



Roscoe West Hall '68 Student Services Renovation

TCNJ Advertised Bid # AB230019

COVER SHEET

INVITATION TO BID

MILESTONE SCHEDULE

CONSTRUCTION BID PROPOSAL FORM

GENERAL WORK DESCRIPTION

DRAWINGS

MANDATORY DOCUMENTS

CONTRACT

GENERAL CONDITIONS

March 16, 2023



Please place the following advertisement in the Legal Section of Classified Advertising. Please ensure that the invoice for this advertisement is prepared and an affidavit forwarded to The College of New Jersey, Office of Finance and Business Services, Administrative Services Building, Room 201, P.O. Box 7718, Ewing, NJ 08628-0718.

To be published on **March 16, 2023 in the Trentonian**. Contact person regarding placement of ad is Lauren Manning (609) 771-2894.

**THE COLLEGE OF NEW JERSEY
ADVERTISEMENT FOR BIDS
BID #AB230019**

Under the provisions of the State College Contracts Law, Chapter 64 of Title 18-A, The College of New Jersey will receive sealed bids for the **Roscoe West Hall '68 Student Services Renovation** until **2:00 P.M. on the 11th day of April, 2023** at The College's Office of Finance and Business Services, Administrative Services Building, Second Floor, Room 201, Route 31 (Pennington Road), Ewing Township, New Jersey. At 2:00 P.M. all bids will be publicly opened and read in Room 203 of the Administrative Services Building.

The project will be bid as a Single Lump Sum and no bidder may submit more than one bid.

Bid Documents may be obtained on/after **March 16, 2023 via our website** (<https://bids.tcnj.edu/home/construction-projects/>).

A **strongly encouraged pre-bid conference/on-site inspection** is scheduled on **March 24, 2023 at 10:00 A.M.** in Room 103 of the Administrative Services Building, located on The College's Ewing Township, New Jersey campus on Route 31 (Pennington Road).

Bidders are required to comply with the requirements of P.L. 1975 c. 127 (N.J.S.A. 10:5-31 et seq. and N.J.A.C. 17:27 - Affirmative Action); the New Jersey Prevailing Wage Act, N.J.S.A. 34:11-56.25 et seq.; N.J.S.A. 52:25-24.2, "Statement of Ownership Disclosure"; the Public Works Contractor Registration Act (N.J.S.A. 34:11-56.48 et seq.); the New Jersey Business Registration of Public Contractors provisions (N.J.S.A. 52:32-44); Executive Order 117 and P.L. 2005 Chapter 51 (N.J.S.A. 19:44a-1 et seq.) and all amendments thereto

Bidders must have a New Jersey Department of Treasury, Division of Property Management and Construction (DPMC) C008 or C009 classification. No other bids will be accepted without this classification.

A bid bond is required in the amount of 10% of the total bid. Bid bond shall consist of a certified check or cashiers check to the order of The College of New Jersey, or an individual or annual bid bond issued by an insurance company or surety company authorized to do business in the State of New Jersey. The successful Bidder(s) is required to provide a Performance and Payment Bond equal to 100% of the contract. A Surety Disclosure Statement and Certification form must accompany the performance bond.

The College will award the contract to the lowest responsible bidder who satisfies the qualification criteria as set forth in the contract documents.

The College of New Jersey reserves the right to reject all bids or to waive any minor informalities in the bidding in accordance with law. No bid shall be withdrawn for a period of sixty (60) days subsequent to the opening of bids without the consent of The College of New Jersey.



**ROSCOE WEST HALL '68
STUDENT SERVICES RENOVATION
TCNJ PROJECT #: WE220**

MILESTONE SCHEDULE
As of March 15, 2023

Request for Proposals Released	March 16, 2023
Pre-bid Meeting (Administrative Services Building Room 103 @ 10:00AM)	March 24, 2023
Cut off for questions	March 28, 2023
Addendum issued if needed	March 31, 2023
Bids Received	April 11, 2023
Notice of Intent to Award issued	April 13, 2023
Notice to Proceed issued by	April 21, 2023
Preconstruction and Submittals	April & May
Construction Begins in Field	May 30, 2023
Substantial Completion by	August 1, 2023
Punch List Completion	September 29, 2023
Contract Closed by	December 1, 2023



Bid # AB230019
For: Roscoe West Hall '68
Student Service Renovation

Event	Date	Time
Pre-bid Conference and Site Visit at The College of New Jersey's Administrative Services Building, Room 103	03/24/2023	10:00 AM
Question Cut Off Date (Refer to Bid Section # 2 for more information.)	03/28/2023	4:00 PM
Addendum Date (Refer to Bid Section # 2 for more information.)	03/31/2023	11:00 AM
Bid Submission Due Date (Refer to Bid Section # 3 for more information.)	04/11/2023	2:00 PM

Dates are subject to change. All times contained in the Bid refer to Eastern Time.
 All changes will be reflected in Addendum to the Bid posted on the College's website.

Bid Issued By:

The College of New Jersey
 Office of Finance & Business Services
 Purchasing Department
 Administrative Services Building, Room 201
 2000 Pennington Road
 Ewing, NJ 08628
 Phone: (609) 771-2894
<https://bids.tcnj.edu/home/construction-projects/>
 Assigned Purchasing Contact: Lauren Manning
 E-mail: manningl@tcnj.edu

Date Issued: 3/16/2023
 Fiscal Year: 2023

Required Procurement Documents & Bidder's Checklist

This bid proposal MUST be received by The College of New Jersey, Purchasing Department before or at 2:00 p.m. on Tuesday, April 11, 2023 at which time responses will be publicly opened and read. Any proposal arriving at the Purchasing Department after the submission due date and time will not be accepted.

The following Bidder's Checklist is provided as an aid to the bidder. It does not in any way relieve the bidder of its responsibility to ensure that its bid proposal is complete. It is the bidder's responsibility to ensure documents are submitted and that all requirements of the bid solicitation have been met.

Procurement Documentation & Bidder's Checklist		
FORMS, REGISTRATIONS, AND CERTIFICATIONS THAT MUST BE SUBMITTED BY THE BIDDER AT THE TIME OF SUBMISSION. FAILURE TO INCLUDE THE BELOW REQUESTED DOCUMENTATION MAY RESULT IN REJECTION OF BIDDER'S SUBMISSION.		
Required		Vendor's Initials next to each item submitted with proposal
X	Bidder Information	
X	General Agreement including Acknowledgement of Receipt of Addendum (if any issued)	
X	Cost Sheet	
X	Subcontractor Information Page	
X	Small Business, Minority and/or Female-owned Business Reporting	
X	Acknowledgement of Mandatory Equal Employment Opportunity Language for Construction Contracts (NJAC 17:27-1.1 et seq. - P.L. 1975 C.127)	
X	Completed Statement of Ownership Disclosure (N.J.S.A. 52:25-24.2)	
X	Completed Non-Collusion Affidavit	
X	Completed Disclosure of Investment Activities in Iran (N.J.S.A. 52:32-58)	
X	Completed Certification of Non-Involvement in Prohibited Activities in Russia (P.L.2022, c.3)	
X	Completed Vendor Qualification Sheet	
X	Enclosed Certified Check or Bid Bond for ten percent (10%) of the amount of the bid	
X	Copy of Public Works Contractor Registration Certificate for the bidder and disclosed subcontractors (A completed copy of your Certification is not required at time of bid; however, the certificate must be valid at the time of bid.)	
X	Copy of Electrical, Plumbing, and HVACR Licenses and any other licenses, certifications, and qualifications.	
X	Copy of DPMC Notice of Classification and Total Amount of Uncompleted Contracts	
	Copy of latest Experience Modification Rating (EMR Safety Rating). The College requires an average rating over the last 5 years of 1.25 or less.	
FORMS, REGISTRATIONS, AND CERTIFICATIONS THAT MUST BE SUBMITTED BY THE BIDDER PRIOR TO AWARD.		
X	Completed Two-year Chapter 51/Executive Order 117 Vendor Certification and Disclosure of Political Contributions	
X	Proof of Affirmative Action Compliance (Initial Project Workforce Report, AA-201)	
X	New Jersey Business Registration Certificate (N.J.S.A. 52:32-44)	
X	Taxpayer Identification Request (W-9 Form)	
X	Certificate of Insurance	

THE COLLEGE OF NEW JERSEY
Construction Bid Proposal Form

Office of Finance & Business Services
Administrative Services Building, Rm. 201
2000 Pennington Road
Ewing, New Jersey 08628-0718

Bid Number: AB230019
Bid Due Date: April 11, 2023

Project Name: Roscoe West Hall '68 Student Services Renovation

BIDDER INFORMATION

Firm Name:	Telephone Number:
Contact Person:	Fax Number:
Address:	Email Address:
	Federal I.D. Number:

SOLICITATION OF CONSTRUCTION BIDS

1. BID PROPOSALS ARE SOLICITED AS FOLLOWS:

- A. Single Bid (Lump Sum) which combines all trades.
 - 1. The total number and types of trades are set forth in the Specifications.
 - 2. Bidder enters the Bid Price on the line provided on the Cost Sheet.
 - 3. Pursuant to the requirements of N.J.S.A. 18A:64-76.1., bidder lists the names of the subcontractors on the Subcontractor Information page.

2. THE SCOPE OF WORK INCLUDES:

- A. The scope of work consists of a tenant fit-out of rooms 203 and 205 on the second floor of Roscoe West Hall. These spaces are currently unfinished and unoccupied. This refurbished suite will be dedicated to tutoring services and provide students with more resources and flexible space for independent study and group collaboration. See Specifications and Drawings for Details (included in Bid package).
- B. The College may issue Addenda or Clarifications which may include additions to or deletions from the scope of work; changes to the Specifications, Drawings, and proposal form; and clarifications of requirements. Bidder is advised to review all Addenda and/or clarifications carefully, and shall note the receipt of same with their bid package.

GENERAL INSTRUCTIONS AND REQUIREMENTS

1. PRICES

- A. Bidder submits prices for the Base Bid and any Alternate Proposals and Unit Prices which are listed for the contract of the bid. If there is no cost associated with the Alternate or Unit Price, bidder is required to enter “0.00” or “no change”.
 - 1. Prevailing wage rates apply (Mercer County).
 - 2. Bid is to remain good for sixty (60) days after the Bid Due Date.

2. QUESTIONS

- A. Direct inquiries and correspondence relating to this proposal form and questions regarding the technical specifications and requests for clarification must be submitted in writing via **email to manningl@tcnj.edu** and must be received **prior to 4:00 p.m. on March 28, 2023**.
- B. Should any questions be received, a notice will be placed in the newspaper and the addendum or clarification will be available on **March 31, 2023 on the College’s website at <https://bids.tcnj.edu/>**. **If an addendum and/or clarification is posted, it SHOULD be noted in the General Agreement section of the bidder’s proposal. Failure to do so may subject Bidder to disqualification.**

3. HOW TO SUBMIT THE COMPLETED CONSTRUCTION BID PROPOSAL FORM

- A. Bidder places all pages of the completed form and the requisite additional documents in an envelope, seals the envelope, and labels it with his/her firm name, address, and “Sealed Bid Enclosed for (**Bid Number and Project Name**)”.
- B. Bidder mails or deliver by hand the sealed bid, no later than **2:00 p.m., April 11, 2023**, to The College of New Jersey, Attention: Lauren Manning for (specify the Bid Number), Office of Finance & Business Services, Room 201, 2000 Pennington Road, Ewing, New Jersey 08628-0718. **At 2:00 p.m., all bids will be publicly opened and read in Room 203 of the Administrative Services Building.**
- C. Contractors are advised that the U.S. Postal Service and all express mail companies deliver to The College’s Mail Room or Receiving Department, not directly to the Office of Budget & Finance. The College is not responsible for lost or misdirected bids.

4. BOND REQUIREMENTS AND SURETY STANDARDS

- A. Bidder must submit with its bid a Certified Check in the amount of ten percent (10%) of the total bid, or a Bid Bond in the amount of ten percent (10%) of the total bid.
- B. The successful bidder must submit a Performance and Payment Bond equal to 100% of the contract. A completed Surety Disclosure Statement and Certification must accompany the Performance and Payment Bond.
 - 1. The Performance and Payment Bond form and a sample Surety Disclosure Statement and Certification form are included at the end of this Construction Bid Proposal Form.
- C. All bid deposits shall be returned within three (3) days, Sunday and holidays excepted, after the awarding of the contract and the approval of the successful bidder’s performance bond, if any, the bid guaranty of the remaining bidders shall be returned to them.
- D. Should the successful bidder fail to enter into said contract after acceptance of bid by the College, then the check or security deposited by that bidder shall, at the option of the College, be retained as liquidated damages, or if Bid Bond has been supplied, principal and surety shall be liable to the amount of the Bid Bond.
- E. Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified copy of their Power of Attorney to sign said bonds.
- F. Contractor shall provide a Maintenance Bond at job completion for a period of one year for 100% of the final contract price.

5. LICENSES, CERTIFICATIONS, REGISTRATIONS, QUALIFICATIONS

- A.** The bidder or, as applicable, its subcontractors shall at the time of bid have those required licenses, certifications, registrations, qualifications and the like (“LCRQ”) listed below and shall present satisfactory evidence thereof upon request of the College prior to the notice of intent to award.
 - 1. The electrical contractor or subcontractor as applicable shall have a valid electrical license. (An electrical license is not required when the work is below 110Volt)
 - 2. The plumbing contractor or subcontractor as applicable shall have a valid plumbing license.
 - 3. The HVACR contractor or subcontractor as applicable shall have a valid HVACR license.
- B.** The selected bidder/contractor or, as applicable, its subcontractors shall have and shall present satisfactory evidence of all other required LCRQ noted in the Specifications after execution of contract during the submittal process and prior to the start of the applicable work, unless otherwise requested by the College or a date or event specified for that LCRQ in the Specifications.
- C.** Bidders are required to be registered with the New Jersey Department of Property Management and Construction (DPMC) and possess a C008 or C009 classification at the time of bid submission.

6. SUBCONTRACTORS

- A.** Pursuant to New Jersey State Law (N.J.S.A. 18A-76.1), a Single Bid (Lump Sum) bidder discloses its subcontractors to whom the bidder intends to subcontract the work. The Subcontractor Information sheet is provided for this purpose.

7. CERTIFICATE OF INSURANCE

- A.** The bidder is required to submit proof of liability insurance in accordance with The College’s contract.

8. ACCEPTANCE/REJECTION OF BIDS

- A.** THE COLLEGE OF NEW JERSEY, pursuant to State College Contract Law, Contracts shall be awarded to the lowest responsible bidder whose bid, conforming to the invitation for bids, will be the most advantageous to the State college.
- B.** The bid is irrevocable by the bidder or the bidder's representatives. The bid, and any award made to the bidder by the College, shall bind the bidder and the bidder's heirs, executors, administrators, successors or assigns.
- C.** Award of contract shall be made to the lowest responsible bidder, whose bid, conforming to the invitation for bids, is the most advantageous to the College.
- D.** The award of the contract or the rejection of the bids shall be made within sixty (60) days of the date of receiving bids, unless written extensions are requested by the College and accepted by the bidder(s). All bid securities shall be returned immediately if all bids are rejected. The successful bidder(s) to whom the award is to be made will be notified by receipt of a written "Intent to Award" from the College.
- E.** When award of contract is made in one fiscal year with effective date in the next fiscal year, award shall be contingent upon the availability and appropriation of sufficient funds for that purpose for the year in which said contract takes effect. When a contract shall be awarded for a period in excess of one year, said contract shall be contingent upon the annual availability and appropriation of sufficient funds for that purpose for each year of the contract term.

9. WITHDRAWAL OF BIDS

- A.** A written request for the withdrawal of a bid, or any part thereof, will be granted if the request is received by the College prior to the specified time of the bid opening.
- B.** Should the bidder refuse to perform the work for the price provided, they will forfeit their bid security and will be held liable for the difference between their low bid and the next highest/responsive bidder.

10. BID COMPLIANCE

- A.** Any bid not prepared and submitted in accordance with the provisions described herein may be rejected by the College. Any bid received after the time and date specified will not be considered. No bidder shall withdraw a bid within sixty (60) days after the date of the bid opening. Contracts shall be awarded to the lowest responsible bidder whose bid, conforming to the invitation for bids, will be the most advantageous to the State college

- B. Any bidder who has defaulted on any contract with the College or any other State Agency may be considered as not responsible and their bid may be rejected. THE COLLEGE OF NEW JERSEY reserves the right to exercise this option, as the College deems proper and/or necessary in accordance with applicable law.
- C. Bids shall include all costs of any nature necessary to complete the project in the manner and within the time required by the contract.
- D. The College reserves the right to require bidders to provide a schedule of values of their lump sum bid price upon request.
- E. The College is exempt from all taxes including Federal Excise Tax, Transportation Taxes, State Excise, Sales Tax and local taxes. Rentals of equipment for 28 days or less is not exempt from any tax under the State sales tax act.
- F. Before submitting a bid, the bidder shall be familiar with the Drawings, Specifications, and other Documents that will form part of the contract and shall have visited the site of the project to confirm for themselves the character and amount of work involved.
- G. No bidder shall be allowed to offer more than one price on each item even though he/she may feel that he/she has two or more types or styles that will meet specifications. Bidders must determine for themselves which to offer. This may be cause for automatic rejection of bid.
- H. It is understood and agreed that all prices quoted are firm and not subject to any increase during the life of the contract.
- I. Should any difference arise between the contracting parties as to the meaning or intent of these instructions or specifications, the College's decision shall be final and conclusive.
- J. Should the bidder discover discrepancies in this Request for Bids, the matter shall be at once brought to the attention of the College, and the discrepancies corrected by written agreement before submission of bid. The correction will be issued by addendum.

11. OSHA COMPLIANCE:

- A. The Contractor shall guarantee that all materials, supplies and equipment to be provided under his contract shall meet all applicable requirements, Specifications and standards of the Federal Occupational Safety and Health Act (OSHA) of 1970 as amended to date of acceptance by the College, and shall also apply to Contractors Construction procedures.

12. EXAMINATION OF SITE, DRAWINGS AND SPECIFICATIONS

- A. Each Bidder shall visit the site of the proposed work and fully acquaint themselves with the conditions as they exist so that they may fully understand the facilities, difficulties, and restrictions attending the execution of the work under this Contract.
- B. Bidders shall also thoroughly examine and be familiar with the Drawings and Specifications. The failure to receive or examine any form, instrument or document, or to visit the site and acquaint himself with conditions there existing shall in no way relieve any bidder from obligation with respect to his bid. By submitting a bid, the bidder agrees and warrants that he has examined the site, the Drawings and Specifications and, that the Specifications and Drawings are adequate and the required result can be produced under the Drawings and Specifications. No claim for any extra will be allowed because of alleged impossibilities in the productions of the results specified or because of unintentional errors or conflicts in the Drawings and Specifications. No change orders will be issued for items, materials or issues that existed on or with respect to the site prior to bidding.

13. DRAWINGS AND SPECIFICATIONS

- A. The project shall be performed in accordance with the requirements of the Drawings and Specifications, subject to modification as provided in General Conditions. The Drawings and Specifications are intended to complement and supplement each other.
- B. Any work required by either of them and not by the other shall be performed as if denoted in both. Should any work be required which is not also denoted in the Specifications or on the Drawings because of an obvious omission, but which is, nevertheless, necessary for the proper performance of the project, such work shall be performed as fully as if it were described and delineated.

14. FORM OF AGREEMENT

- A. Every successful bidder shall be required to sign the standard form contract, a copy of which is attached. Any proposed language or form changes which in any way modifies the contractor's responsibilities as set forth in the Contract Documents will not be acceptable and will be deemed to constitute a bid exception.

15. MULTIPLE BIDS NOT ALLOWED:

- A. No bidder is allowed to submit more than one bid from an individual, firm, partnership, corporation or association under the same or different name. This will be cause for automatic rejection of each bid.

16. SUBSTITUTIONS:

- A. The bidder may include in their bid substitute materials or equipment or methods in lieu of those specified in the contract documents, but they do so at their own risk. Any substitution must be equivalent in type, function and quality to the item required in the contract. The successful bidder must submit all information required within 20 days of contract award to determine if the proposed substitute is equal to the contract requirements, and any substitution must be approved by the architect and the College.
- B. The College shall have complete discretion to decide whether it will accept any substitution. No substitution shall result in any increase in the contract price or times. The successful bidder in its application for the substitution must certify in writing that the substitution is equal to what is specified in the contract documents in all material respects and will not increase the time or price of the contract work.
- C. Should the substitution be rejected, the contractor will then be required to provide the specified product, material or method at no additional cost to the College and no change in the project schedule.

17. APPLICABLE LAWS: The following list of statutes and regulations, which may be applicable in whole or in part, is provided for the benefit of the Contractor and is not meant to be all-inclusive. In the event that other laws are applicable, it shall be the responsibility and obligation of the Contractor to ascertain and comply with them.

- A. **EXECUTIVE ORDER #34 – MINORITY AND WOMEN BUSINESS ENTERPRISES:** On September 15, 2006, Governor Corzine signed Executive Order 34 establishing a Division of Minority and Women Business Development. The Division is charged with administering and monitoring policies, practices, and programs to ensure that minority and women business enterprises (MWBE) are afforded an equal opportunity to participate in New Jersey's purchasing and procurement processes. State entities are required to report to the Division the ethnic and gender composition of the vendors with which those state entities do business.
- B. **STATEMENT OF OWNERSHIP DISCLOSURE:** Pursuant to N.J.S.A. 52:25-24.2, in the event the Bidder is a corporation, partnership or limited liability company, the Bidder must disclose their ownership. Bidder completes and submits the form along with bid proposal.
- C. **NON-COLLUSION AFFIDAVIT:** Bidder completes and submits the form along with bid proposal.
- D. **SET ASIDE PROGRAM FOR SMALL BUSINESS ENTERPRISE (SBE) – CONSTRUCTION:** In accordance to N.J.A.C., 17:14-1.2 et seq. and Executive Order 71, signed by Governor James E. McGreevey in 2003, the College requires bidders to make a good faith effort to provide opportunities for Small Business Enterprises (SBE) to participate in the performance of this contract as subcontractors consistent with the overall goals established for construction services by the New Jersey Commerce and Economic Growth Commission (NJ Commerce). SBE subcontracting goals are not applicable if the bidder is currently registered with NJ Commerce as an SBE firm.
- E. **PREVAILING WAGE (N.J.S.A. 34:11-56.25 et seq.) AND PUBLIC WORKS CONTRACTOR REGISTRATION ACTS (N.J.S.A. 34:11-56.48 et seq.):**
 - 1. The work described in this project is subject to the New Jersey Prevailing Wage Act, N.J.S.A. 34:11-56.25 et seq. and the Public Works Contractor Registration Act, N.J.S.A. 34:11-56.48 et seq.
 - 2. The Public Works Contractor Registration Act requires the bidder and any subcontractors listed in the bid to be registered with the New Jersey Department of Labor and Workforce

Development at the time the bid is submitted. The contractor must submit registration certificates for all listed subcontractors prior to award of the contract.

3. The Contractor must comply with the New Jersey Prevailing Wage Act, N.J.S.A. 34:11-56.25 through 56.47. Workers employed by the Contractor or any subcontractor or sub-subcontractor in the performance of services directly on the project must be paid prevailing wages. As required by N.J.S.A. 34:11-56.27 and 56.28, this contract cannot become effective until the College obtains from the New Jersey Department of Labor and Workforce Development a determination of the prevailing wage rates applicable to the project as of the contract award date and attaches a copy to the contract. As required by N.J.S.A. 34:11-56.27, the Contractor or any subcontractor may be terminated if any covered worker is not paid prevailing wages on the project, and the Contractor and its surety shall be liable for any additional costs which result. The Contractor and its subcontractors must be registered with the New Jersey Department of Labor and Workforce Development (N.J.S.A. 34:11-56.51 et seq.), and the prevailing wage rates must be posted at the job site (N.J.S.A. 34:11-56.32). The Contractor and its subcontractors must prepare accurate certified records of wages paid for each worker on the project (N.J.S.A. 34:11-56.29), and copies for the period covered by each invoice must be attached to the invoice submitted under the contract. In accordance with N.J.S.A. 34:11-56.33, the Contractor's final invoice must include a statement of all amounts still then due to workers on the project. The Contractor is also cautioned that it must use job titles and worker classifications consistent with those approved by the Department of Labor and Workforce development, and that, if it intends to pay apprentice rates, it must comply with the Department of Labor and Workforce Development regulations at N.J.A.C. 12:60,
4. Please refer to http://lwd.dol.state.nj.us/labor/wagehour/wagerate/wage_rates.html for official wage rate determinations for Mercer County, NJ.

F. NEW JERSEY EQUAL PAY ACT:

1. On April 24, 2018, Governor Phil Murphy signed into law New Jersey's Diane B. Allen Equal Pay Act (P.L. 2018, c. 9) The law provides in pertinent part that as of July 1, 2018, any employer entering into a contract with the State of New Jersey or an instrumentality of the State for "qualifying services" or "public works" must provide to the Department of Labor and Workforce Development – upon commencement of the contract – wage and demographic data for all employees who are employed in connection with the contract (for public works) and for all employees (for qualifying services). This requirement DOES NOT apply to employers who are contracting with local governments (for example: municipalities and counties). The report must contain the gender, race, ethnicity, job category, compensation, and number of hours worked by each employee.
2. The extent of the Department of Labor and Workforce Development's responsibilities under the Equal Pay Act is the collection of data regarding compensation, hours worked, job/occupational category, job title, gender, race, and ethnicity for State contractors and making that data available to the Division on Civil Rights (DCR), within the Department of Law and Public Safety, and upon request to certain individuals. Complaints of unlawful discrimination under the Equal Pay Act should be directed to the DCR, as should any questions regarding the filing of such a complaint.
3. The Department of Labor and Workforce Development has issued two forms, as required by the law, to be completed by employers. The forms should be used to report the employee's wage and demographic data and can be found on the LWD website (<http://www.nj.gov/labor/equalpayact>). **A completed copy of the forms is not required at time of bid; however, it will be required of the bidder who receives the notice to proceed from the College. Completed forms should be emailed to: equalpayact@dol.nj.gov**

- #### **G. Two-year Chapter 51/Executive Order 117 Vendor Certification and Disclosure of Political Contributions:**
- In order for your proposal to be accepted and deemed valid, your company/firm will be required to comply with the requirements of N.J.S.A. 19:44A-1 et seq/P.L. 2005 Ch. 51 ("Chapter 51") and Executive Order 117. Enclosed are the requirements of Chapter 51 and Executive Order 117, the forms for Certification and Disclosure. The contract that will be generated based on this bid proposal cannot be awarded without approval of the Certification and Disclosure forms by the State of New Jersey, Department of Treasury. **A completed copy of your Certification form is not required**

at time of bid; however, it will be required from the bidder who receives the notice of intent to award from the College prior to the execution of the contract.

- H. N.J.S.A. 10:5-31 et seq. and N.J.A.C. 17:27-1 et seq., AFFIRMATIVE ACTION:** The bidder is required to complete and submit a copy of Initial Project Workforce Report (AA-201) to the College and the Division of Public Contracts Equal Employment Opportunity Compliance verifying that the bidder is operating under a federally approved or sanctioned Affirmative Action program. The bidder also agrees to submit a copy of the Monthly Project Workforce Report once a month thereafter for the duration of this contract to The College and the Division.
- I. New Jersey Business Registration Certificate, N.J.S.A. 52:32-44:**
1. Pursuant to - N.J.S.A. 52:32-44, The College of New Jersey (“Contracting Agency”) 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 has a valid Business Registration Certificate on file with the Division of Revenue and Enterprise Services within the Department of the Treasury.
 2. 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).
 3. 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 other contracting document is awarded or authorized.
 4. During the course of contract performance:
 - (a) the contractor shall not enter into a contract with a subcontractor unless the subcontractor first provides the contractor with a valid proof of business registration.
 - (b) 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.
 - (c) 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 et seq.) 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 <http://www.state.nj.us/treasury/revenue/busregcert.shtml>.
 5. 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.
 6. Pursuant to N.J.S.A. 54:49-4.1, a business organization that fails to provide a copy of a 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.
- J. RECORD RETENTION:** Pursuant to N.J.A.C. 17:44-2.2, the vendor shall maintain all documentation related to products, transactions or services under this contract for a period of five years from the date of final payment. Such records shall be made available to the New Jersey Office of the State Comptroller upon request.
- K. ENERGY STAR ENERGY EFFICIENT PRODUCTS:** Under Executive Order #11 (Corzine), the College is required to select ENERGY STAR energy-efficient products when acquiring new energy-using products or replacing existing equipment. For products that do not have ENERGY STAR labels, vendors shall follow guidelines established by the New Jersey Clean Energy Program.
- L.** The following list of statutes and regulations, which may be applicable in whole or in part, is provided for the benefit of the Contractor and is not meant to be all-inclusive. In the event that other laws are applicable, it shall be the responsibility and obligation of the Contractor to ascertain and comply with them.
1. Federal Statutes:
 - Immigration Control and Reform Act (1986) – 8 U.S.C.A. Section 1324(a) *et seq.*
 - Civil Rights Act of 1964 – 42 U.S.C.A. Section 1971 *et seq.*
 - The Americans with Disabilities Act of 1990

GENERAL AGREEMENT

1. Having examined the plans and specifications with related documents and the site of the proposed work and being familiar with all of the conditions surrounding the construction of the proposed project including the availability of materials and labor, the undersigned hereby proposes to furnish all labor, materials, and supplies, and to construct the project in accordance with the Contract Documents, within the time set forth therein, and at the price stated. This price covers all expenses incurred in performing the work required under the Contract Documents, of which this proposal is a part.

2. Bidder acknowledges receipt of the following Addendums/Clarifications:

Addendum Number _____ Date _____ Addendum Number _____ Date _____
Addendum Number _____ Date _____ Addendum Number _____ Date _____
Addendum Number _____ Date _____ Addendum Number _____ Date _____

3. Bidder acknowledges and affirms that he/she has personal knowledge of or has obtained and reviewed a copy of the valid prevailing wage rates at the time of the bid and for the duration of the contract for all trades involved in the project for the geographical location of the project as issued by the Commissioner of the Department of Labor & Workforce Development, Trenton, NJ 08625 (609) 292-2259 or visiting the Department of Labor website at (http://lwd.dol.state.nj.us/labor/wagehour/wagerate/wage_rates.html).

4. Bidder agrees that its price is good and the bid shall not be withdrawn for a period of 60 calendar days after the scheduled Bid Due Date and Time.

5. The attached bid security is to become the Property of the Owner in the event that the Contract and bond are not executed within the time set forth, as liquidated damages for the delay and additional expense (including the difference between the price provided with said bond and the next lowest responsive bidder) to the Owner caused thereby.

6. Upon conclusion of the 5-business day protest period, Bidder will execute the formal contract for the stated work and compensation on the Standard Form of Agreement Between Owner and Contractor within 5 business days and deliver as required in the General Conditions: a Performance and Payment Bond; Surety Disclosure and Certification Statement; and certificates of insurance for general liability, automobile and worker's compensation. Contractor shall provide a Maintenance Bond at job completion for a period of one year for 100% of the final contract price.

7. Bidder acknowledges work to commence on site not later than ten (10) calendar days after receipt of a Notice to Proceed.

(Seal if bid is by Corporation)

Respectfully submitted,

(Signature of Principal)

(Printed Name of Principal)

(Title of Principal)

**COST SHEET
SINGLE BID (LUMP SUM):
BASE BID, ALTERNATE PROPOSALS, AND UNIT PRICES**

To: **The College of New Jersey**

for: Construction of Roscoe West Hall '68 Student Services Renovation

Date _____

A. BID:

1. **Base:** We, _____, the Undersigned, in accordance with the published advertisement inviting proposals, will furnish all labor, material, equipment and services necessary for the complete construction, as defined in the advertisement, specimen contract, specifications, addendums/clarifications/bulletins, drawings, and proposal, for the Contract amount indicated below for the **above noted project** in strict accordance with the Contract Documents and Addenda thereto for the total sum of:

_____ Dollars \$ _____
(words)

General Construction (Single overall Prime Contract)

2. **Add /Deduct Alternate: None**

3. **Check List for Bidders:** A check list has been provided in these specifications for the use in completing this proposal. Bidders are encouraged to reference said list to minimize the opportunity for errors by the bidder.

B. STATEMENT:

We, the Undersigned, acting through its authorized officers and intending to be legally bound, agree that this bid proposal shall constitute an offer by the Undersigned to enter into a Contract with the acts and things therein provided and accept this offer at any time during said period by notifying the Undersigned of the acceptance of said offer.

Dated _____

Firm Name _____

Phone Number _____

Address _____

**If a corporation, give the State of Incorporation, using the phrase:

"A corporation organized under the laws of _____."

If a partnership, give names of the partners, using also the phrase:

"Co-partners trading and doing business under the firm name and style of _____."

_____."

If an individual using a trade name, give individual name, also using the phrase:

"An individual doing business under the firm name and style of _____."

Dated: _____

STATE OF _____

SS.

COUNTY OF _____

_____ being duly sworn say that the several matters stated in this proposal are in all respects true, and that no member of the State or employee of the College are interested in any way in this proposal.

Sworn and subscribed before me _____

Bidder signs above line

this _____ day of _____ 20____

Print Name

and

Title

SUBCONTRACTOR INFORMATION FOR SINGLE BID (LUMP SUM)

Pursuant to the State Colleges Contract Law, N.J.S.A. 18A:64-76.1, all bids submitted shall set forth the names and license numbers of all subcontractors to whom the bidder intends to subcontract the plumbing and gas fitting work; the refrigeration, the heating and ventilating systems and equipment; the electrical work, including any electrical power plants; tele-data, fire alarm, or security systems; the structural steel and ornamental iron work (individually, the “Trade” or collectively, the “Trades”).

For each Trade listed below for which the work will be completed by a subcontractor you must list for each such subcontractor at a minimum the name and, where applicable, license number (or in lieu thereof enclose a copy of the license with this form) and preferably you will also list the subcontractor’s address, telephone number, and fax number. If the work will be self-performed by the bidder, you may indicate that by inserting the name of the bidder (next to “Name”). If work by that Trade is not required per the scope of work of the project, you may indicate that by inserting “Not required” (next to “Name”). If the name of a subcontractor is not provided on this form for any one or more of the Trades, the bidder, in submitting its bid, certifies that, for such Trades, either the work will be self-performed by the bidder, or the work is not required per the scope of work.

Failure to complete this form as required may result in your bid being disqualified.

Plumbing and Gas Fitting Work

List information for Subcontractor, if any:

Name: _____
License Number: _____
Address: _____

Telephone: _____
Fax: _____

Refrigeration, Heating and Ventilating Systems and Equipment

List information for Subcontractor, if any:

Name: _____
License Number: _____
Address: _____

Telephone: _____
Fax: _____

Electrical Work, including any Electrical Power Plants, Tele-data, Fire Alarm, or Security Systems

List information for Subcontractor, if any:

Name: _____
License Number: _____
Address: _____

Telephone: _____
Fax: _____

Structural Steel Work and Ornamental Iron Work

List information for Subcontractor, if any:

Name: _____
License Number: _____
Address: _____

Telephone: _____
Fax: _____

Bidder Name

By: _____
Signature

Printed Name of Signing Individual

Date

DEMOGRAPHIC INFORMATION

Under Executive Order 34, the College is responsible for soliciting demographic information from its vendors. The College is required to seek the following information from each firm under contract with the College:

1. Is more than fifty percent (50%) of your company minority owned? (circle one) YES NO
(African-American, Hispanic, Asian, and/or Native American)

2. Is more than fifty percent (50%) of your company woman owned? (circle one) YES NO

3. What is the ethnicity of the owner of your company: (check applicable according to 51% ownership)
 - Asian American
 - Multiple Ethnicities
 - Non-Minority
 - Hispanic American
 - African American
 - Caucasian American Female
 - Native American
 - Unspecified

The College is required to solicit the foregoing information. Your response, however, is **strictly voluntary**. Please be advised that any contracting decisions made by the College will **not** be influenced in any way by your decision to provide the above information.

Bidder Name

By: _____
Signature

Printed Name of Signing Individual

Date

SMALL BUSINESS, MINORITY AND/OR WOMEN, VETERAN AND DISABLED VETERAN OWNED BUSINESS REPORTING

1. Contractor and sub-contractors are requested to check all of the following that apply to their company and, if applicable, submit a copy of their certificate(s):

A. My company is certified by the NJ Department of Treasury, Division of Revenue and Enterprise Services as a:

- Small Business Enterprise, SBE
- Minority-owned Business Enterprise, MBE
- Women-owned Business Enterprise, WBE
- Veteran-owned Business, VOB
- Disabled Veteran-owned Business, DVOB

B. My company is not certified by either NJ Department, but is:

- Small Business, SBE
- Minority-owned Business, MBE
- Women-owned Business, WBE
- Veteran-owned Business, VOB
- Disabled Veteran-owned Business, DVOB

C. My company is not certified as one of the categories listed above.

Bidder Name

By: _____
Signature

Printed Name of Signing Individual

Date



PERFORMANCE BOND & PAYMENT BOND

BOND NO. _____

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned _____ as Principal, and _____, a corporation of the State of _____, duly authorized to do business in the State of New Jersey, having an office at _____, are hereby held and firmly bound unto The College of New Jersey in the Penal Sum of _____ DOLLARS, for payment of which well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

SIGNED this _____ day of _____, 20_____

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH THAT, WHEREAS, the above named Principal did on the _____ day of _____, 20_____, enter into a written contract with The College of New Jersey for _____ which said contract is made a part of this bond as set forth herein;

NOW, if the said _____ shall well and faithfully do and perform the things agreed by _____ to be done and performed according to the terms of the said contract; shall pay all lawful claims of sub-contractors, materialmen, laborers, persons, forms of other suppliers or teams. fuel, oils, implements or machinery furnished, used or consumed in the carrying forward, performing, or completing of said contract, we agreeing and assenting that this undertaking shall be for the benefit of any subcontractor, materialman, laborer, person, firm or corporation having a just claim, as well as for the obligee herein; then this obligation shall be void, otherwise the same shall remain in full force and effect; it being 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 said surety hereby stipulated and agrees that no modifications, omissions, or additions in or to the terms of the said contract, or in or to the plans and specifications therefore shall in any wise effect the obligation of said surety on its bond.

This bond is given in compliance with the requirements of the statutes of the State of New Jersey including N.J.S.A. 18A:64-68 and any amendments thereof.

SIGNED, SEALED AND DELIVERED IN THE PRESENCE OF

Witness

BY: _____

Witness as to Surety

BY: _____
ATTORNEY-IN-FACT

Countersigned

this _____ day of _____, 20_____

BY: _____

NOTE: General Power of Attorney and the current financial statement of the bonding company must be attached to each copy (a total of three) of the Performance Bond.

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 the State of New Jersey, of the surety(ies) participating in the issuance of the attached bond is (are) in the following amount(s) as of the calendar year ending December 31, ____, (insert 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 accountants that shall have certified those amounts):

- (3) (a) With respect to each surety participating in the issuance of the attached bond that has received from the United States Secretary of the Treasury a 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 surety that surety’s underwriting limitation and the effective date thereof):

- (b) With respect to 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, by virtue of 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 set forth 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 re-insurer under that contract and the amount of that re-insurer’s participation in the contract is as follows:

- (b) Each surety that is 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 certification is attached shall have been filed with the appropriate public agency.

CERTIFICATION

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

I, _____ (name of agent), as _____ (title of agent)

for _____ (name of surety),

a corporation/mutual insurance company/other (indicate type of business organization by circling one) domiciled in _____ (state of domicile), DO HEREBY CERTIFY that, to the 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 and I am subject to punishment.

(Signature of certifying agent)

(Printed name of certifying agent)

(Title of certifying agent)

(Date of Certification)

**SECTION 000101
PROJECT TITLE PAGE**

**PROJECT MANUAL - VOLUME I
FOR
THE COLLEGE OF NEW JERSEY
ROSCOE HALL STUDENT SERVICES RENOVATION**



**ARCHITECT'S PROJECT NUMBER: 22031600
2000 PENNINGTON ROAD, EWING, NJ 08618
DATE: 03-02-2023
ISSUED FOR: BID
PREPARED BY: NORR**

END OF SECTION

**SECTION 000110
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**SECTION 010100
SUMMARY OF WORK**

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1.01 RELATED DOCUMENTS

DRAWINGS AND GENERAL PROVISIONS OF THE SPECIFICATIONS, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND OTHER DIVISION 1 SPECIFICATION SECTIONS, APPLY TO THIS SECTION.

1.02 WORK COVERED BY CONTRACT DOCUMENTS

A. THE PROJECT CONSISTS OF ALL WORK NOTED ON THE DRAWINGS AND IN THESE SPECIFICATIONS. WORK INDICATED AS "PHASE 2" ON DRAWINGS SHOULD BE EXCLUDED FROM BID AT THIS TIME.

1. PROJECT LOCATION: THE COLLEGE OF NEW JERSEY, EWING NEW JERSEY

2. OWNER: THE COLLEGE OF NEW JERSEY, STATE OF NEW JERSEY

1.03 CONTRACTS

A. THE PROJECT CONTRACT IS BETWEEN THE COLLEGE OF NEW JERSEY AND THE SINGLE PRIME CONTRACTOR PERFORMING THE WORK SPECIFIED.

B. DEFINITION OF EXTENT OF CONTRACT WORK: THE CONTRACT DOCUMENTS, SPECIFICATIONS, PROJECT DRAWINGS, MANUFACTURER'S INSTALLATION HANDBOOKS, TCNJ FORM OF AGREEMENT, AND THE CONTRACTORS RESPONSE TO THE RFP REPRESENT THE EXTENT OF THE CONSTRUCTION CONTRACT.

1.04 CONTRACTORS USE OF PREMISES

A. GENERAL: DURING THE CONSTRUCTION PERIOD THE CONTRACTOR SHALL HAVE FULL USE OF THE PREMISES FOR CONSTRUCTION OPERATIONS, INCLUDING USE OF THE SITE. THE CONTRACTOR'S USE OF THE PREMISES IS LIMITED ONLY BY THE OWNER'S RIGHT TO PERFORM WORK, RETAIN OTHER CONTRACTORS ON PORTIONS OF ASSOCIATED PROJECTS, OR TO ACCESS THE BUILDING FOR THE OCCUPANTS.

1. CONTRACTOR IS TO COORDINATE THEIR WORK WITH THE ACTIVITIES FOR EACH WORK LOCATION.

B. USE OF THE SITE: LIMIT USE OF THE PREMISES TO AREAS REQUIRED FOR EQUIPMENT AND MATERIAL STORAGE AND ACCESS TO THE ROOF AREA. CONFINE OPERATIONS TO AREAS WITHIN CONTRACT LIMITS INDICATED. DO NOT DISTURB PORTIONS OF THE SITE BEYOND THE AREAS IMMEDIATELY ADJACENT TO THE BUILDING WHERE THE WORK IS BEING PERFORMED.

1. OWNER OCCUPANCY: ALLOW FOR OWNER OCCUPANCY AND USE BY THE PUBLIC.

2. DRIVEWAYS AND ENTRANCES: KEEP DRIVEWAYS AND ENTRANCES SERVING THE PREMISES CLEAR AND AVAILABLE TO THE OWNER, THE OWNER'S EMPLOYEES, AND EMERGENCY VEHICLES AT ALL TIMES. DO NOT USE THESE AREAS FOR PARKING OR STORAGE OF MATERIALS UNLESS PREVIOUSLY APPROVED BY THE OWNER. SCHEDULE DELIVERIES TO MINIMIZE SPACE AND TIME REQUIREMENTS OR STORAGE OF MATERIALS AND EQUIPMENT ON -SITE.

3. BURIAL OF WASTE MATERIALS: DISPOSAL OF ORGANIC AND HAZARDOUS MATERIALS ON-SITE EITHER BY BURIAL OR BURNING, WILL NOT BE PERMITTED.

4. PARKING IS ALLOWED WITH IN THE CONSTRUCTION FENCE ONLY. IF MORE PARKING IS NEEDED, THERE IS ADDITIONAL PARKING PROVIDED AT THE COLLEGES CARLTON AVENUE PARKING LOT. THE CONTRACTOR IS RESPONSIBLE TO SHUTTLE WORKERS BACK AND FORTH AS NEEDED.

C. USE OF THE EXISTING BUILDING: MAINTAIN ANY EXISTING BUILDING IN A WEATHERTIGHT CONDITION THROUGHOUT THE CONSTRUCTION PERIOD. REPAIR DAMAGE CAUSED BY CONSTRUCTION OPERATIONS. TAKE ALL PRECAUTIONS NECESSARY TO PROTECT THE BUILDING, ITS CONTENTS, COMPONENTS, AND SYSTEMS AND ITS OCCUPANTS DURING THE CONSTRUCTION PERIOD.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3- EXECUTION (NOT APPLICABLE)

END OF SECTION

**SECTION 010250
MEASUREMENT AND PAYMENT**

PART 1 - GENERAL

1.01 SCHEDULE OF VALUES

- A. Each Contractor shall prepare a schedule of values in coordination with the preparation of progress schedule. Correlate line items with other administrative schedules and forms required for the work, including progress schedule, payment request form, listing of subcontractors, schedule of allowances if any, schedule of alternates if any, listing of products and principal suppliers and fabricators, and schedule of submittals. Break down principal subcontract amounts into multiple line items for each entity of work. Round off to nearest whole dollar, but with total equal to Contract Sum. Submit 4 copies of schedule of values to the Owner and Architect for review and approval.
 - 1. Upon Owner/Architect approval, Owner will return the Schedule of Values to the Contractor for the Contractor to submit to the bonding company for their acceptance. Payments will not be made to the Contractor until the bonding company has provided a written acceptance to the Owner.
- B. The schedule of values shall be tabulated into subcontracts and trades with the Quantity, Labor, Material, and Total Cost indicated. The Schedule of Values shall include such items as bonds, insurance, allowances and alternates, punchlist/close out documents and shall enclose copies of invoices and/or cancelled checks from bonding and insurance agents.
- C. Schedule of values shall be submitted on AIA Form G703 or similar form approved by the Architect and Owner.
- D. Each Contractor's monthly application for payment shall be in the same schedule form, reflecting the same items from above. Unit costs shall be realistic for their part of the Work.

1.02 CHANGES IN THE WORK

- A. 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.
- B. 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.
- C. For all extra Work performed by the 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 not to exceed 15% of the net cost.
- D. 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 15% of the net cost, plus the Prime Contractor's overhead and profit not to exceed 5% of the Subcontractor's cost.
- E. 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.
 - 5. Insurance and Bonds.
- F. Gross costs shall be net costs plus the mark up allowances described above, such mark up allowances being inclusive, of all cost of superintendence, supervision, engineering, overhead, profit, administrative and site office expenses and all other general expenses.

1.03 APPLICATIONS FOR PAYMENT

- A. Except as otherwise indicated, sequence of progress payments for the Contractor shall be regular, and each shall be consistent with previous applications and payments. It is recognized that certain applications involve extra requirements, including initial applications, applications at times of substantial completion, and final payment applications.
- B. Payment Application Forms: Use AIA Document G702 and G703 Continuation Sheets; available from Publications Distribution Div., The American Institute of Architects, 1735 New York Ave., N.W., Washington, D.C. 20006 (also available at most local AIA chapter offices).
- C. Except as otherwise indicated, complete every entry provided on the form, including notarization and execution by authorized persons. Incomplete applications will be returned by Architect and Owner without action. Entries shall match current data of schedule of values, progress schedules and reports. Listing shall include amounts of fully executed change orders issued prior to first day of the period of construction covered by application. Applications for payment shall include weekly payroll report. Contractor shall furnish to the Owner certified payroll reports for each payroll period with pay request, indicating name craft, social security number and actual hourly rate of wages paid to each workman employed on the project. A certified payroll record is defined as "a payroll record which is attested to by the employer, or corporate officer of such company, or an authorized agent of the employer." A payment request will not be paid until the Owner receives the certified payrolls.
- D. Submit one "pencil" copy of each proposed payment application to the architect and owner, for review, not less than seven days prior to formal submissions of application.
- E. Submit 4 executed copies of each payment application. Transmit with a transmittal form listing attachments, and recording appropriate information related to application.
- F. Breakdown may include a line item for General Conditions. General Conditions shall include the cost of general supervision, trailers, temporary utilities and other general expenses directly related to the project and not considered overhead. The general conditions item shall be billed on monthly progress payments on a percentage of work completed.

1.04 INITIAL PAYMENT APPLICATION

- A. The principal administrative actions and submittals which shall precede or coincide with submittal of the Contractor's first payment application can be summarized as follows, but not necessarily by way of limitation.
 - 1. Listing of subcontractors and principal suppliers and fabricators.
 - 2. Schedule of values.
 - 3. Schedule of principal products.
 - 4. Schedule of submittals (preliminary if not final).
 - 5. Copies of acquired building permits and similar authorizations and licenses from governing authorities for current performance of the work.
 - 6. Data needed by Owner to secure related insurance coverages.
 - 7. Performance and Payment Bond.
 - 8. Insurance Certificates.

1.05 PROGRESS PAYMENTS

- A. Based upon application for payments submitted to the Architect and the Owner, by the Contractor, on or about the 25th day of each month for the period ending the last day of the previous second month, and Certificate of Payment issued by the Architect and the Owner, the Owner will make progress payments on account of the Contract Sum to the Contractor as follows:
 - 1. On or after the 20th day of each month, the Contractor shall submit to the Architect and Owner a "pencil copy" indicating the previous payment and the proposed amounts for each line item for the current period. After review and approval or changes, the Contractor shall prepare the final billing for presentation to the Architect and Owner.
 - 2. a. Whenever any contract, the total price of which exceeds \$100,000, entered into by a State college, for the construction, reconstruction, alteration or repair of any building, structure, facility or other improvement to real property, requires the withholding of

payment of a percentage of the amount of the contract, the contractor may agree to the withholding of payments in the manner prescribed in the contract, or may deposit with the State college registered book bonds, entry municipal bonds, State bonds or other appropriate bonds of the State of New Jersey, or negotiable bearer bonds or notes of any political subdivision of the State, the value of which is equal to the amount necessary to satisfy the amount that otherwise would be withheld pursuant to the terms of the contract. The nature and amount of the bonds or notes to be deposited shall be subject to approval by the State college. For purposes of this section, "value" shall mean par value or current market value, whichever is lower.

If the contractor agrees to the withholding of payments, the amount withheld shall be deposited, with a banking institution or savings and loan association insured by an agency of the Federal government, in an account bearing interest at the rate currently paid by such institutions or associations on time or savings deposits. The amount withheld, or the bonds or notes deposited, and any interest accruing on such bonds or notes, shall be returned to the contractor upon fulfillment of the terms of the contract relating to such withholding. Any interest accruing on cash payments withheld shall be credited to the State college.

b. Any contract, the total price of which exceeds \$100,000, entered into by a State college involving the construction, reconstruction, alteration, repair or maintenance of any building, structure, facility or other improvement to real property, shall provide for partial payments to be made at least once each month as the work progresses, unless the contractor shall agree to deposit bonds with the State college pursuant to section 1.

c. 1. With respect to any contract entered into by a State college pursuant to section 2 for which the contractor shall agree to the withholding of payments pursuant to section 1, 2% of the amount due on each partial payment shall be withheld by the State college pending completion of the contract.

2. Upon acceptance of the work performed pursuant to the contract for which the contractor has agreed to the withholding of payments pursuant to subsection a. of this section, all amounts being withheld by the State college shall be released and paid in full to the contractor within 45 days of the final acceptance date agreed upon by the contractor and the State college, without further withholding of any amounts for any purpose whatsoever, provided that the contract has been completed as indicated. If the State college requires maintenance security after acceptance of the work performed pursuant to the contract, such security shall be obtained in the form of a maintenance bond. The maintenance bond shall be no longer than two years and shall be no more than 100% of the project costs.

d. This act shall take effect immediately. This bill supplements the "State College Contracts Law," P.L.1986, c.43 (C.18A:64-52 et seq.), and applies to any State college contract for over \$100,000 which involves the construction, reconstruction, alteration or repair of any building, structure, facility or other improvement to real property. Under the provisions of this bill, whenever a contract of this type requires the withholding of payment of a percentage of the amount of the contract, the contractor would have the choice of either agreeing to a retainage deduction from each monthly progress payment, or the contractor could choose to deposit bonds in the amount necessary to satisfy the amount that otherwise would be withheld under the contract. If a contractor chooses a retainage deduction from each monthly payment, then the retainage would be limited to 2% of the amount due on each partial payment. Upon acceptance of the work performed pursuant to the contract for which the contractor has agreed to a retainage deduction, all amounts being withheld by the State college must be paid in full to the contractor within 45 days of the final acceptance date agreed upon by the contractor and the State college. The bill provides that if the State college requires maintenance security after acceptance of the work performed under the contract, the security must be obtained in the form of a maintenance bond, which is required to be no longer than two years and no more than 100% of the project costs. The provisions of this bill are similar to provisions in the "Local Public Contracts Law," P.L.1971, c.198 (C.40A:11-1 et seq.) and the "Public School Contracts Law," P.L.1977, c.114 (C.18A:18A-1 47 et seq.).

3. Upon substantial completion, the retainage shall, upon the Architect/Owner's approval, remain at 2% of the value of work completed. Final release of retained monies will occur only upon the total completion of all punch list and closeout documentation to the satisfaction of the Architect and Owner.
4. For each day's delay in the Contractor's submission of an application for payment acceptable to the Architect and Owner, the Owner may delay one day in making his progress payment.
5. Owner shall make payments within 30 days of receipt of said monthly pay requisition.

1.06 APPLICATION AT TIME OF SUBSTANTIAL COMPLETION

A. FOLLOWING ISSUANCE OF CERTIFICATE OF SUBSTANTIAL COMPLETION ON EACH CONTRACTOR'S WORK, AND ALSO IN PART AS APPLICABLE TO PRIOR CERTIFICATES ON PORTIONS OF COMPLETED WORK AS DESIGNATED, A "SPECIAL" PAYMENT APPLICATION MAY BE PREPARED AND SUBMITTED BY CONTRACTOR. THE PRINCIPAL ADMINISTRATIVE ACTIONS AND SUBMITTALS WHICH SHALL PRECEDE OR COINCIDE WITH SUCH SPECIAL APPLICATIONS CAN BE SUMMARIZED AS FOLLOWS, BUT NOT NECESSARILY BY WAY OF LIMITATION:

1. Occupancy permits and similar approvals or certifications by governing authorities and franchised services, assuring Owner's full access and use of completed work.
2. Warranties, guarantees, maintenance agreements and similar provisions of Contract Documents.
3. Test/adjust/balance records, maintenance instructions, meter readings, start up performance reports, and similar change over information germane to Owner's occupancy, use, operation and maintenance of completed work.
4. Final cleaning of the work.
5. Application for reduction (if any) of retainage, with consent of surety.
6. Advice to Owner on coordination of shifting insurance coverages, including proof of extended coverage as required.
7. Listing of Contractor's incomplete work, recognized as exceptions to certificate of substantial completion.

1.07 FINAL PAYMENT APPLICATION

- A. The administrative actions and submittals which shall precede or coincide with submittal of the Contractor's final payment application can be summarized as follows, but not necessarily by way of limitation.
1. Completion of project closeout requirements.
 2. Completion of items specified for completion beyond time of substantial completion, regardless of whether special payment application was previously made.
 3. Assurance, satisfactory to Owner and Owner, that unsettled claims will be settled and that work not actually completed and accepted will be completed without undue delay.
 4. Transmittal of required project construction records to Owner via the Owner.
 5. Proof, satisfactory to Owner and Owner, that taxes, fees and similar obligations of Contractor have been paid.
 6. Removal of temporary facilities, services, surplus materials, rubbish and similar elements.
 7. Notarized consent of surety for final payment.

1.08 WAIVER OF LIENS

- A. Each Contractor, for himself, and for all Subcontractors and material men, agrees that no mechanic's lien or other claim shall be filed or maintained by the Contractor or by any Subcontractor, materialmen, laborer or any other person whatsoever for, or on account of any work performed or materials furnished under this Contract. This agreement shall be an independent contract, and the Contractor shall execute and deliver a separate Waiver of Liens in form and substance satisfactory to the Architect and Owner contemporaneously with the execution of the Owner-Contractor Agreement and before any work is begun at the site.

- B. In every subcontract entered into by each Contractor after execution of this Contract or in connection herewith, the Contractor shall incorporate a provision, similar to the foregoing paragraph, to the effect that neither the Subcontractor nor any party acting through or under him shall file or maintain any mechanic's lien or other claim against the Architect or Owner in connection with the Work.

END OF SECTION

**SECTION 011000
PROJECT PROCEDURES**

PART 1 - GENERAL

1.01 SPECIAL REQUIREMENTS

- A. Schedule: Contractor shall provide a master schedule showing sequencing of work utilizing the CPM method. The Contractor shall supply a schedule with all subcontractor activities, relationships, and durations, utilizing the CPM method via SureTrak/Primavera, Version 3.0, or a Microsoft scheduling software to the Owner on a working version CDrom and coordinate their schedule with the Owner.
 - 1. The Contractor is required to update at the end of each month the CPM Schedule based on the percentage completed for each activity on the approved schedule (in concert with the submission of the percentage completed in the monthly proposed schedule of values).
 - 2. The contractor in their bid includes a cost of \$500.00 per month for this schedule submission, for the duration of construction (per the milestone schedule in the bidding documents). This only applies to projects in excess of 2 million dollars in base price price. The contractors schedule of values shall include this cost, and can only be billed for upon TCNJ's successful receipt of said schedule. Should any schedule not be received at the end of any month during construction, TCNJ will issue a deduct change order in the amount of \$500.00 to the contractor.
- B. Each Contractor shall take all necessary precautions to ensure the safety of all structural elements during all phases of all work. No materials, cranes, trucks or any other construction loads shall be placed on any part of the structure until the Contractor has determined the adequacy of that structure to carry the intended load without damage or overstress.
- C. Entrance into, or other use of the building will not be permitted except as may be necessary for the execution of the Work, and shall be subject to the restrictions and instructions of the Owner.
- D. Routes of ingress and egress to areas where work is being performed shall be subject to the restrictions and instructions of the Owner.
- E. Materials shall be moved through the Building using rubber tired vehicles which shall be properly controlled at all times to avoid damage to existing wall, floor or ceiling surfaces.
- F. Water damage cannot be tolerated and it is incumbent upon Contractors to take any steps necessary to keep the existing premises dry at all times.
- G. Any damage to the new building from heavy equipment, striking the Building or any other damage to any part of the premises shall be repaired at the expense of the Contractors.
- H. All welding and cutting shall be performed by qualified and certified welders. Certificates shall be on file with the Contractor prior to commencement of any welding.
- I. No work shall start before 8:30am.unless agreed to in advance with the College.

PART 2 - PRODUCTS

2.01 NOT APPLICABLE

PART 3 - EXECUTION

3.01 GENERAL

- A. Contractors shall perform the work on or about the premises in a careful manner with full consideration to fire protection as required by the National Fire Protection Association Standards, National Board of Fire Underwriters and State and Local Departments having jurisdiction. Fire resistant materials shall be used for temporary enclosures.
- B. Chemical extinguishers approved by the Owner shall be provided by the General Contractor during the progress of the work where and as required by the Owner, the State Fire Marshal and the National Board of Fire Underwriters.
- C. The Contractor shall maintain an active program of fire prevention to keep workmen fire conscious during the entire life of the Contract. Designate one member of the organization to execute and coordinate fire control measures of his own organization and that of all

subcontractors under his jurisdiction.

- D. All sub-contractors shall cooperate with the Contractor in carrying out the above program.
- E. Storage of flammable materials will not be permitted in the Building unless written permission is obtained from the Owner. Storage of all such materials shall be the Contractors' responsibility.
- F. On-site open burning of rubbish, garbage, trade waste, leaves or plant life is prohibited.
- G. Safety Program: The Contractor shall institute a safety program in accordance with OSHA and any local, state, or federal guidelines. The contractor shall name a safety officer to monitor this program and shall submit a safety report at job meetings.
 - Contractor is to maintain their company safety manual on site at all times, along with SDS for every material that is on site.
- H. Stockpiling: Stockpiling of materials on site will be allowed (but limited due to the limited space on this site). Such materials shall not impair or impede the functioning of the facility. Materials stored on site shall be secured to prevent loss from theft, damage, vandalism or fire. By stockpiling materials on site, the contractor assumes full responsibility for said materials, and shall protect them to the fullest extent possible. Specific locations for stockpiling materials shall be coordinated with the Architect, and Owner.
- I. Safety Barriers: The Contractor shall erect safety barriers to deter and prohibit unauthorized access to the construction site; such barriers may take the form of fences and shall be clearly marked with signage prohibiting unauthorized access. The Contractor shall be responsible for safety barriers within the building. The contractor shall be liable for damages to persons or property due to the construction process if adequate safety measures are not undertaken. The Owner and Architect shall review safety precautions for their adequacy but shall not be held liable for Contractors failure to maintain or provide adequate protection.
- J. Sequencing: The Contractor will work with the Sub-Contractors to sequence the work during the submission of monthly project schedules. Contractors shall endeavor to coordinate their work efforts with the Owner's requirements. Interruptions of utility services shall be coordinated with the Architect, and Owner, but in no instance shall last longer than 2 hours.
- K. Limited staging and on site parking will be provided by General Contractor. The Contractor will coordinate parking areas with all the subcontractors and TCNJ.
 - 1. Parking will be available at Carlton Avenue. Contractor will provide shuttle service to and from the site.
 - 2. Contractor will be permitted to have vehicles on site with in the construction fencing only. Contractor is to provide stone in all parking areas on site to prevent the buildup of ruts and mud, thus minimizing the amount of mud leaving the site and being left behind on TCNJ roads.
- L. Site Utilities: Electric power and water are available on site. Toilet facilities will be made available by the Contractor. These facilities shall remain clean by the Contractors throughout the course of the project. The Contractors shall repair and/or replace any damaged fixtures, partitions, etc. The Electrical Sub-Contractor shall tie in a temporary power panel (or panels as required) for all trades to use during construction. Interruption of building services shall not occur without prior consent and coordination by the Owner and Owner.
 - 1. Provide portable toilets for all construction personnel.
- M. Construction Lighting: The Electrical Sub-Contractor shall run sufficient strings and fixtures to maintain a 50 foot-candle/sq.ft.intensity of light throughout the project areas.
- N. Dumpster Location and Cleanup: The Architect and Owner shall coordinate the dumpster location with the Contractors. The Contractor shall be responsible for obtaining, maintaining, and disposing of dumpsters, and shall maintain clean work areas throughout the course of the project.
 - 1. Contractor is to provide adequate manpower during the entire course of the project to maintain the site in a clean, neat and professional manner. At a minimum the contractor is to clean the entire site twice per week (on different days) by picking up all debris in and around the site. Sweeping the entire building daily is required once the floor slabs are in place. Contractor is to place garbage cans on each floor minimum 3 per floor in

designated locations to assist in keeping the site clean. The owner will not tolerate a building project that is not maintained in a professional manner at all times.

- O. Radio / Music usage: no one is to have any loud radios/or music devices on the work site at any time. Any music must be kept to a personal level, not affecting others on site or on campus at any time.

3.02 PROGRESS MEETINGS

- A. Progress Meetings shall be held bi-weekly at the job site at a regular time and day mutually agreed upon. The frequency may be changed by the Architect or Owner to reflect current conditions. The Contractors, those of his/their subcontractors concerned with current progress or with scheduling of future progress, the Architect, the Owner, and the Owner shall each be represented at these job meetings by persons familiar with the details of the work and authorized to conclude matters relative to work progress, establishment of progress schedules, etc., as may be necessary to expedite completion of the work.
- B. The Contractors and his/their subcontractors attending these meetings shall present complete and definite reports as to the status of their respective work, conditions of product and equipment manufacturer, labor availability, productivity and cooperation, shipping data, time of completion, sequence of the work, safety program, and any other information bearing upon the execution of the Contract or subcontract. For the Owner's convenience the Owner will chair the meetings.

3.03 MONTHLY REPORTS

- C. The Contractor is to provide TCNJ a brief monthly status report on the last working day of each month dividing the status of the project into the following categories (report must be complete in all respects, piece meal submissions will not be accepted):
 - 1. Project overview
 - 2. Financial status
 - 3. Updated project schedule
 - 4. Change order request log
 - 5. Submittal log
 - 6. RFI log
 - 7. Owner/Architect issues that need immediate resolution
 - 8. Order/delivery issues
- D. The Contractor is to provide TCNJ with this monthly report, and include in their bid a cost of \$500.00 per month for all projects in excess of 2 million dollars base bid price for the duration of the construction period as noted in the bidding milestone schedule. This total cost will be listed in the contractor's schedule of values and can be billed for on a monthly basis only if said report is received in whole as noted above. Should TCNJ not receive said complete report a deduct change order will be issued to the contractor for \$500.00 for that month.

END OF SECTION

**SECTION 013000
SUBMITTALS AND SUBSTITUTIONS**

PART 1 – GENERAL

1.01 PROGRESS SCHEDULE / COORDINATION DRAWINGS

- A. The Contractor's schedule, shall coordinate with all trades to produce a coordinated CPM via Suretrak/Primavera version 3.0 or a Microsoft scheduling program schedule indicating the start and completion dates for each portion of the work as defined by the schedule of values, with the total time as defined by the contract time and milestone dates as set forth in these specifications. The Contractor's CPM schedule shall be submitted in electronic format (Suretrak 3.0 or a Microsoft Scheduling program) to and reviewed by the Owner and Architect prior to first application for payment. Any revisions or additional information requested by the Owner or Architect shall be provided. (No payment shall be made to any Contractor not providing a schedule that reflects their entire work).
 - 1. Also refer to Section 011000 – Project Procedures.
- B. The Contractor shall revise the progress schedule on a monthly basis as the work progresses reflecting therein any delays, including those not within the Contractor's control, or accelerations in the progress of the work. The progress schedule, as revised for any weekly period, shall be discussed at the bi-weekly job meetings with the, Owner, the Architect, and the Contractor and the major trades in order to insure that the percentage of actual completion of any portion of the work as called for in the progress schedule for that bi-weekly period is attained. Monthly updates to the progress schedule shall be made prior to application for payment.
- C. Should any delay occur in the progress of the work or any portion thereof, the Contractor shall be required to implement all necessary measures to accelerate the construction, to meet the percentages of completion dictated by the progress schedule on the applicable dates, without additional cost to the Owner.

1.02 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

A. SHOP DRAWINGS, PRODUCT DATA AND SAMPLES WILL NOT BE PROCESSED BY THE OWNER AND/OR ARCHITECT UNTIL THE LIST OF SUBCONTRACTORS, MATERIAL SUPPLIERS AND FABRICATORS IS SUBMITTED AS REQUIRED UNDER PARAGRAPH 3.12 OF THE GENERAL CONDITIONS.

- 1. The successful Contractor shall submit their list of proposed substitutions with in 20 calendar days of the Contract Award.
- 2. The Architect shall be compensated on an hourly basis for review of all shop drawings or samples that do not meet the requirements of the contract documents after two submissions. The compensation shall be deducted from the contractors contract via a deduct change order, or other means that both parties agree to.

B. COORDINATE PREPARATION AND PROCESSING OF SUBMITTALS WITH PERFORMANCE OF THE WORK SO THAT WORK WILL NOT BE DELAYED BY SUBMITTALS. ALLOW TWO WEEKS FOR REVIEW/APPROVAL BY THE ARCHITECT FOR THE APPROVAL PROCESS, ONE ADDITIONAL WEEK FOR TCNJ STAFF TO REVIEW THE SUBMITTAL BEFORE IT IS RETURNED TO THE CONTRACTOR. ALLOW ADDITIONAL TIME IF PROCESSING MUST BE DELAYED TO PERMIT COORDINATION WITH SUBSEQUENT SUBMITTALS WITH OTHERS.

- 1. Contractor is to provide a submittal schedule identifying the critical path submittals to assist the design team in prioritizing their review and subsequent return to the contractor prior to the first requisition for payment being processed. Every submittal is to have a required return date associated with it so the design team can schedule their reviews accordingly.
- A. Provide permanent marking on each submittal to identify Project, date, Contractor, subcontractor, submittal name, Specification section, drawing reference, and similar information to distinguish it from other submittals. Show Contractor's executed review and approval marking and provide space (5" x 7") for Architect's Action marking and space for Owner's

review marking. Package each submittal appropriately for transmittal and handling. Submittals received, which are lacking the above information, will be returned without action. Submittals, which are received from sources other than through Contractor's office, will be returned without action.

- B. Each submission shall be complete, with all options clearly marked and with all components required for the assembly fully described and detailed. Submissions missing important information will be returned unchecked.
- C. Transmittal Form: Submittals shall be accompanied by a transmittal form. Provide Contractor's certification on form, ready for execution, stating that information submitted complies with requirements of contract documents.
 - 1. Transmit all submittals and shop drawings to the Architect or Engineer with a copy of the transmittal to the Owner.
- D. Except as otherwise indicated in individual work sections, comply with requirements specified herein for each indicated category of submittal. Provide and process intermediate submittals, where required between initial and final, similar to initial submittals.
- E. Maintain returned final set of samples at project site, in suitable condition and available for quality control comparisons by Architect, and by Owner.
- F. Do not proceed with installation of materials, products or systems until final copy of applicable shop drawings, product data and samples are in possession of Installer.
- G. Provide newly prepared shop drawings, on reproducible sheets, with graphic information at accurate scale, with company name of preparer indicated. Show dimensions and note which are based on field measurement. Identify materials and products in the work shown. Indicate compliance with standards, and special coordination requirements. Do not allow shop drawing copies without appropriate final Action markings by Architect to be used in connection with the work.
 - 1. Initial and Intermediate Submittals: One correctable translucent reproducible print and 5 blue line or black line prints; reproducible will be returned.
 - 2. Final Submittal: 6 prints, plus 3 additional prints where required for maintenance manuals; 4 will be retained and remainder will be returned, one of which shall be marked up and maintained by Contractor as "Record Document".
 - 3. Electronic submittals are acceptable in AutoCad format only. Contractor shall be responsible for printing and distribution of multiple copies as required.
- H. Collect required product data into one submittal for each unit of work or system; and mark each copy to show which choices and options are applicable to the project. Include manufacturer's standard printed recommendations for application and use, compliance with standards, application of labels and seals, notation of field measurements that have been checked, and special coordination requirements. Maintain one set of product data for each submittal at project site, available for reference by Architect and others.
- I. Submittals will be accepted from the Contractor only. Submittals received from other entities will be returned without review or action.
 - 1. Submittals received without a transmittal form will be returned without review or action.
 - 2. Transmittal form: Use a form matching the sample form attached to this section. Include the following:
 - a. List of deviations.
 - b. The Contractor's certification signature.
 - 3. Fill out a separate transmittal form for each submittal; also include the following:
 - c. Other relevant information.
 - d. Request for additional information.
- J. Do not submit product data, or allow its use on the project, until compliance with requirements of Contract Documents has been confirmed by Contractor. Submittal is for information and record unless otherwise indicated. Initial submittal is final submittal unless returned promptly by Architect marked with an Action that indicates and observed noncompliance. Submit 6 copies, plus 3 additional copies, which will be returned, where required for maintenance manuals.

1. Electronic submittals are acceptable in 8 ½" x 11" format only.
- K. Provide three (3) samples identical with final condition of proposed materials or products for the work. Include range samples, not less than 3 units, where unavoidable variations between units of each set. Provide full set of optional samples where Architect's selection is required. Prepare samples to match Architect's sample where so indicated. Include information with sample to show generic description, source or products name and manufacturer, limitations, and compliance with standards. Samples are submitted for review and confirmation of color, pattern, texture and kind by Architect. Architect will not test samples, except as otherwise indicated, for compliance with other requirements, which are therefore the exclusive responsibility of the Contractor.
- L. Upon receipt of a signed copy of the Architects' Waiver form, electronic copies of CAD drawings of the Contract Documents will be provided by the Architect for Contractor's use in preparing submittals. Copy of Waiver form is attached.
- M. Product Selection Procedures: Procedures for product selection include the following:
 1. Product: Where Specification paragraphs or subparagraphs titled "Product" name a single product and manufacturer, provide the named product or an equivalent.
 2. Manufacturer/Source: Where Specification paragraphs or subparagraphs titled "Manufacturer" or "Source" name single manufacturers or sources, provide a product of the manufacturer or source that complies with requirements, or an equivalent.
 3. Products: Where Specification paragraphs or subparagraphs titled "Products" introduce a list of names of both products and manufacturers, provide one of the products listed that complies with requirements, or an equivalent. Comply with provisions of "Product Options and Substitutions," Section 1.4 of Division 1300 of these specifications when submitting an equivalent product.
 4. Manufacturers: Where specification paragraphs or subparagraphs titled "Manufacturers" introduce a list of manufacturers' names, provide a product by one of the manufacturers listed, or an equivalent, that complies with requirements. Comply with provisions of "Product Options and Substitutions," Section 1.4 of Division 1300 of these specifications when submitting an equivalent product.
 5. Product Options: Where Specification paragraphs or subparagraphs refer to "Product Options and Substitutions," indicate that size, profiles, and dimensional requirements on Drawings are based on a specific product or system; provide the specific product or system or an equivalent product or system by another manufacturer. Comply with provisions of "Product Options and Substitutions," Section 1.4 of Division 1300 of these specifications when submitting an equivalent product.
 6. Basis of Design Products: Where Specification paragraphs or subparagraphs titled "Basis-of-Design Products" introduce or refer to a list of manufacturers' names, provide either the specified product or an equivalent. Drawings and Specifications indicate sizes, profiles, dimensions and other characteristics that are based on the product names. Comply with the provisions of "Product Options and Substitutions," Section 1.4 of Division 1300 of these specifications when submitting an equivalent product.

1.03 MISCELLANEOUS SUBMITTALS

- A. Miscellaneous submittals related directly to the work include warranties, maintenance agreements, workmanship bonds, survey data and reports, physical work records, quality testing and certifying reports, copies of industry standards, record drawings, field measurement data, operating and maintenance materials, overrun stock, and similar information, devices and materials applicable to the work and not processed as shop drawings, product data or samples.
- B. Refer to sections for specific general requirements on warranties, product/workmanship bonds, and maintenance agreements. In addition to copies desired for Contractor's use, furnish 2 executed copies, except furnish 3 additional copies where required for maintenance manuals.
- C. For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the work.

1.04 PRODUCT OPTIONS AND SUBSTITUTIONS

A. DEFINITIONS

1. Products: Items purchased 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.
 - a. 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.
 - b. New Products: Items that have not previously been incorporated into another project or facility, except that products consisting of recycled-content materials are allowed, unless explicitly stated otherwise. Products salvaged or recycled from other projects are not considered new products.
 - c. Equivalent Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, 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.
2. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
3. Basis-of-Design Product Specification: Where a specific manufacturer's product is named and accompanied by the words "basis of design," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other named manufacturers.
4. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
5. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.
6. **Buy American Requirement: the Contractor shall comply with N.J.S.A 52:32-1 and N.J.S.A. 52:33-1 et seq., which prohibits the use by the Contractor or subcontractors of materials or farm products produced and manufactured outside of the United States on any public work.**

A. General Requirements:

1. The requirements for substitutions do not apply to specified Contractor options on products and construction methods. Revisions to Contract Documents, where requested by Owner or Architect are changes, not substitutions. Contractor's determination of and compliance with governing regulations and orders issued by governing authorities do not constitute substitutions and do not constitute a basis for change orders. Otherwise, Contractor's requests for changes in products, materials, and methods of construction required by Contract Documents are considered requests for substitutions, and are subject to requirements hereto.
 2. To the greatest extent possible, provide products, materials and equipment of a singular generic kind and from a single source.
 3. Where more than one choice is available as options for Contractor's selection of a product or material, select an option that is compatible with other products and materials already selected. Total compatibility among options is not assured by limitations within Contract Documents, but shall be provided by Contractor. Compatibility is a basic general requirement of product/material selections.
- B. Submittals: Submit 6 copies, utilizing Substitution Request Form, CSI Form 13.1.A, fully identified for product or method being requested for substitution, including related specification section and drawing numbers, and fully documented to show compliance with requirements for substitutions. Include product data/drawings, description of methods, samples where applicable, Contractor's details comparison of significant qualities between specified item and

proposed substitution, statement of effect on construction time and coordination with other affected work and contractors, cost information or proposal, warranty information, compatibility with other work, approval of all authorities having jurisdiction, and Contractor's statement to the effect that proposed substitution will result in overall work equal to or better than work originally indicated.

- C. Contractor's options for selecting products are limited by Contract Documents requirements, and governing regulations. Required procedures include, but are not necessarily limited to, the following for various indicated methods or specifying:
1. Single product/manufacturer name; provide product indicated or equivalent, except advise Architect before proceeding, where known that named product is not a feasible or acceptable selection.
 2. Two or more product/manufacturer names; provide one of the named products or equivalent, at Contractor's option; but excluding products which do not comply with requirements. Advise Architect before proceeding.
 3. Equivalent; where named products in Specifications text are accompanied by the term "or equivalent", or other language of similar effect, comply with those Contract Documents provisions concerning substitutions for obtaining Architect's approval of equivalent product.
 - a. Named, except as otherwise indicated, is defined to mean manufacturer's name for product, as recorded in published product literature, of latest issue as of date of Contract Documents. Refer requests to use products of a later or earlier model to Architect for acceptance before proceeding.
 - b. Where compliance with an imposed standard, code or regulation is required, selection from among products that comply with requirements including those standards, codes and regulations, is Contractor's option.
 4. Provide products which comply with specific performances indicated, and which are recommended by manufacturer, in published product literature or by individual certification, for application indicated. Overall performance of a product is implied where product is specified for specific performance.
 5. Provide products that have been produced in accordance with prescriptive requirements, using specified ingredients and components, and complying with specified requirements for mixing, fabricating, curing, finishing, testing and similar operations in manufacturing process.
 6. Where matching of an established sample is required, final judgment of whether a product proposed by Contractor matches sample satisfactorily is Architect's judgment. Where no product within specified cost category is available, which matches sample satisfactorily and complies with requirements, comply with Contract Document provisions concerning substitutions for selection of a matching product outside established cost category or not complying with requirements.
 7. Where specified product requirements include "...as selected from manufacturer's full range of colors, patterns, textures..." or words of similar effect, the selection of manufacturer and basic product data is to comply with requirements of the Contract, and selection shall be from the full range of products within the requirements. Where specified product requirements include "... as the industry...", or words to that effect, selection of product complying with requirements, is Architect's selection, including designation of manufacturer, where necessary to obtain desired color, pattern or texture.
- D. Substitutions may be permitted by the Architect, if, in his opinion, the requirements of the proposed substitution comply with the requirements specified for the material, article or piece of equipment; however, the Architect is not required to permit substitution pursuant to the case of Whitten Corporation vs. Paddock, Incorporated, United States District Court, Massachusetts, April 12, 1974, affirmed by the Federal First Circuit Court, December 14, 1974.
- E. After award of contract, the Contractor may submit substitutes to the Architect for review, fully documented and certified, and accompanied by a proposal for a reduction in the Contract Sum.
- F. Contractor's request for substitution will be received and considered when extensive revisions to Contract Documents are not required and changes are in keeping with general intent of

Contract Documents; when timely, fully documented and properly submitted; and when one or more of following conditions is satisfied, all as judged by Architect. Otherwise, requests will be returned without action except to record noncompliance with these requirements.

1. Where request is directly related to an "equivalent" clause or other language of same effect in Contract Documents.
 2. Where required product, material or method cannot be provided within Contract Time, but not as a result of Contractor's failure to pursue the work promptly or coordinate various activities properly.
 3. Where required product, material or method cannot be provided in a manner which is compatible with other materials of the work, or cannot be properly coordinated therewith, or cannot be warranted (guaranteed) as required, or cannot be used without adversely affecting Owner's insurance coverage on completed work, or will encounter other substantial noncompliances which are not possible to otherwise overcome except by making requested substitution, which Contractor thereby certifies to overcome such incompatibility, uncoordination, nonwarranty, noninsurability or other noncompliance as claimed.
 4. Where substantial advantage is offered Owner, in terms of cost, time or other valuable considerations, after deducting offsetting responsibilities Owner may be required to bear, including additional compensation to Architect for redesign and evaluation services, increased cost of other work by Owner or separate Contractors, and similar considerations.
- G. Contractor's submittal of, and Architect's acceptance of, shop drawings, product data or samples which indicate work not complying with requirements of Contract Documents, does not constitute an acceptable and valid request for, nor approval of, a substitution.

H. QUALITY ASSURANCE

1. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.
 - a. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
 - b. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.

I. EQUIVALENT PRODUCTS

1. Where products or manufacturers are specified by name, Contractor must submit the following, in addition to other required submittals, to obtain approval of an unnamed product proposed as an equivalent:
 2. Evidence that the proposed product does not require extensive revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
 3. Detailed comparison of significant qualities of proposed product with those named in the specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 4. Evidence that proposed product provides specified warranty.
 5. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
 6. Samples, if requested.

1.05 OPERATION AND MAINTENANCE INSTRUCTIONS AND EQUIPMENT WARRANTIES

- A. The Contractor shall orient and instruct the responsible maintenance personnel designated by the Owner in the Operation of all equipment and shall provide the maintenance personnel with pertinent literature and operational manuals for all equipment. Date and time of demonstrations shall be mutually agreed upon with the Owner. Provide qualified personnel for as long as necessary to fully orient and instruct the Owner. Contractor shall videotape instruction session and provide owner with completed video.

- B. The manuals shall be submitted in (quadruplicate) 3-ring loose-leaf type binders and electronically in PDF format and be able to be TEXT SEARCHABLE to the Architect for approval with all additional information that the Architect may request and considers necessary for the proper servicing and maintenance of all equipment. Manuals are to include plain paper copies of approved shop drawings and catalog cuts. The quality of the copies may be subject to approval by the Architect. Upon completion and approval, 3 copies will be forwarded to the Owner and one copy retained by the Architect.
- C. Manuals shall include no less than the following:
 - 1. Operating Procedures:
 - a. Typewritten procedures indicating each mode of operation of each piece of equipment or system. Procedures shall indicate the status of each component of a system in each operating mode.
 - b. Procedures shall indicate names, symbol numbers, valve tags, circuit numbers, schematic control and wiring diagrams, locations of thermostats, manual starters, control cabinets, and other controls of each system.
 - c. Emergency shutdown procedures for each piece of equipment or system, both automatic and manual as appropriate.
 - 2. Maintenance Schedule: Typewritten schedule describing manufacturer's recommended schedule of maintenance and maintenance procedures.
 - 3. Catalog cuts and shop drawings:
 - a. Catalog cuts shall clearly indicate the exact model and type of each piece of equipment installed in the Project, including all options provided.
 - b. Catalog cuts shall fully describe equipment including physical, electrical, mechanical and other characteristics, performance characteristics and installation or erection diagrams.
 - c. Catalog cuts shall indicate spare part numbers and name, address and telephone number of local representative or service department.
 - 4. Typewritten list of all subcontractors on the Project including name, address, telephone number and responsibility on the Project.
 - 5. Manuals shall be indexed with dividers indicating each system or piece of equipment.
 - 6. Warranties, permits, inspection stickers/approvals and Certificate of Occupancy are to be included.
- D. Required equipment warranties shall be submitted in three copies and electronically in PDF format to the Architect.
- E. The Contractor shall video tape all instructional sessions and demonstrations and provide the Owner with a copy of the videotape at the end of all demonstrations.

PART 2 - PRODUCTS

NOT APPLICABLE

PART 3 - EXECUTION

3.01 ACTION ON SUBMITTALS

- A. One copy of all submissions will be returned to the Contractor for his files. The Contractor shall mark up other copies so as to conform with the copy returned to him and forward them to all interested Contractors, Subcontractors, and Suppliers.
- B. The Architect will review and stamp submitted shop drawings in one of the following ways (the actual stamp may be different; below language is shown for an example only)
 - 1. "No Exceptions Taken": Approved.
 - 2. "Make Corrections Noted": Approved, provided the work complies with corrections marked on the submittal.
 - 3. "Revise and Resubmit": Do not commence work of this submittal. Revise and resubmit or prepare a new submittal; comply with notations marked on submittal.
 - 4. "Rejected": Fundamentally not in compliance. Prepare a new submittal. No notations or comments made.

- C. Work shall be executed in accordance with "Approved", "Approved As Noted", or "Resubmit for Record" stamp only.
- D. Architect's review of shop drawings/submittals will constitute checking for general arrangement only, and shall not relieve the Contractor of responsibility for complete compliance with Drawings and Specifications. Contractor shall be responsible for quantities and dimensions to assure a proper fit under field conditions.

3.02 DISTRIBUTION

- A. Provide additional distribution of submittals, not included in foregoing copy submittal requirements, to subcontractors, suppliers, fabricators, installers, governing authorities and others as necessary for proper performance of the work. Include such additional copies in transmittal to Architect where required to receive Action marking before final distribution. Show such distributions on transmittal forms.

3.03 COLOR SELECTIONS

- A. All colors for all finished surfaces and materials will be selected or approved by the Architect. The color selections will be made at one time to provide a complete and coordinated color schedule which, upon acceptance of the Owner, will be provided to the Contractor. Any and all specific color selections for materials not noted on drawings or in specification shall be chosen by Architect after submittal of samples.
- B. It is imperative that all color information be submitted to the Architect by the Contractor before color selections can be made. If any color selection information is not available when colors are needed to meet the project schedule, the Architect will select colors from one of the named manufacturers in the Specifications, and the Contractor will be required to exactly match that color. A claim for delay will not be accepted if the color schedule is late due to the failure of the Contractor to provide the Architect with all required color information, nor will an extra be entertained if the selected color is not available from the manufacturer the Contractor intended to use but neglected to submit.
- C. The Contractors are reminded of the requirement to declare all substitutions within 20 days of execution of their Contract as specified.

END OF SECTION

**SECTION 013100
QUALITY CONTROL**

PART 1 - GENERAL

1.01 TRADESMEN AND WORKMANSHIP

- A. Each Contractor shall ensure that tradesmen performing work at site are skilled and knowledgeable in methods and craftsmanship needed to produce required quality levels for workmanship in completed work. Remove and replace work which does not comply with workmanship standards as specified and as recognized in the construction industry for applications indicated. Remove and replace other work damaged or deteriorated by faulty workmanship or its replacement.
- B. In certain instances, specification text requires that specific work be assigned to specialists or expert entities, who shall be engaged for performance of those units of work. These shall be recognized as special requirements over which Contractor has no choice or option. These assignments shall not be confused with, and are not intended to interfere with, normal application of regulations, union jurisdictions and similar conventions. One purpose of such assignments is to establish which party or entity involved in a specific unit of work is recognized as "expert" for indicated construction processes or operations. Nevertheless, final responsibility for fulfillment of entire set of requirements remains with Contractor.

1.02 INSPECTION, TESTS AND REPORTS

- A. Required inspection and testing services are intended to assist in determination of probable compliances of the work with requirements, but do not relieve any Contractor of responsibility for those compliances, or for general fulfillment of requirements of Contract Documents. Specified inspections and tests are not intended to limit any Contractor's quality control program. Afford reasonable access to agencies performing tests and inspections.
- B. Contractors are responsible for all testing associated with their work (foundations, soils compaction, concrete, steel, roof material testing etc.) and shall submit the name of their proposed testing agency within 15 days of Notice-to-Proceed. Each Contractor is responsible to coordinate the activities of the testing agency to assure that work is tested prior to being covered up or other activities associated to the work begin.

1.03 ROOF DRAIN TESTING

A. PRE-CONSTRUCTION TESTING: PRIOR TO THE START OF ANY WORK ON THE ROOF, THE CONTRACTOR SHALL WATER-FLOW TEST ALL ROOF DRAINS (5 MINUTES AT EACH DRAIN), TO DETERMINE IF ANY FULL OR PARTIAL DRAIN CLOGS EXIST IN THE DRAINAGE SYSTEM.

- 1. The Owner shall have a representative at the test.
- 2. The results of the testing shall be reported to the Owner, in writing, prior to the start of work.
- 3. The Owner will be responsible for correction of any drain-age problems reported by the Contractor prior to the start of work.
- 4. Any drains, piping or other components, whether exposed, concealed, below grade, etc., found to be clogged after the start of construction, and not reported to the Owner prior to the start of construction, shall be cleared, repaired or replaced as required to restore full drainage capacity. All work shall be performed by the Contractor at no additional cost to the Owner, including patching, repair or re-placement of any materials, finishes, landscaping, etc., disturbed in gaining access to drainage components.

B. Post-Construction Testing: When all work reaches substantial completion, the Contractor shall water-flow test all roof drains (5 minutes at each drain), to determine if any full or partial drain clogs exist in the drainage system.

- 5. The Owner shall have a representative at the test.
- 6. Report the results of testing to the Owner in writing prior to preparation of the final punchlist inspection.

7. Any drains, piping or other components, whether exposed, concealed, below grade, etc., found to be clogged shall be cleared, repaired or replaced as required to restore full drainage capacity. All work shall be performed by the Contractor at no additional cost to the Owner, including patching, repair or replacement of any materials, finishes, landscaping, etc., disturbed in gaining access to drainage components.

1.04 ROOF DRAIN PROTECTION

A. CONTRACTOR IS TO MAKE EVERY EFFORT TO PREVENT MATERIALS FROM ENTERING ROOF DRAINS. CONTRACTOR IS TO INSTALL ROOF RAIN FILTERS PRIOR TO REMOVAL OF ANY ROOF MATERIALS.

B. ALL DEBRIS IS TO BE CLEANED AWAY FROM DRAINS AT THE END OF EACH DAY.

PART 2 - PRODUCTS

2.01 ROOF DRAIN FILTERS

A. TIDY GUTTER DF100001 ROOF DRAIN FOAM FILTER OR EQUAL.

PART 3 - EXECUTION

3.01 REPLACEMENT OF WORK

- A. THE CONTRACTOR SHALL, WITHIN 24 HOURS AFTER REJECTION OF WORK, REMOVE ALL MATERIALS AND EQUIPMENT SO REJECTED AND IMMEDIATELY REPLACE SAID WORK, AT HIS COST, TO THE SATISFACTION OF THE ARCHITECT. SHOULD THE WORK OF THE OWNER OR OTHER CONTRACTORS BE DAMAGED BY SUCH REMOVAL OR REPLACEMENT, THE CONTRACTOR SHALL REIMBURSE THE OWNER OR OTHER CONTRACTORS FOR ALL COST INCURRED FOR CORRECTING SAID DAMAGE.

3.02 EXAMINATION

- B. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.
 1. Before construction, verify the location and points of connection of utility services.
- C. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction affecting the Work.
 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical services.
 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- D. Acceptance of Conditions prior to work starting: 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. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
 - a. Description of the Work.
 - b. List of detrimental conditions, including substrates.
 - c. List of unacceptable installation tolerances.
 - d. Recommended corrections.
 2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 3. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 4. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.

5. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.03 PREPARATION

- E. Existing Utility Information: Furnish information to local utility and Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- F. 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 to provide temporary utility services according to requirements indicated:
 1. Notify Owner not less than two days in advance of proposed utility interruptions.
 - a. Do not proceed with utility interruptions without Owner's/Owner's written permission.
- G. 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.
- H. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- I. 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. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents.

3.04 CONSTRUCTION LAYOUT

- J. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to existing conditions and dimensions. If discrepancies are discovered, notify Architect and Owner promptly.

3.05 INSTALLATION

- K. General: 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.
- L. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- M. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- N. 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.
- O. Tools and Equipment: Only use the best quality tools and equipment with proper attenuations for the latest acceptable sound levels.
- P. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
 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.
- Q. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

- R. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

END OF SECTION

**SECTION 013200
TEMPORARY FACILITIES**

PART 1 - GENERAL

1.01 DESCRIPTION OF REQUIREMENTS

- A. Specific administrative and procedural minimum actions are specified in this section, as extensions of provisions in General Conditions and other Contract Documents. Nothing in this section is intended to limit types and amounts of temporary work required, and no omission from this section will be recognized as an indication that such temporary activity is not required for successful completion of the work and compliance with requirements of Contract Documents.
- B. Each Contractor is specifically assigned certain responsibilities for temporary facilities to be used by all Contractors, other entities at the site, the Owner's work forces and other personnel including occupants of the project, the Owner, the Architect, test agencies, personnel of governing authorities, and similar entities and personnel authorized to be at the project site during construction. In general, each Contractor is assigned the responsibilities for installation, operation and removal of each temporary facility which is related by recognized trades to its scope of contract work; and, except as otherwise indicated, each is responsible for costs and use charges associated therewith, including fuel, power usage, water usage and similar usage costs. The Contractor is responsible for temporary facilities not related to any other Contractor's scope of contract work and not otherwise specifically assigned, as designated by the Architect.
- C. No costs or usage charges for temporary facilities are chargeable to the Owner, nor can any Contractor's cost or usage charges for temporary facilities be accepted as the basis for a change order extra. The total costs and usage charges for temporary facilities are included, collectively, in the Contract Amounts.

1.02 GENERAL REQUIREMENTS

- A. Each Contractor shall provide and operate all hoists, cranes, helicopters and furnish and erect all ladders and scaffolding required by him and his subcontractors, constructed to afford proper protection to craftsmen, their Work and other Work in progress and previously executed.

1.03 JOB CONDITIONS

- A. Each Contractor shall establish and initiate use of each temporary facility at time first reasonably required for proper performance of the total work of project. Terminate use and remove facilities at earliest reasonable time, when no longer needed or when permanent facilities have, with authorized use, replaced the need.
- B. Each Contractor shall install, operate, maintain and protect temporary facilities in a manner and at locations that will be safe, nonhazardous, sanitary, protective of persons and property, and free of deleterious effects.

1.04 ENVIRONMENTAL PROTECTION

- A. Each Contractor shall provide facilities, establish procedures, and conduct construction activities in a manner that will ensure compliance with environmental and other regulations controlling construction activities at project site. The Contractor shall designate one person, the Construction Superintendent or other, to enforce strict discipline on activities related to generation of wastes, pollution of air/water/soil, generation of noise, and similar harmful or deleterious effects which might violate regulations or reasonably irritate persons at or in vicinity of project site. Anti-pollution measures required by D.E.P., as applicable are to be followed.

1.05 SECURITY

- A. The Contractor shall maintain complete security on the site at all times during and outside of normal working hours to protect the Work and all field offices, and to secure the area of construction by restricting all trespassers.
 - 1. This means locking the doors and/or gates. A guard is not required.

- B. Provide a six foot chain link fence around any compounds and/or dumpsters related to this project.

1.06 TEMPORARY CONSTRUCTION FACILITIES

- C. Where mud, snow, ice or other hazardous conditions exist in the purview (Scope of Work) of any Sub Contractor, the Contractor shall remove the hazards immediately and replace with suitable material for the other contractors use. If the Owner is compelled to remove the hazards with their own forces due to inaction by the Contractor, then that Contractor will be back-charged for the work performed by the Owner.
- D. No welding, cutting by torch, or Work utilizing or causing flammable waste shall be done unless adequate fire protection is provided and maintained for the duration of the Work in the area of operations.
- E. **Contractor is to provide road safety and traffic controls when working on or near any roadway or sidewalk on campus. Including flag personnel, signage, cones and all necessary safety measures to assure the safety of the pedestrians and vehicles at all times. This includes escorting deliveries using equipment other than a truck or car on roadways and walkways with a flag person. Backhoes can be run without an escort.**

1.07 DEBRIS CONTROL (REFER TO SECTION 01524 FOR FURTHER DELINEATION)

- A. The Contractor shall be responsible for daily cleaning up of spillages and debris resulting from his operations and from those of his Subcontractors; and shall be responsible for complete removal and disposition of hazardous and toxic waste materials. The Contractor shall provide containers at grade, sufficient for the depositing of nonhazardous/nontoxic waste materials, and shall remove such waste materials from project site at least weekly during cold weather (daily high temperatures below 50oF) and at least twice weekly during mild and warm weather.
 - 1. CONTRACTOR IS RESPONSIBLE TO PROVIDE AND PAY FOR ALL DUMPSTERS.
- B. The Contractor shall daily clean all mud, dirt and debris resulting from all trades operations from the adjacent streets, sidewalks, drives and parking areas and shall repair all damage caused by the cleaning to the satisfaction of the Owner.
- C. The Contractor is to provide and maintain appropriate means of trash disposal (i.e., chutes) to grade/dumpster. Multiple units may be required and shall be figured for in the bid.

PART 2 - EXECUTION

2.01 ENCLOSURES

7.01

7.02 AT EARLIEST POSSIBLE DATE, THE CONTRACTOR SHALL SECURE PROJECT AREA AGAINST UNAUTHORIZED ENTRANCE AT TIMES WHEN PERSONNEL ARE NOT WORKING. PROVIDE SECURE TEMPORARY ENCLOSURE AT GROUND FLOOR AND OTHER LOCATIONS OF POSSIBLE ENTRY, WITH LOCKED ENTRANCES.

7.03 WHERE ANY FORM OF DEMOLITION WILL EXPOSE THE INTERIOR OF THE BUILDING TO WEATHER, DEMOLITION SHALL FOLLOW THE ERECTION OF WEATHERPROOF WALLS BY THE CONTRACTOR INSTALLED INSIDE THE DEMOLITION LINE, SEALED AND FLASHED, AS REQUIRED, TO KEEP ALL WATER FROM THE BUILDING INTERIOR. KEEP TEMPORARY WEATHERPROOFING IN PLACE UNTIL NEW CONSTRUCTION HAS BEEN COMPLETED TO THE STAGE WHERE WATER WILL NOT ENTER THE BUILDING.

7.04 THE CONTRACTOR SHALL PROVIDE CONSTANT PROTECTION AGAINST RAIN, WIND, STORMS, FROST OR HEAT TO MAINTAIN THE WORK, MATERIALS, APPARATUS AND FIXTURES FREE FROM DAMAGE. AT THE END OF EACH DAY'S WORK, COVER WORK LIKELY TO BE DAMAGED. DURING COLD WEATHER, PROTECT WORK FROM DAMAGE BY FREEZING AND PROVIDE SUCH ENCLOSURES AND HEATING APPARATUS AS MAY BE NECESSARY DILIGENTLY TO PROSECUTE THE WORK WITHOUT STOPPAGE FOR REASON OF UNFAVORABLE WEATHER.

7.05 WHEREVER A CONTRACTOR PROVIDES OPENINGS THROUGH WALLS OR SLABS, EACH LOCATION SHALL BE ADEQUATELY PROTECTED AT THE END OF EACH WORKING DAY WITH TEMPORARY ENCLOSURES TO MAKE THESE AREAS TIGHT. OPENINGS THROUGH EXTERIOR WALLS SHALL BE WATERTIGHT.

7.06 INSTALL AN 8 FOOT HIGH FENCE AROUND THE ENTIRE SITE WITH WIND SCREENING. PROVIDE GATES AS NEEDED TO PROPERLY ACCESS THE SITE TO COMPLETE THE WORK. REMOVE THE FENCE ONCE THE PROJECT IS SUBSTANTIALLY COMPLETED. FENCE IS TO HAVE POLES INTO THE GROUND WHERE THE FENCE WILL BE UNTOUCHED PER A PERIOD OF TIME, AND CAN HAVE FEET WITH SAND BAGS IN AREAS THAT THE FENCE MAY HAVE TO BE MOVED OCCASIONALLY TO NOT INTERFERE WITH THE WORK.

7.07 FOR RENOVATION PROJECTS: CONTRACTOR IS TO MAINTAIN THE BUILDING IN A WATER TIGHT CONDITION DURING ALL CONSTRUCTION ACTIVITIES BY WHATEVER MEANS NECESSARY. CONTRACTOR IS TO NEVER DO ANY MORE REMOVAL WORK DURING ANY GIVEN DAY THAN THAT CONTRACTOR CAN REPLACE IN THE SAME DAY IN ORDER TO MAKE SURE THE OCCUPANTS OF THE BUILDING WILL BE PROTECTED FROM THE POSSIBILITY OF WATER LEAKAGE INTO THE BUILDING. SHOULD ANY LEAKAGE OCCUR, THE CONTRACTOR IS TO IMMEDIATELY MAKE THE BUILDING WATER TIGHT (ON A 24 HOUR BASIS) AND REPAIR ANY DAMAGE CAUSED BY THE LEAKAGE OR REPLACE ANY EQUIPMENT DAMAGED BY THE LEAKAGE.

2.02 TEMPORARY ELECTRICITY

8.01 POWER IS AVAILABLE ON SITE.

2.03 TEMPORARY VENTILATION

9.01 A TRADE REQUIRING VENTILATION FOR WORK SHALL PROVIDE FANS TO INDUCE CIRCULATION OF AIR.

2.04 TEMPORARY TELEPHONES

10.01 EACH CONTRACTOR IS RESPONSIBLE FOR THEIR OWN TELEPHONE SERVICE AND FOR PAYMENT OF ALL CHARGES RELATING TO THAT SERVICE.

2.05 TEMPORARY WATER

A. Water is available on site.

2.06 TEMPORARY SANITARY FACILITIES

12.01 STARTING AT TIME OF START OF WORK AT PROJECT SITE, THE CONTRACTOR SHALL PROVIDE AND MAINTAIN SELF-CONTAINED TOILET UNITS OF TYPE ACCEPTABLE TO GOVERNING AUTHORITIES, ADEQUATE, AT ALL STAGES OF CONSTRUCTION, FOR USE OF PERSONNEL AT PROJECT SITE. PROVIDE SEPARATE FACILITIES FOR MALE AND FEMALE PERSONNEL WHEN BOTH SEXES ARE WORKING, IN ANY CAPACITY, AT PROJECT SITE. FACILITIES SHALL REMAIN IN USE UNTIL COMPLETION OF PROJECT. USE OF PERMANENT FACILITIES WILL NOT BE PERMITTED.

2.07 REMOVAL AND RESTORATION

13.01 PRIOR TO ACCEPTANCE OF THE PROJECT, EACH CONTRACTOR SHALL REMOVE TEMPORARY WORK FOR WHICH HE HAS BEEN RESPONSIBLE.

2.08 OWNER'S RIGHTS

14.01 IF ANY CONTRACTOR FAILS TO CARRY OUT HIS RESPONSIBILITIES IN PROVIDING TEMPORARY FACILITIES, AS SET FORTH ABOVE, THE OWNER SHALL HAVE THE RIGHT TO TAKE SUCH ACTION AS HE DEEMS PROPER FOR THE PROTECTION AND CONDUCT OF THE WORK, AND TO DEDUCT THE COST THEREOF FROM THE AMOUNT DUE THE CONTRACTOR AT FAULT.

A. Extended work days, hours, shifts, weekend work, etc. may be allowed upon coordination and approval by Architect, Owner at no additional cost to the Owner.

1. Should the schedule begin to slip, for any reason, each contractor will be required to work additional shifts or weekends to recover the lost time. Should there be a cost to the College for this overtime work, the contractor will be required to reimburse the owner for said costs.

2.09 PARKING

PARKING IS ALLOWED FOR TWO VEHICLES ONLY. ALL OTHER PARKING IS TO BE AT THE TCNJ CARLTON AVENUE PARKING LOT. THE CONTRACTOR IS RESPONSIBLE TO SHUTTLE WORKERS BACK AND FORTH AS NEEDED.

END OF SECTION

**SECTION 013220
PHOTOGRAPHIC DOCUMENTATION**

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes administrative and procedural requirements for the following work by the General Contractor (other primes are encouraged to document the site and construction, but not required):
 - 1. Preconstruction video or photographs
- B. Related Sections include the following:
 - 1. All of Division 1.

1.03 SUBMITTALS

- A. Qualification Data: For photographer.
- B. Videotapes: video the existing conditions prior to start of the project and provide TCNJ with a copy of the video.

1.04 QUALITY ASSURANCE

- A. Job Project Manager or Superintendent

1.05 NOT USED

1.06 USAGE RIGHTS

- A. Obtain and transfer copyright usage rights to the Owner for unlimited reproduction of photographic documentation.

PART 2 – PRODUCTS

2.01 PHOTOGRAPHIC MEDIA

- A. Digital format as agreed to at the project kick off meeting.

PART 3 – EXECUTION

3.01 CONSTRUCTION VIDEOTAPES

- A. Preconstruction: Before starting demolition or construction record, videotape (digital) of Project site, interior and exterior.
 - 1. Show protection efforts by the Contractor.
 - 2. Show as many existing conditions as possible prior to the start of the work.

END OF SECTION

**SECTION 013300
CONTRACT CLOSEOUT**

PART 1 – GENERAL

1.01 DEFINITION

- A. Closeout is hereby defined to include general requirements near end of Contract Time, in preparation for final acceptance, final payment, normal termination of Contract, occupancy by Owner and similar actions evidencing completion of the work. Specific requirements for individual units of work are specified in sections of Divisions 2 through 16. Time of closeout is directly related to Substantial Completion, and therefore may be either a single time period for entire work or a series of time periods for individual parts of the work which have been certified as substantially complete at different dates. That time variation, if any, shall be applicable to other provisions of this section.
- B. Substantial completion shall be defined that every material item has been installed. Nothing is missing and therefore, the punch list can begin.

1.02 PREREQUISITES TO SUBSTANTIAL COMPLETION

- A. Prior to requesting the Architect's inspection for certification of substantial completion, for either entire work or portions thereof, complete the following and list known exceptions in request:
 - 1. In progress payment request coincident with or first following date claimed, show either 100% completion for portion of work claimed as substantially complete, or list incomplete items, value of incomplete items, and reasons for being incomplete.
 - 2. Include supporting documentation for completion as indicated in these Contract Documents.
 - a. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
 - 3. Submit statement showing accounting of changes to the Contract Sum.
 - 4. Advise Owner of pending insurance change over requirements.
 - 5. Submit specific warranties, workmanship/maintenance bonds, maintenance agreements, final certifications and similar documents.
 - 6. All fire sprinklers, devices, alarm system, roofing system, doors, insulation, etc. requiring FM Research approval to submit certification from Factory Mutual.
 - 7. Obtain and submit releases enabling Owner's full and unrestricted use of the work and access to services and utilities, including occupancy permits, operating certificates, and similar releases.
 - 8. Deliver tools, spare parts, extra stocks of materials, and similar physical items to Owner obtaining a signed receipt of materials delivered. Refer to individual work sections for required quantities of spare parts, extra and overrun stock, maintenance tools and devices, keys, and similar physical units to be submitted.
 - 9. Complete start up testing of systems, and instructions of Owner's operating/maintenance personnel. Discontinue, or change over, and remove from project site temporary facilities and services, along with construction tools and facilities, mockups, and similar elements.
 - 10. Complete final clean up requirements.
 - 11. Touch up and otherwise repair and restore marred exposed finishes.
 - 12. Inspection: Submit a written request for inspection for Substantial Completion to Project Manager. On receipt of request, Architect and Project Manager will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection, the Project Manager 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.
 - a. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
 - b. Results of completed inspection will form the basis of requirements for Final Completion.

- B. Upon receipt of Contractor's request, the Project Manager and Architect will proceed with substantial completion inspection. Following inspection, the Architect will either prepare the certificate of substantial completion, or advise the Contractor of work which shall be performed prior to issuance of certificate. The work remaining to be performed shall be completed prior to the punch list for final acceptance.
- C. Upon receipt of Contractor's notice that work has been completed, including all punch list items, but excepting incomplete items delayed because of circumstances acceptable to the Project Manager and Architect, the Project Manager and Architect will reinspect the work. Upon completion of reinspection, the Architect will either prepare the certificate of final acceptance or advise the Contractor of work not completed or obligations not fulfilled as required for final acceptance.
- D. In the event that the work is not completed or obligations are not fulfilled as required for final acceptance and the Architect/CM is required to reinspect the work more often than the two inspections described, the Contractor shall compensate the Architect and/or the Project Manager at the rate of \$500.00 for each additional site visit required for reinspections. The compensation shall be processed by change order as a deduction to the Contractor's Contract Sum, which amount will be paid to the Architect or Project Manager by the Owner, through a change order as an addition to the Architect's or Project Manager's Contract Sum.
- E. **Substantial Completion shall be defined for this project that every element of the project/construction and the contract, based on the contract and amended drawings and specification sections, are installed and the building is deemed complete, less repairs and/or touch up type work that would be generally referred to as punchlist work. If any components of the building, or site work associated with this contract are not installed, the project cannot be deemed substantially completed.**

1.03 PREREQUISITES TO FINAL ACCEPTANCE

- A. Prior to requesting Project Manager and Architect's final inspection for certification of final acceptance and final payment, complete the following and list known exceptions, in request:
 - 1. Submit final payment request with final releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
 - 2. Submit release of liens for all subcontractors.
 - 3. Submit Contractor's statement that his final application, as presented, is the final bill and no other claims will be presented.
 - 4. Submit updated final statement, accounting for additional changes to Contract Sum including change orders and allowances.
 - 5. Submit certified copy of Architect's final punch list of itemized work to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, endorsed and dated by Architect.
 - 6. Submit one set of record documents, bound copies of maintenance/operating manuals, final project photographs, damage or settlement survey, property survey, and similar final record information.
 - 7. Complete final clean up requirements.
 - 8. Touch up and otherwise repair and restore marred exposed finishes.
 - 9. Submit notarized consent of surety to final payment.
 - 10. Submit final liquidated damages settlement statement, if required, acceptable to Project Manager and the Owner.
 - 11. Revise and submit evidence of final, continuing insurance coverage complying with insurance requirements.
 - 12. A letter from the Owner's representative certifying that he has been properly instructed in the operation and maintenance of equipment by the Contractor.
 - 13. 10% one year Maintenance Bond.
 - 14. Underwriter's Certificate or Electrical Sub Code Official's Approval.
 - 15. Fire Alarm Certification and Description - NFPA form 72C including local County of Chester.

16. HVAC Contractor to submit certified balancing report.
 17. Final acceptance by Architect of Record documents
- B. Except as otherwise indicated or requested by Project Manager/Architect, remove temporary protection devices and facilities that were installed during course of the work to protect previously completed work during remainder of construction period.

1.04 CLEAN UP

1. Remove waste materials from site and dispose of in a lawful manner.

PART 2 - PRODUCTS

1.05 NOT APPLICABLE

PART 3 - EXECUTION

1.06 CLEANING

- A. Where extra materials of value remaining after completion of associated work have become Owner's property, dispose of these to Owner's best advantage as directed.
- B. After Substantial Completion of the Work, each Contractor shall do the final cleaning of the surfaces of his installations as may be required by the various Specification sections.
- C. After each Contractor has cleaned their work, The General Contractor shall engage a professional cleaning service to perform final cleaning of the work consisting of cleaning each surface or unit to normal clean condition. Comply with manufacturer's instructions for cleaning operations and chemicals. The following are examples, but not by way of limitation, of cleaning levels required:
 1. Remove labels that are not required as permanent labels.
 2. Clean transparent materials, including mirrors and window/door glass, to a polished condition, removing substances that are noticeable as vision obscuring materials. Replace broken glass and damaged transparent materials.
 3. Clean exposed exterior and interior hard surfaced finishes, to a dirt free condition, free of dust, stains, films and similar noticeable distracting substances. Except as otherwise indicated, avoid disturbance of natural weathering of exterior surfaces. Restore reflective surfaces to original reflective conditions.
 4. Wipe surfaces of mechanical and electrical equipment clean, including elevator equipment and similar equipment; remove excess lubrication and other substances.
 5. Remove debris and surface dust from limited access spaces including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics and similar spaces.
 6. Vacuum and clean carpeted surfaces and similar soft surfaces.
 7. Clean light fixtures and lamps to function with full efficiency.
 8. Clean and wax or polish all hard floors following manufacturer's instructions.
 9. Clean all window surfaces inside and outside.
 10. Perform final cleaning in, on and around all casework, sinks, toilets fixtures, etc.
 11. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 12. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 13. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 14. Remove tools, construction equipment, machinery, and surplus material from Project site.
 15. Remove snow and ice to provide safe access to building.
 16. 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.
 17. Sweep concrete floors broom clean.
 18. Replace parts subject to unusual operating conditions.

19. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 20. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
 21. Clean ducts, blowers, and coils if units were operated without filters during construction.
 22. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
 23. Leave Project clean and ready for occupancy.
- D. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

3.02 RECORD DOCUMENTS (REFER TO SECTION 01340, PROJECT REQUIREMENTS FOR SUBMITTING RECORD DOCUMENTS)

3.03 REMOVE TEMPORARY FACILITIES

- A. At the completion of the work prior to final payment, remove all temporary facilities entirely from site, including, but not limited to, the following: Field offices, trailers, shanties, sheds, job telephone, temporary toilets, temporary enclosures, dust barriers and other temporary protection devices.

END OF SECTION

**SECTION 013400
PROJECT RECORD DOCUMENTS**

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
- B. Project record documents consisting of:
 - a. Record drawings.
 - b. Record project manual (specifications).

1.02 SUBMITTALS

- A. Project Record Documents: Submit after substantial completion, but prior to final completion.
 - 1. Record drawings: Submit in form of opaque prints.
 - a. Sets shall include all drawings, whether changed or not.
 - 2. Other record documents: Submit originals or good quality photocopies.
 - 3. Each Sub contractor is responsible for their respective trade, record documents and record drawings. Combine with General Contractor record drawing documents for a complete set.

PART 2 - PRODUCTS

(NOT USED)

PART 3 - EXECUTION

4.01 MAINTENANCE OF PROJECT RECORD DOCUMENTS

- A. Do not use record documents of any type for construction purposes.
- B. Maintain record documents in a secure location at the site while providing for access by the contractor and the architect during normal working hours; store in a fire-resistive room or container outside of normal working hours.
- C. Record information as soon as possible after it is obtained.
- D. Assign a person or persons responsible for maintaining record documents.
- E. Record the following types of information on all applicable record documents:
 - 1. Dimensional changes.
 - 2. New and revised details.
 - 3. Revisions to electrical circuits.
 - 4. Locations of utilities concealed in construction.
 - 5. Particulars on concealed products which will not be easy to identify later.
 - 6. Changes made by modifications to the contract; note identification numbers if applicable.
 - 7. New information which may be useful to the owner, but which was not shown in either the contract documents or submittals.

4.02 RECORD DRAWINGS

- A. Maintain a complete set of opaque prints of the contract drawings, marked to show changes.
- B. Where the actual work differs from that shown on the drawings, mark this set to show the actual work.
 - 1. Mark location of concealed items before they are covered by other work.
 - 2. Mark either record contract drawings or shop drawings, whichever are best suited to show the change.
- C. When the contractor is required by a provision of a modification to prepare a new drawing, rather than to revise existing drawings, obtain instructions from the architect as to the drawing scale and information required.
- D. Keep drawings in labeled, bound sets.
 - 1. Mark with red pencil.
 - 2. Mark work of separate contracts with different colors of pencils.

3. Incorporate new drawings into existing sets, as they are issued.
- E. Where record drawings are also required as part of operation and maintenance data submittals, copy marks to another opaque print obtained from the architect.

4.03 RECORD PROJECT MANUAL

- A. Maintain a complete copy of the project manual, marked to show changes.
- B. Where the actual work differs from that shown in the project manual, mark the record copy to show the actual work.
 1. Include a copy of each addendum and modification to the contract.
 2. In addition to the types of information required on all record documents, record the following types of information:
 - a. Product options taken, when the specification allows more than one.
 - b. Proprietary name and model number of actual products furnished, for each product, material, and item of equipment specified.
 - c. Name of the supplier and installer, for each product for which neither a product data submittal nor a maintenance data submittal was specified.

4.04 TRANSMITTAL TO OWNER (THROUGH THE ARCHITECT)

- A. Collect, organize, label, and package ready for reference.
 1. Bind print sets with durable paper covers.
 2. Label each document (and each sheet of drawings) with "PROJECT RECORD DOCUMENTS - This document has been prepared using information furnished by _____" [insert the contractor's name], and the date of preparation.
- B. Submit to the Project Manager for transmittal to the Architect, unless otherwise indicated.
- C. Submit to the Architect four (4) sets of Operation and Maintenance Manuals in three-ring binders, by volume, and indexed per binder (with one master index) to be transmitted to the Architect/Engineer for approval: All to be submitted at one time, not piece meal. Indexing should follow the specification section numbers.
 1. Include all inspection/approvals/certifications
 2. All approved submittals and cut sheets as well as manufacturer's operation and maintenance manuals for each section.
 3. Manuals are to be completed in volumes, three ring binders, starting with Division 1 and continuing through the last projects Division. The number of volumes is determined by the number of spec section the projects has and by the amount of paper/copies for complete sets of three ring binders.
 4. List of all contractors and vendors for the project with names, addresses and phone numbers.

END OF SECTION

**SECTION 015240
CONSTRUCTION WASTE MANAGEMENT**

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes administrative and procedural requirements for the following:
 - 1. Salvaging nonhazardous demolition and construction waste.
 - 2. Recycling nonhazardous demolition and construction waste.
 - 3. Disposing of nonhazardous demolition and construction waste.
- B. Related Sections include the following:
 - 1. All of Division 1 and attached specifications and drawings that make a part of this contract.

1.03 DEFINITIONS

- A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

1.04 SUBMITTALS

- A. Waste Management Plan: Submit 4 copies of plan within 30 days of date established for the Notice to Proceed.
- B. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.
- C. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.
- D. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- E. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

1.05 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Waste Management Conference: Conduct conference at Project site to comply with requirements in Division 1. Review methods and procedures related to waste management including, but not limited to, the following:
 - 1. Review and discuss waste management plan.
 - 2. Review requirements for documenting quantities of each type of waste and its disposition.
 - 3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.

4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
5. Review waste management requirements for each trade.

1.06 WASTE MANAGEMENT PLAN

- A. General: Develop plan consisting of waste identification, and waste reduction work plan. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.
- B. Waste Identification: Indicate anticipated types and quantities of demolition, site-clearing, and construction waste generated by the Work. Include estimated quantities and assumptions for estimates.
- C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.
 1. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
 2. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
 3. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
 4. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
 5. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location on Project site where materials separation will be located.

PART 2 - PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 PLAN IMPLEMENTATION

- A. General: Implement waste management plan as approved by Project Manager. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
 1. Comply with Division 1 Section "Temporary Facilities" for operation, termination, and removal requirements.
- B. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.
 1. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.
- C. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
 2. Comply with Division 1 Section "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.02 SALVAGING DEMOLITION WASTE

- A. Salvaged Items for Sale and Donation: Not permitted on Project site.

3.03 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

- A. General: Recycle beverage containers used by on-site workers.
- B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall accrue to the Contractor.

- C. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical.
 - 1. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.
 - a. Inspect containers and bins for contamination and remove contaminated materials if found.
 - 2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 3. Stockpile materials away from construction area.
 - 4. Store components off the ground and protect from the weather.
 - 5. Remove recyclable waste off Owner's property and transport to recycling receiving or processor.

3.04 RECYCLING DEMOLITION WASTE

- A. Asphaltic Concrete Paving: Break up and transport paving to asphalt-recycling facility.
- B. Concrete: break up and sort rebar as best as possible. Recycle all concrete.
- C. Recycle all metal products from the building before demolition (aluminum, steel etc)
- D. Recycle as much product as possible and provide a complete report to TCNJ to confirm the percentage recycled on the project.

3.05 RECYCLING CONSTRUCTION WASTE

- A. Packaging:
 - 1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
 - 2. Polystyrene Packaging: Separate and bag materials.
 - 3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
 - 4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.
- B. Wood Materials:
 - 1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.

3.06 DISPOSAL OF WASTE

- A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
 - 1. Except as otherwise specified, do not allow waste materials that are to be disposed of 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 waste materials on site.
- C. Burying: Do not bury waste materials on site.
- D. Disposal: Transport waste materials off Owner's property and legally dispose of them.
- E. Washing waste materials into sewers or drains is not permitted.

END OF SECTION

SECTION 024100 DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Selective demolition of building elements for alteration purposes.
- B. Abandonment and removal of existing utilities and utility structures.

1.02 DEFINITIONS

- A. Remove: Detach or dismantle items from existing construction and dispose of them off site, unless items are indicated to be salvaged or reinstalled.
- B. Remove and Salvage: Detach or dismantle items from existing construction in a manner to prevent damage. Clean, package, label and deliver salvaged items to Owner in ready-for-reuse condition.
- C. Existing to Remain: Designation for existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.

1.03 REFERENCE STANDARDS

- A. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations 2022, with Errata (2021).

PART 3 EXECUTION

2.01 GENERAL PROCEDURES AND PROJECT CONDITIONS

- A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
 - 1. Obtain required permits.
 - 2. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
 - 3. Provide, erect, and maintain temporary barriers and security devices.
 - 4. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
 - 5. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
 - 6. Do not close or obstruct roadways or sidewalks without permits from authority having jurisdiction.
 - 7. Conduct operations to minimize obstruction of public and private entrances and exits. Do not obstruct required exits at any time. Protect persons using entrances and exits from removal operations.
 - 8. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon, or limit access to their property.
- B. Do not begin removal until receipt of notification to proceed from Owner.
- C. Protect existing structures and other elements to remain in place and not removed.
 - 1. Provide bracing and shoring.
 - 2. Prevent movement or settlement of adjacent structures.
 - 3. Stop work immediately if adjacent structures appear to be in danger.
- D. Hazardous Materials:
 - 1. If hazardous materials are discovered during removal operations, stop work and notify Architect and Owner; hazardous materials include regulated asbestos containing materials, lead, PCBs, and mercury.

2.02 EXISTING UTILITIES

- A. Coordinate work with utility companies. Notify utilities before starting work, comply with their requirements, and obtain required permits.

- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.
- E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.
- F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.
- G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

2.03 SELECTIVE DEMOLITION FOR ALTERATIONS

- A. Existing construction and utilities indicated on drawings are based on casual field observation and existing record documents only.
 - 1. Verify construction and utility arrangements are as indicated.
 - 2. Report discrepancies to Architect before disturbing existing installation.
 - 3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.
- B. Remove existing work as indicated and required to accomplish new work.
 - 1. Remove items indicated on drawings.
- C. Services including, but not limited to, HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications: Remove existing systems and equipment as indicated.
 - 1. Maintain existing active systems to remain in operation, and maintain access to equipment and operational components.
 - 2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
 - 3. Verify that abandoned services serve only abandoned facilities before removal.
 - 4. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings. Remove back to source of supply where possible, otherwise cap stub and tag with identification.
- D. Protect existing work to remain.
 - 1. Prevent movement of structure. Provide shoring and bracing as required.
 - 2. Perform cutting to accomplish removal work neatly and as specified for cutting new work.
 - 3. Repair adjacent construction and finishes damaged during removal work.
 - 4. Patch to match new work.

2.04 DEBRIS AND WASTE REMOVAL

- A. Remove debris, junk, and trash from site.
- B. Leave site in clean condition, ready for subsequent work.
- C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

**SECTION 061000
ROUGH CARPENTRY**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Communications and electrical room mounting boards.
- B. Concealed wood blocking, nailers, and supports.

1.02 REFERENCE STANDARDS

- A. PS 20 - American Softwood Lumber Standard 2021.

1.03 DELIVERY, STORAGE, AND HANDLING

- A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.
- B. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, and installation.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
 - 1. If no species is specified, provide species graded by the agency specified; if no grading agency is specified, provide lumber graded by grading agency meeting the specified requirements.
 - 2. Grading Agency: Grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee at www.alsc.org, and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

PART 3 EXECUTION

3.01 INSTALLATION - GENERAL

- A. Select material sizes to minimize waste.
- B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

3.02 BLOCKING, NAILERS, AND SUPPORTS

- A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.
- B. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.
- C. Provide the following specific nonstructural framing and blocking:
 - 1. Cabinets and shelf supports.
 - 2. Wall-mounted door stops.
 - 3. Chalkboards and marker boards.

3.03 INSTALLATION OF CONSTRUCTION PANELS

- A. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches (610 mm) on center on all edges and into studs in field of board.
 - 1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
 - 2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
 - 3. Install adjacent boards without gaps.

4. Size and Location: As indicated on drawings.

END OF SECTION

**SECTION 062000
FINISH CARPENTRY**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Finish carpentry items.

1.02 RELATED REQUIREMENTS

- A. Section 064100 - Architectural Wood Casework: Shop fabricated custom cabinet work.
- B. Section 081416 - Flush Wood Doors.

1.03 REFERENCE STANDARDS

- A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition 2014, with Errata (2016).
- B. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards 2021, with Errata.
- C. NEMA LD 3 - High-Pressure Decorative Laminates 2005.

PART 2 PRODUCTS

2.01 FINISH CARPENTRY ITEMS

- A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

2.02 PLASTIC LAMINATE MATERIALS

- A. Plastic Laminate: As indicated on drawings.

2.03 FABRICATION

- A. Shop assemble work for delivery to site, permitting passage through building openings.
- B. Cap exposed plastic laminate finish edges with material of same finish and pattern.
- C. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.
- D. Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 2 feet from sink cut-outs. (Locate counter butt joints minimum 600 mm from sink cut-outs.)

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify adequacy of backing and support framing.

3.02 INSTALLATION

- A. Install custom fabrications in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade indicated.
- B. Set and secure materials and components in place, plumb and level.
- C. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch (0.79 mm). Do not use additional overlay trim to conceal larger gaps.

END OF SECTION

**SECTION 064100
ARCHITECTURAL WOOD CASEWORK**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Specially fabricated cabinet units.
- B. Countertops.
- C. Hardware.

1.02 RELATED REQUIREMENTS

- A. Section 061000 - Rough Carpentry: Support framing, grounds, and concealed blocking.
- B. Section 066100 - Solid Surfacing Fabrications: Cast plastic countertops.

1.03 REFERENCE STANDARDS

- A. ANSI A208.1 - American National Standard for Particleboard 2022.
- B. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition 2014, with Errata (2016).
- C. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards 2021, with Errata.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
- C. Product Data: Provide data for hardware accessories.

1.05 QUALITY ASSURANCE

- A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.

1.06 FIELD CONDITIONS

- A. During and after installation of custom cabinets, maintain temperature and humidity conditions in building spaces at same levels planned for occupancy.

PART 2 PRODUCTS

2.01 CABINETS

- A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
- B. Plastic Laminate Faced Cabinets: Custom grade, flush overlay.

2.02 WOOD-BASED COMPONENTS

- A. Wood fabricated from old growth timber is not permitted.

2.03 PANEL CORE MATERIALS

- A. Particleboard: Composite panel composed of cellulosic particles, additives, and bonding system; comply with ANSI A208.1.

2.04 LAMINATE MATERIALS

- A. Manufacturers:
 - 1. Formica Corporation; [____]: www.formica.com/#sle.
 - 2. Panolam Industries International, Inc; [____]: www.panolam.com/#sle.
 - 3. Wilsonart LLC; [____]: www.wilsonart.com/#sle.
- B. Provide specific types as indicated on finish schedule (equivalent products will be considered, pending approval).

2.05 ACCESSORIES

- A. Adhesive: Type recommended by fabricator to suit application.

2.06 HARDWARE

- A. Adjustable Shelf Supports: Standard side-mounted system using recessed metal shelf standards or multiple holes for pin supports and coordinated self rests, polished chrome finish, for nominal 1 inch (25 mm) spacing adjustments.
- B. Drawer and Door Pulls: "U" shaped wire pull, aluminum with satin finish, 3 1/2 inch centers ().
- C. Drawer Slides:
 - 1. Type: Extension types as indicated.
 - 2. Static Load Capacity: Commercial grade.
 - 3. Mounting: Side mounted.
 - 4. Stops: Integral type.
 - 5. Manufacturers:
 - a. Accuride International, Inc; Light-Duty Drawer Slides: www accuride.com/#sle.
 - b. Blum, Inc; STANDARD: www blum.com/#sle.
 - c. Knappe & Vogt Manufacturing Company; Light-Duty Drawer Slides: www knapeandvogt.com/#sle.
- D. Hinges: European style concealed self-closing type, steel with nickel-plated finish.

2.07 FABRICATION

- A. Assembly: Shop assemble cabinets for delivery to site in units easily handled and to permit passage through building openings.
- B. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 2 feet from sink cut-outs. (Locate counter butt joints minimum 600 mm from sink cut-outs.)

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify adequacy of backing and support framing.
- B. Verify location and sizes of utility rough-in associated with work of this section.

3.02 INSTALLATION

- A. Install work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade indicated.
- B. Set and secure custom cabinets in place, assuring that they are rigid, plumb, and level.
- C. Use concealed joint fasteners to align and secure adjoining cabinet units.
- D. Secure cabinets to floor using appropriate angles and anchorages.

3.03 ADJUSTING

- A. Adjust moving or operating parts to function smoothly and correctly.

3.04 CLEANING

- A. Clean casework, counters, shelves, hardware, fittings, and fixtures.

END OF SECTION

**SECTION 066100
SOLID SURFACING FABRICATIONS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Solid surfacing fabrications.

1.02 REFERENCE STANDARDS

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2022.

1.03 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: For each type of cast polymer, indicate:
 - 1. Plans and Elevations: Include dimensions and thicknesses; indicate location of fabricated units.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with minimum three years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Handle products to prevent damage to edges, ends, or surfaces, and in accordance with manufacturer's written instructions.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Solid Surface Fabrications: Solid Surface Material: Non-porous, homogeneous material maintaining the same composition throughout the part with a composition of acrylic polymer, aluminum trihydrate filler and pigment; not coated, laminated or of composite construction
 - 1. Basis of Design: Corian by DuPont; www.corian.com.
 - 2. Wilsonart Contract; www.wilsonartcontract.com.
 - 3. Cambria Company LLC[<>]: www.cambriausa.com/#sl.
 - 4. Substitutions: See Section 016000 - Product Requirements.

2.02 REGULATORY REQUIREMENTS

- A. Surface Burning Requirements:
 - 1. Interior Use: Flame spread index of 75 or less and smoke-development index of 450 or less; Class B interior finish classification when tested in accordance with ASTM E84.

2.03 SOLID SURFACING FABRICATIONS

- A. Solid Surfacing: Densified, homogeneous, nonporous castings fabricated into sheets; composed of acrylic resins, fillers, color chips, and pigment and performance-enhancing additives.
- B. Applications: Countertops
 - 1. Style: As indicated on drawings.

2.04 FABRICATION

- A. Radius corners and edges with 1/8 inch (3.2 mm) minimum radius; polish exposed edges.
- B. Fabrication Tolerances:
 - 1. Maximum Variation from Specified Thicknesses: 1/16 inch (1.59 mm).

2.05 ACCESSORIES

- A. Joint Sealants: Type recommended by cast polymer manufacturer for application.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify field measurements are as indicated on shop drawings.
- B. Verify substrates are prepared to receive cast polymer fabrications.
- C. Verify plumbing, electrical, and other building components affecting work of this section are placed and ready to receive work of this section.

3.02 INSTALLATION

- A. Install anchoring devices in accordance with cast polymer manufacturer's setting templates.
- B. Install cast polymer units in accordance with manufacturer's written instructions.
- C. Align work plumb and level.

3.03 CLEANING

- A. Clean exposed surfaces of installed units in accordance with manufacturer's instructions.

END OF SECTION

**SECTION 081116
INTERIOR ALUMINUM DOORS, DOOR FRAMES, AND GLAZING FRAMES**

SUMMARY

1.01 SECTION INCLUDES:

- A. Pre-finished aluminum door frames for interior use.
- B. Pre-finished aluminum window frames for interior use.
- C. Pre-finished aluminum framing systems for interior use.
- D. Pre-finished aluminum and glass doors for interior use.

1.02 RELATED SECTIONS:

- A. Section 081416 – Flush wood doors.
- B. Section 087100 – Door hardware.
- C. Section 088000 – Glass and glazing.

SUBMITTALS

2.01 SUBMIT UNDER PROVISIONS OF SECTION 01300.

2.02 PRODUCT DATA: MANUFACTURER'S FABRICATION AND INSTALLATION INSTRUCTIONS.

- A. Include information on factory finish, glazing gaskets, accessories and other required components.

2.03 SHOP DRAWINGS: SUBMIT SCHEDULE INDICATING OPENING NUMBERS, FRAME TYPES, DIMENSIONS, SWINGS AND HARDWARE REQUIREMENTS.

2.04 INCLUDE ELEVATIONS AND DETAILS INDICATING FRAME TYPES, PROFILES, CONDITIONS AT OPENINGS, METHODS AND LOCATIONS OF ANCHORING, GLAZING REQUIREMENTS, HARDWARE LOCATIONS AND REINFORCEMENTS FOR HARDWARE.

2.05 SAMPLES: SUBMIT THE FOLLOWING:

- A. Full range of manufacturer's standard finishes for the Architect's selection.
- B. Where normal color variations are expected, include additional samples to show range of such variation.

2.06 INSTRUCTIONS: PROVIDE COPIES OF MANUFACTURER'S DATA FOR FABRICATION AND INSTALLATION OF ALUMINUM

- A. door frames.

QUALITY ASSURANCE

3.01 SINGLE SOURCE RESPONSIBILITY: PROVIDE ALUMINUM FRAMES, ALUMINUM AND GLASS DOORS AND ACCESSORIES PRODUCED BY A SINGLE MANUFACTURER FOR EACH TYPE OF PRODUCT INDICATED.

3.02 MANUFACTURER'S QUALIFICATIONS: COMPANY SPECIALIZING IN THE MANUFACTURING OF DOOR FRAME SYSTEMS WITH A MINIMUM OF 10 YEARS OF DOCUMENTED EXPERIENCE ON A COMPARABLE SIZED PROJECT.

3.03 FIRE AND SMOKE RATED ASSEMBLIES:

- A. In locations where fire rated openings are scheduled or required by regulatory agencies, provide fire rated aluminum frames that have been tested and certified for specified exposure by an agency acceptable to governing authorities.
- B. Provide labels permanently fastened on each fire rated frame that are within size limits established by NFPA and the testing authority.
 - 1. Provide 20 minute labels.
 - 2. Provide 90 minute labels.

DELIVERY, STORAGE AND HANDLING

- 4.01 DELIVER FRAMES AND DOORS CARTONED TO PROVIDE PROTECTION DURING TRANSIT AND STORAGE AT PROJECT SITE.**
- 4.02 INSPECT FRAMES AND DOORS UPON DELIVERY FOR DAMAGE.**
 - A. Repair minor damage to pre-finished products by means as recommended by the
 - B. manufacturer.
 - C. Replace frames that cannot be satisfactorily repaired.
- 4.03 STORE FRAMES AT THE PROJECT SITE UNDER COVER AND AS NEAR AS POSSIBLE TO THE FINAL INSTALLATION LOCATION. DO NOT USE COVERING MATERIAL THAT WILL CAUSE DISCOLORATION OF ALUMINUM FINISH.**

ENVIRONMENTAL REQUIREMENTS

- 5.01 DO NOT BEGIN INSTALLATION OF THE FRAMES OR DOORS UNTIL THE AREA OF WORK HAS BEEN COMPLETELY**
- 5.02 ENCLOSED AND THE INTERIOR IS PROTECTED FROM THE ELEMENTS.**
- 5.03 MAINTAIN TEMPERATURE AND HUMIDITY IN AREAS OF INSTALLATION WITHIN REASONABLE LIMITS, AS CLOSE AS POSSIBLE TO FINAL OCCUPANCY. IF NECESSARY, PROVIDE TEMPERATURE CONTROL AND VENTILATION TO MAINTAIN REQUIRED ENVIRONMENTAL CONDITIONS.**

WARRANTY

- 6.01 WARRANT AGAINST DEFECTS IN MANUFACTURING OF MATERIALS FOR A PERIOD OF 2 YEARS FROM DATE OF**
- 6.02 SUBSTANTIAL COMPLETION.**
- 6.03 WARRANT FRAMING FINISH AGAINST DEFECTS, INCLUDING CRACKING, FLAKING, BLISTERING, PEELING AND**
- EXCESSIVE FADING, CHALKING AND NON-UNIFORMITY IN COLOR FOR A PERIOD OF 5 YEARS.**

PART 2 PRODUCTS

8.01 ACCEPTABLE MANUFACTURERS AND PRODUCTS

- A. BASIS OF DESIGN: WILSON PARTITIONS
 - 1. 110 VIADUCT ROAD STAMFORD, CT 06907 (203) 316-8033
WWW.WILSONPART.COM
- B. SUBSTITUTIONS: COMPLY WITH PROVISIONS OF SECTION 01600 FOR SUBSTITUTION REQUESTS.
 - 1. MATERIALS

8.02 ALUMINUM: CONTROLLED ALLOY BILLETS MEETING REQUIREMENTS OF ASTM B221, 6063 T5 ALLOY, TO ASSURE COMPLIANCE WITH TIGHT DIMENSIONAL TOLERANCES AND MAINTAIN COLOR UNIFORMITY.

8.03 RECYCLED CONTENT OF ALUMINUM PRODUCTS: MINIMUM WEIGHTED AVERAGE SCRAP CONTENT OF THE EXTRUSIONS TO BE 47.9%. THIS INCLUDES A POST CONSUMER SCRAP CONTENT OF 11/1% AND A PRE CONSUMER SCRAP CONTENT OF 36.8%. THE REMAINING 52.1% OF THE EXTRUSIONS TO BE PRIME ALUMINIUM.

- A. INTERIOR ALUMINUM FRAMES
 - 1. SNAP-ON TRIM PROFILE: PROVIDE FRAMES WITH THE FOLLOWING CHARACTERISTICS:
- B. RECTILINEAR DESIGN.
- C. TRIM: 2".
- D. SERIES 500: 4-7/8" THROAT. ACCEPTS 1/4", 3/8" AND 1/2" GLASS.
- E. INTERIOR ALUMINUM DOORS

1. PROVIDE 1-3/4" DOORS WITH THE FOLLOWING CHARACTERISTICS: MEDIUM STILE (3-1/2")
2. TOP RAIL (3-1/4") BOTTOM RAIL (9-1/2")
3. 1/2" GLASS STOPS FOR 1/4" GLASS
4. 3/4" GLASS STOPS FOR 3/8" GLASS
5. FABRICATION

8.04 PRE-MACHINE JAMBS AND PREPARE FOR HARDWARE, WITH CONCEALED REINFORCEMENT PLATES, DRILLED AND TAPPED AS REQUIRED, AND FASTENED WITHIN THE FRAME.

8.05 PROVIDE CORNER REINFORCEMENTS AND ALIGNMENT CLIPS FOR PRECISE BUTT OR MITERED CONNECTIONS.

8.06 FABRICATE ALL COMPONENTS TO ALLOW SECURE INSTALLATION WITHOUT EXPOSED FASTENERS.

8.07 MANUFACTURER SHALL PRE-CUT AND SHIP ALL FRAME MATERIALS KNOCK-DOWN.

1. FINISHES

B. Factory finish extruded frame components so that any part exposed to view upon completion of installation will be uniform in finish and color.

1. FACTORY APPLIED PAINTED FINISH.
2. COLOR COAT: DRY FILM THICKNESS 0.8 +/- 0.05 MIL.
3. COLOR: AS SELECTED BY ARCHITECT.

EXAMINATION

9.01 EXAMINE PROJECT CONDITIONS AND VERIFY THAT THE WORK OF THIS SECTION MAY PROPERLY COMMENCE. DO NOT PROCEED WITH THE INSTALLATION UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.

9.02 VERIFY THAT THE WALL THICKNESS DOES NOT EXCEED MANUFACTURER'S RECOMMENDED TOLERANCES OF SPECIFIED FRAME THROAT SIZE.

INSTALLATION

10.01 COMPLY WITH FRAME MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS AND APPROVED SHOP DRAWINGS. STRICTLY ADHERE TO MAINTAINING SPECIFIED WALL THICKNESS TO INSURE DIMENSION DOES NOT EXCEED FRAME THROAT SIZE SPECIFIED. INSTALLATION NOT TO BE ATTEMPTED IN AREAS WHERE THE WALL THICKNESS EXCEEDS THE TOLERANCE OF THE SPECIFIED THROAT SIZE.

10.02 INSTALL FRAMES PLUMB AND SQUARE, SECURELY ANCHORED TO SUBSTRATES WITH FASTENERS RECOMMENDED BY FRAME MANUFACTURER.

- A. Use concealed installation clips to assure that splices and connections are tightly butted and properly aligned.
- B. Secure clips to main structural extrusion components and not to snap-in or trim members.
- C. Do not use screws or other fasteners that will be exposed to view when installation is complete.

ADJUSTING AND CLEANING

11.01 CLEAN EXPOSED FRAMES PROMPTLY AFTER INSTALLATION, USING CLEANING METHODS RECOMMENDED BY FRAME MANUFACTURER.

11.02 TOUCH UP MARRED AREAS SO THAT TOUCH-UP IS NOT VISIBLE FROM A DISTANCE OF 4 FEET. REMOVE AND REPLACE FRAMES THAT CANNOT BE SATISFACTORILY ADJUSTED.

PROTECTION

12.01 PROVIDE PROTECTION REQUIRED TO ASSURE THAT FRAMES WILL BE WITHOUT DAMAGE OR DETERIORATION UPON SUBSTANTIAL COMPLETION OF THE PROJECT.

END OF SECTION

**SECTION 081213
HOLLOW METAL FRAMES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Non-fire-rated hollow metal frames for non-hollow metal doors.
- B. Interior glazed borrowed lite frames.

1.02 RELATED REQUIREMENTS

- A. Section 081416 - Flush Wood Doors: Non-hollow metal door for hollow metal frames.
- B. Section 087100 - Door Hardware: Hardware and silencers.
- C. Section 088000 - Glazing: Glazed borrowed lites.
- D. Section 099123 - Interior Painting: Field painting.

1.03 REFERENCE STANDARDS

- A. AAMA/WDMA/CSA 101/I.S.2/A440 - North American Fenestration Standard/Specification for Windows, Doors, and Skylights 2017.
- B. ADA Standards - 2010 ADA Standards for Accessible Design 2010.
- C. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors 2018.
- D. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100) 2017.
- E. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames 2020.
- F. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2022.
- G. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable 2021a.
- H. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength 2018a.
- I. BHMA A156.115 - Hardware Preparation in Steel Doors and Steel Frames 2016.
- J. ICC A117.1 - Accessible and Usable Buildings and Facilities 2017.
- K. NAAMM HMMA 830 - Hardware Selection for Hollow Metal Doors and Frames 2002.
- L. NAAMM HMMA 831 - Hardware Locations for Hollow Metal Doors and Frames 2011.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes.
- C. Installation Instructions: Manufacturer's published instructions, including any special installation instructions relating to this project.
- D. Manufacturer's qualification statement.
- E. Installer's qualification statement.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Hollow Metal Frames with Integral Casings:
 - 1. Ceco Door, an Assa Abloy Group company: www.assaabloydss.com/#sle.
 - 2. Curries, an Assa Abloy Group company: www.assaabloydss.com/#sle.
 - 3. Steelcraft, an Allegion brand: www.allegion.com/#sle.

2.02 PERFORMANCE REQUIREMENTS

- A. Hollow Metal Frames: AAMA/WDMA/CSA 101/I.S.2/A440 requirements for specific frame type:
 - 1. Performance Class (PC): AW.
- B. Door Frame Type: Provide hollow metal door frames with integral casings.
- C. Steel Sheet: Comply with one or more of the following requirements; galvanized steel complying with ASTM A653/A653M, cold-rolled steel complying with ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel complying with ASTM A1011/A1011M, commercial steel (CS) Type B, for each.
- D. Accessibility: Comply with ICC A117.1 and ADA Standards.
- E. Glazed Lights: Stops on non-secure side; sizes and configurations as indicated on drawings. Style: Manufacturers standard.
- F. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with the specified requirements for each type; for instance, an exterior frame that is also indicated as being sound-rated must comply with the requirements specified for exterior frames and for sound-rated frames; where two requirements conflict, comply with the most stringent.
- G. Hardware Preparations, Selections and Locations: Comply with BHMA A156.115, NAAMM HMMA 830, NAAMM HMMA 831 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
- H. Frames for Interior Glazing or Borrowed Lites: Construction and face dimensions to match door frames, and as indicated on drawings.

2.03 HOLLOW METAL DOOR FRAMES WITH INTEGRAL CASINGS

- A. Interior Door Frames, Non-Fire Rated: Knock-down type.
 - 1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
 - a. Level 1 - Standard-duty.
 - b. Physical Performance Level C, 250,000 cycles; in accordance with ANSI/SDI A250.4.
 - c. Frame Metal Thickness: 18 gauge, 0.042 inch (1.0 mm), minimum.

2.04 FINISHES

- A. Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.

2.05 ACCESSORIES

- A. Silencers: Resilient rubber, fitted into drilled hole; provide three on strike side of single door, three on center mullion of pairs, and two on head of pairs without center mullions.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that opening sizes and tolerances are acceptable.
- C. Verify that finished walls are in plane to ensure proper door alignment.

3.02 INSTALLATION

- A. Install frames in accordance with manufacturer's instructions and related requirements of specified frame standards or custom guidelines indicated.
- B. Coordinate frame anchor placement with wall construction.
- C. Comply with glazing installation requirements of Section 088000.
- D. Install door hardware as specified in Section 087100.

3.03 TOLERANCES

- A. Maximum Diagonal Distortion: 1/8 inch (3 mm) measured with straight edges, crossed corner to corner.

3.04 SCHEDULE - SEE DRAWINGS

- A. Refer to Door and Frame Schedule on the drawings.

END OF SECTION

**SECTION 081416
FLUSH WOOD DOORS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Flush wood doors; flush and flush glazed configuration; non-rated.

1.02 RELATED REQUIREMENTS

- A. Section 081213 - Hollow Metal Frames.
- B. Section 087100 - Door Hardware.
- C. Section 088000 - Glazing.
- D. Section 099123 - Interior Painting: Field finishing of doors.

1.03 REFERENCE STANDARDS

- A. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass 2018.
- B. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition 2014, with Errata (2016).
- C. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards 2021, with Errata.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Indicate door core materials and construction; type and characteristics.
- C. Shop Drawings: Show doors and frames, elevations, sizes, types, swings, undercuts, beveling, blocking for hardware, factory machining, factory finishing, cutouts for glazing and other details.
- D. Warranty, executed in Owner's name.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section, with not less than three years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified in this section, with not less than three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Package, deliver and store doors in accordance with specified quality standard.
- B. Accept doors on site in manufacturer's packaging, and inspect for damage.
- C. Protect doors with resilient packaging sealed with heat shrunk plastic; do not store in damp or wet areas or areas where sunlight might bleach veneer; seal top and bottom edges with tinted sealer if stored more than one week, and break seal on site to permit ventilation.

1.07 WARRANTY

- A. Manufacturer Warranty: Provide manufacturer's warranty on interior doors for the life of the installation. Complete forms in Owner's name and register with manufacturer.
 - 1. Include coverage for warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Medium-Density Overlay (MDO) Faced Doors for Opaque Finish:
 - 1. Masonite Architectural; Aspiro Premium Painted Doors:
www.architectural.masonite.com/#sle (or approved equal).

2.02 DOORS AND PANELS

- A. Doors: See drawings for locations and additional requirements.

1. Quality Standard: Premium Grade, Standard Duty performance, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
- B. Interior Doors: 1-3/4 inches (44 mm) thick unless otherwise indicated; flush construction.
 1. Provide solid core doors at each location.

2.03 DOOR AND PANEL CORES

- A. Non-Rated Solid Core and 20 Minute Rated Doors: Type particleboard core (PC), plies and faces as indicated.

2.04 DOOR FACINGS

- A. Veneer Facing for Opaque Finish: Medium density overlay (MDO), in compliance with indicated quality standard.

2.05 DOOR CONSTRUCTION

- A. Fabricate doors in accordance with door quality standard specified.
- B. Glazed Openings: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings.
- C. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.
- D. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.
 1. Exception: Doors to be field finished.
- E. Provide edge clearances in accordance with the quality standard specified.

2.06 FINISHES - DOORS

- A. Finish work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 5 - Finishing for grade specified and as follows:
 1. Opaque:
 - a. System - 4, Latex Acrylic, Water-based.
 - b. Color: As indicated on drawings.
 - c. Sheen: Semigloss.
- B. Factory finish doors in accordance with approved sample.

2.07 ACCESSORIES

- A. Glazed Openings:
 1. Heat-Strengthened and Fully Tempered Glass: ASTM C1048.
 2. Glazing: Single vision units, 1/4 inch (6.4 mm) thick glass.
 3. Tint: Clear.
- B. Glazing Stops: Aluminum channel shape, mitered corners; prepared for countersink style tamper proof screws.
- C. Astragals and Edges for Double Doors: Pairs of doors astragals, and door edge sealing and protection devices.
 1. Provide surface mounted astragal to cover or fill space for full door height between pair of doors or door and adjacent jamb.
 2. Astragal Type: Split, two parts, and with cutouts for other door hardware.
 3. Edge Type: Beveled edge
- D. Door Hardware: See Section 087100.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that opening sizes and tolerances are acceptable.

- C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

3.02 INSTALLATION

- A. Install doors in accordance with manufacturer's instructions and specified quality standard.
- B. Field-Finished Doors: Trimming to fit is acceptable.
 - 1. Adjust width of non-rated doors by cutting equally on both jamb edges.
 - 2. Trim maximum of 3/4 inch (19 mm) off bottom edges.
- C. Use machine tools to cut or drill for hardware.
- D. Coordinate installation of doors with installation of frames and hardware.
- E. Coordinate installation of glazing.

3.03 TOLERANCES

- A. Comply with specified quality standard for fit and clearance tolerances.
- B. Comply with specified quality standard for telegraphing, warp, and squareness.

3.04 ADJUSTING

- A. Adjust doors for smooth and balanced door movement.
- B. Adjust closers for full closure.

3.05 SCHEDULE - SEE DRAWINGS

END OF SECTION

**SECTION 087100
DOOR HARDWARE**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Hardware for wood and aluminum doors.
- B. Thresholds.

1.02 RELATED REQUIREMENTS

- A. Section 081116 - Aluminum Doors and Frames.
- B. Section 081213 - Hollow Metal Frames.
- C. Section 081416 - Flush Wood Doors.

1.03 REFERENCE STANDARDS

- A. ADA Standards - 2010 ADA Standards for Accessible Design 2010.
- B. BHMA A156.1 - Standard for Butts and Hinges 2021.
- C. BHMA A156.2 - Bored and Preassembled Locks and Latches 2017.
- D. BHMA A156.3 - Exit Devices 2020.
- E. BHMA A156.4 - Door Controls - Closers 2019.
- F. BHMA A156.6 - Standard for Architectural Door Trim 2021.
- G. BHMA A156.7 - Template Hinge Dimensions 2016.
- H. BHMA A156.16 - Auxiliary Hardware 2018.
- I. BHMA A156.18 - Materials and Finishes 2020.
- J. BHMA A156.21 - Thresholds 2019.
- K. BHMA A156.22 - Standard for Gasketing 2021.
- L. BHMA A156.23 - Electromagnetic Locks 2017.
- M. BHMA A156.36 - Auxiliary Locks 2020.
- N. BHMA A156.115W - Hardware Preparation in Wood Doors with Wood or Steel Frames 2006.
- O. DHI (H&S) - Sequence and Format for the Hardware Schedule 2019.
- P. DHI WDHS.3 - Recommended Locations for Architectural Hardware for Flush Wood Doors 1993; also in WDHS-1/WDHS-5 Series, 1996.
- Q. ICC A117.1 - Accessible and Usable Buildings and Facilities 2017.
- R. NFPA 101 - Life Safety Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- S. UL (DIR) - Online Certifications Directory Current Edition.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the manufacture, fabrication, and installation of products that door hardware is installed on.
- B. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.
- C. Preinstallation Meeting: Convene a preinstallation meeting one week prior to commencing work of this section; attendance is required by affected installers and the following:
 - 1. Contractor.
 - 2. Installer's Architectural Hardware Consultant (AHC).
 - 3. Hardware Installer.
 - 4. Owner's Security Consultant.

- D. Furnish templates for door and frame preparation to manufacturers and fabricators of products requiring internal reinforcement for door hardware.
- E. Keying Requirements Meeting:
 - 1. Attendance Required:
 - a. Contractor.
 - b. Owner.
 - c. Installer's Architectural Hardware Consultant (AHC).
 - d. Owner's Security Consultant.
 - 2. Agenda:
 - a. Verify that keying and programming complies with project requirements.
 - 3. Incorporate "Keying Requirements Meeting" decisions into keying submittal upon review of door hardware keying system including, but not limited to, the following:
 - a. Access control requirements.
 - 4. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.
 - 5. Deliver established keying requirements to manufacturers.

1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project, and includes construction details, material descriptions, finishes, and dimensions and profiles of individual components.
- C. Shop Drawings - Door Hardware Schedule: Submit detailed listing that includes each item of hardware to be installed on each door. Use door numbering scheme as included in Contract Documents.
 - 1. Prepared by or under supervision of Architectural Hardware Consultant (AHC).
 - 2. Comply with DHI (H&S) using door numbers and hardware set numbers as indicated in construction documents.
 - 3. List groups and suffixes in proper sequence.
 - 4. Provide complete description for each door listed.
 - 5. Provide manufacturer name, product names, and catalog numbers; include functions, types, styles, sizes and finishes of each item.
 - 6. Include account of abbreviations and symbols used in schedule.
- D. Manufacturer's Installation Instructions: Indicate special procedures.
- E. Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.
- F. Maintenance Materials and Tools: Furnish the following for Owner's use in maintenance of project.
 - 1. Tools: One set of each special wrench or tool applicable for each different or special hardware component, whether supplied by hardware component manufacturer or not.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified for commercial door hardware with at least three years of documented experience.
- C. Supplier Qualifications: Company with certified Architectural Hardware Consultant (AHC) to assist in work of this section.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Package hardware items individually; label and identify each package with door opening code to match door hardware schedule.

1.08 WARRANTY

- A. See Section 017800 - Closeout Submittals for additional warranty requirements.
- B. Manufacturer's Warranty: Provide warranty against defects in material and workmanship for period indicated. Complete forms in Owner's name and register with manufacturer.
 - 1. Closers: Five years, minimum.
 - 2. Exit Devices: Three years, minimum.
 - 3. Locksets and Cylinders: Three years, minimum.
 - 4. Other Hardware: Two years, minimum.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

- A. Provide specified door hardware as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.
- B. Provide individual items of single type, of same model, and by same manufacturer.
- C. Provide door hardware products that comply with the following requirements:
 - 1. Applicable provisions of federal, state, and local codes.
 - 2. Accessibility: ADA Standards and ICC A117.1.
 - 3. Applicable provisions of NFPA 101.
 - 4. Hardware Preparation for Wood Doors with Wood or Steel Frames: BHMA A156.115W.
- D. Lock Function: Provide lock and latch function numbers and descriptions of manufacturer's series. See Door Hardware Schedule on drawings.
- E. Fasteners:
 - 1. Provide fasteners of proper type, size, quantity, and finish that comply with commercially recognized standards for proposed applications.
 - a. Aluminum fasteners are not permitted.
 - b. Provide phillips flat-head screws with heads finished to match door surface hardware unless otherwise indicated.
 - 2. Provide machine screws for attachment to reinforced hollow metal and aluminum frames.
 - a. Self-drilling (Tek) type screws are not permitted.

2.02 HINGES

- A. Manufacturers:
 - 1. McKinney; an Assa Abloy Group company; [____]: www.assaabloydss.com/#sle.
 - 2. Hager Companies; [____]: www.hagerco.com/#sle.
 - 3. Stanley, dormakaba Group; [____]: www.stanleyhardwarefordoors.com/#sle.
- B. Hinges: Comply with BHMA A156.1, Grade 1.
 - 1. Butt Hinges: Comply with BHMA A156.1 and BHMA A156.7 for templated hinges.
 - a. Provide hinge width required to clear surrounding trim.
 - 2. Provide hinges on every swinging door.
 - 3. Provide five-knuckle full mortise butt hinges unless otherwise indicated.
 - 4. Provide ball-bearing hinges at each door with closer.
 - 5. Provide non-removable pins on exterior outswinging doors.
 - 6. Provide following quantity of butt hinges for each door:
 - a. Doors From 60 inches (1.5 m) High up to 90 inches (2.3 m) High: Three hinges.
 - b. Doors 90 inches (2.3 m) High up to 120 inches (3 m) High: Four hinges.

2.03 FLUSH BOLTS

- A. Manufacturers:
 - 1. Adams Rite, an Assa Abloy Group company: www.assaabloydss.com/#sle.
 - 2. Hager Companies: www.hagerco.com/#sle.
 - 3. Ives, an Allegion brand: www.allegion.com/us/#sle.
- B. Flush Bolts: Comply with BHMA A156.16, Grade 1.

1. Flush Bolt Throw: 3/4 inch (19 mm), minimum.
2. Provides extension bolts in leading edge of door, one bolt into floor, one bolt into top of frame.
 - a. Pairs of Swing Doors: At inactive leaves, provide flush bolts of type as required to comply with code.
3. Provide dustproof floor strike for bolt into floor, except at metal thresholds.
4. Automatic Flush Bolts: Automatically latch upon closing of door; automatic retraction of bolts when active leaf is opened; located on inactive leaf of pair of doors.

2.04 EXIT DEVICES

- A. Manufacturers:
 1. Corbin Russwin, Sargent, or Yale; an Assa Abloy Group company; [_____]: www.assaabloydss.com/#sle.
 2. Hager Companies; [_____]: www.hagerco.com/#sle.
 3. Stanley, dormakaba Group; [_____]: www.stanleyhardwarefordoors.com/#sle.
- B. Exit Devices: Comply with BHMA A156.3, Grade 1.
 1. Lever design to match lockset trim.
 2. Provide cylinder with cylinder dogging or locking trim.
 3. Provide exit devices properly sized for door width and height.
 4. Provide strike as recommended by manufacturer for application indicated.
 5. Provide UL (DIR) listed exit device assemblies for fire-rated doors and panic device assemblies for non-fire-rated doors.

2.05 ELECTROMAGNETIC LOCKS

- A. Manufacturers:
 1. Securitron; an Assa Abloy Group company: www.assaabloydss.com/#sle.
 2. Substitutions: See Section 016000 - Product Requirements.
- B. Electromagnetic Locks: Comply with BHMA A156.23, Grade 1.
 1. Holding Force: 600 lbs (272 kgs), minimum.
 2. Voltage: 12 VDC, and provide power supplies by same manufacturer as locks.
 3. Mounting: Surface mounted to door and frame on secure side, with fasteners, brackets, and spacer bars as required for application.

2.06 CYLINDRICAL LOCKS

- A. Manufacturers:
 1. Corbin Russwin, Sargent, or Yale; an Assa Abloy Group company: www.assaabloydss.com/#sle.
 2. Hager Companies: www.hagerco.com/#sle.
 3. Schlage, an Allegion brand: www.allegion.com/us/#sle.
- B. Cylindrical Locks (Bored): Comply with BHMA A156.2, Grade 1, 4000 Series.
 1. Bored Hole: 2-1/8 inch (54 mm) diameter.
 2. Latchbolt Throw: 1/2 inch (12.7 mm), minimum.
 3. Backset: 2-3/4 inch (70 mm) unless otherwise indicated.
 4. Strikes: Provide manufacturer's standard strike for each latchset or lockset with strike box and curved lip extending to protect frame in compliance with indicated requirements.
 - a. Finish: To match lock or latch.

2.07 AUXILIARY LOCKS (DEADLOCKS)

- A. Manufacturers:
 1. Yale; an Assa Abloy Group company: www.assaabloydss.com/#sle.
 2. Hager Companies: www.hagerco.com/#sle.
 3. Stanley, dormakaba Group: www.stanleyhardwarefordoors.com/#sle.
- B. Auxiliary Locks (Deadlocks): Comply with BHMA A156.36, Grade 1.
 1. Backset: 2-3/4 inch (70 mm), unless otherwise indicated.
 2. Bolt Throw: 1/2 inch (12.7 mm), with latch made of hardened steel.

2.08 DOOR PULLS AND PUSH BARS

- A. Manufacturers:
 - 1. Rockwood; an Assa Abloy Group company; [____]: www.assaabloydss.com/#sle.
 - 2. Hager Companies: www.hagerco.com/#sle.
 - 3. Hiawatha, Inc, division of Activar Construction Products Group, Inc: www.activarcpg.com/hiawatha/#sle.
- B. Door Pulls and Push Bars: Comply with BHMA A156.6.
 - 1. Bar Type: Push bar, unless otherwise indicated.
 - 2. Material: Aluminum, unless otherwise indicated.

2.09 CLOSERS

- A. Manufacturers; Surface Mounted:
 - 1. Corbin Russwin, Sargent, or Yale; an Assa Abloy Group company: www.assaabloydss.com/#sle.
 - 2. Hager Companies: www.hagerco.com/#sle.
 - 3. LCN, an Allegion brand: www.allegion.com/us/#sle.
- B. Closers: Comply with BHMA A156.4, Grade 1.
 - 1. Type: Surface mounted to door.
 - 2. At corridor entry doors, mount closer on room side of door.

2.10 KICK PLATES

- A. Manufacturers:
 - 1. Hiawatha, Inc, an Activar Construction Products Group company; [____]: www.activarcpg.com/hiawatha/#sle.
 - 2. Ives, an Allegion brand; [____]: www.allegion.com/us/#sle.
- B. Kick Plates: Provide along bottom edge of push side of every door with closer, except aluminum storefront and glass entry doors, unless otherwise indicated.
 - 1. Size: 8 inch (203 mm) high by 2 inch (51 mm) less door width (LDW) on push side of door.

2.11 FLOOR STOPS

- A. Manufacturers:
 - 1. Rockwood; an Assa Abloy Group company: www.assaabloydss.com/#sle.
 - 2. Hager Companies: www.hagerco.com/#sle.
 - 3. Hiawatha, Inc, division of Activar Construction Products Group, Inc: www.activarcpg.com/hiawatha/#sle.
- B. Floor Stops: Comply with BHMA A156.16, Grade 1 and Resilient Material Retention Test as described in this standard.
 - 1. Type: Manual hold-open, with pencil floor stop.
 - 2. Material: Aluminum housing with rubber insert.

2.12 ASTRAGALS

- A. Manufacturers:
 - 1. Pemko; an Assa Abloy Group company: www.assaabloydss.com/#sle.
 - 2. Hager Companies: www.hagerco.com/#sle.
 - 3. Zero International, Inc: www.zerointernational.com/#sle.
- B. Astragals: Comply with BHMA A156.22.
 - 1. Type: Split, two parts, and with manual locking.
 - 2. Material: Aluminum.
 - 3. Provide non-corroding fasteners at exterior locations.

2.13 THRESHOLDS

- A. Manufacturers:
 - 1. Pemko; an Assa Abloy Group company; [____]: www.assaabloydss.com/#sle.

2. Hager Companies; [_____]: www.hagerco.com/#sle.
 3. Zero International, Inc; [_____]: www.zerointernational.com/#sle.
- B. Thresholds: Comply with BHMA A156.21.
1. Provide threshold where indicated.
 2. Type: Flat surface.
 3. Material: Aluminum.
 4. Threshold Surface: Fluted horizontal grooves across full width.
 5. Field cut threshold to profile of frame and width of door sill for tight fit.
 6. Provide non-corroding fasteners at exterior locations.

2.14 SILENCERS

- A. Manufacturers:
1. Ives, an Allegion brand: www.allegion.com/us/#sle.
- B. Silencers: Provide at equal locations on door frame to mute sound of door's impact upon closing.
1. Single Door: Provide three on strike jamb of frame.
 2. Pair of Doors: Provide two on head of frame, one for each door at latch side.
 3. Material: Rubber, gray color.

2.15 FINISHES

- A. Finishes: Provide door hardware of same finish, unless otherwise indicated.
1. Primary Finish: 625; bright chromium plated over nickel, with brass or bronze base material (former US equivalent US26); BHMA A156.18.
 2. Secondary Finish: 626; satin chromium plated over nickel, with brass or bronze base material (former US equivalent US26D); BHMA A156.18.
 - a. Use secondary finish in kitchens, bathrooms, and other spaces containing chrome or stainless steel finished appliances, fittings, and equipment; provide primary finish on one side of door and secondary finish on other side if necessary.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that doors and frames are ready to receive this work; labeled, fire-rated doors and frames are properly installed, and dimensions are as indicated on shop drawings.

3.02 INSTALLATION

- A. Install hardware in accordance with manufacturer's instructions and applicable codes.
- B. Use templates provided by hardware item manufacturer.
- C. Do not install surface mounted items until application of finishes to substrate are fully completed.
- D. Door Hardware Mounting Heights: Distance from finished floor to center line of hardware item. As indicated in following list; unless noted otherwise in Door Hardware Schedule or on drawings.
1. For Wood Doors: Install in compliance with DHI WDHS.3 recommendations.
 2. Mounting heights in compliance with ADA Standards:
 - a. Locksets: 40-5/16 inch (1024 mm).
 - b. Push Plates/Pull Bars: 42 inch (1067 mm).
 - c. Deadlocks (Deadbolts): 48 inch (1219 mm).
 - d. Exit Devices: 40-5/16 inch (1024 mm).

3.03 ADJUSTING

- A. Adjust work under provisions of Section 017000 - Execution and Closeout Requirements.
- B. Adjust hardware for smooth operation.

3.04 CLEANING

- A. Clean finished hardware in accordance with manufacturer's written instructions after final adjustments have been made.
- B. Clean adjacent surfaces soiled by hardware installation.
- C. Replace items that cannot be cleaned to manufacturer's level of finish quality at no additional cost.

3.05 PROTECTION

- A. Protect finished Work under provisions of Section 017000 - Execution and Closeout Requirements.
- B. Do not permit adjacent work to damage hardware or finish.

END OF SECTION

SECTION 088000 GLAZING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Glazing units.
- B. Glazing compounds.

1.02 RELATED REQUIREMENTS

- A. Section 081213 - Hollow Metal Frames: Glazed borrowed lites.
- B. Section 081416 - Flush Wood Doors: Glazed lites in doors.
- C. Section 084313 - Aluminum-Framed Storefronts: Glazing provided as part of storefront assembly.

1.03 REFERENCE STANDARDS

- A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials Current Edition.
- B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test 2015 (Reaffirmed 2020).
- C. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers 2005 (Reapproved 2019).
- D. ASTM C1036 - Standard Specification for Flat Glass 2021.
- E. ASTM C1193 - Standard Guide for Use of Joint Sealants 2016.
- F. GANA (SM) - GANA Sealant Manual 2008.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data on Glazing Unit Glazing Types: Provide structural, physical and environmental characteristics, size limitations, special handling and installation requirements.
- C. Product Data on Glazing Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements, and identify available colors.
- D. Manufacturer's qualification statement.
- E. Installer's qualification statement.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years documented experience.

1.06 WARRANTY

- A. See Section 017800 - Closeout Submittals for additional warranty requirements.
- B. Heat Soaked Tempered Glass: Provide a five (5) year manufacturer warranty to include coverage for spontaneous breakage of fully tempered glass caused by nickel sulfide (NiS) inclusions.

PART 2 PRODUCTS

2.01 MANUFACTURERS

2.02 GLASS MATERIALS

- A. Float Glass: Provide float glass based glazing unless otherwise indicated.
 - 1. Annealed Type: ASTM C1036, Type I - Transparent Flat, Class 1 - Clear, Quality - Q3.

2. Impact Resistant Safety Glass: Complies with ANSI Z97.1 - Class B, or 16 CFR 1201 - Category I criteria.
3. Thicknesses: As indicated.

2.03 ACCESSORIES

- A. Setting Blocks: Silicone, with 80 to 90 Shore A durometer hardness; ASTM C864 Option II. Length of 0.1 inch for each square foot (25 mm for each square meter) of glazing or minimum 4 inch (100 mm) by width of glazing rabbet space minus 1/16 inch (1.5 mm) by height to suit glazing method and pane weight and area.
- B. Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness; ASTM C864 Option II. Minimum 3 inch (75 mm) long by one half the height of the glazing stop by thickness to suit application, self adhesive on one face.
- C. Glazing Splines: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option II; color black.
- D. Glazing Clips: Manufacturer's standard type.

PART 3 EXECUTION

3.01 VERIFICATION OF CONDITIONS

- A. Verify that openings for glazing are correctly sized and within tolerances, including those for size, squareness, and offsets at corners.
- B. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and support framing is ready to receive glazing system.
- C. Verify that sealing between joints of glass framing members has been completed effectively.

3.02 INSTALLATION, GENERAL

- A. Install glazing in compliance with written instructions of glass, gaskets, and other glazing material manufacturers, unless more stringent requirements are indicated, including those in glazing referenced standards.
- B. Install glazing sealants in accordance with ASTM C1193, GANA (SM), and manufacturer's instructions.

3.03 INSTALLATION - DRY GLAZING METHOD (GASKET GLAZING)

- A. Application - Exterior and/or Interior Glazed: Set glazing infills from either the exterior or the interior of the building.
- B. Place setting blocks at 1/4 points with edge block no more than 6 inch (152 mm) from corners.
- C. Rest glazing on setting blocks and push against fixed stop with sufficient pressure on gasket to attain full contact.
- D. Install removable stops without displacing glazing gasket; exert pressure for full continuous contact.

3.04 CLEANING

- A. Remove excess glazing materials from finish surfaces immediately after application using solvents or cleaners recommended by manufacturers.
- B. Remove nonpermanent labels immediately after glazing installation is complete.
- C. Clean glass and adjacent surfaces after sealants are fully cured.
- D. Clean glass on both exposed surfaces not more than 4 days prior to Date of Substantial Completion in accordance with glass manufacturer's written recommendations.

3.05 PROTECTION

- A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.

- B. Remove and replace glass that is damaged during construction period prior to Date of Substantial Completion.

END OF SECTION

**SECTION 090561
COMMON WORK RESULTS FOR FLOORING PREPARATION**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. This section applies to floors identified in Contract Documents that are receiving the following types of floor coverings:
 - 1. Resilient tile and sheet.
 - 2. Carpet tile.
 - 3. Thin-set ceramic tile and stone tile.
- B. Removal of existing floor coverings.
- C. Preparation of existing concrete floor slabs for installation of floor coverings.
- D. Patching compound.

1.02 REFERENCE STANDARDS

- A. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50 mm] Cube Specimens) 2021.
- B. ASTM C472 - Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters, and Gypsum Concrete 2020.
- C. RFCI (RWP) - Recommended Work Practices for Removal of Resilient Floor Coverings 2011.

1.03 SUBMITTALS

- A. Floor Covering and Adhesive Manufacturers' Product Literature: For each specific combination of substrate, floor covering, and adhesive to be used; showing:
 - 1. Moisture and alkalinity (pH) limits and test methods.
 - 2. Manufacturer's required bond/compatibility test procedure.
- B. Adhesive Bond and Compatibility Test Report.

1.04 QUALITY ASSURANCE

- A. Contractor may perform adhesive and bond test with Contractor's own personnel or hire a testing agency.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, handle, and protect products in accordance with manufacturer's instructions and recommendations.
- B. Deliver materials in manufacturer's packaging; include installation instructions.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Patching Compound: Floor covering manufacturer's recommended product, suitable for conditions, and compatible with adhesive and floor covering. In the absence of any recommendation from flooring manufacturer, provide a product with the following characteristics:
 - 1. Cementitious moisture-, mildew-, and alkali-resistant compound, compatible with floor, floor covering, and floor covering adhesive, and capable of being feathered to nothing at edges.
 - 2. Compressive Strength: 3000 psi, minimum, after 28 days, when tested in accordance with ASTM C109/C109M or ASTM C472, whichever is appropriate.
 - 3. Products:
 - a. ARDEX Engineered Cements; ARDEX Feather Finish:
www.ardexamericas.com/#sle.
 - b. H.B. Fuller Construction Products, Inc; TEC Feather Edge Skim Coat:
www.tecspecialty.com/#sle.

- c. USG Corporation; Durock Brand Advanced Skim Coat Floor Patch:
www.usg.com/#sle.
- B. Alternate Flooring Adhesive: Floor covering manufacturer's recommended product, suitable for the moisture and pH conditions present; low-VOC. In the absence of any recommendation from flooring manufacturer, provide a product recommended by adhesive manufacturer as suitable for substrate and floor covering and for conditions present.

PART 3 EXECUTION

3.01 CONCRETE SLAB PREPARATION

- A. Perform following operations in the order indicated:
 - 1. Preliminary cleaning.
 - 2. Specified remediation, if required.
 - 3. Patching, smoothing, and leveling, as required.
 - 4. Other preparation specified.
 - 5. Adhesive bond and compatibility test.
 - 6. Protection.

3.02 REMOVAL OF EXISTING FLOOR COVERINGS

- A. Comply with local, State, and federal regulations and recommendations of RFCI (RWP), as applicable to floor covering being removed.
- B. Dispose of removed materials in accordance with local, State, and federal regulations and as specified.

3.03 PREPARATION

- A. See individual floor covering section(s) for additional requirements.
- B. Comply with requirements and recommendations of floor covering manufacturer.
- C. Fill and smooth surface cracks, grooves, depressions, control joints and other non-moving joints, and other irregularities with patching compound.
- D. Do not fill expansion joints, isolation joints, or other moving joints.

3.04 ADHESIVE BOND AND COMPATIBILITY TESTING

- A. Comply with requirements and recommendations of floor covering manufacturer.

3.05 APPLICATION OF REMEDIAL FLOOR COATING

- A. Comply with requirements and recommendations of coating manufacturer.

END OF SECTION

**SECTION 092116
GYPSUM BOARD ASSEMBLIES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Performance criteria for gypsum board assemblies.
- B. Metal stud wall framing.
- C. Metal channel ceiling framing.
- D. Acoustic insulation.
- E. Cementitious backing board.
- F. Gypsum wallboard.
- G. Joint treatment and accessories.

1.02 RELATED REQUIREMENTS

- A. Section 061000 - Rough Carpentry: Wood blocking product and execution requirements.
- B. Section 092216 - Non-Structural Metal Framing.

1.03 REFERENCE STANDARDS

- A. AISI S100 - North American Specification for the Design of Cold-Formed Steel Structural Members 2016, with Supplement (2020).
- B. AISI S220 - North American Standard for Cold-Formed Steel Nonstructural Framing 2020.
- C. AISI S240 - North American Standard for Cold-Formed Steel Structural Framing 2015, with Errata (2020).
- D. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units 2018.
- E. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units 2019.
- F. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2022.
- G. ASTM A1003/A1003M - Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members 2015.
- H. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing 2017.
- I. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products 2020.
- J. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board 2020.
- K. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness 2022.
- L. ASTM C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base 2019.
- M. ASTM C1325 - Standard Specification for Fiber-Mat Reinforced Cementitious Backer Units 2022.
- N. ASTM C1396/C1396M - Standard Specification for Gypsum Board 2017.
- O. GA-216 - Application and Finishing of Gypsum Panel Products 2021.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate the installation of gypsum board assemblies with size, location, and installation of service utilities.

1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data:
 - 1. Provide data on metal framing, gypsum board, and accessories.
 - 2. Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.

1.06 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

- A. Provide completed assemblies complying with ASTM C840 and GA-216.

2.02 METAL FRAMING MATERIALS

- A. Steel Sheet: ASTM A1003/A1003M, subject to the ductility limitations indicated in AISI S240.
- B. Manufacturers - Metal Framing, Connectors, and Accessories:
 - 1. ClarkDietrich: www.clarkdietrich.com/#sle.
 - 2. MarinoWARE: www.marinoware.com/#sle.
 - 3. SCAFCO Corporation: www.scafco.com/#sle.
- C. Nonstructural Framing System Components: AISI S220; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/120 at 5 psf (L/120 at 240 Pa).
 - 1. Studs: C-shaped with knurled or embossed faces.
 - 2. Runners: U shaped, sized to match studs.
- D. Partition Head to Structure Connections: Provide mechanical anchorage devices that accommodate deflection and prevent rotation of studs while maintaining structural performance of partition.
 - 1. Structural Performance: Maintain lateral load resistance and vertical movement capacity required by applicable code, when evaluated in accordance with AISI S100.
 - 2. Material: ASTM A653/A653M steel sheet, SS Grade 50/340, with G60/Z180 hot-dipped galvanized coating.

2.03 BOARD MATERIALS

- A. Manufacturers - Gypsum-Based Board:
 - 1. American Gypsum Company: www.americangypsum.com/#sle.
 - 2. CertainTeed Corporation: www.certainteed.com/#sle.
 - 3. Georgia-Pacific Gypsum: www.gpgypsum.com/#sle.
 - 4. USG Corporation: www.usg.com/#sle.
- B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
 - 1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
 - 2. Thickness:
 - a. Vertical Surfaces: 5/8 inch (16 mm).
 - b. Ceilings: 1/2 inch (13 mm).
- C. Backing Board For Wet Areas: One of the following products:
 - 1. Application: Horizontal surfaces behind tile in wet areas including countertops.
 - 2. ANSI Cement-Based Board: Non-gypsum-based; aggregated Portland cement panels with glass fiber mesh embedded in front and back surfaces complying with ANSI A118.9 or ASTM C1325.
 - a. Thickness: 5/8 inch (16 mm).
 - b. Products:
 - 1) Custom Building Products: www.custombuildingproducts.com/#sle.

- 2) PermaBASE Building Products, LLC provided by National Gypsum Company; PermaBase Cement Board: www.goldbondbuilding.com/#sle.
- 3) USG Corporation; Fiberock Brand Aqua-Tough AR Interior Panels Regular 1/4 in. (6.4 mm): www.usg.com/#sle.

2.04 GYPSUM BOARD ACCESSORIES

- A. Acoustic Insulation: ASTM C665; preformed mineral-fiber, friction fit type, unfaced; 3 1/2" thickness .
- B. Acoustic Sealant: Acrylic emulsion latex or water-based elastomeric sealant; do not use solvent-based non-curing butyl sealant.
- C. Beads, Joint Accessories, and Other Trim: ASTM C1047, rigid plastic, galvanized steel, or rolled zinc, unless noted otherwise.
 1. Corner Beads: Low profile, for 90 degree outside corners.
- D. Screws for Fastening of Gypsum Panel Products to Steel Members from 0.033 to 0.112 inch (0.84 to 2.84 mm) in Thickness: ASTM C954; steel drill screws, corrosion-resistant.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that project conditions are appropriate for work of this section to commence.

3.02 FRAMING INSTALLATION

- A. Metal Framing: Install in accordance with AISI S220 and manufacturer's instructions.
- B. Suspended Ceilings and Soffits: Space framing and furring members as indicated.
- C. Studs: Space studs at 16 inches on center (at 406 mm on center).
 1. Extend partition framing to structure where indicated and to ceiling in other locations.
 2. Partitions Terminating at Ceiling: Attach ceiling runner securely to ceiling track in accordance with manufacturer's instructions.
 3. Partitions Terminating at Structure: Attach top runner to structure, maintain clearance between top of studs and structure, and connect studs to track using specified mechanical devices in accordance with manufacturer's instructions; verify free movement of top of stud connections; do not leave studs unattached to track.
- D. Blocking: Install FRT wood blocking for support of:
 1. Wall-mounted cabinets.
 2. Wall-mounted door hardware.
 3. Digital displays (coordinate with AV vendor).

3.03 ACOUSTIC ACCESSORIES INSTALLATION

- A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.
- B. Acoustic Sealant: Install in accordance with manufacturer's instructions.
 1. Place one bead continuously on substrate before installation of perimeter framing members.
 2. Place continuous bead at perimeter of each layer of gypsum board.
 3. Seal around all penetrations by conduit, pipe, ducts, and rough-in boxes, except where firestopping is provided.

3.04 BOARD INSTALLATION

- A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.
- B. Cementitious Backing Board: Install over steel framing members and plywood substrate where indicated, in accordance with ANSI A108.11 and manufacturer's instructions.

3.05 INSTALLATION OF TRIM AND ACCESSORIES

- A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.

1. Not more than 30 feet (10 meters) apart on walls and ceilings over 50 feet (16 meters) long.
- B. Corner Beads: Install at external corners, using longest practical lengths.
- C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials.

3.06 JOINT TREATMENT

- A. Paper Faced Gypsum Board: Use paper joint tape, embed with drying type joint compound and finish with drying type joint compound.
- B. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
 1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
- C. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
 1. Feather coats of joint compound so that camber is maximum 1/32 inch (0.8 mm).

3.07 TOLERANCES

- A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet (3 mm in 3 m) in any direction.

3.08 PROTECTION

- A. Protect installed gypsum board assemblies from subsequent construction operations.

END OF SECTION

**SECTION 092216
NON-STRUCTURAL METAL FRAMING**

PART 1 GENERAL

1.01 RELATED REQUIREMENTS

- A. Section 061000 - Rough Carpentry: Wood blocking within stud framing.
- B. Section 092116 - Gypsum Board Assemblies: Metal studs for gypsum board partition framing.

1.02 REFERENCE STANDARDS

- A. AISI S220 - North American Standard for Cold-Formed Steel Nonstructural Framing 2020.

1.03 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data describing framing member materials and finish, product criteria, load charts, and limitations.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing the work of this section with minimum five years documented experience and approved by manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Metal Framing, Connectors, and Accessories:
 - 1. ClarkDietrich: www.clarkdietrich.com/#sle.
 - 2. MarinoWARE: www.marinoware.com/#sle.
 - 3. The Steel Network, Inc: www.SteelNetwork.com/#sle.
 - 4. Substitutions: See Section 016000 - Product Requirements.

2.02 FRAMING MATERIALS

- A. Non-Loadbearing Framing System Components: AISI S220; sheet steel, of size and properties necessary for the spacing indicated, with maximum deflection of wall framing of L/240 at 5 psf (L/240 at 240 Pa).
 - 1. Studs: C-shaped with flat faces.
 - 2. Runners: U-shaped, sized to match studs.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that rough-in utilities are in proper location.

3.02 INSTALLATION OF STUD FRAMING

- A. Extend partition framing to six inches above ceiling and to structure where indicated.
- B. Partitions Terminating at Ceiling: Attach ceiling runner securely to ceiling track in accordance with manufacturer's instructions.
- C. Partitions Terminating at Structure: Attach extended leg top runner to structure, maintain clearance between top of studs and structure, and brace both flanges of studs as indicated.
- D. Align and secure top and bottom runners at 24 inches (600 mm) on center.
- E. Fit runners under and above openings; secure intermediate studs to same spacing as wall studs.
- F. Align stud web openings horizontally.
- G. Secure studs to tracks using crimping method. Do not weld.
- H. Fabricate corners using a minimum of three studs.

- I. Install double studs at wall openings, door and window jambs, not more than 2 inches (50 mm) from each side of openings.
- J. Coordinate installation of bucks, anchors, and blocking with electrical, mechanical, and other work to be placed within or behind stud framing.
- K. Blocking: Use wood blocking secured to studs. Provide blocking for support of wall cabinets, hardware, and opening frames.

3.03 TOLERANCES

- A. Maximum Variation From True Position: 1/8 inch in 10 feet (3 mm in 3 m).
- B. Maximum Variation From Plumb: 1/8 inch in 10 feet (3 mm in 3 m).

END OF SECTION

**SECTION 095100
ACOUSTICAL CEILINGS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Suspended metal grid ceiling system.
- B. Acoustical units.
- C. Supplementary insulation above ceiling.

1.02 REFERENCE STANDARDS

- A. ASTM C635/C635M - Standard Specification for Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings 2022.
- B. ASTM E1264 - Standard Classification for Acoustical Ceiling Products 2022.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.
- B. Do not install acoustical units until after interior wet work is dry.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on suspension system components and acoustical units.

1.05 QUALITY ASSURANCE

- A. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- B. Acoustical Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acoustic Tiles/Panels:
 - 1. Armstrong World Industries, Inc: www.armstrongceilings.com/#sle.
 - 2. CertainTeed Corporation: www.certainteed.com/ceilings-and-walls/#sle.
 - 3. USG Corporation: www.usg.com/ceilings/#sle.
- B. Suspension Systems:
 - 1. Same as for acoustical units.

2.02 ACOUSTICAL UNITS

- A. Acoustical Units - General: ASTM E1264, Class A.
- B. Acoustical Panels: Painted mineral fiber, with the following characteristics:
 - 1. Classification: ASTM E1264 Type III.
 - a. Pattern: "G" - smooth.
 - 2. Size: 24 by 48 inches (610 by 1219 mm).
 - 3. Thickness: 3/4 inch (19 mm).
 - 4. Ceiling Attenuation Class (CAC): 35, determined in accordance with ASTM E1264.
 - 5. Panel Edge: Reveal.
 - 6. Tile Edge: Beveled.
 - a. Joint: Kerfed and rabbeted.
 - 7. Color: White.
 - 8. Suspension System: Exposed grid.

2.03 SUSPENSION SYSTEM(S)

- A. Metal Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with perimeter moldings, clips, and splices as required.
- B. Exposed Suspension System: Hot-dip galvanized steel grid and cap.
 - 1. Structural Classification: Intermediate-duty, when tested in accordance with ASTM C635/C635M.
 - 2. Profile: Tee; 9/16 inch (14 mm) face width.
 - 3. Finish: Baked enamel.
 - 4. Color: White.
 - 5. Products:
 - a. CertainTeed Corporation; 9/16" EZ Stab Elite Narrow System: www.certainteed.com/ceilings-and-walls/#sle.
 - b. USG Corporation; Donn Brand Centricitee DXT/DXLT 9/16 inch Acoustical Suspension System: www.usg.com/ceilings/#sle.
 - c. Substitutions: See Section 016000 - Product Requirements.
- C. Exposed Suspension System for "Cloud" Applications: Galvanized steel grid and cap; trim as specified under Accessories.
 - 1. Structural Classification: Intermediate-duty, when tested in accordance with ASTM C635/C635M.
 - 2. Profile: Tee; 15/16 inch (24 mm) face width.
 - 3. Finish: Baked enamel.
 - 4. Products:
 - a. USG Corporation; Compositions Decorative Cloud System: www.usg.com/ceilings/#sle.
 - b. Substitutions: See Section 016000 - Product Requirements.

2.04 ACCESSORIES

- A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.
- B. Hanger Wire: 12 gauge, 0.08 inch (2 mm) galvanized steel wire.
- C. Perimeter Moldings: Same metal and finish as grid.
 - 1. Angle Molding: L-shaped, for mounting at same elevation as face of grid.
- D. Metal Edge Trim for "Cloud" Suspension Systems: Steel or extruded aluminum; provide attachment clips, splice plates, and preformed corner pieces for complete trim system.
 - 1. Trim Height: 6 inch (152 mm).
 - 2. Finish: Baked enamel.
 - 3. Color: White.
 - 4. Products:
 - a. USG Corporation; Compasso Suspension Trim: www.usg.com/ceilings/#sle.
 - b. Armstrong; Axiom Trim.
- E. Touch-up Paint: Type and color to match acoustical and grid units.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that layout of hangers will not interfere with other work.

3.02 PREPARATION

- A. Install after major above-ceiling work is complete.
- B. Coordinate the location of hangers with other work.

3.03 INSTALLATION - SUSPENSION SYSTEM

- A. Install suspension system in accordance with manufacturer's instructions and as supplemented in this section.
- B. Locate system on room axis according to reflected plan.
- C. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
 - 1. Use longest practical lengths.
 - 2. Overlap and rivet corners.
- D. Suspension System, Non-Seismic: Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
- E. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.
- F. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.
- G. Support fixture loads using supplementary hangers located within 6 inches (152 mm) of each corner, or support components independently.
- H. Do not eccentrically load system or induce rotation of runners.

3.04 INSTALLATION - ACOUSTICAL UNITS

- A. Install acoustical units in accordance with manufacturer's instructions.
- B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.
- C. Fit border trim neatly against abutting surfaces.
- D. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.
- E. Cutting Acoustical Units:
 - 1. Make field cut edges of same profile as factory edges.
- F. Lay acoustical insulation for a distance of 48 inches (1219 mm) either side of acoustical partitions where indicated.

3.05 TOLERANCES

- A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet (3 mm in 3 m).
- B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

3.06 CLEANING

- A. Ceiling tile surfaces to be free of fingerprint smudges.
- B. Replace damaged or abraded components.

END OF SECTION

**SECTION 096500
RESILIENT FLOORING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Resilient sheet flooring.
- B. Resilient tile flooring.
- C. Resilient base.
- D. Installation accessories.

1.02 RELATED REQUIREMENTS

- A. Section 090561 - Common Work Results for Flooring Preparation: Removal of existing floor coverings, cleaning, and preparation.

1.03 REFERENCE STANDARDS

- A. ASTM F1700 - Standard Specification for Solid Vinyl Floor Tile 2020.
- B. ASTM F1861 - Standard Specification for Resilient Wall Base 2021.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.
- C. Verification Samples: Submit two samples, illustrating color and pattern for each resilient flooring product specified.
- D. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing specified flooring with minimum three years documented experience.
- B. Installer Qualifications: Company specializing in installing specified flooring with minimum three years documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Upon receipt, immediately remove any shrink-wrap and check materials for damage and the correct style, color, quantity and run numbers.
- B. Store all materials off of the floor in an acclimatized, weather-tight space.
- C. Protect roll materials from damage by storing on end.

1.07 FIELD CONDITIONS

- A. Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 70 degrees F (21 degrees C) to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F (13 degrees C).

PART 2 PRODUCTS

2.01 SHEET FLOORING

2.02 TILE FLOORING

- A. Vinyl Tile Printed film type, with transparent or translucent wear layer.
 - 1. Manufacturers:
 - a. Refer to finish schedule on drawings.
 - 2. Minimum Requirements: Comply with ASTM F1700, of Class corresponding to type specified.
 - 3. Wear Layer Thickness: 0.020 inch (0.50 mm).
 - 4. Total Thickness: 0.125 inch (3 mm).

2.03 RESILIENT BASE

- A. Resilient Base: ASTM F1861, Type TV, vinyl, thermoplastic; style as scheduled.
 - 1. Manufacturers:
 - a. Johnsonite, a Tarkett Company: www.johnsonite.com/#sle.
 - b. Mannington Commercial: www.manningtoncommercial.com/#sle.
 - c. Roppe Corporation; Contours Profiled Wall Base System: www.roppe.com/#sle.
 - 2. Height: 4 inch (100 mm).
 - 3. Thickness: 0.125 inch (3.2 mm).
 - 4. Finish: Satin.
 - 5. Length: Roll.
 - 6. Color: As indicated on drawings.

2.04 ACCESSORIES

- A. Adhesives: Waterproof; types recommended by flooring manufacturer.
- B. Moldings, Transition and Edge Strips: as indicated on drawings.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.
- B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.

3.02 PREPARATION

- A. Prepare floor substrates as recommended by flooring and adhesive manufacturers.

3.03 INSTALLATION - GENERAL

- A. Starting installation constitutes acceptance of subfloor conditions.
- B. Install in accordance with manufacturer's written instructions.

3.04 INSTALLATION - TILE FLOORING

- A. Mix tile from container to ensure shade variations are consistent when tile is placed, unless otherwise indicated in manufacturer's installation instructions.

3.05 INSTALLATION - RESILIENT BASE

- A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches (45 mm) between joints.
- B. Install base on solid backing. Bond tightly to wall and floor surfaces.

3.06 CLEANING

- A. Remove excess adhesive from floor, base, and wall surfaces without damage.
- B. Clean in accordance with manufacturer's written instructions.

3.07 PROTECTION

- A. Prohibit traffic on resilient flooring for 48 hours after installation.

END OF SECTION

**SECTION 096813
TILE CARPETING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Carpet tile, fully adhered.
- B. Removal of existing carpet tile.

1.02 RELATED REQUIREMENTS

- A. Section 090561 - Common Work Results for Flooring Preparation: Removal of existing floor coverings, cleaning, and preparation.

1.03 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.
- C. Samples: Submit two carpet tiles illustrating color and pattern design for each carpet color selected.
- D. Operation and Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing specified carpet tile with minimum three years documented experience.
- B. Installer Qualifications: Company specializing in installing carpet tile with minimum three years documented experience and approved by carpet tile manufacturer.

1.05 FIELD CONDITIONS

PART 2 PRODUCTS

2.01 MATERIALS

- A. Tile Carpeting, manufactured in one color dye lot. Refer to finish schedule on drawings.

2.02 ACCESSORIES

- A. Carpet Tile Adhesive: Recommended by carpet tile manufacturer; releasable type.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive carpet tile.

3.02 PREPARATION

- A. Prepare floor substrates as recommended by flooring and adhesive manufacturers.
- B. Remove subfloor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with subfloor filler.

3.03 INSTALLATION

- A. Starting installation constitutes acceptance of subfloor conditions.
- B. Install carpet tile in accordance with manufacturer's instructions.
- C. Blend carpet from different cartons to ensure minimal variation in color match.
- D. Cut carpet tile clean. Fit carpet tight to intersection with vertical surfaces without gaps.
- E. Locate change of color or pattern between rooms under door centerline.
- F. Fully adhere carpet tile to substrate.
- G. Trim carpet tile neatly at walls and around interruptions.

H. Complete installation of edge strips, concealing exposed edges.

3.04 CLEANING

A. Remove excess adhesive without damage, from floor, base, and wall surfaces.

B. Clean and vacuum carpet surfaces.

END OF SECTION

**SECTION 099123
INTERIOR PAINTING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Surface preparation.
- B. Field application of paints.
- C. Scope: Finish interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.
- D. Do Not Paint or Finish the Following Items:
 - 1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
 - 2. Items indicated to receive other finishes.
 - 3. Items indicated to remain unfinished.
 - 4. Fire rating labels, equipment serial number and capacity labels, bar code labels, and operating parts of equipment.
 - 5. Floors, unless specifically indicated.
 - 6. Glass.
 - 7. Concealed pipes, ducts, and conduits.

1.02 REFERENCE STANDARDS

- A. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual Current Edition.

1.03 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide complete list of products to be used, with the following information for each:
 - 1. Manufacturer's name, product name and/or catalog number, and general product category (e.g., "alkyd enamel").
 - 2. MPI product number (e.g., MPI #47).
 - 3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
- C. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches (216 by 279 mm) in size, illustrating range of colors available for each finishing product specified.
 - 1. Where sheen is specified, submit samples in only that sheen.
 - 2. Where sheen is not specified, discuss sheen options with Architect before preparing samples, to eliminate sheens not required.
- D. Maintenance Data: Submit data including finish schedule showing where each product/color/finish was used, product technical data sheets, material safety data sheets (MSDS), care and cleaning instructions, touch-up procedures, and color samples of each color and finish used.
- E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. Extra Paint and Finish Materials: 1 gallon (4 L) of each color; from the same product run, store where directed.
 - 2. Label each container with color in addition to the manufacturer's label.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

- B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C. Paint Materials: Store at minimum ambient temperature of 45 degrees F (7 degrees C) and a maximum of 90 degrees F (32 degrees C), in ventilated area, and as required by manufacturer's instructions.

1.06 FIELD CONDITIONS

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
- B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- C. Provide lighting level of 80 ft candles (860 lx) measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Provide paints and finishes from the same manufacturer to the greatest extent possible.
 - 1. If a single manufacturer cannot provide specified products; minor exceptions will be permitted provided approval by Architect is obtained using the specified procedures for substitutions.
- B. Paints:
 - 1. Base Manufacturer: Sherwin-Williams Company.
 - 2. Behr Process Corporation: www.behr.com/#sle.
 - 3. PPG Paints: www.ppgpaints.com/#sle.

2.02 PAINTS AND FINISHES - GENERAL

- A. Paints and Finishes: Ready-mixed, unless intended to be a field-catalyzed paint.
 - 1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
 - 2. Supply each paint material in quantity required to complete entire project's work from a single production run.
 - 3. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.
- B. Colors: As indicated on drawings.

2.03 ACCESSORY MATERIALS

- A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.
- B. Patching Material: Latex filler.
- C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin application of paints and finishes until substrates have been adequately prepared.
- B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
- D. Test shop-applied primer for compatibility with subsequent cover materials.
- E. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces is below the following maximums:
 - 1. Gypsum Wallboard: 12 percent.

3.02 PREPARATION

- A. Clean surfaces thoroughly and correct defects prior to application.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.
- D. Seal surfaces that might cause bleed through or staining of topcoat.
- E. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.
- F. Wood Doors to be Field-Finished: Seal wood door top and bottom edge surfaces with tinted primer.

3.03 APPLICATION

- A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
- B. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".
- C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- D. Apply each coat to uniform appearance in thicknesses specified by manufacturer.
- E. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply as many coats as necessary for complete hide.
- F. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- G. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 CLEANING

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.05 PROTECTION

- A. Protect finishes until completion of project.
- B. Touch-up damaged finishes after Substantial Completion.

END OF SECTION

**SECTION 210500
COMMON WORK RESULTS FOR FIRE SUPPRESSION**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Above ground piping.
- B. Escutcheons.
- C. Pipe hangers and supports.
- D. Retrofit - sprinkler piping cover system.

1.02 RELATED REQUIREMENTS

- A. Section 211300 - Fire-Suppression Sprinkler Systems: Sprinkler systems design.

1.03 REFERENCE STANDARDS

- A. ASME BPVC-IX - Boiler and Pressure Vessel Code, Section IX - Qualification Standard for Welding, Brazing, and Fusing Procedures; Welders; Brazers; and Welding, Brazing, and Fusing Operators 2021.
- B. ASME B16.1 - Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250 2020.
- C. ASME B16.3 - Malleable Iron Threaded Fittings: Classes 150 and 300 2021.
- D. ASME B16.4 - Gray Iron Threaded Fittings: Classes 125 and 250 2021.
- E. ASME B16.5 - Pipe Flanges and Flanged Fittings: NPS 1/2 through NPS 24 Metric/Inch Standard 2020.
- F. ASTM A47/A47M - Standard Specification for Ferritic Malleable Iron Castings 1999, with Editorial Revision (2022).
- G. ASTM A795/A795M - Standard Specification for Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Fire Protection Use 2021.
- H. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2022.
- I. NFPA 13 - Standard for the Installation of Sprinkler Systems Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- J. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide manufacturer's catalog information. Indicate valve data and ratings.
- C. Shop Drawings: Indicate pipe materials used, jointing methods, supports, and floor and wall penetration seals. Indicate installation, layout, weights, mounting and support details, and piping connections.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Sprinkler-based System:
 - 1. Comply with NFPA 13.
 - 2. See Section 211300.
- B. Welding Materials and Procedures: Comply with ASME BPVC-IX.
- C. Provide system pipes, fittings, sleeves, escutcheons, seals, and other related accessories.

2.02 ABOVE GROUND PIPING

- A. Steel Pipe: ASTM A795 Schedule 40, black.
 - 1. Steel Fittings: ASME B16.5 steel flanges and fittings.

2. Cast Iron Fittings: ASME B16.1, flanges and flanged fittings and ASME B16.4, threaded fittings.
3. Malleable Iron Fittings: ASME B16.3, threaded fittings and ASTM A47/A47M.
4. Mechanical Grooved Couplings: Malleable iron housing clamps to engage and lock, "C" shaped elastomeric sealing gasket, steel bolts, nuts, and washers; galvanized for galvanized pipe.

2.03 PIPE HANGERS AND SUPPORTS

- A. Hangers for Pipe Sizes 1/2 to 1-1/2 inch (15 to 40 mm): Malleable iron, adjustable swivel, split ring.
- B. Hangers for Pipe Sizes 2 inches (50 mm) and Over: Carbon steel, adjustable, clevis.

2.04 RETROFIT-SPRINKLER PIPING COVER SYSTEM

- A. General Requirements:
 1. Surface Burning Characteristics: Flame spread index/smoke developed index of 20/250, maximum, when tested in accordance with ASTM E84 or UL 723.
- B. Materials:
 1. Piping Cover System: Removal-resistant, modular, snap-fit cover units, clips, and anchors for use with CPVC, steel, and copper piping systems.
 2. Provide sidewall sprinkler head housing in compliance with NFPA 13.

PART 3 EXECUTION

3.01 PREPARATION

- A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
- B. Remove scale and foreign material, from inside and outside, before assembly.
- C. Prepare piping connections to equipment with flanges or unions.

3.02 INSTALLATION

- A. Install sprinkler system and service main piping, hangers, and supports in accordance with NFPA 13.
- B. Route piping in orderly manner, plumb and parallel to building structure. Maintain gradient.
- C. Install piping to conserve building space, to not interfere with use of space and other work.
- D. Group piping whenever practical at common elevations.
- E. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- F. Pipe Hangers and Supports:
 1. Install hangers to provide minimum 1/2 inch (15 mm) space between finished covering and adjacent work.
 2. Place hangers within 12 inches (300 mm) of each horizontal elbow.
 3. Use hangers with 1-1/2 inch (40 mm) minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.
 4. Support vertical piping at every other floor. Support riser piping independently of connected horizontal piping.
 5. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.
- G. Slope piping and arrange systems to drain at low points. Use eccentric reducers to maintain top of pipe level.
- H. Prepare pipe, fittings, supports, and accessories for finish painting. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc-rich primer to welding.
- I. Provide sleeves when penetrating footings, floors, walls, and partitions. Seal pipe including sleeve penetrations to achieve fire resistance equivalent to fire separation required.

- J. Escutcheons:
 - 1. Install and firmly attach escutcheons at piping penetrations into finished spaces.
 - 2. Provide escutcheons on both sides of partitions separating finished areas through which piping passes.
 - 3. Use chrome plated escutcheons in occupied spaces and to conceal openings in construction.
- K. When installing more than one piping system material, ensure system components are compatible and joined to ensure the integrity of the system. Provide necessary joining fittings. Ensure flanges, unions, and couplings for servicing are consistently provided.

END OF SECTION

**SECTION 210553
IDENTIFICATION FOR FIRE SUPPRESSION PIPING AND EQUIPMENT**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Pipe markers.

1.02 REFERENCE STANDARDS

- A. ASME A13.1 - Scheme for the Identification of Piping Systems 2020.

1.03 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturers catalog literature for each product required.
- C. Manufacturer's Installation Instructions: Indicate special procedures, and installation instructions.

PART 2 PRODUCTS

2.01 PIPE MARKERS

- A. Color: Comply with ASME A13.1.
- B. Plastic Pipe Markers: Factory fabricated, flexible, semi- rigid plastic, preformed to fit around pipe or pipe covering; minimum information indicating flow direction arrow and identification of fluid being conveyed.

PART 3 EXECUTION

3.01 INSTALLATION

END OF SECTION

**SECTION 211300
FIRE-SUPPRESSION SPRINKLER SYSTEMS**

PART 1 GENERAL

1.01 REFERENCE STANDARDS

- A. NFPA 13 - Standard for the Installation of Sprinkler Systems Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.02 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on sprinklers, valves, and specialties, including manufacturers catalog information. Submit performance ratings, rough-in details, weights, support requirements, and piping connections.
- C. Shop Drawings:
 - 1. Indicate hydraulic calculations, detailed pipe layout, hangers and supports, sprinklers, components, and accessories. Indicate system controls.
 - 2. Submit shop drawings to Authorities Having Jurisdiction for approval. Submit proof of approval to Architect.
- D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 016000 - Product Requirements for additional provisions.
 - 2. Extra Sprinklers: Type and size matching those installed in quantity required by referenced NFPA design and installation standard.
 - 3. Sprinkler Wrenches: For each sprinkler type.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Sprinklers, Valves, and Equipment:
 - 1. Anvil International: www.anvilintl.com/#sle.
 - 2. Tyco Fire Protection Products: www.tyco-fire.com/#sle.
 - 3. Viking Corporation: www.vikinggroupinc.com/#sle.

2.02 SPRINKLER SYSTEM

- A. Sprinkler System: Provide coverage for entire building.
- B. Occupancy: Light hazard; comply with NFPA 13.
- C. Water Supply: Determine volume and pressure from water flow test data.
- D. Storage Cabinet for Spare Sprinklers and Tools: Steel, located adjacent to alarm valve.
- E. Pipe Hanger Fasteners: Attach hangers to structure using appropriate fasteners, as follows:
 - 1. Concrete Wedge Expansion Anchors: Complying with ICC-ES AC193.

2.03 SPRINKLERS

- A. Suspended Ceiling Type: Semi-recessed pendant type with matching push on escutcheon plate.
 - 1. Response Type: Quick.
 - 2. Coverage Type: Standard.
 - 3. Finish: Brass.
 - 4. Fusible Link: Fusible solder link type temperature rated for specific area hazard.
- B. Flexible Drop System: Stainless steel, multiple use, open gate type.
 - 1. Application: Use to properly locate sprinkler heads.
 - 2. Include all supports and bracing.
 - 3. Provide braided type tube as required for the application.
 - 4. Manufacturers:

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with referenced NFPA design and installation standard.
- B. Install equipment in accordance with manufacturer's instructions.
- C. Place pipe runs to minimize obstruction to other work.
- D. Place piping in concealed spaces above finished ceilings.
- E. Apply masking tape or paper cover to ensure concealed sprinklers, cover plates, and sprinkler escutcheons do not receive field paint finish. Remove after painting. Replace painted sprinklers.
- F. Flush entire piping system of foreign matter.
- G. Hydrostatically test entire system.
- H. Require test be witnessed by Fire Marshal.

END OF SECTION

**SECTION 220523
GENERAL-DUTY VALVES FOR PLUMBING PIPING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Ball valves.

1.02 REFERENCE STANDARDS

- A. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings 2021.
- B. MSS SP-110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends 2010, with Errata .
- C. NSF 61 - Drinking Water System Components - Health Effects 2022, with Errata.
- D. NSF 372 - Drinking Water System Components - Lead Content 2022.

1.03 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

PART 2 PRODUCTS

2.01 APPLICATIONS

- A. See drawings for specific valve locations.
- B. Listed pipe sizes shown using nominal pipe sizes (NPS) and nominal diameter (DN).
- C. Provide the following valves for the applications if not indicated on drawings:
- D. Domestic, Hot and Cold Water Valves:
 - 1. 2 inch (50 mm, DN) and Smaller:
 - a. Bronze and Brass: Provide with solder-joint ends.
 - b. Ball: One piece, full port, brass with brass trim.

2.02 GENERAL REQUIREMENTS

- A. Valve Pressure and Temperature Ratings: No less than rating indicated; as required for system pressures and temperatures.
- B. Valve Sizes: Match upstream piping unless otherwise indicated.
- C. Valve Actuator Types:
- D. Valve-End Connections:
 - 1. Solder Joint Connections: ASME B16.18.
- E. General ASME Compliance:
- F. Potable Water Use:
 - 1. Certified: Approved for use in compliance with NSF 61 and NSF 372.
 - 2. Lead-Free Certified: Wetted surface material includes less than 0.25 percent lead content.

2.03 BRASS, BALL VALVES

- A. One Piece, Full Port with Brass Trim and Push-to-fit or Threaded Connections:
 - 1. Comply with MSS SP-110.
 - 2. CWP Rating: 200 psi (1,379 kPa).
 - 3. Body: Forged brass.
 - 4. Seats: PTFE.
 - 5. Stem: Brass.
 - 6. Ball: Chrome-plated brass.
 - 7. Operator: Handle.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Discard all packing materials and verify that valve interior, including threads and flanges are completely clean without signs of damage or degradation that could result in leakage.
- B. Verify valve parts to be fully operational in all positions from closed to fully open.
- C. Confirm gasket material to be suitable for the service, to be of correct size, and without defects that could compromise effectiveness.
- D. Should valve is determined to be defective, replace with new valve.

3.02 INSTALLATION

- A. Provide unions or flanges with valves to facilitate equipment removal and maintenance while maintaining system operation and full accessibility for servicing.
- B. Provide separate valve support as required and locate valve with stem at or above center of piping, maintaining unimpeded stem movement.

END OF SECTION

**SECTION 220529
HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Pipe hangers.
- B. Pipe supports, guides, shields, and saddles.

1.02 RELATED REQUIREMENTS

- A. Section 055000 - Metal Fabrications.

1.03 REFERENCE STANDARDS

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products 2017.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware 2016a.
- C. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel 2019.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for metal channel (strut) framing systems, nonpenetrating rooftop supports, post-installed concrete and masonry anchors, and thermal insulated pipe supports.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Provide required hardware to hang or support piping, equipment, or fixtures with related accessories as necessary to complete installation of plumbing work.
- B. Provide hardware products listed, classified, and labeled as suitable for intended purpose.
- C. Materials for Metal Fabricated Supports: Comply with Section 055000.
 - 1. Zinc-Plated Steel: Electroplated in accordance with ASTM B633 unless stated otherwise.
 - 2. Galvanized Steel: Hot-dip galvanized in accordance with ASTM A123/A123M or ASTM A153/A153M unless stated otherwise.
- D. Corrosion Resistance: Use corrosion-resistant metal-based materials fully compatible with exposed piping materials and suitable for the environment where installed.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that mounting surfaces are ready to receive support and attachment components.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Provide independent support from building structure. Do not provide support from piping, ductwork, conduit, or other systems.
- C. Unless specifically indicated or approved by Architect, do not provide support from suspended ceiling support system or ceiling grid.
- D. Unless specifically indicated or approved by Architect, do not provide support from roof deck.
- E. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.

- F. Equipment Support and Attachment:
 - 1. Use metal fabricated supports or supports assembled from metal channel (strut) to support equipment as required.
 - 2. Use metal channel (strut) secured to studs to support equipment surface-mounted on hollow stud walls when wall strength is not sufficient to resist pull-out.
 - 3. Use metal channel (strut) to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.
 - 4. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.
- G. Secure fasteners according to manufacturer's recommended torque settings.
- H. Remove temporary supports.

END OF SECTION

**SECTION 220719
PLUMBING PIPING INSULATION**

PART 2 PRODUCTS

1.01 REGULATORY REQUIREMENTS

- A. Surface Burning Characteristics: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84 or UL 723.

END OF SECTION

**SECTION 221005
PLUMBING PIPING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Sanitary waste piping, above grade.
- B. Domestic water piping, above grade.

1.02 RELATED REQUIREMENTS

- A. Section 330110.58 - Disinfection of Water Utility Piping Systems.

1.03 REFERENCE STANDARDS

- A. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings 2021.
- B. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings 2021.
- C. ASME B16.23 - Cast Copper Alloy Solder Joint Drainage Fittings: DWV 2021.
- D. ASME B16.29 - Wrought Copper and Wrought Copper Alloy Solder-Joint Drainage Fittings—DWV 2017.
- E. ASTM A74 - Standard Specification for Cast Iron Soil Pipe and Fittings 2021.
- F. ASTM B32 - Standard Specification for Solder Metal 2020.
- G. ASTM B88 - Standard Specification for Seamless Copper Water Tube 2022.
- H. ASTM B88M - Standard Specification for Seamless Copper Water Tube (Metric) 2020.
- I. ASTM B813 - Standard Specification for Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube 2016.
- J. ASTM B828 - Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings 2016.
- K. ASTM C564 - Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings 2020a.
- L. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2022.
- M. NSF 61 - Drinking Water System Components - Health Effects 2022, with Errata.
- N. NSF 372 - Drinking Water System Components - Lead Content 2022.
- O. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials Current Edition, Including All Revisions.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Potable Water Supply Systems: Provide piping, pipe fittings, and solder and flux (if used), that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.
- B. Plenum-Installed Acid Waste Piping: Flame-spread index equal or below 25 and smoke-spread index equal or below 50 according to ASTM E84 or UL 723 tests.

2.02 SANITARY WASTE PIPING, ABOVE GRADE

- A. Cast Iron Pipe: ASTM A74, service weight.
 - 1. Fittings: Cast iron.
 - 2. Joint Seals: ASTM C564 neoprene gaskets, or lead and oakum.
- B. Copper Tube: ASTM B88 (ASTM B88M), Type K (A).
 - 1. Fittings: ASME B16.29, wrought copper, or ASME B16.23, solvent.
 - 2. Joints: ASTM B32, alloy Sn50 solder.

2.03 DOMESTIC WATER PIPING, ABOVE GRADE

- A. Copper Pipe: ASTM B88 (ASTM B88M), Type K (A), Drawn (H).

1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22, wrought copper and bronze.
2. Fittings: Cast iron, coated.
3. Joints: ASTM B32, alloy Sn95 solder.
4. Mechanical Press Sealed Fittings: Double-pressed type, NSF 61 and NSF 372 approved or certified, utilizing EPDM, nontoxic, synthetic rubber sealing elements.

PART 3 EXECUTION

3.01 PREPARATION

- A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
- B. Remove scale and dirt, on inside and outside, before assembly.
- C. Prepare piping connections to equipment with flanges or unions.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.
- C. Copper Pipe and Tube: Make soldered joints in accordance with ASTM B828, using specified solder, and flux meeting ASTM B813; in potable water systems use flux also complying with NSF 61 and NSF 372.

3.03 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

- A. Disinfect water distribution system in accordance with Section 330110.58.
- B. Prior to starting work, verify system is complete, flushed, and clean.

3.04 SCHEDULES

- A. Pipe Hanger Spacing:
 1. Metal Piping:
 - a. Pipe Size: 1/2 inch (15 mm, DN) to 1-1/4 inch (32 mm, DN):
 - 1) Maximum Hanger Spacing: 6.5 ft (2 m).
 - 2) Hanger Rod Diameter: 3/8 inches (9 mm).
 - b. Pipe Size: 1-1/2 inch (40 mm, DN) to 2 inch (50 mm, DN):
 - 1) Maximum Hanger Spacing: 10 ft (3 m).
 - 2) Hanger Rod Diameter: 3/8 inch (9 mm).

END OF SECTION

**SECTION 224000
PLUMBING FIXTURES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Sinks.
- B. Bi-level, electric water coolers.

1.02 REFERENCE STANDARDS

- A. ADA Standards - 2010 ADA Standards for Accessible Design 2010.
- B. ASHRAE Std 18 - Methods of Testing for Rating Drinking-Water Coolers with Self-Contained Mechanical Refrigeration 2008 (Reaffirmed 2013).
- C. ASME A112.18.1 - Plumbing Supply Fittings 2018, with Errata.
- D. ASME A112.19.3 - Stainless Steel Plumbing Fixtures 2022.
- E. NSF 61 - Drinking Water System Components - Health Effects 2022, with Errata.
- F. NSF 372 - Drinking Water System Components - Lead Content 2022.

1.03 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide catalog illustrations of fixtures, sizes, rough-in dimensions, utility sizes, trim, and finishes.
- C. Manufacturer's Instructions: Indicate installation methods and procedures.
- D. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.04 WARRANTY

- A. See Section 017800 - Closeout Submittals for additional warranty requirements.
- B. Provide five year manufacturer warranty for electric water cooler.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Potable Water Systems: Provide plumbing fittings and faucets that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.

2.02 SINKS

- A. Undermount-Installed Single Compartment Bowl:
 - 1. ASME A112.19.3, stainless steel with ledge back drilled for trim.
 - 2. Undercoated with side and bottom sound deadening pads.
 - 3. Drain: 1-1/2 inch (38 mm), stainless steel with strainer, crumb cup, and tailpiece.
- B. Kitchen Faucets:
 - 1. Two-Handle Faucet:
 - a. Type: Deck-mount, lever operated faucet with mounting plate.
 - b. Spray Type: Full stream spray at 1.75 gpm (6.62 L/min), maximum.
 - c. ASME A112.18.1, ADA Standards, and NSF 61 compliant assembly.
 - d. Materials: Stainless steel disc valve on brass body with polished chrome finish.

2.03 BI-LEVEL, ELECTRIC WATER COOLERS

- A. Water Cooler: Bi-level, electric, mechanically refrigerated; surface mounted, ADA compliant; stainless steel top, vinyl on steel body, elevated anti-squirt bubbler with stream guard, automatic stream regulator, push button, mounting bracket; integral air cooled condenser and stainless steel grille.
 - 1. Capacity: 8 gph (30.3 Lph) of 50 degrees F (10 degrees C) water with inlet at 80 degrees F (27 degrees C) and room temperature of 90 degrees F (32 degrees C), when tested in

- accordance with ASHRAE Std 18.
2. Electrical: 115 VAC, 60 Hertz compressor, 6 foot (2 m) cord and plug for connection to electric wiring system including grounding connector.
- B. Bottle Filler: Materials to match fountain.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that walls and floor finishes are prepared and ready for installation of fixtures.
- B. Verify that electric power is available and of the correct characteristics.

3.02 PREPARATION

- A. Rough-in fixture piping connections in accordance with minimum sizes indicated in fixture rough-in schedule for particular fixtures.

3.03 INSTALLATION

- A. Install components level and plumb.

3.04 SCHEDULES

- A. Fixture Heights: Install fixtures to heights above finished floor as indicated.
 1. Drinking Fountain:
 - a. Child: 30 inches (760 mm) to top of basin rim.
 - b. Standard Adult: 40 inches (1015 mm) to top of basin rim.
 - c. Accessible: 36 inches (915 mm) to top of spout.
 - B. Fixture Rough-In
 1. Sink:
 - a. Cold Water: 1/2 Inch (15 mm).
 - b. Waste: 1-1/2 Inch (40 mm).
 - c. Vent: 1-1/4 Inch (32 mm).
 2. Drinking Fountain:
 - a. Cold Water: 1/2 Inch (15 mm).
 - b. Waste: 1-1/4 Inch (32 mm).
 - c. Vent: 1-1/4 Inch (32 mm).

END OF SECTION

**SECTION 230513
COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. General construction and requirements.
- B. Applications.
- C. Three phase electric motors.
- D. Electronically Commutated Motors (ECM).

1.02 RELATED REQUIREMENTS

- A. Section 260583 - Wiring Connections: Electrical characteristics and wiring connections.

1.03 REFERENCE STANDARDS

- A. NEMA MG 1 - Motors and Generators 2021.
- B. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide wiring diagrams with electrical characteristics and connection requirements.
- C. Manufacturer's Installation Instructions: Indicate setting, mechanical connections, lubrication, and wiring instructions.
- D. Operation Data: Include instructions for safe operating procedures.
- E. Maintenance Data: Include assembly drawings, bearing data including replacement sizes, and lubrication instructions.

PART 2 PRODUCTS

2.01 GENERAL CONSTRUCTION AND REQUIREMENTS

- A. Electrical Service: Refer to Section 260583 for required electrical characteristics.
- B. Electrical Service:
 - 1. Motors Larger than 1/2 Horsepower: 460/3 volts, three phase, 60 Hz.
- C. Construction:
 - 1. Open drip-proof type except where specifically noted otherwise.
 - 2. Design for continuous operation in 104 degrees F (40 degrees C) environment.
 - 3. Design for temperature rise in accordance with NEMA MG 1 limits for insulation class, service factor, and motor enclosure type.
- D. Visible Nameplate: Indicating motor horsepower, voltage, phase, cycles, RPM, full load amps, locked rotor amps, frame size, manufacturer's name and model number, service factor, power factor, efficiency.
- E. Wiring Terminations:
 - 1. Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Enclose terminal lugs in terminal box sized to NFPA 70, threaded for conduit.
 - 2. For fractional horsepower motors where connection is made directly, provide threaded conduit connection in end frame.

2.02 APPLICATIONS

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install securely on firm foundation. Mount ball bearing motors with shaft in any position.

C. Check line voltage and phase and ensure agreement with nameplate.

END OF SECTION

**SECTION 230519
METERS AND GAUGES FOR HVAC PIPING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Pressure gauges and pressure gauge taps.
- B. Thermometers and thermometer wells.

1.02 REFERENCE STANDARDS

- A. ASME B40.100 - Pressure Gauges and Gauge Attachments 2022.
- B. ASTM E1 - Standard Specification for ASTM Liquid-in-Glass Thermometers 2014 (Reapproved 2020).
- C. UL 393 - Indicating Pressure Gauges for Fire-Protection Service Current Edition, Including All Revisions.

1.03 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide list that indicates use, operating range, total range and location for manufactured components.

PART 2 PRODUCTS

2.01 PRESSURE GAUGES

- A. Pressure Gauges: ASME B40.100, UL 393 drawn steel case, phosphor bronze bourdon tube, rotary brass movement, brass socket, with front recalibration adjustment, black scale on white background.

2.02 PRESSURE GAUGE TAPPINGS

- A. Gauge Cock: Tee or lever handle, brass for maximum 150 psi (1034 kPa).

2.03 STEM TYPE THERMOMETERS

- A. Thermometers - Adjustable Angle: Red- or blue-appearing non-toxic liquid in glass; ASTM E1; lens front tube, cast aluminum case with enamel finish, cast aluminum adjustable joint with positive locking device; adjustable 360 degrees in horizontal plane, 180 degrees in vertical plane.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install thermometers in piping systems in sockets in short couplings. Enlarge pipes smaller than 2-1/2 inch (60 mm) for installation of thermometer sockets. Ensure sockets allow clearance from insulation.

END OF SECTION

**SECTION 230523
GENERAL-DUTY VALVES FOR HVAC PIPING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Ball valves.

1.02 REFERENCE STANDARDS

- A. ASME B1.20.1 - Pipe Threads, General Purpose, Inch 2013 (Reaffirmed 2018).
- B. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings 2021.
- C. ASME B31.9 - Building Services Piping 2020.

1.03 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on valves including manufacturers catalog information. Submit performance ratings, rough-in details, weights, support requirements, and piping connections.
- C. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

PART 2 PRODUCTS

2.01 APPLICATIONS

- A. See drawings for specific valve locations.
- B. Listed pipe sizes shown using nominal pipe sizes (NPS) and nominal diameter (DN).
- C. Provide the following valves for the applications if not indicated on drawings:
- D. Heating Hot Water Valves:
 - 1. Size 2 inch (50 mm, DN) and Smaller, Brass and Bronze Valves:
 - a. Threaded ends.
 - b. Ball: Full port, one piece, brass trim.
 - 2. Size 2-1/2 inch (65 mm, DN) and Larger, Iron Valves:
 - a. 2-1/2 inch (65 mm, DN) to 4 inch (100 mm, DN): Threaded ends.
- E. Low Pressure Steam Valves for Pressures of 15 psi (104 kPa) or Less:
 - 1. Size 2 inch (50 mm, DN) and Smaller, Brass and Bronze Valves:
 - a. Ball: Full port, one piece, brass trim.
 - 2. Size 2-1/2 inch (65 mm, DN) and Larger, Iron Valves:

2.02 GENERAL REQUIREMENTS

- A. Valve Pressure and Temperature Ratings: No less than rating indicated; as required for system pressures and temperatures.
- B. Valve Sizes: Match upstream piping unless otherwise indicated.
- C. Valve Actuator Types:
- D. Valve-End Connections:
 - 1. Threaded End Valves: ASME B1.20.1.
 - 2. Solder Joint Connections: ASME B16.18.
- E. General ASME Compliance:
 - 1. Building Services Piping Valves: ASME B31.9.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Discard all packing materials and verify that valve interior, including threads and flanges, are completely clean without signs of damage or degradation that could result in leakage.
- B. Verify valve parts to be fully operational in all positions from closed to fully open.

- C. Confirm gasket material to be suitable for the service, to be of correct size, and without defects that could compromise effectiveness.
- D. Should valve is determined to be defective, replace with new valve.

3.02 INSTALLATION

- A. Provide unions or flanges with valves to facilitate equipment removal and maintenance while maintaining system operation and full accessibility for servicing.
- B. Provide separate valve support as required and locate valve with stem at or above center of piping, maintaining unimpeded stem movement.

END OF SECTION

**SECTION 230529
HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Support and attachment components.
- B. Retrofit piping cover system.

1.02 REFERENCE STANDARDS

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products 2017.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware 2016a.
- C. ASTM A47/A47M - Standard Specification for Ferritic Malleable Iron Castings 1999, with Editorial Revision (2022).
- D. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel 2019.
- E. MFMA-4 - Metal Framing Standards Publication 2004.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate sizes and arrangement of supports and bases with the actual equipment and components to be installed.
 - 2. Coordinate the work with other trades to provide additional framing and materials required for installation.
 - 3. Coordinate compatibility of support and attachment components with mounting surfaces at the installed locations.
 - 4. Coordinate the arrangement of supports with ductwork, piping, equipment and other potential conflicts installed under other sections or by others.
 - 5. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.
- B. Sequencing:
 - 1. Do not install products on or provide attachment to concrete surfaces until concrete has fully cured in accordance with Section 033000.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for channel (strut) framing systems, nonpenetrating rooftop supports, post-installed concrete and masonry anchors, and thermal insulated pipe supports.

PART 2 PRODUCTS

2.01 SUPPORT AND ATTACHMENT COMPONENTS

- A. General Requirements:
 - 1. Provide all required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for the complete installation of plumbing work.
 - 2. Provide products listed, classified, and labeled as suitable for the purpose intended, where applicable.
 - 3. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for the load to be supported with a minimum safety factor of [_____]. Include consideration for vibration, equipment operation, and shock loads where applicable.
 - 4. Steel Components: Use corrosion resistant materials suitable for the environment where installed.

- a. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.
 - b. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.
- B. Prefabricated Trapeze-Framed Metal Strut Systems:
 - 1. Strut Channel or Bracket Material:
 - 2. Accessories: Provide bracket covers, cable basket clips, cable tray clips, clamps, conduit clamps, fire-retarding brackets, j-hooks, protectors, and vibration dampeners.
 - C. Hanger Rods:
 - 1. Threaded zinc-plated steel unless otherwise indicated.
 - D. Anchors and Fasteners:
 - 1. Unless otherwise indicated and where not otherwise restricted, use the anchor and fastener types indicated for the specified applications.
 - 2. Concrete: Use preset concrete inserts, expansion anchors, or screw anchors.
 - 3. Solid or Grout-Filled Masonry: Use expansion anchors or screw anchors.
 - 4. Steel: Use beam-ceiling clamps, beam clamps, machine bolts, or welded threaded studs.
 - 5. Beam Ceiling Flanges: ASTM A47/A47M Grade 32510, malleable iron or stainless steel with copper, plain, stainless steel, or zinc finish.
 - 6. Preset Concrete Inserts: Continuous metal channel (strut) and spot inserts specifically designed to be cast in concrete ceilings, walls, and floors.
 - a. Comply with MFMA-4.
 - b. Channel Material: Use galvanized steel.
 - c. Manufacturer: Same as manufacturer of metal channel (strut) framing system.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that mounting surfaces are ready to receive support and attachment components.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install anchors and fasteners in accordance with ICC Evaluation Services, LLC (ICC-ES) evaluation report conditions of use where applicable.
- C. Provide independent support from building structure. Do not provide support from piping, ductwork, conduit, or other systems.
- D. Unless specifically indicated or approved by Architect, do not provide support from suspended ceiling support system or ceiling grid.
- E. Unless specifically indicated or approved by Architect, do not provide support from roof deck.
- F. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.
- G. Equipment Support and Attachment:
 - 1. Use metal fabricated supports or supports assembled from metal channel (strut) to support equipment as required.
 - 2. Use metal channel (strut) secured to studs to support equipment surface-mounted on hollow stud walls when wall strength is not sufficient to resist pull-out.
 - 3. Use metal channel (strut) to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.
 - 4. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.
- H. Preset Concrete Inserts: Use manufacturer-provided closure strips to inhibit concrete seepage during concrete pour.

- I. Secure fasteners according to manufacturer's recommended torque settings.
- J. Remove temporary supports.

END OF SECTION

**SECTION 230553
IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Nameplates.
- B. Pipe markers.

1.02 RELATED REQUIREMENTS

- A. Section 099123 - Interior Painting: Identification painting.

1.03 REFERENCE STANDARDS

- A. ASME A13.1 - Scheme for the Identification of Piping Systems 2020.
- B. ASTM D709 - Standard Specification for Laminated Thermosetting Materials 2017.

PART 2 PRODUCTS

2.01 NAMEPLATES

- A. Letter Color: White.
- B. Letter Height: 1/4 inch (6 mm).
- C. Background Color: Black.
- D. Plastic: Comply with ASTM D709.

2.02 PIPE MARKERS

- A. Color: Comply with ASME A13.1.
- B. Plastic Pipe Markers: Factory fabricated, flexible, semi- rigid plastic, preformed to fit around pipe or pipe covering; minimum information indicating flow direction arrow and identification of fluid being conveyed.
- C. Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure-sensitive adhesive backing and printed markings.

PART 3 EXECUTION

3.01 PREPARATION

- A. Degrease and clean surfaces to receive adhesive for identification materials.
- B. Prepare surfaces in accordance with Section 099123 for stencil painting.

3.02 INSTALLATION

- A. Install nameplates with corrosive-resistant mechanical fasteners, or adhesive. Apply with sufficient adhesive to ensure permanent adhesion and seal with clear lacquer.
- B. Install tags with corrosion resistant chain.
- C. Install plastic pipe markers in accordance with manufacturer's instructions.
- D. Install plastic tape pipe markers complete around pipe in accordance with manufacturer's instructions.

END OF SECTION

**SECTION 230593
TESTING, ADJUSTING, AND BALANCING FOR HVAC**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Testing, adjustment, and balancing of air systems.
- B. Testing, adjustment, and balancing of hydronic, steam, and refrigerating systems.
- C. Measurement of final operating condition of HVAC systems.

1.02 REFERENCE STANDARDS

- A. AABC (NSTSB) - AABC National Standards for Total System Balance, 7th Edition 2016.
- B. ASHRAE Std 111 - Measurement, Testing, Adjusting, and Balancing of Building HVAC Systems 2008, with Errata (2019).
- C. NEBB (TAB) - Procedural Standards for Testing Adjusting and Balancing of Environmental Systems 2015, with Errata (2017).
- D. SMACNA (TAB) - HVAC Systems Testing, Adjusting and Balancing 2002.

1.03 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Installer Qualifications: Submit name of adjusting and balancing agency and TAB supervisor for approval within 30 days after award of Contract.
- C. TAB Plan: Submit a written plan indicating the testing, adjusting, and balancing standard to be followed and the specific approach for each system and component.
 - 1. Submit to Architect.
 - 2. Submit six weeks prior to starting the testing, adjusting, and balancing work.
 - 3. Include certification that the plan developer has reviewed Contract Documents, the equipment and systems, and the control system with the Architect and other installers to sufficiently understand the design intent for each system.
 - 4. Include at least the following in the plan:
 - a. List of all air flow, water flow, sound level, system capacity and efficiency measurements to be performed and a description of specific test procedures, parameters, formulas to be used.
 - b. Copy of field checkout sheets and logs to be used, listing each piece of equipment to be tested, adjusted and balanced with the data cells to be gathered for each.
 - c. Discussion of what notations and markings will be made on the duct and piping drawings during the process.
 - d. Final test report forms to be used.
 - e. Procedures for formal deficiency reports, including scope, frequency and distribution.
- D. Final Report: Indicate deficiencies in systems that would prevent proper testing, adjusting, and balancing of systems and equipment to achieve specified performance.
 - 1. Revise TAB plan to reflect actual procedures and submit as part of final report.
 - 2. Submit draft copies of report for review prior to final acceptance of Project. Provide final copies for Architect and for inclusion in operating and maintenance manuals.
 - 3. Include actual instrument list, with manufacturer name, serial number, and date of calibration.
 - 4. Form of Test Reports: Where the TAB standard being followed recommends a report format use that; otherwise, follow ASHRAE Std 111.
 - 5. Units of Measure: Report data in both I-P (inch-pound) and SI (metric) units.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

- A. Perform total system balance in accordance with one of the following:

1. AABC (NSTSB), AABC National Standards for Total System Balance.
 2. SMACNA (TAB).
- B. Begin work after completion of systems to be tested, adjusted, or balanced and complete work prior to Substantial Completion of the project.
- C. TAB Agency Qualifications:
1. Company specializing in the testing, adjusting, and balancing of systems specified in this section.
 2. Certified by one of the following:
 - a. AABC, Associated Air Balance Council: www.aabc.com/#sle; upon completion submit AABC National Performance Guaranty.
 - b. NEBB, National Environmental Balancing Bureau: www.nebb.org/#sle.
 - c. TABB, The Testing, Adjusting, and Balancing Bureau of National Energy Management Institute: www.tabbcertified.org/#sle.
- D. TAB Supervisor and Technician Qualifications: Certified by same organization as TAB agency.

3.02 EXAMINATION

- A. Verify that systems are complete and operable before commencing work. Ensure the following conditions:
1. Systems are started and operating in a safe and normal condition.
 2. Temperature control systems are installed complete and operable.
 3. Proper thermal overload protection is in place for electrical equipment.
 4. Final filters are clean and in place. If required, install temporary media in addition to final filters.
 5. Duct systems are clean of debris.
 6. Fans are rotating correctly.
 7. Fire and volume dampers are in place and open.
 8. Air coil fins are cleaned and combed.
 9. Access doors are closed and duct end caps are in place.
 10. Air outlets are installed and connected.
 11. Duct system leakage is minimized.
 12. Hydronic systems are flushed, filled, and vented.
 13. Service and balance valves are open.

3.03 ADJUSTMENT TOLERANCES

- A. Air Handling Systems: Adjust to within plus or minus 5 percent of design for supply systems and plus or minus 10 percent of design for return and exhaust systems.
- B. Air Outlets and Inlets: Adjust total to within plus 10 percent and minus 5 percent of design to space. Adjust outlets and inlets in space to within plus or minus 10 percent of design.

3.04 RECORDING AND ADJUSTING

- A. Field Logs: Maintain written logs including:
1. Running log of events and issues.
 2. Discrepancies, deficient or uncompleted work by others.
 3. Contract interpretation requests.
 4. Lists of completed tests.
- B. Ensure recorded data represents actual measured or observed conditions.
- C. Permanently mark settings of valves, dampers, and other adjustment devices allowing settings to be restored. Set and lock memory stops.
- D. After adjustment, take measurements to verify balance has not been disrupted or that such disruption has been rectified.
- E. Leave systems in proper working order, replacing belt guards, closing access doors, closing doors to electrical switch boxes, and restoring thermostats to specified settings.

3.05 AIR SYSTEM PROCEDURE

- A. Adjust air handling and distribution systems to provide required or design supply, return, and exhaust air quantities at site altitude.
- B. Make air quantity measurements in ducts by Pitot tube traverse of entire cross sectional area of duct.
- C. Measure air quantities at air inlets and outlets.
- D. Where modulating dampers are provided, take measurements and balance at extreme conditions. Balance variable volume systems at maximum air flow rate, full cooling, and at minimum air flow rate, full heating.
- E. Measure building static pressure and adjust supply, return, and exhaust air systems to provide required relationship between each to maintain approximately 0.05 inches (12.5 Pa) positive static pressure near the building entries.
- F. Check multi-zone units for motorized damper leakage. Adjust air quantities with mixing dampers set first for cooling, then heating, then modulating.
- G. For variable air volume system powered units set volume controller to air flow setting indicated. Confirm connections properly made and confirm proper operation for automatic variable air volume temperature control.
- H. On fan powered VAV boxes, adjust air flow switches for proper operation.

3.06 WATER SYSTEM PROCEDURE

- A. Adjust water systems to provide required or design quantities.
- B. Use calibrated Venturi tubes, orifices, or other metered fittings and pressure gauges to determine flow rates for system balance. Where flow metering devices are not installed, base flow balance on temperature difference across various heat transfer elements in the system.
- C. Adjust systems to provide specified pressure drops and flows through heat transfer elements prior to thermal testing. Perform balancing by measurement of temperature differential in conjunction with air balancing.
- D. Effect system balance with automatic control valves fully open to heat transfer elements.
- E. Effect adjustment of water distribution systems by means of balancing cocks, valves, and fittings. Do not use service or shut-off valves for balancing unless indexed for balance point.
- F. Where available pump capacity is less than total flow requirements or individual system parts, full flow in one part may be simulated by temporary restriction of flow to other parts.

END OF SECTION

**SECTION 230719
HVAC PIPING INSULATION**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Piping insulation.
- B. Flexible removable and reusable blanket insulation.
- C. Jacketing and accessories.

1.02 RELATED REQUIREMENTS

- A. Section 078400 - Firestopping.

1.03 REFERENCE STANDARDS

- A. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus 2019.
- B. ASTM C547 - Standard Specification for Mineral Fiber Pipe Insulation 2022a.
- C. ASTM C795 - Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel 2008 (Reapproved 2018).
- D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2022.
- E. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials 2022a.
- F. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials Current Edition, Including All Revisions.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

- A. Surface Burning Characteristics: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84 or UL 723.

2.02 GLASS FIBER, RIGID

- A. Insulation: ASTM C547 and ASTM C795; rigid molded, noncombustible.
 - 1. K (Ksi) Value: ASTM C177, 0.24 at 75 degrees F (0.035 at 24 degrees C).
 - 2. Maximum Service Temperature: 850 degrees F (454 degrees C).
 - 3. Maximum Moisture Absorption: 0.2 percent by volume.
- B. Vapor Barrier Jacket: White kraft paper with glass fiber yarn, bonded to aluminized film; moisture vapor transmission when tested in accordance with ASTM E96/E96M of 0.02 perm-inches (0.029 ng/(Pa s m)).
- C. Vapor Barrier Lap Adhesive: Compatible with insulation.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Test piping for design pressure, liquid tightness, and continuity prior to applying insulation materials.
- B. Verify that surfaces are clean and dry, with foreign material removed.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Glass Fiber Insulated Pipes Conveying Fluids Below Ambient Temperature:
 - 1. Provide vapor barrier jackets, factory-applied or field-applied; secure with self-sealing longitudinal laps and butt strips with pressure-sensitive adhesive. Secure with outward clinch expanding staples and vapor barrier mastic.

2. Insulate fittings, joints, and valves with molded insulation of like material and thickness as adjacent pipe. Finish with glass cloth and vapor barrier adhesive or PVC fitting covers.
- C. For hot piping conveying fluids over 140 degrees F (60 degrees C), insulate flanges and unions at equipment.
- D. Glass Fiber Insulated Pipes Conveying Fluids Above Ambient Temperature:
 1. Provide standard jackets, with or without vapor barrier, factory-applied, or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure-sensitive adhesive. Secure with outward clinch expanding staples.
 2. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe. Finish with glass cloth and adhesive or PVC fitting covers.
- E. Inserts and Shields:
 1. Application: Piping 1-1/2 inches (40 mm) diameter or larger.
 2. Shields: Galvanized steel between pipe hangers or pipe hanger rolls and inserts.
 3. Insert location: Between support shield and piping and under the finish jacket.
 4. Insert Configuration: Minimum 6 inches (150 mm) long, of same thickness and contour as adjoining insulation; may be factory fabricated.
- F. Continue insulation through walls, sleeves, pipe hangers, and other pipe penetrations. Finish at supports, protrusions, and interruptions. At fire separations, see Section 078400.

END OF SECTION

**SECTION 230913
INSTRUMENTATION AND CONTROL DEVICES FOR HVAC**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Control panels.
- B. Control Valves:
 - 1. Ball valves and actuators.
- C. Dampers.
- D. Damper Operators:
 - 1. Electric operators.
- E. HVAC&R Sensors:
 - 1. Temperature sensors.
 - 2. Static pressure (air pressure) sensors.
 - 3. Damper position indicators.
- F. Thermostats:
 - 1. Electric room thermostats.
 - 2. Room thermostat accessories.

1.02 REFERENCE STANDARDS

- A. ANSI/FCI 70-2 - Control Valve Seat Leakage 2021.
- B. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum) 2020.
- C. NEMA DC 3 - Residential Controls - Electrical Wall-Mounted Room Thermostats 2013.

1.03 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide description and engineering data for each control system component. Include sizing as requested. Provide data for each system component and software module.
- C. Shop Drawings: Indicate complete operating data, system drawings, wiring diagrams, and written detailed operational description of sequences. Submit schedule of valves indicating size, flow, and pressure drop for each valve. For automatic dampers indicate arrangement, velocities, and static pressure drops for each system.
- D. Manufacturer's Instructions: Provide for all manufactured components.

PART 2 PRODUCTS

2.01 EQUIPMENT - GENERAL

- A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.

2.02 CONTROL PANELS

- A. Unitized cabinet type for each system under automatic control with relays and controls mounted in cabinet and temperature indicators, pressure gauges, pilot lights, push buttons and switches flush on cabinet panel face.
- B. NEMA 250, general purpose utility enclosures with enameled finished face panel.
- C. Provide common keying for all panels.

2.03 CONTROL VALVES

- A. Ball Valves and Actuators:
 - 1. Service: Use for chilled water, hot water, or steam at 15 to 25 psig (104.4 to 172.4).
 - 2. Flow Characteristic: Include 2-way and 3-way diverting operation configured to fail normally closed (NC).
 - 3. Replacements in Kind: Provide pressure-independent type.

4. Rangeability: 500 to 1.
5. ANSI Rating: Class 150.
6. Leakage: Class IV (0.1 percent of rated capacity) per ANSI/FCI 70-2.
7. Body Size:
 - a. Under 2-1/2 inches (64 mm):
 - 1) Connection: NPT.
 - 2) Materials:
 - (a) Body: Brass.
 - (b) Flanges: Ductile iron.
 - (c) Ball: Chrome-plated brass.
 - (d) Stem: Nickel-plated brass.
 - (e) Seat: Graphite-reinforced PTFE with EPDM O-Ring backing.
 - (f) Stem Seal: EPDM O-Rings.
 - (g) Flow Control Disk: Thermoplastic synthetic-resin.
 - b. Service Temperature:
 - 1) Fluid Side: 0 to 284 degrees F (0 to 140 degrees C) liquid or 25 psig (172.4 kPa) steam.
 - 2) Ambient Side: From minus 4 to 122 degrees F (minus 20 to 50 degrees C).
8. Actuator Requirements:
 - a. Assembly: Factory-mounted.
 - b. Input: 0 to 5 VDC configured for proportional control.
 - c. Accessories: Provide with valve position indicator and manual override.

2.04 DAMPER OPERATORS

- A. General: Provide smooth proportional control with sufficient power for air velocities 20 percent greater than maximum design velocity and to provide tight seal against maximum system pressures. Provide spring return for two position control and for fail safe operation.
 1. Provide sufficient number of operators to achieve unrestricted movement throughout damper range.
 2. Provide one operator for maximum 36 sq ft (3.34 sq m) damper section.

2.05 HVAC&R SENSORS

- A. Temperature Sensors:
 1. Temperature Sensing Device: Compatible with project DDC controllers.
 2. Performance Characteristics:
 - a. Room Temperature Sensors with Integral Digital Display:
 - 1) Construct for surface or wall box.
 - 2) Provide a four button keypad with the following capabilities:
 - (a) Indication of space and outdoor temperatures.
 - (b) Setpoint adjustment to accommodate room setpoint, DDC Input/Output Points List, and Sequence of Operation.
 - (c) Display and control fan operation status.
 - (d) Manual occupancy override and indication of occupancy status.
- B. Static Pressure (Air Pressure) Sensors:
 1. Unidirectional with ranges not exceeding 150 percent of maximum expected input.
 2. Temperature compensate with typical thermal error or 0.06 percent of full scale in temperature range of 40 to 100 degrees F (5 to 40 degrees C).
 3. Accuracy: One percent of full scale with repeatability 0.3 percent.
 4. Output: 0 to 5 vdc with power at 12 to 28 vdc.
- C. Damper Position Indicators: Potentiometer mounted in enclosure with adjustable crank arm assembly connected to damper to transmit 0 to 100 percent damper travel.

2.06 THERMOSTATS

- A. Electric Room Thermostats:
 1. Type: NEMA DC 3, 24 volts, with setback/setup temperature control.

2. Service: Cooling only.
 3. Covers: Locking with set point adjustment, with thermometer.
- B. Room Thermostat Accessories:
1. Insulating Bases: For thermostats located on exterior walls.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that systems are ready to receive work.
- C. Beginning of installation means installer accepts existing conditions.
- D. Sequence work to ensure installation of components is complementary to installation of similar components in other systems.
- E. Coordinate installation of system components with installation of mechanical systems equipment such as air handling units and air terminal units.
- F. Ensure installation of components is complementary to installation of similar components.
- G. Coordinate installation of system components with installation of mechanical systems equipment such as air handling units and air terminal units.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Check and verify location of thermostats with plans and room details before installation. Locate 42 inches (1050 mm) above floor. Align with lighting switches; see Section 262726.
- C. Provide conduit and electrical wiring in accordance with Section 260583. Electrical material and installation shall be in accordance with appropriate requirements of Division 26.

3.03 SCHEDULES

- A. Control Valve Schedule
 1. Drawing Code
 2. Valve Size
 3. Valve CV
 4. Operator Spring Range
 5. Normal Position
- B. Control Damper Schedule
 1. Drawing Code
 2. Height
 3. Width
 4. Air Flow
 5. Air Pressure Drop

END OF SECTION

**SECTION 230923
DIRECT-DIGITAL CONTROL SYSTEM FOR HVAC**

PART 2 PRODUCTS

END OF SECTION

SECTION 232113 HYDRONIC PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Hydronic system requirements.
- B. Heating water piping, above grade.
- C. Chilled water piping, above grade.
- D. Pipe hangers and supports.
- E. Unions, flanges, mechanical couplings, and dielectric connections.
- F. Valves:
 - 1. Ball valves.

1.02 RELATED REQUIREMENTS

- A. Section 232500 - HVAC Water Treatment: Pipe cleaning.

1.03 REFERENCE STANDARDS

- A. ASME B16.3 - Malleable Iron Threaded Fittings: Classes 150 and 300 2021.
- B. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings 2021.
- C. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings 2021.
- D. ASME B31.9 - Building Services Piping 2020.
- E. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless 2022.
- F. ASTM A234/A234M - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service 2022.
- G. ASTM B32 - Standard Specification for Solder Metal 2020.
- H. ASTM B88 - Standard Specification for Seamless Copper Water Tube 2022.
- I. ASTM B88M - Standard Specification for Seamless Copper Water Tube (Metric) 2020.
- J. ASTM F1476 - Standard Specification for Performance of Gasketed Mechanical Couplings for Use in Piping Applications 2007 (Reapproved 2019).
- K. AWS A5.8M/A5.8 - Specification for Filler Metals for Brazing and Braze Welding 2019.
- L. AWS D1.1/D1.1M - Structural Welding Code - Steel 2020, with Errata (2022).
- M. AWWA C606 - Grooved and Shouldered Joints 2015.
- N. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation 2018, with Amendment (2019).

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data:
 - 1. Include data on pipe materials, pipe fittings, valves, and accessories.
 - 2. Provide manufacturers catalog information.
 - 3. Indicate valve data and ratings.
 - 4. Show grooved joint couplings, fittings, valves, and specialties on drawings and product submittals, specifically identified with the manufacturer's style or series designation.

PART 2 PRODUCTS

2.01 HYDRONIC SYSTEM REQUIREMENTS

- A. Comply with ASME B31.9 and applicable federal, state, and local regulations.
- B. Piping: Provide piping, fittings, hangers, and supports as required, as indicated, and as follows:

1. Where more than one piping system material is specified, provide joining fittings that are compatible with piping materials and ensure that the integrity of the system is not jeopardized.
 2. Use non-conducting dielectric connections whenever joining dissimilar metals.
 3. Grooved mechanical joints may be used in accessible locations only.
 - a. Accessible locations include those exposed on interior of building, in pipe chases, and in mechanical rooms, aboveground outdoors, and as approved by Architect.
 - b. Use rigid joints unless otherwise indicated.
 4. Provide pipe hangers and supports in accordance with ASME B31.9 or MSS SP-58 unless indicated otherwise.
- C. Pipe-to-Valve and Pipe-to-Equipment Connections: Use flanges, unions, or grooved couplings to allow disconnection of components for servicing; do not use direct welded, soldered, or threaded connections.
- D. Valves: Provide valves where indicated:
1. Provide drain valves where indicated, and if not indicated, provide at least at main shut-off, low points of piping, bases of vertical risers, and at equipment. Use 3/4 inch (20 mm) gate valves with cap; pipe to nearest floor drain.

2.02 HEATING WATER PIPING, ABOVE GRADE

- A. Steel Pipe: ASTM A53/A53M, Schedule 40, black, using one of the following joint types:
1. Welded Joints: ASTM A234/A234M, wrought steel welding type fittings; AWS D1.1/D1.1M welded.
 2. Threaded Joints: ASME B16.3, malleable iron fittings.
- B. Copper Tube: ASTM B88 (ASTM B88M), Type K (A), drawn, using one of the following joint types:
1. Solder Joints: ASME B16.18 cast brass/bronze or ASME B16.22 solder wrought copper fittings.
 - a. Solder: ASTM B32 lead-free solder, HB alloy (95-5 tin-antimony) or tin and silver.
 - b. Braze: AWS A5.8M/A5.8 BCuP copper/silver alloy.
 2. Mechanical Press Sealed Fittings: Double pressed type complying with ASME B16.22, utilizing EPDM, nontoxic synthetic rubber sealing elements.

2.03 CHILLED WATER PIPING, ABOVE GRADE

- A. Steel Pipe: ASTM A53/A53M, Schedule 40, black; using one of the following joint types:
1. Welded Joints: ASTM A234/A234M, wrought steel welding type fittings; AWS D1.1/D1.1M welded.
 2. Threaded Joints: ASME B16.3, malleable iron fittings.
 3. Grooved Joints: AWWA C606 grooved pipe, fittings of same material, and mechanical couplings.
- B. Copper Tube: ASTM B88 (ASTM B88M), Type K (A), hard drawn; using one of the following joint types:
1. Solder Joints: ASME B16.18 cast brass/bronze or ASME B16.22, solder wrought copper fittings.
 - a. Solder: ASTM B32 lead-free solder, HB alloy (95-5 tin-antimony) or tin and silver.
 - b. Braze: AWS A5.8M/A5.8 BCuP copper/silver alloy.
 2. Mechanical Press Sealed Fittings: Double pressed type complying with ASME B16.22, utilizing EPDM, nontoxic synthetic rubber sealing elements.

2.04 PIPE HANGERS AND SUPPORTS

- A. Provide hangers and supports that comply with MSS SP-58.
1. If type of hanger or support for a particular situation is not indicated, select appropriate type using MSS SP-58 recommendations.
 2. Hangers for Pipe Sizes 1/2 to 1-1/2 Inches (13 to 38 mm): Malleable iron, adjustable swivel, split ring.

3. Hangers for Cold Pipe Sizes 2 Inches (50 mm) and Greater: Carbon steel, adjustable, clevis.
- B. In grooved installations, use rigid couplings with offsetting angle-pattern bolt pads or with wedge-shaped grooves in header piping to permit support and hanging in accordance with ASME B31.9.

2.05 UNIONS, FLANGES, MECHANICAL COUPLINGS, AND DIELECTRIC CONNECTIONS

- A. Unions for Pipe of 2 Inches (50 mm, DN) and Less:
- B. Flanges for Pipe 2 Inches (50 mm, DN) and Greater:
- C. Mechanical Couplings for Grooved and Shouldered Joints: Two or more curved housing segments with continuous key to engage pipe groove, circular C-profile gasket, and bolts to secure and compress gasket.
 1. Dimensions and Testing: In accordance with AWWA C606.
 2. Mechanical Couplings: Comply with ASTM F1476.
 3. Bolts and Nuts: Hot dipped galvanized or zinc-electroplated steel.
 4. When pipe is field grooved, provide coupling manufacturer's grooving tools.

PART 3 EXECUTION

3.01 PREPARATION

- A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
- B. Prepare pipe for grooved mechanical joints as required by coupling manufacturer.
- C. Remove scale and dirt on inside and outside before assembly.
- D. Prepare piping connections to equipment using jointing system specified.
- E. Keep open ends of pipe free from scale and dirt. Protect open ends with temporary plugs or caps.
- F. After completion, fill, clean, and treat systems. See Section 232500 for additional requirements.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Route piping in orderly manner, parallel to building structure, and maintain gradient.
- C. Install piping to conserve building space and to avoid interference with use of space.
- D. Group piping whenever practical at common elevations.
- E. Slope piping and arrange to drain at low points.

END OF SECTION

**SECTION 232213
STEAM AND CONDENSATE HEATING PIPING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Pipe and pipe fittings.
- B. Pipe hangers and supports.
- C. Steam piping system.
- D. Steam condensate piping system.

1.02 REFERENCE STANDARDS

- A. ASME B16.3 - Malleable Iron Threaded Fittings: Classes 150 and 300 2021.
- B. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless 2022.
- C. ASTM A234/A234M - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service 2022.
- D. AWS D1.1/D1.1M - Structural Welding Code - Steel 2020, with Errata (2022).
- E. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation 2018, with Amendment (2019).

1.03 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on pipe materials, pipe fittings, valves and accessories. Provide manufacturers catalogue information. Indicate valve data and ratings.

PART 2 PRODUCTS

2.01 LOW PRESSURE STEAM PIPING (15 PSIG (103 KPA) MAXIMUM)

- A. Steel Pipe: ASTM A53/A53M, Schedule 40, black.
 - 1. Fittings: ASME B16.3 malleable iron Class 150, or ASTM A234/A234M wrought steel.
 - 2. Joints: Threaded, or AWS D1.1/D1.1M welded.

2.02 LOW PRESSURE STEAM CONDENSATE PIPING

- A. Steel Pipe: ASTM A53/A53M, Schedule 80, black.
 - 1. Fittings: ASME B16.3 malleable iron Class 150, or ASTM A234/A234M wrought steel.
 - 2. Joints: Threaded, or AWS D1.1/D1.1M welded.

2.03 PIPE HANGERS AND SUPPORTS

- A. Provide hangers and supports that comply with MSS SP-58.
 - 1. If type of hanger or support for a particular situation is not indicated, select appropriate type using MSS SP-58 recommendations.
- B. Hangers for Pipe Sizes 1/2 to 1-1/2 Inch (13 to 38 mm): Malleable iron, adjustable swivel, split ring.
- C. Hangers for Pipe Sizes 2 to 4 Inches (50 to 100 mm): Carbon steel, adjustable, clevis.
- D. Hangers for Pipe Sizes 6 Inches (150 mm) and Over: Adjustable steel yoke, cast iron roll, double hanger.
- E. Multiple or Trapeze Hangers for Pipe Sizes to 4 inches (100 mm): Steel channels with welded spacers and hanger rods.
- F. Multiple or Trapeze Hangers for Pipe Sizes 6 Inches (150 mm) and Over: Steel channels with welded spacers and hanger rods; cast iron roll and stand.
- G. Wall Support for Pipe Sizes to 3 Inches (70 mm): Cast iron hook.
- H. Wall Support for Pipe Sizes 4 to 5 Inches (100 to 125 mm): Welded steel bracket and wrought steel clamp.

- I. Wall Support for Pipe Sizes 6 Inches (150 mm) and Over: Welded steel bracket and wrought steel clamp; adjustable steel yoke and cast iron roll.
- J. Vertical Support: Steel riser clamp.
- K. Hanger Rods: Mild steel threaded both ends, threaded one end, or continuous threaded.
- L. Inserts: Malleable iron case of galvanized steel shell and expander plug for threaded connection with lateral adjustment, top slot for reinforcing rods, lugs for attaching to forms; size inserts to suit threaded hanger rods.

2.04 UNIONS, FLANGES, AND COUPLINGS

- A. Unions for Pipe 2 Inches (50 mm) and Under:
 - 1. Ferrous Piping: 150 psig (1034 kPa) galvanized malleable iron, threaded.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Route piping in orderly manner, plumb and parallel to building structure, and maintain gradient.
- C. Install piping to conserve building space and avoid interference with use of space.
- D. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

3.02 SCHEDULES

- A. Hanger Spacing for Steel Steam Piping.
 - 1. 1/2 inch (15 mm): Maximum span, 8 feet (2400 mm); minimum rod size, 1/4 inch (6 mm).
 - 2. 3/4 inch (20 mm) and 1 inch (25 mm): Maximum span, 9 feet (2700 mm); minimum rod size, 1/4 inch (6 mm).
 - 3. 1-1/4 inches (32 mm): Maximum span, 11 feet (3.3 m); minimum rod size, 3/8 inch (9 mm).
 - 4. 1-1/2 inches (40 mm): Maximum span, 12 feet (3.6 m); minimum rod size, 3/8 inch (9 mm).

END OF SECTION

**SECTION 232214
STEAM AND CONDENSATE HEATING SPECIALTIES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Steam traps.
- B. Steam air vents.
- C. Safety relief valves.

1.02 REFERENCE STANDARDS

- A. ASME B31.9 - Building Services Piping 2020.

PART 2 PRODUCTS

2.01 STEAM TRAPS

- A. Manufacturers:
 - 1. Armstrong International, Inc: www.armstronginternational.com/#sle.
 - 2. Marshall Engineered Products Company: www.mepcollc.com/#sle.
- B. Steam Trap Applications:
 - 1. Use Float and Thermostatic Traps for:
 - a. Heating coils.
- C. Float and Thermostatic Steam Traps:
 - 1. Manufacturers:
 - a. Armstrong International, Inc: www.armstronginternational.com/#sle.
 - b. Spirax-Sarco: www.spiraxsarco.com/us/#sle.
 - c. Watson McDaniel Company: www.watsonmcdaniel.com/#sle.
 - 2. Metal body with bolted cover, stainless steel or bronze bellows type thermostatic air vent, stainless steel or copper float, stainless steel lever valve assembly, bottom drain plug, and accessible to internal parts without disturbing piping.

2.02 STEAM AIR VENTS

2.03 SAFETY RELIEF VALVES

- A. Valve: Bronze body, stainless steel valve spring, stem, and trim, direct pressure actuated, capacities ASME certified and labelled.
- B. Accessories: Drip pan elbow.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install steam and steam condensate piping and specialties in accordance with ASME B31.9.
- B. Install specialties in accordance with manufacturer's instructions.
- C. Steam Traps:
 - 1. Provide minimum 3/4 inch (20 mm) size on steam mains and branches.
 - 2. Install with union or flanged connections at both ends.
 - 3. Provide gate valve and strainer at inlet, and gate valve and check valve at discharge.
 - 4. Provide minimum 10 inch (250 mm) long, line size dirt pocket between apparatus and trap.

END OF SECTION

**SECTION 233100
HVAC DUCTS AND CASINGS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Metal ducts.
- B. Flexible ducts.

1.02 RELATED REQUIREMENTS

- A. Section 233319 - Duct Silencers.

1.03 REFERENCE STANDARDS

- A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2022.
- B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2022.
- C. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems 2021.
- D. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible 2021.
- E. UL 181 - Standard for Factory-Made Air Ducts and Air Connectors current edition, including all revisions.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Shop Drawings: Indicate duct fitting types, gauges, sizes, welds, and configuration.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Provide UL Class 1 ductwork, fittings, hangers, supports, and appurtenances in accordance with NFPA 90A and SMACNA (DCS) guidelines unless stated otherwise.
- B. Provide metal duct unless otherwise indicated. Fibrous glass duct can be substituted at the Contractor's option.
- C. Acoustical Treatment: Provide sound-absorbing liners and sectional silencers for metal-based ducts in compliance with Section 233319.
- D. Duct Shape and Material in accordance with Allowed Static Pressure Range:
- E. Duct Sealing and Leakage in accordance with Static Pressure Class:
- F. Duct Fabrication Requirements:
 - 1. Duct and Fitting Fabrication and Support: SMACNA (DCS) including specifics for continuously welded round and oval duct fittings.
 - 2. Use reinforced and sealed sheet-metal materials at recommended gauges for indicated operating pressures or pressure class.
 - 3. Construct tees, bends, and elbows with radius of not less than 1-1/2 times width of duct on centerline. Where not possible and where rectangular elbows must be used, provide airfoil turning vanes of perforated metal with glass fiber insulation.
 - 4. Provide turning vanes of perforated metal with glass fiber insulation when acoustical lining is indicated.
 - 5. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.
 - 6. Provide turning vanes of perforated metal with glass fiber insulation when an acoustical lining is required.
 - 7. Where ducts are connected to exterior wall louvers and duct outlet is smaller than louver frame, provide blank-out panels sealing louver area around duct. Use same material as duct, painted black on exterior side; seal to louver frame and duct.

2.02 METAL DUCTS

- A. Material Requirements:
 - 1. Galvanized Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M FS Type B, with G60/Z180 coating.
- B. Round Metal Ducts:
 - 1. Round Single Wall Duct: Round lock seam duct with galvanized steel outer wall.
 - 2. Round Connection System: Interlocking duct connection system per SMACNA (DCS).
- C. Round Spiral Duct:
 - 1. Round spiral lock seam duct with galvanized steel outer wall.
- D. Connectors, Fittings, Sealants, and Miscellaneous:
 - 1. Fittings: Manufacture with solid inner wall of perforated galvanized steel.
 - 2. Transverse Duct Connection System: SMACNA "E" rated rigid class connection, interlocking angle and duct edge connection system with sealant, gasket, cleats, and corner clips in accordance with SMACNA (DCS).
 - 3. Joint Sealers and Sealants: Non-hardening, water resistant, mildew and mold resistant.
 - a. Type: Heavy mastic or liquid used alone or with tape, suitable for joint configuration and compatible with substrates, and recommended by manufacturer for pressure class of ducts.
 - b. Surface Burning Characteristics: Flame spread index of zero and smoke developed index of zero, when tested in accordance with ASTM E84.
- E. Flexible Ducts: UL 181, Class 1, polyethylene film, mechanically fastened and rolled using galvanized steel to form a spiral helix.
 - 1. Insulation: R6 insulation with polyethylene vapor barrier film.
 - 2. Pressure Rating: 10 in-wc (2.50 kPa) positive and 5 in-wc (1.25 kPa) negative.
 - 3. Maximum Velocity: 5500 fpm (27.9 m/sec).
 - 4. Temperature Range: Minus 20 degrees F to 250 degrees F (Minus 28 degrees C to 121 degrees C).

2.03 FLEXIBLE DUCTS

- A. Flexible Air Ducts:
 - 1. UL 181, Class 1, multiple layers of aluminum laminate supported by helically wound spring steel wire.
 - 2. Pressure Rating: From 10 in-wc (2.5 kPa) positive to 1 in-wc (250 Pa) negative.
 - 3. Maximum Velocity: 4,000 fpm (20.3 m/s).
 - 4. Temperature Range: Minus 20 to 210 degrees F (Minus 28 to 99 degrees C).

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install, support, and seal ducts in accordance with SMACNA (DCS).
- B. Install products following the manufacturer's instructions.
- C. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.
- D. Duct sizes indicated are precise inside dimensions. For lined ducts, maintain sizes inside lining.
- E. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.

END OF SECTION

**SECTION 233300
AIR DUCT ACCESSORIES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Air turning devices/extractors.
- B. Combination fire and smoke dampers.
- C. Duct access doors.
- D. Duct test holes.
- E. Fire dampers.
- F. Flexible duct connectors.
- G. Smoke dampers.
- H. Smoke and fire-smoke damper test module.
- I. Volume control dampers.
- J. Low leakage (Class 1A) control dampers.
- K. Air measuring control dampers.
- L. Miscellaneous products:
 - 1. Damper operators.
 - 2. Damper position switch.

1.02 REFERENCE STANDARDS

- A. NFPA 80 - Standard for Fire Doors and Other Opening Protectives 2022.
- B. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems 2021.
- C. NFPA 92 - Standard for Smoke Control Systems 2021.
- D. NFPA 96 - Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations 2021.
- E. NFPA 105 - Standard for Smoke Door Assemblies and Other Opening Protectives 2022.
- F. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible 2021.
- G. UL 33 - Safety Heat Responsive Links for Fire-Protection Service Current Edition, Including All Revisions.
- H. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations Current Edition, Including All Revisions.
- I. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations Current Edition, Including All Revisions.
- J. UL 555 - Standard for Fire Dampers Current Edition, Including All Revisions.
- K. UL 555S - Standard for Smoke Dampers Current Edition, Including All Revisions.

1.03 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide for shop-fabricated assemblies including volume control dampers, duct access doors, duct test holes, and hardware used. Include electrical characteristics and connection requirements.
- C. Shop Drawings: Indicate for shop fabricated assemblies including volume control dampers.
- D. Manufacturer's Installation Instructions: Provide instructions for fire dampers.

PART 2 PRODUCTS

2.01 AIR TURNING DEVICES/EXTRACTORS

- A. Multi-blade device with blades aligned in short dimension; steel construction; with individually adjustable blades, mounting straps.

2.02 COMBINATION FIRE AND SMOKE DAMPERS

2.03 DUCT ACCESS DOORS

- A. Fabricate in accordance with SMACNA (DCS) and as indicated.
- B. Fabrication: Rigid and close fitting of galvanized steel with sealing gaskets and quick-fastening locking devices. For insulated ducts, install minimum 1-inch (25 mm) thick insulation with sheet metal cover.
 - 1. Less Than 12 inches (300 mm) Square: Secure with sash locks.

2.04 DUCT TEST HOLES

- A. Temporary Test Holes: Cut or drill in ducts as required. Cap with neat patches, neoprene plugs, threaded plugs, or threaded or twist-on metal caps.
- B. Permanent Test Holes: Factory fabricated, air tight flanged fittings with screw cap. Provide extended neck fittings to clear insulation.

2.05 FIRE DAMPERS

- A. Fabricate in accordance with NFPA 90A and UL 555, and as indicated.
- B. Horizontal Dampers: Galvanized steel, 22-gauge, 0.0299-inch (0.76 mm) frame, stainless steel closure spring, and lightweight, heat-retardant, non-asbestos fabric blanket.
- C. Multiple Blade Dampers: 16-gauge, 0.0598-inch (1.52 mm) galvanized steel frame and blades, oil-impregnated bronze or stainless steel sleeve bearings and plated steel axles, 1/8 by 1/2 inch (3.2 by 12.7 mm) plated steel concealed linkage, stainless steel closure spring, blade stops, and lock.
- D. Fusible Links: UL 33, separate at 160 degrees F (71 degrees C) with adjustable link straps for combination fire/balancing dampers.

2.06 FLEXIBLE DUCT CONNECTORS

- A. Fabricate in accordance with SMACNA (DCS) and as indicated.
- B. Flexible Duct Connections: Fabric crimped into metal edging strip.
 - 1. Fabric: UL listed fire-retardant neoprene coated woven glass fiber fabric to NFPA 90A, minimum density 30 oz/sq yd (1.0 kg/sq m).

2.07 SMOKE DAMPERS

- A. Fabricate in accordance with NFPA 90A and UL 555S, and as indicated.
- B. Dampers: UL Class 1 airfoil blade type smoke damper, normally open automatically operated by pneumatic actuator.
- C. Electro Thermal Link: Fusible link melting at 165 degrees F (74 degrees C); 120 volts, single phase, 60 Hz; UL listed and labeled.

2.08 SMOKE AND FIRE-SMOKE DAMPER TEST MODULE

- A. Addressable fire alarm system proprietary controller module preconfigured for remote testing of dedicated smoke damper or combination fire-smoke damper.
- B. Provide module, accessories, and connectivity to meet NFPA 80 and NFPA 105 requirements.

2.09 VOLUME CONTROL DAMPERS

- A. Products for Automatic Controls: See Section 253523.
- B. Fabricate in accordance with SMACNA (DCS) and as indicated.

2.10 LOW LEAKAGE (CLASS 1A) CONTROL DAMPERS

- A. Manufacturers:

- B. Maximum Leakage Allowed: 3 cfm/sq ft at 1 in-wc (15.2 L/sec/sq m at 0.25 kPa).

2.11 AIR MEASURING CONTROL DAMPERS

- A. Factory-Mounted Assembly Requirements:
 - 1. Damper Unit or Multi-Unit:
 - a. Construction: Flanged-to-duct frame made of extruded aluminum with V or 3V blades for low to medium pressure applications, zinc-plated steel hardware, frame-mounted shaft bearings, frame-assembly sleeve, and silicone seals at frame and blade ends.
 - b. Control: Opposed blade modulation by damper actuator(s) from air measuring sensor transmitter-controller unit.
 - 2. Air Measuring Sensor Transmitter-Controller:
 - a. Transmitter: Five percent accuracy, adjustable zero and span, 10 to 1 turndown, 0.1 percent of calibrated span linearity, 30 to 50 millisecond response time, minimum overpressure of 150 percent over highest range value, alphanumeric indicating display, wired or wireless connectivity for configuration, and terminal strip within enclosed electronic components.
 - b. Controller: Configure to control hardware-linked damper actuator(s) based on locally typed or software-defined setpoint. Access for user to do local or remote proportional, integrative, and derivative control-loop tuning.
 - c. Hardwired External Damper Actuator Output: Two-wire, 4 to 20 mA.
 - d. BTU Metering: Provide temperature sensor for field mounting upstream or downstream of heating or cooling source.
- B. Service Temperature Range: Minus 20 to 160 degrees F (Minus 28.8 to 71.1 degrees C).
- C. Enclosure Rating for Transmitter-Controller and Damper Actuator(s):
 - 1. General: UL 50 or UL 50E listed for use in non-hazardous locations.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install accessories in accordance with manufacturer's instructions, NFPA 90A, and follow SMACNA (DCS). See Section 233100 for duct construction and pressure class.
- B. Provide duct access doors for inspection and cleaning before and after filters, coils, fans, automatic dampers, at fire dampers, combination fire and smoke dampers, and elsewhere as indicated. Provide for cleaning kitchen exhaust ducts in accordance with NFPA 96 Provide minimum 8 by 8 inch (200 by 200 mm) size access door for hand and shoulder access, or as indicated on drawings. Provide minimum 4 by 4 inch (100 by 100 mm) size access door for balancing dampers only. Review locations prior to fabrication.
- C. Provide duct test holes where indicated and required for testing and balancing purposes.
- D. Provide fire dampers, combination fire and smoke dampers, and smoke dampers at locations indicated, where ducts and outlets pass through fire-rated components, and where required by authorities having jurisdiction. Install with required perimeter mounting angles, sleeves, breakaway duct connections, corrosion resistant springs, bearings, bushings and hinges.
- E. Install smoke dampers and combination smoke and fire dampers in accordance with NFPA 92.
- F. Demonstrate re-setting of fire dampers to Owner's representative.

END OF SECTION

**SECTION 233416
CENTRIFUGAL HVAC FANS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Backward inclined centrifugal fans.
- B. Bearings and drives.

1.02 REFERENCE STANDARDS

- A. ABMA STD 9 - Load Ratings and Fatigue Life for Ball Bearings 2015 (Reaffirmed 2020).
- B. AMCA (DIR) - (Directory of) Products Licensed Under AMCA International Certified Ratings Program 2015.
- C. AMCA 210 - Laboratory Methods of Testing Fans for Certified Aerodynamic Performance Rating 2016.

1.03 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on centrifugal fans and accessories including fan curves with specified operating point plotted, power, rpm, sound power levels for both fan inlet and outlet at rated capacity, and electrical characteristics and connection requirements.
- C. Shop Drawings: Indicate assembly of centrifugal fans and accessories including fan curves with specified operating point plotted, sound power levels for both fan inlet and outlet at rated capacity, and electrical characteristics and connection requirements.

PART 2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

- A. Performance Ratings: Determined in accordance with AMCA 210 and bearing the AMCA Certified Rating Seal.

2.02 WHEEL AND INLET

- A. Backward Inclined: Steel or aluminum construction with smooth curved inlet flange, heavy back plate, backwardly curved blades welded or riveted to flange and backplate; cast iron hub riveted to back plate and keyed to shaft with set screws.

2.03 BEARINGS AND DRIVES

- A. Bearings: Heavy duty pillow block type, selfgreasing ball bearings, with ABMA STD 9 life at 50,000 hours.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install flexible connections between fan inlet and discharge ductwork; see Section 233300. Ensure metal bands of connectors are parallel with minimum one inch (25 mm) flex between ductwork and fan while running.

END OF SECTION

**SECTION 233600
AIR TERMINAL UNITS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Single-duct terminal units.
 - 1. Variable-volume units.

1.02 RELATED REQUIREMENTS

- A. Section 230548 - Vibration and Seismic Controls for HVAC.
- B. Section 233100 - HVAC Ducts and Casings.
- C. Section 251400 - Integrated Automation Local Control Units: HVAC controllers.

1.03 REFERENCE STANDARDS

- A. AHRI 880 (I-P) - Performance Rating of Air Terminals 2017.
- B. ASTM A492 - Standard Specification for Stainless Steel Rope Wire 1995 (Reapproved 2019).
- C. ASTM A603 - Standard Specification for Metallic-Coated Steel Structural Wire Rope 2019.
- D. SMACNA (SRM) - Seismic Restraint Manual Guidelines for Mechanical Systems 2008.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data indicating configuration, general assembly, and materials used in fabrication. Include catalog performance ratings that indicate airflow, static pressure, and NC designation. Include electrical characteristics and connection requirements.
- C. Shop Drawings: Indicate configuration, general assembly, and materials used in fabrication, and electrical characteristics and connection requirements.
 - 1. Include schedules listing discharge and radiated sound power level for each of the second through sixth-octave bands at inlet static pressures of 1 to 4 in-wc (250 to 1000 Pa).
- D. Manufacturer's Installation Instructions: Indicate support and hanging details, installation instructions, recommendations, and service clearances required.
- E. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.05 WARRANTY

- A. See Section 017800 - Closeout Submittals for additional warranty requirements.
- B. Provide five year manufacturer warranty for air terminal units.

PART 2 PRODUCTS

2.01 SINGLE-DUCT, VARIABLE-VOLUME UNITS

- A. General:
 - 1. Factory-assembled, AHRI 880 (I-P) rated and bearing the AHRI seal, air volume control terminal with damper assembly, flow sensor, externally mounted volume controller, duct collars, and all required features.
 - 2. Control box bearing identification, including but not necessarily limited to nominal cfm, maximum and minimum factory-set airflow limits, coil type and coil (right or left hand) connection, where applicable.
- B. Unit Casing:
 - 1. Minimum 22 gauge, 0.0299 inch (0.76 mm) galvanized steel.
 - 2. Air Inlet Collar: Provide round, suitable for standard flexible duct sizes.
 - 3. Unit Discharge: Rectangular, with slip-and-drive connections.
 - 4. Acceptable Liners:
 - a. Liner not to contain pentabrominated diphenyl ether (CAS #32534-81-9) or octabrominated diphenyl ether.

- C. Damper Assembly:
 - 1. Heavy-gauge, galvanized steel, or extruded aluminum construction with solid steel, nickel-plated shaft pivoting on HDPE, self-lubricating bearings.
 - 2. Provide integral position indicator or alternative method for indicating damper position over full range of 90 degrees.
 - 3. Incorporate low leak damper blades for tight airflow shutoff.
- D. Controls:
 - 1. DDC (Direct-Digital Controls):
 - a. Bi-directional Damper Actuator: 24 volt, powered closed, spring return open.
 - b. Microprocessor-Based Controller: Air volume controller, pressure-independent with electronic airflow transducers, factory-calibrated maximum and minimum CFMs.
 - 1) Occupied and unoccupied operating mode.
 - 2) Remote reset of temperature or CFM set points.
 - 3) Proportional, plus integral control of room temperature.
 - 4) Monitoring and adjusting with portable terminal.
 - c. Room Sensor:
 - 1) Compatible with temperature controls specified.
 - 2) Wall-mounted, system powered, with temperature set-point adjustment including connection access for portable operator terminal.
 - d. See Section 25 1400.
 - 2. Airflow Sensor: Differential pressure airflow device measuring total, static, and wake pressures.
 - a. Signal accuracy: Plus/minus five percent throughout terminal operating range.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install the inlets of air terminal units and air flow sensors a minimum of four duct diameters from elbows, transitions, and duct takeoffs.
- C. Provide ceiling access doors or locate units above easily removable ceiling components.
- D. Support units individually from structure with wire rope complying with ASTM A492 and ASTM A603 in accordance with SMACNA (SRM). See Section 23 0548.
- E. Do not support from ductwork.
- F. Connect to ductwork in accordance with Section 233100.

END OF SECTION

**SECTION 233700
AIR OUTLETS AND INLETS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Diffusers:
 - 1. Perforated ceiling diffusers.
- B. Registers/grilles:
 - 1. Ceiling-mounted, exhaust and return register/grilles.
- C. Duct-mounted supply and return registers/louvers.

1.02 REFERENCE STANDARDS

- A. SMACNA (ASMM) - Architectural Sheet Metal Manual 2012.

1.03 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data for equipment required for this project. Review outlets and inlets as to size, finish, and type of mounting prior to submission. Submit schedule of outlets and inlets showing type, size, location, application, and noise level.

PART 2 PRODUCTS

2.01 PERFORATED FACE CEILING DIFFUSERS

- A. Type: Perforated face with fully adjustable pattern and removable face.
- B. Fabrication: Steel with steel frame and baked enamel finish.
- C. Color: As indicated.

2.02 DUCT-MOUNTED SUPPLY AND RETURN REGISTERS/LOUVERS

- A. Type: Duct-mounted, rectangular register for round-spiral duct with adjustable pivot-ended blades, end caps, built-in volume damper, and dual cover flanges to lay flush on duct surface regardless of diameter. Performance to match manufacturer's catalog data.
- B. Material: 22 gauge, 0.0299 inch (0.76 mm).
 - 1. Provide crossing spiral fitting-body of matching duct diameter.
- C. Color: As indicated on drawings.

2.03 CEILING EXHAUST AND RETURN REGISTERS/GRILLES

- A. Type: Streamlined blades, 3/4 inch (19 mm) minimum depth, 3/4 inch (19 mm) maximum spacing, with blades set at 45 degrees, vertical face.
- B. Frame: 1-1/4 inch (32 mm) margin with countersunk screw mounting.
- C. Fabrication: Steel with 20 gauge, 0.0359 inch (0.91 mm) minimum frames and 22 gauge, 0.0299 inch (0.76 mm) minimum blades, steel and aluminum with 20 gauge, 0.0359 inch (0.91 mm) minimum frame, or aluminum extrusions, with factory baked enamel finish.
- D. Color: As indicated.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Comply with SMACNA (ASMM) for flashing/counter-flashing of roof penetrations and supports for roof curbs and roof mounted equipment.
- C. Check location of outlets and inlets and make necessary adjustments in position to comply with architectural features, symmetry, and lighting arrangement.
- D. Install diffusers to ductwork with air tight connection.

- E. Provide balancing dampers on duct take-off to diffusers and grilles and registers, despite whether dampers are specified as part of diffuser, or grille and register assembly.
- F. Paint ductwork visible behind air outlets and inlets matte black, see Section 099123.

END OF SECTION

**SECTION 237313
MODULAR INDOOR CENTRAL-STATION AIR-HANDLING UNITS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Casing construction.
- B. Fan section.
- C. Coil section.
- D. Filter and air cleaner section.
- E. Damper section.
- F. Airflow measurement.
- G. Access section.
- H. Controls.

1.02 RELATED REQUIREMENTS

- A. Section 233413 - Axial HVAC Fans.
- B. Section 251400 - Integrated Automation Local Control Units.

1.03 REFERENCE STANDARDS

- A. ABMA STD 9 - Load Ratings and Fatigue Life for Ball Bearings 2015 (Reaffirmed 2020).
- B. AHRI 410 - Forced-Circulation Air-Cooling and Air-Heating Coils 2001, with Addenda (2011).
- C. AMCA (DIR) - (Directory of) Products Licensed Under AMCA International Certified Ratings Program 2015.
- D. AMCA 99 - Standards Handbook 2016.
- E. AMCA 210 - Laboratory Methods of Testing Fans for Certified Aerodynamic Performance Rating 2016.
- F. AMCA 300 - Reverberant Room Method for Sound Testing of Fans 2014.
- G. AMCA 301 - Methods for Calculating Fan Sound Ratings from Laboratory Test Data 2014.
- H. AMCA 500-D - Laboratory Methods of Testing Dampers for Rating 2018.
- I. AMCA 500-L - Laboratory Methods of Testing Louvers for Rating 2012 (Reapproved 2015).
- J. AMCA 611 - Certified Ratings Program - Product Rating Manual for Airflow Measurement Stations 2015.
- K. ASHRAE Std 52.2 - Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size 2017, with Addendum (2022).
- L. ASHRAE Std 90.1 I-P - Energy Standard for Buildings Except Low-Rise Residential Buildings Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- M. ASHRAE Std 135 - A Data Communication Protocol for Building Automation and Control Networks 2020, with Errata and Amendments (2022).
- N. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems 2021.
- O. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible 2021.
- P. UL 508 - Industrial Control Equipment Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data:
 - 1. Published Literature: Indicate dimensions, weights, capacities, ratings, gauges and finishes of materials, and electrical characteristics and connection requirements.

2. Filters: Data for filter media, filter performance data, filter assembly, and filter frames.
 3. Fans: Performance and fan curves with specified operating point clearly plotted, power, RPM.
 4. Sound Power Level Data: Fan outlet and casing radiation at rated capacity.
 5. Electrical Requirements: Power supply wiring including wiring diagrams for interlock and control wiring, clearly indicating factory-installed and field-installed wiring.
- C. Shop Drawings: Indicate assembly, unit dimensions, weight loading, required clearances, construction details, field connection details, and electrical characteristics and connection requirements.

PART 2 PRODUCTS

2.01 CASING CONSTRUCTION

- A. Full Perimeter Base Rail:
1. Construct of galvanized steel.
 2. Provide base rail of sufficient height to raise unit for external trapping of condensate drain pans.
- B. Casing:
1. Construct of one piece, insulated, double wall panels.
 2. Provide mid-span, no through metal, internal thermal break.
 3. Construct outer panels of galvanized steel and inner panels of galvanized steel.
 4. Casing Air Pressure Performance Requirements:
 - a. Able to withstand up to 8 in-wc (2 kPa) positive or negative static pressure.
 - b. Not to exceed 0.0042 inches per inch (0.000165 mm per mm) deflection at 1.5 times design static pressure up to a maximum of plus 8 in-wc (2 kPa) in positive pressure sections and minus 8 in-wc (2 kPa) in negative pressure sections.
- C. Access Doors:
1. Construction, thermal and air pressure performance same as casing.
 2. Provide surface mounted handles on hinged, swing doors.
- D. Outside Air and Exhaust Air Weather Hood:
1. Fabricate from same material as casing outer panel.
 2. Extend hood past perimeter of unit casing opening so as not to obstruct airflow path.
 3. Paint hoods with same finish as external surface of outdoor units.
 4. Provide inlet hood for each fresh air damper with a sine wave moisture eliminator to prevent entrainment of water into the unit from outside air.
 5. Provide exhaust hoods for each exhaust air opening.
 6. Size each hood for 100 percent of nominal fresh air damper capacities.
 7. Protect each hood with bird screen to prevent nesting at intake or exhaust airflow paths.
- E. Unit Flooring: Construct with sufficient strength to support expected people and equipment loads associated with maintenance activities.
- F. Casing Leakage: Seal joints and provide airtight access doors so that air leakage does not exceed one percent of design flow at the specified casing pressure.
- G. Insulation:
1. Provide minimum thermal thickness of 12 R (2.29 RSI) throughout.
 2. Completely fill panel cavities in each direction to prevent voids and settling.
 3. Comply with NFPA 90A.
- H. Drain Pan Construction:
1. Provide cooling coil sections with an insulated, double wall, galvanized steel drain pan complying with ASHRAE Std 62.1 for indoor air quality and sufficiently sized to collect all condensate.
 2. Slope in two planes to promote positive drainage and eliminate stagnate water conditions.
 3. Locate outlet of sufficient diameter at lowest point of pan to prevent overflow at normal operating conditions.

4. Provide threaded drain connections constructed of drain pan material, extended sufficient distance beyond the base to accommodate field installed, condensate drain trapping.
- I. Louvers: Stationary, of galvanized steel, 4 inches (100 mm) deep with plenum, nylon bearings, 1/2-inch (13 mm) mesh, 0.04-inch (1.0 mm) galvanized wire bird screen in aluminum frame, and bearing AMCA Certified Ratings Seal in accordance with AMCA 500-L. Furnish adjustable louvers with hollow vinyl bulb edging on blades and foam side stops to limit leakage to maximum 2 percent at 4 in-wc (1 kPa) differential pressure when sized for 2000 fpm (10 m/s) face velocity.
- J. Finish:

2.02 FAN SECTION

- A. Type: Forward curved, single width, single inlet, centrifugal plug fan, in accordance with AMCA 99. See Section 233413
- B. Performance Ratings: Determined in accordance with AMCA 210 and labeled with AMCA Certified Rating Seal.
- C. Sound Ratings: AMCA 301; tested to AMCA 300 and label with AMCA Certified Sound Rating Seal.
- D. Bearings: Self-aligning, grease lubricated, with lubrication fittings extended to exterior of casing with plastic tube and grease fitting rigidly attached to casing.
- E. External Motor Junction Box: Factory mount NEMA 4 external junction box and connect to extended motor leads from internally mounted motors.
- F. Motor Wiring Conduit: Factory wire fan motor wiring to the unit mounted starter-disconnect, variable frequency drive, and external motor junction box.
- G. Fan Accessories:
- H. Flexible Duct Connections:
 1. For separating fan, coil, and adjacent sections.
- I. Drives:
 1. Comply with AMCA 99.
 2. Bearings: Heavy duty pillow block type, ball bearings, with ABMA STD 9 L-10 life at 50,000 hours.
 3. Shafts: Solid, hot rolled steel, ground and polished, with key-way, and protectively coated with lubricating oil.
 4. V-Belt Drive: Cast iron or steel sheaves, dynamically balanced, bored to fit shafts, and keyed. Variable and adjustable pitch sheaves for motors 15 hp (11.2 kW) and under selected so required rpm is obtained with sheaves set at mid-position; fixed sheave for 20 hp (15 kW) and over, matched belts, and drive rated as recommended by manufacturer or minimum 1.5 times nameplate rating of the motor.
 5. Belt Guard: Fabricate to SMACNA (DCS); 0.106 inch (2.6 mm) thick, 3/4 inch (20 mm) diamond mesh wire screen welded to steel angle frame or equivalent, prime coated. Secure to fan or fan supports without short circuiting vibration isolation, with provision for adjustment of belt tension, lubrication, and use of tachometer with guard in place.

2.03 COIL SECTION

- A. Casing: Provide access to both sides of coils. Enclose coils with headers and return bends exposed outside casing. Slide coils into casing through removable end panel with blank off sheets and sealing collars at connection penetrations.
- B. Drain Pans: 24 inch (600 mm) downstream of coil and down spouts for cooling coil banks more than one coil high.
- C. Eliminators: Three break of galvanized steel, mounted over drain pan.
- D. Air Coils:
 1. Certify capacities, pressure drops, and selection procedures in accordance with AHRI 410.

- E. Fabrication:
 1. Tubes: 5/8 inch (16 mm) OD seamless copper expanded into fins, brazed joints.
 2. Fins: Aluminum.
 3. Casing: Die formed channel frame of galvanized steel.
- F. Steam Heating Coils:
 1. Headers: Cast iron with tubes expanded into header, seamless copper tube with silver brazed joints, or prime coated steel pipe with brazed joints.
 2. Configuration: Drainable, with threaded plugs for drain and vent, threaded plugs in return bends and in headers opposite each tube, sloped within frame to condensate connection.
- G. Water Cooling Coils:
 1. Headers: Cast iron, seamless copper tube, or prime coated steel pipe with brazed joints.
 2. Configuration: Drainable, with threaded plugs for drain and vent; threaded plugs in return bends and in headers opposite each tube.

2.04 FILTER AND AIR CLEANER SECTION

- A. General: Provide filter sections with filter racks, minimum of one access door for filter removal, and filter block-offs to prevent air bypass.
- B. Throwaway Filters:
 1. Media: 2 inch (50 mm) fiberglass with rigid supporting mesh across the leaving face, capable of operating up to a maximum of 500 fpm (2.54 m/s) without loss of efficiency and holding capacity.
 2. Frame: Rigid.
 3. Minimum Efficiency Reporting Value: 5 MERV when tested in accordance with ASHRAE Std 52.2.
- C. Cartridge Filters:
 1. Media: 2 inch (50 mm), pleated, 8 MERV prefilter and 12 inch (305 mm) closely spaced, pleated, fine-fiber, cartridge filter, sealed into gasketed, metal headers, and capable of operating up to a maximum of 625 fpm (3.17 mps) for without loss of efficiency and holding capacity.
 2. Filter Rack: Side-access rack designed to hold the metal headers.
 3. Minimum Efficiency Reporting Value: 11 MERV when tested in accordance with ASHRAE Std 52.2.
- D. Differential Pressure Gauge:
 1. Provide factory installed dial type differential pressure gauge, flush mounted with casing outer wall, and fully piped to both sides of each filter to indicate status.
 2. Maintain plus/minus 5 percent accuracy within operating limits of 20 degrees F (minus 6.7 degrees C) to 120 degrees F (48.9 degrees C).

2.05 DAMPER SECTION

- A. Mixing Section: Provide a functional section to support the damper assembly for modulating the volume of outdoor, return, and exhaust air.
- B. Damper Blades:
 1. Double-skin airfoil design with metal, compressible jamb seals and extruded-vinyl blade-edge seals on each blade.
 2. Self-lubricating stainless steel or synthetic sleeve bearings.
 3. Comply with ASHRAE Std 90.1 I-P for rated maximum leakage rate.
 4. Provide leakage testing and pressure ratings in compliance with AMCA 500-D test methods.
 5. Arrange in parallel or opposed-blade configuration.
- C. Barometric Relief Dampers:
 1. Frame: Roll formed galvanized steel.
 2. Blades: Roll formed galvanized steel.
 3. Blade Seals: Extruded vinyl, mechanically attached to the blade edge.

4. Material:

2.06 AIRFLOW MEASUREMENT

- A. Airflow Measurement Station:
 1. Provide factory installed, airflow measurement station tested in accordance with AMCA 611 and bearing the AMCA Ratings Seal for Airflow Measurement Performance.
 2. Station Location: Install in outdoor and return opening(s) to measure airflow.
 3. Damper Blades:
 - a. Galvanized steel or extruded aluminum construction.
 - b. Housed in galvanized steel or extruded aluminum frame and mechanically fastened to a rotating axle rod.
 - c. Comply with ASHRAE Std 90.1 I-P for rated maximum leakage rate.
 4. Measurement Range: Minimum of 15 percent to 100 percent of unit nominal flow.
 5. Operation: Provide low voltage signal corresponding to actual airflow for controlling and documenting airflow.
 6. Accuracy: Plus/minus 5 percent.

2.07 ACCESS SECTION

- A. Provide where indicated on drawings to allow for inspection, cleaning, and maintenance of field-installed components.
- B. Construct access doors same as previously specified within this Section.

2.08 CONTROLS

- A. Combination VFD - Disconnects:
 1. Provide factory mounted, combination VFD - disconnect for each fan motor.
 2. Factory mount in full metal enclosure and wire to fan motor.
 3. Mount VFD-disconnect on fan section externally in a NEMA 1 enclosure within a dedicated controls section or housed fan section.
- B. Factory Installed Direct Digital Control (DDC) System:
 1. DDC Controller:
 - a. Provide panel-mounted, factory wired, application-specific (ASC) or advanced application-programmable controller (APC).
 - b. ASC or APC: See Section 251400 except for manufacturer-provided units that are fully compatible with site BAS, BMS, SCADA, or Integrated Automation System.
 - c. Include built-in or provide local screen push-button interface for local monitoring, adjustment, tuning, data logging, and troubleshooting.
 - d. Factory configured to handle internal equipment using manufacturer's specific instructions unless directly specified on listed sequence of operation.
 - e. Factory wired into panel-mounted auxiliary relay(s) to handle scheduled or interlocked cycle-duty operation of externally linked equipment as indicated on drawings.
 - f. Factory installed, wired, programmed, and tested, including each component.
 - g. BAS, SCADA, or other Integrated Automation Link: ASHRAE Std 135 BACnet MS/TP.
 2. Mixing Section Dampers:
 - a. Outdoor Air Damper: Fail closed using spring-return actuator.
 - b. Return Air Damper: Fail open using spring-return actuator.
 3. Temperature Sensors: Provide for fan discharge, supply, return, mixed air, and coil section. Use averaging type for coil sections.
 4. Low Limit Switches:
 - a. Factory wire to momentary push-button reset circuit.
 - b. Provide separate low limit for each coil in a coil stack.
 5. Fan Status: Provide pressure switch to determine running status.
 6. Loaded Filter Section: Tube to filter section to indicate sectional filter status.
 7. Condensate Overflow Switches:

- a. Comply with UL 508; shut down unit in the event of primary drain blockage.
- b. Factory install float switch in drain pan to detect high water condensate level.
- c. Locate float switch above primary drain line connection and below drain pan rim.
- 8. Relays, Unit-Mounted, Output-Linked: Provide for external loads including motor starters, relief dampers, pumps, condensing units, and other equipment as specified in the drawings.
- C. BAS, SCADA, or other Integrated Automation Link: ASHRAE Std 135 BACnet MS/TP.
- D. External Point Mapping: Provide mapping table for each parameter included in the local visual interface with software-toggle flag to allow reduced mapping of available points.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Bolt sections together with gaskets.
- C. Isolate fan section with flexible duct connections.
- D. Install flexible duct connections between fan inlet and discharge ductwork and air handling unit sections. Ensure that metal bands of connectors are parallel with minimum 1 inch (25 mm) flex between ductwork and fan while running.
- E. Provide fixed sheaves required for final air balance.
- F. Make connections to coils with unions or flanges.
- G. Hydronic Coils:
 - 1. Hydronic Coils: Connect water supply to leaving air side of coil (counterflow arrangement).
 - 2. Provide shut-off valve on supply line and lockshield balancing valve with memory stop on return line.
 - 3. Locate water supply at bottom of supply header and return water connection at top.
 - 4. Provide manual air vents at high points complete with stop valve.
 - 5. Ensure water coils are drainable and provide drain connection at low points.
- H. Steam Coils:
 - 1. Install vacuum breaker in steam line at or in header.
 - 2. Install steam traps with outlet minimum 12 inches (300 mm) below coil return connection.

3.02 SYSTEM STARTUP

- A. Provide manufacturer's field representative to perform systems startup.
- B. Prepare and start equipment and systems in accordance with manufacturers' instructions and recommendations.
- C. Adjust for proper operation within manufacturer's published tolerances.

END OF SECTION

SECTION 260519
LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Single conductor building wire.
- B. Nonmetallic-sheathed cable.
- C. Metal-clad cable.
- D. Manufactured wiring systems.
- E. Wiring connectors.
- F. Electrical tape.
- G. Heat shrink tubing.
- H. Wire pulling lubricant.
- I. Cable ties.

1.02 RELATED REQUIREMENTS

- A. Section 078400 - Firestopping.
- B. Section 260526 - Grounding and Bonding for Electrical Systems: Additional requirements for grounding conductors and grounding connectors.
- C. Section 260553 - Identification for Electrical Systems: Identification products and requirements.
- D. Section 284600 - Fire Detection and Alarm: Fire alarm system conductors and cables.

1.03 REFERENCE STANDARDS

- A. ASTM B3 - Standard Specification for Soft or Annealed Copper Wire 2013 (Reapproved 2018).
- B. ASTM B8 - Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft 2011 (Reapproved 2017).
- C. ASTM B33 - Standard Specification for Tin-Coated Soft or Annealed Copper Wire for Electrical Purposes 2010, with Editorial Revision (2020).
- D. ASTM B787/B787M - Standard Specification for 19 Wire Combination Unilay-Stranded Copper Conductors for Subsequent Insulation 2004 (Reapproved 2020).
- E. ASTM D4388 - Standard Specification for Nonmetallic Semi-Conducting and Electrically Insulating Rubber Tapes 2020.
- F. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
- G. NEMA WC 70 - Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy 2021.
- H. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems 2021.
- I. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- J. UL 44 - Thermoset-Insulated Wires and Cables Current Edition, Including All Revisions.
- K. UL 83 - Thermoplastic-Insulated Wires and Cables Current Edition, Including All Revisions.
- L. UL 183 - Manufactured Wiring Systems Current Edition, Including All Revisions.
- M. UL 267 - Outline of Investigation for Wire-Pulling Compounds Most Recent Edition, Including All Revisions.
- N. UL 486A-486B - Wire Connectors Current Edition, Including All Revisions.
- O. UL 486C - Splicing Wire Connectors Current Edition, Including All Revisions.
- P. UL 486D - Sealed Wire Connector Systems Current Edition, Including All Revisions.

- Q. UL 510 - Polyvinyl Chloride, Polyethylene, and Rubber Insulating Tape Current Edition, Including All Revisions.
- R. UL 719 - Nonmetallic-Sheathed Cables Current Edition, Including All Revisions.
- S. UL 1569 - Metal-Clad Cables Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate sizes of raceways, boxes, and equipment enclosures installed under other sections with the actual conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
 - 2. Coordinate with electrical equipment installed under other sections to provide terminations suitable for use with the conductors to be installed.
 - 3. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.05 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store conductors and cables in accordance with manufacturer's instructions.

1.07 FIELD CONDITIONS

- A. Do not install or otherwise handle thermoplastic-insulated conductors at temperatures lower than 14 degrees F (-10 degrees C), unless otherwise permitted by manufacturer's instructions. When installation below this temperature is unavoidable, notify Architect and obtain direction before proceeding with work.

PART 2 PRODUCTS

2.01 CONDUCTOR AND CABLE APPLICATIONS

- A. Do not use conductors and cables for applications other than as permitted by NFPA 70 and product listing.
- B. Provide single conductor building wire installed in suitable raceway unless otherwise indicated, permitted, or required.
- C. Nonmetallic-sheathed cable is not permitted.
- D. Metal-clad cable is permitted only as follows:
 - 1. Where not otherwise restricted, may be used:
 - a. Where concealed above accessible ceilings for final connections from junction boxes to luminaires.
 - 1) Maximum Length: 6 feet (1.8 m).
 - b. Where concealed in hollow stud walls, above accessible ceilings, and in cable tray for branch circuits up to 20 A.

2.02 CONDUCTOR AND CABLE GENERAL REQUIREMENTS

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products listed, classified, and labeled as suitable for the purpose intended.
- C. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, etc. as required for a complete operating system.
- D. Comply with NEMA WC 70.
- E. Thermoplastic-Insulated Conductors and Cables: Listed and labeled as complying with UL 83.
- F. Thermoset-Insulated Conductors and Cables: Listed and labeled as complying with UL 44.
- G. Conductors for Grounding and Bonding: Also comply with Section 260526.

- H. Conductors and Cables Installed Exposed in Spaces Used for Environmental Air (only where specifically permitted): Plenum rated, listed and labeled as suitable for use in return air plenums.
- I. Conductor Material:
 - 1. Provide copper conductors only. Aluminum conductors are not acceptable for this project. Conductor sizes indicated are based on copper.
 - 2. Copper Conductors: Soft drawn annealed, 98 percent conductivity, uncoated copper conductors complying with ASTM B3, ASTM B8, or ASTM B787/B787M unless otherwise indicated.
 - 3. Tinned Copper Conductors: Comply with ASTM B33.
- J. Minimum Conductor Size:
 - 1. Branch Circuits: 12 AWG.
 - a. Exceptions:
 - 1) 20 A, 120 V circuits longer than 75 feet (23 m): 10 AWG, for voltage drop.
 - 2) 20 A, 120 V circuits longer than 150 feet (46 m): 8 AWG, for voltage drop.
 - 2. Control Circuits: 14 AWG.
- K. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
- L. Conductor Color Coding:
 - 1. Color code conductors as indicated unless otherwise required by the authority having jurisdiction. Maintain consistent color coding throughout project.
 - 2. Color Coding Method: Integrally colored insulation.
 - 3. Color Code:
 - a. 208Y/120 V, 3 Phase, 4 Wire System:
 - 1) Phase A: Black.
 - 2) Phase B: Red.
 - 3) Phase C: Blue.
 - 4) Neutral/Grounded: White.
 - b. Equipment Ground, All Systems: Green.
 - c. Travelers for 3-Way and 4-Way Switching: Pink.
 - d. For modifications or additions to existing wiring systems, comply with existing color code when existing code complies with NFPA 70 and is approved by the authority having jurisdiction.

2.03 SINGLE CONDUCTOR BUILDING WIRE

- A. Description: Single conductor insulated wire.
- B. Conductor Stranding:
 - 1. Feeders and Branch Circuits:
 - a. Size 10 AWG and Smaller: Solid.
 - b. Size 8 AWG and Larger: Stranded.
- C. Insulation Voltage Rating: 600 V.
- D. Insulation:
 - 1. Copper Building Wire: Type THHN/THWN or THHN/THWN-2, except as indicated below.
 - a. Size 4 AWG and Larger: Type XHHW-2.

2.04 METAL-CLAD CABLE

- A. Description: NFPA 70, Type MC cable listed and labeled as complying with UL 1569, and listed for use in classified firestop systems to be used.
- B. Conductor Stranding:
 - 1. Size 10 AWG and Smaller: Solid.
 - 2. Size 8 AWG and Larger: Stranded.
- C. Insulation Voltage Rating: 600 V.

- D. Insulation: Type THHN, THHN/THWN, or THHN/THWN-2.
- E. Provide dedicated neutral conductor for each phase conductor where indicated or required.
- F. Grounding: Full-size integral equipment grounding conductor.
- G. Armor: Steel, interlocked tape.

2.05 WIRING CONNECTORS

- A. Description: Wiring connectors appropriate for the application, suitable for use with the conductors to be connected, and listed as complying with UL 486A-486B or UL 486C as applicable.
- B. Connectors for Grounding and Bonding: Comply with Section 260526.
- C. Wiring Connectors for Splices and Taps:
 - 1. Copper Conductors Size 8 AWG and Smaller: Use twist-on insulated spring connectors.
 - 2. Copper Conductors Size 6 AWG and Larger: Use mechanical connectors or compression connectors.
- D. Wiring Connectors for Terminations:
 - 1. Provide terminal lugs for connecting conductors to equipment furnished with terminations designed for terminal lugs.
 - 2. Copper Conductors Size 8 AWG and Larger: Use mechanical connectors or compression connectors where connectors are required.
- E. Do not use insulation-piercing or insulation-displacement connectors designed for use with conductors without stripping insulation.
- F. Do not use push-in wire connectors as a substitute for twist-on insulated spring connectors.
- G. Twist-on Insulated Spring Connectors: Rated 600 V, 221 degrees F (105 degrees C) for standard applications and 302 degrees F (150 degrees C) for high temperature applications; pre-filled with sealant and listed as complying with UL 486D for damp and wet locations.
 - 1. Manufacturers:
 - a. 3M: www.3m.com/#sle.
 - b. Ideal Industries, Inc: www.idealindustries.com/#sle.
 - c. NSI Industries LLC: www.nsiindustries.com/#sle.
- H. Mechanical Connectors: Provide bolted type or set-screw type.
- I. Compression Connectors: Provide circumferential type or hex type crimp configuration.
- J. Crimped Terminals: Nylon-insulated, with insulation grip and terminal configuration suitable for connection to be made.

2.06 ACCESSORIES

- A. Electrical Tape:
 - 1. Vinyl Color Coding Electrical Tape: Integrally colored to match color code indicated; listed as complying with UL 510; minimum thickness of 7 mil (0.18 mm); resistant to abrasion, corrosion, and sunlight; suitable for continuous temperature environment up to 221 degrees F (105 degrees C).
 - 2. Vinyl Insulating Electrical Tape: Complying with ASTM D3005 and listed as complying with UL 510; minimum thickness of 7 mil (0.18 mm); resistant to abrasion, corrosion, and sunlight; conformable for application down to 0 degrees F (-18 degrees C) and suitable for continuous temperature environment up to 221 degrees F (105 degrees C).
 - 3. Rubber Splicing Electrical Tape: Ethylene Propylene Rubber (EPR) tape, complying with ASTM D4388; minimum thickness of 30 mil (0.76 mm); suitable for continuous temperature environment up to 194 degrees F (90 degrees C) and short-term 266 degrees F (130 degrees C) overload service.
 - 4. Electrical Filler Tape: Rubber-based insulating moldable putty, minimum thickness of 125 mil (3.2 mm); suitable for continuous temperature environment up to 176 degrees F (80 degrees C).

5. Varnished Cambric Electrical Tape: Cotton cambric fabric tape, with or without adhesive, oil-primed and coated with high-grade insulating varnish; minimum thickness of 7 mil (0.18 mm); suitable for continuous temperature environment up to 221 degrees F (105 degrees C).
 6. Moisture Sealing Electrical Tape: Insulating mastic compound laminated to flexible, all-weather vinyl backing; minimum thickness of 90 mil (2.3 mm).
- B. Heat Shrink Tubing: Heavy-wall, split-resistant, with factory-applied adhesive; rated 600 V; suitable for direct burial applications; listed as complying with UL 486D.
- C. Wire Pulling Lubricant:
1. Listed and labeled as complying with UL 267.
 2. Suitable for use with conductors/cables and associated insulation/jackets to be installed.
 3. Suitable for use at installation temperature.
- D. Cable Ties: Material and tensile strength rating suitable for application.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that interior of building has been protected from weather.
- B. Verify that work likely to damage wire and cable has been completed.
- C. Verify that raceways, boxes, and equipment enclosures are installed and are properly sized to accommodate conductors and cables in accordance with NFPA 70.
- D. Verify that field measurements are as indicated.
- E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

- A. Clean raceways thoroughly to remove foreign materials before installing conductors and cables.

3.03 INSTALLATION

- A. Circuiting Requirements:
 1. Unless dimensioned, circuit routing indicated is diagrammatic.
 2. When circuit destination is indicated without specific routing, determine exact routing required.
 3. Arrange circuiting to minimize splices.
 4. Include circuit lengths required to install connected devices within 10 ft (3.0 m) of location indicated.
 5. Maintain separation of Class 1, Class 2, and Class 3 remote-control, signaling, and power-limited circuits in accordance with NFPA 70.
 6. Circuiting Adjustments: Unless otherwise indicated, when branch circuits are indicated as separate, combining them together in a single raceway is permitted, under the following conditions:
 - a. Provide no more than six current-carrying conductors in a single raceway. Dedicated neutral conductors are considered current-carrying conductors.
 - b. Increase size of conductors as required to account for ampacity derating.
 - c. Size raceways, boxes, etc. to accommodate conductors.
 7. Common Neutrals: Unless otherwise indicated, sharing of neutral/grounded conductors among up to three single phase branch circuits of different phases installed in the same raceway is not permitted. Provide dedicated neutral/grounded conductor for each individual branch circuit.
- B. Install products in accordance with manufacturer's instructions.
- C. Perform work in accordance with NECA 1 (general workmanship).
- D. Install metal-clad cable (Type MC) in accordance with NECA 120.
- E. Installation in Raceway:

1. Tape ends of conductors and cables to prevent infiltration of moisture and other contaminants.
 2. Pull all conductors and cables together into raceway at same time.
 3. Do not damage conductors and cables or exceed manufacturer's recommended maximum pulling tension and sidewall pressure.
 4. Use suitable wire pulling lubricant where necessary, except when lubricant is not recommended by the manufacturer.
- F. Paralleled Conductors: Install conductors of the same length and terminate in the same manner.
- G. Secure and support conductors and cables in accordance with NFPA 70 using suitable supports and methods approved by the authority having jurisdiction. Provide independent support from building structure. Do not provide support from raceways, piping, ductwork, or other systems.
1. Installation Above Suspended Ceilings: Do not provide support from ceiling support system. Do not provide support from ceiling grid or allow conductors and cables to lay on ceiling tiles.
- H. Terminate cables using suitable fittings.
1. Metal-Clad Cable (Type MC):
 - a. Use listed fittings.
 - b. Cut cable armor only using specialized tools to prevent damaging conductors or insulation. Do not use hacksaw or wire cutters to cut armor.
- I. Install conductors with a minimum of 12 inches (300 mm) of slack at each outlet.
- J. Neatly train and bundle conductors inside boxes, wireways, panelboards and other equipment enclosures.
- K. Group or otherwise identify neutral/grounded conductors with associated ungrounded conductors inside enclosures in accordance with NFPA 70.
- L. Make wiring connections using specified wiring connectors.
1. Make splices and taps only in accessible boxes. Do not pull splices into raceways or make splices in conduit bodies or wiring gutters.
 2. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors.
 3. Do not remove conductor strands to facilitate insertion into connector.
 4. Clean contact surfaces on conductors and connectors to suitable remove corrosion, oxides, and other contaminates. Do not use wire brush on plated connector surfaces.
 5. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
 6. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.
- M. Insulate splices and taps that are made with uninsulated connectors using methods suitable for the application, with insulation and mechanical strength at least equivalent to unspliced conductors.
1. Dry Locations: Use insulating covers specifically designed for the connectors, electrical tape, or heat shrink tubing.
 - a. For taped connections, first apply adequate amount of rubber splicing electrical tape or electrical filler tape, followed by outer covering of vinyl insulating electrical tape.
 - b. For taped connections likely to require re-entering, including motor leads, first apply varnished cambric electrical tape, followed by adequate amount of rubber splicing electrical tape, followed by outer covering of vinyl insulating electrical tape.
 2. Damp Locations: Use insulating covers specifically designed for the connectors, electrical tape, or heat shrink tubing.
 - a. For connections with insulating covers, apply outer covering of moisture sealing electrical tape.

- b. For taped connections, follow same procedure as for dry locations but apply outer covering of moisture sealing electrical tape.
- 3. Wet Locations: Use heat shrink tubing.
- N. Insulate ends of spare conductors using vinyl insulating electrical tape.
- O. Identify conductors and cables in accordance with Section 260553.
- P. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 078400.
- Q. Unless specifically indicated to be excluded, provide final connections to all equipment and devices, including those furnished by others, as required for a complete operating system.

3.04 FIELD QUALITY CONTROL

- A. See Section 014000 - Quality Requirements, for additional requirements.
- B. Inspect and test in accordance with NETA ATS, except Section 4.
- C. Perform inspections and tests listed in NETA ATS, Section 7.3.2. The insulation resistance test is required for all conductors. The resistance test for parallel conductors listed as optional is not required.
- D. Correct deficiencies and replace damaged or defective conductors and cables.

END OF SECTION

**SECTION 260526
GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Grounding and bonding requirements.
- B. Conductors for grounding and bonding.
- C. Connectors for grounding and bonding.
- D. Ground bars.

1.02 RELATED REQUIREMENTS

- A. Section 260519 - Low-Voltage Electrical Power Conductors and Cables: Additional requirements for conductors for grounding and bonding, including conductor color coding.
- B. Section 260553 - Identification for Electrical Systems: Identification products and requirements.

1.03 REFERENCE STANDARDS

- A. IEEE 81 - IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Grounding System 2012.
- B. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
- C. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems 2021.
- D. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- E. UL 467 - Grounding and Bonding Equipment Current Edition, Including All Revisions.

1.04 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 GROUNDING AND BONDING REQUIREMENTS

- A. Existing Work: Where existing grounding and bonding system components are indicated to be reused, they may be reused only where they are free from corrosion, integrity and continuity are verified, and where acceptable to the authority having jurisdiction.
- B. Do not use products for applications other than as permitted by NFPA 70 and product listing.
- C. Unless specifically indicated to be excluded, provide all required components, conductors, connectors, conduit, boxes, fittings, supports, accessories, etc. as necessary for a complete grounding and bonding system.
- D. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
- E. Grounding System Resistance:
 - 1. Achieve specified grounding system resistance under normally dry conditions unless otherwise approved by Architect. Precipitation within the previous 48 hours does not constitute normally dry conditions.
 - 2. Grounding Electrode System: Not greater than 5 ohms to ground, when tested according to IEEE 81 using "fall-of-potential" method.
- F. Grounding Electrode System:
 - 1. Provide connection to required and supplemental grounding electrodes indicated to form grounding electrode system.
 - a. Provide continuous grounding electrode conductors without splice or joint.

- b. Install grounding electrode conductors in raceway where exposed to physical damage. Bond grounding electrode conductor to metallic raceways at each end with bonding jumper.
 - 2. Provide additional ground electrode(s) as required to achieve specified grounding electrode system resistance.
- G. Bonding and Equipment Grounding:
 - 1. Provide bonding for equipment grounding conductors, equipment ground busses, metallic equipment enclosures, metallic raceways and boxes, device grounding terminals, and other normally non-current-carrying conductive materials enclosing electrical conductors/equipment or likely to become energized as indicated and in accordance with NFPA 70.
 - 2. Provide insulated equipment grounding conductor in each feeder and branch circuit raceway. Do not use raceways as sole equipment grounding conductor.
 - 3. Where circuit conductor sizes are increased for voltage drop, increase size of equipment grounding conductor proportionally in accordance with NFPA 70.
 - 4. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
 - 5. Terminate branch circuit equipment grounding conductors on solidly bonded equipment ground bus only. Do not terminate on neutral (grounded) or isolated/insulated ground bus.
 - 6. Provide bonding jumper across expansion or expansion/deflection fittings provided to accommodate conduit movement.
 - 7. Provide bonding for metal building frame.
- H. Communications Systems Grounding and Bonding:
 - 1. Provide intersystem bonding termination at service equipment or metering equipment enclosure and at disconnecting means for any additional buildings or structures in accordance with NFPA 70.
 - 2. Provide bonding jumper in raceway from intersystem bonding termination to each communications room or backboard and provide ground bar for termination.
 - a. Bonding Jumper Size: 6 AWG, unless otherwise indicated or required.
 - b. Raceway Size: 3/4 inch (21 mm) trade size unless otherwise indicated or required.
 - c. Ground Bar Size: 1/4 by 2 by 12 inches (6 by 50 by 300 mm) unless otherwise indicated or required.
 - d. Ground Bar Mounting Height: 18 inches (450 mm) above finished floor unless otherwise indicated.

2.02 GROUNDING AND BONDING COMPONENTS

- A. General Requirements:
 - 1. Provide products listed, classified, and labeled as suitable for the purpose intended.
 - 2. Provide products listed and labeled as complying with UL 467 where applicable.
- B. Conductors for Grounding and Bonding, in Addition to Requirements of Section 260526:
 - 1. Use insulated copper conductors unless otherwise indicated.
 - a. Exceptions:
 - 1) Use bare copper conductors where installed underground in direct contact with earth.
 - 2) Use bare copper conductors where directly encased in concrete (not in raceway).
- C. Connectors for Grounding and Bonding:
 - 1. Description: Connectors appropriate for the application and suitable for the conductors and items to be connected; listed and labeled as complying with UL 467.
 - 2. Unless otherwise indicated, use exothermic welded connections for underground, concealed and other inaccessible connections.
 - 3. Unless otherwise indicated, use mechanical connectors, compression connectors, or exothermic welded connections for accessible connections.
- D. Ground Bars:

1. Description: Copper rectangular ground bars with mounting brackets and insulators.
2. Size: As indicated.
3. Holes for Connections: As indicated or as required for connections to be made.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that work likely to damage grounding and bonding system components has been completed.
- B. Verify that field measurements are as indicated.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Perform work in accordance with NECA 1 (general workmanship).
- C. Make grounding and bonding connections using specified connectors.
 1. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors. Do not remove conductor strands to facilitate insertion into connector.
 2. Remove nonconductive paint, enamel, or similar coating at threads, contact points, and contact surfaces.
 3. Exothermic Welds: Make connections using molds and weld material suitable for the items to be connected in accordance with manufacturer's recommendations.
 4. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
 5. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.
- D. Identify grounding and bonding system components in accordance with Section 260553.

3.03 FIELD QUALITY CONTROL

- A. See Section 014000 - Quality Requirements, for additional requirements.
- B. Inspect and test in accordance with NETA ATS except Section 4.
- C. Perform inspections and tests listed in NETA ATS, Section 7.13.
- D. Perform ground electrode resistance tests under normally dry conditions. Precipitation within the previous 48 hours does not constitute normally dry conditions.
- E. Investigate and correct deficiencies where measured ground resistances do not comply with specified requirements.

END OF SECTION

**SECTION 260529
HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Support and attachment requirements and components for equipment, conduit, cable, boxes, and other electrical work.

1.02 RELATED REQUIREMENTS

- A. Section 260533.16 - Boxes for Electrical Systems: Additional support and attachment requirements for boxes.
- B. Section 262513 - Low-Voltage Busways: Additional support and attachment requirements for busway.
- C. Section 265100 - Interior Lighting: Additional support and attachment requirements for interior luminaires.

1.03 REFERENCE STANDARDS

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products 2017.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware 2016a.
- C. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel 2019.
- D. MFMA-4 - Metal Framing Standards Publication 2004.
- E. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
- F. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 QUALITY ASSURANCE

PART 2 PRODUCTS

2.01 SUPPORT AND ATTACHMENT COMPONENTS

- A. General Requirements:
 - 1. Comply with the following. Where requirements differ, comply with most stringent.
 - a. NFPA 70.
 - b. Requirements of authorities having jurisdiction.
 - 2. Provide required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for complete installation of electrical work.
 - 3. Provide products listed, classified, and labeled as suitable for purpose intended, where applicable.
 - 4. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for load to be supported with minimum safety factor of [_____]. Include consideration for vibration, equipment operation, and shock loads where applicable.
 - 5. Do not use products for applications other than as permitted by NFPA 70 and product listing.
 - 6. Steel Components: Use corrosion-resistant materials suitable for environment where installed.
 - a. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.
 - b. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.
- B. Conduit and Cable Supports: Straps and clamps suitable for conduit or cable to be supported.
 - 1. Conduit Straps: One-hole or two-hole type; steel or malleable iron.
 - 2. Conduit Clamps: Bolted type unless otherwise indicated.

- C. Outlet Box Supports: Hangers and brackets suitable for boxes to be supported.
- D. Metal Channel/Strut Framing Systems:
 1. Description: Factory-fabricated, continuous-slot, metal channel/strut and associated fittings, accessories, and hardware required for field assembly of supports.
 2. Comply with MFMA-4.
- E. Hanger Rods: Threaded, zinc-plated steel unless otherwise indicated.
- F. Anchors and Fasteners:
 1. Unless otherwise indicated and where not otherwise restricted, use anchor and fastener types indicated for specified applications.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that mounting surfaces are ready to receive support and attachment components.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install hangers and supports in accordance with NECA 1.
- C. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
- D. Unless specifically indicated or approved by Architect, do not provide support from suspended ceiling support system or ceiling grid.
- E. Unless specifically indicated or approved by Architect, do not provide support from roof deck.
- F. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.
- G. Equipment Support and Attachment:
 1. Use metal, fabricated supports or supports assembled from metal channel/strut to support equipment as required.
 2. Use metal channel/strut secured to studs to support equipment surface mounted on hollow stud walls when wall strength is not sufficient to resist pull-out.
 3. Use metal channel/strut to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.
 4. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.
- H. Busway Support and Attachment: See Section 262513 for additional requirements.
- I. Interior Luminaire Support and Attachment: See Section 265100 for additional requirements.
- J. Secure fasteners in accordance with manufacturer's recommended torque settings.
- K. Remove temporary supports.

3.03 FIELD QUALITY CONTROL

- A. See Section 014000 - Quality Requirements for additional requirements.
- B. Inspect support and attachment components for damage and defects.
- C. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.
- D. Correct deficiencies and replace damaged or defective support and attachment components.

END OF SECTION

**SECTION 260533.13
CONDUIT FOR ELECTRICAL SYSTEMS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Galvanized steel rigid metal conduit (RMC).
- B. Galvanized steel intermediate metal conduit (IMC).
- C. Flexible metal conduit (FMC).
- D. Galvanized steel electrical metallic tubing (EMT).
- E. Stainless steel electrical metallic tubing (EMT).

1.02 RELATED REQUIREMENTS

- A. Section 078400 - Firestopping.
- B. Section 260519 - Low-Voltage Electrical Power Conductors and Cables: Cable assemblies consisting of conductors protected by integral metal armor.
- C. Section 260526 - Grounding and Bonding for Electrical Systems.
 - 1. Includes additional requirements for fittings for grounding and bonding.
- D. Section 260529 - Hangers and Supports for Electrical Systems.
- E. Section 260533.16 - Boxes for Electrical Systems.
- F. Section 260553 - Identification for Electrical Systems: Identification products and requirements.

1.03 REFERENCE STANDARDS

- A. ANSI C80.1 - American National Standard for Electrical Rigid Steel Conduit (ERSC) 2020.
- B. ANSI C80.3 - American National Standard for Electrical Metallic Tubing -- Steel (EMT-S) 2020.
- C. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
- D. NECA 101 - Standard for Installing Steel Conduits (Rigid, IMC, EMT) 2020.
- E. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable 2014.
- F. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- G. UL 1 - Flexible Metal Conduit Current Edition, Including All Revisions.
- H. UL 6 - Electrical Rigid Metal Conduit-Steel Current Edition, Including All Revisions.
- I. UL 360 - Liquid-Tight Flexible Metal Conduit Current Edition, Including All Revisions.
- J. UL 514B - Conduit, Tubing, and Cable Fittings Current Edition, Including All Revisions.
- K. UL 797 - Electrical Metallic Tubing-Steel Current Edition, Including All Revisions.
- L. UL 797A - Electrical Metallic Tubing - Aluminum and Stainless Steel Current Edition, Including All Revisions.
- M. UL 1242 - Electrical Intermediate Metal Conduit-Steel Current Edition, Including All Revisions.
- N. UL 2419 - Outline of Investigation for Electrically Conductive Corrosion Resistant Compounds Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate minimum sizes of conduits with actual type and quantity of conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
 - 2. Coordinate arrangement of conduits with structural members, ductwork, piping, equipment, and other potential conflicts.
 - 3. Verify exact conduit termination locations required for boxes, enclosures, and equipment.

4. Coordinate work to provide roof penetrations that preserve integrity of roofing system and do not void roof warranty.
 5. Notify Architect of conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.
- B. Sequencing:
1. Do not begin installation of conductors and cables until installation of conduit between termination points is complete.

1.05 QUALITY ASSURANCE

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store conduit and fittings in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 CONDUIT APPLICATIONS

- A. Do not use conduit and associated fittings for applications other than as permitted by NFPA 70, manufacturer's instructions, and product listing.
- B. Unless otherwise indicated and where not otherwise restricted, use conduit types indicated for specified applications. Where more than one listed application applies, comply with most restrictive requirements. Where conduit type for particular application is not specified, use galvanized steel rigid metal conduit.
- C. Concealed Within Hollow Stud Walls: Use galvanized steel rigid metal conduit (RMC), stainless steel rigid metal conduit (RMC), galvanized steel intermediate metal conduit (IMC), stainless steel intermediate metal conduit (IMC), galvanized steel electrical metallic tubing (EMT), or stainless steel electrical metallic tubing (EMT).
- D. Concealed Above Accessible Ceilings: Use galvanized steel rigid metal conduit (RMC), stainless steel rigid metal conduit (RMC), galvanized steel intermediate metal conduit (IMC), stainless steel intermediate metal conduit (IMC), galvanized steel electrical metallic tubing (EMT), or stainless steel electrical metallic tubing (EMT).
- E. Interior, Damp or Wet Locations: Use galvanized steel rigid metal conduit (RMC), stainless steel rigid metal conduit (RMC), galvanized steel intermediate metal conduit (IMC), stainless steel intermediate metal conduit (IMC), galvanized steel electrical metallic tubing (EMT), or stainless steel electrical metallic tubing (EMT).
- F. Exposed, Interior, Not Subject to Physical Damage: Use galvanized steel rigid metal conduit (RMC), stainless steel rigid metal conduit (RMC), galvanized steel intermediate metal conduit (IMC), stainless steel intermediate metal conduit (IMC), galvanized steel electrical metallic tubing (EMT), or stainless steel electrical metallic tubing (EMT).
- G. Exposed, Exterior, Not Subject to Severe Physical Damage: Use galvanized steel rigid metal conduit (RMC), stainless steel rigid metal conduit (RMC), galvanized steel intermediate metal conduit (IMC), stainless steel intermediate metal conduit (IMC), galvanized steel electrical metallic tubing (EMT), or stainless steel electrical metallic tubing (EMT).
- H. Flexible Connections to Vibrating Equipment:
1. Dry Locations: Use flexible metal conduit (FMC).
 2. Damp, Wet, or Corrosive Locations: Use liquidtight flexible metal conduit (LFMC).
 3. Maximum Length: 6 feet (1.8 m) unless otherwise indicated.
 4. Vibrating equipment includes, but is not limited to:
 - a. Motors.
- I. Fished in Existing Walls, Where Necessary: Use flexible metal conduit (FMC), galvanized steel electrical metallic tubing (EMT), or stainless steel electrical metallic tubing (EMT).

2.02 CONDUIT - GENERAL REQUIREMENTS

- A. Comply with NFPA 70.

- B. Existing Work: Where existing conduits are indicated to be reused, they may be reused only where they comply with specified requirements, are free from corrosion, and integrity is verified by pulling mandrel through them.
- C. Electrical Service Conduits: See Section 262100 for additional requirements.
- D. Fittings for Grounding and Bonding: See Section 260526 for additional requirements.
- E. Provide conduit, fittings, supports, and accessories required for complete raceway system.
- F. Provide products listed, classified, and labeled as suitable for purpose intended.
- G. Minimum Conduit Size, Unless Otherwise Indicated:
 - 1. Branch Circuits: 3/4 inch (21 mm) trade size.
 - 2. Branch Circuit Homeruns: 3/4-inch (21 mm) trade size.
 - 3. Control Circuits: 1/2-inch (16 mm) trade size.
 - 4. Flexible Connections to Luminaires: 3/8-inch (12 mm) trade size.
- H. Where conduit size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

2.03 GALVANIZED STEEL RIGID METAL CONDUIT (RMC)

- A. Description: NFPA 70, Type RMC galvanized steel rigid metal conduit complying with ANSI C80.1 and listed and labeled as complying with UL 6.
- B. Fittings:
 - 1. Nonhazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B or UL 6.
 - 2. Material: Use steel or malleable iron.
 - 3. Connectors and Couplings: Use threaded type fittings only. Threadless fittings, including set screw and compression/gland types, are not permitted.

2.04 GALVANIZED STEEL INTERMEDIATE METAL CONDUIT (IMC)

- A. Description: NFPA 70, Type IMC galvanized steel intermediate metal conduit complying with ANSI C80.6 and listed and labeled as complying with UL 1242.
- B. Fittings:
 - 1. Nonhazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B or UL 1242.
 - 2. Material: Use steel or malleable iron.
 - 3. Connectors and Couplings: Use threaded type fittings only. Threadless fittings, including set screw and compression/gland types, are not permitted.

2.05 FLEXIBLE METAL CONDUIT (FMC)

- A. Description: NFPA 70, Type FMC standard-wall steel flexible metal conduit listed and labeled as complying with UL 1, and listed for use in classified firestop systems.
- B. Fittings:
 - 1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
 - 2. Material: Use steel or malleable iron.

2.06 LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)

- A. Description: NFPA 70, Type LFMC polyvinyl chloride (PVC) jacketed steel flexible metal conduit listed and labeled as complying with UL 360.
- B. Fittings:
 - 1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
 - 2. Material: Use steel or malleable iron.

2.07 GALVANIZED STEEL ELECTRICAL METALLIC TUBING (EMT)

- A. Description: NFPA 70, Type EMT galvanized steel electrical metallic tubing complying with ANSI C80.3 and listed and labeled as complying with UL 797.
- B. Fittings:
 - 1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
 - 2. Material: Use steel or malleable iron.
 - 3. Connectors and Couplings: Use compression/gland or set-screw type.
 - a. Do not use indenter type connectors and couplings.

2.08 STAINLESS STEEL ELECTRICAL METALLIC TUBING (EMT)

- A. Description: NFPA 70, Type EMT stainless steel electrical metallic tubing complying with ANSI C80.3 and listed and labeled as complying with UL 797A.
- B. Fittings:
 - 1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
 - 2. Connectors and Couplings: Use compression/gland or set-screw type.

2.09 ACCESSORIES

- A. Conduit Joint Compound: Corrosion-resistant, electrically conductive compound listed as complying with UL 2419; suitable for use with conduit to be installed.
- B. Pull Strings: Use nylon or polyester tape with average breaking strength of not less than 1,250 lbf (5.6 kN).
- C. Sealing Compound for Hazardous/Classified Location Sealing Fittings: Listed for use with particular fittings to be installed.
- D. Sealing Systems for Concrete Penetrations:
 - 1. Sleeves: Provide water stop ring or cement coating that bonds to concrete to prevent water infiltration.
 - 2. Rate for minimum of 40 psig; suitable for sealing around conduits to be installed.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that mounting surfaces are ready to receive conduits.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install conduit in accordance with NECA 1.
- C. Install galvanized steel rigid metal conduit (RMC) in accordance with NECA 101.
- D. Install intermediate metal conduit (IMC) in accordance with NECA 101.
- E. Conduit Routing:
 - 1. Unless dimensioned, conduit routing indicated is diagrammatic.
 - 2. When conduit destination is indicated without specific routing, determine exact routing required.
 - 3. Conceal conduits unless specifically indicated to be exposed.
 - 4. Arrange conduit to maintain adequate headroom, clearances, and access.
 - 5. Arrange conduit to provide no more than equivalent of four 90-degree bends between pull points.
 - 6. Arrange conduit to provide no more than 150 feet (46 m) between pull points.
 - 7. Route conduits above water and drain piping where possible.

8. Maintain minimum clearance of 6 inches (150 mm) between conduits and piping for other systems.
 9. Maintain minimum clearance of 12 inches (300 mm) between conduits and hot surfaces. This includes, but is not limited to:
 - a. Hot water piping.
- F. Conduit Support:
1. Secure and support conduits in accordance with NFPA 70 using suitable supports and methods approved by authorities having jurisdiction; see Section 260529.
 2. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
- G. Connections and Terminations:
1. Use approved conduit joint compound on field-cut threads of galvanized steel conduits prior to making connections.
 2. Where two threaded conduits must be joined and neither can be rotated, use three-piece couplings or split couplings. Do not use running threads.
 3. Use suitable adapters where required to transition from one type of conduit to another.
 4. Provide drip loops for liquidtight flexible conduit connections to prevent drainage of liquid into connectors.
 5. Terminate threaded conduits in boxes and enclosures using threaded hubs or double lock nuts for dry locations and raintight hubs for wet locations.
 6. Provide insulating bushings, insulated throats, or listed metal fittings with smooth, rounded edges at conduit terminations to protect conductors.
 7. Secure joints and connections to provide mechanical strength and electrical continuity.
- H. Penetrations:
1. Do not penetrate or otherwise notch or cut structural members, including footings and grade beams, without approval of Structural Engineer.
 2. Make penetrations perpendicular to surfaces unless otherwise indicated.
 3. Provide sleeves for penetrations as indicated or as required to facilitate installation. Set sleeves flush with exposed surfaces unless otherwise indicated or required.
 4. Conceal bends for conduit risers emerging above ground.
 5. Where conduits penetrate waterproof membrane, seal as required to maintain integrity of membrane.
 6. Make penetrations for roof-mounted equipment within associated equipment openings and curbs where possible to minimize roofing system penetrations. Where penetrations are necessary, seal as indicated or as required to preserve integrity of roofing system and maintain roof warranty.
 7. Install firestopping to preserve fire resistance rating of partitions and other elements; see Section 078400.
- I. Conduit Movement Provisions: Where conduits are subject to movement, provide expansion and expansion/deflection fittings to prevent damage to enclosed conductors or connected equipment. This includes, but is not limited to:
1. Where conduits cross structural joints intended for expansion, contraction, or deflection.
 2. Where conduits are subject to earth movement by settlement or frost.
- J. Conduit Sealing:
1. Use foam conduit sealant to prevent entry of moisture and gases. This includes, but is not limited to:
 - a. Where conduits enter building from outside.
 - b. Where service conduits enter building from underground distribution system.
 - c. Where conduits enter building from underground.
 - d. Where conduits may transport moisture to contact live parts.
 2. Where conduits cross barriers between areas of potential substantial temperature differential, use foam conduit sealant at accessible point near penetration to prevent condensation. This includes, but is not limited to:
 - a. Where conduits pass from outdoors into conditioned interior spaces.

- b. Where conduits pass from unconditioned interior spaces into conditioned interior spaces.
- K. Provide pull string in each empty conduit and in conduits where conductors and cables are to be installed by others. Leave minimum slack of 12 inches (300 mm) at each end.
- L. Provide grounding and bonding; see Section 260526.

3.03 FIELD QUALITY CONTROL

- A. See Section 014000 - Quality Requirements for additional requirements.
- B. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.
- C. Correct deficiencies and replace damaged or defective conduits.

3.04 CLEANING

- A. Clean interior of conduits to remove moisture and foreign matter.

3.05 PROTECTION

- A. Immediately after installation of conduit, use suitable manufactured plugs to provide protection from entry of moisture and foreign material and do not remove until ready for installation of conductors.

END OF SECTION

**SECTION 260533.16
BOXES FOR ELECTRICAL SYSTEMS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Outlet and device boxes up to 100 cubic inches (1,650 cu cm), including those used as junction and pull boxes.
- B. Cabinets and enclosures, including junction and pull boxes larger than 100 cubic inches (1,650 cu cm).
- C. Boxes and enclosures for integrated power, data, and audio/video.

1.02 RELATED REQUIREMENTS

- A. Section 078400 - Firestopping.
- B. Section 083100 - Access Doors and Panels: Panels for maintaining access to concealed boxes.
- C. Section 260526 - Grounding and Bonding for Electrical Systems.
- D. Section 260529 - Hangers and Supports for Electrical Systems.
- E. Section 260533.13 - Conduit for Electrical Systems:
 - 1. Conduit bodies and other fittings.
 - 2. Additional requirements for locating boxes to limit conduit length and/or number of bends between pulling points.
- F. Section 260553 - Identification for Electrical Systems: Identification products and requirements.
- G. Section 262726 - Wiring Devices:
 - 1. Wall plates.
 - 2. Poke-through assemblies.
 - 3. Additional requirements for locating boxes for wiring devices.

1.03 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
- B. NECA 130 - Standard for Installing and Maintaining Wiring Devices 2016.
- C. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum) 2020.
- D. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable 2014.
- E. NEMA OS 1 - Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports 2013 (Reaffirmed 2020).
- F. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- G. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations Current Edition, Including All Revisions.
- H. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations Current Edition, Including All Revisions.
- I. UL 508A - Industrial Control Panels Current Edition, Including All Revisions.
- J. UL 514A - Metallic Outlet Boxes Current Edition, Including All Revisions.

1.04 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 BOXES

- A. General Requirements:
 - 1. Do not use boxes and associated accessories for applications other than as permitted by NFPA 70 and product listing.
 - 2. Provide all boxes, fittings, supports, and accessories required for a complete raceway system and to accommodate devices and equipment to be installed.
 - 3. Provide products listed, classified, and labeled as suitable for the purpose intended.
 - 4. Where box size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
 - 5. Provide grounding terminals within boxes where equipment grounding conductors terminate.
- B. Outlet and Device Boxes Up to 100 cubic inches (1,650 cu cm), Including Those Used as Junction and Pull Boxes:
 - 1. Use sheet-steel boxes for dry locations unless otherwise indicated or required.
 - 2. Use cast iron boxes or cast aluminum boxes for damp or wet locations unless otherwise indicated or required; furnish with compatible weatherproof gasketed covers.
 - 3. Use suitable concrete type boxes where flush-mounted in concrete.
 - 4. Use suitable masonry type boxes where flush-mounted in masonry walls.
 - 5. Use raised covers suitable for the type of wall construction and device configuration where required.
 - 6. Use shallow boxes where required by the type of wall construction.
 - 7. Do not use "through-wall" boxes designed for access from both sides of wall.
 - 8. Sheet-Steel Boxes: Comply with NEMA OS 1, and list and label as complying with UL 514A.
 - 9. Cast Metal Boxes: Comply with NEMA FB 1, and list and label as complying with UL 514A; furnish with threaded hubs.
 - 10. Boxes for Supporting Luminaires and Ceiling Fans: Listed as suitable for the type and weight of load to be supported; furnished with fixture stud to accommodate mounting of luminaire where required.
 - 11. Boxes for Ganged Devices: Use multigang boxes of single-piece construction. Do not use field-connected gangable boxes unless specifically indicated or permitted.
 - 12. Minimum Box Size, Unless Otherwise Indicated:
 - a. Wiring Devices (Other Than Communications Systems Outlets): 4 inch square by 1-1/2 inch deep (100 by 38 mm) trade size.
 - 13. Wall Plates: Comply with Section 262726.
- C. Cabinets and Enclosures, Including Junction and Pull Boxes Larger Than 100 cubic inches (1,650 cu cm):
 - 1. Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E, or UL 508A.
 - 2. NEMA 250 Environment Type, Unless Otherwise Indicated:
 - a. Indoor Clean, Dry Locations: Type 1, painted steel.
 - 3. Junction and Pull Boxes Larger Than 100 cubic inches (1,650 cu cm):
 - a. Provide screw-cover or hinged-cover enclosures unless otherwise indicated.
- D. Boxes and Enclosures for Integrated Power, Data, and Audio/Video: Size and configuration as indicated or as required with partitions to separate services; field-connected gangable boxes may be used.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that mounting surfaces are ready to receive boxes.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install boxes in accordance with NECA 1 (general workmanship) and, where applicable, NECA 130, including mounting heights specified in those standards where mounting heights are not indicated.
- C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- D. Unless otherwise indicated, provide separate boxes for line voltage and low voltage systems.
- E. Flush-mount boxes in finished areas unless specifically indicated to be surface-mounted.
- F. Box Locations:
 - 1. Locate boxes to be accessible. Provide access panels in accordance with Section 083100 as required where approved by the Architect.
 - 2. Locate boxes as required for devices installed under other sections or by others.
 - a. Switches, Receptacles, and Other Wiring Devices: Comply with Section 262726.
 - 3. Locate boxes so that wall plates do not span different building finishes.
 - 4. Locate boxes so that wall plates do not cross masonry joints.
 - 5. Unless otherwise indicated, where multiple outlet boxes are installed at the same location at different mounting heights, install along a common vertical center line.
 - 6. Do not install flush-mounted boxes on opposite sides of walls back-to-back. Provide minimum 6 inches (150 mm) horizontal separation unless otherwise indicated.
 - 7. Acoustic-Rated Walls: Do not install flush-mounted boxes on opposite sides of walls back-to-back; provide minimum 24 inches (610 mm) horizontal separation.
 - 8. Fire Resistance Rated Walls: Install flush-mounted boxes such that the required fire resistance will not be reduced.
 - 9. Provide putty-pads on all boxes within walls in and adjacent to office and other finished areas.
 - 10. Locate junction and pull boxes as indicated, as required to facilitate installation of conductors, and to limit conduit length and/or number of bends between pulling points in accordance with Section 260533.13.
 - 11. Locate junction and pull boxes in the following areas, unless otherwise indicated or approved by the Architect:
 - a. Concealed above accessible suspended ceilings.
- G. Box Supports:
 - 1. Secure and support boxes in accordance with NFPA 70 and Section 260529 using suitable supports and methods approved by the authority having jurisdiction.
 - 2. Provide independent support from building structure except for cast metal boxes (other than boxes used for fixture support) supported by threaded conduit connections in accordance with NFPA 70. Do not provide support from piping, ductwork, or other systems.
 - 3. Installation Above Suspended Ceilings: Do not provide support from ceiling grid or ceiling support system.
- H. Install boxes plumb and level.
- I. Flush-Mounted Boxes:
 - 1. Install boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that front edge of box or associated raised cover is not set back from finished surface more than 1/4 inch (6 mm) or does not project beyond finished surface.
 - 2. Install boxes in combustible materials such as wood so that front edge of box or associated raised cover is flush with finished surface.
 - 3. Repair rough openings around boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that there are no gaps or open spaces greater than 1/8 inch (3 mm) at the edge of the box.
- J. Install boxes as required to preserve insulation integrity.

- K. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.
- L. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 078400.
- M. Close unused box openings.
- N. Install blank wall plates on junction boxes and on outlet boxes with no devices or equipment installed or designated for future use.
- O. Provide grounding and bonding in accordance with Section 260526.
- P. Identify boxes in accordance with Section 260553.

3.03 CLEANING

- A. Clean interior of boxes to remove dirt, debris, plaster and other foreign material.

3.04 PROTECTION

- A. Immediately after installation, protect boxes from entry of moisture and foreign material until ready for installation of conductors.

END OF SECTION

**SECTION 260553
IDENTIFICATION FOR ELECTRICAL SYSTEMS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Electrical identification requirements.
- B. Identification nameplates and labels.
- C. Wire and cable markers.
- D. Voltage markers.
- E. Warning signs and labels.

1.02 RELATED REQUIREMENTS

- A. Section 260519 - Low-Voltage Electrical Power Conductors and Cables: Color coding for power conductors and cables 600 V and less; vinyl color coding electrical tape.
- B. Section 262726 - Wiring Devices - Lutron: Device and wallplate finishes; factory pre-marked wallplates.

1.03 REFERENCE STANDARDS

- A. ANSI Z535.2 - American National Standard for Environmental and Facility Safety Signs 2011 (Reaffirmed 2017).
- B. ANSI Z535.4 - American National Standard for Product Safety Signs and Labels 2011 (Reaffirmed 2017).
- C. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- D. NFPA 70E - Standard for Electrical Safety in the Workplace 2021.
- E. UL 969 - Marking and Labeling Systems Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Verify final designations for equipment, systems, and components to be identified prior to fabrication of identification products.
- B. Sequencing:
 - 1. Do not conceal items to be identified, in locations such as above suspended ceilings, until identification products have been installed.
 - 2. Do not install identification products until final surface finishes and painting are complete.

1.05 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.

1.06 FIELD CONDITIONS

- A. Do not install adhesive products when ambient temperature is lower than recommended by manufacturer.

PART 2 PRODUCTS

2.01 IDENTIFICATION REQUIREMENTS

- A. Existing Work: Unless specifically excluded, identify existing elements to remain that are not already identified in accordance with specified requirements.
- B. Identification for Equipment:
 - 1. Use identification nameplate to identify each piece of electrical distribution and control equipment and associated sections, compartments, and components.
 - a. Panelboards:
 - 1) Identify ampere rating.
 - 2) Identify voltage and phase.

- 3) Identify power source and circuit number. Include location when not within sight of equipment.
 - 4) Use typewritten circuit directory to identify load(s) served for panelboards with a door. Identify spares and spaces using pencil.
 - 5) For power panelboards without a door, use identification nameplate to identify load(s) served for each branch device. Do not identify spares and spaces.
- b. Transformers:
 - 1) Identify power source and circuit number. Include location when not within sight of equipment.
 - 2) Identify load(s) served. Include location when not within sight of equipment.
 - c. Enclosed switches, circuit breakers, and motor controllers:
 - 1) Identify voltage and phase.
 - 2) Identify power source and circuit number. Include location when not within sight of equipment.
 - d. Busway:
 - 1) Use identification nameplate to identify load(s) served for each plug-in unit. Include location when not within sight of equipment.
 - e. Electricity Meters:
 - 1) Identify load(s) metered.
2. Use identification nameplate to identify disconnect location for equipment with remote disconnecting means.
 3. Use identification label to identify overcurrent protective devices for branch circuits serving fire alarm circuits. Identify with text "FIRE ALARM CIRCUIT".
- C. Identification for Conductors and Cables:
1. Color Coding for Power Conductors 600 V and Less: Comply with Section 260519.
 2. Use identification nameplate or identification label to identify color code for ungrounded and grounded power conductors inside door or enclosure at each piece of feeder or branch-circuit distribution equipment when premises has feeders or branch circuits served by more than one nominal voltage system.
 3. Use wire and cable markers to identify circuit number or other designation indicated for power, control, and instrumentation conductors and cables at the following locations:
 - a. Within boxes when more than one circuit is present.
- D. Identification for Boxes:
1. Use identification labels or handwritten text using indelible marker to identify circuits enclosed.
 - a. For exposed boxes in public areas, use only identification labels.
- E. Identification for Devices:
1. Wiring Device and Wallplate Finishes: Comply with Section 262726.
 2. Use identification label or engraved wallplate to identify serving branch circuit for all receptacles.
 - a. For receptacles in public areas or in areas as directed by Architect, provide identification on inside surface of wallplate.
 3. Use identification label or engraved wallplate to identify load controlled for wall-mounted control devices controlling loads that are not visible from the control location and for multiple wall-mounted control devices installed at one location.
 4. Use identification label to identify receptacles protected by upstream GFI protection, where permitted.

2.02 IDENTIFICATION NAMEPLATES AND LABELS

- A. Identification Nameplates:
1. Materials:
 - a. Indoor Clean, Dry Locations: Use plastic nameplates.
 - b. Outdoor Locations: Use plastic nameplates suitable for exterior use.
 2. Plastic Nameplates: Two-layer or three-layer laminated acrylic or electrically non-conductive phenolic with beveled edges; minimum thickness of 1/16 inch (1.6 mm);

- engraved text.
3. Mounting Holes for Mechanical Fasteners: Two, centered on sides for sizes up to 1 inch (25 mm) high; Four, located at corners for larger sizes.
- B. Identification Labels:
1. Materials: Use self-adhesive laminated plastic labels; UV, chemical, water, heat, and abrasion resistant.
 2. Text: Use factory pre-printed or machine-printed text. Do not use handwritten text unless otherwise indicated.
- C. Format for Receptacle Identification:
1. Minimum Size: 3/8 inch (10 mm) by 1.5 inches (38 mm).
 2. Legend: Power source and circuit number or other designation indicated.
 3. Text: All capitalized unless otherwise indicated.
 4. Minimum Text Height: 3/16 inch (5 mm).
 5. Color: Black text on clear background.
- D. Format for Control Device Identification:
1. Minimum Size: 3/8 inch (10 mm) by 1.5 inches (38 mm).
 2. Legend: Load controlled or other designation indicated.
 3. Text: All capitalized unless otherwise indicated.
 4. Minimum Text Height: 3/16 inch (5 mm).
 5. Color: Black text on clear background.

2.03 WIRE AND CABLE MARKERS

- A. Markers for Conductors and Cables: Use wrap-around self-adhesive vinyl cloth, wrap-around self-adhesive vinyl self-laminating, heat-shrink sleeve, plastic sleeve, plastic clip-on, or vinyl split sleeve type markers suitable for the conductor or cable to be identified.
- B. Markers for Conductor and Cable Bundles: Use plastic marker tags secured by nylon cable ties.
- C. Legend: Power source and circuit number or other designation indicated.
- D. Text: Use factory pre-printed or machine-printed text, all capitalized unless otherwise indicated.
- E. Minimum Text Height: 1/8 inch (3 mm).
- F. Color: Black text on white background unless otherwise indicated.

2.04 WARNING SIGNS AND LABELS

- A. Comply with ANSI Z535.2 or ANSI Z535.4 as applicable.
- B. Warning Signs:
1. Materials:
 2. Minimum Size: 7 by 10 inches (178 by 254 mm) unless otherwise indicated.
- C. Warning Labels:
1. Materials: Use factory pre-printed or machine-printed self-adhesive polyester or self-adhesive vinyl labels; UV, chemical, water, heat, and abrasion resistant; produced using materials recognized to UL 969.
 2. Machine-Printed Labels: Use thermal transfer process printing machines and accessories recommended by label manufacturer.
 3. Minimum Size: 2 by 4 inches (51 mm by 102 mm) unless otherwise indicated.

PART 3 EXECUTION

3.01 PREPARATION

- A. Clean surfaces to receive adhesive products according to manufacturer's instructions.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install identification products to be plainly visible for examination, adjustment, servicing, and maintenance. Unless otherwise indicated, locate products as follows:

1. Surface-Mounted Equipment: Enclosure front.
 2. Flush-Mounted Equipment: Inside of equipment door.
 3. Free-Standing Equipment: Enclosure front; also enclosure rear for equipment with rear access.
 4. Elevated Equipment: Legible from the floor or working platform.
 5. Branch Devices: Adjacent to device.
 6. Interior Components: Legible from the point of access.
 7. Boxes: Outside face of cover.
 8. Conductors and Cables: Legible from the point of access.
 9. Devices: Outside face of cover.
- C. Install identification products centered, level, and parallel with lines of item being identified.
 - D. Secure nameplates to exterior surfaces of enclosures using stainless steel screws and to interior surfaces using self-adhesive backing or epoxy cement.
 - E. Install self-adhesive labels and markers to achieve maximum adhesion, with no bubbles or wrinkles and edges properly sealed.
 - F. Mark all handwritten text, where permitted, to be neat and legible.

3.03 FIELD QUALITY CONTROL

- A. See Section 014000 - Quality Requirements, for additional requirements.
- B. Replace self-adhesive labels and markers that exhibit bubbles, wrinkles, curling or other signs of improper adhesion.

END OF SECTION

**SECTION 260583
WIRING CONNECTIONS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Electrical connections to equipment.

1.02 RELATED REQUIREMENTS

- A. Section 260519 - Low-Voltage Electrical Power Conductors and Cables.
- B. Section 260533.13 - Conduit for Electrical Systems.
- C. Section 260533.16 - Boxes for Electrical Systems.
- D. Section 262726 - Wiring Devices.
- E. Section 262816.16 - Enclosed Switches.

1.03 REFERENCE STANDARDS

- A. NEMA WD 1 - General Color Requirements for Wiring Devices 1999 (Reaffirmed 2020).
- B. NEMA WD 6 - Wiring Devices - Dimensional Specifications 2021.
- C. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Obtain and review shop drawings, product data, manufacturer's wiring diagrams, and manufacturer's instructions for equipment furnished under other sections.
 - 2. Determine connection locations and requirements.
- B. Sequencing:
 - 1. Install rough-in of electrical connections before installation of equipment is required.
 - 2. Make electrical connections before required start-up of equipment.

1.05 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Disconnect Switches: As specified in Section 262816.16 and in individual equipment sections.
- B. Wiring Devices: As specified in Section 262726.
- C. Flexible Conduit: As specified in Section 260533.13.
- D. Wire and Cable: As specified in Section 260519.
- E. Boxes: As specified in Section 260533.16.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that equipment is ready for electrical connection, wiring, and energization.

3.02 ELECTRICAL CONNECTIONS

- A. Make electrical connections in accordance with equipment manufacturer's instructions.
- B. Make conduit connections to equipment using flexible conduit. Use liquidtight flexible conduit with watertight connectors in damp or wet locations.
- C. Connect heat producing equipment using wire and cable with insulation suitable for temperatures encountered.
- D. Provide receptacle outlet to accommodate connection with attachment plug.
- E. Provide cord and cap where field-supplied attachment plug is required.

- F. Install suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes.
- G. Install disconnect switches, controllers, control stations, and control devices to complete equipment wiring requirements.
- H. Install terminal block jumpers to complete equipment wiring requirements.
- I. Install interconnecting conduit and wiring between devices and equipment to complete equipment wiring requirements.

END OF SECTION

**SECTION 260923
LIGHTING CONTROL DEVICES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Occupancy sensors.
- B. Daylighting controls.
- C. Accessories.

1.02 RELATED REQUIREMENTS

- A. Section 260526 - Grounding and Bonding for Electrical Systems.
- B. Section 260529 - Hangers and Supports for Electrical Systems
- C. Section 260533.16 - Boxes for Electrical Systems.
- D. Section 260553 - Identification for Electrical Systems: Identification products and requirements.
- E. Section 262726 - Wiring Devices: Devices for manual control of lighting, including wall switches, wall dimmers, and fan speed controllers.
- F. Section 265100 - Interior Lighting.

1.03 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
- B. NECA 130 - Standard for Installing and Maintaining Wiring Devices 2016.
- C. NEMA ICS 5 - Industrial Control and Systems: Control Circuit and Pilot Devices 2017.
- D. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- E. UL 1472 - Solid-State Dimming Controls Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Include ratings, configurations, standard wiring diagrams, dimensions, colors, service condition requirements, and installed features.
- C. Shop Drawings:
 - 1. Occupancy Sensors: Provide lighting plan indicating location, model number, and orientation of each occupancy sensor and associated system component.
 - 2. Daylighting Controls: Provide lighting plan indicating location, model number, and orientation of each photo sensor and associated system component.
- D. Field Quality Control Reports.
- E. Manufacturer's Installation Instructions: Include application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- F. Operation and Maintenance Data: Include detailed information on device programming and setup.
- G. Project Record Documents: Record actual installed locations and settings for lighting control devices.

1.05 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.

1.06 DELIVERY, STORAGE, AND PROTECTION

- A. Store products in a clean, dry space in original manufacturer's packaging in accordance with manufacturer's written instructions until ready for installation.

1.07 FIELD CONDITIONS

- A. Maintain field conditions within manufacturer's required service conditions during and after installation.

1.08 WARRANTY

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.
- B. Provide five year manufacturer warranty for all occupancy sensors.
- C. Provide two year manufacturer warranty for all daylighting controls.

PART 2 PRODUCTS

2.01 LIGHTING CONTROL DEVICES - GENERAL REQUIREMENTS

- A. Provide products listed, classified, and labeled as suitable for the purpose intended.
- B. Unless specifically indicated to be excluded, provide all required conduit, wiring, connectors, hardware, components, accessories, etc. as required for a complete operating system.

2.02 OCCUPANCY SENSORS

- A. Manufacturers:
 - 1. Lutron Electronics Company, Inc: www.lutron.com/#sle.
 - 2. Sensor Switch Inc: www.sensorswitch.com/#sle.
 - 3. WattStopper: www.wattstopper.com/#sle.
- B. All Occupancy Sensors:
 - 1. Description: Factory-assembled commercial specification grade devices for indoor use capable of sensing both major motion, such as walking, and minor motion, such as small desktop level movements, according to published coverage areas, for automatic control of load indicated.
 - 2. Sensor Technology:
 - a. Passive Infrared (PIR) Occupancy Sensors: Designed to detect occupancy by sensing movement of thermal energy between zones.
 - b. Ultrasonic Occupancy Sensors: Designed to detect occupancy by sensing frequency shifts in emitted and reflected inaudible sound waves.
 - c. Passive Infrared/Ultrasonic Dual Technology Occupancy Sensors: Designed to detect occupancy using a combination of both passive infrared and ultrasonic technologies.
 - 3. Provide LED to visually indicate motion detection with separate color LEDs for each sensor type in dual technology units.
 - 4. Operation: Unless otherwise indicated, occupancy sensor to turn load on when occupant presence is detected and to turn load off when no occupant presence is detected during an adjustable turn-off delay time interval.
 - 5. Dual Technology Occupancy Sensors: Field configurable turn-on and hold-on activation with settings for activation by either or both sensing technologies.
 - 6. Passive Infrared Lens Field of View: Field customizable by addition of factory masking material, adjustment of integral blinders, or similar means to block motion detection in selected areas.
 - 7. Turn-Off Delay: Field adjustable, with time delay settings up to 30 minutes.
 - 8. Sensitivity: Field adjustable.
 - 9. Compatibility (Non-Dimming Sensors): Suitable for controlling incandescent lighting, low-voltage lighting with electronic and magnetic transformers, fluorescent lighting with electronic and magnetic ballasts, and fractional motor loads, with no minimum load requirements.
- C. Wall Switch Occupancy Sensors:
 - 1. All Wall Switch Occupancy Sensors:
 - a. Description: Occupancy sensors designed for installation in standard wall box at standard wall switch mounting height with a field of view of 180 degrees, integrated manual control capability, and no leakage current to load in off mode.

- b. Manual-Off Override Control: When used to turn off load while in automatic-on mode, unit to revert back to automatic mode after no occupant presence is detected during the delayed-off time interval.
 - 2. Passive Infrared/Ultrasonic Dual Technology Wall Switch Occupancy Sensors: Capable of detecting motion within an area of 900 square feet (83.6 sq m).
- D. Wall Dimmer Occupancy Sensors:
 - 1. General Requirements:
 - a. Description: Occupancy sensors designed for installation in standard wall box at standard wall switch mounting height with a field of view of 180 degrees, integrated dimming control capability , and no leakage current to load in off mode.
 - b. Manual-Off Override Control Capability: When used to turn off load while in automatic-on mode, unit to revert back to automatic mode after no occupant presence is detected during the delayed-off time interval.
 - c. Dimmer: Solid-state with continuous full-range even control following square law dimming curve, integral radio frequency interference filtering, power failure preset memory, air gap switch accessible without removing wall plate, and listed as complying with UL 1472; type and rating suitable for load controlled.
- E. Ceiling Mounted Occupancy Sensors:
 - 1. All Ceiling Mounted Occupancy Sensors:
 - a. Description: Low profile occupancy sensors designed for ceiling installation.
 - 2. Passive Infrared/Ultrasonic Dual Technology Ceiling Mounted Occupancy Sensors:
 - a. Standard Range Sensors: Capable of detecting motion within an area of 450 square feet (41.8 sq m) at a mounting height of 9 feet (2.7 m), with a field of view of 360 degrees.
 - b. Extended Range Sensors: Capable of detecting motion within an area of 1,200 square feet (111.5 sq m) at a mounting height of 9 feet (2.7 m), with a field of view of 360 degrees.
- F. Power Packs for Low Voltage Occupancy Sensors:
 - 1. Description: Plenum rated, self-contained low voltage class 2 transformer and relay compatible with specified low voltage occupancy sensors for switching of line voltage loads.
 - 2. Provide quantity and configuration of power and slave packs with all associated wiring and accessories as required to control the load indicated on drawings.
 - 3. Input Supply Voltage: Dual rated for 120/277 V ac.
 - 4. Load Rating: As required to control the load indicated on drawings.

2.03 DAYLIGHTING CONTROLS

- A. Manufacturers:
 - 1. Hubbell Control Solutions; [_____]:
www.hubbell.com/hubbellcontrolsolutions/en/#sle.Hubbell Control Solutions;
[_____]: www.hubbell.com/hubbellcontrolsolutions/en/#sle.Hubbell Control Solutions; [_____]: www.hubbell.com/hubbellcontrolsolutions/en/#sle.
 - 2. Lutron Electronics Company, Inc; [_____]: www.lutron.com/#sle.
 - 3. Sensor Switch Inc; [_____]: www.sensorswitch.com/#sle.
 - 4. WattStopper; [_____]: www.wattstopper.com/#sle.
- B. System Description: Control system consisting of photo sensors and compatible control modules and power packs, contactors, or relays as required for automatic control of load indicated according to available natural light; capable of integrating with occupancy sensors and manual override controls.
- C. Daylighting Control Photo Sensors: Low voltage class 2 photo sensor units with output signal proportional to the measured light level and provision for zero or offset based signal.
 - 1. Sensor Type: Filtered silicon photo diode.
 - 2. Sensor Range:
 - a. Indoor Photo Sensors: 5 to 100 footcandles (53.8 to 1,080 lx).

3. Finish: White unless otherwise indicated.
- D. Accessories:
 1. Where indicated, provide compatible accessory wall switches for manual override control.

2.04 ACCESSORIES

- A. Auxiliary Contacts:
 1. Comply with NEMA ICS 5.
 2. Provide number and type of contacts indicated or required to perform necessary functions, including holding (seal-in) circuit and interlocking, plus one normally open (NO) and one normally closed (NC) spare contact for each lighting contactor, minimum.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate devices and conductors in accordance with NFPA 70.
- C. Verify that openings for outlet boxes are neatly cut and will be completely covered by devices or wall plates.
- D. Verify that final surface finishes are complete, including painting.
- E. Verify that branch circuit wiring installation is completed, tested, and ready for connection to lighting control devices.
- F. Verify that the service voltage and ratings of lighting control devices are appropriate for the service voltage and load requirements at the location to be installed.
- G. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

- A. Install lighting control devices in accordance with NECA 1 (general workmanship) and, where applicable, NECA 130, including mounting heights specified in those standards unless otherwise indicated.
- B. Coordinate locations of outlet boxes provided under Section 260533.16 as required for installation of lighting control devices provided under this section.
 1. Mounting Heights: Unless otherwise indicated, as follows:
 - a. Wall Switch Occupancy Sensors: 48 inches (1.2 m) above finished floor.
 2. Orient outlet boxes for vertical installation of lighting control devices unless otherwise indicated.
 3. Locate wall switch occupancy sensors on strike side of door with edge of wall plate 3 inches (80 mm) from edge of door frame. Where locations are indicated otherwise, notify Architect to obtain direction prior to proceeding with work.
- C. Install lighting control devices in accordance with manufacturer's instructions.
- D. Unless otherwise indicated, connect lighting control device grounding terminal or conductor to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
- E. Install lighting control devices plumb and level, and held securely in place.
- F. Where required and not furnished with lighting control device, provide wall plate in accordance with Section 262726.
- G. Provide required supports in accordance with Section 260529.
- H. Where applicable, install lighting control devices and associated wall plates to fit completely flush to mounting surface with no gaps and rough opening completely covered without strain on wall plate. Repair or reinstall improperly installed outlet boxes or improperly sized rough

openings. Do not use oversized wall plates in lieu of meeting this requirement.

- I. Occupancy Sensor Locations:
 - 1. Location Adjustments: Locations indicated are diagrammatic and only intended to indicate which rooms or areas require devices. Provide quantity and locations as required for complete coverage of respective room or area based on manufacturer's recommendations for installed devices.
 - 2. Locate ultrasonic and dual technology passive infrared/ultrasonic occupancy sensors a minimum of 4 feet (1.2 m) from air supply ducts or other sources of heavy air flow and as per manufacturer's recommendations, in order to minimize false triggers.
- J. Daylighting Control Photo Sensor Locations:
 - 1. Location Adjustments: Locations indicated are diagrammatic and only intended to indicate which rooms or areas require devices. Provide quantity and locations as required for proper control of respective room or area based on manufacturer's recommendations for installed devices.
 - 2. Unless otherwise indicated, locate photo sensors for closed loop systems to accurately measure the light level controlled at the designated task location, while minimizing the measured amount of direct light from natural or artificial sources such as windows or pendant luminaires.
 - 3. Unless otherwise indicated, locate photo sensors for open loop systems to accurately measure the level of daylight coming into the space, while minimizing the measured amount of lighting from artificial sources.

3.04 FIELD QUALITY CONTROL

- A. See Section 014000 - Quality Requirements, for additional requirements.
- B. Inspect each lighting control device for damage and defects.
- C. Test occupancy sensors to verify proper operation, including time delays and ambient light thresholds where applicable. Verify optimal coverage for entire room or area. Record test results in written report to be included with submittals.
- D. Test daylighting controls to verify proper operation, including light level measurements and time delays where applicable. Record test results in written report to be included with submittals.
- E. Correct wiring deficiencies and replace damaged or defective lighting control devices.

3.05 ADJUSTING

- A. Adjust devices and wall plates to be flush and level.
- B. Adjust occupancy sensor settings to minimize undesired activations while optimizing energy savings, and to achieve desired function as indicated or as directed by Architect.
- C. Where indicated or as directed by Architect, install factory masking material or adjust integral blinders on passive infrared (PIR) and dual technology occupancy sensor lenses to block undesired motion detection.
- D. Adjust daylighting controls under optimum lighting conditions after all room finishes, furniture, and window treatments have been installed to achieve desired operation as indicated or as directed by Architect. Record settings in written report to be included with submittals. Readjust controls calibrated prior to installation of final room finishes, furniture, and window treatments that do not function properly as determined by Architect.

3.06 CLEANING

- A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

3.07 CLOSEOUT ACTIVITIES

- A. Demonstration: Demonstrate proper operation of lighting control devices to Architect, and correct deficiencies or make adjustments as directed.
- B. Training: Train Owner's personnel on operation, adjustment, programming, and maintenance of lighting control devices.

1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.

END OF SECTION

**SECTION 262200
LOW-VOLTAGE TRANSFORMERS**

PART 1 GENERAL

1.01 SUMMARY

- A. This Section includes the following types of dry-type transformers rated 600 V and less, with capacities up to 500 kVA:
 - 1. Distribution transformers.

1.02 SUSTAINABLE DESIGN PROJECT REQUIREMENTS

- A. See Section 018113 SUSTAINABLE DESIGN REQUIREMENTS for project sustainability requirements.

1.03 ACTION SUBMITTALS

- A. Product Data: Include rated nameplate data, capacities, weights, dimensions, minimum clearances, installed devices and features, and performance for each type and size of transformer indicated.
- B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.

1.04 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For transformers to include in emergency, operation, and maintenance manuals.

1.05 QUALITY ASSURANCE

- A. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a member company of the InterNational Electrical Testing Association or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7, and that is acceptable to authorities having jurisdiction.
 - 1. Testing Agency's Field Supervisor: Person currently certified by the InterNational Electrical Testing Association or the National Institute for Certification in Engineering Technologies to supervise on-site testing specified in Part 3.
- B. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7.
- C. Source Limitations: Obtain each transformer type through one source from a single manufacturer.
- D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- E. Comply with IEEE C57.12.91, "Test Code for Dry-Type Distribution and Power Transformers."

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Temporary Heating: Apply temporary heat according to manufacturer's written instructions within the enclosure of each ventilated-type unit, throughout periods during which equipment is not energized and when transformer is not in a space that is continuously under normal control of temperature and humidity.

1.07 COORDINATION

- A. Coordinate size and location of concrete bases with actual transformer provided. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified with concrete.
- B. Coordinate installation of wall-mounting and structure-hanging supports with actual transformer provided.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. ACME Electric Corporation; Power Distribution Products Division.
 - 2. Eaton Electrical Inc.; Cutler-Hammer Products.
 - 3. Federal Pacific Transformer Company; Division of Electro-Mechanical Corp.
 - 4. General Electric Company.
 - 5. Siemens Energy & Automation, Inc.
 - 6. Sola/Hevi-Duty.
 - 7. Square D; Schneider Electric.

2.02 GENERAL TRANSFORMER REQUIREMENTS

- A. Description: Factory-assembled and -tested, air-cooled units for 60-Hz service.
- B. Cores: Grain-oriented, non-aging silicon steel.
- C. Coils: Continuous windings without splices except for taps.
 - 1. Internal Coil Connections: Brazed or pressure type.
 - 2. Coil Material: Copper.

2.03 DISTRIBUTION TRANSFORMERS

- A. Comply with NEMA ST 20, and list and label as complying with UL 1561.
- B. Provide transformers that are constructed to withstand seismic forces specified in Section 16074 "Vibration and Seismic Controls for Electrical Systems."
- C. Cores: One leg per phase.
- D. Enclosure: Ventilated, NEMA 250, Type 2.
 - 1. Core and coil shall be encapsulated within resin compound, sealing out moisture and air.
- E. Transformer Enclosure Finish: Comply with NEMA 250.
 - 1. Finish Color: Gray.
- F. Taps for Transformers Smaller Than 3 kVA: None.
- G. Taps for Transformers 7.5 to 24 kVA: One 5 percent tap above and one 5 percent tap below normal full capacity.
- H. Taps for Transformers 25 kVA and Larger: Two 2.5 percent taps above and two 2.5 percent taps below normal full capacity.
- I. Insulation Class: 220 deg C, UL-component-recognized insulation system with a maximum of 150 deg C rise above 40 deg C ambient temperature.
- J. Energy Efficiency for Transformers Rated 15 kVA and Larger:
 - 1. Complying with NEMA TP 1, Class 1 efficiency levels.
 - 2. Tested according to NEMA TP 2.
- K. Wall Brackets: Manufacturer's standard brackets.
- L. Fungus Proofing: Permanent fungicidal treatment for coil and core.

2.04 IDENTIFICATION DEVICES

- A. Nameplates: Engraved, laminated-plastic or metal nameplate for each distribution transformer, mounted with corrosion-resistant screws. Nameplates and label products are specified in Section 16075 "Identification for Electrical Systems."

2.05 SOURCE QUALITY CONTROL

- A. Test and inspect transformers according to IEEE C57.12.91.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine conditions for compliance with enclosure- and ambient-temperature requirements for each transformer.
- B. Verify that field measurements are as needed to maintain working clearances required by NFPA 70 and manufacturer's written instructions.
- C. Examine walls, floors, roofs, and concrete bases for suitable mounting conditions where transformers will be installed.
- D. Verify that ground connections are in place and requirements in Section 16060 "Grounding and Bonding for Electrical Systems" have been met. Maximum ground resistance shall be 5 ohms at location of transformer.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Install wall-mounting transformers level and plumb with wall brackets fabricated by transformer manufacturer.
 - 1. Brace wall-mounting transformers as specified in Section 16074 "Vibration and Seismic Controls for Electrical Systems."
- B. Construct concrete bases and anchor floor-mounting transformers according to manufacturer's written instructions, seismic codes applicable to Project, and requirements in Section 260529 "Hangers and Supports for Electrical Systems."

3.03 CONNECTIONS

- A. Ground equipment according to Section 16060 "Grounding and Bonding for Electrical Systems."
- B. Connect wiring according to Section 16120 "Low-Voltage Electrical Power Conductors and Cables."

3.04 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections and prepare test reports.
- B. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections. Report results in writing.
- C. Perform tests and inspections and prepare test reports.
 - 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- D. Tests and Inspections:
 - 1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
- E. Remove and replace units that do not pass tests or inspections and retest as specified above.
- F. Infrared Scanning: Two months after Substantial Completion, perform an infrared scan of transformer connections.
 - 1. Use an infrared-scanning device designed to measure temperature or detect significant deviations from normal values. Provide documentation of device calibration.
 - 2. Perform 2 follow-up infrared scans of transformers, one at 4 months and the other at 11 months after Substantial Completion.
 - 3. Prepare a certified report identifying transformer checked and describing results of scanning. Include notation of deficiencies detected, remedial action taken, and scanning observations after remedial action.

- G. Test Labeling: On completion of satisfactory testing of each unit, attach a dated and signed "Satisfactory Test" label to tested component.

3.05 ADJUSTING

- A. Record transformer secondary voltage at each unit for at least 48 hours of typical occupancy period. Adjust transformer taps to provide optimum voltage conditions at secondary terminals. Optimum is defined as not exceeding nameplate voltage plus 10 percent and not being lower than nameplate voltage minus 3 percent at maximum load conditions. Submit recording and tap settings as test results.
- B. Connect buck-boost transformers to provide nameplate voltage of equipment being served, plus or minus 5 percent, at secondary terminals.
- C. Output Settings Report: Prepare a written report recording output voltages and tap settings.

3.06 CLEANING

- A. Vacuum dirt and debris; do not use compressed air to assist in cleaning.

END OF SECTION

SECTION 262416 PANELBOARDS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Lighting and appliance panelboards.
- B. Overcurrent protective devices for panelboards.

1.02 RELATED REQUIREMENTS

- A. Section 260526 - Grounding and Bonding for Electrical Systems.
- B. Section 260526 - Grounding and Bonding for Electrical Systems.
- C. Section 260529 - Hangers and Supports for Electrical Systems.
- D. Section 260553 - Identification for Electrical Systems: Identification products and requirements.

1.03 REFERENCE STANDARDS

- A. FS W-C-375 - Circuit Breakers, Molded Case; Branch Circuit and Service 2013e, with Amendment (2017).
- B. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
- C. NECA 407 - Standard for Installing and Maintaining Panelboards 2015.
- D. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum) 2020.
- E. NEMA PB 1 - Panelboards 2011.
- F. NEMA PB 1.1 - General Instructions for Proper Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less 2013.
- G. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems 2021.
- H. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- I. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations Current Edition, Including All Revisions.
- J. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations Current Edition, Including All Revisions.
- K. UL 67 - Panelboards Current Edition, Including All Revisions.
- L. UL 489 - Molded-Case Circuit Breakers, Molded-Case Switches and Circuit Breaker Enclosures Current Edition, Including All Revisions.
- M. UL 943 - Ground-Fault Circuit-Interrupters Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for panelboards, enclosures, overcurrent protective devices, and other installed components and accessories.
- C. Shop Drawings: Indicate outline and support point dimensions, voltage, main bus ampacity, overcurrent protective device arrangement and sizes, short circuit current ratings, conduit entry locations, conductor terminal information, and installed features and accessories.

1.05 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store panelboards in accordance with manufacturer's instructions and NECA 407.

- B. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.
- C. Handle carefully in accordance with manufacturer's written instructions to avoid damage to panelboard internal components, enclosure, and finish.

1.07 FIELD CONDITIONS

- A. Maintain ambient temperature within the following limits during and after installation of panelboards:
 1. Panelboards Containing Circuit Breakers: Between 23 degrees F (-5 degrees C) and 104 degrees F (40 degrees C).

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Eaton Corporation; [_____]: www.eaton.com/#sle.
- B. General Electric Company; [_____]: www.geindustrial.com/#sle.
- C. Schneider Electric; Square D Products; [_____]: www.schneider-electric.us/#sle.
- D. Siemens Industry, Inc; [_____]: www.usa.siemens.com/#sle.

2.02 PANELBOARDS - GENERAL REQUIREMENTS

- A. Provide products listed, classified, and labeled as suitable for the purpose intended.
- B. Unless otherwise indicated, provide products suitable for continuous operation under the following service conditions:
 1. Altitude: Less than 6,600 feet (2,000 m).
 2. Ambient Temperature:
 - a. Panelboards Containing Circuit Breakers: Between 23 degrees F (-5 degrees C) and 104 degrees F (40 degrees C).
- C. Short Circuit Current Rating:
 1. Provide panelboards with listed short circuit current rating not less than the available fault current at the installed location as indicated on the drawings.
- D. Mains: Configure for top or bottom incoming feed as indicated or as required for the installation.
- E. Branch Overcurrent Protective Devices: Replaceable without disturbing adjacent devices.
- F. Bussing: Sized in accordance with UL 67 temperature rise requirements.
 1. Provide fully rated neutral bus unless otherwise indicated, with a suitable lug for each feeder or branch circuit requiring a neutral connection.
 2. Provide solidly bonded equipment ground bus in each panelboard, with a suitable lug for each feeder and branch circuit equipment grounding conductor.
- G. Conductor Terminations: Suitable for use with the conductors to be installed.
- H. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
 1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
 2. Boxes: Galvanized steel unless otherwise indicated.
 - a. Provide wiring gutters sized to accommodate the conductors to be installed.
 3. Fronts:
 - a. Fronts for Flush-Mounted Enclosures: Overlap boxes on all sides to conceal rough opening.
 4. Lockable Doors: All locks keyed alike unless otherwise indicated.
- I. Future Provisions: Prepare all unused spaces for future installation of devices including bussing, connectors, mounting hardware and all other required provisions.

2.03 LIGHTING AND APPLIANCE PANELBOARDS

- A. Description: Panelboards complying with NEMA PB 1, lighting and appliance branch circuit type, circuit breaker type, and listed and labeled as complying with UL 67; ratings, configurations and features as indicated on the drawings.
- B. Conductor Terminations:
 - 1. Main and Neutral Lug Material: Aluminum, suitable for terminating aluminum or copper conductors.
 - 2. Main and Neutral Lug Type: Mechanical.
- C. Bussing:
 - 1. Phase Bus Connections: Arranged for sequential phasing of overcurrent protective devices.
 - 2. Phase and Neutral Bus Material: Aluminum.
 - 3. Ground Bus Material: Aluminum.
- D. Circuit Breakers: Thermal magnetic bolt-on type unless otherwise indicated.
- E. Enclosures:
 - 1. Provide flush-mounted enclosures as indicated.
 - 2. Fronts: Provide lockable hinged door with concealed hinges for access to overcurrent protective device handles without exposing live parts.
 - 3. Provide clear plastic circuit directory holder mounted on inside of door.

2.04 OVERCURRENT PROTECTIVE DEVICES

- A. Molded Case Circuit Breakers:
 - 1. Description: Quick-make, quick-break, over center toggle, trip-free, trip-indicating circuit breakers listed and labeled as complying with UL 489, and complying with FS W-C-375 where applicable; ratings, configurations, and features as indicated on the drawings.
 - 2. Interrupting Capacity:
 - a. Provide circuit breakers with interrupting capacity as required to provide the short circuit current rating indicated, but not less than:
 - b. Fully Rated Systems: Provide circuit breakers with interrupting capacity not less than the short circuit current rating indicated.
 - 3. Conductor Terminations:
 - a. Provide mechanical lugs unless otherwise indicated.
 - b. Lug Material: Aluminum, suitable for terminating aluminum or copper conductors.
 - 4. Thermal Magnetic Circuit Breakers: For each pole, furnish thermal inverse time tripping element for overload protection and magnetic instantaneous tripping element for short circuit protection.
 - 5. Multi-Pole Circuit Breakers: Furnish with common trip for all poles.
 - 6. Provide the following circuit breaker types where indicated:
 - a. Ground Fault Circuit Interrupter (GFCI) Circuit Breakers: Listed as complying with UL 943, class A for protection of personnel.
 - 7. Do not use tandem circuit breakers.
 - 8. Do not use handle ties in lieu of multi-pole circuit breakers.
 - 9. Provide multi-pole circuit breakers for multi-wire branch circuits as required by NFPA 70.

2.05 SOURCE QUALITY CONTROL

- A. Factory test panelboards according to NEMA PB 1.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that the ratings and configurations of the panelboards and associated components are consistent with the indicated requirements.
- C. Verify that mounting surfaces are ready to receive panelboards.

- D. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Perform work in accordance with NECA 1 (general workmanship).
- B. Install products in accordance with manufacturer's instructions.
- C. Install panelboards in accordance with NECA 407 and NEMA PB 1.1.
- D. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- E. Provide required support and attachment in accordance with Section 260529.
- F. Install panelboards plumb.
- G. Install flush-mounted panelboards so that trims fit completely flush to wall with no gaps and rough opening completely covered.
- H. Mount panelboards such that the highest position of any operating handle for circuit breakers or switches does not exceed 79 inches (2000 mm) above the floor or working platform.
- I. Provide minimum of six spare 1 inch (27 mm) trade size conduits out of each flush-mounted panelboard stubbed into accessible space above ceiling and below floor.
- J. Provide grounding and bonding in accordance with Section 260526.
- K. Install all field-installed branch devices, components, and accessories.
- L. Multi-Wire Branch Circuits: Group grounded and ungrounded conductors together in the panelboard as required by NFPA 70.
- M. Provide filler plates to cover unused spaces in panelboards.
- N. Identify panelboards in accordance with Section 260553.

3.03 FIELD QUALITY CONTROL

- A. See Section 014000 - Quality Requirements, for additional requirements.
- B. Inspect and test in accordance with NETA ATS, except Section 4.
- C. Molded Case Circuit Breakers: Perform inspections and tests listed in NETA ATS, Section 7.6.1.1 for all main circuit breakers and circuit breakers larger than [_____] amperes. Tests listed as optional are not required.
- D. Test GFCI circuit breakers to verify proper operation.
- E. Correct deficiencies and replace damaged or defective panelboards or associated components.

3.04 ADJUSTING

- A. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.
- B. Adjust alignment of panelboard fronts.

3.05 CLEANING

- A. Clean dirt and debris from panelboard enclosures and components according to manufacturer's instructions.
- B. Repair scratched or marred exterior surfaces to match original factory finish.

END OF SECTION

SECTION 262726 WIRING DEVICES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Wall switches.
- B. Wall dimmers.
- C. Receptacles.
- D. Wall plates.
- E. Poke-through assemblies.

1.02 RELATED REQUIREMENTS

- A. Section 260519 - Low-Voltage Electrical Power Conductors and Cables: Manufactured wiring systems for use with access floor boxes with compatible pre-wired connectors.
- B. Section 260526 - Grounding and Bonding for Electrical Systems.
- C. Section 260533.16 - Boxes for Electrical Systems.
- D. Section 260553 - Identification for Electrical Systems: Identification products and requirements.
- E. Section 260923 - Lighting Control Devices: Devices for automatic control of lighting, including occupancy sensors, in-wall time switches, and in-wall interval timers.

1.03 REFERENCE STANDARDS

- A. FS W-C-596 - Connector, Electrical, Power, General Specification for 2014h, with Amendments (2017).
- B. FS W-S-896 - Switches, Toggle (Toggle and Lock), Flush Mounted (General Specification) 2014g, with Amendment (2017).
- C. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
- D. NECA 130 - Standard for Installing and Maintaining Wiring Devices 2016.
- E. NEMA WD 1 - General Color Requirements for Wiring Devices 1999 (Reaffirmed 2020).
- F. NEMA WD 6 - Wiring Devices - Dimensional Specifications 2021.
- G. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- H. UL 20 - General-Use Snap Switches Current Edition, Including All Revisions.
- I. UL 498 - Attachment Plugs and Receptacles Current Edition, Including All Revisions.
- J. UL 514D - Cover Plates for Flush-Mounted Wiring Devices Current Edition, Including All Revisions.
- K. UL 943 - Ground-Fault Circuit-Interrupters Current Edition, Including All Revisions.
- L. UL 1472 - Solid-State Dimming Controls Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the placement of outlet boxes with millwork, furniture, equipment, etc. installed under other sections or by others.
 - 2. Coordinate wiring device ratings and configurations with the electrical requirements of actual equipment to be installed.
 - 3. Coordinate the installation and preparation of uneven surfaces, such as split face block, to provide suitable surface for installation of wiring devices.
 - 4. Coordinate the core drilling of holes for poke-through assemblies with the work covered under other sections.
 - 5. Notify Architect of any conflicts or deviations from Contract Documents to obtain direction prior to proceeding with work.

1.05 SUBMITTALS

- A. Product Data: Provide manufacturer's catalog information showing dimensions, colors, and configurations.
 - 1. Wall Dimmers: Include derating information for ganged multiple devices.
- B. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- C. Operation and Maintenance Data:
 - 1. Wall Dimmers: Include information on operation and setting of presets.
 - 2. GFCI Receptacles: Include information on status indicators.

1.06 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.
- B. Products: Listed, classified, and labeled as suitable for the purpose intended.

1.07 DELIVERY, STORAGE, AND PROTECTION

- A. Store in a clean, dry space in original manufacturer's packaging until ready for installation.

PART 2 PRODUCTS

2.01 WIRING DEVICE APPLICATIONS

- A. Provide weather resistant GFCI receptacles with specified weatherproof covers for receptacles installed outdoors or in damp or wet locations.
- B. Provide GFCI protection for receptacles installed within 6 feet (1.8 m) of sinks.
- C. Provide GFCI protection for receptacles installed in kitchens.
- D. Provide GFCI protection for receptacles serving electric drinking fountains.
- E. Unless noted otherwise, do not use combination switch/receptacle devices.

2.02 WIRING DEVICE FINISHES

- A. Provide wiring device finishes as described below unless otherwise indicated.
- B. Wiring Devices Installed in Finished Spaces: White with stainless steel wall plate.
- C. Wiring Devices Installed in Unfinished Spaces: Gray with galvanized steel wall plate.
- D. Flush Poke-Through Service Fittings: Gray wiring devices with aluminum cover and aluminum flange.

2.03 WALL SWITCHES

- A. Manufacturers:
 - 1. Hubbell Incorporated; [_____]: www.hubbell.com/#sle.
 - 2. Leviton Manufacturing Company, Inc; [_____]: www.leviton.com/#sle.
 - 3. Pass & Seymour, a brand of Legrand North America, Inc; [_____]: www.legrand.us/#sle.
- B. Wall Switches - General Requirements: AC only, quiet operating, general-use snap switches with silver alloy contacts, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 20 and where applicable, FS W-S-896; types as indicated on the drawings.
 - 1. Wiring Provisions: Terminal screws for side wiring and screw actuated binding clamp for back wiring with separate ground terminal screw.
- C. Standard Wall Switches: Industrial specification grade, 20 A, 120/277 V with standard toggle type switch actuator and maintained contacts; single pole single throw, double pole single throw, three way, or four way as indicated on the drawings.

2.04 WALL DIMMERS

- A. Manufacturers:
 - 1. Leviton Manufacturing Company, Inc; [_____]: www.leviton.com/#sle.
 - 2. Lutron Electronics Company, Inc; Maestro Series: www.lutron.com/#sle.

3. Pass & Seymour, a brand of Legrand North America, Inc; [_____]: www.legrand.us/#sle.
- B. Wall Dimmers - General Requirements: Solid-state with continuous full-range even control following square law dimming curve, integral radio frequency interference filtering, power failure preset memory, air gap switch accessible without removing wall plate, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 1472; types and ratings suitable for load controlled as indicated on the drawings.

2.05 RECEPTACLES

- A. Manufacturers:
1. Hubbell Incorporated; [_____]: www.hubbell.com/#sle.
 2. Leviton Manufacturing Company, Inc; [_____]: www.leviton.com/#sle.
 3. Lutron Electronics Company, Inc; Designer Style: www.lutron.com/#sle.
 4. Pass & Seymour, a brand of Legrand North America, Inc; [_____]: www.legrand.us/#sle.
 5. Source Limitations: Where wall controls are furnished as part of lighting control system, provide accessory matching receptacles and wallplates by the same manufacturer in locations indicated.
- B. Receptacles - General Requirements: Self-grounding, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 498, and where applicable, FS W-C-596; types as indicated on the drawings.
1. Wiring Provisions: Terminal screws for side wiring or screw actuated binding clamp for back wiring with separate ground terminal screw.
 2. NEMA configurations specified are according to NEMA WD 6.
- C. Convenience Receptacles:
1. Standard Convenience Receptacles: Industrial specification grade, 20A, 125V, NEMA 5-20R; single or duplex as indicated on the drawings.
- D. GFCI Receptacles:
1. GFCI Receptacles - General Requirements: Self-testing, with feed-through protection and light to indicate ground fault tripped condition and loss of protection; listed as complying with UL 943, class A.
 2. Standard GFCI Receptacles: Industrial specification grade, duplex, 20A, 125V, NEMA 5-20R, rectangular decorator style.

2.06 WALL PLATES

- A. Manufacturers:
1. Hubbell Incorporated; [_____]: www.hubbell-wiring.com/#sle.
 2. Leviton Manufacturing Company, Inc; [_____]: www.leviton.com/#sle.
 3. Lutron Electronics Company, Inc; [_____]: www.lutron.com/#sle.
 4. Pass & Seymour, a brand of Legrand North America, Inc; [_____]: www.legrand.us/#sle.
 5. Source Limitations: Where wall controls are furnished as part of lighting control system, provide accessory matching receptacles and wallplates by the same manufacturer in locations indicated.
- B. Wall Plates: Comply with UL 514D.
1. Configuration: One piece cover as required for quantity and types of corresponding wiring devices.
 2. Size: Standard; [_____].
 3. Screws: Metal with slotted heads finished to match wall plate finish.
- C. Stainless Steel Wall Plates: Brushed satin finish, Type 302 stainless steel.

2.07 POKE-THROUGH ASSEMBLIES

- A. Manufacturers:
1. Hubbell Incorporated; [_____]: www.hubbell.com/#sle.
 2. Thomas & Betts Corporation; [_____]: www.tnb.com/#sle.
 3. Wiremold, a brand of Legrand North America, Inc; [_____]: www.legrand.us/#sle.

- B. Description: Assembly comprising floor service fitting, poke-through component, fire stops and smoke barriers, and junction box for conduit termination; fire rating listed to match fire rating of floor and suitable for floor thickness where installed.
- C. Flush Floor Service Fittings:
 - 1. Dual Service Flush Combination Outlets:
 - a. Cover: Hinged door(s).
 - b. Configuration:
 - 1) Power: One standard convenience duplex receptacle(s).
 - 2) Communications: [_____].
 - 3) Voice and Data Jacks: Provided by others.
 - 2. Dual Service Flush Furniture Feed:
 - a. Configuration:
 - 1) Power: One 3/4 inch threaded opening(s).
 - 2) Communications: Two 1/2 inch threaded opening(s).
 - 3. Accessories:
 - a. Closure Plugs: Size and fire rating as required to seal unused core hole and maintain fire rating of floor.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate devices and conductors in accordance with NFPA 70.
- C. Verify that wall openings are neatly cut and will be completely covered by wall plates.
- D. Verify that final surface finishes are complete, including painting.
- E. Verify that branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.
- F. Verify that core drilled holes for poke-through assemblies are in proper locations.
- G. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

- A. Perform work in accordance with NECA 1 (general workmanship) and, where applicable, NECA 130, including mounting heights specified in those standards unless otherwise indicated.
- B. Coordinate locations of outlet boxes provided under Section 260533.16 as required for installation of wiring devices provided under this section.
 - 1. Mounting Heights: Unless otherwise indicated, as follows:
 - a. Wall Switches: 48 inches (1200 mm) above finished floor.
 - b. Wall Dimmers: 48 inches (1200 mm) above finished floor.
 - c. Receptacles: 18 inches (450 mm) above finished floor or 6 inches (150 mm) above counter.
 - 2. Locate wall switches on strike side of door with edge of wall plate 3 inches (80 mm) from edge of door frame. Where locations are indicated otherwise, notify Architect to obtain direction prior to proceeding with work.
 - 3. Locate receptacles for electric drinking fountains concealed behind drinking fountain according to manufacturer's instructions.
- C. Install wiring devices in accordance with manufacturer's instructions.
- D. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.

- E. Where required, connect wiring devices using pigtails not less than 6 inches (150 mm) long. Do not connect more than one conductor to wiring device terminals.
- F. Connect wiring devices by wrapping conductor clockwise 3/4 turn around screw terminal and tightening to proper torque specified by the manufacturer. Where present, do not use push-in pressure terminals that do not rely on screw-actuated binding.
- G. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
- H. Provide GFCI receptacles with integral GFCI protection at each location indicated. Do not use feed-through wiring to protect downstream devices.
- I. Install wiring devices plumb and level with mounting yoke held rigidly in place.
- J. Install wall switches with OFF position down.
- K. Install wall dimmers to achieve full rating specified and indicated after derating for ganging as instructed by manufacturer.
- L. Do not share neutral conductor on branch circuits utilizing wall dimmers.
- M. Install vertically mounted receptacles with grounding pole on top and horizontally mounted receptacles with grounding pole on left.
- N. Install wall plates to fit completely flush to wall with no gaps and rough opening completely covered without strain on wall plate. Repair or reinstall improperly installed outlet boxes or improperly sized rough openings. Do not use oversized wall plates in lieu of meeting this requirement.
- O. Install blank wall plates on junction boxes and on outlet boxes with no wiring devices installed or designated for future use.
- P. Identify wiring devices in accordance with Section 260553.
- Q. Install poke-through closure plugs in each unused core holes to maintain fire rating of floor.

3.04 FIELD QUALITY CONTROL

- A. See Section 014000 - Quality Requirements, for additional requirements.
- B. Inspect each wiring device for damage and defects.
- C. Operate each wall switch, wall dimmer, and fan speed controller with circuit energized to verify proper operation.
- D. Test each receptacle to verify operation and proper polarity.
- E. Test each GFCI receptacle for proper tripping operation according to manufacturer's instructions.
- F. Correct wiring deficiencies and replace damaged or defective wiring devices.

3.05 ADJUSTING

- A. Adjust devices and wall plates to be flush and level.
- B. Adjust presets for wall dimmers according to manufacturer's instructions as directed by Architect.

3.06 CLEANING

- A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

END OF SECTION

**SECTION 262813
FUSES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fuses.

1.02 RELATED REQUIREMENTS

- A. Section 260553 - Identification for Electrical Systems: Identification products and requirements.
- B. Section 262816.16 - Enclosed Switches: Fusible switches.

1.03 REFERENCE STANDARDS

- A. NEMA FU 1 - Low Voltage Cartridge Fuses 2012.
- B. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- C. UL 248-1 - Low-Voltage Fuses - Part 1: General Requirements Current Edition, Including All Revisions.
- D. UL 248-12 - Low-Voltage Fuses - Part 12: Class R Fuses Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate fuse clips furnished in equipment provided under other sections for compatibility with indicated fuses.
 - a. Fusible Enclosed Switches: See Section 262816.16.
 - 2. Coordinate fuse requirements according to manufacturer's recommendations and nameplate data for actual equipment to be installed.

1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard data sheets including voltage and current ratings, interrupting ratings, time-current curves, and current limitation curves.

1.06 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Bussmann, a division of Eaton Corporation; [_____]: www.cooperindustries.com/#sle.
- B. Littelfuse, Inc; [_____]: www.littelfuse.com/#sle.
- C. Mersen; [_____]: ep-us.mersen.com/#sle.

2.02 APPLICATIONS

- A. Feeders:
 - 1. Fusible Switches up to 600 Amperes: Class RK1, time-delay.
- B. General Purpose Branch Circuits: Class RK1, time-delay.
- C. Individual Motor Branch Circuits: Class RK1, time-delay.

2.03 FUSES

- A. Provide products listed, classified, and labeled as suitable for the purpose intended.
- B. Unless specifically indicated to be excluded, provide fuses for all fusible equipment as required for a complete operating system.
- C. Provide fuses of the same type, rating, and manufacturer within the same switch.

- D. Comply with UL 248-1.
- E. Unless otherwise indicated, provide cartridge type fuses complying with NEMA FU 1, Class and ratings as indicated.
- F. Voltage Rating: Suitable for circuit voltage.
- G. Class R Fuses: Comply with UL 248-12.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Do not install fuses until circuits are ready to be energized.
- B. Install fuses with label oriented such that manufacturer, type, and size are easily read.

END OF SECTION

**SECTION 262816.13
ENCLOSED CIRCUIT BREAKERS**

PART 2 PRODUCTS

1.01 ENCLOSED CIRCUIT BREAKERS

- A. Description: Units consisting of molded case circuit breakers individually mounted in enclosures.
- B. Provide products listed, classified, and labeled as suitable for the purpose intended.
- C. Unless otherwise indicated, provide products suitable for continuous operation under the following service conditions:
 - 1. Altitude: Less than 6,600 feet (2,000 m).
 - 2. Ambient Temperature: Between 23 degrees F (-5 degrees C) and 104 degrees F (40 degrees C).
- D. Short Circuit Current Rating:
- E. Conductor Terminations: Suitable for use with the conductors to be installed.
- F. Provide solidly bonded equipment ground bus in each enclosed circuit breaker, with a suitable lug for terminating each equipment grounding conductor.
- G. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
 - 1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
- H. Provide externally operable handle with means for locking in the OFF position.

1.02 MOLDED CASE CIRCUIT BREAKERS

- A. Description: Quick-make, quick-break, over center toggle, trip-free, trip-indicating circuit breakers listed and labeled as complying with UL 489, and complying with FS W-C-375 where applicable; ratings, configurations, and features as indicated on the drawings.
- B. Interrupting Capacity:
 - 1. Provide circuit breakers with interrupting capacity as required to provide the short circuit current rating indicated, but not less than:
 - 2. Fully Rated Systems: Provide circuit breakers with interrupting capacity not less than the short circuit current rating indicated.
- C. Conductor Terminations:
 - 1. Lug Material: Aluminum, suitable for terminating aluminum or copper conductors.
- D. Multi-Pole Circuit Breakers: Furnish with common trip for all poles.

END OF SECTION

SECTION 262816.16 ENCLOSED SWITCHES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Enclosed safety switches.

1.02 RELATED REQUIREMENTS

- A. Section 260526 - Grounding and Bonding for Electrical Systems.
- B. Section 260529 - Hangers and Supports for Electrical Systems.
- C. Section 260553 - Identification for Electrical Systems: Identification products and requirements.
- D. Section 262813 - Fuses.

1.03 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
- B. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum) 2020.
- C. NEMA KS 1 - Heavy Duty Enclosed and Dead-Front Switches (600 Volts Maximum) 2013.
- D. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems 2021.
- E. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- F. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations Current Edition, Including All Revisions.
- G. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations Current Edition, Including All Revisions.
- H. UL 98 - Enclosed and Dead-Front Switches Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the work with other trades. Avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and within working clearances for electrical equipment required by NFPA 70.
 - 2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
 - 3. Verify with manufacturer that conductor terminations are suitable for use with the conductors to be installed.
 - 4. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.05 SUBMITTALS

- A. Product Data: Provide manufacturer's standard catalog pages and data sheets for enclosed switches and other installed components and accessories.
- B. Shop Drawings: Indicate outline and support point dimensions, voltage and current ratings, short circuit current ratings, conduit entry locations, conductor terminal information, and installed features and accessories.

1.06 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.

- B. Handle carefully in accordance with manufacturer's written instructions to avoid damage to enclosed switch internal components, enclosure, and finish.

1.08 FIELD CONDITIONS

- A. Maintain ambient temperature between -22 degrees F (-30 degrees C) and 104 degrees F (40 degrees C) during and after installation of enclosed switches.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Eaton Corporation; [_____]: www.eaton.com/#sle.
- B. General Electric Company; [_____]: www.geindustrial.com/#sle.
- C. Schneider Electric; Square D Products; [_____]: www.schneider-electric.us/#sle.
- D. Siemens Industry, Inc; [_____]: www.usa.siemens.com/#sle.
- E. Source Limitations: Furnish enclosed switches and associated components produced by the same manufacturer as the other electrical distribution equipment used for this project and obtained from a single supplier.

2.02 ENCLOSED SAFETY SWITCHES

- A. Description: Quick-make, quick-break enclosed safety switches listed and labeled as complying with UL 98; heavy duty; ratings, configurations, and features as indicated on the drawings.
- B. Provide products listed, classified, and labeled as suitable for the purpose intended.
- C. Unless otherwise indicated, provide products suitable for continuous operation under the following service conditions:
 - 1. Altitude: Less than 6,600 feet (2,000 m).
 - 2. Ambient Temperature: Between -22 degrees F (-30 degrees C) and 104 degrees F (40 degrees C).
- D. Horsepower Rating: Suitable for connected load.
- E. Voltage Rating: Suitable for circuit voltage.
- F. Short Circuit Current Rating:
 - 1. Minimum Ratings:
 - a. Switches Protected by Class H Fuses: 10,000 rms symmetrical amperes.
 - b. Heavy Duty Single Throw Switches Protected by Class R, Class J, Class L, or Class T Fuses: 200,000 rms symmetrical amperes.
- G. Provide with switch blade contact position that is visible when the cover is open.
- H. Conductor Terminations: Suitable for use with the conductors to be installed.
- I. Provide solidly bonded equipment ground bus in each enclosed safety switch, with a suitable lug for terminating each equipment grounding conductor.
- J. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
 - 1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
- K. Provide safety interlock to prevent opening the cover with the switch in the ON position with capability of overriding interlock for testing purposes.
- L. Heavy Duty Switches:
 - 1. Comply with NEMA KS 1.
 - 2. Conductor Terminations:
 - a. Provide mechanical lugs unless otherwise indicated.
 - b. Lug Material: Aluminum, suitable for terminating aluminum or copper conductors.
 - 3. Provide externally operable handle with means for locking in the OFF position, capable of accepting three padlocks.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that the ratings of the enclosed switches are consistent with the indicated requirements.
- C. Verify that mounting surfaces are ready to receive enclosed safety switches.
- D. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Perform work in accordance with NECA 1 (general workmanship).
- C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- D. Provide required support and attachment in accordance with Section 260529.
- E. Install enclosed switches plumb.
- F. Except where indicated to be mounted adjacent to the equipment they supply, mount enclosed switches such that the highest position of the operating handle does not exceed 79 inches (2000 mm) above the floor or working platform.
- G. Provide grounding and bonding in accordance with Section 260526.
- H. Provide fuses complying with Section 262813 for fusible switches as indicated or as required by equipment manufacturer's recommendations.
- I. Identify enclosed switches in accordance with Section 260553.

3.03 FIELD QUALITY CONTROL

- A. See Section 014000 - Quality Requirements, for additional requirements.
- B. Inspect and test in accordance with NETA ATS, except Section 4.
- C. Perform inspections and tests listed in NETA ATS, Section 7.5.1.1.
- D. Correct deficiencies and replace damaged or defective enclosed safety switches or associated components.

3.04 ADJUSTING

- A. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.

3.05 CLEANING

- A. Clean dirt and debris from switch enclosures and components according to manufacturer's instructions.
- B. Repair scratched or marred exterior surfaces to match original factory finish.

END OF SECTION

SECTION 265100 INTERIOR LIGHTING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Interior luminaires.
- B. Emergency lighting units.
- C. Exit signs.
- D. Ballasts and drivers.
- E. Accessories.

1.02 RELATED REQUIREMENTS

- A. Section 260529 - Hangers and Supports for Electrical Systems.
- B. Section 260533.16 - Boxes for Electrical Systems.
- C. Section 260553 - Identification for Electrical Systems: Identification products and requirements.
- D. Section 260923 - Lighting Control Devices.
- E. Section 262726 - Wiring Devices: Manual wall switches and wall dimmers.

1.03 REFERENCE STANDARDS

- A. IES LM-79 - Approved Method: Optical and Electrical Measurements of Solid-State Lighting Products 2019.
- B. IES LM-80 - Approved Method: Measuring Maintenance of Light Output Characteristics of Solid-State Light Sources 2021.
- C. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
- D. NECA/IESNA 500 - Standard for Installing Indoor Lighting Systems 2006.
- E. NECA/IESNA 502 - Standard for Installing Industrial Lighting Systems 2006.
- F. NEMA LE 4 - Recessed Luminaires, Ceiling Compatibility 2012 (Reaffirmed 2018).
- G. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- H. NFPA 101 - Life Safety Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- I. UL 924 - Emergency Lighting and Power Equipment Current Edition, Including All Revisions.
- J. UL 1598 - Luminaires Current Edition, Including All Revisions.
- K. UL 8750 - Light Emitting Diode (LED) Equipment for Use in Lighting Products Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the installation of luminaires with mounting surfaces installed under other sections or by others. Coordinate the work with placement of supports, anchors, etc. required for mounting. Coordinate compatibility of luminaires and associated trims with mounting surfaces at installed locations.
 - 2. Coordinate the placement of luminaires with structural members, ductwork, piping, equipment, diffusers, fire suppression system components, and other potential conflicts installed under other sections or by others.
 - 3. Coordinate the placement of exit signs with furniture, equipment, signage or other potential obstructions to visibility installed under other sections or by others.
 - 4. Notify Architect of any conflicts or deviations from Contract Documents to obtain direction prior to proceeding with work.

1.05 SUBMITTALS

- A. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, installed accessories, and ceiling compatibility; include model number nomenclature clearly marked with all proposed features.
 - 1. LED Luminaires:
 - a. Include estimated useful life, calculated based on IES LM-80 test data.
- B. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- C. Operation and Maintenance Data: Instructions for each product including information on replacement parts.

1.06 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.

1.07 DELIVERY, STORAGE, AND PROTECTION

- A. Receive, handle, and store products according to NECA/IESNA 500 (commercial lighting), NECA/IESNA 502 (industrial lighting), and manufacturer's written instructions.
- B. Keep products in original manufacturer's packaging and protect from damage until ready for installation.

1.08 FIELD CONDITIONS

- A. Maintain field conditions within manufacturer's required service conditions during and after installation.

1.09 WARRANTY

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.
- B. Provide 3-year manufacturer warranty for LED luminaires, including drivers.
- C. Provide 5-year pro-rata warranty for batteries for emergency lighting units.

PART 2 PRODUCTS

2.01 LUMINAIRE TYPES

- A. Furnish products as indicated in luminaire schedule included on the drawings.

2.02 LUMINAIRES

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products that are listed and labeled as complying with UL 1598, where applicable.
- C. Provide products listed, classified, and labeled as suitable for the purpose intended.
- D. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.
- E. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, supports, trims, accessories, etc. as necessary for a complete operating system.
- F. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.
- G. Recessed Luminaires:
 - 1. Ceiling Compatibility: Comply with NEMA LE 4.
- H. LED Luminaires:
 - 1. Components: UL 8750 recognized or listed as applicable.
 - 2. Tested in accordance with IES LM-79 and IES LM-80.

3. LED Estimated Useful Life: Minimum of 50,000 hours at 70 percent lumen maintenance, calculated based on IES LM-80 test data.
- I. Luminaires Mounted in Continuous Rows: Provide quantity of units required for length indicated, with all accessories required for joining and aligning.

2.03 EMERGENCY LIGHTING UNITS

- A. Description: Emergency lighting units complying with NFPA 101 and all applicable state and local codes, and listed and labeled as complying with UL 924.
- B. Operation: Upon interruption of normal power source or brownout condition exceeding 20 percent voltage drop from nominal, solid-state control automatically switches connected lamps to integral battery power for minimum of 90 minutes of rated emergency illumination, and automatically recharges battery upon restoration of normal power source.
- C. Battery:
 1. Size battery to supply all connected lamps, including emergency remote heads where indicated.
- D. Diagnostics: Provide power status indicator light and accessible integral test switch to manually activate emergency operation.
- E. Provide low-voltage disconnect to prevent battery damage from deep discharge.
- F. Self-Diagnostics: Provide units that self-monitor functionality and automatically perform testing required by NFPA 101 where indicated; provide indicator light(s) to report test and diagnostic status.

2.04 EXIT SIGNS

- A. Description: Exit signs complying with NFPA 101 and applicable state and local codes, and listed and labeled as complying with UL 924.
 1. Number of Faces: Single- or double-face as indicated or as required for installed location.
 2. Directional Arrows: As indicated or as required for installed location.

2.05 BALLASTS AND DRIVERS

- A. Ballasts/Drivers - General Requirements:
 1. Provide ballasts containing no polychlorinated biphenyls (PCBs).
 2. Minimum Efficiency/Efficacy: Provide ballasts complying with all current applicable federal and state ballast efficiency/efficacy standards.
- B. Dimmable LED Drivers:
 1. Dimming Range: Continuous dimming from 100 percent to five percent relative light output unless dimming capability to lower level is indicated, without flicker.
 2. Control Compatibility: Fully compatible with the dimming controls to be installed.
 - a. Wall Dimmers: See Section 262726.
 - b. Daylighting Controls: See Section 260923.

2.06 ACCESSORIES

- A. Provide accessory plaster frames for luminaires recessed in plaster ceilings.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate conductors in accordance with NFPA 70.
- C. Verify that suitable support frames are installed where required.
- D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to luminaires.
- E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

- A. Coordinate locations of outlet boxes provided under Section 260533.16 as required for installation of luminaires provided under this section.
- B. Perform work in accordance with NECA 1 (general workmanship).
- C. Install products in accordance with manufacturer's instructions.
- D. Install luminaires securely, in a neat and workmanlike manner, as specified in NECA 500 (commercial lighting) and NECA 502 (industrial lighting).
- E. Provide required support and attachment in accordance with Section 260529.
- F. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.
- G. Suspended Ceiling Mounted Luminaires:
 - 1. Do not use ceiling tiles to bear weight of luminaires.
 - 2. Do not use ceiling support system to bear weight of luminaires unless ceiling support system is certified as suitable to do so.
 - 3. Secure pendant-mounted luminaires to building structure.
 - 4. Secure lay-in luminaires to ceiling support channels using listed safety clips at four corners.
 - 5. See appropriate Division 9 section where suspended grid ceiling is specified for additional requirements.
- H. Recessed Luminaires:
 - 1. Install trims tight to mounting surface with no visible light leakage.
- I. Suspended Luminaires:
 - 1. Install using the suspension method indicated, with support lengths and accessories as required for specified mounting height.
- J. Wall-Mounted Luminaires: Unless otherwise indicated, specified mounting heights are to center of luminaire.
- K. Install accessories furnished with each luminaire.
- L. Bond products and metal accessories to branch circuit equipment grounding conductor.
- M. Emergency Lighting Units:
 - 1. Unless otherwise indicated, connect unit to unswitched power from same circuit feeding normal lighting in same room or area. Bypass local switches, contactors, or other lighting controls.
- N. Exit Signs:
 - 1. Unless otherwise indicated, connect unit to unswitched power from same circuit feeding normal lighting in same room or area. Bypass local switches, contactors, or other lighting controls.
- O. Install lamps in each luminaire.

3.04 FIELD QUALITY CONTROL

- A. See Section 014000 - Quality Requirements, for additional requirements.
- B. Inspect each product for damage and defects.
- C. Operate each luminaire after installation and connection to verify proper operation.
- D. Test self-powered exit signs, emergency lighting units, and fluorescent emergency power supply units to verify proper operation upon loss of normal power supply.

- E. Correct wiring deficiencies and repair or replace damaged or defective products. Repair or replace excessively noisy ballasts as determined by Architect.

3.05 ADJUSTING

- A. Aim and position adjustable luminaires to achieve desired illumination as indicated or as directed by Architect. Secure locking fittings in place.
- B. Aim and position adjustable emergency lighting unit lamps to achieve optimum illumination of egress path as required or as directed by Architect or authority having jurisdiction.
- C. Exit Signs with Field-Selectable Directional Arrows: Set as indicated or as required to properly designate egress path as directed by Architect or authority having jurisdiction.

3.06 CLEANING

- A. Clean surfaces according to NECA 500 (commercial lighting), NECA 502 (industrial lighting), and manufacturer's instructions to remove dirt, fingerprints, paint, or other foreign material and restore finishes to match original factory finish.

3.07 PROTECTION

- A. Protect installed luminaires from subsequent construction operations.

END OF SECTION

**SECTION 284600
FIRE DETECTION AND ALARM**

PART 2 PRODUCTS

1.01 FIRE ALARM SYSTEM

- A. Fire Alarm System: Provide a new automatic fire detection and alarm system:
 - 1. Provide all components necessary, regardless of whether shown in Contract Documents or not.
 - 2. Protected Premises: Entire building shown on drawings.
 - 3. Comply with the following; where requirements conflict, order of precedence of requirements is as listed:
 - a. ADA Standards.
 - b. The requirements of the local authority having jurisdiction , which is [_____].
 - c. Applicable local codes.
 - d. Contract Documents (drawings and specifications).
 - e. NFPA 72; where the word "should" is used consider that provision mandatory; where conflicts between requirements require deviation from NFPA 72, identify deviations clearly on design documents.
 - 4. Evacuation Alarm: Multiple smoke zones; allow for evacuation notification of any individual zone or combination of zones, in addition to general evacuation of entire premises.
 - 5. Voice Notification: Provide emergency voice/alarm communications with multichannel capability; digital.
 - 6. General Evacuation Zones: Each smoke zone is considered a general evacuation zone unless otherwise indicated, with alarm notification in all zones on the same floor, on the floor above, and the floor below.
 - 7. Program notification zones and voice messages as directed by Owner.
 - 8. Fire Command Center: Location indicated on drawings.
 - 9. Fire Alarm Control Unit: New, located at fire command center.
- B. Supervising Stations and Fire Department Connections:
 - 1. Public Fire Department Notification: By on-premises supervising station.
 - 2. On-Premises Supervising Station: Existing proprietary station operated by Owner, located at [_____].
 - 3. Means of Transmission to On-Premises Supervising Station: Directly connected noncoded system.
- C. Circuits:
 - 1. Initiating Device Circuits (IDC): Class B, Style A.
 - 2. Signaling Line Circuits (SLC) Within Single Building: Class B, Style 0.5.
 - 3. Notification Appliance Circuits (NAC): Class B, Style W.
- D. Power Sources:
 - 1. Primary: Dedicated branch circuits of the facility power distribution system.
 - 2. Secondary: Storage batteries.
 - 3. Capacity: Sufficient to operate entire system for period specified by NFPA 72.
 - 4. Each Computer System: Provide uninterruptible power supply (UPS).

1.02 FIRE SAFETY SYSTEMS INTERFACES

- A. Supervision: Provide supervisory signals in accordance with NFPA 72 for the following:
- B. Alarm: Provide alarm initiation in accordance with NFPA 72 for the following:

1.03 COMPONENTS

- A. General:
 - 1. Provide flush mounted units where installed in finish areas; in unfinished areas, surface mounted unit are acceptable.

2. Provide legible, permanent labels for each control device, using identification used in operation and maintenance data.
- B. Fire Alarm Control Units: Analog, addressable type; listed, classified, and labeled as suitable for the purpose intended.
 - C. Master Control Unit: [_____].
 - D. Initiating Devices:
 1. Addressable Systems:
 - a. Addressable Devices: Individually identifiable by addressable fire alarm control unit.
 - b. Provide suitable addressable interface modules as indicated or as required for connection to conventional (non-addressable) devices and other components that provide a dry closure output.
 - E. Notification Appliances:
 - F. Circuit Conductors: Copper or optical fiber; provide 200 feet (60 m) extra; color code and label.
 - G. Surge Protection: In accordance with IEEE C62.41.2 category B combination waveform and NFPA 70; except for optical fiber conductors.
 - H. Locks and Keys: Deliver keys to Owner.
 - I. Instruction Charts: Printed instruction chart for operators, showing steps to be taken when a signal is received (normal, alarm, supervisory, and trouble); easily readable from normal operator's station.
 1. Frame: Stainless steel or aluminum with polycarbonate or glass cover.
 2. Provide one for each control unit where operations are to be performed.
 3. Obtain approval of Owner prior to mounting; mount in location acceptable to Owner.
 4. Provide extra copy with operation and maintenance data submittal.

END OF SECTION

ROSCOE HALL STUDENT SERVICES INTERIOR RENOVATION

2000 PENNINGTON ROAD

EWING, NJ 08628

ISSUED FOR BID: MARCH 02, 2023



One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia, PA 19103 U.S.A.
norrr.com

CLIENT:
THE COLLEGE OF NEW JERSEY
2000 PENNINGTON ROAD
EWING, NJ

PROJECT TEAM
NORR
One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia, PA 19103
norrr.com

SHEN MILSON & WILKE
75 MADISON AVE
NEW YORK, NY 10016

TCNJ - ROSCOE HALL STUDENT SERVICES RENOVATION
2000 PENNINGTON ROAD EWING, NJ
THE COLLEGE OF NEW JERSEY

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PROJECT NUMBER: **22031600**
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SHEET TITLE:
COVER SHEET

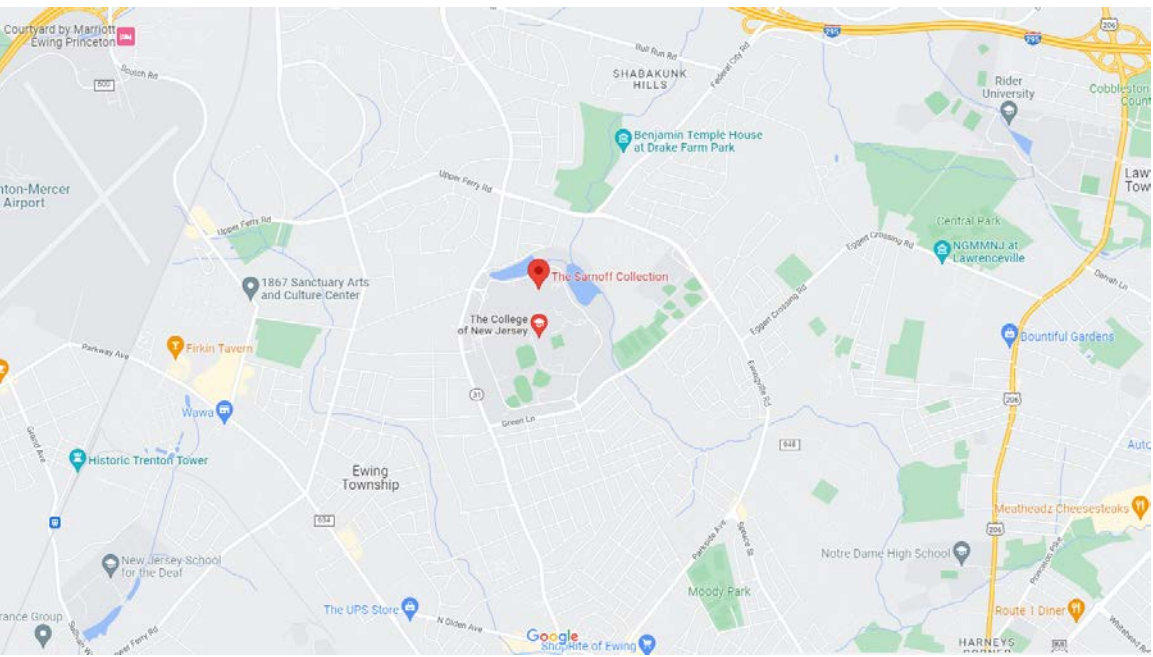
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G000

ABBREVIATIONS

NOTE: ABBREVIATIONS ARE GENERAL AND MAY NOT BE APPLICABLE TO THIS PROJECT.
ABBREVIATIONS IN DRAWINGS MAY OR MAY NOT USE PERIODS.

(M)	MODIFIED	KIT	KITCHEN
(N)	NEW CONSTRUCTION	KO	KNOCKOUT
(E)	EXISTING CONSTRUCTION		
(S)	SURPLUS	LAM	LAMINATE
(R)	RELOCATED EQUIPMENT	LAV	LAVATORY
@	AT	LBS	POUNDS
CF	CENTERLINE	LF	LINEAR FEET
Ø	DIAMETER OR ROUND	LP	LOW POINT
		LSF	LINOLEUM SHEET FLOORING
		LTF	LINOLEUM TILE FLOORING
AB	ANCHOR BOLT OR AIR BARRIER		
ABV	ABOVE	MAS	MASONRY
AC	AIR CONDITIONING	MAX	MAXIMUM
ACT	ACOUSTICAL CEILING TILE	MECH	MECHANICAL
ADA	AMERICANS WITH DISABILITIES ACT	MFR	MANUFACTURER
AFF	ABOVE FINISH FLOOR	MH	MANHOLE
AFG	ABOVE FINISH GRADE	MIN	MINIMUM
AL_ALUM	ALUMINUM	MIR	MIRROR
ALT	ALTERNATIVE	MISC	MISCELLANEOUS
APPROX	APPROXIMATE	MO	MASONRY OPENING
ARCH	ARCHITECTURAL	MP	METAL PANEL
AUTO	AUTOMATIC	MRD	METAL ROOF DECK
AVE	AVENUE OR AVERAGE	MTD	MOUNTED
		MTL	METAL
BB	BULLETIN BOARD	MWK	MILLWORK
BD	BOARD		
BLDG	BUILDING	N	NORTH OR NEUTRAL
BLK	BLOCK OR BLOCKING	NA	NOT APPLICABLE
BLVD	BOULEVARD	NE	NORTHEAST
BM	BEAM	NIC	NOT IN CONTRACT
BO	BOTTOM OF	NO.	NUMBER
BOD	BASIS-OF-DESIGN OR BOTTOM OF	NOM	NOMINAL
BOF	BOTTOM OF FRAMING	NR	NOT REQUIRED
BOC	BASE OF CURB	NSF	NET SQUARE FEET
BOT	BOTTOM	NTS	NOT TO SCALE
BEG	BEARING	NW	NORTHWEST
BTWN	BETWEEN		
BU	BUILT-UP	OC	ON CENTER OR OVER CENTER
		OD	OUTSIDE DIAMETER
CAB	CABINET	O/H, OH	OVERHEAD
CC	CENTER TO CENTER	OPG	OPENING
CEM	CEMENT	OPH	OPPOSITE HAND
CFM	CUBIC FEET PER MINUTE	OPP	OPPOSITE
CFL	COUNTER FLASHING OR COMPACT FLUORESCENT LAMP	OSA	OUTSIDE AIR
CG	CORNER GUARD	OSB	ORIENTED STRAND BOARD
CGT	CEILING HEIGHT	OTB	OUT TO BID
CH	CASHT IN PLACE	P	POLE
CJ	CONTROL JOINT OR	PC	PHOTO-CELL LIGHTING
		PEF	POURED EPOXY FLOORING
CL	CONSTRUCTION JOINT	PFT	PORCELAIN FLOOR TILE
CL	CENTERLINE	PH	PHASE AND PHARMACY
CLG	CEILING	PH, PL	PROPERTY LINE
CLR	CLEAR	PL	PLATE
CMU	CONCRETE MASONRY UNIT	PLM	PLASTIC LAMINATE
CMP	CORRUGATED METAL PIPE	PLUMB	PLUMBING
CO	CONCRETE OPENING AND CLEAN-OUT	PND	PLYWOOD PANEL
COL	COLUMN	PNL	PANEL
CONC	CONCRETE	PROP	PROPOSED
CONT	CONTINUOUS	PSF	POUNDS PER SQUARE FOOT
CORR	CORRIDOR	PSI	POUNDS PER SQUARE INCH
CPT	CARPET	PT	PAINT OR PAINTED
CT	CERAMIC TILE	PTD	PAPER TOWEL DISPENSER OR
CW	CURTAIN WALL	PTFR	PAINTED PRESSURE TREATED FIRE RESISTIVE
CWT	CERAMIC WALL TILE	PVC	POLYVINYL CHLORIDE
		PVMT	PAVEMENT
DBL	DOUBLE	QSM	QUARTZ SURFACE MATERIAL
DEDTL	DETAIL	OT	QUARRY TILE
DEPT	DEPARTMENT	QTY	QUANTITY
DF	DRINKING FOUNTAIN		
DIA	DIAMETER	R	RADIUS
DN	DOWN	RA	RETURN AIR OR RELIEVING ANGLE
DWG	DRAWING	RD	ROAD, ROUND OR ROOF DRAIN
E	EAST	RE	REFERENCE, REFER TO
EA	EACH	REFR	REFRIGERATION OR REFRIGERATOR
EB	EXPANSION BOLT	REINFR	REINFORCEMENT
EFS	EXTERIOR INSULATION FINISH SYSTEM	REQ'D	REQUIRED
EJ	EXPANSION JOINT	REQ	REQUIRED REVISION
EL	ELEVATION	RF	RUBBER FLOORING
ELEC	ELECTRIC OR ELECTRICAL	RHF	ROUGH FLOORING
EP	ELECTRICAL PANELBOARD	ROW	RIGHT OF WAY
EST	ESTIMATE OR ESTIMATED	RM	ROOM
EQ	EQUAL OR EQUIVALENT	RO	ROUGH OPENING
EQUIP	EQUIPMENT	RVS	REVERSE (SIDE)
EW	EACH WAY	S	SOUTH
EWC	ELECTRIC WATER COOLER	SA	SUPPLY AIR
EXH	EXHAUST	SAN	SANITARY SEWER
EXP	EXPANSION	SC	SOLID CORE
EXT	EXTERIOR	SCD	SEAT COVER DISPENSER
FA	FIRE ALARM	SCHED	SCHEDULE
FD	FLOOR DRAIN	SD	SMOKE DETECTOR, SOAP DISPENSER AND STORM DRAIN SEALANT
FDN	FOUNDATION	SEAL	SEALANT
FDC	FIRE DEPARTMENT CONNECTION	SECT/SEC	SECTION
FE	FIRE EXTINGUISHER	SECT	SECTION
FEC	FIRE EXTINGUISHER CABINET	SF	SQUARE FOOT/FEET
FFE	FINISH FLOOR ELEVATION	SFRM	SPRAYED FIRE-RESISTIVE MATERIAL
FFL	FINISH FLOOR LEVEL	SE	SOUTH/EAST
FH	FIRE HYDRANT	SHR	SHOWER
FHC	FIRE HOSE CABINET	SHT	SHEET
FNC	FINISH (ED)	SHTG	SHOOTING
FLR	FLOOR (ING)	SHR	SHOWER
F.O.C.	FACE OF CURB/CONCRETE	SIM	SIMILAR
F.O.F.	FACE OF FINISH	SK	SKETCH
F.O.M.	FACE OF MASONRY	SL	SLOPE
F.O.S.	FACE OF STUDS	SND	SANITARY NAPKIN DISPENSER
F.O.T.	FACE OF TREAD	SNR	SANITARY NAPKIN RECEPTACLE
FPHW	FROST-PROOF WALL HYDRANT	SPEC	SPECIFICATION
FRP	FIBER REINFORCED PLASTIC	SQ	SQUARE
FRT	FIRE-RETARDANT TREATED WOOD	SS	SANITARY SEWER, STAINLESS STEEL
FRTW	FIRE SERVICE	SSM	SOLID SURFACE MATERIAL
FS,F	FOOT OR FEET	SST	STAINLESS STEEL
FTG	FOOTING	SSWC	STAINLESS STEEL WALL CLADDING
FURR	FURRING	ST	STREET
FWP	FABRIC WALL PANEL	STA	STATION
		STD	STANDARD
G	GROUND AND NATURAL GAS	STL	STEEL
GA	GAUGE	STRUC	STRUCTURAL
GAL	GALLON	SUSP	SUSPENDED
GALV	GALVANIZED	SW	SOUTHWEST
GB	GRAB BAR	SYM	SYMMETRICAL
GC	GENERAL CONTRACTOR	T	TREAD AND TRANSFORMER
GFI,GFCI	GROUND FAULT CIRCUIT INTERRUPTER	TB	TOWEL BAR
GFR	GLASS FIBER REINFORCED CONCRETE	TC	TOP OF CURB
GFRG	GLASS FIBER REINFORCED GYPSUM	T&G	TONGUE & GROOVE
GL	GALVANIZED IRON (STEEL)	TD	TOP OF DRAIN
GLB	GLUE-LAM BEAM	TEL	TELEPHONE
GND	GROUND	TEMP	TEMPERATURE
GSF	GROSS SQUARE FEET	TG	TEMPERED GLASS
GWB	GYPSUM WALL BOARD	THK	THICKNESS
GWT	GLASS WALL TILE	THRS	THRESHOLD
		TO	TOP OF
HC	HANDICAPPED	TOC	TOP OF CURB/CONCRETE OR TABLE OF CONTENTS
HD	HIGH DENSITY	TOD	TOP OF DECK
HM	HOLLOW METAL	TOF	TOP OF FRAMING
HORIZ	HORIZONTAL	TOM	TOP OF MASONRY
HP	HIGH POINT AND HORSEPOWER	TOP	TOP OF PAVEMENT/PARAPET
HR	HOOR	TOS	TOP OF SLAB
HT	HEIGHT	TOW	TOP OF WALL
HVAC	HEATING VENTILATING AND AIR CONDITIONING	TPD	TOILET PAPER DISPENSER
		TS	TUBE STEEL AND TEMP SENSOR
ID	INSIDE DIAMETER	TYP	TYPICAL
IE	INVERT ELEVATION	UDL	UNIFORM DISTRIBUTED LOAD
IG	ISOLATED GROUND	UF	UPHOLSTERY FABRIC
IGU	INSULATED GLAZING UNIT	UNO	UNLESS NOTED OTHERWISE
IN	INCH	UR	URINAL
INSUL	INSULATION	V	VOLTS AND VENT
INT	INTERIOR AND INTERCOM	VB	VAPOR BARRIER
INV	INVERT	V	VENTILATION
		VERT	VERTICAL
JAN	JANITOR	VEST	VESTIBULE
JC	JANITOR CLOSET	VIF	VERIFY IN FIELD
		VCT	VINYL COMPOSITION TILE
		VR	VENT RISER
		VTR	VENT THRU ROOF
		WVC	VINYL WALL COVERING
		W	WEST, WATTS AND WATER
		W/	WITH
		W/O	WITHOUT
		WB	WALL BASE
		WC	WATER CLOSET OR WALL COVERING
		WD	WOOD
		WGL	WIRE GLASS
		WOM	WALK OFF MAT
		WP	WATERPROOF OR WORK POINT
		WR	WASTE RECEPTACLE
		WRB	WEATHER-RESISTIVE BARRIER
		WT	WINDOW TREATMENT
		WV	WATER VALVE
		WVF	WELDED WIRE FABRIC

LOCATION PLAN



ARCHITECT, STRUCTURAL & MEP ENGINEER:

NORR GENERAL PARTNERSHIP
1617 JFK BLVD
PHILADELPHIA, PA 19103
CONTACT(S):
RAMON TURNER
TEL: 215.525.4849
FAX: 215.525.4852
RAMON.TURNER@NORR.COM

AVIT CONSULTANT:

SHEN MILSON & WILKE
75 MADISON AVENUE
NEW YORK, NY 10016
CONTACT(S):
ROBERT HADDID
TEL: 212.725.6800
EMAIL: RHADDAD@SMWLLC.COM

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REV.	DATE	DESCRIPTION
	2022.12.08	DESIGN DEVELOPMENT
	2023.01.20	CLIENT REVIEW
	2023.02.13	ISSUED FOR DCIA REVIEW
	2023.03.02	ISSUED FOR BID

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SHEET TITLE:
COVER SHEET

SHEET NUMBER:
G000

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REV	DATE	DESCRIPTION	ISSUED FOR	DATE	DESCRIPTION	ISSUED FOR
	2023 02 13	CLIENT REVIEW	ISSUED FOR			
	2023 02 13	ISSUED FOR	ISSUED FOR			
	2023 03 02	ISSUED FOR	ISSUED FOR			



One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia, PA 19103 U.S.A.
norr.com

CLIENT:
THE COLLEGE OF NEW JERSEY
2000 PENNINGTON ROAD
EWING, NJ

PROJECT TEAM

NORR
One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia PA 19102
norr.com

SHEN MILSON & WILKE
75 MADISON AVE
NEW YORK, NY 10016

TCNJ - ROSCOE HALL STUDENT SERVICES RENOVATION

2000 PENNINGTON ROAD EWING, NJ
THE COLLEGE OF NEW JERSEY

INDICA REF NUMBER:
PROJECT NUMBER: **22031600**
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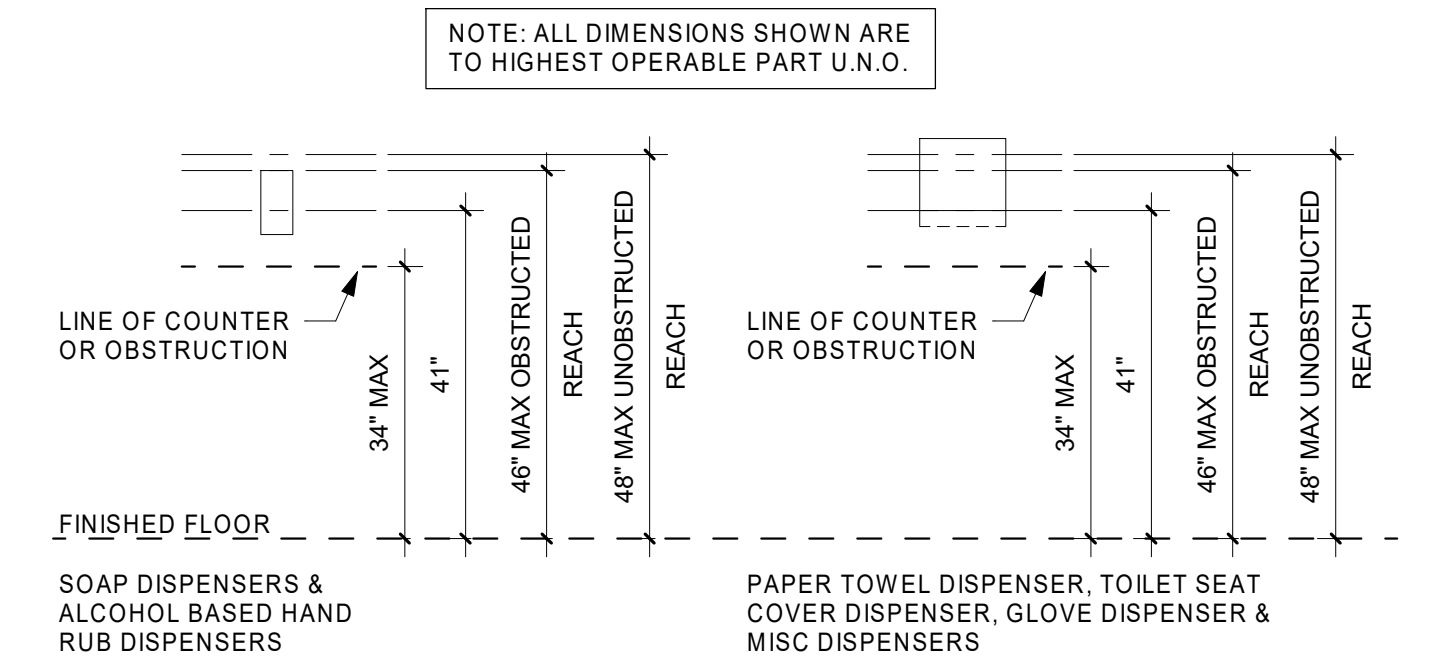
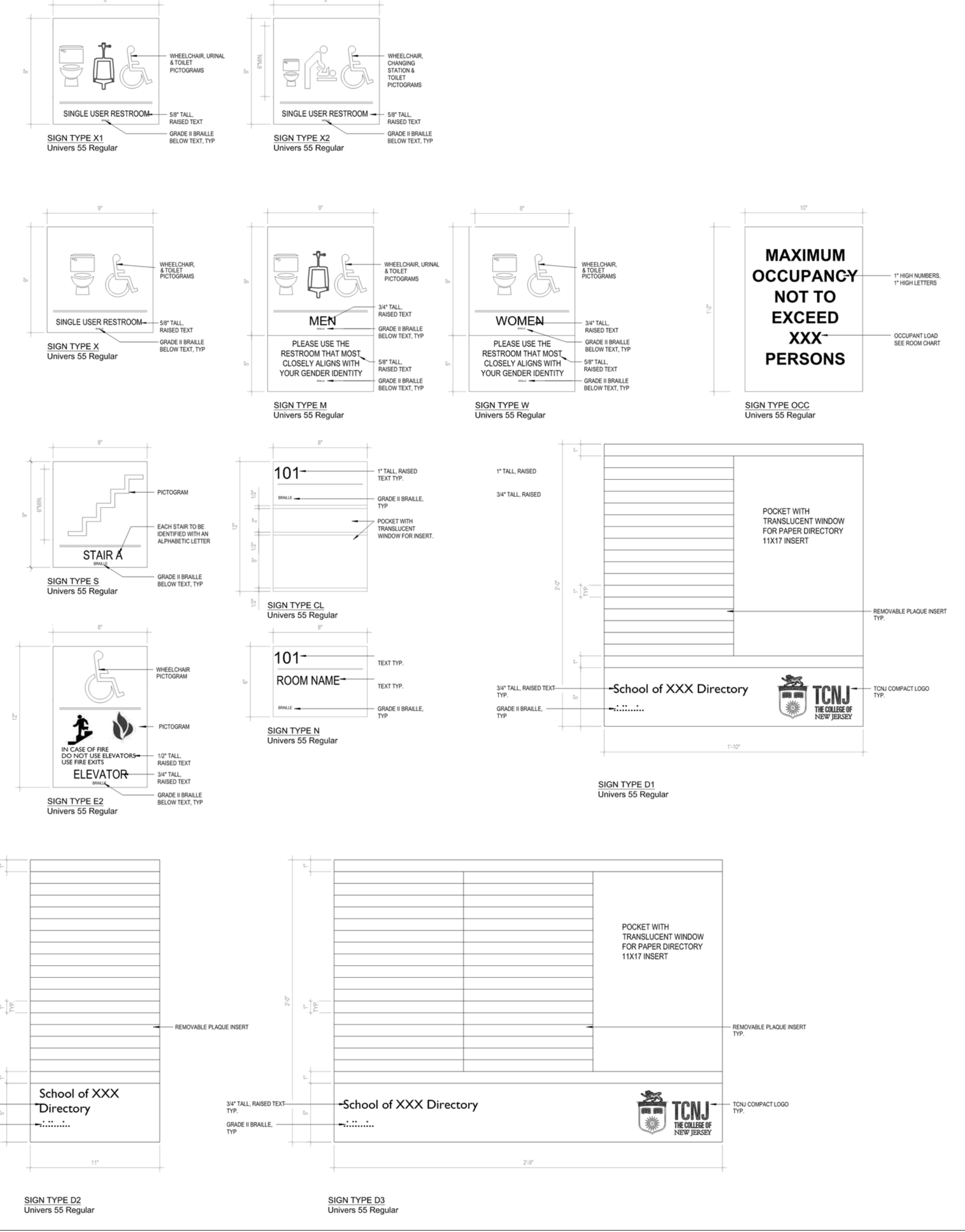
SHEET TITLE:
GENERAL REQUIREMENTS

SHEET NUMBER:
G001

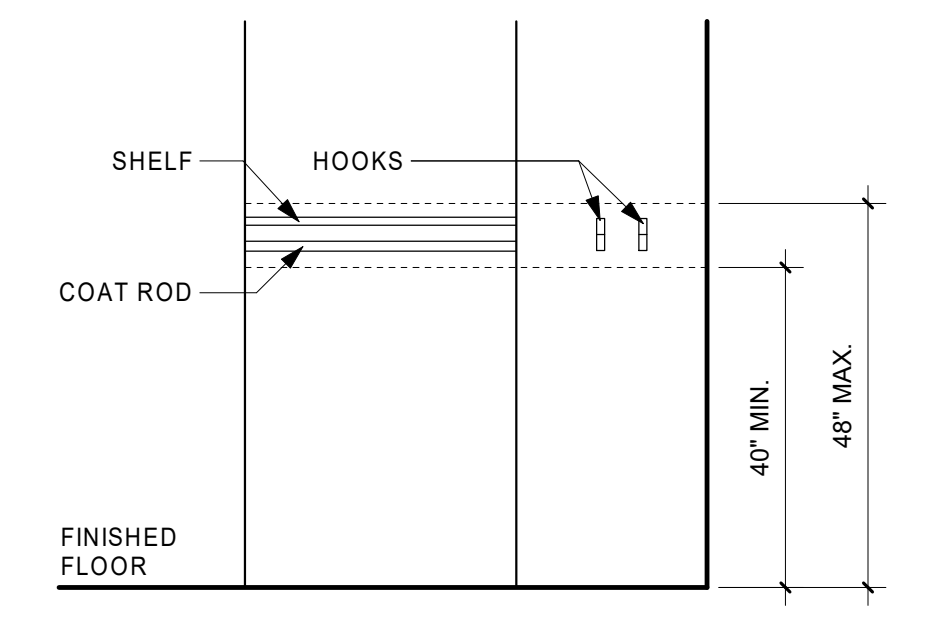
GENERAL NOTES

- ALL WORK UNDER THIS CONTRACT SHALL BE GOVERNED BY AIA DOCUMENT A201, GENERAL CONDITIONS OF THE CONTRACT, LATEST EDITION. **IF ANY CONFLICTS BETWEEN THESE DRAWINGS AND DOCUMENT A201 ARISE, THE MORE STRINGENT OF THE TWO REQUIREMENTS SHALL APPLY.**
- THE INTENT OF THE CONTRACT DOCUMENTS IS TO ALLOW FOR THE PERFORMANCE OF THE WORK. EVERY ITEM NECESSARILY REQUIRED MAY NOT BE SPECIFICALLY MENTIONED OR SHOWN. UNLESS OTHERWISE INDICATED IN THE CONSTRUCTION DOCUMENTS AS BEING NOT IN CONTRACT (N.I.C., NIC) OR EXISTING, ALL SYSTEMS AND EQUIPMENT SHALL BE COMPLETED AND APPROPRIATELY OPERABLE. FURNISH AND INSTALL ALL SPECIFIED AND APPROPRIATE ITEMS, AND ALL INCIDENTAL, ACCESSORY, AND OTHER ITEMS NOT SPECIFIED BUT REQUIRED FOR A COMPLETE AND FINISHED ASSEMBLY.
- NO WORK DEFECTIVE IN WORKMANSHIP OR QUALITY OR DEFICIENT IN ANY REQUIREMENTS OF THE CONTRACT DOCUMENTS WILL BE ACCEPTABLE. **WHETHER OR NOT THE ARCHITECT DISCOVERS OR POINTS OUT DEFECTS OR DEFICIENCIES DURING CONSTRUCTION, DEFECTIVE WORK REVEALED WITHIN THE TIME REQUIRED BY WARRANTIES SHALL BE REPLACED BY WORK CONFORMING WITH THE INTENT OF THE CONTRACT.** NO PAYMENT, EITHER PARTIAL OR FINAL, SHALL BE CONSTRUED AS AN ACCEPTANCE OF DEFECTIVE WORK OR IMPROPER MATERIALS.
- IT IS INTENDED THAT THE CONTRACTOR PROVIDE A COMPLETE JOB AND ANY OMISSIONS IN THESE NOTES OR IN THE OUTLINE OF WORK SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR OF SUCH RESPONSIBILITIES IMPLIED BY THE SCOPE OF WORK, EXCEPT FOR ITEMS SPECIFICALLY NOTED.
- SHOULD ANY PORTION OF THE CONTRACT DOCUMENTS PROVE TO BE UNENFORCEABLE FOR WHATEVER REASON, SUCH UNENFORCEABILITY SHALL NOT EXTEND TO THE REMAINDER OF THE CONTRACT NOR SHALL IT VOID ANY OTHER PROVISIONS OF THE CONTRACT.
- THROUGHOUT THE DURATION OF THE PROJECT, THE CONTRACTOR SHALL REFRAIN FROM ACTIONS THAT COULD LEAD TO THE FILING OF CLAIMS OF LIEN BY SUBCONTRACTORS, SUPPLIERS OF MATERIALS, LABOR, SERVICE, EQUIPMENT OR ANY OTHER INDIVIDUAL OR COMPANY SO ENTITLED UNDER GOVERNING LAWS AND REGULATIONS UNLESS REASONABLE AND JUSTIFIABLE CAUSE CAN BE SHOWN. APPROVAL FOR PAYMENT SHALL BE CONTINGENT UPON THE CONTRACTOR'S OBTAINING AND FURNISHING TO THE OWNER SIGNED RELEASES FROM SUCH INDIVIDUALS OR COMPANIES.
- THE CONTRACTOR IS RESPONSIBLE FOR CHECKING CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS FOR ACCURACY AND CONFIRMING THAT WORK IS BUILDABLE AS SHOWN BEFORE PROCEEDING WITH CONSTRUCTION. IF THERE ARE ANY QUESTIONS REGARDING THESE OR OTHER COORDINATION ISSUES, THE CONTRACTOR SHALL SUBMIT THEM, IN WRITING, TO THE ARCHITECT AND IS RESPONSIBLE FOR OBTAINING A WRITTEN CLARIFICATION FROM THE ARCHITECT BEFORE PROCEEDING WITH WORK OR RELATED WORK.
- IN THE EVENT OF DISCREPANCIES BETWEEN ANY DRAWINGS AND/OR SPECIFICATIONS, THE MORE COSTLY AND/OR MORE RESTRICTIVE CONDITION SHALL BE DEEMED THE CONTRACT REQUIREMENT, UNLESS OTHERWISE STATED IN WRITING FROM THE OWNER.
- EXECUTE WORK IN ACCORDANCE WITH ANY AND ALL APPLICABLE LOCAL, STATE, AND FEDERAL CODES, MANUFACTURER'S RECOMMENDATIONS, TRADE AND REFERENCED STANDARDS INCLUDING BUT NOT LIMITED TO, NEC, NFPA, ASTM, ASHRAE, LATEST ADOPTED EDITIONS. THESE SHALL SUPERCEDE DRAWINGS, NOTES AND DIMENSIONS IN ALL CASES. THE ARCHITECT SHALL BE NOTIFIED OF SUCH CHANGES BEFORE WORK IS STARTED. OBTAIN PERMITS BEFORE STARTING WORK, AND OBTAIN APPROVALS OF ALL REGULATORY AGENCIES UPON COMPLETION, AND AS REQUIRED.
- THE GENERAL CONTRACTOR IS RESPONSIBLE FOR PAYING FOR AND OBTAINING ALL PERMITS, INSPECTIONS, REQUIRED TESTS AND UTILITY CONNECTIONS UNLESS OTHERWISE NOTED.
- DO NOT SCALE DRAWINGS; DIMENSIONS SHALL GOVERN. DETAILS SHALL GOVERN OVER PLANS AND ELEVATIONS. LARGE SCALE DETAILS SHALL GOVERN OVER SMALL SCALE DETAILS. WRITTEN SPECIFICATIONS SHALL GOVERN OVER ALL.
- CLARIFY ALL DISCREPANCIES AND QUESTIONS RELATIVE TO CONSTRUCTION DOCUMENTS, SPECIFICATIONS, AND FIELD CONDITIONS PRIOR TO SUBMITTING BIDS OR COMMENCING WORK. **BY SUBMITTING THEIR BID, THE CONTRACTOR ATTESTS THAT THEY HAVE NO OPEN QUESTIONS RELATED TO THE CONSTRUCTION DOCUMENTS AND IS THEREFORE NOT ENTITLED TO ADDITIONAL COMPENSATION RELATED TO ANY ITEMS THEY DEEM TO BE UNCLEAR.**
- THERE SHALL BE NO SUBSTITUTION OF MATERIAL WHERE A MANUFACTURER IS SPECIFIED. WHERE THE TERM "OR EQUAL" IS USED, THE ARCHITECT ALONE SHALL DETERMINE EQUALITY BASED UPON INFORMATION SUBMITTED BY THE CONTRACTOR.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DISTRIBUTION OF DRAWINGS TO ALL TRADES UNDER THEIR JURISDICTION OR AUTHORITY.
- DO NOT PROCEED WITH ANY WORK REQUIRING ADDITIONAL COMPENSATION BEYOND THE CONTRACT AMOUNT WITHOUT WRITTEN AUTHORIZATION FROM THE OWNER. FAILURE TO OBTAIN AUTHORIZATION SHALL INVALIDATE ANY CLAIM FOR EXTRA COMPENSATION.
- ALL INSTALLED PLUMBING, MECHANICAL, AND ELECTRICAL EQUIPMENT SHALL OPERATE QUIETLY AND **FREE OF VIBRATION**.
- ALL MATERIALS SHALL BE NEW, UNUSED, AND OF THE **HIGHEST QUALITY IN EVERY RESPECT** UNLESS OTHERWISE NOTED. MANUFACTURED MATERIALS AND EQUIPMENT SHALL BE INSTALLED AS PER MANUFACTURER'S RECOMMENDATIONS AND INSTRUCTIONS, U.O.N.
- THE CONTRACTOR AND SUBCONTRACTORS SHALL PURCHASE AND MAINTAIN CERTIFICATIONS OF INSURANCE WITH RESPECT TO WORKERS COMPENSATION, PUBLIC LIABILITY AND PROPERTY DAMAGE FOR THE LIMITS AS REQUIRED BY LAW. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS IN CONNECTION WITH THE WORK.
- COORDINATE ALL WORK WITH BUILDING OWNER SO AS NOT TO DISTURB OR CAUSE DAMAGE TO ANY EXISTING AREAS IN THE BUILDING. AVOID CONFLICT WITH NORMAL BUILDING OPERATIONS BY COMPLYING WITH THE BUILDING'S REGULATIONS REGARDING SCHEDULING AND USE OF ELEVATORS AND LOADING FOR DELIVERIES, HANDLING OF MATERIALS, EQUIPMENT, AND DEBRIS.
- ANY WORK INVOLVING ALTERATIONS TO EXISTING BUILDING UTILITIES AND REQUIRING UTILITY SHUT DOWN SHALL BE COORDINATED WITH THE OWNER AND SHALL REQUIRE A MINIMUM OF (5) FIVE DAYS NOTICE. THIS WORK SHALL BE COMPLETED AT THE CONVENIENCE OF THE OWNER, ALLOWING ENOUGH TIME TO COORDINATE SCHEDULED SHUT DOWNS WITH BUILDING OCCUPANTS.
- VERIFY IN THE FIELD THAT NO CONFLICTS EXIST WHICH WOULD PROHIBIT THE LOCATION OF ANY AND ALL MECHANICAL, TELEPHONE, DATA, ELECTRICAL, LIGHTING, PLUMBING AND SPRINKLER EQUIPMENT (TO INCLUDE ALL REQUIRED PIPING, DUCTWORK AND CONDUIT) AND THAT ALL REQUIRED CLEARANCES FOR INSTALLATION AND MAINTENANCE OF ABOVE EQUIPMENT ARE PROVIDED.
- PROVIDE PROTECTION TO ALL EXISTING FINISHES IN ALL SPACES WITHIN OR ADJACENT TO THE SCOPE OF WORK AND THE OWNER'S SPACE. THE CONTRACTOR SHALL PATCH AND REPAIR ANY DAMAGE CAUSED BY HIM OR HIS SUBCONTRACTORS, AT CONTRACTOR'S EXPENSE. REFINISH TO MATCH EXISTING ADJACENT FINISH, OR AS NOTED HEREIN.
- CORRECT ANY DEFECTS FOUND IN EXISTING BUILDING CONSTRUCTION WHICH AFFECT THE SCOPE OF WORK. THIS INCLUDES BUT IS NOT LIMITED TO UNEVEN SURFACES AND FINISHES AT GYPSUM BOARD OR DAMAGED FIREPROOFING. PATCH AND REPAIR SURFACES TO MATCH ADJACENT AND ADJOINING SURFACES.
- "TYPICAL" OR "TYP" MEANS IDENTICAL FOR ALL SIMILAR CONDITIONS U.O.N.
- "SIMILAR" OR "SIM" MEANS COMPARABLE CHARACTERISTICS TO THE CONDITION NOTED. VERIFY DIMENSIONS AND ORIENTATION ON PLAN.
- "VERIFY" OR "VF" MEANS TO ASCERTAIN FIELD CONDITIONS AND CONFIRM APPLICATION WITH ARCHITECT.
- PROVIDE STRICT CONTROL OF JOB CLEANING AND PREVENT DUST AND DEBRIS FROM MIGRATING FROM CONSTRUCTION AREA.
- THE CONTRACTOR SHALL NOT CLOSE OR OBSTRUCT ANY STREETS, ALLEYS OR WALKS. NO MATERIAL SHALL BE PLACED OR STORED IN STREETS, ALLEYS OR WALKS. ALL DEBRIS IS TO BE REMOVED COMPLETELY FROM THE PREMISES.
- CONTRACTOR SHALL THOROUGHLY EXAMINE THE PREMISES AND SHALL BASE HIS BID ON THE EXISTING CONDITIONS, NOTWITHSTANDING ANY INFORMATION SHOWN OR NOT INDICATED ON THE CONTRACT DOCUMENTS.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE ARCHITECT OF ANY CONFLICTS HEREIN PRIOR TO THE START OF NEW WORK ON THAT ITEM OR BEAR THE RESPONSIBILITY OF CORRECTING SUCH WORK AS DIRECTED BY THE ARCHITECT.
- ALL DRAWINGS AND WRITTEN MATERIAL HEREIN CONSTITUTE THE ORIGINAL WORK OF THE ARCHITECT, AND THE SAME MAY NOT BE DUPLICATED, USED, OR DISCLOSED WITHOUT THE WRITTEN CONSENT OF THE ARCHITECT.
- THE ARCHITECT HAS NO RESPONSIBILITY FOR AND SHALL NOT BE HELD LIABLE FOR ANY ASBESTOS OR OTHER HAZARDOUS MATERIALS ON THE JOB SITE. ASBESTOS OR OTHER HAZARDOUS MATERIALS PRESENT AT THE JOB SITE MUST BE MITIGATED IN COMPLIANCE WITH APPLICABLE LAWS, CODES AND REGULATIONS BY THE OWNER.
- CONTRACTOR SHALL SUBMIT A DETAILED PROJECT SCHEDULE. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR CONSTRUCTION SEQUENCING, METHODS AND TECHNIQUES.
- AS REQUIRED BY CODE, EACH CONTRACTOR AND EACH SUBCONTRACTOR SHALL OBTAIN REQUIRED INSPECTION OF THAT PORTION OF WORK.
- THE CONTRACTOR SHALL CONFIRM AND SUBMIT ALL LEAD TIMES AND PROCUREMENT ISSUES FOR ALL MATERIALS INCLUDED IN THE DRAWINGS AND SPECIFICATIONS OR NECESSARY FOR THE COMPLETION OF THE WORK WITHIN TWO (2) WEEKS OF THE CONTRACT AWARD OR NOTICE TO PROCEED, WHICHEVER IS EARLIER.**
- THE CONTRACTOR SHALL AWARD ALL SUBCONTRACTS AND ENSURE THAT ALL SUBMITTALS ARE MADE WELL IN ADVANCE OF THE LEAD TIMES NECESSARY TO OBTAIN ALL MATERIALS. THE CONTRACTOR SHALL STRUCTURE THEIR SUBMITTAL SCHEDULE TO ALLOW FOR TWO REVISIONS OF EACH SUBMITTAL, ALLOWING THE ARCHITECT TEN (10) BUSINESS DAYS FOR EACH REVIEW. PRODUCT SUBSTITUTIONS WILL NOT BE ALLOWED DUE TO CONTRACTOR'S FAILURE TO AWARD SUBCONTRACTS, MAKE SUBMITTALS, OR ORDER MATERIALS IN A TIMELY MANNER. IN THE EVENT THAT SUCH A FAILURE BY THE CONTRACTOR RESULTS IN A SCHEDULE DELAY, THE CONTRACTOR SHALL ACCELERATE THE SCHEDULE AT THEIR OWN EXPENSE TO MAINTAIN THE SCHEDULED COMPLETION DATE.**

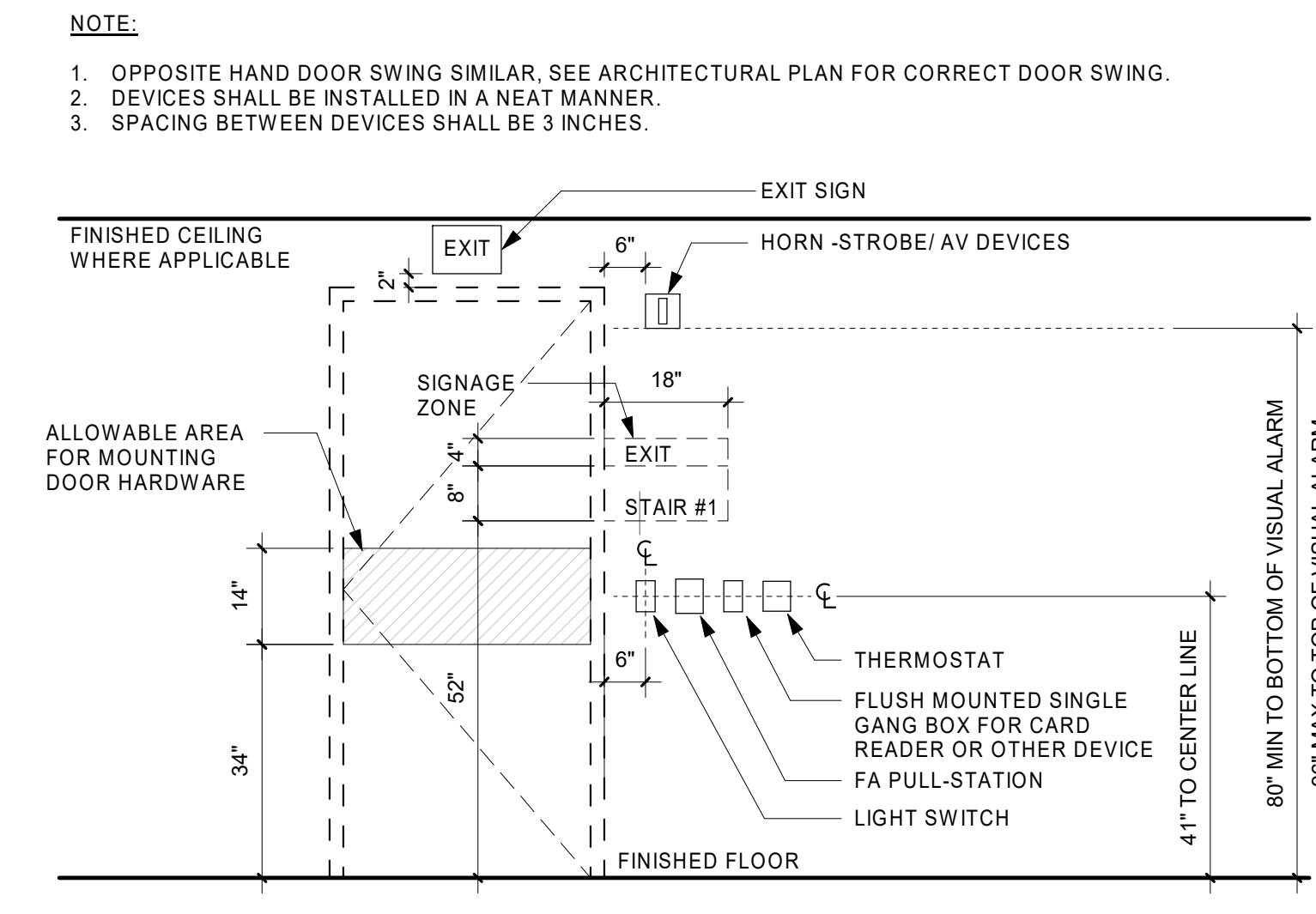
- NOTES:**
1. REFER TO **FINISH PLANS OR SIGNAGE PLANS** FOR SIGNAGE LOCATIONS.
 2. ALL SIGNS TO MEET REQUIREMENTS OF THE LATEST EDITION OF ADA STANDARDS, ANSI A117.1, AND IBC CHAPTER 11.
 3. ALL SIGNS TO BE PAINTED PLEXIGLASS BACKGROUND WITH 1/32" THICK RAISED VINYL CHARACTERS AND CONTRACTED (GRADE 2) DOMED RASTERIZED BRAILLE UNLESS OTHERWISE NOTED. BRAILLE CHARACTERS ARE TO CORRESPOND TO THE TEXT. CHARACTER AND BACKGROUND MATERIALS SHOULD HAVE A FLAT OR SATIN NON-GLARE FINISH.
 4. THE SIGNAGE VENDOR IS RESPONSIBLE FOR ALL GRAPHIC CONTENT AND DESIGN. DETAILED GRAPHICS ARE TO BE SUBMITTED TO THE ARCHITECT FOR APPROVAL.
 5. OWNER TO CONFIRM ALL PANTONE COLORS / SIGN TEXT / TEXT SIZE, SUBJECT TO CODE REQUIREMENTS.
 6. OWNER AND ARCHITECT TO APPROVE ALL SIGN MOUNTING LOCATIONS.
 7. INSTALL SIGNS WITH TOP EDGE OF SIGN 5'-0" ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED.



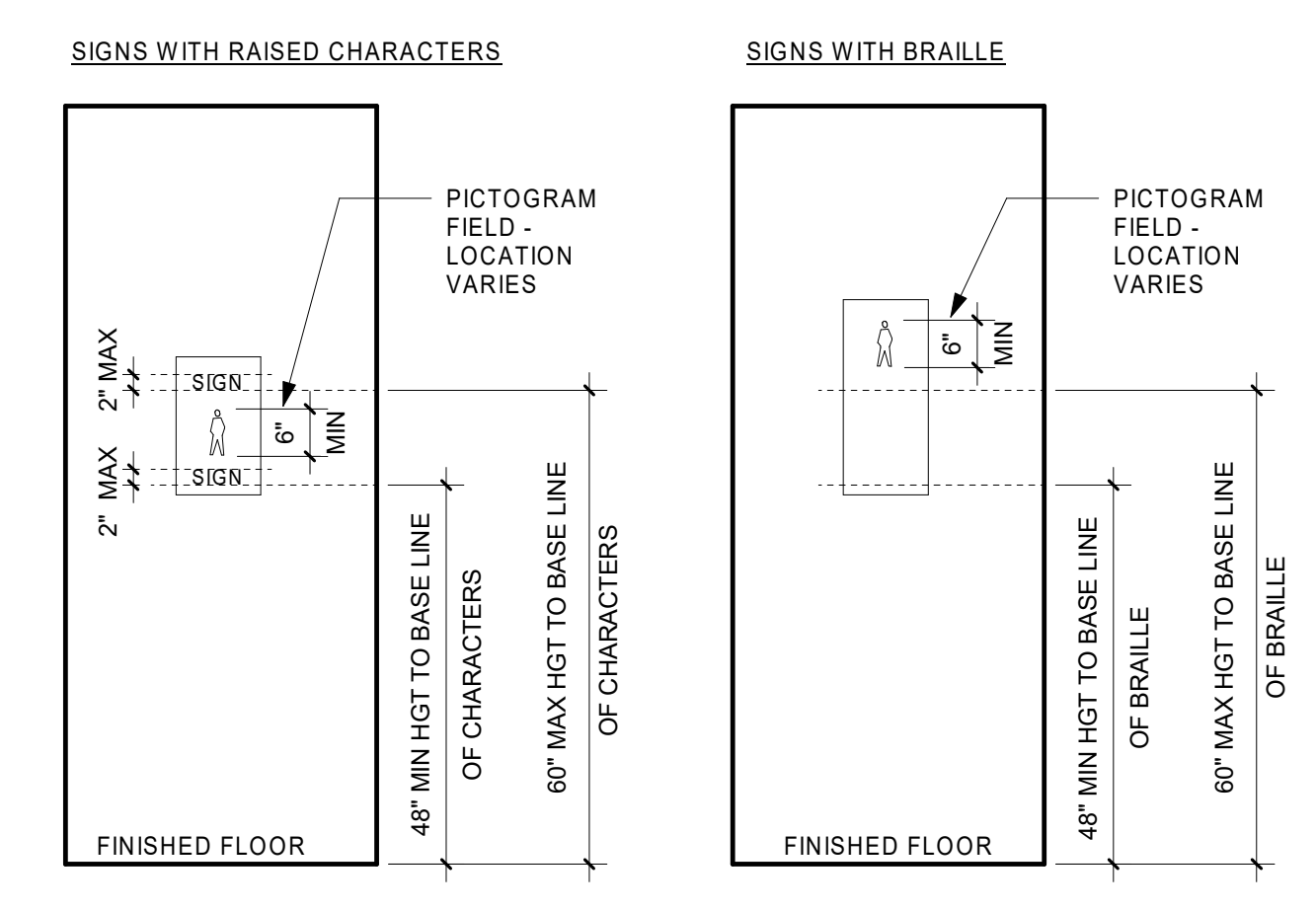
9 TYP MOUNTING LOCATIONS DISPENSERS
1/2" = 1'-0"



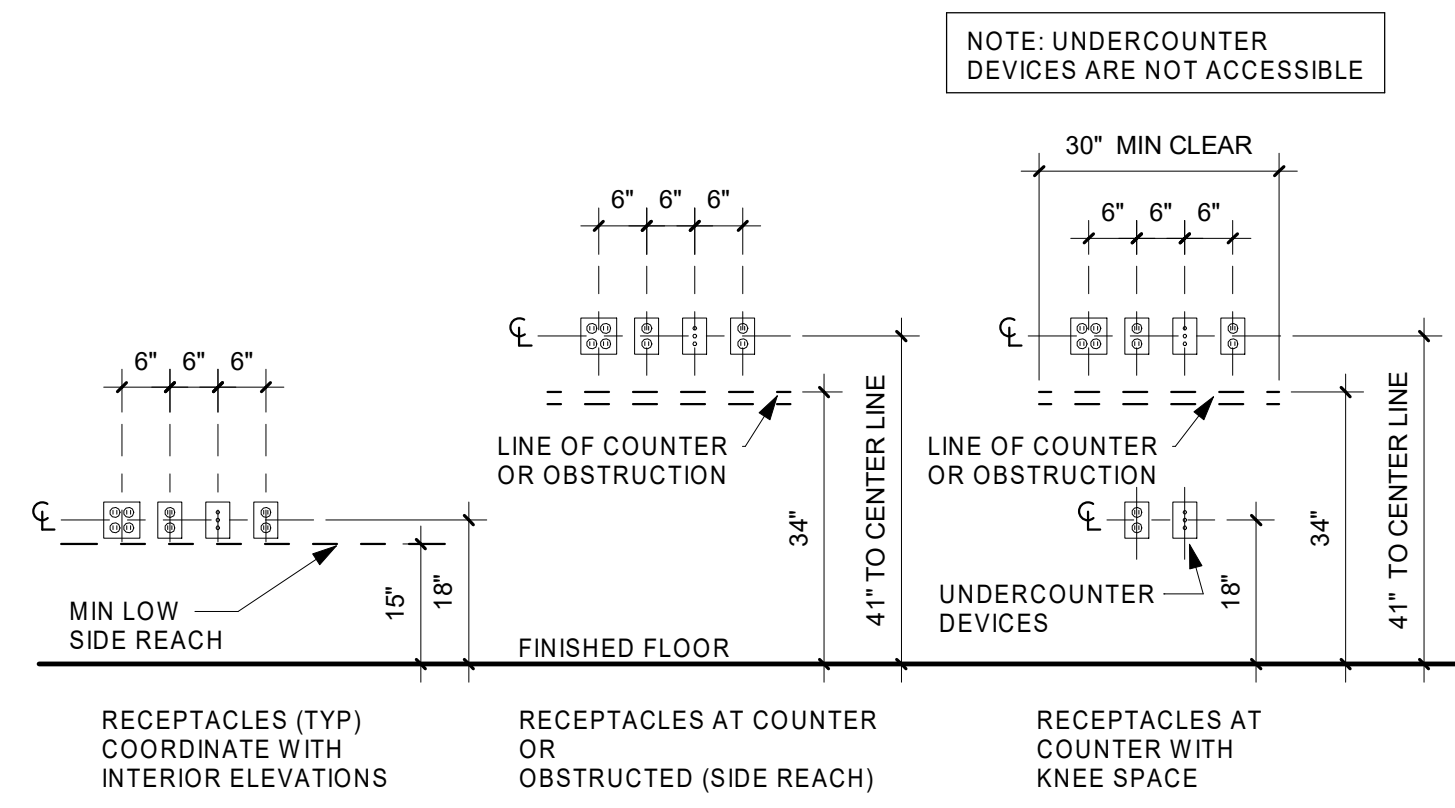
10 TYP SHELF & HOOK MOUNTING LOCATIONS
1/2" = 1'-0"



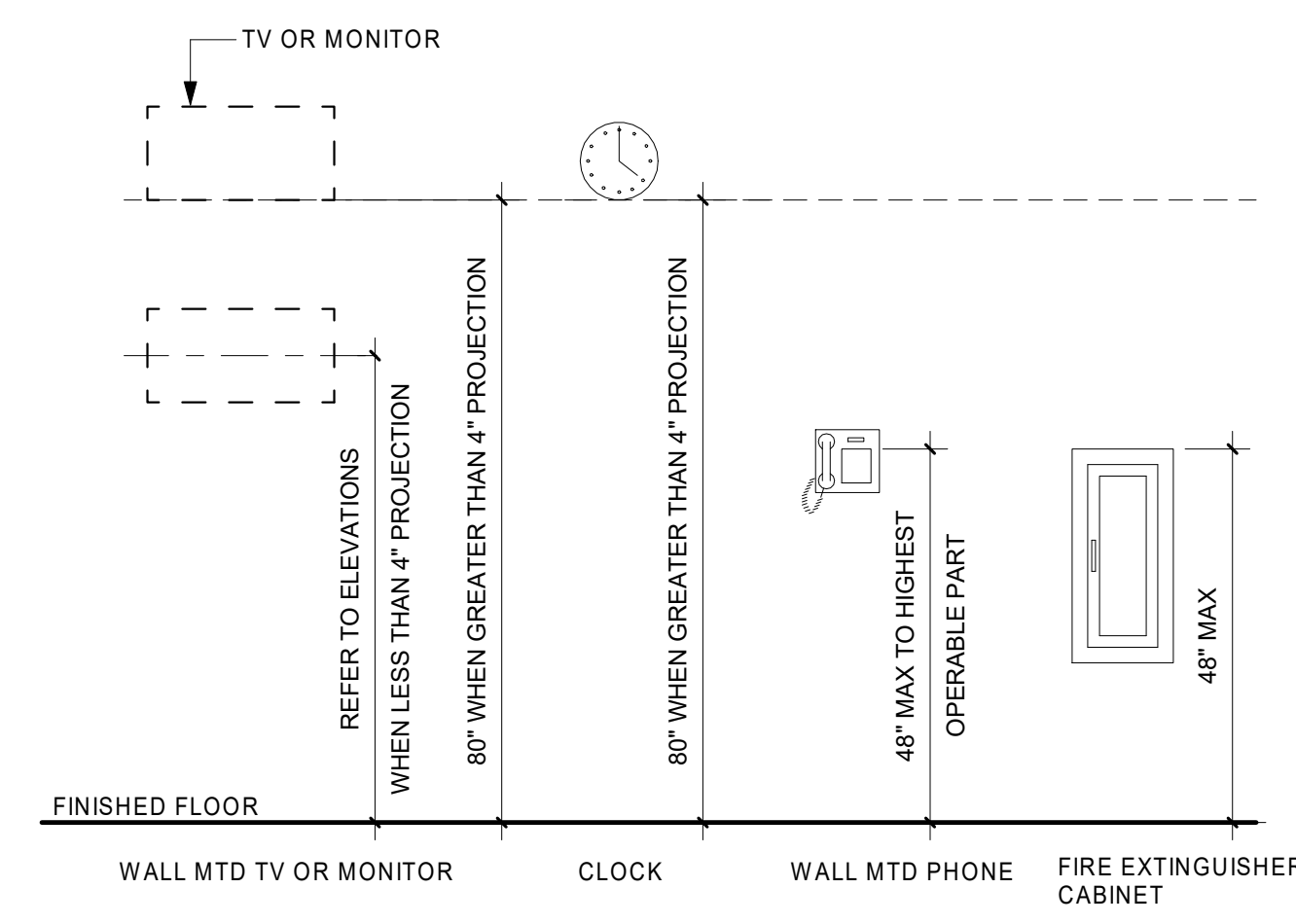
11 TYP MOUNTING LOCATIONS @ DOORS
1/2" = 1'-0"



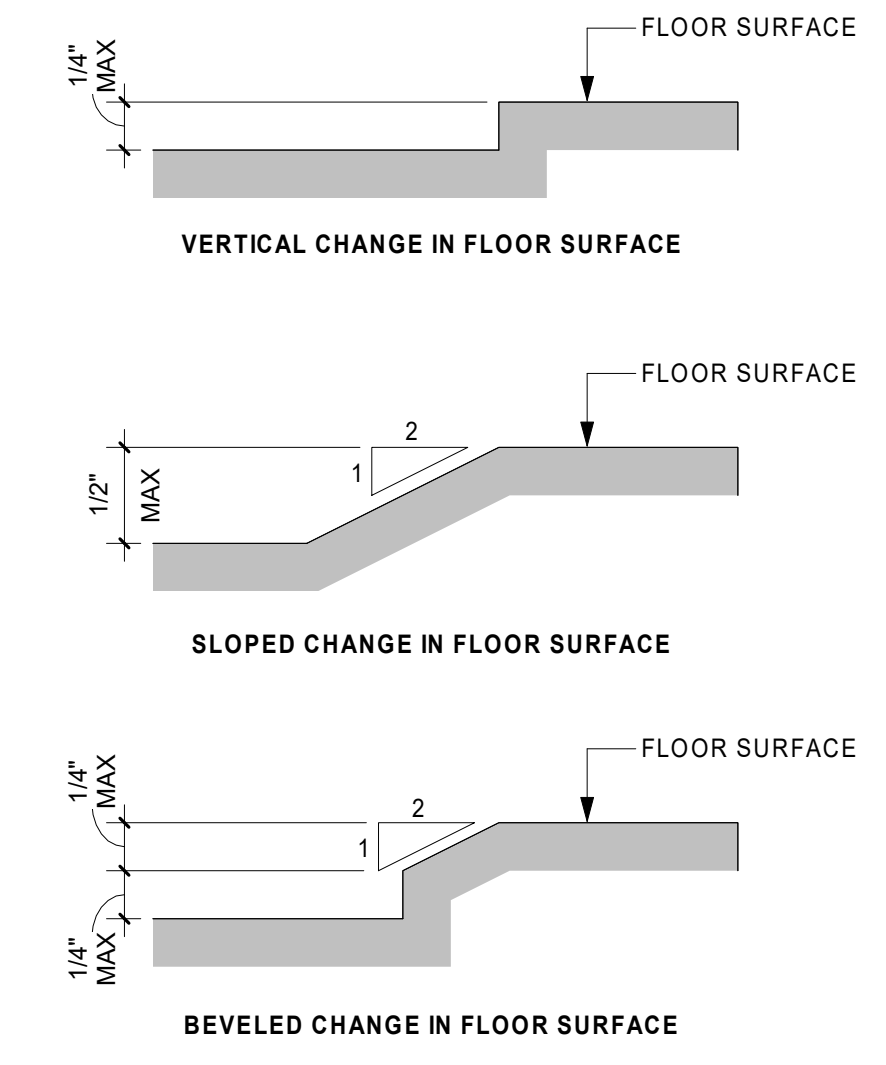
12 ANSI TACTILE SIGNS
1/2" = 1'-0"



13 ANSI & TYP MOUNTING HGTS - DEVICES
1/2" = 1'-0"



14 TYP MOUNTING HGTS - MISC
1/2" = 1'-0"



15 ANSI CHANGES IN FLOOR LEVELS
1/2" = 1'-0"

ACCESSIBILITY & MOUNTING HEIGHT NOTES

ANSI 117.1.

1. ALL WORK TO BE COMPLIANT WITH ACCESSIBILITY GUIDELINES PROVIDED IN ACCORDANCE WITH THE CURRENT EDITION OF ANSI A117.1.

AMERICANS WITH DISABILITIES ACT ARCHITECTURAL STANDARDS FOR ACCESSIBLE DESIGN

1. ALL WORK TO BE COMPLIANT WITH ACCESSIBILITY GUIDELINES PROVIDED IN ACCORDANCE WITH THE CURRENT EDITION OF AMERICANS WITH DISABILITIES ACT ARCHITECTURAL STANDARDS FOR ACCESSIBLE DESIGN.

CODE OF FEDERAL REGULATIONS PART 36, SUBPART D

1. ALL WORK TO BE COMPLIANT WITH ACCESSIBILITY GUIDELINES PROVIDED IN ACCORDANCE WITH THE CURRENT EDITION OF CODE OF FEDERAL REGULATIONS PART 36, SUBPART D.

STATE AND MUNICIPAL BARRIER FREE CODES

1. ALL WORK TO BE COMPLIANT WITH ACCESSIBILITY GUIDELINES PROVIDED IN ACCORDANCE WITH THE CURRENT EDITION OF ALL STATE AND MUNICIPAL BARRIER FREE CODES.

GENERAL

1. CONTRACTOR TO SUPPLY AND INSTALL PIPE COVERS / SHROUDS FOR ALL EXPOSED PIPING UNDER NEW LAVATOIRES/SINKS.
2. CONTRACTOR TO SUPPLY AND INSTALL METAL BRACKETS OR APPROPRIATE BLOCKING NECESSARY FOR TOILET ACCESSORY INSTALLATION.
3. CONTRACTOR TO MAINTAIN FIRE, SMOKE, AND ACOUSTICAL RATINGS WHERE ACCESSORIES ARE RECESSED INTO THE WALL PARTITION.



One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia, PA 19103 U.S.A.
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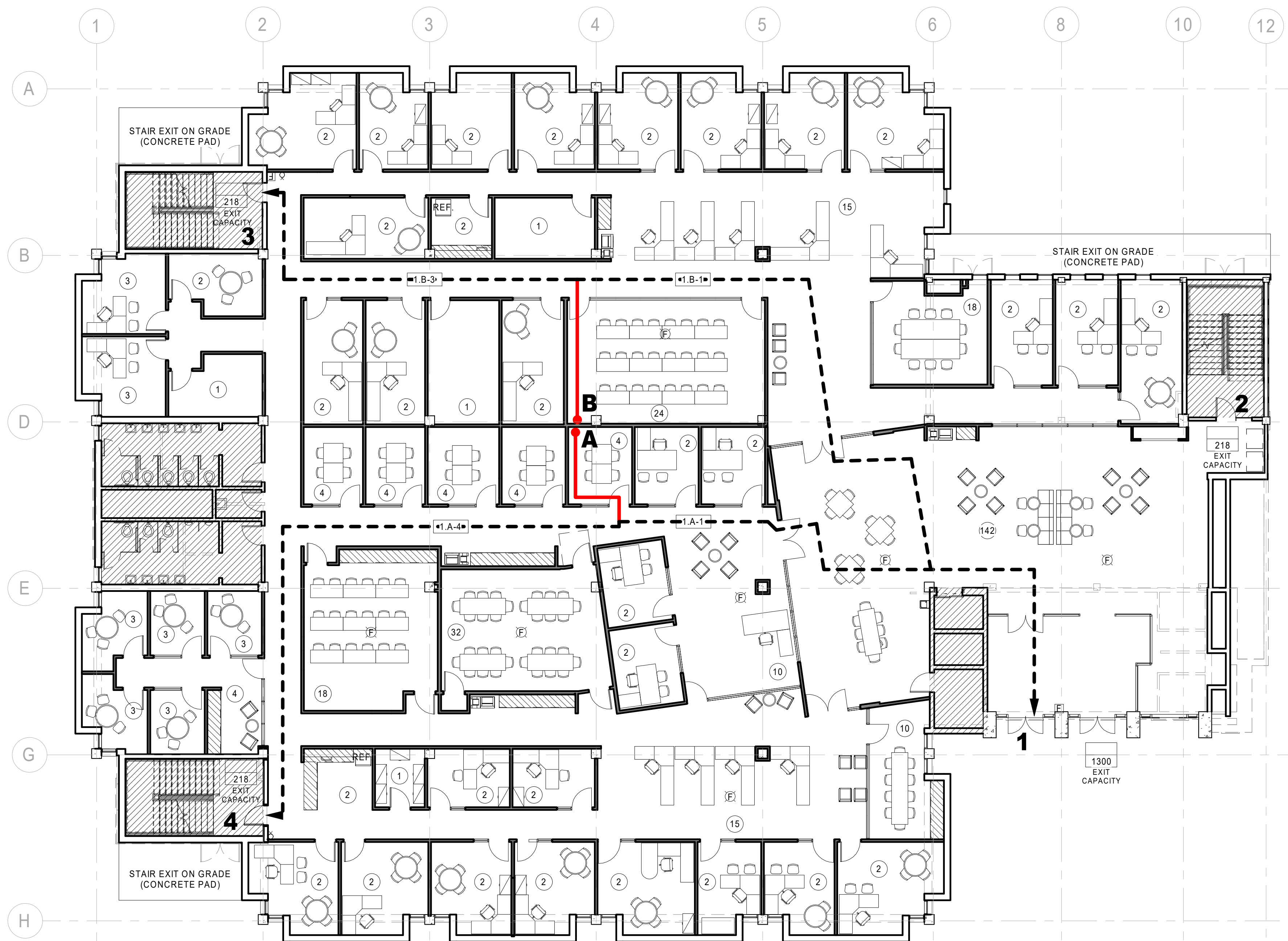
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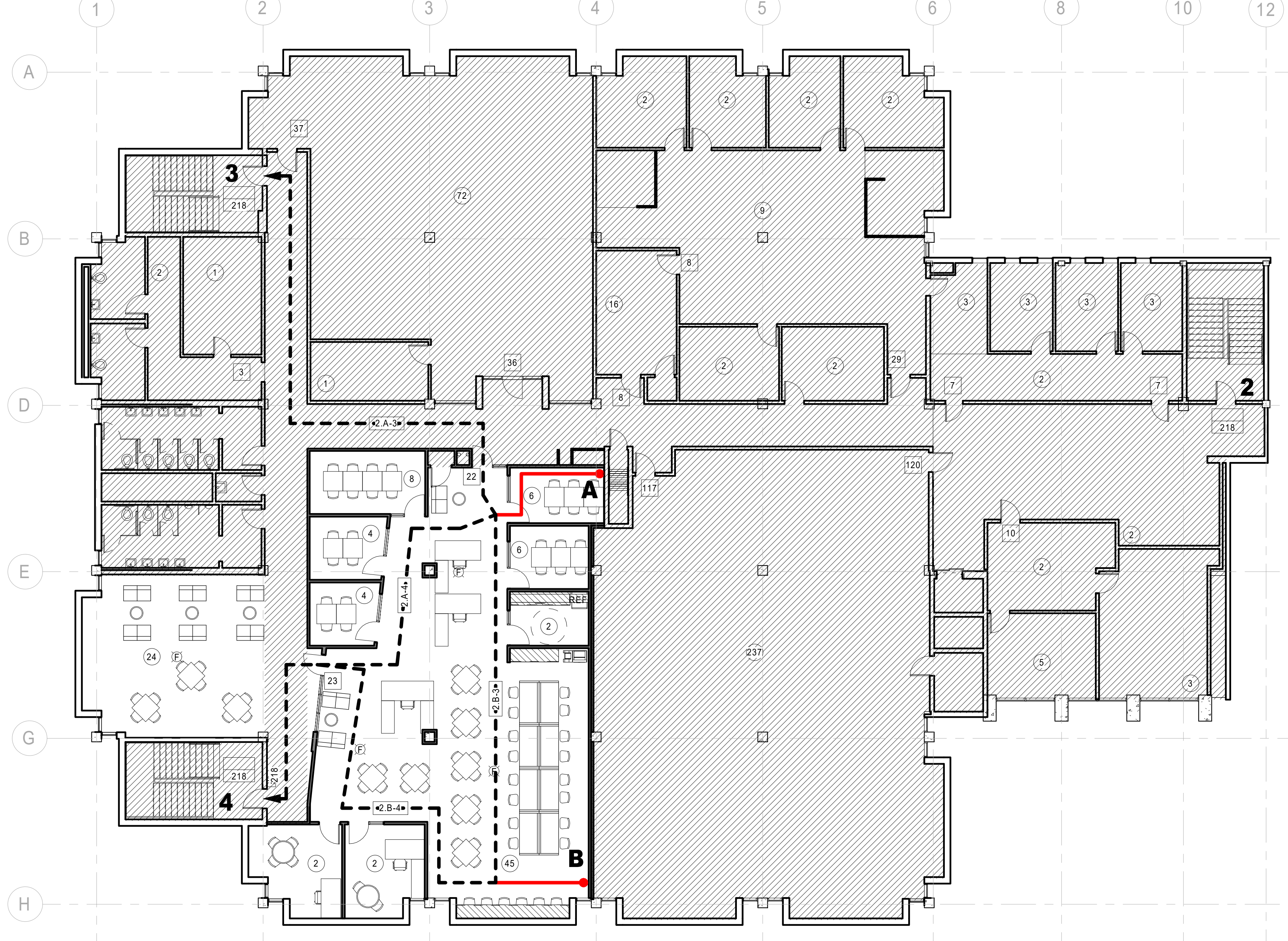
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ACCESSIBILITY & MOUNTING LOCATION STANDARDS, REGULATORY SIGN DETAILS

SHEET NUMBER:
G002



B4 FIRST FLOOR LIFE SAFETY PLAN
3/32" = 1'-0"



A4 SECOND FLOOR LIFE SAFETY PLAN
3/32" = 1'-0"

LIFE SAFETY PLAN LEGEND

- FE FIRE EXTINGUISHER LOCATION (MAX TRAVEL DISTANCE 75'-0')
- FEC EXIT SIGN (TRAVEL DIRECTION & FACING VARIES. SEE REFLECTED CEILING PLAN)
- Path of Travel
- Path Indicator - SEE SCHEDULE FOR VALUE
- 36 OCCUPANT LOAD PER ROOM
- AREA NOT IN SCOPE OF WORK

EGRESS PATHS W/ COMMON TRAVEL - FIRST FLOOR

Mark	Path of Egress	Comments	Common Travel
1.A-1	113'-0"		20'-4"
1.A-4	119'-5"		20'-4"
1.B-1	152'-4"		21'-6"
1.B-3	83'-2"		21'-6"

EGRESS PATHS W/ COMMON TRAVEL - SECOND FLOOR

Mark	Path of Egress	Comments	Common Travel
2.A-3	108'-4"		22'-3"
2.A-4	97'-6"		22'-3"
2.B-3	155'-8"		13'-6"
2.B-4	105'-10"		13'-6"

APPLICABLE / ADOPTED CODES

APPLICABLE / ADOPTED CODES & REGULATIONS
UNIFORM CONSTRUCTION CODE NJAC 5:23

BUILDING CODE:
2021 INTERNATIONAL BUILDING CODE

BARRIER FREE CODE:
2017 ICC A117.1

FIRE CODES:
2021 INTERNATIONAL FIRE CODE

MECHANICAL CODES:
2021 INTERNATIONAL MECHANICAL CODE

PLUMBING CODE:
2021 NATIONAL STANDARD PLUMBING CODE, NJ EDITION

ELECTRICAL CODE:
2020 NATIONAL ELECTRICAL CODE (NFPA 70)

BUILDING CLASSIFICATION

A. OCCUPANCY CLASSIFICATION	BUSINESS GROUP B
USE GROUP:	II-B
B. CONSTRUCTION TYPES	
C. CONSTRUCTION AREA	CONSTRUCTION AREA
SQUARE FOOTAGE - TOTAL	21,218 sf
FIRST FLOOR	17,322 SF
SECOND FLOOR	3,896 SF
	FLOOR AREA
	38,204 SF
	19,102 SF
	19,102 SF

FIRE RESISTANCE REQUIREMENTS OF CONSTRUCTION ELEMENTS

	ALLOWED/REQUIRED	PROPOSED
A. INTERIOR FINISHES		
INTERIOR WALL & CEILING FINISH FLAME SPREAD	CLASS B	
INTERIOR EXIT & CEILING FINISH FLAME SPREAD	CLASS C	
CORRIDORS FOR EXIT ACCESS:	CLASS C	
ROOMS & ENCLOSED SPACES:	CLASS II	
INTERIOR FLOOR FINISHES RADIANT FLUX CLASS:		
B. FIRE PROTECTION SYSTEMS		
AUTOMATIC SPRINKLER SYSTEMS:	REQUIRED	EXISTING
ALTERNATIVE AUTOMATIC FIRE-EXTINGUISHING SYSTEMS:		
PORTABLE FIRE EXTINGUISHERS:	REQUIRED	EXISTING
SIZE & TYPE		2-A
FLOOR AREA PER EXTINGUISHER, MAX TRAVEL DISTANCES:	75 FT	75 FT MAX
FIRE ALARM & DETECTION SYSTEMS	REQUIRED	EXISTING

OCCUPANT LOAD

	ALLOWED/REQUIRED	PROPOSED
A. OCCUPANT LOADS		
FIRST FLOOR		
DESIGN OCCUPANT LOAD:		
MAIN FUNCTION:	BUSINESS	65
FLOOR AREA PER OCCUPANT:	150	
ACCESSORY FUNCTION:	ASSEMBLY	425
FLOOR AREA PER OCCUPANT:	15	
OCCUPANTS:		
SECOND FLOOR		
DESIGN OCCUPANT LOAD:		
MAIN FUNCTION:	BUSINESS	7
FLOOR AREA PER OCCUPANT:	150	
ACCESSORY FUNCTION:	ASSEMBLY	173
FLOOR AREA PER OCCUPANT:	15	
OCCUPANTS:		

PLUMBING & TOILET ROOM FIXTURES

A. MINIMUM NUMBER OF FIXTURES

FIRST FLOOR

	POPULATION	MALE WCs/URs	FEMALE WCs/MALE LAVs	FEMALE LAVs/DRINKING FOUNTAINS	SERVICE SINKS
REQUIRED:	64 M 64 F	2 WCs 1 URs	2 WCs 1 LAVs	1 LAVs 2	1
PROVIDED:	64 M 64 F	3 WCs 2 URs	5 WCs 4 LAVs	5 LAVs 1*	1

SECOND FLOOR - PARTIAL

	POPULATION	MALE WCs/URs	FEMALE WCs/MALE LAVs	FEMALE LAVs/DRINKING FOUNTAINS	SERVICE SINKS
REQUIRED:	64 M 64 F	2 WCs 1 URs	2 WCs 1 LAVs	1 LAVs 2	1
PROVIDED:	64 M 64 F	3 WCs 2 URs	5 WCs 4 LAVs	5 LAVs 1*	1

NUMBER OF OCCUPANTS OF EACH GENDER:
Shall be distributed equally between the sexes based on the percentage of each sex anticipated in the occupant load. The occupant load shall be composed of 50% of each sex, unless statistical data approved by the code official indicate a different distribution of the sexes. (403.3) Get statistical data (payroll, etc) to demonstrate distribution of sexes, and revise these figures accordingly.



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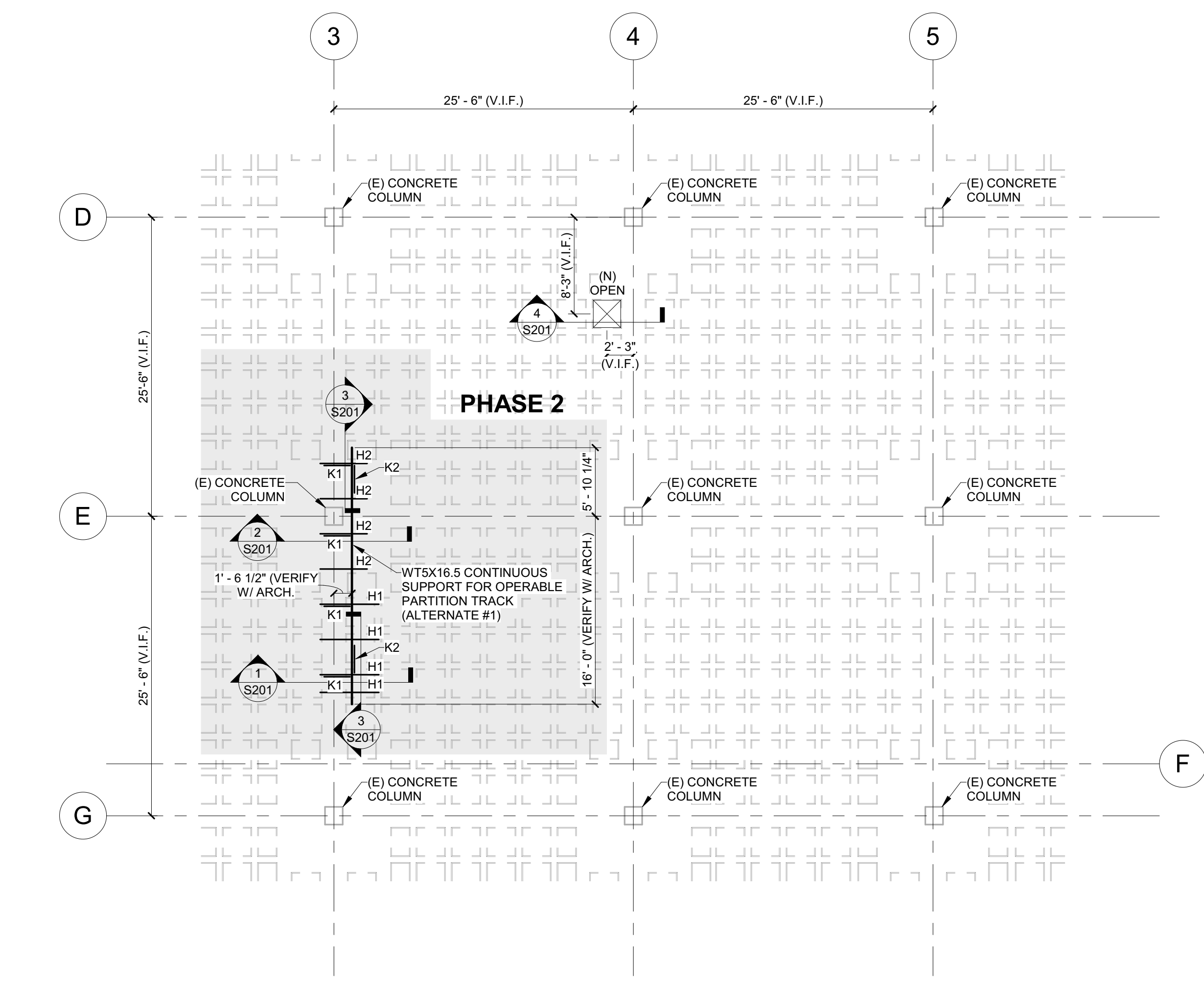
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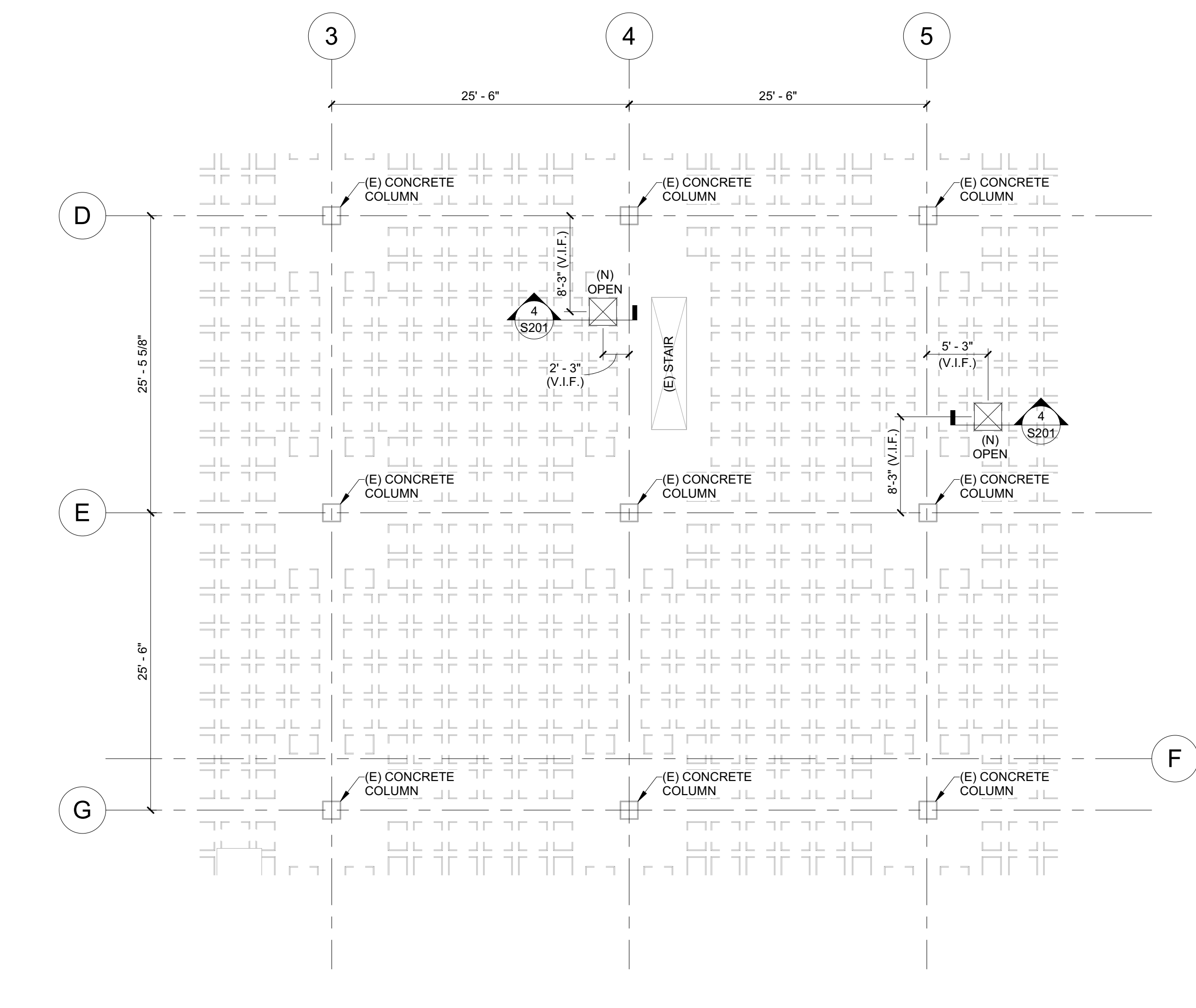
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CODE ANALYSIS & LIFE SAFETY PLANS

SHEET NUMBER
G101



2 PARTIAL SECOND FLOOR FRAMING PLAN
1/8" = 1'-0"



3 PARTIAL PENTHOUSE FRAMING PLAN
1/8" = 1'-0"

PARTITION SUPPORT NOTES

- EXISTING SLAB AND FLOOR FRAMING CONSIST OF 15" TOTAL DEPTH CONCRETE WAFFLE SLAB (12" DEEP DOMES + 3" SLAB), WITH 30"x30" DOMES AND 6" RIBS AT 36" O.C.
- OPERABLE PARTITION DESIGN LOAD IS 100 PLF (OPEN) OR 2200 LBS (STACKED).
- G.C. TO FIELD VERIFY EXISTING WAFFLE SLAB AREAS AT AREAS OF WORK AN NOTIFY ENGINEER OF DISCREPANCIES.
- G.C. TO VERIFY EXISTING STRUCTURE AT AREAS OF NEW WORK TO AVOID NEW ANCHORS SEVERING OR CONFLICTING WITH EXISTING STEEL REINFORCING.
- H1 INDICATES STEEL ANGLE HANGER FOR OPERABLE PARTITION SUPPORT PER DETAIL S201
- H2 INDICATES STEEL ANGLE HANGER FOR OPERABLE PARTITION SUPPORT PER DETAIL S201
- K1 INDICATES STEEL ANGLE KICKER BRACE PERPENDICULAR TO OPERABLE PARTITION PER DETAIL S201
- K2 INDICATES STEEL ANGLE KICKER BRACE PARALLEL TO OPERABLE PARTITION PER DETAIL S201

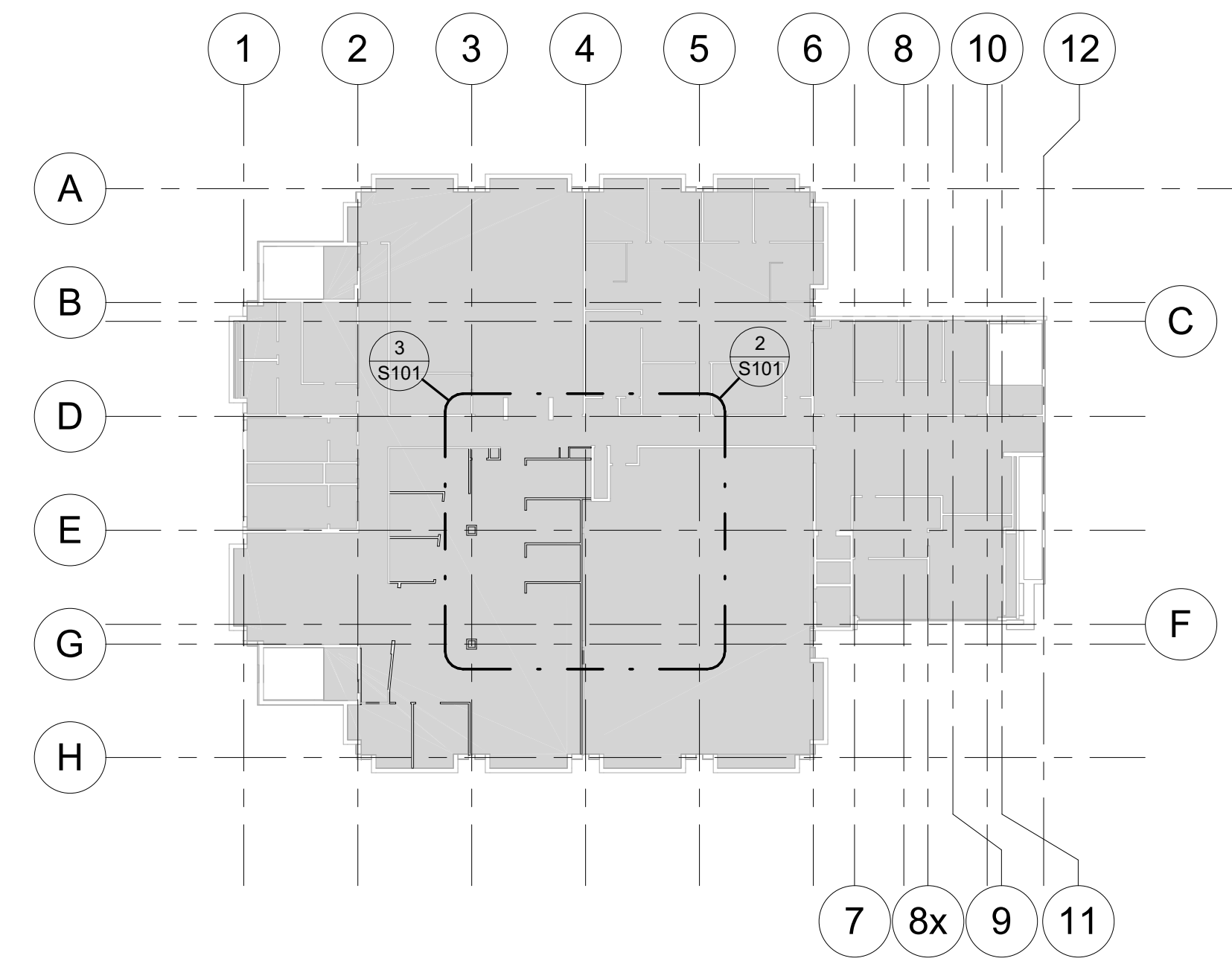
STEEL FRAMING NOTES

- A. STANDARDS**
- DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH "THE STEEL CONSTRUCTION MANUAL", 15TH EDITION, BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION.
- B. SHOP DRAWINGS / SUBMITTALS**
- SHOP DRAWINGS INCLUDING THE FOLLOWINGS SHALL BE SUBMITTED FOR REVIEW AND APPROVAL PRIOR TO ANY FABRICATION
 - COMPLETE DETAILS FOR FABRICATION, ASSEMBLY AND ERECTION.
 - A STEEL ERECTION PROCEDURE PREPARED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER HIRED BY THE CONTRACTOR. THIS PROCEDURE MUST INCLUDE THE PROPOSED SURVEY PER STEEL SPECIFICATIONS.
 - ANCHOR BOLT PLACEMENT SHALL BE FIELD SURVEYED PRIOR TO COLUMN BASE PLATE SHOP DRAWING PREPARATION/SUBMITTAL. SHOP DRAWINGS SHALL REFLECT INSTALLED ANCHOR BOLT CONDITIONS.
 - ALL GRADE CERTIFICATIONS FOR RECORD.
- C. MATERIAL INFORMATION**
- | ELEMENT | ASTM | YIELD STRENGTH |
|-----------------------------------|----------------|---|
| W-SHAPES, TEES | A992 | 50 KSI |
| HSS (RECT & SQUARE) | A500 Gr. C | 50 KSI |
| HSS (ROUND) | A500 Gr. C | 46 KSI |
| CHANNELS, ANGLES, PLATES AND BARS | A36 | 36 KSI |
| PIPES | A53 Gr. B | 35 KSI |
| BOLTS | F3125 Gr. A325 | 92 KSI |
| ANCHOR BOLTS/RODS | F1554 Gr. | 55 KSI @ MOMENT COLUMNS
36 KSI @ GRAVITY COLUMNS |
| WASHERS | F436 | - |
| NUTS | A563 Gr. B | - |
- SHOP PAINT SHALL CONFORM TO SSPC-PS 1.10, PAINT 25, RED IRON OXIDE. SURFACE PREPARATIONS SHALL CONFORM TO SSPC-SP 3. SURFACES TO RECEIVE SPRAY ON FIRE PROOFING, SURFACES TO BE ENCASED IN CONCRETE AND SURFACES OF CONNECTING ELEMENTS IN SLIP-CRITICAL CONNECTIONS SHALL NOT BE PAINTED. PAINT SHOULD BE MODIFIED AS REQUIRED WITH NO ADDITIONAL COST TO THE OWNER. FIELD PAINT PER ARCHITECTURAL DRAWINGS AND SPECIFICATIONS.
 - GALVANIZED STEEL:** GALVANIZED STEEL AND ITS CONNECTORS SHALL CONFORM TO ASTM A123, ASTM A153, ASTM A384 AND THE RECOMMENDATIONS OF THE "AMERICAN HOT-DIP GALVANIZERS ASSOCIATION STANDARD SPECIFICATIONS". FINISH PIECES SHALL CONFORM TO AISI "MANUAL OF STEEL CONSTRUCTION". ABRASED, SCRAPED AND FIELD WELDED AREAS SHALL BE TOUCHED UP WITH A SUITABLE ZINC RICH PAINT.
- D. FABRICATION/ERECTION**
- FILLER BEAM SPACING:** SHALL BE EQUAL BETWEEN SUPPORTS U.N.O.
 - GALVANIZED ELEMENTS:** HOT-DIP GALVANIZE ALL STEEL LINTELS AND SHELF ANGLES, DUNNAGE STEEL OR OTHER STEEL EXPOSED TO THE EXTERIOR. STEEL SURFACES THAT ARE EXPECTED TO CONTACT ALUMINUM SHALL BE PROPERLY SEPARATED OR TREATED. BOLTS, NUTS, AND WASHERS FOR STEEL PERMANENTLY EXPOSED TO WEATHER SHALL BE GALVANIZED.
 - TEMPORARY BRACING:** CONTRACTOR SHALL PROVIDE ADDITIONAL STEEL, GUYING, CONNECTIONS, BRACING REQUIRED FOR ERECTION AT NO ADDITIONAL COST.
 - DRAINAGE:** PROVIDE HOLES IN ALL STEEL AS REQUIRED TO PREVENT ANY ACCUMULATION OF WATER DURING ERECTION. ALL PENETRATIONS THROUGH MAIN MEMBERS SHALL NOT EXCEED 1/8" AND SHALL BE GROUND SMOOTH. THESE DRAWINGS MUST BE KEPT CLEAN AND OPEN.
 - THERMAL CUTTING:** ALL HOLES AND CUTS SHALL BE SHOWN IN THE SHOP DRAWINGS AND MADE IN THE SHOP. BURNING OR CUTTING OF HOLES IN STRUCTURAL STEEL IN THE FIELD IS NOT PERMITTED WITHOUT APPROVAL OF EOR.
 - FIELD ADJUSTABILITY:** SPANDREL ANGLE AT PERIMETER EDGE OF FLOOR SLAB/ROOF SHALL BE ADJUSTABLE. SHIP ANGLE LOOSE AND SET WITH STRING LINE IN FIELD FOR VERTICAL AND HORIZONTAL ALIGNMENT AFTER STEEL IS FULLY ERECTED TO A MAXIMUM TOLERANCE OF 1/4" HORIZONTAL PER FLOOR AND MUST BE SET PLUMB BY STEEL ERECTOR PRIOR TO STUDCLADDING ERECTION. ANGLE MUST BE INSTALLED IN ONE LENGTH PER BAY.
- E. STEEL CONNECTIONS**
- DETAILS:** ALL DETAILS ARE CONCEPTUAL ONLY AND DO NOT INDICATE THE REQUIRED NUMBER OF BOLTS OR WELD SIZES, U.N.O. REFERENCE DELEGATED DESIGN SUBMITTALS SECTION UNDER GENERAL NOTES.
 - WELDED CONNECTION:** WELDS SHALL CONFORM TO AMERICAN WELDING SOCIETY (AWS) D1.1.
 - ALL WELDING SHALL BE PERFORMED BY AWS CERTIFIED WELDERS.
 - ALL WELDED CONNECTIONS SHALL BE E70XX ELECTRODES.
 - NO WELD TO BE LESS THAN 1/4" UNLESS NOTED OTHERWISE.
 - ALL BUTT AND FULL PENETRATION WELDS SHALL HAVE RUN OFF TABS THAT SHALL BE REMOVED & GROUND SMOOTH ONLY WHERE NOTED.
 - ALL WELD BACK UP BARS SHALL BE REMOVED & GROUND SMOOTH ONLY WHERE NOTED.
 - ALL STEEL MARKED AS AESS (ARCHITECTURALLY EXPOSED STRUCTURAL STEEL) NEEDS TO BE GROUND SMOOTH.
- F. FIELD TESTING**
- INSPECTIONS:** THE STRUCTURAL STEEL FABRICATOR AND ERECTOR SHALL SCHEDULE ALL WORK TO ALLOW COMPLETION OF INSPECTION AND TESTING REQUIREMENTS, AND APPLICABLE THIRD PARTY INSPECTION ITEMS.
 - FIELD WELDED CONNECTIONS** SHALL BE TESTED PER ANSI / AWS D1.1, CHAPTER 6.

STRUCTURAL NOTES

- A. PROJECT REFERENCES:**
- CODE: WORK SHALL BE EXECUTED IN FULL COMPLIANCE WITH THE APPLICABLE PROVISIONS OF ALL LAWS, BY-LAWS, STATUTES, ORDINANCES, CODES, RULES, REGULATIONS, AND LAWFUL ORDERS OF PUBLIC AUTHORITIES BEARING ON THE PERFORMANCE AND EXECUTION OF THE WORK.
- CODES AND STANDARDS**
- | BUILDING CODE | ASCE 7-16 |
|------------------------|-----------|
| RISK CATEGORY | II |
| FM APPROVED PARAMETERS | NO |
- PROJECT SPECIFICATIONS:** NOTES AND SPECIFICATIONS GIVEN ON THE STRUCTURAL DRAWINGS ARE EXCEPTS FROM THE RELATING PROJECT SPECIFICATIONS. THEY ARE NEITHER COMPLETE NOR DO THEY REPLACE THE CONTRACT SPECIFICATIONS.
 - MATERIAL STANDARDS:** REFERENCED STANDARDS OR PUBLICATIONS SHALL PERTAIN TO MOST CURRENT DATA, STANDARD OR PUBLICATION.
- B. TEMPORARY BRACING, SHORING AND METHODS:** CONTRACTOR RESPONSIBLE FOR THE DESIGN, ADEQUACY, AND SAFETY OF SHORING, BRACING, OTHER TEMPORARY SUPPORTS, AND METHODS OF CONSTRUCTION.
- STABILITY:** THE CONTRACTOR SHALL INSURE THE STABILITY OF ALL ELEMENTS INCLUDING, BUT NOT LIMITED TO EXCAVATION, FLOORS, ROOFS, WALLS, FOUNDATIONS, AND ADJACENT STRUCTURE AS PROJECT CONDITIONS REQUIRE. THE STRUCTURAL ENGINEER ASSUMES NO RESPONSIBILITY FOR THE STRUCTURE DURING THE ENTIRE CONSTRUCTION PERIOD. BRACE BASEMENT/PIV WALLS UNTIL SUPPORTING FLOORS ARE PLACED AND WALL/FLOOR HAS REACHED DESIGN STRENGTH. BACKFILL BOTH SIDES OF WALLS SIMULTANEOUSLY.
 - LOADING:** THE BUILDING IS DESIGNED ONLY FOR PERMANENT LOADS APPLIED TO THE STRUCTURE IN ITS FINAL CONFIGURATION. DO NOT PLACE MATERIAL OR EQUIPMENT ON FLOORS OR FLOORS IN EXCESS OF THE INDICATED DESIGN LIVE LOADS, AVOID IMPACT LOADS.
 - SURCHARGE:** IN NO CASE SHALL HEAVY EQUIPMENT BE PERMITTED CLOSER THAN 8'-0" FROM ANY FOUNDATION/BASEMENT WALL. IF THE CONTRACTOR DEEMS IT NECESSARY TO OPERATE SUCH EQUIPMENT CLOSER THAN 8'-0" THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE AND, AT HIS OWN EXPENSE, PROVIDE ADEQUATE SUPPORTS OR WALL BRACES TO WITHSTAND THE ADDITIONAL LOADS SUPERIMPOSED FROM SUCH EQUIPMENT.
 - SAFETY:** THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR MAINTAINING CONDITIONS OF PUBLIC AND WORKER SAFETY DURING EXECUTION OF THE WORK. THIS SHALL INCLUDE COMPLIANCE WITH ALL OSHA, STATE AND LOCAL REGULATIONS/LAWS AS WELL AS PREPARING AND FILING A SITE SAFETY PLAN OR PROTECTIVE ORDER WRITTEN SAFETY ASSURANCES AS REQUIRED. ALL CONSTRUCTION METHODS SHALL COMPLY WITH THE REQUIREMENTS OF CHAPTER 33 OF THE IBC, "SAFEGUARDS DURING CONSTRUCTION".
 - DAMAGE:** CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TEMPORARY MEASURES TO PROTECT THE PREMISES INCLUDING EXISTING FACILITIES, STRUCTURES, AND UTILITY LINES FROM ANY DAMAGE AND REPAIR ALL DAMAGE CAUSED BY THE CONTRACTOR WITH NEW MATERIALS TO MATCH EXISTING TO THE SATISFACTION OF THE OWNER, ARCHITECT AND/OR ENGINEER.
- C. REVIEW AND COORDINATION:**
- EXISTING CONDITIONS, DIMENSIONS, AND ACCESSIBILITY** SHALL BE VERIFIED BY ALL CONSTRUCTION TRADES IN FIELD PRIOR TO SHOP DRAWING PREPARATIONS AND PROCEEDING WITH THE WORK. IF EXISTING CONDITIONS DO NOT PERMIT EXECUTION OF THE WORK IN ACCORDANCE WITH THE SHOWN DETAILS, THE CONTRACTOR MUST SUBMIT A SKETCH WITH PROPOSED MODIFICATION APPROVAL MUST BE GRANTED BY THE ENGINEER PRIOR TO START OF WORK.
 - CONSTRUCTION DOCUMENTS:** THE CONTRACTOR SHALL COORDINATE STRUCTURAL PLANS, DETAILS AND DIMENSIONS WITH ALL OTHER CONSTRUCTION DOCUMENTS BEFORE PROCEEDING WITH THE WORK. DISCREPANCIES WITHIN OR BETWEEN OTHER CONSTRUCTION DOCUMENTS SHALL BE NOTIFIED TO THE ENGINEER AND ARCHITECT PRIOR TO BID AND EXECUTION OF THE WORK.
 - MATERIAL STRENGTHS OR QUANTITIES:** IF DISCREPANCIES OCCUR REGARDING MATERIAL STRENGTHS OR QUANTITIES, HIGHER STRENGTH, AND GREATER QUANTITY SHALL BE USED.
 - DIMENSIONS AND ELEVATIONS** SHOWN ON STRUCTURAL DRAWINGS ARE GENERATED BY OTHER DISCIPLINES, WITH THE EXCEPTION OF DIMENSIONS OF STRUCTURAL MEMBERS. ANY DIMENSIONS OR ELEVATIONS OMITTED OR NOT SHOWN ON THE STRUCTURAL DRAWINGS SHOULD BE OBTAINED FROM THE OTHER TRADE CONSTRUCTION DOCUMENTS.
 - INTENT:** ALL DETAILS, SECTIONS, AND NOTES ARE INTENDED TO BE TYPICAL AND SHALL BE CONSTRUED TO APPLY TO SIMILAR CONDITIONS ELSEWHERE.
 - BID:** UNLESS DRAWING IS PART OF THE FULL SET OF DOCUMENTS LABELED "ISSUED FOR BID" DO NOT CONSIDER IT AS THE BASIS FOR A BID. ALL ESTIMATES BASED ON OTHER DRAWINGS ARE USED AT THE ESTIMATOR'S SOLE RISK.
 - CHANGES REQUESTED BY THE CONTRACTOR** WILL BE DONE AT NO COST TO THE OWNER. APPROVAL OF CONTRACTOR REQUESTED CHANGES IN NO WAY STATES OR IMPLIES APPROVAL OF A CHANGE IN SCOPE OR CHANGE IN CONTRACT COST. THE CONTRACTOR SHALL MAKE NO DEVIATION FROM THE CONTRACT DOCUMENTS WITHOUT THE PRIOR WRITTEN APPROVAL OF THE ENGINEER OF RECORD.
 - ERRORS:** COSTS OF INVESTIGATION AND/OR REDESIGN DUE TO CONTRACTOR ERRORS WILL BE AT THE CONTRACTORS EXPENSE.
- D. SUBMITTALS:**
- REVIEW SCHEDULE:** SUBMIT SHOP DRAWINGS FOR REVIEW AT LEAST 14 DAYS (10 WORKING DAYS) BEFORE RETURN. ANY REVIEW THAT IS REQUIRED MORE QUICKLY WILL BE AT THE CONTRACTORS EXPENSE.
 - COMPLETENESS:** A CONTRACTOR'S STAMP CERTIFYING THAT THEY HAVE VERIFIED ALL FIELD MEASUREMENTS, CONSTRUCTION CRITERIA, MATERIALS AND SIMILAR DATA AND HAVE CHECKED EACH DRAWING FOR COMPLETENESS, COORDINATION AND COMPLIANCE WITH THE CONTRACT DOCUMENTS MUST BE PRESENT ON ALL SUBMITTALS FOR REVIEW BY THE ENGINEER OF RECORD. IF REVIEWS OF INCOMPLETE SHOP DRAWINGS/SUBMITTALS ARE REQUIRED, THOSE SUBMITTALS SHALL BE MARKED AS INCOMPLETE UNTIL THEY BEAR SUCH STAMP FROM THE G.C.
 - ORIGINAL DOCUMENTS:** IN NO CASE SHALL THE CONTRACT DOCUMENTS BE USED REPRODUCIBLY AS A BASIS FOR SHOP DRAWINGS. SHOP DRAWINGS SHALL BE ORIGINAL DRAWINGS NOT COPIES OF THE CONTRACT DOCUMENTS.
 - REJECTION:** SUBMITTALS NOT MEETING THE CRITERIA LISTED IN THIS SECTION WILL NOT BE REVIEWED.
 - DELEGATED DESIGN:** DELEGATED DESIGNS SHALL CLEARLY INDICATE THE APPLICABLE CODES, DESIGN CRITERIA, CONNECTION DETAILS, AND LOAD CAPACITY OF COMPONENTS/SYSTEMS BEING PROVIDED.
 - THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND CALCULATIONS SIGNED AND SEALED BY A STRUCTURAL ENGINEER REGISTERED IN THE STATE OF CONSTRUCTION FOR THE FOLLOWING:
 - STEEL CONNECTIONS
 - GRAVITY, BRACE FRAME, MOMENT CONNECTIONS
 - FRAMING TO SUPPORT PRECAST/ARCH. GLAZING
 - DELEGATED ELEMENTS AND CONNECTIONS SHALL BE ARRANGED SUCH THAT NO ECCENTRICITIES OR TORSION IS CREATED ON THE PRIMARY STRUCTURE
 - ADDITIONAL BRACING TO RESOLVE SUCH FORCE SHALL BE DETAILED BY THE DELEGATED DESIGNER AND FURNISHED BY THE CONTRACTOR. CONTRACTOR IS RESPONSIBLE FOR FURNISHING AND INSTALLING EMBED ITEMS AND HARDWARE AS REQUIRED.
- E. SPECIAL INSPECTIONS (STRUCTURAL):**
- RESPONSIBILITIES:**
 - THIRD PARTY INSPECTION AGENCY SHALL BE CONTRACTED BY THE OWNER.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR FILING AND OBTAINING PERMITS AND SIGN-OFFS FROM THE DEPARTMENT OF BUILDINGS.
 - SPECIAL INSPECTIONS AND TESTS, STATEMENTS OF SPECIAL INSPECTIONS, RESPONSIBILITIES OF CONTRACTORS, SUBMITTALS TO THE BUILDING OFFICIAL AND STRUCTURAL OBSERVATIONS SHALL MEET THE APPLICABLE REQUIREMENTS OF IBC CHAPTER 17
 - STATEMENT OF SPECIAL INSPECTIONS:** MATERIALS, PROCEDURES AND WORKMANSHIP OF LISTED STRUCTURAL ELEMENTS SHALL BE VERIFIED FOR COMPLIANCE WITH THE CONSTRUCTION DOCUMENTS AND APPROVED SUBMITTALS PER THE CORRESPONDING REFERENCES.
 - INSPECTION DEFINITIONS:**
 - C - CONTINUOUS:** CONSTANT MONITORING OF IDENTIFIED TASKS BY A SPECIAL INSPECTOR OVER THE DURATION OF PERFORMANCE OF SAID TASKS.
 - P - PERIODIC:** INTERMITTANTLY INSPECTED DURING THE COURSE OF EACH WORK DAY TO INSURE THAT APPLICABLE REQUIREMENTS ARE BEING MET. OPERATIONS NEED NOT BE DELAYED PENDING THESE INSPECTIONS AT CONTRACTOR'S RISK.

PHASE 2



1 KEY PLAN
1/32" = 1'-0"

STATEMENT OF SPECIAL INSPECTIONS (IBC '18)				
INSPECTION	VERIFICATION AND INSPECTION ITEM	IBC 18	REFERENCE	TYPE
STEEL				
WELDING OF STEEL	WELDING OF STRUCTURAL STEEL	1705.2	AISC 360 N.5.4, AWS D1.1	C,P
CONCRETE				
POST-INSTALLED ANCHOR	ANCHORS INSTALLED IN HARDEND CONCRETE	1705.3	ACI 308.1B.7.8.2	C

NORR

One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia, PA 19103 U.S.A.
norr.com

CLIENT:
THE COLLEGE OF NEW JERSEY
2000 PENNINGTON ROAD
EWING, NJ

PROJECT TEAM

TCNJ - ROSCOE HALL STUDENT SERVICES RENOVATION
2000 PENNINGTON ROAD EWING, NJ

PROJECT NORTH

REV.	DATE	DESCRIPTION	ISSUED FOR REVIEW	ISSUED FOR CONSTRUCTION
1	2023.03.02			

NJPCA REF NUMBER:
PROJECT NUMBER: **22031600**
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SHEET TITLE
FRAMING PLANS

SHEET NUMBER
S101

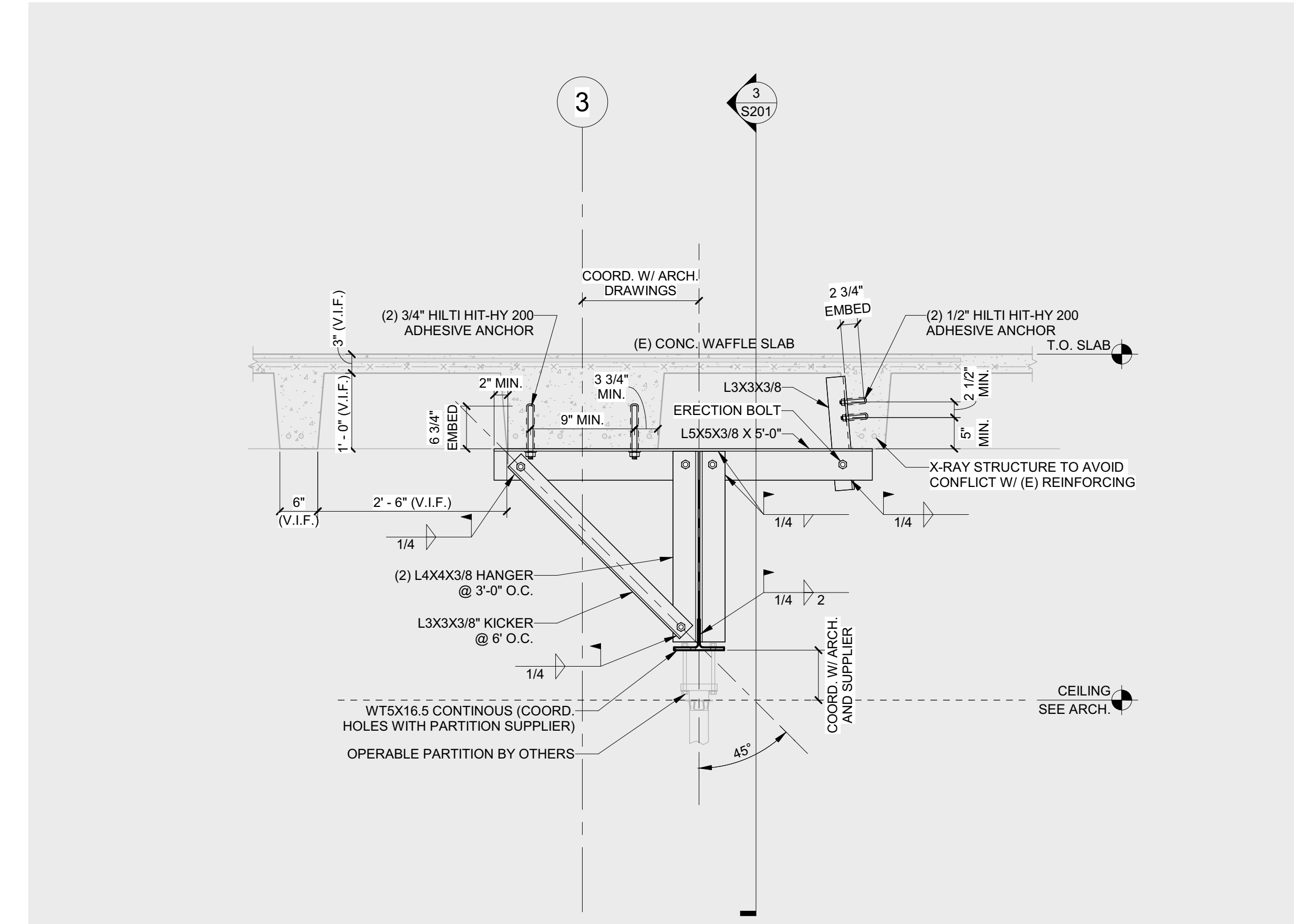


REV.	DATE	DESCRIPTION

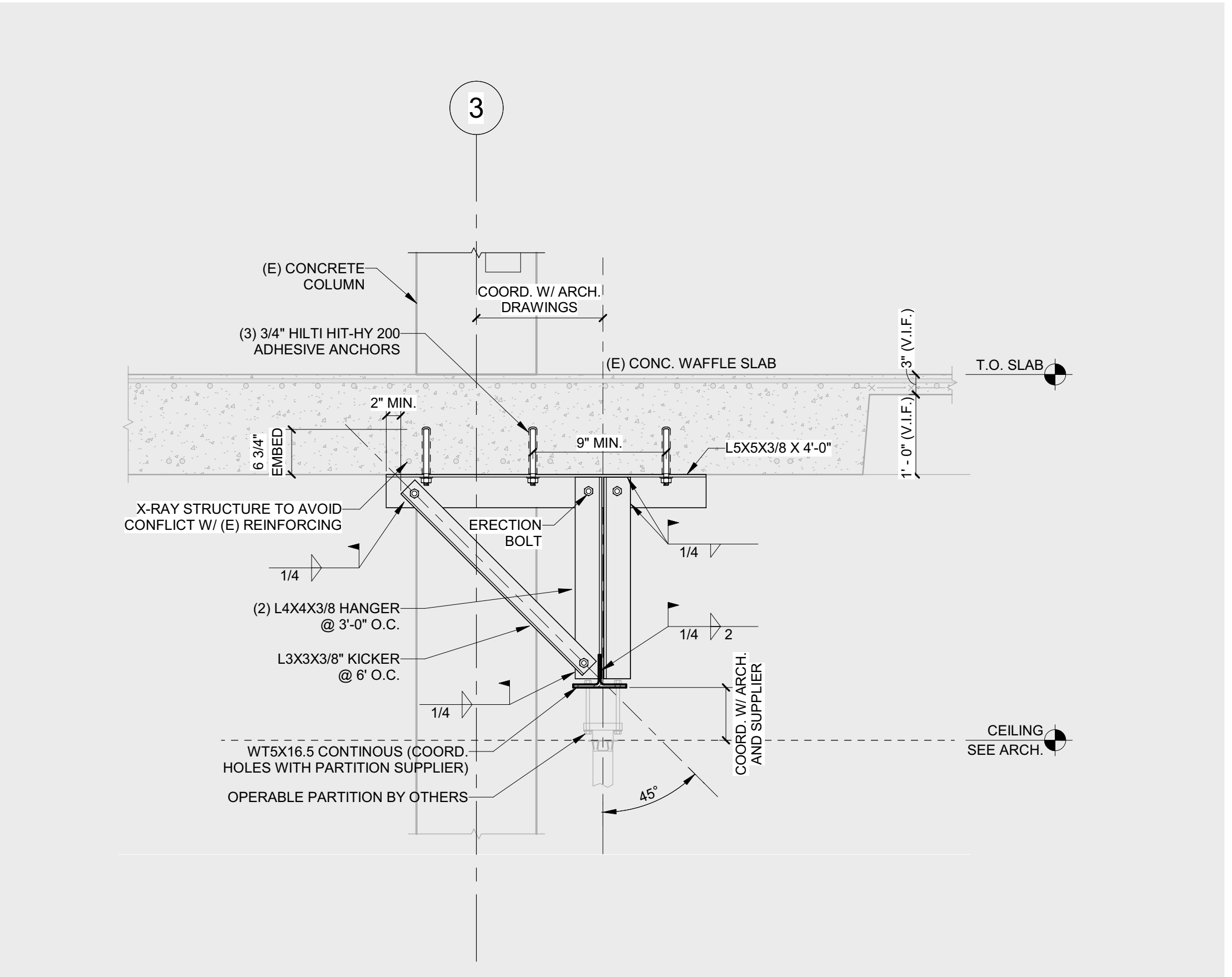
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PROJECT NUMBER: **22031600**
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SHEET TITLE:
FRAMING DETAILS

SHEET NUMBER:
S201

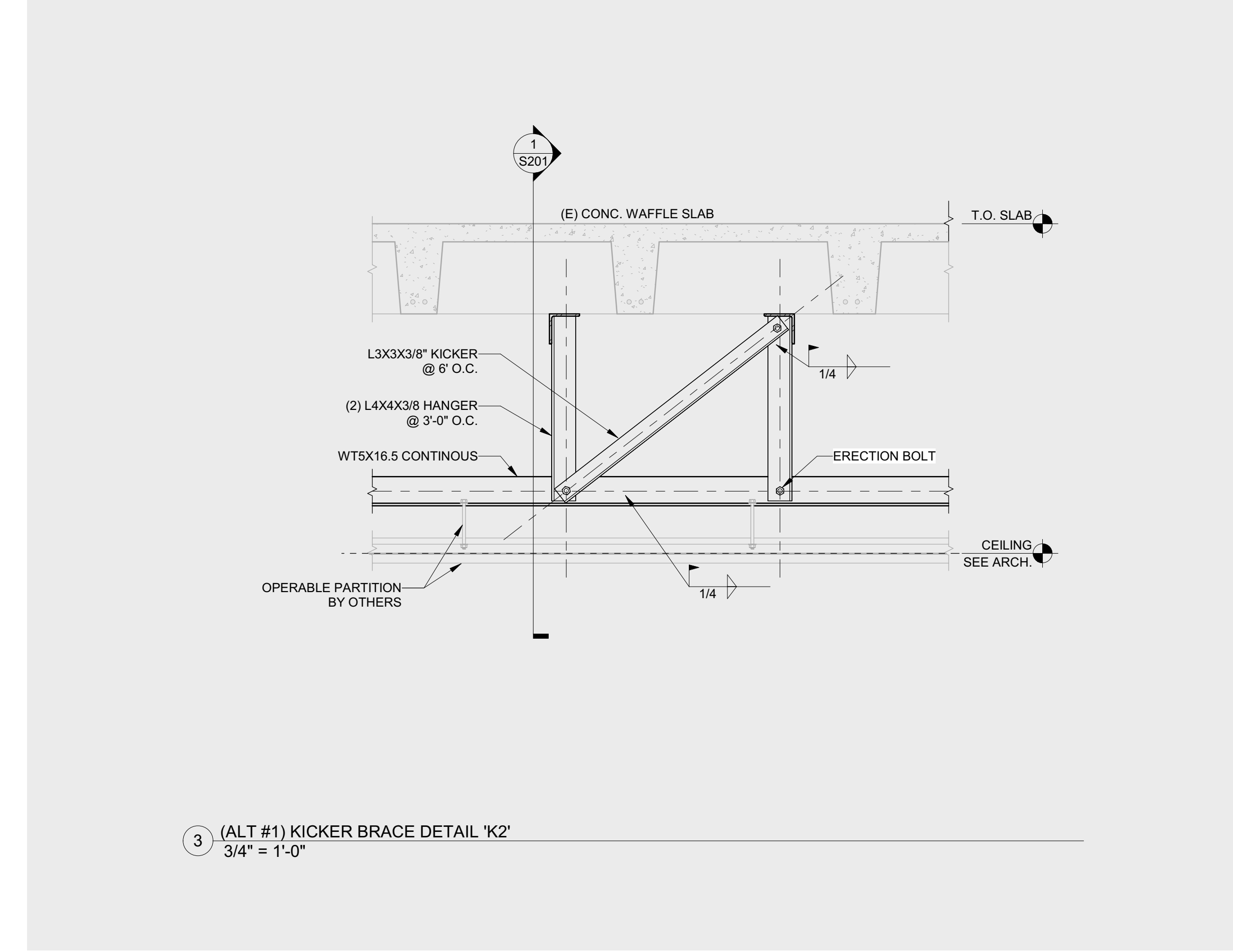


1 (ALT #1) OPERABLE PARTITION HANGER DETAIL 'H1' WITH KICKER 'K1'
3/4" = 1'-0"

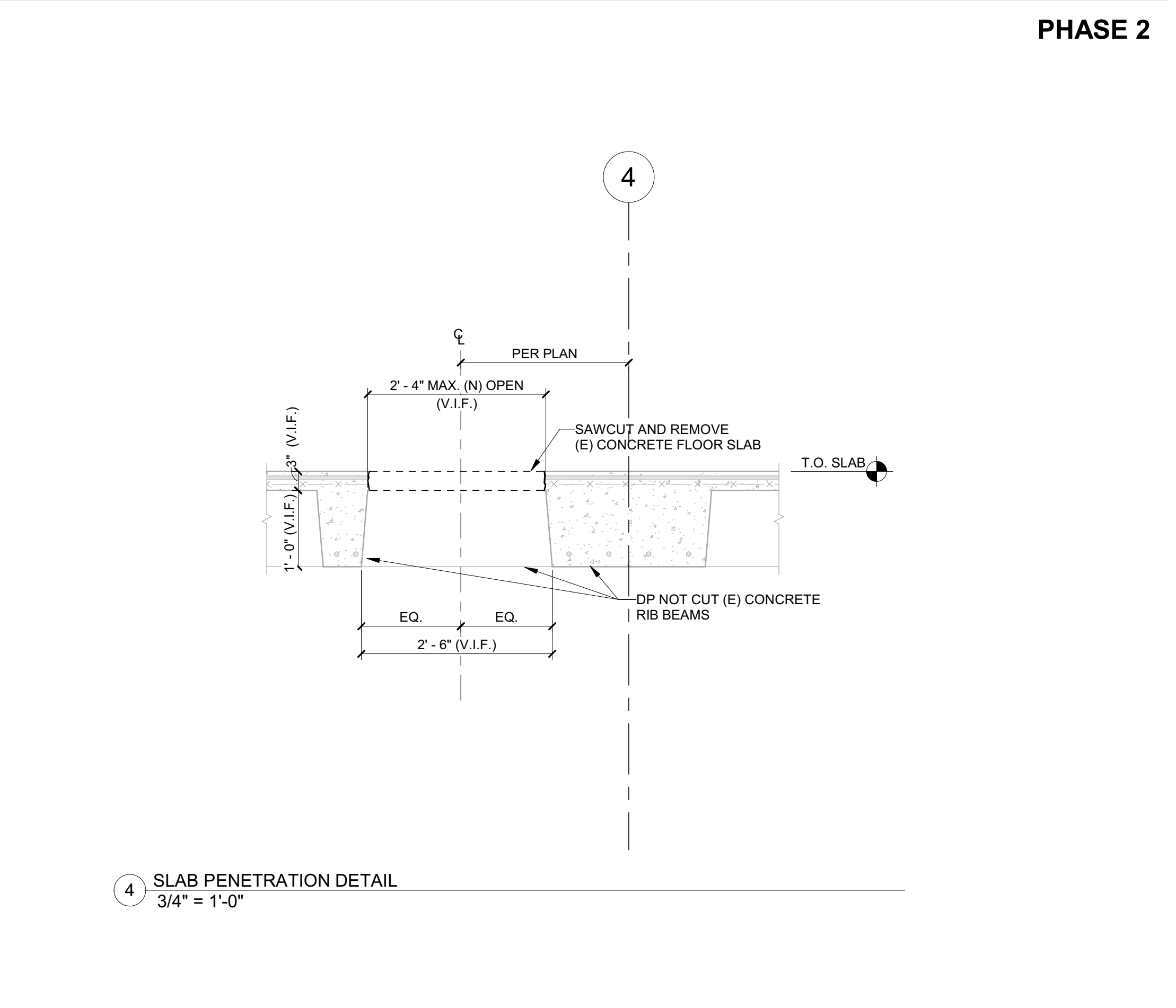


2 (ALT #1) OPERABLE PARTITION HANGER DETAIL 'H2' WITH KICKER 'K1'
3/4" = 1'-0"

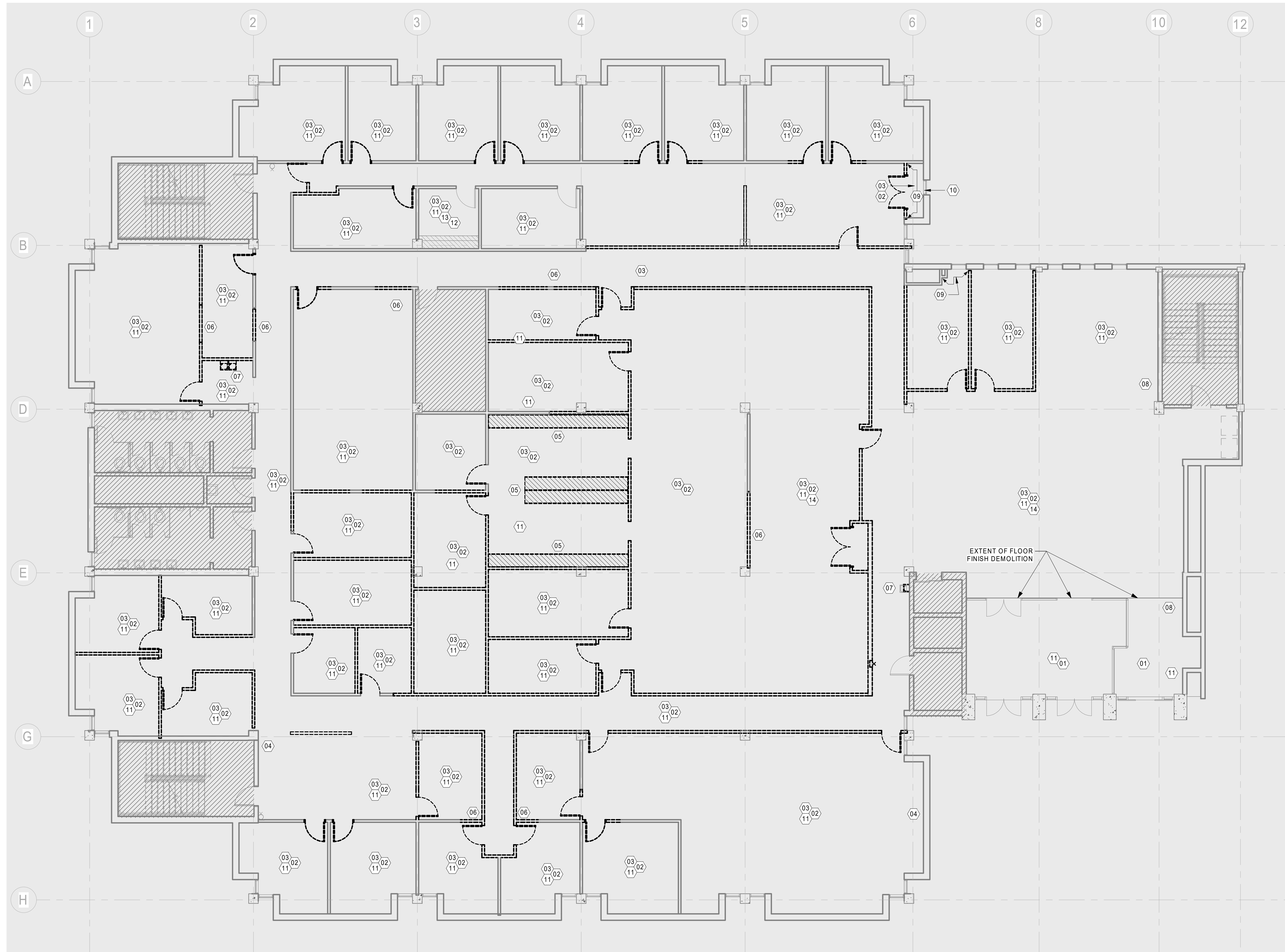
PHASE 2



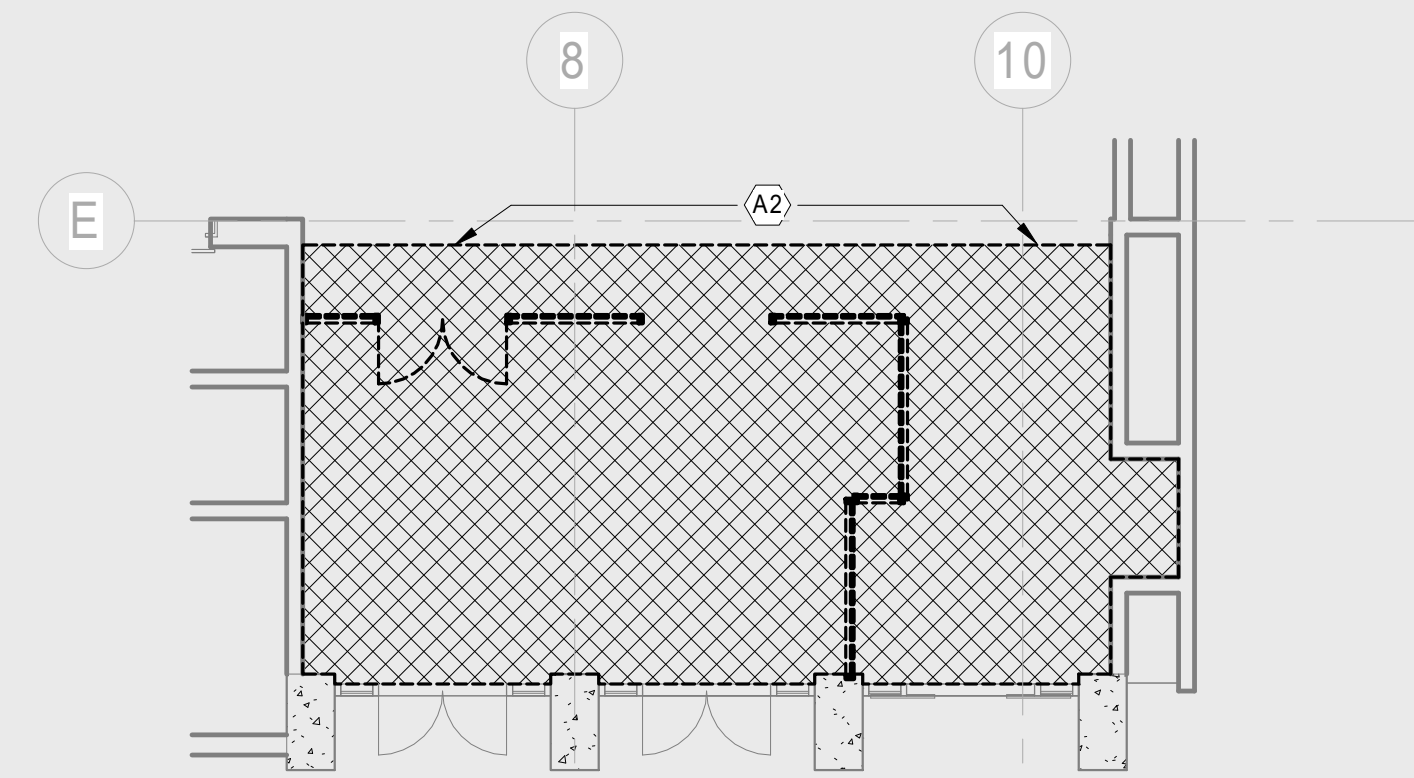
3 (ALT #1) KICKER BRACE DETAIL 'K2'
3/4" = 1'-0"



4 SLAB PENETRATION DETAIL
3/4" = 1'-0"

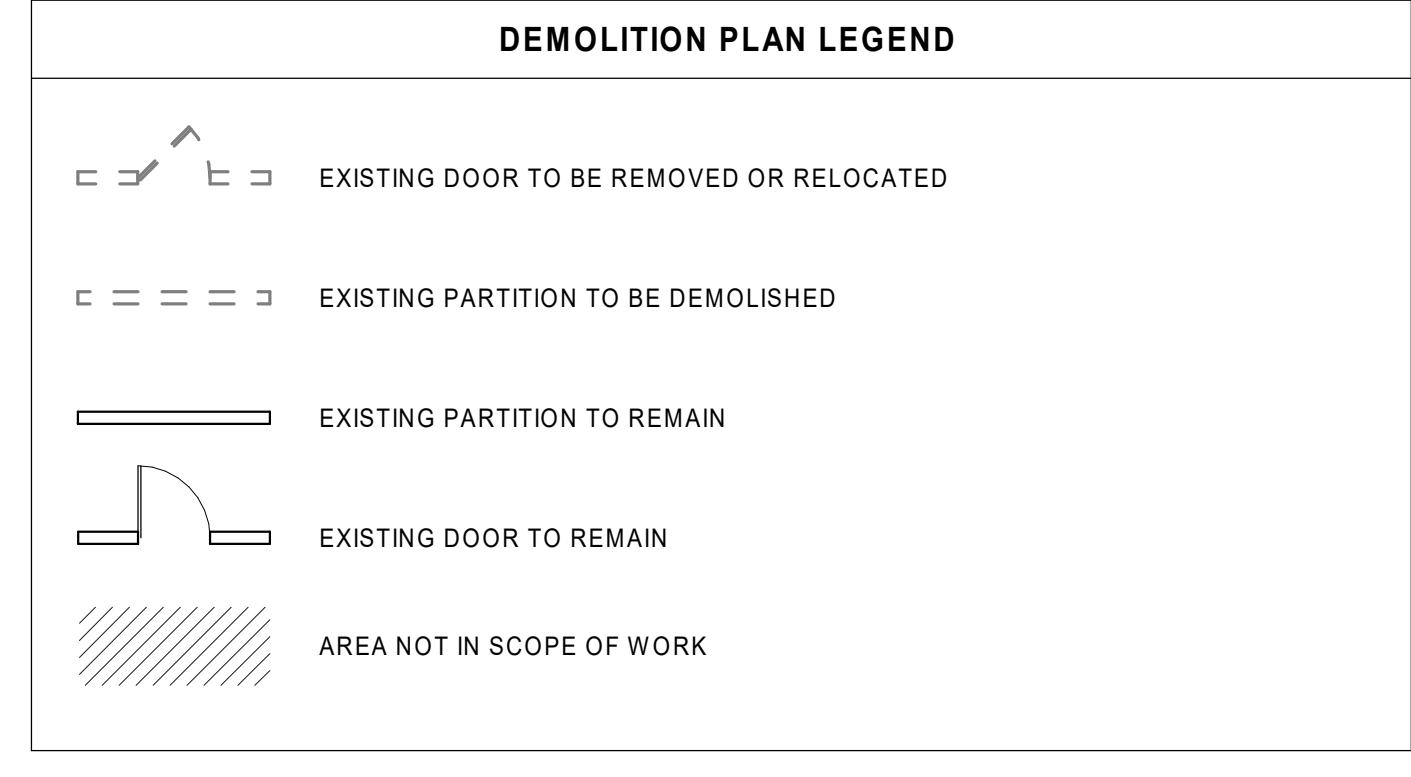


B5 FIRST FLOOR DEMOLITION PLAN (PHASE 2)
1/8" = 1'-0"



A2 ALT #2 - VESTIBULE DEMO
1/8" = 1'-0"

- ### DEMOLITION GENERAL NOTES
- OBTAIN DEMOLITION PERMITS AND INCLUDE ALL COSTS OF SAME IN CONTRACT PRICE, IF REQUIRED.
 - FURNISH ALL LABOR AND MATERIALS/EQUIPMENT AS REQUIRED TO COMPLETE DEMOLITION AND REMOVAL OF ALL ITEMS AS INDICATED.
 - PROVIDE STRICT CONTROL OF JOB CLEANING AND PREVENT DUST AND DEBRIS FROM EMANATING FROM DEMOLITION/CONSTRUCTION AREA. KEEP AREA CLEAN.
 - IF ANY QUESTIONS ARISE AS TO THE REMOVAL OF ANY MATERIAL, CLARIFY THE POINT IN QUESTION WITH THE OWNER BEFORE PROCEEDING.
 - AT COMPLETION OF DEMOLITION WORK, THE CONSTRUCTION AREA(S) SHALL BE LEFT IN "BROOM CLEAN" CONDITION. ALL DEBRIS AND MISCELLANEOUS MATERIAL SHALL BE REMOVED AND JOB SITE KEPT CLEAN ON A DAILY BASIS.
 - ALL DEBRIS REMOVAL SHALL BE PERFORMED IN ACCORDANCE WITH OWNER REQUIREMENTS AND PROCEDURES.
 - WHERE PARTITIONS ARE TO BE REMOVED, REMOVE ALL OUTLETS, SWITCHES, WIRES, THERMOSTATS, ETC. TO PANELS AND TERMINATE IN COMPLIANCE WITH APPLICABLE BUILDING CODES.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR PATCHING AND/OR REPAIRING ANY DAMAGE CAUSED BY HIS SUBCONTRACTORS TO EXISTING TO REMAIN CONSTRUCTION. REFINISH TO MATCH EXISTING ADJACENT FINISH.
 - REMOVE TO SOURCE ALL PIPES, VENTS, APPLIANCES OR DRAINS NOT BEING RE-USED AND TERMINATE IN COMPLIANCE WITH APPLICABLE BUILDING CODES.
 - REMOVAL OF ALL EQUIPMENT, CABLING, SWITCHES, AND CONDUIT PERTAINING TO DATA/COMMUNICATIONS AND TELEPHONE SHALL BE VERIFIED WITH TELEPHONE COMPANIES, SERVICE OWNER OR TENANT DATA/COMMUNICATIONS REPRESENTATIVE AS REQUIRED TO PREVENT NEW CONSTRUCTION DELAYS.
 - SCOPE INCLUDES:
 - REMOVAL OF ALL ITEMS OF ANY NATURE SHOWN ON DRAWINGS TO BE REMOVED.
 - CONTRACTOR TO DEMO AND REMOVE EXISTING PARTITIONS & CONSTRUCTION INCLUSIVE OF WALLS, LIGHTING, GRID, TILE AND EQUIPMENT AS SHOWN ON DRAWINGS.
 - ALL WORK SHALL COMPLY WITH THE RULES AND REGULATIONS OF THE DIVISION OF INDUSTRIAL SAFETY AND ALL OTHER LOCAL, STATE AND FEDERAL AUTHORITIES HAVING JURISDICTION.
 - WHEN THE NATURE OF THE DEMOLITION WORK REQUIRES OWNER USE, ALL WORK TO BE ISOLATED BY TEMPORARY, LOCKABLE PAINTED PLYWOOD BARRIERS SO THAT WORK IS SEPARATED FROM OCCUPIED OWNER SPACE. CONTRACTOR TO ENSURE BARRIERS PROTECT DEMOLITION WORK AND PROHIBIT UNAUTHORIZED ENTRY.
 - ALL DIMENSIONS AND CONDITIONS ARE TO BE VERIFIED IN THE FIELD. ARCHITECT TO BE IMMEDIATELY NOTIFIED OF ANY DISCREPANCIES.
 - EXISTING CONSTRUCTION ADJACENT TO ITEMS BEING REMOVED TO BE ADEQUATELY PROTECTED AND PATCHED AND REPAIRED AS REQUIRED. ANY DAMAGE TO EXISTING FINISHES TO REMAIN SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. DAMAGED SURFACES TO BE REPAIRED AND REFINISHED TO NEAREST INSIDE CORNER. ALL REPAIR WORK SUBJECT TO APPROVAL BY ARCHITECT/OWNER.
 - MAINTAIN ALL ABOVE CEILING DUCTWORK, DIFFUSERS, GRILLES, OR OTHER EQUIPMENT AS REQUIRED FOR PROPER DISTRIBUTION OF AIR. TEMPORARILY HANG EQUIPMENT FROM CEILING IF NECESSARY. CONTRACTOR TO INSTALL FILTER OR GAUZE MATERIAL AT BUILDING'S HVAC RETURN OPENINGS TO MINIMIZE DUST IN HVAC SYSTEM.
 - COORDINATE ALL WORK CONCERNING EXISTING EQUIPMENT AND SERVICES TO REMAIN. DE-ENERGIZE CIRCUITS AND MAKE THEM SAFE AS REQUIRED BY APPLICABLE CODES. RECONNECT CIRCUITS THAT ARE TO REMAIN AND ARE INTERRUPTED DURING DEMOLITION.
 - RECONNECT EXISTING CIRCUITRY WHICH ORIGINATES OR PASSES THROUGH THE RENOVATED AREAS BUT SERVES OTHER AREAS NOT BEING RENOVATED. EXTEND THESE CIRCUITS AS MAY BE NECESSARY TO THE EXISTING PANELBOARDS.
 - COORDINATE WORK CONCERNING EXISTING EQUIPMENT AND SERVICES IN THE BUILDING WITH OWNER. CONTRACTOR TO CONTACT OWNER TO SCHEDULE A SHUTDOWN AT A TIME CONVENIENT TO OWNER WHEN IT BECOMES NECESSARY TO TEMPORARILY DISTURB OR INTERRUPT SYSTEMS OR SERVICES TO PERMIT DEMOLITION. CONTRACTOR REQUEST MUST BE IN WRITING.
 - CONTRACTOR TO MAINTAIN ALL EGRESS DOORS, AND ACCESS TO ALL EGRESS EXIT DOORS THROUGHOUT ALL DEMOLITION/NEW CONSTRUCTION.
 - CONTRACTOR TO ENSURE THAT ANY DEMOLITION REQUIRING "EXCESSIVE" NOISE BE PERFORMED AFTER NORMAL BUSINESS HOURS. COORDINATE WITH OWNER.
 - CONTRACTOR TO PROVIDE SUPPLEMENTAL LIGHTING FOR SAFE WORKING CONDITIONS THROUGHOUT COURSE OF DEMOLITION/NEW CONSTRUCTION AS REQUIRED.
 - CONTRACTOR TO COORDINATE PLACEMENT OF DUMPSTER WITH OWNER.
 - CONTRACTOR TO REMOVE ALL TOOLS, EQUIPMENT AND DEBRIS FROM SITE UPON COMPLETION OF DEMOLITION WORK. REMOVE TEMPORARY PROTECTION AND LEAVE INTERIOR AREAS BROOM CLEAN.
 - PREP & PATCH WALLS, CEILINGS & FLOORS IF AFFECTED BY DEMOLITION. REPAIR AS REQUIRED TO MEET ORIGINAL FIRE PROTECTION AND STRUCTURAL REQUIREMENTS.



KEYED NOTES - DEMO FLOOR PLANS

TAG	DESCRIPTION
01	EXISTING FLOOR FINISH TO REMAIN.
02	REMOVE EXISTING CEILING GRID & ALL ASSOCIATED HARDWARE AND ASSOCIATED ACCESSORIES IN ITS ENTIRETY.
03	REMOVE EXISTING FLOOR FINISH & WALL BASE IN ITS ENTIRETY.
04	REMOVE EXISTING WALL MOUNTED BOARD, PATCH SUBSTRATE AS REQ'D.
05	REMOVE MILLWORK AND ALL ASSOCIATED HARDWARE, PATCH SUBSTRATE AS REQ'D.
06	COORDINATE EXTENT OF DEMOLITION WITH NEW WORK.
07	REMOVE EXISTING WALL MOUNTED WATER COOLER. REFER TO PLUMBING DRAWINGS FOR MORE INFORMATION.
08	REMOVE WALL MOUNTED ACCESSORIES, PATCH AS REQ'D.
09	REMOVE WALL PANELING, PATCH WALL AS REQ'D.
10	REMOVE WALL TRIM FROM WINDOW.
11	REMOVE ALL WALL MOUNTED SIGNAGE. TYP. PATCH SUBSTRATE AS REQ'D.
12	EXISTING BASE CABINETS & WALL CABINETS TO REMAIN.
13	REMOVE EXISTING COUNTERTOP, PATCH & REPAIR SUBSTRATE AS REQ'D.
14	NEW FLOOR CORE, REFER TO ELEC DRAWINGS FOR ADDITIONAL INFORMATION.
A2	ALTERNATE #2 REMOVE EXISTING ALUM SOTREFRONT SYSTEM IN ITS ENTIRETY. REMOVE EXISTING HERRINGBONE BRICK TILE FLOOR IN ITS ENTIRETY. PATCH & REPAIR SUBSTRATE AS REQ'D FOR NEW FINISH FLOOR. REFER TO FINISH PLAN FOR MORE INFORMATION ON NEW FLOORING.

PHASE 2



One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia, PA 19103 U.S.A.
norr.com

CLIENT:
THE COLLEGE OF NEW JERSEY
2000 PENNINGTON ROAD
EWING, NJ

PROJECT TEAM
NORR
One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia PA 19102
norr.com

SHEN MILSON & WILKE
75 MADISON AVE
NEW YORK, NY 10016

TCNJ - ROSCOE HALL STUDENT SERVICES RENOVATION

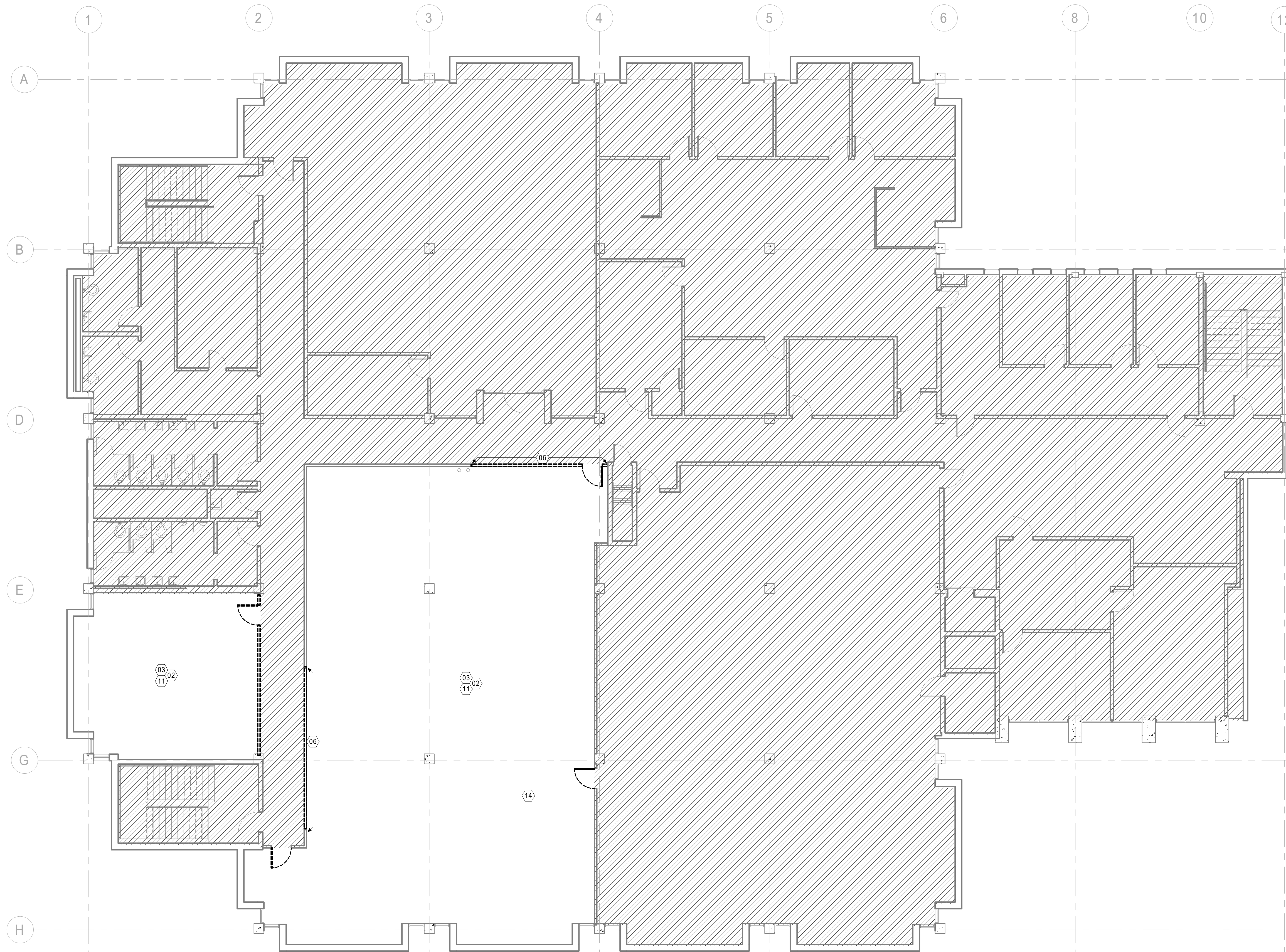
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REV.	DATE	DESCRIPTION	ISSUED FOR	ISSUED FOR
1	2023.01.20	DESIGN DEVELOPMENT	CLIENT REVIEW	
2	2023.02.13	ISSUED FOR DCI REVIEW		
3	2023.03.02	ISSUED FOR BID		

NIDCA REF NUMBER:
PROJECT NUMBER: **22031600**
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FIRST FLOOR DEMOLITION PLAN

SHEET NUMBER:
AD101

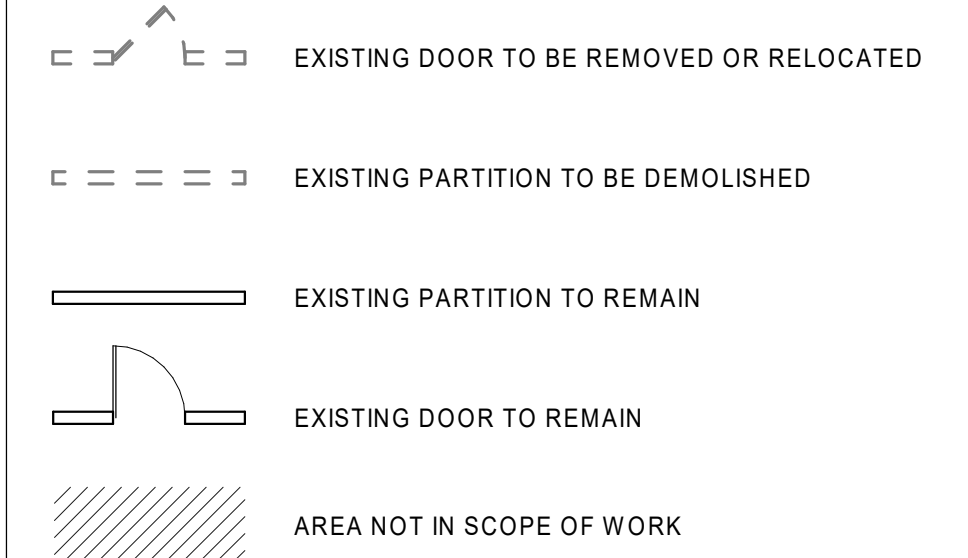


1 SECOND FLOOR DEMOLITION PLAN
1/8" = 1'-0"

DEMOLITION GENERAL NOTES

1. OBTAIN DEMOLITION PERMITS AND INCLUDE ALL COSTS OF SAME IN CONTRACT PRICE, IF REQUIRED.
2. FURNISH ALL LABOR AND MATERIALS/EQUIPMENT AS REQUIRED TO COMPLETE DEMOLITION AND REMOVAL OF ALL ITEMS AS INDICATED.
3. PROVIDE STRICT CONTROL OF JOB CLEANING AND PREVENT DUST AND DEBRIS FROM EMANATING FROM DEMOLITION/CONSTRUCTION AREA. KEEP AREA CLEAN.
4. IF ANY QUESTIONS ARISE AS TO THE REMOVAL OF ANY MATERIAL, CLARIFY THE POINT IN QUESTION WITH THE OWNER BEFORE PROCEEDING.
5. AT COMPLETION OF DEMOLITION WORK, THE CONSTRUCTION AREA(S) SHALL BE LEFT IN "BROOM CLEAN" CONDITION. ALL DEBRIS AND MISCELLANEOUS MATERIAL SHALL BE REMOVED AND JOB SITE KEPT CLEAN ON A DAILY BASIS.
6. ALL DEBRIS REMOVAL SHALL BE PERFORMED IN ACCORDANCE WITH OWNER REQUIREMENTS AND PROCEDURES.
7. WHERE PARTITIONS ARE TO BE REMOVED, REMOVE ALL OUTLETS, SWITCHES, WIRES, THERMOSTATS, ETC. TO PANELS AND TERMINATE IN COMPLIANCE WITH APPLICABLE BUILDING CODES.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR PATCHING AND/OR REPAIRING ANY DAMAGE CAUSED BY HIS SUBCONTRACTORS TO EXISTING TO REMAIN CONSTRUCTION. REFINISH TO MATCH EXISTING ADJACENT FINISH.
9. REMOVE TO SOURCE ALL PIPES, VENTS, APPLIANCES OR DRAINS NOT BEING RE-USED AND TERMINATE IN COMPLIANCE WITH APPLICABLE BUILDING CODES.
10. REMOVAL OF ALL EQUIPMENT, CABLING, SWITCHES, AND CONDUIT PERTAINING TO DATA/COMMUNICATIONS AND TELEPHONE SHALL BE VERIFIED WITH TELEPHONE COMPANIES, SERVICE OWNER OR TENANT DATA/COMMUNICATIONS REPRESENTATIVE AS REQUIRED TO PREVENT NEW CONSTRUCTION DELAYS.
11. SCOPE INCLUDES:
 - A. REMOVAL OF ALL ITEMS OF ANY NATURE SHOWN ON DRAWINGS TO BE REMOVED.
 - B. CONTRACTOR TO DEMO AND REMOVE EXISTING PARTITIONS & CONSTRUCTION INCLUSIVE OF WALLS, LIGHTING, GRID, TILE AND EQUIPMENT AS SHOWN ON DRAWINGS.
12. ALL WORK SHALL COMPLY WITH THE RULES AND REGULATIONS OF THE DIVISION OF INDUSTRIAL SAFETY AND ALL OTHER LOCAL, STATE AND FEDERAL AUTHORITIES HAVING JURISDICTION.
13. WHEN THE NATURE OF THE DEMOLITION WORK REQUIRES OWNER USE, ALL WORK TO BE ISOLATED BY TEMPORARY, LOCKABLE PAINTED PLYWOOD BARRIERS SO THAT WORK IS SEPARATED FROM OCCUPIED OWNER SPACE. CONTRACTOR TO ENSURE BARRIERS PROTECT DEMOLITION WORK AND PROHIBIT UNAUTHORIZED ENTRY.
14. ALL DIMENSIONS AND CONDITIONS ARE TO BE VERIFIED IN THE FIELD. ARCHITECT TO BE IMMEDIATELY NOTIFIED OF ANY DISCREPANCIES.
15. EXISTING CONSTRUCTION ADJACENT TO ITEMS BEING REMOVED TO BE ADEQUATELY PROTECTED AND PATCHED AND REPAIRED AS REQUIRED. ANY DAMAGE TO EXISTING FINISHES TO REMAIN SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. DAMAGED SURFACES TO BE REPAIRED AND REFINISHED TO NEAREST INSIDE CORNER. ALL REPAIR WORK SUBJECT TO APPROVAL BY ARCHITECT/OWNER.
16. MAINTAIN ALL ABOVE CEILING DUCTWORK, DIFFUSERS, GRILLES, OR OTHER EQUIPMENT AS REQUIRED FOR PROPER DISTRIBUTION OF AIR. TEMPORARILY HANG EQUIPMENT FROM CEILING IF NECESSARY. CONTRACTOR TO INSTALL FILTER OR GAUZE MATERIAL AT BUILDING'S HVAC RETURN OPENINGS TO MINIMIZE DUST IN HVAC SYSTEM.
17. COORDINATE ALL WORK CONCERNING EXISTING EQUIPMENT AND SERVICES TO REMAIN. DE-ENERGIZE CIRCUITS AND MAKE THEM SAFE AS REQUIRED BY APPLICABLE CODES.
18. RECONNECT CIRCUITS THAT ARE TO REMAIN AND ARE DISRUPTED DURING DEMOLITION.
19. RECONNECT EXISTING CIRCUITRY WHICH ORIGINATES OR PASSES THROUGH THE RENOVATED AREAS BUT SERVES OTHER AREAS NOT BEING RENOVATED. EXTEND THESE CIRCUITS AS MAY BE NECESSARY TO THE EXISTING PANELBOARDS.
20. COORDINATE WORK CONCERNING EXISTING EQUIPMENT AND SERVICES IN THE BUILDING WITH OWNER. CONTRACTOR TO CONTACT OWNER TO SCHEDULE A SHUTDOWN AT A TIME CONVENIENT TO OWNER WHEN IT BECOMES NECESSARY TO TEMPORARILY DISTURB OR INTERRUPT SYSTEMS OR SERVICES TO PERMIT DEMOLITION. CONTRACTOR REQUEST MUST BE IN WRITING.
21. CONTRACTOR TO MAINTAIN ALL EGRESS DOORS, AND ACCESS TO ALL EGRESS EXIT DOORS THROUGHOUT ALL DEMOLITION/NEW CONSTRUCTION.
22. CONTRACTOR TO ENSURE THAT ANY DEMOLITION REQUIRING "EXCESSIVE" NOISE BE PERFORMED AFTER NORMAL BUSINESS HOURS. COORDINATE WITH OWNER.
23. CONTRACTOR TO PROVIDE SUPPLEMENTAL LIGHTING SUFFICIENT FOR SAFE WORKING CONDITIONS THROUGHOUT COURSE OF DEMOLITION/NEW CONSTRUCTION AS REQUIRED.
24. CONTRACTOR TO COORDINATE PLACEMENT OF DUMPSTER WITH OWNER.
25. CONTRACTOR TO REMOVE ALL TOOLS, EQUIPMENT AND DEBRIS FROM SITE UPON COMPLETION OF DEMOLITION WORK. REMOVE TEMPORARY PROTECTION AND LEAVE INTERIOR AREAS BROOM CLEAN.
26. PREP & PATCH WALLS, CEILINGS & FLOORS IF AFFECTED BY DEMOLITION. REPAIR AS REQUIRED TO MEET ORIGINAL FIRE PROTECTION AND STRUCTURAL REQUIREMENTS.

DEMOLITION PLAN LEGEND



KEYED NOTES - DEMO FLOOR PLANS

TAG	DESCRIPTION
01	EXISTING FLOOR FINISH TO REMAIN.
02	REMOVE EXISTING CEILING GRID & ALL ASSOCIATED HARDWARE AND ASSOCIATED ACCESSORIES IN ITS ENTIRETY.
03	REMOVE EXISTING FLOOR FINISH & WALL BASE IN ITS ENTIRETY.
04	REMOVE EXISTING WALL MOUNTED BOARD. PATCH SUBSTRATE AS REQ'D.
05	REMOVE MILLWORK AND ALL ASSOCIATED HARDWARE. PATCH SUBSTRATE AS REQ'D.
06	COORDINATE EXTENT OF DEMOLITION WITH NEW WORK.
07	REMOVE EXISTING WALL MOUNTED WATER COOLER. REFER TO PLUMBING DRAWINGS FOR MORE INFORMATION.
08	REMOVE WALL MOUNTED ACCESSORIES. PATCH AS REQ'D.
09	REMOVE WALL PANELING. PATCH WALL AS REQ'D.
10	REMOVE WALL TRIM FROM WINDOW.
11	REMOVE ALL WALL MOUNTED SIGNAGE. TYP. PATCH SUBSTRATE AS REQ'D.
12	EXISTING BASE CABINETS & WALL CABINETS TO REMAIN.
13	REMOVE EXISTING COUNTERTOP. PATCH & REPAIR SUBSTRATE AS REQ'D.
14	NEW FLOOR CORE. REFER TO ELEC DRAWINGS FOR ADDITIONAL INFORMATION.
A2	ALTERNATE #2 REMOVE EXISTING ALUM SOTREFRONT SYSTEM IN ITS ENTIRETY. REMOVE EXISTING HERRINGBONE BRICK TILE FLOOR IN ITS ENTIRETY. PATCH & REPAIR SUBSTRATE AS REQ'D FOR NEW FINISH FLOOR. REFER TO FINISH PLAN FOR MORE INFORMATION ON NEW FLOORING.



One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia, PA 19103 U.S.A.
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THE COLLEGE OF NEW JERSEY
2000 PENNINGTON ROAD
EWING, NJ

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One Penn Center
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Philadelphia PA 19103
norr.com

SHEN MILSON & WILKE
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NEW YORK, NY 10016

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1	2023.01.20	DESIGN DEVELOPMENT	
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4	2023.03.02	ISSUED FOR BID	

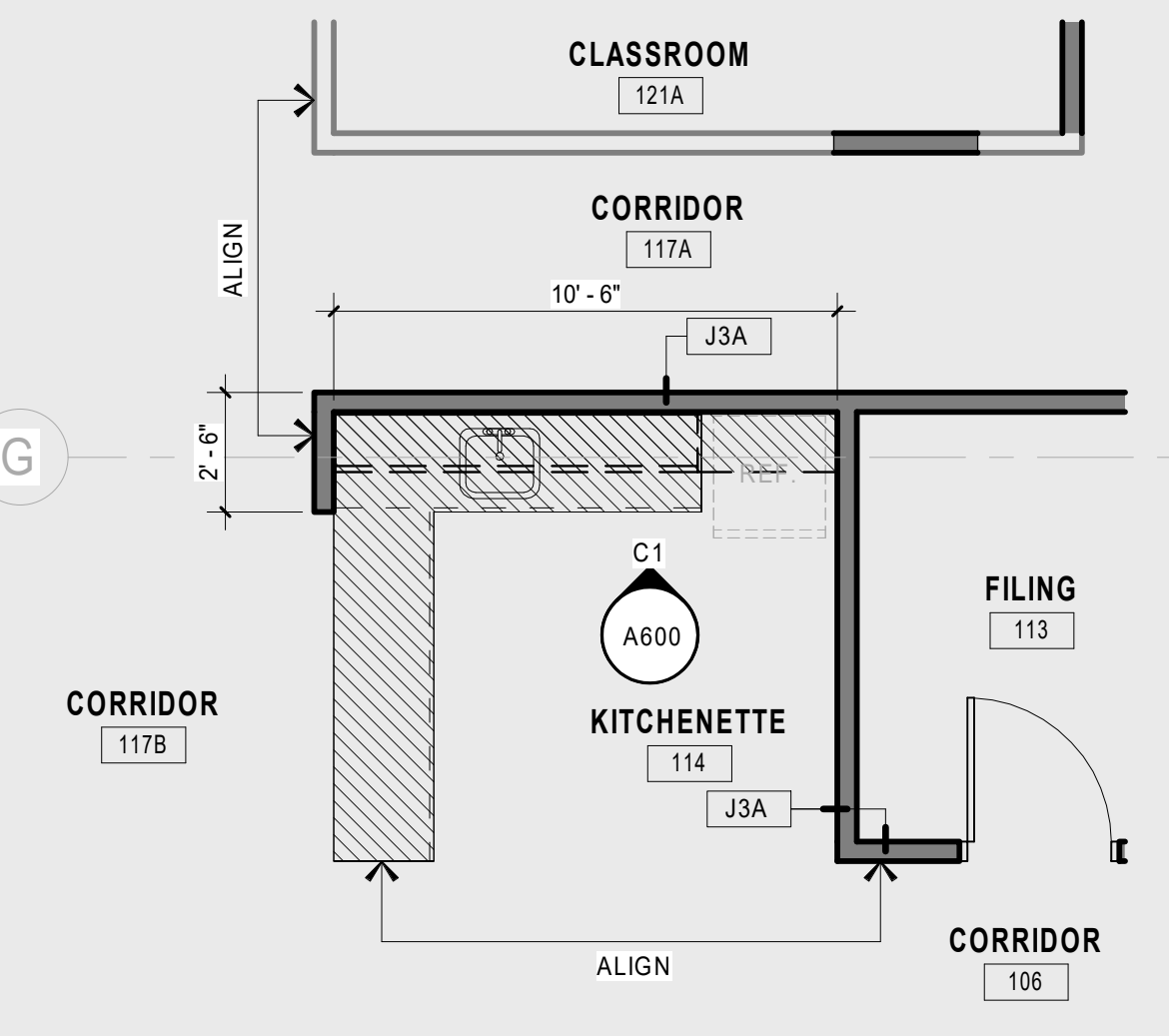
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SECOND FLOOR DEMOLITION PLAN

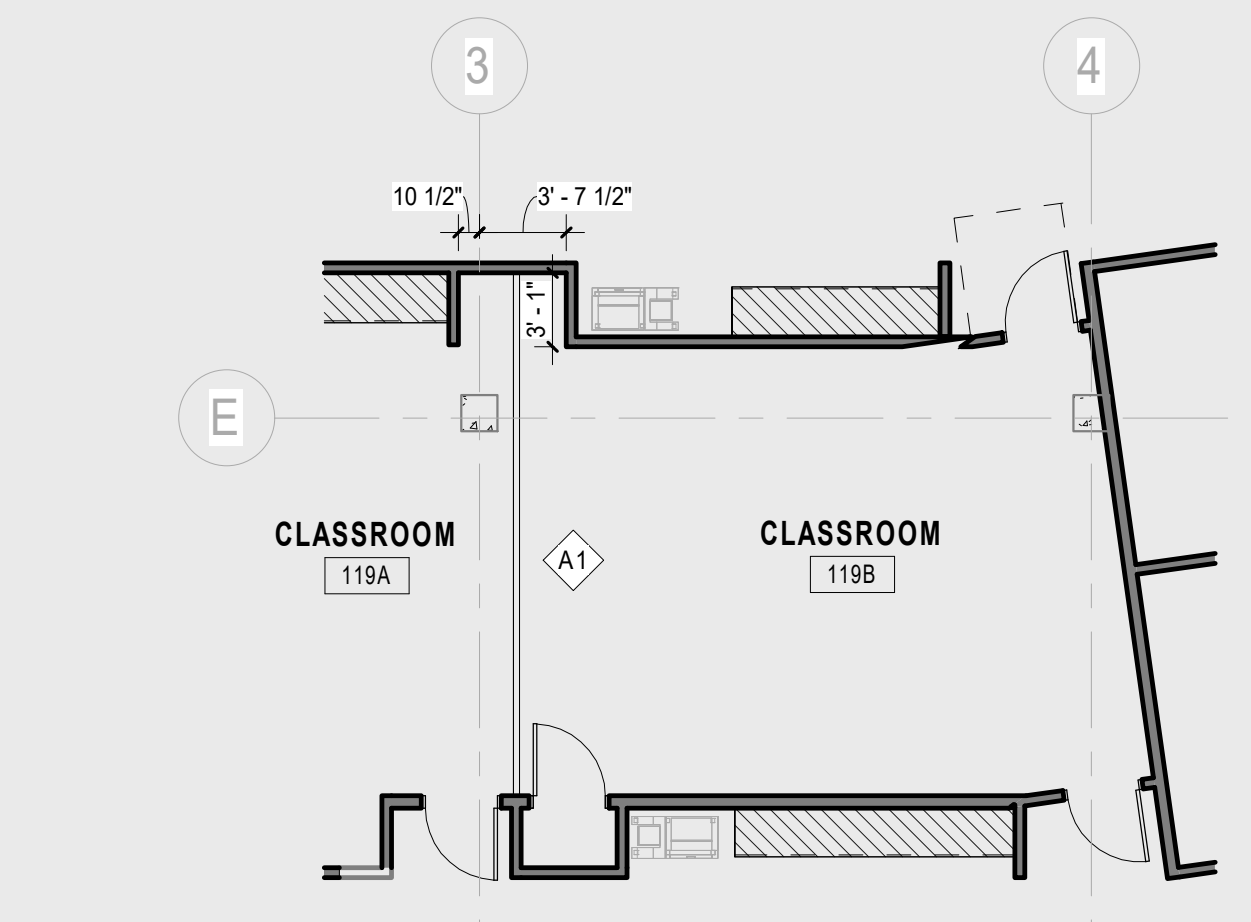
SHEET NUMBER:
AD102



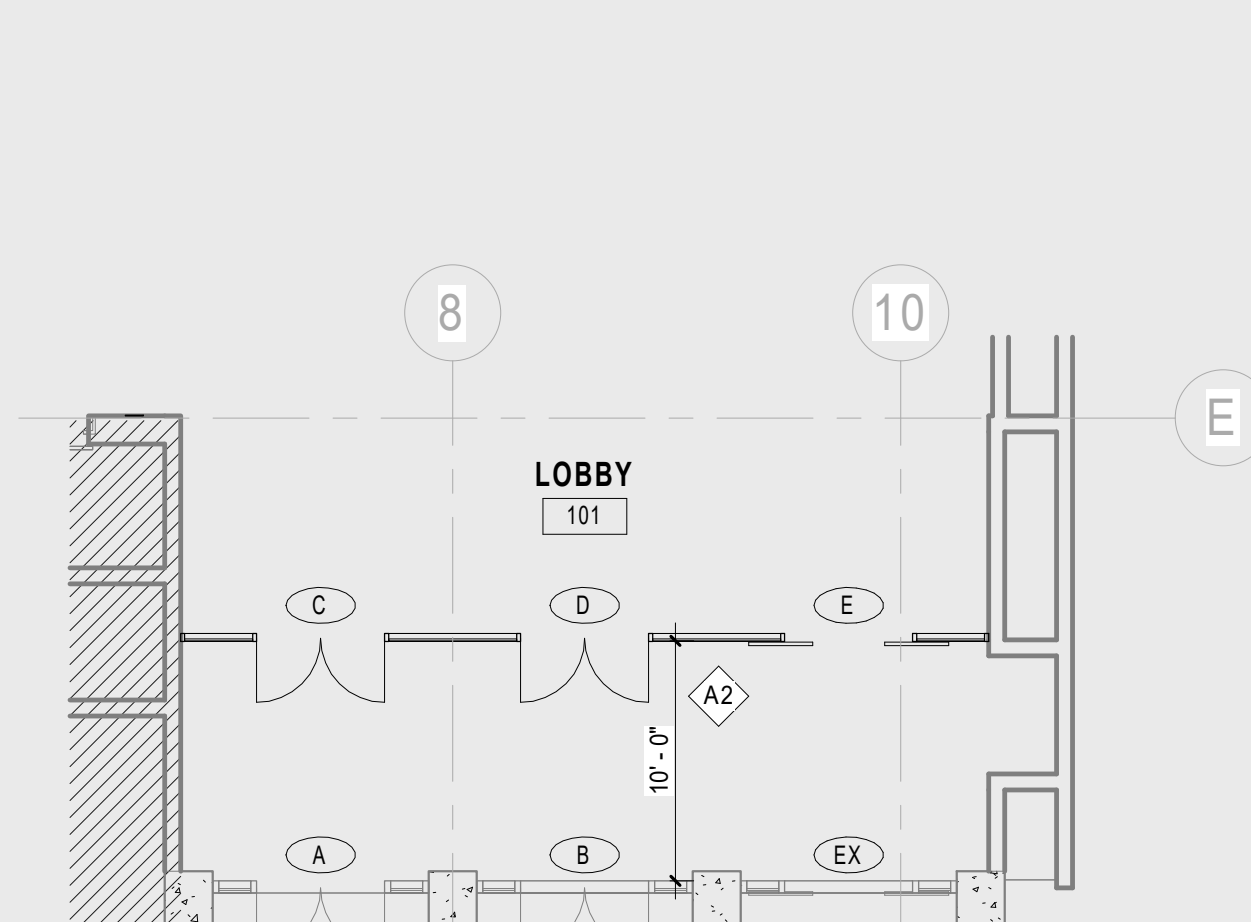
1 OVERALL FIRST FLOOR PLAN (PHASE 2)
1/8" = 1'-0"



2 ENLARGED KITCHENETTE 114 PLAN
1/4" = 1'-0"



A1 FIRST FLOOR PLAN ALT #1 OPERABLE PARTITION
1/8" = 1'-0"

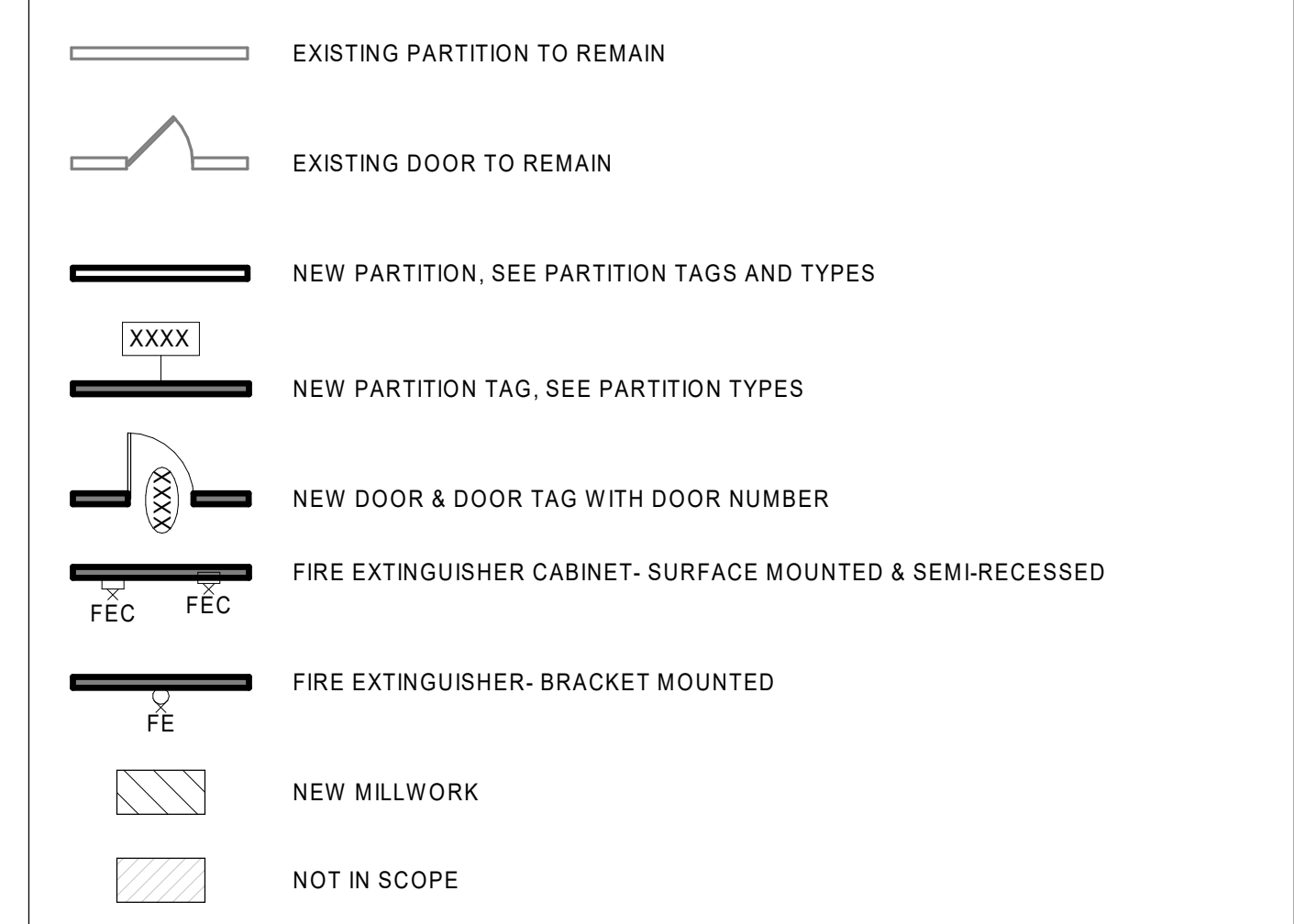


A2 FIRST FLOOR PLAN ALT #2 NEW STOREFRONT
1/8" = 1'-0"

FLOOR PLAN GENERAL NOTES

- DO NOT SCALE DRAWINGS. WRITTEN DIMENSIONS GOVERN. ALL PARTITION LOCATIONS SHALL BE AS SHOWN ON PARTITION PLAN. IN CASE OF CONFLICT NOTIFY ARCHITECT IMMEDIATELY. PARTITION PLAN BY ARCHITECT TAKES PRECEDENCE OVER ALL OTHER PLANS.
- DIMENSIONS NOTED "CLEAR" OR "CLR" OR "HOLD" MUST BE ACCURATELY MAINTAINED. SHALL ALLOW FOR THICKNESS OF ALL WALL FINISHES U.O.N. AND SHALL NOT VARY MORE THAN + 1/8" WITHOUT WRITTEN INSTRUCTION FROM ARCHITECT.
- ALL PARTITIONS ARE DIMENSIONED FROM FINISH FACE OF GYPSUM BOARD TO FINISH FACE OF GYPSUM BOARD U.O.N.
- ALL PARTITIONS ARE TYPE A3A U.O.N.
- ALL FLOOR SLAB PENETRATIONS FOR PIPING SHALL BE FULLY PACKED AND SEALED IN ACCORDANCE WITH THE APPLICABLE BUILDING AND FIRE CODES. ANY PENETRATIONS AT RATED PARTITIONS TO BE PER APPLICABLE UL ASSEMBLY.
- U.O.N. DOORS ARE CENTERED OR HINGE SIDE IS TO BE LOCATED 6" FROM CORNER AS INDICATED. DOORS MUST HAVE 1" CLEAR ON STRIKE/PULL SIDE AND 12" CLEAR ON STRIKE/PUSH SIDE OF DOOR. VERIFY AND ADVISE ARCHITECTS OF EXCEPTIONS PRIOR TO CLOSING OUT PARTITIONS.
- ALL GYPSUM PARTITIONS SHALL BE TAPED AND SANDED SMOOTH WITH NO VISIBLE JOINTS. PATCH AND REPAIR SURFACES TO MATCH ADJACENT OR ADJOINING SURFACES WHERE REQUIRED.
- REFER TO GYPSUM SERIES SHEETS FOR ADDITIONAL NOTES, LEGENDS, SYMBOLS, ABBREVIATIONS, AND SCHEDULES.
- ALL MILLWORK & WALL-HUNG FURNITURE TO BE FASTENED TO THE PARTITION. PROVIDE BLOCKING FOR ALL MILLWORK & WALL-HUNG FURNITURE NOT SUPPORTED BY THE SLAB OR ABOVE 4'-0" HEIGHT. ALL CONCEALED WOOD BLOCKING TO BE FIRE TREATED, AS REQUIRED BY APPLICABLE CODES.
- PREPARE SURFACES TO RECEIVE NEW FINISHES, AS REQUIRED. FINISHES TO BE INSTALLED PER MANUFACTURERS SPECIFICATIONS.
- ALL APPLIANCES AND EQUIPMENT TO BE PROVIDED BY OWNER.

FLOOR PLAN LEGEND



KEYED NOTES - FLOOR PLANS

TAG	DESCRIPTION
01	NEW PARTITION TO MATCH CONSTRUCTION OF ADJACENT.
02	NEW RETURN SHAFT LOCATION. PROVIDE 12"x12" ACCESS DOOR. COORDINATE FINAL LOCATION IN FIELD. REFER TO MECH DRAWINGS FOR MORE INFORMATION.
03	ADD LAYER OF 5/8" GWB TO EXISTING STUD. GWB TO GO FROM FLOOR SCRIBED TO BOTTOM OF DECK
04	PARTITION TO BE TIGHT TO EXIST. COLUMN.
05	EXTEND EXISTING PARTITION 6" BEYOND CEILING. CONSTRUCTION TO MATCH EXISTING. REFER TO RCP FOR CEILING HEIGHT
06	PROVIDE NEW COUNTERTOP W/ 4" BACKSPLASH ON EXISTING BASE CABINETS. NEW SINK IN APPROXIMATE LOCATION SHOWN ON PLAN. COORDINATE SPEC W/ PLUMBING DRAWINGS.
07	PARTITION AS NOTED. PROVIDE 1" AIR GAP BETWEEN EXISTING NEW PARTITION.
08	NEW FLOOR CORE. REFER TO ELECTRICAL DRAWINGS.
A1	ALTERNATE #1: PROVIDE MODERN FOLD OPERABLE PARTITION IN LIEU OF GWB/STUD PARTITION AS SHOWN. BOD SPEC: ACUSTI-SEAL LEGACY; 8'-0" H. PAIRED PANEL, MANUAL OPERATION CTC-50; VINYL FABRIC. CASEWORK IN ADJACENT CORRIDORS SHOULD REDUCED AS NECESSARY TO MAINTAIN 4'-6" CLEAR OPENING @ COPY MACHINE LOCATION. SUPPLEMENTAL STEEL SUPPORT AND DOUBLE-LAYER GWS SOFFIT TO BE PROVIDED IN CEILING ABOVE. REFER TO STRUCTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
A2	ALTERNATE #2: REMOVE EXISTING INTERIOR STOREFRONT ASSEMBLY IN ITS ENTIRETY. PROVIDE NEW FLOOR-CEILING ALUMINUM / GLASS STOREFRONT & DOORS AS SHOWN. NARROW STYLE DOORS. SIZES OF DOORS TO MATCH EXISTING EXTERIOR (VF). BOD: KAWNEER TRIFAB VG-451 FRAMING SYSTEM. CENTER SET. W/ FULLY TEMPERED CLEAR GLAZING. 4" H BASE. DOOR HARDWARE: 12" CTC PULLS (EXTERIOR), PUSH BAR (INTERIOR). INTERCHANGEABLE CORE RIM CYLINDER. SURFACE CLOSERS (ADA-COMPLIANT W/ STOP). SLIDING DOOR BOD: STANLEY DURAGLIDE 2000 SERIES. FINISHES OF ALL STOREFRONT / DOOR COMPONENTS TO BE BLACK ANODIZED. PATCH / PAINT EXISTING DRYWALL SURFACES DAMAGED DURING DEMOLITION OF EXISTING STOREFRONT. RELOCATE ANY EXISTING DIFFUSERS / SPRINKLERS AS REQUIRED TO ACCOMMODATE NEW LAYOUT. REFER TO ALT RCP FOR NEW LIGHTING LAYOUT. CONTRACTOR TO CAREFULLY REMOVE & SALVAGE EXISTING WALL PLAQUES @ VESTIBULE FOR RELOCATION.



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PROJECT NUMBER: **22031600**
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FIRST FLOOR PLAN

SHEET NUMBER
A101



1 OVERALL SECOND FLOOR PLAN
1/8" = 1'-0"

FLOOR PLAN GENERAL NOTES

1. DO NOT SCALE DRAWINGS. WRITTEN DIMENSIONS GOVERN. ALL PARTITION LOCATIONS SHALL BE AS SHOWN ON PARTITION PLAN. IN CASE OF CONFLICT NOTIFY ARCHITECT IMMEDIATELY. PARTITION PLAN BY ARCHITECT TAKES PRECEDENCE OVER ALL OTHER PLANS.
2. DIMENSIONS NOTED "CLEAR" OR "CLR" OR "HOLD" MUST BE ACCURATELY MAINTAINED. SHALL ALLOW FOR THICKNESS OF ALL WALL FINISHES U.O.N. AND SHALL NOT VARY MORE THAN + 1/8" WITHOUT WRITTEN INSTRUCTION FROM ARCHITECT.
3. ALL PARTITIONS ARE DIMENSIONED FROM FINISH FACE OF GYPSUM BOARD TO FINISH FACE OF GYPSUM BOARD U.O.N.
4. ALL PARTITIONS ARE TYPE A3A U.O.N.
5. ALL FLOOR SLAB PENETRATIONS FOR PIPING SHALL BE FULLY PACKED AND SEALED IN ACCORDANCE WITH THE APPLICABLE BUILDING AND FIRE CODES. ANY PENETRATIONS AT RATED PARTITIONS TO BE PER APPLICABLE UL ASSEMBLY.
6. U.O.N. DOORS ARE CENTERED OR HINGE SIDE IS TO BE LOCATED 6" FROM CORNER AS INDICATED. DOORS MUST HAVE 1'-0" CLEAR ON STRIKE/PULL SIDE AND 12" CLEAR ON STRIKE/PUSH SIDE OF DOOR. VERIFY AND ADVISE ARCHITECTS OF EXCEPTIONS PRIOR TO CLOSING OUT PARTITIONS.
7. ALL GYPSUM BOARD PARTITIONS SHALL BE TAPED AND SANDED SMOOTH WITH NO VISIBLE JOINTS. PATCH AND REPAIR SURFACES TO MATCH ADJACENT OR ADJOINING SURFACES WHERE REQUIRED.
8. REFER TO G000-SERIES SHEETS FOR ADDITIONAL NOTES, LEGENDS, SYMBOLS, ABBREVIATIONS, AND SCHEDULES.
9. ALL MILLWORK & WALL-HUNG FURNITURE TO BE FASTENED TO THE PARTITION. PROVIDE BLOCKING FOR ALL MILLWORK & WALL-HUNG FURNITURE NOT SUPPORTED BY THE SLAB OR ABOVE 4'-0" HEIGHT. ALL CONCEALED WOOD BLOCKING TO BE FIRE TREATED, AS REQUIRED BY APPLICABLE CODES.
10. PREPARE SURFACES TO RECEIVE NEW FINISHES, AS REQUIRED. FINISHES TO BE INSTALLED PER MANUFACTURERS SPECIFICATIONS.
11. ALL APPLIANCES AND EQUIPMENT TO BE PROVIDED BY OWNER

FLOOR PLAN LEGEND

- EXISTING PARTITION TO REMAIN
- EXISTING DOOR TO REMAIN
- NEW PARTITION, SEE PARTITION TAGS AND TYPES
- NEW PARTITION TAG, SEE PARTITION TYPES
- NEW DOOR & DOOR TAG WITH DOOR NUMBER
- FIRE EXTINGUISHER CABINET- SURFACE MOUNTED & SEMI-RECESSED
- FIRE EXTINGUISHER- BRACKET MOUNTED
- NEW MILLWORK
- NOT IN SCOPE

KEYED NOTES - FLOOR PLANS

TAG	DESCRIPTION
01	NEW PARTITION TO MATCH CONSTRUCTION OF ADJACENT.
02	NEW RETURN SHAFT LOCATION. PROVIDE 12"x12" ACCESS DOOR. COORDINATE FINAL LOCATION IN FIELD. REFER TO MECH DRAWINGS FOR MORE INFORMATION.
03	ADD LAYER OF 5/8" GWB TO EXISTING STUD. GWB TO GO FROM FLOOR SCRIBED TO BOTTOM OF DECK.
04	PARTITION TO BE TIGHT TO EXIST. COLUMN.
05	EXTEND EXISTING PARTITION 6" BEYOND CEILING. CONSTRUCTION TO MATCH EXISTING. REFER TO RCP FOR CEILING HEIGHT.
06	PROVIDE NEW COUNTERTOP W/ 4" BACKSPLASH ON EXISTING BASE CABINETS. NEW SINK IN APPROXIMATE LOCATION SHOWN ON PLAN. COORDINATE SPEC W/ PLUMBING DRAWINGS.
07	PARTITION AS NOTED. PROVIDE 1" AIR GAP BETWEEN EXISTING NEW PARTITION.
08	NEW FLOOR CORE. REFER TO ELECTRICAL DRAWINGS.
A1	ALTERNATE #1: PROVIDE MODERNFOLD OPERABLE PARTITION IN LIEU OF GWB/STUD PARTITION AS SHOWN. BOD SPEC: ACOUSTI-SEAL LEGACY, 9'-0" H. PAIRED PANEL, MANUAL OPERATION STC-50, VINYL FABRIC. CASEWORK IN ADJACENT CORRIDORS SHOULD BE REDUCED AS NECESSARY TO MAINTAIN 4'-6" CLEAR OPENING @ COPY MACHINE LOCATION. SUPPLEMENTAL STEEL SUPPORT AND DOUBLE-LAYER GWB SOFFIT TO BE PROVIDED IN CEILING ABOVE. REFER TO STRUCTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
A2	ALTERNATE #2: REMOVE EXISTING INTERIOR STOREFRONT ASSEMBLY IN ITS ENTIRETY. PROVIDE NEW FLOOR-CEILING ALUMINUM / GLASS STOREFRONT & DOORS AS SHOWN. NARROW STYLE DOORS- SIZES OF DOORS TO MATCH EXISTING EXTERIOR (VIP). BOD: KAWNEER TRIFAB V6451 FRAMING SYSTEM, CENTER SET, W/ FULLY TEMPERED CLEAR GLAZING, 4" H BASE. DOOR HARDWARE: 12" CTC PULLS (EXTERIOR), PUSH BAR (INTERIOR). INTERCHANGEABLE CONE RIM CYLINDER, SURFACE CLOSERS (ADA-COMPLIANT W/ STOP), SLIDING DOOR BOD: STANLEY DURAGLIDE 2000 SERIES. FINISHES OF ALL STOREFRONT / DOOR COMPONENTS TO BE BLACK ANODIZED. PATCH / PAINT EXISTING DRYWALL SURFACES DAMAGED DURING DEMOLITION OF EXISTING STOREFRONT. RELOCATE ANY EXISTING DIFFUSERS / SPRINKLERS AS REQUIRED TO ACCOMMODATE NEW LAYOUT. REFER TO ALT RCP FOR NEW LIGHTING LAYOUT. CONTRACTOR TO CAREFULLY REMOVE & SALVAGE EXISTING WALL PLAQUES @ VESTIBULE FOR RELOCATION.



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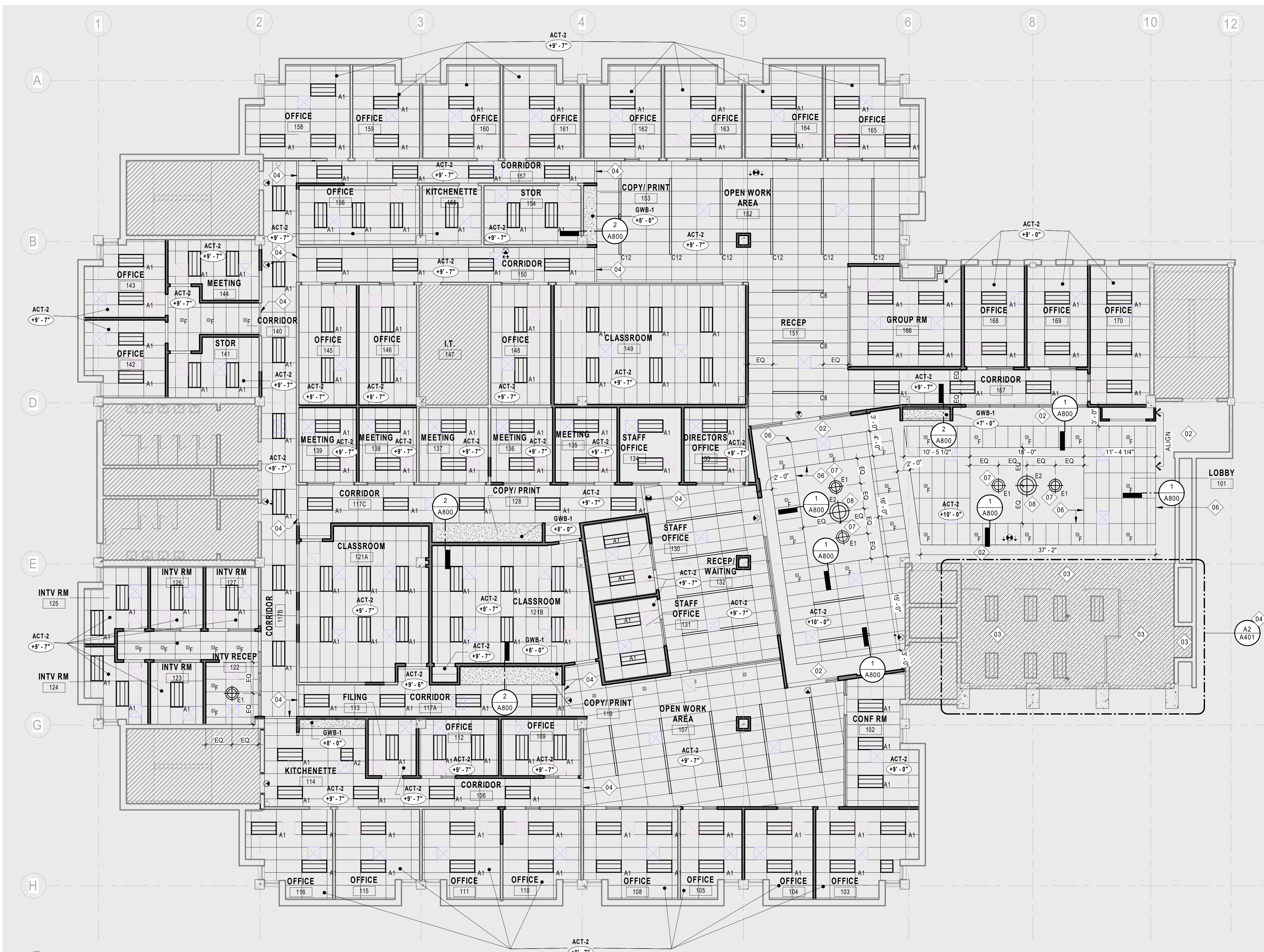
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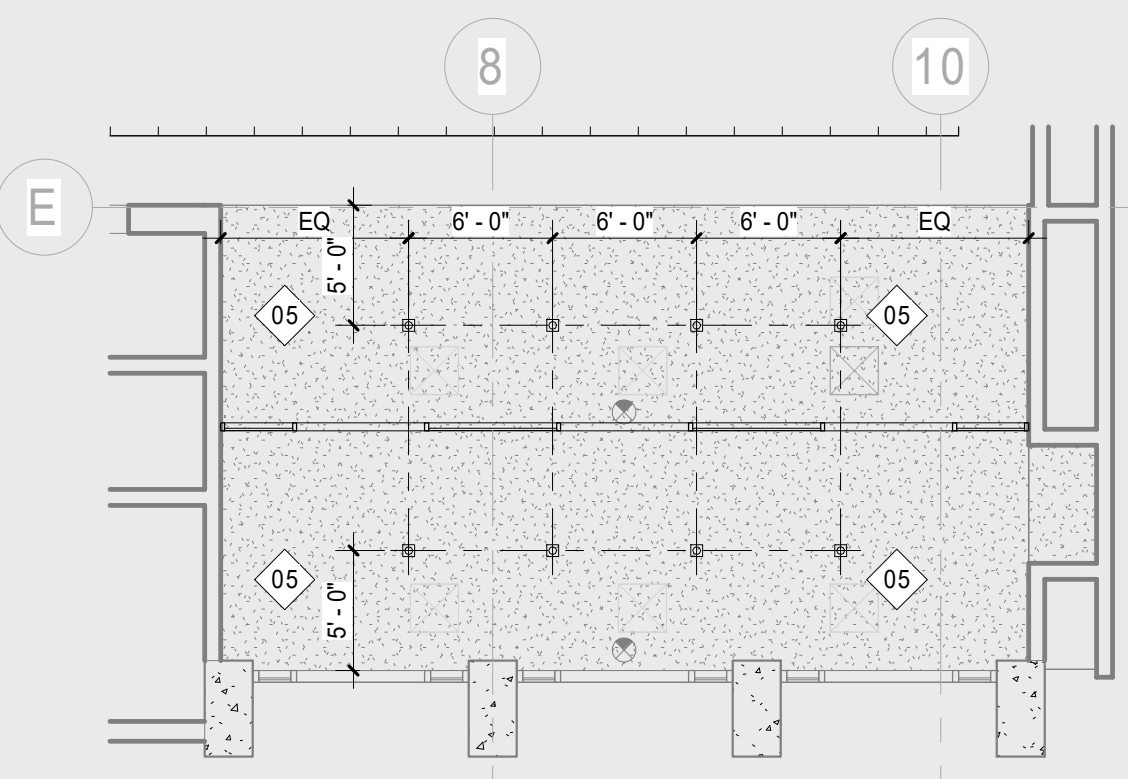
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SECOND FLOOR PLAN

SHEET NUMBER:
A102



1 FIRST FLR REFLECTED CEILING PLAN (PHASE 2)
1/8" = 1'-0"



A2 FIRST FLOOR REFLECTED CEILING PLAN - ALT #2
1/8" = 1'-0"

- REFLECTED CEILING PLAN GENERAL NOTES**
1. THE CONTRACTOR SHALL PROVIDE AND INSTALL CEILING SYSTEMS AND CONSTRUCTION AS DESIGNATED ON THE REFLECTED CEILING PLANS OF THESE DRAWINGS AND NOTES.
 2. COORDINATE THE WORK OF ALL TRADES INVOLVED IN THE CEILING WORK TO ENSURE CLEARANCES FOR FIXTURES, DUCTS, PIPING, CEILING SUSPENSION SYSTEMS, ETC. NECESSARY TO MAINTAIN THE FINISHED CEILING HEIGHTS INDICATED ON ARCHITECT'S DRAWINGS.
 3. FASCIA OR ANY BREAK IN THE CEILING HEIGHTS CREATED BY THE INSTALLATION AND/OR ALTERATION OF HEATING, VENTING, AIR CONDITIONING, MECHANICAL DUCTS, PIPING, OR OTHER EQUIPMENT SHALL BE FORMED OF GYPSUM WALLBOARD ON FURRING CHANNELS PERIMETER CEILING ANGLES, WHERE OCCURRING, SHALL BE INSTALLED TIGHT TO VERTICAL SURFACES, FREE FROM CURVES. BREAKS OR OTHER IRREGULARITIES SHALL BE PAINTED TO MATCH CEILING FINISH.
 4. FURNISH AND INSTALL ALL FIXTURES, ASSOCIATED TRIM, FIXTURE LAMPS, AND SEISMIC BRACING AS REQUIRED.
 5. ALL JOINTS IN THE TILE FIELD SHALL BE SQUARE, LEVEL, AND PERFECTLY ALIGNED WITH EACH OTHER AND THE RECESSED LIGHTING FIXTURES.
 6. LIGHT FIXTURES, EXIT SIGNS, SPRINKLERS, AND OTHER CEILING ELEMENTS SHALL BE LOCATED IN THE CENTER OF INDIVIDUAL CEILING TILES, U.O.N.
 7. ALL SOFFITS AND CEILING HEIGHTS ARE DIMENSIONED FROM TOP OF FINISHED FLOOR TO BOTTOM OF FINISHED GYP. BOARD OR CEILING TILE, AND SHALL ALLOW FOR THICKNESS OF ALL FLOOR FINISHES.
 8. CEILING HEIGHTS SHALL BE AS SHOWN ON THE REFLECTED CEILING PLANS AND DETAILS. ANY DEVIATION FROM HEIGHTS OR CONDITIONS WILL BE SUBMITTED TO THE ARCHITECT FOR REVIEW.
 9. CEILING IN CLOSETS AND STORAGE AREAS SHALL BE OF THE SAME HEIGHTS AND CONSTRUCTION AS THAT OF ADJOINING SPACES, U.O.N.
 10. NOTIFY ARCHITECT OF ANY CONFLICTS OF LIGHT FIXTURE LOCATIONS WITH MAIN RUNNERS, DUCTS, STRUCTURES, HVAC, AND/OR EXISTING CONDUIT, PRIOR TO FRAMING FOR LIGHTS. ANY DISCREPANCIES BETWEEN ARCHITECT'S CEILING GRID AND ACTUAL FIELD CONDITION ARE TO BE CLARIFIED WITH ARCHITECT PRIOR TO FRAMING.
 11. INSTALL LIGHT FIXTURES WITH PROTECTIVE FILM OR SIM. COVER OVER LOUVER, LENS, BAFFLE, ETC., TO AVOID FIXTURE SOILING OR DAMAGE. FIXTURES SHALL BE MAINTAINED CLEAN AND AS NEW. LAMPS SHALL BE NEW AT PROJECT COMPLETION.
 12. ARCHITECTURAL DRAWINGS DETERMINE LOCATION OF ALL FIXTURES AND TAKE PRECEDENCE OVER ALL OTHERS, U.O.N.
 13. ALL CEILING TILES SHALL BE INSTALLED IN THE SAME DIRECTION.

- REFLECTED CEILING PLAN LEGEND**
- 2 x 4 LIGHT FIXTURE
 - 2 x 2 LIGHT FIXTURE
 - RECESSED DOWNLIGHT
 - LINEAR LIGHT FIXTURE
 - PENDANT LIGHT FIXTURE
 - CEILING-MOUNTED ILLUMINATED EXIT SIGN
 - CEILING-MOUNTED DIRECTIONAL ILLUMINATED EXIT SIGN
 - WALL-MOUNTED ILLUMINATED EXIT SIGN
 - WALL-MOUNTED DIRECTIONAL ILLUMINATED EXIT SIGN
 - HVAC SUPPLY DIFFUSER
 - HVAC RETURN GRILLE
 - GWB CEILING
 - AREA NOT IN SCOPE OF WORK

KEYED NOTES - REFLECTED CEILING PLANS

TAG	DESCRIPTION
01	EXTEND EXISTING CEILING GRID INTO RECESS. CEILING & GRID TO MATCH EXISTING.
02	EXISTING WAFLE SLAB DECK OVERHEAD EXPOSED. TO BE PAINTED ECP-1. ALL CABLING AND WIRES TO BE NEATLY BUNDLED AND TIED TO THE BOTTOM OF STRUCTURE W/ J-HOOKS. ALL NEW DUCTWORK TO HAVE INTERNAL INSULATION AND BE PAINTED SAME COLOR AS BOTTOM OF DECK. ALL PIPING TO BE PAINTED SAME COLOR AS BOTTOM OF DECK.
03	EXISTING GWB CEILING TO REMAIN. PATCH & REPAIR AS REQ'D
04	ARMSTRONG 4" AXIOM FIELD FACE PLATE
05	REFER TO PLAN FOR ALT #2
06	PATCH EXISTING GWB CEILING AS REQ'D
07	AXIOM AXIOTRIM AT ALL EDGES
08	BOTTOM OF 24" DIAMETER PENDANT TO BE 7'-6".
09	BOTTOM OF 36" DIAMETER PENDANT TO BE 8'-6".

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TCNJ - ROSCOE HALL STUDENT SERVICES RENOVATION

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THE COLLEGE OF NEW JERSEY

REV.	DATE	DESCRIPTION	ISSUED FOR	ISSUED FOR	ISSUED FOR
1	2022.01.20	DESIGN DEVELOPMENT	CLIENT REVIEW		
2	2022.01.20	DESIGN DEVELOPMENT	CLIENT REVIEW		
3	2022.02.13	ISSUED FOR DCI REVIEW			
4	2022.03.02	ISSUED FOR DCI REVIEW			

NVDCA REF NUMBER:
PROJECT NUMBER: **22031600**
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FIRST FLOOR REFLECTED CEILING PLAN

SHEET NUMBER:
A401



1 SECOND FLOOR REFLECTED CEILING PLAN
1/8" = 1'-0"

REFLECTED CEILING PLAN GENERAL NOTES

1. THE CONTRACTOR SHALL PROVIDE AND INSTALL CEILING SYSTEMS AND CONSTRUCTION AS DESIGNATED ON THE REFLECTED CEILING PLANS OF THESE DRAWINGS AND NOTES.
2. COORDINATE THE WORK OF ALL TRADES INVOLVED IN THE CEILING WORK TO ENSURE CLEARANCES FOR FIXTURES, DUCTS, PIPING, CEILING SUSPENSION SYSTEMS, ETC NECESSARY TO MAINTAIN THE FINISHED CEILING HEIGHTS INDICATED ON ARCHITECT'S DRAWINGS.
3. FASCIA OR ANY BREAK IN THE CEILING HEIGHTS CREATED BY THE INSTALLATION AND/OR ALTERATION OF HEATING, VENTING, AIR CONDITIONING, MECHANICAL DUCTS, PIPING, OR OTHER EQUIPMENT SHALL BE FORMED OF GYPSUM WALLBOARD ON FURRING CHANNELS PERIMETER CEILING ANGLES, WHERE OCCURRING, SHALL BE INSTALLED TIGHT TO VERTICAL SURFACES, FREE FROM CURVES. BREAKS OR OTHER IRREGULARITIES SHALL BE PAINTED TO MATCH CEILING FINISH.
4. FURNISH AND INSTALL ALL FIXTURES, ASSOCIATED TRIM, FIXTURE LAMPS, AND SEISMIC BRACING AS REQUIRED.
5. ALL JOINTS IN THE TILE FIELD SHALL BE SQUARE, LEVEL, AND PERFECTLY ALIGNED WITH EACH OTHER AND THE RECESSED LIGHTING FIXTURES.
6. LIGHT FIXTURES, EXIT SIGNS, SPRINKLERS, AND OTHER CEILING ELEMENTS SHALL BE LOCATED IN THE CENTER OF INDIVIDUAL CEILING TILES, U.O.N.
7. ALL SOFFITS AND CEILING HEIGHTS ARE DIMENSIONED FROM TOP OF FINISHED FLOOR TO BOTTOM OF FINISHED GYP. BOARD OR CEILING TILE, AND SHALL ALLOW FOR THICKNESS OF ALL FLOOR FINISHES.
8. HUNG CEILING HEIGHTS SHALL BE AS SHOWN ON THE REFLECTED CEILING PLANS AND DETAILS. ANY DEVIATION FROM HEIGHTS OR CONDITIONS WILL BE SUBMITTED TO THE ARCHITECT FOR REVIEW.
9. CEILING IN CLOSETS AND STORAGE AREAS SHALL BE OF THE SAME HEIGHTS AND CONSTRUCTION AS THAT OF ADJOINING SPACES, U.O.N.
10. NOTIFY ARCHITECT OF ANY CONFLICTS OF LIGHT FIXTURE LOCATIONS WITH MAIN RUNNERS, DUCTS, STRUCTURES, HVAC, AND/OR EXISTING CONDUIT, PRIOR TO FRAMING FOR LIGHTS. ANY DISCREPANCIES BETWEEN ARCHITECT'S CEILING GRID AND ACTUAL FIELD CONDITION ARE TO BE CLARIFIED WITH ARCHITECT PRIOR TO FRAMING.
11. INSTALL LIGHT FIXTURES WITH PROTECTIVE FILM OR SIM. COVER OVER LOUVER, LENS, BAFFLE, ETC., TO AVOID FIXTURE SOILING OR DAMAGE. FIXTURES SHALL BE MAINTAINED CLEAN AND AS NEW. LAMPS SHALL BE NEW AT PROJECT COMPLETION.
12. ARCHITECTURAL DRAWINGS DETERMINE LOCATION OF ALL FIXTURES AND TAKE PRECEDENCE OVER ALL OTHERS, U.O.N.
13. ALL CEILING TILES SHALL BE INSTALLED IN THE SAME DIRECTION.

REFLECTED CEILING PLAN LEGEND

- 2 x 4 LIGHT FIXTURE
- 2 x 2 LIGHT FIXTURE
- RECESSED DOWNLIGHT
- LINEAR LIGHT FIXTURE
- PENDANT LIGHT FIXTURE
- CEILING-MOUNTED ILLUMINATED EXIT SIGN
- CEILING-MOUNTED DIRECTIONAL ILLUMINATED EXIT SIGN
- WALL-MOUNTED ILLUMINATED EXIT SIGN
- WALL-MOUNTED DIRECTIONAL ILLUMINATED EXIT SIGN
- HVAC SUPPLY DIFFUSER
- HVAC RETURN GRILLE
- GWB CEILING
- AREA NOT IN SCOPE OF WORK

KEYED NOTES - REFLECTED CEILING PLANS

TAG	DESCRIPTION
01	EXTEND EXISTING CEILING GRID INTO RECESS. CEILING & GRID TO MATCH EXISTING.
02	EXISTING WAFFLE SLAB DECK OVERHEAD EXPOSED. TO BE PAINTED ECP-1. ALL CABLING AND WIRES TO BE NEATLY BUNDLED AND TIED TO THE BOTTOM OF STRUCTURE W/ J-HOOKS. ALL NEW DUCTWORK TO HAVE INTERNAL INSULATION AND BE PAINTED SAME COLOR AS BOTTOM OF DECK. ALL PIPING TO BE PAINTED SAME COLOR AS BOTTOM OF DECK.
03	EXISTING GWB CEILING TO REMAIN. PATCH & REPAIR AS REQ'D
04	ARMSTRONG 4" AXIOM FIELD FACE PLATE
05	REFER TO PLAN FOR ALT #2
06	PATCH EXISTING GWB CEILING AS REQ'D
07	AXIOM AX10STR TRIM AT ALL EDGES
08	BOTTOM OF 24" DIAMETER PENDANT TO BE 7'-6".
08	BOTTOM OF 36" DIAMETER PENDANT TO BE 8'-6".



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1617 JFK Boulevard, Suite 1600
Philadelphia, PA 19103 U.S.A.
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PROJECT TEAM
NORR
One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia PA 19103
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75 MADISON AVE
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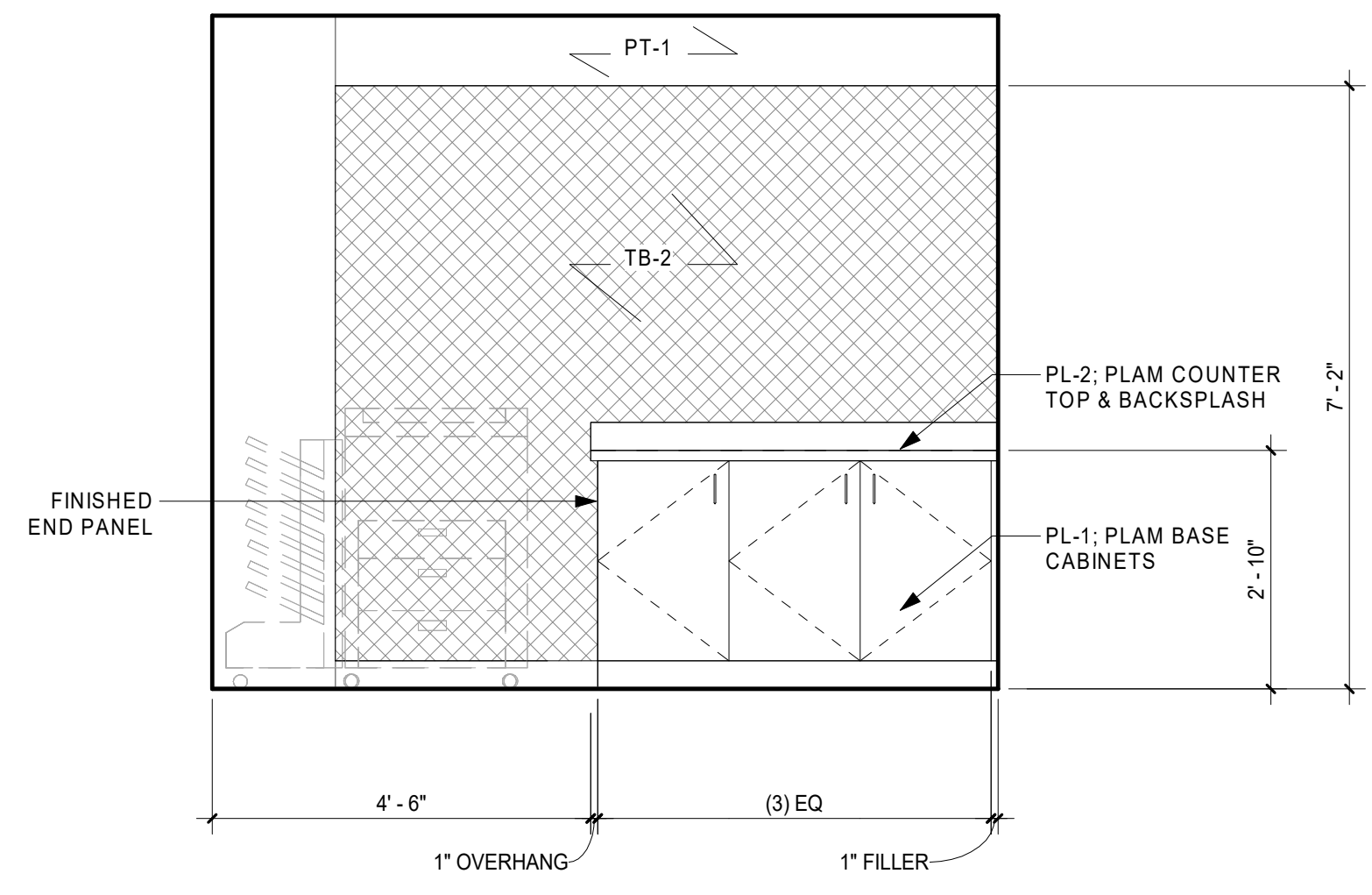
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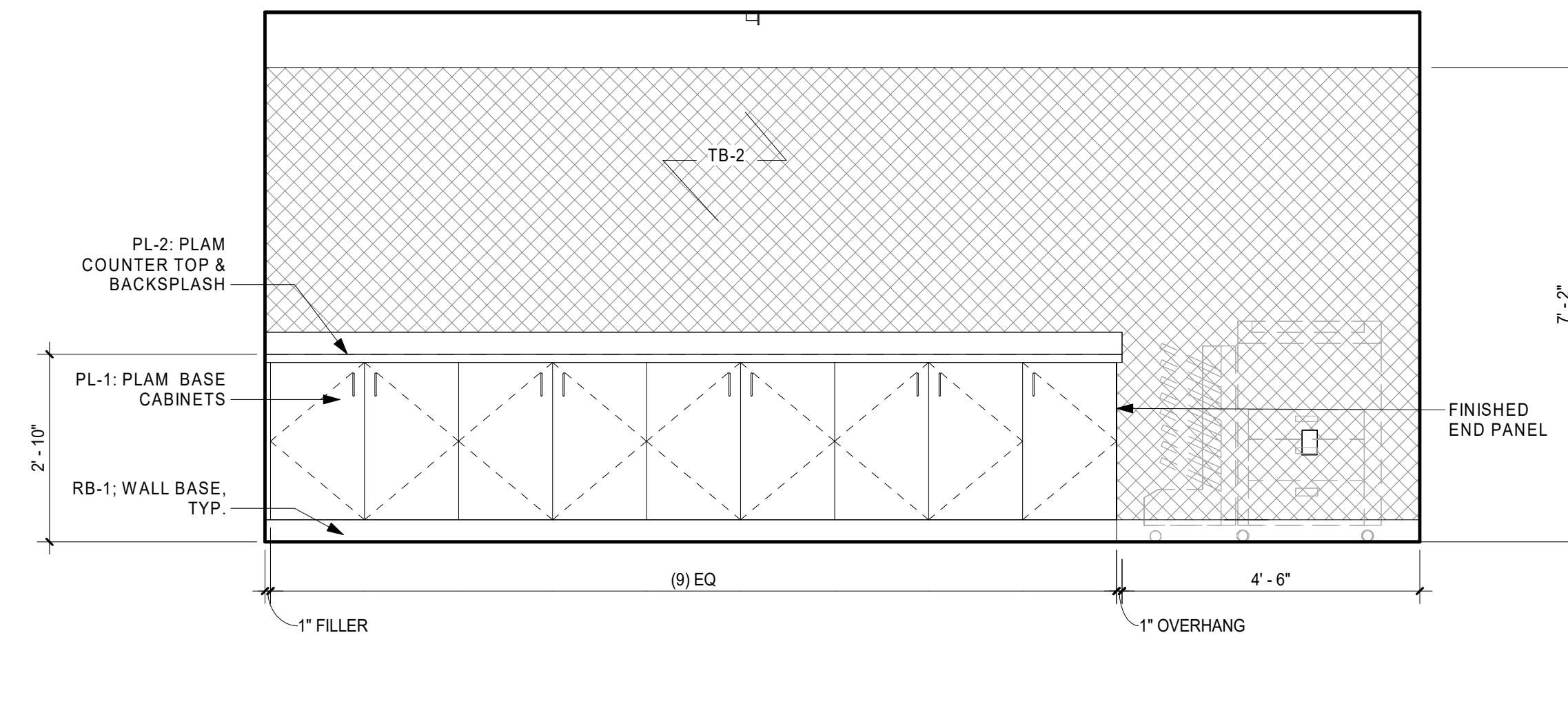
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PROJECT NUMBER: **22031600**
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SECOND FLOOR REFLECTED CEILING PLAN

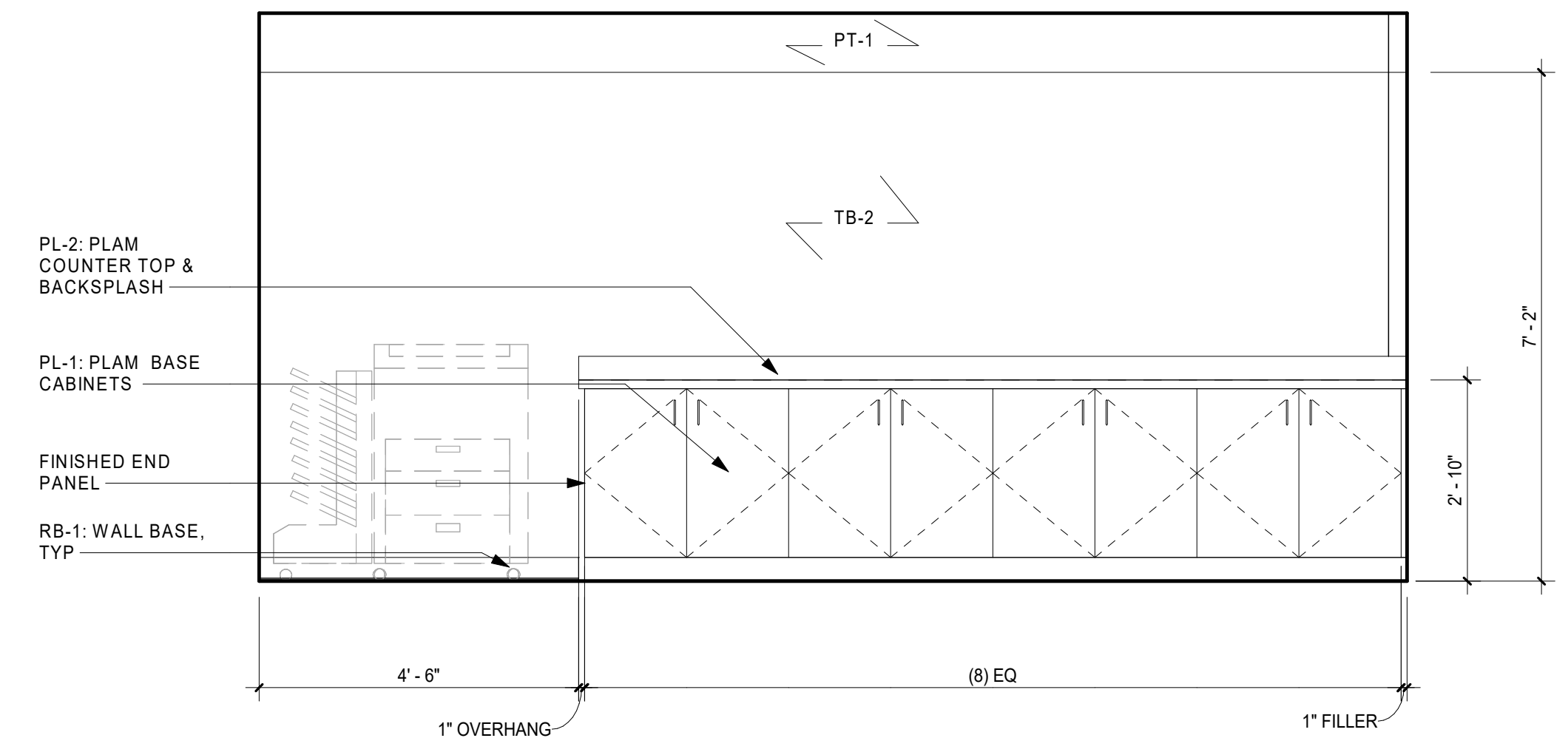
SHEET NUMBER:
A402



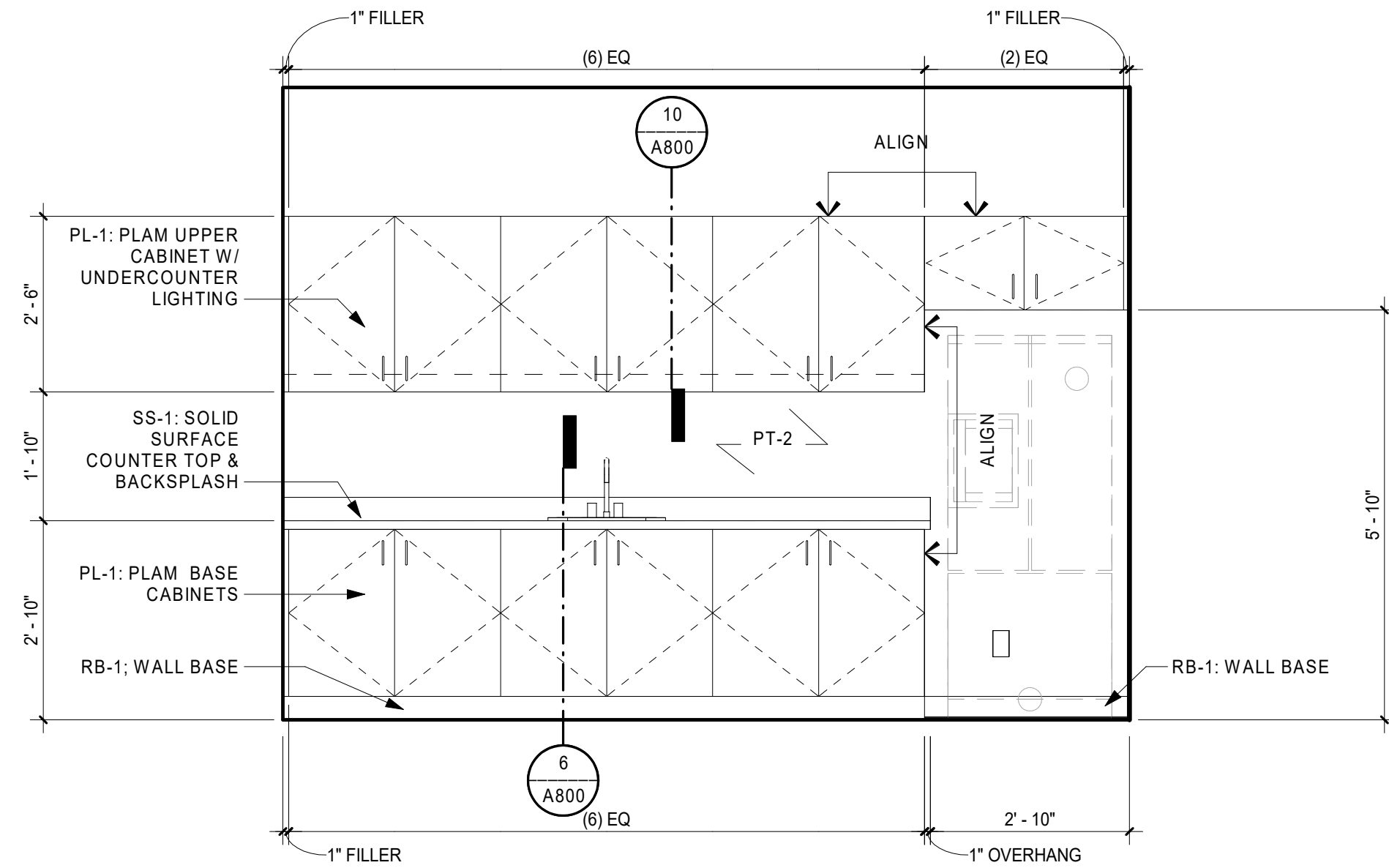
D3 COPY/PRINT 150
1/2" = 1'-0"



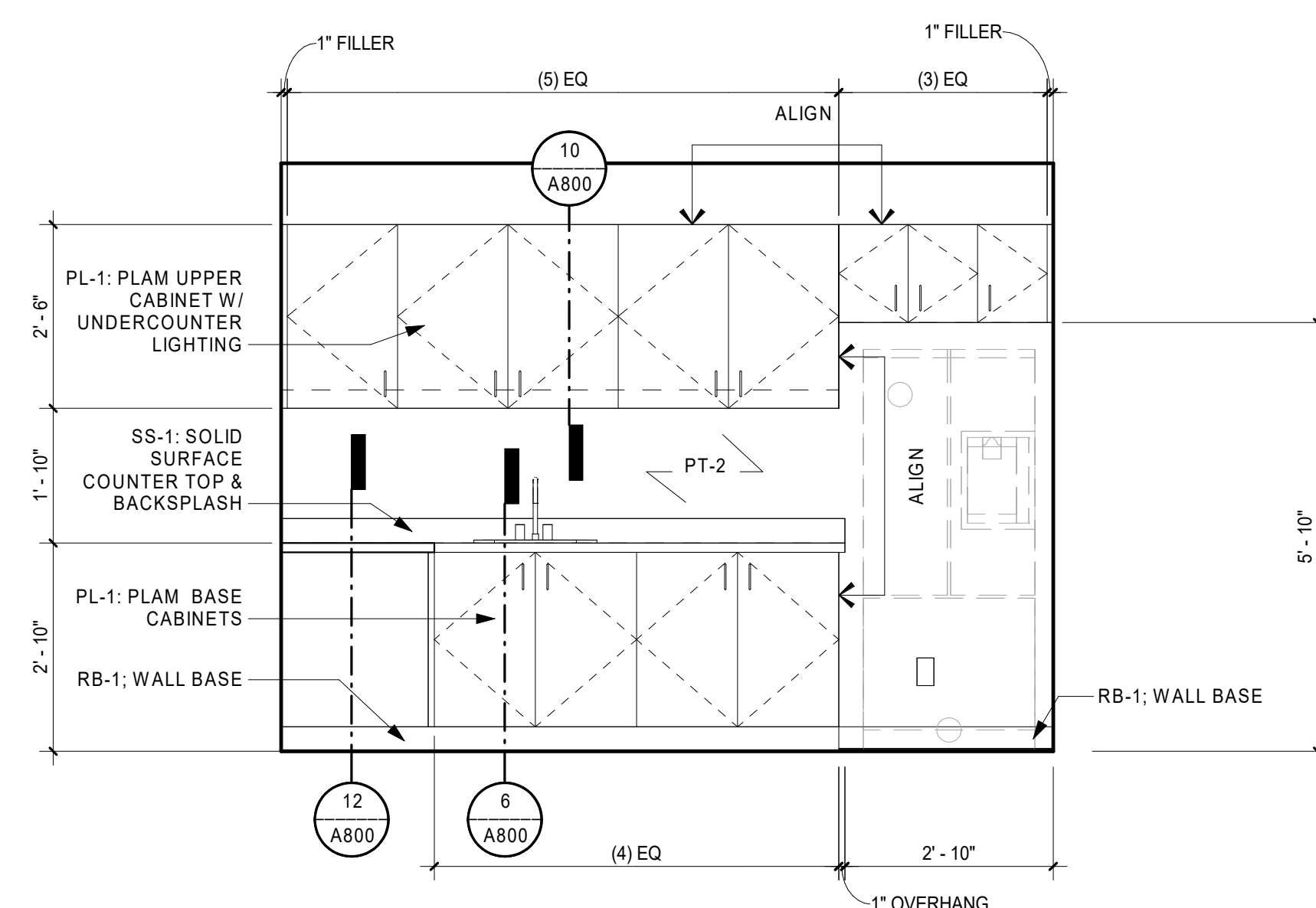
D2 COPY/PRINT 127
1/2" = 1'-0"



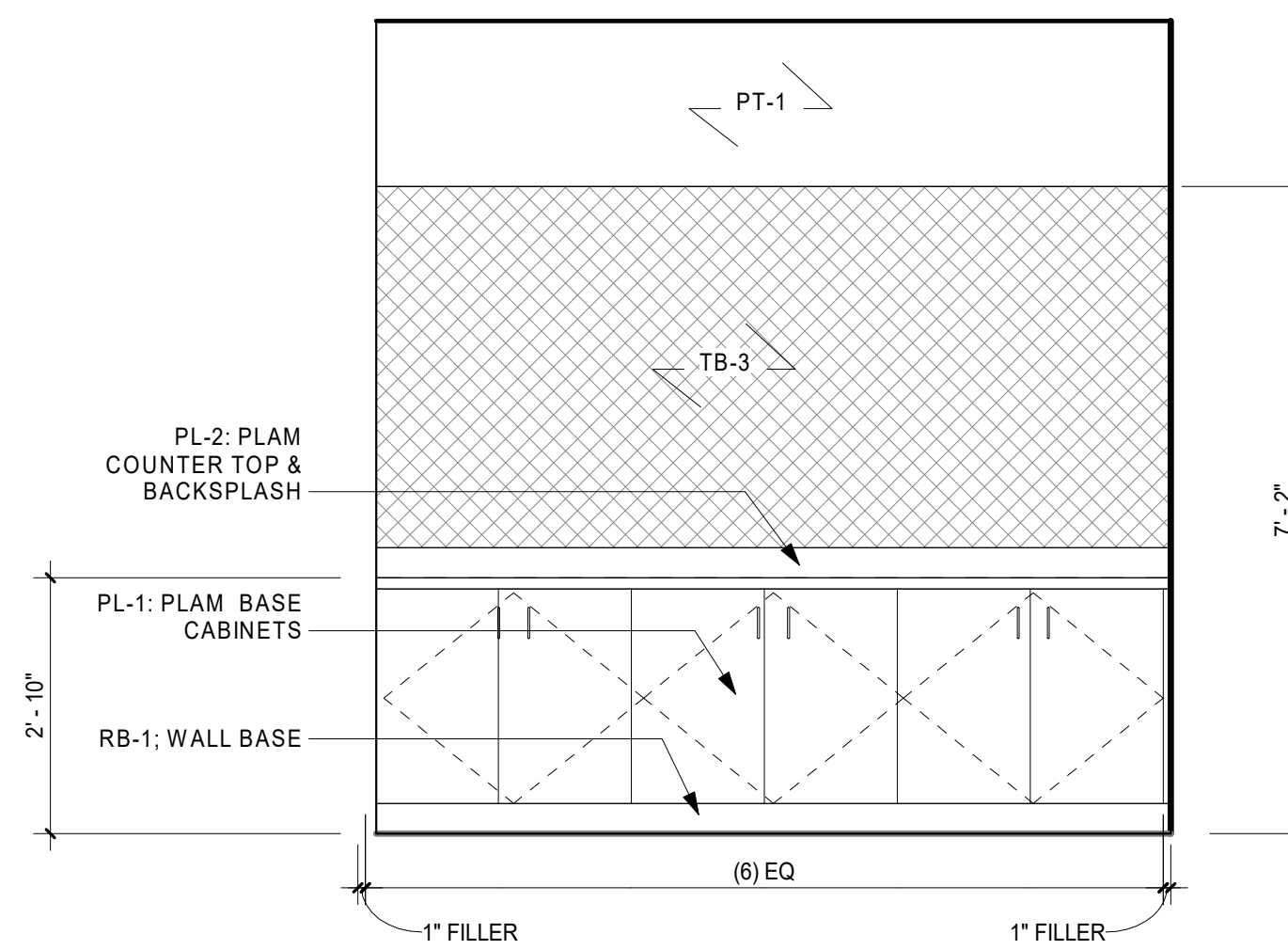
D1 COPY/PRINT 118
1/2" = 1'-0"



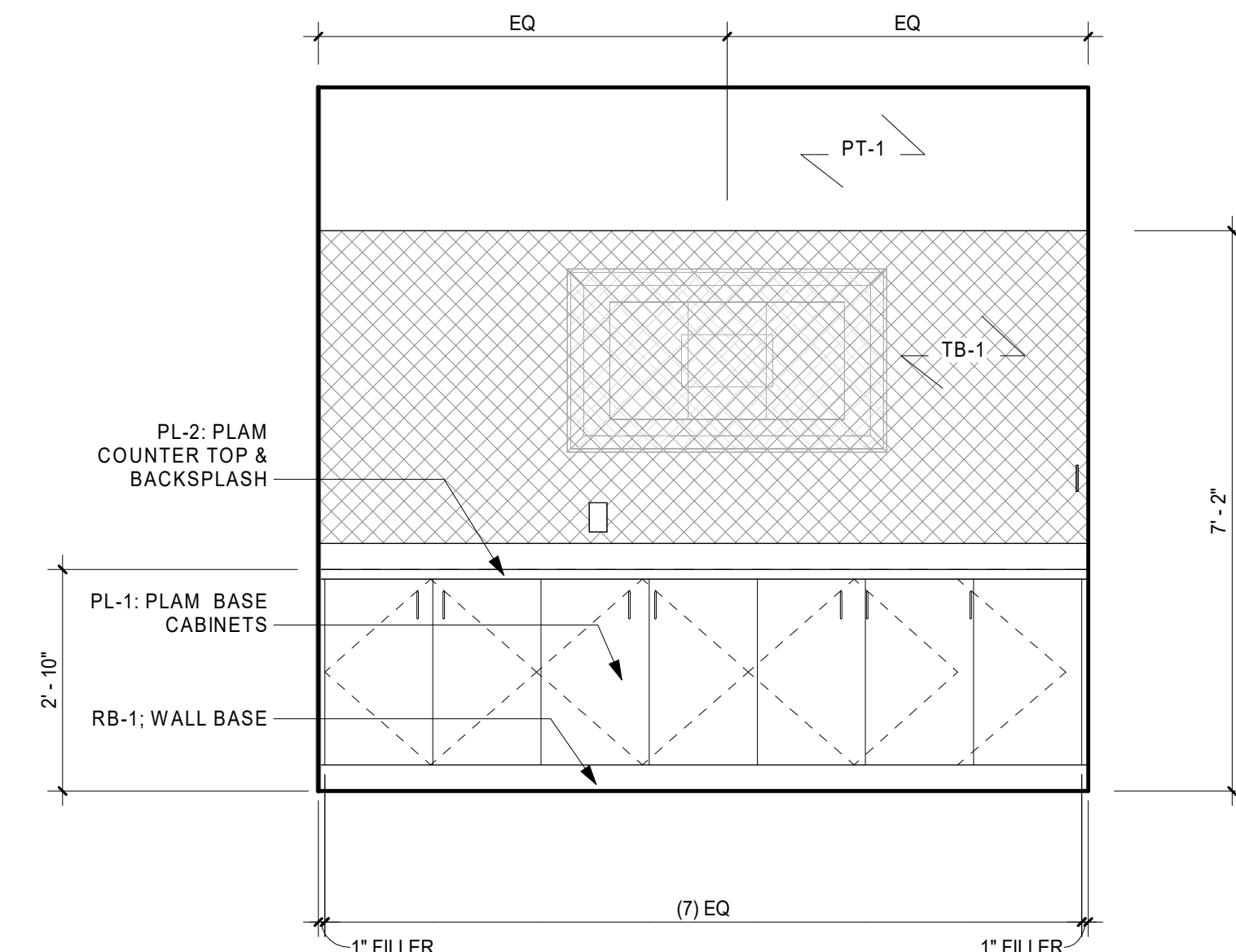
C3 KITCHENETTE 203
1/2" = 1'-0"



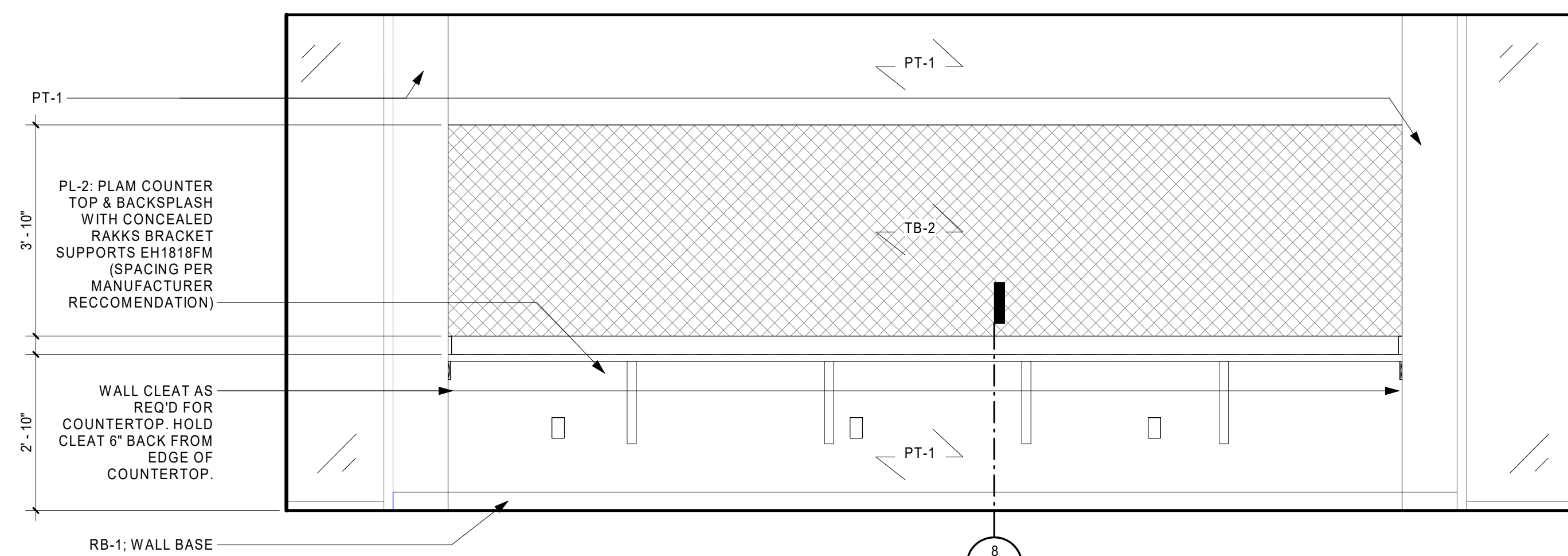
C1 KITCHENETTE 114 NORTH
1/2" = 1'-0"



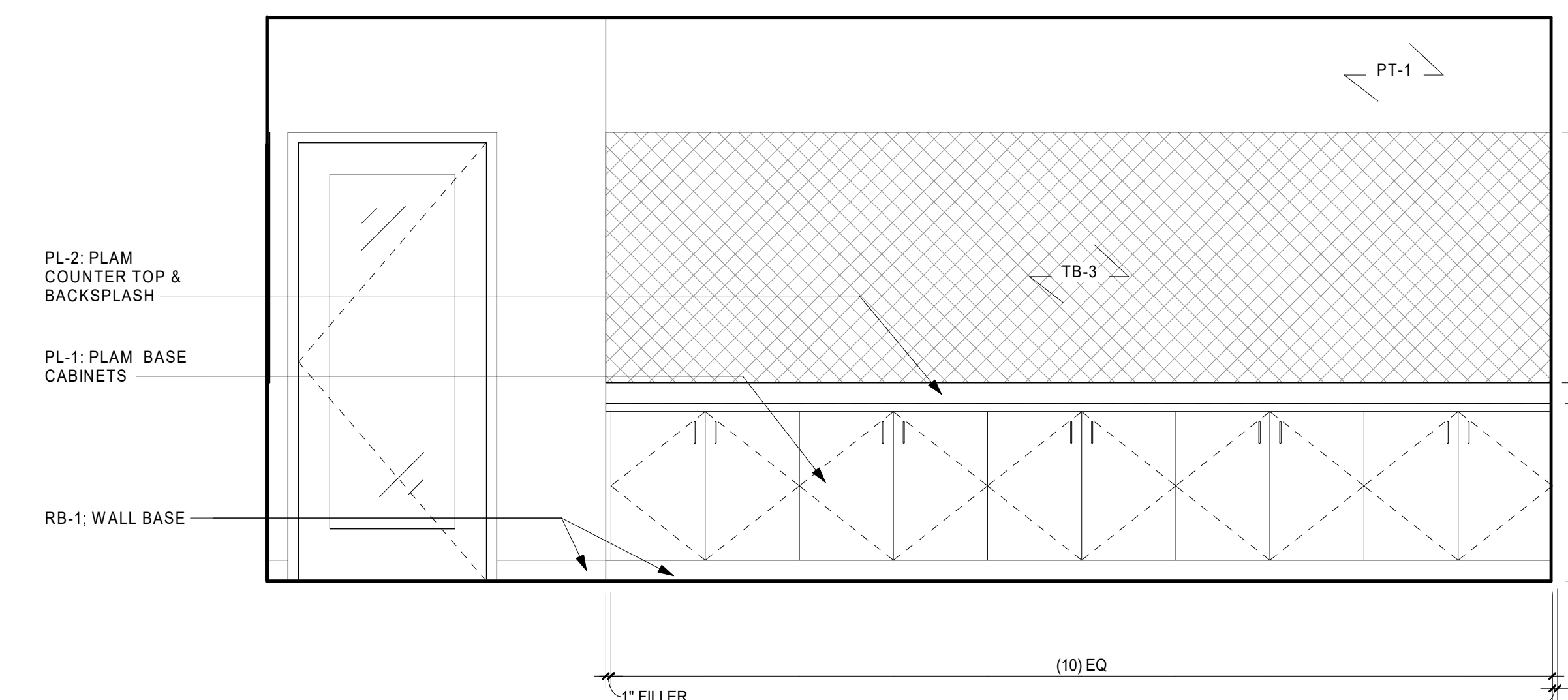
B2 CONF RM 102
1/2" = 1'-0"



B1 INTERVIEW 120
1/2" = 1'-0"



A2 OPEN STUDY 204
1/2" = 1'-0"



A1 MULTIPURPOSE 119A
1/2" = 1'-0"



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PROJECT TEAM
NORR
One Penn Center
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75 MADISON AVE
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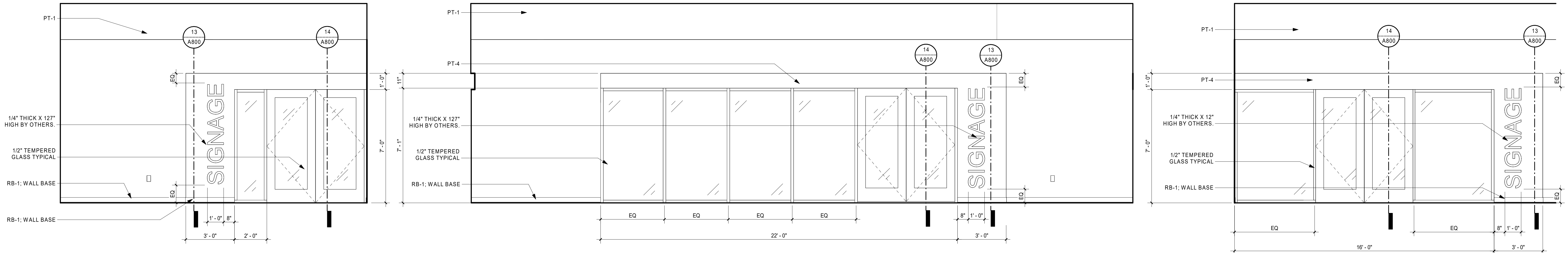
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MILLWORK ELEVATIONS

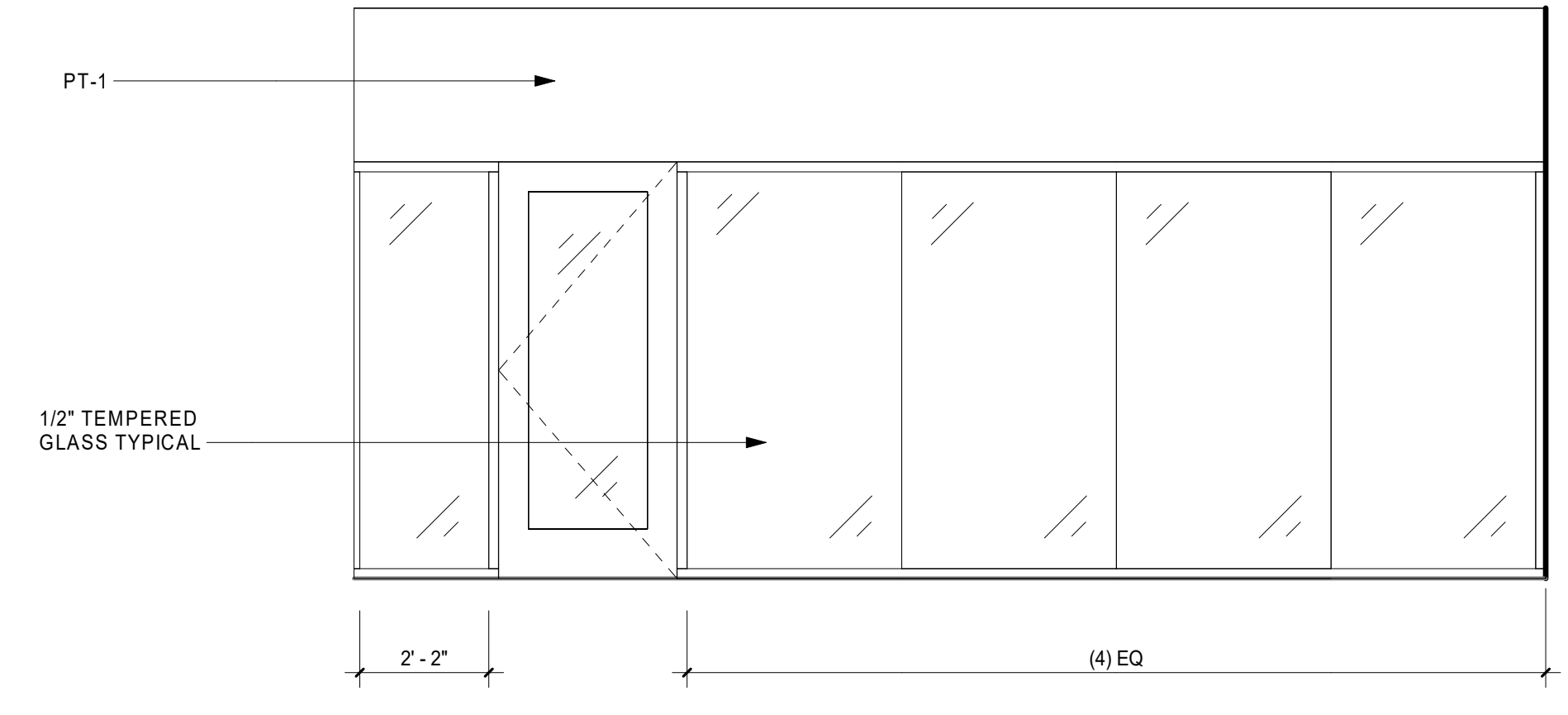
SHEET NUMBER
A600



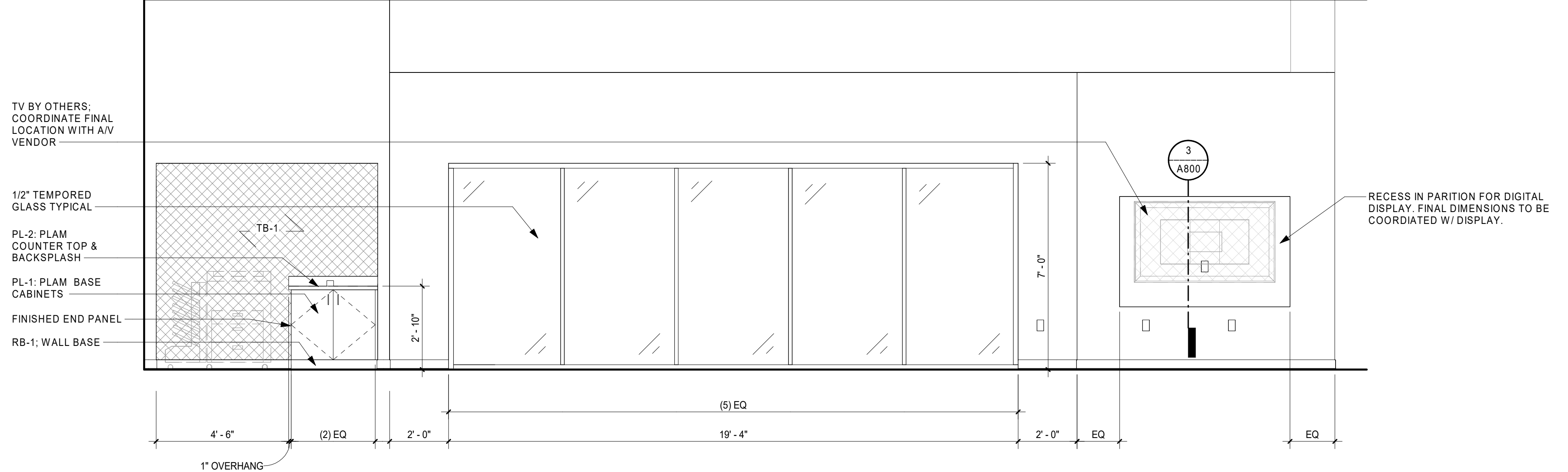
D3 CAREER CENTER ENTRY
3/8" = 1'-0"

D2 Academic Advising Entry
3/8" = 1'-0"

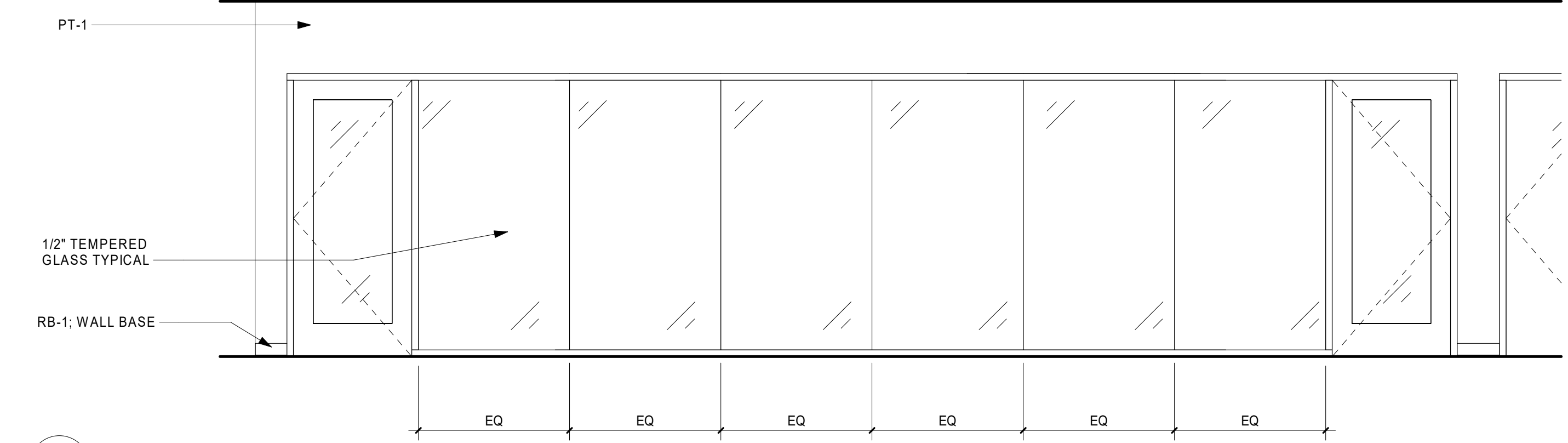
D1 Student Success Entry
3/8" = 1'-0"



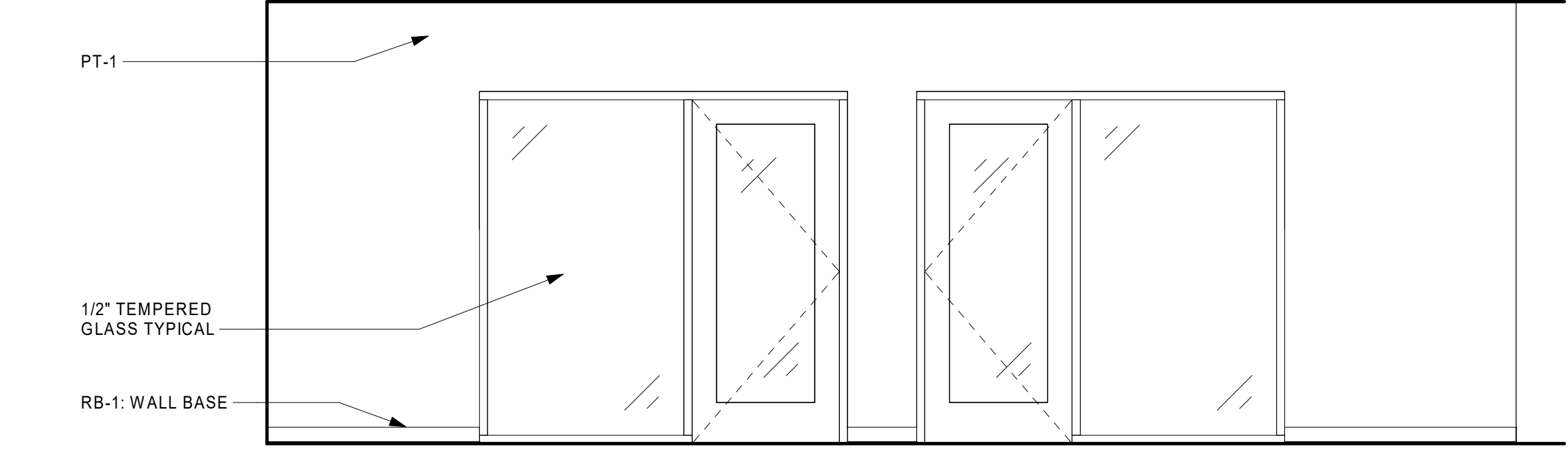
C2 Conf Rm 102
3/8" = 1'-0"



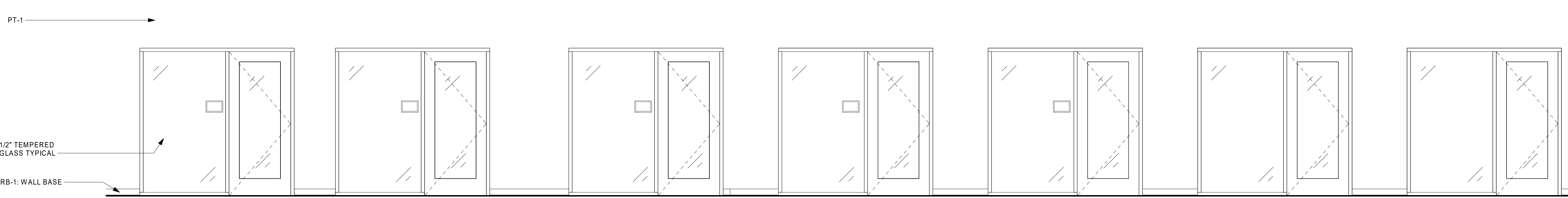
C1 Lobby 100
3/8" = 1'-0"



B2 Multipurpose 146
3/8" = 1'-0"



B1 Staff Office 128 & 129
3/8" = 1'-0"



A1 Office 131 & 132, Meeting Rm 133 - 137
3/8" = 1'-0"



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One Penn Center
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75 MADISON AVE
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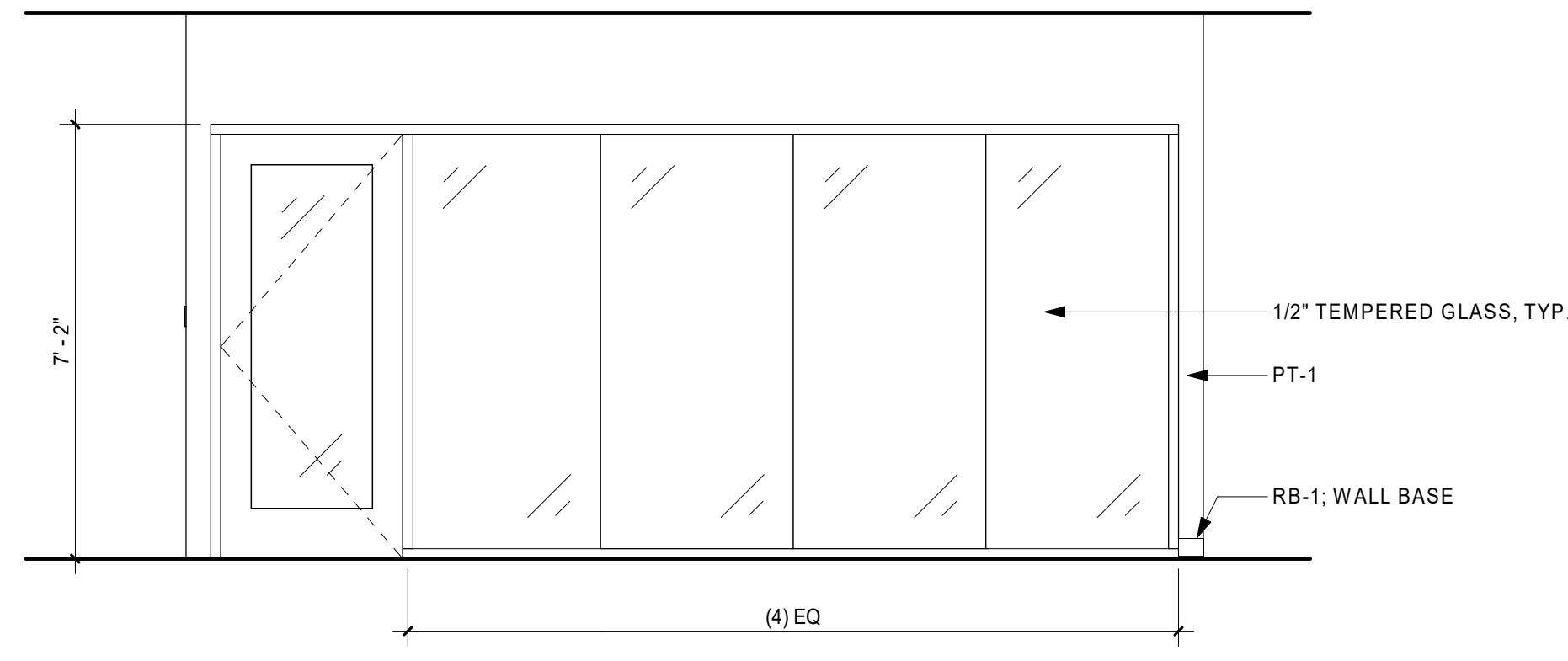
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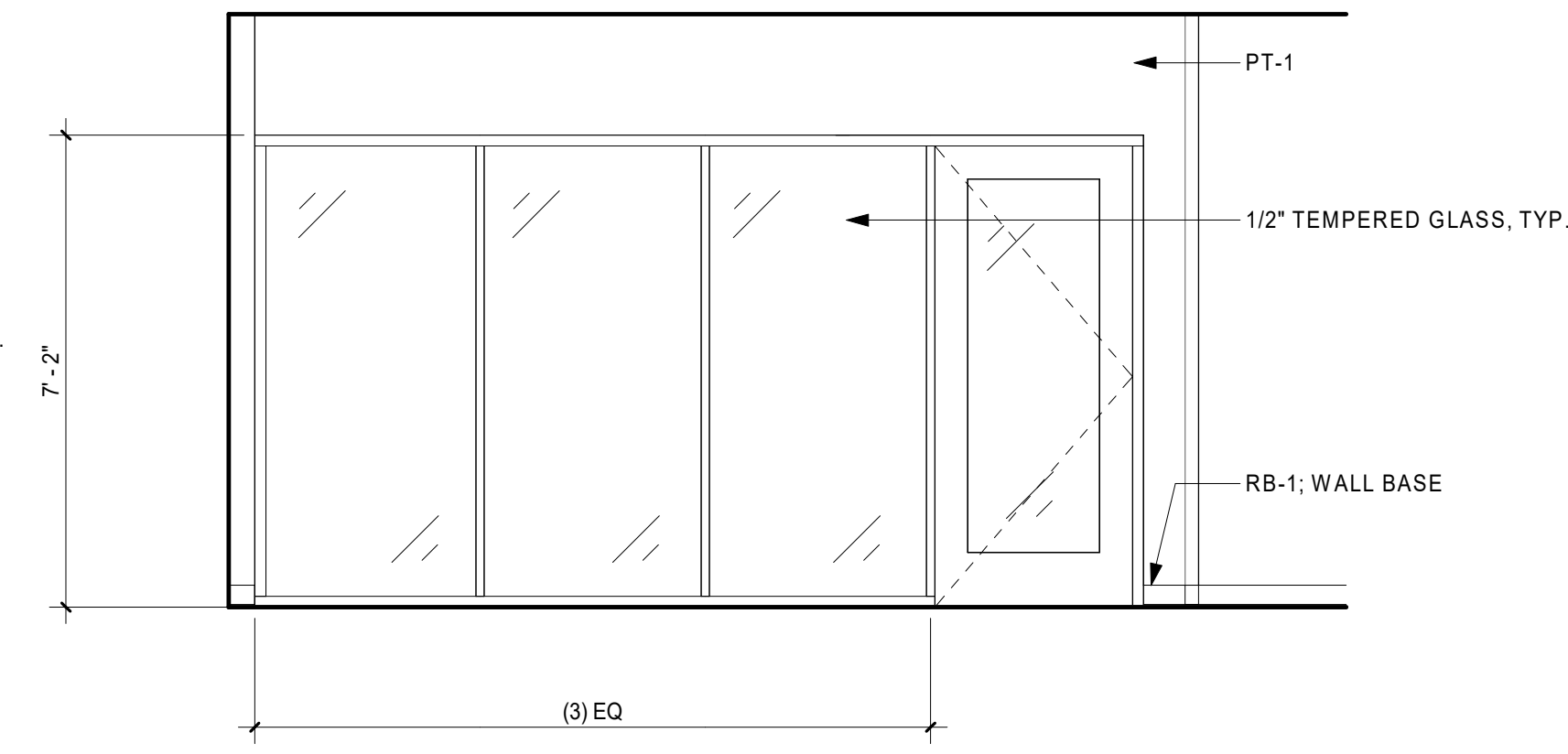
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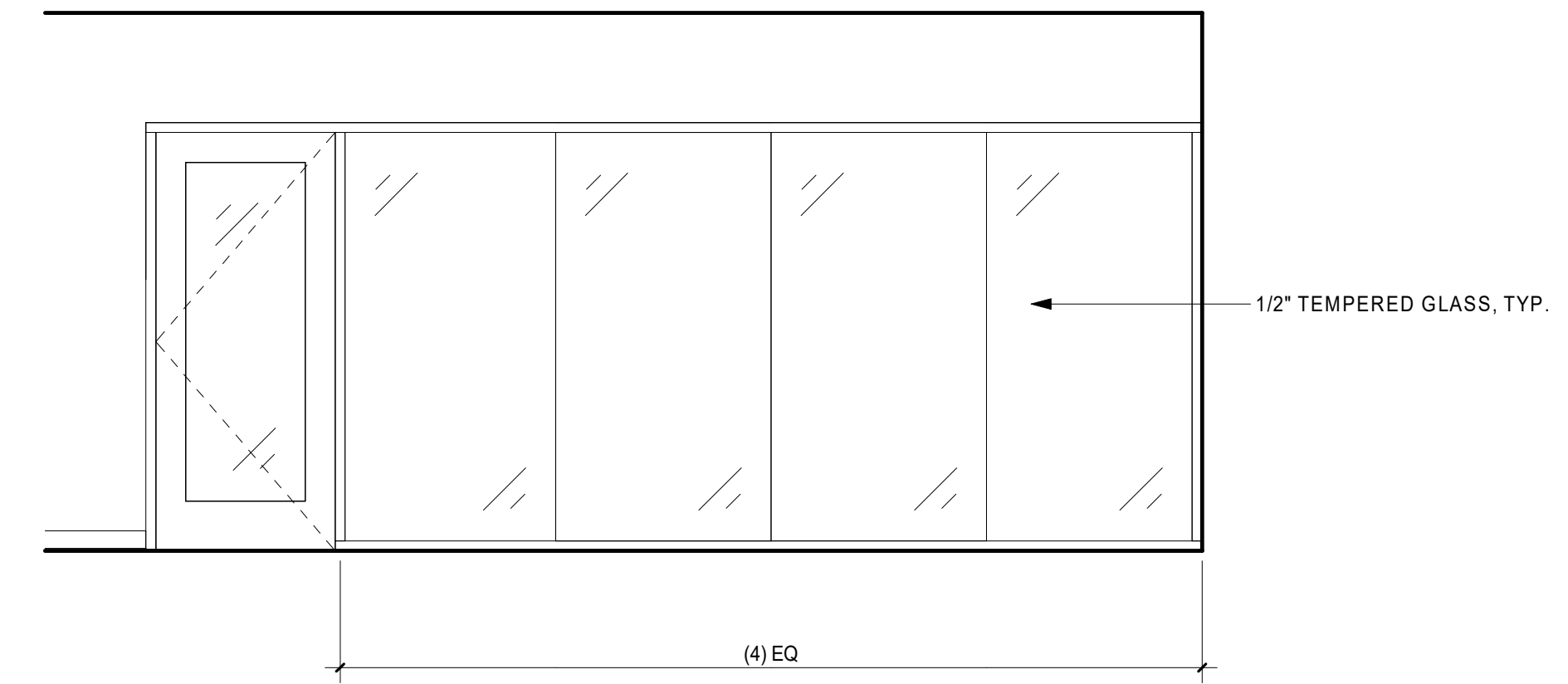
SHEET TITLE:
INTERIOR ELEVATIONS
SHEET NUMBER:
A601



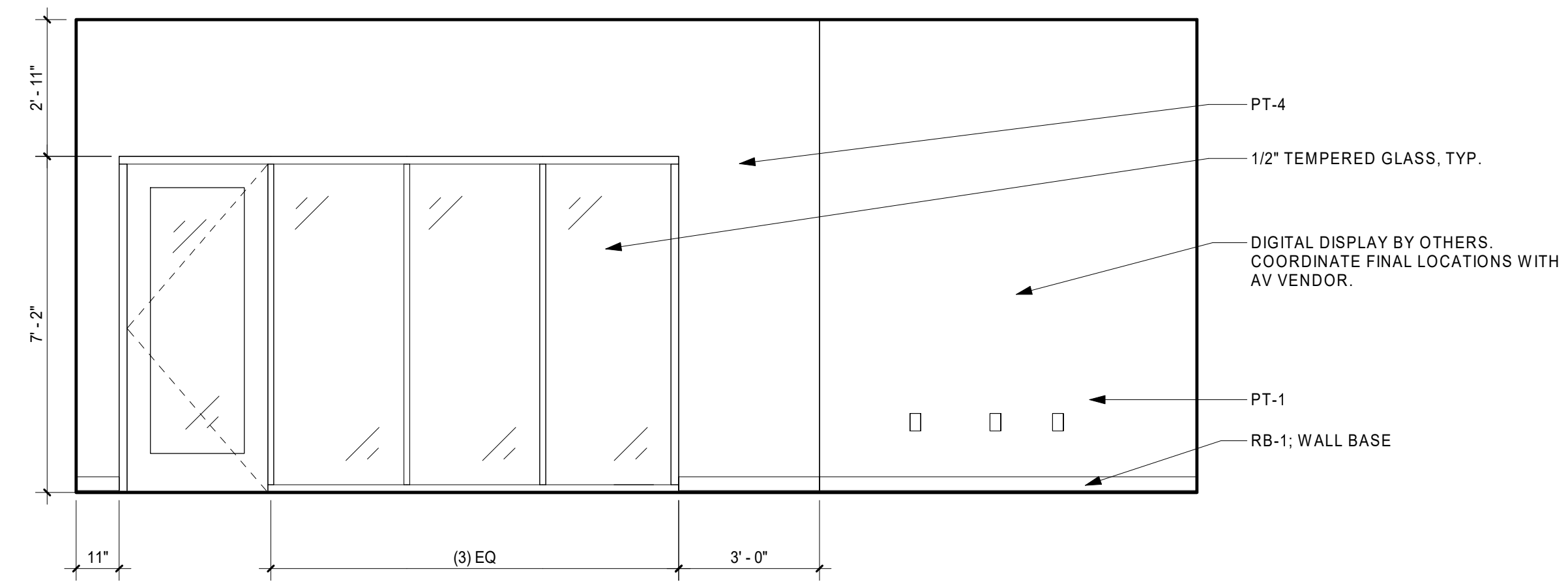
D3 GROUP ROOM 163
3/8" = 1'-0"



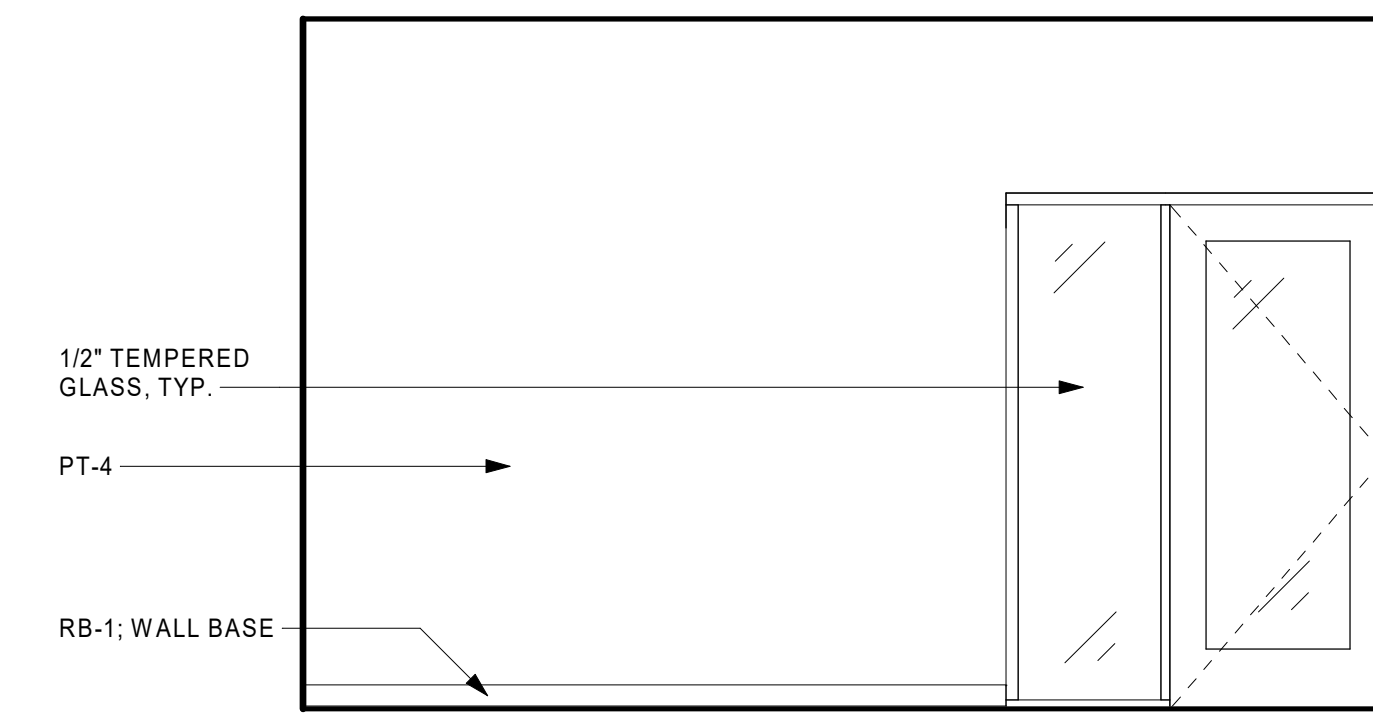
D2 INTERVIEW SUITE ENTRY
3/8" = 1'-0"



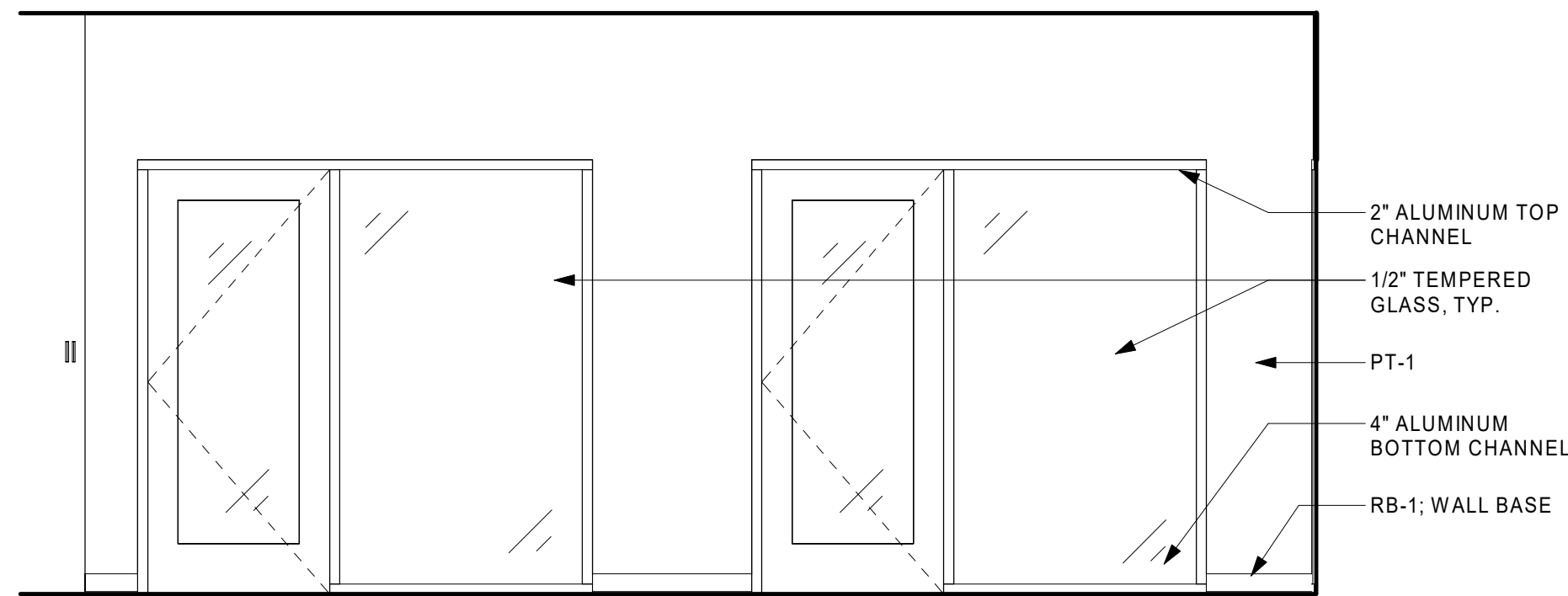
D1 STUDENT SUCCESS PARTITION
3/8" = 1'-0"



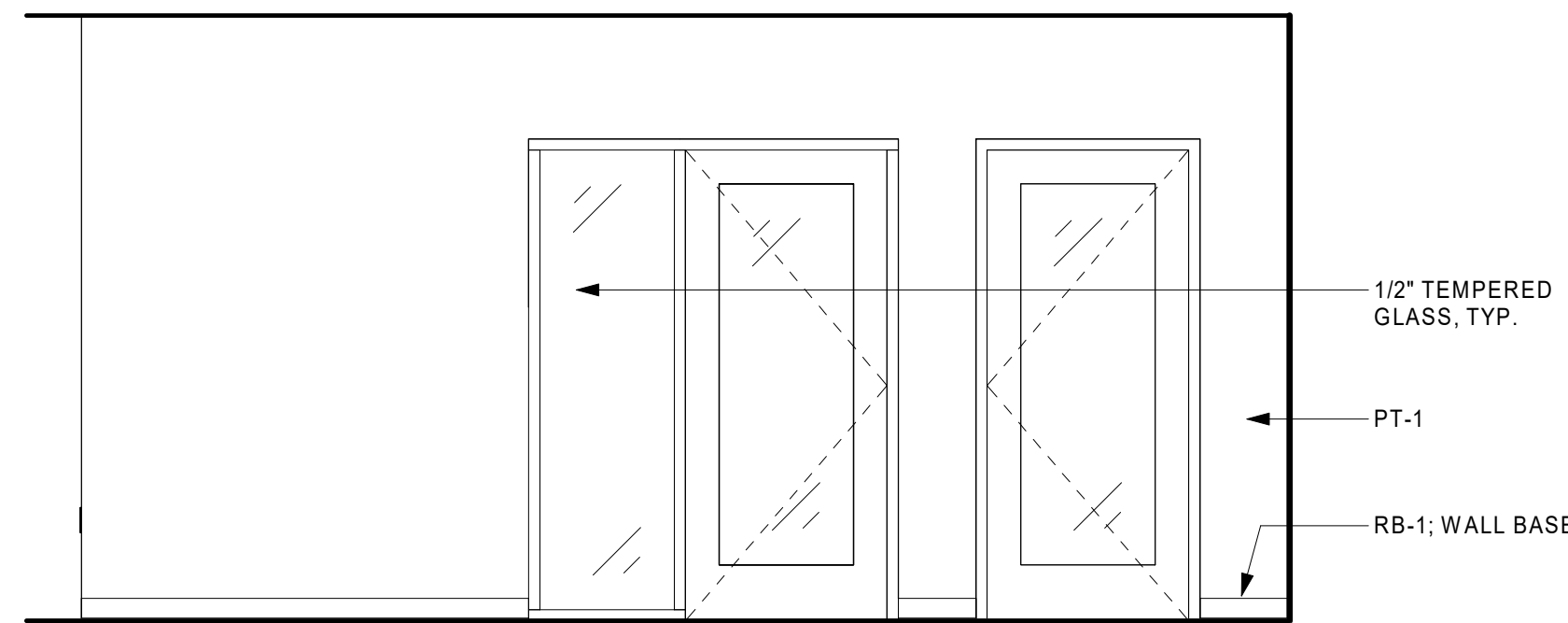
C2 TUTORING CENTER WEST ENTRY
3/8" = 1'-0"



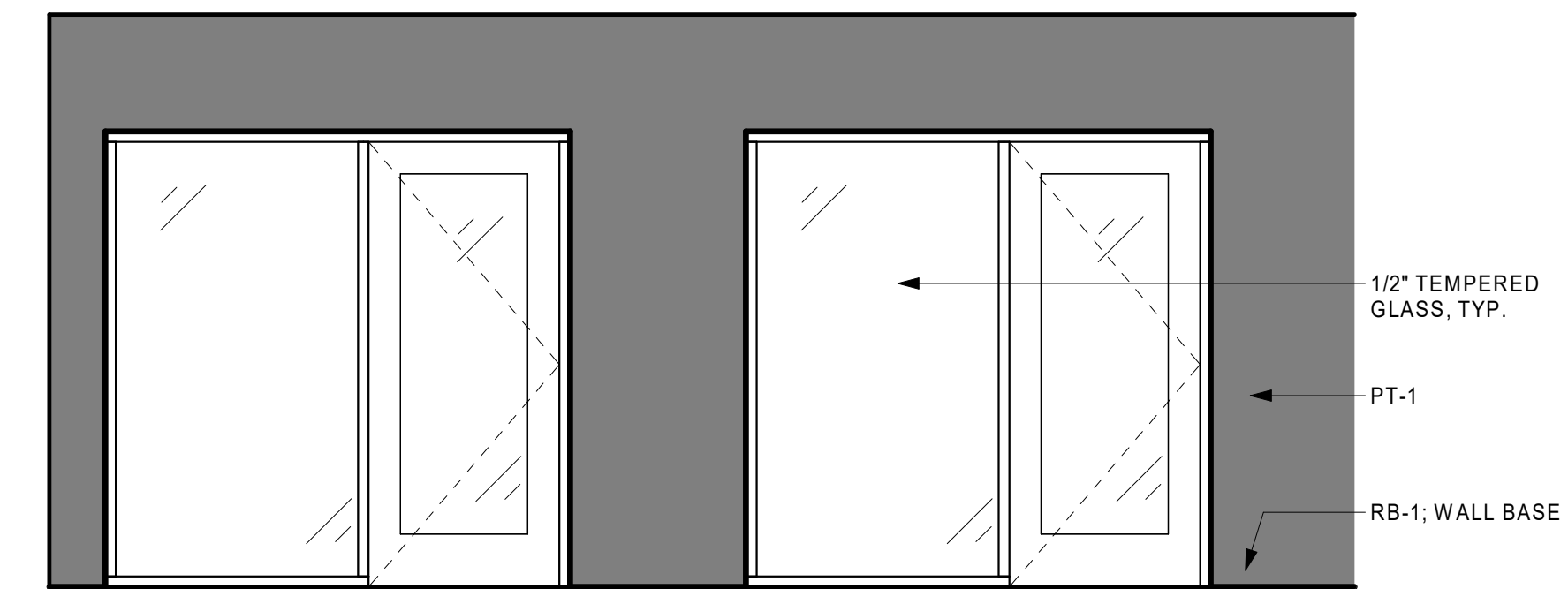
C1 TUTORING CENTER NORTH ENTRY
3/8" = 1'-0"



B3 STUDY RM 209 & 210
3/8" = 1'-0"



B2 OFFICE 205 & 206
3/8" = 1'-0"



B1 STUDY RM 201 & 202
3/8" = 1'-0"

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NORR
One Penn Center
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75 MADISON AVE
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SHEET TITLE:
**INTERIOR
ELEVATIONS**

SHEET NUMBER:
A602

- ### PARTITION GENERAL NOTES
- NOT EVERY PARTITION TYPE LISTED ON THIS SHEET IS USED IN THIS PROJECT.
 - USE TYPE-X GWB FOR ALL FIRE-RESISTANCE RATED PARTITIONS.
 - GWB AT PARTITIONS IS 5/8" UNLESS NOTED OTHERWISE.
 - USE ACOUSTICAL JOINT SEALANT COMPLYING WITH ASTM C 834 AND ASTM E 90 AT NON-RATED PARTITIONS. USE UL-APPROVED FIRESTOP SEALANT AT FIRE-RESISTANCE RATED PARTITIONS. COMPLY WITH LEED REQUIREMENTS AS APPLICABLE.
 - WHERE INDICATED, USE 1/2" SOUND ATTENUATION BATTS @ 2 1/2" STUD SIZE & 3" SOUND ATTENUATION BATTS @ 3 5/8" STUD SIZE & LARGER. SOUND ATTENUATION BATTS ARE TO COMPLY WITH ASTM C 885 TYPE 1. AT FIRE-RESISTANCE-RATED PARTITIONS, COMPLY WITH MINERAL-FIBER REQUIREMENTS OF UL ASSEMBLY INDICATED.
 - STUD SPACING SHALL BE 16" O.C. UNLESS NOTED OTHERWISE.
 - STUD SHAPE AND GAUGE ARE TO COMPLY WITH STEEL STUD MANUFACTURERS ASSOCIATION (SSMA) PUBLISHED LIMITING HEIGHTS. FOR TYPICAL INTERIOR PARTITIONS, LESS THAN 14'-0" IN HEIGHT WITH FULL-HEIGHT GWB ON BOTH SIDES, 25 GA. DRYWALL STUDS @ 16" O.C. MAY BE USED.
 - DEFLECTION TOP TRACK TO BE USED AT ALL PARTITION CONNECTIONS TO DECK UNLESS NOTED OTHERWISE. TRACK SHALL ACCOMMODATE AT LEAST 1" OF DEFLECTION AT DECK TYPICAL. ALLOW FOR L/360 LIVE LOAD DEFLECTION AT FLOOR STRUCTURE AND L/180 LIVE LOAD DEFLECTION AT ROOF STRUCTURE.
 - BASIS OF DESIGN FOR SHAFT WALL FRAMING IS USG J-SHAPED, C-H SHAPED, AND E-SHAPED STUDS. REFER TO USG PUBLICATION SA928 FOR ALLOWABLE SPANS. DESIGN DEFLECTION SHALL BE L/240 @ 5 PSF UNLESS NOTED OTHERWISE. AT ELEVATOR SHAFTS AND MECHANICAL SHAFTS, COORDINATE DESIGN AIR PRESSURE WITH ELEVATOR MANUFACTURER AND/OR MECHANICAL ENGINEER (DESIGN DEFLECTION SHALL BE L/240).
 - PROVIDE CONTROL JOINTS IN ALL DRYWALL PARTITIONS ACCORDING TO ASTM C 840. FINAL LOCATIONS OF CONTROL JOINTS ARE TO BE SUBMITTED AND APPROVED BY ARCHITECT.
 - FIRE-RESISTANCE RATED PARTITIONS SHALL BE TESTED IN ACCORDANCE WITH ASTM E 119 OR UL 263 PER CODE.
 - PENETRATIONS THROUGH FIRE-RESISTANCE RATED AND SMOKE BARRIER PARTITIONS MUST BE FIRESTOPPED, TESTED AND APPROVED IN ACCORDANCE WITH ASTM E 814 OR UL 1479, ASTM E 119 OR UL 263. PENETRATIONS THROUGH SMOKE BARRIER PARTITIONS MUST BE TESTED AND APPROVED IN ACCORDANCE WITH REQUIREMENTS OF UL 1479 FOR AIR LEAKAGE. FIRE RESISTANCE JOINT SYSTEMS IN SMOKE BARRIER PARTITIONS MUST BE TESTED AND APPROVED IN ACCORDANCE WITH REQUIREMENTS OF UL 2019 FOR AIR LEAKAGE.
 - DOORS LOCATED IN SMOKE BARRIER PARTITIONS MUST BE RATED FOR 20 MINUTES AND TESTED ACCORDING TO NFPA 252 OR UL 10C. DOOR ASSEMBLIES MUST BE TESTED FOR SMOKE AND DRAFT CONTROL ACCORDING TO UL 1784 AND NFPA 105.
 - DUCTS AND AIR TRANSFER OPENINGS IN FIRE-RESISTANCE RATED PARTITIONS MUST BE EQUIPPED WITH LISTED FIRE DAMPERS RATED ACCORDING TO THE PARTITION RATING. DUCTS AND AIR TRANSFER OPENINGS IN SMOKE BARRIER PARTITIONS MUST BE EQUIPPED WITH LISTED COMBINATION FIRE/SMOKE DAMPERS.
 - ANY PARTITIONS OR SIDES OF PARTITIONS SCHEDULED TO RECEIVE WALL TILE OR BASE TILE SHALL BE CONSTRUCTED WITH MOISTURE RESISTANT GLASS-MAT GYPSUM BOARD COMPLYING WITH ASTM C 1176/C 1178M, OR CEMENT BACKER UNITS COMPLYING WITH ANSI A118.9 AND ASTM C 1288 OR 1325.
 - ABUSE-RESISTANT GYPSUM BOARD SHALL COMPLY WITH ASTM C 1629/C 1629M.



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- ### PARTITION SYMBOLS LEGEND
- | PARTITION TYPE | ADDITIONAL REMARKS: |
|---|---|
| (Symbol: A42A) PARTITION TYPE OF CMU SIZE | A. PROVIDE SOUND ATTENUATION BATTS- SIZE ACCORDING TO GENERAL NOTES. |
| (Symbol: A42B) PARTITION TYPE OF CMU SIZE | B. GWB MAY STOP 6" ABOVE FINISHED CEILING. |
| (Symbol: A42C) PARTITION TYPE OF CMU SIZE | C. PROVIDE ABUSE-RESISTANT GYPSUM BOARD. |
| (Symbol: A42D) PARTITION TYPE OF CMU SIZE | D. PROVIDE MOISTURE-RESISTANT GYPSUM BOARD. |
| (Symbol: A42E) PARTITION TYPE OF CMU SIZE | S. SMOKE BARRIER PARTITION WITH PROTECTED OPENINGS AND PENETRATIONS. SEE NOTES. |
- ADDITIONAL REMARKS- SEE BELOW
FIRE RATING

STUD SIZE	TOTAL THICKNESS	0 HR	1 HR	2 HR	3 HR	STC W/ SAB (A)	UL DESIGN NO.	SEE GENERAL NOTES FOR LETTER SUFFIXES, PARTITION NOTES:
7/8"	1 1/2"	Q1	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--

Q FULL HEIGHT FURRING WALL: HAT CHANNELS W/ ONE LAYER OF GWB ON ONE SIDE ONLY.

STUD SIZE	TOTAL THICKNESS	0 HR	1 HR	2 HR	3 HR	STC W/ SAB (A)	UL DESIGN NO.	SEE GENERAL NOTES FOR LETTER SUFFIXES, PARTITION NOTES:
2 1/2"	3 1/8"	K2	--	--	--	--	--	--
3 5/8"	4 1/4"	K3	--	--	--	--	--	--
6"	6 5/8"	K6	--	--	--	--	--	--

K STUDS TO 6" ABOVE CEILING W/ ONE LAYER OF GWB ON ONE SIDE ONLY TO TOP OF STUDS. PROVIDE HEADER AT TOP OF WALL BRACE AS REQUIRED.

STUD SIZE	TOTAL THICKNESS	0 HR	1 HR	2 HR	3 HR	STC W/ SAB (A)	UL DESIGN NO.	SEE GENERAL NOTES FOR LETTER SUFFIXES, PARTITION NOTES:
2 1/2"	3 3/4"	J2	--	--	--	--	--	--
3 5/8"	4 7/8"	J3	--	--	--	--	--	--
6"	7 1/4"	J6	--	--	--	--	--	--

J STUDS TO 6" ABOVE CEILING W/ ONE LAYER OF GWB TO TOP OF STUDS ON EACH SIDE. PROVIDE HEADER AT TOP OF WALL BRACE AS REQUIRED.

STUD SIZE	TOTAL THICKNESS	0 HR	1 HR	2 HR	3 HR	STC W/ SAB (A)	UL DESIGN NO.	SEE GENERAL NOTES FOR LETTER SUFFIXES, PARTITION NOTES:
2 1/2"	3 3/4"	H2	--	--	--	--	--	--
3 5/8"	4 7/8"	H3	--	--	--	--	--	--
6"	7 1/4"	H6	--	--	--	--	--	--

H STUDS TO UNDERSIDE OF STRUCTURE W/ ONE LAYER OF GWB EA. SIDE TO 6" ABOVE FIN. CLG.

STUD SIZE	TOTAL THICKNESS	0 HR	1 HR	2 HR	3 HR	STC W/ SAB (A)	UL DESIGN NO.	SEE GENERAL NOTES FOR LETTER SUFFIXES, PARTITION NOTES:
1 5/8"	2 1/4"	D1	--	--	--	--	--	--
2 1/2"	3 1/8"	D2	--	--	--	--	--	--
3 5/8"	4 1/4"	D3	--	--	--	--	--	--

D STUDS TO UNDERSIDE OF STRUCTURE W/ ONE LAYER OF GWB ONE SIDE ONLY.

STUD SIZE	TOTAL THICKNESS	0 HR	1 HR	2 HR	3 HR	STC W/ SAB (A)	UL DESIGN NO.	SEE GENERAL NOTES FOR LETTER SUFFIXES, PARTITION NOTES:
2 1/2"	5"	B2	B21	B22	--	48	U 419	--
3 5/8"	6 1/8"	B3	B31	B32	--	55	U 419	--
6"	8 1/2"	B6	B61	B62	--	55	U 419	--

B STUDS TO UNDERSIDE OF STRUCTURE W/ TWO LAYERS OF GWB EA SIDE TO UNDERSIDE OF STRUCTURE

NOTE: 1 1/2" MINERAL FIBER BATTS COMPLYING WITH UL U 419 ARE REQUIRED FOR TYPE A21 FIRE-RATED PARTITIONS.

STUD SIZE	TOTAL THICKNESS	0 HR	1 HR	2 HR	3 HR	STC W/ SAB (A)	UL DESIGN NO.	SEE GENERAL NOTES FOR LETTER SUFFIXES, PARTITION NOTES:
2 1/2"	3 3/4"	A2	A21A	--	--	42	U 419	--
3 5/8"	4 7/8"	A3	A31	--	--	48-50	U 419	--
6"	7 1/4"	A6	A61	--	--	48-50	U 419	--

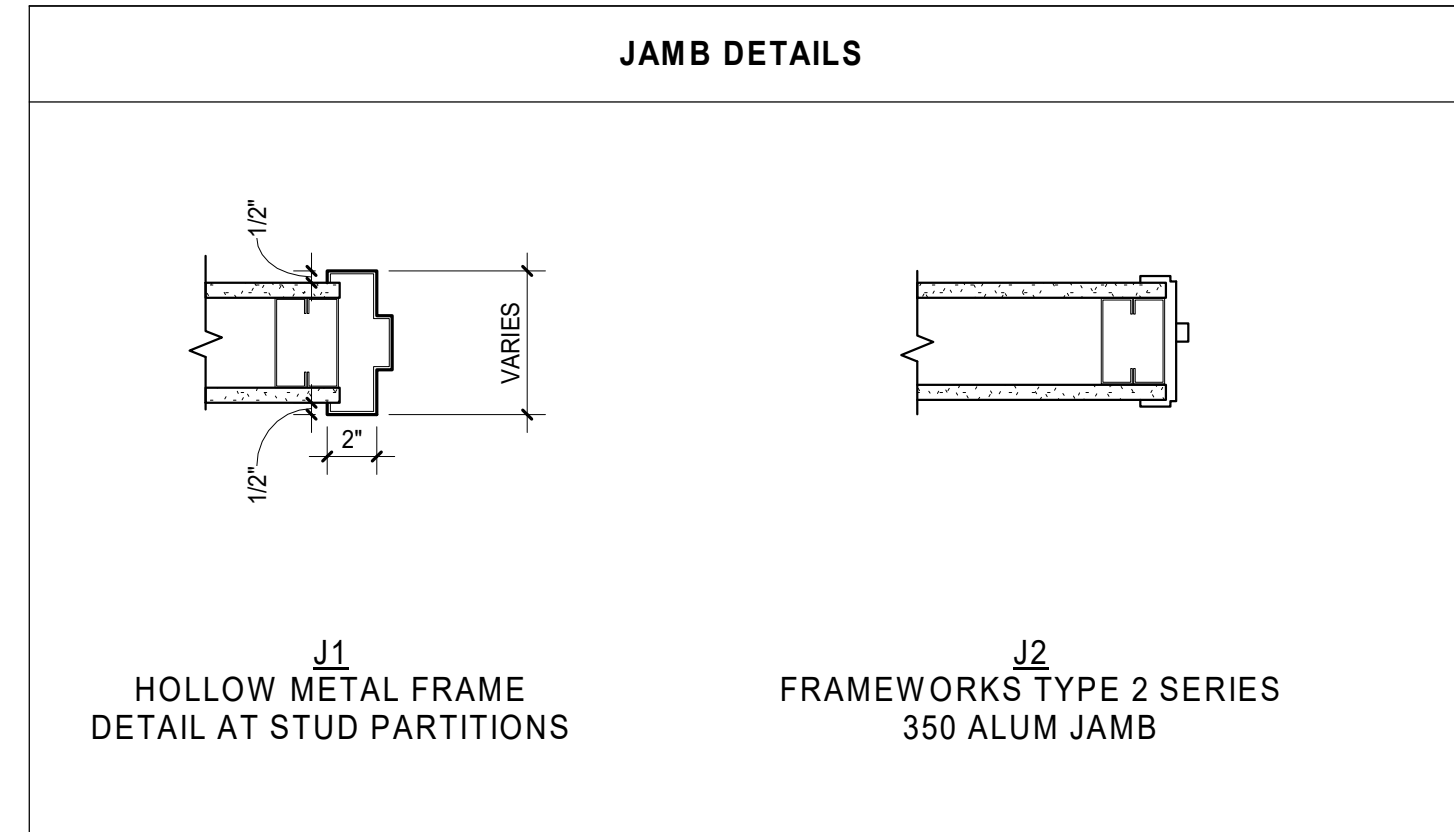
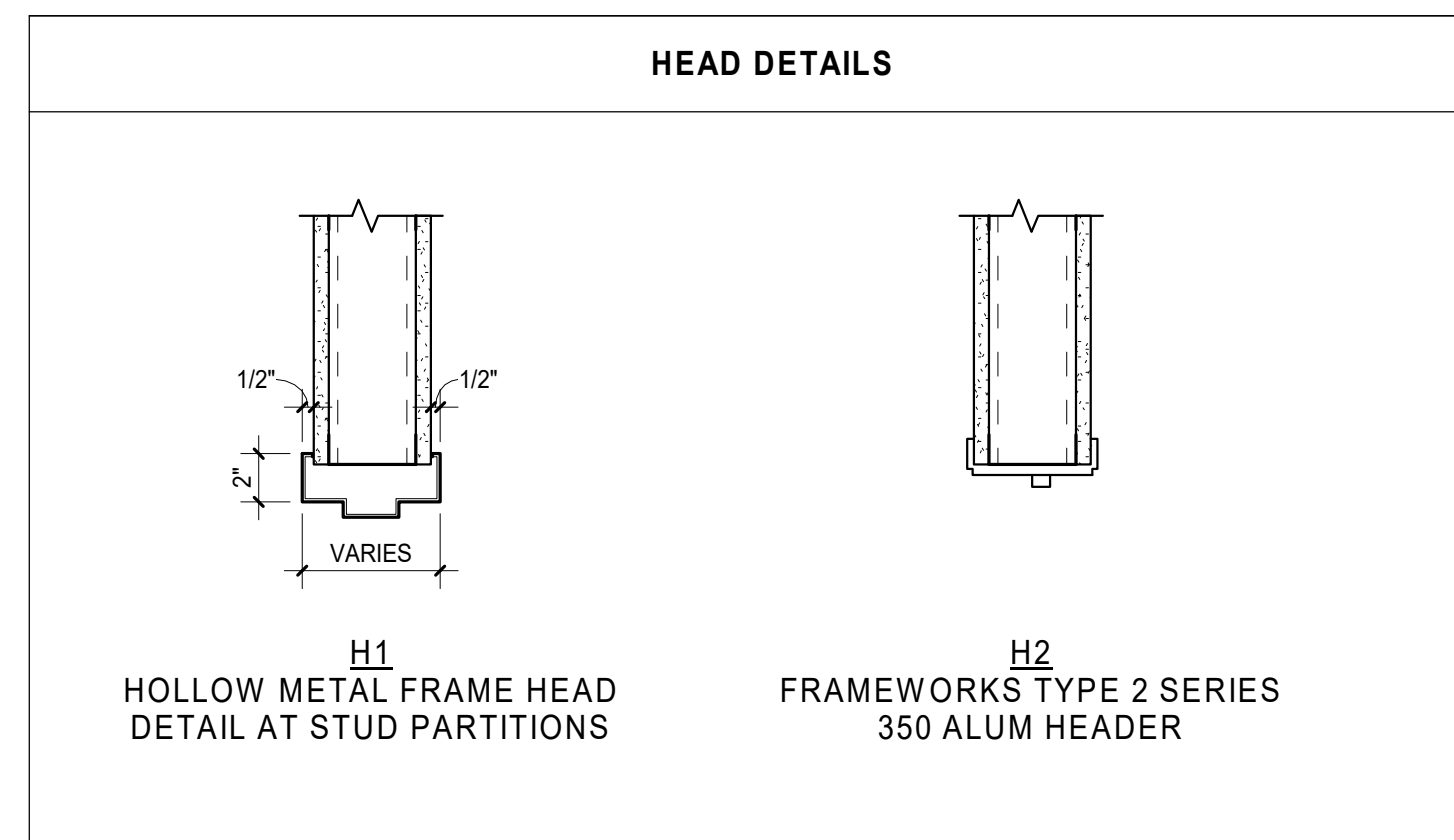
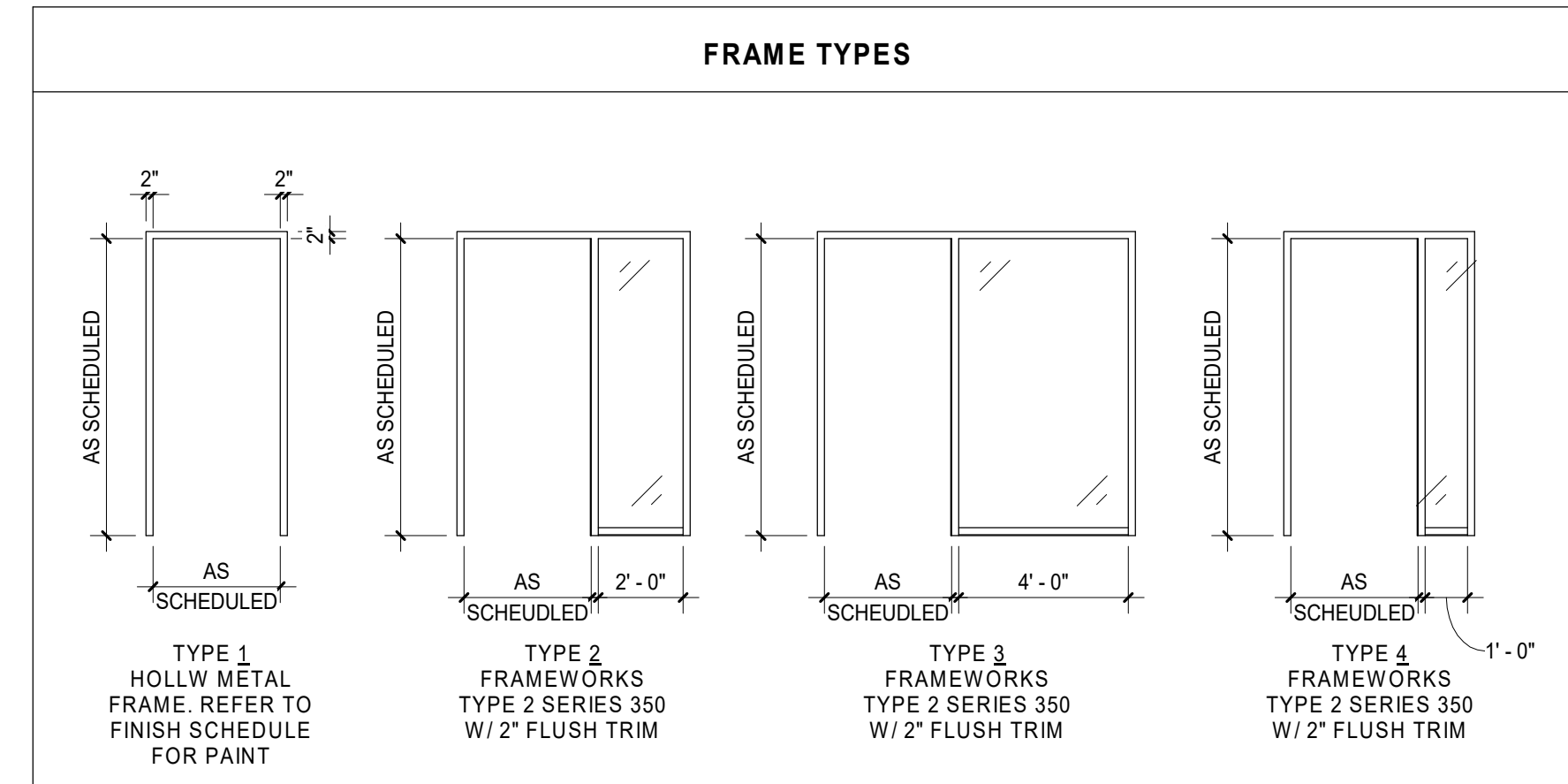
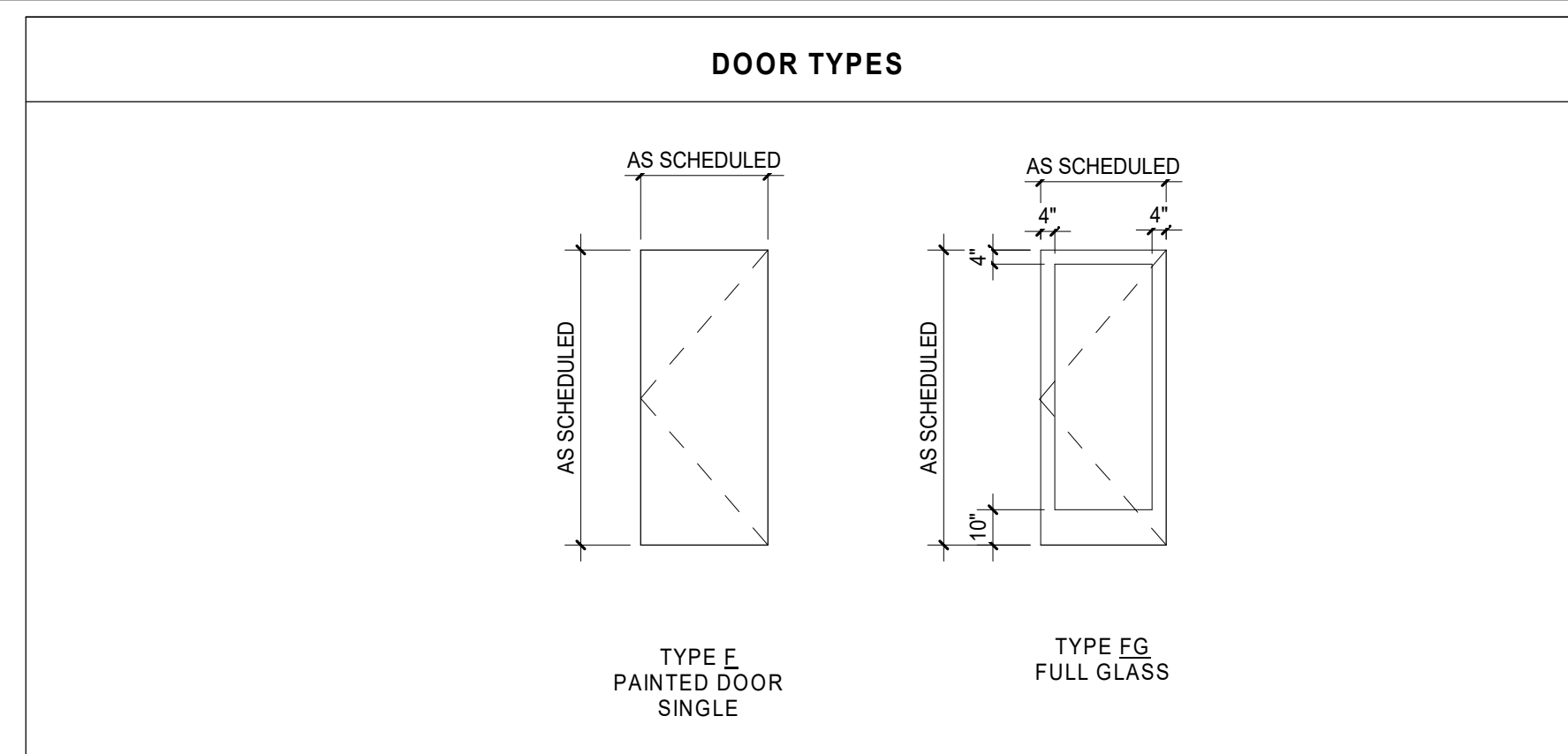
A STUDS TO UNDERSIDE OF STRUCTURE W/ ONE LAYER OF GWB EA SIDE TO UNDERSIDE OF STRUCTURE

REV.	DATE	DESCRIPTION	ISSUED FOR
1	2023.01.20	DESIGN DEVELOPMENT	CLIENT REVIEW
2	2023.02.13	ISSUED FOR DC&M REVIEW	ISSUED FOR DC&M REVIEW
3	2023.03.02	ISSUED FOR DC&M REVIEW	ISSUED FOR DC&M REVIEW

NJDCA REF NUMBER:
PROJECT NUMBER: **22031600**
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PARTITION TYPES

SHEET NUMBER
A700



DOOR SCHEDULE

DOOR #	TYPE	DOOR				FRAME				HARDWARE SET	FIRE RATING (MIN)				COMMENTS
		WIDTH	HEIGHT	THICKNESS	MATERIAL	GLASS	MATERIAL	TYPE	HEAD		JAMB	20	45	60	
Level 1															
101	(2)FG	6'-0"	7'-0"	1 3/4"	ALUM	Yes	ALUM	*	H2	J2	#04				
102	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	*	H2	J2	#04				
103	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	*	H2	J2	#03				
104	FG	3'-2 1/8"	7'-0"	1 3/4"	WD	Yes	ALUM	2	H2	J2	#03				
105	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	2	H2	J2	#03				
108	FG	3'-4"	7'-0"	1 3/4"	WD	Yes	ALUM	2	H2	J2	#03				
109	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	2	H2	J2	#03				
110	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	2	H2	J2	#03				
111	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	2	H2	J2	#03				
112	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	2	H2	J2	#03				
113	F	3'-0"	7'-0"	1 3/4"	WD	No	HM	1	H1	J1	#05				
115	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	EXIST	1	EXIST	EXIST	#03				
116	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	EXIST	1	EXIST	EXIST	#03				
120	F	3'-0"	7'-0"	1 3/4"	WD	No	HM	1	H1	J1	#05				
121A.A	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	HM	1	H2	J2	#02				
121A.B	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	HM	1	H2	J2	#02				
121B.A	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	HM	1	H2	J2	#02				
121B.B	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	HM	1	H2	J2	#02				
122	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	*	H2	J2	#04				
123	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	3	H2	J2	#04				
124	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	HM	1	H2	J2	#04				
125	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	HM	1	H2	J2	#04				
126	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	3	H2	J2	#04				
127	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	3	H2	J2	#04				
130	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	3	H2	J2	#03				
131	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	3	H2	J2	#03				
132.A	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	*	H2	J2	#04				
132.B	(2)FG	6'-0"	7'-0"	1 3/4"	ALUM	Yes	ALUM	*	H2	J2	#04				
133	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	3	H2	J2	#03				
134	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	3	H2	J2	#03				
135	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	3	H2	J2	#04				
136	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	3	H2	J2	#04				
137	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	3	H2	J2	#04				
138	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	3	H2	J2	#04				
139	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	3	H2	J2	#04				
141	F	3'-0"	7'-0"	1 3/4"	WD	No	HM	1	H1	J1	#05				
142	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	HM	1	H2	J2	#03				
143	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	HM	1	H2	J2	#03				
144	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	HM	1	H2	J2	#04				
145	F	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	2	H2	J2	#03				
146	F	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	2	H2	J2	#03				
148	F	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	3	H2	J2	#03				
149.A	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	*	H2	J2	#02				
149.B	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	*	H2	J2	#02				
151	(2)FG	6'-0"	7'-0"	1 3/4"	ALUM	Yes	ALUM	*	H2	J2	#04				
156	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	EXIST	1	EXIST	EXIST	#03				
158	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	EXIST	1	EXIST	EXIST	#03				
159	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	EXIST	1	EXIST	EXIST	#03				
160	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	EXIST	1	EXIST	EXIST	#03				
161	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	EXIST	1	EXIST	EXIST	#03				
162	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	2	H2	J2	#03				
163	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	2	H2	J2	#03				
164	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	2	H2	J2	#03				
165	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	2	H2	J2	#03				
166	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	*	H2	J2	#04				
168	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	3	H2	J2	#03				
169	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	3	H2	J2	#03				
170	F	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	4	H2	J2	#03				
Level 2															
200	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	*	H2	J2	#04				
200A	F	3'-0"	7'-0"	1 3/4"	WD	No	HM	1	H1	J1	#05				
201	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	3	H2	J2	#04				
202	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	3	H2	J2	#04				
203	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	2	H2	J2	#04				
205	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	2	H2	J2	#03				
206	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	HM	1	H2	J2	#03				
207	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	*	H2	J2	#04				
209	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	3	H2	J2	#04				
210	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	3	H2	J2	#04				
211	FG	3'-0"	7'-0"	1 3/4"	WD	Yes	ALUM	*	H2	J2	#04				
Grand total: 69															

PHASE 2

Qty	Description	Catalog Number	Finish	Mfr
Hardware Group No. 01 Entry (Panic Hardware)				
3	EA HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA PANIC HARDWARE	99-L-06	626	VON
1	EA SPIC RIM CYLINDER	80-159	626	SCH
1	EA PERMANENT CORE	1C7	626	BES
1	EA SURFACE CLOSER	4040XP EDA TBWMS	689	LCN
1	EA FLOOR STOP	FS17-26D	630	IVE
1	DOOR SEAL	188S-BK	S-Bk	ZER
Hardware Group No. 02 MULTIPURPOSE				
3	HINGE	5BB1 4.5 X 4.5	652	IVE
1	PASSAGE LOCK	ML 2002 x NSA x MR w/ thumb turn on interior	626	CORBIN
1	PERMANENT CORE	1C7	626	BES
1	SURFACE CLOSER	4040XP TBWMS REG	689	LCN
1	WALL STOP	WS406/407CCV	630	IVE
1	DOOR SEAL	188S-BK	S-Bk	ZER
Hardware Group No. 03 OFFICES				
3	HINGE	5BB1 4.5 X 4.5	652	IVE
1	OFFICE LOCK	ML 2054 x NSA x MR (F04)	626	CORBIN
1	PERMANENT CORE	1C7	626	BES
1	FLOOR STOP	FS17-26D	630	IVE
3	SILENCER	SR64	GRY	IVE
Hardware Group No. 04 PASSAGE				
3	HINGE	CB168	STANLEY	IVE
1	PASSAGE LOCK	ML2010 x NSA (F01)	626	CORBIN
1	WALL STOP	WS401/402 SERES	ROCKWOOD	IVE
1	HEAD & JAMB SEALS	328A Jamb/428A Head	ZER	ZER
1	SILL SEAL/SWEEP	39A	ZER	ZER
3	SILENCER	SR64	GRY	IVE
Hardware Group No. 05 STORAGE				
3	HINGE	CB168	STANLEY	IVE
1	PASSAGE LOCK	ML 2057 x NSA x MR (F07)	626	CORBIN
1	WALL STOP	WS401/402 SERES	ROCKWOOD	IVE
1	HEAD & JAMB SEALS	328A Jamb/428A Head	ZER	ZER
1	SILL SEAL/SWEEP	39A	ZER	ZER
3	SILENCER	SR64	GRY	IVE

CLASSROOM?

STORAGE?



CLIENT:
THE COLLEGE OF NEW JERSEY
2000 PENNINGTON ROAD
EWING, NJ

PROJECT TEAM
NORR
One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia PA 19102
norr.com

SHEN MILSON & WILKE
75 MADISON AVE
NEW YORK, NY 10016

TCNJ - ROSCOE HALL STUDENT SERVICES RENOVATION

2000 PENNINGTON ROAD EWING, NJ
THE COLLEGE OF NEW JERSEY

REV.	DATE	DESCRIPTION	DRW. CHK.
1	2023.01.20	DESIGN DEVELOPMENT	
2	2023.01.20	CLIENT REVIEW	
3	2023.02.13	ISSUED FOR DCI REVIEW	
4	2023.03.02	ISSUED FOR BID	

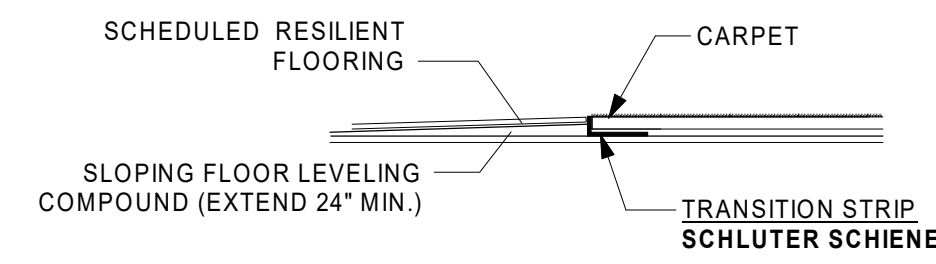
NJDCA REF NUMBER:
PROJECT NUMBER: **22031600**
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DOOR AND FRAME TYPES, SCHEDULE, DETAILS, GLAZING TYPES

SHEET NUMBER
A710

FINISH SCHEDULE

FINISH TAG	TITLE	MANUFACTURER	STYLE	SIZE	COLOR	COMMENTS
BASE						
RB-1	THERMOPLASTIC RUBBER BASE	MANNINGTON	TP	4" H	217 CHARCOAL	STRAIGHT BASE AT CARPET, COVE BASE AT RESILIENT FLOORING. 100' ROLL TYP.
CEILING						
ACT-1	ACOUSTICAL CEILING GRID & TILE	ARMSTRONG	DUNE 1775 BEVELED TEGULAR, 9/16" SUPRAFINE GRID	2' X 4'	WHITE	
GWB-1	GYPSUM WALLBOARD	-	FLAT FINISH	-	SW 7007 CEILING BRIGHT WHITE	GENERAL CEILING PAINT
ECP-1	EXPOSED CEILING PAINT	SHERWIN WILLIAMS	DRYFALL	-	BM 216 CALIFORNIA HILLS	
FLOORING						
CPT-1	CARPET TILE	MANNINGTON	DRIFT	18" X 36"	VISTA 34924	INSTALLATION: ASHLAR
CPT-2	CARPET TILE	MANNINGTON	DRIFT	18" X 36"	DITTO 12525	INSTALLATION: ASHLAR
CPT-3	CARPET TILE	MANNINGTON	RUFFIAN II	24" X 24"	EBONY EARTH 1506	INSTALLATION: MONOLITHIC
LVT-1	LUXURY VINYL TILE	MANNINGTON	COLOR ANCHOR STRIDE	9" X 36" UNBEVELLED EDGE	TRUFFLE C167	INSTALLATION: BRICK & CUSTOM ASPEKT LARGE PATTERN
LVT-2	LUXURY VINYL TILE	MANNINGTON	ASPEKT LARGE PATTERN	VARIES, UNBEVELLED EDGE	1. ABSTRACT STUCCO FLAX 2. STONE TEMPUS SOOTHE 3. ABSTRACT DIFFUSION CHAMBRAY	INSTALLATION: ASPEKT LARGE PATTERN
LVT-3	LUXURY VINYL TILE	MANNINGTON	NO RESERVATIONS XPRESS - WOOD	7.25" X 48"	INHIBITION NR101	INSTALLATION: STAGGER
MILLWORK						
SS-1	SOLID SURFACE	WILSONART	AVALANCHE MELANGE 9175ML	2CM THK		COUNTER TOPS AT: PANTRY EDGE PROFILE: EASED
PL-1	PLASTIC LAMINATE	FORMICA	GREIGE SOFTWOOD 4924-NG	-	-	BASE CABINETS, VERTICLE SURFACES
PL-2	PLASTIC LAMINATE	FORMICA	SEA SALT 9529-43	-	-	COUNTERTOPS, HORIZONTAL SURFACES
MISC.						
GL-1	TYPICAL GLAZING	MCGRORY GLASS OR EQ.	LAMINATED GLASS W/ INTERLAYER	-	NORP-165	WHERE NOTED
WF-1	WINDOW FILM					
WALLS						
PT-1	GENERAL WALL PAINT	BENJAMIN MOORE	WALLS: EGGSHELL	-	SUPER WHITE OC-152	GENERAL PAINT THROUGHOUT
PT-2	ACCENT WALL PAINT	SHERWIN WILLIAMS	WALLS: EGGSHELL	-	CHRYSANTHEMUM SW6347	KITCHENETTE MILLWORK WALL WHERE NOTED
PT-3	ACCENT WALL PAINT	SHERWIN WILLIAMS	DOORS/FRAMES: SEMI-GLOSS	-	SILVER CHAIN 1472	HM DOORS & FRAMES
PT-4	ACCENT WALL PAINT	BENJAMIN MOORE	WALLS: EGGSHELL	-	VAN DEUSEN BLUE HC-156	ACCENT WALLS/OFFICES WHERE NOTED
PT-5	ACCENT WALL PAINT	BENJAMIN MOORE	WALLS: EGGSHELL	-	HEMLOCK BM 719	MEETING, CONFERENCE, MULTI-PURPOSE, GROUP RM WHERE NOTED
TB-1	TACK BOARD	FORBO	BULLETIN BOARD	-	FRESH PINEAPPLE 2212	SEE ELEVATIONS FOR SIZE
TB-2	TACK BOARD	FORBO	BULLETIN BOARD	-	CINNAMON BARK 2207	SEE ELEVATIONS FOR SIZE
TB-3	TACK BOARD	FORBO	BULLETIN BOARD	-	DUCK EGG 2162	SEE ELEVATIONS FOR SIZE
MB-1	MARKER BOARD	POLYVISION	E3 SURFACE HIGH GLOSS	6'-10" X LENGTH OF WALL	WHITE 6100H	PROVIDE PLATINUM DROP-IN TRAY TRIM SYSTEM



1 FLOOR TRANSITION - RESILIENT FLOORING TO CPT SCHIENE
3" = 1'-0"



One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia, PA 19103 U.S.A.
norr.com

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TCNJ - ROSCOE HALL STUDENT SERVICES RENOVATION

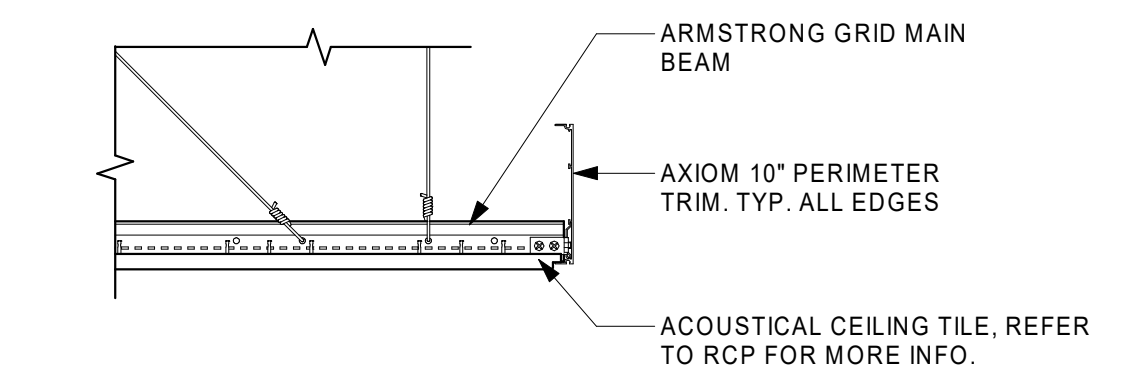
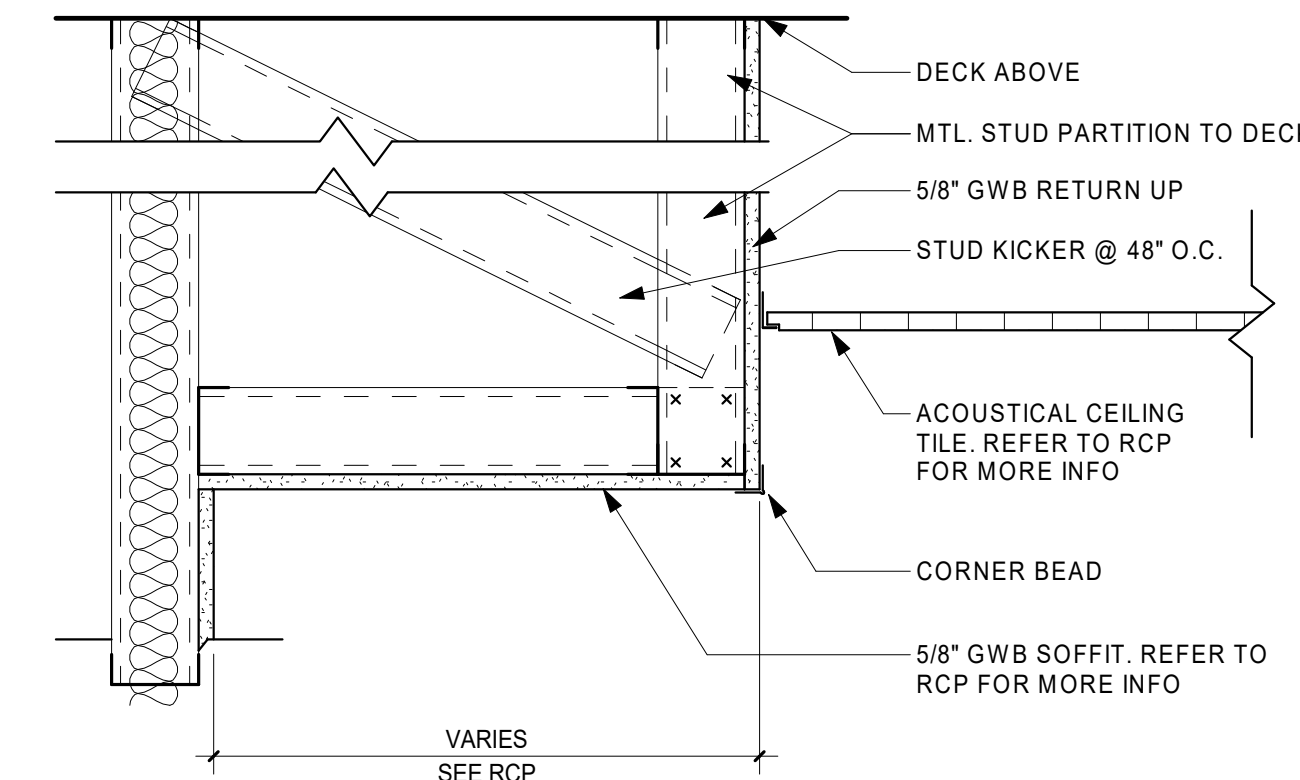
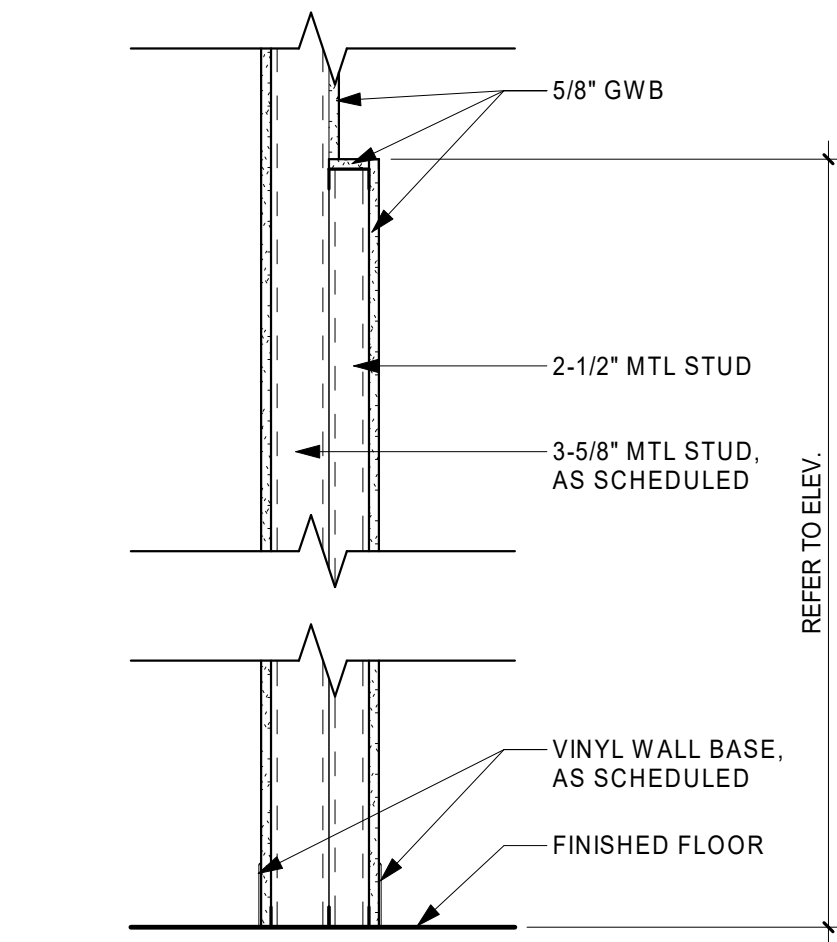
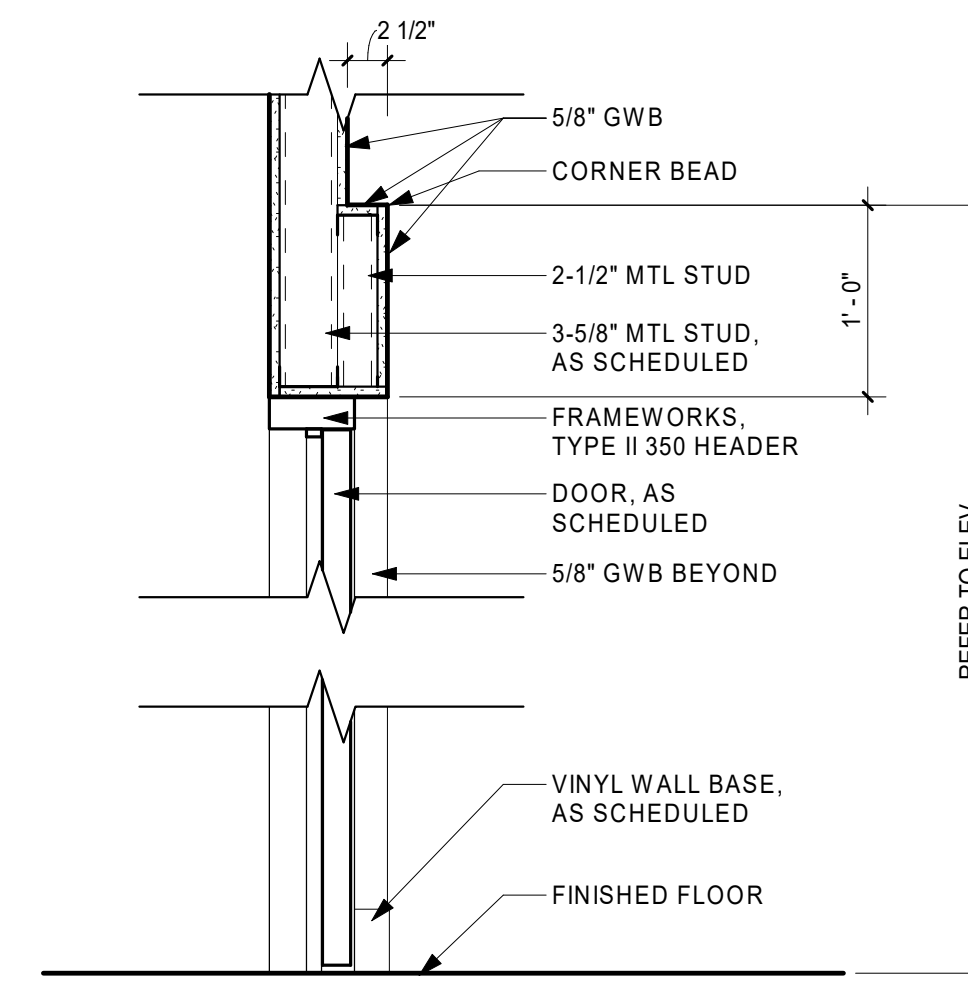
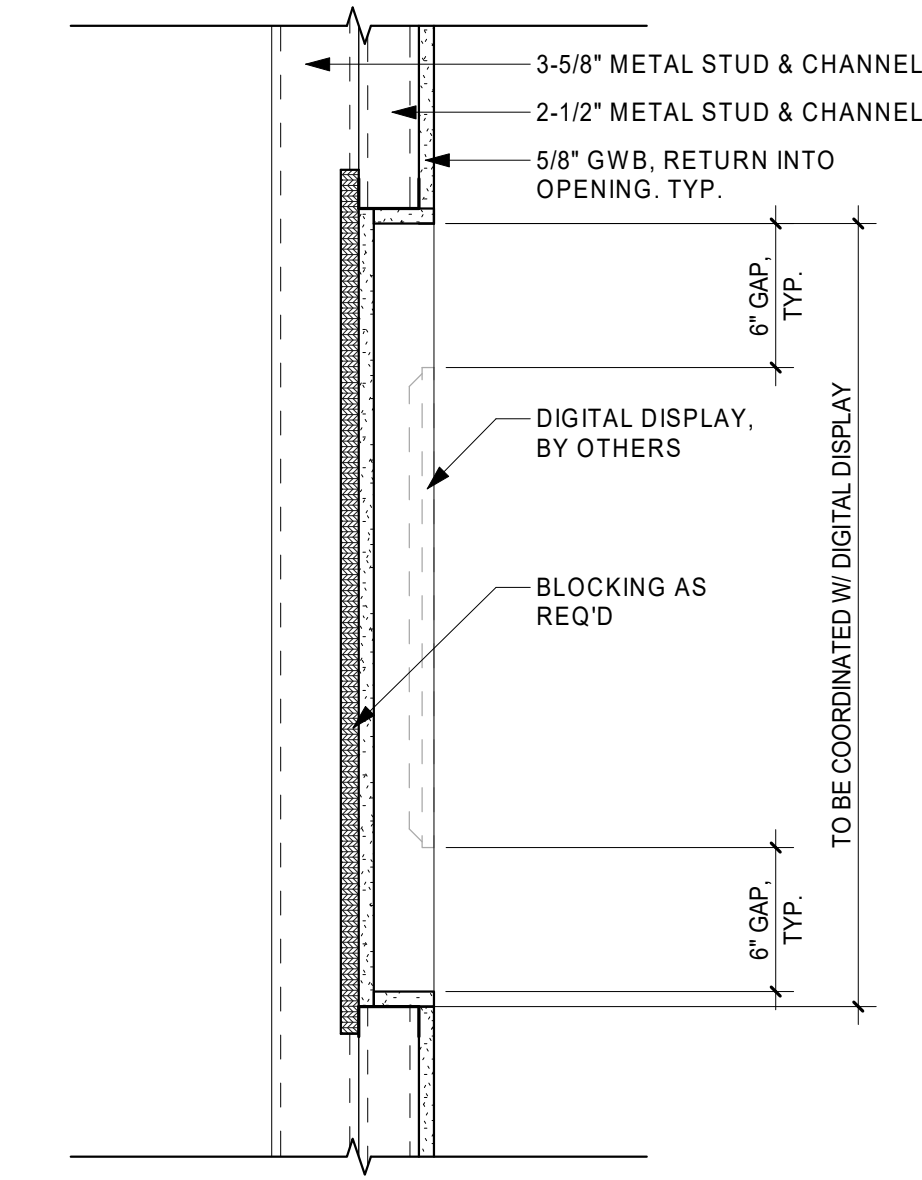
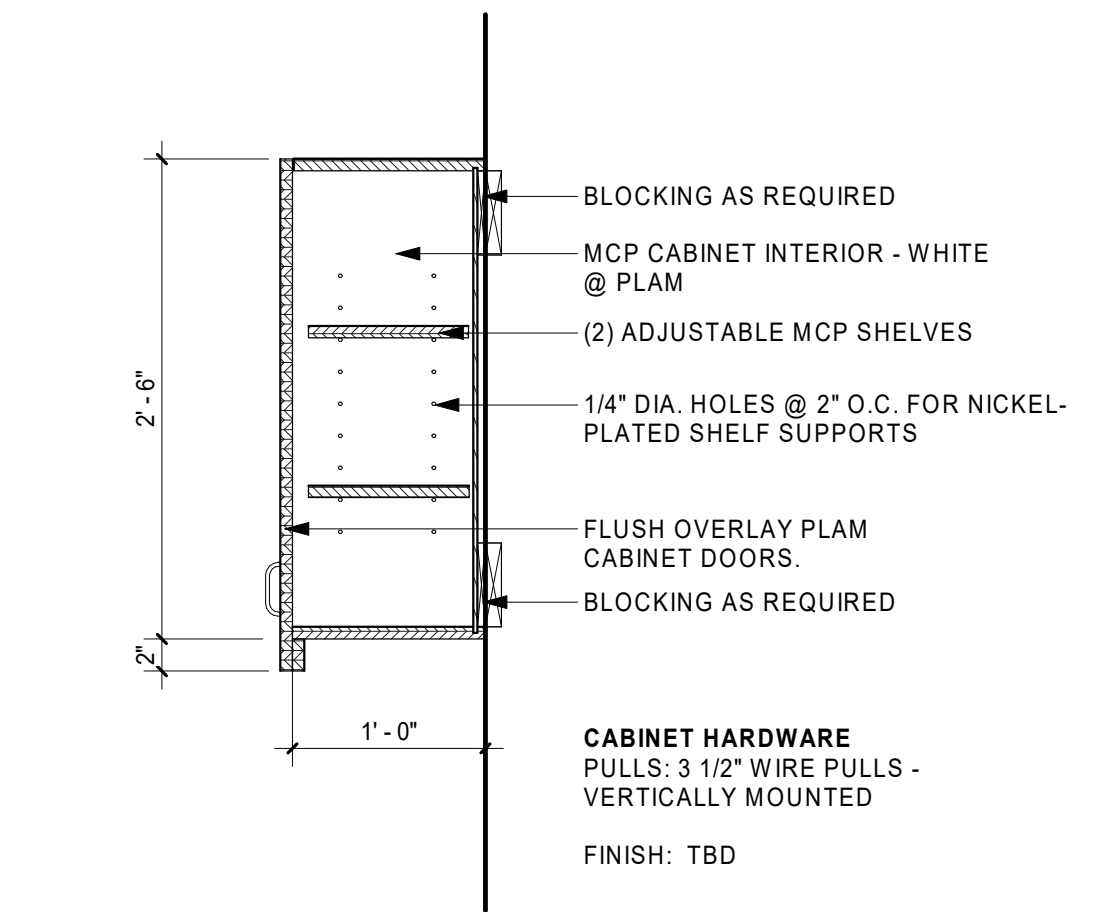
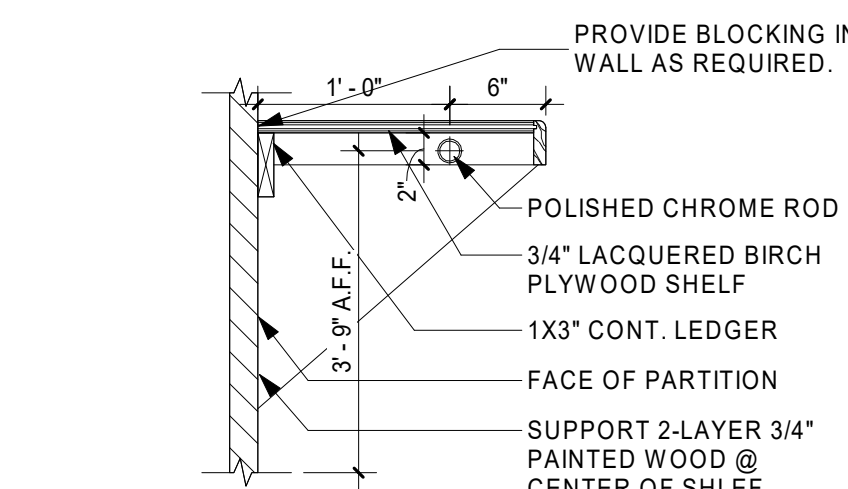
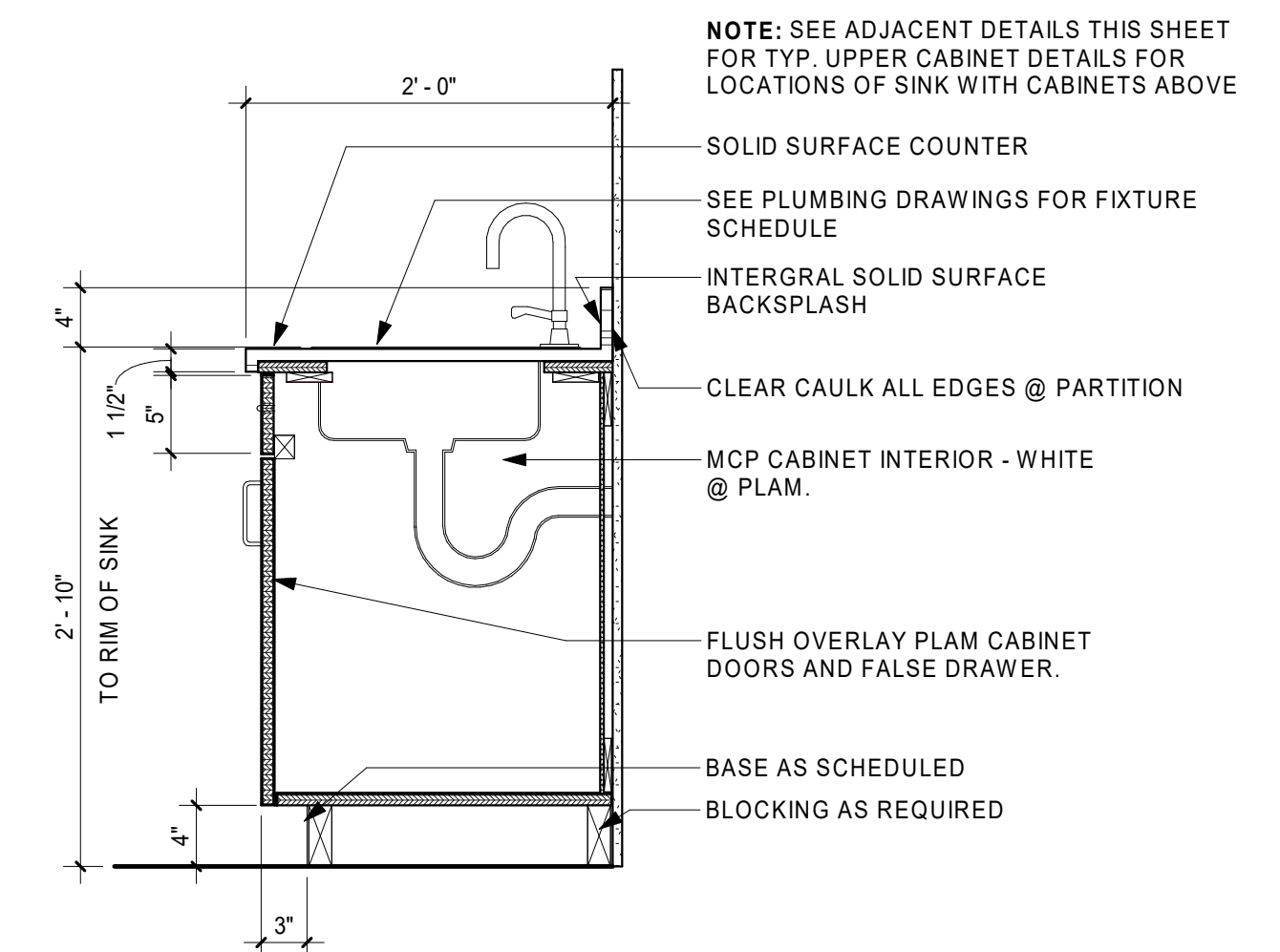
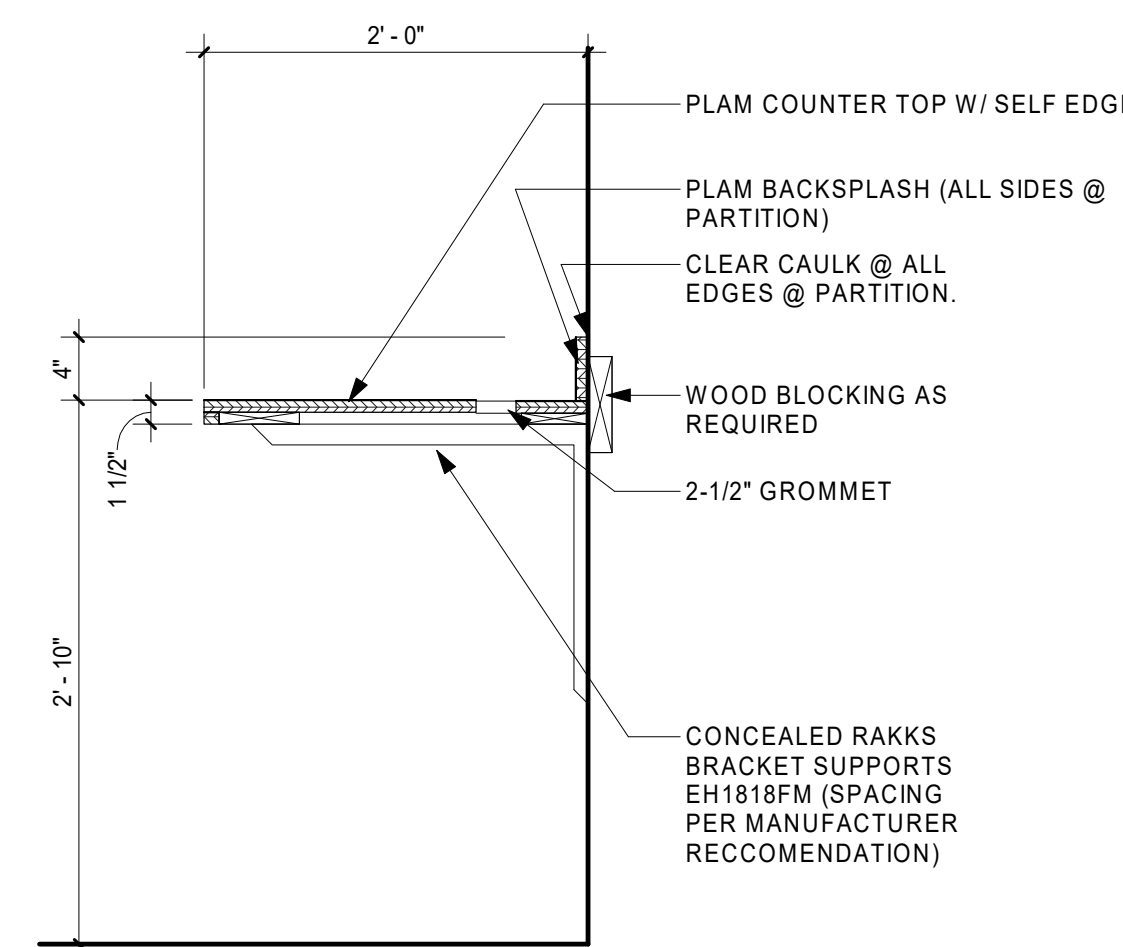
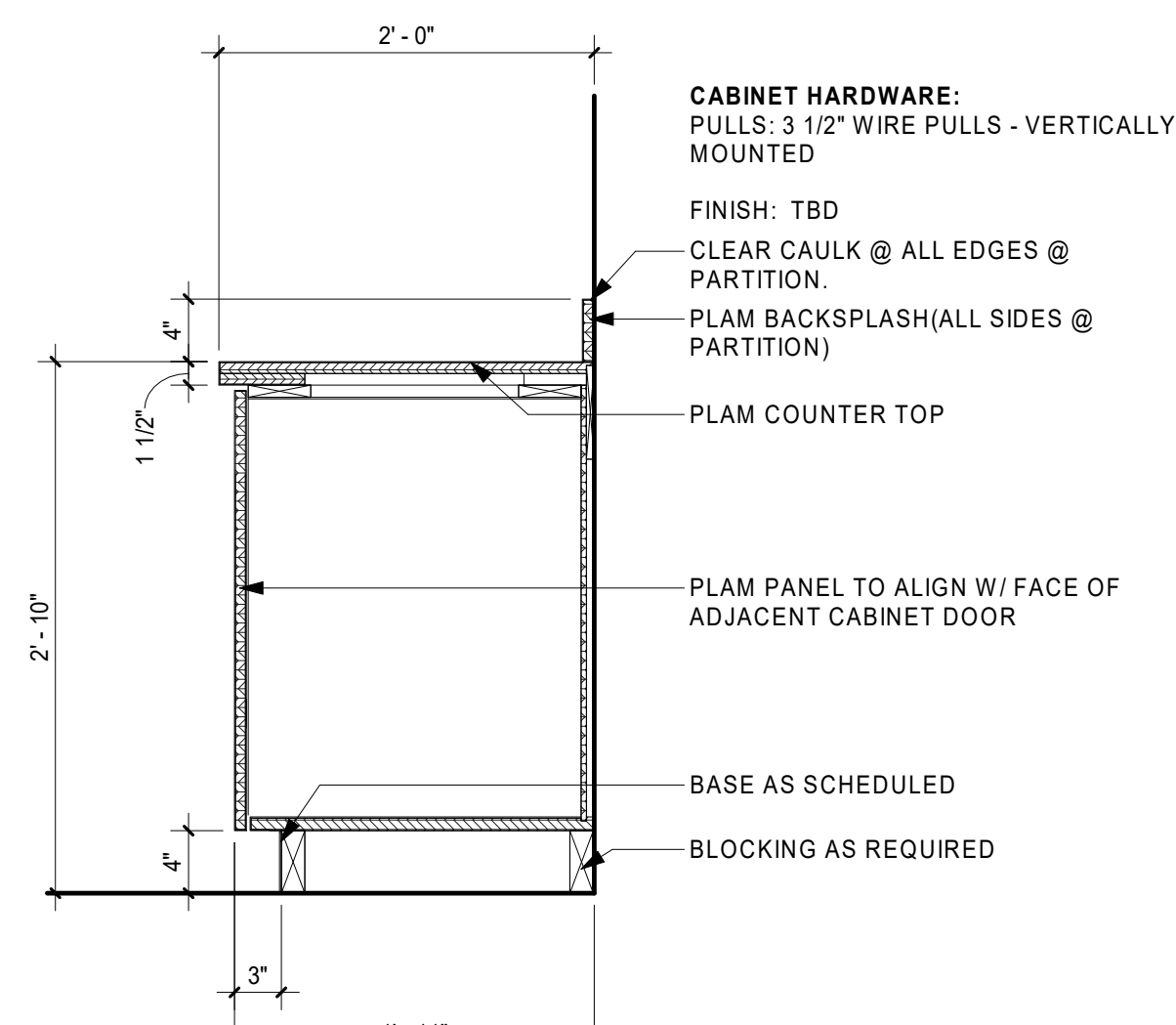
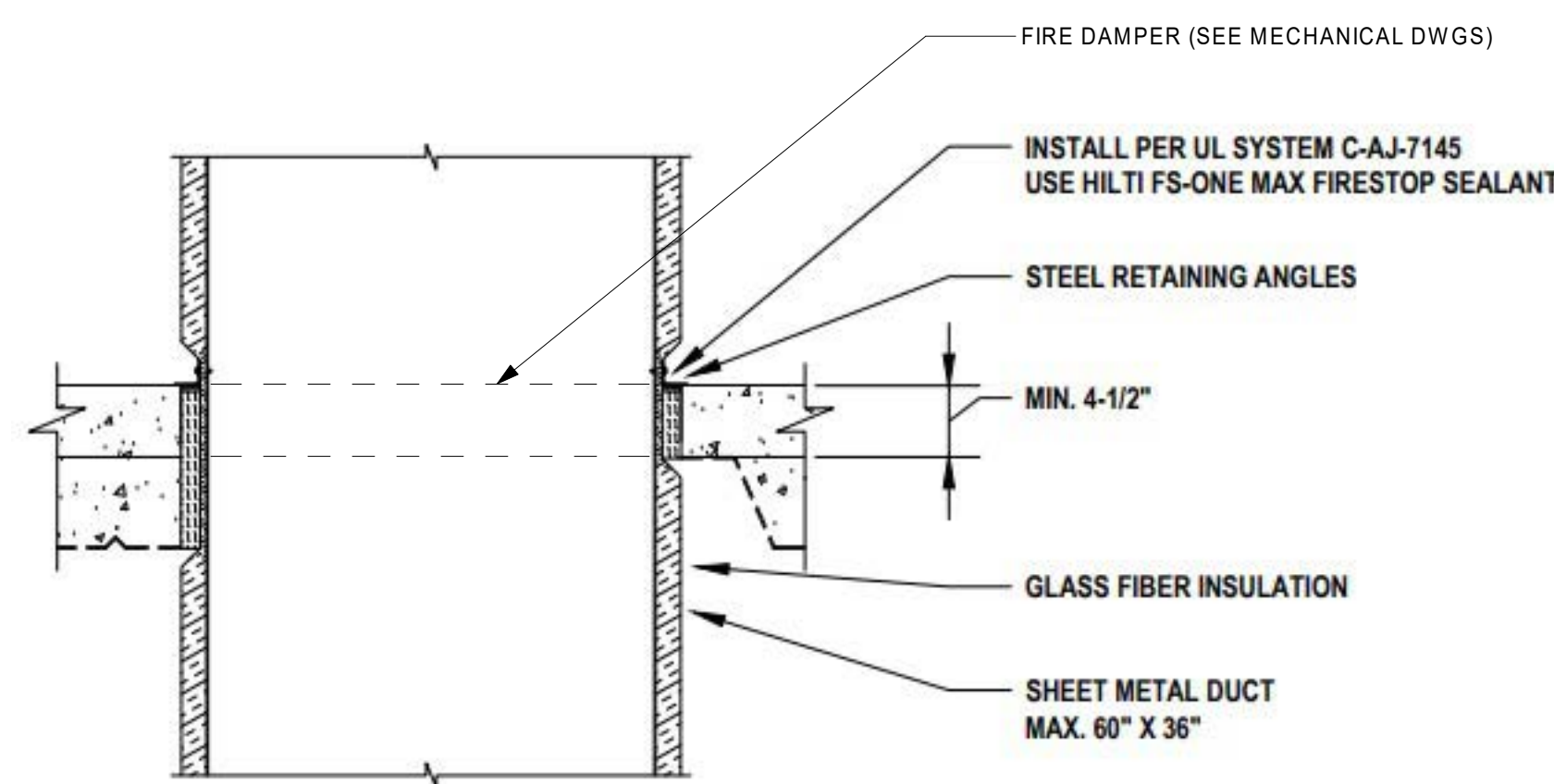
2000 PENNINGTON ROAD EWING, NJ
THE COLLEGE OF NEW JERSEY

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1	2023.01.20	DESIGN DEVELOPMENT	
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4	2023.03.02	ISSUED FOR BDO	

NJDCA REF NUMBER:
PROJECT NUMBER: **22031600**
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FINISH SCHEDULE, TRANSITION DETAILS

SHEET NUMBER
A740



One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia, PA 19103 U.S.A.
norr.com

CLIENT:
THE COLLEGE OF NEW JERSEY
2000 PENNINGTON ROAD
EWING, NJ

PROJECT TEAM
NORR
One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia PA 19103
norr.com

SHEN MILSON & WILKE
75 MADISON AVE
NEW YORK, NY 10016

TCNJ - ROSCOE HALL STUDENT SERVICES RENOVATION

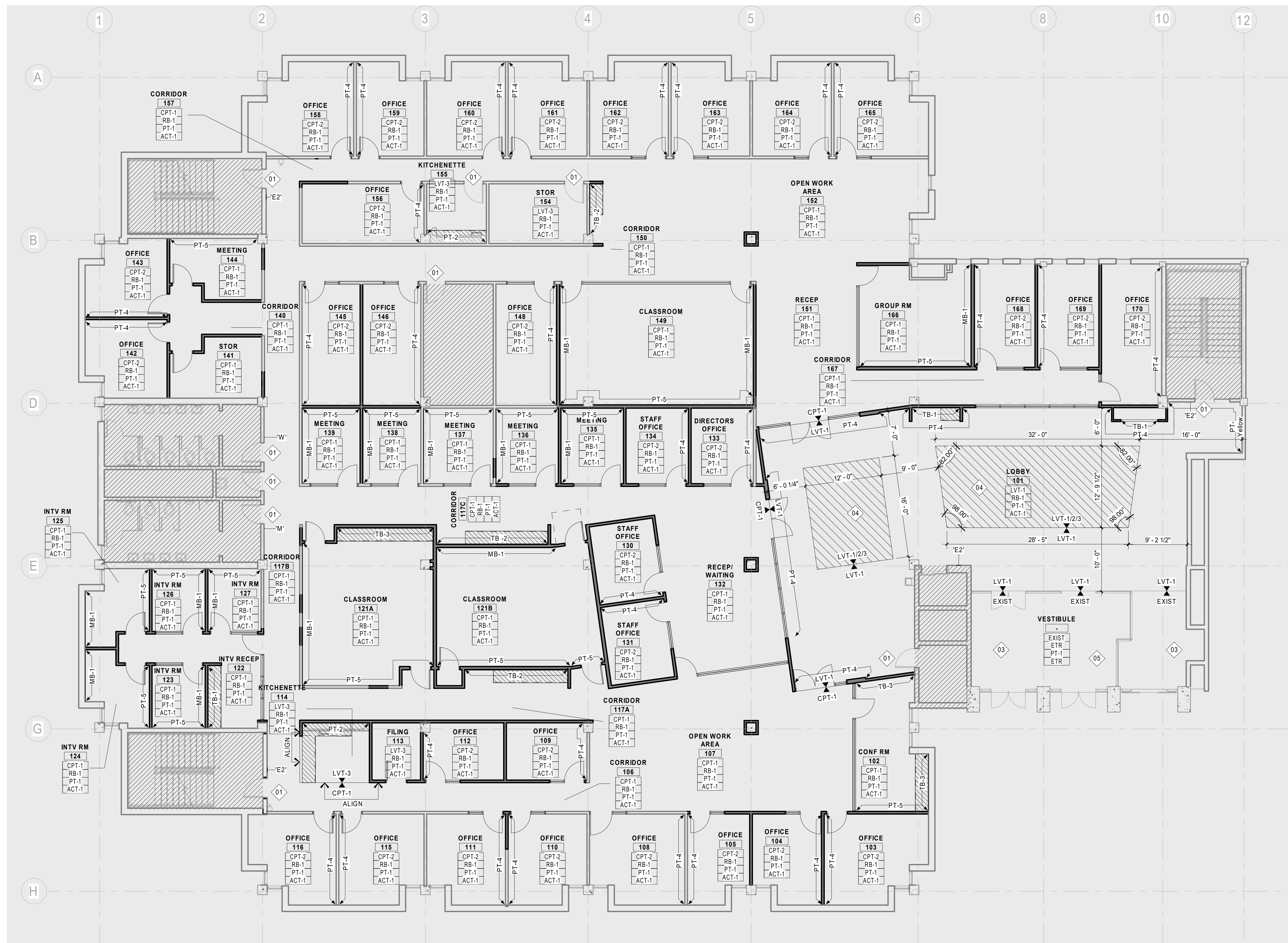
2000 PENNINGTON ROAD EWING, NJ
THE COLLEGE OF NEW JERSEY

REV.	DATE	DESCRIPTION	DRW (CHK)
1	2022.01.20	ISSUED FOR DEVELOPMENT	
2	2022.01.20	CLIENT REVIEW	
3	2022.02.15	ISSUED FOR DCI REVIEW	
4	2023.03.02	ISSUED FOR BID	

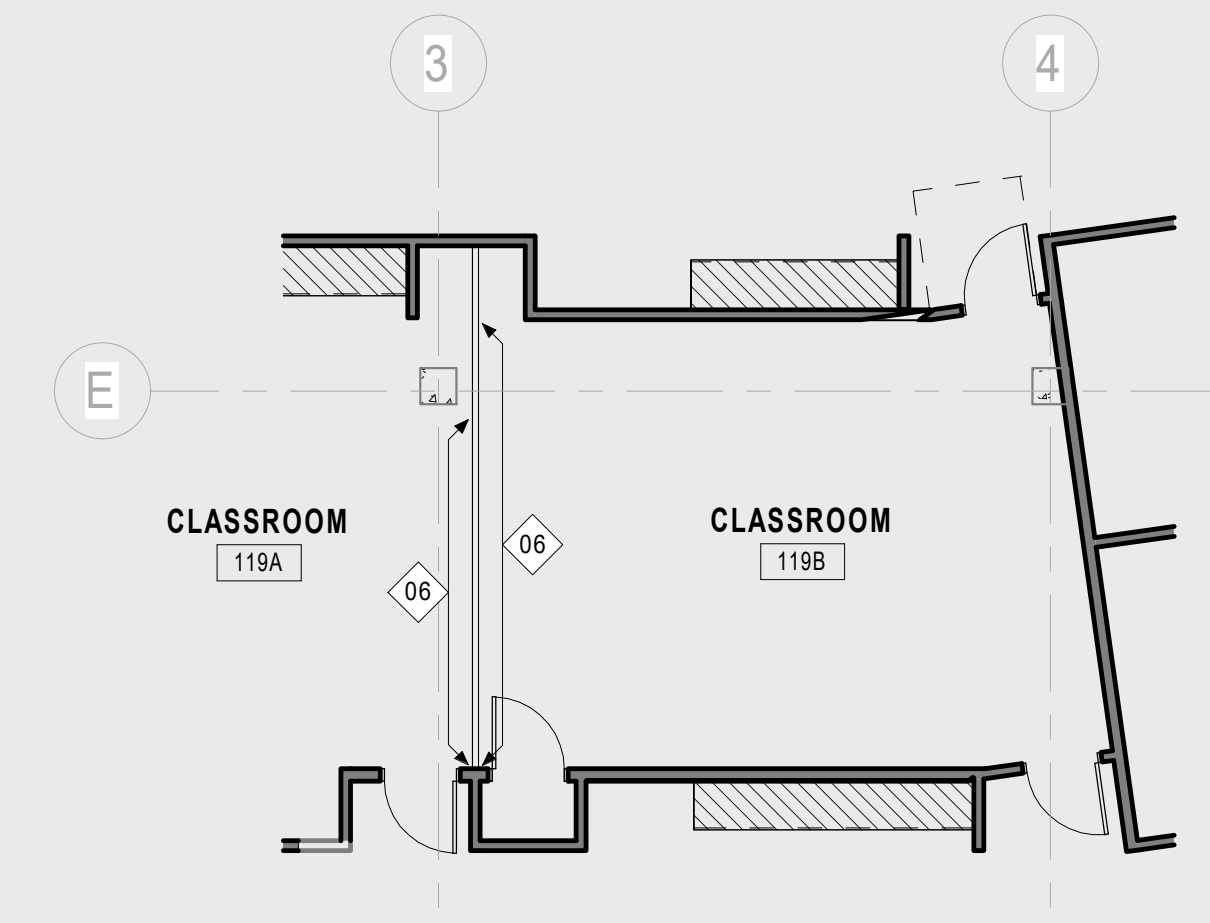
NIDCA REF NUMBER:
PROJECT NUMBER: **22031600**
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SHEET TITLE:
DETAILS

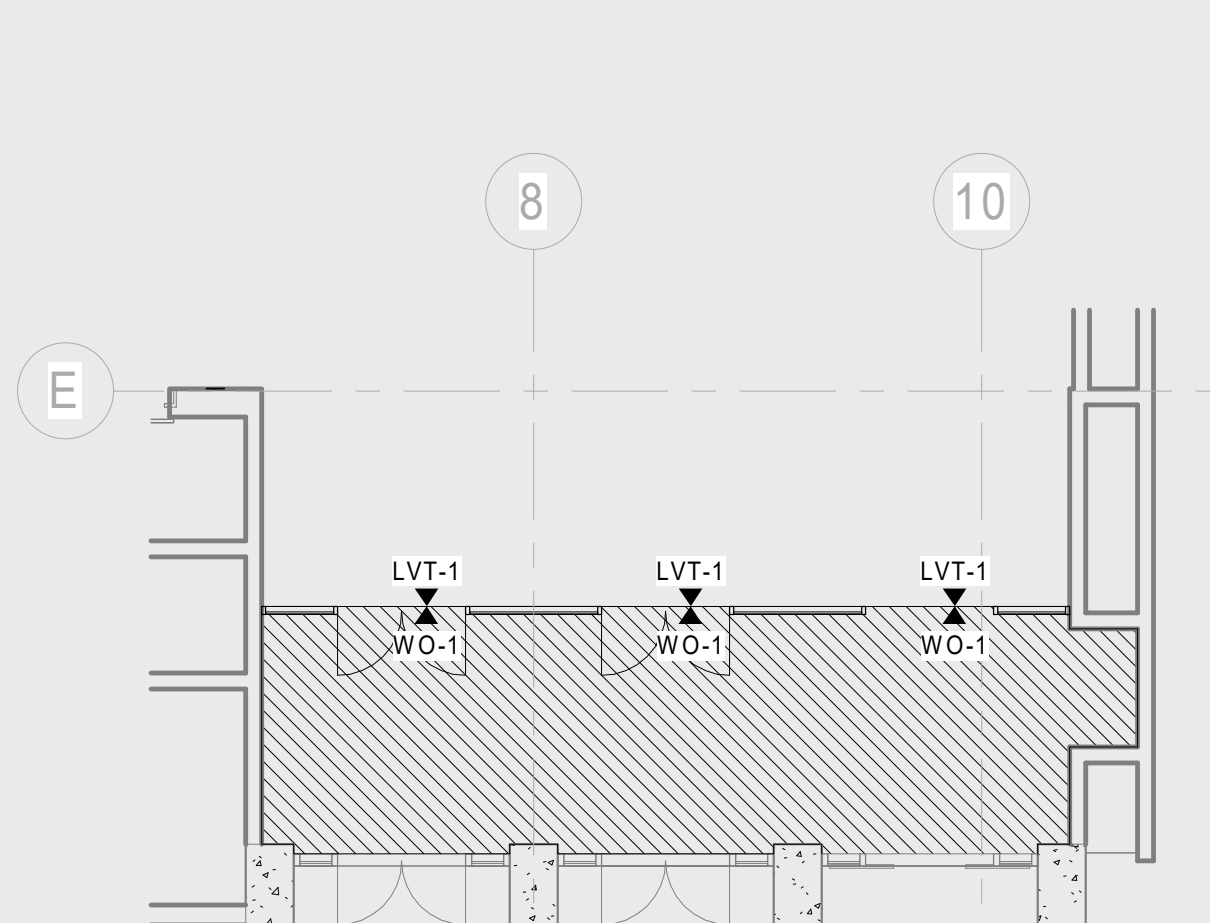
SHEET NUMBER:
A800



1 FIRST FLOOR FINISH & SIGNAGE PLAN
1/8" = 1'-0"



A1 FIRST FLOOR FINISH PLAN ALT #1 OPERABLE PARTITION
1/8" = 1'-0"



A2 FIRST FLOOR FINISH PLAN ALT #2 NEW STOREFRONT
1/8" = 1'-0"

FINISH PLAN GENERAL NOTES

1. ALL WALLS TO RECEIVE BASE AS NOTED, U.O.N.
2. ALL WALLS TO BE PT-1, U.O.N.
3. GYPSUM WALLBOARD FINISH LEVEL TO BE LEVEL-4, U.O.N.
4. ALL HOLLOW METAL DOOR FRAMES TO BE PAINTED ADJACENT WALL COLOR, SEMI-GLOSS FINISH.
5. ALL OUTLET COVERS PLATES TO BE WHITE FINISH.
6. ALL MILLWORK SHALL BE AWI PREMIUM GRADE AND SHOP FINISHED.
7. WALLS SHALL INCLUDE SURFACES FROM FLOOR TO CEILING INCLUDING PLASTERS, FASCIAS, JAMBS, BUCKS, REVEALS, RETURNS AND ALL OTHER VERTICAL SURFACES NOT INCLUDED IN THE CEILING.
8. PAINT COLORS SHALL BE SPECIFIED BY THE DESIGNER AND THE GENERAL CONTRACTOR SHALL SUBMIT THREE (3) SAMPLES (12" X 12") FOR REVIEW BY THE DESIGNER. AN ALTERNATE SUBMITTAL MAY BE FIELD APPLIED TO ONE WALL FOR THE DESIGNER TO EXAMINE UPON FIELD INSPECTION.
9. ALL WALLS AND CEILINGS SHALL BE PROPERLY PREPARED, SPACKLED, SANDED, ETC., TO PROVIDE A SMOOTH FINISH AND A SURFACE READY FOR PRIME, PAINT AND/OR WALL COVERING.
10. THE PAINT CONTRACTOR SHALL REMOVE ALL ELECTRICAL SWITCH PLATES AND OUTLET PLATES, SURFACE HARDWARE, ETC., PRIOR TO PAINTING, PROTECTING AND REPLACING WHEN THE PAINTING HAS BEEN COMPLETED. PAINT CONTRACTOR SHALL REMOVE PAINT WHERE IT HAS SPILLED, SPLASHED OR SPATTERED ON SURFACES, INCLUDING BUT NOT LIMITED TO LIGHT FIXTURES, DIFFUSERS, REGISTERS AND SLAB FITTINGS, ETC.
11. THE CONTRACTOR SHALL USE A LATEX BASE PAINT IN COLORS AND FINISHES AS SELECTED BY THE DESIGNER. CONTRACTOR SHALL PROPERLY PREPARE ALL SURFACES TO RECEIVE ONE (1) PRIME COAT AND TWO (2) FINISH COATS OF PAINT IN THE COLORS AS SELECTED BY THE DESIGNER.
12. THE CONTRACTOR SHALL INSTALL WALL COVERINGS AS PER THE MANUFACTURERS' INSTALLATION INSTRUCTIONS, WHERE DESIGNATED. ALL WALL COVERINGS SHALL BE SMOOTH, WITH NO WRINKLES, BUBBLES OR LOOSE EDGES. ALL PASTE AND BRUSH MARKS SHALL BE THOROUGHLY REMOVED. WALL COVERINGS ADJOINING WOOD OR METAL TRIM SHALL BE CUT STRAIGHT AND SQUARE. ALL WORKMANSHIP WHICH IS NOT FIRST QUALITY AS JUDGED BY THE DESIGNER WILL NOT BE ACCEPTED.
13. ALL EXISTING LOOSE PAINT SHALL BE REMOVED AND SPACKLED OR PLASTER PATCHED EVEN SURFACE.
14. THE CONTRACTOR SHALL EXAMINE ALL AREAS OF CONSTRUCTION AFTER COMPLETION OF WORK BY ALL TRADES (INCLUDING TELEPHONE INSTALLATION, FLOORING ETC.) AND INDICATE ALL NECESSARY TOUCH UP PAINTING AND/OR PATCHING.
15. IT IS THE INTENTIONS THAT ALL EXPOSED SURFACES IN ELEVATOR LOBBY, COMMON TENANT CORRIDOR AND BATHROOMS RECEIVE FINISHES AS INDICATED ON THE DRAWINGS OR IN THE SPECIFICATIONS UNLESS SPECIFICALLY NOTED OTHERWISE. ANY SURFACE WHICH DOES NOT HAVE A SPECIFIED FINISH NOTED OR ARE NOTED TO REMAIN UNFINISHED, SHALL BE BROUGHT TO THE ATTENTION OF THE DESIGNER AND FINISHED AS DIRECTED.
16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH ALL LOCAL VOC (VOLATILE ORGANIC COMPOUND) REGULATIONS FOR PRIMERS, PAINTS, SOLVENTS AND ADHESIVES.
17. THE GENERAL CONTRACTOR SHALL FLASH PATCH ALL CRACKS, HOLES OR OTHER IMPERFECTIONS (PROJECTIONS SHALL BE REMOVED AND PATCHED) TO PROVIDE A CONTINUOUS SMOOTH FLOOR SURFACE. SUBFLOOR SHALL BE FLAT AND LEVEL, WITH VARIATIONS NOT EXCEEDING 1/4" IN 10'-0" AND 1/16" IN 12" SUBFLOOR UNDER CERAMIC TILE IS TO CONFORM TO ANSI AND TCNA HANDBOOK REQUIREMENTS.
18. THE CONTRACTOR SHALL NOTIFY THE DESIGNER AFTER THE FLOOR PATCHING IS DONE AND RECEIVE APPROVAL PRIOR TO INSTALLATION OF FINISHED FLOORING.
19. ALL NEW FLOORING SHALL BE INSTALLED BY THE FLOORING CONTRACTOR AND SHALL BE AS SPECIFIED ON THESE CONSTRUCTION DOCUMENTS.
20. ALL WORKMANSHIP SHALL BE OF THE BEST QUALITY AND WHEN THE WORK IS COMPLETE, IT SHALL BE FREE FROM BUCKLES, BUBBLES, OPEN JOINTS OR OTHER IMPERFECTIONS. SEAMS SHALL BE KEPT IN ACCURATE ALIGNMENT ALONG BOTH COORDINATES. TILE HAVING CHIPPED OR ROUND CORNERS WILL BE REJECTED AND IF LAID, WILL BE REMOVED AND REPLACED WITH AN ACCEPTABLE INSTALLATION.
21. SPACES BEING SURFACED SHALL BE CLOSED TO TRAFFIC AND OTHER WORK DURING THE LAYING OF THE FLOORING. STONE FLOORS NEW OR EXISTING SHALL BE COVERED FOR PROTECTION.
22. UPON COMPLETION, ALL WORK SHALL BE CLEANED BY THE CONTRACTOR, REMOVING ALL SPOTS OF ADHESIVE, SURFACE STAINS AND ALL SCRAPS, CARTONS AND CONTAINERS SHALL BE REMOVED FROM THE BUILDING.
23. THE CONTRACTOR SHALL CLEAN AND GIVE RESILIENT TILE FLOOR TWO (2) APPLICATIONS OF AN APPROVED NON-SLIP WAX WHICH IS TO BE THOROUGHLY MACHINE BUFFED AND LEFT IN CONDITION ENTIRELY SATISFACTORY TO THE DESIGNER.
24. THE GENERAL CONTRACTOR SHALL PROVIDE AND MAINTAIN ADEQUATE PROTECTION FOR ALL RESILIENT FLOORING WORK FOR THE DURATION OF THE PROJECT, AND REMOVE ALL PROTECTION PRIOR TO THE PUNCH LISTING.
25. THE CARPET CONTRACTOR IS TO PROVIDE A SEAMING DIAGRAM TO THE DESIGNER FOR APPROVAL PRIOR TO INSTALLATION.
26. THE CARPET CONTRACTOR IS TO COORDINATE ALL FLOORING CONTRACTORS INVOLVED, TO ASSURE FLUSH INSTALLATION OF ALL VARYING FLOOR MATERIALS USED. ALL TRANSITIONS SHALL BE CENTERED ON DOORS AND THE METHODS APPROVED BY THE DESIGNER.
27. THE CONTRACTOR SHALL PROVIDE AND INSTALL VINYL TRANSITION STRIPS AT ALL VCT AND CARPET TRANSITIONS. IF TRANSITION OCCURS AT A DOOR LOCATION, THE TRANSITION SHALL BE CENTERED ON THE DOOR. THE COLOR IS TO MATCH ADJACENT FLOORING BASE TRIM. THE CONTRACTOR IS TO VERIFY, WITH THE DESIGNER, OTHER FLOOR FINISH TRANSITIONS NOT NOTED.
28. ALL GWB AT CEILINGS, INCLUDING ALL SURFACES OF COVES, SOFFITS, ETC. SHALL BE PAINTED CEILING WHITE. ALL SURFACES WHERE COVE LIGHTING IS MOUNTED AND GWB IS LIT SHALL BE PAINTED, EVEN IF NOT EXPOSED DIRECTLY TO VIEW.
29. ALL SECURITY HARDWARE AND WIRING, INCLUDING TURNSTILES, SWING GATE, CAMERAS, MAGNETIC LOCKS, CARD READERS, ARE BY OWNER'S SECURITY VENDOR. PROVIDE CONDUIT TO SECURITY DESK, TURNSTILES, AND EXTERIOR CARD READER PEDESTAL.

FINISH PLAN LEGEND

ROOM #	FINISH TAG	REFER TO FINISH SCHEDULE FOR MORE INFORMATION
FLOOR		
BASE		
WALLS		
CEILING		

'X' SIGNAGE TAG - REFER TO G002 FOR MORE INFORMATION.

KEYED NOTES - FINISH PLANS

TAG	DESCRIPTION
01	PAINT DOOR & FRAME PT-7. REFER TO FINISH SCHEDULE FOR MORE INFO.
02	COORDINATE WITH BUILDING ARCHITECT FOR COMMON CORRIDOR FINISHES. EXTEND PAINT AND WALL BASE FINISHES.
03	EXISTING BRICK FLOORING TO REMAIN. PATCH & REPAIR FOR A LIKE NEW APPEARANCE AS REQ'D.
04	CUSTOM FLOOR PATTERN. REFER TO ENLARGED PLAN XXXX FOR ADDITIONAL INFORMATION.
05	ALTERNATE #2: DEMO EXISTING TILE FLOOR, PREPARE SUBSTRATE FOR NEW WALK OFF CARPET TILE (HOLD \$50/SY MATERIAL COST ONLY), WALL BASE, PAINT THROUGHOUT. PROVIDE LVT TO CPT FLOORING TRANSITION AS REQUIRED. REFER TO DETAIL 1A740 FOR ADDITIONAL INFORMATION.
06	ALTERNATE #1: OPERABLE PARTITION TO BE WHITEBOARD FINISH.



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1617 JFK Boulevard, Suite 1600
Philadelphia, PA 19103 U.S.A.
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2000 PENNINGTON ROAD
EWING, NJ

PROJECT TEAM
NORR
One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia PA 19102
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75 MADISON AVE
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THE COLLEGE OF NEW JERSEY

REV.	DATE	DESCRIPTION
01	2022.01.20	DESIGN DEVELOPMENT
02	2022.01.20	CLIENT REVIEW
03	2022.02.13	ISSUED FOR DCI REVIEW
04	2022.03.02	ISSUED FOR BID

NIDCA REF NUMBER:
PROJECT NUMBER: **22031600**
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FIRST FLOOR FINISH PLAN

SHEET NUMBER
A901

PHASE 2



1 SECOND FLOOR FINISH & SIGNAGE PLAN
1/8" = 1'-0"

FINISH PLAN GENERAL NOTES

1. ALL WALLS TO RECEIVE BASE AS NOTED, U.O.N.
2. ALL WALLS TO BE PT-1, U.O.N.
3. GYPSUM WALLBOARD FINISH LEVEL TO BE LEVEL-4, U.O.N.
4. ALL HOLLOW METAL DOOR FRAMES TO BE PAINTED ADJACENT WALL COLOR, SEMI-GLOSS FINISH.
5. ALL OUTLET COVERS PLATES TO BE WHITE FINISH.
6. ALL MILLWORK SHALL BE AWI PREMIUM GRADE AND SHOP FINISHED.
7. WALLS SHALL INCLUDE SURFACES FROM FLOOR TO CEILING INCLUDING PLASTERS, FASCIAS, JAMBS, BUCKS, REVEALS, RETURNS AND ALL OTHER VERTICAL SURFACES NOT INCLUDED IN THE CEILING.
8. PAINT COLORS SHALL BE SPECIFIED BY THE DESIGNER AND THE GENERAL CONTRACTOR SHALL SUBMIT THREE (3) SAMPLES (12" X 12") FOR REVIEW BY THE DESIGNER. AN ALTERNATE SUBMITTAL MAY BE FIELD APPLIED TO ONE WALL FOR THE DESIGNER TO EXAMINE UPON FIELD INSPECTION.
9. ALL WALLS AND CEILINGS SHALL BE PROPERLY PREPARED, SPACKLED, SANDED, ETC., TO PROVIDE A SMOOTH FINISH AND A SURFACE READY FOR PRIME, PAINT AND/OR WALL COVERING.
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FINISH PLAN LEGEND

ROOM #	ROOM FINISH TAG - REFER TO FINISH SCHEDULE FOR MORE INFORMATION
FLOOR	
BASE	
WALLS	
CEILING	

'X' SIGNAGE TAG - REFER TO G002 FOR MORE INFORMATION.

KEYED NOTES - FINISH PLANS

TAG	DESCRIPTION
01	PAINT DOOR & FRAME PT-7. REFER TO FINISH SCHEDULE FOR MORE INFO.
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06	ALTERNATE #1: OPERABLE PARTITION TO BE WHITEBOARD FINISH.



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CLIENT:
THE COLLEGE OF NEW JERSEY
2000 PENNINGTON ROAD
EWING, NJ

PROJECT TEAM
NORR
One Penn Center
1617 JFK Boulevard, Suite 1600
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SHEN MILSON & WILKE
75 MADISON AVE
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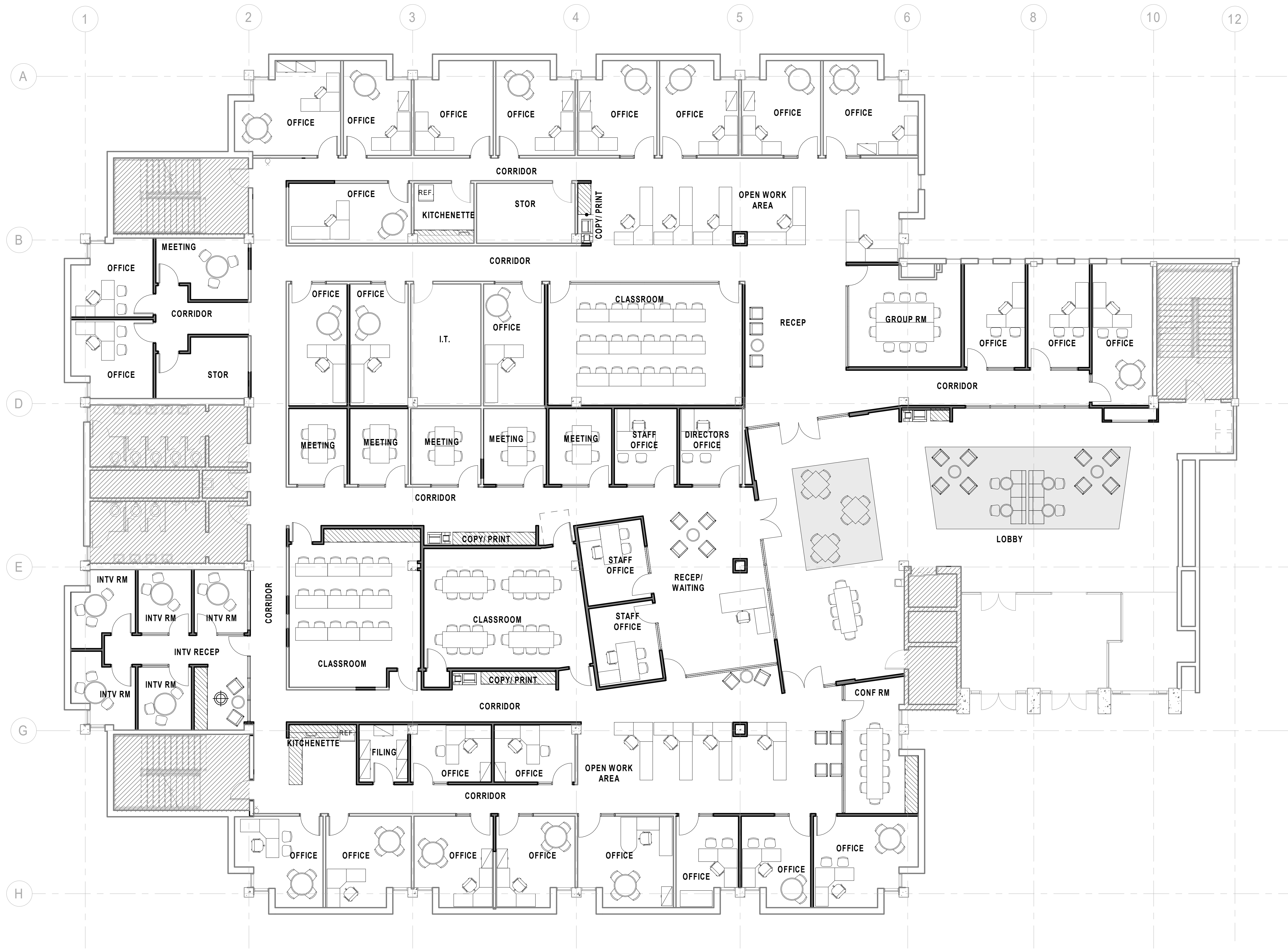
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1	2023.01.20	DESIGN DEVELOPMENT	CLIENT REVIEW		
2	2023.01.20	DESIGN DEVELOPMENT	CLIENT REVIEW		
3	2023.02.13	ISSUED FOR DCI REVIEW			
4	2023.03.02	ISSUED FOR DCI REVIEW			

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SECOND FLOOR FINISH PLAN

SHEET NUMBER
A902



1 FIRST FLOOR FURNITURE & EQUIPMENT PLAN
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 2000 PENNINGTON ROAD
 EWING, NJ

PROJECT TEAM
NORR
 One Penn Center
 1617 JFK Boulevard, Suite 1600
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SHEN MILSON & WILKE
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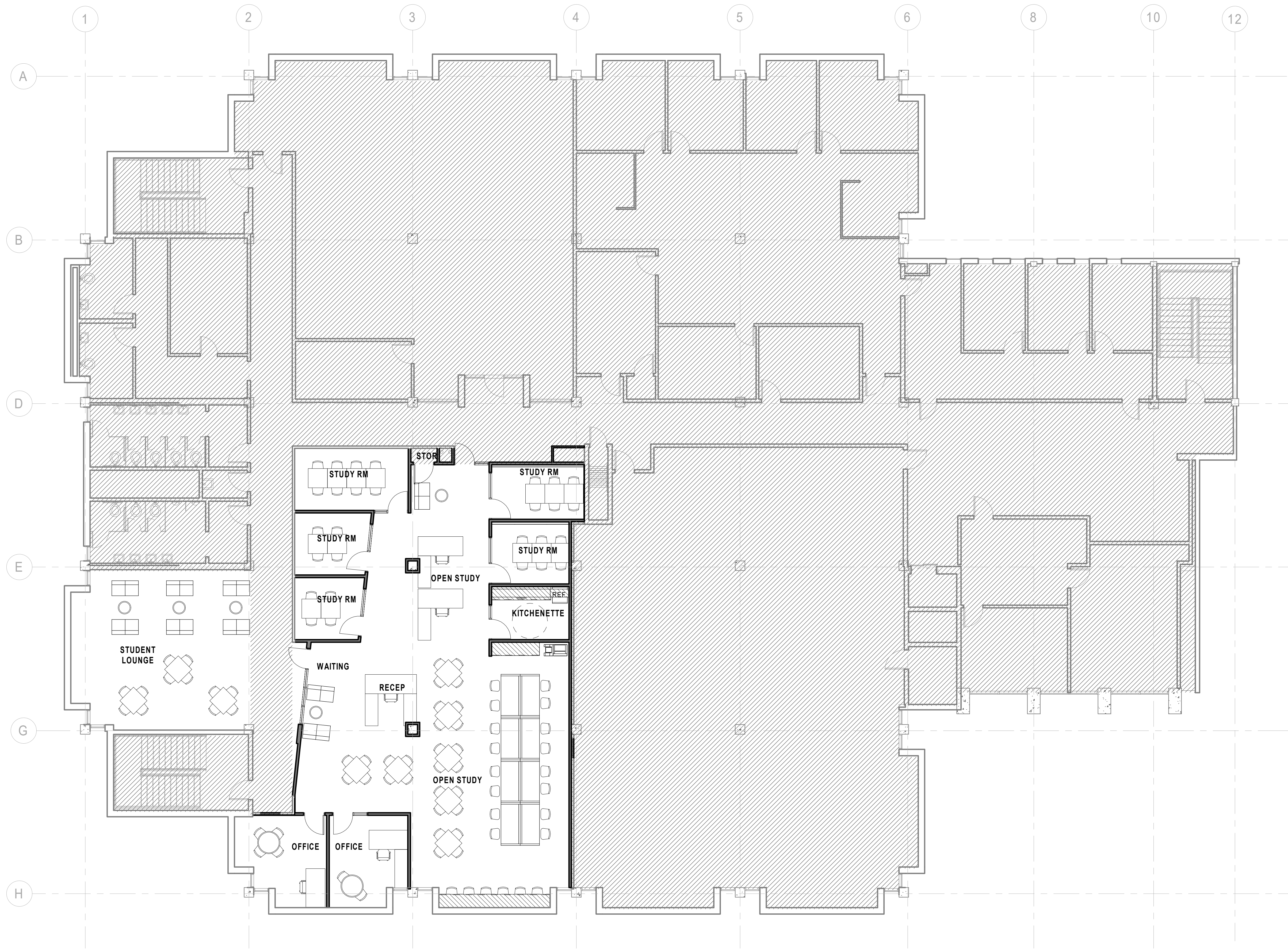
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REV.	DATE	DESCRIPTION
1	2023.01.20	DESIGN DEVELOPMENT
2	2023.01.20	CLIENT REVIEW
3	2023.02.13	ISSUED FOR DCIA REVIEW
4	2023.03.02	ISSUED FOR BID

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FIRST FLOOR FURNITURE & EQUIPMENT PLAN

SHEET NUMBER:
A911



1 SECOND FLOOR FURNITURE & EQUIPMENT PLAN
1/8" = 1'-0"

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THE COLLEGE OF NEW JERSEY
2000 PENNINGTON ROAD
EWING, NJ

PROJECT TEAM
NORR
One Penn Center
1617 JFK Boulevard, Suite 1600
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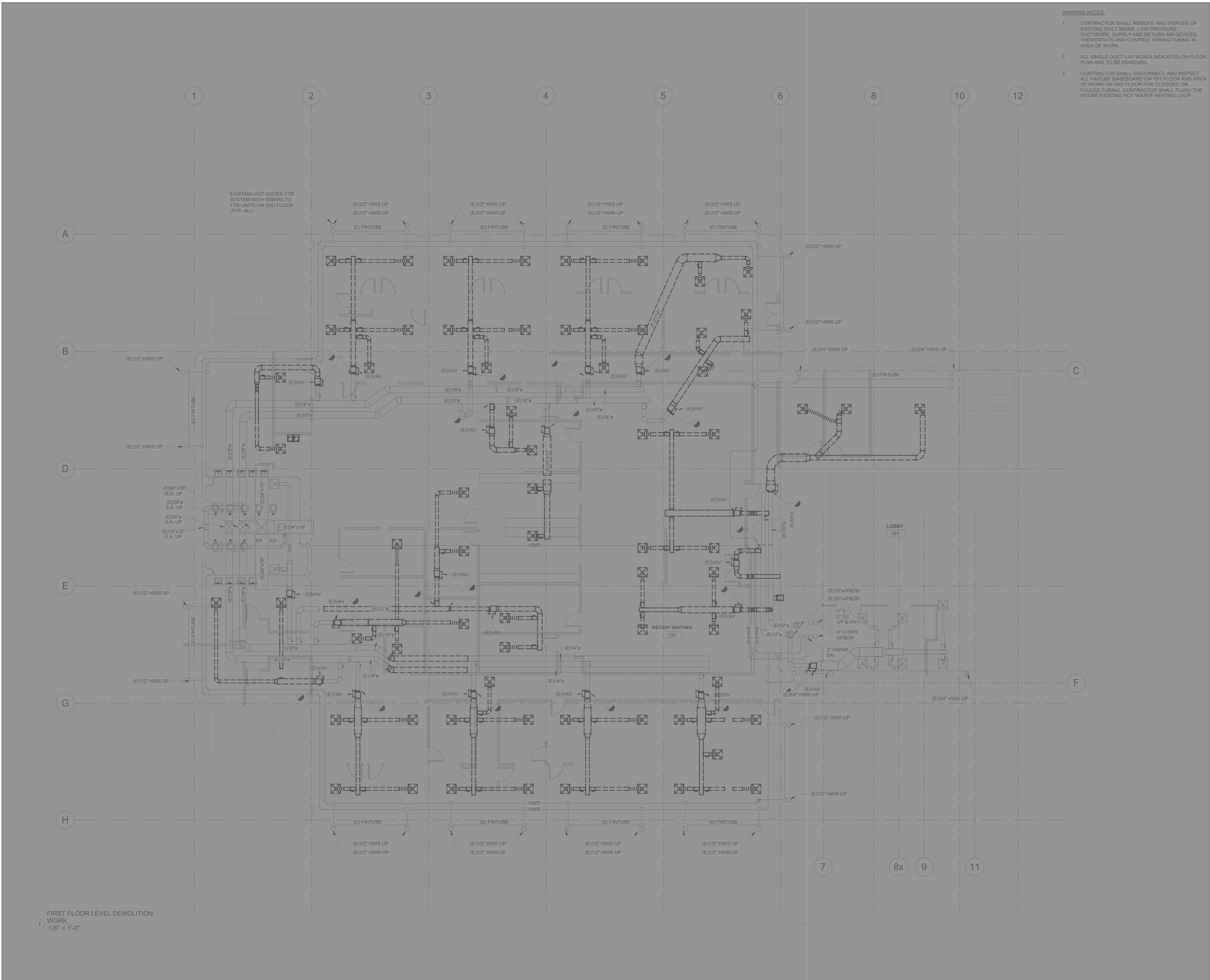
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REV.	DATE	DESCRIPTION	DRW. CHK.
1	2023.01.20	DESIGN DEVELOPMENT	
2	2023.01.20	CLIENT REVIEW	
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SECOND FLOOR FURNITURE & EQUIPMENT PLAN

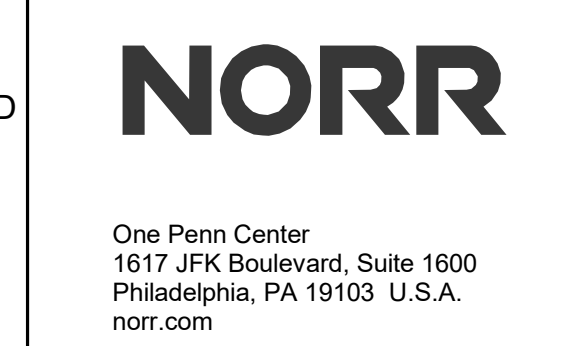
SHEET NUMBER
A912



DRAWING NOTES:

- CONTRACTOR SHALL REMOVE AND DISPOSE OF EXISTING DUCT MAINS, LOW PRESSURE DUCTWORK, SUPPLY AND RETURN AIR DEVICES, THERMOSTATS AND CONTROL WIRING/TUBING IN AREA OF WORK.
- ALL SINGLE DUCT VAV BOXES INDICATED ON FLOOR PLAN ARE TO BE REMOVED.
- CONTRACTOR SHALL DISCONNECT AND INSPECT ALL FINITUBE BASEBOARD ON 1ST FLOOR AND AREA OF WORK ON 2ND FLOOR FOR CLOGGED OR FOULED TUBING. CONTRACTOR SHALL FLUSH THE ENTIRE EXISTING HOT WATER HEATING LOOP.

FIRST FLOOR LEVEL DEMOLITION WORK
 1/8" = 1'-0"



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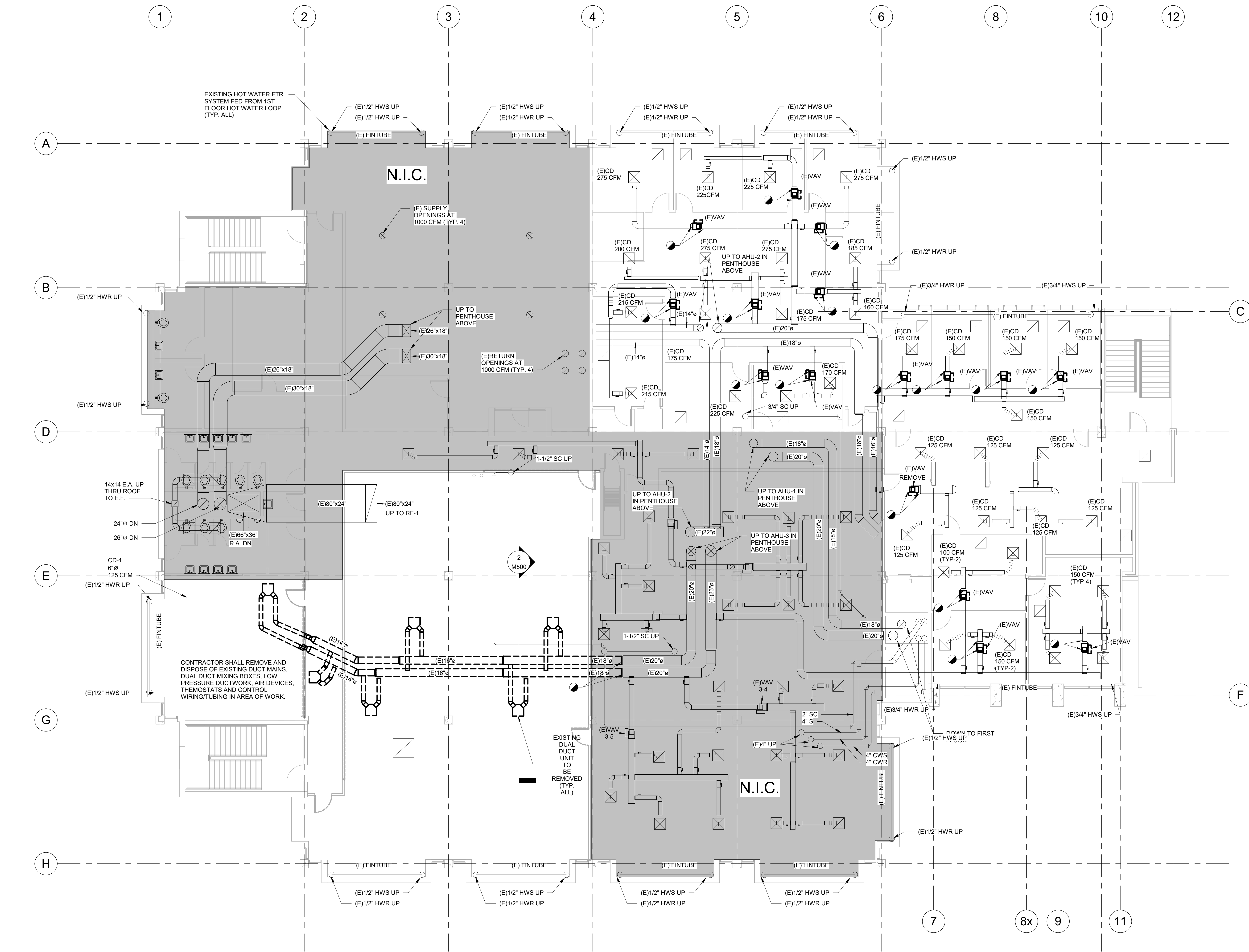
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1	03/02/2023	ISSUED FOR REVIEW	ISSUED FOR REVIEW	HW

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SHEET TITLE:
FIRST FLOOR DEMOLITION PLAN

SHEET NUMBER:
MD101

PHASE 2



1 SECOND FLOOR DEMOLITION WORK
1/8" = 1'-0"

DRAWING NOTES:

1. CONTRACTOR SHALL REMOVE AND DISPOSE OF EXISTING DUCT MAINS, LOW PRESSURE DUCTWORK, SUPPLY AND RETURN AIR DEVICES, THERMOSTATS AND CONTROL WIRING/TUBING IN AREA OF WORK.
2. ALL SINGLE DUCT VAV BOXES INDICATED ON FLOOR PLAN ARE TO BE REMOVED.
3. CONTRACTOR SHALL DISCONNECT AND INSPECT ALL FINITUBE BASEBOARD ON 1ST FLOOR AND AREA OF WORK ON 2ND FLOOR FOR CLOGGED OR FOULED TUBING. CONTRACTOR SHALL FLUSH THE ENTIRE EXISTING HOT WATER HEATING LOOP.

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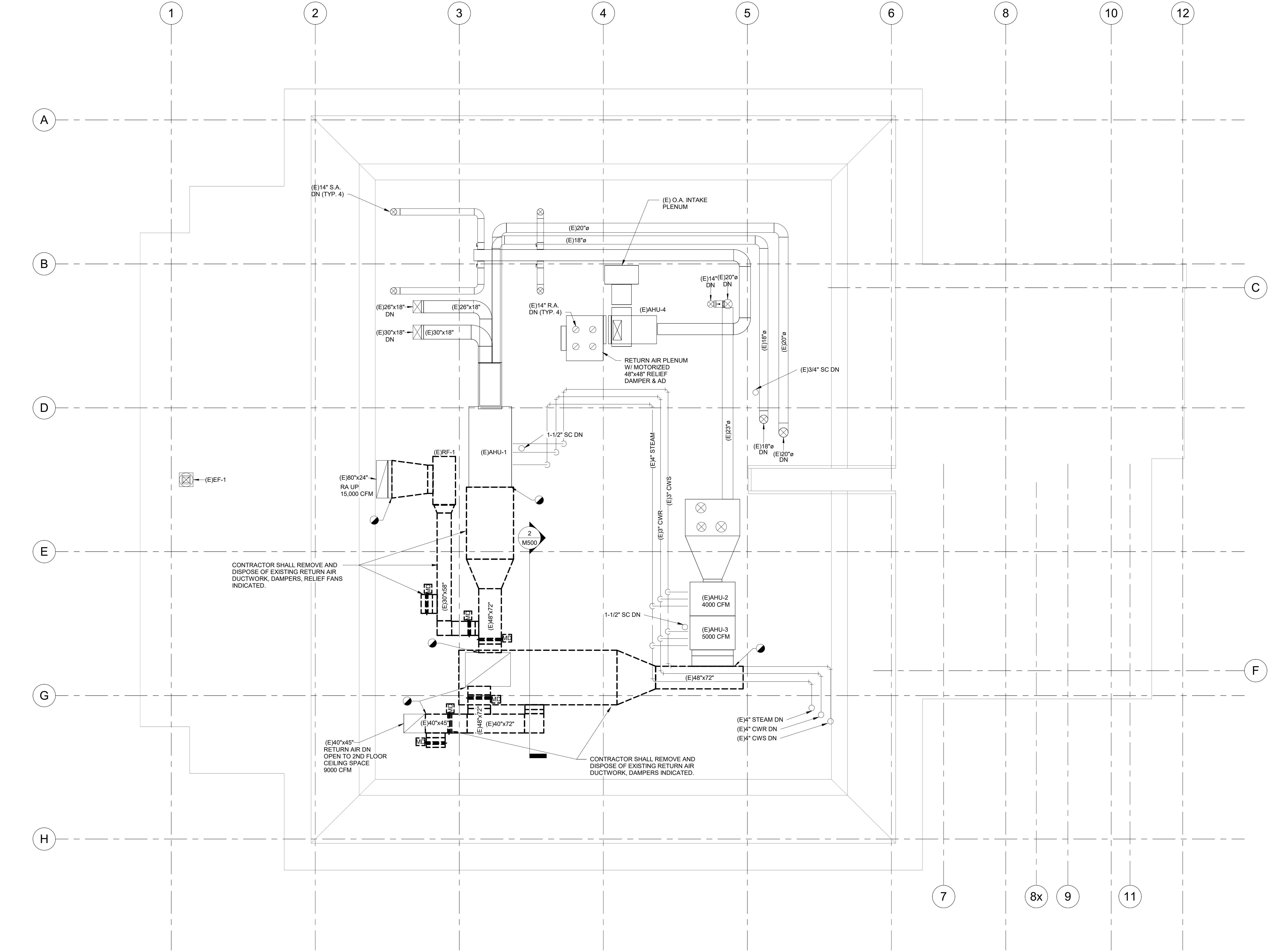
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REV.	DATE	DESCRIPTION	ISSUED FOR	ISSUED FOR
1	03/02/2023	ISSUED FOR REVIEW	HW	HW

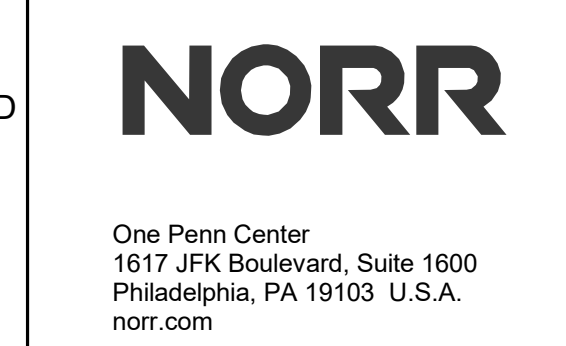
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SHEET TITLE:
SECOND FLOOR DEMOLITION PLAN

SHEET NUMBER:
MD102



1 PENTHOUSE LEVEL DEMOLITION WORK
 1/8" = 1'-0"



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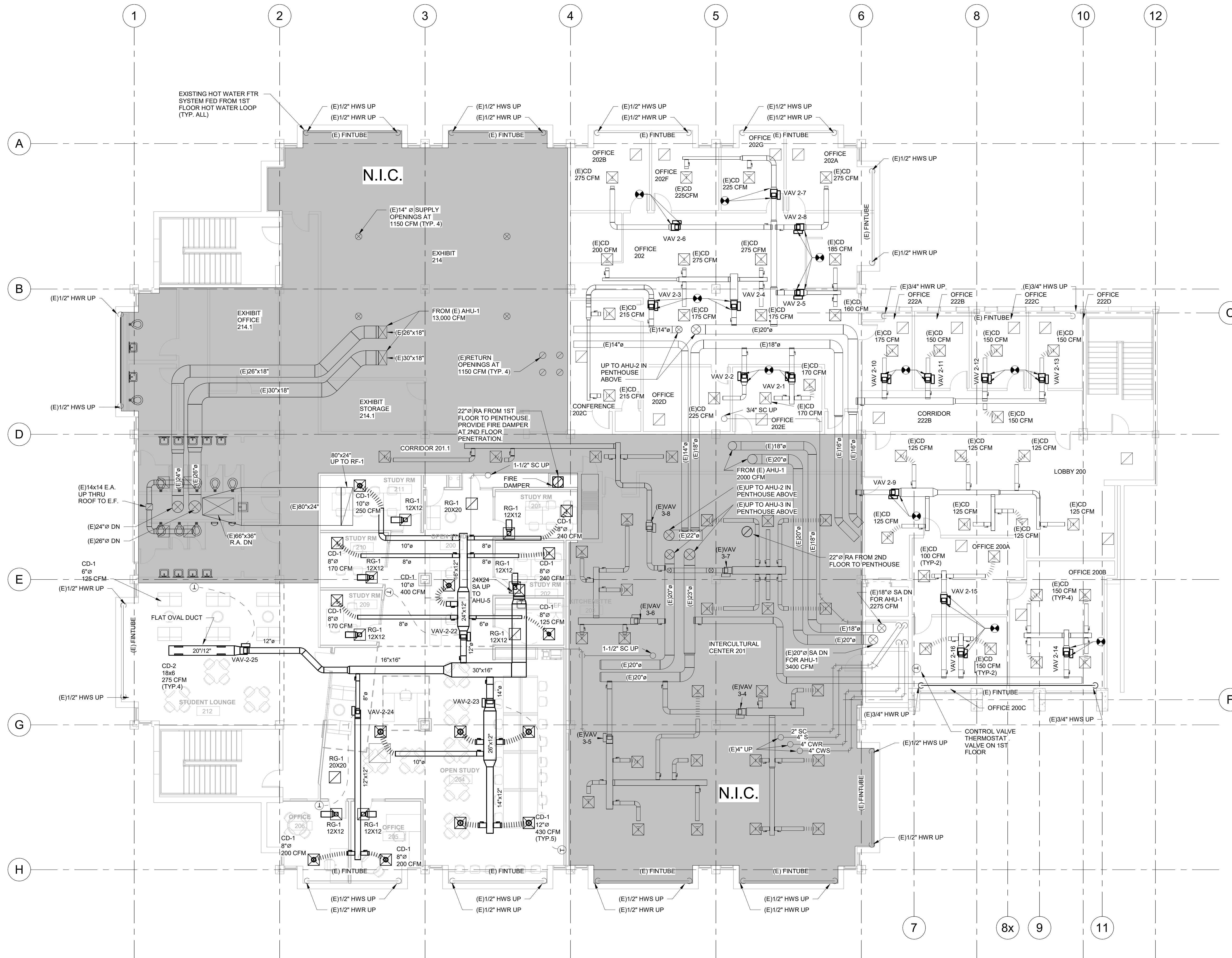
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REV.	DATE	DESCRIPTION	DRW	CHK	APP
1	03/02/2023	ISSUED FOR CONSTRUCTION	MM	MM	MM
2					
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SHEET TITLE:
PENTHOUSE DEMOLITION PLAN

SHEET NUMBER:
MD103



1 SECOND FLOOR LEVEL NEW WORK
1/8" = 1'-0"

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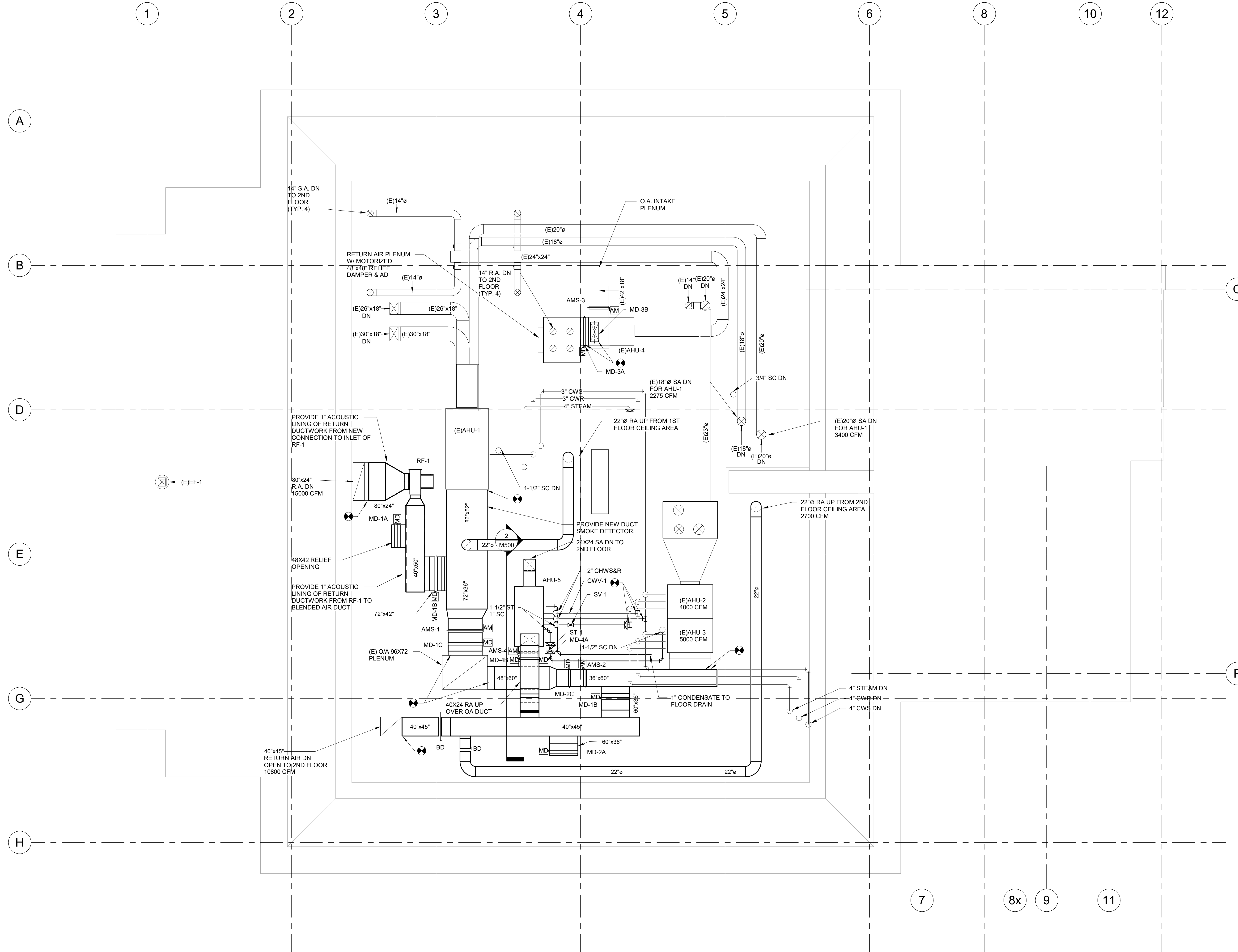
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REV.	DATE	DESCRIPTION	DRW	CHK	APP
1	03/02/2023	ISSUED FOR CONSTRUCTION	HW	HW	HW
2		ISSUED FOR BID			
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SHEET TITLE:
SECOND FLOOR NEW WORK PLAN

SHEET NUMBER:
M102



1 PENTHOUSE LEVEL NEW WORK
1/8" = 1'-0"

REV.	DATE	DESCRIPTION	DRW	CHK	APP
1	03/02/2023	ISSUED FOR REVIEW	HM		
2		ISSUED FOR CONSTRUCTION			

MOTORIZED DAMPER SCHEDULE

MARK	SERVICE	SIZE	MAX PRESS DROP N. W.C.	MOTOR OPERATOR TYPE	MANUFACTURER & MODEL NO. OR EQUAL	REMARKS
MD-1A	(E) AHU-1	48X42	0.10	ELECTRIC	RUSKIN CD38	1
MD-1B	(E) AHU-1	72X36	0.10	ELECTRIC	RUSKIN CD36	1
MD-1C	(E) AHU-1	72X36	0.10	ELECTRIC	RUSKIN CD36	1
MD-2A	(E) AHU-2&3	60X36	0.10	ELECTRIC	RUSKIN CD36	1
MD-2B	(E) AHU-2&3	60X36	0.10	ELECTRIC	RUSKIN CD36	1
MD-2C	(E) AHU-2&3	36X60	0.10	ELECTRIC	RUSKIN CD36	1
MD-3A	(E) AHU-4	42X18	0.10	ELECTRIC	RUSKIN CD36	1
MD-3B	(E) AHU-4	42X18	0.10	ELECTRIC	RUSKIN CD36	1
MD-4A	AHU-5	42X24	0.10	ELECTRIC	RUSKIN CD36	1
MD-4B	AHU-5	42X24	0.10	ELECTRIC	RUSKIN CD36	1

NOTES:
1. PROVIDE 3/4" ELECTRIC DAMPER ACTUATOR AND WIRE TO BAS SYSTEM. DAMPERS WIDER THAN 48" WILL BE PROVIDED WITH 2 ACTUATORS.

EXISTING AIR HANDLER SCHEDULE FOR REFERENCE

UNIT No.	LOCATION	SERVICE	FAN DATA										MOTOR DATA										COOLING COIL DATA										PREHEAT COIL DATA										FILTER	
			CFM	TOTAL SP (IN.)	ESP	RPM	MIN. BHP	MHP	STARTER TYPE	ELECTRICAL DATA			CAPACITY TOTAL MBH	SENS. MBH	MIN O.A. CFM	AIR				WATER			AIR			STEAM DATA			TYPE	MIN. EFF.	MANUF./MODEL #													
										VOLTS	PHASE	HZ				SP (IN. Hg)	EDB (°F)	EWB (°F)	LDB (°F)	LWB (°F)	GPM	PD (FT. Hg)	EWT (°F)	LWT (°F)	DESIGN PRESS. (PSIG)	SP (IN. Hg)	EAT (°F)	LAT (°F)				PRESS. (IN. PSIG)	FLOW (LBS/HR)											
(E)AHU-1	ATTIC MER	1ST FLR	15000	3.75	2.0	1061	103	20	VFD	480	3	60	1038	569	4200	1.23	88	74	53.3	53.1	207.5	7	45	55	150	0.17	40	70	5	515.0	2TA	30%	TRANE LPCAA30D											
(E)AHU-2	ATTIC MER	2ND FLR	4000	3.0	2.0	1200	3.4	5	VFD	480	3	60	239	137	650	4.1	3.4	88	74	55.25	55.1	48	16.9	45	55	150	0.09	33	70	5	169.4	2TA	30%	TRANE LPCAA10D										
(E)AHU-3	ATTIC MER	2ND FLR	5000	3.0	2.0	1242	4.1	5	VFD	480	3	60	305	174	1350	4.2	88	74	54.6	54.1	61	16.2	45	55	150	0.06	40	70	5	171.7	2TA	30%	TRANE LPCAA14D											
(E)AHU-4	ATTIC MER	SARNOFF	4300	3.0	2.0	1200	3.4	5	VFD	480	3	60	239	137	1050	6.6	88	74	56.7	56.6	33	5.4	45	59.5	150	0.12	48	75	5	132.9	2TA	30%	TRANE SIZE 10											

1. CONTRACTOR SHALL BALANCE UNIT SUPPLY AIR FLOW, OUTSIDE AIR FLOW, CHILLER WATER FLOW, STEAM SUPPLY FLOW TO VALUES IN SCHEDULE.

NEW AIR HANDLER SCHEDULE

UNIT No.	LOCATION	SERVICE	FAN DATA										MOTOR DATA										COOLING COIL DATA										PREHEAT COIL DATA										FILTER	
			CFM	TOTAL SP (IN.)	ESP	RPM	MIN. BHP	MHP	STARTER TYPE	ELECTRICAL DATA			CAPACITY TOTAL MBH	SENS. MBH	MIN O.A. CFM	AIR				WATER			AIR			STEAM DATA			TYPE	MIN. EFF.	MANUF./MODEL #													
										VOLTS	PHASE	HZ				SP (IN. Hg)	EDB (°F)	EWB (°F)	LDB (°F)	LWB (°F)	GPM	PD (FT. Hg)	EWT (°F)	LWT (°F)	DESIGN PRESS. (PSIG)	SP (IN. Hg)	EAT (°F)	LAT (°F)				PRESS. (IN. PSIG)	FLOW (LBS/HR)											
AHU-5	ATTIC MER	1ST FLR	4500	3.475	2.0	1221	4.55	5	VFD	480	3	60	166.5	124.5	1050	1.23	78.6	65.4	53.3	53.1	33.2	6.46	45	55	150	0.13	38	70	5	65.5	2TA	30%	TRANE UCCAA12C											

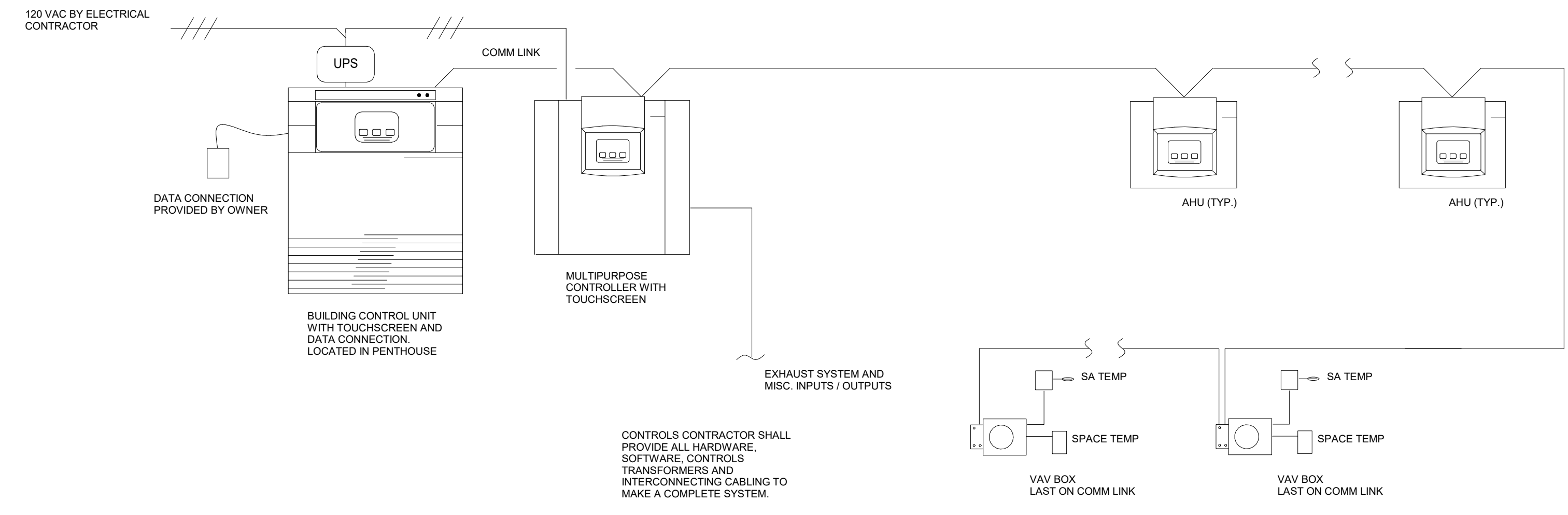
1. PROVIDE WITH BASE RAIL AND SUPPLY FAN VFD

VENTILATION SCHEDULE

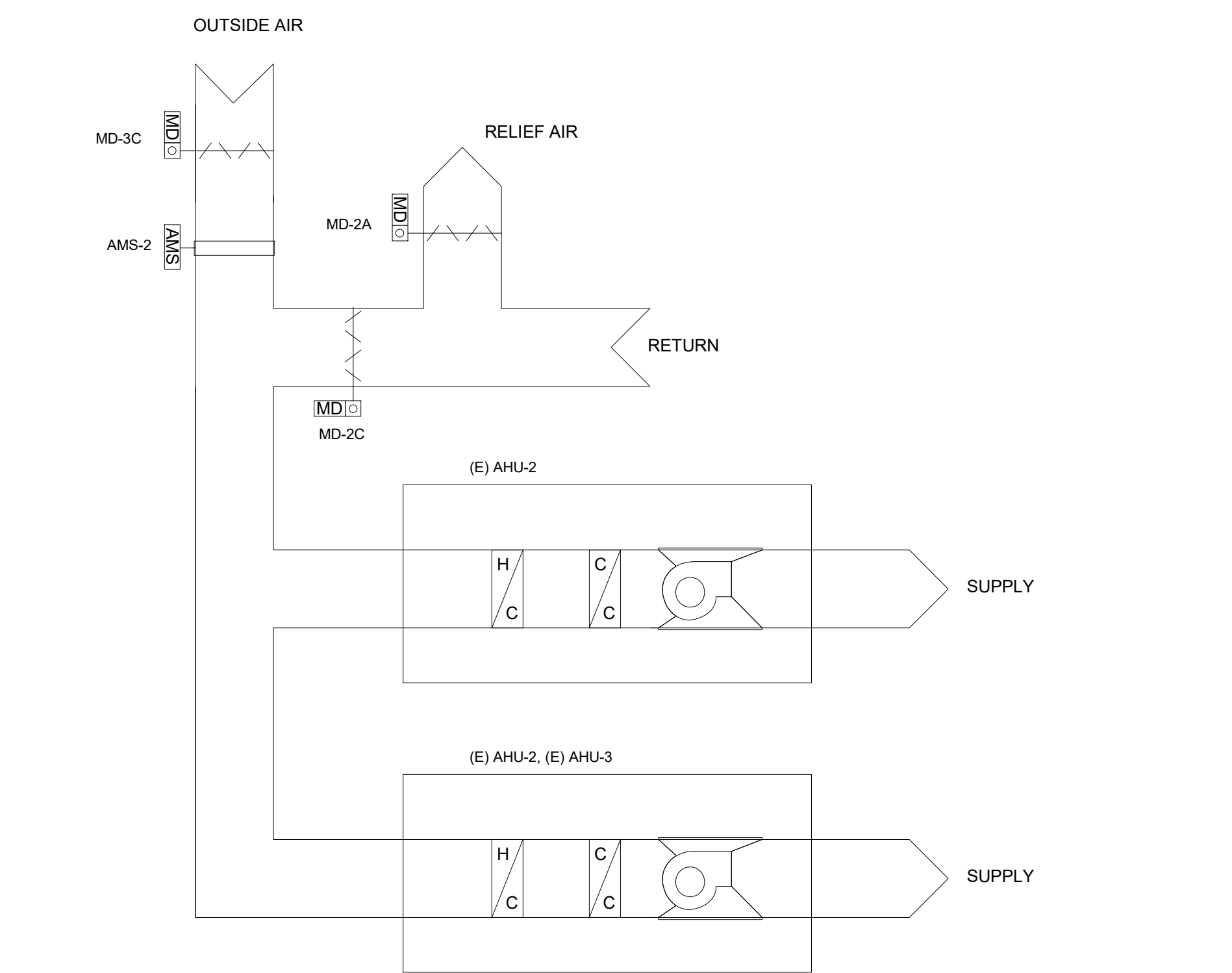
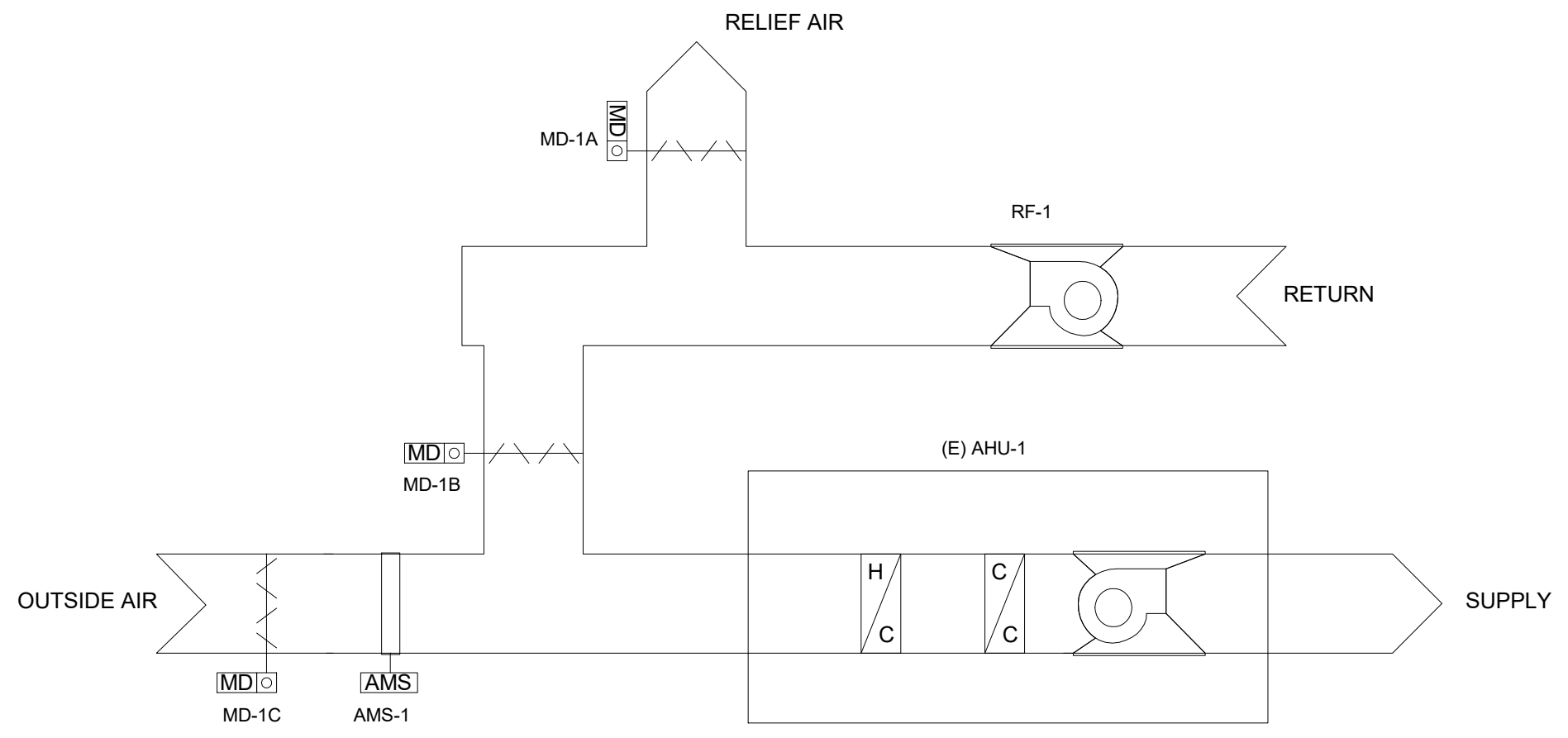
Zone Name / Space Name	Mult.	Minimum Supply Air (CFM) (Vpz)	Space Floor Area (Sq Ft) (Az)	Area Outdoor Air Rate (CFM/Rt) (Ra)	Time Averaged Occupancy (Persons) (Pz)	People Outdoor Air Rate (CFM/person) (Rp)	Air Distribution Effectiveness (Ez)	Air Outdoor Air (CFM) (Voz)	Space Breathing Zone Outdoor Air (CFM) (Vbz)	Space Ventilation Efficiency (Evz)
065 KITCHENETTE	1	33	100.0	0.06	4.0	5.00	0.80	33	26	0.800
091 CORRIDOR	1	38	334.0	0.06	2.0	5.00	0.80	38	30	0.800
096 CORRIDOR	1	28	209.0	0.06	2.0	5.00	0.80	28	23	0.800
100 LOBBY	1	303	2902.0	0.06	24.0	5.00	0.80	323	258	0.800
102 CONF RM	1	90	203.0	0.06	12.0	5.00	0.80	90	72	0.800
103 OFFICE	1	28	207.0	0.06	2.0	5.00	0.80	28	22	0.800
104 OFFICE	1	24	147.0	0.06	2.0	5.00	0.80	24	19	0.800
105 OFFICE	1	22	130.0	0.06	2.0	5.00	0.80	22	18	0.800
106 CORRIDOR	1	48	452.0	0.06	2.0	5.00	0.80	48	37	0.800
107 OPEN WORK AREA	1	88	335.0	0.06	10.0	5.00	0.80	88	79	0.800
108 OFFICE	1	28	204.0	0.06	2.0	5.00	0.80	28	22	0.800
109 OFFICE	1	21	112.0	0.06	2.0	5.00	0.80	21	17	0.800
110 OFFICE	1	25	187.0	0.06	2.0	5.00	0.80	25	20	0.800
111 OFFICE	1	25	187.0	0.06	2.0	5.00	0.80	25	20	0.800
112 OFFICE	1	21	111.0	0.06	2.0	5.00	0.80	21	17	0.800
113 FILING	1	18	68.0	0.06	2.0	5.00	0.80	18	14	0.800
114 OFFICE	1	26	182.0	0.06	2.0	5.00	0.80	26	21	0.800
115 OFFICE	1	25	171.0	0.06	2.0	5.00	0.80	25	20	0.800
116 CORRIDOR	1	55	566.0	0.06	2.0	5.00	0.80	55	44	0.800
117 CORRIDOR	1	52	529.0	0.06	2.0	5.00	0.80	52	42	0.800
119A MULTI PURPOSE	1	186	482.0	0.06	24.0	5.00	0.80	186	149	0.800
119B MULTI PURPOSE	1	186	479.0	0.06	24.0	5.00	0.80	186	149	0.800
120 INTY RECEPTION	1	19	82.0	0.06	2.0	5.00	0.80	19	15	0.800
121 INTY RM	1	19	82.0	0.06	2.0	5.00	0.80	19	15	0.800
122 INTY RM	1	20	100.0	0.06	2.0	5.00	0.80	20	16	0.800
123 INTY RM	1	20	100.0	0.06	2.0	5.00	0.80	20	16	0.800
128 STAFF OFFICE	1	22	123.0	0.06	2.0	5.00	0.80	22	17	0.800
129 STAFF OFFICE	1	22	123.0	0.06	2.0	5.00	0.80	22	17	0.800
130 RECEPTION/WAITING	1	132	526.0	0.06	18.0	5.00	0.80	132	122	0.800
131 DIRECTORS OFFICE	1	21	115.0	0.06	2.0	5.00	0.80	21	17	0.800
132 STAFF OFFICE	1	21	115.0	0.06	2.0	5.00	0.80	21	17	0.800
133 MEETING	1	21	115.0	0.06	2.0	5.00	0.80	21	17	0.800
BASEMENT	1	1208	16500.0	0.00	10.00	5.00	0.80	1208	990	0.800
134 MEETING	1	21	115.0	0.06	2.0	5.00	0.80	21	17	0.800
135 MEETING	1	21	115.0	0.06	2.0	5.00	0.80	21	17	0.800
136 MEETING	1	21	109.0	0.06	2.0	5.00	0.80	21	16	0.800
137 MEETING	1	21	108.0	0.06	2.0	5.00	0.80	21	16	0.800
138 MEETING	1	22	124.0	0.06	2.0	5.00	0.80	22	17	0.800
139 OFFICE	1	23	144.0	0.06	2.0	5.00	0.80	23	19	0.800
140 OFFICE	1	23	144.0	0.06	2.0	5.00	0.80	23	19	0.800
141 STOR	1	21	118.0	0.06	2.0	5.00	0.80	21	17	0.800
142 OFFICE	1	26	181.0	0.06	2.0	5.00	0.80	26	21	0.800
143 OFFICE	1	26	181.0	0.06	2.0	5.00	0.80	26	21	0.800
144 OFFICE	1	26	181.0	0.06	2.0	5.00	0.80	26	21	0.800
145 OFFICE	1	26	181.0	0.06	2.0	5.00	0.80	26	21	0.800
146 MULTI PURPOSE	1	193	575.0	0.06	24.0	5.00	0.80	193	155	0.800
147 CORRIDOR	1	42	392.0	0.06	2.0	5.00	0.80	42	34	0.800
148 RECEPTION	1	95	435.0	0.06	10.0	5.00	0.80	95	76	0.800
149 OPEN WORK AREA	1	113	511.0	0.06	12.0	5.00	0.80	113	91	0.800
151 STOR	1	23	143.0	0.06	2.0	5.00	0.80	23	19	0.800
152 KITCHENETTE	1	26	178.0	0.06	2.0	5.00	0.80	26	21	0.800
153 OFFICE	1	26	178.0	0.06	2.0	5.00	0.80	26	21	0.800
154 CORRIDOR	1	38	346.0	0.06	2.0	5.00	0.80	38	31	0.800
155 OFFICE	1	28	213.0	0.06	2.0	5.00	0.80	28	23	0.800
156 OFFICE	1	23	144.0	0.06	2.0	5.00	0.80	23	19	0.800
157 OFFICE	1	25	169.0	0.06	2.0	5.00	0.80	25	20	0.800
158 OFFICE	1	25	169.0	0.06	2.0	5.00	0.80	25	20	0.800
159 OFFICE	1	25	169.0	0.06	2.0	5.00	0.80	25	20	0.800
160 OFFICE	1	25	169.0	0.06	2.0	5.00	0.80	25	20	0.800
161 OFFICE	1	25	169.0	0.06	2.0	5.00	0.80	25	20	0.800
162 OFFICE	1	28	213.0	0.06	2.0	5.00	0.80	28	23	0.800
163 GROUP ROOM	1	65	289.0	0.06	12.0	5.00	0.80	65	76	0.800
164 OFFICE	1	24	154.0	0.06	2.0	5.00	0.80	24	19	0.800
165 OFFICE	1	24	154.0	0.06	2.0	5.00	0.80	24	19	0.800
166 OFFICE	1	28	206.0	0.06	2.0	5.00	0.80	28	22	0.800
Totals (incl. Space Multipliers)		4172						4172	3337	0.800

VARIABLE AIR VOLUME TERMINAL BOX SCHEDULE

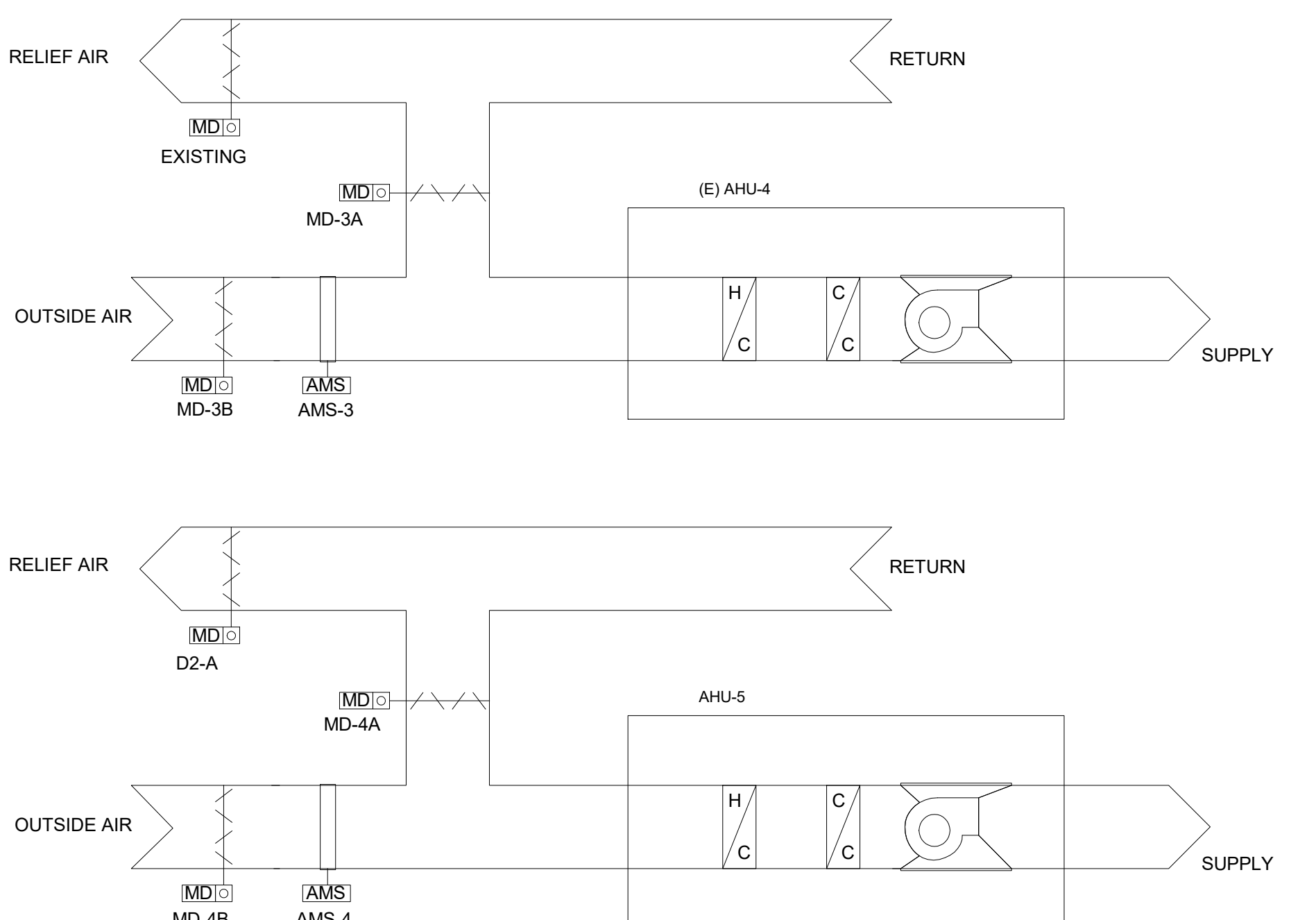
TAG	UNIT SERVED	AREA SERVED	MAXIMUM COOLING CFM	MINIMUM COOLING CFM	MIN. S.P. DROP (IN WG)	ELECTRICAL			MANUFACTURER & MODEL No.	NOTES
						VOLTS	PHASE	HZ		
VAV-1-1	(E)AHU-1	INV 122-127	610	200	0.17	120	1	60	TITUS DESV-06	1 - 13
VAV-1-2	(E)AHU-1	OFFICE 115/116	335	100	0.17	120	1	60	TITUS DESV-06	1 - 13
VAV-1-3	(E)AHU-1	CLASSROOM 121A	1200	300	0.17	120	1	60	TITUS DESV-12	1 - 13
VAV-1-4	(E)AHU-1	OFFICE 145/146/148	270	70	0.17	120	1	60	TITUS DESV-06	1 - 13



1 CONTROL SYSTEM ARCHITECTURE
SCALE: NONE

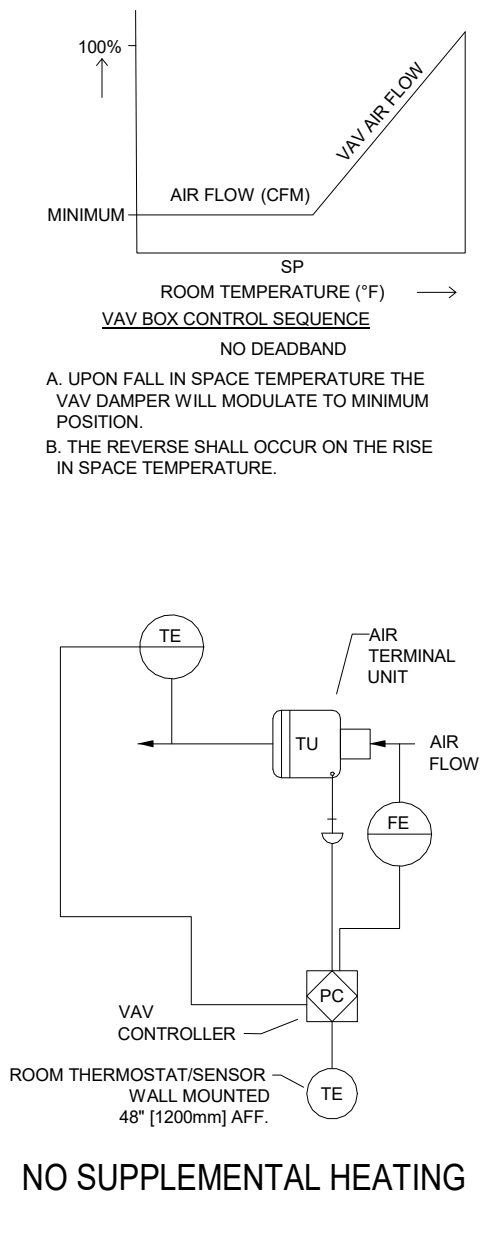


4 AIR HANDLER DAMPER CONFIGURATION DIAGRAMS
SCALE: NONE



4 AIR HANDLER DAMPER CONFIGURATION DIAGRAMS
SCALE: NONE

2 VARIABLE VOLUME AIR TERMINAL UNIT CONTROL DIAGRAM
NTS



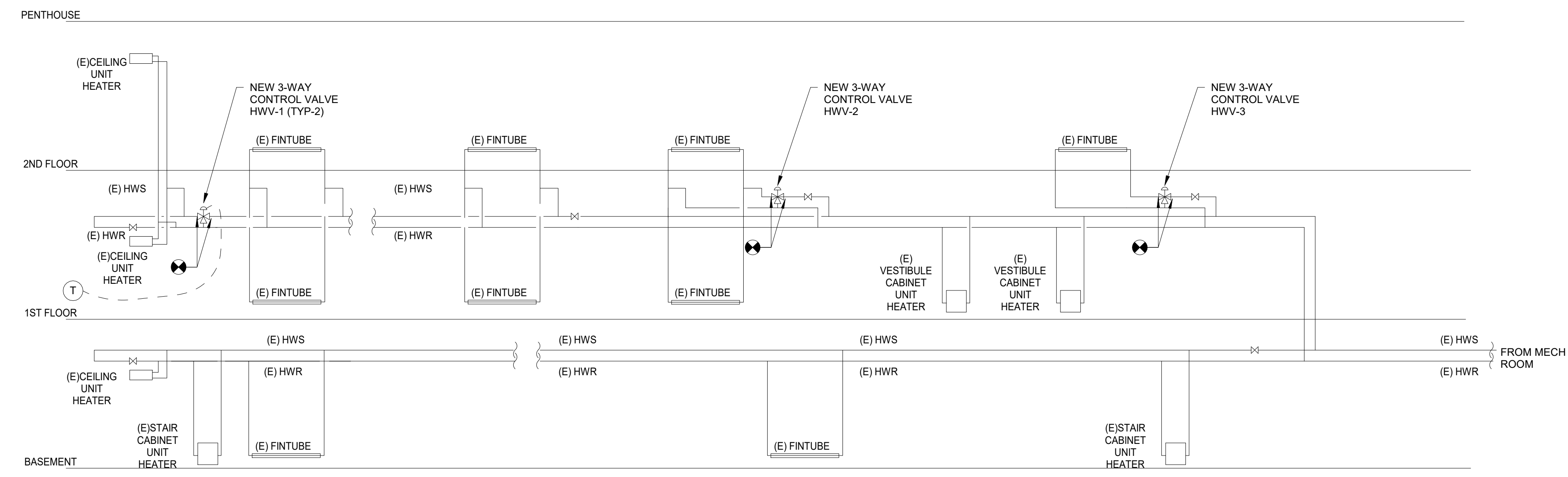
(E) AHU-1, (E) AHU-2, (E) AHU-3, (E) AHU-4, NEW AHU-5

- GENERAL**
 - UNIT IS NORMALLY STARTED AND STOPPED REMOTELY AT THE BAS SYSTEM. H.O.A. SWITCH SHALL BE KEPT IN THE "AUTO" POSITION. "MAN" AND "OFF" POSITIONS SHALL BE USED ONLY FOR MAINTENANCE. WHEN THE UNIT IS "OFF" DAMPER MD-C SHALL BE FULLY CLOSED. WHEN THE UNIT IS "ON" MD-B SHALL BE FULLY OPEN. MD-C AND MD-B SHALL MODULATE IN ACCORDANCE WITH THE FOLLOWING SEQUENCE:
- TEMPERATURE CONTROL**
 - SUPPLY AIR TEMPERATURE, SENSED BY TEMP SENSOR TT-1, SHALL BE MAINTAINED AT SETPOINT VIA DIGITAL CONTROL PANEL BY MODULATING CHW VALVE OR MD-C AND MD-B PER TEMPERATURE SEQUENCE.
 - WHEN THE TEMPERATURE OF THE OUTSIDE AIR, SENSED BY TT-2, IS ABOVE 57°F (13.3°C), THE DIGITAL CONTROL PANEL SHALL PREVENT THE MODULATION OF MD-A AND MD-C AND SHALL ASSUME THE MINIMUM OUTSIDE AIR POSITION. MD-B IS FULLY OPENED AND MD-A IS FULLY CLOSED. THE DIGITAL CONTROL PANEL SHALL MODULATE CHW VALVE TO MAINTAIN THE SUPPLY AIR TEMPERATURE, SENSED BY TT-1.
 - WHEN THE TEMPERATURE OF THE OUTSIDE AIR, SENSED BY TT-2, IS BETWEEN 45°F (7.2°C) AND THE SUPPLY AIR TEMPERATURE, SENSED BY TT-1, DAMPER MD-C SHALL BE FULLY OPEN (MAXIMUM OUTSIDE AIR POSITION). THE DIGITAL CONTROL PANEL SHALL MODULATE CHW VALVE TO MAINTAIN THE SUPPLY AIR TEMPERATURE, SENSED BY TT-1.
 - WHEN THE TEMPERATURE OF THE OUTSIDE AIR, SENSED BY TT-2, IS BELOW THE SUPPLY AIR TEMPERATURE, SENSED BY TT-1, DAMPER MD-A, MD-B AND MD-C SHALL MODULATE TO MAINTAIN THE SCHEDULED SUPPLY AIR TEMPERATURE. IF MD-B IS OPEN AND MD-C IS CLOSED TO MINIMUM OUTSIDE AIR, STEAM VALVE SHALL MODULATE OPEN TO MAINTAIN THE SUPPLY AIR TEMPERATURE, SENSED BY TT-1.
- AIR FLOW CONTROL**
 - SUPPLY AIR FLOW SHALL BE CONTROLLED BY THE DIGITAL CONTROL PANEL MODULATING THE SUPPLY FAN VARIABLE SPEED MOTOR CONTROLLER TO MAINTAIN 1% OF DUCT STATIC PRESSURE (PER DUCT QUALIFIER) SENSED BY 20 DISTANCE PRESSURE SENSOR. RESET STATIC PRESSURE BASED ON ACTUAL BUILDING FLOW BY POLLING ALL VAV BOXES.
 - THE DIGITAL CONTROL PANEL USING TOTAL SUPPLY AIR AND RETURN AIR FLOW SIGNALS, SHALL RESET THE RETURN AIR FAN FLOW TO MAINTAIN A CONSTANT AIR FLOW DIFFERENCE BETWEEN THE SUPPLY AIR AND THE RETURN AIR EQUAL TO MINIMUM OUTSIDE AIR.
- ESSECE PROTECTION**
 - IF THE AIR TEMPERATURE AS SENSED BY TT-1 FALLS BELOW 47°F (7.8°C), AN ALARM SIGNAL SHALL INDICATE AT THE CAMPUS BAS. IF THIS TEMPERATURE FALLS BELOW 47°F (7.8°C), AS SENSED BY THE TSL, THE SUPPLY AND RETURN FANS SHALL SHUT DOWN AND A CRITICAL ALARM SHALL INDICATE AT THE DIGITAL CONTROL PANEL AND ECC. TSL SHALL BE REWROVE TO THE SUPPLY FAN UPS AND UNIT SHALL BE SHUTDOWN IN HAND-AUTO OR BYPASS MODE. TSL WILL REQUIRE MANUAL RESET AT THE DEVICE.
- AUTOMATIC SHUTDOWN/RESET**
 - WHEN SMOKE IS DETECTED BY DUCT SMOKE DETECTOR, THE SUPPLY AND RETURN FANS SHALL SHUT "OFF" AND AN ALARM SIGNAL SHALL BE TRANSMITTED TO THE FIRE ALARM SYSTEM.
 - EXHAUST FANS SERVING AREA OF THE SUPPLY FAN SHALL CONTINUE TO RUN. SUPPLY AND RETURN FANS SHALL RESTART AND SMOKE DAMPERS SHALL OPEN WHEN FIRE ALARM CIRCUIT IS RESET.
- EMERGENCY CONSTANT SPEED OPERATION**
 - UPON FAILURE OF BAS COMMUNICATION LOSS, THE SUPPLY AND RETURN FANS SHALL BE STARTED/STOPPED MANUALLY AT THE DIGITAL CONTROL PANEL THROUGH THE BYPASS STARTER. FANS SHALL THEN BE OPERATED AT CONSTANT SPEED.

MD-A = MD-1A, MD-2A, MD-3A, MD-4A, MD-5A
MD-B = MD-1B, MD-2B, MD-3B, MD-4B, MD-5B
MD-C = MD-1C, MD-2C, MD-3C, MD-4C, MD-5C

SYSTEM	POINT LEGEND	SYSTEM OUTPUTS				SYSTEM INPUTS		ALARM PROCESSING		APPLICATION/FUNCTION		REMARKS
		BINARY	ANALOG	BINARY	ANALOG	ALARM	PROCESSING	APPLICATION	FUNCTION			
SYSTEM COMPONENT:												
Return Air Temperature	RA1											
Return Air Humidity	RA2											
Return Air Flow (CFM)	RAF											
Mixed Air Temperature	MAT											
Fan-Heat Temperature	FHT											
Cooling Coil Temperature	CCT											
Discharge Air Temperature	DAT											
Discharge Static Pressure	DSP											
Discharge Air Humidity	DAH											
Supply Air Flow (CFM)	SAP											
OUTSIDE AIR TEMPERATURE	OAT											
RETURN LOW PRESSURE	RLP											
RETURN FAN STATUS	RF-STS											
SUPPLY FAN STATUS	SF-STS											
INLET AIR LOW LIMIT	TL-1											
STATIC PRESSURE HIGH LIMIT	SPS-2											
HUMIDITY HIGH LIMIT	HHL											
SUPPLY FAN VSMC ALARM	SF-ALA											
RETURN FAN VSMC ALARM	RF-ALA											
RETURN FAN VSMC	RF-SFD											FULL COMMUNICATION
SUPPLY FAN VSMC	SF-SFD											FULL COMMUNICATION
OUTSIDE AIR DAMPER	OAD											
RETURN AIR DAMPER	RAD											
RELEASER DAMPER	LD											
PRE-HEAT VALVE V-2	PHV-1											
COILING VALVE V-1	COV-1											
STEAM HUMIDIFIER VALVE V-4	THV-4											
RETURN FAN START/STOP	RF-SST											
SUPPLY FAN START/STOP	SF-SST											
STEAM ISOLATION VALVE V-3	HSV-3											

3 AIR HANDLER UNIT CONTROLS SEQUENCE
SCALE: NONE



5 HOT WATER SYSTEM DIAGRAM
SCALE: NONE

NORR

One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia, PA 19103 U.S.A.
norr.com

CLIENT:
THE COLLEGE OF NEW JERSEY
2000 PENNINGTON ROAD
EWING, NJ

PROJECT TEAM

TCNJ - ROSCOE HALL STUDENT SERVICES RENOVATION
2000 PENNINGTON ROAD EWING, NJ
THE COLLEGE OF NEW JERSEY

REV.	DATE	DESCRIPTION	ISSUED FOR	ISSUED FOR

NORR REF NUMBER:
PROJECT NUMBER: **22031600**
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SHEET TITLE:
CONTROLS

SHEET NUMBER:
M700

LEGEND				
SANITARY PIPING A.F.F. OR GRADE	S			
SANITARY PIPING B.F.F. OR GRADE	S			
GREASE WASTE PIPING A.F.F. OR GRADE	GW			
GREASE WASTE PIPING B.F.F.	GW			
INDIRECT WASTE PIPING A.F.F. OR GRADE	IW			
INDIRECT WASTE PIPING B.F.F. OR GRADE	IW			
STORM PIPING A.F.F. OR GRADE	ST			
STORM PIPING B.F.F. OR GRADE	ST			
CONDENSATE DRAIN	C			
VENT PIPING A.F.F. OR GRADE	V			
VENT PIPING B.F.F. OR GRADE	V			
LOW PRESSURE NATURAL GAS	G			
2 PSI NATURAL GAS	2G			
COLD WATER	CW			
HOT WATER	HW			
HOT WATER RECIRC.	HW			
FILTER WATER	FW			
TEMPERED WATER	TP			
EXISTING SANITARY PIPING	(E)S			
EXISTING GREASE WASTE PIPING	(E)GW			
EXISTING INDIRECT WASTE PIPING	(E)IW			
EXISTING STORM PIPING	(E)ST			
EXISTING VENT PIPING	(E)V			
EXISTING LOW PRESSURE NATURAL GAS	(E)G			
EXISTING 2 PSI NATURAL GAS	(E)2G			
EXISTING COLD WATER	(E)CW			
EXISTING HOT WATER	(E)HW			
EXISTING HOT WATER RECIRC.	(E)HWR			
VALVE	GATE		UNION	
SOLENOID VALVE	SV		AQUASTAT	
PRESS. RED. VALVE		VACUUM RELIEF VALVE		
GAS COCK		BALANCING VALVE		
GREASE INTERCEPTOR	GI	MIXING VALVE		
WATER FILTER	WF	TRAP RELIEF VALVE		
HUB DRAIN	HD	CAPPED OUTLET		
FLOOR SINK	FS	WATER HAMMER		
FLOOR / AREA DRAIN	FD	BACKFLOW PREVENTION DEVICE		
GROUND / FLOOR CLEAN OUT	GCO	FLOOR CLEAN OUT		
WALL CLEAN OUT		CHECK VALVE		
HORIZONTAL CLEAN OUT		FROST PROTECTED WALL HYDRANT		
TRAP PRIMER	TP	WALL HYDRANT		
STAND PIPE	SP	HOSE BIBB		HB
TRENCH DRAIN	TD	WATER METER		
P TRAP		GAS METER		
PIPE DROP & RISE		PRESSURE GAUGE		
PIPE UP OR DOWN		ROOF DRAIN		
WATER TIGHT PIPE SLEEVE		OVERFLOW ROOF DRAIN		
PIPE BREAK		CONNECT TO EXISTING		
VENT THROUGH ROOF (VTR)	PLAN	RISER		TO BE REMOVED
SLOPE		CIRCULATING PUMP		
DIRECTION OF FLOW		THERMOMETER		

THIS SHEET IS A GENERAL LIST OF SYMBOLS, ABBREVIATIONS AND SHALL BE USED AS A DICTIONARY TO DEFINE ITEMS INDICATED ON DRAWINGS. NOT ALL SYMBOLS OR ABBREVIATIONS ARE NECESSARILY USED ON THIS PROJECT.

ABBREVIATIONS			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
AD	AREA DRAIN	LAV	LAVATORY LEADER
AFF	ABOVE FINISHED FLOOR	MAX	MAXIMUM
AP	ACCESS PANEL	MIN	MINIMUM
ARCH	ARCHITECTURAL	MS	MOP SINK
BFP	BACKFLOW PREVENTER	NC	NORMALLY CLOSED
BFF	BELOW FINISHED FLOOR	NO	NORMALLY OPEN
BLDG	BUILDING	NTS	NOT TO SCALE
BWV	BACKWATER VALVE	NIC	NOT IN CONTRACT
CLG	CEILING	OFD	OVER FLOW ROOF DRAIN
CDP	CLEANOUT DECK PLATE	PRV	PRESSURE REDUCING VALVE
CONN	CONNECTION	RD	ROOF DRAIN
CONT	CONTINUATION	RPZ	REDUCED PRESSURE BFP
CW	COLD WATER	RWC	RAIN WATER CONDUCTOR
DF	DRINKING FOUNTAIN	S	SANITARY
DI	DIMENSIONED WATER	SA	SHOCK ARRESTER
DN	DOWN	SH	SHOWER
DR	DRAIN	SK	SINK
EA	EACH	SSK	SERVICE SINK
EL	ELEVATION	SS	SOIL STACK
EQ	EQUAL	ST	STORM WATER PIPING
EVC	VACUUM CONDENSATE	TP	TEMPERED WATER
EW	ELECTRIC WATER COOLER	TP	TRAP PRIMER
EXIST / EX	EXISTING	UR	URNAL
FCD	FLOOR CLEANOUT	UR	UNLESS OTHERWISE INDICATED
FD	FLOOR DRAIN	V	VENT
FF	FLOOR FINISH	VTR	VENT THROUGH ROOF
FL	FLOOR	VS	VENT STACK
FW	FILTERED WATER	W	WASTE
FWH	FROST PROTECTED WALL HYDRANT	WO	WITHOUT
G	GALLONS PER MINUTE	WC	WATER CLOSURE
GM	GREASE WASTE	WCO	CLEANOUT WALL PLATE
GCO	GRADE CLEANOUT	WFU	WATER SUPPLY FIXTURE UNITS
HB	HOSE BIBB	WH	WALL HYDRANT
HW	HOT WATER	WS	WASTE STACK
HWR	HOT WATER RETURN		
IW	INDIRECT WASTE		

THIS SHEET IS A GENERAL LIST OF ABBREVIATIONS AND SHALL BE USED AS A DICTIONARY TO DEFINE ITEMS INDICATED ON DRAWINGS. NOT ALL SYMBOLS OR ABBREVIATIONS ARE NECESSARILY USED ON THIS PROJECT.

PLUMBING LEGEND	
COLD WATER PIPE	
HOT WATER PIPE	
HOT WATER RETURN PIPE	
SANITARY PIPE	S
VENT PIPE	
SERVICE SYSTEM PIPE	X
X = SYSTEM ABBR. (E)X = EXISTING SYSTEM	
G = NATURAL GAS < 2PSIG	
2G = NATURAL GAS (2PSIG)	
RWC = RAINWATER / STORM WATER	
2-WAY VALVE	
3-WAY VALVE	
ACCESS PANEL	
AIR ADMITTANCE VALVE	
ANGLE VALVE	
BACKFLOW PREVENTER (BALL DOUBLE CHECK)	
BACKFLOW PREVENTER (GATE DOUBLE CHECK)	
BACKFLOW PREVENTER (RPZ)	
BALANCING VALVE	
BALL VALVE (2-PIECE)	
BALL VALVE (3-PIECE)	
BUTTERFLY VALVE	
CAP	
CHECK VALVE	
CLEANOUT	
FLOOR CLEANOUT	
FLOOR DRAIN	
GATE VALVE	
GLOBE VALVE	
GRADE CLEANOUT	
HOSE BIBB	
HOT WATER RETURN VALVES	
INLINE PUMP	
NEEDLE VALVE	
PLUG VALVE	
PRESSURE GAUGE	
PRV	
RELIEF VALVE	
ROOF DRAIN	
SOLENOID VALVE	
STRAINER	
THERMOMETER	
UNION	
WALL HYDRANT	
WHA / SA	

- ### PLUMBING GENERAL NOTES
1. PLUMBING SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES INDICATED ON THIS DRAWING ARE TYPICAL. PLUMBING DRAWINGS MAY NOT INDICATE ALL SYMBOLS AND ABBREVIATIONS SHOWN ON THIS DRAWING.
 2. ALL PIPING AND EQUIPMENT SHOWN ON DRAWINGS ARE DIAGRAMMATIC ONLY.
 3. THE ENTIRE PLUMBING SYSTEM SHALL BE IN CONFORMANCE WITH ALL FEDERAL, STATE AND LOCAL REGULATIONS. APPLICABLE PLUMBING CODE IS THE 2018 INTERNATIONAL PLUMBING CODE. CONFORM TO APPLICABLE BUILDING CODES AND THE OWNER'S INSURANCE AGENCY. PROVIDE ALL LICENSES, PERMITS, CERTIFICATIONS, AND AGENCY APPROVALS PRIOR TO COMMENCING FABRICATION OR INSTALLATION. PROVIDE ALL REQUIRED DOCUMENTS, CALCULATIONS AND DRAWINGS.
 4. THE PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR CUTTING/PATCHING OF ALL WALLS, CEILING AND FLOORS FOR INSTALLATION OF PLUMBING SYSTEMS
 5. PLUMBING SYSTEMS SHALL NOT BE LOCATED IN ELECTRICAL EQUIPMENT ROOMS, TRANSFORMER VAULT, ELECTRICAL CLOSETS, TELE DATA ROOMS OR SIMILAR AREAS CONTAINING ELECTRICAL EQUIPMENT
 6. DO NOT INSTALL PIPING OVER, AROUND, IN FRONT OF, BEHIND OR DIRECTLY BELOW ELECTRICAL EQUIPMENT, SWITCHES, TERMINALS OR SIMILAR ELECTRICAL EQUIPMENT. MAINTAIN 4" IN FRONT OF 48VAC EQUIPMENT, 30" IN FRONT OF 240VAC EQUIPMENT. CONFORM TO NEC.
 7. NO PLUMBING SYSTEMS SHALL PENETRATE INTO OR PASS THROUGH STAIRWAYS UNLESS IT IS FOR SERVICING THE STAIRWAY.
 8. INSTALL PIPING IN A CONCEALED MANNER. STRAIGHT, AND PLUMB FORM RIGHT ANGLES PARALLEL WITH BUILDING WALLS. LOCATE GROUPS OF PIPES PARALLEL TO EACH OTHER. PIPE WILL BE LOCATED TO PERMIT ACCESS FOR SERVICE VALVES.
 9. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL VERIFY FLOW, STATIC AND RESIDUAL PRESSURE BE PERFORMING A HYDRANT FLOW TEST OF THE EXISTING STREET MAIN AT THE POINT OF NEW CONNECTION OR AS CLOSE AS POSSIBLE.
 10. COORDINATE PLUMBING SYSTEM SHUT DOWN REQUIREMENTS WITH OWNER. NOTIFY OWNER A MINIMUM 48 HOURS PRIOR TO SYSTEM SHUT DOWN.
 11. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES BETWEEN CONSTRUCTION DOCUMENTS AND EXISTING CONDITIONS PRIOR TO CONSTRUCTION.
 12. ONLY CAST IRON PIPING FOR SANITARY AND VENTING SHALL BE INSTALLED IN PLENUM SPACES. THE PLUMBING CONTRACTOR SHALL VERIFY / COORDINATE THE EXACT PLENUM SPACES WITH THE HVAC PLANS AND CONTRACTOR PRIOR TO THE START OF CONSTRUCTION.
 13. CHECK ARCH, ELEC, MECHANICAL, & FP DRAWINGS FOR WORK SHOWN TO BE DONE BY PC.
 14. COORDINATE PLUMBING WORK WITH OTHER DISCIPLINES. SEE SPECIFICATIONS FOR INFORMATION REGARDING COORDINATION DRAWINGS. PROVIDE DEDUCTIONS FOR ANY OWNER AGREED REDUCTIONS IN PIPING RUNS. COORDINATE ROUGH-IN INFORMATION WITH FIXTURES AND EQUIPMENT SUPPLIERS. COORDINATE PLUMBING FIXTURE LOCATIONS WITH ARCHITECTURAL PLANS.
 15. COORDINATE ALL BELOW GRADE PLUMBING PIPING WITH FOUNDATION ELEVATIONS AND SITE UTILITY INVERTS. VERIFY EXISTING ELEVATIONS AND INVERTS PRIOR TO CONSTRUCTION.
 16. PROVIDE PIPING PENETRATIONS WITH FIRE RATINGS EQUAL TO OR GREATER THAN THE FIRE RATING OF THE WALL OR FLOOR PENETRATED. COORDINATE PIPE PENETRATIONS WITH CONCRETE CONSTRUCTION. PROVIDE CORE DRILLED PENETRATIONS AT ALL LOCATIONS WHERE CONCRETE OR MASONRY WALLS OR FLOORS HAVE BEEN CONSTRUCTED PRIOR TO PLUMBING PIPING INSTALLATION. CORING SIZES AND LOCATIONS SHALL BE APPROVED BY THE ARCHITECT/ENGINEER. EXTEND SLEEVES 2" ABOVE FLOOR SLAB IN ALL WET AREAS SUCH AS MECHANICAL ROOMS AND WASH AREA.
 17. PROVIDE FLUSH TYPE ACCESS DOORS OR PANELS FOR ALL VALVES OR APPARATUS LOCATED IN CHASES, WALLS, NON ACCESSIBLE CEILING OR FLOOR.
 18. PROVIDE CLEANOUTS FOR ALL HORIZONTAL STORM AND SANITARY PIPING AT EVERY CHANGE IN DIRECTION AND AT THE BASE OF ALL STACKS.
 19. PROVIDE PIPE IDENTIFICATION LABELS WITH DIRECTIONAL FLOW ARROWS ON ALL HORIZONTAL RUNS EVERY 20ft.
 20. SUPPORT ALL PIPING IN CONFORMANCE WITH SPECIFICATIONS AND THE PLUMBING CODE. SEE PLUMBING CODE FOR SPACING REQUIREMENTS.
 21. PROVIDE BACKFLOW PREVENTION DEVICES ON ALL WATER CONNECTIONS TO HVAC EQUIPMENT AND IRRIGATION SYSTEMS
 22. PROVIDE WATER HAMMER ARRESTORS ON SUPPLY LINES TO FLUSH VALVES, SOLENOID VALVES AND AUTOMATIC VALVES. IN CONFORMANCE WITH PDI AND LOCAL ORDINANCES. INSTALL IN ACCESSIBLE LOCATIONS FOR MAINTENANCE
 23. PROVIDE SHUT-OFF VALVES WITHIN 2ft. OF MAINS ON ALL BRANCH PIPING SERVING PLUMBING FIXTURES, EQUIPMENT OR CASEWORK. CONNECT SERVICE BRANCHES TO TOP OF MAINS.
 24. PROVIDE DRAIN VALVES AND HOSE CONNECTIONS AT ALL LOW POINTS IN SERVICE PIPING SYSTEM
 25. SLOPE ALL PIPING IN CONFORMANCE WITH SPECIFICATIONS AND THE PLUMBING CODE
 26. PROVIDE CLOSED CELL MOLDED VINYL INSULATION ON EXPOSED LAVATORY DRAINS AND SUPPLIES FOR HANDICAPPED
 27. PROVIDE PIPING MATERIAL IN CONFORMANCE WITH THE SPECIFICATIONS AND THE PLUMBING CODE
 28. TEST ALL PLUMBING SYSTEMS IN CONFORMANCE WITH THE SPECIFICATIONS AND THE PLUMBING CODE
 29. DISINFECT DOMESTIC WATER SYSTEM IN CONFORMANCE WITH THE SPECIFICATIONS AND THE PLUMBING CODE
 30. INSTALL PLUMBING FIXTURES AND EQUIPMENT IN CONFORMANCE WITH MANUFACTURER'S RECOMMENDATIONS AND THE PLUMBING CODE
 31. PROVIDE PIPE SLEEVES THROUGH CONCRETE BEAMS WHERE REQUIRED. COORDINATE WITH THE ARCHITECTURAL AND STRUCTURAL DRAWINGS
 32. PROVIDE RETENTION STRAPES ON ALL ABOVE & BELOW GROUND CAST IRON NO-HUB FITTINGS AT CHANGE OF DIRECTION IN PIPES OF 5" AND LARGER AS REQUIRED BY CISPI 301. (SEE DETAIL ON DRAWING P901)
 33. THE FIRE PROTECTION CONTRACTOR SHALL REVIEW THE ARCHITECTURAL REFLECTED CEILING, ELEVATION AND SECTION PLANS AS PART OF THIS CONTRACT FOR ADDITIONAL INFORMATION SUCH AS CEILING HEIGHTS, TYPES, SOFFITS AND OR OTHER DEVICE LOCATIONS.
 34. PROVIDE HEAT TRACE, 3 WATTS PER FOOT, 120 VOLT, SELF REGULATING WITH 1" PIPE INSULATION ON ALL HORIZONTAL CHEMICAL WASTE PIPING LOCATED IN UNCONDITIONED AREAS, TO INCLUDE PARKING GARAGE BELOW.

PLUMBING SHEET LIST	
P-001	COVERSHEET
PD-101	PLUMBING FIRST FLOOR PLAN - DEMOLITION
P-101	PLUMBING FIRST FLOOR PLAN
P-102	PLUMBING SECOND FLOOR PLAN
P-500	DETAILS AND SCHEDULES



One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia, PA 19103 U.S.A.
norr.com

CLIENT:
THE COLLEGE OF NEW JERSEY
2000 PENNINGTON ROAD
EWING, NJ

PROJECT TEAM

TCNJ - ROSCOE HALL STUDENT SERVICES RENOVATION
2000 PENNINGTON ROAD EWING, NJ

REV.	DATE	DESCRIPTION	ISSUED FOR

REV. DATE DESCRIPTION ISSUED FOR
06.02.2023

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SHEET TITLE:
COVERSHEET

SHEET NUMBER:
P-001



PHASE 2

5

4

3

2

1

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JERSEY**
2000 PENNINGTON ROAD
EWING, NJ

PROJECT TEAM

**TCNJ - ROSCOE HALL STUDENT
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2000 PENNINGTON ROAD EWING, NJ

THE COLLEGE OF NEW JERSEY

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PROJECT NUMBER: **22031600**
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SHEET TITLE:
**PLUMBING
FIRST FLOOR
PLAN -
DEMOLITION**

SHEET NUMBER:
PD-101

- DRAWING NOTES:
- SANITARY PIPING IS INSTALLED IN THE CEILING OF THE 1ST FLOOR. CONTRACTOR SHALL COORDINATE REMOVAL AND INSTALLATION OF CEILING FOR THIS WORK.



1 PLUMBING SECOND FLOOR PLAN
1/8" = 1'-0"

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1817 JFK Boulevard, Suite 1600
Philadelphia, PA 19103 U.S.A.
norr.com

CLIENT:
THE COLLEGE OF NEW JERSEY
2000 PENNINGTON ROAD
EWING, NJ

PROJECT TEAM

TCNJ - ROSCOE HALL STUDENT SERVICES RENOVATION
2000 PENNINGTON ROAD EWING, NJ

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SHEET TITLE:
PLUMBING SECOND FLOOR PLAN

SHEET NUMBER:
P-102

PLUMBING FIXTURE SCHEDULE																	
SYMBOL	DESCRIPTION	BASIS OF DESIGN			COLOR	ELECTRICAL CHARACTERISTICS			ROUGH IN			FIXTURE UNITS			REMARKS		
		MANUFACTURER & MODEL NUMBER	FAUCET	CARRIER OR SUPPORT		TRIM	AMPS	VOLTS	EP	CW	HW	SAN	VENT	CW		HW	GPF/GPM
SK-1	BREAKROOM SINK	PROFLO - "PLOMOSA" 17-13/16" X 15-15/16"	DELTA 101-DST	UNDER MOUNTED	LEONARD 279-LF MIXING VALVE	STAINLESS STEEL	-	-	-	1/2"	1/2"	2"	2"	.5	.5	0.5	PROVIDE WITH LOW FLOW THREAD AERATOR.

PLUMBING SPECIALTY SCHEDULE						
SYMBOL	LOCATION	DESCRIPTION	BASIS OF DESIGN (APPROVED MANUFACTURERS ARE LISTED IN SPECIFICATIONS)			
			MANUFACTURER	TYPE	MODEL	MATERIAL
IWH-1	INSTANTANEOUS WATER HEATER	UNDER COUNTER TANKLESS WATER HEATER	RHEEM	6.0 KW @ 220 V, 25 AMPS.	RTEX-6	-

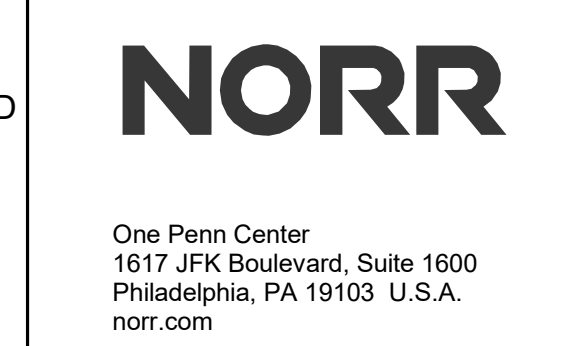
PIPE MATERIAL SCHEDULE						
SERVICE	SIZE	MATERIAL	SCHEDULE/TYPE	INSULATION		REMARKS
				TYPE	THICK	
UNDERGROUND SANITARY WASTE PIPING	ALL	CAST IRON	SERVICE			HUB AND SPIGOT FITTINGS
ABOVE GROUND SANITARY WASTE AND VENT PIPING	ALL	CAST IRON	SERVICE			HUBLESS FITTINGS
DOMESTIC COLD WATER	ALL	COPPER	TYPE L	FIBER GLASS	2"	1 - 2
DOMESTIC HOT WATER	ALL	COPPER	TYPE L	FIBER GLASS	2"	1 - 2
DOMESTIC HOT WATER RETURN	ALL	COPPER	TYPE L	FIBER GLASS	2"	1 - 2
CONDENSATE	ALL	COPPER	TYPE L			3

NOTES:
 1. PROVIDE SOLDER FITTINGS AND JOINTS.
 2. PROVIDE ALL WITH ALUMINUM JACKETING.
 3. PROVIDE WITH 3/4" ARMAFLEX INSULATION

WATER HAMMER ARRESTOR

J.R. SMITH MODEL #	SYMBOL	FIXTURE UNIT RATING
5005	(A)	1-11
5010	(B)	12-32
5020	(C)	33-60
5030	(D)	61-113
5040	(E)	114-154
5050	(F)	155-330

NOTES:
 1. PROVIDE AT ALL QUICK CLOSING VALVES.
 2. APPROVED EQUALS - SIXL CHIEF PRECISION PLUMBING PRODUCTS & WATTS WITH PISTON AND O-RING CONSTRUCTION, HAVING PDI #WH-201, ASSE #1010 AND ANSI #A112.26.1M CERTIFICATION.
 3. INSTALL IN HORIZONTAL OR VERTICAL POSITION, BUT NEVER UPSIDE DOWN. INSTALL IN LINE WITH WATER FLOW IF POSSIBLE. SIZE THE UNITS PER THE TABLES SHOWN ABOVE. SINGLE FIXTURES OR APPLIANCES - LOCATE (WHA) JUST BEFORE THE FIXTURE VALVE.
 4. BATTERIES OF FIXTURES - LENGTH OF BATTERY 20-FEET OR LESS. LOCATED HYDROTROL BETWEEN THE LAST AND NEXT TO LAST FIXTURES.
 5. FOR BATTERY OF FIXTURES HAVING A BRANCH LINE OVER 20-FEET IN LENGTH TWO HYDROTROLS SHALL BE INSTALLED. THE TWO HYDROTROLS SELECTED SHALL HAVE A COMBINED FIXTURE UNIT RATING EQUAL TO OR GREATER THAN THE TOTAL FIXTURE UNIT DEMAND OF THE ENTIRE BRANCH LINE. LOCATED ONE BETWEEN THE LAST AND NEXT TO LAST FIXTURES ON THE BRANCH LINE. THE OTHER HYDROTROL SHALL BE LOCATED AT THE BRANCH MID POINT SO THAT THERE ARE EQUAL LENGTH OF PIPE ON EACH SIDE.
 6. ON HOT WATER BRANCH LINES OVER 20-FEET IN LENGTH WHERE PLUMBING FIXTURES ARE INSTALLED ON A PORTION OF THE LINE THE SECOND HYDROTROL SHALL BE LOCATED AT A POINT HALF THE DISTANCE OF THE PLUMBING FIXTURES INSTALLED.
 7. PROVIDE ACCESS PANELS, COORDINATE WITH THE G.C. FOR ALL LOCATIONS



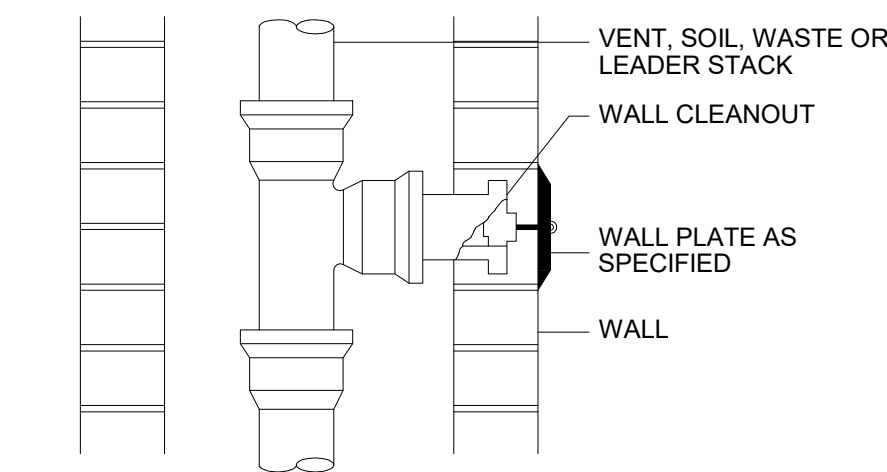
CLIENT:
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 2000 PENNINGTON ROAD
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PROJECT TEAM

TCNJ - ROSCOE HALL STUDENT SERVICES RENOVATION
 2000 PENNINGTON ROAD EWING, NJ

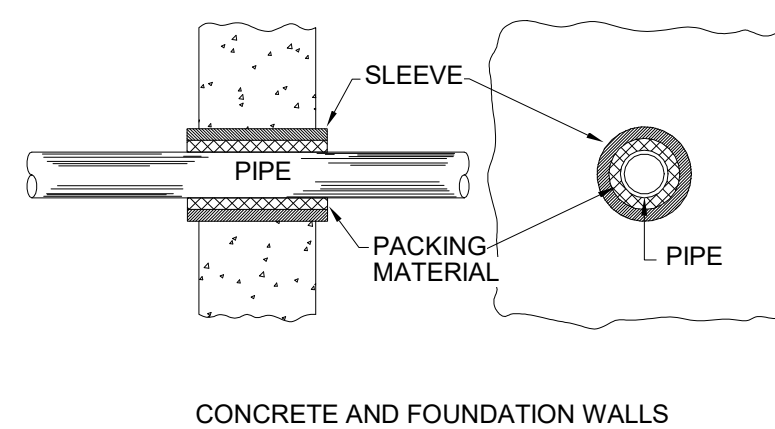
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SIZE OF CLEANOUT	
NOMINAL PIPING SIZE (INCHES)	NOMINAL CLEANOUT SIZE (INCHES)
1-1/4	1-1/4
1-1/2	1-1/2
2	2
3	3
4 AND 6	4
8 AND 10	6

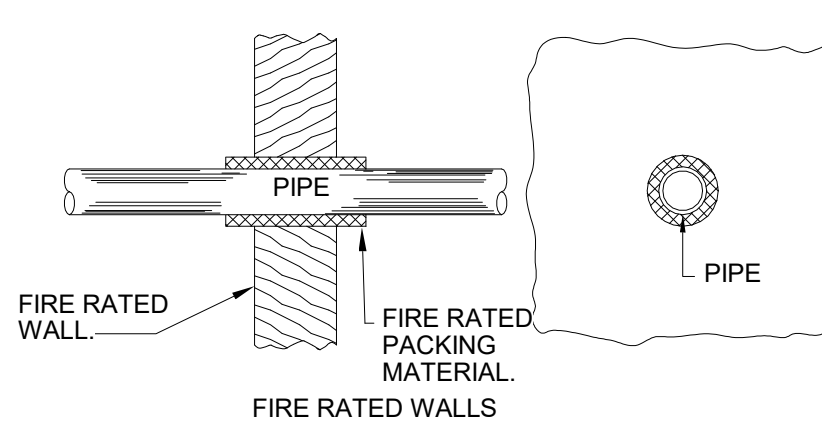


1 FLOOR AND WALL CLEANOUT DETAIL
 NTS

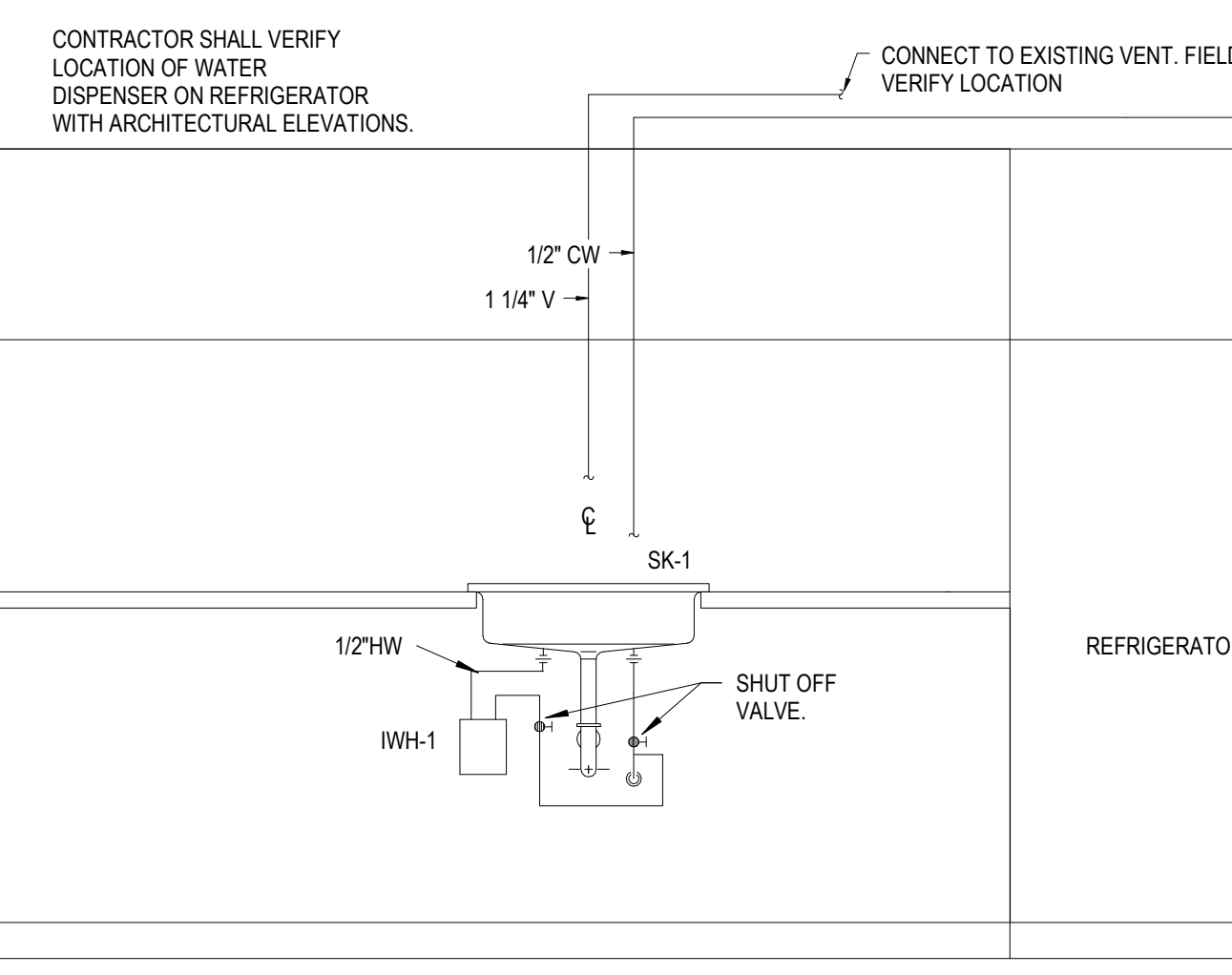
- NOTES:
 1. NO STRUCTURAL STRAIN SHOULD BE TRANSMITTED FROM ANY WALL TO THE PIPING SYSTEM. THE SLEEVING, RELIEVING ARCH, OR STRUCTURAL BEAM SUPPORT METHODS PROTECT THE PIPING FROM SUPERIMPOSED LOADS. THE "PACKING" MATERIAL AROUND THE PIPE IS FLEXIBLE ENOUGH TO RESPOND TO SETTLING IN THE STRUCTURE OR PIPING.
 2. FIRE RATED PACKING MATERIAL TO BE BY 3M. CAULK CP 25N/S
 3. FOR ALL PIPING PASSING THRU MEZZANINE FLOOR PACK WITH 3M, CAULK CP255/L
 4. SEE ARCHITECTURAL DRAWINGS FOR FIRE RATED WALLS.



- NOTE:
 NO STRUCTURAL STRAIN SHOULD BE TRANSMITTED FROM ANY WALL TO THE PIPING SYSTEM. THE SLEEVING, RELIEVING ARCH, OR STRUCTURAL BEAM SUPPORT METHODS PROTECT THE PIPING FROM SUPERIMPOSED LOADS. THE "PACKING" MATERIAL AROUND THE PIPE IS FLEXIBLE ENOUGH TO RESPOND TO SETTLING IN THE STRUCTURE OR PIPING.



3 TYPICAL PIPE HANGER DETAIL
 NTS



5 KITCHENETTE - DETAIL
 NTS

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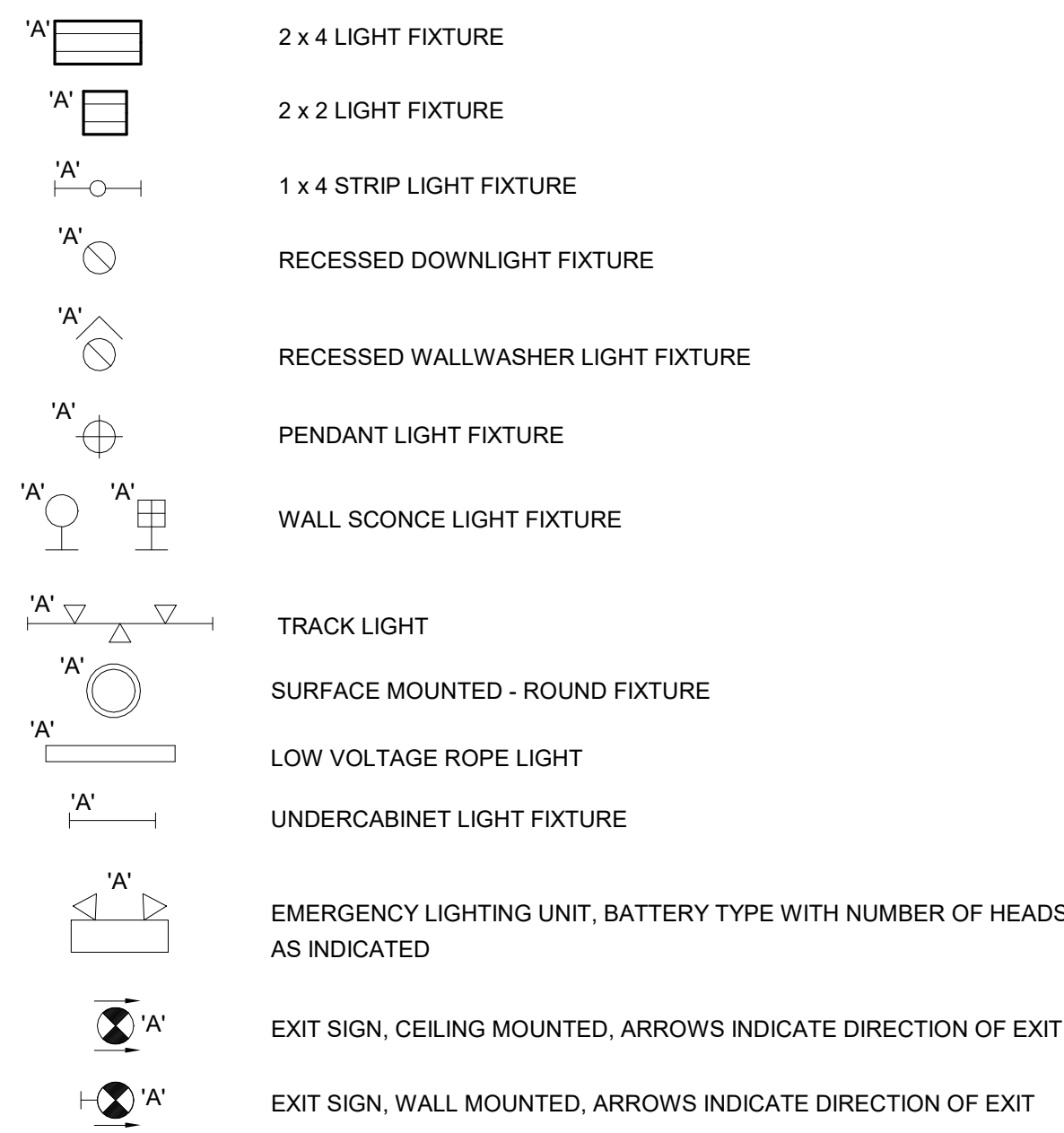
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 PROJECT NUMBER: **22031600**
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SHEET TITLE:
DETAILS AND SCHEDULES

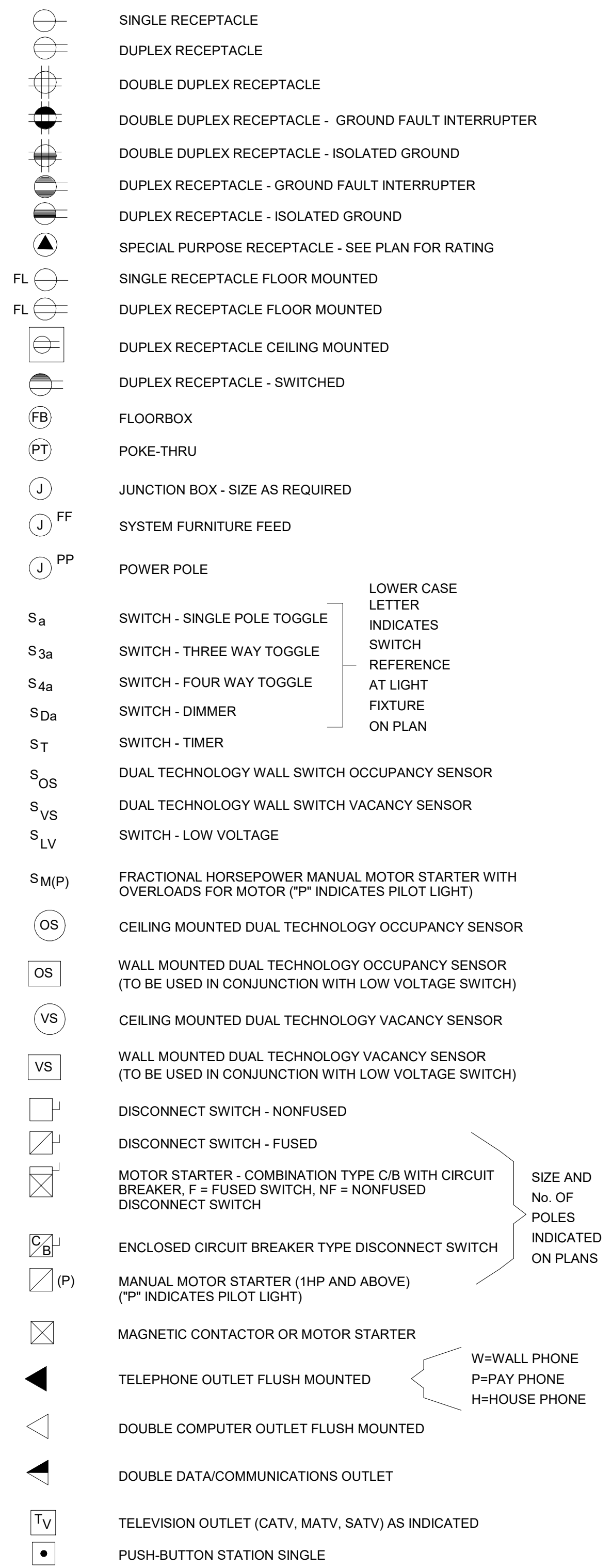
SHEET NUMBER:
P-500

LIGHTING

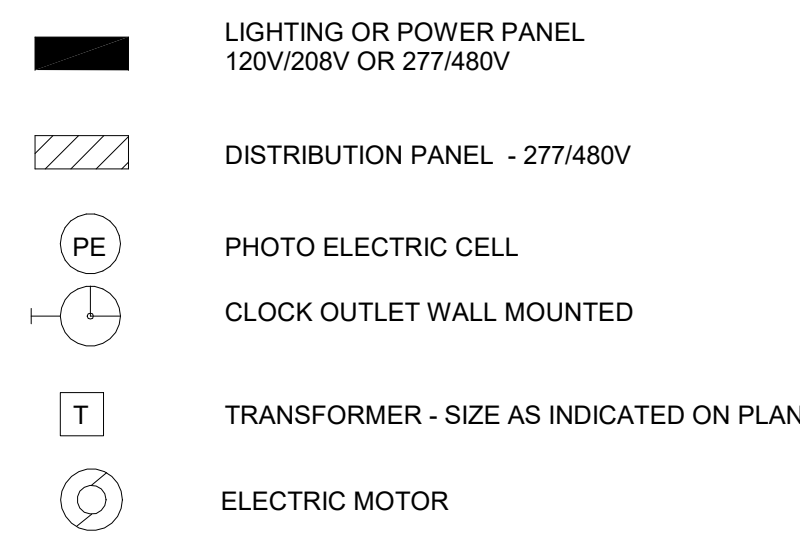
LIGHTING (NOTE: UPPER CASE LETTER INDICATES FIXTURE TYPE)



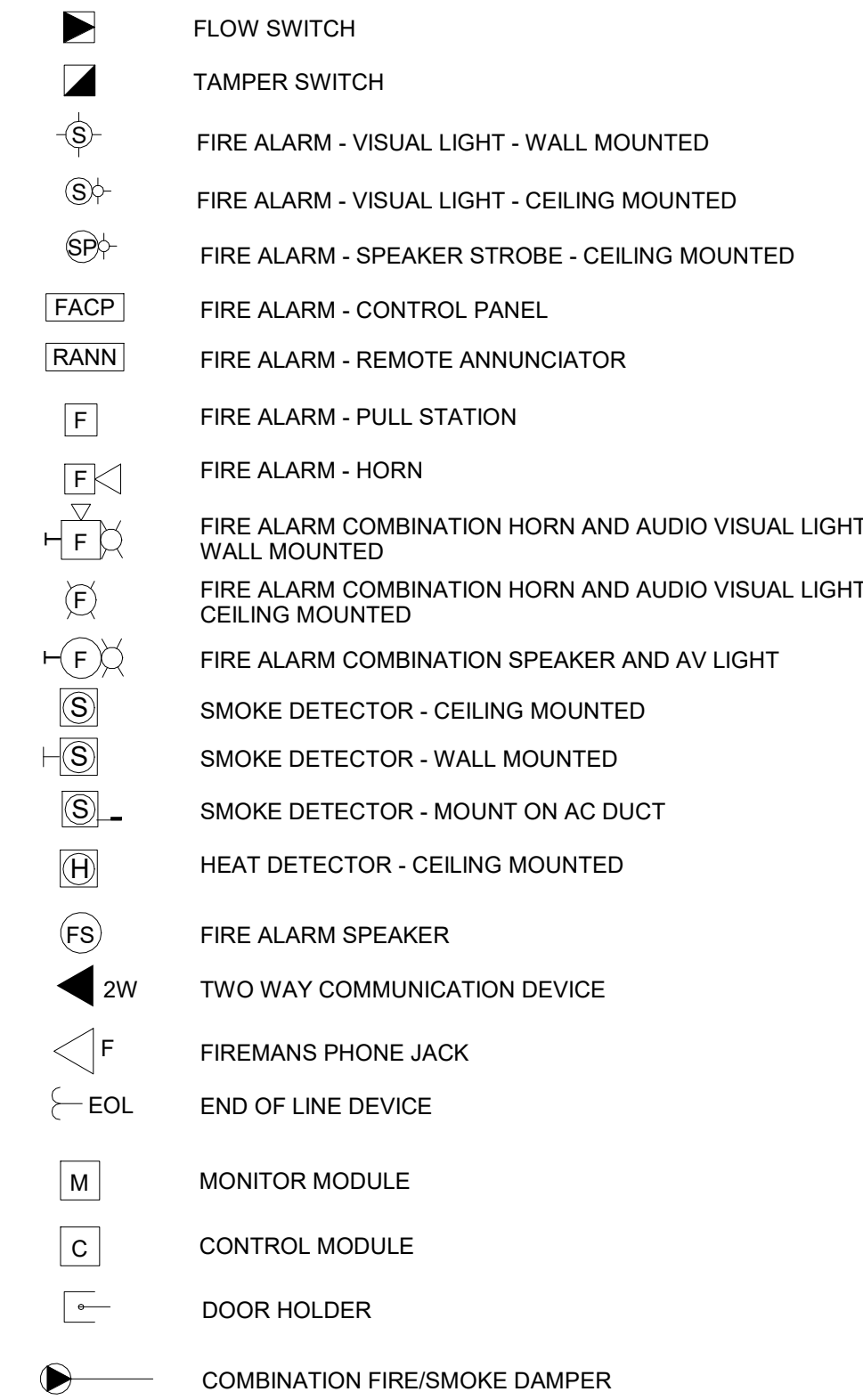
POWER



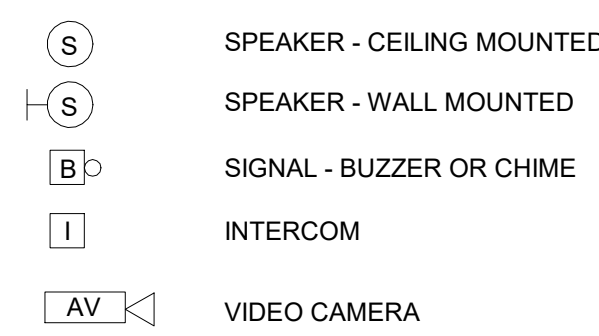
POWER (CONTINUED)



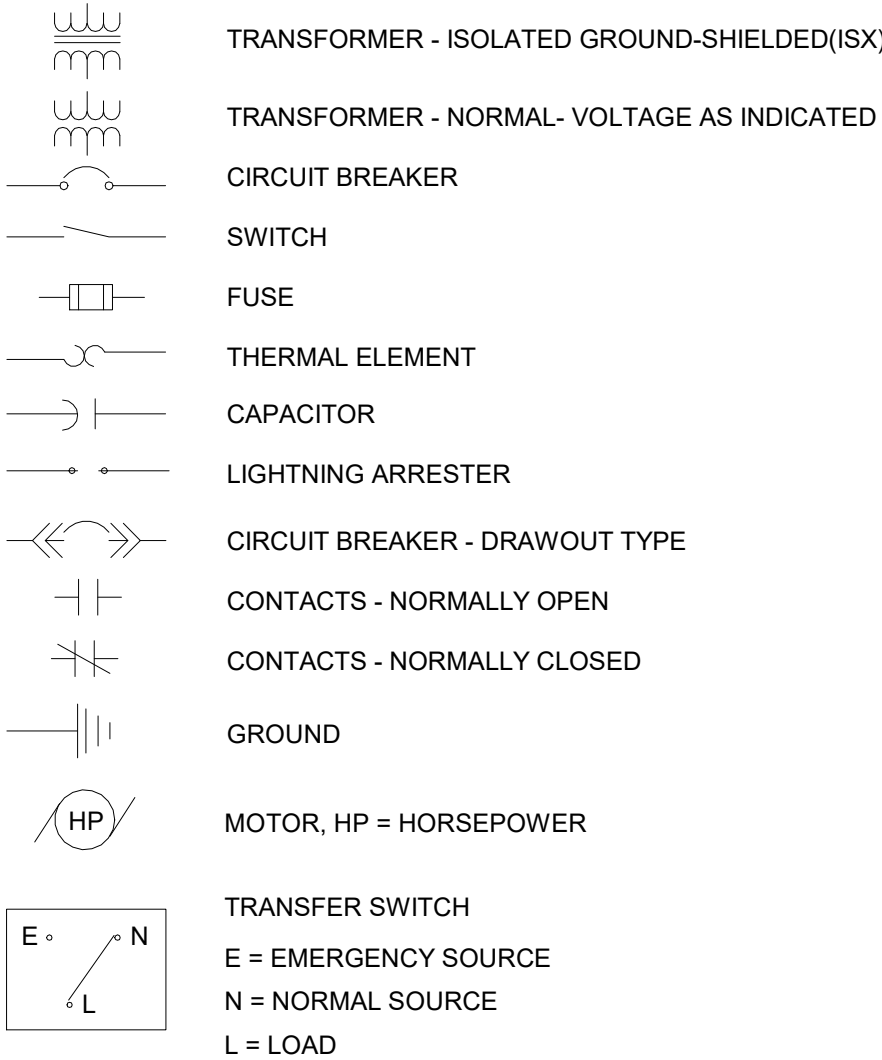
FIRE ALARM



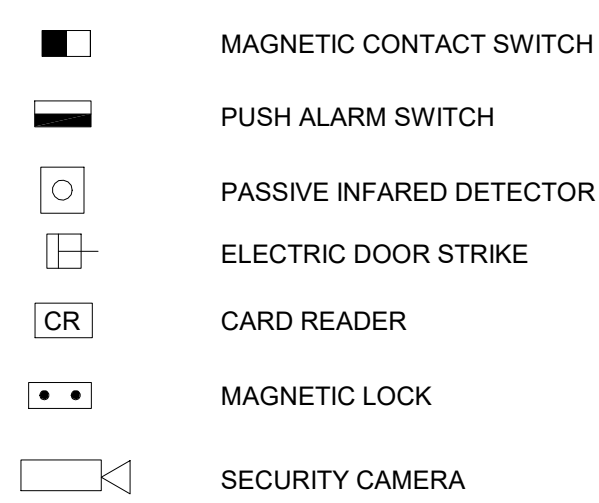
AUDIO/VIDEO



SINGLE LINE SYMBOLS



SECURITY



MOUNTING HEIGHTS

- 1. ALL MOUNTING HEIGHTS LIST ARE TO CENTER OF DEVICE UNLESS OTHERWISE NOTED AND MUST CONFORM TO ADA, NFPA, ANSI 117.1 REQUIREMENTS UNLESS OTHERWISE NOTED.
2. CONTRACTOR TO VERIFY FINAL LOCATION OF ALL DEVICES WITH ARCHITECT AND/OR INTERIOR DESIGNER.
3. WHERE DEVICES FALL ON TWO SURFACE FINISHES, RAISE THE DEVICE TO BE ON A SINGLE FINISH. COORDINATE WITH ARCHITECT.

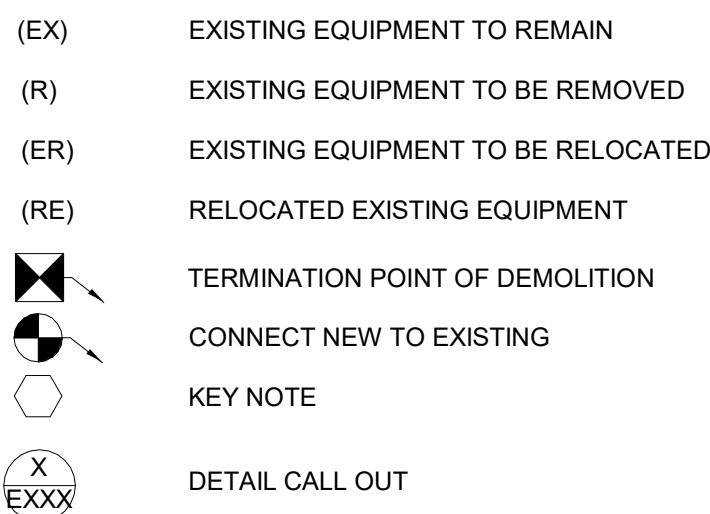
Table with 2 columns: Device Name and Mounting Height. Includes items like Fire Alarm Gong and Bell, Fire Alarm Strobe Light, Telephone Outlets, and Manual Control Devices.

GENERIC ELECTRICAL ABBREVIATIONS

Table with 4 columns: Abbreviation, Full Name, Abbreviation, Full Name. Lists various electrical symbols and their corresponding full names.

GENERAL

ALL EQUIPMENT AND DEVICES SHOWN ON PLANS SHALL BE NEW AND BY DIVISION 26 CONTRACTOR UON.



LIFE SAFETY SCOPE OF WORK

- 1. THE ELECTRICAL CONTRACTOR SHALL SUPPLY AND INSTALL ALL FIRE ALARM DEVICES INCLUDING BUT NOT LIMITED TO:
A. PULL STATIONS - ADDRESSABLE TYPE
B. SMOKE DETECTORS - ADDRESSABLE TYPE
C. STROBE LIGHTS - (WALL MOUNTED) ADA TYPE - 80" A.F.F.
D. SPEAKERS - SET TO 15db ABOVE AMBIENT SOUND
E. WIRING FROM ALL DEVICES TO THE FACP
F. WIRING FROM THE FACP TO FLOW AND TAMPER SWITCHES INCLUDING ADDRESSABLE MODULES
2. ELECTRICAL CONTRACTOR SHALL INCLUDE ALL FIRE ALARM MANUFACTURER'S TECHNICIAN TIME IN BASE PRICE.
3. ELECTRICAL CONTRACTOR SHALL INCLUDE FEES FOR ALL TESTING INCLUDING LOCAL FIRE DEPARTMENT SMOKE TEST IN BASE PRICE.
4. ELECTRICAL CONTRACTOR SHALL INCLUDE ALL DEMOLITION AND REWIRING AS NECESSARY TO MAINTAIN THE INTEGRITY OF THE FIRE ALARM SYSTEM DURING CONSTRUCTION.
5. EXISTING FIRE ALARM STROBE LIGHTS ARE NOT TO BE REMOVED UNTIL NEW STROBE LIGHTS ARE INSTALLED.
6. ALL FIRE ALARM DEVICES, PANELS, POWER SUPPLIES, AMPLIFIERS AND WIRING SHALL BE BY NOTIFICATION WELLS OR APPROVED COMPATIBLE ALTERNATE OF THE EXISTING SYSTEM, AND MUST BE U.L. LISTED FOR THE SYSTEM.
7. ELECTRICAL CONTRACTOR SHALL UTILIZE THE EXISTING ADDRESSABLE FACP AND INSTALL A NEW 3/8" #16 SHIELDED LOW IMPEDANCE CABLE FROM THE ADDRESSABLE FACP TO ALL DEVICES (EXTEND THE EXISTING ADDRESSABLE LOOP AS REQUIRED).
8. ELECTRICAL CONTRACTOR SHALL SUPPLY AND INSTALL NEW STROBE LIGHT POWER SUPPLY AND SPEAKER AMPLIFIERS AS REQUIRED INCLUDING ALL WIRING, CONTROL MODULES, HARDWARE AND SOFTWARE.
9. ELECTRICAL CONTRACTOR SHALL INCLUDE IN BASE PRICE ALL SOFTWARE PROGRAMMING AND FINAL PROGRAM LOADED INTO THE EXISTING FIRE ALARM SYSTEM FOR A COMPLETE OPERATIONAL SYSTEM.
10. ALL FIRE ALARM WORK SHALL COMPLY WITH THE LOCAL BUILDING CODE, NFPA 72, AND THE NATIONAL ELECTRICAL CODE.
11. THE CONTRACTOR SHALL SUPPLY AND INSTALL ALL WIRING AND DEVICES TO PROVIDE A COMPLETE, OPERATING, AND APPROVED SYSTEM.

LEGEND NOTES

THIS SHEET IS A GENERAL LIST OF SYMBOLS AND ABBREVIATIONS AND SHALL BE USED AS A DICTIONARY TO DEFINE ITEMS INDICATED ON DRAWINGS. NOT ALL SYMBOLS OR ABBREVIATIONS ARE NECESSARILY USED ON THIS PROJECT.

ELECTRICAL SHEET LIST

Table listing sheet numbers and titles: E001 ELECTRICAL COVER SHEET, ED100 BASEMENT FLOOR DEMOLITION PLAN, ED101 FIRST FLOOR DEMOLITION PLAN, ED102 SECOND FLOOR DEMOLITION PLAN, ED103 PENTHOUSE FLOOR DEMOLITION PLAN, E101 FIRST FLOOR POWER & SYSTEMS PLAN, E102 SECOND FLOOR POWER & SYSTEMS PLAN, E103 PENTHOUSE FLOOR POWER & SYSTEMS PLAN, E201 FIRST FLOOR LIGHTING PLAN, E202 SECOND FLOOR LIGHTING PLAN, E301 FIRST FLOOR HVAC POWER & FIRE ALARM PLAN, E302 SECOND FLOOR HVAC POWER & FIRE ALARM PLAN, E303 PENTHOUSE FLOOR HVAC POWER & FIRE ALARM PLAN, E600 ELECTRICAL SINGLE LINE DIAGRAM, E601 RISER DIAGRAMS AND SCHEDULES, E700 PANEL SCHEDULES.

NORR

One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia, PA 19103 U.S.A.
norr.com

SEAN P. PIC-KELL
LIC# 24GE05659200

CLIENT:
THE COLLEGE OF NEW
JERSEY
2000 PENNINGTON ROAD
EWING, NJ

PROJECT TEAM

NORR
One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia, PA 19103
norr.com

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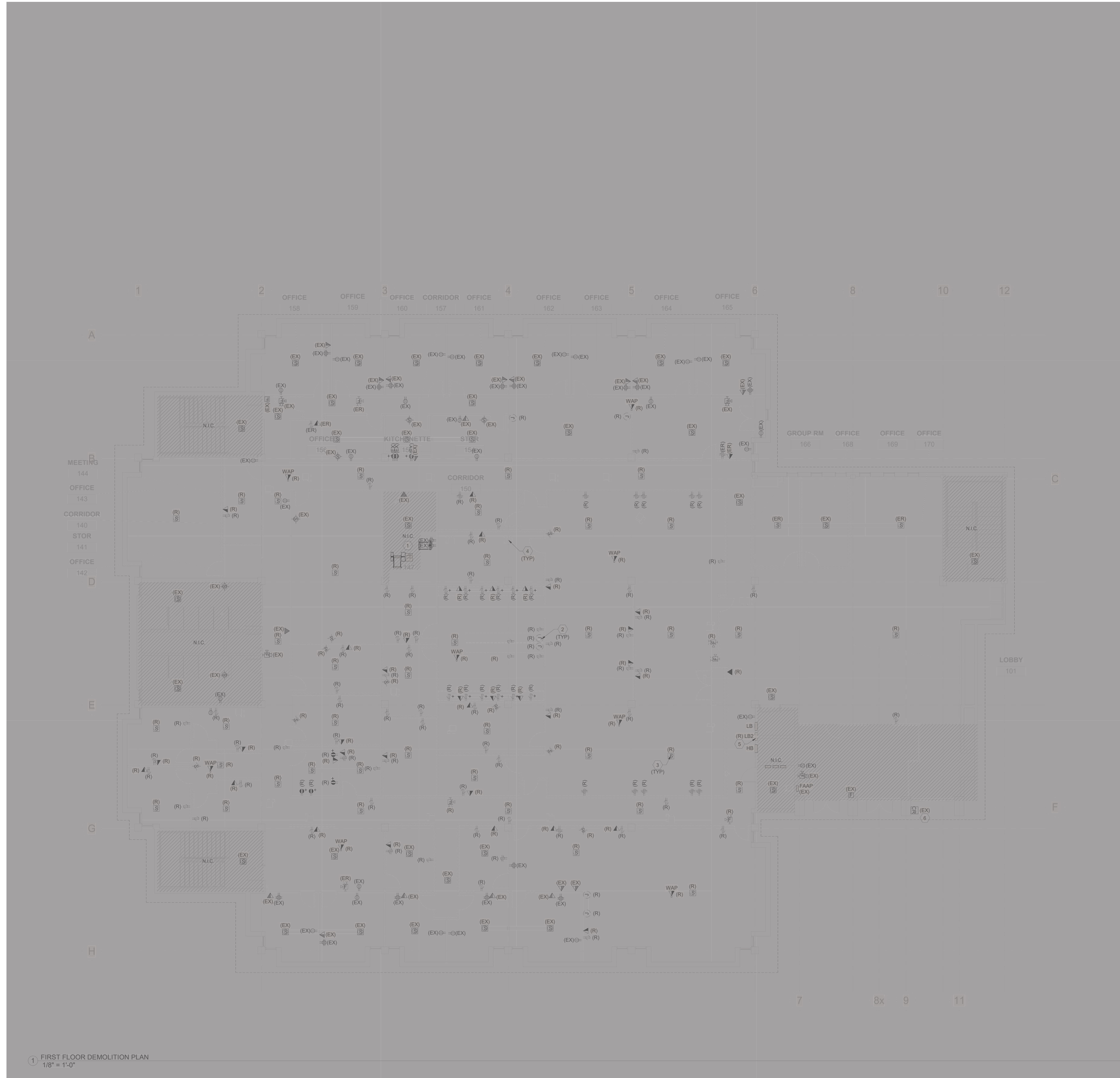
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ELECTRICAL
COVER SHEET

E001



1 FIRST FLOOR DEMOLITION PLAN
1/8" = 1'-0"

GENERAL DEMOLITION NOTES

- A. COORDINATE ALL WORK CONCERNING EXISTING EQUIPMENT AND SERVICES TO REMAIN DE-ENERGIZE CIRCUITS AND MAKE THEM SAFE AS REQUIRED. RECONNECT CIRCUITS THAT ARE TO REMAIN AND ARE DISRUPTED DURING DEMOLITION.
- B. REMOVE EXPOSED OR ACCESSIBLE WIRING. TO EQUIPMENT OR OUTLETS TO BE REMOVED, UNLESS OTHERWISE INDICATED. LABEL AND TERMINATE WIRING TO REMAIN.
- C. WHERE EXISTING OUTLETS ARE TO REMAIN AND ARE CUT OFF BY THE REMODELING THEY SHALL RE-CONNECTED TO CIRCUITS AS REQUIRED BY JOB CONDITIONS.
- D. LEGALLY DISPOSE OF EQUIPMENT WHERE EXISTING EQUIPMENT IS INDICATED TO BE REMOVED. OFFER EQUIPMENT TO OWNER AND DISPOSE OF EQUIPMENT THE OWNER DOES NOT WISH TO RETAIN. PROVIDE DOCUMENTATION INDICATING LEGAL DISPOSAL OR RECYCLING OF MATERIALS REMOVED. RECYCLE FLUORESCENT AND HID LAMPS. PROVIDE DOCUMENTATION.
- E. WIRING INDICATED TO BE REMOVED OR SERVING EQUIPMENT TO BE REMOVED SHALL BE REMOVED BACK TO THE SOURCE OR TO THE NEXT JUNCTION POINT IF THE WIRING SERVES OTHER OUTLETS THAT WILL REMAIN. CONDUIT OVER UNDISTURBED CEILINGS SHALL REMAIN AND BE LABELED ABANDONED ON EACH END WITH END POINTS INDICATED.
- F. RECONNECT EXISTING CIRCUITRY WHICH ORIGINATES OR PASSES THROUGH THE RENOVATED AREAS BUT SERVES OTHER AREAS NOT BEING RENOVATED. EXTEND THESE CIRCUITS AS MAY BE NECESSARY TO THE EXISTING PANELBOARDS.
- G. COORDINATE WORK CONCERNING EXISTING EQUIPMENT AND SERVICES IN THE BUILDING. COORDINATE REQUIRED POWER INTERRUPTIONS AND PERFORM AT TIME CONVENIENT TO OWNER. INCLUDE COSTS FOR REQUIRED PREMIUM TIME.
- H. VERIFY THE INTEGRITY AND CONDITION OF THE EXISTING BRANCH CIRCUIT WIRING THAT IS TO BE RE-USED. REPLACE WIRING FOUND TO BE NON-FUNCTIONAL.

ELECTRICAL KEYNOTES

- | | |
|---|---|
| 1 | EXISTING IT ROOM TO REMAIN. ALL ITEMS IN THIS SPACE SHALL BE EXISTING TO REMAIN OR BY OTHERS U.O.N., INCLUDING BUT NOT LIMITED TO ELECTRICAL EQUIPMENT, DEVICES, FEEDERS, CONDUIT, CONTROL WIRING, HVAC EQUIPMENT AND ASSOCIATED CONTROLS, LIGHT FIXTURES, AND LIGHTING CONTROLS. SEE TELE/DATA DRAWINGS FOR FURTHER INFORMATION. |
| 2 | DISCONNECT EXISTING POWER AND DATA FURNITURE FEED FROM FURNITURE. REMOVE POWER FEEDERS BACK TO SOURCE PANEL OR NEAREST DEVICE ON CIRCUIT TO REMAIN. LABEL EMPTY CIRCUITS AS "SPARE". REMOVE TELEPHONE AND DATA CABLING BACK TO TERMINAL BLOCK OR IDF SWITCH. COORDINATE WITH OWNER'S IT DEPARTMENT PRIOR TO DEMOLITION. |
| 3 | DISCONNECT AND REMOVE EXISTING FIRE ALARM DEVICES IN SCOPE. REMOVE CIRCUIT TO NEAREST NAC PANEL OR NEAREST DEVICE TO REMAIN. FIRE ALARM SHALL REMAIN OPERATIONAL THROUGHOUT CONSTRUCTION. COORDINATE DEMOLITION WITH OWNER. |
| 4 | DISCONNECT AND REMOVE ANY ASSOCIATED ELECTRICAL EQUIPMENT SERVING HVAC UNIT. REMOVE ALL CONDUIT AND WIRING BACK TO SOURCE PANEL. LABEL ANY CIRCUITS AS "SPARE". |
| 5 | ABANDONED PANEL ENCLOSURE. REMOVE ENCLOSURE AND DISCARD. |
| 6 | EXISTING CARD READER TO REMAIN IN PLACE. |

PHASE 2



One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia, PA 19103 U.S.A.
norr.com

SEAN P. PIC-KELL
LIC# 24GE05659200

CLIENT:
THE COLLEGE OF NEW JERSEY
2000 PENNINGTON ROAD
EWING, NJ

PROJECT TEAM
NORR
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1617 JFK Boulevard, Suite 1600
Philadelphia PA 19103
norr.com

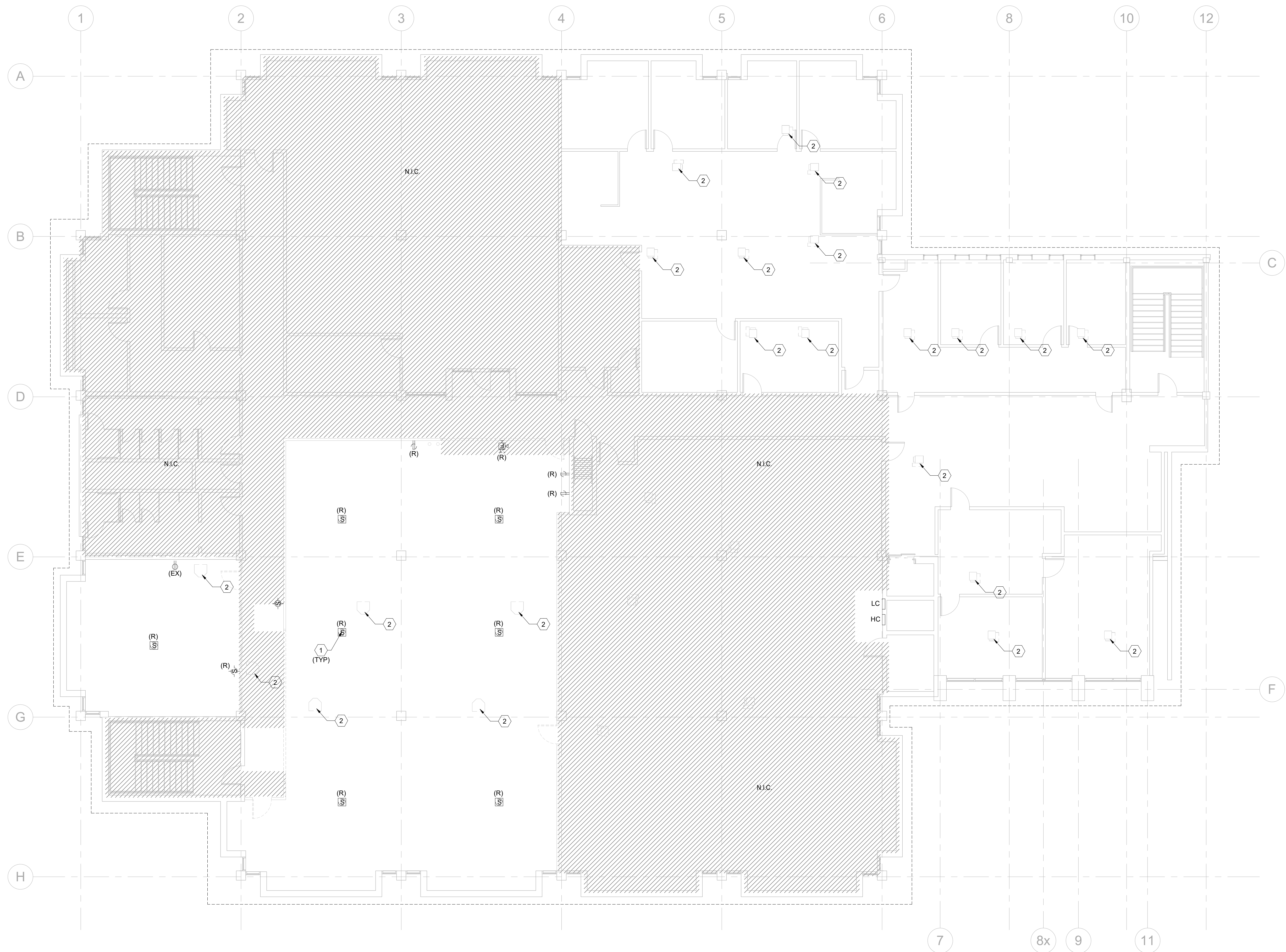
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**FIRST FLOOR
DEMOLITION
PLAN**

SHEET NUMBER:
ED101



GENERAL DEMOLITION NOTES

- A. COORDINATE ALL WORK CONCERNING EXISTING EQUIPMENT AND SERVICES TO REMAIN DE-ENERGIZE CIRCUITS AND MAKE THEM SAFE AS REQUIRED. RECONNECT CIRCUITS THAT ARE TO REMAIN AND ARE DISRUPTED DURING DEMOLITION.
- B. REMOVE EXPOSED OR ACCESSIBLE WIRING, TO EQUIPMENT OR OUTLETS TO BE REMOVED, UNLESS OTHERWISE INDICATED. LABEL AND TERMINATE WIRING TO REMAIN.
- C. WHERE EXISTING OUTLETS ARE TO REMAIN AND ARE CUT OFF BY THE REMODELING THEY SHALL RE-CONNECTED TO CIRCUITS AS REQUIRED BY JOB CONDITIONS.
- D. LEGALLY DISPOSE OF EQUIPMENT WHERE EXISTING EQUIPMENT IS INDICATED TO BE REMOVED. OFFER EQUIPMENT TO OWNER AND DISPOSE OF EQUIPMENT THE OWNER DOES NOT WISH TO RETAIN. PROVIDE DOCUMENTATION INDICATING LEGAL DISPOSAL OR RECYCLING OF MATERIALS REMOVED. RECYCLE FLUORESCENT AND HID LAMPS. PROVIDE DOCUMENTATION.
- E. WIRING INDICATED TO BE REMOVED OR SERVING EQUIPMENT TO BE REMOVED SHALL BE REMOVED BACK TO THE SOURCE OR TO THE NEXT JUNCTION POINT IF THE WIRING SERVES OTHER OUTLETS THAT WILL REMAIN. CONDUIT OVER UNDISTURBED CEILINGS SHALL REMAIN AND BE LABELED ABANDONED ON EACH END WITH END POINTS INDICATED.
- F. RECONNECT EXISTING CIRCUITRY WHICH ORIGINATES OR PASSES THROUGH THE RENOVATED AREAS BUT SERVES OTHER AREAS NOT BEING RENOVATED. EXTEND THESE CIRCUITS AS MAY BE NECESSARY TO THE EXISTING PANELBOARDS.
- G. COORDINATE WORK CONCERNING EXISTING EQUIPMENT AND SERVICES IN THE BUILDING. COORDINATE REQUIRED POWER INTERRUPTIONS AND PERFORM AT TIME CONVENIENT TO OWNER. INCLUDE COSTS FOR REQUIRED PREMIUM TIME.
- H. VERIFY THE INTEGRITY AND CONDITION OF THE EXISTING BRANCH CIRCUIT WIRING THAT IS TO BE RE-USED. REPLACE WIRING FOUND TO BE NON-FUNCTIONAL.

ELECTRICAL KEYNOTES

- 1 DISCONNECT AND REMOVE EXISTING FIRE ALARM DEVICES IN SCOPE. REMOVE CIRCUIT TO NEAREST NAC PANEL OR NEAREST DEVICE TO REMAIN. FIRE ALARM SHALL REMAIN OPERATIONAL THROUGHOUT CONSTRUCTION. COORDINATE DEMOLITION WITH OWNER.
- 2 DISCONNECT AND REMOVE ANY ASSOCIATED ELECTRICAL EQUIPMENT SERVING HVAC UNIT. REMOVE ALL CONDUIT AND WIRING BACK TO SOURCE PANEL. LABEL ANY CIRCUITS AS 'SPARE'.

NORR

One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia, PA 19103 U.S.A.
norr.com

SEAN P. PIC-KELL
LIC# 24GE0569200

CLIENT:
THE COLLEGE OF NEW JERSEY
2000 PENNINGTON ROAD
EWING, NJ

PROJECT TEAM

NORR
One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia PA 19103
norr.com

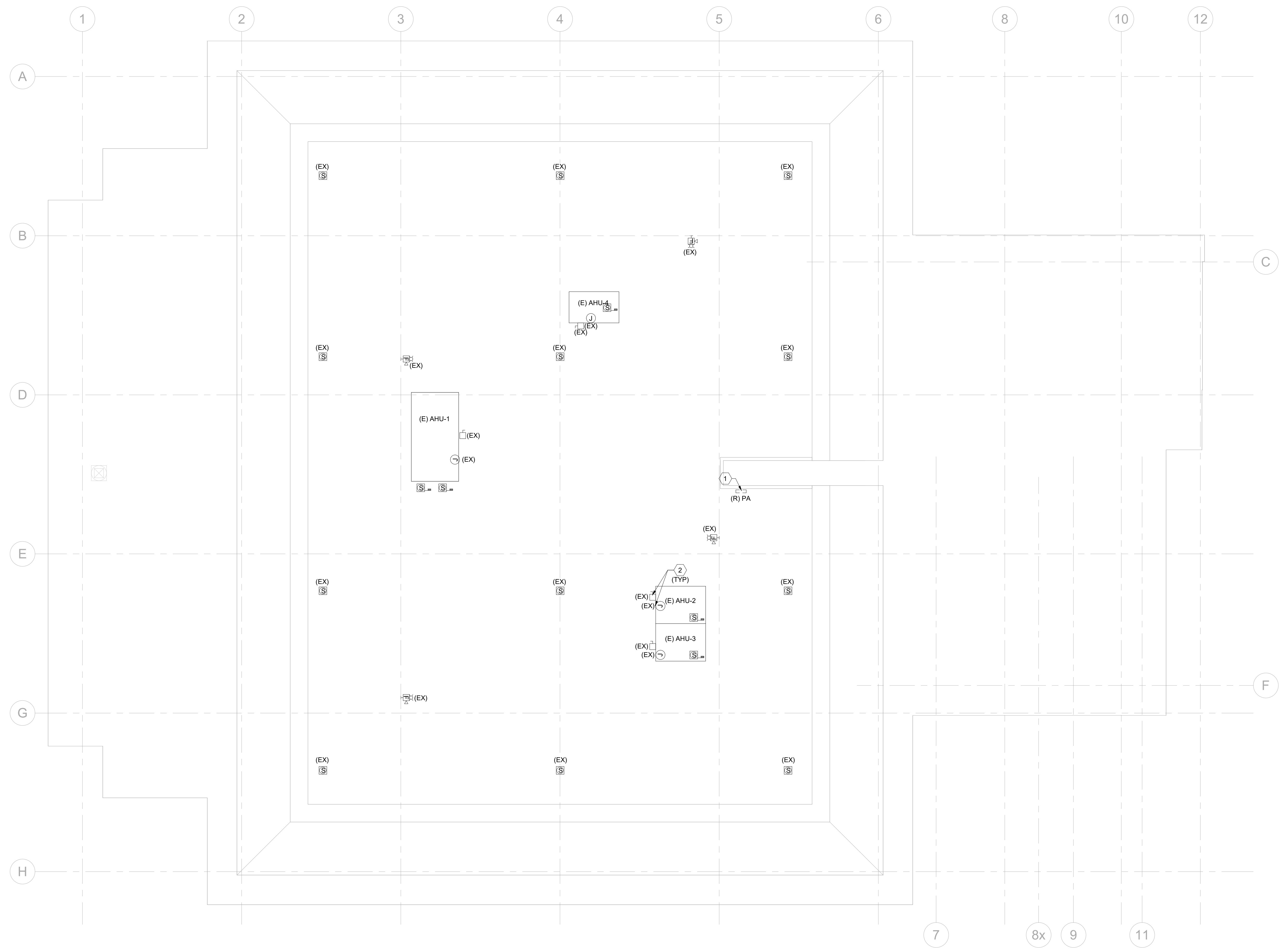
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SHEET TITLE:
**SECOND FLOOR
DEMOLITION
PLAN**

SHEET NUMBER:
ED102



1 PENTHOUSE FLOOR DEMOLITION PLAN
1/8" = 1'-0"

GENERAL DEMOLITION NOTES

- A. COORDINATE ALL WORK CONCERNING EXISTING EQUIPMENT AND SERVICES TO REMAIN DE-ENERGIZE CIRCUITS AND MAKE THEM SAFE AS REQUIRED. RECONNECT CIRCUITS THAT ARE TO REMAIN AND ARE DISRUPTED DURING DEMOLITION.
- B. REMOVE EXPOSED OR ACCESSIBLE WIRING, TO EQUIPMENT OR OUTLETS TO BE REMOVED, UNLESS OTHERWISE INDICATED. LABEL AND TERMINATE WIRING TO REMAIN.
- C. WHERE EXISTING OUTLETS ARE TO REMAIN AND ARE CUT OFF BY THE REMODELING THEY SHALL RE-CONNECTED TO CIRCUITS AS REQUIRED BY JOB CONDITIONS.
- D. LEGALLY DISPOSE OF EQUIPMENT WHERE EXISTING EQUIPMENT IS INDICATED TO BE REMOVED. OFFER EQUIPMENT TO OWNER AND DISPOSE OF EQUIPMENT THE OWNER DOES NOT WISH TO RETAIN. PROVIDE DOCUMENTATION INDICATING LEGAL DISPOSAL OR RECYCLING OF MATERIALS REMOVED. RECYCLE FLUORESCENT AND HID LAMPS. PROVIDE DOCUMENTATION.
- E. WIRING INDICATED TO BE REMOVED OR SERVING EQUIPMENT TO BE REMOVED SHALL BE REMOVED BACK TO THE SOURCE OR TO THE NEXT JUNCTION POINT IF THE WIRING SERVES OTHER OUTLETS THAT WILL REMAIN. CONDUIT OVER UNDISTURBED CEILINGS SHALL REMAIN AND BE LABELED ABANDONED ON EACH END WITH END POINTS INDICATED.
- F. RECONNECT EXISTING CIRCUITRY WHICH ORIGINATES OR PASSES THROUGH THE RENOVATED AREAS BUT SERVES OTHER AREAS NOT BEING RENOVATED. EXTEND THESE CIRCUITS AS MAY BE NECESSARY TO THE EXISTING PANELBOARDS.
- G. COORDINATE WORK CONCERNING EXISTING EQUIPMENT AND SERVICES IN THE BUILDING. COORDINATE REQUIRED POWER INTERRUPTIONS AND PERFORM AT TIME CONVENIENT TO OWNER. INCLUDE COSTS FOR REQUIRED PREMIUM TIME.
- H. VERIFY THE INTEGRITY AND CONDITION OF THE EXISTING BRANCH CIRCUIT WIRING THAT IS TO BE RE-USED. REPLACE WIRING FOUND TO BE NON-FUNCTIONAL.

ELECTRICAL KEYNOTES

- 1 EXISTING ELECTRICAL PANEL 'PA' FOR PENTHOUSE HVAC EQUIPMENT, TO BE REPLACED. DISCONNECT AND REMOVE PANEL, RETAIN EXISTING BRANCH CIRCUIT FEEDERS AND CONDUIT TO HVAC EQUIPMENT IN AREA FOR NEW WORK.
- 2 EXISTING AHU TO REMAIN. SHUT DOWN AND LOCK OUT POWER AND CONTROL CIRCUITS AS REQUIRED FOR DEMOLITION. RETAIN ALL EXISTING CIRCUITRY FOR RE-USE. ALL AHUs ARE POWERED FROM PANEL 'PA' ON THIS PLAN. VERIFY CONTROL CIRCUITING IN FIELD. COORDINATE WORK WITH OTHER TRADES PRIOR TO DEMOLITION.

NORR

One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia, PA 19103 U.S.A.
norr.com

SEAN P. PIC-KELL
LIC# 24GE05659200

CLIENT:
THE COLLEGE OF NEW JERSEY
2000 PENNINGTON ROAD
EWING, NJ

PROJECT TEAM
NORR
One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia PA 19103
norr.com

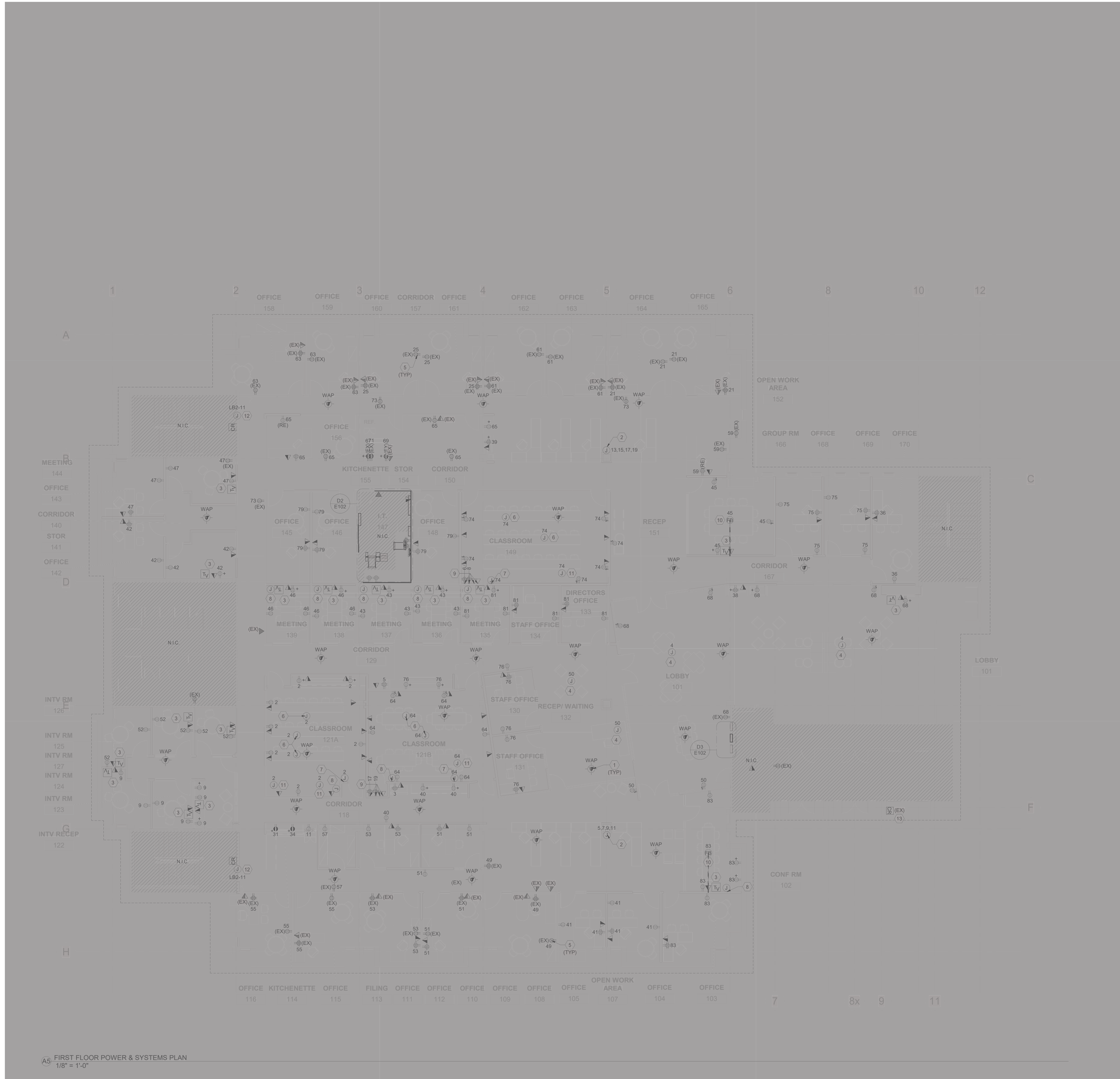
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SHEET TITLE:
**PENTHOUSE
FLOOR
DEMOLITION
PLAN**

SHEET NUMBER:
ED103



A5 FIRST FLOOR POWER & SYSTEMS PLAN
1/8" = 1'-0"

PHASE 2

GENERAL POWER NOTES

- A. FOR ELECTRICAL SYMBOLS, ABBREVIATIONS, REFER TO DRAWING E001.
- B. CONTRACTOR SHALL PROVIDE COMPLETE AND ACCURATE CIRCUIT DIRECTORIES FOR ALL NEW AND EXISTING PANELS AFTER NEW WORK IS COMPLETED.
- C. CONTRACTOR SHALL COORDINATE ALL TELE/DATA AND AUDIO/VISUAL REQUIREMENTS WITH DIVISION 27 CONTRACTOR. SEE AUDIO/VISUAL AND TELE/DATA DRAWINGS BY OTHERS FOR FURTHER INFORMATION. DEVICES SHOWN FOR COORDINATION ONLY.
- D. PROVIDE A JUNCTION BOX AND PULL STRING FROM EACH CARD READER/ELECTRIC DOOR STRIKE TO SECURITY EQUIPMENT RACK IN IDF ROOM. PROVIDE FIRE ALARM CONTACT AT SECURITY EQUIPMENT RACK FOR CARD READERS/ELECTRIC DOOR TO RELEASE UPON GENERAL ALARM OF FIRE ALARM SYSTEM.
- E. FIRE ALARM SHALL BE OPERATIONAL AND MAINTAINED DURING ALL ASPECTS OF DEMOLITION AND NEW CONSTRUCTION.
- F. MAINTAIN THE CONTINUITY OF ALL EXISTING TO REMAIN OUTSIDE THE SCOPE OF WORK AREA.
- G. ALL ELECTRICAL OUTLETS AND JUNCTION BOXES SHALL BE STAGGERED WITHIN THE WALL TO AVOID SOUND TRANSMISSION.
- H. ALL NEW FIRE ALARM DEVICES TO BE CONNECTED TO EXISTING FIRE ALARM SYSTEM. PROVIDE NEW WIRING AND CONDUIT TO ALL NEW FIRE ALARM DEVICES. NEW DEVICES SHALL MATCH EXISTING SYSTEM DEVICES. PROVIDE NEW BATTERIES, STROBE SYNC MODULES, HARDWARE, SOFTWARE, ETC AT THE FIRE ALARM CONTROL PANEL NECESSARY TO SUPPORT NEW FIRE ALARM DEVICES.
- I. EXACT DEVICE LOCATIONS AND MOUNTING HEIGHTS SHALL BE DETERMINED BY FINAL FURNITURE PLANS, PROVIDED BY OWNER. COORDINATE WITH FURNITURE PLANS PRIOR TO ROUGH-IN.
- J. UNLESS OTHERWISE NOTED, ALL DEVICES ON THIS PLAN SHALL BE CIRCUITED TO PANEL 1B.

ELECTRICAL KEYNOTES

KEYNOTE	DESCRIPTION
1	CEILING-MOUNTED WIRELESS ACCESS POINT, BY OTHERS. PROVIDE JUNCTION BOX IN CEILING AT INDICATED LOCATION. SEE AUDIO/VISUAL AND TELECOM DRAWINGS FOR FURTHER INFORMATION.
2	PROVIDE NEW RECESSED JUNCTION BOX FOR FURNITURE FEED, MOUNTED IN ACCESSIBLE LOCATION. PROVIDE (1) 3/4" OPENING FOR POWER AND (1) 2" OPENING FOR COMMUNICATION CABLING. PROVIDE UPSIZED NEUTRAL FOR MULTI-WIRE 3+1 CIRCUITS. SIZED PER CODE. PAINT BOXES, FITTINGS, AND CONDUIT TO MATCH FINISHES SPECIFIED IN ARCHITECTURAL DRAWINGS.
3	PROVIDE DUPLEX RECEPTACLE AND (2) SPARE 2"x4" JUNCTION BOXES FOR DISPLAY, MOUNTED WITHIN WALL-BOX. WALL-BOX PROVIDED AND INSTALLED BY G.C. PROVIDE RACEWAYS WITH PULLSTRING FROM EMPTY JUNCTION BOXES UP TO ABOVE ACCESSIBLE CEILING. DATA, AV DEVICES AND CABLING BY OTHERS. VERIFY FINAL MOUNTING HEIGHTS WITH AVIT DRAWINGS PRIOR TO ROUGH-IN.
4	PROVIDE POKETHRU DEVICE WITH DUPLEX AND DATA OUTLETS. POKETHRU DEVICE SHALL BE WIREMOLD EVOLUTION SERIES 8 WITH (2) DUPLEX OUTLETS AND (4) DATA PORTS. TYPICAL FOR ALL POKETHRU DEVICES IN OPEN AREAS U.N.O.
5	FOR LINE VOLTAGE DEVICES AND FIXTURES WITH DESIGNATION (EX), DEVICES SHALL RETAIN ORIGINAL CIRCUIT U.O.N. FOR EXISTING DEVICES TO BE RE-CIRCUITED. PROVIDE NEW FEEDERS AND CONDUIT AND PROVIDE NEW PANEL-CIRCUIT LABEL ON RECEPTACLE COVER PLATE.
6	PROVIDE 4"x4" RECESSED, CEILING-MOUNTED JUNCTION BOX FOR AV EQUIPMENT. PROVIDE (1) DUPLEX RECEPTACLE, DATA DEVICES AND DATA CABLING BY OTHERS.
7	PROVIDE 4"x4" RECESSED JUNCTION BOX FOR WALL-MOUNTED CAMERA. MOUNTED AT 8'-8" AFF. PROVIDE (1) DUPLEX RECEPTACLE, DATA DEVICES AND DATA CABLING BY OTHERS. PROVIDE ADDITIONAL RACEWAY WITH PULLSTRING FROM DEVICE UP TO ABOVE ACCESSIBLE CEILING. DATA CABLING BY OTHERS.
8	PROVIDE 2"x4" RECESSED, WALL-MOUNTED JUNCTION BOX FOR AV CONTROL PANEL. PROVIDE ADDITIONAL RACEWAY WITH PULLSTRING FROM DEVICE UP TO ABOVE ACCESSIBLE CEILING. DATA CABLING BY OTHERS. VERIFY FINAL MOUNTING HEIGHTS WITH AVIT DRAWINGS PRIOR TO ROUGH-IN.
9	PROVIDE (2) DOUBLE DUPLEX RECEPTACLES FOR AV EQUIPMENT RACK. (6) DATA DEVICES AND DATA CABLING BY OTHERS. CONFIRM MOUNTING HEIGHT PRIOR TO ROUGH-IN.
10	PROVIDE CONNECTRAC UNDER FLOORING. WIREMOLD EXPRESS CT-XP-xx-25.1c OR APPROVED EQUAL, SIZE AS REQUIRED. PROVIDE DOUBLE DUPLEX RECEPTACLES, DATA PORTS, AND AV PORTS AS REQUIRED IN COMPATIBLE FLOOR BOX STYLES. ROUTE CONNECTRAC UNDER CARPET TO DISPLAY ON WALL. COORDINATE WITH OTHER TRADES PRIOR TO CONSTRUCTION.
11	PROVIDE 4"x4" RECESSED, CEILING-MOUNTED JUNCTION BOX FOR PROJECTOR SCREEN. PROVIDE 120V POWER TO JUNCTION BOX, DATA DEVICES AND DATA CABLING BY OTHERS. CONFIRM CONNECTION TYPE WITH MANUFACTURER DOCUMENTATION.
12	PROVIDE 120V CONNECTION TO DOOR SECURITY HARDWARE. PROVIDE 1" C WITH PULLSTRING FROM CARD READER TO DOOR HARDWARE CONNECTION. REFER TO MANUFACTURER DETAILS.
13	EXISTING CARD READER TO REMAIN IN PLACE.

NORR

One Penn Center
1817 JFK Boulevard, Suite 1600
Philadelphia, PA 19103 U.S.A.
norr.com

SEAN P. PIC-KELL
LIC# 24GE05659200

CLIENT:
THE COLLEGE OF NEW JERSEY
2000 PENNINGTON ROAD
EWING, NJ

PROJECT TEAM
NORR
One Penn Center
1817 JFK Boulevard, Suite 1600
Philadelphia PA 19103
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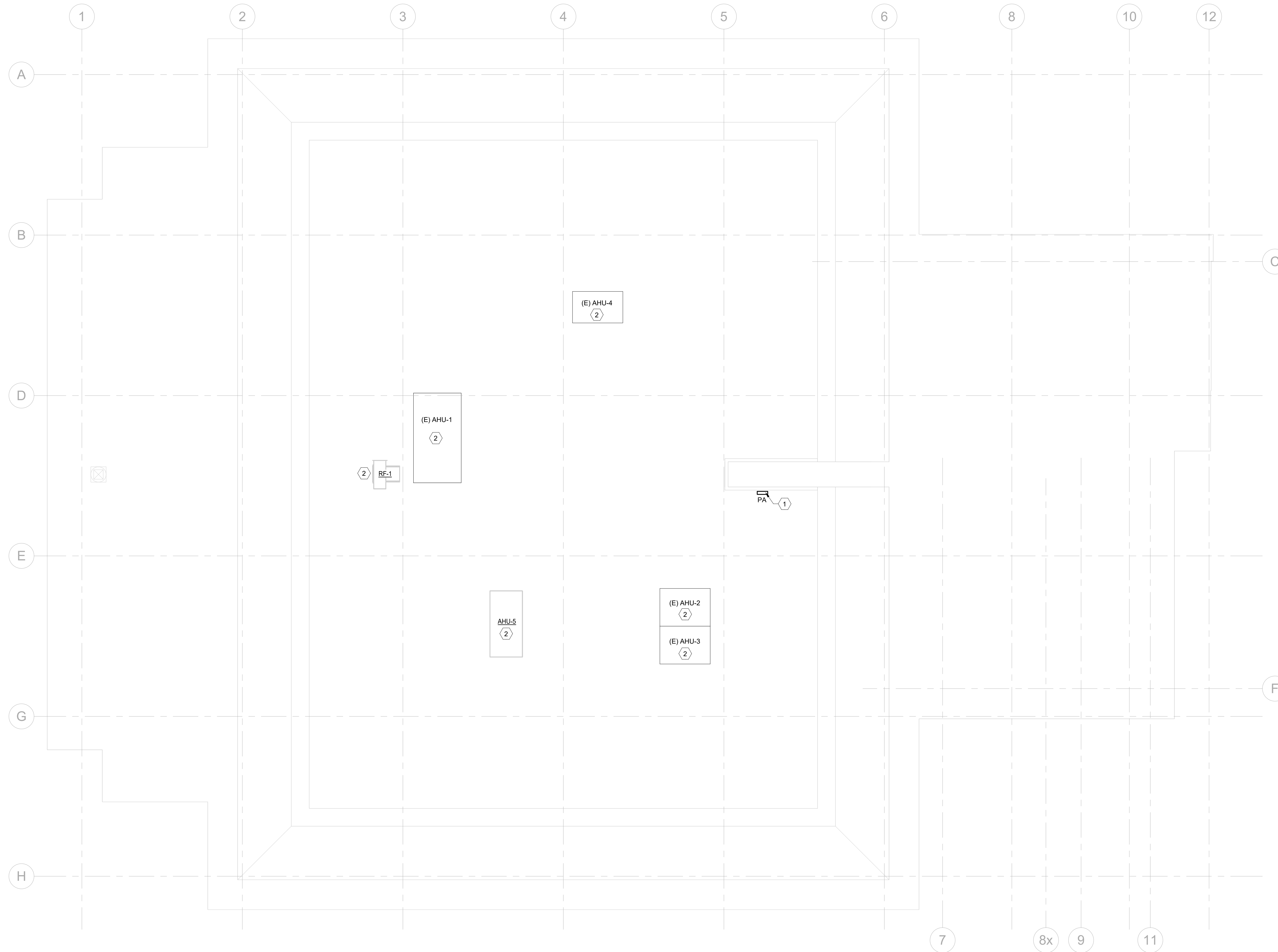
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SHEET TITLE:
**FIRST FLOOR
POWER &
SYSTEMS PLAN**

SHEET NUMBER:
E101



1 PENTHOUSE FLOOR POWER & SYSTEMS PLAN
1/8" = 1'-0"

- GENERAL POWER NOTES**
- A. FOR ELECTRICAL SYMBOLS, ABBREVIATIONS, REFER TO DRAWING E001.
 - B. CONTRACTOR SHALL PROVIDE COMPLETE AND ACCURATE CIRCUIT DIRECTORIES FOR ALL NEW AND EXISTING PANELS AFTER NEW WORK IS COMPLETED.
 - C. CONTRACTOR SHALL COORDINATE ALL TELE/DATA AND AUDIO/VISUAL REQUIREMENTS WITH DIVISION 27 CONTRACTOR. SEE AUDIO/VISUAL AND TELE/DATA DRAWINGS BY OTHERS FOR FURTHER INFORMATION. DEVICES SHOWN FOR COORDINATION ONLY.
 - D. PROVIDE A JUNCTION BOX AND PULL STRING FROM EACH CARD READER/ELECTRIC DOOR STRIKE TO SECURITY EQUIPMENT RACK IN IDF ROOM. PROVIDE FIRE ALARM CONTACT AT SECURITY EQUIPMENT RACK FOR CARD READER/ELECTRIC DOOR TO RELEASE UPON GENERAL ALARM OF FIRE ALARM SYSTEM.
 - E. FIRE ALARM SHALL BE OPERATIONAL AND MAINTAINED DURING ALL ASPECTS OF DEMOLITION AND NEW CONSTRUCTION.
 - F. MAINTAIN THE CONTINUITY OF ALL EXISTING TO REMAIN OUTSIDE THE SCOPE OF WORK AREA.
 - G. ALL ELECTRICAL OUTLETS AND JUNCTION BOXES SHALL BE STAGGERED WITHIN THE WALL TO AVOID SOUND TRANSMISSION.
 - H. ALL NEW FIRE ALARM DEVICES TO BE CONNECTED TO EXISTING FIRE ALARM SYSTEM. PROVIDE NEW WIRING AND CONDUIT TO ALL NEW FIRE ALARM DEVICES. NEW DEVICES SHALL MATCH EXISTING SYSTEM DEVICES. PROVIDE NEW BATTERIES, STROBE SYNC MODULES, HARDWARE, SOFTWARE, ETC AT THE FIRE ALARM CONTROL PANEL NECESSARY TO SUPPORT NEW FIRE ALARM DEVICES.
 - I. EXACT DEVICE LOCATIONS AND MOUNTING HEIGHTS SHALL BE DETERMINED BY FINAL FURNITURE PLANS, PROVIDED BY OWNER. COORDINATE WITH FURNITURE PLANS PRIOR TO ROUGH-IN.

ELECTRICAL KEYNOTES	
1	PROVIDE NEW SURFACE-MOUNTED PANEL, SQUARE D OR APPROVED EQUAL. SEE ONE-LINE DIAGRAMS AND PANEL SCHEDULES FOR FURTHER INFORMATION.
2	SEE E30x DRAWINGS FOR INFORMATION REGARDING MECHANICAL SCOPE.

NORR

One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia, PA 19103 U.S.A.
norr.com

SEAN P. PIC-KELL
LIC# 24GE05659200

CLIENT:
THE COLLEGE OF NEW JERSEY
2000 PENNINGTON ROAD
EWING, NJ

PROJECT TEAM
NORR
One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia PA 19103
norr.com

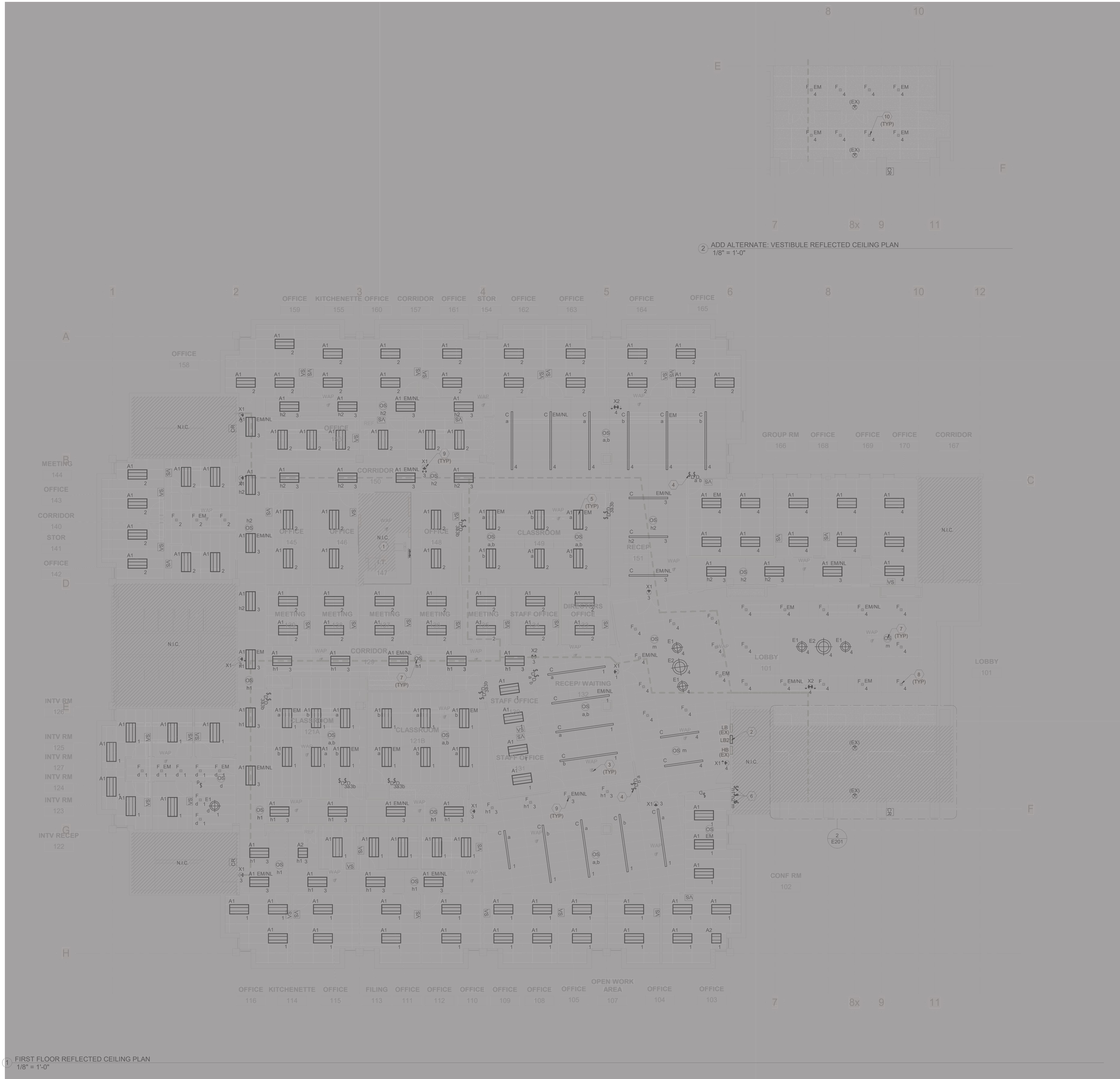
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SHEET TITLE:
**PENTHOUSE
FLOOR POWER
& SYSTEMS
PLAN**

SHEET NUMBER:
E103



1 FIRST FLOOR REFLECTED CEILING PLAN
1/8" = 1'-0"

2 ADD ALTERNATE: VESTIBULE REFLECTED CEILING PLAN
1/8" = 1'-0"

GENERAL LIGHTING NOTES

- A. FOR ELECTRICAL SYMBOLS, ABBREVIATIONS, REFER TO DRAWING E001.
- B. FOR LIGHTING FIXTURE DESCRIPTIONS, REFER TO LIGHTING FIXTURE SCHEDULE ON DRAWING E601.
- C. FOR ACTUAL LOCATION OF CEILING MOUNTED LIGHTING FIXTURES, REFER TO ARCHITECTURAL REFLECTED CEILING DRAWING(S); FOR ACTUAL LOCATION OF WALL MOUNTED LIGHTING FIXTURES AND TASK LIGHTING, REFER TO ARCHITECTURAL ELEVATIONS AND DETAILS.
- D. UNLESS OTHERWISE INDICATED CONNECT ALL NORMAL POWER LIGHTING FIXTURES ON THIS DRAWING TO PANEL 'HB'.
- E. CONNECT EXIT SIGNS, EMERGENCY BATTERY UNITS AND EMERGENCY BATTERY BALLAST UNITS TO THE UNSWITCHED SIDE OF LOCAL EMERGENCY LIGHTING CIRCUIT OR CIRCUIT INDICATED, TO MONITOR AC CIRCUIT AND FOR CONTINUOUS BATTERY CHARGING.
- F. ALL LIGHTING FIXTURES WITHIN A SPACE SHALL BE CONTROLLED BY INDICATED SWITCH AND/OR SENSOR WITHIN THAT SPACE.
- G. THE TOTAL CONNECTED LOAD SHALL NOT EXCEED 1600 WATTS FOR A 20A, 120V CIRCUIT OR 3600W FOR A 20A, 277V CIRCUIT.
- H. ALL LUMINAIRES, LIGHTING CONTROL DEVICES, POWER CIRCUITS AND CONTROL WIRING SHOWN ON PLANS SHALL BE NEW AND BY DIVISION 26 CONTRACTOR, UON.

ELECTRICAL KEYNOTES

- 1 EXISTING IT ROOM TO REMAIN. ALL EXISTING LIGHTING FIXTURES AND CONTROLS TO REMAIN WITHIN THIS SPACE U.O.N.
- 2 PROVIDE NEW SUBPANEL IN EXISTING LOCATION. SEE ONE-LINE DIAGRAM AND PANEL SCHEDULES FOR FURTHER INFORMATION.
- 3 CEILING-MOUNTED WIRELESS ACCESS POINT, BY OTHERS. PROVIDE JUNCTION BOX IN CEILING AT INDICATED LOCATION. SEE AUDIO/VISUAL AND TELECOM DRAWINGS FOR FURTHER INFORMATION.
- 4 PROVIDE OVERRIDE CONTROLS FOR OPEN OFFICE LIGHTING. OVERRIDE SWITCHES SHALL BE WIRED TO HOT SIDE OF LIGHTING CIRCUITS AHEAD OF OCCUPANCY SENSORS. COORDINATE FINAL LOCATION OF OVERRIDE SWITCHES IN FIELD PRIOR TO ROUGH-IN.
- 5 FOR ALL FIXTURES LABELED 'EM', PROVIDE EMERGENCY BATTERY BACKUP IN FIXTURE CAPABLE OF 1400 LUMEN OUTPUT FOR 90 MINUTES. SEE LIGHTING FIXTURE SCHEDULE AND MANUFACTURER SPECIFICATIONS FOR APPROPRIATE MODEL OPTION.
- 6 PROVIDE OVERRIDE CONTROLS WITH PILOT LIGHT IN ELECTRICAL ROOM FOR CORRIDORS AND LOBBY. LIGHTING SWITCHES SHALL BE GANGED TOGETHER AT INDICATED LOCATION. OVERRIDE SWITCHES SHALL BE WIRED TO HOT SIDE OF LIGHTING CIRCUITS AHEAD OF OCCUPANCY SENSORS. COORDINATE FINAL LOCATION OF OVERRIDE SWITCHES IN FIELD PRIOR TO ROUGH-IN.
- 7 OCCUPANCY SENSORS IN CORRIDORS AND LOBBY SHALL REDUCE LIGHTING LEVELS TO 40% OF FULL FIXTURE OUTPUT DURING NON-OCCUPANCY.
- 8 ALL LIGHTING FIXTURES IN LOBBY AREA SHALL BE CONTROLLED BY SWITCH 'm'.
- 9 FOR ALL EXIT SIGNS AND FIXTURES LABELED 'NL', FIXTURES SHALL BE ON 247 FOR SECURITY AND WIRED AHEAD OF ALL LOCAL SWITCHING.
- 10 ADD ALTERNATE. PROVIDE NEW VESTIBULE LIGHTING. COORDINATE SCOPE WITH CLIENT AND ARCHITECTURAL DRAWINGS PRIOR TO CONSTRUCTION.

NORR

One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia, PA 19103 U.S.A.
norr.com

SEAN P. PIC-KELL
LIC# 24GE05659200

CLIENT:
THE COLLEGE OF NEW JERSEY
2000 PENNINGTON ROAD
EWING, NJ

PROJECT TEAM
NORR
One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia PA 19103
norr.com

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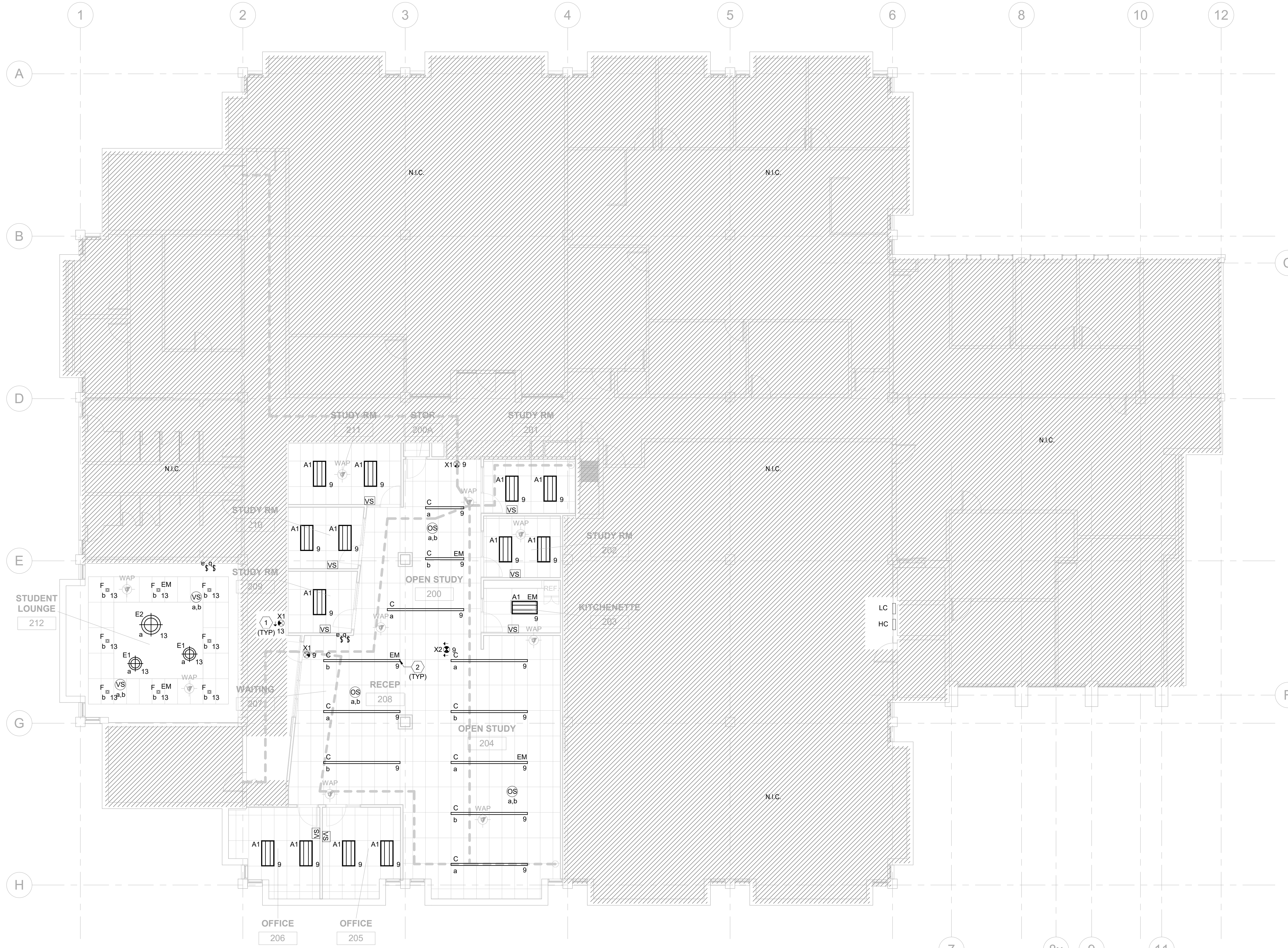
REV.	DATE	DESCRIPTION
1	2023-01-09	ISSUED FOR DEVELOPMENT
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SHEET TITLE:
**FIRST FLOOR
LIGHTING PLAN**

SHEET NUMBER:
E201

PHASE 2



1 SECOND FLOOR REFLECTED CEILING PLAN
1/8" = 1'-0"

GENERAL LIGHTING NOTES

- A. FOR ELECTRICAL SYMBOLS, ABBREVIATIONS, REFER TO DRAWING E001.
- B. FOR LIGHTING FIXTURE DESCRIPTIONS, REFER TO LIGHTING FIXTURE SCHEDULE ON DRAWING E601.
- C. FOR ACTUAL LOCATION OF CEILING MOUNTED LIGHTING FIXTURES, REFER TO ARCHITECTURAL REFLECTED CEILING DRAWING(S); FOR ACTUAL LOCATION OF WALL MOUNTED LIGHTING FIXTURES AND TASK LIGHTING, REFER TO ARCHITECTURAL ELEVATIONS AND DETAILS.
- D. UNLESS OTHERWISE INDICATED CONNECT ALL NORMAL POWER LIGHTING FIXTURES ON THIS DRAWING TO PANEL 'HC'.
- E. CONNECT EXIT SIGNS, EMERGENCY BATTERY UNITS AND EMERGENCY BATTERY BALLAST UNITS TO THE UNSWITCHED SIDE OF LOCAL EMERGENCY LIGHTING CIRCUIT OR CIRCUIT INDICATED. TO MONITOR AC CIRCUIT AND FOR CONTINUOUS BATTERY CHARGING.
- F. ALL LIGHTING FIXTURES WITHIN A SPACE SHALL BE CONTROLLED BY INDICATED SWITCH AND/OR SENSOR WITHIN THAT SPACE.
- G. THE TOTAL CONNECTED LOAD SHALL NOT EXCEED 1600 WATTS FOR A 20A, 120V CIRCUIT OR 3600W FOR A 20A, 277V CIRCUIT.
- H. ALL LUMINAIRES, LIGHTING CONTROL DEVICES, POWER CIRCUITS AND CONTROL WIRING SHOWN ON PLANS SHALL BE NEW AND BY DIVISION 26 CONTRACTOR, UON.

ELECTRICAL KEYNOTES

- 1 FOR ALL EXIT SIGNS AND FIXTURES LABELED 'NL', FIXTURES SHALL BE ON 24/7 FOR SECURITY AND WIRED AHEAD OF ALL LOCAL SWITCHING CONTROLS.
- 2 FOR ALL FIXTURES LABELED 'EM', PROVIDE EMERGENCY BATTERY BACKUP IN FIXTURE CAPABLE OF 1400 LUMEN OUTPUT FOR 90 MINUTES. SEE LIGHTING FIXTURE SCHEDULE AND MANUFACTURER SPECIFICATIONS FOR APPROPRIATE MODEL OPTION.

NORR

One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia, PA 19103 U.S.A.
norr.com

SEAN P. PIC-KELL
LIC# 24GE0569200

CLIENT:
THE COLLEGE OF NEW JERSEY
2000 PENNINGTON ROAD
EWING, NJ

PROJECT TEAM
NORR
One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia, PA 19103
norr.com

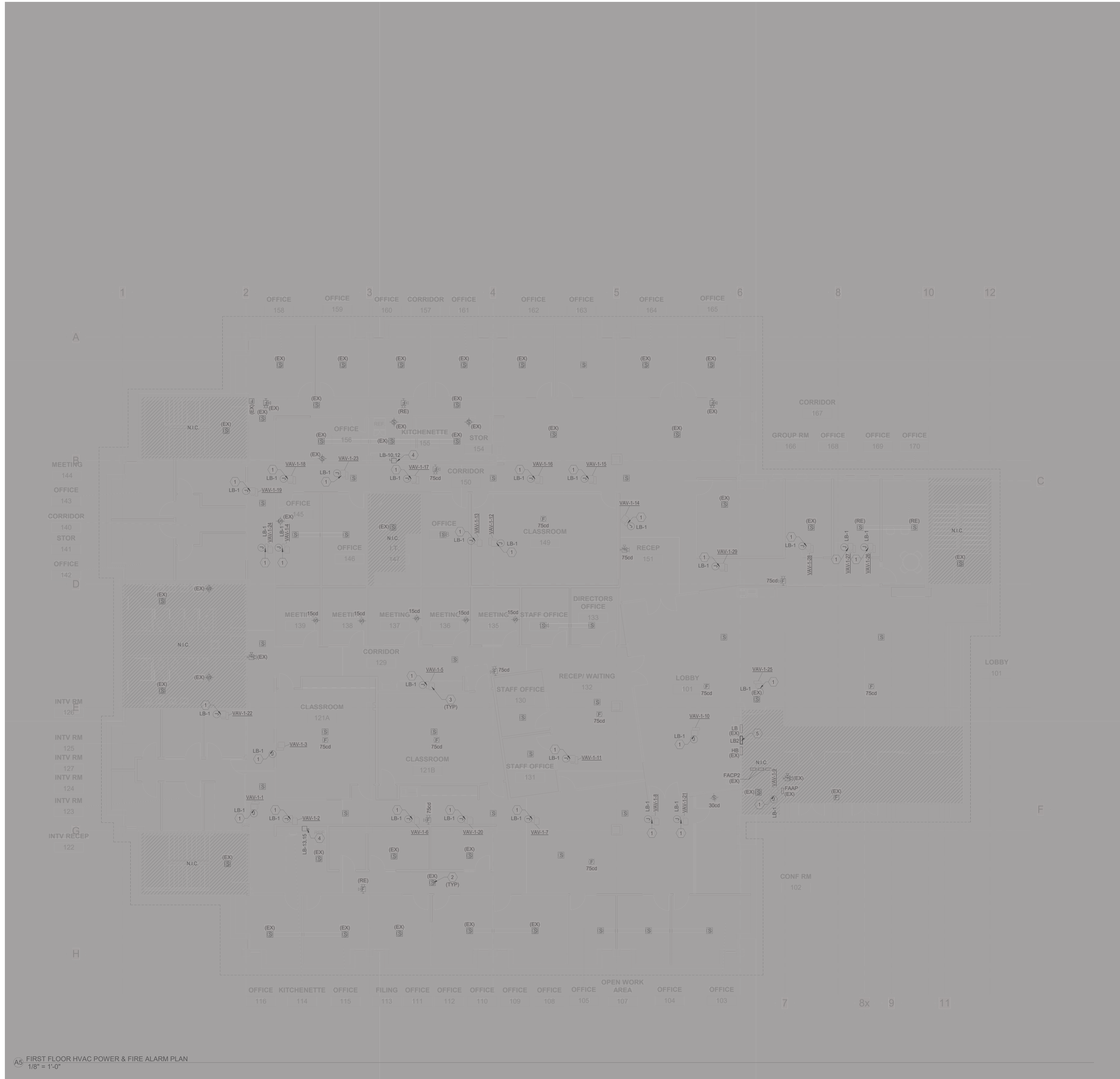
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**SECOND FLOOR
LIGHTING PLAN**

SHEET NUMBER:
E202



A5 FIRST FLOOR HVAC POWER & FIRE ALARM PLAN
1/8" = 1'-0"

GENERAL POWER NOTES

- A. FOR ELECTRICAL SYMBOLS, ABBREVIATIONS, REFER TO DRAWING E001.
- B. CONTRACTOR SHALL PROVIDE COMPLETE AND ACCURATE CIRCUIT DIRECTORIES FOR ALL NEW AND EXISTING PANELS AFTER NEW WORK IS COMPLETED.
- C. CONTRACTOR SHALL COORDINATE ALL TELE/DATA AND AUDIO/VISUAL REQUIREMENTS WITH DIVISION 27 CONTRACTOR. SEE AUDIO/VISUAL AND TELE/DATA DRAWINGS BY OTHERS FOR FURTHER INFORMATION. DEVICES SHOWN FOR COORDINATION ONLY.
- D. PROVIDE A JUNCTION BOX AND PULL STRING FROM EACH CARD READER/ELECTRIC DOOR STRIKE TO SECURITY EQUIPMENT RACK IN IDF ROOM. PROVIDE FIRE ALARM CONTACT AT SECURITY EQUIPMENT RACK FOR CARD READERS/ELECTRIC DOOR TO RELEASE UPON GENERAL ALARM OF FIRE ALARM SYSTEM.
- E. FIRE ALARM SHALL BE OPERATIONAL AND MAINTAINED DURING ALL ASPECTS OF DEMOLITION AND NEW CONSTRUCTION.
- F. MAINTAIN THE CONTINUITY OF ALL EXISTING TO REMAIN OUTSIDE THE SCOPE OF WORK AREA.
- G. ALL ELECTRICAL OUTLETS AND JUNCTION BOXES SHALL BE STAGGERED WITHIN THE WALL TO AVOID SOUND TRANSMISSION.
- H. ALL NEW FIRE ALARM DEVICES TO BE CONNECTED TO EXISTING FIRE ALARM SYSTEM. PROVIDE NEW WIRING AND CONDUIT TO ALL NEW FIRE ALARM DEVICES. NEW DEVICES SHALL MATCH EXISTING SYSTEM DEVICES. PROVIDE NEW BATTERIES, STROBE SYNC MODULES, HARDWARE, SOFTWARE, ETC AT THE FIRE ALARM CONTROL PANEL NECESSARY TO SUPPORT NEW FIRE ALARM DEVICES.
- I. EXACT DEVICE LOCATIONS AND MOUNTING HEIGHTS SHALL BE DETERMINED BY FINAL FURNITURE PLANS, PROVIDED BY OWNER. COORDINATE WITH FURNITURE PLANS PRIOR TO ROUGH-IN.

ELECTRICAL KEYNOTES

1	PROVIDE 120V CIRCUIT FOR NEW VAV BOX CONTROL. CONNECT TO 24VDC TRANSFORMER AT VAV BOX. CONTROLS AND LOW VOLTAGE CONTROL WIRING BY OTHERS. PROVIDE ALL MONITORING MODULES AND DUCT DETECTORS REQUIRED FOR FIRE ALARM SHUTDOWN AS REQUIRED BY NFPA 72. COORDINATE WITH DIVISION 23 CONTRACTOR.
2	CONTRACTOR SHALL MAINTAIN FIRE ALARM AND ALL RELATED DEVICES IN WORKING ORDER DURING CONSTRUCTION. CONTRACTOR SHALL ADDRESS ANY TROUBLES OR ALARMS INITIATED DURING CONSTRUCTION, COORDINATE WITH FACILITIES FOR SHUTDOWN OF SYSTEM COMPONENTS WHERE REQUIRED.
3	ALL NEW VAV BOXES ARE CONTROLLED BY THE EXISTING MAIN BUILDING AUTOMATION SYSTEM. COORDINATE POWER AND CONTROL CONNECTION REQUIREMENTS WITH OWNER'S BUILDING ENGINEER AND MECHANICAL CONTRACTOR.
4	PROVIDE TOGGLE DISCONNECT SWITCH AND ALL REQUIRED CONTROL CIRCUITRY FOR NEW ELECTRIC WATER HEATER. MOUNTED BELOW COUNTER WITHIN MILLWORK. INSTALL DISCONNECT SWITCH IN ACCESSIBLE LOCATION. COORDINATE WITH DIVISION 22 CONTRACTOR.
5	PROVIDE NEW SUBPANEL IN EXISTING LOCATION. SEE ONE-LINE DIAGRAM AND PANEL SCHEDULES FOR FURTHER INFORMATION.



One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia, PA 19103 U.S.A.
norr.com

SEAN P. PIC-KELL
LIC# 24GE05659200

CLIENT:
THE COLLEGE OF NEW JERSEY
2000 PENNINGTON ROAD
EWING, NJ

PROJECT TEAM
NORR
One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia PA 19103
norr.com

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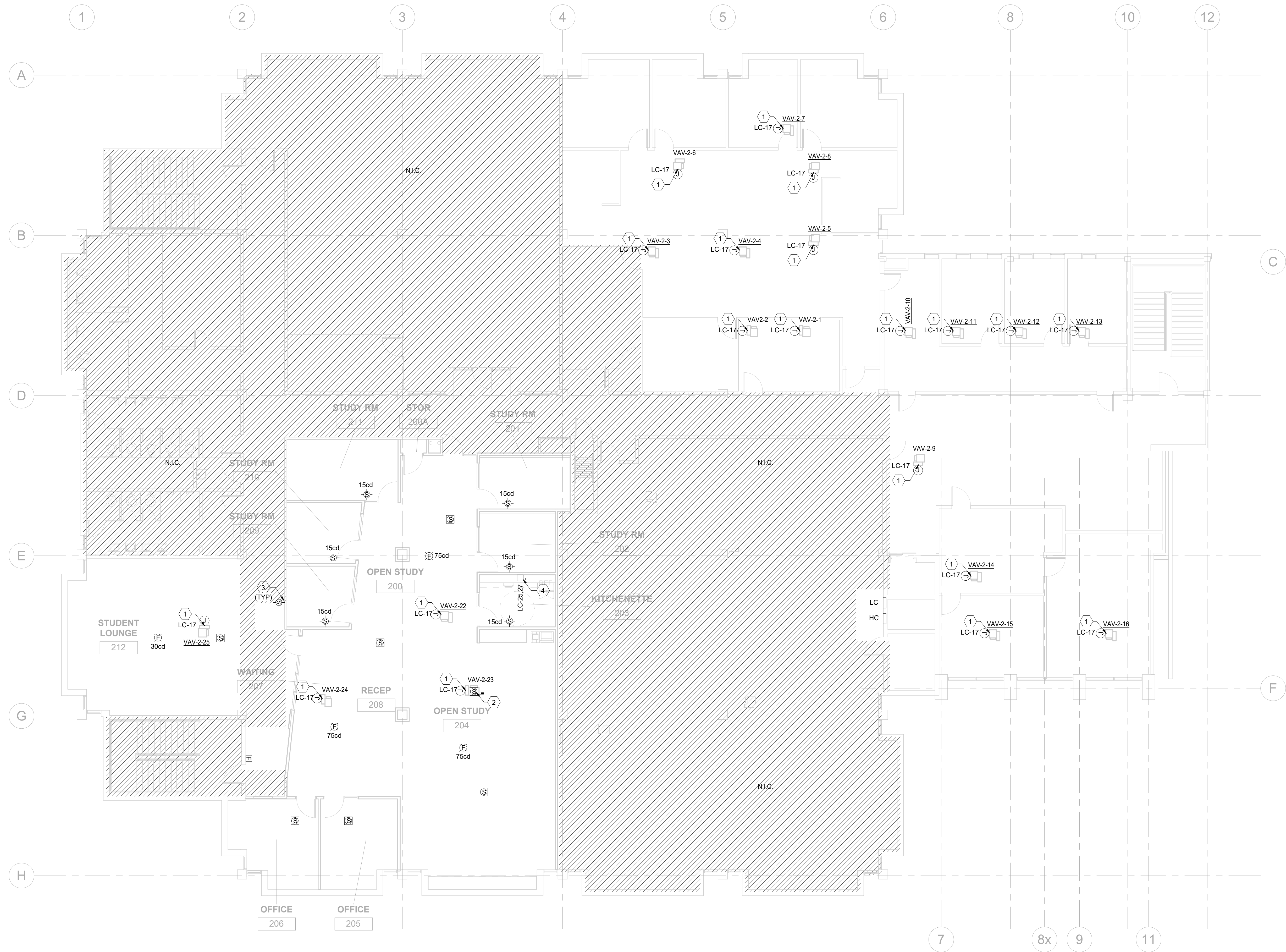
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SHEET TITLE
**FIRST FLOOR
HVAC POWER &
FIRE ALARM
PLAN**

SHEET NUMBER
E301

PHASE 2



AS SECOND FLOOR HVAC POWER & FIRE ALARM PLAN
1/8" = 1'-0"

GENERAL POWER NOTES

- A. FOR ELECTRICAL SYMBOLS, ABBREVIATIONS, REFER TO DRAWING E001.
- B. CONTRACTOR SHALL PROVIDE COMPLETE AND ACCURATE CIRCUIT DIRECTORIES FOR ALL NEW AND EXISTING PANELS AFTER NEW WORK IS COMPLETED.
- C. CONTRACTOR SHALL COORDINATE ALL TELE/DATA AND AUDIO/VISUAL REQUIREMENTS WITH DIVISION 27 CONTRACTOR. SEE AUDIO/VISUAL AND TELE/DATA DRAWINGS BY OTHERS FOR FURTHER INFORMATION. DEVICES SHOWN FOR COORDINATION ONLY.
- D. PROVIDE A JUNCTION BOX AND PULL STRING FROM EACH CARD READER/ELECTRIC DOOR STRIKE TO SECURITY EQUIPMENT RACK IN IDF ROOM. PROVIDE FIRE ALARM CONTACT AT SECURITY EQUIPMENT RACK FOR CARD READER/ELECTRIC DOOR TO RELEASE UPON GENERAL ALARM OF FIRE ALARM SYSTEM.
- E. FIRE ALARM SHALL BE OPERATIONAL AND MAINTAINED DURING ALL ASPECTS OF DEMOLITION AND NEW CONSTRUCTION.
- F. MAINTAIN THE CONTINUITY OF ALL EXISTING TO REMAIN OUTSIDE THE SCOPE OF WORK AREA.
- G. ALL ELECTRICAL OUTLETS AND JUNCTION BOXES SHALL BE STAGGERED WITHIN THE WALL TO AVOID SOUND TRANSMISSION.
- H. ALL NEW FIRE ALARM DEVICES TO BE CONNECTED TO EXISTING FIRE ALARM SYSTEM. PROVIDE NEW WIRING AND CONDUIT TO ALL NEW FIRE ALARM DEVICES. NEW DEVICES SHALL MATCH EXISTING SYSTEM DEVICES. PROVIDE NEW BATTERIES, STROBE SYNC MODULES, HARDWARE, SOFTWARE, ETC AT THE FIRE ALARM CONTROL PANEL NECESSARY TO SUPPORT NEW FIRE ALARM DEVICES.
- I. EXACT DEVICE LOCATIONS AND MOUNTING HEIGHTS SHALL BE DETERMINED BY FINAL FURNITURE PLANS, PROVIDED BY OWNER. COORDINATE WITH FURNITURE PLANS PRIOR TO ROUGH-IN.

ELECTRICAL KEYNOTES

- | | |
|---|--|
| 1 | PROVIDE 120V CIRCUIT FOR NEW VAV BOX CONTROL. CONNECT TO 24VDC TRANSFORMER AT VAV BOX. CONTROLS AND LOW VOLTAGE CONTROL WIRING BY OTHERS. PROVIDE ALL MONITORING MODULES AND DUCT DETECTORS REQUIRED FOR FIRE ALARM SHUTDOWN AS REQUIRED BY NFPA 72. COORDINATE WITH DIVISION 23 CONTRACTOR. |
| 2 | PROVIDE DUCT-MOUNTED SMOKE DETECTOR FOR NEW HVAC EQUIPMENT. PROVIDE ALL MONITORING MODULES AND DUCT DETECTORS REQUIRED FOR FIRE ALARM SHUTDOWN. COORDINATE WORK WITH DIVISION 23 AND DIVISION 28 CONTRACTORS. |
| 3 | CONTRACTOR SHALL MAINTAIN FIRE ALARM AND ALL RELATED DEVICES IN WORKING ORDER DURING CONSTRUCTION. CONTRACTOR SHALL ADDRESS ANY TROUBLES OR ALARMS INITIATED DURING CONSTRUCTION. COORDINATE WITH FACILITIES FOR SHUTDOWN OF SYSTEM COMPONENTS WHERE REQUIRED. |
| 4 | PROVIDE TOGGLE DISCONNECT SWITCH AND ALL REQUIRED CONTROL CIRCUITRY FOR NEW ELECTRIC WATER HEATER, MOUNTED BELOW COUNTER WITHIN MILLWORK. INSTALL DISCONNECT SWITCH IN ACCESSIBLE LOCATION. COORDINATE WITH DIVISION 22 CONTRACTOR. |

NORR

One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia, PA 19103 U.S.A.
norr.com

SEAN P. PIC-KELL
LIC# 24GE0569200

CLIENT:
THE COLLEGE OF NEW JERSEY
2000 PENNINGTON ROAD
EWING, NJ

PROJECT TEAM

NORR
One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia PA 19103
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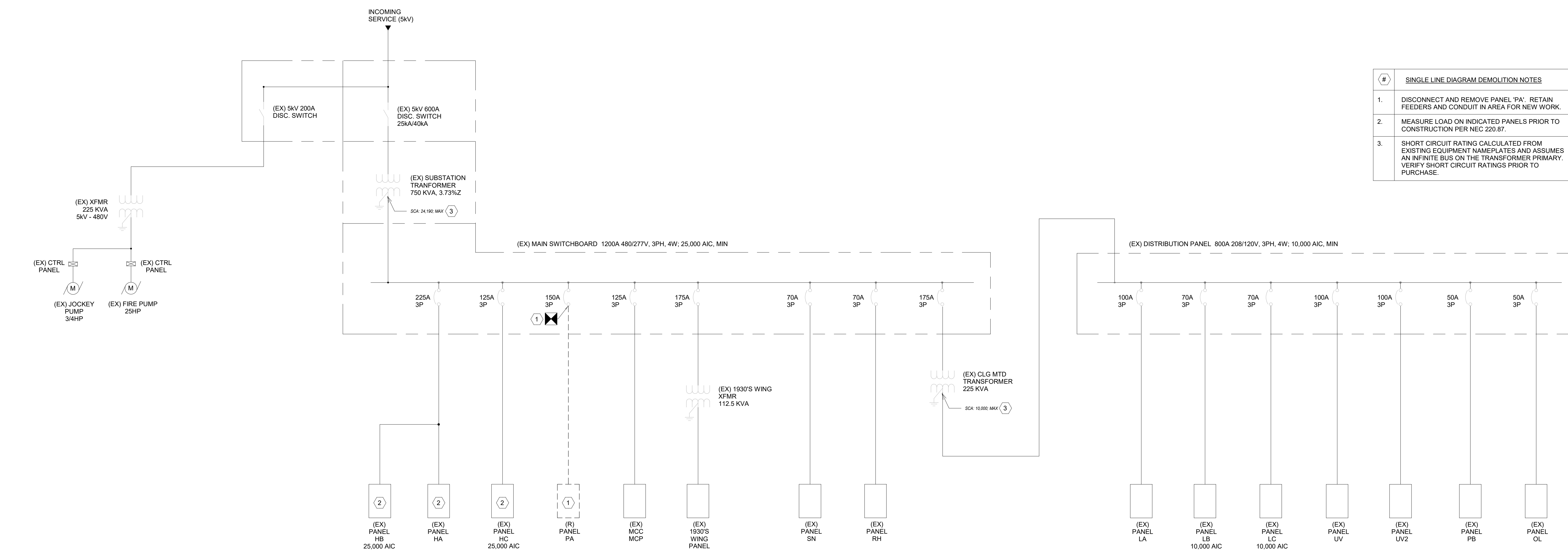
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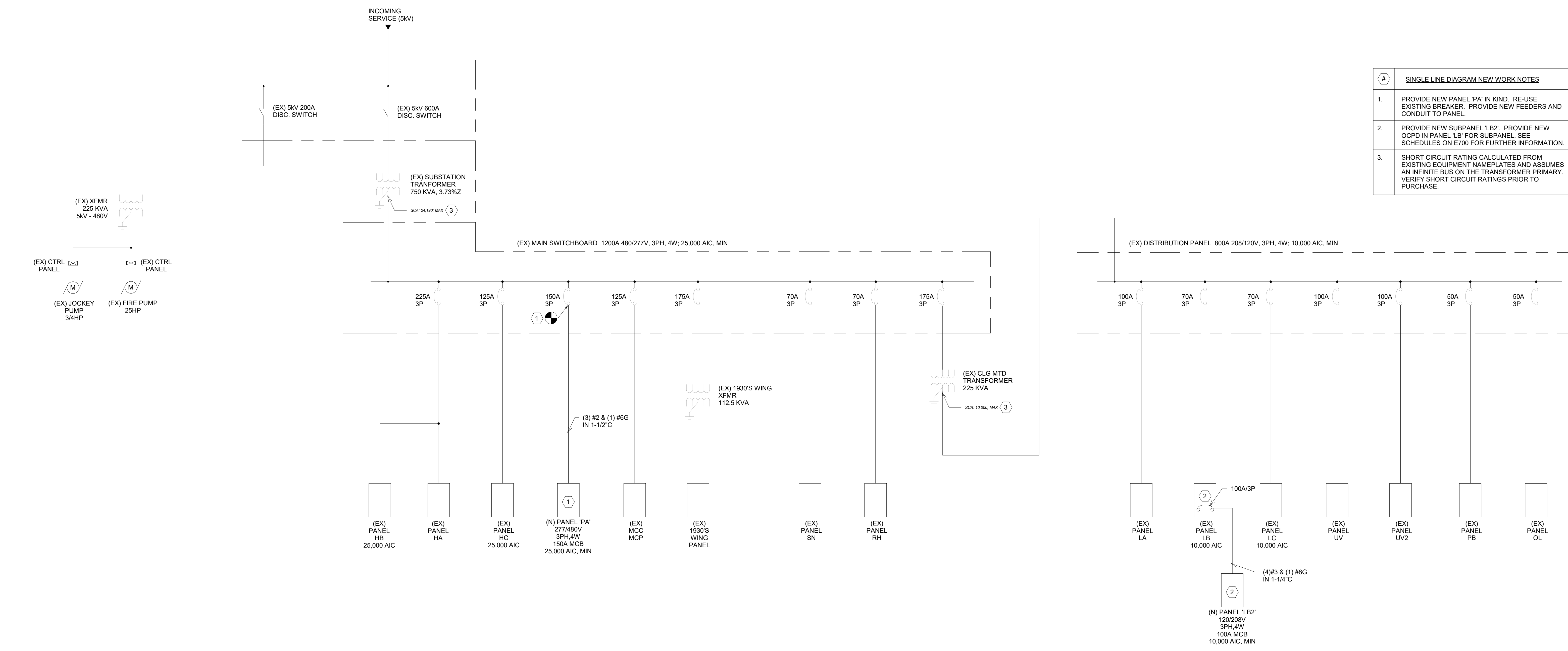
SHEET TITLE:
**SECOND FLOOR
HVAC POWER &
FIRE ALARM
PLAN**

SHEET NUMBER:
E302



#	SINGLE LINE DIAGRAM DEMOLITION NOTES
1.	DISCONNECT AND REMOVE PANEL 'PA'. RETAIN FEEDERS AND CONDUIT IN AREA FOR NEW WORK.
2.	MEASURE LOAD ON INDICATED PANELS PRIOR TO CONSTRUCTION PER NEC 220.87.
3.	SHORT CIRCUIT RATING CALCULATED FROM EXISTING EQUIPMENT NAMEPLATES AND ASSUMES AN INFINITE BUS ON THE TRANSFORMER PRIMARY. VERIFY SHORT CIRCUIT RATINGS PRIOR TO PURCHASE.

C5 SINGLE LINE DIAGRAM - DEMO
1/8" = 1'-0"



#	SINGLE LINE DIAGRAM NEW WORK NOTES
1.	PROVIDE NEW PANEL 'PA' IN KIND. RE-USE EXISTING BREAKER. PROVIDE NEW FEEDERS AND CONDUIT TO PANEL.
2.	PROVIDE NEW SUBPANEL 'LB2'. PROVIDE NEW OCPD IN PANEL 'LB' FOR SUBPANEL. SEE SCHEDULES ON E700 FOR FURTHER INFORMATION.
3.	SHORT CIRCUIT RATING CALCULATED FROM EXISTING EQUIPMENT NAMEPLATES AND ASSUMES AN INFINITE BUS ON THE TRANSFORMER PRIMARY. VERIFY SHORT CIRCUIT RATINGS PRIOR TO PURCHASE.

A5 SINGLE LINE DIAGRAM - NEW WORK
1/8" = 1'-0"



One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia, PA 19103 U.S.A.
norr.com

SEAN P. PIC-KELL
LIC# 24GE05659200

CLIENT:
THE COLLEGE OF NEW JERSEY
2000 PENNINGTON ROAD
EWING, NJ

PROJECT TEAM:
NORR
One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia PA 19103
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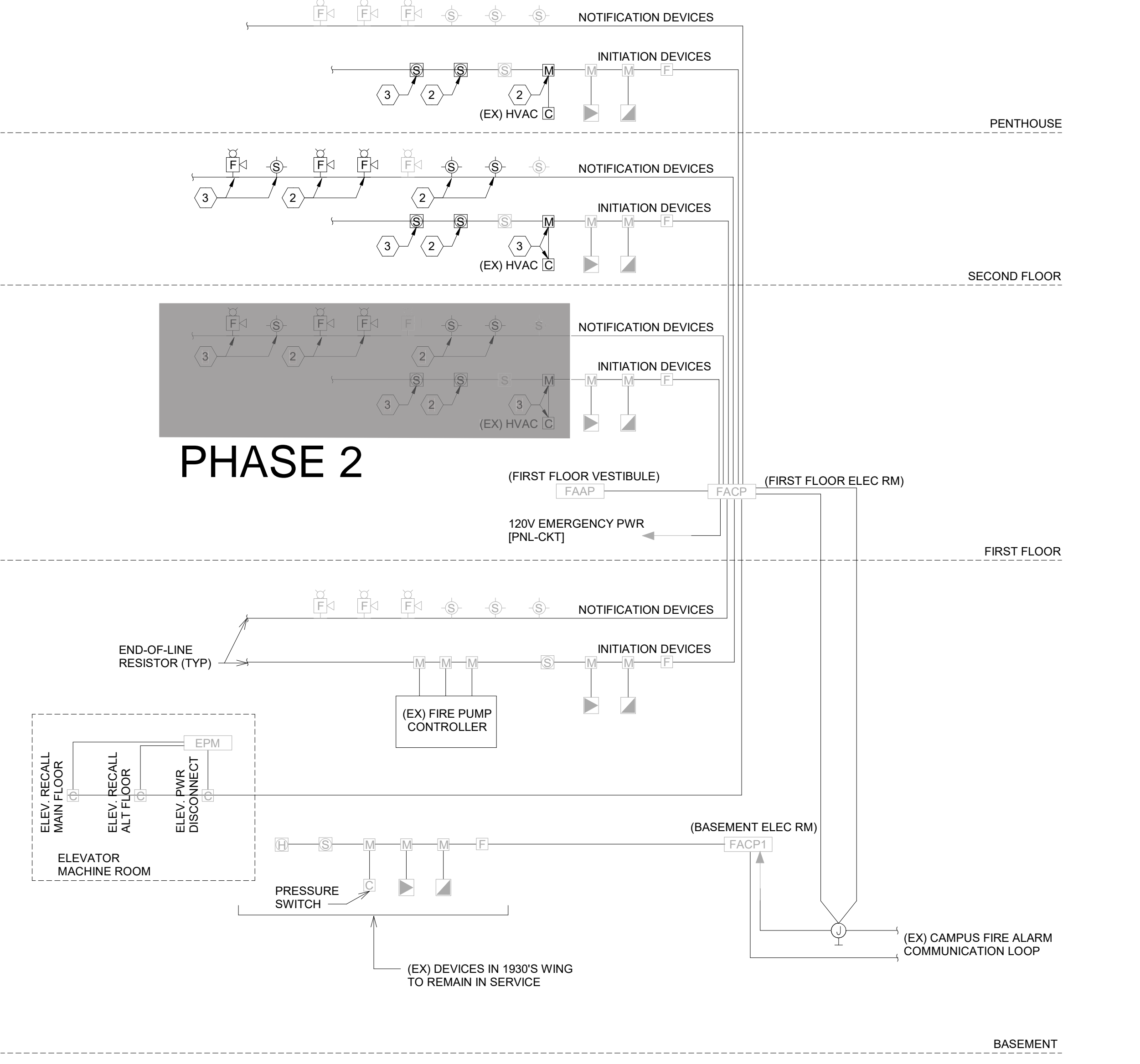
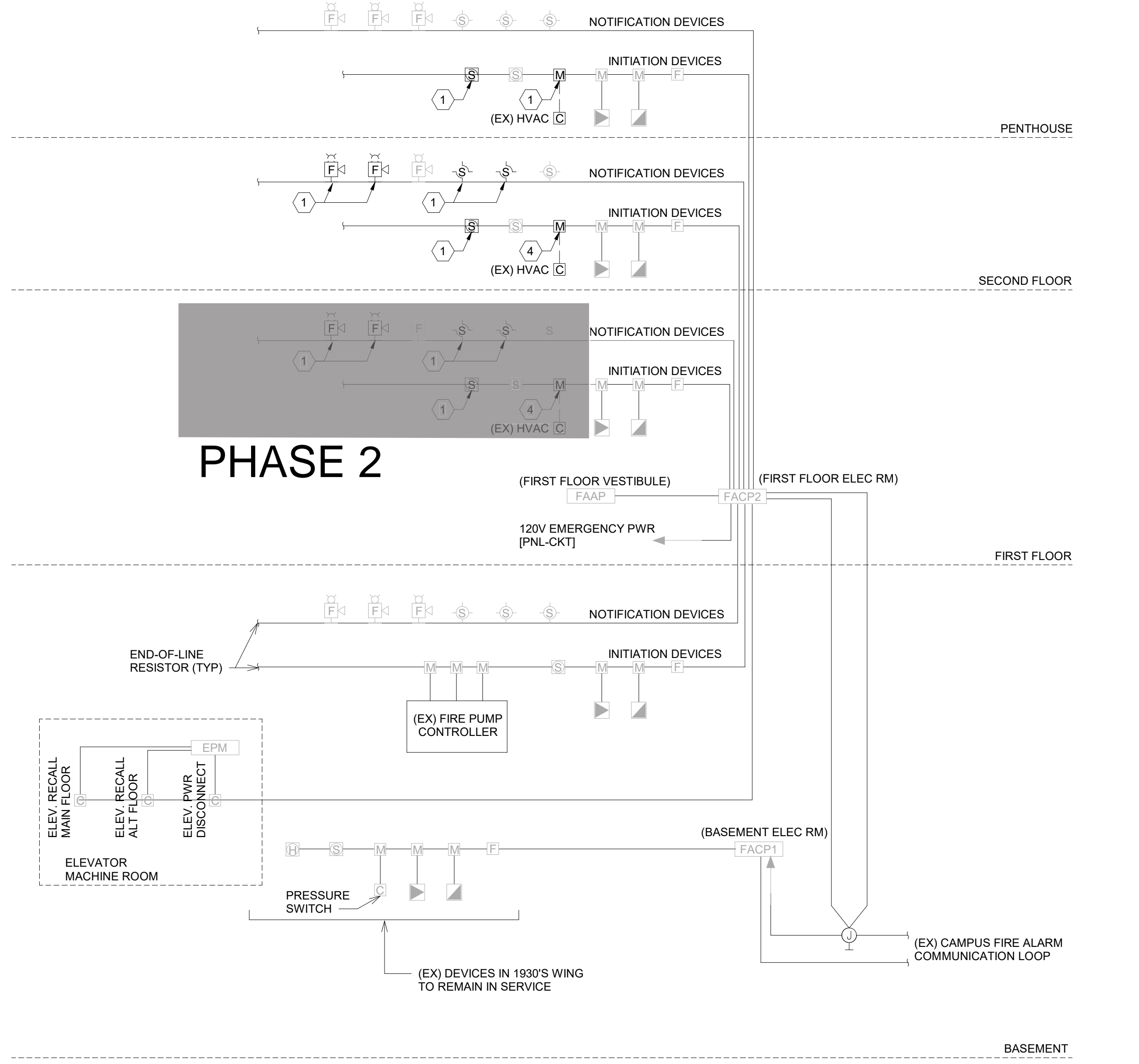
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**ELECTRICAL
SINGLE LINE
DIAGRAM**

SHEET NUMBER:
E600



C5 EXISTING FIRE ALARM RISER - ROSCOE HALL NO SCALE

C3 NEW WORK FIRE ALARM RISER - ROSCOE HALL NO SCALE

- GENERAL FIRE ALARM NOTES**
- THE SCHEMATIC FIRE ALARM RISER IS INTENDED TO INDICATE THE MAJOR FIRE ALARM COMPONENTS AND GENERAL SEPARATION OF INDICATING, INITIATING, COMMUNICATIONS, AND ANNUNCIATION CIRCUITS AS REQUIRED BY THE PROJECT. WIRING IS TO BE PROVIDED AS REQUIRED BY THE FIRE ALARM EQUIPMENT MANUFACTURER. THE RISER DIAGRAM IS A GENERAL INDICATION OF EQUIPMENT TO BE PROVIDED AND DOES NOT NECESSARILY INDICATE ALL ITEMS OR APURTENANCES WHICH MAY BE REQUIRED TO PROVIDE A FULLY OPERATIONAL SYSTEM. ALL SUCH ITEMS ARE TO BE PROVIDED AS INDICATED IN THE SPECIFICATIONS AND AS REQUIRED FOR OPERATION OF THE SYSTEM.
 - ACTIVATION OF SMOKE DETECTOR AT TOP OF ELEVATOR SHAFT, IN LOBBIES OR IN ELEVATOR MACHINE ROOM SHALL INITIATE RECALL SEQUENCE.
 - ACTIVATION OF HEAT DETECTOR AT TOP OF ELEVATOR SHAFT OR IN ELEVATOR MACHINE ROOM SHALL INITIATE ELEVATOR POWER SHUTDOWN.
 - TAMPER/FLOW SWITCH DEVICES TO BE FURNISHED AND INSTALLED BY FIRE PROTECTION SYSTEM CONTRACTOR AT ALL SUPERVISED VALVE LOCATIONS AND LOCATIONS INDICATED ON FIRE PROTECTION DRAWINGS. DEVICES TO BE WIRED BY THE FIRE ALARM CONTRACTOR. COORDINATE EXACT LOCATIONS WITH FIRE PROTECTION SYSTEM CONTRACTOR.
 - SINGLE/MULTIPLE STATION SMOKE DETECTORS SHALL BE AS MANUFACTURED BY GENEX. DETECTORS SHALL BE CAPABLE OF BEING INTERCONNECTED WITH OTHER DETECTORS FOR SIMULTANEOUS OPERATION AND HAVE A CONTACT AVAILABLE FOR FUTURE CONNECTION TO THE BUILDING FIRE ALARM SYSTEM. SINGLE/MULTIPLE STATION DETECTORS LOCATED WITHIN HANDICAP ACCESSIBLE LIVING UNITS SHALL BE SUPPLIED INTEGRAL STROBES.
 - FIRE ALARM ZONES SHALL BE THE SAME AS SPRINKLER ZONES, OR BY FLOOR AREA WHICHEVER IS SMALLER.
 - ACTIVATION OF ANY COMMON AREA SMOKE DETECTOR, PULL STATION, OR FLOW SWITCH SHALL INITIATE A GENERAL ALARM FOR THE ENTIRE BUILDING. ACTIVATION OF A TAMPER SWITCH SHALL SEND A SUPERVISORY SIGNAL TO THE CENTRAL MONITORING LOCATION.
 - PROVIDE FULLY ADDRESSABLE SYSTEM CAPABLE OF ADDRESSING EACH DEVICE.
 - ALL CONCEALED INITIATING DEVICES SHOULD HAVE A REMOTE INDICATING LIGHT LOCATED IN AN ACCESSIBLE LOCATION.
 - FAACP SHALL BE SUPPLIED WITH BATTERY BACKUP TO COMPLY WITH NFPA 72. ALSO PROVIDE THE APPROPRIATE DIALER TO NOTIFY A CENTRAL MONITORING LOCATION OR CENTRAL STATION.
 - FIRE PUMP AND GENERATOR MONITOR POINTS SHALL INITIATE A SUPERVISORY ALARM UPON ACTIVATION.
 - THE INSTALLING ELECTRICAL CONTRACTOR SHOULD BE ADVISED TO PREPARE THE FOLLOWING DOCUMENTATION AT THE PROJECT CLOSE-OUT:
 - SET OF 'AS-BUILT' DRAWINGS AS APPROVED BY THE FIRE MARSHALL.
 - RECORD OF COMPLETION (A DOCUMENT THAT ACKNOWLEDGES THE FEATURES OF INSTALLATION, OPERATION (PERFORMANCE), SERVICE AND EQUIPMENT).
 - MANUAL CONTAINING A 'SEQUENCE OF ALARM' AND A MANUFACTURERS SHEET FOR EACH DEVICE INSTALLED IN THE FIRE ALARM SYSTEM INCLUDING THE MAIN CONSOLE.
 - ALL MANUAL PULL STATIONS SHALL BE PROVIDED WITH CLEAR, PROTECTIVE COVER ASSEMBLIES. INSPECT ALL EXISTING PULL STATION COVERS FOR DAMAGE AND REPLACE AS REQUIRED.
 - FIRE ALARM ZONES SHALL NOT EXCEED 22,500 SF IN AREA NOR EXCEED 300 FEET IN LENGTH PER 2021 IBC, SECTION 907.6.4
 - EXISTING FIRE ALARM RISER WAS DETERMINED FROM AS-BUILT DRAWINGS AND NOT ALL DEVICES ON SYSTEM MAY BE SHOWN ON THESE DRAWINGS. ENGINEER ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY OTHER THAN CONFORMANCE WITH THE DESIGN CONCEPTS. E.C. SHALL SURVEY AND FIELD-VERIFY SCOPE OF WORK PRIOR TO BID.

#	FIRE ALARM KEYED NOTES
1.	DISCONNECT EXISTING FIRE ALARM INITIATION AND NOTIFICATION DEVICES, RETAIN FOR SCOPE IN NEW WORK.
2.	RECONNECT EXISTING FIRE ALARM DEVICES RETAINED DURING DEMOLITION. PROVIDE NEW SIGNAL CABLING AS REQUIRED.
3.	PROVIDE NEW DEVICES AS REQUIRED, MATCH EXISTING MANUFACTURER.
4.	DISCONNECT, REMOVE AND DISCARD EXISTING FIRE ALARM DEVICES FOR EXISTING HVAC EQUIPMENT TO BE DEMOLISHED.

Type Mark	DESCRIPTION	MANUFACTURER	CATALOG NUMBER	WATTAGE	VOLTAGE	LUMEN OUTPUT	MOUNTING	LAMP TYPE	REMARKS
A1	2'X4' LED LAY-IN FIXTURE	LITHONIA	STAKS 2X4 AL06 SWVY 35K 40L	40 W	UNV	5310 lm	CEILING INLAY	LED	PROVIDE TYPE 'EM' FIXTURES WITH BATTERY BACKUP CAPABLE OF DELIVERING 1400 LUMEN OUTPUT FOR 90 MINUTES.
A2	2'X2' LED LAY-IN FIXTURE	LITHONIA	STAKS 2X2 AL03 SWVY 35K 40L	34 W	UNV	4371 lm	CEILING INLAY	LED	PROVIDE TYPE 'EM' FIXTURES WITH BATTERY BACKUP CAPABLE OF DELIVERING 1400 LUMEN OUTPUT FOR 90 MINUTES.
C	LED LINEAR FIXTURE	WILLIAMS	LRX4G-XX-L/835-DMA-(EM/10W)-DIM-UNV	13.1 W/ft	UNV	1800 lm	RECESSED	LED	VERIFY FIXTURE LENGTH WITH ARCHITECTURAL DRAWINGS. PROVIDE TYPE 'EM' FIXTURES WITH OPTION '-EM/10W', WITH BATTERY BACKUP CAPABLE OF DELIVERING 1400 LUMEN OUTPUT FOR 90 MINUTES.
E1	24" LED PENDANT FIXTURE	PABLO LIGHTING	SOLI DR 24 WHT	35 W	UNV	2500 lm	CEILING SUSPENDED	LED	PROVIDE WITH FACTORY-AVAILABLE 3500K OPTION
E2	36" LED PENDANT FIXTURE	PABLO LIGHTING	SOLI DR FSH 36 WHT	80 W	UNV	5600 lm	CEILING SUSPENDED	LED	PROVIDE WITH FACTORY-AVAILABLE 3500K OPTION
F	RECESSED LED DOWNLIGHT	WILLIAMS	4DS-L20/835-(EM/10W)-DIM-UNV-R-W-OF-CS-MWT	17.4 W	UNV	1500 lm	RECESSED	LED	PROVIDE TYPE 'EM' FIXTURES WITH OPTION '-EM/10W', WITH BATTERY BACKUP CAPABLE OF DELIVERING 1400 LUMEN OUTPUT FOR 90 MINUTES.
X1	SINGLE-FACE LED EXIT SIGN	LUMAPRO	53RH94	3 W	UNV		RECESSED	LED	PROVIDE ALL FIXTURES WITH BATTERY BACKUP CAPABLE OF DELIVERING FULL OUTPUT FOR 90 MINUTES.
X2	DOUBLE-FACE LED EXIT SIGN	LUMAPRO	53RH94	3 W	UNV		RECESSED	LED	PROVIDE ALL FIXTURES WITH BATTERY BACKUP CAPABLE OF DELIVERING FULL OUTPUT FOR 90 MINUTES.

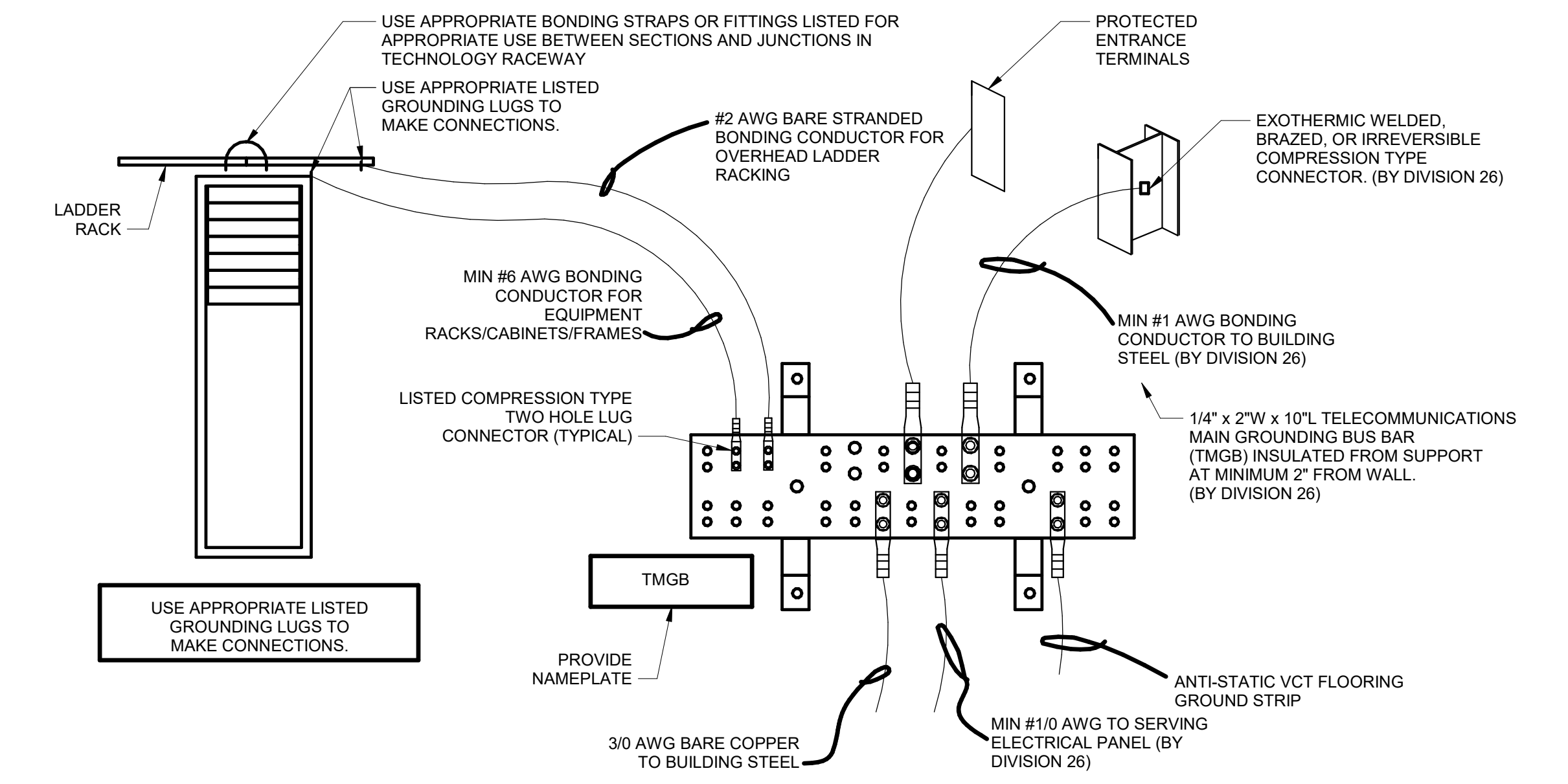
- LIGHTING FIXTURE NOTES:**
- PRIOR TO SUBMISSION OF FIXTURE CUTS AND/OR PURCHASE, THE CONTRACTOR IS RESPONSIBLE TO REVIEW THE CONDITIONS OF INSTALLATION TO DETERMINE THAT NO CONFLICTS WILL EXIST FOR THE APPROPRIATE INSTALLATION OF THE FIXTURE.
 - PROVIDE ALL HARDWARE REQUIRED FOR MOUNTING OF FIXTURE IN SPECIFIED CEILING TYPE. COORDINATE CEILING TYPE WITH ARCHITECTURAL PLANS AND DETAILS.
 - ALL LIGHTING FIXTURES SHALL BE ILC-APPROVED.
 - PROVIDE ALL LUMINAIRES WITH INTEGRAL LED LAMPS WITH COLOR TEMPERATURE OF 3000 DEGREES KELVIN.
 - MANUFACTURERS CATALOG NUMBERS ARE PROVIDED AS A BASIS OF DESIGN & LEVEL OF QUALITY REQUIRED. ALTERNATE MANUFACTURERS EQUIPMENT MUST MEET OR EXCEED THIS LEVEL OF QUALITY & PHYSICAL CHARACTERISTICS. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ANY COORDINATION REQUIRED TO INSTALL ALTERNATE MANUFACTURERS EQUIPMENT. ACCEPTABLE ALTERNATES MANUFACTURERS ARE: HUBBELL, COLUMBIA, & LIGHTOLIER.

TYPE	DESCRIPTION	MANUFACTURER/CATALOG NO.	MOUNTING	VOLTAGE	TIME DELAY	REMARKS
VS	DUAL-TECHNOLOGY WALL MOUNTED VACANCY SENSOR WITH DIMMER	HUBBELL CONTROL SOLUTIONS LHMMS-2-N-W	WALL		30 MN.	SENSOR SHALL BE PROGRAMMED TO VACANCY (MANUAL-ON) MODE. PROVIDE BLUETOOTH CONTROLLER NXBTX
OS	DUAL-TECHNOLOGY CEILING MOUNTED OCCUPANCY SENSOR	HUBBELL CONTROL SOLUTIONS NX3S-OM-DT2	CEILING	24V	30 MN.	SENSOR SHALL BE PROGRAMMED TO OCCUPANCY (AUTO-ON) MODE. PROVIDE ROOM CONTROLLER NARC-2RD
VS	DUAL-TECHNOLOGY CEILING MOUNTED VACANCY SENSOR	HUBBELL CONTROL SOLUTIONS NX3S-OM-DT2	CEILING	24V	30 MN.	SENSOR SHALL BE PROGRAMMED TO OCCUPANCY (AUTO-ON) MODE. PROVIDE ROOM CONTROLLER NARC-2RD
VS-D	DUAL-TECHNOLOGY WALL MOUNTED VACANCY SENSOR WITH DIMMER	HUBBELL CONTROL SOLUTIONS NX3V-OO-WH	WALL		30 MN.	SENSOR SHALL BE PROGRAMMED TO VACANCY (MANUAL-ON) MODE.

- NOTE:**
- PROVIDE BLUETOOTH BRIDGE MODULE NXBTC FOR TIME CLOCK OPERATION OF CORRIDOR LIGHTS.

FIRE ALARM SEQUENCE OF OPERATIONS MATRIX

SYSTEM INPUTS	CENTRAL UNIT ANNUNCIATION	NOTIFICATION	REQ'D FIRE SAFET...	CENTRAL OFFICE...
1 PULL STATION	X X	X	X	X
2 WATER FLOW SWITCH	X X	X	X	X
3 SMOKE DETECTOR	X X	X	X	X
4 AC DUCT SMOKE DETECTOR	X X	X	X	X
5 AREA HEAT DETECTOR	X X	X	X	X
6 ELEV SHAFT HEAT DETECTOR				X
7 TAMPER SWITCH	X X	X	X	X
8 FIRE ALARM AC POWER FAILURE	X X	X	X	X
9 FIRE ALARM SYSTEM LOW BATTERY	X X	X	X	X
10 OPEN CIRCUIT	X X	X	X	X
11 GROUND FAULT	X X	X	X	X
12 NOTIFICATION APPLIANCE CIRCUIT SHORT	X X	X	X	X
13 CO DETECTOR	X X	X	X	X



3 TMGB CONNECTIONS DIAGRAM 12" = 1'-0"



One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia, PA 19103 U.S.A.
norr.com

SEAN P. PIC-KELL
LIC#N# 24GE0569200

CLIENT:
THE COLLEGE OF NEW JERSEY
2000 PENNINGTON ROAD
EWING, NJ

PROJECT TEAM
NORR
One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia, PA 19103
norr.com

TCNJ - ROSCOE HALL
STUDENT SERVICES
RENOVATION
2000 PENNINGTON ROAD EWING, NJ
THE COLLEGE OF NEW JERSEY

REV.	DATE	DESCRIPTION	ISSUED FOR	ISSUED FOR	ISSUED FOR
1	2023.02.13	CLIENT REVIEW	ISSUED FOR	ISSUED FOR	ISSUED FOR
2	2023.02.13	ISSUED FOR	ISSUED FOR	ISSUED FOR	ISSUED FOR
3	2023.03.02	ISSUED FOR	ISSUED FOR	ISSUED FOR	ISSUED FOR

NJDCA REF NUMBER:
PROJECT NUMBER: 22031600
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SHEET TITLE:
RISER DIAGRAMS AND SCHEDULES

SHEET NUMBER:
E601

Branch Panel: HB

Table with columns: CKT, Circuit Description, Rating, Pole, Wire Size, A, B, C, Wire Size, Pole, Rating, Circuit Description, CKT. Includes location, voltage, and load information.

PHASE 2

Notes: EXISTING PANEL TO REMAIN. ALL NEW (N) LOADS SHALL BE ON EXISTING BREAKERS U.O.N. PROVIDE TYPED PANEL SCHEDULES WITH FIELD-VERIFIED LOADS AT JOB COMPLETION.

Branch Panel: HC

Table with columns: CKT, Circuit Description, Rating, Pole, Wire Size, A, B, C, Wire Size, Pole, Rating, Circuit Description, CKT. Includes location, voltage, and load information.

Notes: EXISTING PANEL TO REMAIN. ALL NEW (N) LOADS SHALL BE ON EXISTING BREAKERS U.O.N. PROVIDE TYPED PANEL SCHEDULES WITH FIELD-VERIFIED LOADS AT JOB COMPLETION.

Branch Panel: PA

Table with columns: CKT, Circuit Description, Rating, Pole, Wire Size, A, B, C, Wire Size, Pole, Rating, Circuit Description, CKT. Includes location, voltage, and load information.

Notes: EXISTING PANEL TO REMAIN. ALL NEW (N) LOADS SHALL BE ON EXISTING BREAKERS U.O.N. PROVIDE TYPED PANEL SCHEDULES WITH FIELD-VERIFIED LOADS AT JOB COMPLETION.

Branch Panel: LB

Table with columns: CKT, Circuit Description, Rating, Pole, Wire Size, A, B, C, Wire Size, Pole, Rating, Circuit Description, CKT. Includes location, voltage, and load information.

NOTE: PANEL SCHEDULES FOR LB1 AND LB2 INCLUDE CIRCUITS FOR PHASE 1 AND PHASE 2 WORK. REFER TO PLANS FOR SCOPE OF WORK IN EACH PHASE.

Branch Panel: LB2

Table with columns: CKT, Circuit Description, Rating, Pole, Wire Size, A, B, C, Wire Size, Pole, Rating, Circuit Description, CKT. Includes location, voltage, and load information.

NOTE: PANEL SCHEDULES FOR LB1 AND LB2 INCLUDE CIRCUITS FOR PHASE 1 AND PHASE 2 WORK. REFER TO PLANS FOR SCOPE OF WORK IN EACH PHASE.

Branch Panel: LC

Table with columns: CKT, Circuit Description, Rating, Pole, Wire Size, A, B, C, Wire Size, Pole, Rating, Circuit Description, CKT. Includes location, voltage, and load information.

Notes: EXISTING PANEL TO REMAIN. ALL NEW (N) LOADS SHALL BE ON EXISTING BREAKERS U.O.N. PROVIDE TYPED PANEL SCHEDULES WITH FIELD-VERIFIED LOADS AT JOB COMPLETION.



One Penn Center 1617 JFK Boulevard, Suite 1600 Philadelphia, PA 19103 U.S.A. norr.com

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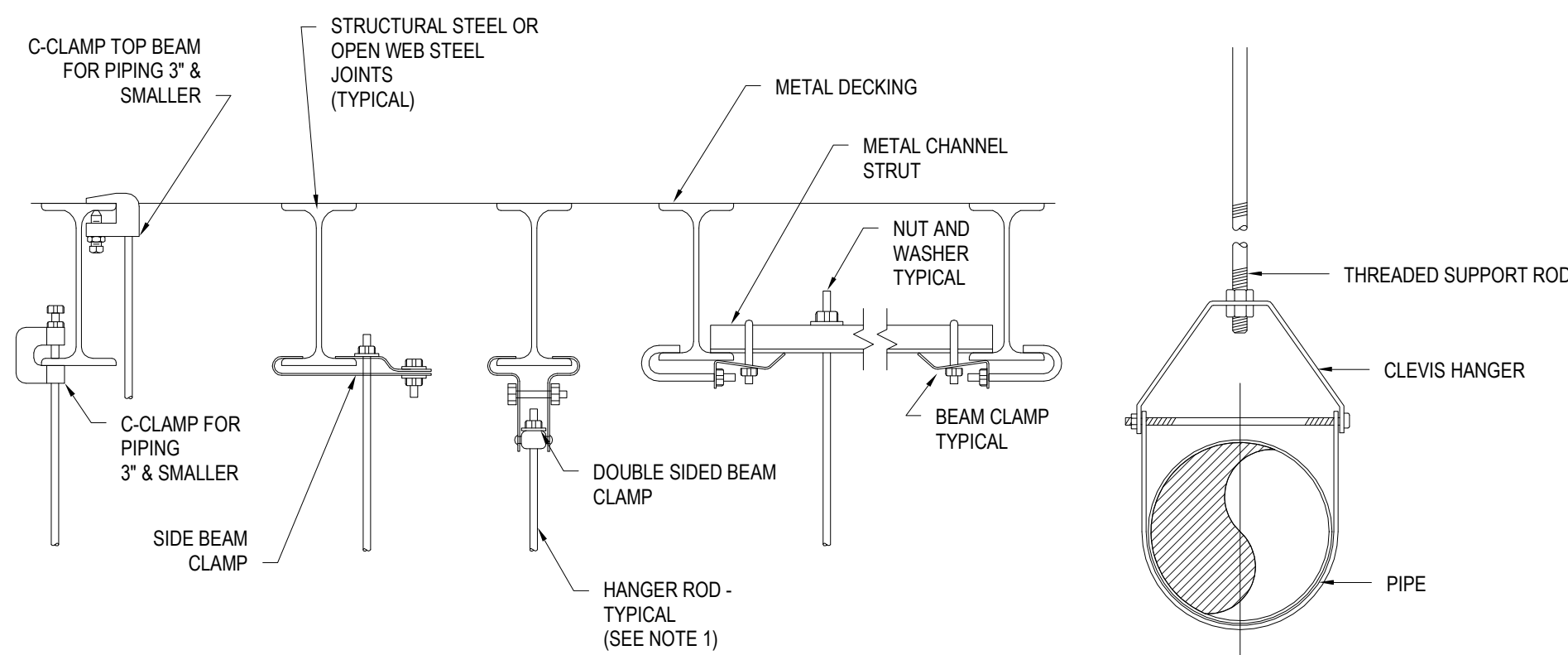
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Table with columns: REV, DATE, DESCRIPTION. Includes revision history for the panel schedules.

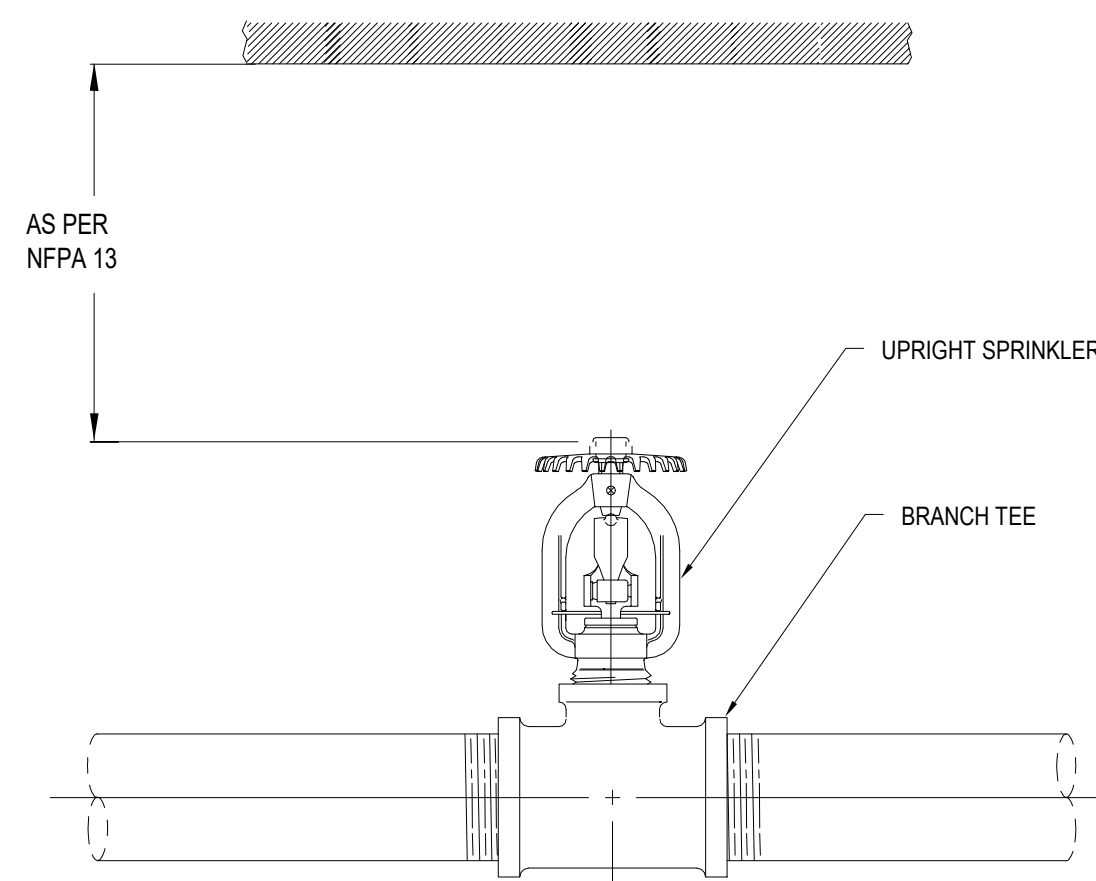
PANEL SCHEDULES

E700

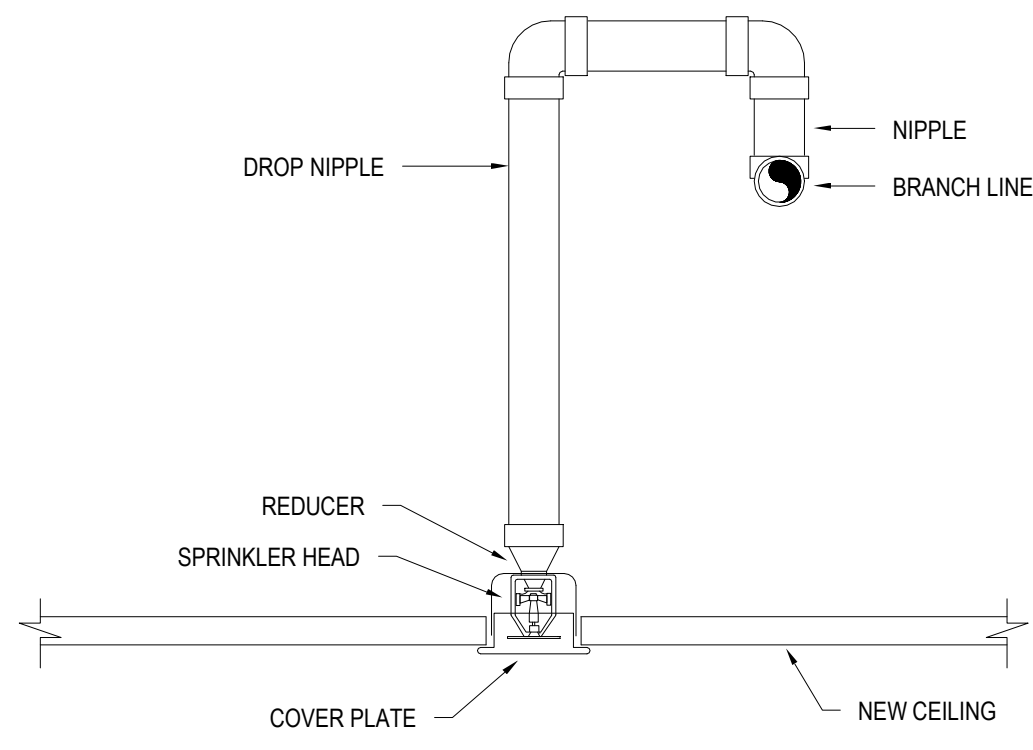


NOTES:
EQUIPMENT PROVIDE MIN. 3/8\"/>

1 PIPE HANGER DETAIL
NTS



2 UPRIGHT SPRINKLER DETAIL
NTS



3 CONCEALED SPRINKLER TYPE DETAIL
NTS

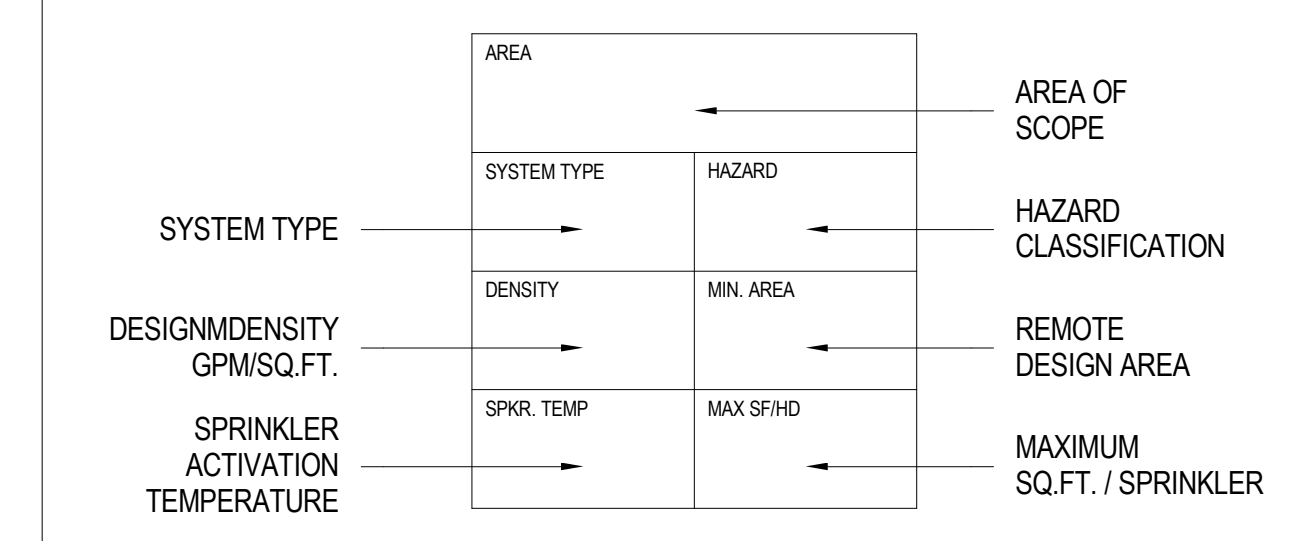
GENERAL NOTES

- THESE GENERAL NOTES ARE APPLICABLE TO ALL FIRE PROTECTION DRAWINGS.
- THESE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND SHOW THE GENERAL INTENT OF WORK. SEE DETAILS, RISERS, AND SPECIFICATION FOR ADDITIONAL INFORMATION. THE CONTRACTOR IS RESPONSIBLE FOR A COMPLETE SYSTEM FOR FULL BUILDING COVERAGE. ADDITIONAL SPRINKLERS AND PIPING MAY BE REQUIRED TO ACCOMMODATE CONDITIONS SUCH AS SOFFITS, DUCTWORK, STRUCTURE, LIGHTING, EQUIPMENT, BOOK STACKS, ETC. THE CONTRACTOR SHALL PROVIDE A COMPLETE SPRINKLER INSTALLATION IN CONFORMANCE WITH NFPA 13, NFPA 14, FEDERAL AND STATE CODES AND THEIR APPLICABLE SUPPLEMENTS, AND THE REQUIREMENTS OF THE OFFICE OF THE STATE FIRE MARSHAL.
- REFER TO NFPA 13 FOR EXACT SPACING, DENSITY, AND LOCATION REQUIREMENTS. CONTRACTOR SHALL INSTALL QUICK RESPONSE TYPE SPRINKLER IN ENTIRE BUILDING. USE OF EXTENDED COVERAGE, QUICK RESPONSE, TYPE SPRINKLER MAY BE USED WITH THE APPROVAL OF THE AUTHORITY HAVING JURISDICTION.
- SPRINKLERS IN FINISHED LAYIN TILE CEILING AREAS SHALL ALWAYS BE LOCATED IN THE CENTER OF CEILING TILES UNLESS INDICATED OTHERWISE.
- REVIEW THE ARCHITECTURAL, REFLECTED CEILING, ELEVATION AND SECTION PLANS AS PART OF THIS CONTRACT FOR ADDITIONAL INFORMATION SUCH AS CEILING HEIGHTS, TYPES, SOFFITS AND OR OTHER DEVICE LOCATIONS.
- REVIEW THE ELECTRICAL DIVISION DRAWINGS AND COORDINATE THE FIRE PROTECTION WORK WITH LOCATIONS OF LIGHT, AND CEILING MOUNTED DEVICES WHICH MAY INTERFERE WITH SPRINKLER LOCATIONS OR SPRAY PATTERNS.
- REVIEW THE HVAC DIVISION DRAWINGS AND COORDINATE THE FIRE PROTECTION WORK WITH LOCATIONS OF CEILING MOUNTED DEVICES SUCH AS DIFFUSERS, GRILLS, REGISTERS, AND ALSO THE LOCATIONS OF HEAT PRODUCING EQUIPMENT AND DUCTWORK REQUIRING SPRINKLER PROTECTION BELOW IT.
- PROVIDE PIPE EXPANSION JOINTS ALL BUILDING EXPANSION JOINT LOCATIONS AND EXPANSION LOOPS AT ALL BUILDING EXPANSION/SEISMIC JOINT LOCATIONS AS REQUIRED PER NFPA 13 AND BUILDING CODES. REVIEW ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR EXACT LOCATIONS OF EXPANSION AND SEISMIC JOINTS. SEISMIC SEPARATION ASSEMBLIES SHALL BE INSTALLED WHERE SPRINKLER PIPING, REGARDLESS OF SIZE, CROSSES BUILDING SEISMIC SEPARATION JOINTS ABOVE GROUND LEVEL IN ACCORDANCE WITH NFPA 13.20. PROVIDE U.L. LISTED SWING JOIN ASSEMBLIES (METAFLEX FIRELOOP,) WHERE SPRINKLER PIPING CROSSES BUILDING EXPANSION JOINTS. 21. PIPING, PIPE HANGERS AND SUPPORTS SHALL BE PROVIDED WITH SEISMIC RESTRAINT BRACING PER NFPA 13, STATE AND LOCAL REQUIREMENTS.
- PERFORM A FLOW TEST WITNESSED BY A REPRESENTATIVE OF THE OFFICE OF THE AUTHORITY HAVING JURISDICTION, OWNER, ARCHITECT, ENGINEER, DATA RECORDED AT THE TIME OF THIS FLOW TEST SHALL INCLUDE: DATE OF TEST, TIME OF TEST, WITNESSES PRESENT, ALL PARTIES SHALL BE NOTIFIED OF THE DATE AND TIME OF THE TEST PRIOR TO ANY FUTURE FLOW TESTS. THE CONTRACTOR SHALL USE THE FLOW DATA FROM THIS TEST FOR HIS/HER HYDRAULIC CALCULATIONS. REFER TO SPECIFICATION FOR ADDITIONAL REQUIREMENTS.
- ALL PIPE SIZES SHOWN ON THE CONTRACT DOCUMENTS ARE ADEQUATELY SIZED FOR THE NEW SPRINKLER SYSTEM. THE PIPE SIZES SHOWN ARE SUBJECT TO CHANGE UPON THE COMPLETION OF THE FIRE PROTECTION CONTRACTOR'S HYDRAULIC CALCULATIONS.
- MAKE PROVISIONS FOR DRAINING THE ENTIRE SYSTEM PER NFPA 13.
- PROVIDE SPRINKLER LAYOUT SHOP DRAWINGS, SEISMIC BRACING CALCULATION AND HYDRAULIC CALCULATIONS SIGNED AND STAMPED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF THE PROJECT. THESE DRAWINGS AND CALCULATIONS SHALL BE SUBMITTED TO AND APPROVED BY AN AUTHORITY HAVING JURISDICTION AND OWNER'S INSURANCE CARRIER PRIOR TO INSTALLATION. THE CONTRACTOR SHALL PROVIDE COPIES OF AN AUTHORITY HAVING JURISDICTION AND OWNER'S INSURANCE CARRIER'S APPROVALS WITH THEIR SHOP DRAWING SUBMITTAL.
- UNOCCUPIED SPACES WITHOUT CEILINGS SHALL BE PROVIDED WITH UPRIGHT SPRINKLERS.
- SPRINKLERS SHALL BE INSTALLED UNDER FIXED OBSTRUCTIONS OVER 4 FEET (1.2M) WIDE PER NFPA 13. THE CONTRACTOR SHALL VERIFY ALL DUCTWORK DIMENSIONS IN THE FIELD AND INSTALL SPRINKLERS AS REQUIRED.
- VERIFY THE DISTANCE BETWEEN CEILING AND BOTTOM OF STRUCTURAL BEAMS IN ALL AREAS WITH REFLECTIVE CEILINGS.
- ALL HORIZONTAL PIPING SHALL BE LOCATED ABOVE THE CEILING OR IN SOFFIT SPACES UNLESS NOTED OTHERWISE.
- VERIFY AND COORDINATE VALVE IDENTIFICATION REQUIREMENTS WITH OWNER STANDARDS IN THE FIELD.
- FLOW AND TAMPER SWITCHES SHALL BE PROVIDED WHERE INDICATED. ALL WIRING SHALL BE PROVIDED BY ELECTRICAL CONTRACTOR. ALL WORK SHALL BE COORDINATED BETWEEN TRADES IN THE FIELD.
- SPRINKLER PROTECTION SHALL BE REQUIRED IN ALL ELECTRICAL EQUIPMENT AND COMMUNICATION ROOMS, ETC. SPRINKLER HOODS OR SHIELDS SHALL BE INSTALLED TO PROTECT IMPORTANT ELECTRICAL EQUIPMENT FROM SPRINKLER DISCHARGE. HOODS/SHIELDS SHALL BE OF A NON-COMBUSTIBLE MATERIAL. SPRINKLER SHALL NOT BE REQUIRED WHERE ALL THE FOLLOWING CONDITIONS ARE MET:
 - THE ROOM IS DEDICATED TO ELECTRICAL EQUIPMENT ONLY.
 - ONLY DRY TYPE ELECTRICAL EQUIPMENT IS USED.
 - ELECTRICAL EQUIPMENT IS INSTALLED IN A 2 HOUR, FIRE RATED, ENCLOSURE INCLUDING PROTECTION OF PENETRATIONS.
 - NO COMBUSTIBLE STORAGE IS PERMITTED TO BE STORED IN THE ROOM.
- THE SPRINKLER EQUIPMENT ROOM AND FIRE PROTECTION EQUIPMENT COMPONENTS (E.G. VALVES, PIPING, TAMPER SWITCHES, FLOW ALARMS, ECT.) SHALL REQUIRE PROPER IDENTIFICATION AS PER THE REQUIREMENT OF NFPA13.
- THE SUBMISSION OF AUTOMATIC FIRE SUPPRESSION (SPRINKLER) SYSTEM SHOP DRAWINGS (E.G. INFORMATION RELATIVE TO SPRINKLERS, FITTINGS, CHECK VALVES, EXPOSURE TO HAZARDS, EXTENT OF SYSTEM COVERAGE, SUPPRESSION SYSTEM DESIGN CRITERIA, WATER SUPPLY SOURCE, SUPPLY AND EXTINGUISHING AGENTS, LOCATION AND METHOD OF OPERATION FOR DETECTION AND ALARM DEVICES, ECT.) SHALL BE REQUIRED FOR REVIEW AND EVALUATION AS PER IBC, 2009; THE STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS (NFPA-13) AND THE HUD MAP CHAPTER 5 GUIDELINES.
- SPRINKLERS ARE REQUIRED IN CONCEALED SPACES PER NFPA 13 SECTION 8.15.1
- CONTRACTOR SHALL COORDINATE HEAD TYPE WITH ARCHITECTURAL CEILING PLANS.
- CONTRACTOR SHALL PROVIDE SPRINKLER HEADS ABOVE AND BELOW DUCT AND CEILING CLOUDS AS REQUIRED BY NFPA.

FIRE PROTECTION CONSTRUCTION PROCEDURES

- IT IS SOLELY THE FIRE PROTECTION CONTRACTOR'S RESPONSIBILITY TO OBTAIN APPROVAL OF SHOP DRAWINGS FROM THE OWNERS INSURANCE CARRIER AND THE AUTHORITY HAVING JURISDICTION. ANY INSTALLATION OF THE SPRINKLER SYSTEM WITHOUT APPROVED PLANS SHALL BE AT THE SOLE RISK AND EXPENSE OF THE CONTRACTOR.
- THE FIRE PROTECTION CONTRACTOR MUST CONTACT THE OWNERS CONSTRUCTION COORDINATOR AND REQUEST WHENEVER THE SPRINKLER MAIN IS TO BE ISOLATED AND/OR DRAINED. THIS PROCEDURE MUST BE ADHERED TO WHEN PRESSURE TESTING AND/OR PLACING ANY PORTION OF SYSTEM IN OR OUT OF SERVICE.
- THE OWNER'S CONSTRUCTION COORDINATOR AND THE AUTHORITY HAVING JURISDICTION SHALL WITNESS ALL SYSTEM PRESSURE TESTS. CONTRACTOR MAKING THE TEST SHALL PROVIDE 24 HOURS NOTICE TO ALL REQUIRED TO BE IN ATTENDANCE.
- ALL WORK SHALL MEET THE REQUIREMENTS OF NFPA STANDARDS. INSTALLATION PROCEDURES SHALL COMPLY WITH THE SAFETY RULES OF OSHA AND THE STATE OF PENNSYLVANIA FIRE SAFETY CODE.
- THE FIRE PROTECTION CONTRACTOR MUST PROVIDE A FIRE WATCH WHENEVER ANY WELDING IS DONE WITHIN THE AREA BEING WORKED, DURING THE WELDING OPERATION, AND FOR ONE HOUR AFTER WELDING IS COMPLETE.
- NO STOCK OF FURNISHINGS SHALL BE ALLOWED IN THE AREAS BEING WORKED UNTIL THE ENTIRE SYSTEM IS COMPLETED IN ACCORDANCE WITH THE ABOVE NOTES AND APPROVED BY THE AUTHORITY HAVING JURISDICTION.
- PROVIDE A MATERIAL TEST AND CERTIFICATION FORM TO THE AUTHORITY HAVING JURISDICTION AND OWNER'S INSURANCE CARRIER SO AS TO CERTIFY THAT THE SPRINKLER SYSTEM WAS INSTALLED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, SPECIFICATIONS, FEDERAL, STATE, AND LOCAL CODES AND PROCEDURES.
- UPON COMPLETION OF SYSTEM INSTALLATION, PERFORM A HYDROSTATIC TEST ON ALL PIPING AND ATTACHED APPURTENANCES IN THE PRESENCE OF AN AUTHORITY HAVING JURISDICTION. THE SYSTEM SHALL BE HYDROSTATIC ALLY TESTED AT A PRESSURE OF 200 PSI AND SHALL MAINTAIN THAT PRESSURE WITHOUT LOSS FOR 2 HOURS. TEST FAILURE SHALL BE DETERMINED BY A DROP IN GAUGE PRESSURE OR VISUAL LEAKAGE. THE TEST PRESSURE SHALL READ FROM A GAUGE LOCATED AT THE LOWEST ELEVATION POINT OF THE SYSTEM OR PORTION BEING TESTED. ALL TESTING THE SYSTEM SHALL BE IN ACCORDANCE WITH NFPA 13 AND NFPA 25.
- CONSTRUCTION PHASING OF THE PROJECT, THE EXISTING AREAS OF FIRE PROTECTION MUST BE MAINTAINED. THE FIRE PROTECTION CONTRACTOR IS TO PROVIDE SERVICE TO THESE AREAS FROM THE NEW FIRE PROTECTION SERVICE AS REQUIRED.

SPRINKLER SYSTEM DESIGN CRITERIA SYMBOLS

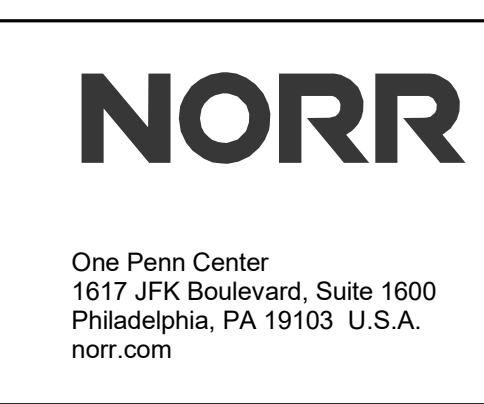


FIRE PROTECTION SHEET LIST

FP-001	COVERSHEET
FP-101	FIRE PROTECTION FIRST FLOOR PLAN
FP-102	FIRE PROTECTION SECOND FLOOR PLAN

LEGEND

FIRE SERVICE PIPING		F
SPRINKLER PIPING		SPR
FIRE PUMP TEST HEADER PIPING		FPTH
FIRE DEPARTMENT CONNECTION PIPING		FDC
STANDPIPE		WSP
COMBINATION SPRINKLER / STANDPIPE		SPRWSP
DRY STANDPIPE		DSP
ALARM CHECK VALVE W/ SUPERVISORY SWITCH		VALVE GATE BALL
DOUBLE CHECK DETECTOR ASSEMBLY (DCDA)		BACKFLOW PREVENTION DEVICE
EXISTING SPRINKLER		FIRE DEPARTMENT CONNECTION
EXISTING SIDE WALL TYPE SPRINKLER		CAPPED OUTLET
SIDE WALL TYPE SPRINKLER		CHECK VALVE
CONCEALED SIDE WALL SPRINKLER		PRESSURE GAUGE
PENDENT TYPE SPRINKLER		WATER TIGHT PIPE SLEEVE
CONCEALED TYPE PENDENT SPRINKLER		PIPE BREAK
UPRIGHT TYPE SPRINKLER		PIPE DROP
DRY TYPE SPRINKLER		PIPE UP OR DOWN
REMOVE EXISTING SPRINKLER		FIRE HOSE VALVE



CLIENT:
THE COLLEGE OF NEW JERSEY
2000 PENNINGTON ROAD
EWING, NJ

PROJECT TEAM

TCNJ - ROSCOE HALL STUDENT SERVICES RENOVATION
2000 PENNINGTON ROAD EWING, NJ

REV.	DATE	DESCRIPTION	ISSUED FOR

NJDCA REF NUMBER:
PROJECT NUMBER: **22031600**
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SHEET TITLE:
COVERSHEET

SHEET NUMBER:
FP-001

5

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3

2

1



PHASE 2

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One Penn Center
1617 JFK Boulevard, Suite 1600
Philadelphia, PA 19103 U.S.A.
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CLIENT:
THE COLLEGE OF NEW JERSEY
2000 PENNINGTON ROAD
EWING, NJ

PROJECT TEAM

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2000 PENNINGTON ROAD EWING, NJ

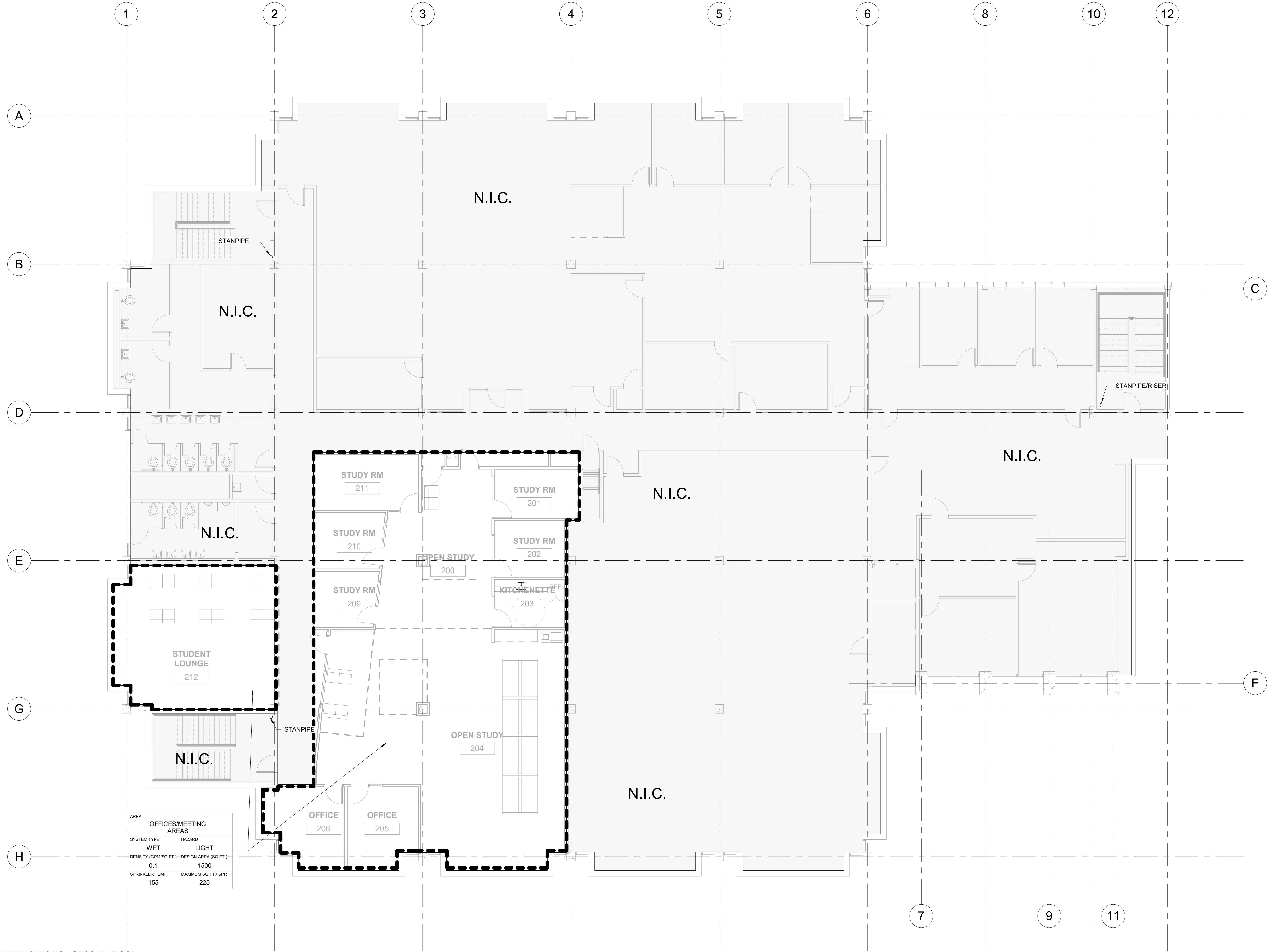
THE COLLEGE OF NEW JERSEY

REV.	DATE	DESCRIPTION	ISSUED FOR	BY	CHKD BY
1	03/02/2023	ISSUED FOR EPCO REVIEW	ISSUED FOR EPCO	JLO	HW

NADCA REF NUMBER:
PROJECT NUMBER: **22031600**
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SHEET TITLE:
FIRE PROTECTION FIRST FLOOR PLAN

SHEET NUMBER:
FP-101



AREA	OFFICES/MEETING AREAS
SYSTEM TYPE	WET LIGHT
DENSITY (GPM/SQ.FT.)	DESIGN AREA (SQ.FT.)
0.1	1500
SPRINKLER TEMP.	MAXIMUM SQ.FT./SPR.
155	225

1 FIRE PROTECTION SECOND FLOOR PLAN
1/8" = 1'-0"

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One Penn Center
1817 JFK Boulevard, Suite 1600
Philadelphia, PA 19103 U.S.A.
norr.com

CLIENT:
THE COLLEGE OF NEW JERSEY
2000 PENNINGTON ROAD
EWING, NJ

PROJECT TEAM

TCNJ - ROSCOE HALL STUDENT SERVICES RENOVATION
2000 PENNINGTON ROAD EWING, NJ

THE COLLEGE OF NEW JERSEY

REV.	DATE	DESCRIPTION	DRW. CHK.	CHK.
1	02/02/2023	ISSUED FOR PERMITS	HM	
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PROJECT NUMBER: **22031600**
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FIRE PROTECTION SECOND FLOOR PLAN

SHEET NUMBER:
FP-102



TCNJ

THE COLLEGE OF NEW JERSEY

Mandatory Documents

FORM #	TITLE OF FORM
1	MANDATORY EQUAL EMPLOYMENT OPPORTUNITY LANGUAGE
2	OWNERSHIP DISCLOSURE FORM
3	NON-COLLUSION STATEMENT
4	TWO-YEAR CHAPTER 51/EXECUTIVE ORDER 117 VENDOR CERTIFICATION AND DISCLOSURE OF POLITICAL CONTRIBUTIONS
5	DISCLOSURE OF INVESTMENT ACTIVITIES IN IRAN FORM
6	NON-INVOLVEMENT IN PROHIBITED ACTIVITIES IN RUSSIA OR BELARUS FORM
7	VENDOR QUALIFICATION SHEET



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 CONSTRUCTION CONTRACTS
FORM # 1

The College of New Jersey
PO Box 7718
Ewing, NJ 08628-0718

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, up-grading, 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 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 commencement of work, to 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.
- (3) 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 Division 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 **Subchapter 10 of the Administrative Code (NJAC 17:27-1.1 et seq.)**.

Additional Mandatory Construction Contract Language For State Agencies, Independent Authorities, Colleges and Universities Only

The Executive Order No. 151 (Corzine, August 28, 2009) and P.L. 2009, Chapter 335 include a provision which require all state agencies, independent authorities and colleges and universities to include additional mandatory equal employment and affirmative action language in its construction contracts. It is important to note that this language is in addition to and does not re- place the mandatory contract language and good faith efforts requirements for construction con- tracts required by N.J.A.C. 17:27-3.6, 3.7 and 3.8. The additional mandatory equal employment and affirmative action language is as follows:

It is the policy of The College of New Jersey that its contracts should create a work- force that reflects the diversity of the State of New Jersey. Therefore, contractors engaged by The College of New Jersey to perform under a construction contract shall put forth a good faith effort to engage in recruitment and employment practices that further the goal of fostering equal opportunities to minorities and women.

The contractor must demonstrate to The College of New Jersey's satisfaction that a good faith effort was made to ensure that minorities and women have been afforded equal opportunity to gain employment under The College of New Jersey's contract with the contractor. Payment may be withheld from a contractor's con- tract for failure to comply with these provisions.

Evidence of a "good faith effort" includes, but is not limited to:

1. The Contractor shall recruit prospective employees through the State Job bank website, managed by the Department of Labor and Workforce Development, available online at <http://NJ.gov/JobCentralNJ>;
2. The Contractor shall keep specific records of its efforts, including records of all individuals interviewed and hired, including the specific numbers of minorities and women;
3. The Contractor shall actively solicit and shall provide The College of New Jersey with proof of solicitations for employment, including but not limited to advertisements in general circulation media, professional service publications and electronic media; and
4. The Contractor shall provide evidence of efforts described at 2 above to The College of New Jersey no less frequently than once every 12 months.
5. The Contractor shall comply with the requirements set forth at N.J.A.C. 17:27-1.1 et seq.

To ensure successful implementation of the Executive Order and Law, state agencies, independent authorities and colleges and universities must forward an Initial Project Workforce Report (AA 201) for any projects funded with ARRA money to the Dept. of LWD, Construction EEO Monitoring Program immediately upon notification of award but prior to execution of the contract.

IF AWARDED A CONTRACT YOUR COMPANY/FIRM WILL BE REQUIRED TO COMPLY WITH THE AFFIRMATIVE ACTION REQUIREMENTS LISTED ABOVE.

Firm Name: _____

Signature: _____

Title: _____

Date: _____



OWNERSHIP DISCLOSURE FORM # 2

The College of New Jersey PO Box 7718 Ewing, NJ 08628-0718

BID SOLICITATION # AND TITLE: _____

VENDOR NAME: _____

PURSUANT TO N.J.S.A. 52:25-24.2, ALL PARTIES ENTERING INTO A CONTRACT WITH THE STATE ARE REQUIRED TO PROVIDE A STATEMENT OF OWNERSHIP.

- 1. The vendor is a Non-Profit Entity; and therefore, no disclosure is necessary.
2. The vendor is a Sole Proprietor; and therefore, no other disclosure is necessary. A Sole Proprietor is a person who owns an unincorporated business by himself or her-self. A limited liability company with a single member is not a Sole Proprietor.
3. The vendor is a corporation, partnership, or limited liability company; and therefore, disclosure is necessary.

If you answered YES to Question 3, you must disclose the following information below: (a) the names and addresses of all stockholders in the corporation who own 10% or more of its stock, of any class; (b) all individual partners in the partnership who own a 10% or greater interest therein; or, (c) all members in the limited liability company who own a 10% or greater interest therein.*

NAME ADDRESS ADDRESS CITY STATE ZIP

NAME ADDRESS ADDRESS CITY STATE ZIP

NAME ADDRESS ADDRESS CITY STATE ZIP

NAME ADDRESS ADDRESS CITY STATE ZIP

- 4. For each of the corporations, partnerships, or limited liability companies identified in response to Question #3 above, are there any individuals, partners, members, stockholders, corporations, partnerships, or limited liability companies owning a 10% or greater interest of those listed business entities?

If you answered YES to Question 4, you must disclose the following information below: (a) the names and addresses of all stockholders in the corporation who own 10% or more of its stock, of any class; (b) all individual partners in the partnership who own a 10% or greater interest therein; or, (c) all members in the limited liability company who own a 10% or greater interest therein. The disclosure(s) shall be continued until the names and addresses of every non-corporate stockholder, individual partner, and/or member a 10% or greater interest has been identified.*

NAME ADDRESS ADDRESS CITY STATE ZIP

NAME ADDRESS ADDRESS CITY STATE ZIP

NAME ADDRESS ADDRESS CITY STATE ZIP

NAME ADDRESS ADDRESS CITY STATE ZIP

- 5. As an alternative to completing this form, a Vendor with any direct or indirect parent entity which is publicly traded, may submit the name and address of each publicly traded entity and the name and address of each person that holds a 10% or greater beneficial interest in the publicly traded entity as of the last annual filing with the federal Securities and Exchange Commission or the foreign equivalent, and, if there is any person that holds a 10% or greater beneficial interest, also shall submit links to the websites containing the last annual filings with the federal Securities and Exchange Commission or the foreign equivalent and the relevant page numbers of the filings that contain the information on each person that holds a 10% or greater beneficial interest.*

* Attach additional sheets if necessary



**NON-COLLUSION STATEMENT
FORM # 3**

The College of New Jersey
PO Box 7718
Ewing, NJ 08628-0718

Date:

The College of New Jersey
The Office of Finance & Business Services, Purchasing Department
Administrative Services Building, Room 201
P.O. Box 7718
Ewing, New Jersey 08628-0718
To Whom It May Concern:

This is to certify that the undersigned bidder _____ as
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 the proposal submitted to The College of New
Jersey on the _____ day of _____, 20 ____.

Signature:

Corporate Seal:

Attest by:

Sworn to and subscribed before me this _____ day of _____, 20 ____.

My commission Expires: _____

Notary Public

THIS STATEMENT MUST BE COMPLETED AND SIGNED



INFORMATION AND INSTRUCTIONS
For Completing the "Two-Year Vendor Certification and Disclosure of
Political Contributions Chapter 51
FORM # 4

The College of New Jersey
PO Box 7718
Ewing, NJ 08628-0718

Background Information

On September 22, 2004, then-Governor James E. McGreevey issued E.O. 134, the purpose of which was to insulate the negotiation and award of State contracts from political contributions that posed a risk of improper influence, purchase of access or the appearance thereof. To this end, E.O. 134 prohibited State departments, agencies and authorities from entering into contracts exceeding \$17,500 with individuals or entities that made certain political contributions. E.O. 134 was superseded by Public Law 2005, c. 51, signed into law on March 22, 2005 ("Chapter 51").

On September 24, 2008, Governor Jon S. Corzine issued E.O. 117 which is designed to enhance New Jersey's efforts to protect the integrity of procurement decisions and increase the public's confidence in government. The Executive Order builds upon the provisions of Chapter 51.

Two-Year Certification Process

Upon approval by the State Chapter 51 Review Unit, the Certification and Disclosure of Political Contributions form is valid for a two (2) year period. Thus, if a vendor receives approval on January 1, 2014, the certification expiration date would be December 31, 2015. Any change in the vendor's ownership status and/or political contributions during the two-year period will require the submission of new Chapter 51/Executive Order 117 forms to the State Review Unit. **Please note that it is the vendor's responsibility to file new forms with the State should these changes occur.**

State Agency Instructions: Prior to the awarding of a contract, the State Agency should first use NJSTART (<https://www.njstart.gov/bsol>) to check the status of a vendor's Chapter 51 certification before contacting the Review Unit's mailbox at CD134@treas.nj.gov. If the State Agency does not find any Chapter 51 Certification information in NJSTART and/or the vendor is not registered in NJSTART, then the State Agency should send an e-mail to CD134@treas.nj.gov to verify the certification status of the vendor. If the response is that the vendor is NOT within an approved two-year period, then forms must be obtained from the vendor and forwarded for review. If the response is that the vendor is within an approved two-year period, then the response so stating should be placed with the bid/contract documentation for the subject project.

Instructions for Completing the Form

Part 1: BUSINESS ENTITY INFORMATION

Business Name – Enter the full legal name of the vendor, including trade name if applicable.

Address, City, State, Zip and Phone Number -- Enter the vendor's street address, city, state, zip code and telephone number.

Vendor Email – Enter the vendor's primary email address.

Vendor FEIN – Please enter the vendor's Federal Employment Identification Number.

Business Type - Check the appropriate box that represents the vendor's type of business formation.

Listing of officers, shareholders, partners or members - Based on the box checked for the business type, provide the corresponding information. (A complete list must be provided.)

Part 2: DISCLOSURE OF CONTRIBUTIONS

Read the three types of political contributions that require disclosure and, if applicable, provide the recipient's information. The definition of "Business Entity/Vendor" and "Contribution" can be found on pages 3 and 4 of this form.

Name of Recipient - Enter the full legal name of the recipient.

Address of Recipient - Enter the recipient's street address.

Date of Contribution - Indicate the date the contribution was given.

Amount of Contribution - Enter the dollar amount of the contribution.

Type of Contribution - Select the type of contribution from the examples given.

Contributor's Name - Enter the full name of the contributor.

Relationship of the Contributor to the Vendor - Indicate the relationship of the contributor to the vendor. (e.g. officer or shareholder of the company, partner, member, parent company of the vendor, subsidiary of the vendor, etc.)

NOTE: If form is being completed electronically, click "Add a Contribution" to enter additional contributions. Otherwise, please attach additional pages as necessary.

Check the box under the recipient information if no reportable contributions have been solicited or made by the business entity. **This box must be checked if there are no contributions to report.**

Part 3: CERTIFICATION

Check Box A if the representative completing the Certification and Disclosure form is doing so on behalf of the business entity and all individuals and/or entities whose contributions are attributable to the business entity.

(No additional Certification and Disclosure forms are required if BOX A is checked.)

Check Box B if the representative completing the Certification and Disclosure form is doing so on behalf of the business entity and all individuals and/or entities whose contributions are attributable to the business entity with the exception of those individuals and/or entities that submit their own separate form. For example, the representative is not signing on behalf of the vice president of a corporation, but all others. The vice president completes a separate Certification and Disclosure form. **(Additional Certification and Disclosure forms are required from those individuals and/or entities that the representative is not signing on behalf of and are included with the business entity's submittal.)**

Check Box C if the representative completing the Certification and Disclosure form is doing so on behalf of the business entity only. **(Additional Certification and Disclosure forms are required from all individuals and/or entities whose contributions are attributable to the business entity and must be included with the business entity submittal.)**

Check Box D when a sole proprietor is completing the Certification and Disclosure form or when an individual or entity whose contributions are attributable to the business entity is completing a separate Certification and Disclosure form.

Read the five statements of certification prior to signing.

The representative authorized to complete the Certification and Disclosure form must sign and print her/his name, title or position and enter the date.

State Agency Procedure for Submitting Form(s)

The State Agency should submit the completed and signed Two-Year Vendor Certification and Disclosure forms either electronically to: cd134@treas.nj.gov or regular mail at: Chapter 51 Review Unit, P.O. Box 230, 33 West State Street, Trenton, NJ 08625-0230. Original forms should remain with the State Agency and copies should be sent to the Chapter 51 Review Unit.

Business Entity Procedure for Submitting Form(s)

The business entity should return this form to the contracting State Agency.

The business entity can submit the Certification and Disclosure form directly to the Chapter 51 Review Unit only when:

- The business entity is approaching its two-year certification expiration date and is seeking certification renewal;
- The business entity had a change in its ownership structure; OR
- The business entity made any contributions during the period in which its last two-year certification was in effect, or during the term of a contract with a State Agency.

Questions & Information

Questions regarding Public Law 2005, Chapter 51 (N.J.S.A. 19:44A-20.13) or E.O. 117 (2008) may be submitted electronically through the Division of Purchase and Property website at: <https://www.state.nj.us/treas/purchase/eo134questions.shtml>.

Reference materials and forms are posted on the Political Contributions Compliance website at: <http://www.state.nj.us/treasury/purchase/execorder134.shtml>.



Two-Year Chapter 51/Executive Order 117 Vendor Certification and Disclosure of Political Contributions FORM # 4

The College of New Jersey PO Box 7718 Ewing, NJ 08628-0718

FOR STATE USE ONLY

Solicitation, RFP, or Contract No. _____ Award Amount _____

Description of Services _____

State Agency Name _____ Contact Person _____

Phone Number _____ Contact Email _____

Check if the Contract / Agreement is Being Funded Using FHWA Funds

Please check if requesting recertification

Part 1: Business Entity Information

Full Legal Business Name _____ (Including trade name if applicable)

Address _____

City _____ State _____ Zip _____ Phone _____

Vendor Email _____ Vendor FEIN (SS# if sole proprietor/natural person) _____

Check off the business type and list below the required information for the type of business selected. MUST BE COMPLETED IN FULL

- Corporation: LIST ALL OFFICERS and any 10% and greater shareholder (If the corporation only has one officer, please write "sole officer" after the officer's name.)
Professional Corporation: LIST ALL OFFICERS and ALL SHAREHOLDERS
Partnership: LIST ALL PARTNERS with any equity interest
Limited Liability Company: LIST ALL MEMBERS with any equity interest
Sole Proprietor

Note: "Officers" means President, Vice President with senior management responsibility, Secretary, Treasurer, Chief Executive Officer or Chief Financial Officer of a corporation, or any person routinely performing such functions for a corporation.

Also Note: "N/A will not be accepted as a valid response. Where applicable, indicate "None."

All Officers of a Corporation or PC

10% and greater shareholders of a corporation or all shareholders of a PC

Blank lines for listing officers of a corporation or professional corporation.

Blank lines for listing 10% and greater shareholders of a corporation or all shareholders of a professional corporation.

All Equity partners of a Partnership

All Equity members of a LLC

Blank lines for listing equity partners of a partnership.

Blank lines for listing equity members of a LLC.

If you need additional space for listing of Officers, Shareholders, Partners or Members, please attach separate page.

Part 2: Disclosure of Contributions by the business entity or any person or entity whose contributions are attributable to the business entity.

1. **Report below all contributions solicited or made during the 4 years immediately preceding the commencement of negotiations or submission of a proposal to any:**

Political organization organized under Section 527 of the Internal Revenue Code and which also meets the definition of a continuing political committee as defined in N.J.S.A. 19:44A-3(n)

2. **Report below all contributions solicited or made during the 5 ½ years immediately preceding the commencement of negotiations or submission of a proposal to any:**

Candidate Committee for or Election Fund of any Gubernatorial or Lieutenant Gubernatorial candidate
State Political Party Committee
County Political Party Committee

3. **Report below all contributions solicited or made during the 18 months immediately preceding the commencement of negotiations or submission of a proposal to any:**

Municipal Political Party Committee
Legislative Leadership Committee

Full Legal Name of Recipient _____
Address of Recipient _____
Date of Contribution _____ Amount of Contribution _____
Type of Contribution (i.e. currency, check, loan, in-kind) _____
Contributor Name _____
Relationship of Contributor to the Vendor _____
If this form is not being completed electronically, please attach additional contributions on separate page. Click the "Add a Contribution" tab to enter additional contributions.
<input type="button" value="Remove Contribution"/>
<input type="button" value="Add a Contribution"/>

Check this box only if no political contributions have been solicited or made by the business entity or any person or entity whose contributions are attributable to the business entity.

Part 3: Certification (Check one box only)

- (A) I am certifying on behalf of the business entity and all individuals and/or entities whose contributions are attributable to the business entity as listed on Page 1 under **Part 1: Vendor Information**.
- (B) I am certifying on behalf of the business entity and all individuals and/or entities whose contributions are attributable to the business entity as listed on Page 1 under **Part 1: Vendor Information**, except for the individuals and/or entities who are submitting separate Certification and Disclosure forms which are included with this submittal.
- (C) I am certifying on behalf of the business entity only; any remaining persons or entities whose contributions are attributable to the business entity (as listed on Page 1) have completed separate Certification and Disclosure forms which are included with this submittal.
- (D) I am certifying as an individual or entity whose contributions are attributable to the business entity.

I hereby certify as follows:

- I have read the Information and Instructions accompanying this form prior to completing the certification on behalf of the business entity.**
- All reportable contributions made by or attributable to the business entity have been listed above.**

3. The business entity has not knowingly solicited or made any contribution of money, pledge of contribution, including in-kind contributions, that would bar the award of a contract to the business entity unless otherwise disclosed above:

- a) Within the 18 months immediately preceding the commencement of negotiations or submission of a proposal for the contract or agreement to:
 - (i) A candidate committee or election fund of any candidate for the public office of Governor or Lieutenant Governor or to a campaign committee or election fund of holder of public office of Governor or Lieutenant Governor; OR
 - (ii) Any State, County or Municipal political party committee; OR
 - (iii) Any Legislative Leadership committee.
- b) During the term of office of the current Governor or Lieutenant Governor to:
 - (i) A candidate committee or election fund of a holder of the public office of Governor or Lieutenant Governor; OR
 - (ii) Any State or County political party committee of the political party that nominated the sitting Governor or Lieutenant Governor in the last gubernatorial election.
- c) Within the 18 months immediately preceding the last day of the sitting Governor or Lieutenant Governor's first term of office to:
 - (i) A candidate committee or election fund of the incumbent Governor or Lieutenant Governor; OR
 - (ii) Any State or County political party committee of the political party that nominated the sitting Governor or Lieutenant Governor in the last gubernatorial election.

4. During the term of the contract/agreement the business entity has a continuing responsibility to report, by submitting a new Certification and Disclosure form, any contribution it solicits or makes to:

- (a) Any candidate committee or election fund of any candidate or holder of the public office of Governor or Lieutenant Governor; OR
- (b) Any State, County or Municipal political party committee; OR
- (c) Any Legislative Leadership committee.

The business entity further acknowledges that contributions solicited or made during the term of the contract/agreement may be determined to be a material breach of the contract/agreement.

5. During the two-year certification period the business entity will report any changes in its ownership structure (including the appointment of an officer within a corporation) by submitting a new Certification and Disclosure form indicating the new owner(s) and reporting said owner(s) contributions.

I certify that the foregoing statements in Parts 1, 2 and 3 are true. I am aware that if any of the statements are willfully false, I may be subject to punishment.

Signed Name _____ Print Name _____

Title/Position _____ Date _____

Procedure for Submitting Form(s)

The contracting State Agency should submit this form to the Chapter 51 Review Unit when it has been required as part of a contracting process. The contracting State Agency should submit a copy of the completed and signed form(s), to the Chapter 51 Unit and retain the original for their records.

The business entity should return this form to the contracting State Agency. The business entity can submit this form directly to the Chapter 51 Review Unit only when it -

- Is approaching its two-year certification expiration date and wishes to renew certification;
- Had a change in its ownership structure; OR
- Made any contributions during the period in which its last two-year certification was in effect, or during the term of a contract with a State Agency.

Forms should be submitted either electronically to: cd134@treas.nj.gov , or regular mail at: Chapter 51 Review Unit, P.O. Box 230, 33 West State Street, Trenton, NJ 08625.



DISCLOSURE OF INVESTMENT ACTIVITIES IN IRAN

FORM # 5

The College of New Jersey
PO Box 7718
Ewing, NJ 08628-0718

BID SOLICITATION # AND TITLE: _____

VENDOR NAME: _____

Pursuant to N.J.S.A. 52:32-57, et seq. (P.L. 2012, c.25 and P.L. 2021, c.4) any person or entity that submits a bid or proposal or otherwise proposes to enter into or renew a contract must certify that neither the person nor entity, nor any of its parents, subsidiaries, or affiliates, is identified on the New Jersey Department of the Treasury's Chapter 25 List as a person or entity engaged in investment activities in Iran.

CHECK THE APPROPRIATE BOX

[] I certify, pursuant to N.J.S.A. 52:32-57, et seq. (P.L. 2012, c.25 and P.L. 2021, c.4), that neither the Vendor/Bidder listed above nor any of its parents, subsidiaries, or affiliates is listed on the New Jersey Department of the Treasury's Chapter 25 List of entities determined to be engaged in prohibited activities in Iran.

OR

[] I am unable to certify as above because the Vendor/Bidder and/or one or more of its parents, subsidiaries, or affiliates is listed on the New Jersey Department of the Treasury's Chapter 25 List. I will provide a detailed, accurate and precise description of the activities of the Vendor/Bidder, or one of its parents, subsidiaries or affiliates, has engaged in regarding investment activities in Iran by completing the information requested below.

Entity Engaged in Investment Activities
Relationship to Vendor/ Bidder
Description of Activities
Duration of Engagement
Anticipated Cessation Date

*Attach Additional Sheets If Necessary.

CERTIFICATION

I, the undersigned, certify that I am authorized to execute this certification on behalf of the Vendor, that the foregoing information and any attachments hereto, to the best of my knowledge are true and complete. I acknowledge that the State of New Jersey is relying on the information contained herein, and that the Vendor is under a continuing obligation from the date of this certification through the completion of any contract(s) with the State to notify the State 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. If I do so, I may be subject to criminal prosecution under the law, and it will constitute a material breach of my contract(s) with the State, permitting the State to declare any contract(s) resulting from this certification void and unenforceable.

Signature

Date

Print Name and Title



CERTIFICATION OF NON-INVOLVEMENT ACTIVITIES IN RUSSIA OR BELARUS FORM # 6

The College of New Jersey PO Box 7718 Ewing, NJ 08628-0718

BID SOLITICATION TITLE BID SOLITICATION NO.

Pursuant to N.J.S.A. 52:32-60.1, et seq. (P.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 engaged in prohibited activities in Russia or Belarus.

CERTIFICATION

I, the undersigned, certify that I have read the definition of "Vendor" below, and have reviewed the Department of the Treasury's list of Vendors engaged in prohibited activities in Russia or Belarus, and having done so certify:

(Check the Appropriate Box)

- A. That the Vendor is not identified on the Department of the Treasury's list of Vendors engaged in prohibited activities in Russia or Belarus. OR B. That I am unable to certify as to "A" above, because the Vendor is identified on the Department of the Treasury's list of Vendors engaged in prohibited activities in Russia and/or Belarus. OR C. That I am unable to certify as to "A" above, because the Vendor, though not identified on the Department of the Treasury's list of Vendors engaged in prohibited activities in Russia or Belarus, is engaged in prohibited activities in Russia or Belarus. A detailed, accurate and precise description of the Vendor's activity in Russia and/or Belarus is set forth below. Description of Prohibited Activity (Attach Additional Sheets If Necessary.)

Additional Certification of Federal Exemption and/or License (Complete only if appropriate)

- D. I, the undersigned, certify that Vendor is currently engaged in activity in Russia and/or Belarus, but is doing so consistent with federal law and/or regulation and/or license. A detailed description of how the Vendor's activity in Russia and/or Belarus is consistent with federal law, or is within the requirements of the federal exemption and/or license 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

Definitions

1 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). ii Engaged in prohibited activities in Russia or Belarus means: (1) companies in which the Government of Russia or Belarus has any direct equity share; (2) having any business operations commencing after the effective date of this act that involve contracts with or the provision of goods or services to the Government of Russia or Belarus; (3) being headquartered in Russia or having its principal place of business in Russia or Belarus, or (4) supporting, assisting or facilitating the Government of Russia or Belarus in their campaigns to invade the sovereign country of Ukraine, either through in-kind support or for profit.



VENDOR QUALIFICATION SHEET
FORM # 7

The College of New Jersey
PO Box 7718
Ewing, NJ 08628-0718

Vendors are required to submit evidence of qualifications to meet all requirements as required by the Office of Finance & Business Services at The College of New Jersey by providing the information listed below. Vendors must comply with the College's terms and conditions available on the Purchasing website.

If this information is being requested as part of an RFP or RFQ, vendors may be requested to furnish additional information for clarification purposes. This will in no way change the vendor's original proposal.

All vendors are encouraged to register with the State of New Jersey, Division of Purchase and Property via NJSTART.

TO BE COMPLETED BY VENDOR

1. Please list the types of commodities that your company can provide.

- A.
B.
C.

2. The number of years your firm has been providing these services. Year(s)

3. Location of vendor's office and personnel that will be responsible for managing contract/service:

Name:
Title:
Telephone Number:
Email Address:
Street Address:
City/State/Zip:
Federal Identification Number:

4. Does your firm have a New Jersey Business Registration Certificate? Yes No
If yes, please attach a copy of the certificate. If you would like to register, visit the State website here.

5. Is your firm registered under any of the following categories in the State of New Jersey? If yes, please attach a copy of the certificate or certification statement from the New Jersey Division of Revenue and Enterprise Services. If no and you would like to register, please contact the New Jersey Division of Revenue and Enterprise Services at 609-292-2146.

Small Business Enterprise (SBE): Yes No
Women-Owned Business Enterprise (WBE): Yes No
Minority-Owned Business Enterprise (MBE): Yes No
Veteran-Owned Business (VOB): Yes No
Disabled Veteran-Owned Business (DVOB): Yes No

VENDOR QUALIFICATIONS- continued

Under NJ Executive Order 34, TCNJ is responsible for soliciting demographic, ethnic, and gender information from its vendors. Your response, however, is **strictly voluntary**. Please be advised that any contracting decisions made by TCNJ will **not** be influenced in any way by your decision to provide the above information. TCNJ is required to seek the following information from each firm under contract with us:

1. Is more than fifty percent (50%) of your company minority owned (African-American, Hispanic, Asian, and/or Native American) Yes No
2. Is more than fifty percent (50%) of your company woman owned? Yes No
3. What is the ethnicity of the owner of your company: (check applicable according to 51% ownership)

- Asian American
- Multiple Ethnicities
- Non-Minority
- Hispanic American
- African American
- Caucasian American Female
- Native American
- Unspecified

11. Please provide a list of former or present clients. Also, indicate the name of a contact person and telephone number for reference purposes. **Any personnel from The College of New Jersey listed as a reference will not be considered a valid reference.**

A. Client Name: _____

Contact Name: _____

Telephone Number: _____

Email Address: _____

B. Client Name: _____

Contact Name: _____

Telephone Number: _____

Email Address: _____

C. Client Name: _____

Contact Name: _____

Telephone Number: _____

Email Address: _____

VENDOR QUALIFICATIONS- continued

12. Please answer the questions below related to your prior experience. If any of the responses are yes, attach a summary of details on a separate sheet.

Has the bidder:

- a. been found, through either court adjudication, arbitration, mediation, or other contractually stipulated alternate dispute resolution mechanism, to have: failed to provide or perform goods or services; or failed to complete the contract in a timely manner; or otherwise performed unsatisfactorily under a prior contract with the contracting unit? Yes No

- b. defaulted on a contract, thereby requiring the local unit to utilize the services of another contractor to provide the goods or perform the services or to correct or complete the contract or requiring the local unit to look to the bidder's surety for completion of the contract or tender of the costs of completion? Yes No

- c. been debarred or suspended from contracting with any of the agencies or departments of the executive branch of the State of New Jersey at the time of contract award, whether or not the action was based on experience with the contracting unit. Yes No

Firm Name: _____

Signature: _____

Title: _____

Date: _____



CONTRACT FOR CONSTRUCTION

This AGREEMENT is entered into as of the ____ day of _____, _____, between

The College: The College of New Jersey (“TCNJ” or the “College”)
PO Box 7718
2000 Pennington Road
Ewing, New Jersey 08628-0718

and

the Contractor: _____ (the “Contractor”)

in connection with

the Project: [Roscoe West Hall '68 Student Services Renovation] (the “Project”)

The Architect: NORR
1617 JFK Blvd., Suite 1600
Philadelphia, PA 19103

ARTICLE 1

EMPLOYMENT OF THE CONTRACTOR/THE PROJECT DESCRIPTION

1.1 The College employs the Contractor and the Contractor agrees to perform the construction for the Project identified above. The Project is described in more detail in the College’s Plans and Specifications prepared by the Architect.

ARTICLE 2

THE CONTRACT DOCUMENTS

2.1 The Contract Documents consist of this Contract for Construction and the Exhibits attached hereto (“Contract for Construction”), the General Conditions of the Contract for Construction (the “General Conditions”) (and any other General, Supplementary and other Conditions), the Plans and Specifications, and also the following documents:

- (a) The Contractor's Bid excluding limitations and qualifications unless such limitation or qualification is specifically accepted in writing by the College;
- (c) Addenda and Clarifications issued before the bid due date;
- (d) The Project Bidding Schedule; and
- (e) Modifications issued after execution of this Contract for Construction.

These documents all form the "Contract," and are as fully a part of this Contract as if attached hereto or repeated herein. This Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral.

ARTICLE 3 **SCOPE OF WORK**

3.1 The Contractor shall fully perform the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others. The Contractor shall assume full responsibility for constructing and completing the Project and all the Work, including providing all labor, Subcontractors, materials, equipment, and services reasonably inferable from the Contract Documents and all applicable laws, codes and professional standards, and providing all supervision, management, and scheduling required in the General Conditions and as noted throughout the Contract Documents.

ARTICLE 4 **CONTRACT TIMES**

4.1 TIME OF THE ESSENCE. All dates and durations specified in this Contract, including the Construction Start Date(s), any Milestones Dates, any Substantial Completion Date(s) and any Final Completion Date(s) (collectively, "Contract Times") are agreed to be of the essence.

4.2 CONSTRUCTION START. The Work shall start no later than ten (10) calendar days after the College issues a Notice to Proceed to the Contractor ("Construction Start Date"). If the Work is to be performed in phases, the College may issue a separate Notice to Proceed with respect to each phase (e.g., Phase 1 Notice to Proceed, Phase 2 Notice to Proceed, etc.) thereby establishing different Construction Start Dates for each phase (e.g., Phase 1 Construction Start Date, Phase 2 Construction Start Date, etc.). The College may, in its sole discretion and at no cost to the College, choose to delay the issuance of a Notice to Proceed and the Construction Start Date for any phase until after the Contractor has achieved Substantial or Final Completion of any other phase.

4.3 MILESTONES. The construction tasks or activities shall be completed within the number of calendar days after the Construction Start Date as set forth in the Notice to Proceed ("Milestone Dates"). If the Work is to be performed in phases, each phase may have

separate Milestone Dates (e.g., Phase 1 Milestone Dates, Phase 2 Milestone Dates, etc.), which dates shall be set forth in the Notice to Proceed for that phase.

4.4 SUBSTANTIAL COMPLETION. The Contractor shall diligently prosecute the Work and shall achieve Substantial Completion of the entire Work as set forth in the Notice to Proceed (“Substantial Completion Date”). If the Work is to be performed in phases, each phase may have a separate Substantial Completion Date (e.g., Phase 1 Substantial Completion Date, Phase 2 Substantial Completion Date, etc.), which date shall be set forth in the Notice to Proceed for that phase. The definition and requirements of Substantial Completion are set forth in the General Conditions. The Substantial Completion Date(s) shall only be changed by a written change order.

4.5 FINAL COMPLETION. The Contractor shall achieve Final Completion of the entire Work as set forth in the Notice to Proceed (“Final Completion Date”). If the Work is to be performed in phases, each phase may have a separate Final Completion Date (e.g., Phase 1 Final Completion Date, Phase 2 Final Completion Date, etc.), which date shall be set forth in the Notice to Proceed for that phase. The requirements for Final Completion are defined in the General Conditions as well as the Specifications of the Project. The Final Completion Date(s) shall only be changed by written change order.

4.6 LIQUIDATED DAMAGES FOR DELAY. If the Contractor fails to achieve Substantial Completion of a phase of the Work or of the entire Work by the Substantial Completion Date(s) set forth in the applicable Notice to Proceed (as extended by Change Order, if applicable), and the delay is not excused by the College, then the Contractor shall pay the College the following amounts as liquidated damages for delay (“Liquidated Damages”) for each calendar day that the phase of the Work or the entire Work is not substantially completed beyond the applicable Substantial Completion Date:

\$ 1/20th of 1% per calendar day.

The College and the Contractor agree that the actual loss to the College from construction delays and the inability to use the Project or any phase of the Project in a substantially completed state are for the most part difficult to quantify, and that the foregoing Liquidated Damages formula results in damages amounts that are a reasonable estimate of the damage to the College for not being able to use the Project in a substantially completed state and are not penalties and are not intended to be penalties. The College may deduct Liquidated Damages from payments due under this Contract, but its failure to withhold Liquidated Damages or to assert a claim for Liquidated Damages shall not be deemed a waiver of the College’s right to withhold or to assert a claim for damages for any delay that occurs at any time on the Project.

ARTICLE 5
CONTRACT PRICE

5.1 CONTRACT PRICE. The Contractor shall be paid \$_____ for the complete performance of this Contract, which was proposed by the Contractor in its bid and accepted by the College (the "Contract Price"). The Contractor shall be entitled to additional compensation for authorized changes which include the cost of the changes and mark-ups included in change orders approved in writing by the College in accordance with the change order provision set forth in the General Conditions.

5.2 ALTERNATES. The Contract Price is based upon and includes the following alternates, if any, which are described in the Contract Documents and are hereby accepted by the College:

[_____]

5.3 UNIT PRICES. The Contract Price is based upon and includes the following unit prices, if any, which are described in the Contract Documents:

[_____]

5.4 ALLOWANCES. The Contract Price is based upon and includes the following allowances, if any, which are described in the Contract Documents:

[_____]

ARTICLE 6
PAYMENTS TO THE CONTRACTOR

6.1 PAYMENT. The Contractor will be paid by the College in accordance with this Article and the payment provision in the General Conditions.

6.2 MONTHLY PROGRESS PAYMENTS. The College will make progress payments as the Work proceeds based on written invoices submitted monthly by the Contractor and approved by the Architect and the College. No payments will be made until the Contractor submits a unit schedule break down showing the portions of the total Contract Price for each principal category of Work and value loaded CPM schedule allocating the Contract Price among the schedule activities. Monthly progress payment amounts shall be based on the percentages of the Work completed as of the end of the pay period (less earlier payments). All payment requests or invoices and all payments shall be governed by the payment provision of the General Conditions as well as any special requirements of this Contract, including the requirement that progress payments shall be based on a unit schedule breakdown and a value loaded CPM schedule.

6.3 RETAINAGE. The College will retain 2% of the amount due on each progress payment pending Final Completion of the Work. The holding and release of retainage shall be governed by the payment provision of the General Conditions.

6.4 CHANGE ORDERS. The Contractor shall invoice for change order work in the monthly progress payment invoices as the change order work is performed, but only after a written change order and TCNJ issued Purchase Order has been signed by the College. Changes in the Work shall be governed by the change order provision of the General Conditions.

6.5 FINAL PAYMENT. Upon final completion of all Work included in the Contract Documents including all change orders, acceptance of the Work by the Architect and the College, the satisfactory completion of all of the requirements in the General Conditions for final completion, and the issuance of the Certificate of Final Completion, the Contractor will be paid the fully adjusted Contract Price including any retainage withheld (less earlier payments). The invoice for final payment and final payment shall also be subject to the payment provision of the General Conditions and any special requirements of this Contract.

6.6 PAYMENT TERMS. All invoices and payments shall also be subject to the General Conditions, including the provisions regarding payments, to the right of the College to withhold payments or to make deductions from payments, and to the Prevailing Wage Act requirements set forth in the General Conditions. The College will pay proper final invoices within thirty (30) days of their submission to the College with the approval of the Architect.

6.7 SUBMISSION OF INVOICES. Prior to the submission of the invoice, the Contractor will submit to the College and the Architect, in draft form, a “pencil copy” of the monthly invoice for review and approval setting forth each line item for which the Contractor intends to request payment in that invoice based on the claimed percent completed for that line item. Upon receipt of said “pencil copy”, the College and the Architect shall observe the Work in place and, on the basis of such observations, will either approve the amounts requested or modify the Contractor’s request, based on the College’s independent assessment of the Work in place. The College will then return the pencil copy invoice to the Contractor for the Contractor to then adjust and submit the final invoice with the agreed to percentages completed per line item to the College for payment. No invoice shall be submitted for payment until all amounts and completion percentages have been determined in this manner.

6.8 PROMPT PAYMENT ACT. For the purposes of the State’s Prompt Payment Act, N.J.S.A. 2A:30A-1, et seq.:

(a) An invoice will be deemed to have been received when it is received by the College at the address designated in the pre-construction conference for receipt of the invoices.

(b) The “billing date” as that term is used in N.J.S.A. 2A:30A-2 shall be the earlier of the date upon which an invoice for payment is approved for payment or 20 days after the invoice is received, unless within such 20 day period the invoice is found to be incomplete or

otherwise unacceptable and returned to the Contractor, with a written explanation of deficiencies, the amount withheld and the reasons for withholding payment.

(c) In the event that an invoice is found to be deficient and returned to the Contractor, the “billing date” shall be calculated from the date that a corrected invoice is received.

(d) Payment shall be considered to have been made on the date on which a check for such payment is dated.

(e) Payment terms (e.g., “net 20”) offered by the Contractor shall not govern the College’s obligation to make payment.

(f) The following periods of time will not be included in the calculation of the due date of the Contractor’s invoice:

(i) Any time elapsed between receipt of an improper invoice and its return to the Contractor, not to exceed 20 calendar days; or

(ii) Any time elapsed between the College’s return of an improper invoice to the Contractor and the College’s receipt of a corrected invoice.

If the State’s Prompt Payment Act is amended, or the language stated herein is inconsistent with the language contained in the State’s Prompt Payment Act, the language of the State’s Prompt Payment Act shall control.

6.9 LIMITATIONS ON APPLICABILITY. The provisions of this Article shall not govern the College’s payment obligations nor shall they supersede or modify any other contractual provision allowing the withholding of monies from the Contractor to the extent that the Contractor has not performed in accordance with the provisions of the Contract Documents. This Article also shall not govern the College’s payment obligations nor supersede or modify any other contractual provision governing the Contractor claims for additional compensation beyond the base Contract Price and approved change orders.

6.10 INTEREST. Interest shall be payable on amounts due the Contractor if not paid within thirty (30) calendar days after the billing date specified above, as provided under the State’s Prompt Payment Act, N.J.S.A. 2A:30A-1, et seq. Interest on amounts due shall be payable to the Contractor for the period beginning on the day after the required payment date and ending on the date on which the check for payment is drawn. Interest may be paid by separate payment to the Contractor, but shall be paid within 30 days of payment of the principal amount of the approved invoice. Nothing in this Article shall be construed as entitling the Contractor to payment of interest on any sum withheld by the College for any reason permitted under the Contract Documents or applicable law, or on any claim for additional compensation, over and above sums due under the base Contract Price or approved change orders.

ARTICLE 7
DISPUTE RESOLUTION

7.1 If a dispute or claim arises out of or relates to this Contract, or the breach thereof, and if the dispute cannot be settled through negotiation, the method for resolution of such dispute or claim shall be as provided in the dispute resolution provision of the General Conditions.

ARTICLE 8
TERMINATION OR SUSPENSION

8.1 This Contract may be terminated by the College as provided in the termination and suspension provision in the General Conditions.

8.2 The Work may be suspended by the College or the Contractor as provided in termination and suspension provision in the General Conditions.

ARTICLE 9
INSURANCE AND BONDS

9.1 CONTRACTOR'S INSURANCE. The Contractor shall purchase and maintain insurance as set forth in the insurance and bonds provision of the General Conditions. To the extent the Contractor shall be required to purchase and maintain additional insurance or insurance that differs from that set forth in the General Conditions, such requirements are set forth below:

[_____]

9.2 SUBCONTRACTOR'S INSURANCE. The Contractor shall ensure that its Subcontractors purchase and maintain insurance as set forth in the insurance and bond provision of the General Conditions.

9.3 PAYMENT AND PERFORMANCE BOND. The Contractor shall furnish the College with a payment bond and a performance bond as set forth in the insurance and bond provision of the General Conditions.

ARTICLE 10
OTHER PROVISIONS

10.1 CONTRACTOR REPRESENTATIONS. The Contractor represents to the College that it has:

(a) **Examination of the Contract Documents.** Examined and carefully studied the Contract Documents and the other documents in the bid documents, and that they are sufficient for performing the Work at the Contract Price.

(b) **Examination of Site.** Visited the site and become familiar with and is satisfied as to the general, local and site conditions that may affect the cost, progress, and performance of the Work.

(c) **Familiarity with Law.** Familiarized itself with all federal, state, and local laws and regulations that may affect the cost, progress, and performance of the Work.

(d) **Familiarity with Other Information and Other Documents.** Carefully studied all reports of investigations and tests of the site and subsurface conditions at or contiguous to the site and all drawings of physical conditions at the site including surface or subsurface composition, water, structures and utilities at or near to the site.

(e) **Additional Information Not Required for Bidding or Contract Performance.** Does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price.

10.2 ASSIGNMENT OF CONTRACT. The Contractor may not assign this Contract or any rights under or interests in this Contract including its right to payments under this Contract.

10.3 CONTRACTOR PERSONNEL ASSIGNED. The Contractor's team for this Project shall consist of the following personnel, who shall not be reassigned without the College's prior written consent:

<u>Name</u>	<u>Position</u>
_____	<u>Project Executive</u>
_____	<u>Project Manager</u>
_____	<u>Project Superintendent</u>
_____	<u>Project Scheduler</u>

The College reserves the right to request and have any member of the Contractor's or Subcontractor's staff replaced on the Project for any non-discriminatory reason.

10.4 NOTIFICATIONS/AUTHORIZED REPRESENTATIVE. All Notices required under this Contract shall be in writing, signed by the party giving same, and shall be deemed properly given only if hand delivered, sent by reputable overnight courier, or by registered or certified U.S. mail, return receipt requested, postage pre-paid and addressed as provided below.

Notice to the Contractor/Contractor's Representative. Written notices from the College and/or the Architect to the Contractor should be addressed to the Contractor's Representative:

Attn: _____

Notice to the College/College's Representative: Written notices from the Contractor to the College should be addressed to the College's Representative:

The College of New Jersey
PO Box 7718,
Ewing, New Jersey 08628
Attn: _____

with a copy to the College's General Counsel as follows:

Thomas Mahoney, Esq.
Vice President and General Counsel
The College of New Jersey
PO Box 7718
Ewing, NJ 08628-0718

The College's Contracting Officer hereby authorizes the College's Representative to receive all Contract related correspondence.

Notice to the Architect: Written notices from the Contractor to the Architect should be addressed to:

Attn: _____

Neither the College's nor the Contractor's Authorized Representatives shall be changed without 7 days' written notice to the other party.

10.5 CONTRACT TERMS, CHANGES, AND LAW. This Contract constitutes the entire agreement between the College and the Contractor, and it shall be governed by the law of the State of New Jersey. The terms and conditions of this Contract may not be changed except by a writing signed by the Contractor and the College.

10.6 COUNTERPARTS AND SIGNATURES. This Contract may be executed in counterparts. All executed counterparts shall constitute one contract, and each counterpart shall be deemed an original. The parties hereby acknowledge and agree that facsimile signatures or signatures transmitted by electronic mail in so-called “pdf” format shall be legal and binding and shall have the same full force and effect as if an original of this Contract had been delivered. The College and the Contractor (1) intend to be bound by the signatures on any document sent by facsimile or electronic mail, (2) are aware that the other party will rely on such signatures, and (3) hereby waive any defenses to the enforcement of the terms of this Contract based on the foregoing forms of signature.

10.7 NO IMPLIED COVENANTS OR WARRANTIES. The Contractor acknowledges that there are no implied covenants or warranties from the College under this Contract.

10.8 SEVERABILITY. If any term or provision of the Contract Documents are to any extent held invalid or unenforceable, and if the provisions of the Contract Documents that are essential to each party’s interests otherwise remain valid and enforceable, then (i) the remaining terms and provisions in the Contract Documents will not be affected thereby, (ii) each term and provision of the Contract Documents will be valid and enforceable to the fullest extent permitted by law, and (iii) the court/arbitrator(s) will give the offending provision the fullest meaning and effect permitted by law.

10.9 HEADINGS. The headings used in this Contract are for convenience and reference only, and are not part of this Contract, and do not in any way control, define, limit or add to the terms and conditions hereof.

10.10 INTERPRETATION/RULES OF CONSTRUCTION. The parties acknowledge that each party, and if it so chooses, its counsel, have reviewed and revised this Contract and that the normal rule of construction to the effect that any ambiguities be resolved in favor of the non-drafting party shall not be employed in the interpretation of this Contract or any amendments or exhibits thereto.

THE COLLEGE OF NEW JERSEY

By _____
William Rudeau,
Director of Construction

By _____
Valarie McDuffie,
Interim Treasurer

Date _____

Date _____

By _____
Sharon Blanton,
Vice President for Operations

Date _____

By _____
Anup Kapur,
Executive Director of Procurement

Date _____

By _____
Dave McNamara,
Associate Vice President for Facilities Management

Date _____

CONTRACTOR:

By _____

Title _____

Date _____



GENERAL CONDITIONS
OF THE
CONTRACT FOR CONSTRUCTION

Last Revised May 2021

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ARTICLE 1
**CONTRACT DOCUMENTS, INTERPRETATION, INFORMATION FOR BIDDERS,
CLAIMS BASED ON BID AND CONTRACT DOCUMENTS**

1.1 Definitions.

Terms defined in the Contract for Construction shall have the meaning provided therein. Definitions for the purpose of these General Conditions include the following:

Addendum: A document issued to bidders by the College prior to the bid due date which supplements, revises or modifies the bid solicitation documents furnished for bidding purposes, and which must be identified and included in bids for the Contract.

Architect: The Architect (A/E) engaged by the College to design the Project, to prepare the design documents and assist with bid documents, and may administer the Contract and act as the agent of the College as described in the Contract.

Bulletin: A document prepared by the Architect describing proposed changes or additions to the Work in the Contract Documents that is issued after Contract award. If the College decides to implement the change, it will provide the bulletin to the Contractor and ask it to submit a change order proposal or request (in accordance with the change order provisions in the Contract for Construction, these General Conditions and other sections of the bidding documents).

Change Order Proposal or Change Order Request: A written proposal or request submitted by the Contractor in accordance with the change order provision of the Contract for Construction, these General Conditions and other sections of the bidding documents, including proposals submitted in response to Contract Change Directives, which proposes cost, time and other terms under which the Contractor will perform changed work under the Contract. If accepted by the College, a written change order signed by the Vice President for Administration and a TCNJ Purchase Order signed by the Contracting Officer of the College, and if accepted by the Contractor in writing, it will become part of the Contract as a change order.

The College's Representative: The College's Representative is a person or persons designated by the College to act on its behalf in administering the Contract for the College. The College's Representative may include the Director of Campus Construction, the Project Manager or an independent construction manager working for the Office of Campus Construction.

College Site Superintendent: The College Site Superintendent is a person or persons designated by the College to witness, observe, record and report on activities in and around the construction site. The Site Superintendent does not have the authority to stop or change the scope of the Work of the Contract Documents.

Contract: The Contract Documents all form the Contract. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual

relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the College and a Subcontractor or a Sub-subcontractor, (3) between the College and the Architect or the Architect's consultants or (4) between any persons or entities other than the College and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's Contractor's duties.

Contract Amendment: The Contract can only be amended by (1) a written amendment identified as such that is signed by the College and the Contractor, (2) a change order signed in accordance with the Contract Documents, (3) a written Contract Change Directive (CCD) issued by the College that should result in a change order unless issued to address some fault of the Contractor, (4) a written approval or acceptance by the College or the Architect of a change requested by the Contractor in writing, provided the request for a change is specifically identified in a submittal.

Contract Change Directive (CCD): A Contract Change Directive (CCD) is a written directive issued by the College which orders an addition, deletion, clarification of a disputed item or revision in the Work, or a response to an emergency. A CCD does not by itself change the Contract, but it should result in a change order which does change the Contract Price or Contract Times if warranted. A CCD should specify the terms of the change order (if deemed warranted by the College) which will result, and/or specify a deadline for the submission by the Contractor of a proper change order request, and/or contain other similar terms.

Contract Documents: The Contract Documents are enumerated in Article 2 of the Contract for Construction.

Contract Limit Lines: The lines shown on the Plans that limit the boundaries of the Project site, and beyond which no construction work or activities shall be performed by the Contractor unless otherwise specified in the Contract Documents, including the Plans and Specifications and supplemental General Conditions.

Contracting Officer: The Associate Treasurer of the College shall be the Contracting Officer in connection with the Contract and the Project. The Contracting Officer and other designee shall have authority to act on behalf of the College under the Contract.

Field Order (FO): A written order issued by the Architect or the College which requires minor changes in the Work that do not result in a change in the Contract Price or the Contract Times. If the Contractor believes that a field order warrants the issuance of a change order that changes the Contract Times or Contract Price, it must notify the College and the Architect in writing within 48 hours, and its notice must specify the terms of the change order that it believes are warranted, including specific time and price change requests.

Plans: The Plans are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, and diagrams.

Project: The Project is the total construction of the Work performed under the Contract Documents and may include construction by the College and by separate contractors that the College has specifically identified.

Specifications: The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services prepared by the Architect or the College.

Supplemental General Conditions: The part of the Contract Documents which amends or supplements these General Conditions for the Project.

Work: The construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

1.2 Intent Of Contract Documents.

The intent of the Contract Documents is to describe a functionally complete and aesthetically acceptable Project to be constructed and completed by the Contractor in every detail in accordance with the Contract Documents. Any Work, services, materials, equipment or documentation that may be reasonably inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce a complete Project shall be supplied by the Contractor whether or not specifically identified at no additional cost to the College. Where the Contract Documents describe portions of the Work in general terms but not in complete detail, only the best construction practices and only materials and workmanship of the first quality are to be used. Only where the Contract Documents specifically describe a portion of the Project as being performed by others is the Work to be considered to include less than the entire Project.

1.3 Interpretation Of Contract Documents.

When two or more interpretations of a Specification for the Work are possible, the most stringent or the highest cost interpretation shall apply as determined by the Architect. The Architect (or in the absence of the Architect, the College) shall be the sole interpreter of the Plans and Specifications and the Contractor's performance therewith. It is the intent of these Plans and Specifications to provide materials of a quality consistent with the highest standards provided under similar circumstances in the same general geographical area and that will result in long-term use and efficient operation.

1.4 Law And Referenced Standards.

The Contractor is required to comply with all federal, state and local laws and regulations that apply to the Project, the Work and the Contract. Where the Contract Documents refer to any publication, including but not limited to any standard, which affects any portion of the Work or the Project, it shall be considered to mean the edition or revision in effect on the bid due date unless otherwise specified in the Contract Documents. No provision in any publication including

any standard shall create an obligation on the part of the College or the Architect to supervise or direct the Contractor's Work.

1.5 Plans And Specifications.

The Plans will include general plans and such details as deemed necessary to give a comprehensive representation of the construction required. The Contractor shall keep one set of Plans available at the Project site, which shall be available for inspection by the College and the Architect at all times. All alterations affecting the requirements in the Plans must be authorized by the College and the Architect in writing, and shall be promptly noted on the Contractor's record set of Plans, which are maintained at the site for inspection by the Contractor, the College and the Architect.

1.6 Order Of Precedence Of Contract Documents.

Each of the Contract Documents is an essential part of the Contract, and a requirement specified in one part of the documents is binding as if specified in all. The Contract Documents are intended to be complementary and to describe and provide for a complete Project. The obligations of the Contractor under the various Contract Documents shall be cumulative and to the extent that one of the Contract Documents imposes a stricter or more costly requirement or higher standard upon the Contractor than does another Contract Document, the more stringent or more costly requirement or higher standard, as determined by the Architect, shall apply. Otherwise, if there is any conflict among the Contract Documents, the signed Contract for Construction and all approved change orders shall control. As to the other Contract Documents, the order of precedence shall be as follows:

- (a) Contract for Construction
- (b) Addenda
- (c) Supplemental General Conditions
- (d) General Conditions
- (e) Specifications
- (f) Plans
 - i. Notes
 - ii. Large Scale Details
 - iii. Sections
 - iv. Elevations
- (g) Scope of Work Description

1.7 Organization Of Plans And Specifications.

The arrangement of the Plans and the organization of the Specifications into divisions, sections or articles shall not be construed by the Contractor as being intended to divide or allocate the Work among Subcontractors or trades or to establish the scope of the Work to be performed by particular Subcontractors or trades. The College is not liable for the Contractor dividing and separating the Contract Documents into individual packages to Subcontractors. Items that the Contractor fails to include or provide for shall be at the Contractor's sole risk and

cost. The Contract Documents work together as a whole and, therefore, the Contractor is required to coordinate the entire package with all its Subcontractors.

1.8 Required Approvals.

In all cases where approvals or decisions under the Contract Documents are required from the College, the Work shall not proceed without the required approvals and decisions in writing.

1.9 Conformity Of Work To Contract Documents.

All Work performed shall conform to the lines, grades, cross-sections, dimensions, material requirements, tolerances, details and other information in the Contract Documents. The purpose of tolerances is to accommodate occasional minor variations from the middle portion of the tolerance range that are unavoidable despite reasonable construction practices. When a maximum or minimum tolerance value is specified, the material and the Work shall be controlled so that they shall not be preponderantly of borderline quality or dimension.

1.10 Work Involving Existing Structures.

On projects involving alterations, remodeling, repairs, installations or other work in pre-existing structures or systems, the Contractor shall by personal inspection of the existing structures and systems satisfy itself as to the accuracy of any information provided that may affect the quantity, size and/or quality of materials required for a satisfactorily completed Project, including information that is not identified or included in the Plans and Specifications. The Contractor shall provide all material and labor required to complete the Work based on conditions that can be reasonably observed by a competent and diligent contractor before bidding.

1.11 Verification Of Dimensions.

The Contractor shall verify all dimensions at the job site and shall take any and all measurements necessary to verify the information in the Plans. The Contractor shall properly and accurately layout and survey the Work. Any errors or discrepancies affecting the layout of the Work shall be reported to the Architect and the College immediately in writing. No Work affected by any error or discrepancy shall proceed until such discrepancy is resolved by a written decision of the Architect with the consent of the College.

1.12 Manufacturer Literature.

Manufactured articles, materials and equipment shall be installed, applied, connected, erected, used, cleaned and conditioned in accordance with the manufacturer's written instructions unless otherwise specified in the Contract Documents. If there is any conflict between manufacturer literature and the Contract Documents, it shall be reported by the Contractor to the Architect and the College in writing, and the Contractor shall not proceed without a written decision by the Architect with the consent of the College.

1.13 Quality -- General Requirement.

Where no explicit quality or standard are specified for Work, materials or equipment, they shall be new, of good quality, free of defects, suitable for their intended use, in conformity with the Contract Documents, and consistent with the highest quality of the surrounding Work and of the construction of the Project generally.

1.14 Examination Of Contract Documents Before Bidding/Errors.

The Contractor represents and warrants that before bidding it examined and carefully studied the Contract Documents and other documents included or referred to in the bid documents. The Contractor also represents and warrants that the documents are sufficient for bidding and performing the Work at the Contract Price. Should it appear that any of the Work or materials are not sufficiently or properly detailed or explained in the Contract Documents, the Contractor shall notify the College in writing before the bid deadline for submitting questions.

Errors, omissions, conflicts, discrepancies, inconsistencies or other defects in the Contract Documents or between the Contract Documents and any codes, standards or other applicable documents which are capable of being discovered by a diligent and competent contractor before bidding shall be reported to the College in writing before the bid deadline for submitting questions. If errors, omissions, inconsistencies or other defects in the Contract Documents are not discovered until after the bid due date, the Contractor shall promptly notify the College and the Architect of them in writing, provide written recommendations regarding changes or corrections to resolve any such errors, omissions, inconsistencies or defects, and obtain the Architect's written interpretation and approval with the consent of the College before proceeding with the Work affected.

1.15 Site Information.

Soil borings, test pits or other subsurface or site information regarding the physical site and subsurface conditions on or near the site may have been obtained from independent contractors for the purpose of preparing the design documents for the Project rather than for the purpose of contractor estimating or bidding. Such information may be identified or included in the Contract Documents so that it can be reviewed by bidders during the bidding phase, but because of the limited nature and purpose of the information, it shall not be considered to be part of the Contract Documents, and the Contractor must assume responsibility for interpreting and relying upon the information.

1.16 Sufficiency Of Documents Provided For Bidding.

The Contractor represents and warrants that before bidding it carefully studied all reports, surveys and documents included or identified in the bid documents regarding observations, inspections, investigations and tests of the site and subsurface conditions at or near the site, and all information provided to bidders regarding physical conditions at or near the site, including surface and subsurface composition, water, structures and utilities, and that it determined that no further examinations, investigations, tests, studies or data were necessary for bidding or the performance of the Work at the Contract Price. If the Contractor concluded that additional

information is required, it must notify the College in writing before the bid deadline for submitting questions.

1.17 Examination Of Site Before Bidding.

The Contractor represents and warrants that before bidding it visited the site and familiarized itself with and was satisfied as to the general, local and site conditions which may affect the cost, progress and performance of the Work and the Contract, and that its bid and bid price take into account all such conditions. No additional costs will be borne by the College for conditions that existed and were reasonably observable or described at the time of bidding.

1.18 Hazardous Materials On Site.

The Contractor will not be responsible for hazardous environmental conditions uncovered or discovered on the site that were not disclosed in the Contract Documents and that were not caused by the Contractor or anyone working through or under the Contractor. If such conditions are discovered, the Contractor shall stop work and notify the College in writing immediately. The College may issue a written directive to the Contractor requiring it to stop work until the hazardous environmental condition is remedied, and the Contractor will be entitled to an extension of the Contract Times if an extension is warranted under the provisions of the Contract for Construction and these General Conditions regarding extensions. The College may also make changes in the Contract in response to the conditions, and the Contract will be changed in accordance with the change order provisions in the Contract for Construction and these General Conditions.

1.19 Limitation On Claims Based On Contract Documents And Information Provided For Bidding.

The Contractor may not assert claims for extra compensation beyond the bid and Contract Price for constructing the completed Project by reason of any errors, omissions, inconsistencies, or defects in the Contract Documents that are discoverable by a diligent and competent contractor, because of (i) its obligation to review and study the bid documents before submitting its bid, (ii) its representation in the Contract Documents that it did so, and (iii) its obligation to notify the College in writing of any such errors, omissions, inconsistencies, or defects before submitting its bid,. In addition, the Contractor may not assert claims for extra compensation beyond the bid and Contract Price for constructing the completed Project by reason of any lack of information affecting the construction of the Project at the time of bidding, or errors in the information included or referenced in the bid documents except to the extent explicitly permitted by the Contract for Construction or these General Conditions. The Contractor shall notify the College in writing before submitting its bid of any errors or omissions in the information provided or be precluded from seeking extra compensation or asserting a claim. This limitation on claims may be modified and further restricted in the signed Contract for Construction when the Contract Documents explicitly require the Contractor to participate in any aspect of the design phase.

The Contractor may assert claims for extensions and additional compensation in accordance with the provisions of the Contract for Construction and these General Conditions if

information regarding the site that is identified in the bid or Contract Documents is factually inaccurate, and the inaccuracy is one that a reasonably competent and diligent contractor would not discover in preparing a bid. The Contractor may not assert a claim for an extension or extra compensation when it claims, not that the information is factually inaccurate, but rather that conclusions, inferences or judgments made in reliance on accurate information prove to be incorrect.

ARTICLE 2 **THE COLLEGE**

2.1 General Rights And Responsibilities Of The College.

The College as the owner of the Project is entitled to have the Contractor perform and complete the Work in accordance with the Contract Documents, including the time of completion, quality and documentation requirements of the Contract. The College for its part undertakes to furnish the site, to notify the Contractor of any restrictions on the site that could affect the Contractor's performance of the Contract, to obtain approvals relating to the site that are needed for the construction to proceed, to pay the Contractor in accordance with the Contract, and to act reasonably in reviewing all documentation, claims and questions properly submitted to it under the Contract. The College also undertakes to provide the information and items that it expressly agrees in the Contract Documents to provide.

The College shall also have such other rights and responsibilities as are specified in the Contract Documents. The College will not supervise the Contractor's Work or be responsible for the Contractor's construction means and methods, or the Contractor's safety practices, or any failure of the Contractor to comply with the Contract Documents or any laws or regulations.

2.2 The College's Representative, Authority To Decide Contract Questions.

The Contracting Officer delegates its authority to the College's Representative who is authorized to act and make decisions on behalf of the College regarding matters specified in the Contract Documents. However, the College's Representative is not authorized to make or agree to material changes to the Contract Documents or changes involving the Contract Times or Contract Price.

All changes to the Contract Documents including change orders that modify Contract Price, Contract Times or other material change to the Contract Documents must be reviewed and approved by the Contracting Officer or his/her designee. The Contracting Officer designates that the Vice President for Administration is authorized to approve change orders.

The College's Representative, in consultation with the Architect, is authorized to decide on behalf of the College, all questions regarding the quality, acceptability and rate of progress of the Work, all questions regarding the interpretation of the Contract Documents, the acceptability of the performance of the Contract by the Contractor, and the compensation due to the Contractor. Where the College's Representative is authorized to render decisions under the

Contract for Construction or these General Conditions regarding disputes or claims, he/she shall consult with the Architect and shall not act arbitrarily so as to unfairly benefit either the College or the Contractor.

2.3 Required Approvals.

In all cases where approvals or decisions are required from the College under the Contract Documents, such approvals or decisions shall be made reasonably, except in cases where a specific standard applies such as, for example, situations where the College is entitled to exercise unqualified discretion in selecting the types of materials, products or construction which it decides to procure.

2.4 Information Required From The College.

Information which the Contract Documents specify the College will provide shall be provided with reasonable promptness.

2.5 Permits.

The College will arrange and pay for permits and permit inspections, including building code permits except to the extent that the Specifications specify otherwise. The Contractor will arrange for and coordinate all inspections and the dates and times for all inspections with local, state and independent agencies and include the College's Representative or the Site Superintendent.

2.6 The College's Inspection Of The Project.

The College shall have the right to be represented at the site by the College's Representative(s), the Site Superintendent and other College employees designated by the College, the Architect, and other consultants designated by the College or the Architect. The College and its representatives shall have the right to visit the site, inspect Work and materials, inspect Project documentation, conduct tests, attend meetings, meet with the Contractor' and the Subcontractors' representatives, investigate problems, conduct studies, and make reports. The College and its representatives shall be allowed access to all parts of the Work, and the Contractor shall furnish them with information and assistance when they request it.

The Contractor shall give the College and the Architect timely notice of readiness of Work for observation, inspection and testing, and shall cooperate with these efforts. The Contractor shall also comply with any inspection and testing procedures specified in the Contract Documents.

The Contracting Officer, the Architect and the College's Representative shall have the right to direct the Contractor to remove or uncover unfinished Work if deemed necessary to inspect Work or materials in place.

If Work is covered before it is inspected because the College, the Architect or any consultant were not afforded reasonable notice and an opportunity to inspect, or where the

Contract Documents or any law require an inspection, the Contractor shall uncover and replace Work at its own expense if required to do so by the College.

If any other portion of the Work not specifically required to be inspected is covered, and the College or the Architect did not ask to observe or inspect the Work before it was covered, the College may nonetheless ask to inspect the Work. If the College makes such a request, the Contractor shall uncover the Work for inspection. If the Work uncovered is found to be in accordance with the Contract Documents, the cost of uncovering and replacement shall be paid by the College by a change order. If the Work uncovered is found not to be in compliance with the Contract Documents, the Contractor shall pay all costs of uncovering and replacement, and also remedy the defect or deficiency at its own cost.

The College at all times retains the right to stop all or part of the Work by a written direction because of defective Work until the defect is eliminated. This right shall not give rise to any duty on the part of the College to exercise the right for the benefit of the Contractor or those performing its Contract.

The College at all times retains the right to stop all or part of the Work due to concerns with the effectiveness of the Contractor's safety program required under Article 5.2. The College may require the Contractor to provide a written plan to correct safety deficiencies, an on-site safety supervisor, or other administrative or engineering controls to ensure the safety of personnel impacted or potentially impacted by Contractor operations. The Contractor shall indemnify, defend and hold the College harmless from fines issued by Federal, State or Local OSHA enforcement.

2.7 The College's Inspectors, Duties And Limitations

If the College designates inspectors to inspect Work and materials and Project documentation, they will not be authorized to alter or waive any requirements or provisions in the Contract Documents. The College's inspectors will not be authorized to issue instructions contrary to the Contract Documents or to act as foremen or employees of the Contractor. The College's inspectors have the authority to reject unsuitable Work or materials, subject to written confirmation by the College's Representative. If the Contractor believes that any action of a College inspector is contrary to the Contract Documents, it shall notify the College's Representative and the Architect in writing within 48 hours. The College does not undertake to have inspectors sufficient in number to inspect every item of Work or material as it is provided, or to have inspectors with the expertise needed to judge every aspect of the Work.

The Contractor shall remain responsible for defective Work or materials irrespective of any inspections or lack of inspections during the Work. If the Contractor seeks a binding determination of the acceptability of Work or materials during the performance of the Contract, it shall do so by making a written request for such a determination to the College's Representative with a copy to the Architect.

2.8 The College's Rejection Of Defective Work.

The College shall have the right to reject defective Work, materials, or equipment at any time, and to require the Contractor to remove and replace it at the Contractor's expense. The Contractor shall also be responsible for repairing damage to other work caused by defects or deficiencies in its Work. The College's Representative, upon consultation with the Architect, may elect to accept Work or materials that do not conform to the Contract Documents and to credit or reduce the Contract Price, but the College shall have no contractual obligation to elect this remedy. Changes to the Contract Documents in these circumstances shall be recorded as a change order under the change order provision of the Contract for Construction and these General Conditions.

ARTICLE 3 **THE ARCHITECT**

3.1 The Architect's General Role.

The Architect is, by contract with the College, responsible for the design of the Project. During construction, the Architect is responsible for reviewing the Contractor's submittals to determine if they conform to the Contract Documents and good industry practice, to provide some level of inspection to determine if Work and materials provided by the Contractor conform to the Contract Documents and good industry practice, and to review the Contractor's payment applications. During the performance of the Work, the Architect may investigate any defects and deficiencies in the Work or materials provided and make recommendations to the College regarding the defects or deficiencies. The Architect will conduct inspections to determine if the Contractor has achieved proper Substantial and Final Completion and submitted all documents required at Substantial and Final Completion. The Contractor shall cooperate with and render assistance to the Architect in the performance of these duties.

3.2 The Architect's Access And Facilities.

The Contractor shall allow the Architect and its consultants access to the Project at all times and shall facilitate their access to inspect Work and materials and Project documentation. The Architect and its consultants shall be permitted to attend job meetings, scheduling meetings and other meetings at the site and the Contractor shall facilitate their ability to do so. The Contractor shall provide an office at the site for the Architect if the Specifications require it to do so.

3.3 Limitation Of The Architect's Responsibilities.

The Architect will not be responsible for or have control of construction means and methods or safety precautions and programs in connection with the Work. The Architect will not be responsible for or have control of acts or omissions of the Contractor, its Subcontractors, or any of their agents or employees, or any other person performing any of the Contract Work.

3.4 The Architect's Rejection Of Work.

The Architect may recommend rejection of Work or materials that it believes does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, it may recommend to the College special inspections or testing of Work or materials, including completed Work and materials.

3.5 The Architect's Review Of The Contractor's Submittals.

The Architect will review, approve or take other appropriate action regarding the Contractor's submittals, such as shop drawings, product data and samples, to assure that they conform with the design requirements and Contract Documents. The approval of a specific item shall not be deemed to constitute approval of an assembly of which the item is a component.

3.6 The Architect's Review Of The Contractor's As-Built Plans.

The Architect will periodically review the Contractor's as-built plans maintained at the site to ensure that they are up-to-date, and shall review the completed as-built plans at Project completion to ensure that they are complete and are provided to the College.

3.7 The Architect's Determination Of Substantial and Final Completion.

The Architect will conduct inspections to determine the dates of Substantial and Final Completion and to determine if the Contractor has properly Substantially and Finally completed the Project. The Architect will obtain from the Contractor all written warranties and all other documents that the Contractor is required to provide at Substantial and Final Completion of the Project.

ARTICLE 4 **THE CONTRACTOR**

4.1 The Contractor's Responsibility For Performance Of The Contract And Work.

The Contractor is the person or entity identified as such in the Contract. The Contractor shall be lawfully licensed in the jurisdiction where the Project is located.

The Contractor shall perform all of the duties in the Contract Documents, shall furnish the labor, materials and equipment to complete the construction of the Project in accordance with the Contract Documents, and furnish all services, labor, materials and equipment necessary or appropriate to construct the Project. The Contractor shall manage, supervise, schedule, direct, and inspect the Work as competently, skillfully, and efficiently as possible, and shall be solely responsible for all construction means, methods, techniques, safety, security, sequences, procedures, and coordination.

The Contractor shall comply with all applicable laws, and shall establish and maintain reasonable quality assurance and safety programs in connection with its Work. The Contractor shall complete the Work in compliance with the Contract Documents and by Milestone, Substantial Completion and Final Completion Dates in the Contract for Construction or any authorized extensions thereof. The Contractor shall maintain good order and discipline at the site at all times.

4.2 The Contractor's Key Personnel.

The Contractor shall assign to the Project a Project executive, Project manager, superintendent, and scheduler, and such other key personnel as are specified in the Contract for Construction or as required to carry out the requirements of the Project. The Contractor shall not remove or replace such key personnel without the College's written approval. The College has the authority to reject and have replaced any staff member of the Contractor or any of the Subcontractors for any non-discriminatory reason.

4.3 The Contractor's Supervision Of Contract Work/The Superintendent.

The Contractor shall supervise and be responsible for the acts and omissions of the Contractor's employees, agents, Subcontractors, sub-subcontractors, suppliers and other persons performing portions of the Work and the Contract. The Contractor's designated Project superintendent shall be at the Project site at all times when Work is in progress. The Contractor may designate in writing an alternate superintendent who must be approved in writing by the College. The superintendent (or alternate) shall have full authority to represent and act for the Contractor at the site and shall have full authority to execute orders and directives of the College without delay.

Communications from the College or the Architect to the superintendent shall be deemed to have been given to the Contractor. The superintendent shall be capable of and authorized to respond to all hazardous and unsafe conditions at the Project site and to implement prompt corrective measures to eliminate all unsanitary, hazardous or dangerous conditions at the site. The College may suspend all or part of the Work at the Project site if the superintendent (or alternate) is not present at the Project site. Such a suspension shall not be the basis of a claim against the College, including without limitation any claim for additional time or extra cost.

The superintendent shall attend all meetings at the Project site including job meetings, scheduling meetings, and meetings with the College and/or the Architect. The superintendent shall have a written plan that must be approved in writing by the College for responding to emergencies when the Work is not in progress. The Contractor shall also utilize qualified competent craftsmen on the Project.

4.4 Cooperation With The College And Other Contractors.

The College reserves the right to contract for and perform other or additional work on or adjacent to the Project site. When separate contracts are let within the limits of the Project site, or in areas adjacent to the site, the Contractor shall perform its Work so as not to interfere with or

hinder the progress or completion of the work being performed by other contractors. The Contractor shall also affirmatively cooperate with such other contractors and coordinate its activities with theirs, and include coordination measures in the Project Schedule. The Contractor shall arrange its Work and shall place and dispose of materials being used so as not to interfere with the operation of other contractors within the limits of the Project site. The Contractor shall join its Work with that of the other contractors in an acceptable manner and shall perform its Work in proper sequence with that of other contractors.

If there is a disagreement as to the respective rights of the Contractor and others doing work within the limits of or adjacent to the Project site, the College shall determine the respective rights of the contractors involved to secure the satisfactory completion of all affected work. The Contractor shall not be entitled to additional compensation beyond its Contract Price that may arise because of inconvenience, delay, or loss experienced by it as a result of the presence and operations of other contractors working within the limits of or adjacent to the Project site.

The College reserves the right to occupy any portion of the Project that is ready for occupancy prior to Final Completion and acceptance of the Project, after Local and State Construction Enforcing Agency approval.

The occupancy of any portion of the Project does not constitute an acceptance of any Work nor does it waive the College's right to liquidated damages or constitute an acceptance of any Work, as the Project will be accepted as a whole and not in units. Prior to such occupancy, however, the Architect, a representative of the College, and the Contractor shall fully inspect the portions of the Project to be occupied, preparing a complete list of omissions of materials, faulty workmanship, or any items to be repaired, torn out or replaced. The College will assume responsibility for damage to premises so occupied of any items not on this list when such damage is due to greater than normal wear and tear, but does not assume responsibility for improper or defective workmanship or materials.

4.5 Performance Of The College Directives.

When the College issues a written directive to the Contractor under the authority of any provision in the Contract for Construction or these General Conditions, the Contractor shall perform as directed in a diligent manner and without delay. Compliance with written directives shall not adversely affect the rights of the Contractor under the Contract for Construction, these General Conditions or law, but if the Contractor objects to a directive of the College, or claims that a directive infringes upon its rights or entitles it to a change order, it shall notify the College in writing within 2 business days of any directive and describe any objection it has to the directive and the reasons for its objection. Objection to a written directive does not relieve the Contractor of the obligation to comply with the directive and proceed in a diligent manner to implement the directive without delay.

ARTICLE 5
PERFORMANCE OF WORK

5.1 Protection Of Work/Materials.

The Contractor, shall at its own expense, protect all finished Work and materials from damage and keep them protected until the Project is accepted as Substantially Completed, and shall repair or replace any Work or material damaged before acceptance. After the Project is accepted as Substantially Complete, the Contractor will remain responsible up through Final Completion for damage to Work and materials caused by it or its Subcontractors or others participating in the performance of its obligations under the Contract Documents. The Contractor shall also secure and protect its own tools, equipment, materials and supplies, and the College shall have no liability for damage, theft or injury to the Contractor's property.

5.2 Safety And Safety Programs.

The Contractor shall have full responsibility for safety at the Project site at all times up to Final Completion and acceptance of the Project and the Contract. The Contractor shall provide for the safety of all individuals on the Project site, and take measures to ensure that individuals on or near the Project site are not injured by the performance of the Contract. The Contractor shall establish and maintain a Project safety program in accordance with all applicable laws including OSHA, good industry practice, and any additional requirements in the Contract Documents. If the College or the Architect become aware of an unsafe situation, the Contractor will immediately respond to remedy the safety concern and shall take all other actions necessary to comply with Article 2.6.

5.3 Emergencies Affecting Safety.

If there is an emergency affecting the safety of persons or property, the Contractor shall take immediate action to prevent damage, injury or loss. The Contractor shall notify the College in writing of the situation and all actions being taken immediately or as soon as possible. If, in the opinion of the Contractor, immediate action is not required, the Contractor shall notify the College in writing of the emergency situation and proceed in accordance with the College's instructions. However, if loss, damage, injury or death occurs that could have been prevented by the Contractor's prompt and immediate action, the Contractor shall be liable for all costs, damages, claims, actions, suits, attorney's fees and other expenses that result.

Any additional compensation or extension of time claims by the Contractor on account of emergency Work shall be determined in accordance with the change provisions of the Contract for Construction and these General Conditions. The Contractor shall be responsible for emergencies and costs and delays resulting therefrom that could have been foreseen or prevented with normal diligence, planning, and supervision of the Work, or that are caused by the Contractor's failure to properly perform the Contract.

The Contractor shall provide the College with a list of the names and telephone numbers of its employees and employees of each Subcontractor designated to be contacted in case of an emergency during non-working hours. A copy of this list shall be displayed prominently at the

Project site so that it is visible when the Project site is secured and shall be provided to the College's campus police department.

5.4 Working Hours.

Except as required for the safety or protection of persons or property, or as specified in the Contract Documents, all Work at the site shall be performed during regular working hours, and not on Saturdays, Sundays, legal holidays, the College's commencement days, resident move-in and move-out days or other days specifically noted in the Contract Documents without the prior written consent of the College, which will not be unreasonably withheld.

5.5 Site Security.

The Contractor shall provide, maintain and oversee security at the site if required in the Specifications. The Project site shall be fenced as specified in the Specifications, and the Contractor shall control access when gates are unlocked or open. The fence shall provide a physical barrier to the site and protection from visible nuisance. At a minimum, the fence shall be firmly secured with buried posts or weighted feet, top rails, metal fabric, and locking gates. Contractor shall immediately notify the College in the event of unauthorized entry to the site.

5.6 Site Use.

The Contractor shall confine construction equipment, storage and Work to the Project site absent written approval from the College. Any request by the Contractor to use areas outside the Project site must be described in written form and included with the Contractor's bid.

5.7 Building Access.

The Contractor shall be responsible for the sign out, distribution, safe use and return of all building keys and/or access cards, and shall be responsible for all costs associated with failure to return these items (e.g., the cost to re-key/re-implement the system).

5.8 Minimize Interruption.

The Contractor acknowledges that the College is an existing educational facility and that classes may be in session during construction. The Contractor agrees to conduct its Work with as little disruption as reasonably possible to the College's students, faculty, employees and guests, and will maintain a safe environment for the College's students, faculty, employees and guests, in addition to the Contractor's employees and workers of all tiers. The Contractor and its Subcontractors and employees of all tiers must display courtesy and consideration with and shall refrain from discriminating against or harassing the College's students, faculty, employees, visitors and guests at all times. The Contractor will not allow smoking, vaping, alcohol, drugs, any firearms, or other weapons on the College's property at any time. The Contractor shall abide by all campus traffic regulations.

5.9 Submittals (Shop Drawings, Product Data, Samples).

Prior to the beginning of Work on the Project, the Contractor shall furnish to the Architect and the College for their review and approval, a schedule setting forth all the submittals, including shop drawings, product data and samples required by the Contract Documents, that the Contractor intends to submit to the Architect for review and approval, the date upon which the Contractor shall make each such submittal and the date upon which the Architect shall complete its review of each such submittal, which in no event shall be less than ten (10) days from receipt (“Submittal Schedule”). The Architect and the College shall identify all submittals that will require more than ten (10) days to review and notify the Contractor of the required review period. The Contractor shall adjust the Submittal Schedule to accommodate the extended review period. The Architect shall endeavor to conduct its review and approval of all submittals in accordance with the Submittal Schedule. In the event that a submittal is made that is not set forth on the Submittal Schedule, the Architect shall review and return such submittal within ten (10) working days from receipt.

Submittals shall be complete as to quantities, details, dimensions and design criteria. The Architect will approve and the College will review submittals if they conform to the Contract Documents, the design concept and good industry practice. The Contractor shall note its approval of all submittals and the date for any submittals prepared by any Subcontractor or supplier, and it shall be responsible for determining and verifying all materials, field dimensions, field construction criteria, and coordination requirements pertaining to the submittal.

The Contractor will not be relieved of responsibility of deviations in submittals from the requirements in the Contract Documents by reason of approvals of the submittals unless the Contractor specifically identifies the deviation in the submittal and the Architect and the College expressly approve the deviation in writing. The Contractor shall be responsible for errors or omission in its submittals. No Work or materials included in a submittal shall begin until the submittal is approved by the Architect and the College.

5.10 Layout And Dimensional Control.

The Contractor shall be responsible for locating and laying out the Project components and all of the Project parts on the Project site in strict accordance with the Plans, and shall accurately establish and maintain dimensional control. The Contractor shall employ a competent and licensed New Jersey engineer or land surveyor as appropriate to perform all layout Work and to fix the level and location of excavations, footing base plates, columns, walls, floors and roof lines. The Contractor shall furnish to the College and the Architect certifications that each such level is as required by the Plans as the Work progresses.

The plumb lines of vertical surfaces shall be tested and certified by the Contractor's engineer or surveyor as the Work proceeds. The engineer or surveyor shall establish all points, lines, elevations, grades and bench marks for the proper control and execution of the Work. The engineer or surveyor shall establish a single permanent benchmark to be approved by the Architect, to which all three coordinates of dimensional control can and shall be based. The engineer or surveyor shall verify all topographical and utility survey data, and all points, lines, elevations, grades and benchmarks furnished by the College.

Should any discrepancies be found between information in the Plans and the actual site or field conditions, the Contractor shall notify the Architect and the College in writing, and shall not proceed with any Work affected until it receives written instructions from the College.

The Contractor is required to provide a final “as built” survey from a New Jersey licensed/certified surveyor of the Project site showing all structures, elevations, grades and required information on the Project site and submit to the College in CADD format.

5.11 Construction Access, Roads, Walks, And Parking.

The Contractor shall construct and keep all roadways, drives, walkways and parking areas within or near the site free and clear of debris, gravel, mud or any other site materials, including, for example, the cleaning of muddy wheels and undercarriages on vehicles before they exit the site. The Contractor shall be responsible for any citations, fines, or penalties imposed on it or the College for failing to comply with applicable local rules or laws regarding its use of roads and the like.

The Contractor shall obtain permission in writing from the College before using for construction purposes any existing driveways, parking areas, walkways or areas not specifically designated for such use in the Contract Documents. The Contractor shall maintain such driveways and areas in good and clean condition during construction and not damage them. At Final Completion, the Contractor shall leave them in the same condition as they were at the start of the Work. Conditions of such facilities before use shall be photographed and otherwise documented by the Contractor. The Contractor shall not commence construction of permanent driveways, parking areas or walks on the Project site without the written approval of the College.

Any existing walkways, driveways, aprons, or curbs damaged by the Work of the Contract Documents shall be replaced in kind, at the Contractor’s expense, immediately upon Project completion, or as required to maintain campus safety and campus aesthetics.

5.12 Construction Site Condition, Storage, Dust Control.

The Contractor shall provide reasonable, safe and orderly storage for its equipment, tools and materials, and shall not unreasonably encumber the site. The Contractor shall keep the site and the Project free from the accumulation of refuse, debris and scrap materials caused by its operations so that the site has a neat, orderly and workman-like appearance. Loading, cartage, hauling and dumping will be at the Contractor’s expense. The Contractor shall provide, at its expense, temporary dust-proof partitions around areas of work in existing buildings, and where reasonably required, in new building areas.

5.13 Photographs.

The Contractor shall provide, at its expense, monthly progress photographs of the Project. The photographs shall be 8 inches by 10 inches and shall be submitted to the College in duplicate monthly. Unless otherwise specified in the supplemental general requirements, four photographs

shall be submitted each month which provide views of the Project taken from the same four points each, which points shall be selected by the Architect.

5.14 Project Sign.

The Contractor shall, at its expense, provide, erect and maintain two Project signs at the site, which shall be described in the Contract Documents. The College will specify the location of the signs. The signs shall be painted by a professional sign painter or prepared by a professional graphic artist. No other signage will be permitted at the site. The signs shall include the name and cell phone number of a Contractor-designated project lead that is available for 24-hour contact in case of emergency. The Contractor shall remove the signs when the Project is finally accepted unless the College requests that they be removed earlier.

5.15 Soil Conservation.

The Contractor shall employ reasonable measures to conserve the soil at the site, and determine and comply with all soil conservation measures required by the Mercer County Soil Conservation District.

The Contractor shall coordinate and schedule all soil conservation inspections, shall provide the College with written notice of all such inspections so that the College may attend the inspections if it chooses in its sole discretion to do so, and shall provide the College with all site inspection notes, approvals or notices.

5.16 Temporary Facilities, Services, Electric, Heat And Enclosures.

The Contractor shall provide storage areas, temporary drives and sidewalks, employee parking areas, staging areas, excavation borrow/spoil areas, commercial canteen areas, field offices including a meeting room, telephones, toilet facilities, and other temporary facilities that are necessary to perform the Work or that may be required by the Project Specifications. The Contractor shall locate these facilities on the Project site, and the location shall be subject to the approval of the College.

The Contractor shall provide adequate and clean temporary toilet facilities on the Project site in locations to be approved by the College, and they shall be serviced at least twice a week by a firm qualified and experienced in such functions. The Contractor shall provide such temporary electricity, water, and other utilities that are necessary to perform the Work, or that may be required by the Project Specifications. The Contractor shall also supply such temporary enclosures and heat that are necessary to perform the Work or that may be required by the Project Specifications. The Contractor and the Subcontractors will not enter or use any College facilities not required by the Work of the Contract.

Temporary electric and heat shall be furnished by the Contractor for the benefit of other contractors working on the Project if specified in the Project Specifications.

The Contractor shall not anticipate using the permanent heating or air conditioning system in a building for temporary heat or air conditioning prior to the acceptance of the Project as Substantially Complete unless specified otherwise.

Any natural gas, combustible material, or hazardous material containers utilized by the Contractor must be stored in a safe, ventilated location approved by the College. The Contractor must also submit for approval a reasonable safety plan for the operation of temporary heat equipment. The Contractor shall be solely responsible for any natural gas, combustible material or hazardous materials containers utilized by the Contractor or any of its Subcontractors and shall indemnify, defend and hold harmless the College from any fines, costs, expenses, liabilities, damages, etc. resulting from the Contractor's or any of its Subcontractors' use of such materials.

5.17 Substitutions.

To the extent that the Contractor includes in its bid substitute materials or equipment or construction methods in lieu of those specified in the Contract Documents, it does so at its own risk. Any substitution must be equal in type, function and quality to the item required in the Contract. The Contractor must submit all information required within 20 days of the Contract award to determine if the proposed substitute is equal to the requirements of the Contract Documents, and any substitution must be approved in writing by the Architect and the College.

The College shall have complete discretion to decide whether it will accept any substitution. No substitution shall result in any increase in the Contract Price or Contract Times. The Contractor in its application for the substitution must certify in writing that the substitution is equal to what is specified in the Contract Documents in all material respects and will not increase the Contract Times or Contract Price of the Work.

Should the substitution be rejected, the Contractor will then be required to provide the specified product, material or method at no additional cost to the College and no change in the Project Schedule.

5.18 License Fees.

The Contractor shall be responsible for obtaining the right to use any equipment, design, device or material required to perform the Contract, and shall include in its Contract Price any license fee or royalty required.

ARTICLE 6 **SUBCONTRACTORS**

6.1 The Contractor's Responsibility For Subcontracted Work.

The Contractor shall be fully responsible to the College for the proper performance of the Contract irrespective of whether the Work is performed by the Contractor's own forces or by Subcontractors employed by the Contractor. The Contractor shall be responsible for the acts and

omissions of its Subcontractors and suppliers on the Project and shall take appropriate measures if they are not properly supervising or performing their Work.

6.2 Subcontractor Identification And Approval.

The Contractor shall have included with its bid for the Contract, the names, addresses and license numbers of all Subcontractors that it proposes to utilize on the Project for plumbing and gas fitting work, HVAC work, electrical work, structural steel and ornamental iron work. No Subcontractor may perform Work on the Project until it has been approved in writing by the College.

Within 20 days after issuance of the Notice to Proceed, the Contractor shall furnish to the Architect and the College in writing for review by the Architect and the College a list of the names of all Subcontractors, sub-subcontractors, fabricators, manufacturers, sources of supply, articles, devices, fixtures, pieces of equipment, materials and processes proposed for each item of Work using AIA Document G705-2001, List of Subcontractors. The Architect and the College will notify the Contractor in writing if either the College or the Architect, after due investigation, has reasonable objection to any names on such list.

In submitting the names of Subcontractors, the Contractor shall (1) list the name and address of the Subcontractor, (2) provide the name and address of all sub-subcontractors for each significant subdivision of the trade or work, and (3) reference in the form of a list at least 3 jobs similar in size and quality to the Project performed by the subcontractor in the last 5 years, with name and location of work, dollar value and names of the College and the Architect.

In submitting sources of supply, articles, devices, fixtures, piece of equipment and materials, including those under subcontracts and sub-subcontracts, the Contractor shall list (1) the name and address of the source of supply, and (2) the name of the manufacturer of the items.

If the College disapproves of a proposed Subcontractor, it will provide the reason for its decision in writing. The College will not be liable for any extra cost or delays caused by the reasonable disapproval of proposed Subcontractors. The approval of Subcontractors by the College shall not relieve the Contractor of the responsibility for complying with all of the provisions of the Contract Documents including those performed by the Subcontractors. Subcontractors approved by the College may not be changed without prior notice to and written approval by the College.

Payment to the Contractor shall not be made until the list of Subcontractors (as required above) has been provided to the Architect and College.

6.3 Subcontractor Qualifications.

The College may disapprove of a proposed Subcontractor if (i) it has a reasonable objection to the Subcontractor, (ii) there is evidence of poor performance on other Projects or financial problems, (iii) the Subcontractor has been suspended or debarred by any public agency within the State of New Jersey, (iv) the Subcontractor is not properly licensed and registered to do business in New Jersey or with the New Jersey Department of Labor regarding prevailing

wages, or (v) the Subcontractor has been charged with or convicted of violating any laws, including but not limited to, the New Jersey Prevailing Wage Act, criminal laws, public procurement laws, anti-trust laws, election laws, laws against employment discrimination, environmental laws, tax laws, professional licensing laws, or laws regarding attempts to improperly influence the College or other public officials.

Subcontractors shall utilize qualified, competent craftsmen on the Project.

6.4 Subcontractor Compliance With Contract/Subcontractor Supervisors.

The Contractor shall require its Subcontractors on the Project to comply with all pertinent terms of the Contract Documents, and shall include all appropriate terms and provisions in written subcontracts on the Project to achieve proper Contract performance. Each Subcontractor shall have competent superintendents and foremen supervising their work, and the Contractor shall take appropriate measures if they fail to do so.

6.5 No Contractual Relationship Between The College And Subcontractors.

The Contractor shall enter into written subcontracts with each and every Subcontractor and supplier solely in its own name. No approval by the College of any Subcontractor or supplier and nothing in the Contract Documents shall create any contractual relationship or duties between the Contractor's Subcontractors and the College. Nothing in the Contract Documents shall cause any of the Contractor's Subcontractors or suppliers to be deemed a third- party beneficiary of the Contract between the College and the Contractor, and nothing herein shall give any of the Contractor's Subcontractors or suppliers any rights or claims directly against the College.

6.6 Contingent Assignment of Subcontracts.

Each subcontract agreement for a portion of the Work and any purchase order for materials or equipment may, in the College's sole discretion, be assigned by the Contractor to the College, provided that

- (a) assignment is effective only after termination of the Contract by the College for cause or for convenience and only for those subcontract agreements that the College accepts by notifying the Subcontractor and the Contractor in writing and only on such terms and conditions acceptable to the College;
- (b) assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract;
- (c) if the College elects to take an assignment of any subcontract or purchase order, the Contractor shall execute all papers necessary to effectuate the assignment; and
- (d) the assignment shall not relieve the Contractor of its existing obligations to any Subcontractor or Supplier, nor shall it cause the College to assume

any of the Contractor's obligations to any Subcontractor or Supplier that arose prior to the termination.

When the College accepts the assignment of a subcontract agreement or purchase order, the College assumes the Contractor's rights and obligations under the subcontract going forward. Upon such assignment to the College, the College may further assign the subcontract to a successor contractor or other entity.

ARTICLE 7
TIME, LIQUIDATED DAMAGES, DELAY CLAIMS AGAINST THE COLLEGE.

7.1 Contract Times.

The Contractor shall begin the Work within 10 days after the issuance of a Notice to Proceed by the College, and shall perform the Work in the Contract Documents by the dates specified in the Notice to Proceed, including Construction Start, Milestone, Substantial Completion and Final Completion Dates (collectively, "Contract Times"). As specified in the Contract for Construction, if the Work is to be performed in phases, the College may issue separate Notices to Proceed for each phase, which shall specify the Construction Start, Milestone, Substantial Completion and Final Completion Dates for that phase. The College may, in its sole discretion and at no cost to the College, choose to delay the issuance of a Notice to Proceed and the Construction Start Date for any phase until after the Contractor has achieved Substantial or Final Completion of any other phase.

7.2 Liquidated Damages For Delay.

If the Contractor fails to Substantially Complete any phase of the Work or the entire Work by the Substantial Completion Date(s) set forth in the applicable Notice to Proceed (as extended by Change Order, if applicable), and the delay is not excused by the College, then the Contractor shall pay the College the amounts specified in the Contract for Construction as liquidated damages for delay for each calendar day that the phase of the Work or the entire Work is not Substantially Completed beyond the applicable Substantial Completion Date

**7.3 Delay Claims By The Contractor Against The College --
Limitations.**

The Contractor may not assert claims against the College for extra compensation by reason of any delays in its Work resulting from acts or omissions of any third parties irrespective of extensions granted under the Contract, including but not limited to delays caused by third parties such as the Architect, other contractors, utilities and governmental authorities.

The College shall only be required to pay additional compensation for delays caused by the College itself, and only to the extent required by N.J.S.A. 2A:58B-3 (delayed performance caused by the College's own negligence, bad faith, active interference or other tortious conduct, but not for reasons contemplated by the parties and not for the negligence of others including

others under contract with the College on the theory that such negligence should be imputed to the College). The College shall not be liable for any period of delay when there is a concurrent delay for which the College is not responsible.

When the Contractor is entitled to extra compensation for delay under the Contract for Construction and these General Conditions, it can only assert claims for extra costs at the job site, and may not assert claims for extra costs for home office expenses, home office overhead, lost profit or revenue, or consequential losses as that term is defined by New Jersey law. Any additional compensation under this Article shall also be subject to the provisions in the Contract for Construction and these General Conditions regarding claims, and the provisions in the Contract for Construction and these General Conditions regarding the maintenance and availability of cost records.

ARTICLE 8 **PROJECT SCHEDULE**

8.1 General Project Schedule Requirements.

The Contractor shall schedule the construction Work and determine the most feasible means and order for the Work to complete the Project within the times required by the Contract. The Contractor shall prepare a Project Schedule and monthly schedule updates, which must be approved in writing by the College and the Architect. The Contractor shall perform the Contract and the Work in accordance with the Project Schedule. The Project Schedule should include a schedule of submittals for approval as required herein. The Project Schedule must be submitted before any Work (other than mobilization to site and general layout and site preparatory work) on the Project can begin under the Notice to Proceed. When the Contractor's Project Schedule is approved in writing by the College, it shall become an additional Contract Document and the Contractor shall be required by the Contract to comply with it. The Project Schedule and any updates to it shall be used in determining the amount of the monthly progress payments to the Contractor. The College may also use the Project Schedule and updates to determine if the Contractor is adequately planning and performing the Work in accordance with the Contract Documents.

8.2 Form And Content Of Project Schedule.

The Contractor shall prepare the Project Schedule using Critical Path Method (CPM) scheduling techniques. The Contractor shall utilize the latest revision of Primavera P3 or Microsoft Scheduling software. The Contractor shall prepare a detailed schedule which shows how it will plan, organize, execute and complete the Work. The Project Schedule shall be in the form of an activity oriented network diagram (CPM). The principles and definitions used in this Article shall be as set forth in the Associated General Contractors of America (AGC) publication "Construction Planning and Scheduling", copyright 1994.

The detailed network diagram shall provide sufficient detail and clarity of form and technique so that the Contractor can plan, schedule and control the Work properly, and the College and the Architect can readily monitor and follow the progress of all portions of the

Work. The network diagram shall comply with the limitations imposed by the scope of the Work and contractually specified Milestone, Substantial Completion, and Final Completion Dates. The Project Schedule shall include the arrow or network diagram and the computer produced schedule with dates. The Project Schedule shall include and reflect the following factors:

- (a) Project phasing, contract Milestone, Substantial and Final Completion Dates.
- (b) The structural breakdown of the Project.
- (c) The types of Work to be performed and the labor trades involved.
- (d) Reasonable logic and activity durations.
- (e) Reasonable coordination of all activities.
- (f) Purchase, manufacture and delivery activities for all major materials and equipment.
- (g) Deliveries of equipment furnished by the College.
- (h) Allowances for work by separate contractors identified in writing by the College at the time of Contract award.
- (i) Submittals and approvals of shop drawings, material samples, and other required submittals.
- (j) Subcontract Work.
- (k) Crew flows and sizes (manpower).
- (l) Assignment of responsibility for performing all activities.
- (m) Access and availability to Work areas.
- (n) Identification of interfaces and dependencies with preceding, concurrent and follow-on contractors, and sequences and interdependence of activities.
- (o) Testing and inspections.
- (p) Phased or total inspection, acceptance, and takeover by the College.
- (q) Utilization of the Project Schedule to determine amounts of monthly progress payments.
- (r) Activities required of the College and the Architect such as approvals, including reasonable durations for the activities.

Activities should be set forth in working days and have a maximum duration of 60 days, except for non-construction activities such as the procurement and delivery of materials and equipment. All durations shall be the result of definitive manpower and resource planning by the Contractor. The level of detail in the Project Schedule shall be subject to the approval of the College. The Project Schedule shall include a reasonable approach to achieve Milestone, Substantial Completion and Final Completion Dates in the Contract. Any failure of the Contractor to include any element of the Work in the Project Schedule shall not excuse the Contractor from completing that Work and all of the Work needed to complete the Project by the Milestone, Substantial Completion and Final Completion Dates in the Contract.

The network diagram is to be prepared by a computer plotter. The logic diagram will be pure logic and shall not be drawn to time scale. The logic diagram shall be drawn on 30" x 42" size sheets and prepared on a tracing/mylar or similar material suitable for reproducing high quality prints.

8.3 Computerization Of Project Schedule.

The mathematical analysis of the detailed network diagram shall be made by computer, and the tabulation for each activity shall include the following:

- (a) Activity numbers.
- (b) Activity descriptions.
- (c) Durations in work days for each activity.
- (d) Earliest start date (by calendar date).
- (e) Earliest finish date (by calendar date).
- (f) Latest start date (by calendar date).
- (g) Latest finish date (by calendar date).
- (h) Slack or total float in work days.

The following computer documents shall be prepared as part of the initial Project Schedule submission and each update:

- (a) Activity file sort, including sorts listing activities required of the College and the Architect, such as approvals.
- (b) Eight week "lookahead" detailed bar chart.
- (c) Eight week summary bar chart.
- (d) Additional computer sorts requested by the College.
- (e) High density CDs or thumb drives of all computer files.

8.4 Weather Inclusion In Project Schedule.

Seasonal weather conditions shall be included in the Project Schedule, including average precipitation, temperature and other weather conditions typical in the geographic area over a 5 year period by month.

8.5 Project Schedule Updates.

The Contractor shall prepare Project Schedule updates monthly until the Project is completed. The first update shall be issued 30 calendar days after the Construction Start Date specified in the Notice to Proceed. Updates shall include the following information:

- (a) Actual start and completion dates for activities.
- (b) Activity percent completion.
- (c) Remaining durations for activities in progress.

Each Project Schedule update shall also include a narrative report that includes the following information:

- (a) Summary of Work completed during update period.
- (b) Comparison of actual progress and status to activities and dates in original Project Schedule.

- (c) Analysis of critical path including effect of activity progress on the Project critical path.
- (d) Analysis of secondary critical paths, meaning float within 10 days of the Project critical path.
- (e) Analysis of time lost or gained during the update period.
- (f) Identification of problem areas.
- (g) Identification of change orders and delays impacting or delaying the Project under the Project Schedule.
- (h) Solutions or proposed solutions to current problems and delays.
- (i) Extensions requested by the Contractor, including activities affected and the amounts, and the reasons for the requests.
- (j) Extensions granted by the College for delays and changes, including the activities affected and the amounts, and any effect on the critical path and Contract Milestone, Substantial Completion and Final Completion Dates.
- (k) Delays in activities required of the College and the Architect, and activities that they are required to complete in the update period following the issuance of the update.

All Project Schedule updates must be submitted to the College and the Architect for written approval. Project Schedule updates, including the reports which are approved by the College, shall be deemed to be official records of the progress and status of the Project under the Project Schedule and the Contract, and may be utilized by the College in determining if the Contractor is adequately planning and performing the Work under the Contract Documents.

8.6 Meetings/Eight Week Bar Charts.

The Contractor's Project Manager and Scheduler shall arrange for and attend monthly progress and scheduling meetings with the College and the Architect. Monthly progress meetings shall be scheduled 3 to 7 days after monthly Project Schedule updates and reports are issued and provided to the College and the Architect. The purpose of these meetings will be to review past progress, current status, problem areas, delays, measures to reduce delays, future progress, and the Contractor's most recent Project Schedule update and report. At the monthly progress meetings, the Contractor shall provide a look ahead summary and detailed bar charts showing the Work and activities to be performed and/or completed during the 8 week period following the Project Schedule update.

8.7 Project Schedule Documentation For Contract Payments.

The Contractor will not be entitled to payments under the Contract until a Project Schedule has been submitted to and approved in writing by the College. No payment will be made under the Contract if, when the payment is due, a Project Schedule update and narrative report is due under this Article but has not been submitted to and approved in writing by the College. The original Project Schedule shall include a breakdown allocating the total Contract Price among the network activities in the Project Schedule, which must be approved by the College.

8.8 Progress and Recovery Project Schedules.

The Contractor shall perform its Work in accordance with the Project Schedule. If the Contractor's Work falls behind the requirements of the Project Schedule, it shall, at its own cost, institute measures to improve its progress and bring its Work in compliance with the Project Schedule, including but not limited to increasing manpower, increasing work hours per shift, increasing shifts, increasing working days per week, and rescheduling Work activities to perform them concurrently where feasible.

If monthly Project Schedule updates show that the Contractor's progress has fallen behind the Project Schedule so as to jeopardize the achievement of Milestone, Substantial Completion or Final Completion Dates by more than 10 work days, the Contractor shall, if requested by the College in writing, prepare a recovery schedule with acceleration measures to regain the lost time, and shall proceed in accordance with the recovery schedule in addition to the Project Schedule at its own cost.

8.9 The Contractor's Failure to Provide Project Schedule Updates.

If the Contractor fails to provide monthly Project Schedule updates and reports when required, the College can elect in its sole discretion to employ any of the following remedies: (i) not make progress payments; (ii) on 10 days written notice to the Contractor, retain its own consultant to provide Project Schedule updates and reports and deduct the cost from the Contract Price; (iii) terminate the Contract for default in accordance with the termination provisions in the Contract for Construction and these General Conditions and/or (iv) make a claim on the performance bond.

8.10 Scheduler Qualifications.

The Contractor must utilize a Project Scheduler that satisfies the qualification requirements for the Project. If at any time during the Project it appears that the Contractor's Project Scheduler is not competent to provide the scheduling services required in this Article, the Contractor shall, within 10 days after a written notice and demand from the College, retain a replacement scheduler that is competent to provide the services required. The College may also utilize any of the remedies provided in the Contract for Construction or these General Conditions for the Contractor's failure to provide proper Project Schedule updates and reports.

ARTICLE 9 **EXTENSIONS, COMPENSATION FOR CERTAIN EXTENSIONS.**

9.1 Delays Warranting Extensions Of Contract Times.

If the Contractor is unavoidably prevented from completing any part of the Work within the Milestone, Substantial Completion or Final Completion Dates by causes beyond the control and without the fault of the Contractor or its Subcontractors, those Contract Times will be extended by amounts equal to the time lost due to such delays, provided the Contractor requests extensions in accordance with this Article. Delays warranting extensions of the Contract Times

include unforeseeable and unavoidable delays caused by the College, the Architect, other contractors employed by the College, utility owners or other third parties, acts of God, acts of governmental authorities, wars, abnormally severe weather conditions of unusual duration (specifically excluding weather conditions of the type and duration that have been encountered in the area in which the Project is located) that prevent timely delivery of materials or equipment necessary to the completion of portions of the Work or hamper access to the Work by workmen or Subcontractors, fires, floods, earthquakes, epidemics, plagues, and other unavoidable casualties.

Apart from an extension of time, no payment or allowance of any kind shall be made to the Contractor as compensation for damages on account of hindrance or delay from any cause in the progress of the Work, whether such delay be avoidable or unavoidable. The Contractor agrees that it will make no claim for compensation, damages for any such delays, and will accept in full satisfaction for such delays said extension of time.

9.2 Weather Delays.

The Project Schedule shall take into account normally anticipatable adverse weather plus an additional five (5) days of severe and unusual weather conditions that will materially interfere with the timely prosecution of the Work. No time extensions will be granted for time lost due to weather conditions that do not meet the criteria set forth in Article 9.1, and then only to the extent more than five (5) days of delay result from such severe and unusual weather conditions. Owner shall not be required to keep a record of days of precipitation or low temperatures and the burden of proof with respect to weather delays shall be upon Contractor. No time extensions will be considered for any weather conditions that do not affect Work on the critical path or Contract Times.

9.3 Float Time Use.

Float time in the Project Schedule is not for the exclusive use of either the Contractor or the College. Float time is available for use by both parties to facilitate the effective use of available resources and to minimize the impact of problems and delays that may arise during construction. No time extension will be granted as a result of any problem, change order or delay which only results in the loss of available positive float on the Project Schedule. Float time shown on the Project Schedule shall not be used by the Contractor in a manner that is detrimental to the interests of the College or the Project.

9.4 Calculation Of Extensions.

Extensions will be calculated based on the effect of delays on the Project Schedule and the activities in the Project Schedule. If the Contractor is entitled to an extension for a delay based on the nature of the delay under this Article, the activities in the Project Schedule affected by the delay will be extended by the amount they are affected. If extensions of activities in the Project Schedule affect the critical path and delay the Contract Milestone, Substantial Completion or Final Completion Dates, they too will be extended to the extent affected. The critical path and Contract Times will only be extended to the extent that they are actually

affected under the Project Schedule by a delay for which the Contractor is entitled to an extension.

If, for any scheduled activity or period, there are concurrent delays that include delays for which the Contractor is entitled to an extension and delays for which the Contractor is not entitled to an extension, the Contractor will be given an extension for the delays for which it is entitled to extension so that it will not be liable to pay liquidated damages for delay, unless the College eliminates or reduces that delay. A concurrent delay will not justify an extension to the Contractor if it has minimal effect on the completion of the Project, and/or if it would likely have been avoided if it had become apparent that it was having an effect on the progress of the Project and the Final Completion Date.

9.5 Elimination of Delays and Extensions (Acceleration).

If the effect of a delay for which the Contractor is entitled to an extension can be reduced or eliminated by changes in the Project Schedule or other measures which have no material adverse impact on the Contractor in terms of cost or otherwise, the Contractor shall employ those measures so that no extension is required or so that a shorter extension is required. If the Contractor is entitled to extensions for delays, and if the College (in its sole discretion) notifies the Contractor in writing that it prefers to eliminate the lost time to avoid or reduce the extension required, by changes or additional efforts such as acceleration efforts, the Contractor shall perform those measures as a change to the Contract to be compensated under the change order provisions in the Contract for Construction and these General Conditions.

9.6 Requests For Extensions Required.

The Contractor must provide the College with a written notice of delay and request for an extension within 24 hours of the beginning of a delay. The written notice of delay and request for extension must include the nature and cause of the delay, the known extent of the delay, the Work activities on the Project Schedule affected by the delay, and the extent of the effect to each, and suggestions or proposals to reduce or eliminate the delay. This limited time frame is to provide the College the opportunity to immediately address the issue and limit the amount of time in the potential delay and its potential impact on the Project Schedule.

9.7 Compensation For Certain Extensions And Limitations.

Under the Contract for Construction and these General Conditions, the College does not assume responsibility for many types of delays, including additional costs resulting from extensions granted because of those delays. Where the College is responsible for a delay under the express terms of the Contract for Construction and these General Conditions, it will pay extra compensation for any extension granted because of the delay.

Compensation by the College for delays (and extensions) for which it is responsible under the Contract for Construction and these General Conditions shall only include additional costs actually incurred at the site, and shall not include home office expense, home office overhead, lost profit or consequential losses. Any additional compensation under this Article shall be subject to the provisions in the Contract for Construction and these General Conditions

regarding claims, and the provisions in the Contract for Construction and these General Conditions regarding the maintenance and availability of cost records.

No compensation will be paid if an extension for a delay for which the College is responsible is concurrent with another delay for which the Contractor is not entitled to an extension, or is concurrent with another delay for which the Contractor is entitled to an extension but the College is not responsible for the other delay.

If the College requests a change in the Contract Work, potential delays and extensions that result from the change and any resulting extra compensation for the change shall be addressed under the change order provisions in the Contract for Construction and these General Conditions in addition to this Article.

ARTICLE 10 **PAYMENTS TO THE CONTRACTOR.**

10.1 Contract Price.

The College will pay the Contractor as full compensation for performing the Work the Contract Price as adjusted by approved change orders that increase or decrease the Contract Price. The College will do so in accordance with this Article, any supplemental General Conditions regarding payment, and the payment terms in the Contract for Construction. Payment provisions in the supplemental General Conditions that add to or modify this Article shall take precedence over this Article. Payment provisions in the Contract for Construction that add to or modify payment terms shall take precedence over the supplemental General Conditions and this Article.

10.2 Monthly Progress Payments.

The College will pay the Contractor monthly progress payments as the Work proceeds and will pay for the Work completed, less retainage. The Contractor shall submit monthly invoices using the College's invoice form for the Work completed in each calendar month, and the monthly invoice shall be submitted in accordance with the Contract. The Contractor shall be entitled to monthly progress payments based on the percentage of the Work completed (less earlier payments), and that amount shall be based on the Unit Schedule Breakdown and the update of the Project Schedule for the billing period showing schedule activities completed and progress on incomplete activities, in conjunction with the values assigned to those activities. If there is a discrepancy between the amount due based on the Unit Schedule Breakdown and the amount due based on the Project Schedule update, the Contractor shall only be entitled to the lesser amount unless the College's Representative, in his/her sole discretion, decides otherwise. Payments made by the College shall be used by the Contractor solely for purposes of this Project and for paying Subcontractors, suppliers, and for labor and materials, and shall not be used to pay debts owed by the Contractor outside of the Project.

10.3 Unit Schedule Breakdown/CPM Activity Price Breakdown.

Before the Contract for Construction is signed, the Contractor shall submit to the College and the Architect a Unit Schedule Breakdown (schedule of values) utilizing the College's form (AIA Documents G702/G703) which reasonably allocates the Contract Price among the principal categories of Work and materials in the Contract. The Unit Schedule Breakdown must be signed by the Contractor and is subject to written approval by the Architect and the College for use in calculating monthly progress payments under the Contract. The Contractor shall not "front end load" the Unit Schedule Breakdown. The Unit Schedule Breakdown may include line items for mobilization, bonds and insurance.

The Contractor's proposed Project Schedule shall reasonably allocate the Contract Price among the activities in the schedule so that monthly Project Schedule updates can be utilized in connection with the Unit Schedule Breakdown in determining the amount of monthly progress payments. The Contractor's Unit Schedule Breakdown and Project Schedule activity price breakdown must be approved in writing by the Architect and the College before any payments are made under the Contract.

10.4 Invoices For Monthly Progress Payments: Form and Content.

The Contractor must utilize the College's invoice form and the invoice forms (AIA Documents G702/G703 and waiver attachments) must be completed before they are submitted for payment. Each invoice must be signed by the Contractor, and shall certify that the Work and materials represented as having been provided have been provided, and that all Subcontractors and suppliers on the Project have been paid all amounts legitimately due for Work and materials billed to the College in earlier invoices that were paid by the College. The Contractor's submission of an invoice constitutes an affirmative representation and warranty by the Contractor that it performed the Work in compliance with the Contract Documents and applicable laws, codes and regulations.

Invoices for monthly Project payments must include the status of the Work in the Unit Schedule Breakdown and the Project Schedule update for the billing period that shows the activities completed or started and the value of them based on the Project Schedule. Invoices must also include certified payrolls for the Contractor and all Subcontractors for the billing period, affirmative action monthly manning reports, a certification of Subcontractor/supplier payments, the College's acknowledgment of progress payment and release of liens and claims form duly executed by the Contractor, the College's acknowledgment of progress payment and release of liens and claims form duly executed by each Subcontractor and supplier who has furnished labor or materials that are the subject of the current invoice, a list of all materials stored to date including descriptions, values, quantities and location, and any other documents required in the Contract Documents.

The Contractor will be entitled to have an invoice paid if the Architect and the College approve in writing the invoice including the percentage of Work completed, and if the quality of the Work and materials conform to the Contract Documents. The approval of invoices shall not waive claims for defects or deficiencies in the Work or materials provided, or the right to subsequently inspect the Project as a complete and functioning whole.

10.5 Payment For Materials And Equipment Procured But Not Installed.

The Contractor may seek payment in monthly invoices for materials and equipment delivered to the Project site but not yet incorporated into the Work. The Contractor shall include with its monthly invoices a list of the stored equipment, the amount and type of stored materials, and the place where they are stored. Each invoice that seeks payment for materials and equipment delivered to the Project site but not installed or incorporated into the Work shall include a signed bill of sale to the College and an invoice from the supplier. All risk of loss or damage for materials and equipment delivered to the Project site shall remain with the Contractor.

The College will only rarely pay for material or equipment stored offsite, and only when it determines, in its sole discretion, that there is good cause. The College will consider no request to pay for materials or equipment stored off site unless the Contractor includes a written request for such payment with its bid for the Project. If the College does agree to pay for material or equipment stored offsite during the performance of the Contract, it will do so when the Contract for Construction is signed.

If the College does agree to pay for materials and equipment stored offsite, such payments shall be subject to any conditions in the signed Contract, and in all cases, a bill of sale to the College, a paid invoice, insurance and proof the storage facility is bonded will have to be provided to the College when each payment is sought. The location will have to be specified in writing and the material or equipment will have to be inspected by the College. The Contractor and its performance bond surety must agree in writing that they retain all risk of loss or damage, and each payment application must contain a consent to payments for materials stored offsite signed by the Contractor's bonding company.

Payments on account of materials or equipment not incorporated into the Work but delivered and suitably stored at the site, or at some other location agreed upon in writing, may be made by the College subject to the following conditions:

- (a) Such materials or equipment shall have been fabricated or assembled specifically for the Project and delivered to storage no earlier than needed for the orderly progress of the Work as demonstrated by the Project Schedule.
- (b) Title to such materials or equipment shall pass to the College pursuant to the Contractor's bill of sale, which shall contain guarantee of replacement thereof in the event of damage thereto or disappearance thereof due to any cause. The Contractor shall also affirm that it will pay for such materials or equipment immediately upon receipt of payment therefore from the College.

In the case of offsite storage, the Contractor shall also provide Consent of Surety to such payment and insurance of such materials or equipment against the perils set forth in these General Conditions both while storage and during transportation to the site. Raw materials or other materials or equipment readily duplicated or usable on other projects will be paid for only

after the materials are incorporated into the construction.

10.6 Retainage.

The College will retain 2% of the amount due on each partial payment pending Final Completion of the Contract.

Retainage amounts being withheld by the College shall be released and paid in full to the Contractor within 45 days of the Final Completion Date agreed upon by the Contractor and the College, without further withholding of any amounts for any purpose whatsoever, provided that the Work has been Finally Completed as indicated.

10.7 Payment For Change Order Work.

The Contractor shall invoice for change order work in the monthly progress payment invoices as the change order work is performed, but may only do so after a written change order has been signed by the appropriate College personnel and a TCNJ Purchase Order is issued by the College.

10.8 Final Payment.

Upon Final Completion of all the Work including all change orders, upon final acceptance of the Work by the Architect and the College, and upon the issuance of the Certificate of Final Completion, the Contractor will be paid the fully adjusted Contract Price including any retainage. The Contractor shall submit an invoice for the final payment. The final invoice must be accompanied by the College's acceptance of final payment and release of liens and claims form duly executed by the Contractor, the College's acceptance of final payment and release of liens and claims form duly executed by each Subcontractor and supplier who has furnished labor or materials that are the subject of the final invoice, all warranties, guarantees, manufacturer literature, approved as-built drawings, shop drawings required, and any other documents that the Contractor is required by the Contract Documents to provide to the College at the time of Final Completion. The final invoice must also include a written signed consent to the final payment signed by the Contractor's bonding company.

10.9 Payment Terms.

All invoices and payments shall be subject to the terms of the Contract for Construction and these General Conditions, including the provisions regarding payments, and to the right of the College to withhold payments or to make deductions from payments for damages, defective work, liquidated damages, third-party claims, failure to complete Work, failure to comply with requirements of the Contract Documents, failure to comply with Prevailing Wage Act requirements set forth in the Contract for Construction and these General Conditions, failure to comply with Project Schedule obligations, or other causes authorized by the Contract Documents.

10.10 Payment Based On Partial Acceptance (Limitation).

The College will not accept portions of the Project as Substantially or Finally Complete unless specified elsewhere in the Contract Documents. If the Specifications authorize partial acceptances, they will also specify the terms and conditions of such acceptances.

10.11 Failure To Pay Amounts In Dispute Not To Affect Performance.

The failure of the College to pay any amount requested by the Contractor in an invoice based on a determination that the invoice is improper or some other dispute shall not entitle the Contractor to stop or slow down the performance of the Work.

10.12 Reasons For Withholding Payment.

In addition to the reasons set forth elsewhere in the Contract for Construction and these General Conditions, the Architect or the College may also withhold payments to the Contractor, or, because of subsequently discovered evidence, may nullify the whole or a part of a payments previously issued to the Contractor, to such extent as may be necessary in the Architect's or the College's opinion to protect the College from loss for which the Contractor is responsible because of

- (a) defective Work not remedied;
- (b) third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the College is provided by the Contractor;
- (c) failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;
- (d) reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Price;
- (e) damage to the College or a separate contractor;
- (f) reasonable evidence that the Work will not be completed within the Contract Times, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay;
- (g) failure to comply with requirements for monthly progress payments pursuant to Article 10.4; or
- (h) failure to carry out the Work in accordance with the Contract Documents.

When the above reasons for withholding payment are removed, payment will be made for amounts previously withheld.

If the College withholds or the Architect recommends that the College should withhold payment from the Contractor under subsection (c) above, the College may, after providing the Contractor with written notice and an opportunity to cure, issue joint checks to the Contractor and to any Subcontractor or material or equipment suppliers to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. However, by doing so, the College is not undertaking any payment obligation on the part of the

Contractor, nor does any Subcontractor have any claims against the College or any right to future joint check payments.

10.13 Set-Off For State Tax Indebtedness.

Pursuant to N.J.S.A. 54:49-19, and notwithstanding any other provision of law to the contrary, if the Contractor or any of its Subcontractors or suppliers are indebted to the State of New Jersey for any State tax, the College may withhold and/or set off any payments due to the Contractor as may be necessary to satisfy such indebtedness and/or pending resolution of the indebtedness.

10.14 Maintenance Of Cost And Accounting Records.

The Contractor shall maintain and retain weekly payroll, material, Subcontractor, supplier, overhead and other cost and accounting records for the Project, and for additional services or extras required by the College, including all costs that the Contractor is entitled to be paid under the Contract. The Contractor shall require its Subcontractors on the Project to do likewise. The Contractor shall also maintain all estimates and takeoffs used in preparing and calculating its bid price for the Contract and change orders. Pursuant to N.J.A.C. 17:44-2.2, the Contractor shall also maintain all documentation related to products, transactions or services under the Contract. The records shall be maintained and shall be made available to the College or its representatives when requested. These records shall be maintained in accordance with generally accepted accounting principles and practices for a period of 5 years after final payment is received by the Contractor, or the duration of any dispute or lawsuit arising out of the Project, whichever is later, and shall be made available to the College or its representatives and the New Jersey Office of the State Comptroller when requested.

Any failure to maintain or produce the records required by this Article shall preclude the Contractor from claiming or being paid or retaining any payments or being paid on any claims that are based on costs or that should be, and expenses or losses incurred by the Contractor or its Subcontractors including extra costs that are or that should be reflected in the records required by this Article or good business practices. This record keeping requirement applies to records related to the basic Contract Price as well as extra compensation for change orders and claims of all kinds.

No claim by the Contractor against the College for payment, whether for Contract Work, extras, changes or claims that is based to any degree on costs that should be recorded in cost records required by this Article or good business practices may be asserted against the College to the extent the cost records do not exist or are not provided to the College upon demand.

The College reserves the right to audit the records of the Contractor and its Subcontractors at any time and for up to 3 years after the Final Completion of the Project. If an audit reveals overpayment by the College, the Contractor shall refund the cost of the audit and the overpayment to the College, or the College may deduct the cost of the audit and the overpayment from future payments under the Contract, or the College may assert claims against the Contractor and/or its surety for the cost of the audit and such overpayments.

10.15 Written Evidence of Payment to Subcontractors.

The College has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and material and equipment suppliers' amounts paid by the College to the Contractor for subcontracted Work. Such evidence shall include acknowledgment of progress payment and release of liens and claims forms duly executed by each Subcontractor and supplier for payments previously made to the Contractor. If the Contractor fails to furnish the College with the written evidence that it has properly paid Subcontractors and material and equipment suppliers, the College shall have the right to contact Subcontractors to ascertain whether they have been properly paid. Neither the College nor Architect shall have an obligation to pay or to see to the payment of money to a Subcontractor, except as may otherwise be required by law. The College may, in its sole discretion, issue checks made payable jointly to the Contractor and a Subcontractor; however, by doing so, the College is not undertaking any obligation on the part of the Contractor, nor does the Subcontractor have any claims against the College nor any right to future joint check payments.

ARTICLE 11 **CHANGES.**

11.1 Changes Authorized.

The College may at any time authorize and direct changes in the Work or accelerations of the Work that change the scope of the Work and that increase or decrease the Contract Price. All changes including changes in the Contract Price shall be governed by this Article. All changes must be in a written change order signed by the Vice President for Administration, the College's Representative, the Architect and the Contractor. A TCNJ Purchase Order will then be issued by the College and signed by the Contracting Officer, after which time, the Contractor can then bill for the completed change order Work. Any extensions in the Contract Times and increases in the Contract Price because of extensions resulting from changes shall be governed by Article 9 of these General Conditions regarding extensions, but the authorization for the extra compensation itself resulting from an extension must be contained in a change order that complies with this Article as well. The College may elect to have changed Work on the Project that is within the scope of the Contract Documents performed by another contractor. Changes in the Work shall not affect the surety bond protection or insurance coverage required by the Contract Documents.

11.2 Change Request Or Directive.

The College may request a change in the Work or materials to be provided under the Contract Documents by a written Contract Change Directive ("CCD") signed by the College's Representative. If the College is of the opinion that no change in the Contract Price or Contract Times is required because of the change request, it shall so state in the CCD. A CCD may include provisions regarding the scope of the changed Work or materials, and may also include conditions including time parameters. A CCD may provide that specified Work shall stop until further notice, but the Contractor shall not stop or delay any Work because of a CCD unless the CCD provides that Work should stop because of the change. A CCD may provide that the performance of changes shall not commence until a change order is issued and a subsequent

TCNJ Purchase Order is issued and signed by the Contracting Officer, or that changed Work should proceed before a change order and TCNJ Purchase Order are issued by the College to maintain the progress of the Project.

11.3 Change Orders Which Are Protested.

If the Contractor protests the terms of a change order, it shall notify the College of its protest in writing within 2 business days of the issuance of the Change Order. It shall describe the terms that it objects to and the reasons for its protest. It shall include supporting documentation if appropriate, including detailed justification for any Contractor requested additional compensation based upon unavoidable additional costs. The College may elect to direct the Contractor in writing to perform the change order requirements despite the protest. If it does so, the Contractor's right to pursue further relief based on the protest shall be preserved and the Contractor shall immediately proceed with the change Work

11.4 Changes Affecting Contract Times.

Changes and change orders shall not affect or extend any of the Contract Times unless the change order itself specifies that it changes Contract Times. If a change order issued by the College delays the completion of any activity in the Project Schedule, the time allowed for that activity shall be extended, and if a delay in that activity delays other activities, the critical path or the Completion Dates in the Contract, they too will be extended. The Contractor shall make reasonable efforts in scheduling changed Work so that it does not delay or extend activities in the Project Schedule critical path, including any Milestone Dates, the Substantial Completion Date and the Final Completion Date. The Contractor shall also make alternate proposals for change order Work that include acceleration for the changed Work where feasible to achieve this goal, and shall include the cost of such efforts in its change order requests and proposals.

Change orders must specify whether they result in any delay (or extension) to any critical path activities in the Project Schedule, including an identification of the activities and the amount of delay in each. If no delay or extension is set forth in a change order, it will be deemed an agreement by the College and the Contractor that no delay or extension results from the change order.

11.5 Contractor Initiated Change Order Requests.

If the Contractor contends that any directive or communication from the College or Architect, or any condition, event or circumstance entitles it to a change order changing the scope of the Work, terms of the Contract Documents, Contract Price or Contract Times, it shall submit a written change order request to the College's Representative within 5 days of the event upon which the request is based. The written request shall specify the terms of the change order requested, and include all documentation and information that the Contractor seeks to have considered in support of the request, or that is necessary to a proper consideration of the request.

11.6 Change Order Amounts.

All price changes or amounts in change orders shall be based on (i) lump sum, (ii) actual work time and materials plus mark-ups for overhead and profit, or (iii) unit prices times actual quantities that may or may not include separate mark-ups for overhead and profit. If a change order price is to be based on a lump sum price or a unit price, the College may request the submission of such documentation regarding market price or cost which it reasonably deems necessary to determine a lump sum or unit price. If a change order is based on actual work time and material costs, it will include a not-to-exceed price.

Applications for payment for change order Work shall be included in monthly progress payment invoices as the change order work is performed, but only after a TCNJ Purchase Order has been issued to the Contractor by the College. For change orders based on time and material costs or unit prices times actual quantities, the time spent, material provided, and quantities performed shall be recorded in daily time slips, material invoices, and quantity of work performed tickets that are signed by the College's Representative to certify that the Work and materials were provided, and the quantities. Labor costs and material costs for change orders shall be based on actual costs to the Contractor without any mark-ups except as provided in this Article.

Mark-ups may be added to time and material costs where a change order is authorized to be paid on a time and material basis, and also unit price change orders if the change order price term expressly authorizes mark-ups as a separate additional charge to be added to the unit price. When mark-ups for overhead and profit are authorized, the standard mark-up for overhead and profit shall be 15% of net costs properly invoiced in the change order. The schedule for mark ups is as follows:

- 15% of direct costs for overhead, profit, bond, and insurance for Work performed directly by the Contractor;
- 15% of direct costs for overhead, profit, bond, and insurance for Work performed directly by the Subcontractor and 5% of the direct and indirect costs of the Work performed by the Subcontractor for the Contractor; and
- 15% of direct costs for overhead, profit, bond, and insurance for Work performed directly by the Subcontractor's subcontractor and 5% of the direct and indirect costs of the Work performed by the Subcontractor's subcontractor for the Subcontractor and 5% of the direct and indirect costs of the Work performed by the Subcontractor for the Contractor.

There shall be no additional mark-ups for materials or supplies. Bond and insurance costs are included in the noted mark ups above. Refer to Division 1 Specifications also for further delineation of items included in mark-ups.

THE CONTRACTOR MUST USE THE COLLEGE'S CHANGE ORDER FORM INCLUDED IN THE PAYMENT PROCEDURE DOCUMENTS.

11.7 Right To Audit Extra Costs (Before And After Payment).

The College reserves the right to audit all change orders and additional costs claimed and/or paid under the Contract at any time. The obligation of the Contractor, Subcontractors and suppliers to establish, maintain and produce cost records and remedies for failing to do as specified elsewhere in these General Conditions and the Contract for Construction shall govern. If an audit reveals that actual costs invoiced to the College and/or paid by the College in change orders exceed the actual costs incurred, the Contractor shall refund the excess, or the College may deduct the excess from future payments under the Contract, or the College may assert claims against the Contractor and/or its surety for such overpayments.

11.8 Change Orders With Both Price Increases and Decreases.

If a change order reduces the scope of the Work or materials to be provided by the Contractor under the Contract, the change order shall provide for a reduction in the Contract Price in the amount of the actual reduction in cost. If a change order results in both added costs and reduced costs, they shall be combined for a net plus or minus Contract Price adjustment, and when mark-ups are applicable, they shall only be added to a net increase in the Contract Price which results from a combination of additions and deductions in the change order.

11.9 Waiver Of Rights In Connection With Change Orders Issued Without Protest.

The Contractor shall not be entitled to seek any additional compensation or any extension of the Contract Times beyond the amounts and any extensions included in a change order signed by the College or a written change order request submitted by the Contractor to the College for approval, the intent being that the Contractor must disclose all additional costs and delays claimed to result from a change so that the College can take measures in considering the change to effect cost savings and avoid delays. The failure to include extra costs or delays in a change order request will preclude the Contractor from later claiming such costs or delays in connection with the change in any form or fashion.

ARTICLE 12 **COMPLETION.**

12.1 Substantial Completion.

When the Contractor believes that the Project (or a specific phase of the Work, if the Work is to be performed in phases) is Substantially Complete, meaning all essential requirements of the Work have been sufficiently completed so that the Project (or a specific phase) can be occupied and used for its intended purpose (and as further defined in the College's Division 1 specifications for capital projects), it can make a written request to the Architect and the College to conduct an inspection and to issue a Certificate of Substantial Completion. The Contractor's request shall list all Work and requirements of the Contract Documents that remain to be completed or corrected and an estimate of the value of the incomplete items and the dates by which those items of the Work will be completed, but in no event shall it be more than thirty (30) days from Substantial Completion.

The Architect and the College will conduct an inspection, and if they determine the Contractor has Substantially Completed the Project (or a specific phase of the Work, if the Work is to be performed in phases), the College will issue a Certificate of Substantial Completion. If the Architect and the College determine that the Contractor has not achieved Substantial Completion, the College will notify the Contractor in writing and will list the Work and requirements of the Contract Documents that must be completed for Substantial Completion and provide a punchlist. The Architect and the College will also assign a value to the incomplete items to be added to the 2% retainage held after the Certificate of Substantial Completion is issued. The College and the Architect will re-inspect when the Contractor notifies them in writing that those items have been completed.

Any failure of the College or Architect to include incomplete or deficient items in a Certificate of Substantial Completion or a notice regarding a Substantial Completion inspection shall not affect the Contractor's obligation to properly complete all requirements of the Contract.

The College will not issue a Certificate of Substantial Completion unless it can occupy and use the Project (or the phase of the Work) for its intended purpose, and the Contractor agrees that the College's use and occupancy of the Project (or the phase of the Work) shall not affect the Contractor's obligation to complete the Project and requirements of the Contract Documents. The Contractor also agrees that its completion of the Project will not unreasonably interfere with the College's occupancy and use of the Project (or the phase of the Work) and that the College's occupancy will not impede the Contractor's completion of the Work to Final Completion.

Unless otherwise specified in the supplemental General Conditions, a Certificate of Substantial Completion will not be issued unless an unqualified temporary or permanent certificate of occupancy is issued, and the College is able to use and occupy the Project (or the phase of the Work) without interruption.

The issuance of a Certificate of Substantial Completion shall not void or alter any of the other terms of the Contract Documents, including but not limited to terms relating to warranties, or relieve the Contractor of its obligation to complete the Work or remedy defective Work or materials, unless such terms are expressly modified by the Certificate of Substantial Completion.

Guarantee periods for equipment, workmanship and materials shall commence when the Certificate of Substantial Completion is issued or from the completion and acceptance of equipment, workmanship or materials, whichever is later, unless otherwise specified in the supplemental General Conditions or the Certificate of Substantial Completion.

The rights of the Contractor regarding payments upon the issuance of the Certificate of Substantial Completion shall be as provided in the payment provisions of the Contract for Construction and these General Conditions.

12.2 Final Completion.

The Contractor shall notify the Architect and the College in writing when it has completed the entire Project (or a specific phase of the Work, if the Work is to be performed in

phases) and has satisfied all of the requirements of the Contract Documents for Final Completion. The Architect and the College will then conduct an inspection, and if they determine that the Contractor has completed the entire Project (or a specific phase of the Work, if the Work is to be performed in phases) and has satisfied all of the requirements of the Contract Documents for Final Completion, the College will then issue a Certificate of Final Completion. If any items remain incomplete or unsatisfactory, the College will notify the Contractor in writing and list the incomplete or unsatisfactory items. The Contractor shall immediately complete and correct any unfinished items and notify the Architect and the College in writing and request a follow-up inspection for Final Completion.

The Certificate of Final Completion will not be issued until all documents required by the Contract Documents have been provided, including the College's acceptance of final payment and release of liens and claims forms duly executed by the Contractor and any Subcontractors and suppliers who have furnished labor or materials under the Contract, warranties, maintenance and operating instructions, certificates, insurance, shop drawings required, and as-built drawings approved by the Architect. Final Completion must include leaving the entire Project site and the Project (or the phase of the Work) clean, neat and orderly. All distortions, cracks, delaminating and deteriorations of finished surfaces must be remedied. All broken items shall be repaired. All paint spots, stains and plaster must be removed. All unused equipment and excess material shall be removed. The Project and the Project site (or the phase of the Work) shall be clean and finished.

If the Contractor unreasonably delays completing and correcting items needed for the issuance of the Certificate of Final Completion, the College may unilaterally issue a Certificate of Final Completion that lists incomplete and defective items, and that deducts any applicable liquidated damages and the cost of remedying incomplete and defective items from the final amount due to the Contractor under the Contract.

Final payment will not be made until the Certificate of Final Completion is issued, and the final payment shall be subject to the payment provisions in the Contract for Construction and these General Conditions.

ARTICLE 13 **SUSPENSION AND TERMINATION OF CONTRACT.**

13.1 Suspension By The College.

The College shall have the right to stop or suspend the Work in whole or in part at any time. The Work may only be stopped or suspended by a written directive of the College's Representative, except in an emergency. The College's Representative may stop or suspend the Work in whole or in part on an emergent basis, either verbally or in writing, but any such emergent suspension or stop Work order shall be confirmed by a written directive from the College's Representative within 48 hours. The College may stop or suspend the Work because of any conditions affecting health or safety on or off site, any dangerous condition, any environmental hazard, the convenience of the College, or the public interest. If a directive to

stop or suspend all or part of the Work includes directions to secure the site, the Contractor shall perform the Work required in the directive. The Contractor shall also maintain the safety and security of the Project during the suspension for the protection of the site, Work in place, materials and equipment on site, persons on or near the site, and the College's property.

If all or part of the Work is suspended in response to a problem or condition caused by the Contractor's performance of its Contract, or parties other than the College itself, or conditions over which the College has no control, the Contractor will not be entitled to any additional compensation for the suspension. If the College directs the suspension of Work because of the improper performance of the Contract by the Contractor or those performing its Contract, the Contractor will not be entitled to any extension of any Contract Times or additional compensation by reason of the suspension. If a suspension is directed for reasons other than the fault of the Contractor or others involved in its performance of the Contract, the Contractor will be entitled to an extension under and to the extent authorized in Article 9, and additional compensation under and to the extent authorized by Article 11.

13.2 Termination For Convenience.

The College may, by a written directive, terminate the Contract at any time before completion for the College's convenience or where it concludes that it is in the public interest to do so. The Contractor shall complete any items of Work specified in the notice of termination for convenience and any Work necessary to make the site safe for all persons and property at or near the Project site when the College terminates the Contract for convenience under this Article.

Absent the Contractor fault or violation of the Contract, the Contractor shall be paid in full for all properly completed Work, subject to the payment provisions in the Contract for Construction and these General Conditions. The Contractor will not be entitled to payment for costs and mark-ups for Work or materials not provided before the termination, or costs for Work and materials not provided unless the Contractor cannot avoid liability to pay those costs, or profit or overhead on the portion of the Contract that will not be performed because of the termination, or other types of damages. The extra compensation payable to the Contractor in connection with a termination for convenience may include the cost of materials or equipment purchased for the Project before termination but not installed if the Contractor cannot otherwise use or sell them.

The Contractor will also be entitled to reasonable termination costs in reasonable amounts for additional direct costs in connection with the termination, but not administrative, home office or overhead costs, lost profit, or consequential damages. In addition, any claims shall be subject to the provisions in the Contract for Construction and these General Conditions regarding claims and the maintenance of cost records.

The Contractor shall include provisions similar to this Article in subcontracts and supply contracts for the Project. When a termination for convenience is directed by the College, the Contract shall be closed out in accordance with the provisions of the Contract for Construction and these General Conditions regarding payment and Project completion.

13.3 Termination For Cause.

The College may terminate the Contract for cause if the Contractor (i) commits violations of the Contract Documents, (ii) fails to perform the Work in accordance with the Contract Documents including the Project Schedule, (iii) fails to comply with applicable laws, rules or regulations, (iv) fails to pay Subcontractors or suppliers to the extent reasonably required, (v) becomes insolvent or becomes a debtor in a bankruptcy proceeding, (vi) fails to pay its debts, (vii) is found to have made false or misleading statements to the College in writing in obtaining the Contract or payments, (viii) fails to comply with employment discrimination laws, (ix) fails to pay prevailing wages, (x) fails to maintain or renew the required insurance, (xi) fails to maintain proper protection for the safety of persons or property on the site, (xii) fails to comply with reasonable and authorized directives of the College under the Contract, or (xiii) assigns its rights or interests under the Contract or payments under the Contract to any third party.

If the College terminates the Contract for cause, it shall first send a notice of intent to terminate to the Contractor and the Contractor's surety. The notice shall direct the Contractor to remedy or eliminate the deficiency within a specified time if the problem is one that can be eliminated. If the Contractor fails to reasonably comply with the directive and notice, the College may after 10 days issue a notice of termination to the Contractor and its surety which terminates the Contract effective immediately and specifies the reason for the termination.

If the Contract is terminated, the Contractor shall secure the site and take measures to leave the site safe for persons, material, Work in place and equipment before departing the site, and shall remove all tools and equipment within 5 days of the termination effective date. The Contractor shall not remove any materials or equipment stored on site unless directed to do so by the College. When the Contract is terminated, the Contractor shall deliver materials purchased for the Project and paid for by the College, but not stored on site, together with all appropriate warranties and guaranties to any location designated by the College.

If the Contractor's surety does not take over the completion of the Work in accordance with this Article, the College may appropriate any or all materials on the site that may be suitable and acceptable and may enter into an agreement for the completion of the Work with another contractor, or use other methods to complete the Work.

All damages, costs and charges incurred by the College together with the cost of completing the Work, will be deducted from any monies due or which may become due to the Contractor for Work properly completed by it before the termination. If such expenses exceed the sum available from the unpaid Contract Price, the Contractor and its surety shall be liable and shall pay to the College the amount of such excess in addition to other damages.

The rights and remedies of the College in connection with a termination for cause shall be in addition to other rights and remedies which it has under law, the Contract, and the Contractor's bond.

If the College terminates the Contract for cause and it is subsequently determined by a court that the Contractor was not in default, or that the termination was legally unjustified, the termination will be deemed to be a termination for convenience under this Article, and the rights

and remedies of the Contractor and its surety for the termination will be limited to those which exist in connection with a termination for convenience. If the College terminates the Contract for cause, the Contractor may not file a suit to recover on any claims arising out of the Project before the Work is Substantially Complete.

13.4 Surety Takeover Following Termination For Cause.

If the College terminates the Contractor for cause, the Contractor's performance bond surety may elect to takeover and complete the Contractor's Work and obligations under its Contract. If the surety elects to take over the completion of the Contract, it may only do so on the following conditions:

- (a) The surety must notify the College that it will take over completion of the Contract by a written notice of intent signed by a representative authorized to bind the surety within 5 calendar days of the surety's receipt of the College's notice of termination.
- (b) The surety and the College must execute a written takeover agreement within 10 days after the surety sends its notice of intent to takeover. The takeover agreement signed by the surety and the College, must:
 - i. contain an acknowledgement and agreement by the surety to assume the obligation to complete the balance of the Work under the Contract and to perform all of the Contractor's obligations under the Contract at the surety's sole cost and expense, and to utilize only contractors approved by the College to complete the Work, which approval shall not be unreasonably withheld;
 - ii. provide that the surety is entitled to be paid the unpaid balance under the terminated Contractor's Contract in accordance with and subject to the terms of the Contract for Construction and these General Conditions;
 - iii. provide that the surety is not relieved of any of its obligations under its payment and performance bond for the Project, and that the College retains its right to withhold money for Contract payments to compensate for damages or for other reasons where authorized under the Contract for Construction or these General Conditions; and
 - iv. provide that it is without prejudice to and is subject to all of the rights and remedies of the College, the surety, and the defaulted Contractor, and the surety may not require the College to agree to a takeover agreement that seeks to extinguish any such rights.
- (c) The surety must also pay without delay all obligations of the terminated Contractor for Work and materials on the Project, subject to a reasonable allowance of time to investigate and verify claims.

13.5 Suspension By The Contractor For Non-Payment.

If the Contractor is not paid sums due under an approved invoice within thirty (30) days of the billing date, it may suspend performance without penalty for breach of Contract, but only

after providing the College with 7 days written notice of non-payment, and only in the event that the College fails to furnish the Contractor, within that 7 day period, with a written statement of the amount withheld and the reasons for the withholding. Nothing herein shall be construed to excuse the Contractor's nonperformance, or to limit the College's rights and remedies relating to such nonperformance, with regard to any monies withheld from the Contractor upon the proper notice provided under this Article, or with regard to any Contractor claim disputed by the College.

ARTICLE 14 **WARRANTY/DEFECTIVE WORK AND MATERIALS**

14.1 General Work One Year Warranty; HVAC Systems Two Year Warranty

The Contractor warrants and guarantees for a one year period that all Work, materials and equipment (and for a two year period that all HVAC work) conform to the Contract Documents and will not fail or manifest defects, that the Project and all its components will be fit for their intended functions, and that all material and equipment will be new and of good quality.

The general one year warranty period (or two year warranty period for HVAC work) shall commence when the Certificate of Substantial Completion is issued, and the one year period (or two year period for HVAC work) shall commence on that date for all components of the Project, including any equipment activated and operated before Substantial Completion, such as HVAC systems, electrical systems and elevators.

During the one year warranty period (or two year warranty period for HVAC work), the Contractor shall repair and remedy at its own expense any premature failure, defects or deficiencies in any Work, materials or equipment that are discovered or that develop during the one year period (or two year period for HVAC work), and shall do so within 5 days after receipt of a written warranty claim from the College. The Contractor shall also repair damages caused by any failure or defect covered by this warranty. A failure to provide the warranty service required shall constitute a breach of this warranty obligation as well as other applicable provisions of the Contract. This warranty shall not cover failures caused solely by substantial misuse or abuse by the College.

This general one year warranty (or two year warranty for HVAC work) is intended to provide the College with prompt warranty service for all aspects of the Project for the one year period (or two year period for HVAC work). It is not intended to limit or extinguish any additional warranties required by any of the Contract Documents, or provided by manufacturers of systems, equipment or materials provided under the Contract. It is not intended to eliminate or reduce the College's rights and remedies under the Contract Documents and law for defects and deficiencies in the Work, materials and equipment, or the time period of the Contractor's general responsibility and liability.

14.2 Defective Work, Materials And Equipment.

Apart from the general one year warranty (or two year warranty for HVAC work) provided for in this Article, the Contractor shall be responsible for defective Work, materials and equipment and any failure of these items to comply with the Contract Documents. This obligation shall extend beyond Substantial Completion, Final Completion and the general one year warranty (or two year warranty for HVAC work) in this Article.

If defects in the Work, materials or equipment or non-conforming items are discovered during construction and before Final Completion, the Contractor shall promptly correct them at its own expense. If the Contractor fails to correct defective or non-conforming Work, material or equipment in response to a written notice from the College, either during construction or after Final Completion, the College may employ others to provide the remedial work and the Contractor and its surety shall be liable for the cost thereof and damages incurred by the College. The Contractor and its surety shall also be liable for the cost of making good all Work and material destroyed or damaged by defects or the correction of defects.

If any portion of the Contractor's Contract Price remains in the custody of the College, either earned or unearned, the College may deduct money paid to others to remedy defects after notice is sent to the Contractor and damages incurred by the College when the Contractor fails to provide a remedy in response. The Contractor's responsibility for defects and non-conforming Work, material and equipment shall not be limited in time except by applicable law.

The Contractor's responsibility for defective Work shall not be affected by either the performance or the lack of performance of inspections by the College or the Architect. The issuance of payments, a Certificate of Substantial Completion or a Certificate of Final Completion shall not constitute acceptance of Work, material or equipment that is deficient or not in compliance with the Contract, or limit the Contractor's warranty or the other Contract obligations.

ARTICLE 15

INDEMNIFICATION/LIABILITY TO THIRD PARTIES.

15.1 The Contractor's Indemnification Obligation.

To the fullest extent permitted by law, the Contractor shall defend, indemnify, and hold harmless the College, the State of New Jersey, the New Jersey Educational Facilities Authority, Trenton State College Corporation, and any other persons or entities designated by the College, and the officers, directors, principals, attorneys, agents, servants, and employees of any of them (collectively the "Indemnified Parties") from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from: (1) performance of the Work, whether such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, including loss of use resulting therefrom caused in whole or in part by the negligent or willful acts or omissions of the Contractor, Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder or (2) any one or more of the items set forth in

this Article. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Article.

In claims against any person or entity indemnified under this Article by an employee of the Contractor, a Subcontractor or anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under this Article shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts, nor shall the same be limited by the types or limits of insurance carried or to be carried by the Contractor or any Subcontractor pursuant to the Contract Documents or otherwise.

The indemnity, defense, and hold harmless obligation set forth in this Article shall be supplemented by the following:

- (a) any claims or liens of Subcontractors, except to the extent that the non-payment upon which the claim or lien is predicated resulted solely from the College's wrongful failure to pay the Contractor sums due under the Contract;
- (b) any fines, penalties, liquidated damages, assessments or other executions imposed by any governmental authority having jurisdiction over the Project by reason of the Contractor's failure to comply with any requirement of the Contract;
- (c) any losses, damages, or expenses incurred by reason of the Contractor's failure to obtain and maintain in force or cause to be obtained and maintained, the insurance required by the terms of the Contract;
- (d) any losses, damages, or expenses incurred by reason of any failure (whether or not specifically identified herein) by the Contractor to perform its obligations under the Contract Documents or any breach of the Contract;
- (e) any claims, damages, or expenses incurred by reason of the Contractor's infringement or alleged infringement of any patent, copyright, or other intellectual property or similar rights; and
- (f) any claims, damages, liquidated damages, penalties, or fines assessed against the College, directly or indirectly, solely or partially by reason of the Contractor's failure to comply with any applicable laws, codes, statutes, or regulations.

If any judgment is rendered against the Indemnified Parties for which indemnification is required under this Article, the Contractor shall satisfy and discharge it. The Contractor shall reimburse the College for reasonable attorney fees, costs and expenses incurred by the Indemnified Parties in the defense of such suit or claim.

The College shall give written notice to the Contractor of claims and suits for which indemnification may be claimed pursuant to this Article.

The foregoing obligations shall survive the completion of the Work and final payment to the Contractor (or the sooner termination of the Contract) with respect to all matters accrued during the term of the Contract and such obligations shall not be construed to negate, abridge or reduce any other rights, obligations or indemnity which would otherwise exist as to a party or person indemnified by this Article.

15.2 The Subcontractor's Indemnification Obligation.

The Contractor shall cause the indemnification obligations set forth in this Article to be included in all contracts with its Subcontractors.

ARTICLE 16 **INSURANCE AND BONDS.**

16.1 The Contractor's Insurance.

The Contractor shall purchase from, and maintain with a company or companies lawfully authorized to do business in the State of New Jersey, insurance for protection from claims under workers' compensation and other employee benefit acts which are applicable, claims for damages because of bodily injury, including death, and claims for damages, including the Work itself, to property which may arise out of or result from the Contractor's operations and completed operations under the Contract, whether such operations be by the Contractor or by a Subcontractor or anyone directly or indirectly employed by any of them, until at least 1 year after the Final Completion and acceptance of the Project. This insurance shall be written for not less than the limits set forth below or as required by law, whichever coverage is greater, and shall include contractual liability insurance applicable to the Contractor's obligations under Article 15 (Indemnification). The Contractor expressly agrees that any insurance protection required by the Contract Documents shall in no way limit the Contractor's obligations under the Contract, and shall not be construed to relieve the Contractor from liability in excess of such coverage. Nor shall it preclude the College from taking such actions as are available to it under any other provisions of the Contract for Construction, these General Conditions or the law.

16.1.1 Types and Minimum Amounts of Insurance:

- (a) **Commercial General Liability Insurance (CGL).** Commercial General Liability insurance ISO CG 00 01 12 07 or later occurrence form of insurance including contractual liability with limits of at least **one** million dollars (\$ **1,000,000**) per occurrence, and at least **two** million dollars (\$ **2,000,000**) in the aggregate. The general aggregate limit shall apply separately to this project/location or the general aggregate limit shall be twice the required occurrence limit. The CGL policy shall also include products/completed operations with limits of at least **one** million (\$ **1,000,000**) in the aggregate. This insurance shall be maintained for at least 1 year after the Final Completion of the Project.
- (b) **Automobile Liability Insurance.** Comprehensive Automobile Liability insurance covering owned, non-owned, and hired vehicles. The limits of liability shall not be less than **one** million dollars (\$ **1,000,000**) combined single limit for bodily injury and property damage for each occurrence.

- (c) **Workers Compensation/ Employer's Liability.** 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, sub-subcontractor or supplier who will be engaged in the performance of the Contract. The certificate must so indicate that no proprietor, partner, executive officer or member is excluded. This insurance shall include Employers' Liability Insurance 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 employee, and one million dollars (\$1,000,000) disease, aggregate limit.

All required insurance coverages must be written by insurance companies acceptable to the College. All insurance companies must have a minimum A.M. Best's financial strength rating of A- or better, or an equivalent rating from another respected rating agency, and an A.M. Best's size rating of VII or greater.

16.1.2 Additional Insureds. All insurance required herein, except Worker's Compensation, shall name The College of New Jersey, the State of New Jersey, the New Jersey Educational Facilities Authority, Trenton State College Corporation and any other persons or entities designated by the College as additional insureds.

16.1.3 Cancellation. The certificates of insurance shall provide for 30 days written notice to the College before any cancellation, expiration or non-renewal during the term the insurance is required by the Contract.

16.1.4 Evidence of Insurance. The Contractor shall when the Contract for Construction is signed and before beginning the Work required under the Contract, provide the College with valid certificates of insurance signed by an insurance provider or authorized agent or underwriter to evidence the Contractor's insurance coverage as required in this Article, and also copies of the policies themselves. The certificates of insurance shall specify that the insurance provided is of the types and in the amounts required in this Article, and that the policies cannot be canceled except after 30 days written notice to the College. The Contractor shall also be required to provide the College with valid certificates of renewal when policies expire. The Contractor shall also, when requested, provide the College with additional copies of each policy and all endorsements required under the Contract, which are certified by an agent or underwriter to be true copies of the policies and endorsements issued to the Contractor.

16.1.5 Remedies for Lack of Insurance. If the Contractor fails to renew any of its required insurance policies, or any policy is canceled, terminated or modified, the College may refuse to pay monies due under the Contract. The College, in its sole discretion and for its sole benefit, may use monies retained under this Article to attempt to renew the Contractor's insurance or obtain substitute coverage if possible for the College's sole benefit, and may invoke other applicable remedies under the Contract for Construction and these General Conditions including claims against the Contractor and its surety. During any period when the required insurance is not in effect, the College may also, in its sole discretion, either suspend the Work under the Contract or terminate the Contract.

16.2 The Subcontractor's Insurance.

The Contractor shall ensure that its Subcontractors purchase and maintain insurance on the same terms and with coverages customary for each trade as required by the Contractor under the Contract. The Contractor shall contractually obligate its Subcontractors to indemnify, defend, and hold harmless the College upon the same terms and conditions that the Contractor is required to do so as provided in Article 15 of these General Conditions (Indemnification).

16.3 Payment And Performance Bond.

The Contractor is required to furnish the College with a payment bond and a performance bond from an approved surety as described in this Article and in the bid documents. The bonds shall conform to N.J.S.A. 2A:44-147. The Contract will not become effective until these bonds are provided to and approved in writing by the College. The bonds must also be accompanied by the surety disclosure statement and certification required by N.J.S.A. 18A:64-68.

ARTICLE 17 **DISPUTE RESOLUTION.**

17.1 Mediation.

If a dispute or claim arises out of or relates to the Contract, or the breach thereof, and if the dispute cannot be settled through negotiation, the dispute or claim may, at the College's sole option, be subject to mediation administered by the American Arbitration Association under its Construction Industry Mediation Rules as a condition precedent to binding dispute resolution. The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in Mercer County, New Jersey, at the offices of the College's attorneys, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable in any court having jurisdiction thereof.

17.2 Method Of Binding Dispute Resolution.

For any dispute or claim, not resolved by mediation pursuant to this Article, the method of binding dispute resolution shall be litigation in the state or district courts of the State of New Jersey, unless the College, in its sole discretion, decides to submit the dispute or claim to arbitration pursuant to this Article.

17.3 Arbitration (If The College Elects To Arbitrate).

If the College decides, in its sole discretion, to submit a dispute or claim to arbitration rather than litigation as provided above, the arbitration shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Contract unless the parties mutually agree otherwise. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The arbitrator shall be a New Jersey licensed attorney with at least twenty (20) years' experience practicing in construction law. In the event that the parties mutually agree to use a panel of three arbitrators, then the construction attorney will be the

presiding arbitrator, one of the arbitrators will be a registered architect and the other will be a contractor, all of whom shall be neutral and independent. This Article shall not preclude the College or Contractor from instituting legal action to discharge an invalid construction lien. The arbitration hearing shall be held in Mercer County, New Jersey, at the offices of the College's attorneys, unless another location is mutually agreed upon.

A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the claim, dispute or other matter in question would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the claim, dispute or other matter in question.

The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by the parties to the Contract shall be specifically enforceable in accordance with applicable law in any court having jurisdiction thereof.

The award rendered by the arbitrator(s) shall be a reasoned award and shall include a statement of findings of fact and conclusions of law and shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

17.4 Consolidation Or Joinder.

The College, in its sole discretion, may consolidate an arbitration conducted under the Contract with any other arbitration to which it is a party provided that (i) the arbitration agreement governing the other arbitration permits consolidation, (ii) the arbitrations to be consolidated substantially involve common questions of law or fact, and (iii) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

The College, in its sole discretion, may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

The College, in its sole discretion, may grant to any person or entity made a party to an arbitration conducted under this Article, whether by joinder or consolidation, the same rights of joinder and consolidation as the College under the Contract.

17.5 Work During Pendency Of Dispute.

Unless otherwise instructed by the College, the Contractor shall carry on its Work during the pendency of any dispute hereunder, and the College shall continue making payments to the Contractor of undisputed amounts.

17.6 Prompt Payment Claims.

Notwithstanding the foregoing, disputes regarding only whether a party has failed to make payments required pursuant to New Jersey's Prompt Payment Act may be submitted to alternative dispute resolution as provided in N.J.S.A. 2A:30a-2(f). In such event, the College and the Contractor shall share equally the fees and expenses of the selected mediator. Provided, however, that nothing herein shall be construed, in whole or in part, as a waiver, release or modification of the provisions of the New Jersey Contractual Liability Act, N.J.S.A. 59:13-1, et seq., as it governs claims against the College.

17.7 The Contractor's Claims: Procedures And Limitations.

Claims by the Contractor against the College shall be subject to the New Jersey Contractual Liability Act, N.J.S.A. 59:13-1, et seq., including the notice and time for suit provisions. For the purpose of determining the time within which the Contractor must file suit under the New Jersey Contractual Liability Act, "completion of the contract" shall be deemed to have occurred upon achievement of Substantial Completion as defined in these General Conditions.

The Contractor also agrees that it shall not be entitled to assert claims against the College for any compensation beyond that provided for in the Contract by reason of the acts or omissions of any third parties, including but not limited to the Architect and any other contractor on the Project. The Contractor may not assert claims for extra costs for home offices expenses, home office overhead, lost profits or revenue, or consequential damages as that term is defined in law. All claims shall also be subject to all other pertinent provisions of the Contract for Construction and the Contract Documents including these General Conditions. The Contractor also agrees that it may not assert any claims for extra costs or damages unless it maintains all the records of its estimated and actual costs as required by the Contract for Construction and these General Conditions.

17.8 Dispute Resolution Process In The Contractor's Subcontracts.

The Contractor shall include this dispute resolution process in all of its contracts with any Subcontractors or suppliers on this Project.

ARTICLE 18 **MISCELLANEOUS.**

18.1 Prevailing Wage.

The Contractor and its Subcontractors shall comply with the New Jersey Prevailing Wage Act, N.J.S.A. 34:11-56.25 through 56.57. Workers employed by the Contractor or any Subcontractor or sub-subcontractor in the performance of services directly on the Project must be paid prevailing wages. As required by N.J.S.A. 34:11-56.27 and 56.28, the Contract cannot become effective until the College obtains from the New Jersey Department of Labor a determination of the prevailing wage rates applicable to the Project as of the Contract award date and attaches a copy to the Contract. As required by N.J.S.A. 34:11-56.27, the Contractor or any

Subcontractor may be terminated if any covered worker is not paid prevailing wages on the Project, and the Contractor and its surety shall be liable for any additional costs which result. The Contractor and its Subcontractors must be registered with the New Jersey Department of Labor (N.J.S.A. 34:11-56.51 et seq.), and the prevailing wage rates must be posted at the job site (N.J.S.A. 34:11-56.32). The Contractor and its Subcontractors must prepare accurate certified records of wages paid for each worker on the Project (N.J.S.A. 34:11-56.29), and copies for the period covered by each invoice must be attached to the invoice submitted under the Contract. In accordance with N.J.S.A. 34:11-56.33, the Contractor's final invoice must include a statement of all amounts still then due to workers on the Project. The Contractor is also cautioned that it must use job titles and worker classifications consistent with those approved by the Department of Labor, and that, if it intends to pay apprentice rates, it must comply with the Department of Labor's regulations at N.J.A.C. 12:60-7.1 through 7.4.

If the State's Prevailing Wage Act is amended, or the language stated herein is inconsistent with the language contained in the State's Prevailing Wage Act, the language of the State's Prevailing Wage Act shall control.

18.2 Employment Discrimination.

The Contractor and any Subcontractors employed by it shall comply with N.J.S.A. 10:2-1 through 10:2-4 and N.J.S.A. 10:5-1 et seq., including N.J.S.A. 10:5-31 through 10:5-35, which prohibit discrimination in employment in public contracts. The statute and the rules and regulations promulgated thereunder shall be considered to be part of the Contract and binding upon the Contractor and its Subcontractors. If the College is notified of any violation of the public contract awarding regulations in accordance with N.J.A.C. 17:27-7.4 concerning the financing of minority and women outreach and training programs, the College reserves the right to deduct the outreach and training allocation from the Contract. During the performance of the Contract, the Contractor agrees that:

- (a) In the hiring of persons for the performance of Work under the 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 the Contract, neither the Contractor, its Subcontractors nor any person acting on behalf of the Contractor or any of its Subcontractors, shall, by reason of race, creed, religion, color, national origin, nationality, ancestry, age, sex (including pregnancy), familial status, marital status, domestic partnership or civil union status, affectional or sexual orientation, gender identity or expression, atypical hereditary cellular or blood trait, genetic information, liability for military service, and mental or physical disability, perceived disability, and AIDS and HIV status, discriminate against any person who is qualified and available to perform the Work to which the employment relates;
- (b) Neither the Contractor, its Subcontractors, nor any person acting on behalf of the Contractor or any of its Subcontractors shall, in any manner, discriminate against or intimidate any employee engaged in the performance of Work under the 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, religion, color, national origin, nationality, ancestry, age, sex (including pregnancy), familial status, marital status, domestic partnership or civil union status, affectional or sexual orientation, gender identity or expression, atypical hereditary cellular or blood trait, genetic information, liability for military service, and mental or physical disability, perceived disability, and AIDS and HIV status;

- (c) There may be deducted from the amount payable to the Contractor by the College, under the 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) The Contract may be canceled or terminated by the College, and all money due or to become due hereunder may be forfeited, for any violation of this Article of the Contract occurring after notice to the Contractor from the College of any prior violation of this Article of the Contract. The Contractor and its Subcontractors shall comply with all laws prohibiting discrimination against employees, and shall comply with the provision in the Contract regarding employment discrimination.

If the State's Law Against Discrimination is amended, or the language stated herein is inconsistent with the language contained in the State's Law Against Discrimination, the language of the State's Law Against Discrimination shall control.

18.3 Patents.

If any design, device, material or process covered by patents or copyright is used in the Work, the Contractor shall provide for such use by a suitable agreement with the patent or copyright owner. The Contractor shall bear all costs arising from the use of patented materials, equipment, or processes and all copyrighted materials used on or incorporated in the Work. The Contractor shall defend, indemnify and hold harmless the College and its representatives from any and all claims for infringement by reason of the use of any such patented or copyrighted items.

18.4 The Contractor's Compliance With Law.

The Contractor shall keep fully informed of all federal, state and local laws, ordinances, regulations and orders of agencies that have jurisdiction or authority that in any manner affect those employed on the Project or the Project. The Contractor shall at all times observe and comply with, and cause its agents and employees to observe and comply with, all such laws, ordinances, regulations, and/or orders. The Contractor shall also protect and indemnify, defend and hold harmless the College and its representatives against any claim or liability arising from the violation of any laws, ordinances, regulations, or orders, whether by the Contractor or its employees, agents, Subcontractors at any tier, suppliers or materialmen.

18.5 Environmental Protection – The Contractor’s Duty To Comply With Applicable Law.

The Contractor shall comply with all applicable federal, state and local laws and regulations and all conditions of permits pertaining to the protection of the environment. Necessary precautions shall be taken to prevent pollution of streams, lakes, ponds, rivers, wetlands, groundwater, reservoirs, and property by chemicals, fuels, oils, bitumens, or other harmful or hazardous materials as defined by law. The Contractor also shall not pollute the atmosphere from particulate or gaseous matter in violation of applicable law.

18.6 No Personal Liability Of College Officials.

In carrying out any of the provisions of the Contract, or in exercising any right or authority granted to them by or in connection with the Contract, there shall be no liability upon any trustee, officer or employee of the College, either personally or as officials of the College, it being agreed that in all such functions they act only as agents and representatives of the College.

18.7 Recovery Of Monies By The College From Other Contracts With The Contractor.

When the Contract Documents authorize the College to withhold or deduct money from any monies due to the Contractor, or require the Contractor to pay or return monies for any reason, the College may in its discretion withhold any monies due the Contractor under any other contracts between the Contractor and the College. This right shall not affect the rights of the College against the Contractor or its surety under the Contract, and the College shall not be obliged to exercise this right as to any other contract as a condition of exercising its rights against the Contractor or surety under the Contract.

18.8 Buy American Requirement.

The Contractor shall comply with N.J.S.A. 52:32-1 and N.J.S.A. 52:33-1 et seq., which prohibit the use by the Contractor or Subcontractors of materials or farm products produced and manufactured outside of the United States on any public Work. Notwithstanding any inconsistent provision of any law, and unless the head of the department, or other public officer charged with the duty by law, shall determine it to be inconsistent with the public interest, or the cost to be unreasonable, only domestic materials shall be acquired or used for any public work. This Article shall not apply with respect to domestic materials to be used for any public work, if domestic materials of the class or kind to be used are not mined, produced or manufactured, as the case may be, in the United States in commercial quantities and of a satisfactory quality. If the State’s “Buy American” laws are amended, or the language stated herein is inconsistent with the language contained in the State’s “Buy American” laws, the language of the State’s “Buy American” laws shall control.

18.9 Compliance With Grant Requirements. The Contractor acknowledges and agrees that if the College receives any grant monies in connection with the Project, the Contractor and its Subcontractors shall comply with all requirements associated with such grant or set forth in such grant agreement.

18.10 Modification Of Contract.

No modification or amendment of the Contract shall be effective unless it is in writing and signed by both the College and the Contractor.

18.11 State Sales Tax Exemption.

Materials, supplies or services for exclusive use in constructing the Project are exempt from the State Sales Tax Act. Rentals of equipment are not exempt from any tax under the State Sales Tax Act.

18.12 Successors and Assigns.

The College and the Contractor respectively bind themselves, their successors and assigns, to the other party hereto and to the successors and assigns of such other party in respect to covenants, agreements and obligations contained in the Contract Documents.

The Contractor shall not assign the Contract, nor shall the Contractor transfer or assign any Contract funds, due or to become due, or claims of any nature it has against the College without the prior written approval of the College. The College in its sole discretion and considering primarily the interests of the College may elect either to grant or to deny such approval. If the Contractor attempts to make such an assignment without the College's prior written approval, the Contractor shall nevertheless remain legally responsible for all obligations under the Contract.

The College shall be entitled to assign its rights hereunder to one or more lenders as collateral for loans which the College may obtain to finance construction of the Project and to a party who presently has or later acquires a legal interest in the premises. The Contractor agrees to execute such certificates, documents and instruments as are reasonably requested by the College, including, without limitation, certificates, documents and instruments that evidence the Contractor's consent to an assignment of the Contract or confirm the absence or existence of a default on the part of the College hereunder.

18.13 Construction Liens.

If any Subcontractor or other person working under the Contractor files a construction lien or claim or notice of intention or right to file a lien for or on account of Work, labor, services, materials, equipment or other items furnished under or in connection with the Contract for which the College has paid the Contractor, the Contractor agrees to discharge or remove such lien, claim or notice at its own expense by bond, payment or otherwise within twenty (20) calendar days from the date of the filing thereof, and upon its failure to do so, the College shall have the right to cause any such lien or claim, notice of intention or stop notice to be removed or discharged by whatever means the College chooses, at the sole cost and expense of the

Contractor (such costs and expenses to include legal fees and disbursements). The Contractor agrees to indemnify, defend and hold harmless the College and its representatives from and against any and all such liens, claims or other filings, and actions brought or judgments rendered thereon, and from and against any and all losses, damages, liabilities, costs and expenses, including legal fees and disbursements, which the College may sustain in connection therewith. Further, if any Subcontractor or other person working under the Contractor files a construction lien or claim or notice of intention or right to file a lien for or on account of Work, labor, services, materials, equipment or other items furnished under or in connection with the Contract for which the College has paid the Contractor, the College may, in the College's sole discretion, pay all wages, damages, recoveries, costs and expenses and reasonable counsel fees arising therefrom and deduct the same from any monies due or to become due to the Contractor.

18.14 Independent Contractor Status.

The relationship of the Contractor to the College is that of an independent contractor. The Contractor agrees that it shall conduct itself consistent with such status, and shall not hold itself out as or claim to be a trustee, officer, employee or agent of the College. The Contractor shall not make any claim or demand for any right or privilege applicable to officers or employees of the College, including but not limited to, workers compensation, unemployment insurance benefits, social security coverage, or retirement benefits.

18.15 Third Party Beneficiary Rights Not Intended.

It is specifically agreed between the College and the Contractor that no provisions of the Contract Documents are intended to make the public or any member thereof a third party beneficiary of the Contract, or to authorize anyone not a party to the Contract to maintain a suit for personal injuries, property damage or other claims under the Contract. It is also the intent of the College and the Contractor that no individual or firm that supplies materials, labor, services, or equipment to the Contractor for the performance of the Work shall be a third party beneficiary of the Contract.

18.16 Gifts To College Employees And Agents Prohibited.

The Contractor shall not give any gifts of any nature, nor any gratuity in any form, nor loan any money or anything of value to any College employee or relative thereof, or any agent of the College. The Contractor shall not rent or purchase any equipment or supplies of any kind from any College employee or relative thereof or any agent of the College.

18.17 Compliance With Procurement Statutes.

The Contractor warrants and represents that the Contract has not been solicited or secured, directly or indirectly, in a manner contrary to the law of New Jersey, and in particular the provisions of N.J.S.A. 18A:64-6.1, 6.2 and 6.3, and that the Contractor has not and shall not violate the law of New Jersey relating to the procurement of or the performance of the Contract by any conduct, including the paying of any gratuity of any kind, directly or indirectly, to any College trustee, employee or officer. Any violation of this Article shall be cause for the College to terminate the Contract, to retain all unpaid and/or unearned monies, and to recover all monies paid. The Contractor shall notify the College in writing of any interest which any trustee, officer,

employee or consultant of the College has in, or association with the Contractor, any other contractor, any Subcontractor, material supplier, consultant, or manufacturer, or other party which has any interest in the Project.

18.18 Conflict Of Interest.

The Contractor shall not pay, offer to pay, or agree to pay, either directly or indirectly, any fee, commission, compensation, gift, gratuity, or other thing of value of any kind to any State officer or employee or special State officer or employee, as defined by N.J.S.A. 52:13D-13b. and e., in the Department of the Treasury or any other agency with which the Contractor transacts or offers or proposes to transact business, or to any member of the immediate family, as defined by N.J.S.A. 52:13D-13i., of any such officer or employee, or any partnership, firm, or corporation with which they are employed or associated, or in which such officer or employee has an interest within the meaning of N.J.S.A. 52:13D-13g.

The solicitation of any fee, commission, compensation, gift, gratuity or other thing of value by any State officer or employee or special State officer or employee from any State vendor shall be reported in writing forthwith by the Contractor to the Attorney General and the Executive Commission on Ethical Standards.

The Contractor may not, directly or indirectly, undertake any private business, commercial or entrepreneurial relationship with, whether or not pursuant to employment, contract or other agreement, express or implied, or sell any interest in the Contractor to, any State officer or employee or special State officer or employee having any duties or responsibilities in connection with the purchase, acquisition or sale of any property or services by or to any State agency or any instrumentality thereof, or with any person, firm or entity with which he is employed or associated or in which he has an interest within the meaning of N.J.S.A. 52:13D-13g. Any relationships subject to this Article shall be reported in writing forthwith to the Executive Commission on Ethical Standards, which may grant a waiver of this restriction upon application of the State officer or employee or special State officer or employee upon a finding that the present or proposed relationship does not present the potential, actuality or appearance of a conflict of interest.

The Contractor shall not influence, or attempt to influence or cause to be influenced, any State officer or employee or special State officer or employee in his official capacity in any manner which might tend to impair the objectivity or independence of judgment of said officer or employee.

The Contractor shall not cause or influence, or attempt to cause or influence, any State officer or employee or special State officer or employee to use, or attempt to use, his official position to secure unwarranted privileges or advantages for the Contractor or any other person.

The provisions cited above shall not be construed to prohibit a State officer or employee or special State officer or employee from receiving gifts from or contracting with the Contractor under the same terms and conditions as are offered or made available to members of the general public subject to any guidelines the Executive Commission on Ethical Standards may promulgate.

The Contractor shall require its Subcontractors and suppliers to comply with the requirements of this Article.

18.19 Confidential Information.

The Contractor shall maintain the confidentiality of information specifically designated as confidential by the College, unless withholding such information would violate applicable law. The Contractor shall require its Subcontractors to maintain the confidentiality of information specifically designated as confidential by the College.

18.20 Publicity.

Publicity and/or public announcements pertaining to the Project must be approved in writing by the College prior to release.