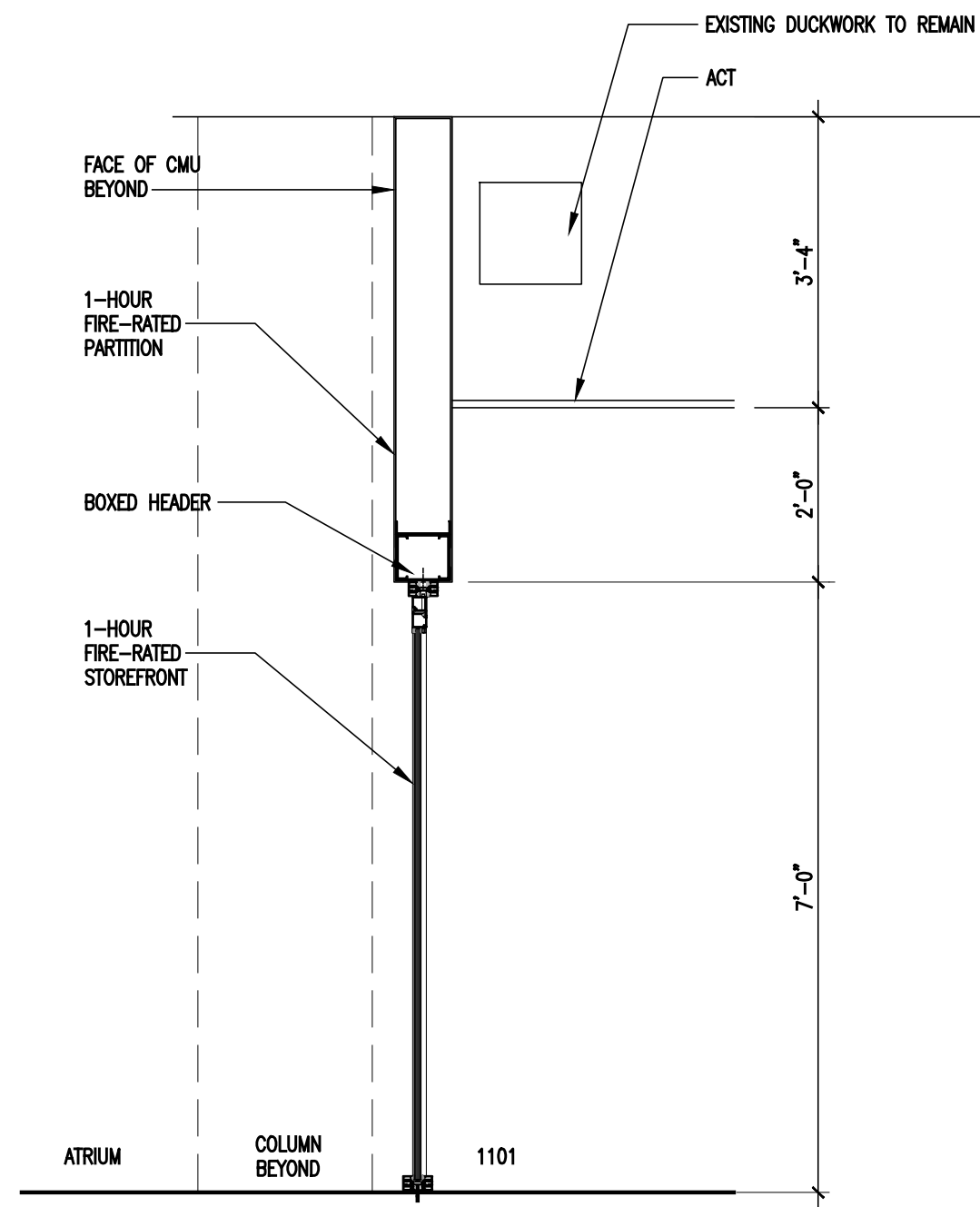
5 ENLARGED PLAN @ ART STUDIO STOREFRONT
1/4"=1'-0"



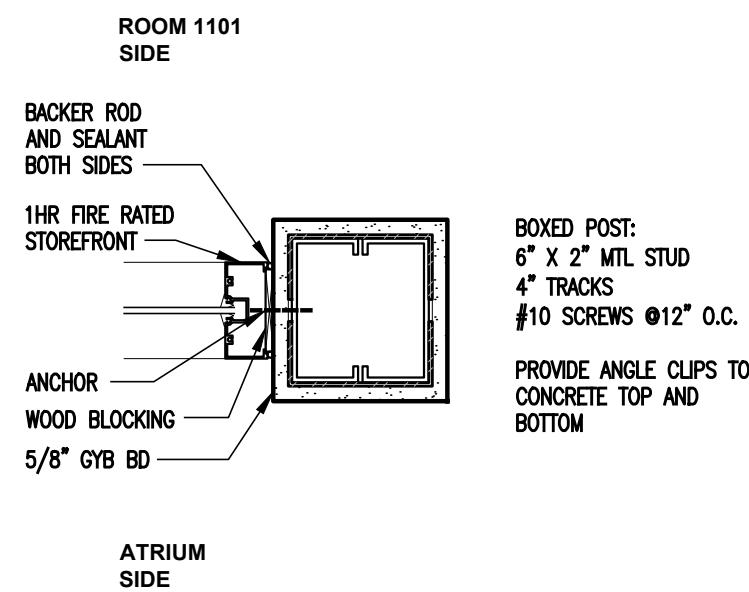
2 INTERIOR ELEVATION @ ENTRANCE STOREFRONT
1/4"=1'-0"



6 INTERIOR ELEVATION @ ART STUDIO STOREFRONT
1/4"=1'-0"



3 SECTION @ STOREFRONT
1/2"=1'-0"



4 BOXED POST DETAIL
SCALE: 1-1/2"=1'0"

FIRE-RATED STOREFRONT:

S1 BASIS OF DESIGN:
SAFTFIRST, GPX ARCHITECTURAL SERIES 60 MIN FIRE RESISTIVE FRAMING AND DOORS
GLAZING: SAFTFIRST SUPERLITE II-XL 60 FIRE RESISTIVE GLASS, GL-2
FINISH: CLEAR ANODIZED

INTERIOR STOREFRONT:

S2 BASIS OF DESIGN:
KAWNEER TRIFAB 400, INTERIOR STOREFRONT FRAMING
GLAZING: 3/8" LAMINATED ACOUSTIC GLASS, GL-3
FINISH: CLEAR ANODIZED

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BRIAN PASECHNICK NJ#48111

DOOR SCHEDULE & DETAILS,
STOREFRONT ELEVATIONS
& DETAILS

SCALE: AS NOTED
DATE: 03.09.2026
FILE: 2448(Current) A.501

SHEET NO:

A.502

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1 FINISH AND SIGNAGE PLAN

3/32" = 1'-0"

FLOOR FINISHES

CARPET:

C-1 MANNINGTON COMMERCIAL
COLLECTION: NEW COMPOSITION
STYLE: INNER SHARE
COLOR: IMPRESSION
SIZE: 24" X 24"
INSTALLATION: QUARTER TURN

C-2 MANNINGTON COMMERCIAL
COLLECTION: NEW COMPOSITION
STYLE: SUBLINE STATE
COLOR: APEX
SIZE: 24" X 24"
INSTALLATION: QUARTER TURN

LUXURY VINYL TILE:

LVT-1 MANNINGTON COMMERCIAL
PRODUCT LINE: NATURAL OPTIMIST
COLOR: BRANDYWINE ASH
SIZE:
INSTALLATION METHOD: QUARTER TURN

RESILIENT SHEET FLOORING:

RS-1 MANNINGTON COMMERCIAL
COLLECTION: BIOSPEC MD SHEET
COLOR: NEW GLACIER

WALL FINISHES

WALL BASE:

B-1 TARKET VINYL WALL BASE
COLLECTION: JOHNSONITE
COLOR: BURBUNDY 85
SIZE: 4", 1/8" THK, COVE STYLE

B-2 TARKET VINYL WALL BASE
COLLECTION: JOHNSONITE
COLOR: SHORELINE 280
SIZE: 4", 1/8" THK, COVE STYLE

PAINT:

NOTE: ALL PAINT TO BE
(1) COAT PRIME, (2) COAT FINISH

P-1 GENERAL
BENJAMIN MOORE
COLOR: SNOWFALL WHITE 2144-70
FINISH: EGGSHELL

P-2 ACCENT PAINT-COLUMNS
BENJAMIN MOORE
COLOR: TERRA COTTA TILE 2090-30
FINISH: EGGSHELL

CEILING FINISHES

GENERAL ACOUSTIC CLG TILE:

CLG-1 STYLE: ARMSTRONG DUNE
COLOR: WHITE
SIZE: 24" X 24" X 3/4"
GRID: 15/16" PRELUDE EXPOSED TEE
GRID COLOR: WHITE FLAT

CLG-2 PTD GYPSUM BOARD SOFFIT
BENJAMIN MOORE
COLOR: CEILING WHITE
FINISH: FLAT/MATTE

MILLWORK

SOLID SURFACE:

SS-1 FORMICA
EVERFORM SOLID SURFACE
COLOR: 413 TUMBLE GLASS
THICKNESS: 1/2"
SUBSTRATE MATERIAL: PLYWOOD

PLASTIC LAMINATE:

PL-1 FORMICA (CABINETS)
COLOR: NATURAL WHITE OAK
SUBSTRATE MATERIAL: MDF. USE WATER
RESISTANT MDF FOR BASE CABINETS.

FINISH SCHEDULE

ROOM NO.	LOCATION	FLOOR	BASE	WALLS	CEILING	REMARKS
1101	SOCIAL/Common AREA	C-1	B-1	P-1	CLG-1	
1102	STUDY AREA	C-2	B-1	P-1	-	
1103	CLASS/FLEX MEETING	LVT-1	B-2	P-1	CLG-1	
1104-1114	OFFICE	C-1	B-1	P-1	CLG-1	
1115-1120	OFFICE	C-1	B-1	P-1	-	
1121	STORAGE	C-1	B-1	P-1	-	
1122	ADJUNCT OFFICE	C-1	B-1	P-1	-	
1123	COLLABORATION SPACE	C-2	B-1	P-1	-	
1124-1137	OFFICE	C-1	B-1	P-1	CLG-1	
1138-1145	OFFICE	C-1	B-1	P-1	-	
1146	COLLABORATION SPACE	C-2	B-1	P-1	-	
1147-1154	OFFICE	C-1	B-1	P-1	CLG-1	
1155	GALLERY	C-1	B-1	P-1	CLG-1	
1156	LIT LAB	LVT-1	B-2	P-1	CLG-1	
1157	ART STUDIO	RS-1	B-2	P-1	CLG-1	
1115-1120	OFFICE	C-1	-	P-1	-	
1138-1144	OFFICE	C-1	-	P-1	-	

3 FINISH SCHEDULE

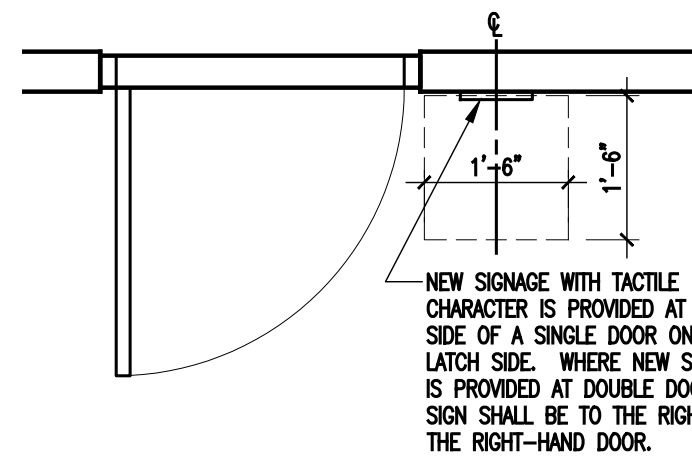
NTS

SIGNAGE SCHEDULE

SIGN #	ROOM #	ROOM NAME ON SIGNAGE	TYPE	SIZE	DOOR #	REMARKS
1	1101	HUMANITIES DEPARTMENT OFFICES	S1	6"x4"	1101A	
2	1103A	CLASS/FLEX MEETING	S1	6"x4"	1103AA	
3	1103A	CLASS/FLEX MEETING	S1	6"x4"	1103AB	
4	1103A	CLASS/FLEX MEETING	S1	6"x4"	1103AC	
5	-	EXIT	S2	6"x4"	1103AD	
6	1104	OFFICE	S1	6"x4"	1104A	
7	1105	OFFICE	S1	6"x4"	1105A	
8	1106	OFFICE	S1	6"x4"	1106A	
9	1107	OFFICE	S1	6"x4"	1107A	
10	1108	OFFICE	S1	6"x4"	1108A	
11	1109	OFFICE	S1	6"x4"	1109A	
12	1110	OFFICE	S1	6"x4"	1110A	
13	1111	OFFICE	S1	6"x4"	1111A	
14	1112	OFFICE	S1	6"x4"	1112A	
15	-	EXIT	S2	6"x4"	EXISTING	
16	1113	OFFICE	S1	6"x4"	1113A	
17	1114	OFFICE	S1	6"x4"	1114A	
18	1115	OFFICE	S1	6"x4"	1115A	
19	1116	OFFICE	S1	6"x4"	1116A	
20	1117	OFFICE	S1	6"x4"	1117A	
21	1118	OFFICE	S1	6"x4"	1118A	
22	1119	OFFICE	S1	6"x4"	1119A	
23	1120	OFFICE	S1	6"x4"	1120A	
24	1121	STORAGE	S1	6"x4"	1121A	
25	1122	OFFICE	S1	6"x4"	1122B	
26	1122	OFFICE	S1	6"x4"	1122A	
27	1124	OFFICE	S1	6"x4"	1124A	
28	1125	OFFICE	S1	6"x4"	1125A	
29	1126	OFFICE	S1	6"x4"	1126A	
30	1127	OFFICE	S1	6"x4"	1127A	
31	-	EXIT	S2	6"x4"	EXISTING	
32	1128	OFFICE	S1	6"x4"	1128A	
33	1129	OFFICE	S1	6"x4"	1129A	
34	1130	OFFICE	S1	6"x4"	1130A	
35	1131	OFFICE	S1	6"x4"	1131A	
36	1132	OFFICE	S1	6"x4"	1132A	
37	1133	OFFICE	S1	6"x4"	1133A	
38	1134	OFFICE	S1	6"x4"	1134A	
39	1135	OFFICE	S1	6"x4"	1135A	
40	-	EXIT	S2	6"x4"	EXISTING	
41	1136	OFFICE	S1	6"x4"	1136A	
42	1137	OFFICE	S1	6"x4"	1137A	
43	-	EXIT	S2	6"x4"	EXISTING	
44	1138	OFFICE	S1	6"x4"	1138A	
45	1139	OFFICE	S1	6"x4"	1139A	
46	1140	OFFICE	S1	6"x4"	1140A	
47	1141	OFFICE	S1	6"x4"	1141A	
48	1142	OFFICE	S1	6"x4"	1142A	
49	1143	OFFICE	S1	6"x4"	1143A	
50	1144	OFFICE	S1	6"x4"	1144A	
51	1145	OFFICE	S1	6"x4"	1145B	
52	1146	OFFICE	S1	6"x4"	1145A	
53	1147	OFFICE	S1	6"x4"	1147A	
54	1148	OFFICE	S1	6"x4"	1148A	
55	1149	OFFICE	S1	6"x4"	1149A	
56	1150	OFFICE	S1	6"x4"	1150A	
57	1151	OFFICE	S1	6"x4"	1151A	
58	1152	OFFICE	S1	6"x4"	1152A	
59	1153	OFFICE	S1	6"x4"	1153A	
60	1154	OFFICE	S1	6"x4"	1154A	
61	1155	EXIT	S2	6"x4"	EXISTING	
62	1156	LIT. LAB	S1	6"x4"	1156A	
63	1157A	ART STUDIO	S1	6"x4"	1157AA	
64	1157B	STORAGE	S1	6"x4"	1157BA	
65	1157C	STORAGE	S1	6"x4"	1157CA	
66	1157D	STORAGE	S1	6"x4"	1157DA	
67	1157A	ART STUDIO	S1	6"x4"	1157AB	
68	1103B	STORAGE	S1	6"x4"	1103BA	

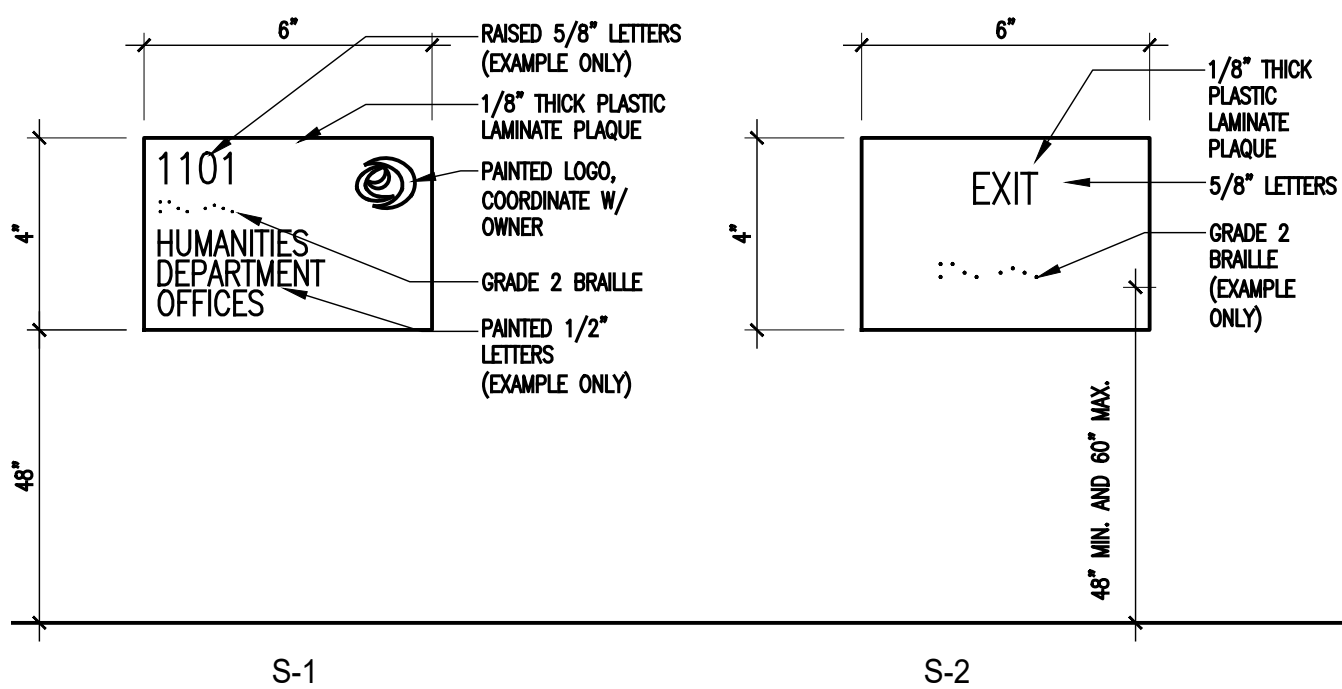
3 SIGNAGE SCHEDULE

NTS



4 SIGNAGE LOCATION DETAIL

1/2" = 1'-0"



5 SIGNAGE TYPES

3" = 1'-0"

SIGNAGE

REFER TO SPECIFICATION SECTION 101423.16 ROOM
IDENTIFICATION PANEL SIGNAGE

SIGNAGE NOTE

1) CONTRACTOR TO COORDINATE THE EXACT ROOM NAME AND
ROOM NUMBER TO BE PLACED ON EACH SIGN PRIOR TO
FABRICATION.

FINISH NOTES

1) HATCH PATTERNS INDICATE FLOOR FINISH TYPE AND NOT JOINTS IN FIELD.

2) ALL PRODUCTS LISTED ON THE FINISH PLAN ARE BASIS OF DESIGN ONLY.
PRODUCTS AND COLORS MUST BE SUBMITTED FOR FINAL APPROVAL PRIOR TO
CONSTRUCTION.

3) INSTALL VINYL TRANSITIONS BETWEEN CARPET AND VCT.

4) ALL FINISHES ARE TO EXTEND UNDER MILLWORK AND EQUIPMENT.

5) SKIM COAT EXISTING SLAB AS REQUIRED FOR NEW FINISH FLOORING.
ASSUME 1/4" DEPTH THROUGHOUT.

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HUMANITIES DEPARTMENT
OFFICE ALTERATIONS

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BRIAN PASECHNICK NJ#48111

FINISH & SIGNAGE PLAN

SCALE: AS NOTED

DATE: 03.09.2026

FILE: 2448(Current) A.601

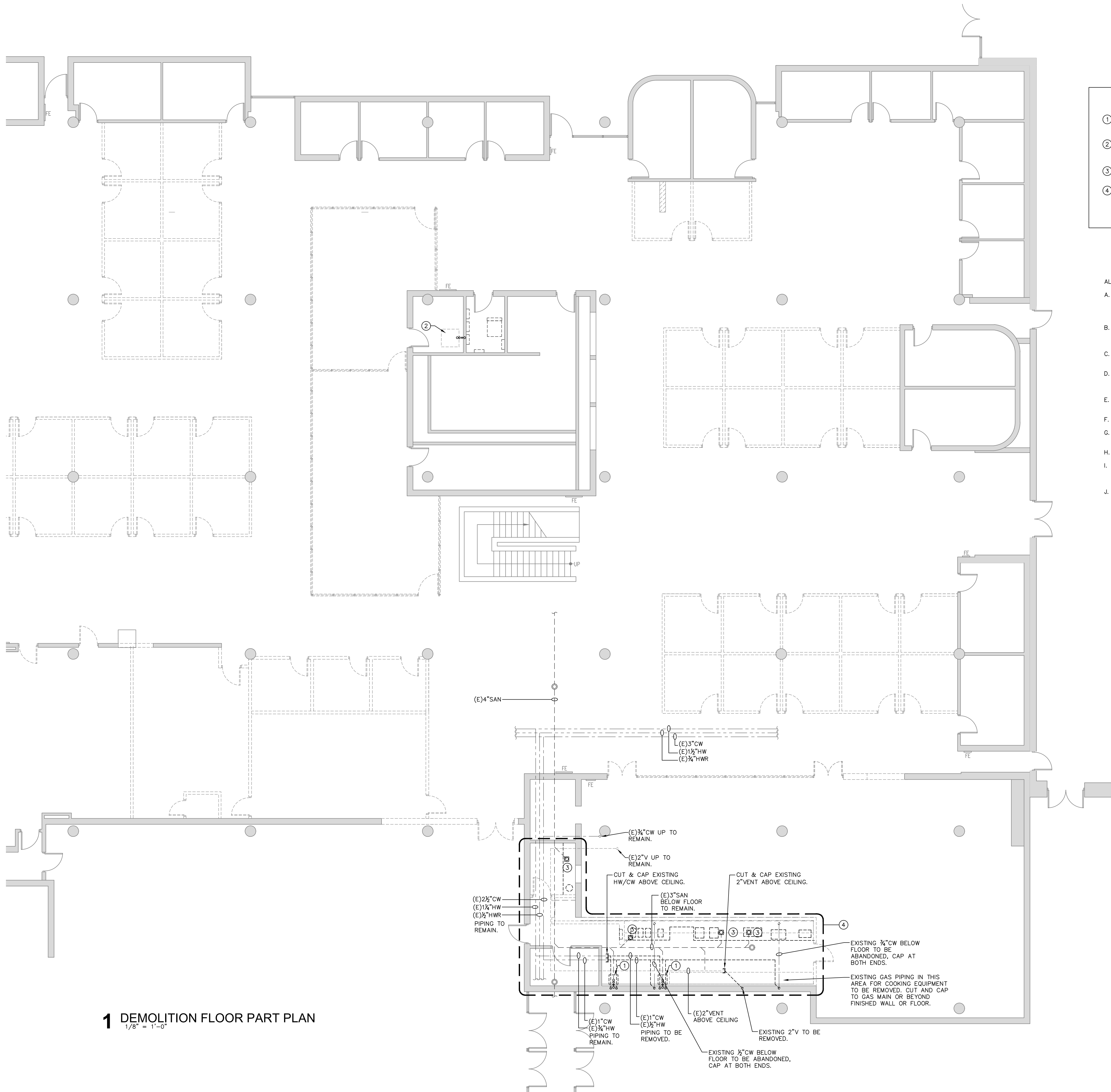
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2 FINISH SPECIFICATIONS

NTS



PLUMBING KEY NOTES:

- ① EXISTING SINK TO BE REMOVED ALONG WITH ALL ASSOCIATED WATER, WASTE, AND VENT PIPING NO LONGER IN USE. CUT AND CAP PIPING BACK TO MAINS.
- ② EXISTING MOP SINK TO BE REMOVED ALONG WITH ALL ASSOCIATED WATER, WASTE, AND VENT PIPING NO LONGER IN USE. CUT AND CAP PIPING BACK TO MAINS.
- ③ EXISTING FLOOR DRAIN TO BE REMOVED. CUT AND CAP SAN PIPE BELOW FINISHED FLOOR. PATCH FLOOR TO MATCH EXISTING.
- ④ EXISTING KITCHEN EQUIPMENT IN THIS AREA TO BE REMOVED. REMOVE ALL ASSOCIATED WATER, WASTE, VENT AND GAS PIPING NO LONGER IN USE. CUT AND CAP PIPING BACK TO MAINS.

ALTERATION WORK

- A. ALL EQUIPMENT, PIPING, ETC. TO BE REMOVED, SHALL BE DISPOSED OF, TURNED OVER TO OWNER OR SALVAGED AS DIRECTED BY THE OWNER. THEY SHALL NOT BE REMOVED FROM THE PREMISES WITHOUT THE OWNERS APPROVAL.
- B. ALL PIPING TO BE REMOVED SHALL BE PROPERLY PLUGGED OR CAPPED SO THAT UPON COMPLETION OF NEW WORK ALL ABANDONED PIPING SHALL BE CONCEALED IN FINISHED AREAS.
- C. NO DEAD ENDS SHALL BE LEFT ON ANY PIPING UPON COMPLETION OF THE PROJECT.
- D. EXISTING EXPOSED PIPING NOT TO BE REUSED, AND NOT SPECIFICALLY NOTED OR SHOWN ON DRAWINGS TO BE ABANDONED SHALL BE COMPLETELY REMOVED.
- E. LOCATIONS AND SIZES OF EXISTING PIPING ARE APPROXIMATE. EXACT SIZES AND LOCATION OF ALL EXISTING PIPING SHALL BE FIELD VERIFIED.
- F. NO REMOVED EXISTING PIPING, ETC, SHALL BE REUSED.
- G. WHERE EXISTING PIPING INSULATION IS DAMAGED BY THE REQUIREMENTS OF THE WORK, REPLACE ALL DAMAGED INSULATION TO MATCH EXISTING.
- H. PROVIDE TEMPORARY SUPPORTS WHERE REQUIRED.
- I. THE WORK UNDER THIS CONTRACT SHALL BE PERFORMED SIMULTANEOUSLY WITH WORK OF OTHER TRADES, SO AS NOT TO DELAY THE OVERALL PROGRESS OF WORK.
- J. THE CONTRACTOR SHALL NOT INTERRUPT ANY OF THE SERVICES NOR INTERFERE WITH THE SERVICES IN ANY WAY WITHOUT THE EXPRESSED PERMISSION OF THE OWNER. SUCH INTERRUPTIONS AND INTERFERENCES SHALL BE MADE AS BRIEF AS POSSIBLE AND ONLY AT THE TIME STATED BY THE OWNER.

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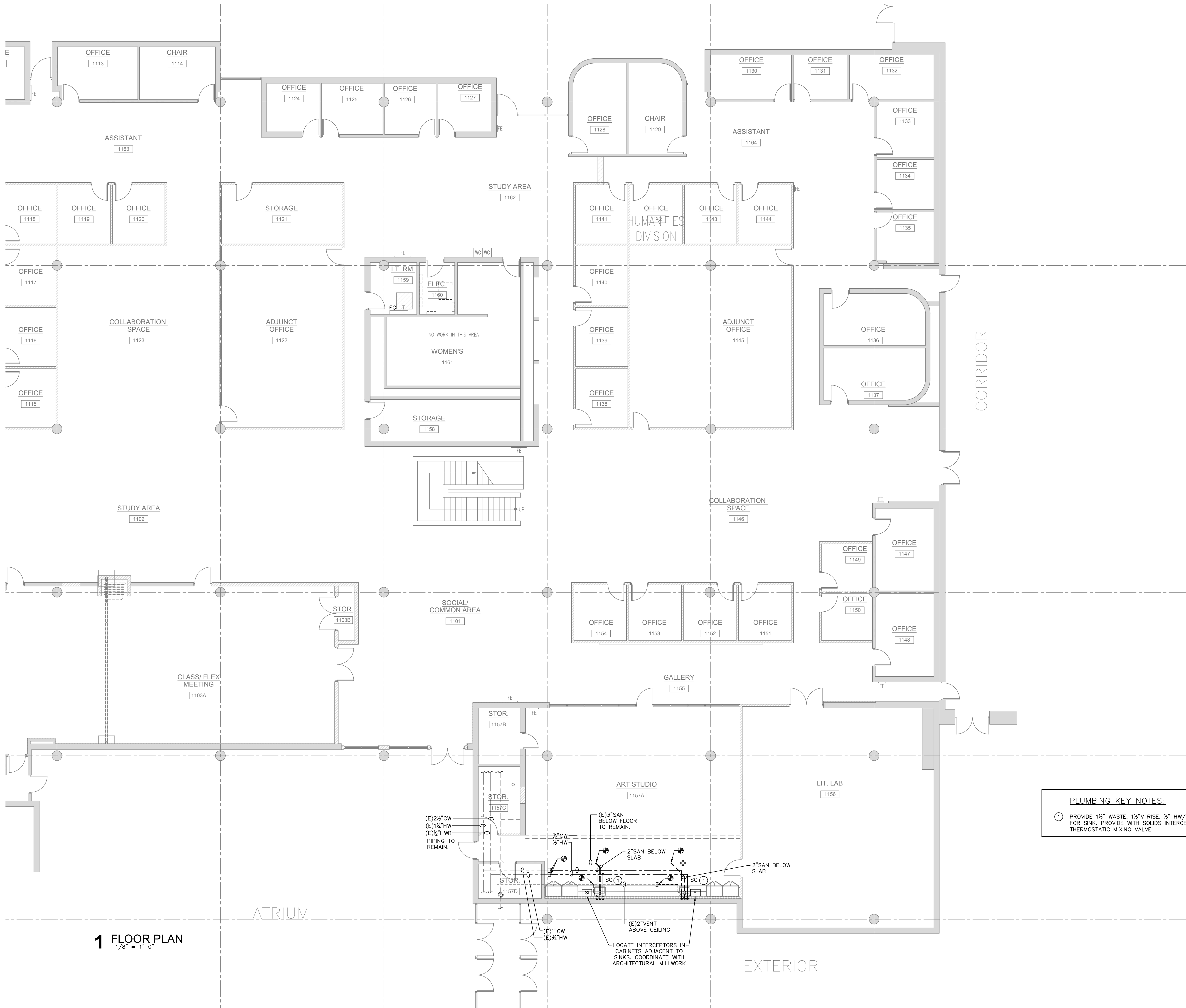
PLUMBING DEMOLITION
PLAN

SCALE: AS NOTED
DATE: 03.09.2026
FILE: 2448(Current)

SHEET NO:
P.101

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1 DEMOLITION FLOOR PART PLAN
1/8" = 1'-0"



1 FLOOR PLAN
1/8" = 1'-0"

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BRIAN PASECHNICK NJ#48111

PLUMBING
PLAN

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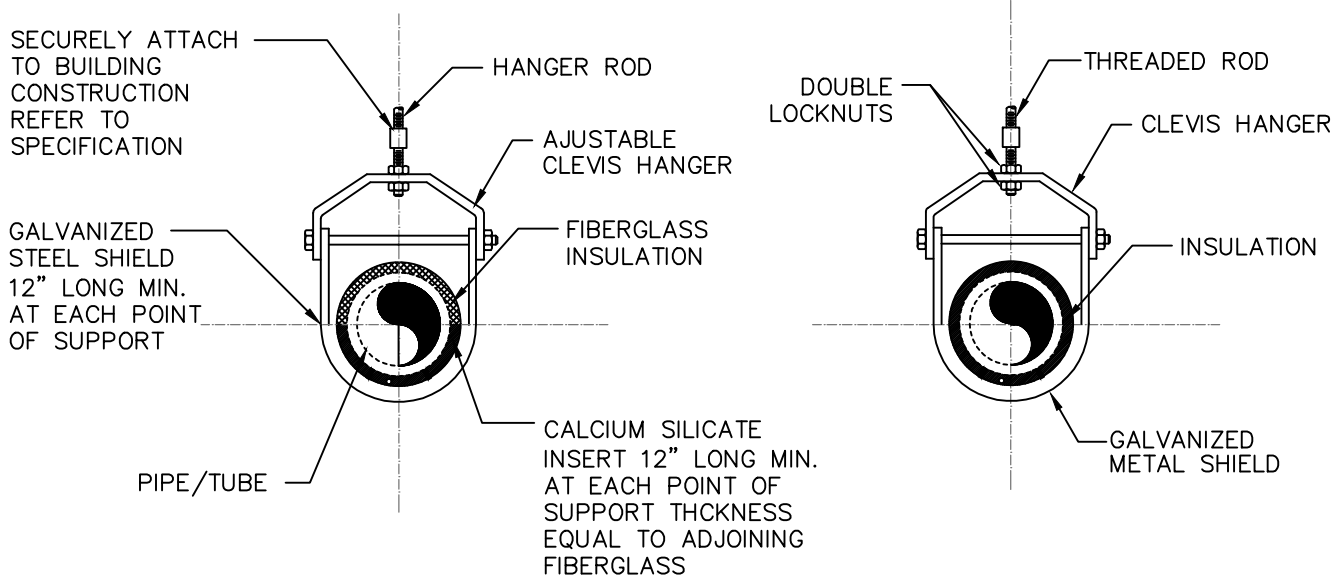
SHEET NO:
P.102

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WITH INCOMPRESSIBLE INSULATING BLOCK AT HANGER		
PIPE DIAMETER	SHIELD LENGTH	SHIELD THICKNESS USSG
UP TO 3"	6"	18
4" TO 6"	8"	16
8" & LARGER	12"	16

WITHOUT INCOMPRESSIBLE INSULATING BLOCK AT HANGER		
PIPE DIAMETER	SHIELD LENGTH	SHIELD THICKNESS USSG
UP TO 3"	12"	18
4"	15"	16
5"	18"	16
6"	21"	16
8" & LARGER	24"	14

NOTES:
HANGER, ROD & INSERT SHALL BE DIPPED IN ZINC CHROMATE PRIMER PRIOR TO INSTALLATION

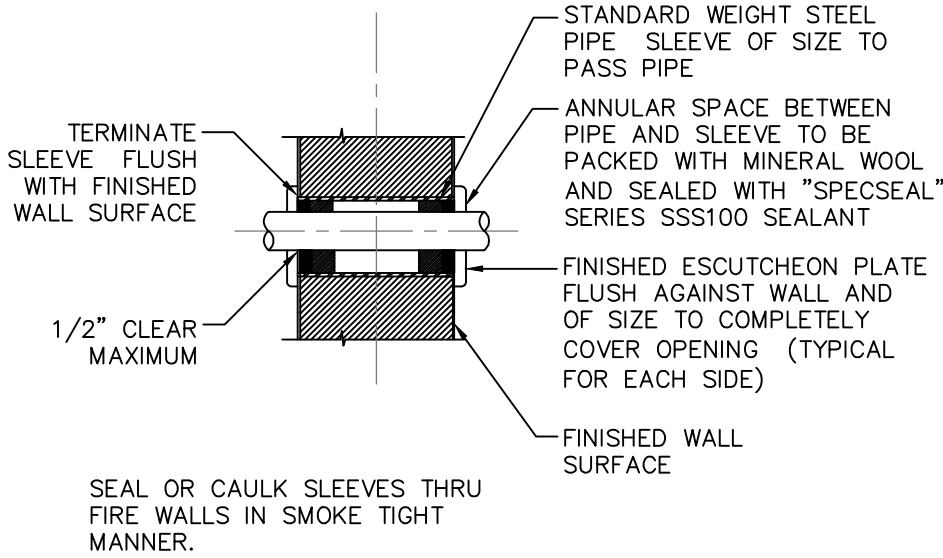


NOTE :

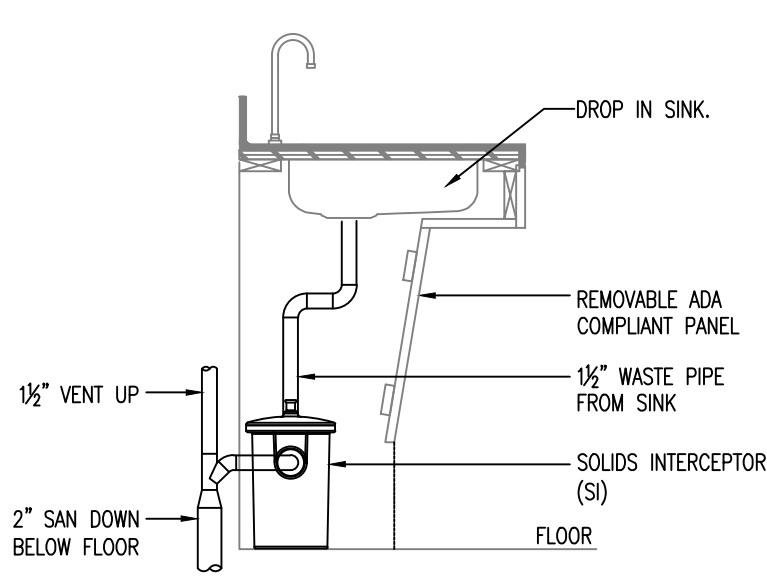
1.- USE THIS DETAIL WHEN SUPPORTING INSULATED PIPING AND TUBING LARGER THAN ONE (1) INCH.

ADJUSTABLE CLEVIS PIPE SUPPORT
NOT TO SCALE

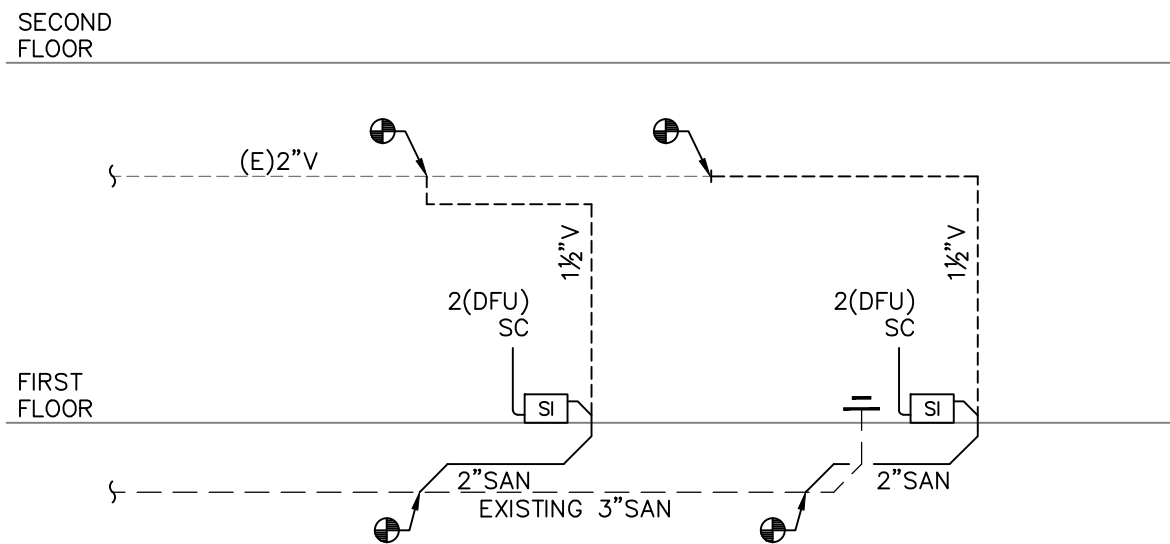
TYPICAL INSULATED PIPE SUPPORT
NOT TO SCALE



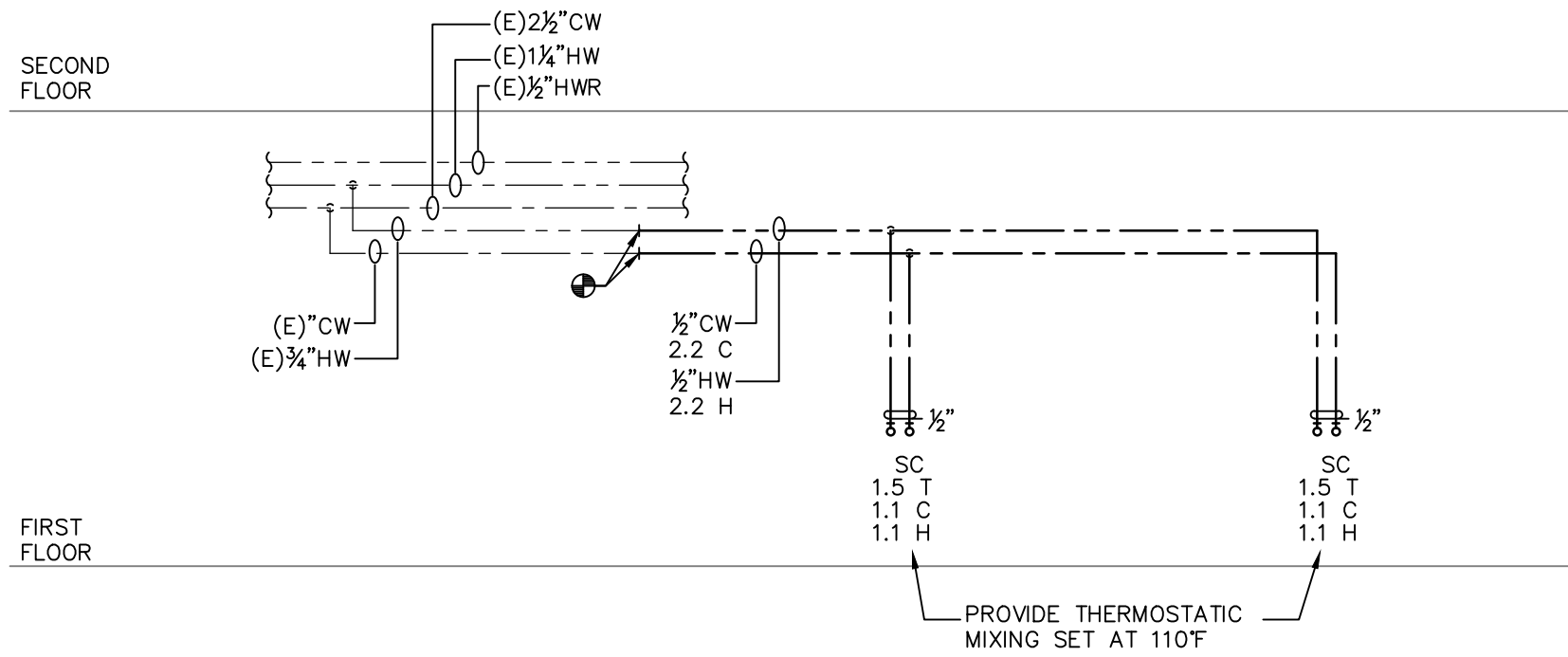
DETAIL OF PIPE PENETRATING THRU FIRE RATED WALL/FLOOR/CEILING
NOT TO SCALE



SOLIDS INTERCEPTOR (SI) INSTALLATION DETAIL
NOT TO SCALE



SANITARY RISER DIAGRAM
N.T.S.



WATER RISER DIAGRAM
N.T.S.

T	=	WATER SUPPLY FIXTURE UNITS TOTAL
H	=	WATER SUPPLY FIXTURE UNITS HOT WATER
C	=	WATER SUPPLY FIXTURE UNITS COLD WATER

- WATER SIZING NOTES**
- WATER DESIGN IS BASED ON 2021 NATIONAL STANDARD PLUMBING CODE CHAPTER 10 AND APPENDIX B..
 - WSPU'S (WATER SERVICE FIXTURE UNITS) BASED ON TABLE B.5.2, "OTHER THAN DWELLING UNITS".
 - PIPE SIZES BASED TYPE L COPPER, AT 8 FPS FOR MAINS AND AT 5 FPS FOR BRANCH PIPING, TABLE B.7.3.C.

PLUMBING FIXTURE SCHEDULE								
SYMBOL	FIXTURE/ITEM	MODEL	VALVE/FAUCET	FIXTURE CONNECTIONS				COMMENTS
				HOT WTR	COLD WTR	DRAIN	VENT	
SC	SINGLE COMPARTMENT SS SINK	ELKAY LRAD2522 6" DEEP BOWL	LK800GN05T4 8" CENTERSET GOOSENECK W/ 4" WRISTBLADE	1/2"	1/2"	1 1/2"	1 1/4"	PROVIDE WITH SOLIDS INTERSEPTOR (SI), NOTE #2
SI	SOLIDS INTERCEPTOR	ZURN Z1180 SOLIDS INTERCEPTOR		1 1/2"	1 1/2"	-	-	

NOTES:
1. COORDINATE ALL COLORS & FINISHES WITH ARCHITECT
2. PROVIDE WATTS LFUSG-B THERMOSTATIC MIXING VALVE ASSE 1070 COMPLIANT.

PLUMBING GENERAL NOTES:

- RUN HOT AND COLD WATER LINES DOWN IN WALLS OR CHASES – BRANCH TO FIXTURES AS REQUIRED.
- ALL DOMESTIC WATER LINES ABOVE GROUND, TYPE "L" COPPER UNLESS NOTED OTHERWISE.
- INSULATE ALL HOT AND COLD WATER PIPING ABOVE GROUND AND CEILINGS WITH 1" THICK FIBERGLASS INSULATION FOR PIPES UP TO 1 1/2" AND 1 1/2" THICK FIBERGLASS INSULATION FOR PIPES 2" AND UP. PROVIDE WITH A FACTORY APPLIED VAPOR BARRIER UNLESS NOTED OTHERWISE.
- CONTRACTOR SHALL COORDINATE ALL WORK WITH THE LOCAL CODE OFFICIAL PRIOR TO EXECUTION OF ANY WORK OR PURCHASE OF ANY EQUIPMENT.
- INSTALL PIPING AFTER DUCTWORK HAS BEEN PLACED.
- COORDINATE ALL WORK WITH THAT OF OTHER TRADES; ELECTRICAL, ETC.
- DRAWINGS ARE DIAGRAMMATIC AND SHOW GENERAL ARRANGEMENT OF PIPING AND EQUIPMENT.
- PROVIDE PRESSURE REDUCING VALVES COMPLYING WITH ASSE 1003 ON DOMESTIC WATER LINES IF PRESSURE IS ABOVE 80 PSI UNDER NO-FLOW CONDITIONS.
- PROVIDE WATER HAMMER ARRESTORS. NO SITE BUILT ARRESTORS ARE ALLOWED.
- PROVIDE ALL REQUIRED CUTTING AND TRENCHING OF EXISTING FLOOR. BACKFILL AND PATCH FLOOR TO MATCH EXISTING.
- EXACT LOCATIONS OF ITEMS NOTED AS BEING EXISTING SHALL BE VERIFIED IN THE FIELD.
- APPROXIMATE LOCATIONS OF EXISTING HW, CW, HWR, VENTS, WASTE, GAS, AND STORM WATER PIPING IN CEILING, WHERE REQUIRED IN ORDER TO ACCOMMODATE NEW WORK, RAISE OR LOWER OR RELOCATE PIPING TO SUIT NEW CONDITIONS.
- OFFSET VTR AT LEAST 5'-0" FROM EXTERIOR WALL BEFORE PENETRATING ROOF.
- MINOR DETAILS NOT USUALLY SHOWN OR SPECIFIED, BUT NECESSARY FOR PROPER CONSTRUCTION OF ANY PART OF THE WORK SHALL BE INCLUDED AS IF THEY WERE INDICATED ON THE DRAWINGS.

PLUMBING LEGEND	
	4" SAN ROUGHING IN FLOOR
	CW COLD WATER PIPING
	E CW EXISTING COLD WATER PIPING
	HW HOT WATER PIPING
	E HW EXISTING HOT WATER PIPING
	HWR HOT WATER RETURN PIPING
	E HWR EXISTING HOT WATER RETURN PIPING
	SAN NEW SAN PIPING
	E SAN EXISTING SAN PIPING
	V VENT PIPING
	E V EXISTING VENT PIPING
	G NEW GAS PIPING
	EG EXISTING GAS PIPING
	(E) DENOTES EXISTING
	V VALVE
	CO CLEAN OUT (FLOOR MOUNTED)
	WCO CLEAN OUT (WALL MOUNTED)
	NEW CONNECTION TO EXISTING
	ELBOW UP
	ELBOW DOWN
	VTR VENT THROUGH ROOF

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BRIAN PASECHNICK NJ#48111

PLUMBING
DETAILS

SCALE: AS NOTED
DATE: 03.09.2026
FILE: 2448(Current)

SHEET NO:
P.201

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SECTIONS 15000
PLUMBING GENERAL CONDITIONS

1.1 GENERAL CONDITIONS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections apply to work specified in this Section. ~~consult them in detail~~ for applicable instructions.
- B. Manufacturers referenced in the technical specifications are for the purpose of establishing a standard of quality.

1.2 CODES AND STANDARDS

- A. All workmanship and material shall conform to the rules and regulations of the current editions of the regulating agencies listed below and regulations of the local utility companies. These rules, regulations and codes shall govern as a minimum standard. In the event of conflict with the Contract drawings or specifications requiring workmanship or material of a higher quality than required by the above-mentioned rules, regulations and codes, the most stringent shall apply.

- NJAC – § 5.23-6
2021 IBC Building Code
2021 IFC Fuel Gas Code
2021 IMC Mechanical Code
2021 National Standard Plumbing Code
NFPA – National Fire Protection Association
AMCA – Air Movement and Control Association, Inc.
SMACNA – Sheet Metal and Air Conditioning Contractors National Association, Inc.
ASHRAE – American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc.
IPCBA – Insulated Power Cables Engineers Association
NEC – National Electrical Code of the NFPA
NEMA – National Electric Manufacturers Association
National Board of Fire Underwriters
AABC – Associated Air Balance Council
ARI – Air Conditioning and Refrigeration Institute
UL – Underwriter's Labs.
Local Utility Requirements
PDI – Plumbing and Drainage Institute
ASSE – American Society of Sanitary Engineering
ASTM – American Society for Testing Materials
The Owner's Insurance Underwriter

- B. During this work, this Contractor shall be responsible for maintaining safety among persons in his employ in accordance with the standards set by the OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970. The Engineer shall be held harmless for any accident, injury, or any other incident resulting from non-conformance with these or any other standards.

1.3 QUALITY ASSURANCE

- A. The Contractor shall use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of these Sections.

- B. Without additional cost to the Owner, the Contractor shall provide such other labor and materials as are required to complete the work of this Section in accordance with the requirements of governmental agencies having jurisdiction, regardless of whether such materials and associated labor are called for elsewhere in these Contract Documents.

- C. Engineering Drawings are symbolic and diagrammatic in nature and are intended to show only the general scheme, equipment involved, and the approximate locations and dimensions of the equipment. For exact locations and dimensions, the Contractor shall review all Drawings provided, including, Architectural and Structural Drawings, Reflected Ceiling Plans, Plumbing, Fire Protection, Electrical and HVAC Drawings to confirm all requirements. It is the Contractor's responsibility to confirm that all equipment will fit. Any discrepancies or inconsistencies are to be reported immediately to the Architect and the Engineer for clarification. No extras or allowances will be made for such items after bid submission.

- D. Examination of the site shall be made by the Contractor, who shall compare it with the Drawings and Specifications and who shall satisfy himself as to the conditions under which the work is to be performed. ~~No allowance shall subsequently be made for any extra expense incurred due to failure or neglect to make such examination.~~

- E. During the execution of work under this Contract the Contractor shall be responsible for protecting any equipment or structures in the work and adjacent areas.

- F. Secure and pay for required authorizations from governmental agencies having jurisdiction.

- G. All Work shall be guaranteed to be free from leaks or defects. Any defective materials or workmanship as well as damage to the work of all trades resulting from the same shall be replaced or repaired as directed for the duration of stipulated guarantee periods.

- H. COORDINATION: Each Contractor shall be responsible for coordinating their work with that of all other trades. No installation shall take place without approval of onsite entity (General Contractor, Construction Manager, etc.) responsible for coordination. Any work installed without approval and which interferes with the work of other trades that have been approved shall be removed and replaced at the Contractor's expense.

- I. EXPOSED PIPING: There shall be no exposed piping of any sort; plumbing, fire protection, whether implied by the MEP drawings or not, unless expressly approved by the Architect.

1.4 SUBMITTALS

- A. Comply with pertinent provisions of General Documents.

- B. PRODUCT DATA: Within the designated time period after the Contractor has received the Owner's Notice to Proceed, submit:
1. Materials list of items proposed to be provided under this Section with sources of supply and manufacture.
 2. Manufacturer's specifications, catalog cuts, and other data needed to prove compliance with the specified requirements.
 3. Product substitutions are to be requested in writing, within 20 calendar days of the Notice to Proceed (NTP). At the time of submission of cuts for review for all substitutions, clearly indicate Specification Section, provide complete information on the original product and the proposed product for approval, and all deviations.
 - a. Any substitutions requested by a contractor are to include all costs for related changes by other contractors. It is the responsibility of the contractor requesting the change to coordinate with any other trade impacted by the substitution.

C. SAMPLES

1. When so requested by the Engineer, promptly provide samples of items scheduled to be exposed in the final structure.
2. When specifically so requested by the Contractor and authorized by the Engineer, authorized samples will be returned to the Contractor for installation on the Work.

D. Shop Drawings:

1. PLUMBING: Before fabrication or purchase of any equipment or controls, prepare and submit for review, shop drawings of layout and design of the complete hot and cold domestic water piping systems, vents, sanitary and storm piping systems, and equipment, for approval before starting any work, at a scale not smaller than 1/4" = 1'-0". Include all access provisions, etc. Coordinate all of the above with all other trades.
2. Clearly identify by circle and by note "DEVIATION" and by note "INTERFERENCE", in large bold lettering, and deviations from Drawings and Specifications and any potential or unresolved interference condition and assume full responsibility for failure to do so.
3. Submittal shall confirm fabrication and installation is in accordance with recommendations and applicable standards.
4. For mandatory coordination of all work, including that which penetrates structural members, consult General Conditions.

- E. Corrections or comments made on shop drawings and submittals during review do not relieve the Contractor from compliance with requirements of the drawings and specifications. This check will only be for review of general conformance with the design concept of the project and general compliance with the information given in the contract documents. The Contractor shall be responsible for; confirming and correlating all quantities and dimensions, selecting fabrication process and techniques of construction, coordinating his work with that of all other trades, and performing his work in a safe and satisfactory manner.

- F. STERILIZATION CERTIFICATE: Upon completion of water line sterilization, deliver two copies of an acceptable "Certificate of Performance" to the Engineer.

- G. MANUALS: Upon completion of the work of this Section, the Contractor shall deliver to the Architect four copies of an operation and maintenance manual compiled in accordance with the provisions of General Conditions, and these Specifications.

1. Include within each manual a copy of the Project Record Documents showing all work of the Section.
2. Include detailed operating and maintenance instructions.

- H. AS-BUILT DRAWINGS: concurrent with the progress of the work, the Contractor shall maintain a set of as-built record sepia drawings noting in red all changes in the work. Upon completion of the work this sepia set is to be turned over to the Owner for his records.

1. All required permits, fees and inspections shall be arranged and paid for by the Contractor. The Contractor shall present to the Owner, properly signed, all required certificates of final inspection and approval before the work will be accepted as complete.

1.5 TRENCHING AND BACKFILLING

- A. Perform trenching, backfilling and compaction in strict accordance with applicable codes and standards.

- B. Cut bottom of trenches to grade. Make trenches 12" wider than the greatest dimension of the pipe.

C. Bedding and backfilling:

1. Install piping promptly after trenching. Keep trenches open as short a time as practicable.
2. Under the building, install pipes on a 6" bed of damp compacted sand. Backfill to bottom of slab with damp sand, compacted in 6" layers.
3. Outside the building, install underground piping on a 6" bed of damp sand, compacted. Backfill to within 12" of finish grade with damp sand, compacted. Backfill remainder with native soil placed in 6" layers, then compacted.
4. Do not backfill until installation has been authorized and until Project Record Documents have been properly annotated.

1.7 GAS EQUIPMENT SEISMIC CONNECTIONS

- Final connection of gas piping to any equipment subject to vibration or movement shall utilize flexible stainless steel high BTU application gas connectors with PVC coating, Dormont Series 40, 50 or 60 by Dormont Mfg. Co., Export, PA or authorized equivalent.

1.8 INTUMESCENT FIRE BARRIER PLASTIC PIPE CAULKING

- A. Provide where plastic pipe penetrates a rated wall, intumescent-type sealant complying with UL Fire Resistance Directory and ULC Volume 3 Fire Resistance Ratings, UL classified for use with PVC, CPVC, CPVC, ABS, COABS, PVDF, PP, PB and FRPP, HILTI FS-ONE or authorized equal.

1.9 INSTRUCTION

- A. After all work is completed, the Contractor shall instruct employees designated by the Owner in the proper operation and maintenance of the equipment and systems installed under this Contract.

1.10 GUARANTEE

- The Contractor shall guarantee his work for a period of one year after date of completion as witnessed by receipt of final payment. The Contractor shall promptly repair and make good any damage to the work of any other Contractor, during that period, that may be caused by defective materials or workmanship. Any defects in materials and workmanship shall be corrected by the Contractor without further expense to the Owner. He shall deliver to the Architect or Owner said written guarantee upon receipt of final payment.

1.11 DEBRIS REMOVAL

- Routinely remove, in an orderly and efficient manner, (and cart away and dispose of, by legal means, off the site and premises), all debris related to work of this Section; worksite and staging areas shall be kept clear of all debris on a daily basis; permit no debris accumulation which poses any threat to life, safety or property. Non-conformance with the foregoing Contract requirements will be subject to all remedies established by the Project General Conditions.

END OF SECTION

SECTION 15400
PLUMBING

PART 1 – GENERAL

1.1 SECTION REQUIREMENTS

- A. WORK INCLUDED: Provide all labor, materials, equipment, paint, tools, and management services for proper and complete execution of all Plumbing work. Without restricting the generality of the foregoing, the following items of work are included:
1. Remove existing fixtures and cap and seal piping.
 2. Provide all domestic water piping for new fixtures from existing sources.
 3. Complete drain, waste and vent systems; connections including escutcheons, connections, cleanouts and connection to building sanitary.
 4. Purchase, installation and connection/piping of Plumbing Fixtures as specified on the drawings, with fittings, electric fittings, stops and traps, in the locations and quantities shown on the Drawings.
 5. Installation of hot and cold water piping, as well as exposed P-traps and drain piping.
 6. Perform all cutting & patching, and fire caulking/sealing for plumbing installation.
 7. Plumbing Contractor shall be responsible for coordination of all work with all other trades to avoid conflicts.
 8. Temporary water service as required to perform the Work.
 9. Sleeves for pipes passing through walls and partitions.
 10. Perform cleaning and protection of your work.
 11. Access doors where required in walls and ceilings for installation by appropriate access Contractor.
 12. Seismic provisions, as required by code, for ALL plumbing systems and components.
 13. Removal of all debris and rubbish related to this work.

PART 2 – PRODUCTS

2.1 PLUMBING FIXTURES

- A. Provide plumbing fixtures as shown on the Drawings with all hangers, supports and stops as required by code for a complete installation.
- B. Provide handicapped flush valves to wide side of stalls as required by code.

C. Traps & Wall Supplies For Plumbing Fixtures:

1. Traps for lavatories, drinking fountains and electric water coolers
2. Trap nipples for lavatories and electric water coolers shall be McGuire No. 2127, 1-1/2" by 6" cast brass chrome plated with cast set screw escutcheon.
3. Traps for sinks shall be McGuire No. 204, chrome plated, cast brass 1-1/2" x 2" "P" trap with clean out plug. Sink shall be provided by G.C.
4. Trap nipples for sinks shall be McGuire No. 3127 chrome plated, cast brass 2" x 6" with cast set screw escutcheon.
5. Wall supplies for lavatories, sinks and electric water coolers shall be McGuire No. 2167 LK chrome plated, 1/2" loose key angle stops with 1/2" O.D. x 12" flex risers and wrote escutcheons.
6. Provide two keys for all wall supplies.
7. All Wall Mounted and Countertop Mounted Lavatories: ADA-conforming, wheelchair accessible lavatory P-traps and angle valve assemblies shall be covered with molded, antimicrobial TRUEBRO Inc. Lav-Guard undersink protective pipe cover, Model 102 (China White) and Model 103 or 103K (available in white). Provide all accessories are required to ensure all piping is covered. Cover shall be secured with Snap-Clip flush reusable fasteners, angle stop shall have Lock-Lid locking access cover.

2.2 SERVICE CONNECTIONS/METERS

- A. Provide all water and sanitary utility connections.
- B. Provide and install meters and pressure regulators if not provided by local utilities.
- C. Coordinate all work with local utilities.
- D. Provide controls and control wiring if applicable, coordinate with Electrical Contractor.

2.3 MATERIALS

- A. All materials entering into this work shall be new and shall be of the best of their respective kinds and shall be installed in a neat and workmanlike manner. The Contractor shall be entirely responsible for all apparatus, equipment, and appliances furnished by him or his Sub-Contractors in connection with this work and special care shall be taken to protect all parts thereof in such manner as may be necessary to protect them. This includes, but is not limited to, covers, crating, sheds, or other means to prevent dirt, plaster, grit or other foreign substances from entering piping, fixtures or equipment. Special care shall be taken to keep all open ends of pipes, etc. closed off at all times or during installation. The Contractor shall be responsible for and shall make good any damages without additional cost.

B. SOIL, VENT AND WASTE PIPING

1. All above ground sanitary piping shall be cast iron "No Hub" pipe (Cast Iron Soil Pipe Standard 301), with neoprene gasket, stainless steel band, and clamp (Cast Iron Soil Pipe Institute Standard 301), with neoprene gasket, stainless steel band, and clamp (Cast Iron Soil Pipe Institute Standard 310). Insulate all horizontal runs with minimum 1" thick rigid fiberglass insulation.
2. ~~Below-ground:~~ Provide PVC pipe and fittings, DWV (ASTM D2665).
3. Coordinate with HVAC Contractor to provide connection points for condensate lines.
4. Install roof drain body, sump receiver, under deck dampers, before installation of roof membrane system. Set drain flange tight to roof deck. Secure drain to roof deck with approved underdeck clamp bolted to underside of drain body. Protect roofing ballast from entering drain body or leader pipe during roofing installation. Rod-clean each roof drain and leader removing all soil, refuse, and other foreign material. Provide waterproof caulking and gasket between reversible collar and body.

D. GALVANIZED OR BLACK STEEL PIPE

1. Provide standard weight complying with ASTM-A-12.
2. Provide Service weight fittings complying with ASTM-A-126 or ASTM-A-197.

E. COPPER HOT AND COLD WATER DOMESTIC SERVICE

1. Provide type L complying with ASTM-B-88.
2. Fittings shall be 150 psi rated cast brass soldered type.
3. Soldered joints shall be made with a LEAD FREE SOLDER.
4. All under-slab copper piping shall be soft, type K with NO JOINTS.

F. DIELECTRIC PIPE FITTINGS

1. Provide at all connections between dissimilar metals (e.g. steel, copper, iron), nylon insulator, Buna-N gasket and/or tape.
2. Fittings shall be 150 psi rated cast brass soldered type.
3. Soldered joints shall be made with a LEAD FREE SOLDER.
4. All under-slab copper piping shall be soft, type K with NO JOINTS.

G. GAS PIPING

1. Provide black steel, schedule 40, minimum 150 PSI, screwed malleable iron fittings, ASTM-A-120, (Standards are in 2018 International Fuel Gas Code).
2. Provide seismic restraints for all piping hangers longer than 12". All seismic restraints shall be in accordance with 2018 International Fuel Gas Code.
3. Construction must meet International Fuel Gas Code, American Gas Association, OSHA, and all other local and applicable codes.
4. Above ground gas piping 5" and larger, shall be Schedule 40 seamless steel pipe with steel welding fittings. Piping and fitting shall comply with gas company standards.
5. Above ground gas piping 4" and smaller shall be Schedule 40 seamless steel pipe and galvanized threaded malleable iron fittings.

2.4 VALVE AND PIPING IDENTIFICATION

- A. Identify piping with pipe identification labels.
- B. Valves shall be designated by distinguishing numbers and/or letters on required chart(s) and/or diagram(s).

2.5 VALVES

- A. GATE VALVES: Provide solid wedge disc, rising stem, 200# WOG; non-rising stem valves may be used only where there is insufficient clearance.
1. 3" and smaller, rising stem: Provide Crane #428, bronze, screwed.
 2. 4" and smaller, non-rising stem: Provide Crane #438, bronze, screwed.
 3. 4" and larger: Provide Crane #465-1/2, IBFM, flanged, non-rising stem.
- B. GLOBE VALVES: Provide replaceable composition disc suitable for 200° F water:
1. 2" and smaller: Provide Crane #71, bronze, screwed.
 2. 2-1/2" and larger: Provide Crane #359, iron body, flanged, 200# WOG.
- C. CHECK VALVES:
1. 3" and smaller: Provide Crane #37, bronze, screwed, Y-pattern, 200# WOG, swing check type.
 2. 4" and larger: Provide Crane #373, IBFM, flanged, 200# WOG.
- D. STRAINERS: Provide Y-pattern, 200# WOG, 20 mesh mesh screen:
1. 3" and smaller: Provide Crane #988-1/2, flanged.
 2. 4" and larger: Provide Crane #989-1/2, flanged.
- E. PARTITION STOP VALVES: Provide Chicago Faucet #1771, loose key type.
- F. BALANCING COCKS: Provide DeZurick #400.

- G. CLEANOUTS: Provide cleanouts on all soil, waste and roof drain lines, at end of all lines, at all changes in direction exceeding 45 degrees, where leaving the building, and not over 50 ft. apart at all horizontal or vertical runs.
- a. Floors:
1. Provide Smith #4023 or Josom #8330 with round nickel-bronze trap in finished room floors.
 2. Provide Smith #4223 or Josom #8090-CAL with round cast iron trap in unfinished room floors.
 3. Provide "flush-with-floor" type cleanouts, with adjustable watertight covers and integral anchoring flange with clamping collar where waterproofing membrane is used.
 4. Provide Smith #4532 or Josom #8790-4 with round chrome plated or stainless steel access plate and screw.
 5. Provide cleanout plugs of extra heavy bronze.
- H. VENT LINES: Where small vent lines pass through roof structures, provide pipe increasers as required by local code.

2.6 PIPE HANGERS

A. WATER PIPING:

1. Provide VMC (Vibration Mountings & Controls Inc.) Series SM spring flex hangers with appropriate split ring or trapeze type connectors.
2. Provide seismic restraints for all hangers longer than 12" as required by code.
3. For joining copper tubing, use the building shall be located within the building in such a manner as to provide through protection from freezing.

2.7 INSULATION

- A. ALL horizontal roof drain lines are to be insulated with 1" thick Owens-Corning Fiberglas "25ASJ/SSL".
- B. Insulate all hot and cold water piping above ground and ceilings with 1" thick Owens-Corning Fiberglas "25asj/ss" insulation for pipes up to 1½" and 1½" thick fiberglass insulation for pipes 2" and up. Provide with a factory applied vapor barrier unless noted otherwise.
- C. For exposed water piping and drains in lavatories, provide "Handy Shield" or authorized equal prefabricated insulation.

2.8 SLEEVES

- A. Where pipes pass through concrete, masonry, or stud walls, provide "Sperzel" rustproof "Crete-Sleeve" of the size required.

2.9 WATER HAMMER ARRESTORS

- A. Provide water hammer arrestors on hot and cold water lines, Smith Hydrolast 5000 series
1. Install in upright position at all quick closing valves, solenoids, isolated plumbing fixtures, and supply headers at plumbing fixture groups.
 2. Locate and size in accordance with Plumbing and Drainage Institute Standard WH-201.
 3. Install water hammer arrestors behind access panels.

2.10 FLOOR DRAINS

- A. Provide 3 inch of the size, type and location shown on the Drawings, and connect to cast iron "P" traps. All floor drains shall include trap primer option.

2.11 ACCESS DOORS

- A. Access panels in ceramic tile, gypsum wallboard, or other finished surface, required for access to valves, etc. on plumbing lines, will be furnished by this Contractor and installed by the Contractor for the applicable surface.
- It shall be the Plumbing Contractor's responsibility to take a count of all such panels required, transmit this information to the respective Contractor and see that they are installed where required, so that no plumbing equipment is left in an inaccessible location.

2.12 OTHER MATERIALS

- A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the authorization of the Engineer.
- B. Provide flashing and counter-flashing for all vent piping extended to exterior.

PART 3 – EXECUTION

3.1 TEMPORARY POWER AND LIGHTING

- A. It is the Contractor's responsibility to run power from point of availability as provided in the Electrical Contract, to the point of use. Provide local temporary lighting as required for performance of the work in this section.

3.2 EXISTING CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.3 PREPARATION

- A. Coordination:
1. Coordinate as necessary with other Sections to assure proper and adequate provision in the work of those Sections for interface with the work of this Section.
 2. Coordinate the installation of items with the schedule for work of other trades to prevent unnecessary delays in the total work.

- B. Data indicated on the Drawings and in these Specifications intended to convey the Engineer's intentions only, as such their accuracy is not warranted. The exact locations, distances, levels, and other conditions will be governed by actual construction and the Drawings and Specifications should be used only for guidance in such regard.

- C. Where devices are not specifically located on the Drawings, locate as determined in the field by the Engineer. Where devices are installed without such specific direction, relocate as directed by the Engineer, at no additional cost to the Owner.

3.4 INSTALLATION OF PIPING AND EQUIPMENT

- A. GENERAL:
1. Thoroughly clean items before installation. Cap pipe openings to exclude dirt until fixtures are installed and final connections have been made.
 2. Cut pipe accurately, and work into place without springing or forcing. Properly clearing windows, doors, and other openings. Excessive cutting or other weakening of the building will not be permitted.
 3. Show no tool marks or threads on exposed piped, polished, or enameled American Sanitary fixtures. Tape all finished surfaces to prevent damage during construction.
 4. Make changes in directions with fittings; make changes in main sizes with eccentric reducing fittings. Unless otherwise noted, install water supply and return piping with straight side of eccentric fittings at top of the pipe.
 5. All drainage piping shall be run as straight as possible. Run horizontal sanitary and storm drainage piping at a uniform grade of 1/8" per ft. unless otherwise noted. Make change in direction of drainage piping by appropriate use of 45° wyes, long turn tee wyes, long sweep quarter elbows, eighth, eighth, or sixteenth bends except where space conditions require, short turn sanitary tees may be used on vertical lines only.
 6. Provide cleanout plugs at efficient swing joints, expansion loops, and devices necessary for a flexible piping system.
 7. Support piping independently at pumps, coils, tanks, and similar locations, so that weight of pipe will not be supported by the equipment.
 8. Securely bolt all equipment, isolators, hangers, and similar items in place.
 9. Support each item independently from other pipes. Do not use wire for hangers or strapping pipes.
 10. Provide complete dielectric insulating couplings between ferrous and non-ferrous metals.
 11. Provide union and shut off valves suitably located to facilitate maintenance and removal of equipment and apparatus.
 12. All water piping shall be concentrated and run as direct as possible but provide for expansion and contraction. Provide cleanouts in all finished room and supply lines to wall hung fixtures, or to fixtures set near or against the wall shall be stubbed through the wall and not up through the floor.
 13. For joining pipes throughout the building shall be located within the building in such a manner as to provide through protection from freezing.
 14. All water piping shall be run level and generally free of traps and unnecessary bends arranged to conform to the building requirements and to suit the necessities of clearances for other mechanical and electrical work.
 15. All piping shall have reducing or increasing fittings where any change in the pipe sizes occur. No bushings of any nature will be allowed.
 16. No valve stems shall be installed below the centerline of the piping it serves.
 17. Run vent piping with elbows at changes of direction or grade to drain out condensate.
 18. Cleanouts shall be provided where required by code. Cleanouts shall be installed at all changes in direction, at the base of all leaders and where shown on the Drawings.
 19. Underground cleanouts shall be extended to the finished floor with long rigid fittings.

B. CHASES, SLOTS, AND OPENINGS

1. Chases, slots and openings in floor, walls, or partitions will be built in by each Contractor in respect to his respective work as shown on the drawings and as directed as the work progresses. This Contractor shall familiarize himself with the size of chases, slots, and openings to be provided by other Contractors to receive his work and shall see that they are properly located and of proper size. This Contractor shall provide all chase access doors for installation by Drywall or Masonry Contractor. If these chase doors have to be cut after walls are built he shall provide same as required. This Contractor shall install his work sufficiently in advance of the building construction to permit his work to be built into walls, floors, and partitions to eliminate unnecessary cutting of construction work.
2. He shall not cut any chases or any structural members without first securing the approval of the Architect and Engineer.

- C. EQUIPMENT ACCESS: Install piping, equipment, and accessories to permit access for maintenance. Relocate items as necessary to provide such access, and without additional cost to the Owner.

3.5 PIPE JOINTS

- A. COPPER TUBING
- a. Cut square, remove burrs, and clean inside of female fitting to a bright finish.
 - b. Apply solder flux with brush to tubing.
 - c. Remove internal parts of solder-end valves prior to soldering.
2. Provide dielectric unions at points of connection of copper tubing to ferrous piping and equipment.
3. For joining copper tubing, use the building shall be located within the building in such a manner as to provide through protection from freezing.
- a. Water piping 3" and smaller: 95-5 solder.
 - b. Water piping larger than 3": Sil-fos® brazing.
4. Use only LEAD-FREE SOLDER.

B. SCREWED PIPING

1. Deburr cuts.
- a. Do not run exceeding internal diameter of the pipe.
- b. Thread to requirements of ANSI B21.
2. Use Teflon tape on male thread prior to joining other services.

C. LEAKY JOINTS

1. Remake with new material.
2. Remove leaking section and/or fitting as directed.
3. Do not use thread cement or sealant to tighten joints.

3.6 PIPE SUPPORTS

- A. Support suspended piping with clevis or trapeze hangers and rods.
- B. Space hangers and support for horizontal steel pipes according to the following schedule:
- | Pipe Size: | Maximum spacing on centers: |
|-------------------|-----------------------------|
| 3/4" and smaller: | 10'-0" |
| 1" and greater: | 12'-0" |
- C. Space hangers and supports for horizontal copper tubing according to the following schedule:
- | Tube Size: | Maximum spacing on centers: |
|-------------------|-----------------------------|
| 1/4" and smaller: | 6'-0" |
| 1-1/2" and over: | 10'-0" |
- D. Cast Iron Soil Pipe: at 5 foot intervals and behind every hub.

- E. Space hangers and supports for horizontal PVC pipe six feet maximum for all sizes.
- F. Provide sway bracing on hangers longer than 18".

- G. Support vertical piping with riser clamps secured to the piping and resting on the building structure.
- H. Provide insulation continuous through hangers and rollers. Protect insulation by galvanized steel shields.

- I. Arrange pipe supports to prevent excessive deflection, and to avoid excessive bending stress.
- J. It is the option of the Contractor to fasten piping directly to walls above ceilings, support from walls above ceilings or support it from building structures above ceilings.

K. MATERIALS

1. All hangers and supports shall be as manufactured by the F & S Company as follows:
- a. All bare horizontal piping shall be hung with fig. #86 or Fig. #86F adjustable galvanized steel clevis hanger.
 - b. All insulated horizontal piping shall be hung with Fig. #86S adjustable galvanized steel clevis hanger.
 - c. All hangers, clamps and anchors for copper pipe shall be copper clad.
 - d. Beam clamps and C clamps shall have steel retaining clips.
 - e. All vertical lines shall be supported by means of authorized galvanized steel clamps.

- L. Support gas piping on roof with pre-fabricated pillow block pipestands, one piece molded plastic with rounded base edges vented to prevent condensate buildup, round cradle with roller in Teflon base, by Miro Industries, sized to fit individual pipe diameters.

3.7 SLEEVES AND OPENINGS

- A. Provide sleeves for each pipe passing through walls, partitions, floors and ceilings.
1. For uninsulated pipe, provide sleeves two pipe sizes larger than the pipe passing through, or provide a minimum of 1/2" clearance between inside and outside of the pipe.
 2. For insulated pipe, provide sleeves of adequate size to accommodate the full thickness of pipe covering, with clearance for packing and caulking.

B. FINISH AND ESCUTCHEONS

1. Smooth up rough edges around sleeves with plaster or spackling compound.
2. Provide 1" wide chrome or nickel plated escutcheons on all pipes exposed to view where passing through walls, floors, partitions, ceilings, and similar locations.
- a. Size the escutcheons to fit pipe and a covering.
- b. Hold escutcheons in place with set screws.

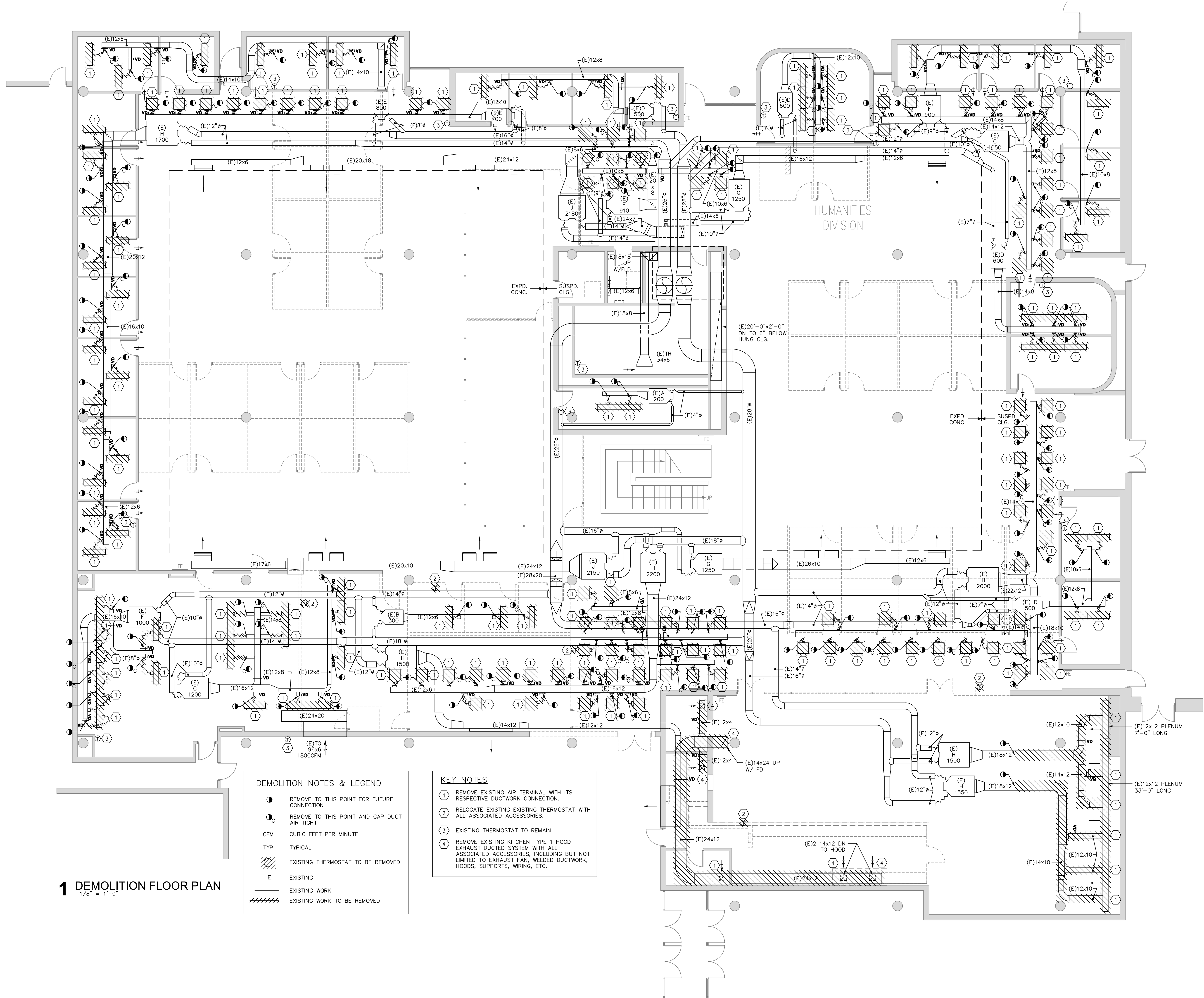
- C. Provide all cutting and patching, and fire caulking/sealing. Caulk the space between sleeve and pipe with a fire covering, using a non-combustible, permanently plastic, waterproof, non-staining compound which leaves a smooth finished appearance, or pack with noncombustible cotton, rope, or fiberglass to within 1/2" of both wall faces.

3.8 CLEANOUTS

- A. Secure the Architect's approval of locations for cleanouts in finished areas prior to installation.
- B. Provide cleanouts of same nominal size as the pipes they serve; except where cleanouts are required in pipes 4" and larger, provide 4" cleanouts.
- C. Make cleanouts accessible. After pressure tests are made and authorized, thoroughly graphite the cleanout threads.
- D. Provide cleanouts every 50' on 5" pipe and under, and every 100' on 6" pipe and larger.

3.9 VALVES

- A. Provide valves in water and gas systems. Locate and arrange so as to give complete regulation of apparatus, equipment, and fixtures.
- B. Provide valves in at least the following locations:
1. In branches or headers of water piping servicing a group of fixtures.
 2. On both sides of all apparatus and equipment.
 3. For shutoff of risers and branch mains.
 4. For flushing and sterilizing the system.
 5. Where shown on the Drawings.



1 DEMOLITION FLOOR PLAN
1/8" = 1'-0"

DEMOLITION NOTES & LEGEND

- REMOVE TO THIS POINT FOR FUTURE CONNECTION
- _C REMOVE TO THIS POINT AND CAP DUCT AIR TIGHT
- CFM CUBIC FEET PER MINUTE
- TYP. TYPICAL
- EXISTING THERMOSTAT TO BE REMOVED
- E EXISTING
- EXISTING WORK
- EXISTING WORK TO BE REMOVED

KEY NOTES

- 1 REMOVE EXISTING AIR TERMINAL WITH ITS RESPECTIVE DUCTWORK CONNECTION.
- 2 RELOCATE EXISTING THERMOSTAT WITH ALL ASSOCIATED ACCESSORIES.
- 3 EXISTING THERMOSTAT TO REMAIN.
- 4 REMOVE EXISTING KITCHEN TYPE 1 HOOD EXHAUST DUCTED SYSTEM WITH ALL ASSOCIATED ACCESSORIES, INCLUDING BUT NOT LIMITED TO EXHAUST FAN, WELDED DUCTWORK, HOODS, SUPPORTS, WIRING, ETC.

03.09.2026 ISSUED FOR BIDDING

ESSEX COUNTY COLLEGE
HUMANITIES DEPARTMENT
OFFICE ALTERATIONS

1-55 MARKET STREET NEWARK, NJ

arcari iovino
+ ARCHITECTS PC

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CERTIFICATE OF AUTHORITY
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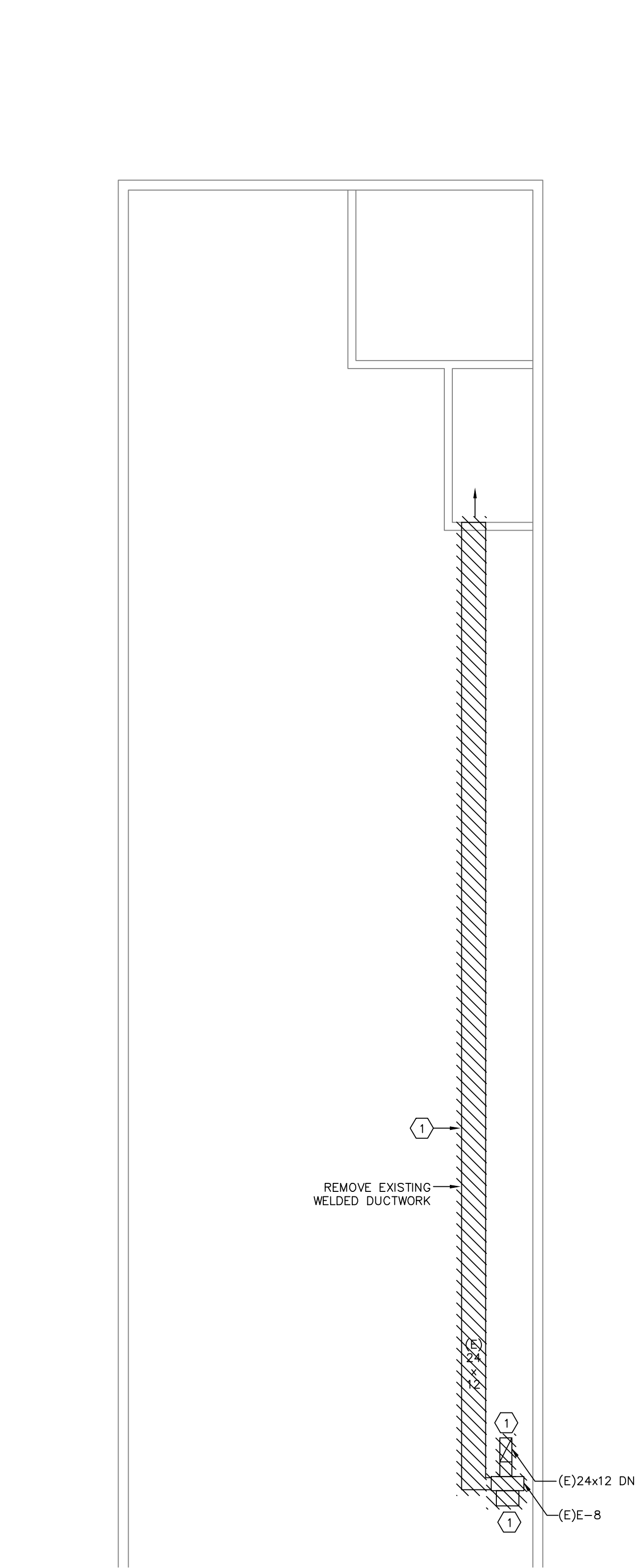
BRIAN PASECHNICK NJ#48111

MECHANICAL DEMOLITION
PLAN

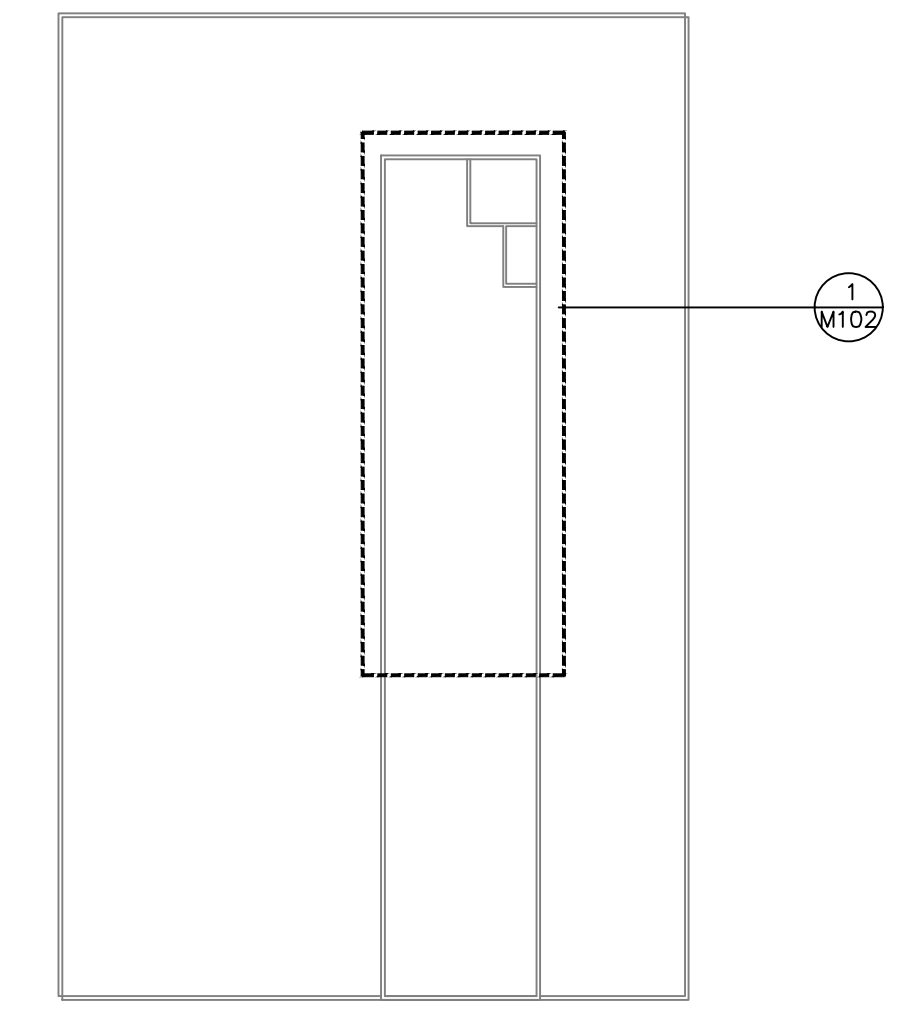
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DATE: 03.09.2026
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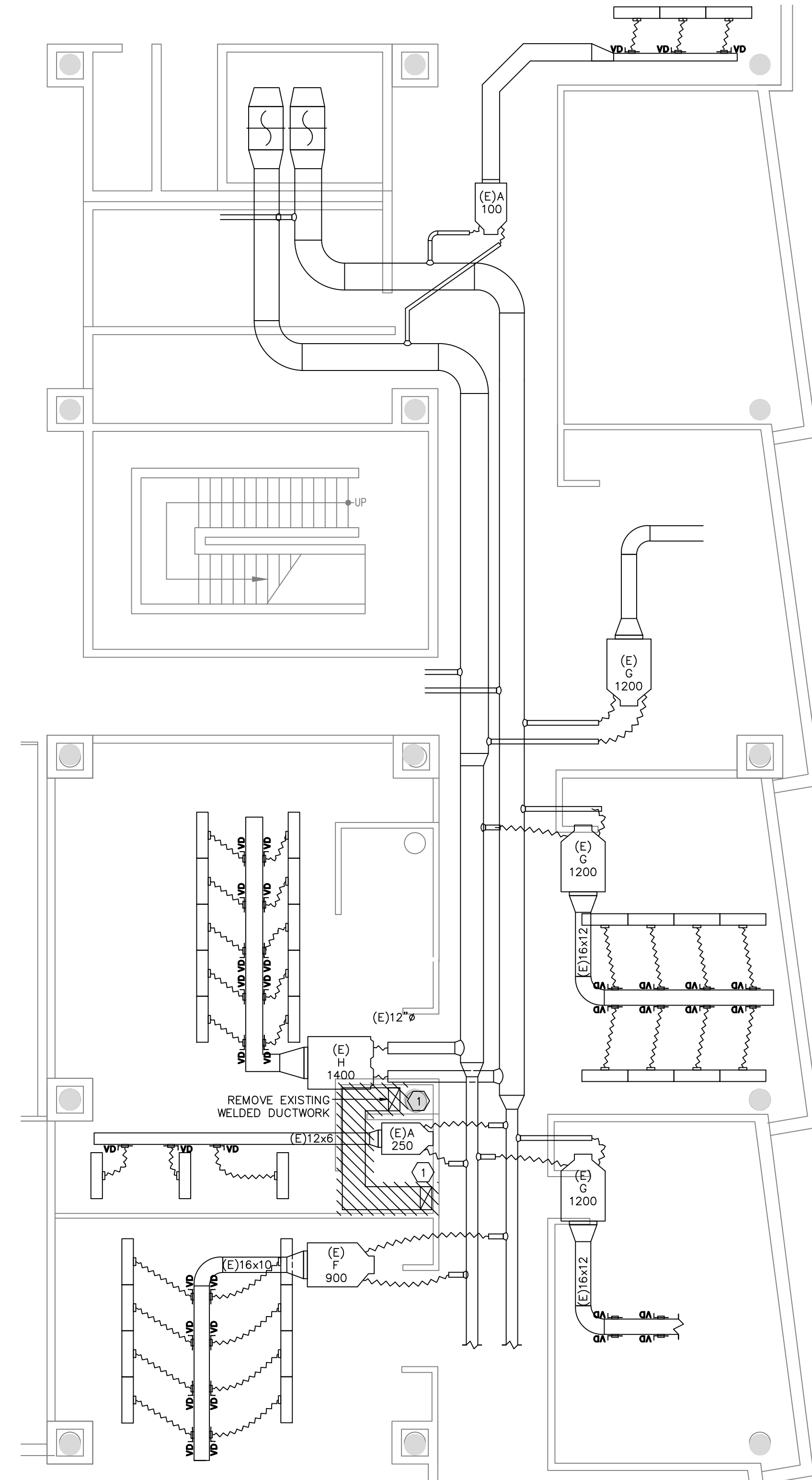
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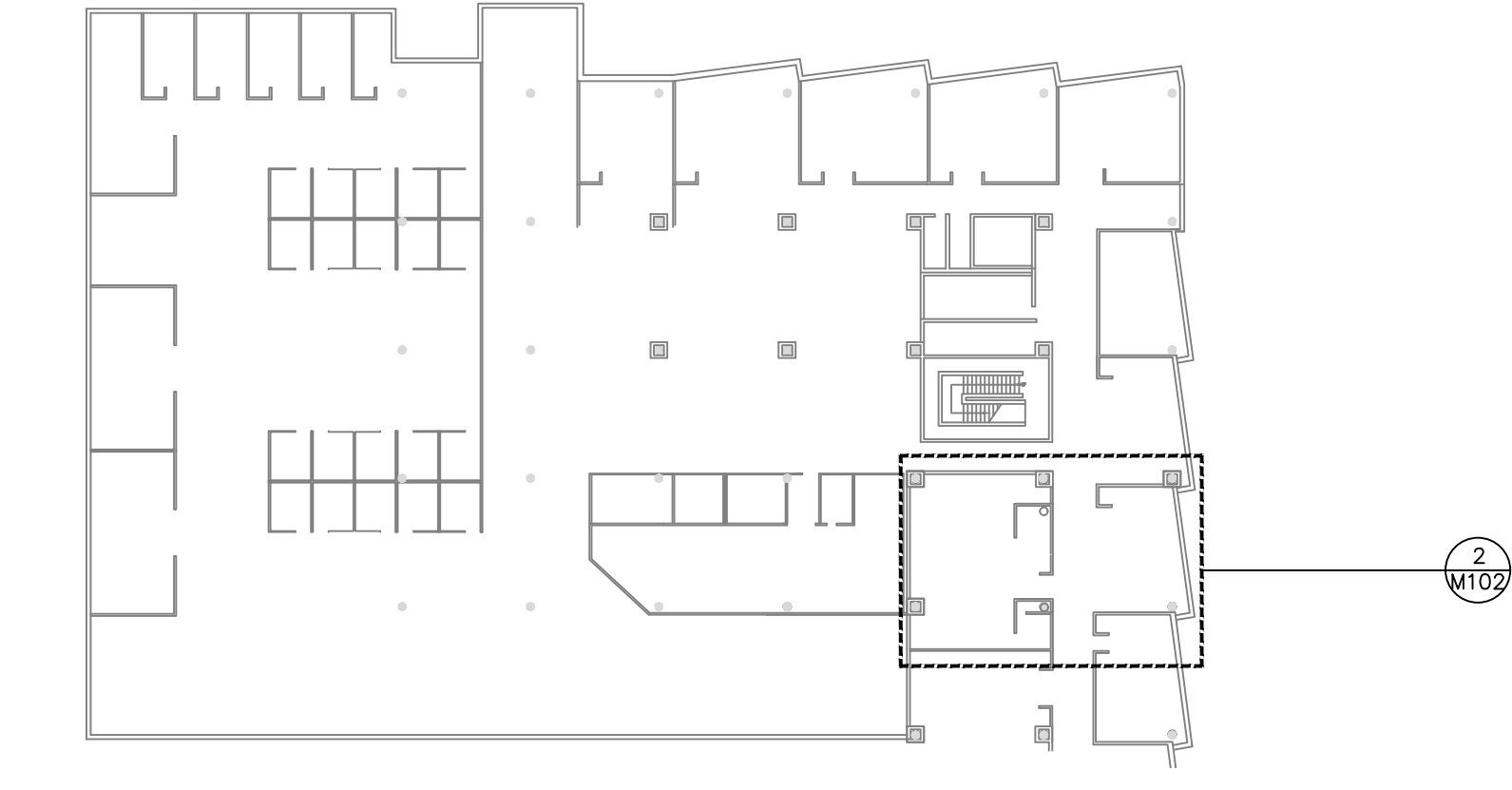
1 DEMOLITION ROOF PLAN
1/8" = 1'-0"



3 ROOF KEY PLAN
NOT TO SCALE



2 DEMOLITION SECOND FLOOR PLAN
1/8" = 1'-0"



4 SECOND FLOOR KEY PLAN
NOT TO SCALE

DEMOLITION NOTES & LEGEND

●

REMOVE TO THIS POINT FOR FUTURE CONNECTION

●_C

REMOVE TO THIS POINT AND CAP DUCT AIR TIGHT

CFM

CUBIC FEET PER MINUTE

TYP.

TYPICAL

E

EXISTING

EXISTING WORK

/////////

EXISTING WORK TO BE REMOVED

KEY NOTES

①

REMOVE EXISTING KITCHEN TYPE 1 EXHAUST DUCTED SYSTEM WITH ALL ASSOCIATED ACCESSORIES, INCLUDING BUT NOT LIMITED TO EXHAUST FAN, DUCTWORK, HOODS, WELDED SUPPORTS, WIRING, ETC.

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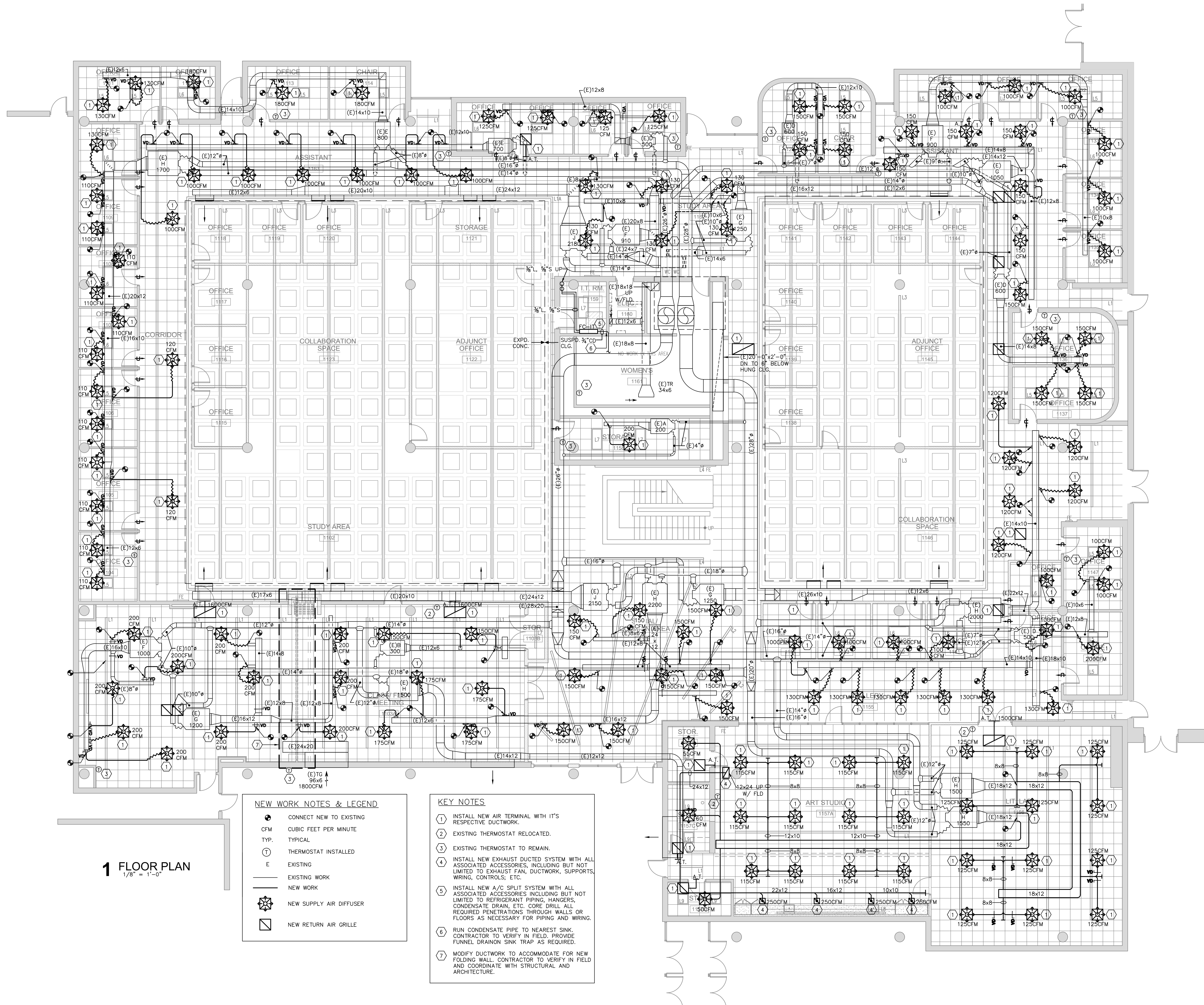
BRIAN PASECHNICK NJ#48111

MECHANICAL SECOND AND ROOF
DEMOLITION PLAN

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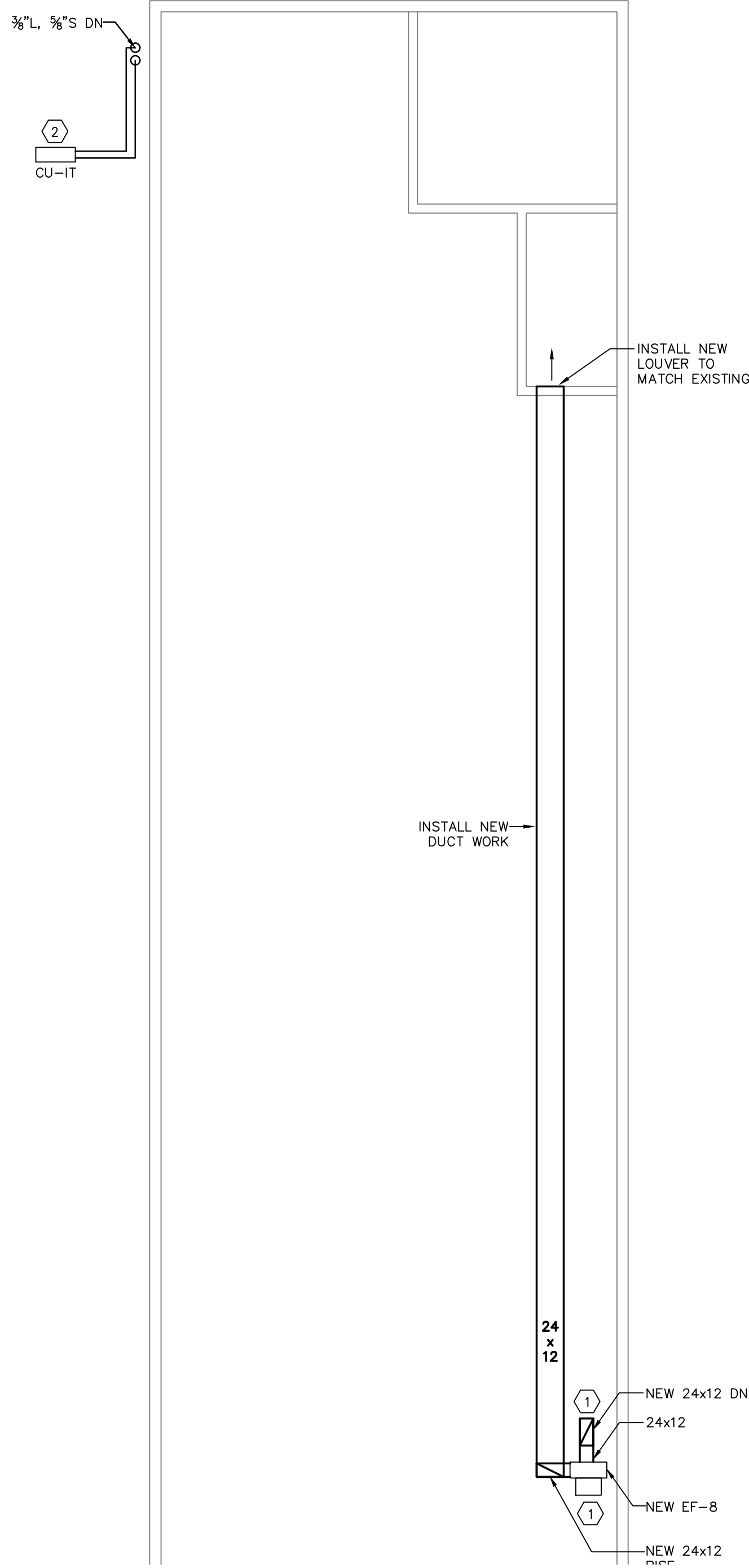
BRIAN PASECHNICK NJ#48111

MECHANICAL FIRST FLOOR PLAN

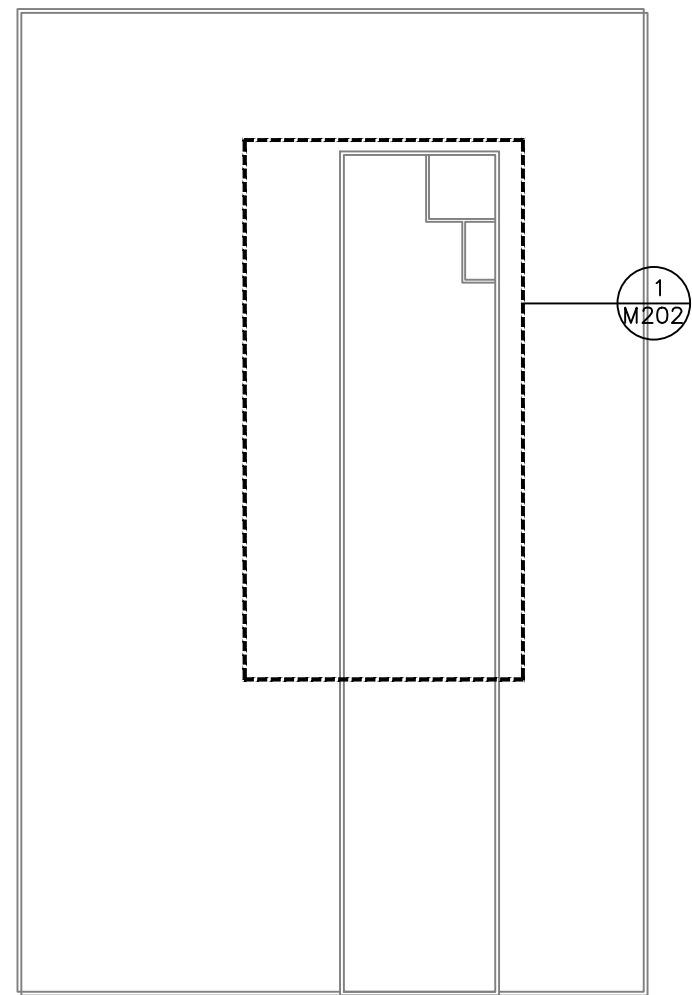
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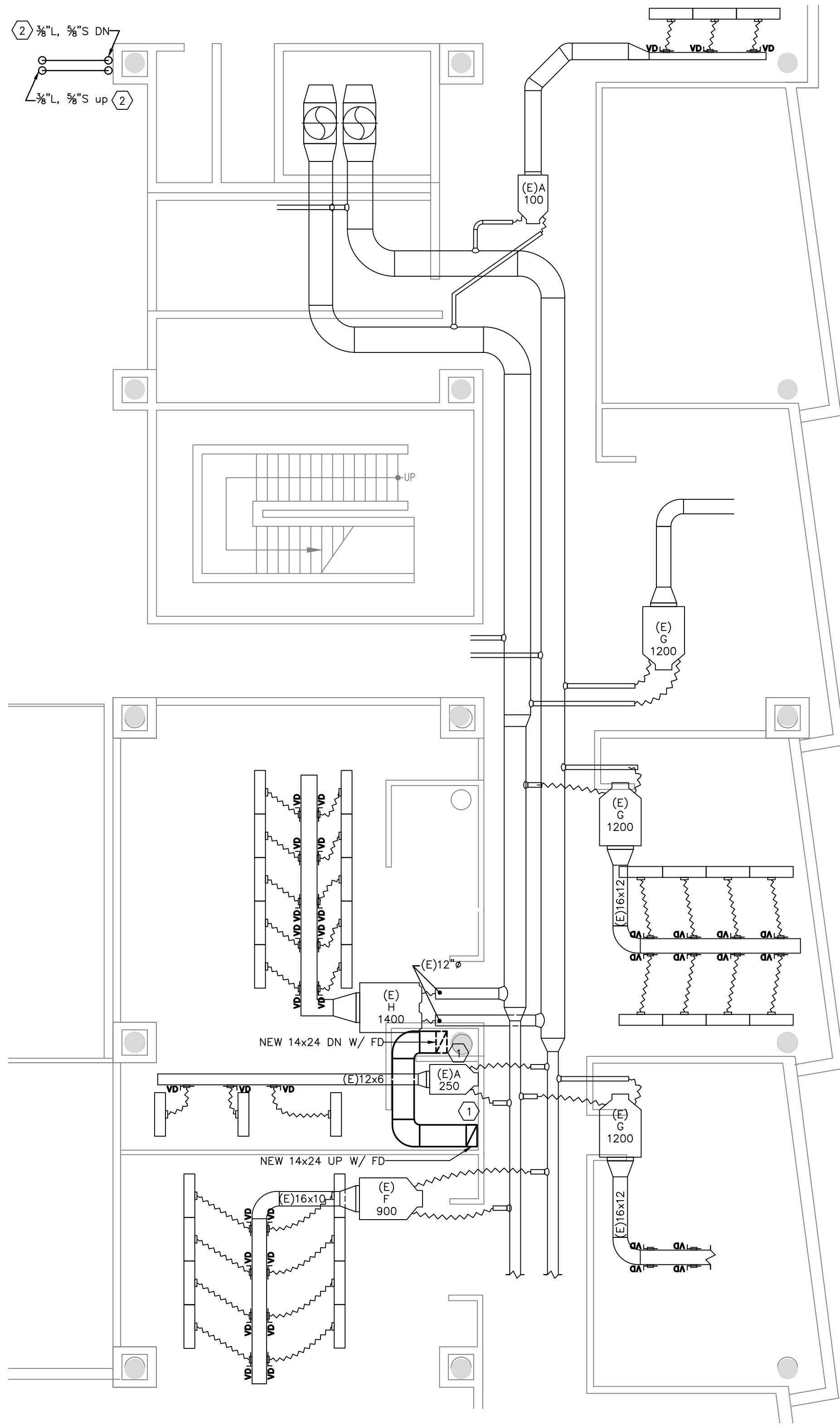
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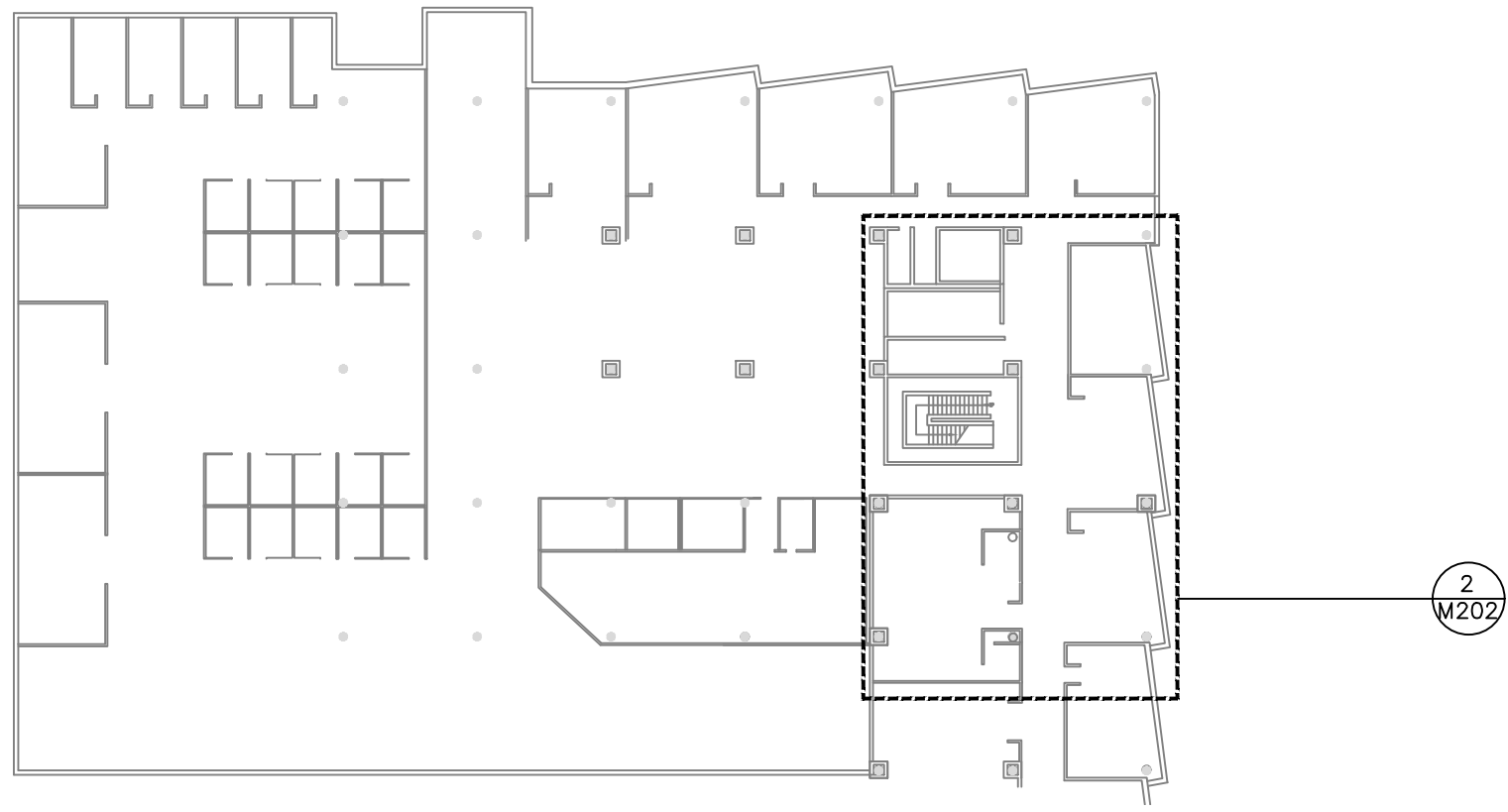
1 NEW WORK ROOF PLAN
1/8" = 1'-0"



3 ROOF KEY PLAN
NOT TO SCALE



2 NEW WORK SECOND FLOOR PLAN
1/8" = 1'-0"



4 SECOND FLOOR KEY PLAN
NOT TO SCALE

NEW WORK NOTES & LEGEND

- CONNECT NEW TO EXISTING
- CFM CUBIC FEET PER MINUTE
- TYP. TYPICAL
- Ⓢ THERMOSTAT INSTALLED
- E EXISTING
- EXISTING WORK
- NEW WORK

KEY NOTES

- ① INSTALL NEW EXHAUST FAN WITH ALL ASSOCIATED ACCESSORIES INCLUDING BUT NOT LIMITED TO DUCTWORK, WIRING, HANGERS, ROOF CURB, ETC.
- ② INSTALL OUTDOOR UNIT WITH ALL ASSOCIATED ACCESSORIES INCLUDING BUT NOT LIMITED TO REFRIGERANT PIPING, HANGERS, WIRING, CURB, ETC. CORE DRILL ALL REQUIRED PENETRATIONS THROUGH WALLS OR FLOORS AS NECESSARY FOR PIPING AND WIRING.

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BRIAN PASECHNICK NJ#48111

MECHANICAL SECOND AND ROOF
NEW WORK PLAN

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SYMBOL LIST AND ABBREVIATIONS					
ABBREVIATION	SYMBOL	DESCRIPTION	ABBREVIATION	SYMBOL	DESCRIPTION
		FLEXIBLE DUCTWORK	TR		TOP REGISTER
		NEW DUCTWORK	RTU		ROOFTOP UNIT
		DUCTWORK WITH INTERNAL ACOUSTIC LINING	EF		EXHAUST FAN
		SUPPLY AIR DUCTWORK	CU		CONDENSING UNIT
		RETURN AIR DUCTWORK	SP		STATIC PRESSURE
		SPLITTER DAMPER	D.O.		DUCT OPENING
		90 DEGREES DUCT ELBOW WITH DOUBLE TURNING VANES	ESP		EXTERNAL STATIC PRESSURE
		SUPPLY DUCT RISER UP	DA		OUTSIDE AIR
		SUPPLY DUCT RISER DOWN	FF		FINISH FLOOR
		RETURN/EXHAUST DUCT RISER UP	AFF		ABOVE FINISH FLOOR
		RETURN/EXHAUST DUCT RISER DOWN	HC		HUNG CEILING
CD		FOUR WAY BLOW CEILING DIFFUSER	NIC		NOT IN CONTRACT
CD		THREE WAY BLOW CEILING DIFFUSER	FPM		FEET PER MINUTE
CD		TWO WAY BLOW CEILING DIFFUSER	NTS		NOT TO SCALE
CD		TWO WAY BLOW CEILING DIFFUSER	CFM		CUBIC FEET PER MINUTE
CR		CEILING REGISTER			DUCT MOUNTED SMOKE DETECTOR
VD		MANUAL VOLUME DAMPER	AD		ACCESS DOOR
FC		FLEXIBLE CONNECTION	FD		FIRE DAMPER
BG		BOTTOM GRILLE			CARBON MONOXIDE SENSOR
DD		DUCT OPENING ABOVE HUNG CLG.			THERMOSTAT
SOFT.		RETURN AIR PATH MIN. SQ. FT. OPEN IF WALL GOES UP TO SLAB	PEF		POWER EXHAUST FAN
		DOOR LOUVER	CFM		CUBIC FEET PER MINUTE
		1' DOOR UNDERCUT	GPM		GALLONS PER MINUTE
TD		TRANSFER DUCT	SD		SMOKE DAMPER
A.T.		AIR TRANSFER	MD		MOTORIZED DAMPER

SYMBOL LIST	
	CEILING SUPPLY DIFFUSER
	CEILING RETURN GRILL
	VOLUME CONTROL DAMPER
	THERMOSTAT
	FLEXIBLE DUCT
	DUCTWORK
	EXHAUST FAN
	NEW CONNECTION TO EXISTING
	AIR TRANSFER GRILLE

FAN SCHEDULE														
UNIT No.	SERVICE	LOCATION	TOTAL AIR CAP. CFM	EXTERNAL S.P. IN INCHES OF W.G.	FAN RPM	MOTOR HP / WATT	SONES	TYPE OF FAN	TYPE OF DRIVE	INTERLOCK WITH	VOLTS/PH/HZ	MANUFACTURER	MODEL No.	SEE NOTES
EF-8	ART CLASSROOM	ROOF	1000	1.0	2422	1/2HP	9.8	UTILITY BLOWER	BELT	BUILDING BMS	208/3/60	GREENHECK	USF-04-B7	1,2

NOTES:
1. VINRATION ISOLATORS

I.T. ROOM SPLIT SYSTEM				AREA SERVED: I.T. ROOM BASED ON LG
INDOOR UNIT UNIT LG MODEL KNSAC181A		OUTDOOR UNIT UNIT LG MODEL KUSAC181A		
SENSIBLE BTUH	14,400	TOTAL BTU/HR	18,000	
SEER2	21.0	VOLTS	208/1/60	
VOLTS	208/1/60	MCCP	20A	
CFM (H/L)	689/371	MCA	15A	
DIMENSIONS HxWxD	13 ¹ / ₂ "H x 39 ³ / ₂ "W x 8 ³ / ₂ "	DIMENSIONS	25 ³ / ₂ "H x 34 ¹ / ₂ "W x 13 ¹ / ₂ "D	
WEIGHT	26 LBS.	WEIGHT	102 LBS.	
LIQ/SUC	3/8"/3/8"	PROVIDE:		
		* WIRED CONTROLLER		
		* ALL WIRING INCLUDING POWER CABLE FROM OUTDOOR TO INDOOR BY HVAC CONTRACTOR		
		* PROVIDE INTEGRAL CONDENSATE PUMP		
		* LOW AMBIENT COOLING		
		* MOUNT ON VMC R 7000 EQUIPMENT SUPPORTS		
		* PROVIDE PREMTCOOU		

SCHEDULE FOR CEILING MOUNTED SUPPLY AIR DIFFUSERS					
CFM RANGE	NECK SIZE INCHES	MAXIMUM NECK VELOCITY FPM	OVERALL SIZE INCHES	MANUFACTURER	MODEL No.
0-60	6"	600	24"x24"	TITUS	TWS
61-200	8"				
201-320	10"				
321-500	12"				
501-600	14"				

NOTES:
ALL DIFFUSERS TO HAVE EQUALIZING GRID AND DAMPER
TWO WAY DIFFUSERS TO BE SIZED FOR 200% CFM
THREE WAY DIFFUSERS TO BE SIZED FOR 133% CFM

SCHEDULE FOR DUCT SYSTEM EXHAUST/RETURN GRILLES					
CFM RANGE	NECK SIZE W X H INCHES	MAXIMUM NECK VELOCITY FPM	OVERALL SIZE W X H INCHES	MANUFACTURER	MODEL No.
0-75	6"x6"	400	7-3/4" X 7-3/4"	TITUS	355RL
76-140	8"x8"		9-3/4" X 9-3/4"		
141-400	12"x12"		13-3/4" X 13-3/4"		
401-699	18"x18"		19-3/4" X 19-3/4"		
700-1400	22"x22"		23-3/4" X 23-3/4"		

SCHEDULE FOR DUCT SYSTEM EXHAUST AIR REGISTERS					
CFM RANGE	NECK SIZE W X H INCHES	MAXIMUM NECK VELOCITY FPM	OVERALL SIZE W X H INCHES	MANUFACTURER	MODEL No.
0-75	6"x6"	400	7-3/4" X 7-3/4"	TITUS	355RL
76-140	8"x8"	400	9-3/4" X 9-3/4"	TITUS	355RL
141-400	12"x12"	400	13-3/4" X 13-3/4"	TITUS	355RL

SCHEDULE FOR DUCT SYSTEM EXHAUST/RETURN GRILLES					
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401-699	18"x18"		19-3/4" X 19-3/4"		
700-1400	22"x22"		23-3/4" X 23-3/4"		

VENTILATION SCHEDULE CALCULATIONS													
ROOM NAME	OCCUPANCY CLASSIFICATION	AREA SQ.FT.	EST. MAX. OCCUP.	CFM REQUIREMENTS		REQUIRED CFM		EXHAUST REQUIRED	PRESSURE RELATIONSHIP TO ADJ. SPACE	DESIGN CFM			UNIT SERVING
				O.A.	SUPPLY	O.A.	SUPPLY			O.A.	SUPPLY	EXHAUST	
TYPICAL OFFICE	OFFICE	125	1	5	15	5	15	—	NEUTRAL	20	100	—	AC-C2
ART STUDIO 1157A	ART CLASSROOM	1325	27	5	15	135	405	928	NEUTRAL	345	1380	1000	AC-C2 EF-8
CLASS/FLEX 1103	CONFERENCE	2500	125	5	15	625	1875	—	NEUTRAL	800	3200	—	AC-C2
SOCIAL AREA 1101	RECEPTION	1435	44	5	15	220	660	—	NEUTRAL	375	1500	—	AC-C2
GALLERY 1155	MUSEUMS/GALLERIES	465	19	5	15	95	285	—	NEUTRAL	195	780	—	AC-C2
LIT LAB 1156	COMPUTER LAB	1415	36	5	15	180	540	—	NEUTRAL	375	1500	—	AC-C2
STUDY AREA 1162	LIBRARIES	545	6	5	15	30	90	—	NEUTRAL	195	780	—	AC-C2
CORRIDORS	CORRIDOR	2301	36	5	15	180	540	—	NEUTRAL	280	1120	—	AC-C2
STUDY AREA 1102	LIBRARIES	1725	18	5	15	90	270	—	NEUTRAL	537	2150	—	AC-C2
COLLABORATION 1123	LIBRARIES	1019	11	5	15	55	165	—	NEUTRAL	537	2150	—	AC-C2
COLLABORATION 1146	LIBRARIES	1050	11	5	15	55	165	—	NEUTRAL	312	1250	—	AC-C2
TYP. STORAGE	STORAGE	100	—	5	15	—	—	—	NEUTRAL	14	55	—	AC-C2
OPEN SPACE 1123	OFFICE	4950	25	5	15	125	375	—	NEUTRAL	545	2180	—	AC-C2
OPEN SPACE 1146	OFFICE	4450	23	5	15	115	345	—	NEUTRAL	312	1250	—	AC-C2

NOTES:
THE WORK SHALL NOT MAKE THE BUILDING LESS CONFORMING WITH THE BASIC REQUIREMENTS OF THE NJAC 5:23 SUBCHAPTER 6 THAN IT WAS WHEN THE ALTERATION WAS UNDERTAKEN PER NJAC 5:23-6-H.
BASIC VENTILATION REQUIREMENTS COMPLY WITH NJAC 5:23-6.17.I-2-II.

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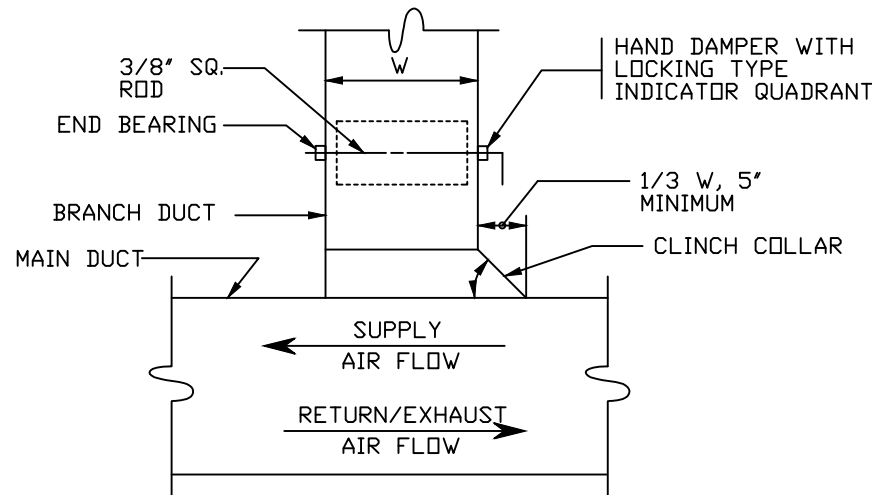
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MECHANICAL SCHEDULES

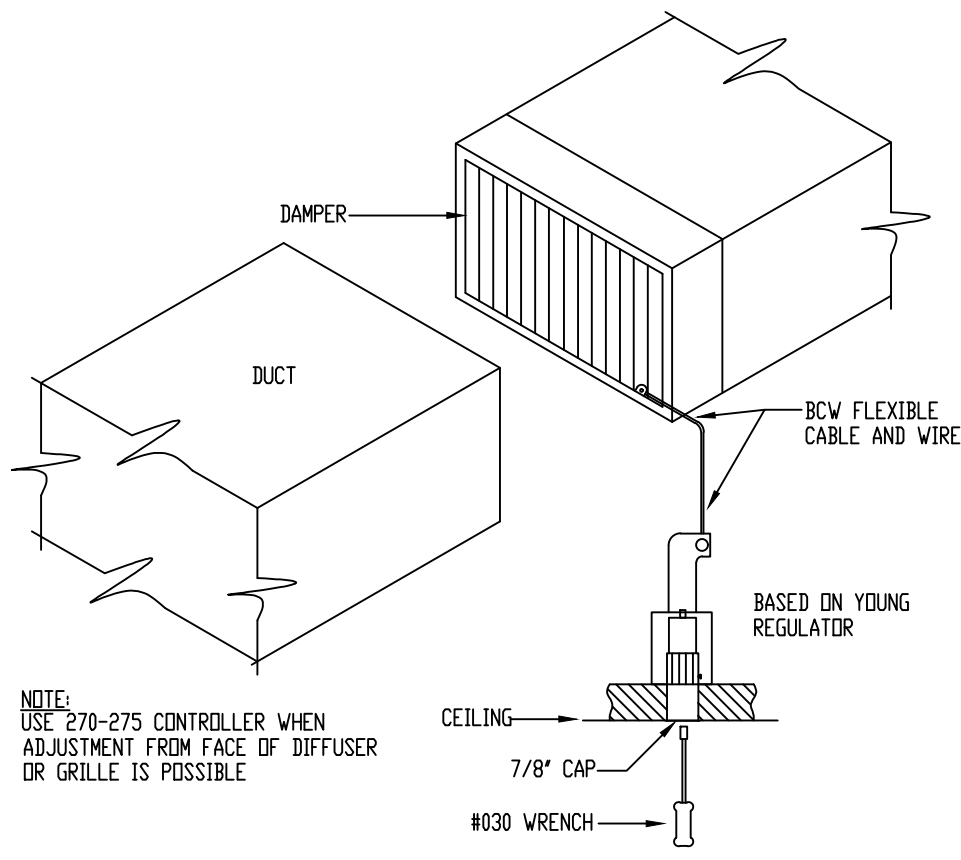
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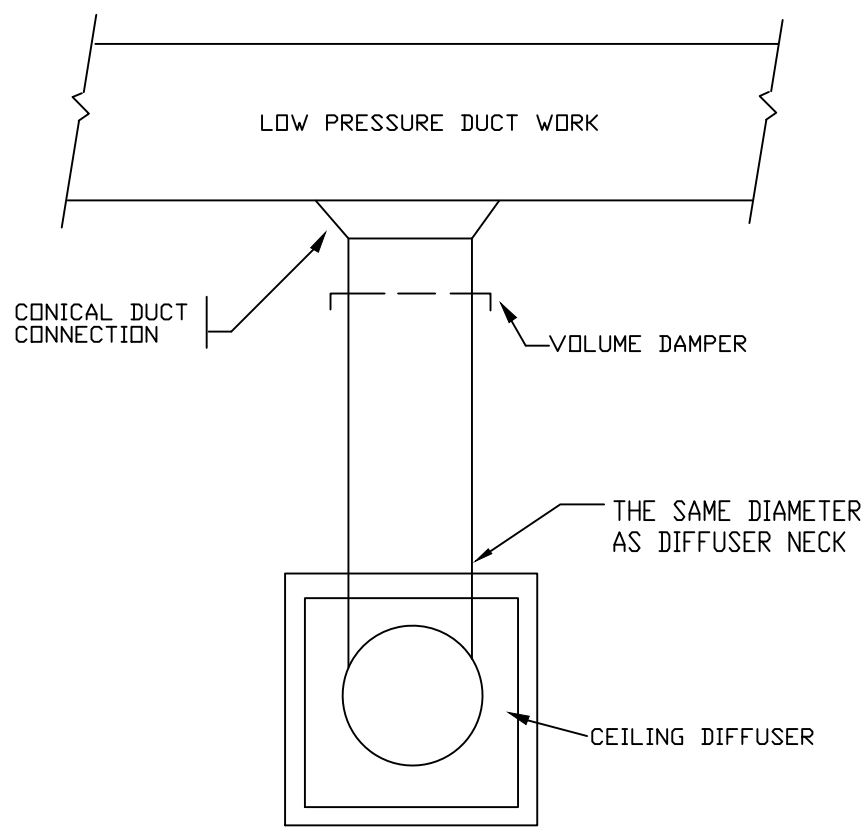
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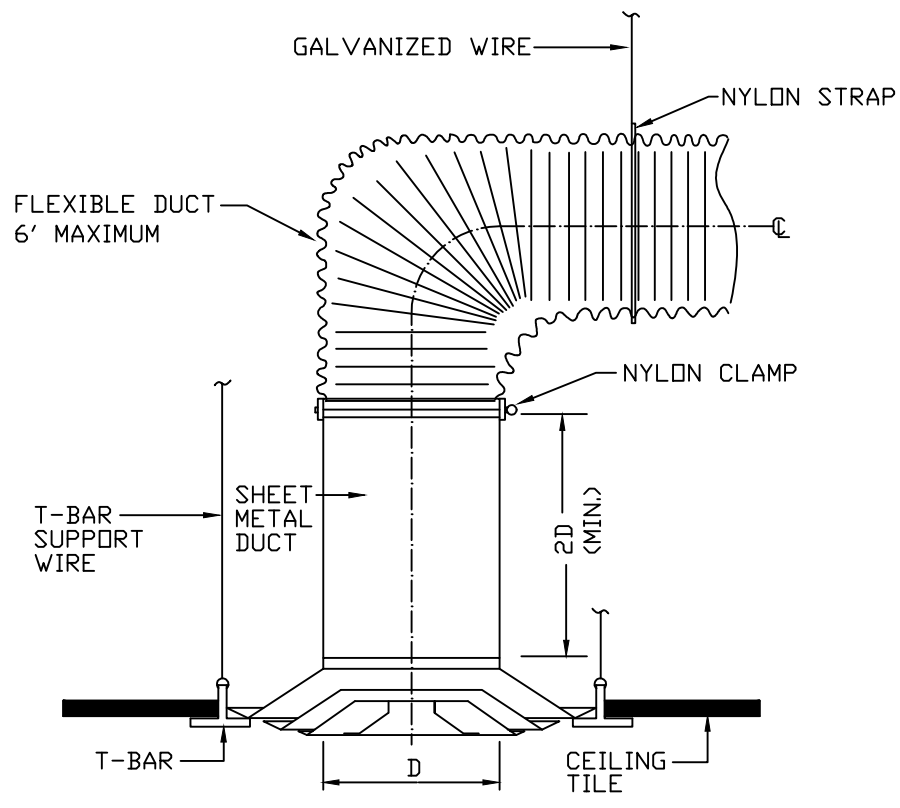
RECTANGULAR DUCT TAP
WITH VOLUME DAMPER
NOT TO SCALE:



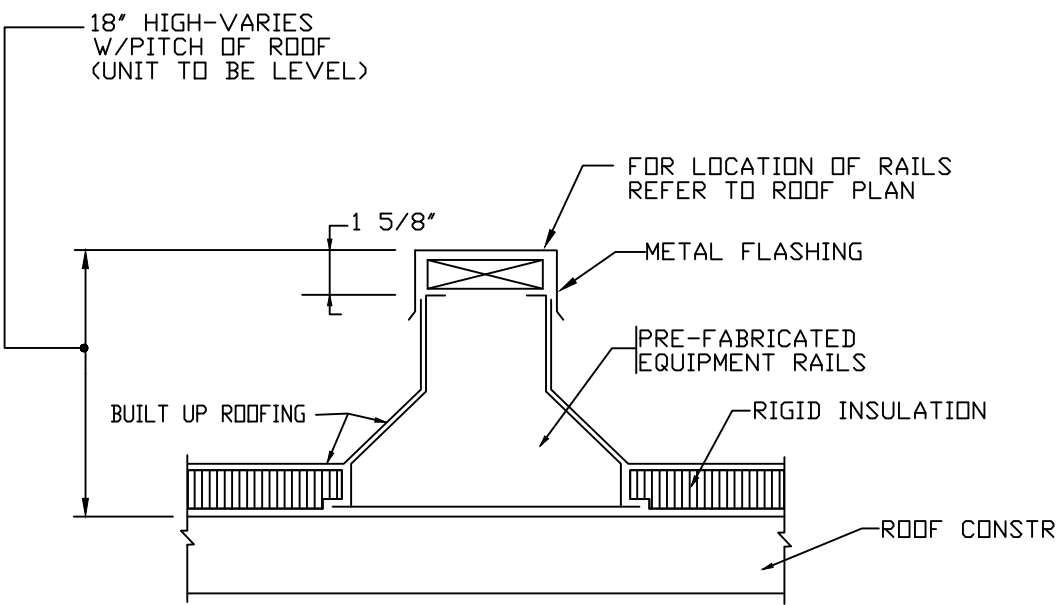
VOLUME DAMPER CONTROL
ABOVE SHEETROCK CEILINGS
NOT TO SCALE



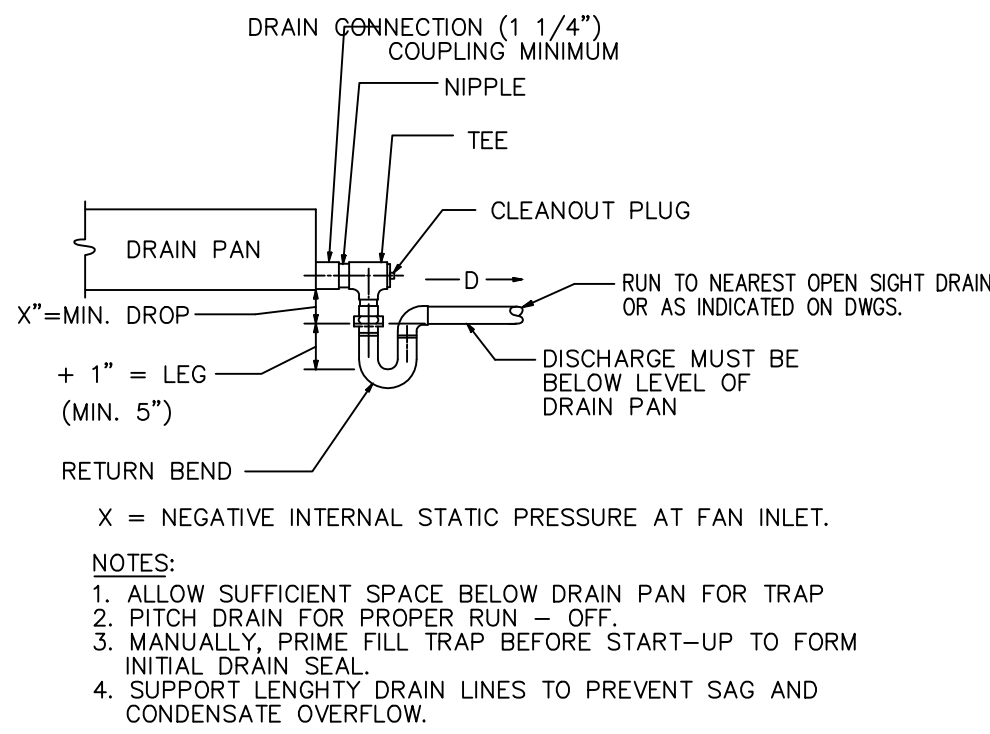
TYPICAL CEILING DIFFUSER
TAKE-OFF DETAIL
NOT TO SCALE



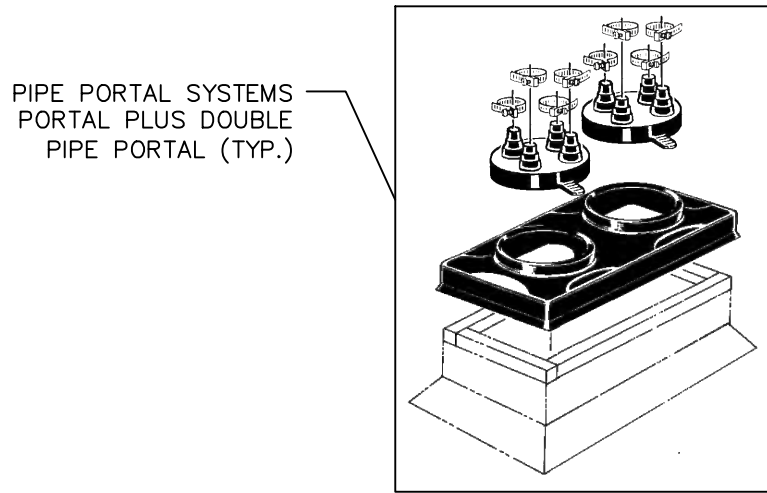
FLEXIBLE DUCT CONNECTION
TO DIFFUSER
NOT TO SCALE



ROOF TOP EQUIPMENT RAILS DETAIL
NOT TO SCALE:

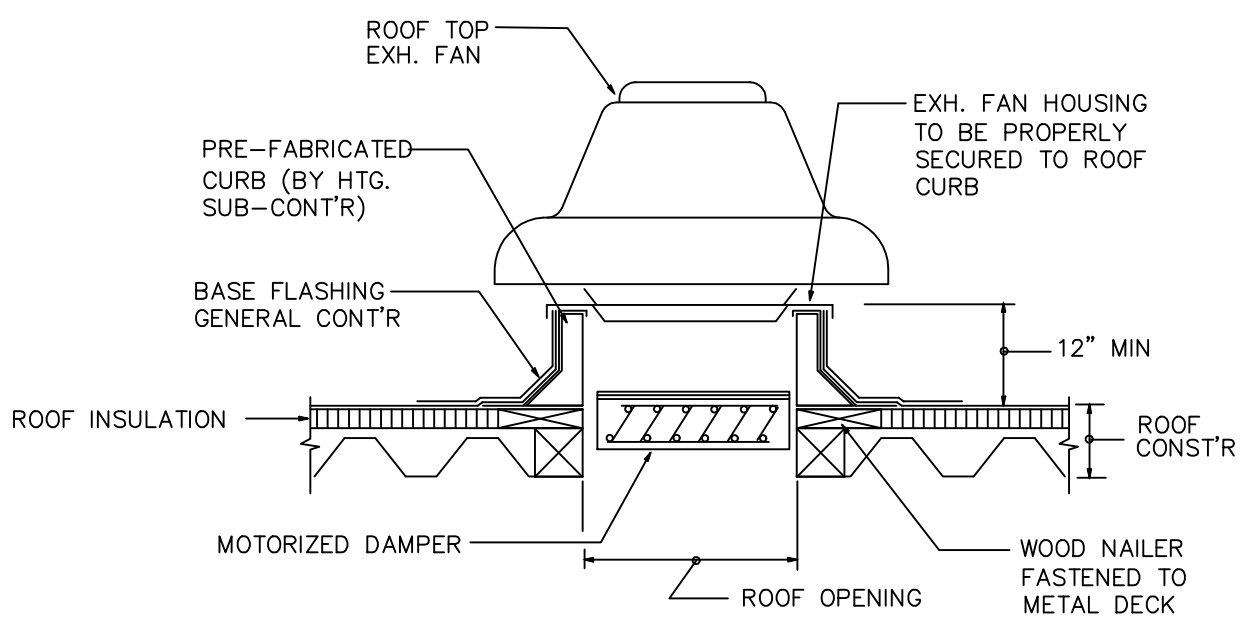


DRAIN PAN WATER SEAL
PIPING DRAW THRU UNIT
NOT TO SCALE:

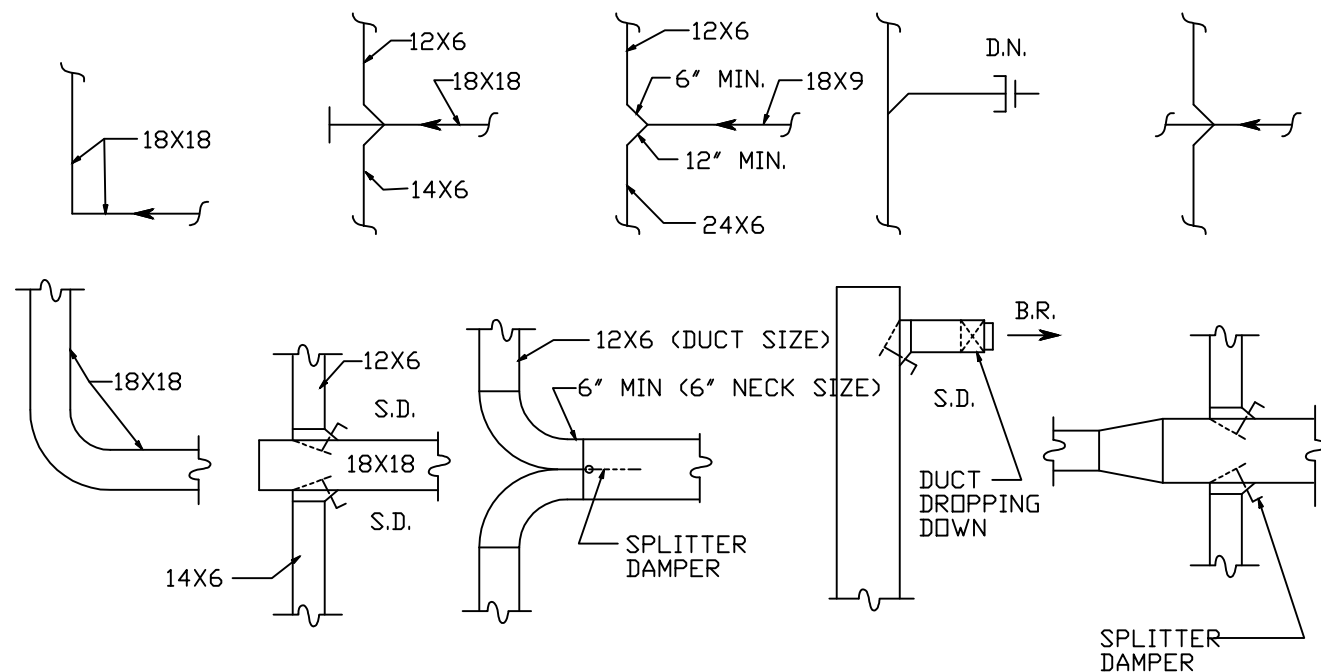


PIPE PORTAL SYSTEMS
PORTAL PLUS DOUBLE
PIPE PORTAL (TYP.)

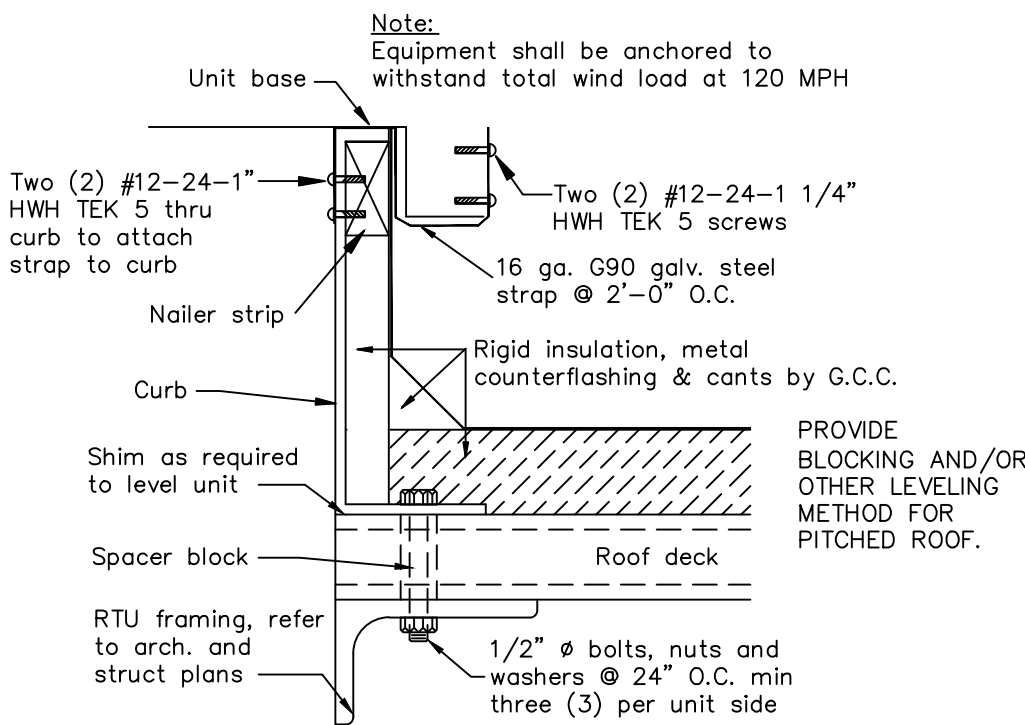
PIPE PORTAL
NOT TO SCALE:



ROOF EXHAUST FAN DETAIL
NO TO SCALE



TYPICAL SINGLE LINE DUCT DETAILS
NOT TO SCALE



EQUIPMENT/CURB ANCHORING
N.T.S.

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MECHANICAL DETAILS

SCALE: AS NOTED
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DEMOLITION NOTES:

1. DO ALL NECESSARY DEMOLITION AND REMOVAL OF EXISTING LIGHTING AND ELECTRICAL EQUIPMENT AS REQUIRED.
2. DEMOLITION TO BE PERFORMED AFTER NORMAL WORKING HOURS WHERE REQUIRED. MAINTAIN TEMPORARY LIGHT AND POWER.
3. REROUTE & RECONNECT ALL CIRCUITING TO EXISTING LOADS WHICH ARE TO REMAIN IF SAME IS DISTURBED BY DEMOLITION WORK. PROVIDE NEW HOME RUNS, IF REQUIRED.
4. CONDUITS COMING UP OUT OF FLOOR SLAB WHICH ARE TO BE REMOVED SHALL BE CUT BACK BELOW TOP OF FINISHED SLAB TO PERMIT PATCHING.
5. DISCONNECT & REMOVE ALL EXISTING WIRING & EXPOSED CONDUITS NOT BEING RETAINED OR REUSED.
6. INSTALL BLANK PLATES ON ALL EXISTING OUTLETS WHICH ARE TO REMAIN BUT HAVE NO DEVICES. REMOVE ALL WIRING FROM EXISTING OUTLETS BEING ABANDONED AS INDICATED ON PLANS. REROUTING SAME IF REQUIRED, TO PERMIT PATCHING OVER THE ARCHITECTURAL SURFACE.
7. PROVIDE EXTENSION COLLARS ON EXISTING OUTLETS WHERE EXISTING WALLS, COLUMNS, ETC. ARE BEING LAMINATED OR FURRED-OUT.
8. RELOCATE EXISTING ACTIVE OUTLET BOXES, JUNCTION BOXES, ETC., WHICH ARE RENDERED INACCESSIBLE BY NEW CONSTRUCTION.
9. NOTIFY ECC OF ANY POWER OUTAGES 72 HOURS IN ADVANCE.

JOB CONDITIONS NOTES:

1. WHERE EXISTING WIRING & CIRCUITRY WHICH IS TO REMAIN IS LEFT EXPOSED BY DEMOLITION & REMOVAL OF PARTITION & /OR HUNG CEILINGS, REROUTE SUCH WIRING TO MAINTAIN THE CIRCUIT CONTINUITY.
 2. WHERE EXISTING WIRING & CIRCUITRY IS TO REMAIN IS LEFT STUBBED UP FROM FLOOR BY THE DEMOLITION & REMOVAL OF PARTITIONS REROUTE SUCH WIRING AS REQUIRED TO MAINTAIN CIRCUIT CONTINUITY & CUT BACK CONDUIT BELOW TOP OF FINISHED SLAB TO PERMIT PATCHING.
 3. WHERE EXISTING CIRCUITRY IS BEING UTILIZED FOR CONNECTION OF NEW LOAD OR BEING RETAINED FOR EXISTING LOADS & SUCH CIRCUITRY IS NOT EXACTLY AS INDICATED ON PLANS, MAKE SUCH MODIFICATIONS AS MAY BE REQUIRED TO WIRING TO ACCOMPLISH THE DESIGN INTENT.
 4. WHERE EXISTING LIGHTING, EQUIPMENT, WIRING, ETC. IS INDICATED AS REMAINING & SUCH ITEMS INTERFERE WITH THE INSTALLATION OR THE DEMOLITION WORK OF OTHER TRADES, DISCONNECT, REMOVE, RELOCATE TO AVOID CONFLICTS REINSTALL & RECONNECT SUCH ITEMS AS REQUIRED.
- WHERE EXISTING FIXTURES ARE BEING REMOVED & SUCH REMOVAL DISTURBED THE CIRCUITRY TO FIXTURES WHICH ARE TO REMAIN, PROVIDE ALL NECESSARY MODIFICATIONS & ADDITIONS TO WIRING AS REQUIRED TO RETAIN SERVICE & SWITCH CONTROL FOR REMAINING FIXTURES.

KEYED NOTES:

- ① EXISTING LIGHTING AND SWITCHING WITHIN ROOM TO REMAIN.
- ② EXISTING POWER RECEPTACLES WITHIN ROOM TO REMAIN. ENSURE CIRCUIT CONTINUITY.
- ③ EXISTING DATA/POWER FLOOR RACEWAY TO REMAIN. TYPICAL FOR ENTIRE RACEWAY WITHIN THE FLOOR.
- ④ EXISTING RECEPTACLE TO REMAIN. ENSURE CIRCUIT CONTINUITY, VIA EXISTING CIRCUIT CURRENTLY SERVING RECEPTACLE.

PROVIDE COMPLETE INTERIOR CUT OF ALL EXISTING LIGHTING FIXTURES, SWITCHES, RECEPTACLES, JUNCTION BOXES, BRANCH WIRING, CONDUIT, PANELS, ETC. CURRENTLY SERVING SPACE UNLESS NOTED OTHERWISE ON PLAN.

FIRE ALARM WORK TO BE PROVIDED BY COLLEGE'S VENDOR. INFORMATION SHOWN FOR REFERENCE ONLY.

EXISTING PANEL LC-1A
SECT 1 AND 2 TO REMAIN
EXISTING PANEL LD-CA AND
112.5KVA XFMR TO REMAIN
EXISTING PANEL LC-2A TO REMAIN
EXISTING PANEL HC-1A
SECT 1 AND 2 TO REMAIN

EXISTING PANEL KP-H TO BE
REMOVED REFER TO RISER
DIAGRAM

HUMANITIES
DIVISION

1 DEMOLITION FLOOR PLAN
1/8" = 1'-0"

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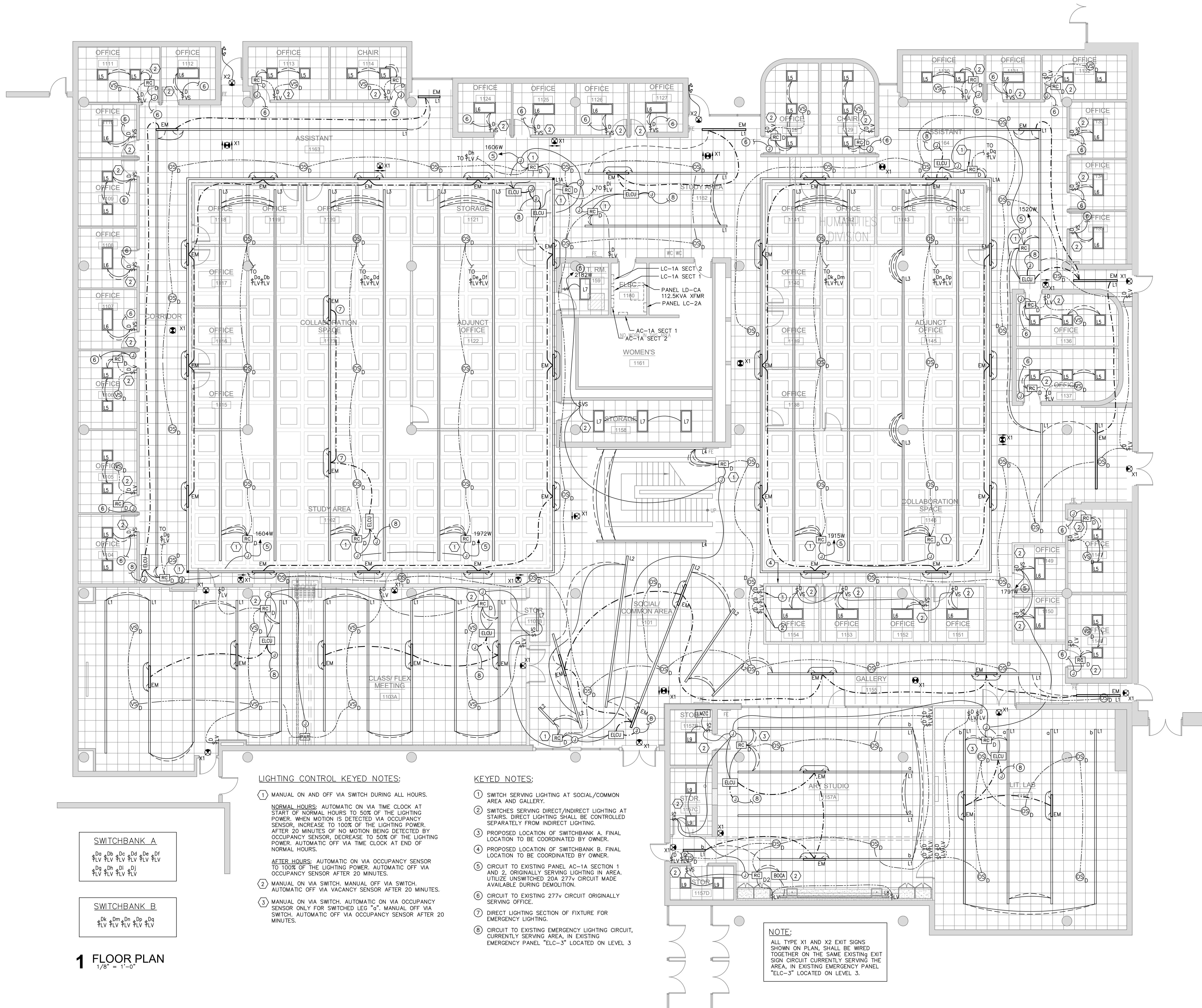
BRIAN PASECHNICK NJ#48111

ELECTRICAL DEMOLITION
PLAN

SCALE: AS NOTED
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SWITCHBANK A
Da Db Dc Dd De Df
FLV FLV FLV FLV FLV
Dg Dh Di Dj
FLV FLV FLV FLV

SWITCHBANK B
Dk Dm Dn Dp Dq
FLV FLV FLV FLV FLV

1 FLOOR PLAN
1/8" = 1'-0"

LIGHTING CONTROL KEYED NOTES:

- 1 MANUAL ON AND OFF VIA SWITCH DURING ALL HOURS.
NORMAL HOURS: AUTOMATIC ON VIA TIME CLOCK AT START OF NORMAL HOURS TO 50% OF THE LIGHTING POWER. WHEN MOTION IS DETECTED VIA OCCUPANCY SENSOR, INCREASE TO 100% OF THE LIGHTING POWER. AFTER 20 MINUTES OF NO MOTION BEING DETECTED BY OCCUPANCY SENSOR, DECREASE TO 50% OF THE LIGHTING POWER. AUTOMATIC OFF VIA TIME CLOCK AT END OF NORMAL HOURS.
AFTER HOURS: AUTOMATIC ON VIA OCCUPANCY SENSOR TO 100% OF THE LIGHTING POWER. AUTOMATIC OFF VIA OCCUPANCY SENSOR AFTER 20 MINUTES.
- 2 MANUAL ON VIA SWITCH. MANUAL OFF VIA SWITCH. AUTOMATIC OFF VIA VACANCY SENSOR AFTER 20 MINUTES.
- 3 MANUAL ON VIA SWITCH. AUTOMATIC ON VIA OCCUPANCY SENSOR ONLY FOR SWITCHED LEO "a". MANUAL OFF VIA SWITCH. AUTOMATIC OFF VIA OCCUPANCY SENSOR AFTER 20 MINUTES.

KEYED NOTES:

- 1 SWITCH SERVING LIGHTING AT SOCIAL/Common AREA AND GALLERY.
- 2 SWITCHES SERVING DIRECT/INDIRECT LIGHTING AT STAIRS. DIRECT LIGHTING SHALL BE CONTROLLED SEPARATELY FROM INDIRECT LIGHTING.
- 3 PROPOSED LOCATION OF SWITCHBANK A. FINAL LOCATION TO BE COORDINATED BY OWNER.
- 4 PROPOSED LOCATION OF SWITCHBANK B. FINAL LOCATION TO BE COORDINATED BY OWNER.
- 5 CIRCUIT TO EXISTING PANEL AC-1A SECTION 1 AND 2, ORIGINALLY SERVING LIGHTING IN AREA. UTILIZE UNSWITCHED 20A 277V CIRCUIT MADE AVAILABLE DURING DEMOLITION.
- 6 CIRCUIT TO EXISTING 277V CIRCUIT ORIGINALLY SERVING OFFICE.
- 7 DIRECT LIGHTING SECTION OF FIXTURE FOR EMERGENCY LIGHTING.
- 8 CIRCUIT TO EXISTING EMERGENCY LIGHTING CIRCUIT, CURRENTLY SERVING AREA, IN EXISTING EMERGENCY PANEL "ELC-3" LOCATED ON LEVEL 3.

NOTE:
ALL TYPE X1 AND X2 EXIT SIGNS SHOWN ON PLAN, SHALL BE WIRED TOGETHER ON THE SAME EXISTING EXIT SIGN CIRCUIT CURRENTLY SERVING THE AREA, IN EXISTING EMERGENCY PANEL "ELC-3" LOCATED ON LEVEL 3.

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ESSEX COUNTY COLLEGE
HUMANITIES DEPARTMENT
OFFICE ALTERATIONS

1-55 MARKET STREET NEWARK, NJ

arcari iovino
+ ARCHITECTS PC

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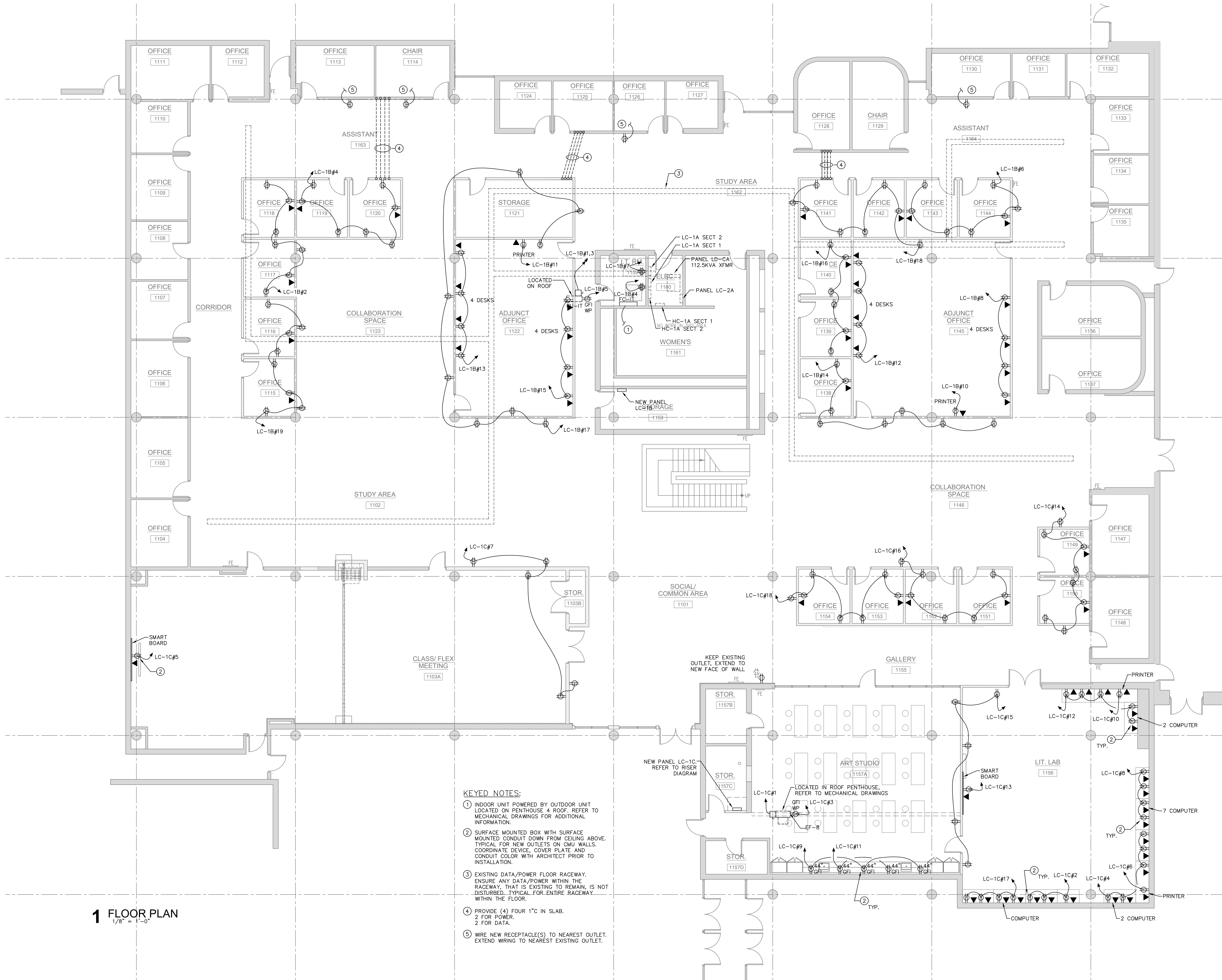
BRIAN PASECHNICK NJ#48111

ELECTRICAL LIGHTING
PLAN

SCALE: AS NOTED
DATE: 03.09.2026
FILE: 2448(Current)

SHEET NO:
E.102

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1 FLOOR PLAN
1/8" = 1'-0"

KEYED NOTES:

- ① INDOOR UNIT POWERED BY OUTDOOR UNIT LOCATED ON PENTHOUSE 4 ROOF. REFER TO MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION.
- ② SURFACE MOUNTED BOX WITH SURFACE MOUNTED CONDUIT DOWN FROM CEILING ABOVE. TYPICAL FOR NEW OUTLETS ON CMU WALLS. COORDINATE DEVICE, COVER PLATE AND CONDUIT COLOR WITH ARCHITECT PRIOR TO INSTALLATION.
- ③ EXISTING DATA/POWER FLOOR RACEWAY. ENSURE ANY DATA/POWER WITHIN THE RACEWAY, THAT IS EXISTING TO REMAIN, IS NOT DISTURBED. TYPICAL FOR ENTIRE RACEWAY WITHIN THE FLOOR.
- ④ PROVIDE (4) FOUR 1" C IN SLAB.
2 FOR POWER.
2 FOR DATA.
- ⑤ WIRE NEW RECEPTACLE(S) TO NEAREST OUTLET. EXTEND WIRING TO NEAREST EXISTING OUTLET.

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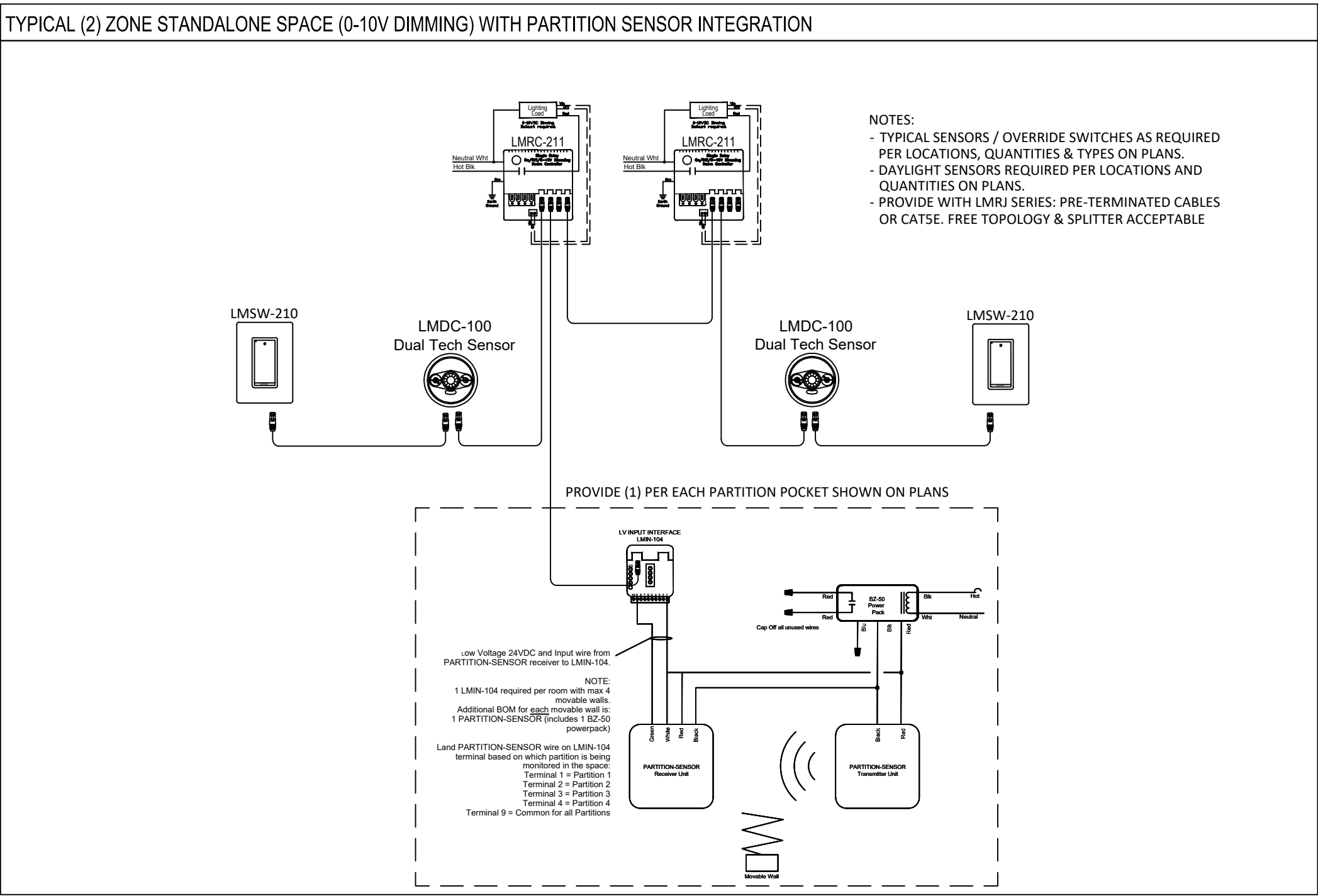
ELECTRICAL POWER
PLAN

SCALE: AS NOTED
DATE: 03.09.2026
FILE: 2448(Current)

SHEET NO:
E.103

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LIGHTING FIXTURE SCHEDULE							
SYMBOL	MANUFACTURER	DESCRIPTION	CATALOG NUMBER	VOLTS	TYPE	LAMPS	REMARKS
						# WATTS MODEL/COMMENTS	
L1		FOCAL POINT	1.5" LINEAR RECESSED GRID MOUNTED	FSM1-BW-500LF-35K-1C -UNV-LD1-X-WH-X	UNV	LED 1 4.75/FT -	3500K
L1A		FOCAL POINT	1.5" LINEAR RECESSED GYPBOARD MOUNTED	FSM1-BW-500LF-35K-1C -UNV-LD1-XFF-WH-X	UNV	LED 1 4.75/FT -	3500K
L2		FOCAL POINT	1.5" LINEAR FIXTURE SURFACE MOUNTED	FSM1S-BW-125LF-35K-1C -UNV-LD1-SM-WH-X	UNV	LED 1 1.5/FT -	3500K
L3		FOCAL POINT	1.5" LINEAR DIRECT/INDIRECT SUSPENDED FIXTURE	ASM1BS-BWBW-X-375DN-375UP 35K-2C-UNV-LD1-J24-WH-X	UNV	LED 1 7.25/FT -	3500K
L4		FOCAL POINT	1.5" LINEAR DIRECT/INDIRECT WALL MOUNTED FIXTURE	FSM1BW-ASAS-375DN-375UP -35K-2C-UNV-LD1-WM-WH-X	UNV	LED 1 6.75/FT -	3500K
L5		LITELINE	2x2 EDGE LIGHT GRID MOUNTED	EDGE-22-WH-C-35-4-2	UNV	LED 1 40 1	3500K
L6		LITELINE	2x4 EDGE LIGHT GRID MOUNTED	EDGE-24-WH-C-35-4-2	UNV	LED 1 40 1	3500K
L7		JADEMAR LIGHTING	2x4 FLAT PANEL LED GRID MOUNTED	JFPF-BL-CPS-24-50W	UNV	LED 1 50 1	3500K, SELECTABLE WATTAGE SET AT 30W
L8		JADEMAR LIGHTING	UNDER CABINET LIEAR	JUCL-CS-X	120	LED 1 6/FT 1	3500K, TRIAC DIMMING
L9		JADEMAR LIGHTING	2x2 FLAT PANEL LED GRID MOUNTED	JFPF-BL-CPS-22-40W	UNV	LED 1 40 1	3500K
X1		ISOLITE	EXIT SIGN	TL2-AC-R-U-X-MTEB	UNV	LED 1 - -	AC ONLY
X2		ISOLITE	EXIT SIGN WITH (2) REMOTE HEADS	TL2-AC-R-U-X-MTEB-MWH-GY-2-LW	UNV	LED 1 - -	AC ONLY



2 MEETING ROOM PARTITION SENSOR CONTROL DETAIL

N.T.S.

SUBMITTALS:

1. CONTRACTOR SHALL OBTAIN THE SERVICES OF A LIGHTING CONTROL VENDOR.
2. VENDOR SHALL PREPARE SITE SPECIFIC FLOOR PLANS AND WIRING DIAGRAMS.
3. PRODUCT DATA SHEETS SHALL BE SUBMITTED ALONG WITH PLANS AND WIRING DIAGRAMS.
4. THE BASIS OF DESIGN IS PER WATTSTOPPER LIGHTING CONTROLS. CONTACT BO CHEN AT SLS LIGHTING AND CONTROLS FOR SUBMITTAL AND PRICING. 917.951.9395.
5. PROVIDE MANUFACTURERS PROGRAMMING & START-UP & TRAINING.

LIGHTING CONTROLS:

GENERAL:

1. ALL LIGHTING CONTROLS SHALL BE IN CONFORMANCE WITH NEC, ASHRAE AND ALL LOCAL CODES.
2. ALL LIGHTING CONTROLS SHALL BE OF ONE MANUFACTURER.

PRODUCTS:

1. ALL PRODUCTS SHALL BE UL LISTED.

LIGHTING NOTES:

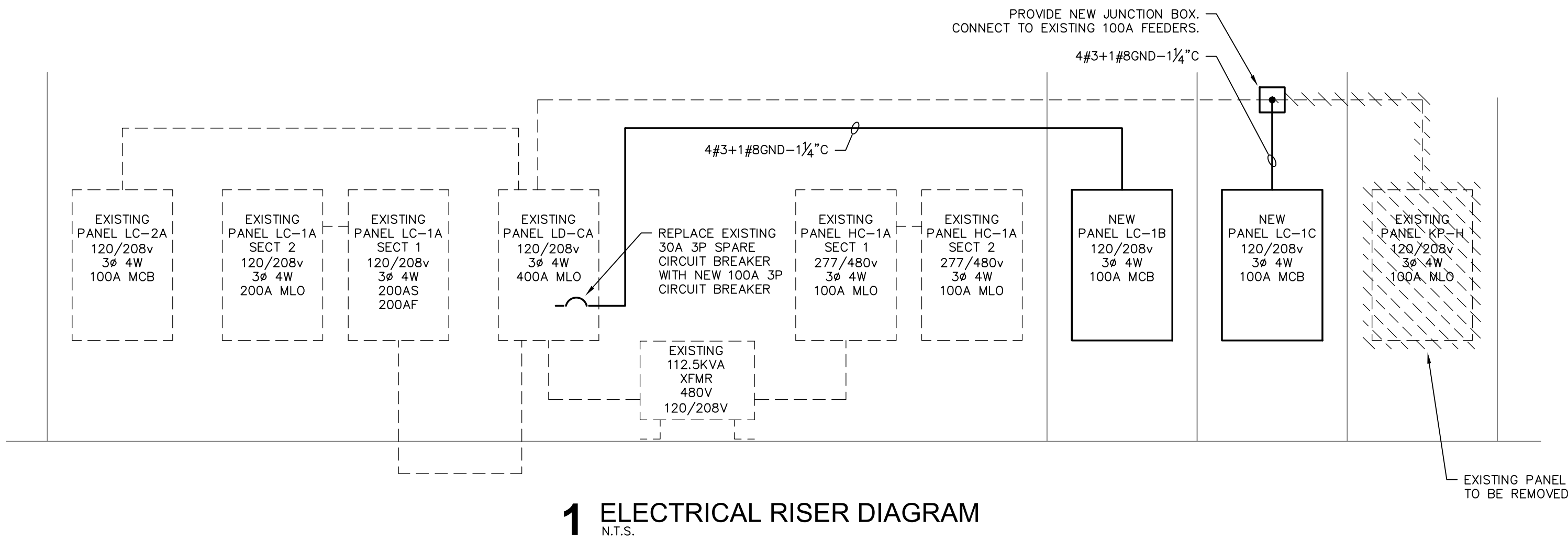
1. COORDINATE EXACT LOCATION & MOUNTING OF ALL LIGHTING FIXTURES WITH ARCHITECTURAL REFLECTED CEILING PLANS.
2. ELECTRICAL CONTRACTOR TO COORDINATE ALL LIGHTING FIXTURE TRIMS WITH CEILING TYPES. SEE ARCHITECTURAL DRAWINGS FOR CEILING INFORMATION.
3. PROVIDE ALL SEISMIC CLIPS AND/OR BRACING AS REQUIRED. SUPPORT ALL FIXTURES FROM STRUCTURE ABOVE BY 2 INDEPENDENT SUPPORTS.
4. CONTRACTOR TO PROVIDE ALL SITE SPECIFIC LIGHTING CONTROL SHOP DRAWINGS, CONTROL DIAGRAMS, CUT SHEETS, ETC.
5. ALL OCCUPANCY/VACANCY SENSORS SHALL BE A MINIMUM OF 6' FROM ANY HVAC DIFFUSER.
6. ALL NEW LIGHTING FIXTURE CIRCUITS AND HOMERUNS SHALL BE RUN WITH DEDICATED NEUTRAL CONDUCTORS.
7. PROVIDE AFC "LUMINARY" CABLE FOR LED FIXTURE DIMMING OR PROVIDE EQUAL METHOD. PROVIDE 2#16 CONTROL FOR 0-10V DIMMING.
8. PROVIDE ACCESS HATCH WHERE LIGHTING CONTROL EQUIPMENT IS INSTALLED ABOVE GYPBOARD CEILING. CONTRACTOR TO AVOID MOUNTING LIGHTING CONTROL EQUIPMENT ABOVE GYPBOARD CEILING WHERE POSSIBLE.

ELECTRICAL LEGEND

- 20A DUPLEX 125V RECEPTACLE
- 20A GFCI DUPLEX RECEPTACLE 125V
- 20A QUAD RECEPTACLE 125V
- JUNCTION BOX
- 3/4" CONDUIT & SINGLE GANG BOX. CONDUIT STUBBED ABOVE HUNG CEILING. PROVIDE NYLON BUSHING & PULL CORD
- EXISTING BELOW GRADE WIRE RACEWAY
- DISCONNECT SWITCH
- WP WEATHER PROOF
- AFF ABOVE FINISHED FLOOR
- EXISTING SURFACE MOUNTED PANEL
- EXISTING RECESSED MOUNTED PANEL
- HOMERUN TO PANEL

LIGHTING LEGEND

	CEILING MOUNTED LOW VOLTAGE ULTRASONIC OCCUPANCY SENSOR WATTSTOPPER LMUC-100	\$	TOGGLE SWITCH, 120/277V 20A DECORA STYLE
	CEILING MOUNTED LOW VOLTAGE PASSIVE INFRARED OCCUPANCY SENSOR WATTSTOPPER LMPC-100	\$ ^D	LINE VOLTAGE 0-10V DIMMING WALL SWITCH, WATTSTOPPER RH4FBL3PT
	CEILING MOUNTED LOW VOLTAGE DUAL-TECH OCCUPANCY SENSOR WATTSTOPPER LMDC-100	\$ ^{LV}	LOW VOLTAGE 1-BUTTON WALL SWITCH, WATTSTOPPER LMSW-101
	CEILING MOUNTED LOW VOLTAGE ULTRASONIC VACANCY SENSOR WATTSTOPPER LMUC-100	\$ ^{LV}	LOW VOLTAGE 3-WAY 1-BUTTON WALL SWITCH, WATTSTOPPER LMSW-101
	CEILING MOUNTED LOW VOLTAGE PASSIVE INFRARED VACANCY SENSOR WATTSTOPPER LMPC-100	\$ ^D	LOW VOLTAGE 3-WAY 2-BUTTON DIMMING WALL SWITCH, WATTSTOPPER LMSW-102
	CEILING MOUNTED LOW VOLTAGE DUAL-TECH VACANCY SENSOR WATTSTOPPER LMDC-100	\$ ^{LV}	LOW VOLTAGE 1-BUTTON DIMMING WALL SWITCH, WATTSTOPPER LMDC-101
	CORNER MOUNTED LOW VOLTAGE DUAL-TECH OCCUPANCY SENSOR WATTSTOPPER LMDX-100	\$ ^D	LOW VOLTAGE 5-BUTTON SCENE WALL SWITCH, WATTSTOPPER LMSW-105
	CORNER MOUNTED LOW VOLTAGE DUAL-TECH VACANCY SENSOR WATTSTOPPER LMDX-100	\$ ^{vs}	LINE VOLTAGE 1-BUTTON VACANCY SENSOR WALL SWITCH, WATTSTOPPER DSW-301
	CORNER/WALL MOUNTED LOW TEMPERATURE PASSIVE INFRARED OCCUPANCY SENSOR WATTSTOPPER CB-100	\$ ^{os}	LINE VOLTAGE 1-BUTTON OCCUPANCY SENSOR WALL SWITCH, WATTSTOPPER DSW-301
	MULTI-ZONE ON/OFF AND DIMMING OPEN LOOP PHOTOSENSOR, WATTSTOPPER LMLS-400 (PRIMARY ZONE ONLY) LMLS-500 (PRIMARY/SECONDARY ZONES)	\$ ^D	LINE VOLTAGE 0-10V DIMMING VACANCY SENSOR WALL SWITCH, WATTSTOPPER DW-311
	0-10V TO PHASE ADAPTIVE CONVERTER (6.25A), WATTSTOPPER BF-SDS10V-AST	\$ ^{3/4}	LINE VOLTAGE 1-BUTTON 3-WAY/4-WAY VACANCY SENSOR WALL SWITCH, WATTSTOPPER DSW-301
	ZONE CONTROLLER WITH ENCLOSURE, WATTSTOPPER LMZC-301	\$ ⁰²	LINE VOLTAGE DIMMING VACANCY SENSOR WALL SWITCH, WATTSTOPPER PW-101D
	NETWORK BRIDGE, WATTSTOPPER LMBC-300		LOW VOLTAGE ON/OFF ROOM CONTROLLER WITH 2 RELAYS, WATTSTOPPER LMRC-102
	EMERGENCY LIGHTING CONTROL UNIT, WATTSTOPPER ELCU-200		LOW VOLTAGE ON/OFF/0-10V 20A DIMMING ROOM CONTROLLER WITH 3 RELAYS AND 3 0-10V DIMMING OUTPUTS, WATTSTOPPER LMRC-213
	INPUT INTERFACE, WATTSTOPPER LMIN-104		LOW VOLTAGE ON/OFF/0-10V 10A DIMMING ROOM CONTROLLER WITH 1 RELAY AND 1 0-10V DIMMING OUTPUT, WATTSTOPPER LMRC-111
	NORMAL WIRING		UNIVERSAL VOLTAGE POWER PACK, WATTSTOPPER BZ-50
	EMERGENCY WIRING		UNIVERSAL VOLTAGE THREE CHANNEL DIMMABLE TRANSFORMER FOR 24V FIXTURE, TIVOLI INF-J-288-3-4-24
	LOW VOLTAGE WIRING		LED DRIVER FOR 24V FIXTURE, JUSTIN, INC. 961-24SSD
	CATS CABLING		PARTITION SENSOR FOR FOLDING DOORS, WATTSTOPPER PARTITION-SENSOR
	MS/TP CABLING		



NEW PANEL LC-1B										
120 / 208 VOLTS 3 Ø 4 WIRE+GND		SURFACE MOUNTING		100 AMP 3 POLE ■ MCB □ MLO			INTEGRATED EQUIPMENT RATING 22,000 A. SYM.			
KVA	LOAD SERVED	NO.	OCP	#A	#B	#C	OCP	NO.	LOAD SERVED	KVA
1.1	CU-IT	1	20A					20A	2 RECEPS. OFFICES 1117/1118	1.3
1.1	2#12+1#12GND-MC	3	2P					20A	4 RECEPS. OFFICES 1119/1120	1.3
.2	RECEP. ROOFTOP	5	20A					20A	6 RECEPS. OFFICES 1143/1144	1.3
.4	QUAD IT ROOM	7	20A					20A	8 RECEPS. DESKS 1145	.7
.4	QUAD IT ROOM	9	20A					20A	10 RECEP. PRINTER	.5
.5	PRINTER ADJ. OFFICE	11	20A					20A	12 RECEPS. DESK 1145	.7
.7	RECEPS. DESK 1122	13	20A					20A	14 RECEPS. OFFICE 1138	1.4
.7	RECEPS. DESK 1122	15	20A					20A	16 RECEPS. OFFICE 1139/1140	1.1
1.3	RECEPS. COLLABORATION	17	20A					20A	18 RECEPS. OFFICE 1141/1142	1.3
1.4	RECEPS. OFFICES 1115/1116	19	20A					20	SPACE	-
-	SPARE	21	20A					22	SPACE	-
-	SPARE	23	20A					24	SPACE	-
-	SPARE	25	20A					26	SPACE	-
-	SPARE	27	20A					28	SPACE	-
-	SPARE	29	20A					30	SPACE	-
-	SPARE	31	20A					32	SPACE	-
-	SPARE	33	20A					34	SPACE	-
-	SPARE	35	20A					36	SPACE	-
-	SPARE	37	20A					38	SPACE	-
-	SPARE	39	20A					40	SPACE	-
-	SPARE	41	20A					42	SPACE	-

NEW PANEL LC-1C										
120 / 208 VOLTS 3 # 4 WIRE+GND		SURFACE MOUNTING		100 AMP 3 POLE ■ MCB □ MLO			INTEGRATED EQUIPMENT RATING 22,000 A. SYM.			
KVA	LOAD SERVED	NO.	OCP	#A	#B	#C	OCP	NO.	LOAD SERVED	KVA
.7	EF-8	1	20A					20A	2 RECEPS. COMPUTERS	.6
.2	RECEP. ROOFTOP	3	20A					20A	4 RECEPS. COMPUTERS	1.0
.5	SMARTBOARD MEETING	5	20A					20A	6 RECEPS. PRINTERS	.5
1.3	RECEPS. COMMON AREA	7	20A					20A	8 RECEPS. COMPUTERS	.8
.5	RECEPS. ART COUNTER	9	20A					20A	10 RECEPS. PRINTER	.5
.4	RECEPS. ART COUNTER	11	20A					20A	12 RECEPS. COMPUTER	1.0
.5	SMARTBOARD LIT. LAB	13	20A					20A	14 RECEPS. OFFICES 1149/1150	1.4
.9	RECEPS. ART/LIT. LAB	15	20A					20A	16 RECEPS. OFFICE 1151/1152	1.4
.8	RECEPS. COMPUTERS	17	20A					20A	18 RECEPS. OFFICE 1153/1154	1.4
-	SPARE	19	20A					20	SPACE	-
-	SPARE	21	20A					22	SPACE	-
-	SPARE	23	20A					24	SPACE	-
-	SPARE	25	20A					26	SPACE	-
-	SPARE	27	20A					28	SPACE	-
-	SPARE	29	20A					30	SPACE	-
-	SPARE	31	20A					32	SPACE	-
-	SPARE	33	20A					34	SPACE	-
-	SPARE	35	20A					36	SPACE	-
-	SPARE	37	20A					38	SPACE	-
-	SPARE	39	20A					40	SPACE	-
-	SPARE	41	20A					42	SPACE	-

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ELECTRICAL
DETAILS & SCHEDULES

SCALE: AS NOTED
DATE: 03.09.2026
FILE: 2448(Current)

SHEET NO:

E.201

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SECTION 16000
ELECTRICAL

PART 1 GENERAL

1.1 SECTION REQUIREMENTS

- A. WORK INCLUDED: Provide all labor, materials, equipment, plant, tools, and management services for proper and complete execution of all Electrical Lighting and Power Work. Without restricting the generality of the foregoing, the following items of work are included:
1. Utilize existing Panelboards.
 2. Power, and lighting.
 3. Branch circuits.
 4. Exit, night, and emergency lighting and power.
 5. Outlets, receptacles, and switches.
 6. Power wiring of HVAC equipment.
 7. Hangers, anchors, cutting, patching, pass through and watertight sleeves, chases, supports for fixtures, backboards, and other electrical materials and equipment, including fire cut offs, in association therewith.
 8. Lighting fixtures, wiring, lamps.
 9. Disconnects (Fused and Safety) for motors, HVAC equipment, transformers and other equipment.
 10. Motor starters for equipment including exhaust fans when not otherwise provided.
- Coordinate with other trades and Owner supplied equipment vendors. (Rooftop HVAC Units will be provided with integral starters).
11. Temporary power and lighting for construction and all trades.
 12. Feeds, final connections, etc., for all interior furniture systems.
 13. Maintenance and removal of temporary light and power.
 14. All written operating and maintenance instructions.
 15. Arrange and pay for all required permits, fees and inspections.
 16. All work shall comply with 2020 NEC.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Provide only materials that are new, of the type and quality specified. Where standards have been established for such materials, provide only materials bearing the UL or ARL Label, or complying with NEMA and NEC standards.

B. Labeling of panels and circuits:

1. Mount a typewritten directory behind glass or plastic on the inside of each panel door and, on the directory, show the circuit number and complete description of all outlets on each circuit. Coordinate all labeling with HVAC, Plumbing and other trades to assure uniform nomenclature.
2. On face of all panels and electrical apparatus provide black plastic laminate name tag, securely fastened, and showing complete identification.
3. Provide 1/2" high letters on each panel and cabinet and 3/4" on switchboard, indicating voltage present.

C. Identification:

1. Identify all panelboards, cabinets, safety switches, and other apparatus used for operation and control of circuits, appliances, and equipment.
2. Provide plastic laminate nameplates, black face with white core letters, showing proper and complete identification.

2.2 GROUNDING SYSTEM

- A. Ground all equipment, including transformers, conduit systems, motors, and other apparatus, by conduit or conductor to cold water main or to independent grounding electrode, using ground clamps manufactured by Burndy or T&B, and authorized by the power company and/or local code official. NOTE: EMT tubing is not acceptable as a ground path.

- B. Ground all electrical equipment in accordance with all provisions of the National Electrical Code, including lighting fixtures, motors, conduits, panelboards, transformers, and all other Non Current carrying parts of electrical equipment.

- E. Interior systems equipment grounding electrode conductors shall be sized per National Electrical Code Section 250, for runs less than 100 feet. When run exceeds 100 feet, grounding conductor size shall be increased to the next larger size. Busway grounds shall be sized equal or greater than bus ground conductor and as shown.

- F. Ground connections shall be made with mechanical pressure type ground clamp. O.Z., Burndy or authorized equal of proper size for the ground conductor and pipe connected. All surfaces shall be scraped clean and bright, firm mechanical connection secured and all exposed surfaces finally coated with asphaltic or glyptal paint. All ground clamps shall be equipped with compression type cable lugs, independent of the compression device clamping the pipe or rod. All grounding cable connections and splices embedded in concrete or underground shall be phosphor copper brazed and tinned or welded with the exothermic Cadweld process and wrapped with tape. Exposed connections shall be compression type to permit removal for individual ground tests. All compression connections shall have at least two studs or compression points for each conductor.

- H. Grounding conductors shall be 600 volt, type "T" green. Equipment grounding connections shall be bare copper in accordance with the latest revision of A.S.T.M. designations B3 and B8. All open bare grounding cable (#6 A.W.G. minimum) shall be secured in place with cast, one hole, malleable, clamps and clamp backs and bolts.

1. All grounding connections shall be executed with the same thorough workmanship as the connections for normal current carrying parts.

2.3 DISTRIBUTION SYSTEM

- A. Branch circuit panels: (provide for locks on all panels)
1. Provide branch circuit panels for lighting, power and general electrical service. Panels to be surface or flush mounted, as identified on drawings, covers should not extend or project beyond box.
 2. Branch Circuit Panels, provide Cutler Hammer type PB, Square D or authorized equal.
 - a. 120/208 VAC, 3 phase, 4 wire
 - b. 100/225 AMP main breakers, or main lugs as indicated, full copper bus.
 - c. pole spaces as indicated on schedules.
 - d. Provisions for recessing and locking.
 3. All breakers shall be molded case, quick make quick break, thermal magnetic trip, and inverse time adjustable trip (for motor loads), bolted in type. Multiple breakers shall be of the common trip type. All breakers with 225 A frames or larger shall have interchangeable trips. Breakers used as light switches shall be marked "SWD". Minimum circuit breaker interrupting capacity shall be 14,000 AMPS or as required by loaded equipment. Provide ground fault breakers where required. Install Cutler Hammer, or Westinghouse circuit breakers or equal.

B. Wiring devices:

1. Provide rigid, E.M.T. with set screw type fittings, for all conduit run exposed.
 2. Where conduit is installed underground or in the floor slab, provide rigid PVC Schedule 40.
 3. For concealed wiring Type "MC" cable.
 4. Provide deep boxes with 1" and larger conduit.
 5. For lighting outlets, provide standard 4" octagon or square units
- C. Above floor raceways:
1. Provide rigid, E.M.T. with set screw type fittings, for all conduit run exposed.
 2. Where conduit is installed underground or in the floor slab, provide rigid PVC Schedule 40.
 3. For concealed wiring Type "MC" cable.
 4. Provide deep boxes with 1" and larger conduit.
 5. For lighting outlets, provide standard 4" octagon or square units

6. For switches and receptacles, provide standard gang switch boxes.
7. Provide boxes 4" square by 1 1/2" deep, except for boxes at ends of run where containing a single device. These may be No. 180 handy boxes as permitted by the governing code.
8. Provide sleeves, chases and fire stops where conduits pass through floors and walls, and where required.
9. Where shown on Drawings, provide empty conduits for future Owner, telephone company, or others' use.
10. Provide pull and junction boxes or LBs in ALL empty conduit runs. Place junction boxes so that 100' of fish line can be used to pull wires if required.

- D. Conductors:
1. For all wire and cable provide THHN insulation, 90° C. Identify feeder neutrals with white tape.
 2. Where branch circuit wiring is installed in wiring channels of continuous run mounted fixtures, provide UL type RHH or other authorized 105° C wires, rated at 600 V.
 3. Provide copper stranded wire, in all sizes.
 4. Install plenum wire and cable wherever required by code.
 5. For all 20 AMP circuits over 100 feet, use #10 AWG only, over 200 feet use #8 AWG only.

E. Exterior and Water Tight Junction Boxes

1. At all termination and intermediate junction points on exterior conduits, but not greater than 100 feet apart, provide a watertight/raintight Crouse Hinds type WDB box.
2. Install boxes flush with surface and provide appropriate conduit openings.
3. Seal all conduits entering box.

2.4 LIGHTING FIXTURES

- A. Provide lighting fixtures as shown on the Fixture Schedule on the Drawings.

2.5 GENERAL LIGHTING FIXTURE INSTRUCTIONS

- A. Accessories, such as strips, yokes, mounting plates, frames, nipples or brackets, shall be provided for proper installation. Acrylic lenses and louvers must meet the requirements of the N.J.U.C.C..

B. Recessed fixtures:

1. Provide units having an attached pull box, and with UL or ARL label.
2. Provide local label in addition if so required by governmental agencies having jurisdiction.

C. Fluorescent fixtures:

1. Provide ballasts thermally protected against overheating by built in thermal protectors sensitive to ballast winding temperature and current.
2. Provide protector preventing winding temperature from exceeding 120° C, allowing winding temperatures to reach 105° C under normal operating conditions at 40° C ambient and, after opening, not re-closing above 80° C.

D. LED Fixtures:

1. LED driver shall be installed in an electrical enclosure.
2. Wiring inside enclosure shall comply 600V/105 degrees rating or higher.
3. LED driver shall comply with UL standard UL1012.
4. LED driver shall be UL certified for use in a dry or damp location.
5. LED driver shall tolerate sustained open circuit and short circuit output conditions without damage.
6. LED luminaires shall be controlled by photocells or automatic profile dimming and motion response override as required by the design drawings.
7. The lighting system shall consist of the type and manufacturer as shown on the drawings or approved equal. If other than fixtures shown is submitted, complete illumination calculations are required to show equality.

2.6 EMERGENCY LIGHTING SYSTEMS

- A. Provide individual self contained battery units. Wire such units ahead of circuit controllers or switches.
- B. Provide lighting fixtures with integral battery packs built in were shown on the drawings.

2.7 SAFETY SWITCHES

- A. Provide fusible and non fusible safety switches of heavy duty type, horsepower rated, quick make and quick break design, externally operated with provision for padlocking, when not supplied with equipment.

- B. Provide enclosures clearly marked for maximum voltage, current, and horsepower rating, and use:

1. Indoor: NEMA type 1.
2. Outdoor: NEMA type 3R, raintight.

- C. Provide at all rooftop units, exhaust fans over 1/4 horsepower, unit heaters, hot water heaters, and other HVAC equipment, as required to comply with local codes. Coordinate with HVAC Contractor to confirm equipment type being provided and to assure completeness of final installation.

2.8 POWER WIRING OF EQUIPMENT

- A. Provide feeders, connection and disconnects for all HVAC equipment, (110V or greater), including air handlers, condensers, and fans.

- B. Air conditioning and low voltage heating equipment (below 110V) controls, panels, motor controls, thermostats, and control devices will be under HVAC work, provide 115V feeds where required, coordinate with HVAC Contractor.

- C. Provide feeders and connection for all Plumbing equipment.

- D. Provide feeders and connection for all Owner supplied equipment.

2.9 TELEPHONE

- A. All telephone work by others

2.10 OTHER MATERIALS

- A. Provide other materials, not specifically described but required for a complete and proper installation, as proposed by the Contractor subject to the authorization of the Engineer.

PART 3 EXECUTION

3.1 PREPARATION

- A. Coordinate:
1. Coordinate as necessary with other Sections.
 2. Coordinate the installation of electrical items with the schedule for work of other Sections to prevent unnecessary delays in the total Work.
 3. Where lighting fixtures and other electrical items are shown in conflict with locations of structural members and mechanical or other equipment, provide required supports and wiring to clear the encroachment.

- B. Data indicated on the Drawings and in these Specifications are as exact as could be secured, but their absolute accuracy is not warranted. The exact locations, distances, levels, and other conditions will be governed by actual construction and the Drawings and Specifications should be used only for guidance in such regard.

3.2 TEMPORARY POWER AND LIGHTING

- A. GENERAL: In coordination with and in addition to the General Conditions of these Specifications provide the following:
1. Provide temporary power and lighting to all areas of construction. All work areas must have 2 120V Duplex GFI outlets available within 80 feet.
 2. Minimum lighting level to be 40 F.C. at work areas.

B. MAINTENANCE:

1. The temporary wiring system shall be maintained by the Electrical Contractor, including lamp replacement, fuses, circuit breakers, sockets, plugs, receptacles, etc. as required during construction of the project shall be maintained by the Electrical Contractor. In addition, Contractor shall insure that temporary wiring is not used for heating.
2. Should any part of the permanent electric system be used during building operations, the Electrical Contractor shall make all replacements made necessary by such use and shall be responsible for all damage to existing electric systems used, and shall make good such damage to the satisfaction of the Engineer.

3. When the electrical lines are no longer required, they shall be removed and any part or parts of the grounds or building disturbed or damaged shall be brought back to their original condition.

4. All temporary electrical equipment (feeders, wiring, panels, lighting, outlets, distribution equipment, etc.) shall be removed.

C. WIRING:

1. All wire shall be insulated and shall be installed without hazardous conditions of any nature. Installation shall be in accordance with article 310 of the NEC and the Federal Register Safety and Health Regulations for construction. Wire sizes shall provide a minimum of 110 volts at all outlets under all conditions of operation.

2. GROUND: Provide ground fault protection per code for all receptacles either via GFI circuit breakers or GFI receptacles.

3. VOLTAGE DROP: Feeders and branches shall be of sufficient size to insure correct operation of all connected equipment and to meet code.

4. POWER OUTLETS: 208 Volts, 3 phase power outlets shall be provided as required.

3.3 MASONRY AND OTHER PENETRATIONS

- A. Provide sleeves and or patching for each conduit passing through walls, partitions, floors, roofs, and ceilings.

1. Set conduit sleeves in place before concrete is placed, wherever possible.
2. Provide sleeves two pipe sizes larger than the conduit passing through, or provide a minimum of 1/2" clearance between inside and outside of the conduit.
3. Provide waterproof installation for sleeves in floors, see Drawing details.

- B. Caulk the space between sleeve or wall and conduit, using a noncombustible, permanently plastic, waterproof, non-staining compound which leaves a smooth finished appearance, or pack with noncombustible mineral wool, or fiberglass to within 1/2" of both wall faces, and provide the waterproof compound described herein. Smooth up rough edges around sleeves.

- C. Provide all cutting and patching, fire caulking and sealing to standards of other Sections and Divisions.

- D. Where conduits and other work of this section pass through fire rated walls, provide proper fire stops to maintain rating in accordance with local codes.

- E. Where conduits pierce the roof, provide 24 gage galvanized iron roof jacks and flashing collar brazed onto the conduits and covering the top of the roof jacks.

- F. Caulk all floor penetrations with fire retardant material meeting ASTM E 814 and UL 1479 Fire Test Standards. Metaculk or authorized equal.

3.4 INSTALLATION OF RACEWAYS AND FITTINGS

1. Run all conduit parallel to and or at right angle with lines of the building.
2. Make bends with standard conduit elbows or conduit bent to not less than the same radius.
3. Make bends free from dents and flattening.

- B. Securely and rigidly support conduits throughout the Work.

- C. All conduit shall be 10' lengths and each 10' length shall contain the Underwriter's label showing the conduit has been manufactured for that purpose. Conduit shall be sized as required by latest National or Local Code applicable for equivalent number of THW conductors. The type to be used and their installation shall be as in item G below.

- D. Galvanized heavy wall steel conduit shall be used for all sweeps, and for above floor conduit extensions from the sweeps to the panels or outlet boxes. (No PVC is to be used above ground for powered electrical circuits.)

- E. Flexible Steel Conduit: Use 1/2" minimum, except where noted otherwise. Flexible conduit shall be used for the following applications only:

1. For final connection to motor terminal box, max. length 18"
2. For final connection to outlets on vibrating equipment
3. From outlet box to recessed lighting fixture minimum 4', maximum 6' length.
4. For short connections as authorized by the Engineer.
5. For expansion joint crossings.
6. For weatherproof installations, with polyvinyl sheathing, similar to American Metal Hose "Sealtite" type "UA" or equal.

3.5 INSTALLATION OF LIGHTING FIXTURES AND LAMPS

- A. Install lighting fixtures complete and ready for service in accordance with the Drawings:

1. Install all lighting fixtures, so that the weight of the fixture is supported, either directly or indirectly, by a sound and safe structural member of the building, using adequate number and type of hangers and fasteners to assure safe installation.
- a. Screwed fastenings and toggle bolts through ceiling material or wall paneling, are not acceptable.
- b. Do not support from sub purlins of panelized roof systems.

2. Single fixtures shall have an outlet box provided for each fixture unless within 4' 0" of outlet box, accessible per code.

3. Special Mounting: When mounting fixtures to rocklath, acoustical or gypsum board ceilings, the Electrical Contractor shall provide and install mounting hardware or angles and secure the fixtures to framework above. When mounting surface or pendant type fixture to metal lath and plaster, they shall be secured per code. When locating outlets in suspended grid ceilings, the Electrical Contractor shall consult and cooperate with the Acoustical Contractor to assure correct placement of fixtures in the grid. authorized slips may be used as fixture support below suspended grid ceilings when the "T" bars are adequate to support the load, with the cost of such additional support by the Electrical Contractor. For gypsum board ceilings, coordinate location with reflected ceiling plans.

4. Ballasts: The Electrical Contractor shall be responsible for replacing all defective fluorescent fixture ballasts during the construction period and guarantee period. Ballasts shall be of the U.L. Class "P" type with high power factor, low energy loss, Jefferson or equal, with Kilicon overwarrant protection. Ballasts shall supply not more than two lamps, but may utilize a two lamp ballast, where practical, in lieu of single lamp ballasts.

5. Lamps: Provide lamps per schedule on drawings for all fixtures and replace all units burned out during construction. If utilized for general lighting, all 750 hour lamps shall be replaced new at time of turn over. Fluorescent lamps shall be, "warm white", of the 34 or 35 watt energy saver type, G.E. "Watt Miser", or equal and similar for the 36" lengths.

3.6 INSTALLATION OF POWER EQUIPMENT

- A. Provide power wiring for panels and equipment as shown on the Drawings or as required for a complete installation.

- B. Connections to miscellaneous building equipment:

1. Wire to, and connect to, all items of building equipment provided under this and other sections of this contract not specifically described but to which electrical power is required.
2. Coordinate as necessary with other trades and suppliers to verify types, numbers, and locations of equipment.

3.7 INSTALLATION OF CONDUCTORS

- A. Except for alarm and signaling systems and unless otherwise shown on the Drawings, the minimum conductor size will be No. 12 for all branch circuits. When necessary use larger wire sizes to prevent voltage drops.

1. Where wire size is not shown, install conductors sized to loads.
2. Where conduit size is not shown, size to wire and load.
3. Provide code sized conduit for number and size wires shown or required, unless a larger size conduit is shown on the Drawings.

4. Support all conduit, junction boxes, etc., from building structure only.

5. Color code: Insulation is to be colored as follows:

- a. 120/208 volt system:

- "A" phase — Black
"B" phase — Red
"C" phase — Blue

- b. 480/277 volt system:

- "A" phase — Brown
"B" phase — Orange
"C" phase — Yellow

- c. Neutral Conductor (120/208 systems) — White
d. Neutral Conductor (277/480 systems) — White with stripe

- e. Equipment Ground Conductor(all systems) — Green
f. Switched leg — Purple

- g. Dummy legs or 3-way switching — Pink

- B. Use identified (white) neutrals and color coded phase wires for all branch circuit wiring.

1. Make splices electrically and mechanically secure with pressure type connectors.
 - a. For wires size 6 AWG and smaller, provide "Scotch Lock" type connectors.
 - b. For wire size 4 AWG and larger, provide Burndy "Versitaps" and heavy duty

- connectors, or T & B "Lock Tite" connectors.

2. Insulate splices with a minimum of three half lapped layers of Scotch Brand No.33 vinyl plastic electrical tape where insulation is required.

- C. The Drawings are a general indication of the direction of home runs. Continue all such home runs to the panel as though the routes were shown completely.

3.8 INSTALLATION OF WIRING DEVICES

- A. Mounting Height: (Outlets) The Electrical Contractor is to coordinate locations of all outlets on walls, columns, etc. with field conditions, so that the outlet does not occur at junction of different materials in wall finishes, on molding, break in wall surface, or other unsuitable locations.

3.9 INSTALLATIONS OF OUTLETS AND BOXES

A. Outlets:

1. Install to bear evenly and truly, secured on axis of supporting members.
2. Where boxes are back of finished surface, use recessed boxes and proper length screws, of size to form shoulder at exact point to retain switch in position. Use no wooden wedges, shims or blocks for truing up.

B. Outlet Boxes:

1. Locations indicated for local wall switches are subject to modifications. At or near doors install switch on side opposite hinge. Verify final door hinge location in field prior to switch outlet installation! sup
2. Set boxes square and true with building finish. Erect wall and switch outlets in advance of furring and fireproofing. Secure to building structure or steel by adjustable strap irons.
3. Verify locations of outlets and switches in finished rooms with drawings of interior details and finish. In centering outlets and locating boxes allow for overhead pipes, ducts and mechanical equipment, variations in fireproofing and plastering, window and door trim, paneling, hung ceilings, and the like, and correct any inaccuracy resulting from failure to do so without expense to Owner.

3.10 SUPPORTS, INSERTS AND HANGERS

- A. The Electrical Contractor shall provide all supports, inserts, and hangers for conduits, cables, lighting fixtures, cabinets and other electrical equipment, as manufactured by Powerstrut, Kindorf, Unistrut, or Elcen.

- B. Pipe straps shall be used for wall mounting conduit. Pipe straps shall be steel, single hole type. Pipe straps, fixtures and cabinets shall be secured to the wall by means of screws, toggle bolts, lag screws in metal expansion shield or other authorized method. Wooden plugs shall not be used.
- C. All overhead conduit shall be supported from the structural beams. Grouped conduit supports shall be steel channel attached to structural beams with proper size beam clamps. Channel may be suspended below structural beams with proper size beam clamps and 3/8" continuous threaded hanger rods installed (maximum) 2' 0" on center for the entire length of channel. Conduit shall be secured to channel with single bolt 2 piece channel pipe clamps for 1 1/4" and larger conduits and strut clips similar to "Caddy" number 12MFA clips for 1" and smaller conduits. Individually supported conduits shall be secured to structural beams with proper size beam clamps and one piece pipe hanger clamps with closure bolt similar to "Kindorf" 6HB series, for 1 1/4" and larger conduits, and combination conduit hanger clamps similar to "Caddy" #16 M 5 8 for 1" and smaller conduits.d

- D. Authorized manufacturers of channel are Powerstrut, Unistrut, and Kindorf. Authorized manufacturers of conduit clamps are Powerstrut, Unistrut, Kindorf, Mineraloc, and Caddy.

- E. NOTE: Electrical Contractor shall be responsible for determining proper size clamps for the various conduit sizes and beam flange thickness encountered.

- F. Conduits shall not be supported by ceiling grid. They shall be supported directly by the building structure.

- D. Authorized manufacturers of channel are Powerstrut, Unistrut, and Kindorf. Authorized manufacturers of conduit clamps are Powerstrut, Unistrut, Kindorf, Mineraloc, and Caddy.

- E. NOTE: Electrical Contractor shall be responsible for determining proper size clamps for the various conduit sizes and beam flange thickness encountered.

- F. Conduits shall not be supported by ceiling grid. They shall be supported directly by the building structure.

3.11 INSTALLATION OF PANELS

- A. Unless otherwise shown on the Drawings, install panels with the top of the trim 6' 3" above the finished floor.

- B. Mount a typewritten directory behind glass or plastic on the inside of each panel door and, on the directory, show the circuit number and complete description of all outlets on each circuit.

- C. Panelboard Spare Conduits shall be furnished and installed by the Electrical Contractor when a panel is either recessed, or furred in. These conduits shall be sized to provide capacity for future wiring of all spares within the panel. Run conduits from panel to accessible ceiling space. Provide a minimum of 3 1" conduits per panel.

3.12 TESTING AND INSPECTION

- A. Provide personnel and equipment, make required tests, and secure required approvals from the Engineer and governmental agencies having jurisdiction.

- B. Make written notice to the Engineer adequately in advance of each of the following stages of construction:

1. When all rough in is complete, but not covered;
2. At completion of the work of this Section.

- C. When material and/or workmanship is found not in compliance with the specified requirements, then within three days after receipt of notice of such noncompliance, remove the non-complying items from the job site and replace them with items complying with the specified requirements, all at no additional cost to the Owner.

- D. Upon completion of work, test installation for ground and short circuits. Test all feeders and 10% of each of other electrical system wiring. If tests indicate faults, further tests shall be conducted as required by the Engineer. Resistance between conductors and between conductors and ground:

No. 12	1,000,000 OHMS
No. 10 & No. 8	250,000 OHMS
No. 6, 4, & 3	100,000 OHMS
No. 2, 1, 1/0, 2/0 & 3/0	50,000 OHMS
No. 4/0, 250,300,350 & 500 MCM	25,000 OHMS
No. 750 MCM and larger	12,000 OHMS

3.13 PROJECT COMPLETION

- A. Upon completion of the work of this Section, thoroughly clean all exposed portions of the electrical installation, removing all traces of soil, labels, grease, oil, and other foreign material, and using only the type cleaner recommended by the manufacturer of the item being cleaned.

- B. Thoroughly indoctrinate the Owner's operation and maintenance personnel in the operation and maintenance of all equipment installed under Section A. A one day session is to be scheduled at the conclusion of this project for this purpose.

END OF SECTION

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ESSEX COUNTY COLLEGE
HUMANITIES DEPARTMENT
OFFICE ALTERATIONS

1-55 MARKET STREET

NEWARK, NJ

arcari iovino

+

ARCHITECTS PC

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BRIAN PASECHNICK NJ#48111

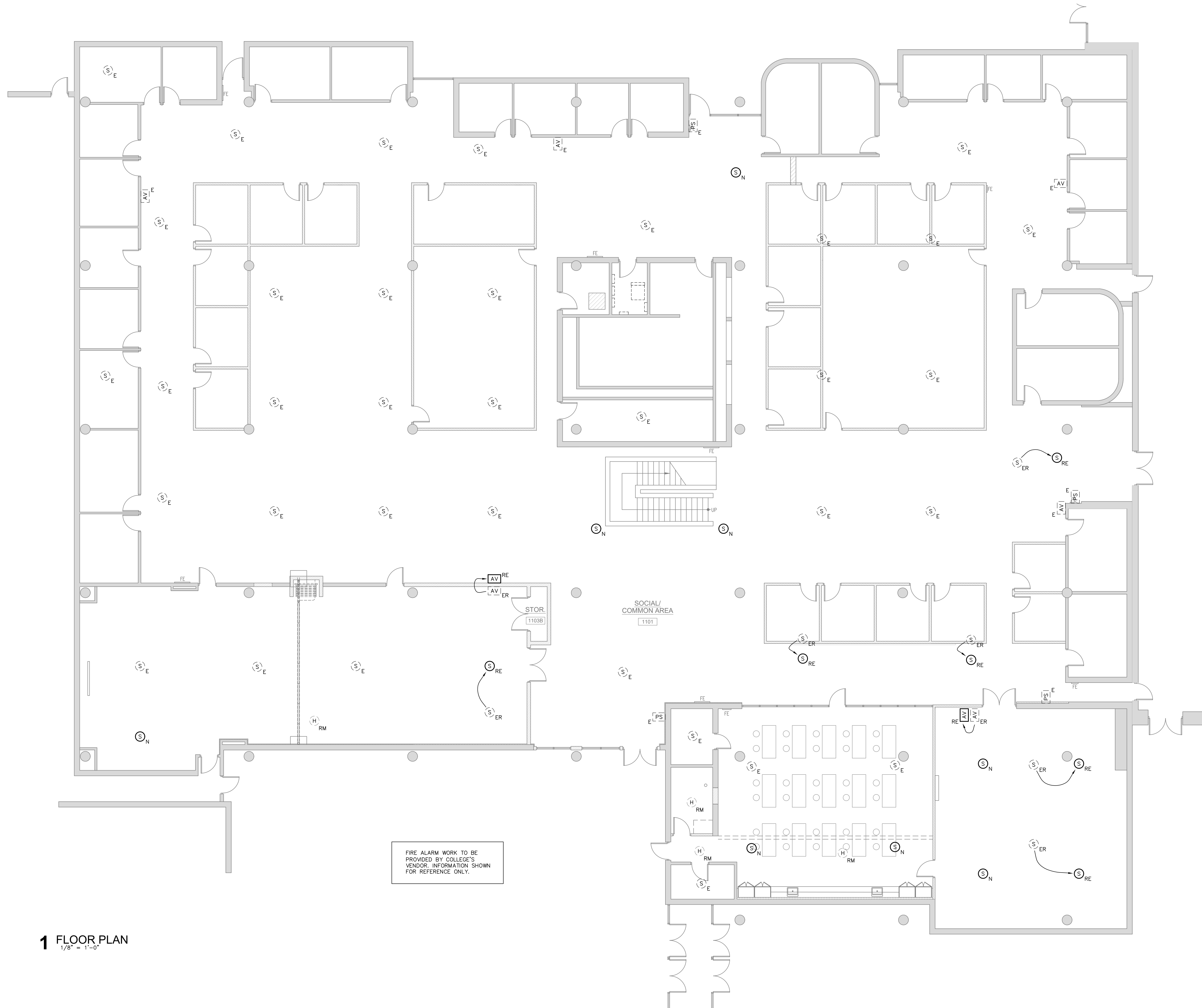
ELECTRICAL
SPECIFICATIONS

SCALE: AS NOTED
DATE: 03.09.2026
FILE: 2448(Current)

SHEET NO:

E.301

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1 FLOOR PLAN
1/8" = 1'-0"

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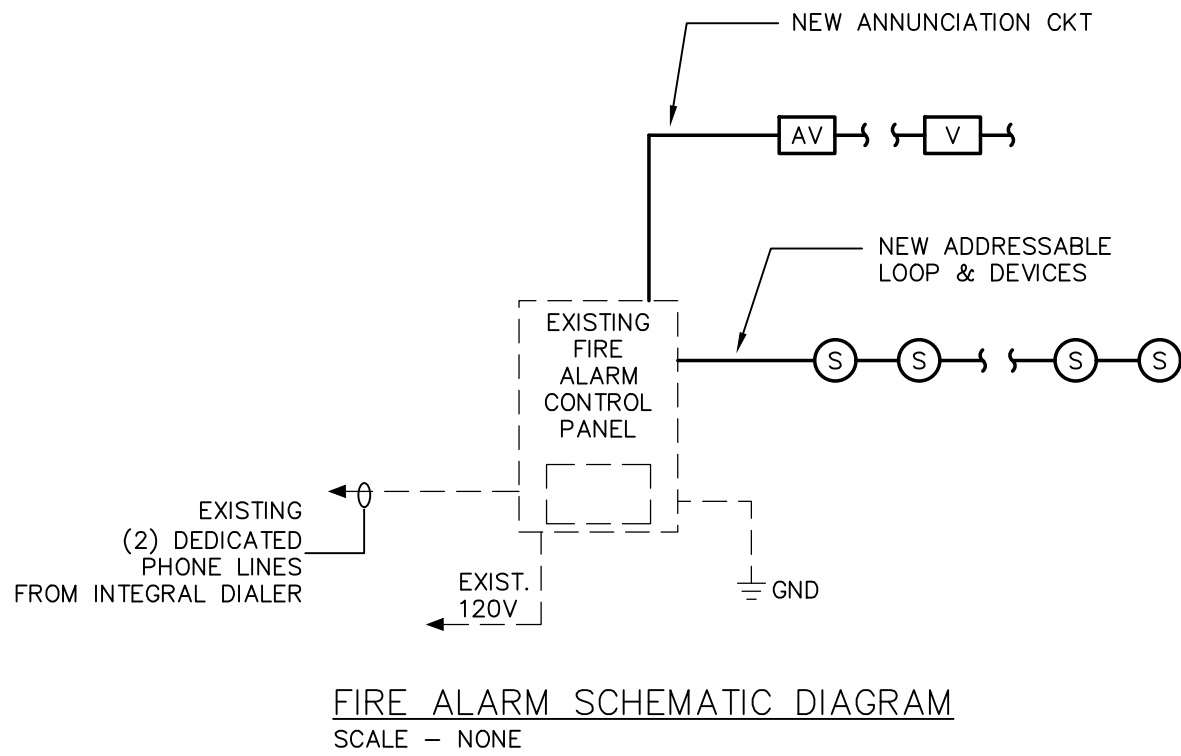
**FIRE ALARM
PLAN**

SCALE: AS NOTED
DATE: 03.09.2026
FILE: 2448(Current)

SHEET NO:
FA.101

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FIRE ALARM LEGEND	
AV	F.A. AUDIO/VISUAL
V	F.A. VISUAL
PS	F.A. PULL STATION
S	F.A. SMOKE DETECTOR
H	F.A. HEAT DETECTOR
CO	F.A. CO DETECTOR WITH SOUNDER BASE
AC	F.A. CONTROL MODULE
DSD	F.A. DUCT SMOKE DETECTOR
E	EXISTING TO REMAIN
RM	EXISTING TO BE REMOVED
N	NEW DEVICE
ER	EXISTING DEVICE TO BE RELOCATED
RE	EXISTING RELOCATED DEVICE



- NOTES:
- FOR EXACT QUANTITY AND LOCATION OF ALL NEW DEVICES REFER TO FLOOR PLANS.
 - EXACT WIRE SIZE & QUANTITY SHALL BE PER SYSTEM MANUFACTURERS RECOMMENDATIONS. ALL WIRING SHALL BE RUN CONCEALED ABOVE THE CEILING AND/OR IN WALLS. SHALL HAVE INSULATION TYPE FPLP AS A MINIMUM. WHERE RUN IN EXPOSED AREAS ~~ie~~ MECHANICAL ROOMS, WIRING SHALL BE RUN IN EMT CONDUIT.
 - ENTIRE INSTALLATION SHALL BE IN CONFORMANCE WITH NFPA, NEC.
 - PROVIDE MINIMUM 2 VISUAL STROBE CIRCUITS, MORE IF REQUIRED.
 - ALL PULL STATIONS SHALL BE PROVIDED WITH CLEAR LEXAN COVERS.
 - CONTRACTOR SHALL FURNISH AND INSTALL THE REQUIRED CONNECTIONS TO EXISTING FIRE ALARM SYSTEM AS SHOWN ON PLANS. FIRE ALARM WORK SHALL INCLUDE ALL DEVICES, WIRING, CONDUIT, BOXES, PROGRAMMING ETC.

- CONTRACTOR SHALL PROVIDE SUBMITTALS IN ACCORDANCE WITH THE FOLLOWING CRITERIA. DOCUMENTS FOR FIRE ALARM SYSTEMS SHALL BE SUBMITTED FOR REVIEW AND APPROVAL BY THE AUTHORITY HAVING JURISDICTION PRIOR TO SYSTEM INSTALLATION. SUBMITTALS SHALL INCLUDE, BUT NOT BE LIMITED TO, ALL OF THE FOLLOWING:
- A FLOOR PLAN WITH DEVICE LOCATIONS AND WIRING.
 - LOCATIONS OF ALARM-INITIATING AND NOTIFICATION APPLIANCES.
 - ALARM CONTROL AND TROUBLE SIGNALING EQUIPMENT.
 - ANNUNCIATION.
 - POWER CONNECTION.
 - BATTERY CALCULATIONS.
 - CONDUCTOR TYPE AND SIZES.
 - VOLTAGE DROP CALCULATIONS.
 - MANUFACTURERS, MODEL NUMBERS AND LISTING INFORMATION FOR EQUIPMENT, DEVICES AND MATERIALS.
 - DETAILS OF CEILING HEIGHT AND CONSTRUCTION.
 - THE INTERFACE OF FIRE SAFETY CONTROL FUNCTIONS.
- ALL PLANS AND CALCULATIONS SUBMITTED SHALL BE SIGNED & SEALED BY A REGISTERED, LICENSED ENGINEER. AND SUBMITTED TO AHJ FOR APPROVAL AND SIGN-OFF.

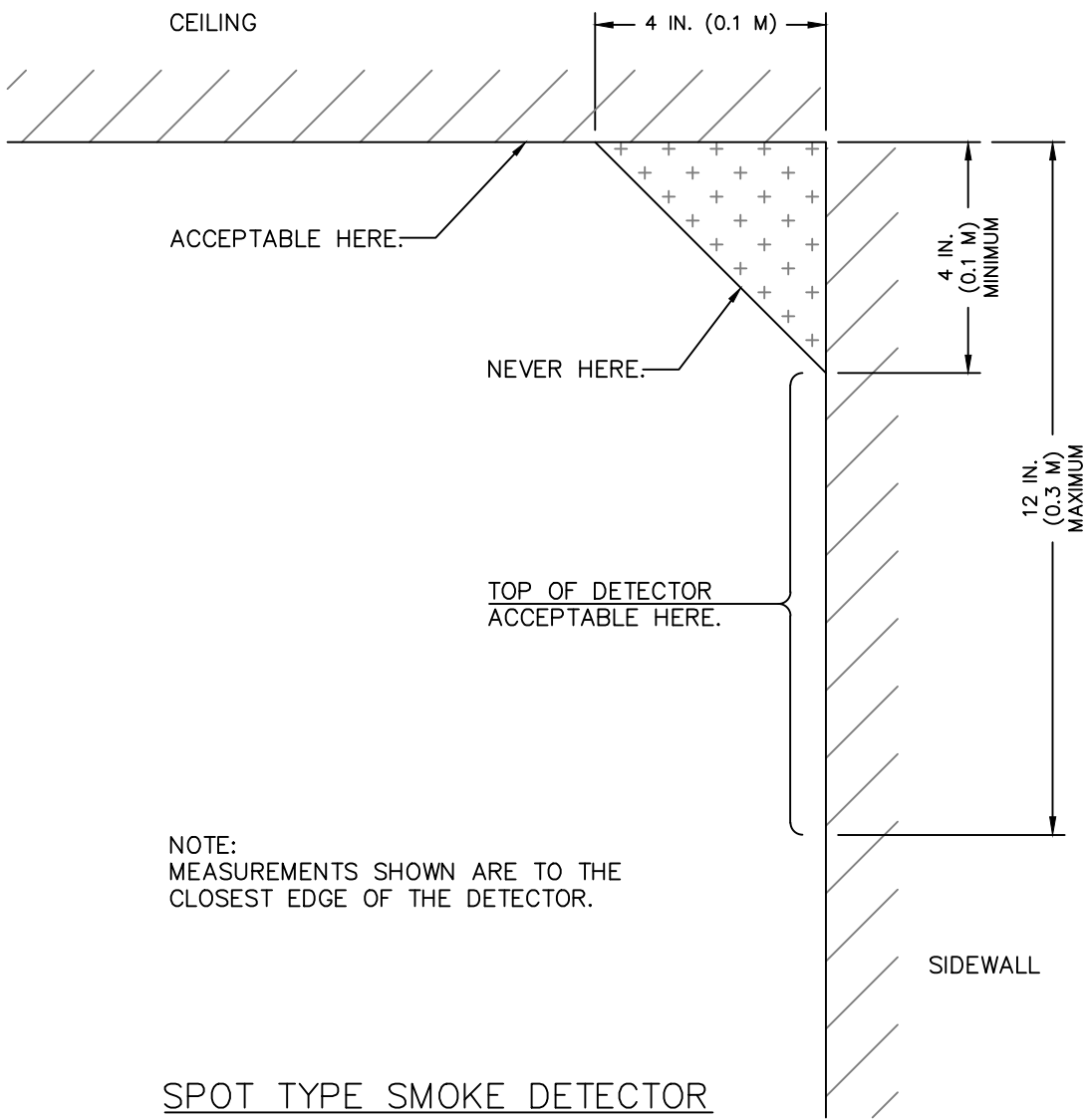
GENERAL FIRE ALARM NOTES:

- CIRCUIT RUNS SHOWN DIAGRAMMATIC. CONTRACTOR SHALL FIELD VERIFY ALL LENGTHS, DIMENSIONS, & ARRANGEMENTS PRIOR TO COMMENCEMENT OF WORK. CONTRACTOR SHALL IDENTIFY INTERFERENCES BETWEEN WORK IN OTHER AREAS.
- THE DUST COVERS FURNISHED WITH THE SMOKE DETECTORS MUST BE INSTALLED WITH EACH DEVICE UNTIL FINAL CHECKOUT.
- INSTALLATION SHALL BE IN STRICT CONFORMANCE WITH THE NATIONAL ELECTRIC CODE, LOCAL CODE(S), AND/OR AUTHORITY HAVING JURISDICTION.
- INSTALLATION MATERIAL (I.E. CONDUIT WIRE, FITTINGS, HANGERS & STANDARD ELECTRICAL BOXES) ARE NOT SUPPLIED BY SIEMENS FIRE SAFETY DIVISION.
- WIRING SHALL BE PER PLAN WITH RESPECT TO CONDUCTOR SIZE, TYPE, & QUANTITY. CONDUCTORS SHALL BE PERMANENTLY MARKED FOR FUTURE IDENTIFICATION. PERMANENT WIRE MARKERS SHALL BE USED TO IDENTIFY THE TERMINATIONS OF ALL CONDUCTORS WITHIN THE FAC, PULL BOXES AND OTHER PANELS.
- ALL CABLE AND WIRING SHALL BE COLOR CODED. DIFFERENT COLOR CODES SHALL BE USED FOR INITIATING, NOTIFICATION, CONTROL, AND COMMUNICATION CIRCUITS. CIRCUITS WHERE POLARITY MUST BE OBSERVED, TWO DIFFERENT COLORS SHALL BE USED.
- THE NUMBER OF SPLICES SHALL BE HELD TO AN ABSOLUTE MINIMUM. WHERE SPLICES CANNOT BE AVOIDED AND AT THE TERMINATION OF ALL EQUIPMENT WHICH INCORPORATE PIGTAIL CONNECTING WIRES, EITHER PHENOLIC TERMINAL BLOCKS OR PRESSURE TYPE CONNECTORS SHALL BE UTILIZED. WIRE NUTS SHALL NOT BE USED. ALL SUCH SPLICES SHALL TAKE PLACE WITH JUNCTION BOXES. WHERE PRESSURE TYPE CONNECTORS ARE UTILIZED, BREAK THE WIRE RUN FOR PROPER SUPERVISION. DO NOT LOOP THE WIRE.
- ALL FIRE ALARM SYSTEM JUNCTION BOXES, AND PULL BOXES SHALL BE PAINTED RED. COVER PLATES SHALL BE PAINTED RED & MARKED 'FA'.
- IF CONDUIT IS UTILIZED, THE MINIMUM SIZE SHALL BE PROVIDED AS REQUIRED BY TABLE 4 CHAPTER 9 OF THE NATIONAL ELECTRIC CODE, USING ACTUAL CROSS SECTION AREA OF THE WIRING TO BE INSTALLED.
- DEDICATED 120vac POWER:
 - 120vac POWER SHALL NOT BE ALLOWED IN THE SAME CONDUIT AS 24vac.
 - ALL 120vac POWER CIRCUITS THAT FEED THE FIRE ALARM EQUIPMENT SHALL BE SHOWN ON THE AS BUILTS DRAWINGS WITH THE CIRCUIT NUMBER & BREAKER PANEL LOCATION.
 - FIRE ALARM CONTROL PANEL 120vac POWER SHALL BE ON EMERGENCY POWER CIRCUITS & IN ADDITION BE PROVIDED WITH LOCKS ON THE CIRCUIT BREAKER TO PREVENT ACCIDENTAL POWER TURN OFF.
 - 120vac POWER SHALL NOT BE APPLIED TO FIRE ALARM PANEL WITHOUT DIRECT SUPERVISION OF TECHNICIAN.
 - AUXILIARY SURGE PROTECTION IS RECOMMENDED.
 - AC WIRING SHALL NOT BE RUN IN THE SAME CONDUIT AS POWER LIMITED WIRING.
 - WITHIN ENCLOSURES, MAINTAIN 2 INCHES BETWEEN AC AND POWER LIMITED WIRING.
- DIGITAL COMMUNICATOR:
- ALL HORIZONTAL FIRE ALARM WIRING NOT IN CONDUIT SHALL BE TIED AND SUPPORTED AT 5'-0" (MAX.) INTERVALS.
- ALL FIRE WALL AND/ OR MASONRY WALL PENETRATIONS SHALL BE DRILLED, SLEEVED, BUSHED AT BOTH ENDS, AND SEALED WITH THE REQUIRED FIRE RATED CAULK OR FIRE STOPPING MATERIAL TO MAINTAIN THE FIRE RATING.
- IF NOT IN CONDUIT, ALL CABLE SHALL BE PLENUM RATED IN COMPLIANCE WITH UL-910, AND NEC (NFPA-70), ARTICLE 800.
- THE INSTALLER IS RESPONSIBLE FOR METERING ALL WIRES TO ENSURE THAT THEY ARE FREE AND CLEAR OF GROUNDS, OPENS, SHORTS, CORRECT RESISTANCE, CAPACITANCE, AND PROPER SUPPORT PRIOR TO TERMINATION ON ANY FIRE ALARM EQUIPMENT. SIEMENS WILL NOT BEGIN CHECKOUT WITHOUT WRITTEN DOCUMENTATION CONFIRMING THIS WORK BEING PERFORMED. IF GROUNDS AND/OR SHORT ARE FOUND ON THE SYSTEM WIRING UPON INITIAL CHECKOUT, THAT INITIAL CHECKOUT WILL BE DISCONNECTED UNTIL ALL WIRING IS CORRECTED.
- TEE BARS SHALL BE USED TO SUPPORT JUNCTION BOXES OF ALL SUSPENDED CEILING MOUNTED DEVICES.
- INSTALLING CONTRACTOR SHALL RETURN ONE SET OF ACCURATELY MARKED DRAWINGS FOR 'AS BUILT' PURPOSES, WITH ACTUAL WIRE RUNS AND EQUIPMENT LOCATIONS.
- FOR ADDITIONAL INSTALLATION INSTRUCTIONS, REFER TO CATALOG CUT SHEETS AND/OR INSTALLATION INSTRUCTIONS.

NOTIFICATION APPLIANCE CIRCUITS -- INDICATING (SIGNAL) APPLIANCES:

INSTALLATION OF INDICATING CIRCUITS SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS & THE FOLLOWING:

- ALL CIRCUITS SHALL BE CONTINUOUS, NO T-TAPPING (PARALLEL WIRING).
- WHEN SHIELDED CABLE IS UTILIZED, THE SHIELDING SHALL BE THE CONTINUOUS, AND THE SHIELD SHALL ONLY BE GROUNDED AT ITS POINT OF ORIGIN. SEE THE RISER DIAGRAM FOR MORE INFORMATION.
- EACH CIRCUIT SHALL HAVE AN END OF LINE DEVICE (SUPPLIED).
- WIRE UTILIZED SHALL BE MINIMUM #14 AWG & IN ACCORDANCE WITH NEC 70.



FIRE ALARM WORK TO BE PROVIDED BY COLLEGE'S VENDOR. INFORMATION SHOWN FOR REFERENCE ONLY.

03.09.2026 ISSUED FOR BIDDING

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FIRE ALARM
DETAILS

SCALE: AS NOTED
DATE: 03.09.2026
FILE: 2448(Current)

SHEET NO:
FA.201

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