



**INDIANA UNIVERSITY**  
CAPITAL PROJECTS

**Addendum #1**

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Project: IN115 Sports Complex Garage Elevators - Repair Cab/Controls

IU Project Number: 20220900

Date: December 2, 2024

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This Addendum, issued prior to bidding, alters, amends, corrects, or clarifies the Construction Bid Documents to the extent stated herein and does thereby become a part of the Construction Bid Documents, and will become part of the Contract Documents of the successful bidder. Acknowledge receipt of this Addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to disqualification.

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**ITEMS INCLUDED IN THIS ADDENDUM**

**Item 1**

A Second **Pre-Bid** meeting is being scheduled for **December 3, 2024 at 9:00 AM**, Eastern Time

The **Bid Date** is being changed to **December 17, 2024 at 2:00 PM**, Eastern Time

**Item 2**

Replace all of Indiana University's front-end specifications (00 and 01) in their entirety

**Item 3**

Replace specification sections 140000 – Conveying Equipment and 142400 – Hydraulic Elevators in their entirety with attached specifications

**Item 4**

Replace specification section 260519 - Electrical Power in its entirety with attached specifications.

**Item 5**

Replace specification section 260526 - Grounding and Bonding for Electrical Systems in its entirety with attached specifications.

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**Item 6**

Replace specification section 260533.13 - Conduit for Electrical Systems in its entirety with attached specification section 260533 - Raceway and Boxes for Electrical Systems.

**Item 7**

Replace specification section 260533.16 - Boxes for Electrical Systems in its entirety with attached specification section 260533 - Raceway and Boxes for Electrical Systems.

**Item 8**

Add specification section 25 05 01 - General Electric Design Considerations. Refer to attached specification.

**Item 9**

Add specification section 23 00 00 - Heating Ventilating, and Air Conditioning. Refer to attached specification.

**END OF ADDENDUM**

# PROJECT MANUAL



IU Indianapolis

**Sports Complex Elevator Alterations**

**Owner #20220900**

**A/E #23.1015.00**

**VOLUME 1 OF 1**

IU Indianapolis  
Sports Complex  
498 Blake St.  
Indianapolis, IN 46202

Date: May 2024

Addendum#1: November 25, 2024



1221 N. PENNSYLVANIA STREET  
INDIANAPOLIS, IN 46202



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VPCPF Support Resources - Construction Procurement  
2901 East Discovery Parkway  
Bloomington, IN 47408  
812-855-5294  
[bidtab@iu.edu](mailto:bidtab@iu.edu)





## NOTICE TO BIDDERS

Notice is hereby given that electronic bids will be received:

By: The Trustees of Indiana University  
Bloomington, Indiana

For: IN115 Sports Complex Garage Elevators - Repair Cab/Controls  
Indiana University Indianapolis  
IU: 20220900

At: Office of the Vice President for Capital Planning and Facilities

In accordance with Indiana Code 4-13-18 Drug Testing of Employees of Public Works Contractors and IC 5-16 Public Works

Via electronic bid submission on [www.iuplanroom.com](http://www.iuplanroom.com). Bidders must be registered on the plan room, and signed into the plan room, in order to submit a bid.

Bids will be electronically opened via Zoom: <https://iu.zoom.us/j/82623978895>  
Meeting ID: 826 2397 8895  
Join By Telephone: 312-626-6799

Until: 2:00 P.M. Eastern Time, on December 17, 2024.

Bids received after that time will not be accepted. Bid results will be published on [www.iuplanroom.com](http://www.iuplanroom.com).

A Unified Bid is requested for all work in this project, including General, Mechanical, and Electrical Construction work.

See project specifications for electronic bid submission instructions.

All bid proposals shall be in full accord with the Bidding Documents, which are on file with the Owner and may be examined by prospective Bidders:

VPCPF Support Resources – Construction Procurement  
Indiana University  
[bidtab@iu.edu](mailto:bidtab@iu.edu)  
812-855-5294

Bidding documents will be available November 18, 2024. Please contact the Eastern Engineering Distribution Department, 9901 Allisonville Road, Fishers, Indiana 46038, Ph. 317-598-0661, [www.iuplanroom.com](http://www.iuplanroom.com) for deposit and purchase information.

Each bid must be accompanied by:

- a completed Minority, Women's and Veteran's Business Enterprise Participation Plan, detailing the good faith efforts of the contractor to include minority, women and veteran-

- owned enterprises as subcontractors or material suppliers on the Project;
- a bid security for 5% of the total bid; and
- the contractor's written drug testing program, which must be in full compliance with IC 4-13-18.

The Owner reserves the right to accept or reject any bid and to waive any irregularities in bidding. The Owner may consider a bid to be incomplete if it does not provide the required documentation as described in this Notice, including but not limited to the Minority, Women's and Veteran's Business Enterprise Participation Plan. The Base Bid may be held for a period not to exceed sixty days before awarding Contracts. All Alternate Bids may be held for a period not to exceed ninety days before award and incorporation into the contract by proper Change Directive.

Should a successful Bidder withdraw his bid or fail to execute a satisfactory Contract within 10 days after notice of acceptance of bid, the Owner may declare the Bid Security forfeited as liquidated damages, not as penalty.

A Pre-bid meeting is scheduled for 9am, Eastern Time, on December 3, 2024. All interested parties should assemble at Loading Dock of the Natatorium (901 W. New York St, Indianapolis, IN 46202) on the Indiana University Indianapolis campus.

IN115 Sports Complex Garage Elevators - Repair Cab/Controls  
Indiana University Indianapolis  
IU 20220900



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## **00 00 00 Procurement and Contracting Requirements**

### **00 20 00 Instructions for Procurement**

#### **00 21 13 Instructions to Bidders – Appendix A**

- 1.1 Instructions to Bidders
- 1.2 Indiana University Mask Policy
- 1.3 Mandatory Electronic Bid Submittal Instructions

### **00 40 00 Procurement Forms and Supplements**

#### **00 41 13 Bid Form – Appendix A**

- 1.1 Bid Form
- 1.2 Contractor's Bid for Public Work - Form 96 (Revised 2013)

#### **00 43 00 Procurement Form Supplements – Appendix A**

- 1.1 Contractor Asbestos Certification Form
- 1.2 Asbestos Protocol for Contractors Form
- 1.3 E-Verify Affidavit
- 1.4 Indiana Worker's Compensation Certificate of Compliance
- 1.5 Escrow Agreement - Old National Wealth Management – awards in excess of \$200,000

#### **00 43 39 Minority Business Enterprise Participation Plan – Appendix A**

- 1.1 Minority, Women's, and Veteran's Business Enterprise Participation Plan

### **00 50 00 Contracting Forms and Supplements**

#### **00 52 13 Agreement Form – Appendix A**

- 1.1 Indiana University Construction Agreement

#### **00 55 00 Notice to Proceed**

- 1.1 Contractor is not allowed to begin contracted work until Notice to Proceed is received, and insurance requirements have been reviewed and approved by INLOCC.

### **00 60 00 Project Forms**

#### **00 61 13 Performance and Payment Bond Form – Appendix A**

- 1.1 Performance and Payment Bond Form

### **00 70 00 Conditions of the Contract**

#### **00 72 13 General Conditions – Appendix B**

- 1.1 AIA A201 – 2017 General Conditions of the Contract for Construction

#### **00 73 00 Supplementary Conditions – Appendix A**

- 1.1 Escrow Agreement

## 1.2 E-Verify

**00 73 16 Insurance Requirements – Appendix C**

## 1.1 Cross-Reference General Conditions, Article 11

- a. Certificate of Insurance
- b. Worker's Compensation – State Form 41321 Certificate of Compliance – Worker's Compensation and Occupational Diseases.
- c. Contractor's Pollution Liability – Construction Contracts
- d. Builder's Risk Insurance

**00 73 36 Equal Employment Opportunity Requirements**

## 1.1 Equal Employment Opportunity

- a. Cross-Reference General Conditions, General Conditions Section 16.5.
- b. During the performance of this Contract, each Contractor agrees as follows:  
The Contractor will not discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin, marital status, age, sexual orientation, veteran status or disability. The Contractor will take affirmative action to ensure that applicants are employed and that employees are treated during employment without regard to their race, religion, color, sex, national origin, marital status, age, sexual orientation, veteran status or disability. Such action shall include, but not be limited to the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by an appropriate agency of the Federal Government setting forth the requirements of these non-discrimination provisions.
- c. The Contractor will, in all solicitations or advertisements for employees placed by or on the behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex, national origin, marital status, age, sexual orientation, veteran status or disability.
- d. The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other Contract or understanding a notice to be provided advising the labor union or worker's representative of the contractor's commitments under Section 202 of Executive Order #11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- e. The Contractor will comply with all provisions of Executive Order #11246 of September 24, 1965, and of the rules, regulations and relevant orders of the Secretary of Labor.
- f. The Contractor will furnish all information and reports required by Executive Order #11246 of September 24, 1965, and by the rules, regulations and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by an appropriate agency of the Federal Government and by the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations and orders.
- g. In the event of the Contractor's non-compliance with the Equal Opportunity



conditions of this Contract or with any of such rules, regulations or orders, this Contract may be cancelled, terminated or suspended in whole or in part, and the Contractor may be declared ineligible for further Government Contracts, in accordance with procedures, authorized in Executive Order #11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in said Executive Order, or by rule, regulation or order of the Secretary of Labor, or as otherwise provided by law.

- h. The Contractor will include all of Clauses (a. thru f. inclusive, of this article) in every subcontract of purchase order unless exempted by rules, regulations or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order # 11246 of September 24, 1965, so that such provision will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontractor or vendor as the appropriate agency of the Federal Government may direct as a means of enforcing such provisions, including sanctions for non- compliance; provided, however, in the event the contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the appropriate agency of the Federal Government, the contractor may request the United States to enter into such litigation to protect the interests of the United States.
- i. Exempted from the above Equal Employment Opportunity conditions are construction contracts and subcontracts not exceeding \$10,000, suppliers, contracts, and material and equipment contracts not exceeding \$10,000 for standard commercial supplies or raw materials, and contracts and subcontracts under which work is performed outside of the United States where no recruitment of workers within the United States is involved.
- j. In addition to the requirements set forth in Article 13 of the Instructions to Bidders, or elsewhere in the Contract Documents, regarding the participation of Minority, Women's, and Veteran's Business Enterprises
- k. ("MBE/WBE/VBE"), the Contractor is required to comply with the following Mandatory Tier II Reporting Requirement:
  1. The Contractor shall take all necessary and reasonable steps to ensure that MBE/WBE/VBEs have the maximum opportunity to compete for and perform work on this Contract. MBE/WBE/VBE utilization in the performance of this Contract must be reported monthly using the IU Online Tier II reporting System. Compliance with Owner's Mandatory Tier II Reporting Requirement is a pre-condition for approval of pay applications. (For more information and training, see <https://supplierdiversity.iu.edu> and click on Online Spend Information in the OTTERS section.)
  2. The Contractor shall, upon Owner's written request, provide documentation that contracts have been entered into and payments made to Tier II MBE/WBE firms as reported by Contractor.

## **00 90 00 Revisions, Clarifications, and Modifications**

### **00 91 13 Addenda**

- 1.1 Pre-bid questions shall be submitted to the Owner's Representative for inclusion of all answers and distributed to all bidders via Addenda.

## 01 00 00 General Requirements

### 01 10 00 Summary

#### 01 11 00 Summary of Work

- 1.1 All documents included in Contract Documents create the work summary in total for said project.
- 1.2 Work Sequence should be coordinated with Owner and Customer.

#### 01 14 00 Work Restrictions

- 1.1 Schedule construction work between 7:00 AM to 6:00 PM on weekdays. Indicate in the Bid Documents if Work outside of this schedule is required.
- 1.2 The IU Construction Manager will arrange for access to be issued to the Contractor to buildings or rooms. The Contractor is required to fill out a form for the keys and is liable for the cost of rekeying if the keys are lost or not returned. All project sites are to be secured during non-work hours to prevent unauthorized access and safety hazards to project site.
- 1.3 Excessive noise from construction activities may require rescheduling or off hours to avoid quiet week, finals week, graduation ceremonies, or at the request of the Owner.

#### 01 18 00 Project Utility Sources

- 1.1 Notification of Utility Companies – The General Contractor, in accordance with local laws and ordinances, shall notify appropriate utilities, with copy to the Owner's Representative and Owner, not less than 48 hours in advance of any excavation or work in, around or on utility lines.
- 1.2 Protection and Maintenance of Existing Utilities – Existing utilities are shown in the Contract Documents in their approximate locations from available information. The General Contractor shall ascertain exact locations of utilities that may be affected by the work of all Prime Contractors on this Project, and shall be responsible for the protection and maintenance of such utilities, and shall be responsible for any damage or injury that may result from working on or near these utilities.
- 1.3 Utilities Not Indicated – If existing utilities are encountered which are not indicated on the drawings, the General Contractor shall protect such utilities and notify the Owner's Representative and the Owner of their presence. If any such utilities not indicated on the drawings, which are to remain in service, are damaged by any of the Prime Contractors, the General Contractor shall take such action as reasonably required to minimize the damage and shall promptly restore the system to operating condition as directed by the Project Engineer and the Owner's Representative.
- 1.4 Owner-Provided Systems - The Contractor shall in no circumstances tap into Owner-provided systems, including but not limited to steam, without prior notice to the Owner. Upon obtaining the Owner's consent, the Contractor shall schedule the tap-in at a time when Owner's personnel can be present. If Contractor fails to comply with this provision, Contractor shall reimburse the Owner for all costs incurred, including but not limited to all damages incurred and not covered by Builders Risk insurance for any reason, whether to property included or not included within the original scope of work.
- 1.5 Review project requirements for natural gas, electric power, domestic water, sanitary sewer, storm water drainage, chilled water, hot water, and steam with IU Engineering Services and IU Utilities.
  - a. Review with the designated University Information Technology Services (UITS) requirements for telephone and data lines.
  - b. Review requirements for emergency telephones and CCTV with Team Leader.

- 1.6 Review with Engineering Services when utilities need to be rerouted, removed or abandoned in place.
- 1.7 On projects within existing buildings, the university will pay for temporary utility costs incurred by the Contractor based on their responsibility as outlined in 00 51 00 Temporary Utilities.
- 1.8 It is the Contractor's responsibility to convey the utilities to the point of usage and to provide the means of conveying the utilities.

## **01 20 00 Price and Payment Procedures**

### **01 26 63 Change Orders**

- 1.1 Change Directives to the Contract will be done with an IU Change Directive Form. The Contractor is required to include documentation for labor and materials unit cost breakdown with appropriate backup as indicated in the IU General Conditions and AIA A201.

### **01 29 00 Payment Procedures**

- 1.1 Contractors shall use the AIA G702 & G703 with Partial Waiver of Lien for payment.
  - a. The Schedule of Values shall include 3% for project closeout submittals and 5% retainage.
  - b. The Schedule of Values must be approved by the IU Construction Manager before submittal of the first Application for Payment.
  - c. Final payment to the Contractor cannot be made until all change orders are processed, close out documents are received, and Final Waiver of Lien and Consent of Surety are received.

## **01 30 00 Administrative Requirements**

### **01 31 19 Project Meetings**

- 1.1 The IU Construction Manager will schedule the Preconstruction Meeting.
- 1.2 Representatives from the A/E Consultant, the Contractor, the User Representative, and the IU Project Team will attend.
- 1.3 This meeting will explain the paperwork requirements for the Project including EEO policies, Risk Management procedures, General Conditions for the Contract, payment procedures, change orders, the Project start and completion dates, etc.
- 1.4 Dates and times for future Project Progress Meetings will be agreed to.

### **01 31 23 Project Web Site**

- 1.1 Projects will use eBuilder as a repository for the Project at the preliminary design phase.
  - a. This project file will be used by the Project Team for all photographs, meeting minutes, submittals and other documents related to the project.
  - b. Training in the use of the web site will be provided by Capital Planning to Consultants, Contractors, and IU Staff; email [ebuilder@iu.edu](mailto:ebuilder@iu.edu).

### **01 32 29 Periodic Work Observation**

- 1.1 On projects with a State of Indiana Construction Design Release, a Building Code Official from the Indiana Department of Homeland Security, Fire and Building Code Enforcement Branch will perform periodic inspections. Additional information is available at this link: <http://www.in.gov/dhs/2376.htm>.
- 1.2 The Contractor will perform and provide all testing results to Owner before placing of

concrete, pressure testing closed loop systems, installation of windows and water testing, ceilings, roofing, water proofing, etc..

- 1.3 Inspections and site reviews do not relieve the A/E from the responsibility to monitor construction for compliance with the documents as well as performing typical industry standard milestone inspections, i.e. form board elevation survey, in wall, above ceiling, close loop systems pressure testing, commissioning of startups, etc.

### 01 33 23 Shop Drawings, Product Data, and Samples

- 1.1 Contractor submittals to be in electronic formats such as .pdf and posted to eBuilder for final review and approval before procurement and installation.
- 1.2 Samples cost the Owner, Consultant and Contractor for shipping and handling, cataloging, reviewing and storing. Consider the importance of requesting physical samples of common construction materials such as roofing, door hardware, concrete masonry, etc.
- 1.3 Limit the number of physical samples to the minimum necessary to verify size, shape, color, and finish. Samples that can be incorporated into the final Work are preferred.
- 1.4 Mock-ups of exterior walls need to include all systems that become part of the wall. Include a sample window, all flashings, mortar, and sealants.
- 1.5 Review Interiors Standards for required samples and control books.

### 01 35 23 Owner Safety Requirements

- 1.1 Contractor Procedures Manual
  - a. <https://protect.iu.edu/environmental-health/occupational-health/construction-safety.html>
- 1.2 Job Site Safety Checklist
  - a. **Purpose:** The intent of this template is to identify the MINIMUM requirements of a Site Specific Safety Plan (SSSP) for any contractor awarded work at Indiana University (IU). Contractors are encouraged to elaborate and expand upon these requirements.
  - b. **SSSP Deliverable:** The SSSP shall be submitted to the IU Construction Manager at Kick Off Meeting. DO NOT SUBMIT your company's safety manual.
  - c. **SSSP Template** (minimum requirements):
    1. Owner reserves the right to request additional information on a project-by-project basis.
    2. Scope of Work: narrative of the project scope associated with your contract including schedule and major project milestones.
    3. Designated On-Site Safety Representative and Competent Persons.
    4. Safety Orientation Program: process to orient workers to your safety rules and expectations including ongoing toolbox safety talks.
    5. Hazardous Communication Program
    6. 24-hour Emergency Points of Contact
    7. Site Logistics Plan: plan shall address student/faculty/staff/public protection, traffic plan, equipment and laydown areas, site security, tire washing, emergency evacuation muster points, etc.
    8. Minimum PPE Requirements
    9. Accident Procedures
    10. Weekly Safety Audit/Inspection Procedures and Upload to eBuilder
    11. Project Clean Up Plan: detail how your company plans to keep the workplace clean and free of potential hazards.
    12. Hazard Assessment: identification of hazards associated with defined project tasks. Please focus on highly hazardous tasks associated with the work (crane picks, scaffolding, confined space, utility shutdowns, hazardous material

- abatement, hot work, trenching, etc.).
- 1.3 Site Specific Safety Plan
    - a. <https://protect.iu.edu/environmental-health/ehs-campus-info.html>
  - 1.4 Contractor Safety Program – required training
    - a. <https://protect.iu.edu/environmental-health/training/index.html>
    - b. OSHA 300A company annual rating for General Contractor and all Subcontractors to be provided to Owner for previous year and current year. Rating numbers are to be listed on the Bid Form on bid day.
  - 1.5 General Safety Considerations
    - a. Report all injuries immediately to the IU Construction Manager/Safety Program Manager.
  - 1.6 Asbestos <https://protect.iu.edu/environmental-health/occupational-health/construction-safety.html>
  - 1.7 CPF LOTO Program as per 01 94 14 and per <https://inlocc.iu.edu/policies/fire-safety/hot-work-policy.html>
    - a. Energized Work Permit
    - b. IU CPF LOTO Program
    - c. Job Planning Form
    - d. LOTO Template
  - 1.8 INLOCC Hot work Permit <https://inlocc.iu.edu/policies/fire-safety/hot-work-policy.html>

### 01 35 43 Environmental Procedures

- 1.1 The IU Environmental Health and Safety Department will assist with compliance and management of the following with the Project Team:
  - a. OSHA Particularly Hazardous Substances ([29 CFR 1910.120](#)) and online [MSDS search](#) information.
  - b. DOT Hazardous Material ([49 CFR 172.101](#))
  - c. Hazardous Waste Operations and Emergency Response (29 CFR 1910.120)
- 1.2 The Project Team Leader and A/E Consultant need to identify any requirements for abatement prior to final Construction Document completion. They must identify where, who and how this item will managed, if applicable.
- 1.3 Mandatory Environmental Health and Safety Training
  - a. The Contractor shall ensure that appropriate personnel attend and participate in Environmental Health and Safety training conducted through the Owner's Office of Environmental Health & Safety. Please contact IUEHS at [iehs@iu.edu](mailto:iehs@iu.edu) to schedule this.
  - b. Contractors are expected to have knowledge of the types and likely locations of asbestos containing materials generally found in building materials and be able to make visual identification of suspect materials (even when demolition and/or abatement is not a contracted-for part of the work).
  - c. Contractors will be required to provide documentation that each employee has attended Asbestos Awareness Training within the last calendar year (as outlined in the Asbestos Protocol for Contractors Communication of Hazards).
  - d. Contractors are required to stop work immediately upon discovering suspected asbestos containing materials and make a report to the Owner's Project Manager.

### 01 35 46 Indoor Air Quality Procedures

- 1.1 All indoor air quality requirements are the responsibility of the Contractor:
  - a. Develop a site-specific plan to control demolition and reconstruction materials in renovation areas as guided by the 'Air Quality Considerations' below.

1. Schedule renovation work during periods of low building occupancy when possible. Isolate work areas from occupied areas using critical barriers, air pressure control and high efficiency particulate air (HEPA) filtration. Minimize the number of building penetrations necessary for entry into the renovation area. Choose the penetration sites carefully to minimize the potential for occupant exposure. Modify HVAC operations according to specifications of University Environmental Health and Safety and IU staff engineers prior to and during renovation activities to ensure isolation of renovation areas from occupied spaces. Maintain an adequate unoccupied buffer zone around renovation areas according to design specifications. This may require temporarily relocating building occupants in the immediate vicinity of renovation areas. Increase housekeeping activities in adjacent occupied areas during renovation activities that create dust.
2. Identify the specific air quality measures needed for the renovation project, including appropriate performance metrics.
3. Manage air quality issues and specify conditions that would require an emergency response, such as asbestos release or a major water loss.

### **01 40 00 Quality Requirements**

#### **01 41 00 Regulatory Requirements**

- 1.1 Indiana University is considered a “political subdivision” of the State of Indiana and therefore is exempt from obtaining local city or county building permits.
  - a. All remodeling, renovation, and additions are considered new construction and may require filing with the State of Indiana, Department of Home Land Security,
  - b. This exemption does not extend to permits required by local utilities, or state and federal agencies.
- 1.2 Refer to <https://www.in.gov/dhs/> for a listing of current State of Indiana Codes, Standards and Rules.
- 1.3 At the link (above), click on “Apps, Forms, Permits”
- 1.4 The Application for Construction Permit for School Facilities is available at this link: <https://forms.in.gov/download.aspx?id=5551>
  - a. This form is required for any IU building that will contain child care, day nurseries, or youth camps.
  - b. Refer to 410 IAC 6-12 And IC 16-41-21 for additional information.
- 1.5 All Applications or other required forms shall be filled out by the A/E Consultant and reviewed by the IU Team Lead.
  - a. The Owner is the “Trustees of Indiana University”
  - b. The University Engineer is the Designated Agent for signature as “Owner”.
  - c. The Architect and/or Engineer of Record will be designated as the “Owner Representative”.

### **01 50 00 Temporary Facilities and Controls**

#### **01 51 13 Temporary Electricity & Lighting**

- 1.1 Light and Power
  - a. The General Contractor shall arrange for and pay for all metered temporary electric light and power for the work of all Prime Contractors and their trades and subcontractors as required throughout the work by the Prime Contractors. The General Contractor shall pay all costs for the installation, maintenance and use of equipment for such temporary light and power, including metering of temporary electrical power.

- b. The General Contractor shall make all necessary arrangements to provide temporary electrical power, to arrange for its distribution, to continue its service throughout construction, to remove same, and to pay for all costs incidental thereto, all as identified herein.
- c. Electrical power at 120/208/480 volts - 3 phase, 4 wire capability is available within convenient reach of the project.
- d. Temporary lighting that complies with applicable federal and state codes shall be continuously provided in all stairways, corridors, and in all other work areas for all Contractors on the project. The General Contractor shall also provide as needed; area flood lights, guard lights at barricades, obstructions in streets, drives, walks and at all trenches or pits adjacent to public areas within the area of construction by any Contractor on this project.
- e. The service entrance shall terminate in a minimum of two 400 ampere fused NEMA 3R rain tight main switches. From the service entrance location there shall be a minimum of two 400-ampere feeders to a minimum of two fused distribution panel boards on each floor. Such distribution panel boards shall be located at third points of the building and shall contain proper fusing for all temporary wiring extensions. Transformers required for the service outlined shall be provided as a part of the service entrance.
- f. Temporary distribution from these panels shall provide single phase, 120 volt, 20-ampere service to outlets within 50 feet of any portion of the building, and a single phase, 208 volts, for a 10 horsepower maximum capacity within 200 feet of any portion of the building. Outlets and bulbs shall be provided by the General Contractor to produce not less than 1/5 watt per square foot of floor area throughout the building.
- g. All temporary wiring shall include a green equipment-grounding conductor and the entire temporary system shall have equipment grounding continuity. All outlets for the connection of portable electrical equipment shall be of the grounding type. All elements of the temporary electric service shall conform to the regulations of the National Electric Code, the National Electric Safety Code, and the Safety Code for the Construction Industry, and O.S.H.A., which shall include such ground fault service as required to protect operating personnel.
- h. Each Contractor and/or subcontractor shall furnish any necessary wiring and extension cords to reach from the nearest outlet to its point of operation. All such devices shall conform to the above provisions or be rejected for use by the Owner's Representative or Owner.
- i. No permanent power from permanent sources shall be used without the Owner's written permission indicating the conditions whereby it may be used. Consideration will not be given for the use of lights, wiring devices or other electric equipment until the building is in the finishing stages or unless it is in the Owner's interests.
- j. The General Contractor shall maintain strict supervision over the use of the temporary electric service and shall be responsible for damages caused by misuse of it. Violation of safe practices, abuse of the service, or failure to conform to the above standards shall be sufficient cause for the Owner's Representative or Owner to take such action as will correct the condition.
- k. Upon completion of the Project or when directed by the Owner's Representative, all temporary light and power equipment shall be removed by the General Contractor.

### **01 51 23 Temporary Heating, Cooling, and Ventilating**

#### **1.1 Heating and Cooling**

- a. The General Contractor shall be responsible for furnishing and installing and subsequent removal of a temporary metered heating/cooling system for use by all

Contractors on the Project, within the new building as weather and construction conditions demand, and as required for the installation of any material or for working conditions required by any trade or trades within the building. Temporary heat shall be provided to prevent freezing within the building, to provide suitable working conditions, to assure progress of the operation within the established schedule time, and to conform to specific requirements of the Contract Documents. In areas where finishing trades are working or have completed their work, temporary heat shall be maintained at a uniform temperature of 70° F until the completion of the Project.

- b. The General Contractor shall provide and pay for all materials, labor, water, tools, electric wiring, fuel, and electric power, operating services and any items incidental and required for a complete and operable system of temporary heat, so long as any system of temporary heating/cooling is in operation and required by any trade or crafts within the building.
- c. The General Contractor shall maintain a system of temporary heating/cooling until total completion and final acceptance by the Owner, even if the Owner exercises its right, pursuant to Section 4.5.2 of the General Conditions to take Beneficial Occupancy of some or all of the building. The entire cost of providing temporary heating/cooling shall be the responsibility of the General Contractor until substantial completion.
- d. Equipment shall be oil or gas fired, electric blower operated, and shall not require a vent from the heated/cooled space. Open flame type units similar to Salamanders shall not be used.
- e. All spaces where temporary heating/cooling is required shall be maintained at a minimum of 50° F. during working hours and at a minimum of 40° F. during non-working hours, or as required for building construction or any trade requirements. Also, for a minimum of seven days prior to any interior finishing, (wood, painting, varnishing, resilient tile, acoustical ceilings, etc.) and until final acceptance by Owner or during partial occupancy by Owner, spaces shall be maintained according to design conditions on a 24-hour, 7-day basis.
- f. None of the permanent heating/cooling systems nor any of their component parts shall be available for temporary heating/cooling until the building is in the finishing stages, (finish painting, varnishing, paneling, wood, resilient tile, acoustical ceiling, etc.). At the point at which the permanent heating/cooling system is completely installed as designed, including permanent wiring connections to a permanent power source, the Contractor may make a request, in writing, to the Owner to use the permanent heating/cooling systems to supply temporary heating/cooling for the remainder of the Project. The Owner shall be sole judge of building conditions and heating/cooling system conditions concerning the permission to use the permanent heating/cooling systems for supplying temporary heating/cooling. Furthermore, if Owner grants permission for Contractor to use the permanent heating/cooling systems for temporary heating/cooling, the warranty on such permanent heating/cooling systems, including their component parts, shall not start to run until Contractor ceases its use of the permanent heating/cooling systems.
- g. The General Contractor shall be responsible for all phases of operation, maintenance, and items of like nature during the time the permanent heating/cooling system is used to furnish temporary heating/cooling. The General Contractor shall assume all responsibility of coordination among other Contractors and/or trades concerning the installation of their permanent systems for use for temporary heating/cooling and extension of the warmth/cooling.
- h. At the termination of the use of the permanent systems as a temporary heating system, the systems shall be cleaned, equipped with new filters, equipped with new



belts if required, etc., and any damage repaired or replaced at the expense of the General Contractor.

## **01 52 00 Construction Facilities**

### **1.1 Storage and Structures**

- a. Each Contractor shall construct and maintain, in locations approved by the Owner's Representative, all temporary structures, material sheds, storage sheds, or other similar enclosed structures required for the performance of this Contract. All temporary structures are to be removed from the site by the Contractor upon completion of the Project, or sooner, if so requested by Owner's Representative.
  1. If on-site storage is not available, review with Owner's Representative and Team Leader to select alternative storage sites.
- b. The General Contractor shall be responsible for and shall cooperate and coordinate with other Contractors requiring storage at the site.
  1. All Contractors on this Project shall be restricted to the "Contract Limit Lines" of the construction site and/or to any additional area as shown on the Site Plan and shall verify locations with the Owner's Representative prior to storing any materials.
  2. All Contractors on this Project shall confine equipment, storage of materials, and the operations of workers to limits indicated on the drawings. Any area indicated on drawings or designated elsewhere by the Owner for storage of materials shall be returned to its original condition upon completion of the Project at no cost to the Owner.
  3. Should any Contractor require additional storage area, acquisition of such additional storage shall be at that Contractor's expense, shall not be on Owner's property and shall not be invoiced or otherwise charged to Owner on monthly pay applications.

## **01 52 13 Field Offices and Sheds**

- 1.1 Contractors' Field Offices – Each Contractor shall provide at all times, for his own use, an adequate, weather tight temporary field office, located on the site in a location approved by the Owner's Representative on new buildings ONLY unless otherwise specified.
  - a. These spaces shall be heated (thermostatically controlled), air conditioned, and lighted.
  - b. Each shall be provided with clean and adequate toilet facilities, including water and sanitary services.
  - c. Internet Access – The Contractor is required to have internet access, as well as printing capabilities, on site at all times during construction operations. This is to conduct Progress Meeting, onsite coordination and ZOOM or similar virtual meeting capabilities.
- 1.2 Review with Team Lead if utilities and restroom facilities are available for the Contractor's use.

## **01 54 00 Temporary Construction Aids**

- 1.1 Hoists, Chutes, Derricks, Scaffold, Stairs, Platforms, Swing Staging, etc.
  - a. Contractor to Provide – Each Contractor shall furnish and maintain all equipment such as temporary hoists, chutes, derricks, scaffolds, staging, stairs, ramps, runways, ladders, and similar items required for the proper execution of its work, and shall provide or arrange for the use of such facilities by all its subcontractors or trades as

- required to carry out its work, and shall remove or arrange for the removal of all such items when no longer required.
- b. Legal Requirements – All such apparatus, equipment and construction shall meet the requirements of the labor laws and regulations applicable thereto and of the authorities having jurisdiction over it.
  - c. Safety Requirements – All such apparatus, equipment and construction shall meet the requirements of OSHA and regulations applicable thereto and of the authorities having jurisdiction over it.
  - d. Removal of Rubbish--General – No materials, rubbish or debris will be permitted to drop free, but shall be removed by use of the material hoist, rubbish chute (closed, dust-tight type) or other method approved by the Owner's Representative. Rubbish shall be removed frequently; daily from the building, weekly from the site. Specific requirements related to waste disposal and storm water management are set forth in 01 55 29.
  - e. Protection of the Work – No materials will be permitted to be passed through the finished openings of the exterior walls without proper protection of the openings in a manner approved by the Owner's Representative. Hoists and chutes shall be so protected as to prevent damage, staining or marring of any permanent work.
  - f. Temporary Stairs – Permanent stairs shall be erected as soon as possible and the General Contractor shall provide same with temporary protective treads, risers, handrails and shaft protection. The General Contractor shall provide safe, convenient access from floor to floor as the construction progresses. Permanent ladders and stairs may be used when available, providing same shall be safely prepared for such use. All devices so used shall conform to the Standards prescribed in the Safety Code for the Construction Industry, State of Indiana, to OSHA, and such other codes as are applicable.
  - g. Temporary Sidewalks – The General Contractor shall erect temporary sidewalks as required where existing sidewalks are rendered inadequate by work on the Project site. Temporary sidewalks shall be complete with all necessary timber uprights, braces, crossbeams, plank walk, railings and the like, all installed in such manner so as not to interfere with the execution of the work, or safety and convenience of all persons using walks.
  - h. Temporary Sidewalk and Materials Bridges – The General Contractor shall erect temporary sidewalks and materials bridges, if required, where building operations are conducted within 30 feet of public sidewalks in order to provide adequate protection to the public and the Owner during the execution of the work of all Prime Contracts. The General Contractor shall construct bridges complete with necessary up-rights, braces, cross beams, plank top and screened guard rails on all sides and ends, and with watertight ceiling, lighting, signs and safety barricades, all in strict accordance with the requirements of local ordinances and regulations.

## 01 54 13 Temporary Elevators

### 1.1 Use of Elevators

- a. Temporary Use – The General Contractor may arrange for the temporary use of elevators by all Prime Contractors, if required, during the construction period, to transport equipment and materials only during the finishing stages of the Project.
- b. Temporary Cars – The General Contractor shall furnish the required cars with car switch, gate contact, and all necessary operating and safety devices, city and state tests and certificates.
- c. Temporary Cab Enclosures, Etc. – The General Contractor shall provide the required

cab enclosures, temporary hoist way entrances and hoist way doors, temporary protection of hoist way openings, protection of permanent hoist way entrances or other installed finished work, and such other items as are necessary to permit temporary operation in accordance with local, state and national codes.

1. The General Contractor shall provide all necessary maintenance of the elevators during the period of temporary operation. The General Contractor shall restore elevators to their original perfect condition and furnish guarantee as specified.
2. All costs in connection with operation of the temporary elevators shall be paid by the General Contractor.
3. The General Contractor shall extend all guarantees and warranties for two (2) years from date of acceptance of the Project by the Owner.

#### 1.2 Enclosures and Measures

- a. The General Contractor shall provide temporary enclosures for all exterior openings, as soon as the building structure is erected and otherwise made weather-tight, or whenever necessary in order to provide suitable working conditions within the building.
- b. The General Contractor shall provide suitable means for ventilation of the building and to permit the exit of water vapor from the building at all times. The permanent door enclosures shall not be used as temporary enclosures, but temporary doors with proper hardware to make them self-closing shall be provided.

### **01 55 00 Vehicular Access and Parking**

- 1.1 Parking Permits are issued by Parking Operations for Contractor's vehicles.
  - a. On-site parking spaces may be limited to one (1) space for job site access. No parking spaces shall be fenced or barricaded or within staging area.
  - b. Contractors are responsible for payment of all parking permits and fines.
  - c. Coordinate with Parking Operations and IU Team Lead for closing of parking spaces for construction purposes.
- 1.2 Comply with Owner's restrictions for bus stops, handicapped accessible parking, accessible curb ramps, and emergency vehicle access.
- 1.3 Restrict use of building loading dock by contractor to minimum time required for loading/unloading supplies and materials. Contractor's vehicles cannot be left unattended at loading docks, in fire lanes, at bus stops, or at any designated reserved or handicapped parking space.
- 1.4 Temporary Access to Site shall be identified on a per project basis.
  - a. The Contractor shall keep adjacent city streets free from mud or debris deposited thereon as a result of operations under this Contract. Contractor shall maintain, restore and street clean such streets to their original condition minimizing of dust and debris by of wet down or vacuum as required.
  - b. Owner shall either identify parking facilities that may be used by the Contractor for its equipment, personnel, and workers or shall notify Contractor that is no project-related parking available on University property.
  - c. Parking of cars will not be permitted on other parking lots, drives or roads of academic or residential buildings.
  - d. On IUPUI projects, free shuttle service is provided from the designated Contractor parking area at 1302 N. Indiana Avenue. Contractors will be required to purchase parking permits for this lot. Each prime contractor will be able to purchase (1) one on-campus parking permit which will allow them to park in a lot closer to the project site. Parking permits may be purchased from Parking and Transportation Services located in the west entrance of the Vermont Street Garage. Contractors are prohibited from parking in any IUPUI campus visitor facility.

- e. On Bloomington projects, Contractor's employees are to park at the Green Lot at the Athletics complex. A fee for parking at this lot will be charged to Contractor. Unless otherwise agreed by the parties, Contractor is responsible for transporting its employees from the Green Lot to the jobsite.
- f. On projects at all other campuses, free parking areas will be designated for Contractor's employees and hang tags will be provided to Contractor by campus parking operations.

### **01 55 29 Staging Areas**

- 1.1 Indicate exterior staging area or point of access to building on drawings along with approved access route to Project Site and have perimeter of area approved by IU Construction Manager and Landscape Services. Fencing must have appropriate red fabric screening and project specific details per IU Construction Fencing Specification.
- 1.2 The General Contractor shall furnish, erect and properly maintain a temporary "chain link fence," 6' 0" high, complete with **solid, Pantone 201** privacy fabric, top and bottom horizontal support, man and vehicle gates as appropriate for the project conditions, which shall remain in place until such time as directed by the Owner to be removed. The fence shall be located on the Contract Limit Line or where the progress of work dictates. The IU Fencing standard can be found on e-Builder in the zIUResources-BL project. File name: [Construction Fence All Campuses 2020.pdf](#).
- 1.3 Indicate location of dumpster and route for debris removal through occupied buildings. Provide red fabric screening at fencing around dumpsters located in open areas. Vehicles will not park within staging area, on hardscape or landscape surfaces in staging area or in surrounding areas. All damage or refresh of areas are the responsibility of the General Contractor for Final Completion.
- 1.4 Review vertical access within building, including use of stairs and elevator with the Team Leader.
- 1.5 Maintain Project site free of waste materials and debris. Perform regular landscaping maintenance to control grass and weeds within all fenced-in areas.

### **01 56 00 Temporary Barriers and Enclosures**

- 1.1 All renovation or construction work inside of occupied buildings will require temporary barriers to prevent unauthorized access and to control dust from entering into adjacent spaces. Note sections for site and air quality.
- 1.2 Indicate on the drawings the location of temporary interior dust partitions of non-combustible wall construction equal to metal studs and dry wall on both sides. Exterior drywall visible to public shall be taped with one coat of joint compound and painted with primer and two coats of paint.
  - a. Provide a wood or hollow metal door frame with a lockable solid core wood or hollow metal door.
  - b. Provide walk-off mats at entry to Project work area.
- 1.3 Designate a single entrance for all materials to be brought into or taken out of the work area. Specify minimum dust control at entrance of two layers of 6 mil polyethylene plastic sheeting over existing doorways. Provide for covering all supply and return air vents with air filters if air handlers to the area cannot be shut down.
- 1.4 Specify cutting of masonry or other materials that will create dust outside of building.

### **01 56 39 Temporary Tree and Plant Protection**

- 1.1 Indicate 6 foot high chain link fencing centered on trunk and to follow around drip line of trees. Provide minimum 8 foot diameter enclosure around small diameter trees.

- a. Provide for mulch to be applied within enclosure.
- b. Tree protection fencing to remain in place until removal is approved by IU Landscape Architect.

### **01 57 13 Temporary Erosion and Sediment Control**

- 1.1 Erosion and Sediment Control: Comply with applicable laws and regulations of authorities having jurisdiction, including:
  - a. Indiana Department of Environmental Management (IDEM) Construction Stormwater General Permit (INRA00000).  
[https://www.in.gov/idem/stormwater/files/final\\_gen\\_permit\\_inra00000\\_construction.pdf](https://www.in.gov/idem/stormwater/files/final_gen_permit_inra00000_construction.pdf).
  - b. The Soil and Water Conservation District of the county where work is performed.
  - c. IU Environmental Health & Safety
  - d. Indiana University's Landscape Architect and IU EHS will review the Stormwater Pollution Prevention Plan (SWPPP) documents before the documents are submitted to the local Soil and Water Conservation District and IDEM.
  - e. The Contractor is responsible by contract with IU to perform all activities stated in the SWPPP documents as defined by the IDEM Construction Stormwater General Permit (INRA00000).

### **01 57 23 Temporary Storm Water Pollution Control**

- 1.1 Site Drainage, Pumping, Storm Water Management
  - a. Site Drainage – The General Contractor shall take over the responsibility for site drainage upon entering the premises and shall maintain such drainage during the term of all Prime Contracts in a manner approved by the Owner's Representative and so as not to adversely affect the construction, the building during various stages and the adjacent areas.
  - b. Pumping – The General Contractor shall, during the progress of the work of all Prime Contracts, provide and maintain all required pumps, suction and discharge lines, power, etc., in sufficient number, capacity, and configurations to keep all excavations, pits, trenches, footings, foundations, and the entire property area free from accumulation of water from any source whatsoever, and also keep the Project dry and free of water, at all times and under any and all circumstances and contingencies that may arise.
  - c. Storm Water Management – The Contractor shall be responsible for the management of storm water run-off from the worksite in accordance with the SWPPP and the IDEM Construction Stormwater General Permit (INRA00000).  
[https://www.in.gov/idem/stormwater/files/final\\_gen\\_permit\\_inra00000\\_construction.pdf](https://www.in.gov/idem/stormwater/files/final_gen_permit_inra00000_construction.pdf). In addition, the Contractor shall comply with the requirements of the Indiana University Sediment and Erosion Control Standards. The Contractor shall use the Indiana Storm Water Quality Manual published by the Indiana Department of Environmental Management, <https://secure.in.gov/idem/4899.htm>, as a guidance document when choosing best management practices for sediment and erosion control at the site.
  - d. Contractor shall pay Owner for any costs Owner incurs based on Contractor's non-compliance with this Section, including but not limited to repair or remediation costs, fines or penalties imposed on Owner by any regulating authority, and any fees or costs paid to attorneys or consultants arising out of a prohibited storm water discharge.

### **01 58 13 Temporary Project Signage**

- 1.1 Project signs are reserved for use on major capital projects and are not required for small projects. The GC shall provide and maintain one sign per the IU Standard found on e-Builder in zIUResources-BL project. File name: Construction Sign all Campuses 2020.pdf.
  - a. IU Team Lead will approve the provided Proof for design, wording and location of the sign at the project site.
  - b. No additional signs will be permitted without the written consent and approval of the Owner and Owner's Representative.
  - c. Signs shall be provided with treated wood posts and 1/2" thick exterior grade substrate or 1/4" aluminum composite panel with a high-density corrugated polypropylene core, all substantially constructed, fastened, and adequately braced.
  - d. All lumber, plywood and bracing shall be painted two coats of exterior paint on all exposed surfaces, in colors designated by the standard design provided by the Owner's Representative.
  - e. All lettering, graphics and colors shall be in accordance with the standard design provided by the Owner's Representative.
  - f. General Contractor shall remove construction sign from site when directed by Owner's Representative.
- 1.2 Contractor's advertising signs are prohibited.
- 1.3 Contractor responsible for all temporary wayfinding, no access and safety signage necessary, interior and exterior.

## **01 60 00 Product Requirements**

### **01 64 00 Owner-Furnished Products**

- 1.1 Owner Furnished Material and Equipment
  - a. Cross-Reference General Conditions, Sections 3.2.1(6)(iii)(e) and Article 6
  - b. Self-Performance by Owner – Each Contractor shall permit the Owner to place and install equipment in accordance with a mutually-agreeable schedule before the completion of its Work. The placing and installation of equipment shall not in any way be construed as evidence of the completion or acceptance of the Work or any portion thereof.
    1. Contractor responsible for hard wire and connection to infrastructure provided in contract scope.
  - c. Contractor Installation of Owner-Furnished Materials and Equipment – In the event that Owner elects to furnish materials or equipment to the Contractor for installation, such equipment or materials shall be noted, indicated or scheduled by the Owner and notice provided to the Contractor, and shall be carefully examined by the Contractor immediately after delivery to the site, and any and all conditions which would prohibit the proper installation or operation of this equipment shall be noted and the Owner informed thereof before acceptance of the materials or equipment for installation. The Contractor shall assume responsibility for such equipment and materials upon receipt thereof, and shall pay for any damage occurring after delivery.

### **01 65 00 Product Delivery Requirements**

- 1.1 Contractor Furnished Material and Equipment
  - a. Cross-Reference General Conditions, Section 3.2.1(6)(iii)(d)
  - b. Contractor, subcontractors, manufacturers and suppliers furnishing materials and equipment under the various Prime Contracts shall identify, ship, address, consign, etc., all such materials and equipment to the appropriate Prime Contractor who may be charged therewith by giving the name of the Contractor, name of the Project, the

street or post office address and the city. Under no circumstances may shipments be directed to, or in care of Indiana University. It shall be the sole responsibility of all contractors, etc., to observe this requirement, and failure to do so shall in no way be construed as a justifiable construction delay.

## **01 70 00 Execution and Closeout Requirements**

### **01 73 00 Execution**

#### 1.1 Construction Loads on Building Structures

- a. The structure is designed to support the loads of the finished building. No provision is included for stresses or loads imposed by construction operations. If the Contractor desires to place such loads in excess of the design load (shown on drawings), it shall submit drawings and calculations prepared by, and bearing the seal of a Professional Engineer of the proposed method for supporting such loads for the Owner's Representative's review and approval.
- b. No loading of any kind in excess of design loads shall be placed on any part of the building structure prior to Owner's Representative's approval of submitted drawings and calculations. The costs of the Owner's Representative's review shall be borne by the Contractor.

### **01 74 00 Cleaning and Waste Management**

#### 1.1 Protective Coverings and Measures

- a. Finished Surfaces – The General Contractor shall protect all finished surfaces, including the jambs and soffits of all openings used as passageways or through which materials are handled, against any possible damage resulting from the conduct of work by all Prime Contractors and their trades and subcontractors.
  1. The finished surfaces shall be clean and not marred upon delivery of the Project to the Owner. The General Contractor shall, without extra compensation, replace, repair or refinish (as determined by the Owner's Representative) all such spaces where painted or finished surfaces prove to have been inadequately protected and are damaged.
  2. Materials Stored on Finished Surfaces – The General Contractor shall provide tight, non-staining wood sheathing under any materials that are stored on finished surfaces and shall provide planking on finished surfaces before moving any materials over those finished areas.
  3. Roof and Waterproof Surfaces – Roof and waterproof surfaces shall not be subjected to traffic, nor shall they be used for storage of material. Where some activity must take place in order to carry out the work of the Prime Contracts, adequate protection, subject to approval by the Owner's Representative, shall be provided by the General Contractor
  4. Glass – All glass shall be protected and kept clean during the entire construction period by the General Contractor. All damaged, etched, defaced or broken glass shall be replaced at the General Contractor's expense.
  5. Flooring – All will be covered and protected throughout the construction project.

### **01 74 19 Construction Waste Management and Disposal**

#### 1.1 Waste Management

- a. Waste Disposal – The Contractor shall be responsible for disposal, recycling or reclamation of all solid or hazardous waste generated by its performance of the Work.

The Contractor shall comply with all applicable state and federal regulations in handling, storing, transporting and disposing of solid or hazardous waste.

- b. The Contractor acknowledges its recognition and understanding that “clean fill” is defined by 329 IAC 12-3-1(1) to consist only of uncontaminated rocks, brick, concrete, road demolition waste materials or dirt, and expressly does not include painted material and treated wood. Contractor shall dispose of any waste that contains painted materials and treated wood as solid waste.
  1. Prior to the removal from the site of any solid waste or clean fill, the Contractor shall inform the Owner’s Representative of the intended disposal site for the material. The Owner has the right, but not the responsibility, to reject a site as suitable for the disposal of the material, and the Contractor shall bear any cost or expense associated with identifying an appropriate alternative disposal site.
  2. The Contractor shall provide the Owner’s Representative with a copy of all transport and material acceptance documents related to the disposal of solid waste or clean fill, such as tare weights and bills of lading, upon receipt by the Contractor.
  3. Within 10 days of shipment off-site of any hazardous waste, the Contractor shall provide the Owner’s Representative with a copy of all hazardous waste manifests. The Contractor shall provide Owner’s Representative with a copy of the manifest signed by the TSD (Treatment Storage and Disposal) company within 10 days of receipt by the Contractor.

#### 1.2 Asbestos

- a. Asbestos Handling – Contractor is expected to be familiar with the appearance and likely locations of asbestos and asbestos containing materials (“ACM”), even if demolition and/or asbestos abatement is not a contracted-for part of the Work, which can be obtained through Asbestos Training to all General Contractors for buildings that are pre-1981, see 1.7.
  1. Technical specifications prepared by the Owner or the Owner’s Representative may identify the nature and extent of asbestos to the extent known at the time of issuance of the specifications. However, site conditions as of the time of the preparation of specifications may prevent complete and accurate identification of the exact nature and extent of asbestos or ACM at the Project site.
  2. Contractor may encounter asbestos or ACM during the course of the work. In the event that Contractor observes material that is suspected to be asbestos or ACM. Contractor shall stop work immediately and notify the Owner’s Representative, who shall direct next steps in terms of testing, removal and disposal. If the suspicious material is determined to be asbestos or ACM, Contractor may be directed to undertake the removal and disposal of the material by way of a Construction Change Directive or, at the Owner’s discretion, a third party may be hired to undertake this work.
  3. If Asbestos Abatement is part of General Contractor Construction Contract, they are responsible for all abatement per scope with the approved 3<sup>rd</sup> Party Monitoring Consultant hired by the Owner via the EHS PCON Compliance approved list.
- b. Contractor shall pay Owner for any costs Owner incurs based on Contractor’s non-compliance with this Section, including but not limited to repair or remediation costs, fines or penalties imposed on Owner by any regulating authority, and any fees or costs paid to attorneys or consultants arising out of a prohibited storm water discharge or improper disposal of solid or hazardous waste, including but not limited to asbestos or ACM.

### 01 74 23 Final Cleaning



### 1.1 Final Clean

- a. Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.
- b. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- c. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
- d. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:
  1. 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.
  2. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
  3. Rake grounds that are neither planted nor paved to a smooth, even- textured surface.
  4. Remove tools, construction equipment, machinery, and surplus material from Project site.
  5. Remove snow and ice to provide safe access to building.
  6. 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.
  7. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, tunnels, chases, crawlspaces, equipment rooms, and similar spaces.
  8. Sweep concrete floors broom clean in unoccupied spaces.
  9. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
  10. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision- obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
  11. Remove labels that are not permanent.
  12. Touch up, otherwise repair, and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration
  13. Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
  14. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
  15. Replace parts subject to unusual operating conditions.
  16. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
  17. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
  18. Clean ducts, blowers, and coils if units were operated without filters during construction.
  19. 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.

20. Leave Project clean and ready for occupancy.
  21. Remove temporary protection, including protective covering, protective film, etc.
  22. Remove marks, stains, fingerprints, and other soil or dirt from painted, decorated, and natural finished walls, ceilings, soffits, woodwork, and other work.
  23. Remove spots, mortar, plaster, soil, and paint from ceramic tile, marble, and other finish materials and wash or wipe clean.
  24. Clean fixtures, cabinetwork, and equipment to remove stains, paint, dirt, dust, and leave in undamaged, new condition.
  25. Clean stainless steel, aluminum, bronze, brass, chrome, and other metallic finishes in accordance with recommendations of the manufacturer.
  26. Clean resilient floors thoroughly with a well-rinsed mop containing only enough moisture to clean off any surface dirt or dust and buff dry by machine to bring the surfaces to sheen.
  27. Clean chases, equipment rooms and closets, and equipment access areas to remove construction related materials, dirt and dust.
- e. Engage an experienced, licensed exterminator to make a final inspection and rid Project of rodents, insects, and other pests. Prepare a report.
  - f. 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.

## **01 77 00 Closeout Procedures**

### **1.1 Substantial Completion**

- a. Before requesting inspection for determining date of Substantial Completion, Contractor shall complete the following:
  1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
  2. Advise Owner of pending insurance changeover requirements.
  3. Furnish to the Owner a pdf version, searchable and printable, of the Maintenance and Operating Instructions and parts lists for all operating, general, mechanical, electrical, and control equipment and all other manufactured items installed by the Contractor. The operating instructions shall integrate each piece of equipment in any one system in to a numbered step-by-step sequence of operation. The parts listed shall consist of exploded views or parts listing, with all component parts numbered, for each piece of operating or expandable equipment. These operating instructions and parts lists must be furnished to the Owner prior to the time when the equipment is checked out and turned over to the Owner for operation or before the final payment on the Contract will be processed.
  4. Submit As-Built Field Data Set Scans.
  5. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
  6. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
  7. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner.

8. Label with manufacturer's name and model number where applicable.
  9. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
  10. Complete startup testing of systems.
  11. Submit testing, adjusting and balancing records.
  12. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
  13. Advise Owner of changeover in heat and other utilities.
  14. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
  15. Complete final cleaning requirements.
  16. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects, including touchup painting.
- b. Submit a written request for inspection for Substantial Completion. On receipt of request, Design Professional will either proceed with inspection or notify Contractor of unfulfilled requirements. Owner may assign its own staff to accompany Design Professional on the inspection and may require Design Professional and Consultants to provide additional inspections. Design Professional will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, on either Contractor's list or additional items identified by Design Professional, which must be completed or corrected before certificate will be issued.
  - c. Re-inspection: Contractor shall request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
  - d. Results of completed inspection will form the basis of requirements for Final Completion.

### **01 77 13 Preliminary Closeout Reviews**

#### **1.1 List of Incomplete Punch Items**

- a. Preparation: Submit one (1) copy of list in PDF format. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
  1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
  2. Organize items applying to each space by major element, including categories for site work, building exterior, roof, ceiling, individual walls, floors, equipment, and building systems.
  3. Include date for completion of each incomplete item.
  4. Include the following information at the top of each page:
    - i. Project name
    - ii. Date
    - iii. Indiana University Project Number
    - iv. Name of Design Professional
    - v. Name of Contractor
    - vi. Page number
- b. All Punch List items shall be complete within sixty (60) days from original date of punch list inspection.
- c. Do not use Attic Stock materials, owed to Owner per Contract Documents, for repair or correction of Punch List items.

### **01 77 16 Final Closeout Review**

- 1.1 Prior to Final Completion and Final Payment
  - a. Before requesting final inspection for determining date of Substantial Completion, Contractor shall complete the following:
    - 1. Prepare and submit Project Record Documents, Record Drawings, Record Specifications, Final Completion construction photographs, damage or settlement surveys, and similar final record information.
    - 2. Orient and instruct the maintenance personnel designated by the Owner in the operation and maintenance of all equipment installed by the Contractor.
    - 3. Submit the following:
      - i. Final approved Lock-Out/Tag-Out manuals as identified in the Project Specifications.
      - ii. Certified copy of Design Professional's Substantial Completion inspection list of Punch List items endorsed and dated by Design Professional. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
      - iii. Evidence of final, continuing insurance coverage complying with insurance requirements.
      - iv. Pest-control final inspection report and warranty.
      - v. Demonstration and training DVDs.
      - vi. Evidence of completion of Contractor documentation submittals for LEED credits that involve Contractor input.
    - 4. Submit a written request for final inspection for acceptance. On receipt of request, Design Professional will either proceed with inspection or notify Contractor of unfulfilled requirements. Design Professional will conduct the inspection to verify that construction is in compliance with Contract Documents and authorities having jurisdiction. Owner may assign its own staff to accompany Design Professional on the inspection and may require Design Professional and Consultants to provide additional inspections. Design Professional will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
    - 5. Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.

**01 78 00 Closeout Submittals**

INDIANA UNIVERSITY DELIVERABLES REQUIREMENTS  
FOR CONSTRUCTION DOCUMENTS AND AS-BUILT & RECORD DOCUMENTS  
(Updated April 2020)

- 1.1 Cross-Reference to General Conditions, Section 3.11.4
- 1.2 Document Deliverables Matrix
  - a. The following matrix outlines the document deliverables required for three different project categories; indicating the associated responsible parties. All deliverables identified in this article are to be provided as indicated.

Responsible Parties    A/E = Architect/Engineer    C = Contractor

Category 1: Projects with an estimated project cost at or over \$5 million:				
Construction Documents Deliverables	Resp. Party	Qty	Format	Due Date

CAPITAL PLANNING AND FACILITIES DIVISION 00 AND 01

IU BIM Proficiency Matrix	A/E	1 set	.xlsx	Prior to selection as required
IU BIM Execution Plan	A/E, C	1 set	.docx	30 days after contract awarded
Design BIM Model(s)	A/E	1 set	.rvt	30 days after contract awarded
Construction Document CAD Drawings	A/E	1 set	.dwg & .pdf	30 days after contract awarded
Addenda	A/E	1 set	.docx & .pdf	30 days after contract awarded
COBie Data (COBie setup)	A/E	1 set	.xlsx	30 days after contract awarded
Record Document CAD Drawings and all project Affidavit(s)	A/E	(see note)	(see note)	* 1 set each .pdf & .dwg as well as 1 set hard copy (paper) prior to Final Payment
As-Built Field Mark-ups - Files and/or Scans	C	1 set	.pdf	At Substantial Completion
Operations & Maint. Manuals (O&M), with LOTO	C	1 set	.pdf & hard	At Substantial Completion
COBie Construction Data	A/E, C	1 set	.xlsx	Prior to Final Payment
As-Built BIM Model(s)	A/E	1 set	.rvt	Prior to Final Payment
Finish Binder	A/E	1 set	Hard	Prior to Final Payment

**Category 2: Projects with an estimated project cost above \$150,000 to under \$5 million:**

Construction Documents Deliverables	Resp. Party	Qty	Format	Due Date
Construction Document CAD Drawings	A/E	1 set	.dwg & .pdf	30 days after contract awarded
Addenda	A/E	1 set	.docx & .pdf	30 days after contract awarded
Specifications	A/E	1 set	.docx & .pdf	30 days after contract awarded
COBie Data (COBie setup)	A/E	1 set	.xlsx	30 days after contract awarded
Record Document CAD Drawings and all project Affidavit(s)	A/E	(see note)	(see note)	* 1 set each .pdf & .dwg as well as 1 set hard copy (paper). Prior to Final Payment
As-Built Field Mark-ups - Files and/or Scans	C	1 set	.pdf	At Substantial Completion
Operations & Maint. Manuals (O&M), with LOTO	C	1 set	.pdf & hard	At Substantial Completion
COBie Construction Data	A/E, C	1 set	.xlsx	Prior to Final Payment
Finish Binder	A/E	1 set	Hard	Prior to Final Payment

**Category 3: Projects at or under \$150,000:**

Construction Documents Deliverables	Resp. Party	Qty	Format	Due Date
Construction Document CAD Drawings	A/E	1 set	.dwg & .pdf	30 days after contract awarded
Addenda	A/E	1 set	.docx & .pdf	30 days after contract awarded
Specifications	A/E	1 set	.docx & .pdf	30 days after contract awarded
Record Document CAD Drawings and all project Affidavit(s)	A/E	(see note)	(see note)	* 1 set each .pdf & .dwg as well as 1 set hard copy (paper). Prior to Final Payment
As-Built Field Mark-ups - Files	C	1 set	.pdf	At Substantial Completion

and/or Scans				
Operations & Maint. Manuals (O&M), with LOTO	C	1 set	.pdf	At Substantial Completion
COBie Construction Data	A/E, C	1 set	.xlsx	Prior to Final Payment
Finish Binder	A/E	1 set	Hard	Prior to Final Payment

Responsible Parties A/E = Architect/Engineer C = Contractor

Responsible Party shall notify the project Team Lead when files are loaded/provided, yet not be relieved of responsibility when files delivered do not meet Indiana University – Capital Projects’ (IU-CP) requirements, or are defective. IU-CP has full discretion with respect to verification of all files and the responsible party shall be notified of acceptance.

Standard Deliverable Time Points: All digital/electronic deliverable files are to be submitted via e-Builder [www.e-builder.net], while project category required hard copies be delivered to appropriate IU-CP offices. Specific requirements for deliverables associated with each of the three above categories may vary; however, the time points establishing the submission of contractual document deliverables for these categories do not. The following time points are based on long-standing practices followed by architects, engineers and contractors.

- Bid Document Deliverable: Consists of the “As Bid” contract or construction drawings, specifications, bidding directions and any addendums. The design professional electronically transmits in .pdf format the full set of the bid documents to IU-CP’s printing contractor who is responsible for paper reproduction and distribution to contractors who have registered to receive the bid documents in order to publically offer a bid proposal for construction of the project. A/E shall assure IU-CP and the project’s e-Builder file is included in plan distribution.
- Contract or Construction Documents Deliverable: Consists of a “For Construction” set of construction drawings and specifications, which incorporate all addendum items and accepted alternates. Any non-accepted alternates should be removed from the set. Revision clouds are not required. This deliverable is to be submitted to IU-CP with files as they were natively created - in Revit .rvt for model/BIM (if applicable) and AutoCAD .dwg format for drawings, Word .docx and Adobe .pdf format for specifications. Within 30 days following the award of bid for contract for construction, the design consultant must provide IU-CP with one set of files in digital/electronic format as follows:
  1. CAD Files; one file each (representing every sheet in the construction document set) and with Addenda and alternates incorporated as listed above. Native CAD files shall be in .dwg format, one file for each sheet in the complete set with all reference files fully bound. These documents must comply with IU-CP CAD Standards. Use of an AutoCAD export method is recommended to bind each file. Do not create a zip file that includes reference files. Files shall be named with a numerical pre-fix followed by the sheet number and brief sheet name to assure uploaded files are arranged in the same order as the sheet index of the construction set.
  2. PDF Files (representing every sheet in the construction document set) and with Addenda and alternates incorporated as listed above. These documents must be stamped and signed by the design professional. Combine all sheets into one PDF file (per volume) and arranged in order per the sheet index of the construction set.
  3. Revit File; a full design model (for each discipline and central file as applicable). Native files shall be in .rvt format. Refer to IU-CP BIM Guidelines and standards for Architects, Engineers and Contractors.
  4. Specifications Files with Addenda and alternates incorporated shall be in native Word .docx (one file for each spec section) and Adobe .pdf formats as a combined file of all sections, in

- order (other than those provided by IU-CP Business Office for Divisions 0 & 1).
5. COBie design File When the scope of work designates installation of operating building equipment requiring on-going regular maintenance, a COBie Design submittal is also required to be submitted in standard COBie xlsx workbook format, with worksheet info completed for each of the following tabs at a minimum:
    - (Tab2) Facility(ies) - referenced in the design;
    - (Tab3) Floor - description of vertical levels;
    - (Tab4) Spaces - referenced in the project;
    - (Tab6) Type – General information of each equipment type;
    - (Tab7) Component – Information of each individual named equipment;
    - (Tab8) System - Systems referenced in the project

See link for required template file:

- As-built and Record Documents Deliverable:
  1. As-built (or Field Data Set): Changes are recorded by the contractor, resulting in an “as-built” set (paper or electronic) documents, which are maintained by the contractor through the project’s construction and then submitted at the time of substantial completion by the contractor to the A/E designer (A/E designer will use these to create the Record Drawings) and to IU-CP via e-Builder. Final payments will not be processed until this deliverable is received and approved.
    - PDF Files (a color .pdf of each sheet in the construction document set), indicating any/all field changes – red for added elements and green for deletions. Each sheet shall indicate “As-built”; and if there are no changes, indicate “No Changes” on the sheet. Combine all sheets into one PDF file (per volume) and arranged in order per the sheet index of the construction set.
  2. Record Drawings: Consists of an updated construction drawing set (or drawing files) which incorporate all contractor as-builts, addenda, accepted alternates, ASI, CCD, etc. Any non-accepted alternates should be removed from the set. Revision clouds and notation are not required, as a clean set showing only what was constructed is desired. This deliverable is to be submitted to IU-CP as a set of files, each one as they were natively created - in Revit .rvt (if applicable) and AutoCAD .dwg format for drawings, Word .docx and Adobe .pdf format for specifications. Final payments to Architect and/or Engineer will not be processed until this deliverable is received and approved. Provide IU-CP with one set of files in digital/electronic format as follows:
    - CAD Files; one file each (representing every sheet in the construction document set). Native CAD files shall be in .dwg format, one file for each sheet in the complete set with all reference files fully bound. These documents must comply with IU-CP CAD Standards. Use of an AutoCAD export method is recommended to bind each file. Each sheet shall indicate “Record Drawing”. Do not create a zip file that includes reference files. Files shall be named with a numerical pre-fix followed by the sheet number and brief sheet name to assure uploaded files are arranged in the same order as the sheet index of the construction set.
    - PDF Files (representing every sheet in the construction document set). Each sheet (.pdf file) shall indicate “Record Drawing”. Combine all sheets into one PDF file (per volume) and placed in order per the construction set.
    - Revit File; a full design model (for each discipline and central file as applicable). Native files shall be in .rvt format. Refer to IU-CP BIM Guidelines and standards for Architects, Engineers and Contractors.
  3. O&M (Operations & Maintenance) Manuals: The contractor shall submit to IU-CP, up to five pdf files of the O&M manuals, along with the Construction Operations Building Information

Exchange (COBie) file, and all necessary LOTO documentation. Final payments will not be processed until this deliverable is received and approved.

4. COBie design File When the design of scope of work designates installation of operating building equipment requiring on-going regular maintenance, a COBie Design submittal is also required to be submitted in standard COBie xlsx workbook format. Provide the manufacturer, model and serial number of each piece of installed equipment, the location of any equipment installed in the building, installation date and warranty date. Include this information in each of the following tabs at a minimum:
  - (Tab2) Facility(ies) - referenced in the design;
  - (Tab3) Floor - description of vertical levels;
  - (Tab4) Spaces - referenced in the project;
  - (Tab6) Type – General information of each equipment type;
  - (Tab7) Component – Information of each individual named equipment;
  - (Tab8) System – Systems referenced in the project

\*\* Refer to the Document Deliverables Matrix above for additional deliverables (hard copies, finish binder, etc.) and their format(s).

Specific requirements for Contractor's field record of changes to contract drawings:

The Contractor shall keep at the construction site a complete set of paper or electronic prints of the contract drawings, reproduced at Contractor expense. During construction, these prints shall be marked to show all deviations in actual construction from the contract drawings. The color red shall be used to indicate all additions and green to indicate all deletions. The drawings shall show the following information, but not be limited thereto:

- a. The locations and description of any utility lines and other installations of any kind or description known to exist within the construction area. The location includes dimensions and elevations of permanent features.
- b. The locations and dimension of any changes within the building or structure, and the accurate location and dimension of all underground utilities and facilities.
- c. Correct grade or alignment of roads, structures, and utilities if any changes were made from contract plans.
- d. Correct elevations if changes were made in site grading from the contract plans.
- e. Changes in details of design or additional information obtained from working drawings specified to be prepared and/or furnished by the Contractor including, but not limited to, fabrication erection, installation, and placing details, pipe sizes, insulation material, dimensions of equipment foundations, etc.
- f. The topography and grades of all drainage installed or affected as part of the project construction.
- g. All changes or modifications from the original design and from the final inspection.
- h. Where contract drawings or specifications allow options, only the option actually used in the construction shall be shown on the as-built drawings. The option not used shall be indicated as deleted.

These deviations shall be shown in the same general detail utilized in the contract drawings. Markings of the prints shall be pursued continuously during construction to keep them up to date. This information shall be maintained in a current condition at all times until the completion of the work. The resulting field-marked data shall be referred to and marked as "As-Built Field Data" and shall be used for no other purpose. They shall be made available for inspection by IU's representative whenever requested during construction and shall be jointly inspected for accuracy and completeness by IU's representative and a responsible representative of the Contractor prior to submission of each monthly pay estimate. Failure to keep the As-Built Field Data current



(including Equipment-in-Place lists in the COBIE spreadsheet) shall be sufficient justification to withhold a retained percentage from the monthly pay estimate.

#### Submittal Standards

- To obtain current IU Standards:
  - Log into the e-Builder system
  - Go to the project zIUResources
  - Go to Documents
  - Go to the folder Standards, Front End Docs & Templates
- BIM (Building Information Modeling) - refer to requirements in the IU-CP Building Information Modeling (BIM) Guidelines for Architects, Engineers, and Contractors.
- CAD (Computer Aided Design) - refer to the Indiana University and National CAD Standards as outlined.
- COBIE (Construction Operations Building Information Exchange) - for template and example go to e-Builder as stated above.
- GIS/SITE – for Site, Civil, Landscape and Utilities guidance go to e-Builder as stated above.

#### File Format Standards

- BIM - Autodesk Revit .rvt - Revit version should closely be coordinated with entire team and Owner and indicated in IU BIM Execution Plan
- CAD - Autodesk AutoCAD .dwg - format should be provided in the version in which it was created.
- PDF - Adobe pdf format should be configured to allow for text searches and printing. Pdfs should also be rotated to drawing/sheet orientation.
- RVT – (see BIM above).

#### Applicable Definitions

- Affidavit – Signed letter affirmation to the University. A Code Affidavit would be the Architect/Engineer's assurance of project's design meeting current required restrictive codes and laws (such as ADA), and will also list any/all unique deviations allowed by the State to be taken, such as any variance(s). Environmental Affidavit would be the Architect/Engineer's assurance of project's design meeting current required environmental codes and laws, and will also list any and all unique deviations that may have been allowed by the legal jurisdiction. Check with your project's IU-CP assigned Team Leader for required affidavits on project.
- As-Built Documents - As-built documents are the collection of paper drawings or electronic drawings that typically reside in the contractor's onsite trailer or office that contain mark-ups, annotations, and comments about changes that have been made to the contract documents during the construction phase.
- As-Built Model - Design Intent Models that have been updated throughout the construction process. These changes and updates have been communicated from the Contractor to the Design Team through the comments, annotations, and mark-ups from the As-Built Documents. These typically, but not always, are discipline-specific models.
- Building Information Model (BIM) - A digital, 3-D and informational representation of physical and functional characteristics of a facility; a shared knowledge resource for information about a facility forming a reliable basis of decisions during life-cycle, which is defined as existing conception to demolition.
- BIM Execution Plan (BEP) - A plan that is created from IU-CP BIM Execution Plan Template that is to be submitted thirty (30) days after contract award. The BEP helps to define roles and responsibilities within a project team.

- **BIM Proficiency Matrix (BPM)** - A matrix that was designed to measure the expertise of a firm as it relates to using a BIM process on projects. It will be used by Indiana University as one of the many selection criteria during the selection process.
- **C.O.B.i.e.** – Construction Operations Building Information Exchange – COBie spreadsheet provided by the contractor represents the installed equipment data in the spreadsheet that will link into designer provided space, and installation information.
- **LOTO – Lockout/Tagout** – All appropriate and required documentation relative to installed and/or provided equipment, inclusive of servicing and maintenance of machines and equipment whereby the unexpected energization or startup of the machines or equipment, or release of stored energy, could harm employees. See OSHA 1910.147 - The control of hazardous energy (lockout/tagout): <https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.147> .
- **Operations and Maintenance Manuals (O&M's)** – Includes all manufacturers' warrantee information, product data and maintenance requirements and recommendations as would be required to properly and safely maintain installed building elements and equipment and maintain the warrantee status of same. Also shall include all temperature control drawings, fire protection system documents, security system documents, and Interior Finishes binders (in format as required by UAO Interiors Dept.)
- **Record Drawing** - The production of Record Drawings is the capturing of the As-Built Documents' annotations, comments, and mark-ups in a drawing format only. This requirement is separate of any updating of any models.

Related Documents: See VPCPF website: <https://cpf.iu.edu/capital-projects/consultants-contractors/standards.html> and e-Builder project ZIUResources.

Building Design Standards  
 CADD Standards  
 GIS Drawing Procedure  
 Engineering Deliverables  
 Interiors Standards Site and Landscape Standards  
 Space Planning Guidelines

## 01 78 36 Warranties

- 1.1 Submit written warranties in pdf form on request of Design Professional for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.
- 1.2 Provide warranty documents in pdf form in an orderly sequence based on the table of contents of the Project Manual.
  - a. Table of Contents: Include the following information:
    1. Product or work item, including scope.
    2. Name, responsible principal, address, and telephone number of Contractor.
    3. Beginning date of warranty or bond.
    4. Proper procedure in case of failure.
    5. Events that may affect validity of warranty.
    6. Cross-referenced to Specification Section number in Project Manual.

## 01 79 00 Demonstration and Training

- 1.1 <https://app.e-builder.net/public/publicLanding.aspx?QS=d4004dee81c745e3b545703151ccc7e6>

**01 80 00 Performance Requirements****01 81 13 Sustainable Design Requirements**

- 1.1 U.S. Green Building Council LEED “Gold” certification is required for all new construction and for renovation projects over \$5 million project cost - <https://cpf.iu.edu/capital-projects/leed-projects/index.html>
- 1.2 See <https://sustain.iu.edu/commitment/energy/index.html> for more information.
- 1.3 Schedule LEED progress meetings no less than one per design phase, provide copy of LEED Design Submittal prior to bidding and LEED Construction Submittal prior to project closeout.

**01 86 13 Fire Suppression Performance Requirements**

- 1.1 Fire Alarm Panel functionality is to remain functional when projects are Phased and Beneficial Occupancy has occurred.
  - a. These typical systems must remain monitored by Operations and Facilities.

**01 86 19 HVAC Performance Requirements**

- 1.1 Heating and Cooling of project site must be maintained during construction. If building systems are unable to maintain conditioned environment, the General Contractor is responsible for provide temporary heat/cooling.

**01 88 13 Special Construction for Accessibility**

- 1.1 Follow the construction requirements of the 2010 ADA Standards for Accessible Design [http://www.ada.gov/2010ADASTandards\\_index.htm](http://www.ada.gov/2010ADASTandards_index.htm) and the requirements of the current edition of the Indiana Building Code.
- 1.2 Design requirements for vehicle parking for persons with physical disabilities are found in the Indiana Code IC 5-16-9: <http://iga.in.gov/legislative/laws/2020/ic/titles/005#5-16-9>.
- 1.3 The following alternative lifts may be considered:
  - a. Inclined or radius wheelchair lifts: Garaventa
  - b. Vertical platform lifts: American Stair Glide or Porch-Lift by ThyssenKrupp
  - c. Limited Use, Limited Access (LULA) elevators



# Appendix A – Procurement and Contracting Requirements

VPCPF Support Resources - Construction Procurement  
2901 East Discovery Parkway  
Bloomington, IN 47408  
812-855-5294  
[bidtab@iu.edu](mailto:bidtab@iu.edu)



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## Instructions to Bidders

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Revised December 1, 2023

## ARTICLE 1 - DEFINITIONS

- 1.1 Bidding Documents include the Notice to Bidders, Instructions to Bidders, the Bid Form, other sample bidding and contract forms and the proposed Contract Documents (as defined in Division 00), including any Addenda issued prior to receipt of bids.
- 1.2 All definitions set forth in Division 00 and 01, the General Conditions of the Contract for Construction, AIA Document A201, (“GENERAL Conditions”) or in other Contract Documents are applicable to the Bidding Documents.
- 1.3 Addenda are written or graphic instruments issued by the Owner’s Representative prior to the execution of the Contract which modify or interpret the Bidding Documents by addition, deletions, clarifications or corrections. Addenda become part of the Contract Documents when the Construction Contracts are executed.
- 1.4 A Bid is a complete and properly signed proposal to do the Work for the sum stipulated therein supported by data called for by the Bidding Documents.
- 1.5 Base Bid is the sum stated in the Bid for which the Bidder offers to perform the Work described as the base to which Work may be added or deducted for sums stated in Alternate Bids. The Base Bid may be held for a period not to exceed sixty days before awarding Contracts.
- 1.6 An Alternate Bid (or Alternate) is an amount stated in the Bid to be added to or deducted from the amount of the Base Bid if the corresponding change in project scope or materials or methods of construction described in the Bidding Documents is accepted. All Alternate Bids may be held for a period not to exceed ninety days before award and incorporation into the contract by proper Change Directive.
- 1.7 A Unit Price is an amount stated in the Bid as a price per unit of measurement for materials or services as described in the Contract Documents.
- 1.8 A Bidder is one who submits a Bid for a prime contract with the Owner for the work described in the proposed Contract Documents.
- 1.9 A Sub-bidder is one who submits a bid to a Bidder for materials or labor for a portion of the Work.
- 1.10 A Day means a calendar day unless otherwise specified.
- 1.11 Contract Documents means these Instructions to Bidders, Division 00 and 01, the General Conditions of the Contract for Construction Between Owner and Contractor, Notice to Bidders, Bid Forms, Notice to Proceed, Drawings, Specifications, Construction Agreement, Addenda issued prior to execution of the Construction Agreement, any other documents listed in the Agreement, approved Schedules (per General Conditions §3.10.4), and Modifications issued after execution of the Construction Agreement. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Construction Change Directive or (3) a written order for a minor change in the Work issued by the Owner’s Representative.

## ARTICLE 2 – MULTI-PRIME PROJECTS WITH OR WITHOUT CONSTRUCTION MANAGER AS ADVISOR

### 2.1 Type of Bid

- 2.1.1 If this Project is bid as a multiple prime project with Construction Manager as Advisor,

Separate Contracts will be awarded to multiple Prime Contractors, as indicated below in Section 2.2 Division of the Work, and the requirements set forth in the remainder of this Article apply.

- 2.1.1 The Bid Proposals for each Prime Contract shall be on the basis of a Lump Sum Base Bid, plus furnishing supplementary information and supplementary documents as requested in the Bid Form.

## 2.2 Division of the Work

- 2.2.1 The Work of this Project has been divided into the following parts, for which Separate Contracts will be awarded:

- 3.1.1 General Construction Work
- 3.1.2 Mechanical Construction Work
- 3.1.3 Electrical Construction Work
- 3.1.4 Other \_\_\_\_\_

- 2.2.2 These Instructions to Bidders, Notice to Bidders, Bid Form, Agreement, Notice to Proceed, Division 00 and 01, General Conditions of the Contract of Construction between Owner and Contractor,, Contract for Construction, Drawings and all the Specifications apply to each of the listed Prime Contracts. Also all Addenda issued during bidding apply to each of the listed Prime Contracts.

- 2.2.3 The scope of work for each Prime Contract is indicated on the Drawings and in the Specification Sections.

## 2.3 Assignment of Coordination and Authority to Approve Pay Applications

- 2.3.1 If the Owner has hired a Construction Manager as Advisor (“CM”) for this Project, the Owner will assign the coordination of the work of all Prime Contractors to the CM and each Prime Contractor shall accept assignment of coordination as a condition of its Contract.

- 2.3.2 Said assignment of coordination of the work of the Prime Contractors to the CM is for the purpose of placing with one entity, namely the CM, the full and complete responsibility for coordinating and expediting all the Work required for the construction of this Project.

- 2.3.3 Each Prime Contractor shall provide the Owner, and not to the CM, with insurance, bonds, and such other documents as may be required under the terms of its contract and Indiana law.

- 2.3.4 The Owner will make monthly progress payments directly to each Prime Contractor under the terms set forth in the General Conditions and Supplementary General Conditions and Addenda thereto, and upon the written approval of the CM and Owner’s Representative of each monthly payment request submitted.

- 2.3.5 If there is no CM for this Project, the Owner will assign the coordination of the work for all other Prime Contractors (including but not limited to the Contractors for Mechanical and Electrical Construction Work) to the General Contractor, and each Prime Contractors shall accept assignment of coordination as a condition of its Contract. The duties assigned to the CM in Sections 2.3.2 through 2.3.4 shall be assigned to the

General Contractor. On a multiple-Prime Project, the General Contractor shall report to the Owner's Representative any circumstances known to it that will assist the Owner's Representative in making a determination as to whether to withhold certification of an Application for Payment submitted by another Prime Contractor.

### **ARTICLE 3 – SINGLE PRIME PROJECTS**

#### **3.1 Type of Bid**

- 3.1.1 If this Project is bid as a single prime project, the requirements set forth in the remainder of this Article apply.
- 3.1.2 The Bid Proposal shall be on the basis of a Lump Sum Base Bid, plus furnishing supplementary information and supplementary documents as requested in the Bid Form.

#### **3.2 Division of the Work and Coordination**

- 3.2.1 The Contractor shall be responsible for performance of or the provision via subcontracts of all work (general, mechanical, electrical) necessary for the completion of the work in full and complete accordance with the Bidding documents. The Contractor shall ensure that subcontractors at every tier comply with the same requirements to which the Contractor is obligated.
- 3.2.2 The Contractor shall ensure that the requirements set forth in Instructions to Bidders, all Addenda issued prior to receipt of Bids, the Bid Form, Agreement, General Conditions, and all Sections of Division 00 and 01 - General Requirements of the Specifications apply to each subcontract for work on this Project.
- 3.2.3 The scope of work for each Separate Contract is indicated on the Drawings and in the Specification Sections listed below:
- 3.2.4 The Contractor has the full and complete responsibility for coordinating and expediting all the Work, including that of all of its subcontractors, required for the construction of this Project.

### **ARTICLE 4 - PROCUREMENT OF BIDDING DOCUMENTS**

- 4.1 Bidding Documents are on file and may be examined and/or obtained for bidding purposes as stated in the Notice to Bidders.
- 4.2 Bidding Documents used for bidding purposes shall remain the property of the Owner. Bidding Documents should be returned to Eastern Engineering within 21 days after the date set for opening of bids or deposit will be forfeited.

### **ARTICLE 5 - EXAMINATION OF SITE AND BIDDING DOCUMENTS**

- 5.1 The site shall be carefully examined prior to bidding to ascertain the location of the work, existing conditions, and all other matters which may affect the work under this Contract. Each bidder by making his bid represents that he has visited the site and familiarized himself with the local conditions under which the Work is to be performed.
- 5.2 The Bidding Documents shall be carefully examined to ascertain the character, quality and

quantity of the work to be performed, of materials and items to be furnished, of equipment and facilities needed during construction, of utilities and of all other matters which may affect the work under the Contract. Each bidder by making his bid represents that he has read and fully understands the Bidding Documents.

- 5.3 Boring information, water levels, indications of surface and subsurface conditions and similar information given on the drawings or in the specifications are furnished only for the convenience of the Bidders. Logs of available subsurface explorations, borings and drawings of existing site conditions may be examined by arrangement with the Owner. The Owner, Owner's Representative and their Consultants make no representation regarding the character and extent of the soil data or other surface or subsurface data and conditions to be encountered during the work and assume no responsibility and make no guarantee as to the accuracy or completeness of the information.
- 5.4 Each Bidder by careful examination, shall inform itself as to the nature and location of the work, the conformation of the ground, subsoil and ground water conditions, the character, quality and quantity of the materials to be encountered, the character of equipment and the facilities needed preliminary to and during the prosecution of the work, the general and local conditions and all other matters which can in any way affect the work. Each Bidder shall make its own deductions of surface and subsurface conditions which may affect methods or cost of construction of the work and Bidder agrees that, if it is awarded the Contract, it will make no claim for damages or other compensation, should it encounter conditions during the progress of the work different from those as calculated and/or anticipated by it.

#### **ARTICLE 6 - QUALIFICATION OF BIDDERS**

- 6.1 Each Bidder shall be thoroughly experienced in the work to be performed and capable of completing the work on schedule.
- 6.2 Each Bidder shall demonstrate that it is authorized to perform public works in the State of Indiana by submitting to the Owner a properly executed Contractor's Bid for Public Work Indiana State Form 96 (Revised 2013).
- 6.3 Each Bidder shall demonstrate that it is financially able to complete the Contract for this Project by submitting its most recent full-year audited, or Independently Reviewed, financial statement and subsequent quarterly financial statements, if requested.

#### **ARTICLE 7 - INTERPRETATIONS AND ADDENDA**

- 7.1 Each Bidder shall examine the Bidding Documents carefully and, not later than ten (10) days prior to the date of receipt of bids, shall make written request for interpretation or correction of any ambiguity, inconsistency or error therein which it may discover. Verbal questions will not be answered.
- 7.2 Request for interpretation, correction or clarification of the Bidding Documents shall be in writing to the Owner's Representative.
- 7.3 Interpretation of the Bidding Documents will be given by the Owner's Representative in the form of written Addenda no fewer than two (2) days before the bid opening date. Addenda will be distributed to each Bidder and shall become a part of the Bid Documents.
- 7.4 Bidders shall ascertain the status of Addenda two (2) days prior to the Bid opening date. Failure of any Bidder to receive any Addenda shall not relieve the Bidder from the obligations of his

bid, unless Bidder acknowledges in writing, prior to Bidding that he has not received the Addenda, in which case he is not liable therefore.

#### **ARTICLE 8 - SUBSTITUTIONS**

- 8.1 Where one or more specific materials, trade names, or articles of certain manufacturers are mentioned, it is done to establish a basis of durability, efficiency, appearance, and simplification of maintenance, and not for the purpose of limiting competition. Other materials or articles may be used if approved in writing by Owner. Approval may be obtained during the bidding period only. After bids are opened substitutions will not be considered. However, the establishment of proof that said "equal" product is equal to the product specified shall be the responsibility of the Contractor if said equality is questioned by the Owner.
- 8.2 Any proposed substitution of equipment or materials for that which is not specified shall first be approved in writing by the Owner not less than seven (7) days prior to the date established for receipt of bids by the Owner.

#### **ARTICLE 9 - PRE-BID CONFERENCE**

- 9.1 A pre-bid conference will be held to answer Bidders' questions regarding the Bidding Documents.
- 9.2 An Addendum will be issued confirming any information conveyed at pre-bid conference and no verbal response tendered during pre-bid conference shall have legal standing unless so confirmed by Addendum.

#### **ARTICLE 10 – ASBESTOS**

- 10.1 Unless expressly included in Project Specifications, Bidder shall not include in its bid price the cost of removal of the asbestos or asbestos containing materials ("ACM").
- 10.2 Each Bidder is expected to familiarize itself with Division 01 Section 01 74 19 regarding the required protocol should asbestos or ACM be encountered on the Project.

#### **ARTICLE 11 - DRUG FREE WORKPLACE: DRUG TESTING PROGRAM**

- 11.1 Owner maintains a drug free workplace, as provided in the Drug-free Workplace Act of 1988. By entering into a Contract with Owner, Contractor acknowledges compliance with this Act and will maintain a drug-free workplace.
- 11.2 The laws of the State of Indiana (IC 4-13-18 as amended) contain certain special provisions regarding drug testing of employees of public works Contractors and Subcontractors. Contracts entered into between a Contractor and the Trustees of Indiana University estimated to be in excess of \$150,000.00 will be governed by these provisions. These provisions require, among other things, that a written plan for a program to test the Contractor's employees for drugs, which must be in full compliance with I.C. 4-13-18 **must be submitted with the bid.**
- 11.3 The successful Bidder will be required to comply with all applicable provisions of I.C. 4.13.18 with respect to each Bidder's Subcontractors, as the term "Subcontractor" is defined in the statute. In particular, the successful Contractor must require each of its subcontractors to furnish Contractor with the Subcontractor's I.C. 4-13-18-6 compliant drug plan and requiring each subcontractor to implement the employee drug testing program described in the



subcontractor's plan.

- 11.4 The successful Bidder must submit, along with each application for payment under the Contract, an affidavit, dated and signed by the Contractor, substantially as follows:

This is to certify that in the performance of this Contract, neither the undersigned Contractor, nor (so far as the undersigned has knowledge) any of its Subcontractors, has violated the "Drug Testing Program" provision of the General Conditions of the Contract.

#### **ARTICLE 12 - RECOMMENDED EMPLOYMENT OF APPRENTICES**

- 12.1 Owner strongly recommends that Contractor employs apprentices from each building trades craft involved in the Project to the maximum extent feasible. In doing so, the Contractor shall consider whether such apprentices are indentured into a Joint Apprenticeship Training Program or other comparable bona fide apprenticeship training program, registered and certified with the U.S. Department of Labor, Bureau of Apprenticeship and Training and shall use as a guide the Apprenticeship Standards of the Labor-Management Contract for the appropriate jurisdictional area when determining the appropriate ratio of apprentices from each respective craft.

#### **ARTICLE 13 – MINORITY, WOMEN’S AND VETERAN’S BUSINESS ENTERPRISES**

- 13.1 MBE/WBE/VBE Participation Plan

Indiana University is committed to diversity and non-discrimination in all aspects of its operations. The Office of the President created the University Business Diversity Department and approved the Business Diversity Initiative to ensure that certified MBEs, WBEs, and VBEs are included in all invitations for quotes and bids, and that all prospective bidders are notified of Indiana University's expectation for diversity, including but not limited to MBE/WBE/VBE participation in procurement contracts for professional services, materials, supplies and equipment, and in contracts for the construction, architectural services, renovation or repair of university facilities and equipment. This expectation extends to all tiers of contractor utilization. Each Prime contractor should actively solicit and include certified minority-, women- and veteran-owned subcontractors in bid submissions.

The Minority, Women's, and Veteran's Business Enterprise Participation Plan (form included in specifications) **must be submitted with the bid.** **This Participation Plan will be considered during the proposal evaluation process.**

Indiana University's annual MBE, WBE, and VBE participation goals parallel those set by the Indiana Department of Administration for its own business diversity efforts. The State MBE/WBE/VBE participation goals may be found at <https://www.in.gov/idoa/mwbe/minority-and-womens-business-enterprises/participation-goals/>.

13.1.1 "Minority Business Enterprise" (MBE) means an individual, partnership, corporation, limited liability company, or joint venture of any kind that is owned and controlled by (1) or more persons who are (a) United States citizens; and (b) members of a racial minority group: African American, American Indians, Hispanics, Asian Americans, or other similar minority group as defined by 13 CFR 124.103

13.1.2 "Women-owned Business Enterprise" (WBE) means an individual, partnership, corporation, limited liability company, or joint venture of any kind that is owned and

controlled by (1) or more persons who are (a) United States citizens; and (b) whose gender is female.

- 13.1.3 “Veteran-owned Business Enterprise” (VBE) means an Indiana firm with its principal place of business location in Indiana and is currently certified by the Department of Veterans Affairs as a veteran-owned business.

In order to count toward participation goals, the MBEs, WBEs and/or VBEs must be certified by the State of Indiana, the City of Indianapolis, or the Indiana Minority Supplier Development Council or other entity recognized by the state or federal government that provides certification of the sort.

Owner retains the discretion to hold payment, and/or to reject future bids submitted by the successful Contractor in the event that Contractor misrepresents either MBE/WBE/VBE participation in this Project, or its efforts to obtain MBE/WBE/VBE participation in this project, or fails to report MBE/WBE/VBE spend on this project.

### 13.2 Mandatory Tier II Reporting Requirement

The successful Contractor shall take all necessary and reasonable steps to ensure that MBE/WBE/VBEs have the maximum opportunity to compete for and perform work on this Contract. MBE/WBE/VBE utilization in the performance of this Contract must be reported monthly using the IU Online Tier II reporting System. Compliance with Owner’s Mandatory Tier II Reporting Requirement is a pre-condition for approval of pay applications. (For more information and training, see <https://supplierdiversity.iu.edu> and click on Online Spend Information in the OTTERS Section.)

## **ARTICLE 14 BID SECURITY AND FORFEITURE**

- 14.1 Bids shall be submitted with Bid Security in the form of a Bid Bond, Certified Bank Draft, or Cashier's Check, in the amount of five (5%) percent of the Bid, made payable to: "The Trustees of Indiana University, Bloomington, Indiana."
- 14.2 The Bid Security of the unsuccessful Bidders will be destroyed, after signing of a Contract or the rejection of bids.
- 14.3 Should the successful Bidder refuse to enter into a Contract for the performance of the Work in accordance with the terms of its Bid, the amount of the Bid Security shall be forfeited to the Owner as liquidated damages, not as a penalty.

## **ARTICLE 15 - BIDDING PROCEDURES**

- 15.1 All Bids must be prepared in the format provided by the Owner and submitted in accordance with these Instructions to Bidders.
- 15.2 The Bid Form must include the following information:
- Major Subcontractors
  - Alternate Proposals
  - Unit Prices
  - Completion Date

- Addenda Acknowledgment

15.3 In order to be complete, the Bid must include the following:

- Bid Form
- Contractor's Bid for Public Work – Form 96 (Revised 2013)
- Bid Bond – 5% of Bid
- Drug Testing Program, which must be in full compliance with Indiana Code 4-13-8
- Contractor Asbestos Certification
- Asbestos Protocol for Contractors
- Completed MBE/WBE/VBE Participation Plan; Certification of MBE/WBE/VBE status if Bidder is itself an MBE/WBE/VBE

Check boxes have been included above to assist the Bidder to ensure that its bid will not be rejected based on its failure meet these requirements.

15.4 One Bid Form and one copy of all other required documents shall be submitted, with all blank spaces appropriately filled in, with prices given in words and numerals, using ink or typewriter, with handwritten ink signature, or electronic signature if submitting electronically. The written prices shall govern where there is a discrepancy. Any modification shall be initialed.

15.5 Verbal proposals or modifications of proposals will not be considered for purposes of award of contract.

15.6 A Bid is invalid if it has not been received prior to the time and date for receipt of bids indicated in the Notice to Bidders, or prior to any extension thereof issued to the Bidders.

15.7 No Bidder shall modify, withdraw or cancel its bid or any part thereof for sixty (60) days after the time designated for the receipt of bids in the Notice to Bidders.

15.8 Bids shall be submitted as indicated in the Notice to Bidders, and received before 2:00 P.M. Eastern Time on the bid opening date.

#### **ARTICLE 16 - BID OPENING**

16.1 Bids will be opened publicly and read aloud.

16.2 Bids shall be valid and binding for a period of not less than sixty (60) days after the bid opening date. Alternate bids may be held for a period not to exceed ninety (90) days before award and incorporation into the contract by proper Change Directive.

16.3 Bid opening date shall be as indicated in the Notice to Bidders, or as changed by Addendum. Bids shall be received no later than 2:00 P.M. Eastern time.

#### **ARTICLE 17 - REJECTION OF BIDS**

17.1 The Bidder acknowledges the right of the Owner to reject any or all Bids and to waive any informality or irregularity in any Bid received.

17.2 The Bidder acknowledges and agrees that the Owner has the right to reject its bid if the bid is in any way incomplete, irregular, conditional, modified or obscure, or if the Bidder fails to furnish with its Bid any of the items identified in Sections 15.2 and 15.3.

## **ARTICLE 18 - SUBMISSION OF POST-BID INFORMATION**

- 18.1 Upon request by the Owner's Representative and Owner, a selected Bidder(s) shall, within 48 hours thereafter, submit the following:
- 18.1.1 A statement of costs for each major item of work included in its bid.
  - 18.1.2 A designation of the work to be performed by the Bidder with its own forces.
  - 18.1.3 A list of names of the subcontractors (firms doing work at the site) or other persons or organizations (including those who are to furnish materials or equipment) proposed for such portions of the work as may be designated in the bidding documents or, if no portions are so designated, the names of the subcontractors proposed for the principal portions of the work. The Bidder will be required to establish to the satisfaction of the Owner's Representative and the Owner the reliability and responsibility of the proposed Subcontractors to furnish and perform the work described in the Sections of the Specifications pertaining to such proposed Subcontractors' respective trades. The Owner's Representative will notify the Bidder in writing if either the Owner or the Owner's Representative, after due investigation, has reasonable and substantial objection to any person or organization on such list. If the Owner or Owner's Representative has a reasonable and substantial objection to any person or organization on such list, the Bidder shall submit the name of another person or organization, and continue to do so until all names of persons and organizations submitted are acceptable to the Owner and Owner's Representative.

Subcontractors and other persons and organizations proposed by the Bidder and accepted by the Owner and the Owner's Representative must be used on the work for which they were proposed and accepted and shall not be changed except with the written approval of the Owner and the Owner's Representative.

## **ARTICLE 19 – PERFORMANCE AND PAYMENT BOND, ESCROW AGREEMENT, AND OTHER REQUIRED DOCUMENTS**

- 19.1 A Bidder selected as a Prime Contractor shall be required to provide a Performance and Payment Bond in the full amount (100%) of its Total Contract price. The Bond shall be made with a Surety Company with a rating of, "A-," or above in the most recent edition of the "A.M. Best's Key Rating Guide." The Bond shall be written in the form provided by the Owner, "Performance and Payment Bond," and shall be delivered to the Owner within thirteen (13) calendar days of the date of the Notice to Proceed. Said Bond shall remain in full force and effect for a period of at least two (2) years after date of final acceptance of the Project. The bond shall be issued in the name of The Trustees of Indiana University and filed with VPCPF Support Resources – Construction Procurement.
- 19.2 The Bidder shall require the attorney in fact who executes the required Bond on behalf of the surety to affix thereto a certified and current copy of its power of attorney indicating the monetary limit of such power.
- 19.3 If awarded the Contract, the Bidder shall execute, along with the Construction Agreement, a formal Escrow Agreement as contemplated Division 00 Section 00 73 00.
- 19.4 If awarded the Contract, the Bidder shall provide to the Owner its Corporate Authority Signature Certificate and its W9 at the same time it returns the executed Construction

Agreement.

**ARTICLE 20 - AWARD OF CONTRACTS AND FORM OF AGREEMENT**

- 20.1 The Owner will award the Contract(s) on the basis of the lowest and best bid(s) in accordance with Indiana law, utilizing any stated alternates accepted and shall issue to the successful Bidder(s) a Notice to Proceed.
- 20.2 No awards will be made on the day of opening bids.
- 20.3 The selected Bidder(s), upon notification, shall enter into written contracts by executing a Construction Agreement with the Owner.
- 20.4 The Construction Agreement shall be copy bound in with the Specifications.

**ARTICLE 21 – MISCELLANEOUS**

- 21.1 If the Owner has hired a Construction Manager for this Project, the successful Bidder will be required to execute the following Addenda with regard to insurance requirements: “The Contractor shall add the Construction Manager as an additional insured on all insurance coverages required for this Project and shall provide Construction Manager with documentation that this coverage has been obtained.”

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# IU plans to make masks optional starting March 4

By **IU Today**

February 18, 2022

With COVID-19 cases declining rapidly at IU and throughout the state, the university intends to make masks optional at all campuses beginning March 4. The action will coincide with the anticipated expiration of state and county public health orders on that date.

Classrooms, residence halls, dining spaces, building common areas and IU Athletics venues are all examples of indoor spaces where mask use will be optional.

Masks will continue to be worn in health-care settings and research spaces.

Dr. Aaron Carroll, chief health officer for IU, says personal choice should increasingly drive decisions related to mask wearing and other precautions: “One-way masking — an individual’s decision to continue wearing a mask — is encouraged for anyone more comfortable wearing a mask in public spaces.”

IU will continue to distribute KN95 and N95 masks.

IU Fort Wayne follows protocols established by Purdue University Fort Wayne.

More information on IU’s COVID-19 policies can be found at <https://www.iu.edu/covid/>.

Also see: <https://www.iu.edu/covid/prevention/masks-and-ppe.html>





INDIANA UNIVERSITY  
CAPITAL PROJECTS

**MANDATORY Electronic Bid Submittal**

Only bids submitted electronically through the IU Plan Room website by 2:00 pm on bid day will be valid - [www.iuplanroom.com](http://www.iuplanroom.com).

Bidders must be registered on the plan room, and signed in to the plan room, in order to submit a bid.

To attend the virtual Bid Opening, click on *Zoom Meeting link for Bid Openings* on the home page of the plan room website. To view bid results after the bid opening, click on *VPCPF Construction Procurement – Bid Tabs & Awards* on the home page of the plan room website.

**BID SUBMITTAL PROCEDURE**

1. Save your completed IU Bid Form and additional required forms in Adobe PDF format. All bid documents may be scanned into one pdf, or separate pdf documents may be uploaded. Please keep the number of documents to a minimum. Title your bid as follows:

**“[your company name] – Bid for «IU Project\_Number» - «Project\_Title”**

2. Go to [www.iuplanroom.com](http://www.iuplanroom.com) and click on the *Sign In/Register* tab. If you are not already registered on IU Plan Room, you must create a User ID and Password and be signed in to submit your bid.
3. Click on the project listing.
4. Click on *Submit Bid* next to the job name on the information tab. Attach bid form and required supplemental bid documents per the project specifications.

EXCEPTION: **Do not upload financial statements to IU Plan Room.** Financial statements may be requested from the apparent low bidder.

5. Click on *Submit Bid* at bottom of screen.
6. You will receive a confirmation screen, stating that, “Your Bid Submission has been saved successfully,” as well as an email confirmation, indicating your submission was received.

For assistance with uploading, please contact Eastern Engineering:

- [FishersPlanRoom@easternengineering.com](mailto:FishersPlanRoom@easternengineering.com) Phone: 317-598-0661, Ext. 313

Indiana University reserves the right to disqualify any submittal received after the time and date indicated above. Indiana University reserves the right to select the firm or firms that best meets the needs of the University based on the submitter’s qualifications and experience.

Submittals that are incomplete, do not follow the format requested below, or otherwise unclear or contrary to the guidelines of this request may be rejected as non-responsive.





# 00 41 13 Bid Form

Bid Form

Contractor's Bid for Public Work – Form 96



**BID FORM**

for

IN115 Sports Complex Garage Elevators – Repair Cab/Controls  
Indiana University Indianapolis  
Indianapolis, Indiana  
IU 20220900

TO: The Trustees of Indiana University  
Bloomington, Indiana

**\*\*Submit bid online via [www.iuplanroom.com](http://www.iuplanroom.com)\*\***

FROM:

Bidder's Name \_\_\_\_\_

Address \_\_\_\_\_

City, State, Zip Code \_\_\_\_\_

Phone Number \_\_\_\_\_ FAX Number \_\_\_\_\_

CONTACTS:

Bid / Contract Information: Name: \_\_\_\_\_

Phone: \_\_\_\_\_ E-mail: \_\_\_\_\_

Proposed Project Manager: Name: \_\_\_\_\_

Phone: \_\_\_\_\_ E-mail: \_\_\_\_\_

Indicate if your firm is a certified minority-, women-, or veteran-owned business \_\_\_ Yes \_\_\_ No  
**If “Yes”, please attach a copy of certification**

FOR: **Unified Bid** to include General, Mechanical, and Electrical Construction Work

Bidders:

LUMP SUM BASE BID

The undersigned Bidder, with a complete understanding of existing conditions at the Project Site and a complete understanding of the Bidding Documents, including any Addenda acknowledged hereinafter, for IN115 Sports Complex Garage Elevators – Repair Cab/Controls on the Indiana University Indianapolis campus, as prepared by Guidon Design, LLC hereby proposes to complete the project, in full and complete accordance with the requirements of the Bidding documents, for the LUMP SUM BASE BID PRICE of:

\_\_\_\_\_ Dollars \$ \_\_\_\_\_  
(written amount) (numerals)

MAJOR SUBCONTRACTORS

Subcontractors and other persons and organizations proposed by the Bidder and accepted by the Owner and the Owner’s Representative must be used on the work for which they were proposed and accepted and shall not be changed except with the written approval of the Owner and the Owner’s Representative.

If requested, the supplemental Subcontractors and Products List will be submitted by email to the Owner, [bidtab@indiana.edu](mailto:bidtab@indiana.edu), and Guidon Design, LLC - [djohnson@guidon.com](mailto:djohnson@guidon.com) within 48 hours of the bid opening. The understanding of the Owner and the design team is that these same Major Subcontractors will be the same subcontractors listed below.

The Contractor proposes to utilize the following primary subcontractors for the work indicated.

**List one major subcontractor per trade.** Any deviation could result in the Owner removing the bid from consideration.

Indicate which are certified by the State of Indiana as an MBE, WBE, or VBE company by circling the M/W/VBE after the name.

Mechanical Subcontractor: \_\_\_\_\_ M/W/VBE

Electrical Subcontractor: \_\_\_\_\_ M/W/VBE

General Subcontractor: \_\_\_\_\_ M/W/VBE

ALTERNATE PROPOSALS

1. Alternate proposals are requested under Alternates of the Bidding Documents. (See Specification Index)
2. The alternate proposal shall indicate the amount to be added to or deducted from the Lump Sum Base Bid if the alternate proposal is accepted by the Owner.
3. The alternate proposal shall include all costs necessary for the complete installation of the materials or items indicated for the alternate proposal, including materials, labor, equipment, operations, administration, overhead, profit, and taxes (as applicable).
4. The alternate proposal shall also include all costs for changes in the work (including work of other Separate Contracts) that will be made necessary by acceptance of the alternate proposal.
5. The Bidder shall submit prices for all the alternates listed below in the manner indicated. Cross out (Add) or (Deduct) as applicable. If there is no change in price to the Lump Sum Base Bid, write in "No Change".

Alternate No. 1: New Cab Shells to 5 Elevators

(Add) (Deduct) \_\_\_\_\_ Dollars \$ \_\_\_\_\_  
(written amount) (numerals)

UNIT PRICES

1. The following Unit Prices shall include all costs necessary for the complete installation of the materials or items indicated, including materials, labor, equipment, operations, administration, overhead, profit and taxes (if applicable).

2. These Unit Prices shall be used to determine the costs for changes in the work during the construction period, when agreed upon by the Owner.
3. These Unit Prices are submitted as a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if estimated quantities of Work required by the Contract Documents are increased or decreased.
4. The Bidder shall submit one Unit Price for each of the following items, plus any other Unit Prices requested in the Bidding Documents, in the manner indicated.

<u>Item</u>	<u>Unit</u>	<u>Price</u>
1. Elevator Controls	_____	\$ _____
2. Elevator Cab Shell	_____	\$ _____

TAX EXEMPTIONS

The undersigned Bidder has informed himself and all his prospective sub-contractors and suppliers of the tax exempt status of the Owner, as set forth in the General Conditions, and therefore, has not included these taxes in his Lump Sum Base Bid price.

SUBSTITUTIONS

The undersigned Bidder has based his bid upon the materials, products, articles, equipment, brands, manufacturers and processes described in the Bidding Documents or upon approved equivalents. Proof of equivalency of substitutions is the responsibility of the Bidder, but the Architect/Engineer shall be the sole judge of equivalency. Proposed equivalent substitutions shall be equal in all respects to the requirements of the Bidding Documents, including but not limited to the design, quality, physical size, performance characteristics, strength, previous history of use, and to the method of installation, attachment, or connection to related or adjoining work. Determination of equivalency of proposed substitutions shall be by the Architect/Engineer, before the bid opening date, as described in paragraph entitled "Substitutions" in the Instructions to Bidders.

COMPLETION DATE

The Undersigned Bidder agrees to coordinate and expedite his work and shall take into consideration any lead time and schedule parameters with all contractors, and that this Work will be completed no later than **May 30, 2025**.

ASSIGNMENT OF COORDINATION

The undersigned Bidder agrees to the assignment of Mechanical and Electrical work to the successful General Contractor for the responsibility of complete coordination of the work as stated in the Instructions to Bidders.

PERFORMANCE AND PAYMENT BOND

The undersigned Bidder agrees, if awarded the Contract, to deliver to the Owner a satisfactory Performance Bond, in the full amount (100%) of the total Contract price, not later than the date of execution of the contract. The cost of the Bond shall be included in the Lump Sum Base Bid contained in this Proposal.

SUPPLEMENTAL AND REQUIRED DOCUMENTS

Bid Security; State Form 96 (Revised 2013); Written Drug Testing Program, which must be in full

compliance with IC 4-13-18; a completed Minority, Women’s and Veteran’s Business Enterprise Participation Plan; Contractor Asbestos Certification; Asbestos Protocol for Contractors.

ADDENDA

The following Addenda have been received by the undersigned Bidder; and all costs resulting from these Addenda have been included in the preparation of this Bid Form:

Addendum No. _____	Dated _____
Addendum No. _____	Dated _____
Addendum No. _____	Dated _____

SIGNATURES

**1. When a Bidder is an Individual:**

_____	_____
Witness	Bidder
Date: _____	Address: _____
	_____

**2. When a Bidder is a Partnership:**

	_____
	Name of Partnership
Date: _____	Address: _____
	_____
_____	_____
Partner	Partner

**3. When Bidder is a Corporation:**

	_____
	Name of Corporation
Date: _____	Address: _____
	_____
	By: _____
	President
Attest: _____	
Secretary	

END

**\*\*Submit bid online via [www.iuplanroom.com](http://www.iuplanroom.com)\*\***



# CONTRACTOR'S BID FOR PUBLIC WORK - FORM 96

State Form 52414 (R2 / 2-13) / Form 96 (Revised 2013)

Prescribed by State Board of Accounts

## PART I

*(To be completed for all bids. Please type or print)*

Date (month, day, year): \_\_\_\_\_

1. Governmental Unit (Owner): \_\_\_\_\_

2. County : \_\_\_\_\_

3. Bidder (Firm): \_\_\_\_\_

Address: \_\_\_\_\_

City/State/ZIPcode: \_\_\_\_\_

4. Telephone Number: \_\_\_\_\_

5. Agent of Bidder (if applicable): \_\_\_\_\_

Pursuant to notices given, the undersigned offers to furnish labor and/or material necessary to complete the public works project of \_\_\_\_\_

(Governmental Unit) in accordance with plans and specifications prepared by \_\_\_\_\_

\_\_\_\_\_ and dated \_\_\_\_\_ for the sum of

\_\_\_\_\_ \$ \_\_\_\_\_

The undersigned further agrees to furnish a bond or certified check with this bid for an amount specified in the notice of the letting. If alternative bids apply, the undersigned submits a proposal for each in accordance with the notice. Any addendums attached will be specifically referenced at the applicable page.

If additional units of material included in the contract are needed, the cost of units must be the same as that shown in the original contract if accepted by the governmental unit. If the bid is to be awarded on a unit basis, the itemization of the units shall be shown on a separate attachment.

The contractor and his subcontractors, if any, shall not discriminate against or intimidate any employee, or applicant for employment, to be employed in the performance of this contract, with respect to any matter directly or indirectly related to employment because of race, religion, color, sex, national origin or ancestry. Breach of this covenant may be regarded as a material breach of the contract.

### CERTIFICATION OF USE OF UNITED STATES STEEL PRODUCTS

*(If applicable)*

I, the undersigned bidder or agent as a contractor on a public works project, understand my statutory obligation to use steel products made in the United States (I.C. 5-16-8-2). I hereby certify that I and all subcontractors employed by me for this project will use U.S. steel products on this project if awarded. I understand that violations hereunder may result in forfeiture of contractual payments.



ACCEPTANCE

The above bid is accepted this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, subject to the following conditions: \_\_\_\_\_

Contracting Authority Members:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

PART II

(For projects of \$150,000 or more – IC 36-1-12-4)

Governmental Unit: \_\_\_\_\_

Bidder (Firm) \_\_\_\_\_

Date (month, day, year): \_\_\_\_\_

These statements to be submitted under oath by each bidder with and as a part of his bid. Attach additional pages for each section as needed.

SECTION I EXPERIENCE QUESTIONNAIRE

1. What public works projects has your organization completed for the period of one (1) year prior to the date of the current bid?

Table with 4 columns: Contract Amount, Class of Work, Completion Date, Name and Address of Owner. Contains 4 empty rows.

2. What public works projects are now in process of construction by your organization?

Table with 4 columns: Contract Amount, Class of Work, Expected Completion Date, Name and Address of Owner. Contains 4 empty rows.

3. Have you ever failed to complete any work awarded to you? \_\_\_\_\_ If so, where and why?

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4. List references from private firms for which you have performed work.

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### SECTION II PLAN AND EQUIPMENT QUESTIONNAIRE

1. Explain your plan or layout for performing proposed work. *(Examples could include a narrative of when you could begin work, complete the project, number of workers, etc. and any other information which you believe would enable the governmental unit to consider your bid.)*

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2. Please list the names and addresses of all subcontractors *(i.e. persons or firms outside your own firm who have performed part of the work)* that you have used on public works projects during the past five (5) years along with a brief description of the work done by each subcontractor.

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3. If you intend to sublet any portion of the work, state the name and address of each subcontractor, equipment to be used by the subcontractor, and whether you will require a bond. However, if you are unable to currently provide a listing, please understand a listing must be provided prior to contract approval. Until the completion of the proposed project, you are under a continuing obligation to immediately notify the governmental unit in the event that you subsequently determine that you will use a subcontractor on the proposed project.

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4. What equipment do you have available to use for the proposed project? Any equipment to be used by subcontractors may also be required to be listed by the governmental unit.

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5. Have you entered into contracts or received offers for all materials which substantiate the prices used in preparing your proposal? If not, please explain the rationale used which would corroborate the prices listed.

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### SECTION III CONTRACTOR'S FINANCIAL STATEMENT

Attachment of bidder's financial statement is mandatory. Any bid submitted without said financial statement as required by statute shall thereby be rendered invalid. The financial statement provided hereunder to the governing body awarding the contract must be specific enough in detail so that said governing body can make a proper determination of the bidder's capability for completing the project if awarded.



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**BID OF**

\_\_\_\_\_ (Contractor)

\_\_\_\_\_ (Address)

\_\_\_\_\_

**FOR**

**PUBLIC WORKS PROJECTS**

**OF**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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Filed \_\_\_\_\_, \_\_\_\_\_

Action taken \_\_\_\_\_

\_\_\_\_\_

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# 00 43 00

## Procurement Form Supplements

Contractor Asbestos Certification Form

Asbestos Protocol for Contractors Form

E-Verify Affidavit

Indiana Worker's Compensation Certificate of Compliance

Escrow Agreement

Old National Wealth Management – awards in excess of \$200,000



**CONTRACTOR ASBESTOS CERTIFICATION**

TO: INDIANA UNIVERSITY

The Contractor certifies that:

No asbestos containing material was selected as a building material for this project. For all materials used on the project which were marked on the material or on the packaging the following or similar wording "May contain mineral fibers" the contractor will have on file, with copies provided to the owner, either of the following – (1) The manufacturer's certification that the material does not contain asbestos or (2) Laboratory results from an EPA accredited laboratory indicating the material does not contain asbestos in accordance with EPA and OSHA requirements.

IU Project Name and Number: \_\_\_\_\_

Contractor Firm: \_\_\_\_\_

Contractor Name: \_\_\_\_\_

Contractor Signature: \_\_\_\_\_ Date \_\_\_\_\_





## Asbestos Protocol for Contractors Communication of Hazards

Asbestos-containing materials (ACM) exist in many buildings constructed prior to January 1, 1981. Pursuant to the OSHA Construction Industry Asbestos Standard 29 CFR 1926.1101, "Communication of Hazards," a building owner is required to inform contractors doing demolition or renovation of the presence, location and quantity of ACM found at the work sites in its buildings. The IU Environmental Health and Safety Department (EHS) performs the asbestos inspection of buildings on the IU campuses and, if necessary, will conduct or oversee the safe removal of all known and accessible ACM prior to renovation or demolition work.

EHS generates a post-inspection Asbestos Notice of each work site, which identifies building materials that are visible or otherwise known to be present at the site at the time of inspection as being "Non-ACM" or "ACM."

**The inspection, and therefore the information contained in the notice, is limited to what is visible to the inspector at the time of the inspection.** This means that during the course of construction work, it is possible to encounter ACM that was not identified on the notice because of the physical limitations on the Asbestos Inspector's ability to see and identify ACM at the time of the inspection. Contractors are expected to have knowledge of the types and likely locations of ACM generally found in building materials and to be able to make visual identification of ACM and must provide documentation that each employee has attended Asbestos Awareness Training within the last calendar year.

Under no circumstances are contractors permitted to disturb ACM. Contractors are required to stop work immediately upon discovering suspected ACM and to make a report to the owner's Project Manager. The Project Manager may direct the contractor to the EHS office if a disturbance has occurred and/or to coordinate additional surveying.

### For the Contractor

I understand and agree that the employees and agents of my company and/or the employees and agents of my company's subcontractor(s) are prohibited from disturbing ACM.

I understand and agree that, upon the discovery of ACM or suspected ACM at the worksite, work shall be stopped immediately and a report of the discovery made to the owner's Project Manager. I agree that my employees, agents and/or the employees and agents of my subcontractor(s) will comply with the directions of the Owner's Project Manager with regard to responding to the discovery or disturbance of ACT.

I understand and agree that failure on the part of my employees and agents and/or the employees and agents of my subcontractor(s) to comply with the above requirements may result in fines being imposed against my company or the owner, or both, by the Indiana Department of Environmental Management (IDEM), or by other federal, state, county or municipal authorities. I agree I will reimburse the owner for any costs incurred by the owner based on violations of this protocol by my employees or agents and/or the employees or agents of my subcontractor(s), including but not limited to fines, penalties, attorneys fees and/or court costs.

I have read and understand these requirements:

\_\_\_\_\_  
Contractor Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
IU Project Number

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
IU Project Title



**This affidavit will be requested of the contractor awarded the project**

**E-VERIFY AFFIDAVIT**

The undersigned, being first duly sworn, states and deposes that:

1. He or she is a representative of the Company identified below, and is authorized to make this affidavit on behalf of the Company.

2. Pursuant to Indiana Code 22-5-1.7-11, a contractor, vendor or other service provider who enters into an agreement to provide work or services to The Trustees of Indiana University, Bloomington, Indiana, is required to enroll in and verify the work eligibility status of all its newly hired employees through the electronic verification of work authorization program of the Illegal Immigration Reform and Immigration Responsibility Act of 1996, as amended (the "E-Verify Program").

3. Based on the above, the undersigned hereby confirms that:

- a) The Company has enrolled in, and is participating in, the E-Verify Program; and
- b) The Company does not knowingly employ any unauthorized aliens.

I swear or affirm, under the penalties for perjury, that the foregoing statements are true.

\_\_\_\_\_  
*Company Name*

\_\_\_\_\_  
*Signature*

\_\_\_\_\_  
*Printed Name*

\_\_\_\_\_  
*Title*

\_\_\_\_\_  
*IU Project Number*

\_\_\_\_\_  
*IU Project Title*

\_\_\_\_\_  
*IU Project Title continued*

STATE OF \_\_\_\_\_ )  
 )SS:  
COUNTY OF \_\_\_\_\_ )

Before me, a Notary Public in and for said County and State, personally appeared \_\_\_\_\_, the \_\_\_\_\_ of \_\_\_\_\_, who being first duly sworn, acknowledged the execution of this E-Verify Affidavit, and stated that the facts and matters therein set forth are true and correct to the best of his or her knowledge.

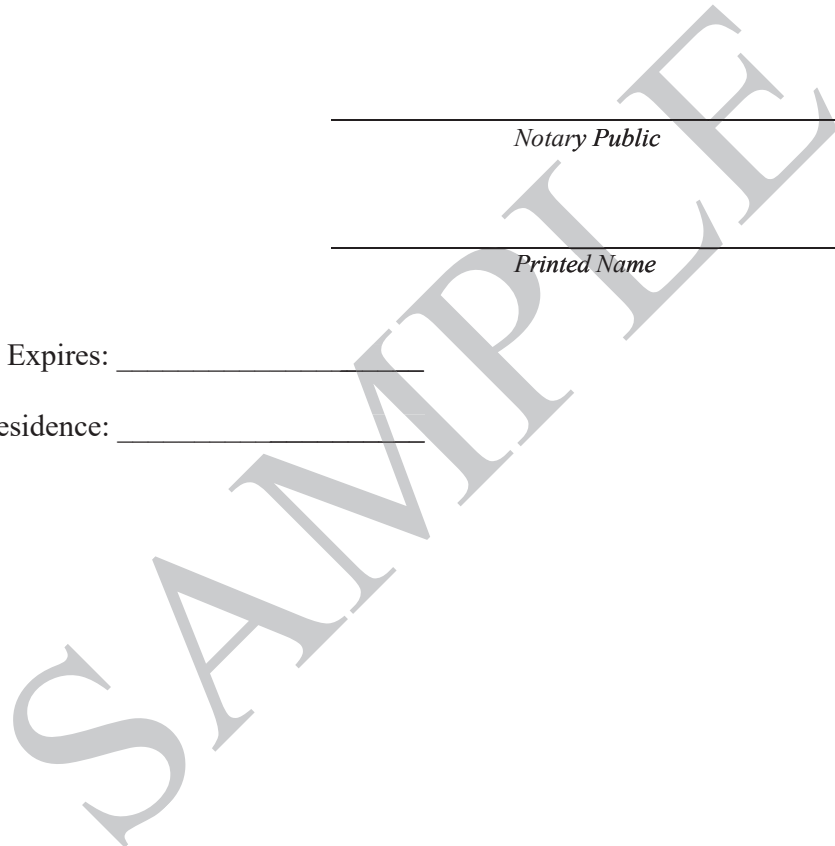
Witness my hand and Notarial Seal this \_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

\_\_\_\_\_  
*Notary Public*

\_\_\_\_\_  
*Printed Name*

My Commission Expires: \_\_\_\_\_

My County of Residence: \_\_\_\_\_



**CERTIFICATE OF COMPLIANCE**  
**Worker's Compensation and Occupational Diseases**  
 State Form 41321 (R3 /1-13)

This is to certify that, pursuant to 631 IAC 1-1-30, as of this date the named Employer is in compliance with the following sections of the Indiana Worker's Compensation Act and the Occupational Diseases Act, as set out below. IC 22-3-2-5, 22-3-5-1, 22-3-5-2, 22-3-7-34.

Employer:
-----------

<input type="checkbox"/> Self-Insured  <input type="checkbox"/> <u>INSURANCE COMPANY NAME</u>		
Policy number	Effective Date	Expiration Date

Validation Stamp:  
**VALID**

NOTE: Coverage may expire prior to the date indicated if cancelled by Employer or the insurance carrier following notice to the Board pursuant to IC 22-3-5-5.

This document may be reproduced. Additional original certifications may be purchased from the Indiana Worker's Compensation Board. For further information contact the Compliance Division at (317) 232-5922

Certification Date (month, day, year)	Verifier
Executive Administrator:	

(Certificate is not valid unless stamped, signed and initialed.)

**This form will be requested from the contractor awarded the project.**

Request form online: <https://wcbgateway.wcb.in.gov/WCBToolsAngular/certificateofcompliance>

Email form to [bidtab@iu.edu](mailto:bidtab@iu.edu). Reference the IU project number and title in the subject line of the email.



**ESCROW AGREEMENT**  
(Contracts in Excess of \$200,000.00)

THIS ESCROW AGREEMENT is made as of «Commitment\_NotifyToProceedDate», between **The Trustees of Indiana University** (“Owner”) and «Company\_Name» of «Company\_City» (the “Contractor”), and **Old National Wealth Management** (the “Escrow Agent”).

Concurrently herewith, the Owner and the Contractor have entered into a Construction Contract which is in excess of Two Hundred Thousand Dollars (\$200,000.00) dated «Commitment\_NotifyToProceedDate», covering «PROJECT\_NAME».

1. The Construction Contract requires Owner to retain certain funds in an escrow account for payments to Contractor, and the Owner and Contractor have agreed that such funds shall be placed in an escrow account pursuant to the terms of this Escrow Agreement. This Escrow Agreement shall have no application to situations where payment is withheld by the Owner pursuant to provisions of the Construction Contract or other provisions unrelated to this Escrow Agreement, such as where those provisions are intended to protect the Owner from loss on account of: defective work not remedied; claims filed on reasonable evidence; failure of the Contractor to make payments when due to subcontractors, or for material or labor; reasonable doubt that the contract can be completed for the balance then unpaid; damage to another Contractor; failure or refusal of the Contractor to prosecute the work in strict compliance with applicable progress schedules; any similar provisions; or for any other reason described in contract provisions entered into between the Owner and Contractor and not related to this Escrow Agreement. Additionally, this Escrow Agreement shall not be construed as a waiver of Owner’s rights to said deposited funds as security or payment for damages which might become due Owner from Contractor under the terms of said Construction Contract.
2. The Escrow Agent shall promptly invest all escrowed principal in the trust department master savings account, or such other interest-bearing account as shall be selected by the Escrow Agent in its reasonable discretion.
3. The interest or other income earned on funds in the account shall accrue until termination of the agreement
4. The income from and earnings on and all gains derived from the investment and reinvestment of the funds (escrow income) shall be held in the escrow account(s). The Escrow Agent Fee of \$350.00 is a one-time fee which shall be taken first from any earnings on account deposits.
5. The Escrow Agent shall provide to the Owner monthly statements with the balances and earnings for the account.
6. The Escrow Agent may commingle the escrow funds with other escrow funds or invested construction funds held by it pursuant to other escrow agreements or trust instruments to which Owner or Contractor are parties. To expedite the handling of the investments and reinvestments of the escrow funds, the Escrow Agent may cause all savings accounts, securities, obligations and investments (other than bearer instruments) to be registered in its own name, or in the name of its nominee or nominees, or in such form that title may pass by delivery.



- 7. The Escrow Agent shall hold all of the escrow funds and shall release the principal and income thereof only upon the execution and delivery to it of an escrow release executed by the Owner and by the Contractor specifying any portion or portions of the principal and income of the escrow funds to be released and the person or persons to whom such portions are to be released. Such release of escrow funds shall be no more than sixty (60) days from date of receipt by the Escrow Agent of the release executed by the Owner and Contractor.
- 8. Each signatory to this agreement warrants that it has full and complete authority to enter into this Escrow Agreement.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

**OWNER & ADDRESS**

The Trustees of Indiana University  
2901 East Discovery Parkway  
Bloomington IN 47408  
«Company\_Zip»

**CONTRACTOR & ADDRESS**

«Company\_Name»  
«Company\_Address»  
«Company\_City», «Company\_State»,

BY: \_\_\_\_\_  
Donald S. Lukes  
Treasurer

BY: \_\_\_\_\_

**ESCROW AGENT**

**Old National Wealth Management  
P.O. Box 207, Evansville, IN 47702-0207**

BY: \_\_\_\_\_

Attest: \_\_\_\_\_

00 43 39  
Minority Business Enterprise Participation  
Plan

Minority, Women's and Veteran's Business Enterprise  
Participation Plan



**MINORITY, WOMEN’S AND VETERAN’S BUSINESS ENTERPRISE PARTICIPATION PLAN**

The Bidder/Firm must submit with its bid/proposal a Minority, Women’s and Veteran’s Business Enterprise Participation Plan. Minority Business Enterprise (MBE), Women’s Business Enterprise (WBE) and Veteran’s Business Enterprise (VBE) are defined below. In this Plan, the Bidder/Firm must show that there are certified by the State of Indiana (see below) MBE/WBE/VBE(s) participating in the project. Participation may be as a subcontractor or second tier participation with common suppliers. The Bidder/Firm must indicate the name of the MBE/WBE/VBE(s) with which it will work; the contact name and phone number of the MBE/WBE/VBE(s); the service supplied by the MBE/WBE/VBE(s); and the specific dollar amount from the project that will be directed toward each MBE/WBE/VBE. Please note: If the Trade is an overhead item for your entire business, please calculate the proportion of the business that will actually apply to the project in question.

Documentation of the Bidder’s/Firm’s good faith effort to meet the participation goal must be submitted at bid time; see Page 3 of this form.

Contractors will find a listing of all MBE/WBE/VBE suppliers certified by the State of Indiana at the following website: [www.in.gov/idoa/mwbe/2743.htm](http://www.in.gov/idoa/mwbe/2743.htm)

Failure to provide a completed Plan at the time of bid/proposal submission will result in the rejection of the bid/proposal. A completed plan shall include evidence of the good faith efforts of the Bidder/Firm to include Minority, Women's and Veteran's Business Enterprises in the project. Indiana University reserves the right to verify all information included in the Minority, Women’s and Veteran’s Business Enterprise Participation Plan before making final determination of the Bidder’s/Firm’s responsiveness and responsibility.

By submission of the bid/proposal, the Bidder/Firm thereby acknowledges and agrees to be bound by the IU Business Diversity Initiative. Questions involving the Minority, Women’s and Veteran’s Business Enterprise Participation Plan should be directed to the IU Supplier Diversity Department at 317/278-5384.

Definitions:

- a. “Minority-owned Business Enterprise” (MBE) means an individual, partnership, corporation, limited liability company, or joint venture of any kind that is owned and controlled by (1) or more persons who are (a) United States citizens; and (b) members of a racial minority group: African American, American Indians, Hispanics, Asian Americans or other similar minority group as defined by 13 CFR 124.103
- b. “Woman-owned Business Enterprise” (WBE) means an individual, partnership, corporation, limited liability company, or joint venture of any kind that is owned and controlled by (1) or more persons who are (a) United States citizens; and (b) whose gender is female.
- c. “Veteran-owned Business Enterprise” (VBE) means an Indiana firm with its principal place of business located in Indiana and is currently certified by the Department of Veterans Affairs as a veteran-owned business.

**MBE/WBE/VBE PARTICIPATION PLAN**

PROJECT # \_\_\_\_\_ BID/PROPOSAL DUE DATE \_\_\_\_\_

PROJECT NAME \_\_\_\_\_

BIDDER/FIRM \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY/STATE/ZIP \_\_\_\_\_

PHONE: (     ) \_\_\_\_\_

EMAIL: \_\_\_\_\_

URL: \_\_\_\_\_

MBE, WBE, VBE Participation Plan

BIDDER/FIRM \_\_\_\_\_ PROJECT # \_\_\_\_\_

PROJECT NAME \_\_\_\_\_

The following certified minority, women and/or veteran -owned firms will be participating in the project according to the following schedule. Indicate whether each firm is an MBE, WBE or VBE by selecting the MBE, WBE or VBE box below.

\*\*E-mail each firm's certification document, within 48 hours post-bid, to the Owner @ bidtab@indiana.edu.\*\*

1.	Firm:	Trade:	Amount:
	MBE <input type="checkbox"/> WBE <input type="checkbox"/> VBE <input type="checkbox"/>	Contact:	
	Phone:	E-mail:	
2.	Firm:	Trade:	Amount:
	MBE <input type="checkbox"/> WBE <input type="checkbox"/> VBE <input type="checkbox"/>	Contact:	
	Phone:	E-mail:	
3.	Firm:	Trade:	Amount:
	MBE <input type="checkbox"/> WBE <input type="checkbox"/> VBE <input type="checkbox"/>	Contact:	
	Phone:	E-mail:	
4.	Firm:	Trade:	Amount:
	MBE <input type="checkbox"/> WBE <input type="checkbox"/> VBE <input type="checkbox"/>	Contact:	
	Phone:	E-mail:	

**If additional room is necessary, please attach a separate page.**

By my signature, I certify that the above statements are true and accurate, all as of the date below. I also understand that any changes to this plan must be approved by Indiana University and documented by Construction Change Directive.

\_\_\_\_\_  
Agent of Bidder

\_\_\_\_\_  
Date

MBE, WBE, VBE Participation Plan

BIDDER/FIRM \_\_\_\_\_ PROJECT # \_\_\_\_\_

PROJECT NAME \_\_\_\_\_

Describe below your good faith efforts to obtain certified minority, women's and veteran's business enterprise participation for this project. Be sure to attach a copy of all solicitation efforts, e.g., ads that were published or networking events, etc.

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As part of the Bidder/Firm's good faith efforts, list below the MBE/WBE/VBE contractors you individually contacted, requesting a quote for this project. Please ensure that reasonable time and information is provided to the potential MBE/WBE/VBE contractors to allow for a response.

Check all that apply:

MBE, WBE, VBE firms contacted (company name and commodity)	Method of contact (i.e. phone or fax number, e-mail or mailing address AND contact name)	MBE	WBE	VBE	Quote Received Not Low	No Response
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If extra space is necessary, please attach additional pages.

**PAGES 1, 2, AND 3 OF THIS DOCUMENT MUST BE SUBMITTED WITH THE BID**



# 00 52 13 Agreement Form

Indiana University Construction Agreement





## CONSTRUCTION AGREEMENT

This contract made Notice To Proceed Date, by and between Contractor and The Trustees of Indiana University, Bloomington, Indiana (“Owner”).

**Article I. Scope of Work:** The Contractor shall perform all labor, furnish all materials and equipment necessary to complete the contract for all work, all in accordance with the Contract Documents prepared by Architect of Record,

**Titled:** IU Project # - IU Project Name

which Contract Documents are made a part of this contract, and shall do everything required by this Agreement and Contract Documents.

**Article II. The Contract Documents:** The Contract Documents are the Notice to Bidders, Instructions to Bidders, Bid Forms, Division 00 and 01, the General Conditions of the Contract for Construction Between Owner and Contractor, Supplementary Conditions, Notice to Proceed, Drawings, Specifications, this Construction Agreement, Addenda issued prior to execution of this Construction Agreement, any other documents listed in this Construction Agreement, approved Schedules (per General Conditions §3.10.4), and Modifications issued after execution of this Construction Agreement. A Modification is (1) a written amendment to the Contract signed by both parties; (2) a Construction Change Directive; or (3) a written order for a minor change in the Work issued by the Owner’s Representative.

The following is an enumeration of the Specifications and Drawings:

**Specifications**

Owner - Contractor Agreement  
Conditions of the Contract (General and Supplementary)  
Specifications Sections of Divisions 0 through 33, all as listed on the Table of Contents in the Specification.

**Drawings**

All as listed on the Title Sheet of the Drawings.

**Article III, Contract Price:** The Owner shall pay to the Contractor for the performance of this contract, subject to any additions or deductions provided herein, in current funds as follows:

Commitment Item	Award Amount
Total Contract Amount	

**Article IV, Time of Completion:** Construction Period. No project schedule extensions will be allowed unless approved by Indiana University via a CCD.

**Article V, Required Documents:** Along with this executed Construction Agreement, the Contractor shall provide the Owner with an Executed Escrow Agreement, if required, its Corporate Authority Signature Certificate, and its W9. The Contractor acknowledges and agrees that the insurance documentation required by the General Conditions, Article 11, was to be submitted to the Owner within fourteen (14) calendar days of the date of the Notice to Proceed.

**Article VI, Assignment of Coordination:** The coordination of the work of all contractors shall be assigned to the General Contractor on this Project. Said assignment of coordination of the work of all Contractors to the General Contractor is for the purpose of placing with one contractor, namely Company Name, the full and complete responsibility for coordination of and expediting all the work required for the construction of this Project. The Contractor expressly accepts this assignment of coordination as a condition of its Contract.

**Article VII, Terms of Payments:** The Owner will make monthly progress payments directly to the Contractor under the terms set forth in the General Conditions, and Addenda thereto, and upon the written approval of the Owner's Representative for each monthly payment request submitted. On a multiple-Prime Project, the General Contractor shall report to the Owner's Representative any circumstances known to it that will assist the Owner's Representative in making a determination as to whether to withhold certification of an Application for Payment submitted by another Prime Contractor based on any of the reasons set forth in Section 9.5.1 of the General Conditions.

**In witness whereof**, the parties hereto have executed this Agreement, the Day and Year first above written:

"Owner"

"Contractor"

**The Trustees of Indiana University**

**Company Name**

By:

By:

\_\_\_\_\_  
Donald S. Lukes, Treasurer

\_\_\_\_\_  
Name/Title

SEAL

SEAL

ATTEST:

ATTEST:

\_\_\_\_\_  
Andrea Havill, Secretary

\_\_\_\_\_  
Name/Title

SAMPLE



# 00 61 13 Performance and Payment Bond Form

Performance and Payment Bond Form



Bond #

PERFORMANCE AND PAYMENT BOND

KNOW ALL MEN: That we

(Here insert the name and address or legal title of the Contractor) hereinafter called the Principal, and

hereinafter called the Surety or Sureties, are held and firmly bound unto The Trustees of Indiana University, hereinafter called the Owner, in the sum of:

for payment whereof the Principal and the Surety or Sureties bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has, by means of a written Agreement, dated: \_\_\_\_\_ entered into a contract with the Owner for

a copy of which Agreement is by reference made a part hereof:

NOW THEREFORE, the condition of this Obligation is such that, if the Principal shall faithfully perform the Contract on its part and shall fully indemnify and save harmless the Owner from all cost and damage which the Owner may suffer by reason of failure to do so and shall fully reimburse and repay the Owner all outlay and expense which the Owner may incur in making good any such default,

and further that, if the Principal shall pay all persons who have contracts directly with the Principal for labor or materials, and all employees, persons, firms, or corporations who have just claims and demands for labor or materials furnished or used in connection with the prosecution of the work under the contract, failing which such persons shall have a direct right of action against the Principal and Surety under this obligation, subject to the Owner's option and priority, then this obligation shall be null and void, otherwise it shall remain in full force and effect.

The said surety for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract, or to the work to be performed thereunder, or the specifications accompanying them, shall in any way affect its obligations on this bond, and it



does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract, or to the work or to the specifications.

PROVIDED, however, that no suit, action or proceeding by reason of any default whatever shall be brought on this Bond after two years from the date of final payment.

AND PROVIDED, that any alterations which may be made in the terms of the Contract, or in the work to be done under it, or the giving by the Owner of any extension of time for the performance of the Contract, or any other forbearance on the part of either the Owner or the Principal to the other shall not in any way release the Principal and the Surety or Sureties, or either or any of them, their heirs, executors, administrators, successors or assigns from their liability hereunder, notice to the Surety or Sureties of any such alterations, extension or forbearance being hereby waived.

Signed and Sealed this \_\_\_\_\_ day of \_\_\_\_\_ 20 \_\_\_\_\_

In presence of :

\_\_\_\_\_) (SEAL)  
    )As to \_\_\_\_\_  
\_\_\_\_\_) \_\_\_\_\_  
    ) (SEAL)  
    )As to \_\_\_\_\_  
\_\_\_\_\_) \_\_\_\_\_  
    ) (SEAL)  
    )As to \_\_\_\_\_  
\_\_\_\_\_) (SEAL)

# 00 73 00 Supplementary Conditions

Escrow Agreement

Requirements for Contractors on Public Works Projects



## ESCROW AGREEMENT

Pursuant to IC 5-16-5.5 and the Contract Documents, Contractor and Owner agree that Owner shall retain a certain percentage from progress payments and place that retainage in an escrow account under the control of a bank, savings and loan institution or the State of Indiana or an instrumentality thereof, selected by mutual agreement of the parties ("Escrow Agent"), for the purpose of accumulating and sharing the benefits which might accrue through normal interest payments. The parties shall execute a formal Escrow Agreement with the Escrow Agent, and the retainage shall be promptly invested with the Escrow Agent until such retainage is ordered released by the Owner or by other legal action, at which time the amount withheld plus accrued interest shall be paid to the Contractor, less service charges as specified in the Escrow Agreement. The Escrow Agreement shall be executed by the Contractor in accordance with Section 3.1.5 of the General Conditions and shall be one of the Contract Documents.

## REQUIREMENTS FOR CONTRACTORS ON PUBLIC WORKS PROJECTS

- A. E-Verify.
1. Contractor shall enroll in and verify the work eligibility status of all newly hired employees of the Contractor through the E-Verify program as described in IC 22-5-1.7-3. Contractor is not required to verify the work eligibility status of all newly hired employees through the E-Verify program if the E-Verify program no longer exists. Prior to commencing the Work, Contractor shall sign and provide an affidavit, in a form acceptable to Owner, affirming that the Contractor does not knowingly employ any unauthorized aliens. Neither Contractor nor any of its Subcontractors may knowingly (a) employ or contract with an unauthorized alien or (b) retain an employee or contract with a person that the Contractor or Subcontractor subsequently learns is an unauthorized alien. If Contractor uses a Subcontractor to provide work or services for any portion of the Work, Contractor must obtain certification from the Subcontractor that the Subcontractor, at the time of certification (a) does not knowingly employ or contract with any unauthorized aliens, and (b) has enrolled and is participating in the E-Verify program.
  2. Prior to commencing any work, Contractor agrees, and represents to Owner, that Contractor and all subcontractors of any tier that furnishes any portion of the Work, either directly or indirectly to Contractor (collectively referred to herein as "Subcontractors"), will submit the E-Verify case verification number for each individual who is required to be verified under IC 22-5-1.7 prior to commencing work in

connectionwith the Project.

- B. Contractor agrees, and represents to Owner, that at least 15% of the ContractPrice (at the time this Agreement is executed) is comprised of any combination of the following:
1. Work performed by Contractor's employees;
  2. Services supplied directly by Contractor's employees; or
  3. Materials supplied directly by Contractor.
- C. Contractor agrees, and represents to Owner, that Contractor and Subcontractors will comply with the following employee related programs and laws during theProject:
1. Contractor and Subcontractors will not pay cash to any employee forany work performed on the Project.
  2. Contractor and Subcontractors are, and will continue to be duringthe Project, in compliance with the following:
    - (a) The Federal Fair Labor Standards Act of 1938, as amended andIC 22-2-2-1 through IC 22-2-2-8;
    - (b) IC 22-3-5-1 and IC 22-3-7-4; and (c)IC 22-4-1 through IC 22-4-39.5.

## Appendix B –

00 72 13

# AIA A201-2017 General Conditions of the Contract for Construction as amended by Indiana University

VPCPF Support Resources - Construction Procurement  
2901 East Discovery Parkway  
Bloomington, IN 47408  
812-855-5294  
[bidtab@iu.edu](mailto:bidtab@iu.edu)





# AIA® Document A201® – 2017

## General Conditions of the Contract for Construction

for the following PROJECT:  
*(Name and location or address)*

**THE OWNER:**  
*Indiana University*

**THE ARCHITECT:**  
*(Name, legal status and address)*

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- 3 CONTRACTOR
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- 5 SUBCONTRACTORS
- 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS
- 7 CHANGES IN THE WORK
- 8 TIME
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- 10 PROTECTION OF PERSONS AND PROPERTY
- 11 INSURANCE AND BONDS
- 12 UNCOVERING AND CORRECTION OF WORK
- 13 MISCELLANEOUS PROVISIONS

### ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

For guidance in modifying this document to include supplementary conditions, see AIA Document A503™, Guide for Supplementary Conditions.

Init.



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## **ARTICLE 1 GENERAL PROVISIONS**

### **§ 1.1 Basic Definitions**

#### **§ 1.1.1 The Contract Documents**

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) including the attached Exhibits and consist of the Agreement, Conditions of the Contract (these Conditions, as modified, Indiana University Division 00 and 01, Drawings, Specifications, Construction Agreement), and Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Construction Change Directive, or (3) a written order for a minor change in the Work issued by the Owner Representative. The Contract Documents also include but are not limited to the Project Bid Documents (including the Instructions to Bidders, Division 00 and 01, and Contractor's Bid Form and Proposal, Notice to Proceed, Substantial Completion), and any other documents specifically agreed to by Owner and Contractor to be included in the Contract Documents. Performance and Payment Bonds as covered in Indiana University Division 00 and 01 shall be considered a part of the Contract Documents.

#### **§ 1.1.2 The Contract**

The Contract Documents form the Contract for Construction. 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 Owner Representative or the Owner Representative consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Owner Representative or the Owner Representative consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Owner Representative shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Owner Representative duties. Notwithstanding the above, Owner shall be considered a third-party beneficiary of the contracts or agreements between Contractor and Subcontractor.

#### **§ 1.1.3 The Work**

The term "Work" means 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. By bidding to perform the Work, Contractor acknowledges and agrees that the Contract Documents are sufficient to provide for the completion of the Work and include Work, whether or not shown or described, which reasonably may be inferred from drawings and specifications to be required or useful for the completion of the Work in accordance with applicable laws, codes, statutes, and customary standards of the construction industry.

#### **§ 1.1.4 The Project**

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors, such as Furniture, Fixtures, Equipment (FFE), whereby Contractor is obligated to assist for a fully functional and completed project.

#### **§ 1.1.5 The Drawings**

The Drawings 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, schedules, and diagrams.

#### **§ 1.1.6 The 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.

#### **§ 1.1.7 Instruments of Service**

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, the Drawings, Specifications, Estimates, Schedules, Building Information Model for the Project - studies, surveys, models, sketches, drawings,

specifications, other similar materials electronic data, information and other documents, including those in electronic form, prepared, provided or procured by Architect during the course of furnishing services to Owner on this Project.

### **§ 1.1.8 Initial Decision Maker**

The Initial Decision Maker shall be the Architect for the purpose of rendering initial decisions on Claims. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

### **§ 1.2 Correlation and Intent of the Contract Documents**

**§ 1.2.1** The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated or intended results. Details of preparation, construction, installation, and finishing encompassed by the Contract Documents shall conform to the best practices of the respective trades. Where specific recognized standards are mentioned in the Specifications, it shall be interpreted that such requirements shall be complied with and met.

*(Paragraph deleted)*

**§ 1.2.2** Contractor shall promptly call to the attention of the Owner and Owner Representative any discrepancy or conflict in figures, Drawings, or Specifications that affect its Work. In the event of conflicts or discrepancies between and among the Contract Documents, the Owner Representative shall determine which takes precedence over the other. Any part of the Work shown on the Drawings but not specifically mentioned in the Specifications, or vice versa, shall be considered as part of the Work, the same as though included in both. In the event of an inconsistency or conflict between Drawings and Specifications, or within either document not clarified by addendum, the better quality or the greater quantity or scope of the Work shall be provided, and the provision of a Contract Document imposing the greater obligation upon the Contractor or affording the greater right or remedy to the Owner shall govern, in accordance with the Owner's interpretation. Likewise, the Work to be undertaken by Contractor shall include all incidental work necessary for the completion of the Project even though it may not be specifically described in the Specifications or Drawings.

**§ 1.2.3** The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

**§ 1.2.4** Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

**§ 1.2.5** Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

**§ 1.2.6** On the Drawings, given dimensions shall take precedence over scaled measurements, large scale drawings over small scale drawings, and drawings of a later date over drawings of an earlier date. Unless expressly authorized, drawings shall not be scaled for dimensions. If figured dimensions are not given on the Drawings, the Contractor shall timely request the same from the Owners Representative.

**§ 1.2.7** When references to laws, codes, regulations or standards of technical associations or organizations are included in the Contract Documents, the most current edition is intended and shall govern unless otherwise specified.

**§ 1.2.8** Whenever a product is specified by proprietary designations, model numbers, catalog numbers, manufacturer trade names, or similar references, no substitution may be made unless it is accepted in writing by the Owner Representative.

**§ 1.2.9** The layout of mechanical and electrical systems, equipment, fixtures, piping, ductwork, conduit, specialty items, accessories shown on the Drawings are diagrammatic, and all variations in alignment, elevation and details required to

avoid interferences and satisfy all architectural and structural limitations are not necessarily shown. Actual layout of the Work shall be carried out without affecting the architectural or structural integrity and limitations of the Work and shall be performed in such sequence and manner as to avoid conflicts, provide clear access to all control points, including valves, strainers, control devices and specialty items of every nature related to such systems and equipment, obtain maximum headroom, and provide clearances as required for operation and maintenance.

**§ 1.2.10** A typical or representative detail on the Drawings shall constitute the standard for workmanship and material throughout corresponding parts of the Work. Where necessary, and where reasonably inferable from the Contract Documents, the Contractor shall adapt such representative detail for application to the Work subject to the prior approval of the Owner Representative.

### **§ 1.3 Capitalization**

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

### **§ 1.4 Interpretation**

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

### **§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service**

**§ 1.5.1** The Instruments of Service shall be and become the property of Owner, whether the Project is completed or not, and Owner shall retain all common law, statutory and other reserved rights, including copyrights. As such, the Instruments of Service may be used by Owner for information and reference and in connection with Owner's use and occupancy of the Project. The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

**§ 1.5.2** The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

### **§ 1.6 Notice**

Except as otherwise provided where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement. If Contractor is sending any notice via email with the intent to satisfy any notice requirement under the Contract Documents, then Contractor shall clearly identify in the email the purpose of the notice and the specific notice requirement it is purporting to satisfy.

*(Paragraphs deleted)*

### **§ 1.7 Digital Data Use and Transmission**

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form and be consistent with Owner's established policies – <http://policies.iu.edu/policies/categories/information-it/data-management/DM-02.shtml> and as further set forth in Division 00 and 01. The parties will use AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

### **§ 1.8 Building Information Models Use and Reliance**

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document G202™–2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk

and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees. Contractor shall comply with and be consistent with the consistent with Owner's established policies – <http://policies.iu.edu/policies/categories/information-it/data-management/DM-02.shtml> and as further set forth in Division 00 and 01.

## **ARTICLE 2 OWNER**

### **§ 2.1 General**

**§ 2.1.1** The Owner is The Trustees of Indiana University as such in the Agreement and is referred to throughout the Contract Documents and is singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Owner Representative does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative. The Owner may at its sole option assign one or more full or part time engineers, CMA (Construction Manager Administrator) or other representatives to observe the performance of the Work. The duties, responsibilities and limitations of authority of any such representatives will be as provided in the Contract Documents or as otherwise stated to Contractor in writing by Owner.

*(Paragraph deleted)*

### **§ 2.2 Information and Services Required of the Owner**

**§ 2.2.1** Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

**§ 2.2.2** To the extent reasonably required for Contractor's performance of the Work, Owner shall furnish surveys in its possession or in the possession of its Architect or other consultant describing the physical characteristics, legal limitations and utility locations for the site of the Project. Such items are for informational purposes only and neither Owner nor Architect shall be liable for inaccuracies or omissions therein, nor shall any inaccuracies or omissions in such items relieve Contractor of its responsibility to perform its Work in accordance with the Contract Documents. Contractor shall in every instance exercise proper precaution relating to the safe performance of the Work. Contractor shall confirm the location of each utility with the appropriate local utility company, shall relocate or dispose of each on-site utility and shall cap each utility as required by the Work or the Specifications. Contractor shall not be entitled to additional compensation resulting from its failure to confirm the location of the site utilities or existing structures prior to the opening of its Request For Price Response, if applicable. Contractor also shall employ and pay a competent registered surveyor to provide all lines, marks, and levels necessary to the Construction of the Work including, but not limited to, a permanent benchmark and baseline.

**§ 2.2.3** The Owner shall furnish information or services required of the Owner by the Contract Documents and in the Owner's possession or control with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

**§ 2.2.4** Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

*(Paragraphs deleted)*

### **§ 2.3 OWNER'S RIGHT TO STOP THE WORK**

If the Contractor fails to correct Work which is not in accordance with the requirements of the Contract Documents as required by Section 12, persistently fails to carry out the Work in accordance with the Contract Documents, or fails to clean up as required by Section 3.15 and Division 00 and 01, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause thereof has been eliminated. However, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1. The stoppage of Work pursuant to this Section 2.3 shall not entitle the Contractor to an adjustment of the Contract Sum, the Contract Time or the Contract Schedule.

### **§ 2.4 Owner's Right to Carry Out the Work**

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If Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents, fails to remove and replace rejected Work as provided by this Article, or fails in any respect to perform the Work in strict accordance with the Contract Documents, and fails within a ten (10) day period after receipt of written notice from Owner Representative to commence and continue correction of such default or neglect with diligence and promptness, Owner may after such ten (10) day period, and without prejudice to other remedies Owner may have, correct and remedy any such default, neglect or deficiency, and may exclude Contractor from all or part of the site, take possession of all or part of the Work, suspend Contractor's services related thereto, and take possession of Contractor's tools, appliances, construction equipment and machinery at the site and incorporate in the Work all materials and equipment stored at the site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's Representative, their respective representatives and other contractors full and unhindered access to the site to enable Owner to exercise the rights and remedies under this Subparagraph.

**§ 2.4.1** All claims costs, losses and damages incurred or sustained by Owner in exercising such rights and remedies will be charged against Contractor and its surety and Owner shall be entitled to a corresponding decrease in the Contract Price. Owner may, with or without a Change Order being issued, deduct from payments then or thereafter due Contractor the costs of correcting such default, neglect or deficiency, including Owner's expenses and compensation for Architect's additional services made necessary by such default, neglect or deficiency. Such direct, indirect and consequential costs will include, but not be limited to fees and charges of engineers, architects, attorneys and other professionals, all court and arbitration costs and all costs of repair and replacement of work or property of Owner or others destroyed or damaged by correction, removal or replacement of Contractor's defective Work. If payments then or thereafter due Contractor are not sufficient to cover such amounts, Contractor shall pay the difference to Owner.

**§ 2.4.2** If an order for relief in favor of Contractor is entered under the United States Bankruptcy Code, and Contractor is not performing its obligations hereunder, Owner may cause such Work to be performed by others until such time as Contractor, or its representative or trustee in bankruptcy, either rejects or accepts the agreement and gives Owner adequate assurance of Contractor's ability to perform further Work and Owner shall offset against the Contract Sum for the cost thereof.

**§ 2.4.3** Owner's reasonable exercise of its rights under the Contract Documents, including but not limited to: ordering changes in the Work, performance of separate Work consistent with Owner's obligations hereunder, carrying out Contractor's Work by Owner, exercising any of Owner's remedies in suspension of the Work or requirements for correction of non-conforming Work, withholding payment for just cause or otherwise exercising in good faith Owner's rights and remedies under this Agreement shall not be construed as intentional interference with Contractor's performance of the Work or otherwise be deemed actionable or support any claim against the Owner.

## **§ 2.5 OWNER'S RIGHT TO REJECT DEFECTIVE WORK**

The Owner shall have the right, but not the duty, to approve all materials and workmanship incorporated, or to be incorporated, into the Work and may reject as defective any work that is not, in the judgment of the Owner and the Owner's Representative, in strict accordance with the requirements of the Contract Documents. Work so rejected shall be promptly removed and corrected by the Contractor. No Work which the Owner expressed its intention to inspect shall be closed or covered by the Contractor until it has been duly inspected and approved by the Owner. Should the Contractor close or cover uninspected Work then the Contractor shall, at its own cost and expense, uncover all such Work so that it may be inspected. After Owner's inspection is complete, Contractor shall then properly repair or replace all affected Work.

## **§ 2.6 OWNER'S CONFIDENTIAL INFORMATION**

The Owner may designate to Contractor such information or documents that Owner wishes to be kept confidential in connection with the Work or the Project. Such designation shall be in writing. Information designated by the Owner as "Confidential" shall not be disclosed, communicated or transmitted to any person or entity other than Contractor's employees, agents or subcontractors as may be necessary for the performance of the Work. Contractor shall require its subcontractors, vendors, material suppliers and the like to comply with this requirement. Documents designated as "Confidential" (and all copies thereof) shall be immediately returned to the Owner upon request. The requirements of this Section 2.6 shall survive Owner's final acceptance of the Work or earlier termination of the Contract.

## ARTICLE 3 CONTRACTOR

### § 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. All references in the Contract Documents to 'Contractor' shall include, unless explicitly stated otherwise, third parties under contract with or control of the Contractor or third parties for whom Contractor is otherwise responsible. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in strict accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Owner Representative in the administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.1.4 No later than seven (7) calendar days after the date of the Notice to Proceed, the Contractor shall deliver to the Owner certified as true and accurate and with no material changes as of the date of delivery: (i) Contractor's required payment and performance bond; (ii) all required Certificates of Insurance, including a Certificate of Compliance for worker's compensation insurance or, if applicable, a Worker's Compensation Exemption Certificate Clearance.

§ 3.1.5 Contractor shall expeditiously execute the Construction Agreement with the Owner and shall, along with the executed Construction Agreement, provide the Owner with its executed Escrow Agreement, as contemplated in Contract Documents and with its Corporate Authority Signature Certificate and W9, as contemplated by Division 00 and 01.

### § 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents. By executing the Contract, the Contractor further represents to the Owner that:

1. the Contractor has a high level of experience and expertise in the business administration, construction, management, workplace health and safety supervision and superintendence of projects of similar size and complexity and that it will perform the Work with the care, skill and diligence of such a contractor
2. Contractor and, to the best of its knowledge, its Subcontractors are financially solvent, able to pay all debts as they mature and have sufficient working capital to complete the Work and all obligations thereunder
3. Contractor is able to furnish the plant, tools, materials, supplies, equipment and labor required to complete the Work
4. Contractor is authorized to do business in the State of Indiana
5. Contractor's execution of the Contract and its performance thereof are within its authorized powers
6. Contractor has (i) studied the Contract Documents, understands their provisions and confirmed that they are sufficiently detailed and complete to permit the Contractor to perform the Work in accordance with the Contract Documents, within the Contract Time and for the Contract Sum; (ii) inspected the Project site; and (iii) investigated and satisfied itself as to:
  - a. the site and locality where the Work is to be performed and the conditions and difficulties to be encountered, including access thereto
  - b. in accordance with the provisions Section 3.2 and Contract Documents, Division 00 and 01, the type and condition of the soil including the quality and quantity of the subsurface and surface materials or obstacles to be encountered
  - c. the availability of utilities and/or new temporary utilities by Contractor, if necessary, be provided by Contractor (all Lock Out/Tag Out (LOTO) safety fulfilled) and access thereto;
  - d. conditions affecting transportation, disposal, handling and storage of materials, supplies and equipment
  - e. materials, supplies or equipment which are to be furnished by the Owner, if any, for the Contractor's use
  - f. The type and availability of tools, equipment and facilities to perform the Work

- g. the availability and adequacy of labor and trades and, if applicable, union wage scales, benefits, working conditions, craft jurisdictions, area practices and collective bargaining agreements affecting the Work
- h. prevailing weather and climatological conditions;
- i. all laws applicable to the Work and to the Contractor; and
- j. all other factors which may affect the Contractor's performance of the Work.

§ 3.2.1.1 Contractor represents that it has studied all surveys and investigative reports of subsurface and latent physical conditions referred to in the Contract Documents and has made such additional surveys and investigations necessary for the performance of the Work at the Contract Sum and in accordance with the requirements of the Contract Documents, that it has correlated the results of all such data with the requirements of the Contract Documents, and that the Contractor enters into the Contract on the basis of its own examination, investigation and evaluation of all such matters and risks associated with the Work, and not in reliance upon any opinions, statements or representations of the Owner, Owner Representative or any of their respective officers, agents, servants or employees.

§ 3.2.1.2 Contractor has executed the Contract based on its own examination, investigation and evaluation of the matters set forth in Section 3.2.1.1 above and not in reliance on any representation of the Owner, Owner Representative or any of their respective employees or agents which is not expressly set forth in the Contract Documents. No failure by the Contractor to consider or evaluate such matters shall relieve the Contractor from its responsibility to properly estimate the difficulty, cost and expense of performing the Work. Contractor shall not be entitled to, and Owner shall not be liable for, an adjustment to the Contract Sum, Contract Time or Contract Schedule which results directly or indirectly from Contractor's failure to properly examine, investigate or evaluate the matters set forth in Section 3.2.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3, take field measurements of any existing conditions related to that portion of the Work and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Owner's Representative any errors, inconsistencies or omissions discovered by or made known to the Contractor or for which Contractor should have reasonably known as a request for information in such form as the Owner's Representative may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 In the event of error, inconsistency, or omission reasonably discoverable in the Contract Documents, Contractor shall not proceed until written clarification has been issued by Owner's Representative. If Contractor fails to make such request for clarification, no excuse will be entertained for failure to carry out the Work per Contract Documents. Neither the Owner nor Owner's Representative will be bound by oral clarifications.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7. Contractor shall not be liable to Owner or Owner's Representative for damages resulting from errors, inconsistencies or omissions in the Contract Documents unless Contractor recognized or in the proper performance of its duties under Section 3.2 should have recognized such error, inconsistency, omission or difference and knowingly or negligently failed to report it to Owner's Representative.

§ 3.2.5 Where there is a conflict in or between the Contract Documents, including the Drawings and Specifications, in resolving conflicts, errors, discrepancies and disputes concerning the nature, character, scope or extent of Work to be performed or furnished by Contractor, or other rights and obligations of Owner and Contractor, the provision of a Contract Document expressing the greater quantity, quality or scope of the Work, or imposing the greater obligation upon Contractor or affording the greater right or remedy to Owner shall govern, without regard to the party who drafted such provision.

§ 3.2.6 Only changes or interpretations covered by Addenda or written from Owner's Representative will be permitted during construction of the Work. Contractor shall perform no portion of the Work at any time without Contract



Documents or where required, received Shop Drawings, Product Data, or Samples for such portion of the Work.

**§ 3.2.7** Before ordering material or performing any Work, Contractor shall verify all measurements at the Project site. Any differences between dimensions on the Drawings and actual measurements shall be brought to the Owner Representative's attention for consideration before the Work proceeds. Where actual measurements require more material and work than the Drawings call for, such material and Work shall be supplied at the cost of Contractor. No extra compensation will be allowed because of differences between actual measurements and dimensions indicated on the Drawings. Contractor shall assume full responsibility for the accuracy of measurements obtained at the work site.

**§ 3.2.8** Mechanical and Electrical, Low Voltage and AV Drawings are diagrammatic only. Actual work involved shall be installed from received Shop Drawings with all measurements obtained at the Project site by Contractor.

**§ 3.2.9** Dimensions which are lacking from the Drawings shall be obtained from Owner's Representative or field verified. In no case will Contractor assume that the Drawings are scaled.

**§ 3.2.10** Contractor may not rely upon and, except as otherwise provided in this Section, shall have no right of claim against Owner or Owner Representative with respect to any graphical or written representation of any exploration, testing, boring or other forms of reports of subsurface or other existing physical conditions or structures at or contiguous to the site which have been utilized and relied upon by Owner Representative or Owner in preparing the Contract Documents.

**§ 3.2.11** Notwithstanding the dimensions given on the Drawings and Specifications and other Contract Documents, it shall be the obligation and responsibility of Contractor to take such measurements as will ensure the proper matching and fitting of all items and components of the Work covered by the Contract with other elements of the Work and with contiguous work of others and with the work performed by predecessor trades or contractors. When Contractor proceeds with its Work, Contractor accepts the conditions of the work performed by such predecessor trades and contractors that may impact or affect Contractor's Work, and Contractor assumes the responsibility with respect to those existing conditions of such predecessor activity that they will not adversely impact the performance and acceptability of Contractor's Work under the Contract.

**§ 3.2.12** Contractor shall verify measurements, lines and grades of existing work, conditions and structures at the site, and when indicated dimensions are not in agreement with Contractor's field measurements, shall notify Owner and Owner Representative immediately, in writing, requesting clarification. If such existing work, conditions and structures do not fit properly with the Work to be done by Contractor, Contractor shall make at Contractor's expense such alterations to its Work as may be necessary to assure proper fit and connections that meet the approval of Owner Representative. Contractor shall be responsible for the accuracy of all field measurements and shall not rely on any data furnished by or prepared by Owner and Owner Representative. The exactness of grades, elevations, dimensions or locations shown on Drawings issued by the Owner Representative or Work installed by other contractors is not guaranteed by the Owner Representative or the Owner. Consequently, prior to ordering any materials or performing any work, Contractor shall satisfy itself as to the accuracy of all grades, elevations, dimensions, and locations and in all cases of interconnection of its work with existing or other Work, shall verify, at the site, all dimensions relating to such existing or other work. If a minor change in the Work is necessary because of actual field conditions, the Contractor shall submit detailed drawings of such change to the Owner Representative for approval before making the change. Any significant dimensional differences shall be submitted to the Owner Representative before proceeding with the Work. Any errors resulting from Contractor's failure to so verify shall be promptly rectified by Contractor at no additional cost to the Owner. No increase in the Contract Sum or the Contract Time shall be allowed because of differences between actual dimensions and dimensions on the Drawings.

**§ 3.2.13** Contractor is responsible for their own layout and for the protection and preservation of all installed engineering data and layout points and shall take all necessary precautions to insure that said data or points are not damaged, destroyed, altered or changed. Re-engineering, if required, shall be performed at Contractor's expense.

**§ 3.2.14** The Contractor shall establish and maintain benchmarks and all other grades, lines and levels necessary for the Work, report errors, omissions or inconsistencies to the Owner and Owner Representative before commencing the Work and, if applicable, review the placement of the building(s) and permanent facilities on the site with the Owner and Owner Representative after all lines are staked out and before foundation work is started. If a survey reveals any encroachments by the Contractor or its Subcontractors on adjacent properties caused by construction (except for

encroachments arising from errors or omissions in the Contract Documents, not reasonably discoverable by the Contractor) such encroachment shall be the sole responsibility of Contractor and Contractor shall correct such encroachment within thirty (30) days after discovery or as soon thereafter as is reasonably possible, at Contractor's sole cost and expense, either by removal of the encroachment and subsequent reconstruction on the Project Site, or agreement with the Owner if the adjacent property is owned by The Trustees of Indiana University or by agreement with any third party owner in a form and substance satisfactory to Owner..

### **§ 3.3 Supervision and Construction Procedures**

**§ 3.3.1** The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention and an English-speaking superintendent present on-site, full-time, when the Contractor, subcontractor or supplier are on-site. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the Owner and Owner Representative, and shall propose alternative means, methods, techniques, sequences, or procedures. The Owner Representative shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Owner Representative objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures. The Contractor shall be responsible for scheduling, coordinating and expediting the work of its Subcontractors and the other Owner entities involved to complete project 100%.

**§ 3.3.2** The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors. Contractor shall remove or cause to be removed from project any person or entity for whom Contractor is responsible, that the Owner or Owners Representative determines to be detrimental to the Project.

**§ 3.3.3** The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

**§ 3.3.4** Neither Contractor nor its employees, Subcontractors, Sub-subcontractors or their agents and employees shall engage in sexual harassment in violation of Title VII of the Civil Rights Act of 1964 or discrimination based on sexual orientation in violation of University policy. In addition, Contractor will ensure that Indiana University students, employees and guests are protected from lewd, offensive or harassing conduct by Contractor's employees, Subcontractors, Sub-subcontractors and their agents and employees.

### **§ 3.4 Labor and Materials**

**§ 3.4.1** Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

**§ 3.4.2** Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Owner Representative in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

**§ 3.4.2.1** The Contractor has based the Contract Price on the exact materials specified in the Contract Documents. The Contract Price is not contingent upon the approval of any substitute or "equal" product, material or method. If the Contractor proposes, in writing, an alternate product, material, equipment or method then:

- .1 The product, material or method called for in the Contract Documents is intended to establish the standard of quality and design; however, an "equal" product, material, equipment or method may be used if approved in writing as "equal" by the Owner's Representative.
- .2 The terms "or approved equal" is deemed to be included after all products, materials, equipment or methods described in the Contract Documents.

- .3 Proposed substitutions shall be supported by appropriate certifications or other materials necessary to support the proposed substitution. All costs associated with the evaluation of a proposed substitution (including but not limited to the cost of Additional Services rendered by the Owner's Representative) shall be borne by the Contractor.
- .4 The Owners Representative shall be the sole judge of equivalency.
- .5 Acceptance of a proposed substitution shall not relieve the Contractor from responsibility for compliance with all the requirements of the Contract Documents. The Contractor shall be completely responsible for the cost of any changes to other parts of its Work or the work of other Contractors caused by such substitution, including the cost of all necessary design or redesign services.
- .6 The Contract Time shall not be extended and the Contract Price shall not be increased as the result of any substitution.

**§ 3.4.3** The Contractor shall enforce strict discipline and good order among the Contractor's employees, subcontractors and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned or safety protocols and requirements associated with all Safety protocols.

**§ 3.4.4** Labor shall be performed in a workmanlike manner, by mechanics skilled in their respective trades. Standards of Work required throughout shall be of such grade as will bring results of good workmanship. Mechanics whose Work is unsatisfactory to Owner or Owner's Representative, or are considered by either Owner or Owner Representative to be careless, incompetent, unskilled or otherwise objectionable, shall be dismissed from the Work upon written notice from the Owner Representative or Owner. Neither Owner nor Owner Representative shall be responsible for any increased costs or delays caused by such dismissal.

**§ 3.4.5** All labor used throughout the Work and in performance of the Contract shall be acceptable to Owners Representative and of a standing or affiliation that will permit the Work to be carried on harmoniously and without delay, and that will in no case cause any disturbance, interference or delay to the progress of the Work. Contractor agrees to proceed with his Work without interruption, regardless of any trade or craft affiliations or the lack thereof on the part of any workmen on the Project. Contractor agrees that where its Work is stopped or delayed or interfered with by strikes, slowdowns or work interruptions resulting from the acts or failures to act of its employees in concert, or by the breach of any of the terms of this provision, then Owner may treat such stoppage, delay or interference as a breach of the Contract and proceed in accordance with the Contract Documents.

**§ 3.4.6** Contractor will use best efforts to cooperate with Owner and any other affected parties to resolve any jurisdictional disputes that may arise during the prosecution of Contractor's Work, and shall abide by the procedures contained in and any decisions rendered under any applicable plan for settlement of jurisdictional disputes. Contractor shall, in all cases, continue to Work while any jurisdictional dispute remains unresolved. Contractor shall Work in harmony with Owner and all other contractors and subcontractors to assure that no labor disputes of any kind involving the Owner, other contractors and subcontractors, or other third parties, or their respective employees or agents shall occur or be manifested on the Project, and Contractor shall only employ persons on the Project who will Work at all times in harmony with other persons and trades employed on the Project. If Contractor has labor agreements with any organized labor unions, Contractor shall work in harmony with any and all contractors or subcontractors who employ personnel that are not represented by an organized union.

**§ 3.4.7** Contractor shall not be relieved of its obligations under the Contract by any jurisdictional dispute, work stoppage, slowdown or any other circumstances involving its employees that cause, create or aggravate any interference, delay, suspension or other form of impairment to performance or completion of any work by any contractor, subcontractor or other third party on the Project. If any such work stoppage, slowdown or any other action does occur due to any type of labor dispute or a picket line established for any reason, Contractor shall immediately adopt any and all measures (including, but not limited to, a separate gate) as necessary to eliminate and avoid delay or disruption to Contractor's Work or any other work of others at the Project. If a labor dispute involving Contractor does occur and, in the judgment of Owner, such dispute causes or threatens to cause delay or disruption to the orderly and efficient progress of construction, then such occurrence shall be deemed a default hereunder and just cause for termination of the Contract as provided in Article 14 hereof or other action or remedy permitted by the Contract Documents or applicable laws.

**§ 3.4.8** Contractor shall abide by, recognize and respect any split gate, reserve gate or similar system on the Project and agrees that the existence of a split gate, reserve gate or similar system shall not be grounds for any form of picket lines,

strikes or walk-outs. Should any workers or employees of Contractor performing any work for the Project engage in a strike, boycott or other work stoppage or cease to work, due to picketing or a labor dispute of any kind or nature, whether involved with or caused by employees of Owner, any other contractor or subcontractor, supplier, trade, union or entity, the failure or refusal of those workers or employees to perform Contractor's Work shall be considered a default under this Contract, and the remedies for defaults set forth in Article 14 and elsewhere herein shall apply.

**§ 3.4.9** Whenever, in the Contract Documents, an article, material, apparatus, equipment, or process is called for by trade name or by the name of a patentee, manufacturer, or dealer or by reference to catalogs of a manufacturer or dealer, it shall be understood as intending to mean and specify the article, material, apparatus, equipment, or process designated, or any approved equal thereto in quality, finish, design, efficiency and durability and equally serviceable for the purposes for which it is intended. Whenever material or equipment is submitted by Contractor for approval as being equal to that specified, the submittal shall include sufficient information and data to demonstrate that the material or equipment conforms to all of the requirements of the Contract Documents. The decision as to whether or not such material or equipment is equal to that specified shall be made by the Owner's Representative in consultation with Architect. Neither the approval of substituted material or equipment nor the furnishing of the material or equipment as specified will relieve the Contractor of responsibility for failure of the material or equipment to perform the functions required by the Contract Documents due to the faulty design, material, or workmanship. Approval by Owner shall be issued in writing.

**§ 3.4.10** Not later than fourteen (14) days from the date of Notice to Proceed, Contractor shall provide to Owner and Owner's Representative a list identifying the name of the manufacturer proposed to be used for each of the products identified in the Specifications and the name of the installing Subcontractor.

**§ 3.4.11** Materials shall conform to manufacturer's standards in effect at the date of issuance of the Contract Documents if there is no standard set forth otherwise in the Contract Documents and shall be installed in strict accordance with manufacturer's directions.

**§ 3.4.12** Where the Contract Documents require the Work, or any part of same, to be above the standards required by applicable laws, ordinances, rules, regulations or any statutory provisions pertaining to the Work, or above the quality of normal construction or trade standards, such Work shall be performed and completed by Contractor in strict accordance with the Contract Documents.

**§ 3.4.13** In the event any of the material or equipment specified, supplied and installed under this contract should fail to produce capacities or meet design or performance specifications as published or warranted by the manufacturer of the material or equipment involved, or fail to meet the requirements of the Contract Documents, Contractor shall remove and replace such material or equipment with replacement material or equipment that will meet all such requirements without cost to the Owner.

**§ 3.4.14** Except in the case of emergency, no substantial field operations shall be performed outside of regular working hours without the prior notifications of and approval by the Owner's Representative and Owner. Contractor will not be entitled to additional compensation for work performed outside of regular working hours except by the prior written approval of the Owner. Overhead and profit for overtime work shall be limited to the base cost of the premium portion of the overtime.

### **§ 3.5 Warranty**

**§ 3.5.1** The Contractor warrants to the Owner and Owner's Representative that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Owner's Representative, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

**§ 3.5.2** All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 3.5.3 As part of the above warranty, it is expressly understood and agreed that Contractor warrants that Contractor's Work shall be waterproof and weatherproof in every respect.

§ 3.5.4 Any and all warranties which are available on any material or equipment or other service which is part of the Work will be provided to Owner at no additional cost. Upon achieving Substantial Completion of the Work, Contractor shall assign to Owner all warranties obtained or obtainable by Contractor from manufacturers and suppliers of equipment and materials incorporated into the Work by written instrument of assignment in a form acceptable to Owner. Contractor shall furnish Owner with copies of all warranties, guarantees, operating manuals relative to equipment installed, and a complete set of reproducible drawings with all field changes noted on them relating to the improvements constructed under the Contract. The assignment of such manufacturer and supplier warranties shall not relieve Contractor of any of its own warranty obligations under this Section, which shall remain in full force and effect.

§ 3.5.5 Contractor warrants that the performance of the Work shall not limit, void or otherwise compromise or diminish any equipment or manufacturer warranty that is to be issued under the Contract or the Contract Documents, and that the Work under this Contract shall be and remain merchantable and fit for their particular purpose, and in strict conformance with the Contract Documents, including but not limited to requirements established by interpretations and decisions rendered by Owner's Representative in accordance with the Contract Documents. All Work not conforming to these standards shall be considered defective.

§ 3.5.6 For a period of two (2) years from the date of Substantial Completion and acceptance of the Work by Owner, as evidenced by the date of the Owner's Representative Certificate of Substantial Completion. For the same period, the Contractor warrants to Owner to make good, at his own expense, any defects, shrinkage, warpage or other faults in work required under this Contract arising out of defective materials or workmanship, ordinary wear and tear excepted.

§ 3.5.7 In addition to all of Contractor's warranties and obligations to correct defective Work provided by law or as set forth in any of the Contract Documents, Contractor agrees, upon notice from Owner or Owner's Representative, immediately to repair, restore, correct and cure, at Contractor's expense, all defects and omissions in workmanship and materials and all failures to comply with the Contract Documents which appear within two (2) years from the date of Substantial Completion and acceptance of the Work by Owner. Contractor shall pay for, and if requested, correct, repair, restore and cure any damage or injury, whenever the same shall occur or appear, resulting from any defects, omissions or failure in workmanship and materials, and indemnify, hold harmless, and defend Owner against any and all claims, losses, costs, damages and expenses, including attorney fees, suffered by Owner as a result of such damage or injury, whenever such damage or injury shall occur or appear. The period within which Contractor shall be obligated to correct Work shall be extended with respect to portions of Work, including corrective work, first performed after final completion and acceptance of the Project. Contractor's obligations under this Section shall survive completion and acceptance of the Work and Project and termination of the Contract. Contractor shall maintain the insurance coverage required under this contract during the two-year warranty period and corrected work extended period.

§ 3.5.8 Instead of requiring correction or removal and replacement of nonconforming Work, Owner may elect to accept such Work in the condition as provided. Contractor shall bear all direct, indirect and consequential costs attributable to Owner's evaluation of and determination to accept such defective work, to include but not be limited to fees and charges of Owner's Representative, attorneys and other professionals. If any such acceptance occurs prior to Architect's and Owner's Representative's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price to account for such costs and damages. If the acceptance occurs after such recommendation of final payment, such costs and damages shall be paid by Contractor and Surety to Owner. The acceptance of nonconforming Work by Owner shall be by written Change Order, signed by Owner's Representative. No person has authority to accept nonconforming work except pursuant to such written Change Order. The terms of this Subsection are not limited by any other limitation on Owner's right to recover consequential damages.

§ 3.5.9 Notwithstanding anything to the contrary contained herein with respect to warranties, it is understood and agreed that the foregoing warranties and guarantees shall not affect, limit or impair Owner's right against Contractor with regard to latent defects in the Work which do not appear within the applicable warranty period following acceptance of the Work and which could not, by the exercise of reasonable care and due diligence, be ascertained or discovered by Owner within such warranty period. Contractor shall be and remain liable and responsible to correct and cure any such latent defects which are reported to Contractor by Owner in writing within thirty (30) days after such latent defect first appears or could, by the exercise of reasonable care and due diligence, be ascertained or discovered by Owner.

§ 3.5.10 At the time of final completion and acceptance of the Work by Owner, and as a condition of final payment by Owner to Contractor, in addition to any other closeout requirements set forth in the Contract Documents, Contractor shall execute and deliver to Owner the Contractor Warranty.

§ 3.5.11 The warranties provided herein shall be in addition to and not in limitation of any other warranty required by the Contract Documents or otherwise available or prescribed by law.

### § 3.6 Taxes

§ 3.6.1 The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.6.2 Indiana Gross Income Tax. In accordance with Indiana Gross Income Tax, as amended, Owner is a withholding agent for the payment of Indiana Gross Income Tax on contracts with Indiana University and is required to withhold the Indiana Gross Income Tax from a Non-Resident Contractor at the current statutory rate, less an annual exemption of \$1,000. The term "Non-Resident Contractor" does not include a contractor that is a corporation organized under the laws of a state other than Indiana but that is licensed, qualified and registered with the Indiana Secretary of State to do business in Indiana.

§ 3.6.3 Indiana Gross Retail Tax. Materials and equipment purchased for incorporation into the Work are not subject to the Indiana Gross Retail Tax (sales tax). A general exemption certificate must be filed with the vendor by Contractor and Owner will furnish the certificate to Contractor upon request.

§ 3.6.4 Federal Excise Tax. Owner is exempt from payment of Federal Excise Tax and will furnish Contractor an exemption certificate upon request

### § 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded. All connection charges, assessments or inspection fees imposed by any governmental agency or utility company are the Contractor's responsibility and shall be included in the Contract Sum.

§ 3.7.2 The Contractor shall comply with and give written notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 Contractor represents and warrants that it is familiar with all applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities. If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

### § 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide written notice to the Owner and the Owner Representative before conditions are disturbed and in no event later than 7 days after first observance of the conditions. The Owner Representative will promptly investigate such conditions and, if the Owner Representative determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both, in accordance with Article 7. If the Owner Representative determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Owner Representative shall promptly notify in writing the Owner and Contractor, stating the reasons. If either party disputes the Owner Representative's determination or recommendation, that party may submit a Claim as provided in Article 15.

*(Paragraph deleted)*

**§ 3.7.4.1** In each such case of a concealed or unknown condition as set out in §3.7.4 an increase or decrease in the Contract Price or an extension or shortening of the Contract Time, or any combination thereof, may be allowable, but only to the extent that (1) evidence of such conditions could not with the exercise of reasonable competence and diligence have been discovered or foreseen by Contractor prior to the Effective Date of the Contract, (2) Contractor, by the terms of the Contract and Contract Documents, has not assumed the risk of such conditions and (3) Contractor has explicitly fulfilled all of its requirements provided by §3.7.4 and its subparts. Contractor shall in no event be entitled to an increase in the Contract Price in excess of costs, overhead and profit to perform authorized additional or changed Work to address the conditions, without additional allowances for delays or suspension of Work. If Owner and Contractor are unable to agree as to the amount or length of the adjustment to the Contract Price or Contract Time, a claim may be made therefore as provided in the Contract Documents.

**§ 3.7.4.2** If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Owner Representative. Upon receipt of such written notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

### **§ 3.8 Allowances**

**§ 3.8.1** The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

**§ 3.8.2** Unless otherwise provided in the Contract Documents,

- .1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum; and
- .3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

**§ 3.8.3** Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

### **§ 3.9 Superintendent**

**§ 3.9.1** The Contractor shall employ a competent English-speaking superintendent and necessary assistants who shall be in attendance full time at the Project site during performance of the Work. The superintendent shall represent the Contractor and have authority to act on behalf of Contractor in every manner and in all respects, and communications given to the superintendent shall be as binding as if given to the Contractor.

**§ 3.9.2** The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Owner Representative of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Owner Representative may notify the Contractor, stating whether the Owner or the Owner Representative (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Owner Representative to provide written notice within the 14-day period shall constitute notice of no reasonable objection.

**§ 3.9.3** The Contractor shall not employ a proposed superintendent to whom the Owner or Owner Representative has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's written consent, which shall not unreasonably be withheld or delayed. The Owner and Owner Representative shall have the right to require Contractor to remove a superintendent to which Owner has a reasonable objection and replace him or her

with one who is satisfactory to Owner. Contractor's superintendent shall remain on site until completion of the Punch List work.

### **§ 3.10 Contractor's Construction and Submittal Schedules**

**§ 3.10.1** Within fourteen (14) calendar days of the date of the Notice to Proceed letter, the Contractor shall submit for the Owner's and Owner's Representative information a Contractor's construction schedule for the Work, refer to Contract Documents and Division 00 and 01 for more information. The schedule shall contain detail appropriate for the Project, including (1) the date of Notice to Proceed, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The Construction Schedule also shall be a detailed schedule or other form satisfactory to the Owner and Owner Representative and shall: (i) provide graphic representation of all activities and events that will occur during the performance of the Work; (ii) identify each phase of construction and occupancy; and (iii) show critical Milestone Dates. Upon approval by the Owner, the schedule shall be the baseline Construction Schedule and shall be deemed a Contract Document. The baseline schedule shall only be modified by an approved Construction Change Directive. The baseline schedule shall be updated monthly showing the status of the Work and Project. If not approved, the Contractor promptly shall revise the Construction Schedule in accordance with the requirements of the Owner and the Owner Representative and resubmit for approval. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be updated at appropriate intervals as required by the conditions of the Work and Project. A submitted Construction Schedule not approved by the Owner that exceeds current time limits shall not relieve the Contractor of its obligation to meet those time limits, shall not make the Owner or Owner's Representative liable for any damages incurred by the Contractor as the result of extended performance or failure to meet time limits set forth in the most recent approved Construction Schedule. Similarly, a Construction Schedule showing completion of the Work prior to the date required by the Contract Documents shall not create any rights to early completion of the Contractor and each Subcontractor and/or Material Supplier shall furnish sufficient labor forces, construction plant and equipment, and shall work such hours, including night shifts and overtime operations, as may be necessary to ensure the execution of the Work in accordance with the approved schedule. The initial schedule and revisions thereof shall not exceed then current time limits under the Contract Documents.

**§ 3.10.2** Within fourteen (14) calendar days of the date of the Notice to Proceed, the Contractor shall promptly submit a submittal schedule for the Owner Representative approval, refer to Division 00 and 01 for more information. The Owner Representative approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Owner Representative reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

**§ 3.10.3** The Contractor shall perform the Work in general accordance with the most recent Owner approved schedules submitted to the Owner and Owner Representative.

**§ 3.10.4** The Contractor shall monitor the progress of its Work and the Work of its Subcontractors for conformance with the Construction Schedule and promptly submit to the Owner and the Owner Representative a written progress report of any delays or potential delays. Compliance with the Construction Schedule is a condition precedent to receiving payment pursuant to Article 9. The Construction Schedule shall be updated to reflect actual conditions or as requested by the Owner or the Owner Representative. If any report indicates delays or potential delays, the Contractor shall propose a plan to correct the delay, including overtime and/or additional labor. A progress report shall not constitute an adjustment in the Contract Time, any Milestone Date, or the Contract Sum.

**§ 3.10.5** Before Contractor starts the Work at the site, a conference attended by Contractor, Owner, Owner Representative and others as appropriate will be held to discuss the schedules and other preliminary matters, along with procedures for handling Shop Drawings and other submittals and for processing Applications for Payment, and to establish other procedures and understandings bearing upon coordination, performance and completion of the Work.

**§ 3.10.6** The Owner, if it deems necessary, may direct Contractor to Work overtime, in addition to any overtime required to meet the approved progress schedule as incorporated in the Contract Documents, and if so directed Contractor shall Work said overtime. Provided that Contractor is not in default under any of the terms or provisions of the Contract or of any of the other Contract Documents, Contractor will be reimbursed for such actual additional wages



paid, if any, at rates which have been approved by Owner Representative and Owner plus taxes imposed by law on such additional wages, plus workmen's compensation insurance and levies on such additional wages if required to be paid by Contractor.

**§ 3.10.7** If the progress of the Work or of the Project be delayed by any fault or neglect or act or failure to act of Contractor or any of its officers, agents, servants, or employees, then Contractor shall, in addition to all of the other obligations imposed by the Contract upon Contractor in such cases, and at its own cost and expense, work such overtime as may be necessary to make up for all time lost and to avoid delay in the completion of the Work and of the Project. If, after written notice is given by Owner's Representative, Contractor refuses to work overtime required to make up lost time or to avoid delay in the completion of the Work and of the Project, Owner may hire others to perform the Work and deduct the cost from Contractor's Contract amount.

**§ 3.10.8** Should the progress of the Work or of the Project be delayed by any fault, neglect, or failure to act of Contractor so as to cause any additional cost, expense, liability or damage to Owner or Owner Representative or any damages or additional costs or expenses for which Owner or Owner Representative may or shall become liable, Contractor shall and does hereby agree to compensate Owner and Owner Representative for and indemnify them against all such costs, expenses, damages and liability.

**§ 3.10.9** The Owner may order a postponement or rescheduling of any date or time for the performance of any part of the Work that interferes with the operations of other Contractors, use of the Owner's premises by the Owner, its tenants or invitees. At the Owner's request, Contractor shall schedule or reschedule any portion of the Work which adversely affects other Contractors.

### **§ 3.11 Documents and Samples at the Site.**

**§ 3.11.1** The Contractor shall keep at the construction site a complete set of all Drawings and Specifications, Addenda, Written Amendments, Change Orders, Construction Change Directives, Field Orders and written interpretations and clarifications related to the Project in good order and annotated to show all changes made during construction. Contractor also shall maintain a set in electronic form. These documents, together with all approved samples and a counterpart of all approved Shop Drawings, including the red line As-Built shall be available to Owner and Owner Representative for reference. Upon achieving Substantial Completion of the Work, separate copy sets of these documents, samples, and Shop Drawings shall be delivered to each of Owner and Owner Representative as a condition precedent of achieving Substantial Completion. During construction, these prints shall be marked to show all deviations in actual construction from the Contract Documents. The color red shall be used to indicate all additions, and green to indicate all deletions. The drawings shall show the following information, but not be limited thereto: (a) the locations and description of any utility lines and other installations of an kind or description known to exist within the construction area (the location includes dimensions to permanent features ); (b) locations and dimensions of any changes within the building or structure, and the accurate location and the dimension of all underground utilities and facilities; (c) correct grade or alignment of roads, structures, and utilities if any changes were made from Contract Documents; (d) correct elevations if changes were made in site grading from the Contract Documents; (e) changes in details of design or additional information obtained from working drawings specified to be prepared and/or furnished by the Contractor including, but not limited to, fabrication, erection, installation, and placing details, pipe sizes, installation material, dimensions of equipment foundations, etc.; (f) the topography and grades of all drainage installed or effected as part of the Project construction; (g) all changes or modifications from the original design and from the final inspection; and (h) where Contract drawings or specifications allow options, only the option actually used in the construction shall be shown on the As-Built drawings: (i) if sheet does not have any changes, those sheets must be marked NO CHANGE at top and included in the as built set. The option not used shall be deleted. These deviations shall be shown in the same general detail utilized in the Contract drawings. Marking of the prints shall be pursued continuously during construction to keep them up-to-date. This information shall be maintained in a current condition at all times until the completion of the Work. The resulting field marked data shall be referred to and marked as "As Built Field Data" and shall be used for no other purpose. They shall be made available for inspection by the Owner Representative whenever requested during construction and, if requested by Owner, shall be jointly inspected for accuracy and completeness by the Owner Representative and responsible representative of the Contractor prior to submission of a monthly pay application. Failure to keep the As Built Field Data (including equipment and place lists) current shall be sufficient justification to deny applicable payment from the monthly pay application.

§ 3.11.2 Contractor shall provide Owner and Owner Representative with the master set of Drawings and Specifications in digital and paper form annotated as per ¶3.11.1 incorporating the revisions and changes made during construction up to acceptance of the Project. These updated documents shall reflect all changes to the original construction documents to indicate the as-built conditions, including revisions in site and building area tabulations. These Drawings and Specifications shall be certified as to their correctness by the signature of Contractor.

§ 3.11.3 Owner and Owner Representative reserve the right to review the as-built documents at any time during the life of the Project. Contractor shall present to Owner and Owner Representative for review updated as-built documents on a monthly basis as a condition precedent for submitting an application for payment.

§ 3.11.4 With regard to as-built, record documents and COBIE construction Data submittals, Contractor shall comply with the requirements set forth in Division 00 and 01.

### § 3.12 Shop Drawings, Product Data and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Owner Representative is subject to the limitations of Section 4.2.7. Informational submittals upon which the Owner Representative is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Owner Representative without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Owner Representative, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Owner Representative or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors. Shop Drawings shall show: (i) the job title, names of Contractor or Subcontractor, the date and the location of each item shown; (ii) the design, dimensions, connections, and other details necessary to ensure that they accurately interpret the Drawings and Specifications; and (iii) adjoining work in sufficient detail to show proper connection with the same. Where adjoining work requires Shop Drawings, they shall be coordinated and submitted at the same time so that connections can be properly received.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and Owner Representative that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the Owner Representative.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Owner Representative's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified in writing the Owner Representative of such deviation at the time of submittal and (1) the Owner Representative has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change

Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Owner Representative's approval thereof.

**§ 3.12.9** The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Owner Representative on previous submittals. In the absence of such notice, the Owner Representative's approval of a resubmission shall not apply to such revisions.

**§ 3.12.10** The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

**§ 3.12.10.1** If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Owner Representative will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's signed approval of the submittals when submitted to the Owner Representative. The Owner and the Owner's Representative shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Owner Representative have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Owner Representative will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

**§ 3.12.10.2** If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Owner Representative at the time and in the form specified by the Owner Representative.

**§ 3.12.11** Contractor shall furnish a copy of approved submittals to each Subcontractor and each separate contractor whose performance may be affected by the Work shown or described therein.

**§ 3.12.12** A submittal schedule of Working Drawings and Shop Drawings submissions shall be submitted by Contractor for Owner Representative's approval on a form acceptable to Owner Representative within fourteen (14) days of the effective date of the Notice To Proceed. Contractor's proposed submission schedule shall allow adequate time for review and approval by Owner Representative and to allow the suppliers and manufacturers sufficient time to fabricate, manufacture, inspect, test and deliver their respective equipment and products to the Project site in a timely manner so as to not delay the complete performance of the Work. The proposed submission schedule shall be in conformance with the completion dates specified in the Contract. Contractor shall prepare and submit Working Drawings and Shop Drawings in accordance with the approved submission schedule.

**§ 3.12.13** Unless otherwise specified in the Contract Documents, Working Drawings shall be numbered consecutively and shall accurately and distinctly present (1) all working and erection dimensions, (2) arrangements and sectional views, (3) necessary details, including complete information for making connections between Work under this Contract and work under other contracts, (4) electrical wiring connections between all equipment furnished under the Contract, including all internal wiring between internal components of equipment, (5) kinds of materials and finishes, and (6) parts lists and description thereof.

**§ 3.12.14** Unless otherwise specified in the Contract Documents, Shop Drawings will present, where applicable, such data as dimensions, weight and performance characteristics. This data shall show conformance with the performance characteristics and other criteria incorporated in the Contract Documents. Each drawing or page shall include (1) submittal date and revision dates, (2) project name, division number and descriptions, (3) Detailed Specifications

Section number and page number, (4) identification of equipment, product or material, (5) name of Contractor and subcontractor, (6) name of supplier and manufacturer, (7) relation to adjacent structure or material, (8) field dimensions, clearly identified, (9) ASTM, Federal and other Specification references, (10) space for Owner Representative's stamp, (11) identification of deviations from the Contract Documents, (12) Contractor's stamp, initialed or signed, dated and certifying to review of the submittal, certification of field measurements and compliance with the Contract Documents, and (13) location at which the equipment or materials are to be installed (both physical location and location relative to other connected or attached material). Owner Representative will return unreviewed any submittal which does not contain complete data on the Work and full information on related matters or otherwise fails to comply with this Section. Stock or standard drawings will not be accepted for review unless full identification and supplementary information is shown thereon in ink or typewritten form.

§ 3.12.15 Contractor shall check and approve all Working Drawings and Shop Drawings before transmitting them to Owner Representative to determine that they comply with requirements of the Contract Documents. Drawings which are incomplete or are not in compliance with the Contract Documents shall not be submitted for processing. Contractor shall place its signature or initials on its stamp of approval on all Working Drawings and Shop Drawings submitted to and Owner Representative to indicate compliance with this requirement. Contractor's approval shall constitute a representation that all quantities, dimensions, field construction criteria, materials, catalog numbers, performance criteria and similar data have been verified and that, in its opinion, the submittal fully meets the requirements of the Contract Documents. Delays incurred by the contractor due to incomplete or non-compliant working drawings or Shop Drawings and are not excusable for purposes of adding additional time to the project Substantial Completion date.

§ 3.12.16 If the Working Drawings or Shop Drawings show departures from the requirements of the Contract Documents, Contractor shall make specific mention thereof in its letter of transmittal, otherwise approval of such submittals by Owner Representative shall not constitute approval of the departure. Approval of the drawings shall constitute approval of the subject matter thereof only and not of any structure, material, equipment or apparatus shown or indicated.

§ 3.12.17 The approval of Working Drawings and Shop Drawings shall be general and shall not relieve Contractor of responsibility for the accuracy of such drawings, nor for the proper fitting and construction of the Work, nor for the furnishing of materials or Work required by the Contract and not indicated on the Drawings. No Work called for by Working Drawings or Shop Drawings shall be done until such drawings have been approved by Owner Representative.

§ 3.12.18 Contractor shall comply with any further show drawing requirements set forth in the Division 00 and 01.

### § 3.13 Use of Site (Paragraph deleted)

§ 3.13.1 Contractor shall confine construction equipment, the storage of materials and equipment and the operations of workers to the Project site and land and areas identified in and permitted by the Contract Documents and other land and areas permitted by Laws and Regulations, rights-of-way, permits and easements. Contractor shall not unreasonably encumber the premises with construction equipment or other materials or equipment, and shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof or of any land or areas contiguous thereto, resulting from Contractor's operations at the site or the performance of the Work. Should any claim be made against Owner or Owner Representative by any such owner or occupant, Contractor shall promptly attempt to settle or otherwise resolve such claim directly with such other party, by agreement or otherwise. Contractor shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold Owner and Owner's Representative harmless from and against all claims, damages, losses and expenses (including, but not limited to, fees of engineers, architects, attorneys and other professionals and court and arbitration costs) arising directly, indirectly or consequentially out of any action, legal or equitable, brought by any such other party against Owner or Owner Representative to the extent based on a claim arising out of Contractor's site operations or performance of the Work.

§ 3.13.2 Contractor, its Subcontractors, and any separate contractor under direct contract with Owner shall be responsible for securing their own Work and their own equipment at the close of each workday.

§ 3.13.3 Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work and shall take all necessary precautions for the safety of, and provide the necessary protection to prevent damage, injury or loss to (i) all employees on the Work and other persons and organizations who

may be affected thereby, (ii) all the Work and all materials or equipment to be incorporated therein, whether in storage on or off the site, and (iii) other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities and underground facilities not designated for removal, relocation or replacement in the course of construction. See Article 10.

**§ 3.13.4** If Owner or Owner Representative requires Contractor to relocate materials which have been stored on site or within the building, Contractor shall relocate such materials at no additional cost to Owner.

**§ 3.13.5** Contractor shall maintain the existing building in a weather tight condition throughout the construction of the Project, and shall repair any and all damage thereto caused by its construction operations. Contractor or the operations of the subcontractors shall take all precautions necessary to protect the existing building and its occupants during the course of the construction and performance of Contractor's Work.

**§ 3.13.6** Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

**§ 3.13.7** Contractor shall perform Work so as not to interfere with Owner's ongoing activities and so as not to create any hazards to Owner's employees or members of the public using Owner's property. Site specific plan for all vehicular, pedestrian, special events and construction traffic, flow and staging is to be diagrammed and coordinated with Owner Representative for best communication and collaboration necessary so as to no impede the Owner activities or Contractor as is comparable to Article 10 requirements.

**§ 3.13.8** Contractor shall be responsible for securing temporary utilities at the Project, including electricity, light, heat and water. Contractor shall be responsible for the cost of all temporary utilities, including the cost of placing utilities in service, their continued operation during the construction of the Project, and their discontinuance thereafter.

**§ 3.13.9** Pumping, draining and control of surface and groundwater shall be carried out so as to avoid endangering any adjacent facility or property, or interrupting, restricting or otherwise infringing, or interfering with the use thereof. All such work shall be performed in compliance with state and federal regulations and any other authority applicable to the site with respect to surface and groundwater and shall be at no additional cost to the Owner.

**§ 3.13.10** The discharge of any substance other than stormwater into any storm drain, inlet, creek, or ditch, including street gutters and curb inlets, is strictly prohibited, unless the substance is only of the following exempt discharges: water line flushing, landscape irrigation, diverted stream flows, rising groundwater infiltration, uncontaminated pumped groundwater, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, springs, water from crawl space pumps, footing drains, lawn watering, individual residential car washing, flows from riparian, habitats and wetlands, dechlorinated swimming pool discharges, street wash water, or discharges from firefighting activities. The discharge of sediment-laden runoff waters from construction sites is included as a prohibited discharge. Contractor shall pay Owner for any costs Owner incurs based upon Contractor's noncompliance with this provision, including but not limited to repair or remediation costs, fines or penalties imposed on Owner by any regulating authority, and any fees or costs paid to attorneys or consultants arising out of a prohibited discharge. Failure to comply with this provision may also, at the Owner's sole option, result in Owner's termination of this Contract. In the event that Owner terminates the Contract based on a violation of this provision, Contractor agrees that Owner shall have no further liability to Contractor, with the exception of payment of any monies for Work Contractor performed prior to the date of termination.

**§ 3.13.11** Only materials and equipment that are to be used in the Work shall be brought to and stored on the Project Site by the Contractor. Equipment no longer required for the Work shall be promptly removed from the Project Site. Contractor shall be solely responsible for protecting construction materials and equipment stored at the Project Site from weather, theft, damage and all other adversity. The Contractor shall ensure that at all times, the Work is performed in a manner that provides reasonable vehicular and pedestrian access to site of the Work and all adjacent areas. To the fullest extent reasonably possible, the Work shall be performed in such manner that public areas adjacent to the site of the Work shall be free from all debris, building materials, equipment or hazardous conditions.

**§ 3.13.12** Neither Contractor nor any entity for which the Contractor is responsible, shall erect any sign on the Project Site without the Owner's prior written consent. Such consent may be withheld in the Owner's sole discretion.

**§ 3.13.13** Without limiting any other provision of the Contract Documents, Contractor shall use its best efforts to minimize any interference with the occupancy or beneficial use of (i) any areas in buildings adjacent to the site of the Work and (ii) the Project itself in the event of Partial Occupancy, as permitted in Section 9.9. Without the Owner's prior written approval, Contractor shall not permit any workers to use any existing facilities at the Project Site, including without limitation, lavatories, toilets, entrances and parking areas other than those designated by the Owner for Contractor's use.

- .1 Without limiting any other provision of the Contract Documents, the Contractor shall comply with all rules and regulations promulgated by the Owner and provided by the Owner at the preconstruction meeting regarding Contractor's use and occupancy of the Project Site during performance of the Work. The Contractor shall give the Owner immediate written notice if Contractor finds compliance with any portion of such rules and regulations to be impractical. Such notice shall set forth the problems caused by such compliance and suggest alternatives through which the same results intended by such rules and regulations can be achieved. The Owner, in its sole discretion, may adopt such alternatives, develop new alternatives, or require compliance with the existing rules and regulations.
- .2 The Contractor shall comply with all insurance requirements and collective bargaining agreements applicable to use and occupancy of the Project Site and the Work.

**§ 3.13.14** In addition to the requirements identified in this Section, Contractor shall comply with the requirements set forth in Indiana University Division 00 and 01.

### **§ 3.14 Underground Facilities**

**§ 3.14.1** Underground Facilities consist of all pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other manmade facilities or structures, and any encasements containing such facilities, which have been installed at or below the surface of the ground for the purpose of furnishing, storing, removing or transmitting electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, computer signals or data, sewage, drainage, traffic or other control systems, or water.

**§ 3.14.2** The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the site is based on information and data furnished to Owner or Owner Representative by the owners of such Underground Facilities or by others. Owner and Owner Representative shall not be responsible for the accuracy or completeness of any such information or data. Contractor shall have the sole responsibility for reviewing and checking all such information and data, for locating all Underground Facilities, shown or indicated in the Contract Documents, for coordination of the Work with the owners of such Underground Facilities during construction, for the safety and protection thereof and for repairing any damage thereto resulting from the Work or Contractor's operations, the cost of all of which having been included in the Contract Price.

**§ 3.14.3** If an Underground Facility is uncovered or revealed at or contiguous to the site which was not shown or indicated in the Contract Documents and of which Contractor could not reasonably have been expected to be aware, Contractor shall immediately but in no event later than two (2) calendar days after becoming aware thereof and before further disturbing conditions affected thereby (except in an emergency as permitted elsewhere herein), notify the owner of such Underground Facility and give written notice to Owner and Owner Representative. Owner and Owner Representative will promptly review the Underground Facility to determine the extent to which the Contract Documents should be modified to reflect and document the consequences of the existence of the Underground Facility, and the Contract Documents will be amended or supplemented to the extent necessary.

**§ 3.14.4** However, Owner and Owner Representative shall not be liable to Contractor for any claims, costs, losses or damages incurred or sustained by Contractor for any claims, costs, losses or damages caused by or arising from any assessment, penalty or other liability imposed upon Contractor by utility companies or third parties.

### **§ 3.15 MATERIALS FOUND AT THE PROJECT SITE**

§ 3.15.1 All existing equipment and materials as listed in the Drawings and Specifications, removed from existing facilities shall remain the property of Owner. Such equipment and materials shall be stored on-site at locations identified by Owner and Owner Representative. Only existing equipment and materials, listed in the Drawings and Specifications, removed from existing facilities shall be the property of Contractor and shall be removed from the site.

§ 3.15.2 Construction materials such as gravel, stone, or sand found in excavations shall not be used for purposes other than indicated on the Drawings and Specifications without written approval of Owner and Owner Representative. When such approval is given, it shall state explicitly the provisions under which it is granted.

§ 3.15.3 Contractor shall give prior written notice to utility companies, make all arrangements and provide all services necessary to discontinue utilities or place same in service.

§ 3.15.4 In addition to the requirements identified in this Section, Contractor shall comply with the requirements set forth in the Indiana University Division 00 and 01.

### § 3.16 CUTTING AND PATCHING

§ 3.16.1 The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting and patching shall be restored to the condition existing prior to the cutting, fitting and patching, unless otherwise required by the Contract Documents.

§ 3.16.2 The Contractor shall not damage or endanger a portion of the Work or any fully or partially completed construction of the Owner or Separate Contractors by excavating, cutting, patching or otherwise altering such construction. The Contractor shall not cut or otherwise alter such construction by the Owner or a separate contractor except with written consent of the Owner and such contractor. Such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's consent to cutting or otherwise altering the Work. All excavating, cutting and/or patching shall be performed in such a manner as to protect other structures, monuments, brick sidewalks, trees and other landscaping.

- .1 Cutting and patching shall be performed by the proper trades or crafts necessary for the material involved, at the cost of the contractor requiring the cutting and patching.
- .2 Patching shall mean the restoration of a surface or item to its original condition to match the existing adjoining surfaces unless otherwise indicated, noted, detailed or specified. When patching involves painting, special coating, vinyl fabric or other applied finishes, the entire surface affected (i.e. wall or ceiling) shall be refinished as a part of this requirement.
- .3 Cutting and patching includes cleaning and restoration of all surfaces soiled by the cutting and patching work.

§ 3.16.3 Contractor shall locate and protect from injury utilities of all kinds, either above or below grade, inside or outside of any structure, found in the area affected by its Work. Contractor shall be responsible for all damage caused to such utility by the operation of equipment or delivery of materials or as the direct or indirect result of any of its Work and shall repair all such damage at its expense and as a part of the Work included in the Contract Documents. The Contractor shall not be entitled to any increase in the Contract Sum or the Contract Time on account of such damage to any utility. Upon discovery of any utility by Contractor, such utility shall be indicated on the As Built Drawings.

### § 3.17 Cleaning Up

§ 3.17.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project and shall leave the site clean and ready for occupancy by the Owner. Additional requirements are set forth in Division 00 and 01.

*(Paragraph deleted)*

§ 3.17.1.1 The Contractor shall be responsible for keeping the site of the Work and adjacent premises as free from material, debris and rubbish as is practicable, and shall remove same from any portion of the Site, if, in the opinion of the Owner or Owner Representative, such material debris or rubbish constitutes a health and safety issue, nuisance or is objectionable in any way to the Owner. The Contractor further agrees to remove all machinery, materials implements, barricades, staging, false work, debris and rubbish connected with or caused by its Work immediately upon completion

of the Work and to clean all structures and Work as required by the Contract Documents, including Division 00 and 01, to the satisfaction of the Owner and the Owner Representative and to leave the premises in a condition that will allow the Owner's immediate and unrestricted use of the Work and all areas affected by the Work. With respect to renovation projects, the Contractor acknowledges that Owner in such cases, may continue to occupy and must maintain continuous operations in the building in which the Work is located. In such cases, it is critical that the Owner's operations are not interfered with, including, without limitation, any interruption in utilities or unreasonable noise, dust, odor, vibration or hazardous condition. The Contractor shall perform its Work and limit its use of the Project Site in such manner as to minimize any interference with Owner's occupancy and operations in the building consistent with applicable building rules and regulations.

*(Paragraph deleted)*

**§ 3.17.1.2** Dust control shall be effectively maintained at all times whether or not specifically ordered by the Owner Representative or Owner. The Contractor shall provide and apply continuous internal and external dust control, including holidays and weekends, as required, to prevent the spread of dust and to avoid the creation of a nuisance at the work site or in the surrounding areas as a result of construction activities. Internal dust control shall be accomplished by barrier, vacuum, filters or other approved methods and equipment. External dust control shall be by sprinkler water or other approved means, except that no chemicals or oil shall be used. Quantities and equipment shall be sufficient to control dust effectively. When weather conditions warrant, external sprinkling equipment shall be on hand and immediately available at all times. Owner Representative and Owner shall have the authority to order dust control Work whenever required in its opinion; however, dust control shall be effectively maintained at all times whether or not specifically ordered by the Owner Representative and Owner. Contractor shall also take proper measures at no additional cost to Owner to prevent tracking mud into the interior of buildings or onto public streets or roads or property of third persons. Such measures shall include but are not limited to covering muddy areas on the Site with clean dry sand. All ingress/egress from the Site shall be maintained in a dry condition, and any mud tracked off site including streets or roads or any other areas of the building or property of third persons shall be immediately removed and the affected area cleaned. Owner Representative or Owner may order such work at any time that conditions warrant.

*(Paragraph deleted)*

**§ 3.17.1.3** Contractor shall be ultimately responsible for all daily cleanup of construction materials and debris and building dust control. Cleanup shall include removal of materials and debris from the building and placement in a debris box or other disposal. Special consideration is required for the immediate removal and/or protection of material or debris which pose a hazard to Owner's students, employees, invitees, fixtures and floor coverings (i.e. particularly hazardous materials, broken glass, sawdust, materials that pose a tripping hazard, etc.), including utilization of protective coverings for newly installed floor covering and fixtures. Certain construction activities, including but not limited to drywall sanding, spray painting, sawing, etc., create dust which must be controlled to protect Owner's students, employees, invitees, equipment, facilities and property. Contractor shall take steps as necessary to control the dust created by these operations, including but not limited to Visquine, ventilation, or a solid construction barrier. In addition to the requirements identified in this Section, Contractor shall comply with the requirements regarding airborne contaminants set forth in the Project Specifications and Division 00 and 01.

*(Paragraph deleted)*

**§ 3.17.2** If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

*(Paragraph deleted)*

### **§ 3.18 Access to Work**

*(Paragraph deleted)*

**§ 3.18.1** The Contractor shall provide the Owner and Owner Representative with access to the Work in preparation and in progress wherever located.

*(Paragraphs deleted)*

**§ 3.18.2** Contractor is responsible for its site access. Contractor shall keep roads, walks, ramps, etc. on and adjacent to the Project site in good working order and condition and free from obstructions which might present a hazard to or interference with traffic. When construction operations necessitate the closing of traffic lanes, Contractor shall be responsible for arranging such closings in advance with the authorities having jurisdiction, Owner, and adjacent property owners. Contractor shall prepare and submit a maintenance of traffic plan to the Owner and Owner's Representative for approval.



*(Paragraphs deleted)*

### **§ 3.19 Royalties, Patents and Copyrights**

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Owner Representative harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner or Owner Representative. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Owner Representative.

*(Paragraph deleted)*

### **§ 3.20 Indemnification**

*(Paragraph deleted)*

**§ 3.20.1** To the fullest extent permitted by law, Contractor shall indemnify, hold harmless and defend Owner, Owner Representative and all of their officers, directors, partners, agents, employees, consultants, attorneys and any other person or entity for whom any of them may be legally responsible, of and from and against all claims, suits, demands, causes of action, damages, losses, costs and expenses, including reasonable attorney's and consultant's fees and expenses, of any nature whatsoever which arise out of, or are alleged to arise out of, result from, or are in connection with or incidental to the performance of Contractor's Work under this Contract, or occasioned by any breach or nonperformance of its terms and obligations, or by any labor, services, materials or equipment furnished hereunder, provided that any such claim, suit, demand, cause of action, damage, loss, cost, fees or expense: (a) is attributable to, or alleged to arise out of or be attributable to, bodily injury, sickness, disease or death, or actual or alleged infringements of any patent, trademark, copyright or other intellectual property or proprietary right, or the breach of or failure to comply with any term, condition or obligation under the Contract, or to injury or damage to or destruction of tangible property or real property, including the loss of use thereof and consequential damages resulting therefrom, or is attributable to damages from economic harm or loss, or is attributable to damages to any party indemnified hereunder or its employees, servants and agents, and whether such claim, suit, demand, cause of action, damage, loss, cost, fees or expense, is based upon, or claimed to be based upon, statutory, contractual, tort or other liability of any indemnified party hereunder; and (b) is caused in whole or in part by any negligent act or omission, breach of contract, breach of warranty, strict liability, or other breach of any duty or obligation of Contractor, Owner Representative, a Consultant, a Contractor, or anyone directly or indirectly employed by them or anyone for whose acts they may be liable, or is caused by or arises out of the use of any products, materials, machinery or equipment furnished by Contractor, regardless of whether such claim, suit, damage, loss, cost or expense is caused in part by any joint, several or comparative, but not sole, negligent act or omission, breach of contract, breach of warranty, strict liability, or other breach of duty or obligation by any party indemnified hereunder.

*(Paragraphs deleted)*

**§ 3.20.2** Without limiting the generality of the foregoing under §3.18 and in addition thereto, the indemnification, hold harmless and defense duties and obligations of Contractor shall apply to any claims, suits, demands, causes of action, damages, losses, costs and expenses, including attorney and expert fees and expenses and court costs, of whatsoever kind, nature and type, whether based in contract, tort or otherwise, of Contractor and its employees against Architect, or any other Consultant, Contractor, material supplier or third party and to the claims of whatsoever kind, nature and type, whether based in contract, tort or otherwise, of Owner Representative, or any other Consultant, Contractor, material supplier or third party, or its employees, against Contractor or Owner or any other party indemnified hereunder, consistent with the provisions of the Indiana Anti-Indemnity Statute, as codified at Indiana Code.

**§ 3.20.3** In any and all claims against Owner or any of its officers, directors, partners, agents, employees, consultants, attorneys and any other person or entity for whom any of them may be legally responsible, by any employee of Contractor or anyone directly or indirectly employed by Contractor, or anyone for whose acts Contractor may be liable, the indemnification obligations under this §3.18 shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for Contractor under worker's compensation acts, disability benefit acts or other employee benefit acts.

**§ 3.20.4** The indemnification, hold harmless and defense duties and obligations of Contractor arising under the Contract and this 3.20 shall extend to any and all claims, suits, demands, causes of action, damages, losses, costs and expenses, including attorney and expert fees and expenses, occurring after the Work under this Contract is completed and the

performance obligations of Contractor hereunder are concluded as well as while the Contract remains in full force and effect, and such indemnification, hold harmless and defense duties and obligations shall continue until there is a final adjudication or determination that any and all such claims, suits, demands and causes of action against the parties indemnified hereunder are fully and finally barred by applicable statutes of limitation or operation of law.

**§ 3.20.5** Contractor shall assume all liability, financial or otherwise, in connection with its Contract and the Work and shall protect and hold harmless Owner and Owner Representative from any and all damages or claims that may arise because of inconvenience, delay, or loss experienced by Contractor and caused directly or indirectly by the acts or omissions of other contractors or third parties. Contractor shall make no claim for damages against Owner or Owner Representative by reason of any act or omission to act by any other contractor or third party or in connection with Owner Representative's or Owner's acts or failures to act in connection with such other contractor or third party, but Contractor shall have a direct right to recover such damages from other contractors.

**§ 3.20.6** Upon receipt of a progress payment, Contractor shall pay promptly all valid bills and charges for materials, equipment, labor or other costs in connection with or arising out of the Work, and will hold Owner free and harmless from and against all liens and claims of liens for such materials, equipment, labor and other costs, or any of them, filed against the Project or the site, or any part thereof, and from and against all expense and liability in connection therewith including, but not limited to, the court costs and attorney fees resulting or arising therefrom. Should any liens or claims of liens be filed of record against the Project or the Site, or should Owner receive notice of any retainage claim or of any unpaid bill of charge in connection with the Work, Contractor shall forthwith either pay or discharge the same and cause the same to be released of record, or shall furnish Owner with appropriate indemnity in form and amount satisfactory to Owner.

**§ 3.20.7** If any part of the indemnity provisions of this Section 3.18 is adjudged to be contrary to law, the remaining parts of the provisions shall in all other respects be and remain legally effective and binding. Moreover, such indemnity obligation shall not be construed to negate, abridge, or otherwise reduce any other right which would otherwise exist or obligation of indemnity as to any party or person described in this Article.

### **§ 3.21 LINES AND GRADES**

**§ 3.21.1** All work under this Contract shall be constructed in accordance with the lines and grades shown on the Drawings or as otherwise given by Owner Representative, and Contractor shall retain the full and exclusive responsibility for maintaining specified alignments and grades throughout the course of the Work. Control points and reference marks for lines and grades shall be set by Contractor as the Work progresses and shall be located to avoid any undue inconvenience to the prosecution of the Work. Contractor shall place excavation and other materials so as to cause no inconvenience in the use of the reference marks provided. Contractor shall remove any obstructions placed by Contractor contrary to this Section at no cost to Owner.

**§ 3.21.2** Contractor shall safeguard all points, stakes, grade marks, monuments and bench-marks made or established on the Work, bear the cost of reestablishing them if disturbed, and bear the entire expense of rectifying work improperly installed due to not maintaining or protecting or to removing without authorization such established points, stakes and marks. Contractor shall safeguard all existing and known property corners, monuments and marks adjacent to but not related to the Work and, if required, shall bear the cost of reestablishing them if disturbed or destroyed.

## **ARTICLE 4 OWNER'S REPRESENTATIVE**

### **§ 4.1 General**

*(Paragraphs deleted)*

**§ 4.1.1** The Owner shall retain an architect or engineer lawfully licensed to practice architecture or engineering or an entity lawfully practicing architecture or engineering in the jurisdiction where the Project is located. That person or entity is identified as the Owner's Representative in the Agreement and is referred to throughout the Contract Documents as if singular in number. To the extent that the Project does not involve the practice of architecture or engineering but instead involves the practice of another licensed profession, the term 'Owner's Representative,' as used herein, shall refer to such other licensed design professional.

*(Paragraph deleted)*

**§ 4.1.2** Duties, responsibilities and limitations of authority of the Owner's Representative as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner, Contractor and Owner's Representative. Consent shall not be unreasonably withheld.

*(Paragraph deleted)*

**§ 4.1.3** If the employment of the Owner's Representative is terminated, the Owner shall employ a successor Owner's Representative, as defined above in Section 4.1.1, whose status under the Contract Documents shall be that of the Owner's Representative.

*(Paragraphs deleted)*

## **§ 4.2 ADMINISTRATION OF THE CONTRACT**

*(Paragraph deleted)*

**§ 4.2.1** The Owner's Representative will provide administration of the Contract as described in the Contract Documents during construction until the date the Owner's Representative issues the final Certificate for Payment, and, with the Owner's concurrence, from time to time during the two-year period for correction of the Work. The Owner's Representative will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

*(Paragraph deleted)*

**§ 4.2.2** The Owner's Representative will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Owner's Representative will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Owner's Representative will not have control over, charge of, or responsibility for, the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents, except as provided in Section 3.3.1.

*(Paragraph deleted)*

**§ 4.2.3** On the basis of the site visits, the Owner's Representative will keep the Owner informed about the progress and quality of the portion of the Work completed, and report to the Owner (1) known deviations from the Contract Documents and from the most recent construction schedule submitted by the Contractor, and (2) defects and deficiencies observed in the Work. The Owner's Representative will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Owner's Representative will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

## **§ 4.3 COMMUNICATIONS FACILITATING CONTRACT ADMINISTRATION**

Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate with each other through the Owner's Representative about matters arising out of or relating to the Contract. Communications by and with the Owner's Representative's consultants shall be through the Owner's Representative. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner.

*(Paragraphs deleted)*

**§ 4.3.1** Based on the Owner's Representative's evaluations of the Contractor's Applications for Payment, the Owner's Representative will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

*(Paragraph deleted)*

**§ 4.3.2** The Owner's Representative has authority to reject Work that does not conform to the Contract Documents. Whenever the Owner's Representative considers it necessary or advisable, the Owner's Representative will have authority to require inspection or testing of the Work in accordance with Sections 13.5.2 and 13.5.3, whether or not such Work is fabricated, installed or completed. However, neither this authority of the Owner's Representative nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Owner's Representative to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons or entities performing portions of the Work.

*(Paragraphs deleted)*

§ 4.3.3 The Owner's Representative will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Owner's Representative's action will be taken in accordance with the submittal schedule approved by the Owner's Representative or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Owner's Representative's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Owner's Representative's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5 and 3.12. The Owner's Representative's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Owner's Representative, of any construction means, methods, techniques, sequences or procedures. The Owner's Representative's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

*(Paragraphs deleted)*

§ 4.3.4 The Owner's Representative will prepare Construction Change Directives and may authorize minor changes in the Work as provided in Section 7.2. The Owner's Representative will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Owner's Representative will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion, issue Certificates of Substantial Completion pursuant to Section 9.8, receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor; and issue a final Certificate for Payment pursuant to Section 9.9.

§ 4.3.5 If the Owner and Owner's Representative agree, the Owner's Representative will provide one or more project representatives to assist in carrying out the Owner's Representative's responsibilities at the site. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents.

§ 4.3.6 The Owner's Representative will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Owner's Representative's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.3.7 Interpretations and decisions of the Owner's Representative shall be made in writing or in the form of drawings and will be consistent with the intent of and reasonably inferable from the Contract Documents. When making such interpretations and decisions, the Owner's Representative will endeavor to secure faithful performance by both Owner and Contractor and will show partiality to neither.

§ 4.3.8 The Owner's Representative's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.3.9 The Owner's Representative will review and respond to requests for information about the Contract Documents. The Owner's Representative's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Owner's Representative will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

## **ARTICLE 5 SUBCONTRACTORS**

### **§ 5.1 Definitions**

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

*(Paragraphs deleted)*

## § 5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

§ 5.2.1 As part of its bid documents and where required by the bid form, Contractor shall furnish to the Owner and Owner's Representative in writing the name and trade for each proposed Subcontractor of all persons or entities proposed as manufacturers of the products identified in the Specifications (including those who are to furnish materials or equipment fabricated to a special design) and, where applicable, the name of the installing Subcontractor. If this information is not required to be provided on the bid date, then it shall be furnished to Owner as otherwise required by the Contract Documents. Contractor shall not propose or utilize a Subcontractor who has been disqualified under existing federal laws and regulations from participating in federally-assisted construction projects. The Contractor shall contract only with a Subcontractor approved in writing by the Owner and, after bid opening, substitution of any Subcontractor identified in the bid shall be made only by way of the Construction Change Directive process set forth in Article 7 of this Agreement. Additionally, the Contractor may not adjust its bid price, and may not seek a refund of its bid bond, based upon Owner's rejection of any Subcontractor or of a proposed substitution. . The Construction Manager may reply within 14 days to the Contractor in writing stating (1) whether the Owner, the Construction Manager or the Owner's Representative has reasonable objection to any such proposed person or entity or, (2) that the Construction Manager, Owner's Representative or Owner requires additional time for review. Failure of the Construction Manager, Owner, or Owner's Representative to reply within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 Contractor shall not contract with any Subcontractor without the Owner's and Owner's Representative's prior written approval, which shall not be granted until Contractor submits a written statement concerning the proposed award to the Subcontractor that contains such information as the Owner may require. The Owner shall issue a written approval or rejection of each proposed award within fourteen (14) days of the Bid Opening. The Contractor shall not contract with a proposed person or entity whom the Owner and/or Owner's Representative has timely rejected.

§ 5.2.3 If the Owner or Owner's Representative has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Owner's Representative has no reasonable objection. In the event that the Contractor is required to substitute a Subcontractor during the course of the Work, such substitution shall be made only by way of the Construction Change Directive process set forth in Article 7 of this Agreement. The Contractor may not adjust its price based upon such a substitution or upon Owner's rejection of any proposed substitute Subcontractor.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person or entity previously selected if the Owner or Owner's Representative makes reasonable objection to such substitution.

## § 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Owner Representative. Each subcontract agreement shall preserve and protect the rights of the Owner and Owner Representative under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

## § 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

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- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and
- .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension except to the extent that the terms of the subcontract agreement prohibits such adjustment, in which case the terms of such contract agreement shall take precedence over this Section 5.4.

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

§ 5.4.4 Contractor must disclose all their affiliates, subsidiaries and vendors, regardless of other reporting requirements.

## **ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS**

### **§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts**

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 When Owner performs construction or operations with Owner's own forces including persons or entities under separate contracts, Contractor shall cooperate with the activities of Owner's own forces and of each separate contractor and coordinate the Work of Contractor with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

§ 6.1.4 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement. These Separate Contractors may also be referred to in the Contract Documents as "Multiple Prime Contractor".

§ 6.1.5 The Contractor accepts assignment of, and liability for, all purchase orders and other agreements for procurement of materials and equipment that are identified as part of the Contract Documents. The Contractor shall be responsible for any such purchased items as if the Contractor were the original purchaser. The Contract sum includes, without limitation, all costs and expenses in connection with delivery, storage, insurance, installation, and testing of items covered in any assigned purchase orders or agreements. Unless the Contract Documents specifically provide otherwise, all warranty and correction of the Work obligations included in the Contract Documents shall apply to any pre-purchased items. Refer to Division 00 and 01 for additional requirements.

### **§ 6.2 Mutual Responsibility**

§ 6.2.1 The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends on proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Owner Representative of apparent delays, discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Owner Representative of apparent delays, discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for delays, discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

§ 6.2.3 Contractor shall be liable for costs incurred or damages sustained by Owner or a separate contractor because of delays, improperly timed activities, defective construction or any other failure of performance by Contractor. Owner shall not be responsible to Contractor for costs incurred by Contractor because of delays, improperly timed activities, damage to the Work or defective construction of such Separate Contractors. Each Contractor agrees that all other Separate Contractors are intended additional beneficiaries of such Contractor's obligations insofar as they pertain to the Work of Separate Contractors. Accordingly, if the Contractor is delayed, hindered, or otherwise damaged by the act, omission, or delay by any separate contractor, Contractor's sole right and recourse shall be against such separate contractor except as to the conditional right to an extension of time as provided in Article 8 hereof.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

§ 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.2.6 If such separate contractor or other contractors initiate any dispute proceedings against Owner on account of any damage alleged to have been caused by Contractor, Owner shall notify Contractor who shall indemnify Owner and hold Owner harmless and shall defend such proceedings at Contractor's expense.

### § 6.3 Owner's Right to Clean Up

Upon written notice by the Owner, the Contractor, Separate Contractors, and other entities are responsible for their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Owner Representative will allocate the cost among those responsible.

## ARTICLE 7 CHANGES IN THE WORK

### § 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after the Notice to Proceed is issued without notice to any surety and without invalidating the Contract, by Construction Change Directive for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

*(Paragraphs deleted)*

§ 7.1.2 When a contemplated change in the Work may affect the Contract Sum or the Contract Time, the Owner's Representative will issue a Construction Change Directive detailing the work involved in such proposed change. The Contractor shall promptly, but in no case longer than five (5) working days after receipt of such Construction Change Directive, issue a written reply or Change Quotation itemizing the cost of such Construction Change Directive and any projected enlargement of the Contract Time or modification of the Project Schedule. Authorization to proceed with the Work shall be in accordance with 7.2.3.

§ 7.1.3 To expedite the review and evaluation of Contractor's Change Quotations, all Change Quotations (except those so minor that their propriety is obvious on their face) shall include a complete itemization of costs showing quantities, with unit prices of labor and materials for each such quantity, including items furnished by Subcontractors. Where major cost items are provided by Subcontractors, such items also shall be itemized and a copy of the Subcontractor's quotations, itemized as indicated above, shall be included in the Construction Change Directive.

§ 7.1.4 A Construction Change Directive requires agreement among the Owner, Contractor and Owner's Representative.

§ 7.1.5 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly, unless otherwise provided in the Construction Change Directive or order for a minor change in the Work. A change in the Contract Sum or Contract Time shall be accomplished only by Construction Change Directive. No course of conduct or dealing between the parties, no expressed or implied acceptance of alterations or additions to the Work, and no claim that Owner has been unjustly enriched by any alteration of or addition to the Work, whether or not there is any unjust enrichment to the Work, shall be the basis of any claim for an increase in the Contract Sum or for a change in the Contract Time in the absence of a Construction Change Directive.

§ 7.1.6 No action, conduct omission, prior failure or course of dealing by Owner shall be effective to waive, modify, change or alter the requirement that Changes in the Work by Construction Change Directive must be in writing and signed by the Owner. As such, Construction Change Directives are the exclusive methods of affecting any change in the Contract Sum or Contract Time. Contractor acknowledges that the Contract Sum and Contract Time cannot be changed by implication, oral agreement, actions, inactions, or course of conduct other than the methods prescribed by the Construction Documents.

## § 7.2 Construction Change Directives

### § 7.2.1 A

*(Paragraphs deleted)*

Construction Change Directive is a written order prepared by the Owner's Representative and signed by the Owner and Owner's Representative, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

*(Paragraphs deleted)*

§ 7.2.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

*(Paragraphs deleted)*

§ 7.2.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- .1 Mutual acceptance of a lump sum properly itemized with breakdown, labor and material, and supported by sufficient substantiating data to permit evaluation;
- .2 Unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- .4 As provided in Section 7.2.4.

§ 7.2.4 The cost of Contractor's overhead and profit combined, to be included on any Change Order or Construction Change Directive, shall be based on the following schedule:

- .1 For extra Work performed by the Contractor's own forces, ten percent (10%) of the cost.
- .2 For extra Work performed by a Subcontractor of Contractor, five percent (5%) of the amount due the Subcontractor, except that Contractor shall receive two (2%) of the cost for overhead and profit for Subcontractors affiliated with the Contractor
- .3 For each Subcontractor or Sub-Subcontractor involved, for extra Work performed by its own forces, ten percent (10%) of the cost.
- .4 For each Subcontractor, for extra Work performed by its Sub-Subcontractors, five percent (5%) of the amount due the Sub-Subcontractor, except that Subcontractor shall receive two (2%) of the cost for overhead and profit for Sub-Subcontractors affiliated with the Subcontractor.
- .5 For Work deleted which would have been completed by Contractor, ten (10%) of the cost shall be credited to the Owner; work deleted which would have been completed by Subcontractors of Contractor, five percent (5%) shall be credited to the Owner as the allowance for overhead and profit.
- .6 When specifically authorized by the Owner, overtime shall be paid by Owner on the base rate payroll and taxes only. Overhead, profit and markup will not be paid by the Owner for overtime.

§ 7.2.5 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Owner's Representative shall determine the adjustment on the basis of reasonable expenditures and savings of



those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, a fixed percentage for 7.2.4 of the overhead and profit as set forth in Subparagraph Agreement. In such case, and also under Section 7.2.6, the Contractor shall keep and present, in such form as the Owner's Representative may prescribe, an itemized accounting together with appropriate supporting data to verify any and all costs and expenditures or savings, if any, directly attributable to the change as described in the Constructive Change Directive. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.2.5 shall be limited to the following:

- .1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement, workers' compensation insurance, and other employee costs approved by the Owner's Representative;
- .2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
- .3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- .4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and
- .5 Costs of supervision and field office personnel directly attributable to the change.

§ 7.2.6 In order to facilitate checking of quotations for extras or credits, all proposals, except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of costs showing quantities, with unit price of labor and materials for each quantity, including those items furnished by Subcontractors. Where major cost items are subcontracts, they shall be itemized also and a copy of their quotations, itemized as indicated above, shall be included in the proposal. In no case shall a change involving over One Thousand Dollars (\$1,000.00) be approved without such itemization. The Contractor shall submit the cost itemization to Owner's Representative within fourteen (14) days after receipt of the proposal request. All proposed contract changes must be processed as a condition for release of Final Payment per section 9.8.1.

§ 7.2.7 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.2.8 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Owner's Representative of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.2.9 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.2.10 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Owner's Representative. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.2.11 No action, conduct, omission, prior failure or course of dealing by Owner or Owner's Representative shall act to waive, modify, change or alter the requirements that Construction Change Directives must be in writing and signed by the parties as provided herein, and that such written Construction Change Directives are the exclusive method of effecting any change to the Contract Sum or Contract Time.

## ARTICLE 8 TIME

### § 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the construction Work is the date of the Notice to Proceed.

§ 8.1.3 The date of Substantial Completion is the date identified in the Notice to Proceed.

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§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

## § 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly commence the site work prior to the effective date of insurance required to be furnished by the Contractor to the Owner and is to be kept current through the 2-year warranty period.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.2.4 The number of days for Project duration as stated in the Contractor's bid shall be noted in the Notice to Proceed and shall be used to calculate the Completion Date on the initial Project Schedule. The Completion Date shall not thereafter be changed except by way of a Construction Change Directive in accordance with Article 7. If Contractor shall fail to adhere to the approved original or revised progress schedule, Contractor shall adopt such other or additional means and methods of construction and commit such additional manpower, equipment and other resources as necessary to make up for the time lost and to assure completion of the Work.

## § 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by a wrongful act or neglect of the Owner or Owner's Representative, or an employee of either, or of a separate contractor employed by the Owner, or by changes ordered in the Work or by labor disputes not caused by wrongful or unlawful acts of Contractor, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's reasonable control, or by delay authorized by the Owner, or by such other causes which Owner's Representative determines may justify delay ("Excusable Delay"), then the Contract Time shall be extended for a number of days equal to the duration of the Excusable Delay, provided the Work is not, was not, or would not have been delayed by a cause for which the Contractor is responsible ("Concurrent Delay"). Extensions of the Contract Time will be permitted only to the extent that the duration of the Excusable Delay could not have been limited, avoided or mitigated.

§ 8.3.2 Except as provided in Sections 3.7.4 and 10.3.3., an extension of time for Excusable Delay, as defined above, shall be the Contractor's exclusive remedy in the event of such a delay, no matter how or by whom caused. Contractor further specifically acknowledges that it shall have no claim for increase in contract price or damages because of any delays whatsoever to all or any part of the Work whether foreseen or unforeseen, and whether caused by any person's hindrance or active interference.

§ 8.3.3 It is a condition precedent to the consideration or prosecution of claims relating to any delays, interferences, hindrances, disruptions, accelerations, suspensions or causes which justify an extension of the Contract Time, that such claims be made and furnished in strict accordance with all applicable time limits provided in this Article. Otherwise, if the Contractor fails to comply, such claims shall be waived, invalid and unenforceable as against Owner and Owner Representative.

§ 8.3.4 Acceleration: In the event of an Excusable Delay which extends Schedule Completion Dates, the Owner, in its sole discretion, in lieu of granting an enlargement of the Contract Time, may direct Contractor to accelerate its performance to meet the Construction Schedule, in which case the Owner shall direct the Owner Representative to issue a Construction Change Directive to increase the Contract Sum to include the additional costs of the Work, if any, reasonably incurred by Contractor to meet the Construction Schedule. Upon request, Contractor shall provide Owner with the options available for acceleration, including the costs and impact on the Construction Schedule. In presenting such costs, Contractor shall credit Owner for those costs which would not be incurred as the result of the Owner's willingness to invest extra funds to compress the Construction Schedule. Owner shall be responsible only for the actual premium costs of acceleration specifically authorized in advance for critical activity in order to offset an Excused Delay. Owner shall not be responsible for premium costs which do not accelerate critical path activities.

## § 8.4 BENEFICIAL OCCUPANCY

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§ 8.4.1 The Owner shall have the privilege of Beneficial Occupancy and the use and benefit of designated areas, subdivisions or portions of the Work prior to completion and acceptance of the entire Work, provided that, in the opinion of the Owner's Representative, such occupancy shall not unduly interfere with the Contractor's operations or unduly delay it in completing the entire Work or such occupancy is a cure for delays caused by the contractor in achieving Substantial Completion. Such occupancy and use shall be further subject to the provisions as set forth herein.

§ 8.4.2 In the event that the Owner desires to exercise the privilege of Beneficial Occupancy, it shall give written notice to the Owner's Representative and Contractor. If the Owner's Representative determines that such proposed Beneficial Occupancy is reasonable and proper, the Contractor shall cooperate with the Owner in providing basic services and facilities reasonably required for the health, safety and comfort of the occupants and other parties lawfully present and/or entering or leaving the premises. Mutually acceptable arrangements shall be made between the Owner and the Contractor with regard to procedures, terms and conditions governing the operation and maintenance of such services and facilities, except that the Contractor is obligated to operate and maintain the services and facilities if the Operation and Maintenance manuals are not competed and approved by the Owner's Representative, as may be utilized for the benefit of the Owner, including but not limited to the provision of Operation and Maintenance manuals. The Owner will not assume proportionate and reasonable responsibility for operation of systems, equipment and/or utilities required to provide such services, in part or in total, including proportionate and reasonable expenses of operation incidental thereto. All responsibility for conditioning systems, utilities and monitored systems/equipment is still the contractors' responsibility until S.C. is achieved and 2 year warranty starts. See 8.4.3 and 8.4.4.

§ 8.4.3 The Owner's occupancy or use of such designated areas, subdivisions, or portions of the Work shall not constitute acceptance of systems, materials, or elements of the Work which are not in accordance with the requirements of the Contract Documents; nor relieve the Contractor from its obligations to complete the Work; nor for responsibility for loss or damage due to or arising out of defects in, or malfunctioning of, systems, materials, equipment, or elements of the Work; nor from other unfulfilled obligations or responsibilities of the Contractor under the Contract. If, however damage results from any act of the Owner, the Owner will assume its proportionate responsibility for such damage.

§ 8.4.4 Notwithstanding the Owner's occupancy or use of such designated areas, subdivisions, or portions of the Work pursuant to this Article, the warranty period(s) referenced in Section 3.5 shall not begin to run until Substantial Completion. The Owner will continue to hold retainage in accordance with Section 9.4.4 until Substantial Completion.

## ARTICLE 9 PAYMENTS AND COMPLETION

### § 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed by 10% so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

### § 9.2 Schedule of Values

§ 9.2.1 Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Owner Representative and Owner before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work as detailed in the specifications by Division 00 and 01. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Owner Representative and Owner. This schedule, unless objected to by the Owner Representative and Owner, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Owner Representative and supported by such data to substantiate its accuracy as the Owner Representative may require, and unless objected to by the Owner Representative, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.2.2 When O&M and As Built Drawings are required, they shall be listed as a separate item in the Schedule of Values with a value of 3% of Contract Sum.

### § 9.3 Applications for Payment

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Owner Representative an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work as detailed in the specifications by Division. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Owner Representative require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 Progress payment requests shall be submitted on AIA Document G702, Application and Certificate for Payment, supported by AIA Document G703, Continuation Sheet. The Continuation Sheet G703 shall be prepared the same as in the Schedule of Values submitted by Contractor. These requests shall detail the value of the various materials installed and accepted in the Work, and the value of the various types of labor performed during the period of time since the previous payment request. Contractor shall attach to each payment request a statement certifying that all payments due Contractor from previously issued Certificates for Payment have been paid. Contractor shall furnish such additional supporting documents and data substantiating Contractor's right to payment as Owner and Owner's Representative may require, including but not limited to waivers of lien and verified lists of Subcontractors and suppliers on forms approved by Owner Representative and Owner.

§ 9.3.1.2 Contractor's Application for Payment shall, if requested by Owner or Owner Representative, be accompanied by a payroll report by Contractor and each of its Subcontractors for the pay period covered by the application. The report shall state as to each employee his/her name, address and work classification, hours worked, rate of pay, itemized deductions, gross amount earned, net pay and fringe benefit information.

§ 9.3.1.3 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay. In such case, the Contractor shall obtain Owner's written approval prior to adding new subcontractors or shall provide written notice to the Owner prior to an existing subcontractor performing the Work.

§ 9.3.2 Unless otherwise provided in the Contract Documents, partial payments may be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, partial payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Partial payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's unencumbered title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, handling, loading/unloading and transportation to the site. Approval for stored materials require storage and maintenance of the materials per the manufacturer's requirements and approval by the Owner's Representative.

§ 9.3.3 The Contractor warrants that unencumbered title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor shall include with each pay application, a signed and notarized Partial Waiver as attached to Contract Documents. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

§ 9.3.4 The Contractor's Application for Payment shall include Tier II Reporting on diversity participation as required by Division 00 and 01.

§ 9.3.5 Final Payment, including any remaining retainage, shall not be made until Contractor provides Owner with complete and legally effective releases or full unconditional waivers of all claims or liens arising out of or filed in connection with the Work. In lieu thereof and as approved by Owner, Contractor shall furnish receipts or releases in full; an affidavit of Contractor that the releases and receipts include all labor, services, material, and equipment for which a claim or lien could be filed, and that all payrolls, material work equipment bills, and other indebtedness connected with the Work for which Owner or his property might in any way be responsible have been paid or otherwise satisfied; and consent of the Surety, if any, to final payment. If any Subcontractor, manufacturer, fabricator,

supplier or distributor fails to furnish a release or receipt in full, Contractor shall furnish a Bond or other collateral satisfactory to Owner to indemnify Owner against any claim or lien.

#### **§ 9.4 Certificates for Payment**

**§ 9.4.1** The Owner's Representative will, within seven days after receipt of the Contractor's correct and complete Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Owner Representative recommends is properly due, and notify the Contractor and Owner reasons for withholding certification in part as provided in Section 9.5.1; or (3) recommend that Owner withhold certification of the entire Application for Payment, and notify the Contractor and Owner of reason for recommending withholding certification in whole as provided in Section 9.5.1.

**§ 9.4.2** The issuance of a Certificate for Payment will constitute a representation by the Owner Representative to the Owner, based on the Owner Representative's evaluation of the Work and the data in the Application for Payment, that, to the best of the Owner Representative's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Owner Representative. However, the issuance of a Certificate for Payment will not be a representation that the Owner Representative has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

**§ 9.4.3** Certificate for Payment shall be issued monthly provided the work is processed diligently and to the satisfaction of the Owner Representative and Owner, with the Owner entitled to withhold retainage in the amount of 5% less the value than the value of work completed and materials stored on-site, or off-site with approval by the Owner, to the date of application of the certificate. If, upon Substantial Completion of the Work, there are any remaining uncompleted minor items and/or Punch List items, the Owner shall be entitled to retain up to two hundred percent (200%) of the dollar value of such items until those items are completed. In addition, Owner shall be entitled to retain up to one hundred percent (100%) of any unresolved claims against the Project until Owner has received written notification that all claims have been resolved. Owner shall release all retainage after all items are complete and all claims are resolved.

**§ 9.4.4** At the time that the Owner withholds retainage, it shall place such retainage in an escrow account, with a bank, savings and loan institution, or the State of Indiana or an instrumentality thereof to be selected by mutual agreement between the Owner and the Contractor, as escrow agent, pursuant to a written agreement which shall provide that: (1) the escrow agent shall promptly invest all escrowed principal in such obligations as shall be selected by the escrow agent in its discretion; (2) the escrow agent shall hold the escrowed principal and income until receipt of notice from the Owner, specifying the portion or portions of the escrowed principal to be released from the escrow account, and the person or persons to whom such portion or portions are to be released and, upon receipt of such notice, the escrow agent shall promptly remit the designated portion of escrowed principal and the same proportion of then escrowed income to such person or persons; and (3) the escrow agent shall be compensated for its services as the parties may agree upon a commercially reasonable fee commensurate with fees then being charged for the handling of escrow accounts of like size and duration, which fee shall be paid from the escrowed income of the escrow account.

#### **§ 9.5 Decisions to Withhold Certification**

**§ 9.5.1** The Owner Representative may recommend withholding a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Owner's Representative opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Owner Representative is unable to certify payment in the amount of the Application, the Owner Representative will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Owner Representative cannot agree on a revised amount, the Owner Representative will promptly issue a Certificate for Payment for the amount for which the Owner Representative is able to make such representations to the Owner. The Owner Representative may also recommend withholding a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a

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Certificate for Payment previously issued, to such extent as may be necessary in the Owner's Representative opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a Separate Contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time
- .7 failure to carry out the Work in accordance with the Contract Documents.
- .8 failure or refusal to perform or prosecute the Work or any separate part or element thereof in accordance with the Contract Documents and with such diligence as will insure its completion within the Contract Time,
- .9 failure to adhere to the original and any revised progress schedules established under the Contract Documents;
- .10 performs defective work or failure or refusal to correct any such Work
- .11 fails in the performance of any agreement or obligation on its part herein contained or provided by the Contract Documents;
- .12 delays the work of Owner, other contractors or other third parties;
- .13 rejection of the Work or any part thereof by any governmental authority having jurisdiction over the Project
- .14 failure to defend, indemnify or hold harmless the Owner, the Owner's Representative and other required indemnitees as required by the Contract Documents.

§ 9.5.2 When either party disputes the Owner Representative decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15. The Owner shall not be in default by reason of withholding payment while any of the grounds set forth in §9.5.1 remain uncured.

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.4 If the Owner Representative recommends withholding certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Owner Representative and the Contractor shall reflect such payment on its next Application for Payment.

§ 9.5.5 If Contractor disputes a determination and/or recommendation to Owner by Owner Representative with regard to a Certificate of Payment, and during any related dispute resolution, arbitration, litigation or other proceeding, Contractor nevertheless shall continue to execute the Work as described in the Contract Documents.

## § 9.6 Progress Payments

§ 9.6.1 After Owner Representative has issued its recommendation to Owner concerning Contractor's Application for Payment, Owner shall make payment in accordance with such recommendation, subject to the terms of the Contract Documents which permit other action to be taken, in which case, Owner shall notify Contractor and Owner Representative of any payment action taken by Owner at variance with Owner's Representative recommendation.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Owner Representative will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Owner Representative and Owner on account of portions of the Work done by such Subcontractor.

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**§ 9.6.4** The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. In the event that Owner determines that Subcontractors and suppliers have not been paid, Owner shall have the right to issue direct checks and/or joint checks to such Subcontractors and suppliers and deduct such amounts from Contractor in accordance with Contract Documents and adjust the Contract Price accordingly. Notwithstanding these rights, neither the Owner nor Owner Representative shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law. Owner's decision to issue any direct or joint check is elective, and no Subcontractor or supplier shall have any third-party beneficiary rights or expectations in connection with Owner's rights under this Subparagraph to issue a direct or joint check.

**§ 9.6.5** The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

**§ 9.6.6** A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

**§ 9.6.7** Payments received by Contractor for Work properly performed by Subcontractors and suppliers shall be held by Contractor in trust for the benefit of Owner and for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with Contractor for which payment was made by Owner. Contractor shall disburse such funds held in trust appropriately to pay subcontractors, suppliers and employees for all labor incurred and materials utilized in connection with the performance of the Work and the construction of the Project. Contractor will ensure that funds provided by Owner to Contractor for Work properly performed by subcontractors will be held in trust in a separate account and shall not be commingled with any Contractor's accounts or monies.

**§ 9.6.8** Provided the Owner has fulfilled its payment obligations under the Contract Documents and/or the Owner has exercised its rights to withhold payment pursuant to Paragraph 9.5 or elsewhere in the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

## **§ 9.7 Failure of Payment**

If the Owner Representative does not issue a Certificate of Payment, through no fault of the Contractor, within fourteen (14) calendar days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within fourteen (14) calendar days after the date established in the Contract Documents, the amount certified by the Owner Representative or awarded by binding dispute resolution, and provided Owner does not have a right to withhold payment under Paragraph 9.5, then the Contractor may, upon seven additional days' written notice to the Owner and Owner's Representative, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable and verified direct costs of shutdown, delay and start-up the Work.

**§ 9.7.1** A final Certificate of Payment shall not be issued until all labor and materials required in the Contract Documents have been furnished, installed and completed, all claims have been disposed of and all claims for extra work materials and allowances for omissions have been rendered, considered, and, if agreed to, made a part of such Certificate of Payment.

**§ 9.7.2** If, pursuant to the Contract Documents, the Owner is entitled to any reimbursement or payment from the Contractor, Contractor shall make such payment within ten (10) days of demand by the Owner. Notwithstanding anything in the Contract Documents to the contrary, if Contractor fails to timely make any payment due the Owner, or if the Owner incurs any costs and expenses to cure any default of Contractor or to correct defective Work, the Owner shall have the right to either (i) deduct an amount equal to that which the Owner is entitled from any payment then or thereafter due Contractor from the Owner, or (ii) issue a written notice to the Contractor reducing the Contract Sum by an amount equal to that which the Owner is entitled

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## § 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work: (i) when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use, (ii) the Owner has received from any governmental authority having jurisdiction thereof all certificates of occupancy and all other permits, approvals, licenses, or other documents necessary for Owner's beneficial occupancy of the Project, (iii) Contractor submits Operating and Maintenance Manuals, Lock Out/Tag Out Roadmaps, As-Built Field Data Set Scans and other documents required in the Contract Documents, and (iv) all construction change directives have been submitted and processed within the fourteen (14) day timeframe per Section 7.2.6 and is a condition for release of Final Payment.

*(Paragraphs deleted)*

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Owner's Representative a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. Additional precondition requirements for the Substantial Completion inspection are set forth in Division 00 and 01.

§ 9.8.3 Upon receipt of the Contractor's list and the other documentation required by Division 00 and 01, the Owner Representative will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Owner's Representative inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Owner Representative. In such case, the Contractor shall then submit a request for another inspection by the Owner Representative to determine Substantial Completion. Test and Balance (TAB) and monitored control systems must be 100% complete. If the Owner has engaged a third-party Commissioning agent then the TAB and monitored control systems must be complete before the commencement of Substantial Completion.

§ 9.8.3.1 At the time Owner Representative commences the Substantial Completion Inspection, if Owner Representative discovers excessive additional items requiring completion or correction, Owner Representative may decline to continue the inspection, instructing Contractor as to the general classification of deficiencies which must be corrected before Owner Representative will resume the Substantial Completion Inspection. If Contractor fails to pursue the Work so as to make it ready for Substantial Completion Inspection in a timely fashion, Owner Representative shall, after notifying Contractor, conduct inspections and develop a list of items, Punch List, to be completed or corrected. This list of items shall be furnished to Contractor who shall proceed to correct such items within the time period noted on the AIA Form G-704. Owner Representative will conduct additional inspections. Contractor shall reimburse Owner for the costs of such additional inspections, and Owner may offset the amounts payable to Owner Representative for such services from the amounts due to the Contractor under the Contract Documents.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Owner Representative will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat and cooling, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work for a period of two years or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.4.1 The time fixed by Owner Representative for the completion of all Punch List items on the list accompanying the Certificate of Substantial Completion shall not be greater than 60 days. Contractor shall complete items on the list within such 60 day period unless a reasonably longer time is needed, in which event Contractor shall make a request in writing for a longer time to complete the remaining items identified in the request, which request shall not be unreasonably denied. If Contractor fails to do so, Owner in its discretion may perform the Work by itself or others and the cost thereof shall be charged against Contractor. Failure to do so may serve as cause for Owner to declare Contractor in default and terminate the Contractor pursuant to Article 14 of the General Conditions, as modified.

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§ 9.8.4.2 If more than one inspection by Owner Representative for the purpose of evaluating corrected work is required by the Punch List of items to be completed or corrected, it will be performed at Contractor's expense unless Contractor has requested additional time and Owner has consented thereto, in accordance with Paragraph 9.8.4.1. In such an event an additional inspection shall not be performed at Contractor's expense, unless and until an additional reinspection of corrected work is required and Owner Representative has charged Owner for such reinspection.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.8.6 Contractor, through qualified individuals, shall adequately coordinate with designated employees of Owner in the operation and care of all equipment installed hereunder. Contractor shall also furnish and deliver to Owner Representative within forty-five (45) days of the shop drawing approval date, ONE (1) complete set for permanent files, electronic file as identified in accordance with Division 00 and 01 for technical bulletins and any other printed matter, such as diagrams, prints or drawings, containing full information required for the proper operation, maintenance and repair of the equipment installed and the ordering of spare parts, except for equipment that may be furnished by Owner. Additional requirements are set forth in the Division 1.

### § 9.9 Final Completion and Final Payment

§ 9.9.1 Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Owner Representative will promptly make such inspection. When the Owner Representative finds the Work acceptable under the Contract Documents and the Contract fully performed, the Owner Representative will promptly issue a final Certificate for Payment stating that to the best of the Owner's Representative knowledge, information and belief, and on the basis of the Owner's Representative on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Owner's Representative final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled. Owner's Representative Final Certificate for Payment will serve as a recommendation to Owner concerning final payment.

*(Paragraphs deleted)*

§ 9.9.2 Final payment and release of retainage shall not become due to Contractor until and unless (1) all Work for the Project is fully completed and performed in accordance with the Contract Documents and is satisfactory to and approved and accepted by Owner and Owner Representative. Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Owner Representative:

1. an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied,
2. a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect,
3. a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents,
4. consent of surety, if any, to final payment,
5. documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties,
6. Contractor has delivered to Owner all operating and maintenance manuals, as-built, guarantees, and warranties for material, machinery and equipment furnished by Contractor, and all testing and/or inspection results or reports,
7. if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner; and
8. Contractor has fulfilled all other requirements and furnished all other documentation, required for Project closeout which are prescribed in the Contract or the Contract Documents as conditions to final payment, including but not limited to those set forth in Division 00 and 01. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the

Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

9. COBIE to the extent and in such form as may be designated by the Owner
10. Lock-Out/Tag-Out Roadmaps as required in the Project Specifications at time of Substantial Completion, Division 00 and 01 and OSHA regulation must be created and reviewed.

**§ 9.9.3** In addition to the foregoing, as a condition to final payment and release of retainage, Contractor shall submit to Owner: (1) Contractor's affidavit that payrolls, including wages and fringe benefits, union dues, payroll taxes, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied; (2) Contractor's affidavit of payment in the form of AIA Document G706 – Contractor's Affidavit of Payment of Debt and Claims or equal; (3) Contractor's release of liens in the form of AIA Document G706A – Contractor's Affidavit of Release of Liens, or as may otherwise be reasonably requested or required to comply with Indiana law; (4) releases and final unconditional waivers of lien from all subcontractors and suppliers; (5) Consent of Surety in the form of AIA Document G707 – Consent of Surety Company to Final Payment or equal; and (6), if required by Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by Owner.

**§ 9.9.4** In addition to the above requirements for final payment and release of retainage, the following items also must be submitted by Contractor to Owner: (1) Contractor's certification stating that no materials containing asbestos were incorporated into the Work; (2) Contractor's certification that all final punch list items have been completed; (3) Contractor's certificate of code compliance from the mechanical, electrical and plumbing subcontractors, if applicable; (4) Contractor's certification from its plumbing subcontractor, if any, that no lead was used in any fittings and connections; (5) Contractor's charts, graphs and locations of concealed work required under the Contract Documents; (6) any and all extra or spare parts, equipment and materials required under the Contract Documents; (7) Contractor's evidence that all startup, testing and/or commissioning requirements under the Contract Documents have been met; and (8) Contractor's maintenance agreements or maintenance bonds required under the Contract Documents.

**§ 9.9.5** Contractor shall furnish such evidence as may be necessary to show that any "Non-Resident Contractor" subcontractor or supplier has fully met the requirements of payment of taxes as established in any law of the State or local subdivision thereof which may be in effect at the time of final payment. Owner will require the submission of such proof or evidence before final payment will be approved or made.

**§ 9.9.6** If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Owner Representative so confirms, the Owner shall, upon application by the Contractor and certification by the Owner Representative, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Owner's Representative prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

**§ 9.9.7** The making and acceptance of Final Payment shall constitute a waiver of all claims by Owner against Contractor and by Contractor against Owner except (i) liens, security interests or encumbrances arising out of the Contract unsettled; (ii) claims previously made in writing by either party and remaining unsettled as of the date of final payment; (iii) claims by Owner duties or responsibilities in accordance with the Contract Documents; (iv) Owner claims and other rights arising under the terms of any general or special warranties or guarantees specified by the Contract Documents or arising thereunder, (v) Owner claims and other rights in respect of Contractor's and its surety's continuing obligations under Laws and Regulations or the Contract Documents, and (vi) unresolved claims that remain from those claims designated on the Contractor and Owner claim lists required above. The date of Final Payment shall be regarded as the date of acceptance of the Work, and payment of the retained percentage shall be due no later than ninety (90) days from the date of acceptance, provided that all claims filed with the Owner by Subcontractors, Sub-subcontractors, suppliers or others, if any, have been resolved, as confirmed by written documentation submitted by the Contractor and the claimant, and subject to and consistent with Indiana Code as applicable.

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§ 9.9.8 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

## ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

*(Paragraphs deleted)*

### § 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the as required by Federal, State, OSHA and ANSI guidelines. Contractor acknowledges that safety is of prime importance to Owner and agrees to utilize all reasonable efforts to prevent injuries to personnel. Contractor shall be solely responsible for the safety of its employees and those of other contractors and Subcontractors working at the Project site that may be affected by its Work. Lock Out/Tag Out and LOTO Roadmaps for all equipment are required per Contract Documents, Division 00 and 01 and as required in the Project Specifications at time of Substantial Completion.

*(Paragraphs deleted)*

§ 10.1.1 By executing the Contract, each Prime Contractor represents that it is knowledgeable with respect to such regulations and will take all necessary measures to comply therewith. It is acknowledged that Owner does not possess expertise as to construction-related safety matters and programs and, therefore, Owner does not assume any duty to the Contractor, its Subcontractors or Suppliers, Separate Contractors or others involved with the Project as to the applicable safety standards or procedures with respect to their work or services.

*(Paragraph deleted)*

### § 10.2 Safety of Persons and Property

*(Paragraph deleted)*

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

- .1 employees on the Work and other persons who may be affected thereby;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and
- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

*(Paragraph deleted)*

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss including but not limited to, State and Federal Occupational Safety and Health Acts ("OSHA"), in accordance with the requirements of the Contract Documents and shall conform to the safety and health standards and regulations for construction issued by the Secretary of Labor pursuant to Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333), entitled "Safety and Health Regulations for Construction" (29 CFR Part 1926). In the event of any conflict among the Contract Documents and any federal, state or local authorities, laws, rules, regulations or requirements, the most stringent requirement shall govern the Work.

*(Paragraph deleted)*

§ 10.2.2.1 In the event that any action is taken against Contractor, including but not limited to assessments of fines or penalties, whether by State or Federal OSHA agencies or otherwise, due to any actual or alleged violation, act or omission of the duties, responsibilities and obligations set out herein that are caused or created by Contractor or any of its contractors or Subcontractors, or any other party for whom Contractor is responsible, whether also caused in part by Owner or Owner Representative, Contractor shall defend, indemnify and hold Owner and Owner Representative harmless therefrom, and Contractor shall be liable for all costs and damages sustained by Owner and Owner Representative as a result thereof, including, but not limited to, fines, penalties and attorney fees incurred in the defense of or appeal from any such action, and any OSHA proceeding or hearing which may occur or be related thereto. The failure of Contractor to comply with these requirements may be treated by Owner as a default under the Agreement.

*(Paragraph deleted)*

§ 10.2.2.2 Contractor shall immediately report in writing any safety-related injury, loss, damage or accident arising from the Work at the Project to Owner and Owner Representative and, to the extent mandated by applicable laws, ordinances, codes, rules and regulations, including those relating to health and safety matters, relating to the Project or Site or their performance of the Work, to all government or quasi-government authorities having jurisdiction over safety-related matters involving the Project or the Work. Refer to Contract Documents and Division 00 and 01 for more information on Reporting of Construction Losses and Accidents.

*(Paragraph deleted)*

§ 10.2.2.3 Contractor shall make frequent and regular inspections of the jobsite by a competent onsite safety representative designated by Contractor. Unsafe acts and/or conditions noted during inspections shall be corrected immediately and reported to Owner and Owner Representative. The name of the Contractor's onsite safety representative will be kept at the jobsite and furnished to Owner and Owner Representative prior to Contractor commencing its Work on the Project.

*(Paragraphs deleted)*

§ 10.2.2.4 Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, cause other damage or create an unsafe condition, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

§ 10.2.2.5 Contractor shall develop and implement an electronic and site copy for site specific safety program with Safety contact 24/7 contact. OSHA standards will serve as the minimum safety requirements for performance of the Work. A copy of Contractor's site safety program shall be available at the Site prior to the commencement of Contractor's Work at the Project and shall be furnished to each of Contractor's other contractors and Subcontractors utilized on the Project.

§ 10.2.2.6 Contractor shall comply with all applicable safety recommendations of Federal and State OSHA and National Fire Protection Association.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards. The Contractor also shall be responsible, at the Contractor's sole cost and expense, for all measures necessary to protect any property adjacent to the Project and improvements thereon or therein. Any damage to such property or improvements shall be promptly and properly repaired by the Contractor.

§ 10.2.4 When use or storage of explosives or other particularly hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel as per Division 00 and 01.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Owner's Representative or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a member of the Contractor's organization who is knowledgeable in the management of environmental health and safety at the site whose duty shall be the prevention of accidents and health-related risks.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition. Weather related precautions such as high wind, freezing temperatures, high volume rain or snow events shall be anticipated and preventative measures shall be enacted until such conditions have subsided as it relates to loading the Work.

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### **§ 10.2.8 Injury or Damage to Person or Property**

If any party suffers injury or damage to person or property because of an act or omission of others, notice of the injury or damage, whether or not insured, shall be given to the Owner promptly upon discovery. The notice shall provide sufficient detail to enable the Owner to investigate the matter.

**§ 10.2.9** When all or a portion of the Work is suspended for any reason, Contractor shall securely fasten down all coverings and protect the Work from injury by any cause.

**§ 10.2.10** The Contractor shall promptly report in writing to the Owner and Owner's Representative all accidents arising out of or in connection with the Work that caused personal injury or property damage, giving full details and statements of any witnesses. Accidents causing death, serious reportable personal injuries or serious property damage shall also be immediately reported by telephone for Emergency response, if necessary, and then the Owner and Owner's Representative. Owner shall have the right, but not the duty, to investigate all accident reports.

### **§ 10.3 Hazardous Materials and Substances**

**§ 10.3.1** The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding particularly hazardous materials or substances as defined by OSHA and DOT. If the Contractor encounters a particularly hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Owner Representative of the condition.

**§ 10.3.2** Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Owner Representative the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Owner Representative will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Owner Representative has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Owner Representative have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

**§ 10.3.3** The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site. If the Contract Documents permit the use of a Regulated Substance of a type which by law an employer must notify its employees is to be used on/the Project, then prior to exposure of any person on the Site to such Substance, Contractor shall notify the Owner's Representative in writing of the chemical composition thereof in sufficient detail and time, including, but not limited to providing a material safety data sheet for such Substance, to permit the Owner and other persons and entities to comply with any applicable laws per Division 00 and 01. Contractor's activities regarding the use of any such Regulated Substance are to be coordinated with the activities of Owner and other persons or entities to avoid any cost or impact to the Owner or any other person or entity as the result of the use of such Regulated Substance.

**§ 10.3.4** Contractor shall not dispose of a Regulated Substance on the Project Site. Contractor shall not commingle Regulated Substances with materials or waste of the Owner, another Prime Contractor (in the event that the Project is a multi-prime Project) or any other person or entity performing Work on the Project Site. Contractor shall provide separate disposal receptacles approved by law for the particular regulated substance(s) which will be placed in them. Such receptacles shall be used exclusively for the storage or temporary disposal of Regulated Substances for which they are approved. When storing, working with, treating or disposing of regulated substances, Contractor and its waste hauler shall strictly comply with all applicable laws. Contractor shall identify its waste haulers and provide the Owner with a copy of each manifest or other document relating to the storage, transportation or disposal of any Regulated Substance taken from the Project Site.

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§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1,

§ 10.3.6 In addition to the requirements identified in this Section, Contractor shall comply with the requirements set forth in Division 00 and 01.

#### § 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

§ 10.4.1 In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, Contractor, without special instruction or authorization from Owner Representative or Owner, shall act to prevent threatened damage, injury or loss. Contractor shall give Owner Representative and Owner immediate written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents are caused thereby as provided in Article 15 and 7.

§ 10.4.2 Contractor shall provide the Owner and Owner Representative a list of names and telephone numbers of the designated employees for each Subcontractor to be contacted in case of emergency during non-working hours. A copy of the list will also be displayed on the job site.

### ARTICLE 11 INSURANCE AND BONDS

#### § 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in Division 00 Appendix C - Insurance Requirements. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. Through the 2-year warranty period, the Owner shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents and specifically as set forth in Division 00 Appendix C - Insurance Requirements. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 11.1.3 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

#### § 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance

The Owner shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage. Any time delay or cost impact caused by the stop work order will be the Contractor's liability and will not obligate the Owner to change the substantial completion date or contract sum.

*(Paragraphs deleted)*

#### § 11.2 BUILDER'S RISK INSURANCE

The Owner's obligation to provide Builder's Risk Insurance is identified in Division 00 and 01.

§ 11.2.1 Beneficial Occupancy or use in accordance with Section 8.4 herein shall not commence until the insurance company or companies providing property insurance have consented to such Beneficial Occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall not, without mutual written consent, take any action with respect to Beneficial Occupancy or use that would cause cancellation, lapse or reduction of insurance.

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§ 11.2.2 A loss insured under Owner's property insurance shall be adjusted by the Owner in good faith and made payable to the Owner as fiduciary in good faith for the insured, as their interest may appear, subject to requirements of bonding obligations associated with the Project. The Contractor shall pay subcontractors their just share of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require subcontractors to make payments to their Sub-subcontractors in similar manner.

§ 11.2.3 The Owner in good faith shall have power to adjust and settle a loss with insurers, unless one of the parties in interest shall object in writing within five (5) days after occurrence of loss to the Owners exercise of this power.

### § 11.3 PERFORMANCE AND PAYMENT BOND

§ 11.3.1 The Owner shall have the right to require the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract documents on the date of execution of the Contract, or as required by applicable law. This bond shall be furnished using the form provided to Contractor by the Owner.

### § 11.4 Waivers of Subrogation

§ 11.4.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§ 11.4.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

*(Paragraphs deleted)*

### § 11.5 Loss of Use, Business Interruption, and Delay in Completion Insurance

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor and Owner's Representative for loss of use of the Owner's property, due to fire or other hazards however caused.

### § 11.6 Adjustment and Settlement of Insured Loss

§ 11.6.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Owner Representative and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Owner Representative and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.6.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor in writing of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object in writing to the proposed settlement or allocation of the proceeds. If the Contractor does not object in writing, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the

appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects in writing to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

**§ 11.6.3** Nothing contained in these insurance requirements is to be construed as limiting the extent of Contractor's responsibility for payment of damages resulting from its failure to perform the Work in accordance with the Contract Documents.

## **ARTICLE 12 UNCOVERING AND CORRECTION OF WORK**

### **§ 12.1 Uncovering of Work**

**§ 12.1.1** If a portion of the Work is covered contrary to the Owner's Representative request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Owner Representative, be uncovered for the Owner's Representative examination and be replaced at the Contractor's expense without change in the Contract Time.

**§ 12.1.2** If a portion of the Work has been covered that the Owner's Representative has not specifically requested to examine prior to its being covered, the Owner's Representative may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Construction Change Directive, be at the Owner's expense. If such Work is not in accordance with the Contract Documents, such costs and the cost of correction shall be at the Contractor's expense.

*(Paragraphs deleted)*

**§ 12.1.3** Owner, Owner Representative and all governmental agencies with jurisdictional interests in respect of the Work or the activities of Contractor or its subcontractors shall be afforded complete and unhindered access to the Work for their observation, inspecting and testing. Contractor shall provide proper and safe conditions for such access and advise them of Contractor's site safety procedures and programs so that they may comply therewith as applicable.

**§ 12.1.4** Contractor shall give Owner Representative timely notice of readiness of the Work for all required inspections, tests, commissioning or approvals. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) to specifically be inspected, tested or approved, Contractor shall assume full responsibility therefore, pay all costs in connection therewith and furnish Owner Representative the required certificates of inspection, testing or approval, subject to any provisions on quality control to the contrary set forth and contained in the Specifications. The cost of all other inspections, tests and approvals which are required by Contract Documents shall be paid by Contractors except as otherwise specified. All inspections, tests or approvals other than those required by Laws or Regulations of any public body having jurisdiction shall be performed by organizations acceptable to Owner and Contractor or by Owner's Representative if so specified. Neither observations by Owner's Representative nor inspections, tests or approvals by others shall relieve Contractor from Contractor's obligations to perform the Work in accordance with the Contract Documents.

### **§ 12.2 Correction of Work**

#### **§ 12.2.1 Before Substantial Completion**

The Contractor shall promptly correct Work rejected by the Owner Representative or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Owner's Representative services and expenses made necessary thereby, shall be at the Contractor's expense. If, prior to the date of final payment, the Contractor, a Subcontractor, or anyone for whom either is responsible, uses or damages any portion of the Work, including, without limitation, mechanical, electrical, plumbing, or other building systems, machinery, equipment, or other mechanical device, Contractor shall cause such item to be restored to "like new" condition at no expense to the Owner and shall not assert a claim for delay or request a Construction Change Directive on this basis.

**§ 12.2.1.2** Owner, Owner Representative and all governmental agencies with jurisdictional interests in respect of the

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Work or the activities of Contractor or its subcontractors shall be afforded complete and unhindered access to the Work for their observation, inspecting and testing. Contractor shall provide proper and safe conditions for such access and advise them of Contractor's site safety procedures and programs so that they may comply therewith as applicable.

**§ 12.2.1.3** Contractor shall give Owner Representative timely notice of readiness of the Work for all required inspections, tests or approvals. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) to specifically be inspected, tested or approved, Contractor shall assume full responsibility therefore, pay all costs in connection therewith and furnish Owner Representative the required certificates of inspection, testing or approval, subject to any provisions on quality control to the contrary set forth and contained in the Specifications. The cost of all other inspections, tests and approvals which are required by Contract Documents shall be paid by Contractor except as otherwise specified. All inspections, tests or approvals other than those required by Laws or Regulations of any public body having jurisdiction shall be performed by organizations acceptable to Owner and Contractor or by Owner Representative if so specified. Neither observations by Owner Representative nor inspections, tests or approvals by others shall relieve Contractor from Contractor's obligations to perform the Work in accordance with the Contract Documents.

**§ 12.2.1.4** Neither observations by Owner Representative nor inspections, tests or approvals by others shall relieve Contractor from Contractor's obligations to perform the Work in accordance with the Contract Documents.

**§ 12.2.2 After Substantial Completion**

**§ 12.2.2.1** In addition to the Contractor's obligations under Section 3.5, if, within two year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice within a reasonable time after discovery of the condition. During the two-year period for correction of Work, if the Owner is unaware of a defect and fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner does not waive the right to require correction by the Contractor. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Owner's Representative, the Owner may correct it in accordance with Section 2.5. The Contractor's responsibility to correct such work within two years of Substantial Completion shall not be affected, diminished or restricted by the limitations, restrictions or conditions of a subcontractor, manufacturer, supplier, or installer's warranty, including the expiration of any Uniform Commercial Code statute of limitations. The inability or refusal of a subcontractor, manufacturer, supplier or installer responsible for defective Work to correct or warrant such Work shall not relieve the Contractor from its obligation to correct such Work within two years of Substantial Completion.

**§ 12.2.2.2** The two-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

**§ 12.2.2.3** Upon completion of any work under or pursuant to this Section 12.2, the two-year correction period in connection with the Work requiring correction shall be renewed and recommenced. The obligations under Paragraph 12.2 shall cover any repairs and replacements to any part of the Work or other property that is damaged by the defective Work at its own cost, to include repair of all interior and exterior masonry or drywall cracks and provide new control joints as required.

**§ 12.2.3** The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

**§ 12.2.4** The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

**§ 12.2.5** Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the two-year period for

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correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

### **§ 12.3 Acceptance of Nonconforming Work**

If, instead of requiring correction or removal and replacement of nonconforming Work, Owner elects to accept such Work in the condition as provided, Owner may do so. Contractor shall bear all direct, indirect and consequential costs attributable to Owner's evaluation of and determination to accept such Defective Work, to include but not be limited to fees and charges of engineers, architects, attorneys and other professionals. If any such acceptance occurs prior to Owner's Representative recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price to account for such costs and damages. If the acceptance occurs after such recommendation of final payment, such costs and damages shall be paid by Contractor and its surety to Owner. The acceptance of nonconforming Work by the Owner shall be by written Change Order, signed by the Owner's authorized representative. No person has authority to accept nonconforming work except pursuant to such written Change Order.

## **ARTICLE 13 MISCELLANEOUS PROVISIONS**

### **§ 13.1 Governing Law**

The Contract shall be governed by the laws of the State of Indiana and the sole and exclusive venue of any claims or disputes arising out of this Agreement (including counterclaims, cross-claims, third party claims and claims for indemnity) shall be Monroe County, Indiana.

### **§ 13.2 Successors and Assigns**

**§ 13.2.1** The Owner and Contractor respectively bind themselves, their partner, successors, assigns and legal representatives to the other party hereto and to partners, successors, assigns and legal representatives of such other party in respect to covenants, agreements and obligations contained in the Contract Documents. Except as provided elsewhere in the Contract Documents, the Contractor shall not assign the Contract in whole or in part, or any rights whatsoever (including the right to payment or to present or assert claims arising out of the Project) without prior written consent of the Owner. If the Contractor attempts to make such an assignment without prior written consent it shall be void and of no effect.

*(Paragraph deleted)*

### **§ 13.3 Written Notice**

Written notice shall be deemed to have been duly served if delivered in person to an officer of the corporation for which it was intended; or if delivered by registered or certified mail or express carrier to persons designated in the Agreement. Email shall constitute valid notification only in those circumstances identified in Section 7.2.3.

**§ 13.3.1** Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

**§ 13.3.2** No action or failure to act by the Owner, Owner's Representative, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

**§ 13.3.3** Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law. Every provision of the Contract is intended to be severable such that, if any term or provision thereof is illegal or invalid for any reason whatsoever, such provision shall be severed from the Contract and shall not affect the validity of the remainder of the Contract. A waiver of any breach or default under the Contract shall not constitute a waiver of any other breach or default of any provision hereunder.

**§ 13.3.4** The waiver by the Owner of any breach or default of the Contract by the Contractor shall not be construed as a waiver of any other breach or default of the same or any other terms or conditions of the Contract. Forbearance from demanding strict compliance with any term or provision of the Contract shall not operate as a waiver and shall not prevent the Owner from subsequently demanding strict compliance therewith. In any instance whereby Owner is

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entitled, under the terms of this Contract, to be indemnified by or recover any moneys from Contractor, or Owner is required to enforce any term or condition of this Contract, Owner shall be entitled, in addition, to recover from Contractor (i) interest on any sums due from Contractor at the rate of ten percent (10%) per annum to accrue from the date due until paid.

### **§ 13.4 Tests and Inspections**

**§ 13.4.1** Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Owner's Representative timely notice of when and where tests and inspections are to be made so that the Owner Representative may be present for such procedures. The Contractor shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations are concluded.

**§ 13.4.2** If the Owner Representative, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Owner Representative will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Owner's Representative of when and where tests and inspections are to be made so that the Owner Representative may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Contractor's expense.

**§ 13.4.3** If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Owner's Representative services and expenses, shall be at the Contractor's expense.

**§ 13.4.4** Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Owner's Representative.

**§ 13.4.5** If the Owner's Representative is to observe tests, inspections, or approvals required by the Contract Documents, the Owner's Representative will do so promptly and, where practicable, at the normal place of testing.

**§ 13.4.6** Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

### **§ 13.5 Interest**

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

### **§ 13.6 Interpretation**

All personal pronouns used in the Contract Documents, whether used in the masculine, feminine or neuter gender shall include all other genders; and the singular shall include the plural and vice versa. Titles of articles, paragraphs, and subparagraphs are for convenience only and neither limit nor amplify the provisions of such articles, paragraphs and subparagraphs.

### **§ 13.7 CLOSEOUT**

**§ 13.7.1** See Article 9 with additional requirements set forth in the Contract Documents and Division 00 and 01.

**§ 13.7.2** The Contract Sum shall include the costs of furnishing competent and experienced engineers, superintendents or other technically qualified representatives who shall represent equipment manufacturers and shall assist Contractor, when required, to install, adjust, test, commission and place in operation equipment in conformity with the Contract Documents. When equipment is ready for permanent operation, such engineers, superintendents or representatives shall make all adjustments and tests required by Owner Representative to prove that such equipment is in proper and satisfactory operating condition, and shall coordinate with such personnel as may be designated by Owner in the proper operation and maintenance of such equipment. See Article 9.

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**§ 13.8 OWNER AUDIT**

**§ 13.8.1** Contractor shall maintain all pertinent accounting records of its Project costs on a generally recognized accounting basis, including all supporting vouchers, canceled checks, subcontracts, purchase orders, time records, project cost reports and similar data as required to substantiate an expenditure, including but not limited to the following items: (a) costs incurred and payments for labor and material, including supervision and equipment (whether rented or owned); (b) costs incurred and payments to Subcontractors and suppliers and vendors; (c) changes in the Work; (d) Claims submitted by Contractor; (e) suspension of the Work and Contractor operations; (f) Project closeout; (g) termination of the Contract; and (h) whenever Contractor's costs and expenses are subject to audit under the Contract Documents. Said accounting records shall be subject to review by the Owner, and said records shall be available to Owner or his authorized representative at mutually convenient times.

**§ 13.9 FUTURE COOPERATION**

Each party hereto agrees to do all acts and things and to make, execute and deliver such written instruments, as from time to time shall be reasonably required to carry out the terms and provisions of the Contract Documents.

**ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT**

**§ 14.1 Termination by the Contractor**

**§ 14.1.1** The Contractor may terminate the Contract if the Work is stopped for a period of 90 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

- .1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- .2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped;
- .3 Because the Owner Representative has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents

**§ 14.1.2** The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

**§ 14.1.3** If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Owner's Representative, terminate the Contract if the Owner is not able to cure issue within 30 days upon receipt of notification. Contractor is entitled to reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination. In lieu of terminating Contract, if Owner has failed to make payment as aforesaid, Contractor may, upon twenty days written notice to Owner and Owner Representative, stop the Work until payment is made of all amounts then due.

*(Paragraph deleted)*

**§ 14.2 Termination by the Owner for Cause**

**§ 14.2.1** The Owner may declare Contractor to be in default and/or terminate the Contract if the Contractor

- .1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials to perform Work in accordance with the approved schedule;
- .2 fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;
- .3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- .4 otherwise has breached a provision of the Contract Documents.
- .5 Is adjudged bankrupt or insolvent, or makes a general assignment for the benefit of creditors, or Contractor or a third party files a petition to take advantage of any debtor's act or to reorganize under the bankruptcy or similar laws, or a trustee or receiver is appointed for Contractor or for any of

- Contractor's property on account of the Contractor's insolvency, and Contractor or its successor in interest does not provide adequate assurance of future performance in accordance with the Contract Documents within ten (10) days of receipt of a written request by Owner for such assurance;
- .6 Fails or refuses to perform or prosecute the Work or any separate part or element thereof in accordance with the Contract Documents and with such diligence as will ensure its completion within the Contract Time,
  - .7 Fails to adhere to the original and any revised progress schedules established under the Contract Documents;
  - .8 Performs any Work which is rejected as defective and fails or neglects to correct any such Work;
  - .9 Abandons or suspends performance of any of the Work, or removes from the site materials or equipment reasonably required to perform and complete the Work, without Owner's written consent, directive or approval.
  - .10 Fails in the performance of any agreement or obligation on its part herein contained or provided by the Contract Documents;
  - .11 Delays the work of Owner, other contractors or other third parties
  - .12 Rejection of the Work or any part thereof by any governmental authority having jurisdiction over the Project; or
  - .13 Failure to defend, indemnify or hold harmless the Owner, the Owner's Representative and other required indemnitees as required by the Contract Documents.

If any of the above-stated events or conditions of default shall exist under any uncompleted separate or additional Contract between Contractor and Owner, whether for this Project or any other project.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, and after consultation with the Owner Representative, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and
- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished. At that time, if the unpaid balance of the amount to be paid under the Contract shall exceed the expenses incurred by Owner in completing and correcting Contractor's Work, plus any costs and damages sustained by Owner by reason of such failure or lack of performance by Contractor, including but not limited to delay damages, attorney's fees, costs of administration, and a reasonable allowance for overhead and profit, such excess Contract balance shall be paid by Owner to Contractor, or to Contractor's surety if Owner proceeds to complete the work under Section 14 herein. However, if Owner's expenses, costs and damages shall exceed such unpaid balance, Contractor and Surety shall be liable to Owner for such deficiency. Contractor or its surety shall pay Owner such excess expenses, costs and damages within thirty (30) days after submission to Contractor or surety of Owner's invoice.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Owner's Representative's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.2.5 Upon termination of the Contract and Owner's right to proceed thereunder, which termination shall become effective without further notice upon the expiration of such seven (7) day period unless otherwise rescinded or modified by Owner in writing, the following shall govern:

- .1 Owner may exclude Contractor from the site and take possession of the Work and of all Contractor's

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tools, appliances, scaffolding, construction equipment and machinery at the site and use or authorize third party contractors to use the same for completing or correcting the Work, and incorporate in the Work all materials and equipment stored at the site or for which Owner has paid Contractor but which are stored elsewhere. Owner and completion contractors shall not be liable to Contractor for the cost or value of any such property used or incorporated in the course of such completion or correction.

- .2 Owner may, by any means it may deem expedient and appropriate under the circumstances, complete and correct or contract with one or more Separate Contractors for completion and correction of the Work. Owner shall not be required to accept the lowest price or the shortest duration proposed for such completion or corrective Work. In the event that Owner takes bids for completion or corrective Work, Contractor shall not be eligible for the award of any contracts resulting therefrom.
- .3 As used in this Paragraph 14.2, the term "costs of finishing the Work" shall mean any and all direct, indirect and consequential costs and expenses paid or incurred by Owner for or incidental to completion of the Work or correction of previous Work performed by Contractor, whether by Owner's own forces or by one or more Separate Contractors engaged by Owner for such purposes, and shall include but not be limited to all fees and charges of engineers, architects, consultants, attorneys and other professionals, plus court costs, arbitration and arbitrator fees and charges.

§ 14.2.6 The occurrence of any labor dispute, work stoppage, strike (including sympathetic strike), slow down, picketing, or any other activity directly or indirectly attributable to Contractor's employees, either caused by them or resulting from their employment on the Project which interrupts, interferes with or delays the Work of Contractor or other Separate Contractors shall constitute a breach of the Contract. In such event, Owner shall have the right, in addition to any other rights and remedies provided by this Contract or the Contract Documents, or by law, following three days' written notice to Contractor, to terminate this Contract or any part thereof for all or any portion of the Work, and for purpose of completing the Work, to enter upon the premises and take possession in the same manner, to the same extent, and upon the same terms and conditions as set forth elsewhere herein.

§ 14.2.7 If Owner terminates the Contract for cause pursuant to this Paragraph 14.2 and it subsequently is determined for any reason that Contractor was not in default, or that such termination was wrongful as against Contractor, or that adequate grounds did not exist to support the termination, the termination shall be deemed a termination for the convenience of Owner, whereupon the rights and obligations of the parties shall be determined and governed in accordance with the provisions of Paragraph 14.4.

### § 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine. In its written notice to Contractor, Owner may fix either the date or requisite events for resumption of the Work. Contractor shall resume the Work on the date so fixed. Contractor may make a claim for an extension of the Contract Time on account of such suspension, as provided by and subject to the limitations of Article 8.

*(Paragraphs deleted)*

### § 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; verified direct costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee of four (4)% of the Work completed to date, less any general condition costs..

Init.

§ 14.4.4 Upon receipt of written notice of Owner's termination for convenience, Contractor shall immediately discontinue Work and follow all other instructions of Owner as stated in such notice, and shall take all other action as may be required or appropriate to minimize costs, damages and expenses in consequence of the termination. Furthermore, Contractor shall deliver to Owner all survey notes, drawings, specifications and estimates completed or partially completed and these shall become the property of Owner. Contractor shall not be entitled to payment on account of loss of anticipated profits or revenue or other economic loss associated with any terminated Work.

#### § 14.5 SURVIVAL OF WARRANTIES

All warranties made to the Owner by Contractor, and all obligations of Contractor to defend, indemnify, and hold harmless the Owner, shall survive any termination of the employment of Contractor for any reason.

### ARTICLE 15 CLAIMS AND DISPUTES

#### § 15.1 Claims

##### § 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, adjustment or interpretation of the Contract terms, payment of money, extension of time or other relief with respect to the terms of the Contract. The term 'Claim' also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim.

##### § 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

The failure to give such written notice by Contractor shall constitute an irrevocable waiver of the Claim.

##### § 15.1.3 Notice of Claims

Claims by either the Owner or Contractor must be initiated by written notice to the other party and to the Initial Decision Maker with a copy sent to the Owner's Representative. Claims by either party must be initiated within 7 days after occurrence of the event giving rise to such Claim or within 7 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later. Claims must be initiated by written notice to the Owner's Representative and the other party. Once a Claim is recognized, the claimant shall use its best efforts to give the Owner's Representative and the other party notice of any such Claim as expeditiously as possible, including, without limitation, Claims in connection with concealed or unknown conditions. Claimant shall cooperate with the Owner's Representative and the party against whom the Claim is made in any reasonable effort to mitigate alleged or potential damages, delays or other adverse consequences arising out of the condition that is the subject of such Claim. Unless the other party objects, Claims may be reserved in writing within the time limits set forth in Section 15.1.2. If a claim is reserved, procedures for the resolution of claims and disputes shall not commence until a written notice from the claimant is received by the Owner's Representative. Any notice of Claim or reservation of Claim must clearly identify the alleged cause and the nature of the Claim and include data and information not available to the claimant that will facilitate prompt verification and evaluation of the Claim. Contractor's timely written notice of Claim is a condition precedent to its entitlement to an adjustment of the Contract Sum, Contract Time or Contract Schedule.

*(Paragraphs deleted)*

##### § 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Owner Representative decision, subject to the right of either party to proceed in accordance with this Article 15. The Owner's Representative will issue Certificates for Payment in accordance with the decision of the Owner Representative.

### **§ 15.1.5 Claims for Additional Cost**

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4. Contractor shall have the burden of substantiating the basis for the Claim and shall furnish Owner and Owner's Representative with documentation relating thereto as Owner may reasonably require. The failure to give such written notice by Contractor shall constitute an irrevocable waiver of the Claim for Additional Cost.

### **§ 15.1.6 Claims for Additional Time**

**§ 15.1.6.1** If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary. Contractor shall have the burden of substantiating the basis for the Claim and demonstrating the effect of the claimed delay on the Contract Time, and shall furnish Owner and Owner's Representative with documentation relating thereto as Owner may reasonably require. The failure to give such written notice by Contractor shall constitute an irrevocable waiver of the Claim for Additional Time.

**§ 15.1.6.2** If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

### **§ 15.1.7 Waiver of Claims for Consequential Damages**

Contractor waives Claims against Owner for all consequential damages arising out of or relating to  
*(Paragraphs deleted)*

the Contract for principal office expenses, including the compensation of personnel stationed there, extended or unabsorbed home office overhead, losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

## **§ 15.2 RESOLUTION OF CLAIMS AND DISPUTES**

**§ 15.2.1** Claims, including those alleging an error or omission by the Owner's Representative but excluding those arising under Sections 10.3 and 10.4, shall be referred initially to the Owner's Representative for decision. An initial decision by the Owner's Representative shall be required as a condition precedent to litigation of all Claims between the Contractor and Owner arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Owner's Representative with no decision having been rendered by the Owner's Representative. The Owner's Representative will not decide disputes between the Contractor and persons or entities other than the Owner.

**§ 15.2.2** The Owner's Representative will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Owner's Representative is unable to resolve the Claim if the Owner's Representative lacks sufficient information to evaluate the merits of the Claim or if the Owner's Representative concludes that, in the Owner's Representative's sole discretion, it would be inappropriate for the Owner's Representative to resolve the Claim.

**§ 15.2.3** In evaluating Claims, the Owner's Representative may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Owner's Representative in rendering a decision. The Owner's Representative may request the Owner to authorize retention of such persons at the Owner's expense.

**§ 15.2.4** If the Owner's Representative requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of such request, and shall either (1) provide a response on the requested supporting data, (2) advise the Owner's Representative when the response or supporting data will be furnished or (3) advise the Owner's Representative that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Owner's Representative will either reject or approve the Claim in whole or in part.



§ 15.2.5 The Owner's Representative will render an initial decision approving or rejecting the Claim, or indicating that the Owner's Representative is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefore; and (3) notify the parties and the Owner's Representative of any change in the Contract Sum or Contract Time or both.

§ 15.2.6 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.7 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

## ARTICLE 16 ADDITIONAL CONTRACTOR RESPONSIBILITIES

### § 16.1 Substitute or "equal" items

§ 16.1.1 Neither the approval of alternate material or equipment as being equivalent to that specified nor the furnishing of the material or equipment specified, shall in any way relieve Contractor of responsibility for failure of the material or equipment, due to faulty design, material, or workmanship, to perform the functions required by the Contract and Contract Documents.

§ 16.1.2 The Contract Sum shall be based on the exact materials specified in the Contract Documents. The Contract Sum shall not be contingent upon the approval of any substitute or "equal" product, material equipment or system. If the Contractor wants to propose a substitute product, material, equipment or system different from what is identified in the Contract Documents, it shall submit its recommendation, in writing, to the Architect with a copy to the Owner. The proposal shall be submitted by the Contractor, reviewed by the Architect and either approved or rejected by the Owner in accordance with the terms, conditions and procedures set forth below:

- .1 The product, material, equipment or system called for in the Contract Documents is intended to establish the standard of quality, performance and design; however, a proposed substitute product, material, equipment or system may be used if the Architect determines that it is "equal" and the Owner approves of the substitution, in writing, by signing a Construction Change Directive.
- .2 The term "or approved equal" is deemed to be included after all products, materials, equipment or systems described in the Contract Documents.
- .3 When submitting proposed substitutions the Contractor shall provide appropriate certifications or other materials necessary for the review and evaluation of the proposed substitution, including, but not limited to:
  - Name and description of the product, material, equipment or system which is proposed to be substituted, including cut sheets, drawings, performance and test data and other information necessary for an evaluation;
  - Identification of any change in other materials, equipment or portions of the Work that would be required if the substitution is approved;
  - Explanation as to why the Contractor believes the proposed substitution meets or exceeds, in all respects, the standard of quality, performance and design of the specified item, including supporting documentation;
  - Confirmation that the Contractor, if the substitution is approved, will provide a warranty for the substituted items which equals or exceeds the warranty for the specified item;
  - Confirmation that if the proposed substitution is approved, the Contractor will coordinate the installation so that the Work will be timely completed in accordance with the Contract Documents; and
  - Confirmation that the Contractor, if the substitution is approved, waives all claims for additional costs or time that may subsequently be incurred as a result of using the substituted item.

The materials submitted by the Contractor shall also identify the cost of the proposed substitute item as compared to the specified items and other costs savings, if any, that will be achieved if the proposed substitution is approved. Such cost information shall be verified by the Contractor, if requested by the Owner, and shall be subject to audit. If the substitution is being considered for approval, the resulting cost savings, if any, shall be addressed and confirmed in the Construction Change Directive issued by the Owner. All costs associated with the evaluation of a proposed

- substitution (including but not limited to the cost of Additional Services rendered by the Architect) shall be borne by the Contractor.
- .4 After review and analysis of the information submitted by the Contractor, the Architect shall advise the Owner, in writing, whether it finds the proposed substitution to be of equivalent and comparable quality, performance and design to what was specified and the Owner shall then determine whether or not to approve the proposed substitution. To be effective and binding, the Owner's approval must be in the form of a Construction Change Directive signed by the Owner.
  - .5 Approval of a proposed substitution shall not relieve the Contractor from responsibility for compliance with all the requirements of the Contract Documents. The Contractor shall be completely responsible for the cost of any changes to other parts of its Work or the work of other Contractors caused by such substitution, including the cost of all necessary design or redesign services.
  - .6 The Contract Time shall not be extended and the Contract Price shall not be increased as the result of any substitution.

### **§ 16.2 Indiana Buy American Steel**

In addition to meeting the Buy America Requirements of the FTA at 49 USC 5323(j) and 49 CFR Part 661, as set out in 16.2 below, Contractor agrees to comply with Indiana Code § 5-16-8 *et seq.*, relating to steel procurement on public works projects in Indiana, which requires that only steel or foundry products made in the United States shall be used or supplied in the performance of the Contract or any subcontracts unless the head of the public agency determines, in writing, that the cost of steel or foundry products is considered to be unreasonable or that the steel or foundry products are not produced in sufficient quantities in the United States.

### **§ 16.3 E-Verify Compliance**

This Project and Contract is subject to the requirements of Indiana Code § 22-5-1.7 *et seq.* and Contractor shall enroll in and verify the work eligibility status of all newly hired employees of Contractor through the E-Verify Program ("Program") as defined therein.

### **§ 16.4 Drug Free Work Site**

Contractor and its employees shall comply with all provisions of the Drug Free Workplace Act of 1988 as amended. The unlawful manufacture, distribution, dispensation, possession or use of a controlled substance in the workplace is prohibited. Contractor is responsible for the development implementation, administration and enforcement of a formal substance abuse policy ("Substance Abuse Policy") which, as, a minimum, meets the standards set forth by the Owner. In all cases where Contractor is permitted to employ a subcontractor, Contractor is responsible for insuring that the subcontractor and subcontractor's employees are in compliance with the Substance Abuse Policy. Contracts between Contractor and its subcontractor must stipulate that Owner reserves the right to audit the subcontractor's substance programs for compliance with the requirements of this provision.

### **§ 16.5 Equal Employment Opportunity And Non-Discrimination**

**§ 16.5.1** The Contractor shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin, marital status, age, sexual orientation, veteran status or disability. The Contractor shall take affirmative action to ensure that applicants are employed and that employees are treated during employment without regard to their race, religion, color, sex, national origin, marital status, age, sexual orientation, veteran status or disability. Such action shall include, but not be limited to the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to all employees and applicants for employment, notices to be provided by an appropriate agency of the federal government setting forth the requirements of these non-discrimination provisions.

**§ 16.5.2** The Contractor shall, 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 race, religion, color, sex, national origin, marital status, age, sexual orientation, veteran status or disability.

**§ 16.5.3** The Contractor shall send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the labor union or workers representative of the Contractors' commitments under Section 202 of Executive Order No. 11246 dated September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

§ 16.5.4 The Contractor shall comply with all provisions of Executive Order No. 11246 dated September 24, 1965, and of the rules, regulations and relevant orders of the Secretary of Labor.

§ 16.5.5 The Contractor shall furnish all information and reports required by Executive Order No. 11246 dated September 24, 1965, and by the rules, regulations and order of the Secretary of Labor. or pursuant thereto, and will permit access to its books, records, and accounts by an appropriate agency of the federal government and by the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulation and others.

#### § 16.6 Performance Specifications

*(Paragraph deleted)*

§ 16.6.1 If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner's Representative will specify in the Contract Documents all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Owner shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications and approvals performed or provided by such design professionals. Owner's Representative will review, approve or take other appropriate action on such submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

*(Paragraph deleted)*

#### § 16.7 Damage Survey and Correction

Contractor, accompanied by a representative of Owner and Owner's Representative, shall make a damage survey of the Project site and adjacent properties prior to commencing the Work and before making application for final payment for the Work. Contractor shall provide Owner's Representative a written inventory of damage observed during each survey. Contractor shall replace or repair all existing construction and facilities (both surface and subsurface) including, but not limited to, sidewalks, fences, yards, plantings, mechanical services and electrical services which may be damaged in the performance of the Work. All damage shall be corrected and such facilities shall be restored to their original condition. Materials and construction shall be new and equal in quality, design, workmanship, and installation to the existing material and construction.

*(Paragraph deleted)*

§ 16.7.1 Contractor shall notify Owner's Representative immediately upon observing damage to the site regardless of whether or not the damage is the result of Contractor's operations.

*(Paragraph deleted)*

#### § 16.8 Water, Lights and Power

Unless otherwise specified in the Contract and Contract Documents, Contractor shall provide, at its expense, the necessary water supply for Contractor's activities, and shall, if necessary, provide and lay necessary water lines from existing mains to the place where such water service is required, and shall secure all necessary permits and pay for all hookups, meters, and taps to water mains or hydrants and for all water used at the established rates.

*(Paragraph deleted)*

§ 16.8.1 Contractor shall provide, at its own expense, temporary lighting and power facilities required for the proper prosecution and inspection of the Work, unless specified otherwise in the Contract Documents. Owner shall furnish electrical power to the Site to which Contractor shall be responsible to secure hook-ups and any electrical connections for temporary lighting and power service, as needed, to perform the Work. Contractor shall meter and pay for Contractor's share of all power utilized.

*(Paragraph deleted)*

#### § 16.9 Prevention, Control and Abatement of Erosion and Water Pollution

Contractor shall be responsible for prevention, control and abatement of erosion, siltation and water pollution resulting from construction of the project until Final Acceptance of the Project and per the IDEM permit and reporting requirements.

*(Paragraph deleted)*

§ 16.9.1 Contractor shall provide, install, construct, and maintain coverings, mulching, sodding, sand bagging, berms, slope drains, sedimentation structures, or other devices necessary to meet Owner, State and Federal regulatory agency codes, rules and laws.

*(Paragraph deleted)*

§ 16.9.2 Contractor shall take sufficient precautions to prevent pollution of adjacent rivers and streams with fuels, oils, bitumens, or other harmful materials. Also, Contractor shall conduct and schedule Contractor's operations so as to avoid or otherwise minimize pollution or siltation of the waters.

*(Paragraph deleted)*

§ 16.9.3 Storm drainage facilities, both open and closed conduit, serving the construction area shall be protected by Contractor from pollutants and contaminants. If it is determined that siltation of drainage facilities has resulted due to the project, Owner's Representative will advise Contractor to remove and properly dispose of the deposited material. Should Contractor fail to or elect not to remove the deposits, Owner will provide maintenance cleaning as needed and will charge all costs of such service against the amount of money due or to become due Contractor.

*(Paragraph deleted)*

§ 16.9.4 Excavated material shall not be deposited in streams, ditches or impoundments, or in a position close enough thereto to be washed away by high water or runoff.

*(Paragraphs deleted)*

§ 16.9.5 Contractor shall not disturb lands or waters outside the limits of construction and public rights of way. The location of and methods of operation in all detention areas, borrow pits, material supply pits and disposal areas furnished by Contractor shall meet the approval of Owner's Representative as being such that erosion during and after completion of the Work will not likely result in detrimental siltation or water pollution.

*(Paragraphs deleted)*

§ 16.9.6 Contractor shall schedule operations such that the area of unprotected erodible earth exposed at any one time is not larger than the minimum area necessary for efficient construction operations; and the duration of exposed, uncompleted construction to the elements shall be as short as practicable.

*(Paragraphs deleted)*

§ 16.9.7 Clearing and grubbing shall be so scheduled and performed that grading operations can follow immediately thereafter; and grading operations shall be so scheduled and performed that permanent erosion control features can follow immediately thereafter if conditions on the project permit.

*(Paragraph deleted)*

§ 16.9.8 The surface areas of unprotected erodible earth exposed by clearing and grubbing, excavation or filling operations shall be kept to a minimum. Immediate erosion or pollution control measures to prevent siltation or contamination of any stream, ditch or other impoundment or to prevent damage to the project or property outside the project limits shall be provided when necessary.

*(Paragraphs deleted)*

#### **§ 16.10 Patents, Copyrights and Infringement Claims**

All inventions, ideas, designs and methods contained in the Instruments of Service and the Contract Documents in which Owner has, or acquires patent, copyright or other intellectual property rights ("Intellectual Property") shall remain reserved for the exclusive use of Owner and may not be utilized, reproduced or distributed by or on behalf of Contractor, or any employee, Third Party or agent of Contractor without the prior written consent of Owner except to the extent that the Intellectual Property are necessarily required in connection with performance of the Work.

*(Paragraphs deleted)*

§ 16.10.1 If, pursuant to performance of the Work, Contractor or any of its agents, officers, employees or Third Parties shall produce any patentable or copyrightable subject matter as to which Owner does not gain ownership rights, Owner shall thereupon have, without cost or expense, an irrevocable, non-exclusive, royalty-free license to make, have made or use, either itself or by another contractor or other party on its behalf, such subject matter in connection

with the Work or any activity now or hereafter undertaken by or on behalf of Owner. The license herein granted shall not be transferable and shall not extend to contractors or other parties except to the extent of their work or activity on behalf of Owner.

**§ 16.10.2** Except to the extent that rights are held by Contractor or others under existing valid patents or copyrights and are not given to Owner, Owner shall have the right to use or permit the use of all such Instruments of Service and Contract Documents, and also any oral information of any nature whatsoever received by Owner, and any ideas or methods represented by such Intellectual Property, for any purposes and at any time without other compensation than that specifically provided herein, and no such Intellectual Property shall be deemed to have been given in confidence and any statement or legend to the contrary on any of said Instruments of Service and Contract Documents shall be void and of no effect.

**§ 16.10.3** Contractor warrants that the Work performed shall be free from any claims made against Owner or indemnified parties of Intellectual Property from any other person or entity. Contractor shall save harmless and indemnify the indemnified parties from and against all costs, expenses and damages, including attorney fees and legal costs, which any of them shall incur or be obligated to pay by reason of any such infringement or claim of infringement, and shall, at the election of Owner, defend at the Contractor's sole expense all such claims in connection with any alleged infringement.

**§ 16.10.4** If Owner is enjoined from using any portion of the Instruments of Service and Contract Documents as to which the Contractor is to indemnify Owner against Intellectual Property claims, Owner may at its option and without thereby limiting any other right it may have hereunder or at law or in equity, require the Contractor to supply at its own expense, temporarily or permanently, facilities not subject to such injunction and not infringing any Intellectual Property. If the Contractor shall fail to do so, the Contractor shall, at its expense, remove such offending facilities and refund the cost thereof to Owner or take such steps as may be necessary to ensure compliance by Owner with such injunction, to the satisfaction of Owner.

**§ 16.10.5** Contractor is responsible to determine whether a prospective Third Party is a party to any litigation involving Intellectual Property infringement claims, including antitrust or other trade regulation claims, or is subject to any injunction which may prohibit it under certain circumstances from providing Work or using any Instruments of Service to be used or furnished under this Contract. Contractor enters into any agreement with a party to such litigation at its own risk and Owner will not undertake to determine the merits of such litigation. Owner, however, reserves the right to reject any article which is the subject of such litigation or injunction, or in its judgment use of such article as a result of such circumstances, would delay the Work or be unlawful.

# Appendix C –

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### Insurance Requirements

VPCPF Support Resources - Construction Procurement  
2901 East Discovery Parkway  
Bloomington, IN 47408  
812-855-5294  
[bidtab@iu.edu](mailto:bidtab@iu.edu)



9. INSURANCE REQUIREMENTS

Cross-Reference General Conditions, Article 11

**INDIANA UNIVERSITY  
MINIMUM INSURANCE REQUIREMENTS  
FOR CONSTRUCTION, NON-CONSTRUCTION AND PROFESSIONAL DESIGN  
CONTRACTS**

**Obligations of Contractors and Consultants**

Contractors and Consultants (whether corporation, sole proprietorship or partnership) shall procure and maintain during the term of the contract, until final acceptance of the completed work under the contract and during any extended period to the extent required and described in the Contract Documents, insurance of the types of coverages and minimum limits as identified herein and shall provide the Owner with Certificate(s) of Insurance evidencing that these coverages are in place prior to beginning work. Except as expressly stated otherwise in specific provisions below, Contractors and Consultants shall collectively be referred to herein as “Contractor,” irrespective of their area of expertise, and references to “work” herein shall refer to either providing labor, equipment and materials as part of physically constructing a Project or providing professional design or construction management services with respect to a Project.

- ◆ It is the responsibility of the Contractor and Subcontractors to become familiar with Owner’s insurance requirements and to ensure that they can meet these requirements prior to submitting a bid or proposal to perform work. This Article 9 is to be read in conjunction with insurance requirements set forth in other Contract Documents, including the applicable Agreement between the Owner and Contractor and the General Conditions. To the extent other Contract Documents require a Contractor to procure and maintain any insurance coverage in addition to those set forth below, at higher limits than those set forth below or to provide other terms of insurance not specified herein, Contractor shall adhere to such requirements in order to comply with the insurance requirements as set forth both in this Article 9 and in other Contract Documents. **Please provide all Contract Documents to your insurance agent so the correct certificate can be issued without delay.**
- ◆ No Contractor or Subcontractor of any tier shall be on the jobsite, proceed with work or be paid for any work performed, until proper certificate(s) of insurance have been submitted to and approved by the Owner. The Owner shall not be liable to any person for the failure of the Contractor or any Subcontractor to carry specified insurance.
- ◆ It is the responsibility of all Contractors to ensure that all of its Subcontractors also meet these insurance requirements.
- ◆ If any part of any coverage includes a deductible, self-insurance, a captive insurance company or a fronting arrangement, the amount so covered must be disclosed on the certificate or in a



separate letter from the Contractor. Owner reserves the right to approve of this coverage.

- ◆ NOTE: Contractor is required to meet the insurance specifications during the time of construction, during the correction of Work period, usually two years after the project is accepted by Owner, and during any Extended Coverage Periods as required herein or in other Contract Documents.
- ◆ Copies of subsequent, renewal certificates must be emailed to:

[kudavis@iu.edu](mailto:kudavis@iu.edu)  
Indiana University  
Office of Insurance, Loss Control & Claims  
Smith Research Center 110  
2805 E. 10<sup>th</sup> St.  
Bloomington, IN 47408

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## **Insurance Requirements**

### **1. Commercial General Liability**

- **Construction Contracts**

- Required Limits
  - General Aggregate \$2,000,000
  - Products/Completed Operations Aggregate \$2,000,000
  - Personal Injury (with Employment Exclusion Deleted) and Advertising Injury \$1,000,000
  - Each Occurrence Limits \$1,000,000
  - Damages to Rented Premises \$100,000
- The "COMMERCIAL GENERAL LIABILITY" box must be checked
- The "OCCUR" box must be checked
- Per Project box must be checked
- Coverage provided by this policy shall include contractual coverage for liability assumed by contract. Products/Completed Operations Coverage shall be maintained for five (5) years following Substantial Completion of the Project ("Extended Coverage Period").

- **Design/Consultant Contracts**

- Required Limits
  - General Aggregate \$2,000,000
  - Products/Completed Operations Aggregate \$2,000,000
  - Personal Injury and Advertising Injury \$1,000,000
  - Each Occurrence Limits \$1,000,000
  - Damages to Rented Premises \$100,000
- The "COMMERCIAL GENERAL LIABILITY" box must be checked
- The "OCCUR" box must be checked

### **2. Automobile Liability**

- Required Coverages
  - Combined Single Limit coverage \$1,000,000
  - If separate Bodily Injury and Property Damage limits are purchased, each must be \$1,000,000
- Either the Any Auto -or- All Owned, Hired and Non-Owned Autos box(es) must be checked

### **3. Excess/Umbrella**

- **Construction Contracts:** Separate Umbrella policy written in excess of the commercial General Liability, Employers Liability and Auto policies on a follow form basis. The limits of the Umbrella/Excess coverage to be carried by a construction

Contractor or Construction Manager, shall correspond to the category set forth below in which the Contract Sum or the Construction Budget for the applicable Project falls:

- Contract Sum/Construction Budget up to \$25,000,000
  - Per Claim Limit \$5,000,000
  - Aggregate Limit \$5,000,000
- Contract Sum/Construction Budget Between \$25,000,001 and \$50,000,000
  - Per Claim Limit \$10,000,000
  - Aggregate Limit \$10,000,000
- Contract Sum/Construction Budget Over \$50,000,000
  - Per Claim Limit \$20,000,000
  - Aggregate Limit \$20,000,000
- **Design/Consultant Contracts:** Separate Umbrella policy written in excess of the Commercial General Liability, Employers Liability and Auto policies on a follow form basis.
  - Per Claim Limit \$3,000,000
  - Aggregate Limit \$3,000,000

#### 4. Professional Liability

Any type of design or professional services contract requires Professional Liability coverage of at least \$1 million per occurrence, \$2 million in the aggregate and a deductible or self-insured retention not to exceed \$25,000. If written on a “claims made” basis the coverage shall be maintained not only throughout the term of the Agreement, but also for a minimum of three (3) years following Substantial Completion of the Project (“Extended Coverage Period”).

**Owner reserves the right to require increased limits of coverage on a Project-by-Project basis, to the extent set forth in the Agreement or other Contract Documents.**

#### 5. Worker’s Compensation

The Contractor shall procure and maintain a Workers’ Compensation policy to cover its obligation under the applicable laws of any state or federal government to its employees employed on the jobsite or elsewhere on this project, including its liability as an employer under common law (commonly known as Employer’s Liability Coverage “B”) with limits of not less than that listed below. Before commencing work, Contractor shall submit to the Owner a valid State Form 41321 (Certificate of Compliance – Worker’s Compensation and Occupational Diseases) or a facsimile thereof at Owner’s option. **If the Contractor has no employees** (i.e., a one-person shop) then a Certificate of Exception must be obtained from the State.

Worker’s Compensation:

Statutory

<u>Employer's Liability:</u>	\$ 1,000,000 each accident or disease
	\$ 1,000,000 policy limit
	\$ 1,000,000 each employee

## 6. Contractor's Pollution Liability – Construction Contracts

All General Contractors, Prime Contractors or Construction Managers At Risk, shall procure Contractor's pollution liability insurance with the following limits:

- For projects of \$1 million or less: \$1 million incident, aggregate \$1 million.
- For projects over \$1 million to \$5 million: minimum limit (per incident and aggregate) equal to cost of project, rounded up to the next million. (E.g., a \$2.3 million project requires \$3 million pollution liability.)
- For projects over \$5 million to \$10 million: \$5 million minimum limit (per incident and aggregate).
- For projects over \$10 million to \$25 million: \$5 million minimum limit per incident, \$10 million aggregate.
- For projects over \$25 million: \$10 million minimum limit (per incident and aggregate).

Subcontractors do not have to procure this insurance unless otherwise expressly required in the Contract Documents. The policy shall contain or shall be endorsed to contain a provision extending coverage for completed operations hazard losses for as long as there is exposure to claims under the Indiana Statute of Repose, Ind. Code 32-30-1.

The policy shall cover sums that the insured becomes legally obligated to pay to a third party or for the investigation, removal, remediation (including associated monitoring) or disposal of soil, surface water, groundwater or other contamination to the extent required by environmental laws (together "clean-up costs") caused by pollution conditions resulting from covered operations, subject to the policy terms and conditions, including bodily injury, property damage (including natural resource damages), clean-up costs, and legal defense costs. Such policy shall cover claims related to pollution conditions to the extent such are caused (i) by the performance of Work; (ii) by transportation, including loading and unloading, by owned and non-owned vehicles and/or (iii) by other activities performed by or on behalf of the Contractor, Prime Contractor or Construction Manager At Risk that occur on the Project. The policy shall have no exclusions or limitations for loss occurring over water including but not limited to a navigable waterway. Coverage shall apply to sudden and non-sudden pollution conditions resulting from the escape or release of smoke, vapors, fumes, acids, alkalis, toxic chemicals, liquids, or gases, waste materials, or other irritants, contaminants, or pollutants. The policy

shall contain a severability provision.

## **7. Builder's Risk Insurance**

The Owner shall purchase and maintain during the course of construction Builder's Risk Insurance, on an "all risk" or equivalent policy form, providing coverage for the scope of the Project (as defined in the Contract Documents) in an amount of not less than one hundred percent (100%) of the insurable value of the Work (as defined in the Contract Documents) performed by the Contractor and the work of separate contractors on the Project, if any, including materials, equipment, and supplies to become a part of the completed Work which have been delivered to the site, which are stored temporarily off the Project site and while in transit, subject to a \$25,000 deductible. The Contractor shall bear responsibility for that deductible.

This insurance shall include the interests of the Owner, the Contractor(s) (whether General Contractor, Prime Contractors or Construction Managers At Risk) and Subcontractors (whether First Tier Subcontractors, or Sub-subcontractors), as their respective interests may appear. A loss insured by the Builder's Risk coverage shall be adjusted by the Owner and made payable to the Owner for the insureds, as their interests may appear. Contractor shall pay Subcontractors their just share of Builder's Risk insurance proceeds received by the Contractor and, by appropriate agreements written where legally required, shall require Subcontractors to make payment to their Sub-subcontractors in similar manner. The Contractor shall be responsible for and shall insure all Contractor's equipment, tools, scaffolding, staging, towers, forms and temporary buildings, and other materials, equipment and supplies not intended to become a part of the completed Work.

The Owner and Contractor waive all rights of subrogation against each other and any of their Subcontractors, Sub-subcontractors, agents and employees, each of the other, and against the Architect, Architect's consultants, separate contractors, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages to the Work (as defined in the Contract Documents) caused by fire or other causes of loss to the extent covered by the Builder's Risk coverage obtained by the Owner pursuant to this Section, except such rights as they have to proceeds of such insurance held by the Owner. The Owner or Contractor, as appropriate, shall require of the Architect, Architect's consultants, separate contractors, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements written where legally required for validity, similar waivers of subrogation each in favor of other parties enumerated herein. The Builder's Risk coverage shall provide such waivers of subrogation by endorsement or otherwise.

The waiver of subrogation as to damaged Work set forth herein, shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the Builder's Risk insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the damaged Work. For the avoidance of doubt, the waiver of subrogation set forth above applies only to damage or loss to the Work (as

defined in the Contract Documents) performed as part of the Project and which is included within the Builder's Risk coverage procured by the Owner. The waiver of subrogation does not extend to damage or loss of other property beyond the scope of the Work performed as part of the Project, regardless of whether such other damaged property is part of an existing facility on which the Work is being performed, or is adjacent to the Work being performed, and regardless of whether the Owner has obtained property coverage for the other property in addition to the Builder's Risk coverage procured by the Owner to cover the Work. Indemnification obligations and additional insured requirements set forth in the Contract Documents shall apply to their full extent with respect to any damage or loss to other property which is not covered by the Builder's Risk coverage procured by the Owner.

*This provision shall not release the Contractor from its obligation to complete, according to plans, specifications and other requirements of the Contract Documents, the Work covered by the Contract and the Contractor and its Surety shall be obligated to the full performance of the Contractor's undertaking.*

**NOTE: Prompt notice of potential claims is required.** In the event of an occurrence that might be covered by Builders Risk insurance, notice must be given to the Owner within two (2) business days of the occurrence. Except for emergency repairs, no changes to damaged property will be made until an inspection is made.

### **Insurance Policy Endorsements**

All insurance policies must provide the following endorsements to the policy and **must be noted on the certificate(s)**:<sup>1</sup>

1. Additional Insured Endorsement (CG2010 10 01 and CG2037) or equivalent form required on General Liability, Automobile Liability and Excess/Umbrella Liability policies naming the Owner and/or Other Parties as defined in Owner's Contract and including coverage for completed operations. Owner shall be identified as: "The Trustees of Indiana University, its officers, agents and employees." *If additional insured status is automatically granted by the insurance form "where required by written contract" then it is sufficient to note that on the certificate with a reference to the form number. This must include information confirming that under the Excess/Umbrella coverage -- "Excess coverage is following form."*

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<sup>1</sup> An addendum to the COI can be used if additional space is needed.

2. Aggregate Per-Project Endorsement (CG2503) to the Commercial General Liability Policy, indicating that the general aggregate applies separately to each project.
3. Waiver of Subrogation under the Contractor's Commercial General Liability, Automobile Liability, Employer's Liability/Workers' Compensation and Umbrella/Excess Policies, in favor of the Owner.

4. All insurance policies required of the Contractor shall be primary and non-contributory (including Contractor's Umbrella/Excess policy to be exhausted vertically above Contractor's Commercial General Liability, Employer's Liability and Automobile policies), with any and all insurance maintained by the Owner to be excess of Contractor's insurance as specified and required above. Contractors' policies shall contain a severability of interests clause in respect to liability, protecting each insured as though a separate policy had been issued to each.
5. Unless expressly waived by the Owner in writing, all policies shall contain a covenant requiring (30) days written notice by the insurer to the Indiana University Office of Insurance, Loss Control & Claims before cancellation, reduction or other modifications of coverage, except ten (10) days prior notice will be required in the event coverage is being terminated for failure to pay the applicable premium.

### **Certificates of Insurance/Insurance Policies**

Before commencing its work, Contractor shall deliver to the Owner a Certificate or Certificates of Insurance evidencing that the required coverages, limits and terms of insurance are in effect. If requested by the Owner during the period in which insurance is required to be maintained per the terms of the Contract Documents, Contractor shall provide certified copies of one or more of the required policies for review by the Owner. If one or more of the policies providing the required coverages, limits and terms of insurance expire or renew during the period in which coverage is required to be maintained (including the Extended Coverage Periods for Products/Completed Operations and Professional Liability coverages), an updated Certificate of Insurance shall be provided by the Contractor to the Owner at least fifteen (15) days before the expiration or renewal of the existing policy, confirming that the required coverages, limits and terms of insurance will remain in place under either a renewal of the existing policy or the procurement of a new policy.

Copies of subsequent, renewal certificates must be emailed to:

[kudavis@iu.edu](mailto:kudavis@iu.edu)  
Indiana University  
Office of Insurance, Loss Control & Claims  
Smith Research Center 110  
2805 E. 10th St.  
Bloomington, IN 47408

Owner shall also have the right during the term that insurance is required to be maintained (including Extended Coverage Periods) to periodically request that an updated Certificate or Certificates of Insurance be provided to confirm that the required coverages, limits and terms of insurance remain in effect. Contractor shall provide such updated Certificate or Certificates within five (5) business days of receiving such request. If Contractor fails to timely provide a Certificate or

Certificates of Insurance or certified copies of policies as required herein, the Owner may suspend all further work by the Contractor and/or payments due to the Contractor until the required evidence of insurance is provided.

On all Certificates of Insurance, the "Certificate Holder" shall be as follows:

The Trustees of Indiana University  
2901 East Discovery Parkway  
Bloomington, IN 47408

The Description of Operations section on all Certificates of Insurance must include the Indiana University Project Name and Project Number to which the Certificate applies.

### **Insurance Companies**

All required insurance shall be procured from companies licensed to do business in the State of Indiana (unless this requirement is waived by the Owner, in writing) and having an A.M. Best Rating of A-, VII (or better).

### **Hold Harmless Agreement**

In addition to and not in limitation of any indemnity obligations of the Contractor as otherwise included in the Contract Documents, Contractor shall indemnify and save harmless the Owner from any and all losses, costs, damages, liability and expenses, including reasonable attorney fees, arising out of or in conjunction with claims or suits for damage to any property not included in the scope of Work and/or injury to persons, including Contractor's employees and all Subcontractor's employees of any tier, including death, alleged or claimed to have been caused by or through the performance of the Work or operations incidental to the Work by the Contractor, its agents or employees, or by its Subcontractors of any tier, their agents or employees, whether through negligence or willful act; and Contractor shall, at the request of Owner, undertake to investigate and defend any and all such claims or suits against Owner.



## **Hold Harmless Agreement—Consultants**

In addition to and not in limitation of any other indemnity obligations of the Consultant as otherwise set forth in the Agreement between Owner and Consultant or in other terms and conditions of the Contract Documents, with regard to losses, costs, damages, liability and expenses, including reasonable attorney fees (“Losses”) that may be covered by Consultant’s professional liability insurance, Consultant shall indemnify and save harmless the Owner from any and all Losses arising out of or in conjunction with claims or suits for damage to any property not included in the scope of work and/or injury to persons, including Consultant’s employees and all employees of a Sub-Consultant, if any, of any tier, including death, caused by or through the performance of the work or operations incidental to the work by the Consultant, its agents or employees, or by its Sub-Consultants, if any, of any tier, their agents or employees, whether through negligence or willful act and Consultant.

In addition to and not in limitation of any other indemnity obligations of the Consultant as otherwise set forth in the Agreement between Owner and Consultant or in other terms and conditions of the Contract Documents, with regard to losses, costs, damages, liability and expenses, including reasonable attorney fees (“Losses”) that may be covered by Consultant’s other liability insurance programs, Consultant shall indemnify and save harmless the Owner from any and all losses, costs, damages, liability and expenses, including reasonable attorney fees (“Losses”), arising out of or in conjunction with claims or suits for damage to any property not included in the scope of work and/or injury to persons, including Consultant’s employees and all employees of a Sub-Consultant, if any, of any tier, including death, alleged or claimed to have been caused by or through the performance of the work or operations incidental to the work by the Consultant, its agents or employees, or by its Sub-Consultants, if any, of any tier, their agents or employees, whether through negligence or willful act and Consultant shall, at the request of Owner, undertake to investigate and defend any and all such claims or suits against Owner.

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Indiana University Indianapolis  
Sports Complex Elevator Alterations  
IU 20220900  
Guidon Design, LLC

HYDRAULIC ELEVATORS

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## DIVISION 14 – CONVEYING SYSTEMS

### 14 00 00 Conveying Equipment

#### 14 24 00 – Hydraulic Elevators

##### 14 24 23 – Hydraulic Passenger Elevators

## PART 1 - GENERAL

### 1.1 SUMMARY AND DEFINITIONS

#### A. Related Documents

1. Division 01 - Supplementary General Conditions
2. Request for Proposal

#### B. Intent

1. This section includes:
  - a. Hydraulic passenger elevators
2. The following outlines the scope of work covered in this Section:
  - a. Comprehensive “Turn-Key” modernization of five (5) hydraulic passenger elevators.
  - b. Completion of Related Work identified herein item 1.5.A.
  - c. This is a “TURN-KEY” project with the Elevator Contractor designated the “PRIME CONTRACTOR” for all related and non-related work specified and required unless specifically excluded or referenced to be done by others.

As this is a “Turn-Key” project, with the Elevator Contractor being the “Prime” Contractor, it is the Elevator Contractor’s responsibility to perform a detailed survey of the existing jobsite conditions to determine applicability and detailed scope for related work completion.

The Elevator Contractor is required to retain the services of trade sub-contractors that are either experienced in working as subcontractors on elevator modernization projects or that have relevant experience on similar projects. The trade sub-contractors shall be required to complete a detailed survey of related work/building conditions at this location(s) alongside the Elevator Contractor as a requirement to provide cost proposals for the related scope of work. At a minimum, trade sub-contractors that are required to be included on the Elevator Contractors project team should include:

Electrical Contractor

Mechanical Contractor

Fire / Life Safety Contractor

The Elevator Contractor is required to identify in their proposal the Trade sub-contractors utilized to compile their cost estimates included in their Base Bid.

It is the intent of this specification that the Elevator Contractor include in their Base Bid the cost to complete all elevator and related work that will be required to return each of the units to public use with no Code violations or punch-list items identified by the local Authority Having Jurisdiction (AHJ) as remaining to be completed. As such, the items Identified in Section 1.5.A of the Technical Specifications are intended to be as accurate a listing as can be compiled at the time of preparation of these documents.

However, should other related building work items be necessary to be completed to meet the requirements of the AHJ for issuance of permanent elevator operating certificates/permits, it will be the responsibility of the Elevator Contractor to complete the additional items under the scope of their Base Bid amount, with no additional costs to the University.

3. Related equipment shall be designed, constructed, installed, and adjusted to produce the highest results with respect to smooth, quiet, convenient, and efficient operation, durability, economy of maintenance, and the highest standard of safety.
4. It is not the intent of these specifications to detail the construction and design of all parts of the equipment, but it is expected that the type, materials, design, quality of work and construction of each part shall be adequate for the service required, durable, properly coordinated with all other parts, and in accordance with the best commercial standards applicable and of the highest commercial efficiency possible.
5. Electric and magnetic circuits and related parts shall be of proper size, design, and material to avoid heating and arcing, and all other objectionable effects which may reduce the efficiency of operation, economy of maintenance and/or net-useful life of the apparatus.
6. Minimum requirements for design, materials, etc., are for certain parts of the equipment. Equivalent requirements approved by the Consultant shall apply to such parts as are of special design, construction, or material and to which the specified requirements are not directly applicable. These minimum requirements as a whole shall be considered as establishing proportionate general minimum standards for all parts of the equipment.
7. The Consultant may permit variations from the requirement of these specifications to permit use of the Contractor's standard equipment, provided such standard equipment is in every way adequate for the intended use and meets the full intent of these specifications. All such variations proposed by the manufacturer shall be called to the attention of the Consultant and shall only be made if approved in writing prior to the award of the contract.

8. General requirements for design, materials and construction are intended primarily to apply to the heavy-duty and important parts of the equipment specifically mentioned and to other parts of similar duty and importance. Less important and light-duty parts may be of the standard design, materials and construction provided that, in the opinion of the Consultant, such standards are in accordance with the best commercial practice and are fully adequate for the purpose of use. All such variations shall be made only on the Consultant's written approval.
9. All equipment and component parts installed, supplied, or provided under this contract shall be manufactured and distributed by a third-party, non-installer company servicing the vertical transportation industry.
  - a. Apparatus shall conform to the design and construction standards referenced herein and shall be rated the best commercial grade suitable for this application.
  - b. Equipment and component systems shall not employ any experimental devices or proprietary designs that could hamper and/or otherwise prohibit subsequent maintenance repairs or adjustments by all qualified contractors.
  - c. Manufacturers of the apparatus shall provide technical support and parts replacements for their equipment and component systems for a minimum of twenty (20) years and issue such guarantee of support to the purchaser with written certification naming the final Owner of their product(s) to ensure the apparatus or systems remain maintainable regardless of who may be selected for future service.
10. All equipment provided shall be factory and field tested with a history of design reliability and net-useful life established.
  - a. Contractor must be able to demonstrate the apparatus to be installed has been used successfully in a substantially similar manner under comparable conditions.
  - b. If the apparatus proposed differs substantially in construction, material composition, design, size, capacity, duty, or other such rating from the equipment previously used for the same purpose by the manufacturer, the Consultant may reject the apparatus or require the vendor test and demonstrate the adequacy and suitability for this particular situation. Any necessary tests shall be performed at the sole expense of the Contractor with no prior guarantee of acceptance after the testing procedure.
11. The Contractor shall not use as part of the permanent equipment any experimental devices, proprietary design, components, construction of materials which have not been fully tried out in at least substantially similar or under comparable service, except as may be especially approved by the Consultant. If any important equipment or devices to be used on this installation differ substantially in construction, materials, design, size, capacity, or duty from corresponding items previously used for the same purpose by the manufacturer, they shall pass such tests as the Consultant may require to fully show their adequacy and suitability. These tests shall be in addition to tests herein specified and shall be made at the expense of the Contractor.
12. Certain design limitations, tests, etc., are herein specified as a partial check of the adequacy of design, construction and materials used. These requirements do not cover all features necessary to ensure satisfactory and approved operation, etc., of the equipment.

13. It is understood, the entire system shall be designed, fabricated, modified and/or upgraded in full compliance with applicable local laws and code standards. The absence of a particular item or requirement shall not relieve the Contractor of the full and sole responsibility for such equipment, features and/or procedures.
14. With the exception of only those items specifically identified as being performed by others, the Specifications are intended to include all engineering, material, labor, testing, and inspections needed to achieve work specified by the Contract Documents. Inasmuch as it is understood that any incidental work necessary to complete the project is also covered by the Specifications, bidders are cautioned to familiarize themselves with the existing job site conditions. Additional charges for material or labor shall not be permitted subsequent to execution of the Contract.
15. Bidders must report discrepancies or ambiguities occurring in the Specifications to the Consultant for resolution prior to the bidding deadline, otherwise the Specifications shall be deemed acceptable in their existing form.
16. Fixtures, Operating Devices and Signage Survey
  - a. Upon award of the Contract, Contractor shall perform a survey of the existing elevator operating fixtures and devices, including signage, and present a report to the Building Management. The report shall include photographs of the following existing items:
    - 1) Hall call push buttons
    - 2) "You are Here" signage if integral with the hall call fixture cover plate
    - 3) Floor identification / Braille signage in entrance jambs
    - 4) Lobby directional lanterns at all floors
    - 5) Applicable wall surfaces
  - b. The Contractor shall submit, as part of the report, pictures or catalog cuts of the new devices intended to be installed under the modernization project at the various locations including any additional signage either new or replacing existing.

C. Termination of Existing Agreement(s)

1. By submitting a bid, the existing maintenance provider agrees that any service contract(s) in effect shall be terminated by the University should the project be awarded to another vendor upon thirty (30) day written notice to the Contractor by the University.
  - a. The contract(s) shall be terminated with no penalty to the University or Contractor.
  - b. University will be responsible for money owed the Contractor for services provided and work performed up until the date of cancellation.

D. Abbreviations and Symbols

1. The following abbreviations, Associations, Institutions, and Societies may appear in the Project Manual or Contract Documents:

ADA                      Americans with Disabilities Act

AHJ	Authority Having Jurisdiction
AIA	American Institute of Architects
ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWS	American Welding Society
IBC	International Building Code
IEEE	Institute of Electrical and Electronics Engineers
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Agency
OSHA	Occupational Safety and Health Act

E. Codes and Ordinances / Regulatory Agencies

1. Work specified by the Contract Documents shall be performed in compliance with applicable Federal, State, and municipal codes and ordinances in effect at the time of Contract execution. Regulations of the Authority Having Jurisdiction shall be fulfilled by the Contractor and Subcontractors. The entire installation, when completed, shall conform with all applicable regulations set forth in the latest editions of:
  - a. Local and/or State laws applicable for logistical area of project work.
  - b. Building Code applicable to the AHJ.
  - c. Elevator Code applicable to the AHJ.
  - d. Safety Code for Elevators and Escalators, ASME A17.1 and all supplements as modified and adopted by the AHJ.
  - e. Safety Code for Elevators and Escalators, A17.1S supplement to A17.1 as modified and adopted by the AHJ for Machine Room Less installations (MRL).
  - f. Guide for Inspection of Elevators, Escalators, and Moving Walks, ASME A17.2.
  - g. Safety Code for Existing Elevators and Escalators, ASME A17.3 as modified and adopted by the AHJ.
  - h. Guide for Emergency Evacuation of Passengers From Elevators, ASME A17.4.
  - i. National Electrical Code (ANSI/NFPA 70).
  - j. American with Disabilities Act - Accessibility Guidelines for Building and Facilities and/or A117.1 Accessibility as may be applicable to the AHJ.
  - k. ASME A17.5/CSA-B44.1 - Elevator and Escalator Electrical Equipment.
2. The Contractor shall advise the University's Representative of pending code changes that could be applicable to this project and provide quotations for compliance with related costs.

F. Reference Standards

1. AISC - Specification for the Design, Fabrication and Erection of Structural Steel for Buildings.
2. ANSI/AWS D1.1 - Structural Welding Code, Steel.
3. ANSI/NFPA 80 - Fire Doors and Windows.

4. ANSI/UL 10B - Fire Tests of Door Assemblies.
5. ASTM D1785 - PVC Pipe.
6. ASTM D2466 – PVC Pipe Fittings.
7. ASTM D2564 – Cement for PVC Pipe and Fittings.
8. ANSI/IEEE - 519-Latest Edition.
9. ANSI/IEEE - Guide for Surge Withstand Capability (SWC) Tests.
10. ANSI Z97.1 – Laminated/Safety Tempered Glass.

G. Definitions

1. Defective Work: Operation or control system failure, including excessive malfunctions; performances below specified ratings; excessive wear; unusual deterioration or aging of materials or finishes; unsafe conditions; need for excessive maintenance; abnormal noise or vibration; and similar unusual, unexpected, and unsatisfactory conditions.
2. Provide: Where used in this document, provide shall mean to install new device, apparatus, system, equipment or feature as specified in this document.
3. Definitions in ASME A17.1 as amended or modified by the AHJ apply to work of this Section.

1.2 PERMITS AND SUBMITTALS

A. Permits

1. Comply with the requirements of Division 01.
2. Prior to commencing work specified by the Contract Documents, the Contractor shall, at its own expense, obtain all permits or variances as may be required by the AHJ and provide satisfactory evidence of having obtained said permits and variances to both the University's Representative and Consultant.
3. File necessary drawings for approval of all Authorities Having Jurisdiction.
4. The Elevator Contractor shall undertake the necessary review and search procedure to identify open applications and/or outstanding violations for this property; and, close-out such applications and/or expunge such violations relative to the project scope as required for final acceptance by the AHJ.
  - a. Outstanding applications and violations must be indicated on the request for permit filing for this procedure to ensure such applications and/or violations are dismissed accordingly.
  - b. All relative costs shall be included in the base bid proposal with the understanding that corrective actions are covered under the specified scope of work.

B. Submittals

1. Prior to beginning the work, the Contractor shall submit and have approved copies of layout drawings, shop drawings and standard cuts. These items shall include:
  - a. A plan view of the hoistway and machine room



- b. Elevation of the pit
    - c. All accessories.
  2. The Consultant and the University's Representative shall pass on the submittals with reasonable promptness and the Contractor shall be responsible to ensure that there will be no delay in their work or that of any other trade involved.
  3. Approved filing and submittal requirements must be completed before equipment and related materials are ordered.
  4. Copies of Department of Buildings' permits and/or governing authority's documents will be posted at the job site with copies issued to the University's Agent, University's Representative and Consultant.
  5. Samples of wood, metal, plastic, paint, or other architectural finish material applicable to this project shall be submitted for approval by the University's designee.
  6. It shall be understood that approval of the drawings and cuts by University's designee, and/or Consultant shall be for general arrangement only and does not include measurements which are the Contractor's responsibility or approval of variations from the contract documents required by the AHJ.
  7. The Contractor shall prepare a record log and maintain all submittals, shop drawings, catalog cuts and samples.
- C. Measurements and Drawings
  1. Drawings or measurements included with the bidding material shall be for the convenience of the bidders only and full responsibility for detailed dimensions lies with the Contractor.
  2. In the execution of the work on the job, the Contractor shall verify all dimensions with the actual conditions.
  3. Where the work of the Elevator Contractor is to join other trades, the shop drawings shall show the actual dimensions and the method of joining the work of the various trades.
- D. Changes in Scope and Extra Work
  1. The University may at any time make changes in the specifications, plans and drawings, omit work, and require additional work to be performed by the Contractor.
    - a. Each such addition or deletion to the Contract shall require the University and the Contractor to negotiate a mutually acceptable adjustment in the contract price, and, for the Contractor to issue a change order describing the nature of the change and the amount of price adjustment.
    - b. The Contractor shall make no additions, changes, alterations, or omissions or perform extra work except on written authorization of the University.
    - c. Each change order shall be executed by the Contractor, University, and the Consultant.
- E. Keys

1. Upon the initial acceptance of work specified by the Contract Documents on each unit, the Contractor shall deliver to the University, six (6) keys for each general key-operated device that is provided under these specifications in accordance with ASME A17.1, Part 8 standards as may be adopted and modified by the AHJ.
2. All other keying of access or operation of equipment shall be provided in accordance with ASME A17.1 Part 8 as may be adopted and modified by the AHJ.

F. Diagnostic Tools

1. Prior to seeking final acceptance of the project, the Contractor shall deliver to the University any specialized tools required to perform diagnostic evaluations, adjustments, and/or programming changes on any microprocessor-based control equipment installed by the Contractor. All such tools shall become the property of the University.
  - a. University's diagnostic tools shall be configured to perform all levels of diagnostics, systems adjustment and software program changes which are available to the Contractor.
  - b. University's diagnostic tools that require periodic re-calibration and/or re-initiation shall be performed by the Contractor at no additional cost to the University for a period equal to the term of the maintenance agreement from the date of final acceptance of the project.
  - c. The Contractor shall provide a temporary replacement, at no additional cost to the University, during those intervals in which the University might find it necessary to surrender a diagnostic tool for re-calibration, re-initiation, or repair.
2. Contractor shall deliver to the University, printed instructions, access codes, passwords, or other proprietary information necessary to interface with the microprocessor-control equipment.

G. Service Support Requirements / Spare Parts

1. Software / Firmware Updates
  - a. During the life of the equipment and subject to the term of the maintenance agreement, where revisions to firmware and/or software are issued by the control manufacturer or manufacturer of solid state and microprocessor based subsystems subsequent to the beneficial use of the equipment, updates shall be provided so that the installation and spare circuit boards are current with respect to software and firmware versions.

H. Wiring Diagrams, Operating Manuals and Maintenance Data

1. Comply with the requirements of Division 01.
2. Deliver to the University, four (4) identical volumes of printed information organized into neatly bound manuals prior to seeking final acceptance of the project.
3. The manuals shall also be submitted in electronic format on non-volatile media, incorporating raw 'CAD' and/or Acrobat 'PDF' file formats.

4. Manuals, as well as electronic copies, shall contain the following:
  - a. Step-by-step adjusting, programming, and troubleshooting procedures that pertain to the solid-state microprocessor-control and motor drive equipment.
  - b. Passwords or identification codes required to gain access to each software program in order to perform diagnostics or program changes.
  - c. A composite listing of the individual settings chosen for variable software parameters stored in the software programs of both the motion and dispatch controllers.
  - d. Method of control and operation.
5. Provide four (4) sets of “AS INSTALLED” straight-line wiring diagrams in both hard and electronic format in accordance with the following requirements:
  - a. Displaying name and symbol of each relay, switch or other electrical component utilized including identification of each wiring terminal.
  - b. Electrical circuits depicted shall include all those which are hard wired in both the machine room and hoistway.
  - c. Supplemental wiring changes performed in the field shall be incorporated into the diagrams in order to accurately replicate the completed installation.
6. Furnish four (4) bound instructions and recommendations for maintenance, with special reference to lubrication and lubricants.
7. Furnish four (4) bound copies of project specific Maintenance Control Programs.
8. Manuals or photographs showing controller repair parts with part numbers listed.

I. Training

1. Prior to seeking final acceptance of the project, the Contractor shall conduct an eight (8) hour training program on-site with building personnel selected by the University.
2. The focus of the session shall include:
  - a. Instructions on proper safety procedures and who to contact for the purpose of assisting passengers that may become entrapped inside an elevator car.
  - b. Explain each control feature and its correct sequence of operation.
3. Control features covered shall include but, not be limited to:
  - a. Independent Service Operation.
  - b. Emergency Fire Recall Operation - Phase I.
  - c. Emergency In-car Operation - Phase II.
  - d. Emergency Power Operation. (Battery Lowering)
  - e. Emergency Communications Equipment.
  - f. Hospital Emergency Service.
  - g. Security Operating Features.

J. Advertising

1. Advertising privileges shall be retained by the University.
2. It shall be the responsibility of the Contractor to keep the job site free of posters, signs, and/or decorations.
3. Contractor's logo shall not appear on faceplates or entrance sills without the approval of the University.

### 1.3 QUALITY ASSURANCE

#### A. Materials and Quality of Work

1. All materials are to be new and of the best quality of the kind specified.
2. Installation of such materials shall be accomplished in a neat manner and be of the highest quality.
  - a. Should the Contractor receive written notification from the University stating the presence of inferior, improper, or unsound materials or quality of installation, the Contractor shall, within twenty-four (24) hours, remove such work or materials and make good all other work or materials damaged.
  - b. Should the University permit said work or materials to remain, the University shall be allowed the difference in value or shall, at its election, have the right to have said work or materials repaired or replaced as well as the damage caused thereby, at the expense of the Contractor, at any time within one (1) year after the completion of the work; and neither payment made to the Contractor, nor any other acts of the University shall be construed as evidence of acceptance and waiver.

#### B. Mechanical Design Requirements (General)

1. The following typical requirements shall apply to all parts of the work where applicable and are supplementary to other requirements noted under the respective headings.
  - a. All bearings, pivots, guides, guide shoes, gearing, door hanger sheaves, door hanger tracks and similar elements subject to friction or rolling wear in the entire elevator installation shall be accurately and smoothly finished and shall be arranged and equipped for adequate and convenient lubrication. Means shall be provided for flushing and draining the larger bearings and gear case. All oiling holes shall have dustproof self-cleaning caps.
  - b. Bearings of governor and governor sheaves and important supporting bearings of other parts in motion when the elevator is traveling shall, unless otherwise specified or approved, be of ball or roller bearing type.
  - c. Bearings for brake levers and similar uses where the amount of movement under load is light and the wear negligible may be unlined.
  - d. All plain bearings shall be liberally sized in accordance with the best commercial elevator usages which have proved entirely satisfactory on heavy-duty installations.
  - e. Bearings of motors shall be arranged and equipped for adequate automatic lubrication. Ring or chain oilers, spring-fed grease cups and equivalent devices

properly used in accordance with the best commercial elevator practice will be acceptable. Approved means shall be provided for visibly checking the amount of lubricant contained and for flushing and draining. Means shall also be provided for preventing leakage of lubricant when the reservoirs or grease cups are filled to proper levels.

- f. Ball and roller bearings shall be of liberal size and of a type and make which have been extensively and successfully used on other similar, heavy-duty elevator installations. They shall be fully enclosed. Loading, lubrication, support, and all other conditions of use shall be in accordance with the recommendations of the bearing manufacturer based on previous extensive and satisfactory elevator usage.
- g. All armature spiders and similar items intended to rotate with their shafts shall be keyed and/or firm press or shrunk fit on the shafts. Set screw fastening will be permitted only for minor items not subject to hoisting loads and where means for field adjustment is required.
- h. All bolts used to connect moving parts, bolts carrying hoisting stresses and all other bolts, except guide rail bolts, subject to vibration or shock shall be fitted with adequate means to prevent loosening of the nuts and bolts. Bolts transmitting important shearing stresses between machine parts shall have tight body fit in drilling holes.
- i. All machine work, assembling and installing shall be done by skilled and experienced mechanics using first-class, modern equipment and tools. All work shall be thoroughly high grade in every respect. All parts will be manufactured to high precision standards so that wearing parts will be readily interchangeable with stock repair parts with a minimum of field fitting.
- j. All bearing and sliding surfaces of shafts, pins, bearings, bushings, guides, etc., shall be smoothly and accurately finished. They shall be assembled and installed in accurate alignment and with working clearance most suitable for the load, speed, lubrication, and other conditions of use.
- k. Structural steel used for supporting and securing equipment and for the construction of car slings, etc., shall conform to the A.S.T.M. specification for Structural Steel for Buildings. Design stresses shall not exceed those specified in the local Building Code.
- l. Castings of motor frames, sheaves, gear casings, etc., shall be of the best quality metallurgically controlled, hard, close grained gray machinery cast iron, free from blow holes, sand holes, or shrinkage cracks, ground to remove overruns, sanded and machined so as to leave a finish suitable for its particular application. Surfaces of sheaves and brake drums shall be entirely free from defects and shall show a hardness of not less than 220 Brinell.

#### C. Electrical Design Requirements (General)

- 1. The following typical requirements shall apply to all parts of the work and are supplementary to other requirements noted under the respective headings.
  - a. The design and construction of the motors shall conform to the requirements of these specifications and to the ASME Standards for Rotating Electrical Machinery

with revisions issued to the first day when the work of this Contract was advertised.

- 1) Motors shall operate successfully under all loads and speeds and during acceleration and deceleration.
- 2) Motors shall be designed for quiet operation without excessive heat.
- 3) Insulation on motor coils and windings and on all insulated switch, relay, brake, and other coils shall conform to the requirements of minimum Class "F" insulation, as defined in ANSI Standards for Rotating Electrical Machinery. All motors shall be impregnated twice.
- 4) Switches, relays, etc., on controller, starter and signal panels and similar items on other parts of the equipment shall be the latest improved type for the condition of use. They shall function properly in full accordance with the requirements of the machines controlled and with the specified operating requirements of the elevator. Any of these parts showing wear or other injurious effects during the guarantee period to the extent that abnormal maintenance is required or indicated shall be replaced with proper and adequate parts by the Contractor.
- 5) Contacts in elevator motor circuits which are intended to be opened by governors or other safety devices shall be copper to carbon or other approved non-fusing type.
- 6) Where required, controllers and other component parts of the installation shall be labeled in accordance with the latest codes and standards as adopted and/or otherwise modified by the AHJ.
- 7) Electrical equipment, motors, controllers, etc., installed under this contract shall have necessary CSA/US or UL/US listing as may be required by the AHJ. Equipment shall be labeled or tagged accordingly.

D. Materials, Painting and Finishes

1. Two (2) coats of rust inhibiting machinery enamel shall be applied to exposed ferrous metal surfaces in the pit that do not have a galvanized, anodized, baked enamel, or special architectural finishes.
2. Two (2) coats of rust inhibiting enamel paint to the machinery located within the machine room as well as to the machine room floors and pit floors.
3. Architectural metal surfaces of bronze or similar non-ferrous materials which are specified to be refinished, re clad and/or provided new, shall be sufficiently clear coated so as to resist tarnishing during normal usage for a period of not less than twelve (12) months after final acceptance by the University.
4. Identify all equipment including buffers, crosshead, bolster channel, pump unit, controller, disconnect switch, etc., by four inch (4") high numerals which shall contrast with the background to which it is applied. The identification shall be either decalomania or stencil type.
5. Paint or provide decal-type floor designation not less than six (6) inches high on hoistway doors (hoistway side), fascia, and/or walls as required by Code at intervals not exceeding seven feet (7'-0"). The color of paint used shall contrast with the color of the surface to which it is applied.

E. Accessibility Requirements

1. Locate the alarm button and emergency stop key switch at thirty-five inches (35”), and floor and control buttons not more than forty-eight inches (48”) above the finished floor. The alarm button shall illuminate when pressed for visual acknowledgement to user.
2. Provide raised markings in the panel to the left of the car call and other control buttons. Letters and numbers shall be a minimum of five-eighths inch (5/8”) and raised three-hundredths inch (.03”) and shall be in contrasting color to the call buttons and cover plate.
3. The centerline of new hall push button shall be forty-two inches (42”) above the finished floor.
4. The hall arrival lanterns or cab direction lantern provided shall sound once for the “up” direction and twice for the “down” direction. Design and locate fixtures per Federal standards.
5. Provide floor designations at each entrance on both sides of jamb at a height of sixty inches (60”) to the baseline of the designation above the floor.
  - a. Use cast metal plates and polished numbers secured with tamper-proof hardware.
  - b. Designations shall be two inches (2”) high, raised three-hundredths inch (.03”) on a contrasting color background as selected by the University.
6. Provide an audible signal within the elevator to tell passenger that the car is stopping or passing a floor served by the elevator.
7. Where elevators operate at a speed greater than 200 fpm, provide a verbal annunciator to announce the floor at which the elevator is stopping where required by the AHJ.
8. Provide signal control timing for passenger entry/exit transitions per Federal and/or Local standards.
9. Ensure sill-to-sill running clearances do not exceed one and one-quarter inches (1-1/4”) at all landings served.
10. Provide visual call acknowledgment signal for car emergency intercommunication device.
11. Provide emergency communication device provisions for the deaf and hard of hearing per IBC-2018.

1.4 DELIVERY / STORAGE / HANDLING / COORDINATION

A. Delivery and Storage of Material and Tools

1. Comply with the requirements of Division 01.
2. Delivery, Storage and Handling:
  - a. Deliver materials to the site ready for use in the accepted manufacturer's original and unopened containers and packaging, bearing labels as to type of material, brand name and manufacturer's name. Delivered materials shall be identical to accepted samples.
  - b. Store materials under cover in a dry and clean location, off the ground.

- c. Remove delivered materials which are damaged or otherwise not suitable for installation from the job site and replace with acceptable materials.
  3. The University shall bear no responsibility for the materials, equipment or tools of the Contractor and shall not be liable for any loss thereof or damage thereto.
  4. The Contractor shall confine storage of materials on the job site to the limits and locations designated by the University and shall not unnecessarily encumber the premises or overload any portion with materials to a greater extent than the structural design load of the Facility.
- B. Work with Other Trades / Coordination
  1. Coordinate installation of sleeves, block outs, equipment with integral anchors, and other items that are embedded in concrete or masonry for the applicable equipment. Furnish templates, sleeves, equipment with integral anchors, and installation instructions and deliver to Project site in time for installation.
  2. Coordinate sequence of installation with other work to avoid delaying the Work.
  3. Coordinate locations and dimensions of other work relating to the equipment scheduled for installation including pit ladders, sumps, and floor drains in pits; entrance subsills; and electrical service, electrical outlets, lights, and switches in pits and machine rooms, and hoistways as it relates to the specific equipment.
- C. Removal of Rubbish and Existing Equipment
  1. On a scheduled basis, the Contractor shall remove all rubbish generated in performing work specified in the Contract Documents from the job site.
  2. Any component of the existing elevator plant that is not reused under the scope of work specified in the Contract Documents shall become property of the Contractor and, as such, shall be removed from the premises at the Contractor's sole expense.
  3. The Contractor agrees to dispose of the aforementioned equipment and rubbish in accordance with any and all applicable Federal, State, and municipal environmental regulations, and further accepts all liability that may result from handling and/or disposing of said material.
- D. Protection of Work and Property
  1. The Contractor shall continuously maintain adequate protection of all their work from damage and shall protect the University's property from injury or loss arising out of this contract.
  2. The Contractor shall make good any such damages, injury, or loss, except such as may be directly caused by agents or employees of the University.
  3. The Contractor shall provide all barricades required to protect open hoistways or shafts per OSHA regulations. Such protection shall include any necessary guards or other barricades for employee protections during and after the modernization procedure.



## 1.5 RELATED WORK

### A. Work by Elevator Contractor Included in the Base Bid

1. Elevator Contractor responsible for the work specified in Division 26, Division 28 and attached ME Drawings
2. The following requirements shall be applicable based on prevailing conditions at the site of work and/or mandated modifications for code compliance.
  - a. Provide auxiliary power feeds with required distribution load center (circuit breaker panel) for intercommunication, CCTV systems, cab lighting or other specialty devices existing or to be provided by the Elevator Contractor.
    - 1) Voltage shall be 110 VAC with one (1) 15 Amp circuit breaker or fuse for lighting of each individual elevator car enclosure.
    - 2) Circuit breakers and/or fused disconnects shall be lockable in the "OFF" position in accordance with applicable code.
  - b. Installation of new main line power feed with related disconnect switch designed and located per local law requirements.
  - c. Installation of new fully enclosed, externally operated, fused (or circuit breaker), main line and/or auxiliary disconnect switch(es), properly located in accordance with local law that can be locked in the open (off) position.
  - d. Provide remote/auxiliary disconnects where new (either by the Elevator Contractor or by others) or existing disconnect switches are not in line-of-sight of the controller.
  - e. Installation of new electrical conduit and power feeders between the load side of existing and new main line disconnect switches and new elevator control equipment.
  - f. The top surface of any setback or projection in the hoistway that measures two inches (2") or more in width shall be beveled at an angle of not less than seventy-five (75) degrees from horizontal. Each bevel plate shall be constructed from prime painted 14 gauge cold-rolled steel and installed so as to conform with ASME A17.1 elevator safety code as modified by, and/or in addition to codes and standards accepted by the AHJ.
  - g. Provide each machine room with a self-closing, self-locking access door. Locking means shall be spring type arranged to permit the doors to be opened from the inside without a key.
  - h. Installation of new permanent lighting fixtures with protective guards and 110-volt duplex GFI receptacles inside the machine room. Illumination shall be no less than thirty (30) foot-candles at floor level. A light control switch shall be provided immediately adjacent to the machine room entrance door. Provide necessary receptacles as required to supply power to auxiliary elevator equipment and/or remotely located monitors.
  - i. Provide each elevator pit with a 110 volt GFI duplex receptacle and a permanent lighting fixture equipped with protective guard. Illumination shall be no less than

- ten (10) foot-candles at pit floor level. A light control switch must be provided and so positioned as to be readily accessible from the pit entrance door or ladder.
- j. Provide the following signage, plates, and tags:
- 1) Provide access doors to each electrical control room, or machinery space with signs that read "ELEVATOR MACHINE ROOM." Letters shall be not less than two inches (2") high.
  - 2) Provide all required manufacturer data plates and installation-specific tags and signs of the types and styles containing information as required by applicable Codes and Standards as adopted and/or modified by the AHJ.
- k. Where the pit extends more than three (3) feet below the sill of the pit access door, provide a permanent fixed metal ladder.
- 1) Ladder shall extend no less than forty-eight inches (48") above the sill of the access door. Handgrips shall extend from the ladder to a point no less than forty-eight inches (48") above the sill of the access door where the ladder does not comply.
  - 2) The rungs shall be a minimum of sixteen inches (16") wide. Where prevailing conditions prevent a sixteen inch (16") wide rung, the rung may be reduced to no less than nine inches (9").
  - 3) The rungs shall be spaced twelve inches (12") on center.
  - 4) A clear distance of no less than four and a half inches (4-½") from the centerline of the rungs and handgrips to the nearest permanent object in back of the ladder shall be provided.
    - a) Where prevailing conditions prohibit the installation of the required ladder as specified above, the Elevator Contractor shall coordinate requirements necessary for compliance with the Authority Having Jurisdiction.
- l. Provide a standard railing conforming to Code on the outside perimeter of the car top on all sides where the perpendicular distance between the edges of the car top and the adjacent hoistway enclosure exceeds 300 mm (12 in.) horizontal clearance or as otherwise required by the Authority Having Jurisdiction.
- m. Provide necessary patching, repairing, and installation of masonry and/or dry wall for smooth and legal elevator hoistways.
- n. Provide any required repair to smoke ventilation provisions, including duct work, dampers, fans, fire control interfaces, in accordance with local codes, shall be reviewed for proper operation.
- o. Installation of HVAC provisions inside the machine room so as to maintain ambient temperature and humidity levels that are within the range specified by the microprocessor-control equipment manufacturers.
- p. Provide a smoke detector and/or smoke detector alarm system meeting the requirements of A17.1 and/or the Local Governing Authority as may be further specified.

- q. Subsequent to the contract execution, the Contractor shall perform a Violation search and review of all open Applications in conjunction with the filing procedure. Subsequently, any and all outstanding Violations and/or open Applications shall be indicated on the Request for Permit; and such outstanding Violations shall be expunged and open Applications closed out as part of this filing procedure.
  - 1) If requirements and/or work necessary to satisfy outstanding Violation or Applications are not included in the contracted scope of work, the Elevator Contractor shall prepare an itemized listing with relative extra costs to cure the condition(s) and expunge and/or close out the Violation or Application for the University's and Consultants' review/approval prior to executing such work procedures
- 3. The following requirements shall be applicable based on prevailing conditions at the site of work and/or mandated modifications for Code compliance.
  - a. Provide a class "ABC" fire extinguisher in electrical machinery and control spaces. Locate the extinguisher in close proximity to the access door.
  - b. Provide necessary telephone wiring with connection to local telephone service for remote elevator monitoring and/or two-way voice emergency communications systems.
    - 1) Terminate the telephone wiring in junction boxes or standard phone jack terminals in the machine room.
    - 2) Coordinate the quantity and termination method of individual phone connections with the Elevator Contractor.
    - 3) Identify each phone line for connection by the Elevator Contractor to the appropriate elevator device(s).
    - 4) Telephone wiring, where required by applicable codes, shall be installed in conduit.
  - c. Sumps in pits where provided, shall be covered. The cover shall be level with the pit floor so as not to produce a tripping hazard.

## 1.6 WARRANTY / MAINTENANCE SERVICES

### A. Contract Close-Out, Guarantee and Warranties

- 1. Comply with the requirements of Division 01.
- 2. Guarantee and Warranties:
  - a. Warrant the equipment installed under these specifications against defects in material and quality of installation and correct any defects not due to ordinary wear and tear or improper use of car which may develop within two (2) year from the

date each unit is completed and placed in permanent operation and accepted by the University.

- b. This warrantee shall be written and issued at the completion of each unit prior to final payment.

## B. Maintenance Coverage

### 1. The following maintenance coverage apply:

#### a. Interim Maintenance

- 1) Provide full protective maintenance services and equipment coverage for two (2) months prior to the commencement of work, and during the work implementation procedure, until final acceptance of the finished project.
- 2) Interim full comprehensive maintenance services shall be provided in accordance with Indiana University Master Form of Agreement issued with the modernization documents for subsequent services.
- 3) Costs related to interim maintenance shall be included in the base bid quotation.

#### b. Guarantee Maintenance

- 1) Provide full comprehensive preventative maintenance services for a period of twenty four (24) months after the final completion and acceptance of the project.
- 2) Guarantee maintenance services shall be provided in accordance with Indiana University Master Form of Agreement issued with the modernization documents for subsequent services.
- 3) Costs related to guarantee maintenance shall be included in the base bid quotation.

## 1.7 AUXILIARY SYSTEMS / TESTING PROCEDURES

### A. Smoke Detector System

1. The Elevator Contractor shall provide a complete smoke detector system for elevator recall to comply with the governing authority's requirements and ASME A17.1 as approved or modified under local law.
  - a. Smoke detectors shall be installed, in the elevator lobby at each floor, top of hoistway, in pit areas, and associated elevator machine room in accordance with NFPA and/or other applicable codes and standards of the authority having jurisdiction.
  - b. The activation of a smoke detector in any elevator lobby or associated elevator machine room other than the designated level (1st Floor) shall cause all cars in all groups that serve that lobby to return non-stop to the designated level (1st Floor).

- c. The activation of a smoke detector at the designated level (1st Floor) shall cause the cars to return to an alternate level as required and/or allowed by applicable code unless the Phase I key-operated switch is in the “firemen service” position.
- d. Smoke detectors and/or smoke detector system shall not be self-resetting.
- e. Elevator Recall System shall incorporate a minimum number of zones as follows:
  - 1) Zone 1, First Floor
  - 2) Zone 2, Alternate Floor
  - 3) Zone 3, Machine Room
  - 4) Zone 4, Top of Hoistway
  - 5) Zone 5, Spare
  - 6) Zone 6 to All Typical Landings serviced
- f. The system shall be independent of the existing building systems and shall contain the following:
  - 1) Modular LED control panel/annunciator, located at the 1st Floor Lobby in a specially designed tamperproof station, shall be custom designed for each individual system and location.
  - 2) Smoke detectors shall be photoelectric type or approved equal.
  - 3) Primary power supply shall be provided by Elevator Contractor.
  - 4) Minimum twenty-four (24) hour emergency power failure battery back-up with automatic recharging apparatus and signal status indicators.
- g. Elevator Contractor shall provide all wiring, conduit and make final connections. Conduit may run in elevator hoistway as part of elevator control signal systems provided such circuitry is installed per local code requirements.

## PART 2 - PRODUCTS

### 2.1 GENERAL DESCRIPTION

### 2.2 Hydraulic Elevator

#### A. Business/SPEA Building 801 W. Michigan Street, Indianapolis, IN 46022 US - Hydraulic Elevator BS01

1. Quantity	One (1)
2. Type	Passenger
3. Capacity (lbs)	2500 lbs.
4. Speed (fpm)	150
5. Travel in Feet	Existing- (Verify in Field)
6. Number of Landings	Five (5)
7. Number of Openings	Five (5)

8.	Front Openings	Five (5)
9.	Operation	Simplex Selective Collective Operation
10.	Controller	Control Equipment (New)
11.	Firefighter's Service	National
	a. Comments	Upgrade to Current Code
12.	Machine Room, Pit Lighting and GFI	New
	a. Comments	Provide new LED Lighting and GFCI in the Machine Room and Pit
13.	Machine Type	Dry Unit
14.	Machine Location	Adjacent Lowest Landing
15.	Power Unit	New
16.	Hydraulic Jack / Cylinder	Jack Unit (Reuse)
17.	Hydraulic Piping	Reuse with new Victaulic couplings
18.	Rescuvator	New
19.	Car Platform / Frame / Safety	Car Frame (Reuse); Car Platform (Reuse)
20.	Guide Rails	Reuse
21.	Guides	Roller Guides (New)
22.	Buffers	Car Buffers (Reuse)
23.	Car Door Type	
	a. Front Door	Single Speed Center Opening
24.	Car Door Size	
	a. Front Door	42" wide x 84" high
25.	Hoistway Door Type	Single Speed Center Opening
26.	Hoistway Door Size	42" wide x 84" high
27.	Master Door Operator	Master Door Power Operator System - VVVF/AC (New)
28.	Hoistway Entrance Sills	Reuse
29.	Sill Finish	Aluminum (Reuse)
30.	Hoistway Entrances	Reuse
31.	Tracks / Hangers / Interlocks / Closers	New
32.	Emergency Exits / Top	Reuse
	a. Comments	Car Top Emergency Exit
33.	Keyed Access	New
34.	Pit Ladder	New
35.	Power Supply	480V-3-60 (Contractor to verify)
36.	Electrical Conduit / Wiring / Traveling Cable (New/Retain)	New
37.	Floor Lockout Feature	Keyed Security Control / Car Only
38.	Number of Push Button Risers	One (1)
39.	Car Operating Fixtures	New
40.	Emergency Communication	New
41.	Door Reopening Device	"3D" New
42.	Emergency Cab Lighting	New
43.	Car Ventilation	New
44.	Elevator Cab Enclosure	New
45.	Car Doors	Car Door Panel(s) (New)
46.	Car Flooring	New (Provided by Elevator Contractor)

47.	Car Sill	Reuse
48.	Door Operation	Power Car / Slide Hoistway
B.	Business/SPEA Building 801 W. Michigan Street, Indianapolis, IN 46022 US - Hydraulic Elevator BS02	
1.	Quantity	One (1)
2.	Type	Passenger
3.	Capacity (lbs)	2500 lbs.
4.	Speed (fpm)	150
5.	Travel in Feet	Existing- (Verify in Field)
6.	Number of Landings	Four (4)
7.	Number of Openings	Four (4)
8.	Front Openings	Four (4)
9.	Operation	Simplex Selective Collective Operation
10.	Controller	Control Equipment (New)
11.	Firefighter's Service	National
	a. Comments	Upgrade to Current Code
12.	Machine Room, Pit Lighting and GFI	
	a. Comments	Provide new LED Lighting and GFCI in the Machine Room and Pit
13.	Machine Type	Dry Unit
14.	Machine Location	Adjacent Lowest Landing
15.	Power Unit	New
16.	Hydraulic Jack / Cylinder	Jack Unit (Reuse)
17.	Hydraulic Piping	Reuse with new Victaulic couplings
18.	Rescuvator	New
19.	Car Platform / Frame / Safety	Car Frame (Reuse); Car Platform (Reuse)
20.	Guide Rails	Reuse
21.	Guides	Roller Guides (New)
22.	Buffers	Car Buffers (Reuse)
23.	Car Door Type	
	a. Front Door	Single Speed Center Opening
24.	Car Door Size	
	a. Front Door	42" wide x 84" high
25.	Hoistway Door Type	Single Speed Center Opening
26.	Hoistway Door Size	42" wide x 84" high
27.	Master Door Operator	Master Door Power Operator System - VVVF/AC (New)
28.	Hoistway Entrance Sills	Reuse
29.	Sill Finish	Aluminum (Reuse)
30.	Hoistway Entrances	Reuse
31.	Tracks / Hangers / Interlocks / Closers	New
32.	Emergency Exits / Top	Reuse
	a. Comments	Car Top Emergency Exit
33.	Keyed Access	New
34.	Pit Ladder	New

35.	Power Supply	480V-3-60 (Contractor to verify)
36.	Electrical Conduit / Wiring / Traveling Cable (New/Retain)	New
37.	Floor Lockout Feature	Keyed Security Control / Car Only
38.	Number of Push Button Risers	One (1)
39.	Car Operating Fixtures	New
40.	Emergency Communication	New
41.	Door Reopening Device	“3D” New
42.	Emergency Cab Lighting	New
43.	Car Ventilation	New
44.	Elevator Cab Enclosure	New
45.	Car Doors	Car Door Panel(s) (New)
46.	Car Flooring	New (Provided by Elevator Contractor)
47.	Car Sill	Reuse
48.	Door Operation	Power Car / Slide Hoistway

C. Business/SPEA Building 801 W. Michigan Street, Indianapolis, IN 46022 US - Hydraulic Elevator BS03

1.	Quantity	One (1)
2.	Type	Passenger
3.	Capacity (lbs)	2500 lbs.
4.	Speed (fpm)	150
5.	Travel in Feet	Existing- (Verify in Field)
6.	Number of Landings	Four (4)
7.	Number of Openings	Four (4)
8.	Front Openings	Four (4)
9.	Operation	Simplex Selective Collective Operation
10.	Controller	Control Equipment (New)
11.	Firefighter's Service	National
	a. Comments	Upgrade to Current Code
12.	Machine Room, Pit Lighting and GFI	
	a. Comments	Provide new LED Lighting and GFCI in the Machine Room and Pit
13.	Machine Type	Dry Unit
14.	Machine Location	Adjacent Lowest Landing
15.	Power Unit	New
16.	Hydraulic Jack / Cylinder	Jack Unit (Reuse)
17.	Hydraulic Piping	Reuse with new Victaulic couplings
18.	Rescuvator	New
19.	Car Platform / Frame / Safety	Car Frame (Reuse) ; Car Platform (Reuse)
20.	Guide Rails	Reuse
21.	Guides	Roller Guides (New)
22.	Buffers	Car Buffers (Reuse)
23.	Car Door Type	
	a. Front Door	Single Speed Center Opening
24.	Car Door Size	



	a. Front Door	42" wide x 84" high	
25.	Hoistway Door Type	Single Speed Center Opening	
26.	Hoistway Door Size	42" wide x 84" high	
27.	Master Door Operator	Master Door Power Operator System	-
		VVVF/AC (New)	
28.	Hoistway Entrance Sills	Reuse	
29.	Sill Finish	Aluminum (Reuse)	
30.	Hoistway Entrances	Reuse	
31.	Tracks / Hangers / Interlocks / Closers	New	
32.	Emergency Exits / Top	Reuse	
	a. Comments	Car Top Emergency Exit	
33.	Keyed Access	New	
34.	Pit Ladder	New	
35.	Power Supply	480V-3-60 (Contractor to verify)	
36.	Electrical Conduit / Wiring / Traveling Cable (New/Retain)	New	
37.	Floor Lockout Feature	Keyed Security Control / Car Only	
38.	Number of Push Button Risers	One (1)	
39.	Car Operating Fixtures	New	
40.	Emergency Communication	New	
41.	Door Reopening Device	"3D" New	
42.	Emergency Cab Lighting	New	
43.	Car Ventilation	New	
44.	Elevator Cab Enclosure	New	
45.	Car Doors	Car Door Panel(s) (New)	
46.	Car Flooring	New (Provided by Elevator Contractor)	
47.	Car Sill	Reuse	
48.	Door Operation	Power Car / Slide Hoistway	

D. Business/SPEA Building 801 W. Michigan Street, Indianapolis, IN 46022 US - Hydraulic Elevator BS04

1.	Quantity	One (1)
2.	Type	Passenger
3.	Capacity (lbs)	2500
4.	Speed (fpm)	100
5.	Travel in Feet	Existing- (Verify in Field)
6.	Number of Landings	Two (2)
7.	Number of Openings	Two (2)
8.	Front Openings	One (1)
9.	Side Openings	One (1)
10.	Operation	Simplex Selective Collective Operation
11.	Controller	Control Equipment (New)
12.	Firefighter's Service	National
	a. Comments	Fire Fighter Service needs to be tied into elevator

13.	Machine Room, Pit Lighting and GFI	Provide new LED Lighting and GFCI in the Machine Room and Pit
14.	Machine Type	Dry Unit
15.	Machine Location	Remote Lowest Landing
16.	Power Unit	New
17.	Hydraulic Jack / Cylinder	Jack Unit (Reuse)
18.	Hydraulic Piping	Reuse with new Victaulic couplings
19.	Rescuvator	New
20.	Car Platform / Frame	Car Frame (Reuse) ; Car Platform (Reuse)
21.	Guide Rails	Reuse
22.	Guides	Roller Guides (New)
23.	Buffers	Car Buffers (Reuse)
24.	Car Door Type	
	a. Front Door	Two (2) Speed Side Opening
	b. Side Door	Two (2) Speed Side Opening
25.	Car Door Size	
	a. Front Door	42" wide x 84" high
	b. Side Door	42" wide x 84" high
26.	Hoistway Door Type	Two (2) Speed Side Opening [Hoistway Door Configuration Other]
27.	Hoistway Door Size	42" wide x 84" high
28.	Master Door Operator	Master Door Power Operator System - VVVF/AC (New)
29.	Hoistway Entrance Sills	Reuse
30.	Sill Finish	Aluminum
31.	Hoistway Entrances	Reuse
32.	Tracks / Hangers / Interlocks / Closers	New
33.	Emergency Exits / Top	
	a. Comments	Car Top Emergency Exit
34.	Keyed Access	New
35.	Pit Ladder	New
36.	Power Supply	480V-3-60
37.	Electrical Conduit / Wiring / Traveling Cable (New/Retain)	New
38.	Floor Lockout Feature	No
39.	Number of Push Button Risers	Two (2)
40.	Car Operating Fixtures	New
41.	Emergency Communication	New
42.	Door Reopening Device	"3D" New
43.	Emergency Cab Lighting	New
44.	Car Ventilation	New
45.	Elevator Cab Enclosure	New
46.	Car Doors	Car Door Panel(s) (New)
47.	Car Flooring	New (Provided by Elevator Contractor)
48.	Car Sill	Reuse
49.	Door Operation	Power Car / Slide Hoistway

E. Education and Social Work Building 801 W. Michigan Street, Indianapolis, IN 46022 US - Hydraulic Elevator ES01

1.	Quantity	One (1)
2.	Type	Passenger
3.	Capacity (lbs)	2500 lbs.
4.	Speed (fpm)	150
5.	Travel in Feet	Existing- (Verify in Field)
6.	Number of Landings	Five (5)
7.	Number of Openings	Five (5)
8.	Front Openings	Five (5)
9.	Operation	Simplex Selective Collective Operation
10.	Controller	Control Equipment (New)
11.	Firefighter's Service	National
	a. Comments	Upgrade to Current Code
12.	Machine Room, Pit Lighting and GFI	
	a. Comments	Provide new LED Lighting and GFCI in the Machine Room and Pit
13.	Machine Type	Dry Unit
14.	Machine Location	Remote Lowest Landing
15.	Power Unit	New
16.	Hydraulic Jack / Cylinder	Jack Unit (Reuse)
17.	Hydraulic Piping	Reuse with new Victaulic couplings
18.	Rescuvator	New
19.	Car Platform / Frame / Safety	Car Frame (Reuse); Car Platform (Reuse)
20.	Guide Rails	Reuse
21.	Guides	Roller Guides (New)
22.	Buffers	Car Buffers (Reuse)
23.	Car Door Type	
	a. Front Door	Single Speed Side Opening
24.	Car Door Size	
	a. Front Door	42" wide x 84" high
25.	Hoistway Door Type	Single Speed Side Opening
26.	Hoistway Door Size	42" wide x 84" high
27.	Master Door Operator	Master Door Power Operator System - VVVF/AC (New)
28.	Hoistway Entrance Sills	Reuse
29.	Sill Finish	Aluminum (Reuse)
30.	Hoistway Entrances	Reuse
31.	Tracks / Hangers / Interlocks / Closers	New
32.	Emergency Exits / Top	Reuse
	a. Comments	Car Top Emergency Exit
33.	Keyed Access	New
34.	Pit Ladder	New
35.	Power Supply	480V-3-60 (Contractor to verify)
36.	Electrical Conduit / Wiring / Traveling Cable (New/Retain)	New

37.	Floor Lockout Feature	Keyed Security Control / Car Only
38.	Number of Push Button Risers	One (1)
39.	Car Operating Fixtures	New
40.	Emergency Communication	New
41.	Door Reopening Device	“3D” New
42.	Emergency Cab Lighting	New
43.	Car Ventilation	New
44.	Elevator Cab Enclosure	New
45.	Car Doors	Car Door Panel(s) (New)
46.	Car Flooring	New (Provided by Elevator Contractor)
47.	Car Sill	Reuse
48.	Door Operation	Power Car / Slide Hoistway

## 2.3 MANUFACTURERS

### A. Pre-Approved Equipment Manufacturers

1. The following manufacturer’s equipment and materials have been pre-approved for use on this project.
2. Certain Original Equipment Manufacturers equipment is acceptable unless otherwise specified.
  - a. Controller - GAL (GALaxy), (MCE) Motion Control Engineering, Elevator Controls Corporation, Elevator Systems, Inc., Smartrise (up to and including 500 fpm high rise / multi-car group), Virginia Controls, Inc.
  - b. Tracks, Hangers, Interlocks and Door Operators - G.A.L.
  - c. Fixtures – Monitor Controls, Inc.
  - d. Door Operator- GAL.
  - e. Door Protective Device - Janus, Adams, G.A.L., T.L. Jones, Tri-Tronics.
  - f. Cabs and Entrances/Entrance Door Panels - Accurate Elevator Door Corp, CEC Elevator Cab, EDI/ECI, Elite Elevator Cab, National Cab & Door, Tyler, Velis, Gunderlin, Premier, Prestige, Regency, Columbia Elevator Products, United Cabs. G&R.
  - g. Motors - Imperial Electric, General Electric, Baldor, Reuland Electric.
  - h. VVVF Emergency Power Systems - MCE, Reynolds & Reynolds Electronics.
  - i. Electrical Traveling Cables - Draka, James Monroe.
  - j. Hydraulic Systems/Components - Canton, ECS Corporation, Elevator Equipment Corporation, Mongrain Vertical Transport (MVT), MEI, Schumacher.
  - k. Guide Shoes/Rollers – ELSCO, G.A.L.
  - l. Intercommunications/Telephones - Webb Electronics, K-Tec, Ring, Wurtec, Janus, approved equal.
  - m. Control Valve: Elevator Equipment Corporation (EECO) or approved equal.
3. Original Equipment Manufacturers may not substitute their own branded equipment.

## 2.4 CONTROL FEATURES / OPERATION

### A. Motion Control

1. Smooth stepless acceleration and deceleration of the elevator car shall be provided in either direction of travel during both single and multiple floor runs.
2. Acceleration, deceleration, jerk, maximum velocity, leveling accuracy and elapsed flight time, for a typical elevator one floor run, shall not exceed values as further specified.

### B. Simplex Selective Collective Operation

1. Provide simplex selective collective operation from a riser of hall push button stations.
2. The registration of one or more car calls shall dispatch the car to the selected floors.
  - a. The car shall also respond to registered hall calls in the same direction of travel.
  - b. Car and hall calls shall be canceled when answered.
3. Stops in response to calls that are registered in either the car or hall push button stations shall occur in the natural order of progression in which the floors are encountered, depending on the direction of car travel, and irrespective of the order in which calls are registered.
4. When the car has responded to the highest or lowest call, and calls are registered for the opposite direction, the car shall reverse direction automatically and respond to those registered calls.
5. When the car arrives at its last stop and reverses direction of travel, all previously registered car calls shall be automatically cancelled.
6. When the car arrives at a landing where both up and down hall calls are registered, it will answer the call in the direction of travel.
  - a. After a pre-determined delay, if no car call is registered, the car shall respond to calls registered for the opposite direction. Car doors shall close immediately, re-open and respond to the call for the opposite direction.
  - b. Hall lantern operation shall always correspond to direction of service.
7. When an empty car reverses direction at a landing with no hall calls, the doors shall not open and the hall lantern shall not operate.
8. If the car has no car calls registered and arrives at a floor where both up and down hall calls have been registered, the car shall respond to the hall call corresponding to the last direction of car travel. If, after making its stop, a car call is not registered and no other hall calls exist ahead of the car corresponding to its original direction of travel, the doors shall close and immediately reopen in response to the hall call for the opposite direction.
9. The car shall maintain its original direction at each stop until the doors are fully closed to permit a passenger to register a car call before the car reverses its direction of travel.

### C. Independent Service Operation

1. The car operating station shall be equipped with a key-operated switch labeled “IND SER.”
2. Locate the switch in the locked service compartment.
3. When placed in the “on” position the following shall occur:
  - a. Simplex elevator - existing hall call registrations shall extinguish and hall buttons shall remain inoperative as an indication to passengers that there is no elevator service.
4. During Independent Service Operation, the elevator doors shall remain open at any landing until the door close or a car call push button is pressed and maintained until the doors are fully closed.
5. If more than one (1) car call is registered, all registered car calls shall extinguish when the elevator stops in response to the first call.
6. Fire Emergency Recall shall automatically override Independent Service Operation and engage Phase I - Fire Emergency Recall Operation following a period of approximately forty-five (45) seconds.

D. Inspection Service Operation

1. Provide a key operated switch in the main car operating panel locked service panel that, when turned to the ‘ON’ position, shall cause the elevator to be removed from service and placed in Inspection Service Operation.
2. Limited operation of the car shall be provided through pressing the Attendant Service up and down push buttons (if provided) or the highest or lowest car call push buttons (if up and down buttons are not provided) in the main car operating panel only.
3. The car shall move at a speed not to exceed 150 feet per minute (0.75 meters per second) as per code with both the hall and car door panels in the closed and locked position.
4. The Inspection Service switch shall be keyed differently than other typical keys used in the operation of the elevator. Keying shall be in accordance with Security Group Classifications as required by applicable code.
5. The top of the elevator car shall be equipped with a control for limited operation of the car during repairs, maintenance and inspection conducted in the hoistway. The transfer of control to the top of car operating device shall cause that device to be the sole means of control for the elevator.
  - a. Visual and audible indication shall be provided on the top of the car when Firefighters’ Emergency Operation is initiated.
6. Power door operating equipment shall be rendered inoperative while the car is being operated in the Inspection Service mode with the exception of power closing of the door. The control system shall maintain closing power on the door while the elevator is moving under Inspection Service Operation.
7. The in-car Inspection Service switch shall be rendered ineffective when the top of car inspection control is activated.

8. Machine Room Inspection Operation and Inspection Operation with open door circuits shall be provided in accordance with A17.1 Safety Code, as modified and adopted, where required or allowed by the AHJ.

E. Hoistway Access Operation

1. Provisions shall be made to allow access to the hoistway through the use of hoistway access switches.
2. Operating the access switch shall permit the car to move at a speed not to exceed 150 feet per minute (0.75 meters per second) as per code with the hall and car doors in the open position to obtain access to the top of the car or climb-in pit.
3. The car shall automatically stop motion when the car top is level with the hoistway door sill for access to top of car.
4. The access key switch(es) shall be keyed differently than other typical keys used in the operation of the elevator. Keying shall be in accordance with Security Group Classifications as required by applicable code.
5. Access operation shall be disabled when top of car inspection operation is in effect.

F. Firefighters' Emergency Operation

1. Phase I Emergency Recall Operation shall be provided for each car in accordance with ASME A17.1 code as modified under the applicable local or State law.
2. Each main car operating station shall be provided with an indicator light and warning buzzer, each of which shall become activated whenever Phase I Operation is engaged.
  - a. The warning buzzer shall cease to function once the car has completed the recall sequence and is positioned at the designated recall landing.
  - b. The indicator light shall remain illuminated as long as Phase I Operation is activated.
3. A three-position, key-operated switch shall be provided on the designated recall landing to manually activate Phase I Operation.
  - a. When activated, Phase I Operation shall be arranged so that in order to reset normal service, all cars must first be returned to the designated recall landing, after which the Phase I key-switch must be turned to the "OFF" position.
4. A standardized Fire Recall Key shall be used where required by the codes and standards applicable to the AHJ.
5. Phase II Emergency Recall In-Car Operation shall be provided for each car in accordance with ASME A17.1 code as modified under local or State law.
6. Locate controls required for Phase II In-Car Operation in a locked access cabinet in the main car operating panel.
  - a. The cover of the locked access panel shall be engraved as required by local or State law.
  - b. The locked access panel shall contain:

- 1) Phase II key switch.
- 2) Fire indicator light.
- 3) Call cancel push button.
- 4) Door open push button.
- 5) Door close push button.
- 6) Run/Stop switch.
- 7) Other devices as may be required by local law.

- c. Engrave the Firefighters' Service operating Instructions on the inside of the locked cabinet door.

G. Floor Lockout Feature / Keyed Security Control / Car Only

1. Provide a car call floor lockout feature for the elevators which will prevent registration of car calls to floors that are "locked out."
  - a. Provide a two (2) position "on-off" key switch located in the car station adjacent to each floor call button, except the primary egress floor, to match existing key cylinder(s).
  - b. Turning the key switch to the "off" (locked out) position shall prevent the registration of a call when the corresponding car call button is pressed.
  - c. The key switches shall be individually keyed with a master as directed by the University.
2. Activation of a floor lockout key switch shall have no effect on the operation of the hall call station, i.e., the car can be called to a floor from the hall button on the floor that is locked out in the car station.
3. The "floor lockout" key switches shall be in a material and finish to match the car operating panel cover plate.
4. Firefighters' Emergency Operation shall override the car call lockout feature.

H. Low Oil Protection and Protective Device

1. Provide low oil protection operation and appropriate device(s) that will discontinue operation of the hydraulic elevator pump when:
  - a. The elevator stalls due to a low oil condition.
  - b. Fails to reach the landing in the up direction.
2. Pressure Switch:
  - a. Where the top of the cylinder head is above the top of the tank, provide a pressure switch between the cylinder and the valve which shall be activated by the loss of pressure at the top of the cylinder, and control the operation of the elevator as required by Code.



3. Provide an additional protective device that shall automatically return the elevator to the bottom landing, open the door, and shut down the system.
4. The protective device shall be an integral part of the control system.

I. Hydraulic Auto Lowering

1. Provide automatic battery powered lowering feature for the hydraulic elevator.
  - a. In the case of normal power outage, the elevator shall be automatically lowered to the Main Lobby level.
  - b. The door shall open automatically to discharge passengers.
  - c. The elevator shall remain parked with its door closed and door open button operative until normal power is restored.
2. The control panel shall be located in the machine room or be an integral part of the control system.
  - a. It shall include necessary batteries, solid-state controls, charger, monitor lights and a test button.
  - b. It shall be fed by a 120 volt, 20 Ampere branch circuit
3. Provide necessary circuitry within the controller to determine the difference between an “intentional” loss of power and an “actual” loss of power in order to prevent operation of the auto lowering unit when the main line disconnect has been opened for elevator servicing.
4. Provide necessary terminals for connection to an auxiliary switch in main line disconnect.

J. Door Operation

1. Car and hoistway doors shall be arranged to operate in unison without excessive noise or slamming in either direction of travel.
  - a. Door opening speeds of two (2) feet per second shall be provided in conjunction with closing speeds of one (1) foot per second in accordance with governing code.
  - b. Door operation shall commence as the car stops level at the floor and the machine brake is applied. Pre-door opening shall not be permitted.
2. Where the hoistway door and the car door are mechanically coupled, the kinetic energy of the closing door system shall be based upon the sum of the hoistway and the car door weights, as well as all parts rigidly connected thereto, including the rotational inertia effects of the door operator and the connecting transmission to the door panels.
3. The force necessary to prevent closing of the car and hoistway door from rest shall not exceed thirty (30) lbf. This force shall be measured on the leading edge of the door with the door at any point between one-third and two-thirds of its travel.
4. Door open and door close time shall be measured between the moment car door operation in either direction begins and the instant at which that cycle is completed.

5. When responding to either a car or corridor call, the amount of time that the elevator door remains stationary in the open position shall be adjustable up to sixty (60) seconds.
  - a. Door open dwell time for a corridor call shall be separate of that for a car call, and in both cases, dwell time shall be canceled whenever the car door protection device is momentarily interrupted by passenger transfers, followed by a reduced door open dwell time of approximately one (1) second (adjustable) after the door protection device is cleared of obstructions.
6. The operation of the door protective device by interruption of one or more infrared light beams (dual or multi-beam non-contact) during the close cycle shall cause the immediate reversing of the doors to the fully open position.
7. The door closing cycle shall be arranged so that, in the event the door protective devices become continually obstructed after the normal door open dwell time has expired and following a time interval of approximately thirty (30) seconds (adjustable), a warning tone shall sound and the door closing cycle shall commence at reduced speed and torque per applicable Code requirements.
8. Each car operating station shall be provided with a “door open” and “door close” push button.
  - a. Pressure on the “door open” button shall cause doors in the fully open position to remain so and doors engaged in the close cycle to reverse direction and assume the fully open position so long as pressure remains applied to the button.
  - b. The “door open” buttons shall also control the open cycle during Phase II - Emergency In-car Operation.
  - c. The “door close” push button shall function on Independent Service, Attendant Service and Phase II - Emergency In-car Operation as well as during normal automatic operations.
9. Repeated attempts by the power door operator to open or close the door at any landing shall be monitored by the control system.
  - a. In the event the door fails to cycle properly after a preset (adjustable) number of attempts, the car shall either travel to the next stop or remove itself from service, depending upon whether the malfunction is in the open or close cycle.
10. Each hoistway door shall be provided with an automatic self-closing mechanism arranged so that the door shall close and lock if the car should leave the landing while the hoistway door is unlocked.
11. Car doors shall be arranged to prevent their being manually opened from inside the car unless the elevator is positioned within a floor landing zone.

## 2.5 MACHINE ROOM

### A. Control Equipment

1. Provide a microprocessor-based elevator control system.
2. Closed-loop distance and velocity feedback shall monitor the actual performance of the elevator car with the desired speed profile.
3. System operating software shall be stored in non-volatile memory.
  - a. Elevator control relays, contactors, switches, capacitors, resistors, fuses, circuit breakers, overload relays, power supplies, circuit boards, static motor drive units, wiring terminal blocks and related components shall be totally enclosed inside a free-standing metal cabinet with hinged access doors.
  - b. Mechanical ventilation or air conditioning of the cabinet shall be provided and shall be adequate to dispose of the full load heat losses without exceeding 40 C (104 F) ambient temperature.
    - 1) Where integral air conditioners are not employed, control equipment cabinets shall be provided with forced air ventilation to prevent overheating of the electrical components housed therein.
  - c. All electrical wiring inside the control equipment cabinet shall be performed in a neat manner with field wiring terminated at stud blocks provided inside the control cabinet.
  - d. Each wiring terminal shall be clearly identified according to the nomenclature used on the “as built” wiring diagrams. No more than two (2) field wires may be connected to any single terminal stud.
  - e. Spare wires shall be tagged according to their point of termination, bundled, and placed at the bottom of the control equipment cabinet.
  - f. Each electrical component within the cabinet shall be permanently identified with symbols, identical to those used on the “as-built” wiring diagrams.
  - g. A data plate that indicates the edition of the Code in effect at the time of installation and/or alteration shall be provided in accordance with applicable code and requirements of ASME A17.1 Code. The data plate shall be in plain view and securely attached on the mainline disconnect or on the controller.
  - h. Control equipment shall comply with requirements of all applicable Sections of the ASME A17.1 Code as approved and adopted by the AHJ.
  - i. The manufacturer’s standard on-board “LCD” display shall be incorporated on the main processor board and/or otherwise incorporated in the controller cabinet. The “LCD” shall be capable of providing alpha-numeric characters to view the operational status of the elevator and/or group functions depending on the application. The display shall provide the user with necessary information for troubleshooting and reprogramming of the basic system parameters.
    - 1) Where the “LCD” is not an integral part of the controller and troubleshooting/reprogramming requires the use of a separate tool, the tool shall be maintained in the machine room and accessible to service personnel. This tool, along with all technical documentation for the correct use of the tool, shall remain the property of the University.
    - 2) Password protection of critical programming features is required to prevent accidental changes to life-safety and other non-typical control settings.

B. Sound Reducing Protection

1. When operating in accordance with plans and specifications, the elevator equipment shall not generate noise levels in excess of NC-40 in occupied tenant spaces and shall be free of pure tones.
  - a. For the purpose of this specification, a pure tone shall be defined as a sound level in any one-third (1/3) octave band which is greater than 5 dB above both adjacent one-third octave bands, in the range 45 to 11,200 Hz.
2. Provide the following treatments as a minimum.
  - a. Mount sound insulating panels, manufactured of reinforced 16 gauge steel panels with a one inch (1") thick one and a half (1-1/2) lbs. core of fiberglass affixed to interior, on all four open sides of the power unit frame to isolate airborne noise from belt driven motor-pump assembly.
  - b. Install a minimum of two (2) sound isolating couplings in the oil line in the machine room between pump and jack.
    - 1) Each coupling shall consist of two (2) machined flanges separated by two (2) neoprene seals to absorb vibration and to positively prevent metal-to-metal contact in the oil line.
    - 2) Build coupling in such a manner that they will be absolutely blow-out proof.
  - c. Install an oil-hydraulic muffler in oil line near power unit.
    - 1) The mufflers contain pulsation absorbing material inserted in a blow-out proof housing.
    - 2) Rubber hose without blow-out proof features will not be acceptable.
  - d. Provide sound reducing vibration isolation elements at all support points of elevator controllers and pump units.
    - 1) The elements shall be similar to double deflection neoprene-in-shear mounts, as manufactured by Mason Industries.
    - 2) All bolts through isolation elements, where necessary, are to incorporate resilient washers and bushings.
  - e. Locate the power unit at least one inch (1") from any walls.
  - f. Use flexible conduit with ground wire for pump unit connections.

C. Hydraulic Power Unit / Motor

1. Provide a self-contained power unit which includes:
  - a. Structural steel outer base.
  - b. Tank support.

- c. Oil tight drip pan.
  - d. Floating inner base to prevent metallic contact for mounting the motor pump assembly.
  - e. Sound isolation panels to enclose the unit and reduce airborne noise.
2. Provide a reinforced overhead oil reservoir with a tight fitting tank over the oil control unit which includes:
  - a. An oil fill strainer with air filter.
  - b. An oil level gauge assembly.
  - c. A self-cleaning strainer in the suction line.
3. The pump shall be for oil hydraulic elevator service with positive displacement screw type design for steady discharge with minimum vibration.
4. The drive shall be by multiple V-Belts and sheaves or directly driven by a submersible pump depending on the HP requirements of the system.
  - a. The use of submersible pumps is unacceptable.
5. Pump drive motor control shall utilize solid state motor starter circuitry to provide reduced current starting and maximum protection of the motor.
6. The oil control unit shall be of the manufacturer's own design (EECO) but shall include relief, safety check, start and slow down valves.
  - a. Use lowering and leveling valves for drop away speed, lowering speed, leveling speed, and stopping speed to ensure smooth down starts and stops.
  - b. Provide a valve for manual lowering of the elevator car in event of power failure and for use in servicing and adjusting the elevator mechanism.
  - c. Design the tank shut-off valve for isolating oil in the power unit tank to ensure servicing and adjusting the elevator mechanism without removing oil from the tank.
  - d. All valves shall be accessible for adjustment without removing the assembly from the oil line.
7. Manufacture the unit to operate under 600 psi (for dry units) working pressure.
8. When the oil reservoir thermostat registers 50 degrees F, the car shall "exercise" until the oil temperature reaches 75 degrees F.

#### D. Hydraulic Piping

1. Provide all necessary pipes and fittings to connect the power unit to the jack.
  - a. Use minimum Schedule 80 steel pipe.
  - b. Provide a shut off valve in the machine room for maintenance service.
2. For remote runs, the oil pipe and conduit shall be overhead above suspended ceiling.

- a. Exact location must be coordinated with other trades.
  - b. For pipe hangers use spring hangers Type 30 of Mason Industries, Inc. or approved equal.
  - c. Provide neoprene isolation pads between the pipe and the hangers.
3. Adequately support the full run of pipe with isolation type support.
  4. Where flexible hose and fitting assemblies, and flexible couplings are used for hydraulic connections, flexible hose and fitting assemblies shall:
    - a. Not be installed within the hoistway, nor project into or through any wall.
    - b. Installation shall be accomplished without introducing twist in the hose and shall conform with the minimum bending radius of SAE 100 R2 type, high pressure, steel wire reinforced, rubber covered hydraulic hose specified in SAE J517.
    - c. Have a bursting strength sufficient to withstand not less than ten (10) times the working pressure.
    - d. Be permanently marked indicating:
      - 1) Manufacturer of the hose and fittings.
      - 2) Type of hose and fitting.
      - 3) Minimum factory test pressure.
      - 4) Minimum bending radius of the hose.
      - 5) Date of installation.
      - 6) Inspection procedure.
      - 7) Name of elevator contractor.

E. Hydraulic Mainline Oil Strainer

1. Provide a mainline hydraulic oil strainer of the self-cleaning, compact type, equipped with a 40 mesh element and installed in the oil line.
2. Design the strainer for maximum system working pressure.

## 2.6 HOISTWAY EQUIPMENT

A. Guide Rails / Inserts / Brackets (Reuse)

1. Car guide rails, fishplates, rail brackets, backing support and related attachments shall be inspected to determine if unfavorable conditions exist that diminish the structural integrity of any component.
  - a. In the event substandard conditions are disclosed by means of this inspection, the Contractor shall immediately inform the Consultant as to the exact nature of said problems.
2. As required, car guide rails joints shall be individually filled, filed, and sanded to eliminate minor variations in adjoining machined surfaces.

B. Roller Guides

1. Provide roller guide shoes with adjustable mounting base, rigidly bolted to the top and bottom of each side of the car.
  - a. Roller guides shall consist of a set of sound reducing polyurethane wheels in precision bearings held in contact with the three (3) finished rail surfaces by adjustable stabilizing springs.
  - b. The bearings shall be sealed or provided with grease fittings for lubrication.
  - c. Equip roller guides with adjustable stops to control postwise float.

C. Final Terminal Stopping Devices

1. Provide final terminal stopping devices to stop the car automatically from the speed specified within the top clearance and bottom overtravel.
2. The terminal stopping devices shall have rollers with rubber or other approved composition tread to provide silent operation when actuated by the cam fixed to the top of the car.
  - a. Terminal stopping devices that are not mechanically operated (i.e.: magnetic proximity) shall be provided by the manufacturer of the control equipment, intended for use as a terminal limit, and designed for reliable operation in the hoistway environment.
3. Final terminal limits shall be pinned to prevent movement after final adjustment where required by the AHJ.

2.7 PIT EQUIPMENT

A. Car Buffer (Reuse)

1. Existing car buffers shall be reused.
  - a. Pit channels, related supports and fastenings shall be inspected for damage and to determine if the structural integrity of any component is diminished by the effects of rust or other unfavorable conditions.
    - 1) In the event defects are found, the Contractor shall immediately inform the Consultant and undertake whatever repair and/or replacement the Consultant may deem appropriate.
  - b. Surface rust shall be removed from all reused components.
  - c. Provide a permanent buffer marking plate which indicates the manufacturer's name, identification number, rated impact speed and stroke.

B. Ladders

1. The design, fabrication and installation shall be by the Elevator Contractor and shall be in compliance with all applicable Codes.
2. Submit drawings showing details for the assembly for approval by the University and structural engineer.
3. Apply two (2) coats of rust inhibiting paint to exposed ferrous metal surfaces.

C. Jack Unit (Reuse)

1. The existing jack shall be reused.
2. The jack shall undergo the following work:
  - a. Check plunger for smooth surface and eliminate burrs where necessary.
  - b. Verify plunger sections are securely attached with minimum seam.
  - c. Check stop-ring for proper fit.
  - d. Renew internal babbitt-lined, guide bearing, packing or seals where necessary.
  - e. Clean drip ring around cylinder top to provide adequate drainage.
  - f. Check mounting hardware and welds where applicable.
  - g. Check secure attachment of head.
  - h. Remove rust and apply rust inhibiting paint.
3. Perform static load test of the jack unit to determine if there are any failures of the cylinder wall.
4. Where double-walled cylinders are not provided, and where prevailing conditions allow, install a plunger gripper to prevent freefall of the elevator in the event of a catastrophic failure of the hydraulic jack.

D. Hydraulic Check Valve

1. A check valve shall be provided and installed so that it will hold the elevator with rated load at any point when the pump stops and the down valves are closed or the maintained pressure drops below the minimum operating pressure.

E. Overspeed (Rupture) Valve

1. An overspeed valve shall be provided and installed so that it will cause the flow of oil from the hydraulic jack through the pressure piping to cease when such flow exceeds a preset value relative to car speed in accordance with applicable codes.

F. Pit Stop Switch

1. Each elevator pit shall be provided with a push/pull or toggle switch that is conspicuously designated "EMERGENCY STOP" and located so as to be readily accessible from the hoistway entrance on the lowest landing served at a height of approximately eighteen inches (18") above the floor.
  - a. This switch shall be arranged to prevent the application of power to the hoist motor and machine brake when placed in the "OFF" position.



## 2.8 HOISTWAY ENTRANCES

### A. Hoistway Entrances (Reuse)

1. Hoistway entrance sills, entrance frames, headers and header supports shall be reused and refurbished.
  - a. Hoistway entrances that have become distorted or bent shall be straightened, plumbed, reset to the proper width dimension, and reinforced, as necessary.
  - b. Provide 14-gauge steel fascia plates that extend at least the full width of the door and be secured at hanger support and sill with oval head machine screws.
    - 1) Reinforce fascia to allow not more than half an inch (") of deflection.
    - 2) Provide fascia plates where the clearance between the edge of the loading side of the platform and the inside face of the hoistway enclosure exceeds the code allowed clearance.
  - c. Provide 14-gauge steel toe guards that extend 12" below any sill not protected by fascia.
    - 1) The toe guards shall extend the full width of the door and shall return to the hoistway wall at a fifteen (15) degree angle and be firmly fastened.
  - d. Remove oil, dirt and impurities on new and existing apparatus and give a factory coat of rust inhibitive paint to all exposed surfaces of struts, hanger supports, covers, fascia, toe guards, dust covers, and other ferrous metal.

### B. Slide Type Hoistway Door / New in Existing Frame

1. Provide a new elevator hoistway entrance door reusing existing entrance frame.
2. Each new door shall be as follows:
  - a. Hollow metal construction.
  - b. One and a half (1-1/2) hour fire-rated test approved with required label.
  - c. Manufactured of cold rolled furniture steel.
  - d. Flush design both sides.
  - e. Rigidly reinforced.
  - f. Sound deadened.
3. Equip all hoistway landing doors with one-piece full height non-vision wings of material and finish to match hall side of door panels.
4. Provide each door panel with two (2) removable laminated plastic composition guides, arranged to run in existing sill grooves with a minimum clearance.
  - a. The guide mounting shall permit their replacement without removing the door from the hangers.
  - b. A steel fire stop shall be enclosed in each guide.

5. Provide the meeting edge of center opening doors with necessary new continuous rubber astragal bumper strips.
  - a. Astragal shall be relatively inconspicuous when the doors are closed.
  - b. Provide rubber bumpers at the top and bottom of each section of door to stop them at their limit of travel in the opening direction.
6. In multi-speed door arrangements, provisions shall be made to interlock the individual panels so all panels close should the normal door panel relating means fail.
7. Provide a special key so that an authorized person can open any landing door when the car is elsewhere.
  - a. The key hole shall be not less than three-eighths inch (3/8") in diameter and shall be fitted with a stainless steel or bronze ferrule to match related equipment.
8. Finish all door panels to match elevator entrances.
9. Where conditions require, provide necessary new masonry around existing entrance frames to maintain fire rating.

C. Tracks / Hangers / Closers / Related Equipment

1. Formed or extruded steel landing door hanger tracks shall be provided.
2. Each landing door panel shall be suspended from a pair of door hanger assemblies that are compatible with the hanger tracks.
  - a. Hanger assemblies shall be directly mounted to the door panel using three-eighths inch (3/8") diameter or better hardware.
  - b. Solid steel blocks shall be used where job-site conditions dictate the use of spacers between hanger assemblies and the landing door panel.
  - c. Hanger assemblies shall be adjusted or shimmed so that door panels are suspended in a plumb manner with no more than three-eighths inch (3/8") vertical clearance to the cab entrance threshold.
  - d. Upthrust rollers shall be adjusted for minimal operating clearance against the bottom edge of the hanger track.
  - e. Means shall be provided to prevent hangers from jumping the track.
  - f. Blocks shall be provided to prevent rollers from overrunning the end of the track.
3. Each set of center opening landing doors shall be provided with a cable driven relating mechanism which is compatible for use with the door hanger assemblies.
  - a. The relating mechanism shall be properly tensioned and adjusted so as to equalize the relationship between the door panels and the hoistway entrance.
4. In multi-speed door arrangements, provisions shall be made to interlock the individual panels so all panels close should the normal door panel relating means fail.
5. Each set of single speed side slide landing doors shall be provided with a sill-mounted spring closing mechanism.

- a. Spirator-type spring closers shall be acceptable should prevailing sill depth or runby clearance conditions require their use.
6. Where applicable, each hoistway door interlock assembly shall be provided with an emergency release mechanism utilizing manufacturers' standard type access key at all landings served.
  - a. Drill each hoistway door to accommodate manufacturers standard lock release key and install escutcheon.
    - 1) Escutcheon shall be brushed stainless steel to match door panels where required.
    - 2) Aluminum shall be provided at all other typical floors.
7. Where multi-speed side slide door panels exist, provide a secondary interlocking device that will prevent separation of the panels should the sill closer or relating cable(s) fail.

D. Hoistway Door Bottom Guides / Safety Retainers

1. The bottom of each side sliding type hoistway door panel shall be equipped with a minimum of two (2) guiding members.
  - a. Metal mounting angles shall be secured to the integral panel frame structure; and when conditions warrant, additional external metal support plates or angles shall be installed to ensure the integrity of the panel frame is not compromised.
  - b. Guides shall be manufactured of low friction non-metal material with sufficient strength to withstand forces placed on door panels per ASME A17.1 Standards.
  - c. Each guide assembly shall incorporate a steel wear indicator and be so designed to permit sliding member replacements without removal of door panel(s) from top hanger devices.
  - d. Panels shall be hung with a maximum vertical clearance of three-eighths inch between top of sill and bottom of panel and the guide shall engage the sill groove by not less than one-quarter (1/4) inch.
2. The bottom of each side sliding type hoistway door panel shall be equipped with a guiding member safety retainer to prevent displacement in the event of primary guide means failure.
  - a. A metal reinforcement (12 gauge stainless or galvanized steel) shall be installed between the two (2) primary guiding members (a.k.a. "Z" bracket).
  - b. The reinforcement shall be designed with a minimum length of eight (8) inches or the maximum possible length that will fit between the primary members and a minimum overall height of two and one-half (2.5) inches secured on the internal face of the door panel. (Hoistway side)
  - c. The retainer shall be set with the supplemental safety angle three-eighths (3/8) inch into the corresponding sill groove; and be capable of preventing displacement of

the panel no more than three-quarters (3/4) inch with an applied force of 1125 lbf at right angles over an area twelve (12) inches x twelve (12) inches at the approximate center of the door panel.

## 2.9 CAR EQUIPMENT / FRAME

### A. Car Frame (Reuse)

1. The existing car frame assembly shall be refurbished to as new condition and reused.
2. Individual car frame members, platform isolation framework, door operator support structure, related bracing and hardware shall be inspected for any indication of damage or distortion.
  - a. Where damage is detected, the Contractor shall immediately inform the Consultant and then undertake corrective action deemed appropriate by the Consultant to remedy the condition.
3. Provide new elastomer isolation pads for all existing platforms where pads are presently installed.
4. The car frame, door operator support and related bracing shall be modified or reconfigured as necessary in order to accommodate new cab enclosure and/or master door operating equipment specified herein.
5. The elevator car shall undergo static balancing upon substantial completion of all work described in the project specifications and subsequent to any car interior refinishing or cab replacement work performed in conjunction with the project.

### B. Car Platform (Reuse)

1. The existing platform shall be modified to accommodate the new apparatus specified herein.
  - a. Where necessary, the underside of platform shall be refurbished and treated with fire-rated material.
  - b. Where Necessary top of platform shall be refurbished with a marine grade plywood set to receive new finished floor covering as selected by University.
  - c. At Contractor's option or when conditions warrant, provide a totally new platform in lieu of repairs, modifications and upgraded specified above.

### C. Automatic Leveling / Releveling / Positioning Device

1. Equip the elevator with a floor leveling device which shall automatically bring the car to a stop within one-quarter inch (1/4") of any floor for which a stop has been initiated regardless of load or direction of travel.
2. This device shall also provide for releveling which shall be arranged to automatically return the elevator to the floor in the event the elevator should move below or above floor level in excess of one-quarter inch (1/4").

3. This device shall be operative at all floors served and whether the hoistway or car door is open or closed provided there is no interruption of power to the elevator.
4. A positioning device shall be part of the controller microprocessor systems.
  - a. Position determination in the hoistway may be through fixed tape in the hoistway or by sensors fitted on each driving machine to encode and store car movement.
  - b. Design the mechanical features and electrical circuits to permit accurate control and rapid acceleration and retardation without discomfort.

D. Top-of-Car Inspection Operating Station

1. An inspection operating station shall be provided on top of the elevator car.
2. This station shall be installed so that the controls are plainly visible and readily accessible from the hoistway entrance without stepping on the car.
3. When the station is operational, all operating devices in the car shall be inoperative.
4. Provide the following control devices and features:
  - a. A push/pull or toggle switch designated “EMERGENCY STOP” shall be arranged so as to prevent the application of power to the hoist motor or machine brake when in the “off” position.
  - b. A toggle switch designated “INSPECTION” and “NORMAL” to activate the top of car Inspection Service Operation.
  - c. Push button designated “Up,” “Down” and “Enable” to operate the elevator on Inspection Service (the “Enable” button shall be arranged to operate in conjunction with either the “Up” or “Down” button).
  - d. An indicator light and warning buzzer that are subject to activation under Phase I - Fire Emergency Recall Operation.

E. Car Enclosure Work Light / Receptacle

1. The top and bottom of each car shall be provided with a permanent lighting fixture and 110 volt GFI receptacle.
2. Light control switches shall be located for easy accessibility from the hoistway entrance.
3. Where sufficient overhead clearance exists, the car top lighting fixture shall be extended no less than twenty-four inches (24”) above the crosshead member of the car frame.
4. Light bulbs shall be guarded so as to prevent breakage or accidental contact.

F. Master Door Power Operator System – VVVF/AC (GAL)

1. Provide a heavy-duty master door operator on top of the elevator car enclosure for power opening and closing of the cab and hoistway entrance door panels.
2. The operator may be of the pivot/lever or belted linear drive type.
3. Operator shall utilize an alternating current motor, controlled by a variable voltage, variable frequency (VVVF) drive and a closed-loop control with programmable operating parameters.

- a. System may incorporate an encoder feedback to monitor positions with a separate speed sensing device or an encoderless closed-loop VVVF-AC control to monitor motor parameters and vary power applied to compensate for load changes.
4. The type of system shall be designated as a high speed operator, designed for door panel opening at an average speed of two (2.0) feet per second and closing at approximately one (1.0) foot per second.
  - a. Reduce the closing speed as required to limit kinetic energy of closing doors to within values permitted by ASME A17.1 as may be adopted and/or modified by the AHJ.
5. The door shall operate smoothly without a slam or abrupt motion in both the opening and closing cycle directions.
  - a. Provide controls to automatically compensate for load changes such as:
    - 1) Wind conditions (stack effect).
    - 2) Use of different weight door panels on multiple landings.
    - 3) Other unique prevailing conditions that could cause variations in operational speeds.
  - b. Provide nudging to limit speed and torque in conjunction with door close signaling/closing and timing devices as permitted by ASME A17.1 as may be adopted and/or modified by the AHJ. Nudging shall be initiated by the signal control system and not from the door protective device.
6. In case of interruption or failure of electric power from any cause, the door operating mechanism shall be so designed that it shall permit emergency manual operation of both the car and corridor doors only when the elevator is located in the floor landing unlocking zone.
  - a. The hoistway door shall continue to be self-locking and self-closing during emergency operation.
  - b. The door operator and/or car door panel shall be equipped with safety switches and electrical controls to prevent operation of the elevator with the door in the open position as per ASME A17.1 Code Standards.
  - c. Provide zone-lock devices as required by ASME A17.1 as may be adopted and/or otherwise modified by the AHJ.
7. Construct all door operating levers of heavy steel or reinforced extruded aluminum members.
8. Belts shall be designed for long life and operate noise free.
9. All components shall be designed for stress and forces imposed on the related parts, linkages, and fixed components during normal and emergency operation functions.

- a. All pivot points, pulleys and motors shall have either ball or roller-type bearings, oilite bronze bushings or other non-metallic bushings of ample size.
10. Provide operating data / data tag permanently attached to the operator as required by applicable code and standards.
- G. Car Door Hangers / Tracks / Gate Switch
1. Provide sheave type two-point suspension hangers and track for each car door.
    - a. Sheaves shall be hardened steel, not less than three and one-quarter (3-1/4) inches in diameter with sealed grease packed precision ball bearings.
    - b. The upthrust shall be taken by a roller mounted on the hanger and arranged to ride on the underside of the track.
  2. The track shall be of formed cold rolled steel or cold drawn steel and shall be rounded on the track surface to receive the hanger sheaves.
    - a. The track shall be removable and shall not be integral with the header.
  3. Provide a gate switch that mounts directly to the car door track.
    - a. The gate switch shall prevent movement of the elevator until such time as it signals the control equipment that the car door has physically closed.
- H. Car Door Panel(s) (New)
1. Provide standard Minimum one inch (1”) thick, 14-gauge hollow metal flush construction panel(s), reinforced for power operation and insulated for sound deadening.
  2. Paint the hoistway side of each panel black and face the cab side with 16-gauge sheet steel matching the existing returns or in selected material and finish as otherwise directed by University.
  3. The panels shall have no binder angles and welds shall be continuous, ground smooth and invisible.
  4. Drill and reinforce panels for installation of door operator hardware, door protective device, door gibs, etc.
    - a. Provide each door panel with two (2) removable laminated plastic composition guides, arranged to run in the sill grooves with minimum clearance.
    - b. The guide mounting shall permit their replacement without removing the door from the hangers.
  5. Provide the meeting edge of center opening doors with necessary continuous rubber astragal bumper strips.
    - a. These strips shall be relatively inconspicuous when the doors are closed.

I. Door Reopening Device / “3D”

1. Provide a combination infrared curtain and 3D door protection system in compliance with ASME A17.1-2019.
2. The door shall be prevented from closing and will reopen when closing if any one of the curtain light rays is interrupted or should an object enter the 3D detection zone.
3. The door shall start to close when the protection system is free of any obstruction.
4. The infrared curtain and 3D zone protective system shall provide:
  - a. Protective curtain field not less than seventy-one inches (71”) above the sill.
  - b. 3D protective zone field not less than sixty-one inches (61”) above the sill.
  - c. Accurately positioned infrared lights to conform to the requirements of the applicable handicapped code.
  - d. Modular design to permit on board test operation and replacement of all circuit boards without removing the complete unit.
  - e. Self-contained, selectable 3D zone timeout feature to allow for closing at nudging speed with audible signal.
  - f. Automatic turning-off of the 3D zone in the event of three (3) consecutive 3D triggers.
    - 1) Light curtain shall continue to operate after 3D system timeout.
  - g. Selectable control of the 3D zone operation on an “always-on” or “as doors close” basis.
  - h. Controls to shut down the elevator when the unit fails to operate properly.
  - i. Provide audible and visual notification of pending door close.

2.10 FINISH / MATERIALS / SIGNAGE

A. Material, Finishes and Painting

1. General
  - a. Cold-rolled Sheet Steel Sections: ASTM A366, commercial steel, Type B
  - b. Rolled Steel Floor Plate: ASTM A786
  - c. Steel Supports and Reinforcement: ASTM A36
  - d. Aluminum-alloy Rolled Tread Plate: ASTM B632
  - e. Aluminum Plate: ASTM B209
  - f. Stainless Steel: ASTM A167 Type 302, 304 or 316
  - g. Stainless Steel Bars and Shapes: ASTM A276
  - h. Stainless Steel Tubes: ASTM A269
  - i. Aluminum Extrusions: ASTM B221
  - j. Nickel Silver Extrusions: ASTM B155
  - k. Structural Tubing: ASTM A500
  - l. Bolts, Nuts and Washers: ASTM A325 and A490



2. Finishes

a. Stainless Steel

- 1) Satin Finish: No. 4 satin, long grain.

b. Sheet Steel:

- 1) Shop Prime: Factory-applied baked on coat of mineral filler and primer.
- 2) Finish Paint: Two (2) coats of low sheen baked enamel, color as selected by the University.
- 3) Steel Equipment: Two (2) coats of manufacturer's standard rust-inhibiting paint to exposed ferrous metal surfaces in both the hoistway and pit that do not have galvanized, anodized, baked enamel, or special architectural finishes.

3. Painting

- a. Apply two (2) coats of paint to the machine room floor.
- b. Apply two (2) coats of paint to the pit floor, pit channels, buffers, and cylinder head.
- c. Identify all equipment including buffers, car apron, crosshead, bolster channel, controller, disconnect switch, etc., by four inch (4") high numerals which shall contrast with the background to which it is applied. The identification shall be either decalcomania or stencil type.
- d. Paint or provide decal-type floor designation not less than four (4) inches high on hoistway doors (hoistway side), fascia, and/or walls as required by A17.1 as may be adopted and/or modified by the AHJ. The color of paint used shall contrast with the color of the surface to which it is applied.

B. Hoistway Entrances Finish and Design

1. Hoistway entrances and door panels shall be finished as specified by the University.
2. Where no finish is specified, finishes of hoistway doors shall match existing entrance frames.
3. Refer to specifications for other design requirements.

C. Hoistway Entrances

1. Entrance Frames:

- a. Passenger Elevators – retain existing frames

D. Door Panels:

- a. BS01, BS02, BS03, ES01 Elevators - Ground Floor: Stainless steel with No. 4 finish.

- b. BS01, BS02, BS03, ES01 Elevators - Typical Floors: Stainless steel with No. 4 finish.
- c. BS04 Passenger Elevator - painted.

E. Car Interior Finishes

- 1. Car interior finishes shall be as selected by University.
- 2. Contractor shall provide samples of finishes as required for approval prior to fabrication.
- 3. Refer to specifications for other design requirements where provided.
- 4. Special attention shall be given to flooring materials and suitability for intended duty.

F. Designation and Data Plates, Labeling and Signage.

- 1. Provide an elevator identification plate on or adjacent to each entrance frame where required by the AHJ.
  - a. The designation numeral shall be a minimum of three inches (3") in height.
- 2. Provide floor designation cast plates at each elevator entrance, on both sides of the jamb at a height of sixty (60) inches to the baseline of floor indication.
  - a. Floor number designations and Braille shall be two inches (2") high, three-hundredths inch (0.03") raised and stud mounted.
- 3. Provide raised designations and Braille markings to the left of the car call and control buttons of the car operating panel(s).
  - a. Designations shall be a minimum of five-eighths inch (5/8") high, three-hundredths inch (0.03") raised and stud mounted.
- 4. Provide elevators with data and marking plates, labels, signages and refuge space markings complying with A17.1 Elevator Safety Code as may be adopted and/or otherwise modified by the AHJ.
- 5. University shall select the designation and data plates from manufacturer's premium line of plates.

2.11 FIXTURES / SIGNAL EQUIPMENT (Monitor Controls IUPUI Standard)

A. General - Design and Finish

- 1. The design and location of the hall and car operating and signaling fixtures shall comply with the ADAAG and local requirements of the AHJ.
- 2. The operating fixtures shall be selected from the manufacturer's premium line of fixtures.
- 3. Custom designed operating and signaling fixtures shall be as shown on the drawings or as approved by the University.

4. The layout of the fixtures including all associated signage and engraving shall be as approved by the University.
5. Where no special design is shown on the drawings, the buttons shall be as follows:
  - a. Stainless steel convex type as selected by the University from the manufacturer's premium line of push buttons.
  - b. The button shall have an LED call registered light.
6. Where no special design is shown on the drawings, the faceplates shall be as follows:
  - a. Passenger Elevators
    - 1) Ground Floor: Custom designed stainless steel faceplate with No. 4 finish.
    - 2) Typical Floors: One-eighth inch (1/8") thick stainless steel faceplate with No. 4 finish.
7. Mount passenger elevator fixtures with tamperproof fasteners. The screw/fastener and key switch cylinder finishes shall match faceplate finish.
8. Where key-operated switch and or key operated cylinder locks are furnished in conjunction with any component of the installation, six (6) keys for each individual switch or lock shall be furnished, stamped, or permanently tagged to indicate function.
9. All caution signs, pictographs, code mandated instructions and directives shall be engraved and filled with epoxy in code required colors.

B. Car Direction Lantern

1. Provide a car riding lantern with visual and audible signal in the edge of the strike and/or return post.
2. The lens shall project a minimum of one-quarter inch (1/4") and shall be of solid Plexiglas.
3. Use tamperproof screws for flush faceplate with hairline joint.
4. Car lantern shall indicate the direction of travel when doors are three-quarters (3/4) open.
5. The unit shall sound once for the "up" direction and twice for the "down" direction.
  - a. Provide an electronic chime with adjustable sound volume.

C. Voice Annunciator

1. Provide a voice annunciator in each elevator.
2. The device features shall comply with the requirements of ADAAG and local accessibility requirements.
3. Coordinate size, shape, and design with Designer and other trades.
4. The system shall include, but not limited to:
  - a. Solid state digital speech annunciator.
  - b. A recording feature for customized messages.
  - c. Playback option.

- d. Built-in voice amplifier.
  - e. Master volume control.
  - f. Audible indication for selected floor, floor status or position, direction of travel, floor stop, seismic operation, firefighter service and nudging.
5. Locate all associated equipment in a single, clearly labeled enclosure located either in the machine room and/or on car top.
- D. Corridor Push Button Stations / Reuse Back Boxes
1. Push button signal fixtures shall be provided on each landing.
  2. Each signal fixture shall consist of:
    - a. Up and down illuminating push buttons measuring three-quarters inch (3/4") at their smallest dimension as selected by the University.
    - b. A recessed mounting box, electrical conduit, and wiring.
  3. Intermediate landings shall be provided with fixtures containing two (2) push buttons while terminal landings shall be provided with fixtures containing a single push button.
  4. Include firefighter key switch in the main lobby level station or other designated recall landing.
  5. Where existing fixtures are located greater than forty-eight inches (48") above the floor:
    - a. The existing back boxes shall be retained and used to attach the oversized fixture faceplate to locate the new buttons with a centerline of forty-two inches (42") above the finished floor.
      - 1) The Contractor has the option of providing a single oversized back box in lieu of retaining existing for faceplate attachment.
    - b. Standardize the new centerline distance on all floors.
  6. All cutting, patching, grouting and/or plastering of masonry walls resulting from the removal or installation of corridor fixtures shall be performed by the Contractor so as to maintain the fire rating of the hoistway.
    - a. Finished painting or decorating of wall surfaces shall be by Others.
  7. All faceplates shall be engraved with fire logo and "In Case of Fire Use Stairs" to help fill the void created by the use of oversized covers.
  8. Provide telephone line audible/visual monitoring features at the designated level.
- E. Floor Position Indicator
1. Remove existing floor position indicator at the lobby only and provide new digital LED type unit.

2. New plate shall completely cover the present cutout and provide two inch (2") numerals located on center.
3. Provide integral direction arrows that will indicate the direction in which the elevator is traveling.

F. Hoistway Access Switch

1. Install a cylindrical type keyed switch at top terminal in order to permit the car to be moved at slow speed with the doors open to allow authorized persons to obtain access to the top of the car.
2. Where there is no separate pit access door, a similar switch shall be installed at the lowest landing in order to permit the car to be moved away from the landing with the doors open in order to gain access to the pit.
3. This switch is to be of the continuous pressure spring-return type and shall be operated by a cylinder type lock having not less than a five (5) pin or five (5) disc combination with the key removable only in the "OFF" position.
  - a. The lock shall not be operable by any key which operates locks or devices used for other purposes in the building and shall be available to and used only by inspectors, maintenance men and repairmen in accordance with A17.1 applicable Security Group.
4. Existing provisions that meet the aforementioned criteria may be updated with keyed switches to match new apparatus provided for uniformity of systems within the building.

2.12 CAR ENCLOSURES

A. Elevator Car Enclosure(s) and the Five Percent (5 ) Rule:

1. In accordance with A17.1, Section 8.7, as adopted and/or modified by the AHJ, entitled "Alterations," where a new or remodeled elevator car enclosure is included in the base scope of work, the Contractor shall, within thirty (30) days after execution of the contract, weigh the elevators included in the base scope of work, to determine the present deadweight of the platform/sling/cab assembly.
2. The Contractor shall, when necessary, weigh the interior materials of each cab to better estimate the total existing weight of existing materials being removed as part of the alteration.
3. The Contractor shall make every effort to provide accurate weight measurements while taking into consideration all weights that may present themselves at the time the measurement is taken that may affect the measurement of the assembly itself.
4. Measurements of actual cab weight shall be compared to the original deadweight of the car as stamped on the crosshead data tag.
5. The amount of weight that may be added to the car, so as to remain within the limits of the "Five Percent (5 ) Rule", shall be calculated based on the following:

- a. (Original Deadweight Capacity) X (0.05) Maximum Additional Weight Allowed
  6. The Contractor shall document and notify the University and Consultant of the results of the measurements taken and what weight, if any, can be added or needs to be removed from the cab in order to maintain compliance with the Five Percent (5 ) Rule.
  7. The Contractor shall work diligently with the University and/or University's Representative and/or consultant as well as the manufacturer of the car enclosure to minimize additional weights of the new or remodeled car enclosure so as to maintain compliance with the Five Percent (5 ) Rule.
  8. Contractor shall be responsible for proper static adjustment of the system, including the static balance of the platform/sling/car enclosure, upon completion of the car interior work.
  9. Costs associated with this work shall be included in the base modernization price.
  10. Provide a new data tag on the crosshead of the elevator indicating the new deadweight and the date of the alteration.
- B. Elevator Cab / General Design Requirements
1. The design, materials and finishes of the cab enclosures shall be as approved by the University
  2. Steel Shell: 14-gauge furniture steel reinforced and designed to accept finished wall panels. Finish shell panels with one coat of rust inhibitive primer and two (2) coats of enamel paint in accordance with Section 09900. Apply one-eighth inch (1/8") thick, rubberized sound deadening material to the hoistway side of the shell.
    - a. All panels shall have minimum radii. Apply sealant beads to panel joints before bolting together with lock washers.
  3. Canopy: Canopy construction methods shall match the shell walls. Use 12-gauge furniture sheet steel and adequately support canopy to comply with the loading requirements of the Code.
    - a. Provide necessary cutouts for the installation of fan and top emergency exit. Arrange exit panel to swing up using a heavy duty piano hinge.
    - b. The exit panel shall have dual locks, necessary stops, and a handle.
    - c. When in the locked position, the panel shall be flush with the interior face of the canopy with hairline joints.
  4. Base: Where finished base provided under another section of these specifications, recess and prepare the shell to accept the base.
    - a. Provide concealed vent slots above side and rear wall base for proper ventilation. Arrange and size vent slots for quiet operation without any whistling. Use 16 gauge baffles to protect the hoistway side of the vent slots.
    - b. The elevator cab shop drawings shall include elevator vent calculations and number, location, and size of top and bottom vent holes.

5. Flooring: Recess and prepare sub-flooring to accept the finished flooring.
6. Front Return Panels, Entrance Posts and Transom: Use 14-gauge furniture sheet steel with proper reinforcing to prevent oil canning.
  - a. Fixed type return panel shall have required cutouts for car operating and signaling fixtures.
  - b. Swing front return panels shall have required cutouts for the car call buttons, keyed switches, indicators, emergency light fixture, cabinets and the specified special control and signaling devices.
    - 1) Provide concealed full height stainless steel piano hinges of sufficient strength to support the panel, without sagging, in the open position.
    - 2) The concealed locks shall secure the panel at two (2) points with linkage that shall be free of vibration and noise when in the locked position.
    - 3) When locked in the closed position, the front return panel shall be in true alignment with the transom and base.
    - 4) Lock release holes shall be not more than 1/4" diameter and be located at the return side jamb of the panel.
    - 5) Engrave the elevator identification number and capacity, no smoking sign, firefighter instructions, and other code mandated instructions and caution signs directly in the front return panel. Applied panels are unacceptable.
  - c. Transom shall be 14 gauge and be reinforced and constructed the same as the front return panels.
  - d. Construct entrance posts for the passenger elevators from 12-gauge sheet steel and reinforce to maintain vertical alignment with the adjacent panels.
  - e. Provide channel post entrance jambs for the service elevators. Clad channels with 14-gauge sheet steel and through bolt channels to the floor and to the reinforced header section.
7. Cab Doors: Standard minimum one inch (1") thick, 14-gauge hollow metal flush construction, reinforced for power operation and insulated for sound deadening. Paint hatch side of doors black and face cab side with 16-gauge sheet steel in selected material and finish.
  - a. The door panels shall have no binder angles. All welds shall be continuous, ground smooth and invisible.
  - b. Drill and reinforce doors for installation of door operator hardware, door protective device, door gibs, etc.
8. Ceiling: Construction techniques for wall panels shall apply to ceiling panel construction. Locate top emergency exit inconspicuously. Construct and mount the exit panel to prevent light leakage around the perimeter of panel.
9. Ventilation: The ventilation system of the exhaust type shall be provided in each elevator.
  - a. The system shall include a blower driven by a direct connected motor and mounted on top of car with isolation to effectively prevent transmission of vibration to the

car structure. The blower shall have not less than two (2) operating speeds. The ventilation system shall be sized to provide one (1) air change per minute at low speed and one and one-half (1.5) air changes per minute at high speed. The unit design and installation shall be such that the maximum noise level, when operating at high speed, shall not exceed 55 dBA approximately three (3) feet above the car floor. A three (3) position switch to control the blower shall be provided in the service panel.

10. Lighting: Arrange lighting fixtures and ceiling assembly to provide even illumination without hot spots and shadows.
  - a. Design and configure lighting system to facilitate maintenance of the fixtures.
11. Handrails: All attachment hardware shall match the selected handrail and shall permit handrail removal from within the cab.
  - a. Provide a minimum of 10-gauge plate at the hatch side of the shell, aligned with the handrail attachment points, to assure secure handrail mounting.
  - b. Design handrail attachment system to support the weight of a person (two hundred fifty [250] pounds) sitting on it without any deflection and damage to the handrail, cab panel and the shell.
12. Protective Pads and Pad Hooks: Provide pad hooks at locations as directed by the University. Protective pads shall cover the front return panels, and the side and rear walls. Provide cutouts in pads for access to the cab operating and signaling devices. Pads shall be fire-resistant canvas with two (2) layers of cotton batting padding.
  - a. Identify each pad by elevator number and wall location.
13. Accessories: Construct elevator cab to accommodate the door operator, hangers, interlocks, and all accessory equipment provided under other sections of these specifications, including firefighter phones, card readers and CCTV.
14. All cab materials shall conform to the code prescribed flame spread rating and smoke development requirements.

C. Cab Fabrication and Installation

1. Maintain accurate relation of planes and angles with hairline fit of contacting panels and/or surfaces.
2. Any shadow gaps (reveals) between panels shall be consistent and uniform.
3. Unless otherwise specified or shown on the drawings, for work exposed to view use concealed fasteners.
4. Maximum exposed edge radius at corner bends shall be one-sixteenth inch (1/16"). There shall be no visible grain difference at the bends.
5. Form the work to the required shapes and sizes with smooth and even curves, lines, and angles. Provide necessary brackets, spacers and blocking material for assembly of the cab.



6. Interior cab surfaces shall be flat and free of bow or oil canning. The maximum overall deviation between the low and high points of 24" x 24" panel section shall not exceed 1/32".
7. Make weights of connections and accessories adequate to safely sustain and withstand stresses to which they will be subjected.
8. All steel work except stainless steel and bronze materials shall be painted with an approved coat of primer and one (1) coat of baked enamel paint.
9. Cab Finish Warranty Enhancement
  - a. Contractor shall be responsible for engineering and installing interior cab finishes in a manner that will withstand all code mandated inspections and test procedures. Failure of finishes during testing shall be repaired by the contractor without expense to the University. Any objections or qualifications to material selection or design shall be identified during the engineering of the cab interior drawings for review by the University.

D. Passenger Elevators (BS01, BS02, BS03, ES01)

1. Wall Panels:
  - a. Three-quarters inch (3/4") thick fire retardant plywood or particleboard with all surfaces faced with 5WL stainless steel as directed by the University. The panels shall be constructed as the removable type.
2. Canopy: Paint canopy with a coat of primer and one (1) coat of low sheen enamel paint.
3. Front Return Panels and Transom: Stainless steel front return panels with No. 4 finish.
4. Cab Doors: Stainless steel with No.4 finish.
5. Ceiling:
  - a. Suspended three-quarters inch (3/4") thick fire retardant plywood or particleboard with all surfaces finished in the selected #4 Stainless Steel.
  - b. Suspended three-quarters inch (3/4") thick fire-retardant plywood or particleboard with all surfaces faced with sheet steel; front and sides stainless steel, and rear side prime painted steel.
6. Handrails:
  - a. Hand Rail - flat three-eighths inch (3/8") x two inch (2") stainless steel handrail at the sides/rear walls.
  - b. Bumper rail seven inches (7") above finished floor flat three-eighths inch (3/8") x two inch (2") stainless steel handrail at the sides/rear walls.
7. Lighting:
  - a. The cab lighting system shall be as shown on the drawings.
  - b. Fully recessed LED down light fixtures with aluminum alzak reflector. Unless otherwise shown on the drawings, provide a light fixture in each ceiling panel.

8. Base: Provide a four inch (4") high base in the material and finish in #4 stainless at the sides and rear of the cab enclosure.

E. Service Elevators (BS04)

1. Wall Panels: 16-gauge stainless steel applied to shell.
2. Provide oval vent slots four inches (4") above the floor.
3. Canopy: Paint canopy with a coat of primer and one (1) coat of enamel paint.
4. Front Return Panels and Transom: Stainless steel with No. 4 finish.
5. Cab Doors: Stainless steel with No. 4 finish.
6. Lighting: LED recessed in canopy
7. Flooring: Provide floor covering in color and pattern selected by the University.
8. Handrails: Double row of three-eighths inch (3/8") x two inch (2") stainless steel bars at seven inches (7") and thirty-two inches (32") above floor on side and rear walls. Mount rails to cabs at twelve inches (12") on centers and arrange them to be removable from within car. Suitably reinforce cab panel to provide for secure handrail mounting.

F. Elevator Cab Enclosure Fan

1. Provide an exhaust type two-speed fan unit with cover grill, mounting accessories and necessary cab enclosure modifications.
  - a. Fan unit shall include self-lubricating motor with housing rubber mounted for sound vibration isolation.
2. Provide a key switch in the elevator cab enclosure for control of fan unit.
3. Provide necessary wiring and approved conduit to properly connect fan unit with power source and control key switch.

2.13 EMERGENCY LIGHTING / COMMUNICATIONS / SIGNALING

A. Battery Back Up Emergency Lighting Fixture and Alarm

1. Provide a self-powered emergency light unit.
  - a. Arrange two (2) of the cab light fixtures to operate as the emergency light system.
  - b. Where cab lighting is utilized for emergency lighting, Contractor shall coordinate the battery back-up equipment so that it is compatible with the type of cab lighting specified by the University or University's representative.
2. Provide a car-mounted battery unit including solid-state charger and testing means enclosed in common metal container.
  - a. The battery shall be rechargeable nickel cadmium with a ten (10) year minimum life expectancy. Mount the power pack on the top of the car.

- b. Provide a six inch (6") diameter alarm bell mounted directly to the battery/charger unit and connected to sound when any alarm push button or stop switch in the car enclosure is operated.
  - c. The bell shall be configured to operate from power supplied by the building emergency power generator. The bell shall produce a sound output of between 80-90 dBa (measured from a distance of ten feet [10']) mounted on top of the elevator car.
    - 1) Activation of this bell shall be controlled by the stop switch and alarm button in the car operating station.
    - 2) The alarm button shall illuminate when pressed.
  3. Where required by Code for the specific application, the unit shall provide mechanical ventilation for at least one (1) hour.
  4. The operation shall be completely automatic upon failure of normal power supply.
  5. Unit shall be connected to normal power supply for car lights and arranged to be energized at all times so it automatically recharges battery after use.
- B. Common Alarm Bell
1. Provide a common alarm bell located in the elevator pit.
    - a. The bell shall be configured to operate when the alarm or stop switch of any elevator is activated, during both normal and battery back-up power conditions.
    - b. Existing common alarm bells may be rehabilitated and reused providing they meet the intent of this section and applicable codes.
- C. Emergency Voice Communication / Telephone
1. A hands-free emergency voice communication system shall be furnished in each car mounted as an integral part of the car operating panel. Comply with IBC-2018.
    - a. Necessary wires shall be included in the car traveling cable and shall consist of a minimum of one shielded pair of 20AWG conductors.
    - b. 120V power shall be provided to power the hands-free device.
  2. The telephone shall be equipped with an auto-dialer and illuminating indicator which shall illuminate when a call has been placed and begin to flash when the call has been answered.
    - a. Engraving shall be provided next to the indicator which says, "When lit help is on the way".
  3. In addition to the standard "Alarm" button, a separate activation button shall be provided on the car operating panel to initiate the emergency telephone and place a call.
    - a. The telephone must not shut off if the activating button is pushed more than once.

- b. The telephone shall transmit a pre-recorded location message only when requested by the operator and be provided with an adjustable call time which can be extended on demand by the operator.
    - c. Once two-way communication has been established, voice prompts shall be provided which instruct the operator on how to activate these functions as well as alerting the operator when a call is being attempted from another elevator in the building.
4. The system shall be compatible with ring down equipment and PBX switchboards.
5. The system shall be capable of serving as the audio output for an external voice annunciation system.
  - a. Conversation levels shall measure 60 dbA or higher and measure 10 dbA above ambient noise levels.
  - b. Each device shall be provided with a self-diagnostic capability in order to automatically alert building personnel should an operational problem be detected.
6. The phone shall be able to:
  - a. Receive incoming calls from any On-Site Rescue Station (when provided or required).
  - b. Receive incoming calls from other off-site locations via the public telephone system.
  - c. Acknowledge incoming calls and automatically establishing hands-free two way communications.
    - 1) If no On-Site Rescue Station is provided, each hands-free device shall have built in line consolidation which will allow up to six (6) elevators to be called individually from outside the building over a single telephone line and up to eighty (80) elevators if an On-Site Rescue Station is provided.
7. The emergency elevator communication system shall require a maximum of one (1) telephone line.
  - a. The system must provide line sharing capability to eliminate the need for a dedicated telephone line.
  - b. The line sharing function must ensure that the emergency telephones always receive dialing priority even if the line is in use and that the emergency telephones can be called into from an off-site location.
8. The system shall provide its own four (4) hour backup power supply in case of a loss of regular AC power.
9. The system must provide capability for building personnel to call into elevators and determine the charge state of any backup batteries provided for the emergency telephones.
10. Pushing the activation button in any of the elevator car stations will cause any on-site Rescue Station (where provided or required) or security telephone to ring.

- a. If the on-site call is not picked up within thirty (30) seconds, the call will be automatically forwarded to a twenty-four (24) hour off-site monitoring service.
  - b. The arrangements and costs of the off-site monitoring and telephone line shall be by others.
11. All connections from the junction box to the telephone system shall be done by the Elevator Contractor where existing provisions can be reused.
  12. New telephone lines, where required, shall be provided, and interfaced by others.
  13. All connections from the junction box to the security room's main telephone system shall be done by others.
- D. Life Safety System
1. Install Life Safety System speaker in each elevator cab.
  2. Provide all necessary wiring and interfacing between the elevator system and the Life Safety System as required.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

##### A. Inspection

1. Study the Contract Documents with regard to the work as specified and required so as to ensure its completeness.
2. Examine surface and conditions to which this work is to be attached or applied and notify the University in writing if conditions or surfaces are detrimental to the proper and expeditious installation of the work. Starting the work shall imply acceptance of the surfaces and conditions to perform the work as specified.
3. Verify, by measurements at the job site, dimensions affecting the work. Bring field dimensions which are at variance with those on the accepted shop drawings to the attention of the University. Obtain the decision regarding corrective measures before the start of fabrication of items affected.
4. Cooperate in the coordination and scheduling of the work of this section with the work of other sections so as not to delay job progress.

#### 3.2 INSTALLATION / PROJECT PHASING

##### A. Installation

1. Modernize the elevators, using skilled personnel in strict accordance with the final accepted shop drawings and other submittals.
2. Comply with the code, manufacturer's instructions, and recommendations.

3. Coordinate work with the work of other building functions for proper time and sequence to avoid delays and to ensure right-of-way of system. Use lines and levels to ensure dimensional coordination of the work.
4. Accurately and rigidly secure supporting elements within the shaftways to the encountered construction within the tolerance established.
5. Provide and install motor, switch, control, safety and maintenance and operating devices in strict accordance with the submitted wiring diagrams and applicable codes and regulations having jurisdiction.
6. Ensure sill-to-sill running clearances do not exceed one and one-quarter inches (1-1/4") at all landings served.
7. Arrange door tracks and sheaves so that no metal-to-metal contact exists.
8. Reinforce hoistway fascia to allow not more than half an inch (1/2") of deflection.
9. Install elevator cab enclosure on platform plumb and align cab entrance with hoistway entrances.
10. Sound isolate cab enclosure from car structure. Allow no direct rigid connections between enclosure and car structure and between platform and car structure.
11. Isolate cab fan from canopy to minimize vibration and noise.
12. Remove oil, dirt and impurities and give a factory coat of rust inhibitive paint to all exposed surfaces of struts, hanger supports, covers, fascias, toe guards, dust covers and other ferrous metal.
13. Prehang traveling cables for at least twenty-four (24) hours with ends suitably weighted to eliminate twisting after installation.
14. Pack openings around oil line with fire resistant, sound isolating glass or mineral wool.
15. Provide isolation pad between platen head and car structure.
16. Set jack unit plumb in waterproof hole and bolt it to mounting channels in the pit.
17. Sound isolate pump units and controllers from building structure.
18. After installation, touch up in the field, surfaces of shop primed elements which have become scratched or damaged.
19. Lubricate operating parts of system as recommended by the manufacturer.

B. Project Phasing

1. Phase I - Final design development and contractors' preliminary work procedures to be completed within four (4) weeks from date of contract award.
  - a. Prevailing conditions review and layout.
  - b. Selection meeting for aesthetic design and finishes with University's designee.
  - c. Filing for required permits or other governing authorities work procedure requirements.
2. Phase II - Submittal approvals and confirmations shall be completed within eight (8) weeks from date of contract award.
  - a. Selection confirmations.
  - b. Manufacturer's shop drawings applicable, i.e., fixtures, cab, machine room layouts, doors, etc.
  - c. Engineering data acknowledgment applicable, i.e., power, heat, structural loads.

- d. Delivery dates for major component suppliers, i.e., controls, machinery, fixtures, cabs, etc.
  - e. Posting of permits or other governing agency authorizations to proceed.
  - f. Proposed work implementation schedule based on the aforementioned procedures/confirmations.
3. Phase III - Mobilization of Final Design Approvals
    - a. Revision confirmations. (Equipment, etc.)
    - b. Preliminary work procedures.
    - c. Schedule confirmations.
  4. Phase IV – Implementation
    - a. Modernize one (1) elevator at a time utilizing a full-time team of elevator mechanics.
  5. Contractor shall provide a project schedule as part of the Bid based on the following:
    - a. Include three (3) days of simulated operation, with or without door operation, while not allowing passenger use.
    - b. Consultant punch list inspection report shall be performed after acceptance testing by the AHJ for each individual elevator.
    - c. Contractor shall complete all punch list items issued by both the AHJ and the Consultant prior to turn-over for beneficial use by the University and removal of the next elevator for modernization.
- C. Removal of Elevators
1. If extenuating circumstances (i.e. separating controller interconnections, inspection, testing, etc.), require that multiple cars of a single elevator group be removed from service simultaneously, the work shall be performed outside of the normal business hours at a time mutually agreed to by the University and Contractor.
  2. A minimum of five (5) days advance written notice shall be given to the University and Elevator Consultant by the Contractor detailing the reasons for the simultaneous removal of the elevators from service along with the estimated out-of-service time.
  3. The request shall be subject to review by the Elevator Consultant and approved by the University prior to the commencement of the work.
  4. Costs for this work in addition to associated expenses shall be included as part of the base bid pricing.

### 3.3 FIELD QUALITY CONTROL

#### A. Inspection and Testing

1. Upon completion of each work phase or individual elevator specified herein, the Contractor shall, at its own expense, arrange and assist with inspection and testing as may be required by the A.H.J. in order to secure a Certificate of Operation.

B. Substantial Completion

1. The work shall be deemed “Substantially Complete” for an individual unit or group of units when, in the opinion of the Consultant, the unit is complete, such that there are no material and substantial variations from the Contract Documents, and the unit is fit for its intended purpose.
2. Governing authority testing shall be completed and approved in conjunction with inspection for operation of the unit; a certificate of operation or other required documentation issued; and remaining items mandated for final acceptance completion are limited to minor punch list work not incorporating any life safety deficiencies.
3. The issuance of a substantial completion notification shall not relieve the Contractor from its obligations hereunder to complete the work.
4. Final completion cannot be achieved until all deliverables, including but not limited to training, spare parts, manuals, and other documentation requirements, have been completed.

C. Contractor’s Superintendent

1. The Contractor shall assign a competent project superintendent during the work progress and any necessary assistant, all satisfactory to the University. The superintendent shall represent the Contractor and all instructions given to him shall be as binding as if given to the Contractor.

### 3.4 PROTECTION / CLEANING

A. Protection and Cleaning

1. Adequately protect surfaces against accumulation of paint, mortar, mastic and disfiguration or discoloration and damage during shipment and installation.
2. Upon completion, remove protection from finished surfaces and thoroughly clean and polish surfaces with due regard to the type of material. Work shall be free from discoloration, scratches, dents, and other surface defects.
3. The finished installation shall be free of defects.
4. Before final completion and acceptance, repair and/or replace defective work, to the satisfaction of the University, at no additional cost.
5. Remove tools, equipment, and surplus materials from the site.

B. Barricades and Hoistway Screening

1. The Contractor shall provide barricades where necessary in order to maintain adequate protection of areas in which work specified by the Contract Documents is being



performed, including open hoistway entrances. Fabrication and erection as all barricades shall be in compliance with applicable OSHA regulations.

2. As required, the Contractor shall provide temporary wire mesh screening in the hoistway and of any elevator undergoing work specified in the Contract Documents. This screening shall be installed in such a manner as to completely segregate the hoistway from that of adjacent elevators. Screening shall be constructed from forty-one thousandths inch (.041") diameter wire in a pattern that rejects passage of a one inch (1") diameter ball.

### 3.5 DEMONSTRATION

#### A. Performance and Operating Requirements

1. Passenger elevators shall be adjusted to meet the following performance requirements:
  - a. Speed within five percent (5 %) of rated speed in the up direction under any loading condition.
  - b. Leveling: within one-quarter inch (1/4") as measured between the car entrance threshold and the landing sill on any given floor under any loading condition.
  - c. Typical Floor-to-Floor Time: (Recorded from the doors start to close on one [1] floor until they are three-quarters [3/4] open at the next floor) under various loading conditions.

Passenger Elevators	15.0-17.0 seconds.
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- d. Door Operating Times

Door Type	Opening	Closing
42" center opening	2.1 sec.	2.4 sec.
42" side opening	3.1 sec.	4.0 sec.
42" 2 speed side opening	2.4 sec.	3.7 sec.

- e. Door dwell time for hall calls: 4.0 sec with Advance lantern signals.
- f. Door dwell time for hall calls: 5.0 sec without Advance lantern signals.
- g. Door dwell time for car calls: 3.0 seconds.
- h. Reduced non-interference dwell time: 1.0 seconds.

2. Maintain the following ride quality requirements for the passenger elevators:

- a. Noise levels inside the car shall not exceed the following:
  - 1) Car at rest with doors closed and fan off - 40 dba.
  - 2) Car at rest with doors closed, fan running - 55 dba.

- 3) Car running at high speed, fan off - 50 dba.
- 4) Door in operation - 60 dba.

b. Vertical and horizontal accelerations shall not exceed 14 milli-g and horizontal accelerations shall not exceed 20 milli-g.

- 1) The accelerometer used for this testing shall be capable of measuring and recording acceleration to nearest 0.01 m/s (1 milli-g) in the range of 0-2 m/s over a frequency range from 0-80 Hz with ISO 8041 filter weights applied. Accelerometer should provide contact with the floor similar to foot pressure, 60 kPA (8.7psi).

c. The maximum jerk rate shall be one and a half (1.5) to two (2.0) times the acceleration and deceleration.

d. The maximum velocity which the elevator achieves in either direction of travel while operating under load conditions that vary between empty car and full rated load shall be within three percent (3 %) of the rated speed.

#### B. Acceptance Testing

1. Comply with the requirements of Division 01.
2. The Contractor shall provide at least five (5) days prior written notice to the University and Consultant regarding the exact date on which work specified in the Contract Documents will reach completion on any single unit of vertical transportation equipment.
3. In addition to conducting whatever testing procedures may be required by local inspecting authorities in order to gain approval of the completed work, and before seeking approval of said work by the University, the Contractor shall perform certain other tests in the presence of the Consultant.
4. The Contractor shall provide test instruments, test weights, and qualified field labor as required to safely operate the unit under load conditions that vary from empty to full rated load and, in so doing, to successfully demonstrate compliance with applicable performance standards set forth in the project specifications with regard to:
  - a. Operation of safety devices.
  - b. Sustained high-speed velocity of the elevator in either direction of travel.
  - c. Brake-to-brake running time and floor-to-floor time between adjacent floors.
  - d. Floor leveling accuracy.
  - e. Door opening/closing and dwell times.
  - f. Ride quality inside the elevator car.
  - g. Communication system.
  - h. Load settings at which anti-nuisance, load dispatch, and load non-stop features are activated.
5. Upon completion of work specified in the Contract Documents on the last car in any group of elevators, and in conjunction with the aforementioned testing procedures, the Contractor shall carry out additional testing of group dispatch/supervisory control features in the presence of the Consultant.

6. The Contractor shall provide test instruments and qualified field labor as required to successfully demonstrate:
  - a. The back-up operating mode for group dispatch failure.
  - b. Firefighter, attendant and independent service operations.
  - c. Restricted access security features and card reader controls.
  - d. Zoning operations and floor parking assignments.
7. After hour tests of systems such as emergency generators, fire service, and security systems shall be conducted at no extra cost to the University.

END OF SPECIFICATION

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SECTION 23 00 00  
HEATING, VENTILATING, AND AIR CONDITIONING

**A. GENERAL**

1. Type of Systems preferred by building type:
  - a. **Classrooms & Offices:** Variable Air Volume (VAV) with hot water reheat or chilled beams.
  - b. **Research or Lab Buildings:** VAV with Hot water reheat and energy recovery, central VAV exhaust system. Constant volume exhaust is not permitted.
  - c. **Large Auditorium or places of assembly (arenas):** Single zone VAV with pre-heat, cooling and reheat.
  - d. **Dormitories:** Dedicated Outside Air System with Fan coil units in student rooms. Common areas should have central system VAV.
  - e. **Libraries, Art Museums and Archival Spaces:** VAV with hot water re-heat or chilled beam. Consider humidity controls.
  
2. Climate Data:
  - a. For cooling design utilize the 1% Monthly Design Dry Bulb and Mean Coincident Wet Bulb Temperatures as listed in ASHRAE's latest Handbook of Fundamentals for the month of July.
  - b. For heating design utilize the Extreme Annual Design Conditions (return frequency of 5 years) as listed in ASHRAE's latest Handbook of Fundamentals.
  - c. Design Conditions capacity for 95°F DB/ 76°F WB for summer and -10°F for winter.
  
3. Indoor Design Conditions
  - a. On large projects follow the requirements outlined by the Bureau of Facility programming and Utilization for specific applications
  - b. For projects where no other direction is given, design for the following: Dry Bulb Temperature: 75 F Degrees, with a minimum relative humidity of 30% (in winter)
  - c. Refer to the latest edition of guide for care and use of lab animals when required.
  
4. Operating control setpoints shall be as follows:
  - a. Comfort areas such as general office/classrooms
    - i. Occupied: 68 heating, 78 cooling
    - ii. Unoccupied: 60 heating, 82 cooling
  - b. Dormitory rooms
    - i. Occupant adjustable: heating 68 – 72, cooling 74 – 78
  - c. Laboratory and other research spaces
    - i. Consult with IU Engineering Services for set points.
  
5. HVAC System Noise Levels:

- a. Per ASHRAE Noise and Vibration Control Guidelines, noise levels due to the building HVAC system must **not** exceed the following:
    - ii. Classrooms NC35
    - iii. Private Offices NC35
    - iv. Open Plan Offices NC40
    - v. Recital Halls NC20
    - vi. Libraries NC35
    - vii. Laboratories NC50
  - b. On projects where noise data presented by the user or the IU Space Planning differs from that listed above, comply with the more stringent requirement.
6. General Air Systems Design:
- a. Ducted return air is preferred, plenum return air is acceptable.
  - b. Plenum return air:
    - i. At minimum, extend return air duct to each floor plenum
    - ii. Balance return air at each floor.
    - iii. Verify return air path from each individual space to common return air inlet on that floor. Pay attention to walls that go to deck.
    - iv. Provide internally insulated Z-boot or L-boot to return air from individual space for privacy purposes.
  - c. Non ducted means of relief air is not preferred.
  - d. Design for overall building to be positively pressurized.
  - e. Lab exhaust systems shall be VAV type. Constant volume lab exhaust systems are not preferred.
  - f. Provide air side economizer. Exceptions could be taken for museum and archival type of buildings needed tight humidity controls.
  - g. Provide minimum MERV 13 filters for AHU.
  - h. Lab exhaust systems must be on emergency power.
7. Mechanical designer shall ensure all HVAC devices are serviceable and show clearances in contract documents.
8. All drawing sets shall include:  
Coordinated single line diagrams shall include both existing and new work as applicable:
- **Overall building airflow diagrams** showing relationships of air handling units, exhaust fans, duct risers and mains, primary dampers, and air balance /pressure relationships.
  - **Overall building hydronic and steam system diagrams** showing interrelationships of main heating/cooling plant equipment or central utility source, heat exchangers, pumps, pipe risers and mains and primary isolation and control valves.
  - *Diagrams shall include connected and cumulative design capacities and flow rates for final construction documents*
9. The implementation of the overall system design must meet the needs and be appropriate for the requirements of the individual spaces.
10. Equipment and controls should **not** be experimental in nature but proven and accepted in

the industry.

11. Provide 4" concrete pad for floor mounted equipment.
12. Provide outdoor air in accordance with the current edition of the Indiana Mechanical Code.
13. Provide all hardware and controls required to utilize outdoor air for "free" cooling in compliance with the latest edition of the Indiana Energy Code.
14. A separate power feed must be provided for lights and receptacles. Lights and receptacles must still be operable when main AHU is disconnected.
15. Contract documents must include labels for all devices and concealed device locations.
16. Use re-circulation air when possible as dictated by LEED standards especially in lab buildings
17. Louvers shall be sized for low velocity (<500 fpm) through free area.

### **C. PACKAGED ROOFTOP AIR CONDITIONING UNITS**

1. Use packaged rooftop HVAC units on small buildings with relatively low loads and when the central chilled water loop is **not** easily accessible.
2. Rooftop units should be hidden from view of passersby at ground level, but in a location that is easily accessed and maintained.
3. Heat Pumps:
  - a. Install heat pumps for heating/cooling duties when central steam or gas is not available.
  - b. Supplementary heat may be required. Use hot water for supplementary heat if economic and available, otherwise use electricity.
4. Consult with IU Engineering Services prior to specification of rooftop HVAC units.
5. Fan Arrays:
  - a. Fan arrays may only be considered for projects where single fan or dual fans are **not** feasible.
  - b. Fan arrays must be direct drive.
  - c. Back up VFD is required to be wired to system as immediate backup to main fan array VFD.
  - d. IU Engineering Services must be consulted prior to design on any project with a fan array.
  - e. Manual close offs for multi fan systems, back draft or motorized dampers with end switches, are **not** preferred

### **G. COILS**



1. General
  - a. All pipe connections including drain and vents shall extend beyond exterior of the unit
  - b. Coils to be individually racked, designed for each coil to be individually removed.
2. Air Heating/Cooling Coils
  - a. Coils shall be cartage style removable from the header side of the casing.
  - b. Stainless steel coil frames are preferred.
  - c. Cooling coil header shall be located above drain pan.
3. Steam Coils
  - a. Use copper tubes and aluminum fins.
  - b. 8 fins per inch maximum is preferred.
  - c. Provide vacuum breakers, steel headers.
  - d. Steam coils with integral face and by-pass dampers are preferred in all outside air systems.
  - e. Vertical Integral Face Bypass (VIFB):
    - i. VIFB type coils are required.
    - ii. Do **not** use dissimilar metals for tubes and condensate header.
    - iii. Shall be constructed for modulating steam applications.
  - f. Steam and condensate headers shall be outside air stream.
4. Water Coils, Glycol Coils
  - a. Copper tubes and aluminum fins, headers of copper seamless tube.
  - b. 8 fins per inch maximum is preferred.
  - c. Fins:
    - i. Specify straight or wavy fins for heating coils to facilitate cleaning.
    - ii. Do **not** specify fins with slits.
  - d. Air velocity across cooling coil **not** to exceed an average of 450 feet per minute.
  - e. Pipe water and air flow must be in counter flow arrangement.
  - f. Provide balancing valve for each section of coil.
  - g. Corrosive environments require stainless steel tubes and fins, or factory coated tubes and fins. Field coating is **not** permitted.
5. Refrigerant Coils
  - a. Utilize copper tubes and aluminum fins or 100% aluminum tubes and fins.
6. Electric Coils
  - a. Electric coils are **not** preferred.
  - b. If Electric Coils Are Required for Air Handling Units:
    - i. Use finned tubular coils.
    - ii. Modulate heat output by varying the number of coils turned on in incremental sequence.
    - iii. SCR controllers are preferred.
  - c. If Electric Coils Are Required for VAV Boxes:
    - i. Specify open wire type, 80% Nickel, 20% Chromium resistance coils except 100% outside air.

## H. AIR FILTERS

1. General:
  - a. All air filters must meet or exceed the application guidelines in ASHRAE Standard 52.2
  - b. Do **not** use passive or active electrostatic filter technology.
  - c. Central Station Air Handling units : Minimum 2” pre-filter MERV 8 pre- filters and MERV 13 or higher final filter
2. For Surgery Suites, Clean Rooms, and Rooms Containing Nuclear or Hazardous Biological Material: Use disposable type HEPA filters with a HEPA efficiency of 99.97% or greater on 0.3 microns.
3. For Laboratories, Research Areas, Computer and Data Processing Areas, General Medical Areas, and Libraries: Specify pleated disposable type filters with a MERV rating of 13 or greater.
4. For Classrooms, Meeting Areas, and Office Areas: Specify pleated throw-away type filters with a MERV rating of 13.
5. Dorm rooms: Fan coil units and all other areas: MERV 13 is preferred, specify a pleated throwaway type of filter with a minimum MERV rating of 8.
6. For All Other Areas: Specify a pleated disposable air filter with a MERV rating no less than 8.

## J. HUMIDIFICATION

1. General:
  - a. Consult IU Engineering Services to confirm if humidification is required or not.
  - b. Office, classroom, dining, dorms, gymnasiums, and athletic facilities typically do not require humidification
  - c. Ensure appropriate steam absorption distances are maintained to avoid condensation.
  - d. Provide steam-to-steam exchanger to generate steam that is free of boiler treatment chemicals.
  - e. Provide reverse osmosis (RO) water systems (to pretreat city water at) for steam generators Art/ Museum or archival facilities.
  - f. All steam-to-steam exchangers need automatic blow down.
  - g. Pressure vessel type exchanger shall be ASME pressure vessel with copper shell lining, copper tubes and heads, and insulated shell.
  - h. Non-pressure type exchanger shall be stainless steel construction with copper tubes and heads, insulated cabinet, and surface skimmer.
  - i. Interlock humidifier control with air handler control so that humidifier shuts down whenever air handler fan is off.

- j. Distribution tubes used in humidifier absorption manifolds must be insulated to reduce condensation rate.
    - k. Provide automatic drain down based on total dissolved solids.
  2. Campus Steam injection is the preferred method of spacehumidification.
    - a. Provide humidification utilizing campus steam for:
      - i. Research Buildings
      - ii. Music Buildings
      - iii. Science Buildings
    - b. Provide humidification clean steam for:
      - i. Arts Buildings
      - ii. Museums and archival spaces

## **K. DEHUMIDIFICATION**

1. Ensure all AHUs have a dehumidification sequence programmed during start up.
2. Use dehumidifiers only for process or critical conditions.
3. Chilled water is preferred method for de-humidification. Dehumidification systems with direct expansion with a compressor refrigerant coil upon approval.
4. Desiccant dehumidification using rotary enthalpy heat exchangers or heat wheels should be considered.
5. Consult IU Engineering Services for the use of DX or desiccant dehumidification

## **L. FAN COIL UNITS (FCU)**

1. General: Used for limited area square footage. Shall not be used for entire building heating and cooling system, except for dorm buildings.
2. Fan coil units are defined as being 1000CFM or below.
3. Provide an inlet grille to prevent dislodging of filter. Filters shall be easily removable.
4. High efficiency electronically commutated motors (ECM) should be specified, direct driven preferred.
5. Coils:
  - a. Use high-temperature rise coils.
  - b. If ventilation is required, dedicated outside air system (DOAS) pretreatment is required.
6. Enclosure Fasteners: Use tamper-resistant fasteners for applications in dorms or apartments.

7. Use corrosion-proof insulated drip pans.
8. Use vertical hi-rise type FCU for dormrooms
  - a. Do **not** locate piping accessories like control valves, balance valve, shutoff valve etc., within FCU enclosure. Separate metal enclosure or chase is acceptable and should be appropriately accessible.
  - b. All rigid piping to be terminated outside FCU enclosure by manufacturer. Do not locate flexible hose or connections inside of FCU.
  - c. All penetrations through FCU enclosure must be sealed airtight.
  - d. Provide fresh air directly to student rooms.
  - e. Provide condensate drain and clean out for risers. Minimum riser size shall be 1”.
9. Provide fresh air utilizing Dedicated outside air system (DOAS) pretreatment. Direct outside air to FCU is **not** allowed.
10. Do not specify unit controls and valves by FCU manufacturer.
11. Provide individual isolation valves for each FCU.
12. Provide DDC controls.
13. FCU Unit Insulation:
  - a. Double wall metal liner is preferred, closed -cell insulation is acceptable.
  - b. All metal and insulation backing exposed to air flow needs to:
    - i. Comply with NFPA Standard 259 for combustion resistance,
    - ii. Be corrosion resistant,
    - iii. Be fungi resistant,
    - iv. Be temperature resistant,
    - v. Be erosion resistant.
    - vi. **Not** absorb water.
    - vii. **Not** produce an objectionable odor.
  - c. Fiberglass duct liner is **not** acceptable.
14. Show clearance space for each FCU on the design drawings.

#### **M. UNIT HEATERS (UH)**

1. **Not** preferred.
2. When required:
  - i. Consider noise, freeze potential, aesthetics and must be easily maintainable.
  - ii. Direct digital controls (DDC) are preferred.
  - iii. Do not specify unit controls and valves by UH Manufacturer
3. Provide individual isolation valves for each UH.

4. Consider use of ECM.

#### **N. TERMINAL UNITS**

1. Use hot water reheat where available, electric reheat is not preferred.
2. Use Direct Digital Controls (DDC) and provide electric actuation. .
3. Fan Powered Boxes:
  - a. **Not** preferred.
  - b. If fan powered boxes are required: Use direct drive motors. Consult IU Engineering Services for approval prior to design.
  - c. Carefully consider parallel in lieu of series type boxes.
4. Terminal Units should be pressure independent type provided with pressure tabs and air flow curve for making air flow and pressure measurements for testing and balancing purposes.
5. Terminal Unit Insulation:
  - a. Double wall metal liner is preferred, closed -cell insulation is acceptable.
  - b. All metal and insulation backing exposed to air flow needs to:
    - i. Comply with NFPA Standard 259 for combustion resistance,
    - ii. Be corrosion resistant,
    - iii. Be fungi resistant,
    - iv. Be temperature resistant,
    - v. Be erosion resistant.
    - vi. **Not** absorb water.
    - vii. **Not** produce an objectionable odor.
  - c. Fiberglass duct liner is **not** acceptable.
6. Provide discharge air temperature sensor.
7. Show clearance space for each terminal unit on the design drawings.

#### **O. DUCTWORK**

1. Ductwork for Air Conditioning and Ventilation:
  - a. Follow SMACNA design and construction standards.
  - b. Material: ASTM A653/A653M galvanized steel sheet, lock forming quality, having zinc coating of 1.25 oz. Per sq. ft. for each side in conformance with ASTM G9
  - c. Reinforce ductwork externally.
  - d. All ductworks shall be tested for leaks prior to installation of insulation
  - e. Elbows:
    - i. Design elbows and turns in ductwork to have throat radii **not** less than the 150% of the diameter or width of the duct.
    - ii. Where there is insufficient clearance to allow this minimum radius,

use square elbows with single sheet, single thickness, and factory fabricated turning vanes.

- f. Smoke Detectors Should Be Installed to Comply with Local Codes and In General as Follows:
- i. **Units below 2000 CFM**; smoke detectors not required.
  - ii. **Units above 2000 CFM and below 15000 CFM**: Per *Indiana Mechanical Code* - Install one smoke detector at the unit. Smoke detectors shall be installed in the return air duct or plenum upstream of any filters, exhaust air connections, outdoor air connections, or decontamination equipment and appliances.
  - iii. **Units 15000 CFM and above**: Per *Indiana Mechanical Code* - Where return air risers serve two or more stories and serve any portion of a return air system, smoke detectors shall be installed at each story. Such smoke detectors shall be located upstream of the connection between the return air riser and any air ducts or plenums.
  - iv. Refer to Electrical standards for smoke detector tie into IU BMS systems

**P. Flexible Ductwork:**

1. Material: Flexible ducts shall conform to UL 18
2. Shall only be used going from a main to a diffuser.
3. Flex duct **not** allowed on inlet to terminal units.
4. Flex duct shall be fastened with metal banding. Connections with tape are **not** allowed.
5. Length of flexible duct to an air outlet **not** to exceed 6 feet.
6. Do **not** use flexible duct for exhaust and return system.

**Q. Special Ductwork:**

1. Chemical Fume Hood Ductwork:
  - a. Construct using stainless steel, PVC coated steel or solid PVC as required for the type of service.
2. Perchloric Acid Hood Ductwork:
  - a. Construct using welded stainless steel and install with a complete wash down and drain system.
  - b. Perchloric acid exhaust systems shall be independent of other building exhaust systems.
3. Radioisotope Hood Ductwork:
  - a. Must be on a separate exhaust system from other hoods and have stainless steel ducts.
  - b. Make provision for filters to be installed at hood outlet if required and select the fan accordingly.
4. Acid Digestion Type Exhaust Systems:
  - a. Use solid PVC ductwork shall be specified for acid digestion type exhaust systems.
5. Dishwasher, Cage Washer and All Other Wet Exhaust System Ductwork:
  - a. Use welded stainless steel sealed watertight and sloped to drain connections at low points.
  - b. Duct section joints shall be welded.

- c. Flange construction shall be bolted with silicone foam rubber gasketing.

**R. Flexible Connections:**

1. Connect inlet and outlet ductwork to fans and air handlers with flexible duct connections.

**S. Duct Hangers and Supports:**

1. Support ductwork in accordance with the SMACNA Duct Construction Standards.
2. Hangers and supports must **not** block duct access doors or any service or maintenance items.

**T. Duct Access Doors:**

1. Hinged-type access doors or panels are preferred in ductwork for maintenance and service of filters, heating coils, sound-traps, volume dampers, fire dampers, humidifiers, etc. Coordinate location of inaccessible equipment with Architect.
2. Provide a minimum 24" x 24" access door in inaccessible ceilings and walls for access to mechanical equipment.
3. Provide for service access to airflow measuring stations and duct mounted reheat coils.
  - d. Provide duct access panels in supply air and return air main trunk ducts in locations spaced approximately 40 feet apart to allow for future duct cleaning.
  - e. All access doors must have tool-less entry.

**7. Ductwork Insulation:**

**a. General:**

- i. Internal duct insulation is **not** allowed.
- ii. Cover all insulation joints with 3" wide foil reinforced kraft sealing tape. Secure insulation tightly to ductwork with all circumferential joints butted and all longitudinal joints overlapped a minimum of 2".
- iii. Sealants, mastics and adhesives shall be as recommended by the insulation manufacturer.
- iv. Vapor barrier jackets shall be applied with a continuous, unbroken vapor seal.
- v. All ductwork shall be tested for leaks prior to installation of insulation.
- vi. Contractor shall repair any existing duct insulation damaged during construction.

**b. Ductwork Inside of Building:**

- i. Supply & Ductwork (if applicable to return as needed).
  - Insulation shall be 1-1/2" thick blanket glass fiber insulation with a .75 pcf density, thermal conductivity of 0.29 @ 75°F and FSK facing. Install insulation per manufacturer instructions.
  - Flexible Supply Duct insulation shall be flexible glass fiber insulation, enclosed by seamless aluminum pigmented plastic vapor barrier jacket; maximum 0.23 K value @ 75°F.

8. Outside Air Ductwork:
  - a. Rigid fiberglass board or Flexible fiberglass insulation. Cover with Foil-Scrim- Kraft (FSK) jacket. Insulation must be aluminum jacketed.
  - b. Thickness of insulation on outside air duct and plenum shall be 2 inches.
  - c. Insulation thickness on supply-air shall be 1 1/2 inches, increased to 2 inches in machine rooms.
  
9. Ductwork Outside of Building:
  - a. Insulation shall be 4" thick rigid board glass fiber insulation with a 6 pcf density, thermal conductivity of 0.23, FSK facing and a vapor permeance of 0.02 perms. Install insulation per manufacturer's instructions.
  - b. Ductwork shall have 0.016" thick aluminum jacket. Metal jacket shall be overlapped 2" and each overlap sealed with Benjamin Foster 30-45 sealant. Bands shall be installed at each overlap. Do **not** use screws to secure jacket.
  - c. Install insulation and aluminum jacket with a minimum 1/8" per foot slope from the center of the ductwork to the outside edge so that water cannot pool on the ductwork.
  - d. Installation:
    - i. When required, all supply and return ducts shall be insulated externally.
    - ii. Installation of interior duct insulation as acoustic lining is prohibited except on transfer ducts not connected to fansystems.
    - iii. Manufacturers' recommendations for installation should be followed.
    - iv. A vapor barrier is required on all air ductwork operating at temperatures below ambient

#### **P. DIFFUSERS AND GRILLES**

1. Should be 25 NC and below.
2. Select diffusers based on both heating and cooling air patterns, verify the throw and spread.
3. Square or round plaque diffusers are required in offices/conference rooms with ceilings 10 feet and below.
4. Supply and Return slots around lights are **not** acceptable.

#### **Q. VIBRATION ISOLATION**

1. General
  - a. Evaluate the project specific need for vibration isolation on pumps, piping, ductwork and rotating equipment.
  
2. Equipment Base Isolators
  - a. All equipment base isolators shall have a vibration transmissibility of less than 20%.



3. Noise

- a. Specify stainless steel flexible connections at pump inlet and outlet to prevent noise transmission from the pump to the hydronic pipework.
- b. Fans and air handling units shall be isolated with spring type isolators to meet the following requirements:

<u>Fan Speed</u>	<u>Allowable Transmissio n</u>
0 to 450 rpm	20%
450 to 850 rpm	10%
850 rpm and over	5%

4. Concrete Inertia-Block Bases

- a. Use concrete filled inertia block bases on the following equipment:
  - i. All rotating HVAC equipment located in mechanical penthouses or not slab on grade
  - ii. Evaluate requirements for all rotating HVAC equipment.

**R. BALANCING**

- 1. The HVAC system design must incorporate means for balancing air and water systems. Such means include dampers, temperature and pressure test connections, and balancing valves.
- 2. The specifications shall require a contractor independent of the installing contractor be procured for testing and balancing air and hydronic systems.
- 3. The balancing subcontractor should be AABC or NEBB certified.
- 4. Consultant must review and approve the Test and Balance (TAB) report prior to project completion.

## SECTION 230500 - COMMON WORK RESULTS FOR HVAC

### PART 1 - GENERAL

#### 1.1 SUMMARY

##### A. Section Includes:

1. Motors.
2. Sleeves without waterstop.
3. Sleeves with waterstop.
4. Stack-sleeve fittings.
5. Sleeve-seal systems.
6. Grout.
7. Silicone sealants.
8. Escutcheons.

#### 1.2 ACTION SUBMITTALS

##### A. Product Data:

1. For each type of product, excluding motors which are included in Part 1 of HVAC equipment Sections.
  - a. Include construction details, material descriptions, and dimensions of individual components, and finishes.
  - b. Include operating characteristics and furnished accessories.

#### 1.3 COORDINATION

##### A. Coordinate features of motors, installed units, and accessory devices to be compatible with the following:

1. Motor controllers.
2. Torque, speed, and horsepower requirements of the load.
3. Ratings and characteristics of supply circuit and required control sequence.
4. Ambient and environmental conditions of installation location.

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## PART 2 - PRODUCTS

### 2.1 MOTORS

#### A. Motor Requirements, General:

1. Content includes motors for use on alternating-current power systems of up to 600 V and installed at equipment manufacturer's factory or shipped separately by equipment manufacturer for field installation.
2. Comply with requirements in this Section except when stricter requirements are specified in equipment schedules or Sections.
3. Comply with NEMA MG 1 unless otherwise indicated.

#### B. Motor Characteristics:

1. Duty: Continuous duty at ambient temperature of 40 deg C and at altitude of 3300 ft. above sea level.
2. Capacity and Torque Characteristics: Sufficient to start, accelerate, and operate connected loads at designated speeds, at installed altitude and environment, with indicated operating sequence, and without exceeding nameplate ratings or considering service factor.

#### C. Single-Phase Motors:

1. Motors larger than 1/20 hp must be one of the following, to suit starting torque and requirements of specific motor application:
  - a. Permanent-split capacitor.
  - b. Split phase.
  - c. Capacitor start, inductor run.
  - d. Capacitor start, capacitor run.
2. Multispeed Motors: Variable-torque, permanent-split-capacitor type.
3. Bearings: Prelubricated, antifriction ball bearings or sleeve bearings suitable for radial and thrust loading.
4. Motors 1/20 hp and Smaller: Shaded-pole type.
5. Thermal Protection: Internal protection to automatically open power supply circuit to motor when winding temperature exceeds a safe value calibrated to temperature rating of motor insulation. Thermal-protection device will automatically reset when motor temperature returns to normal range.

#### D. Electronically Commutated Motors:

1. Microprocessor-Based Electronic Control Module: Converts 120 V single-phase AC power to three-phase DC power to operate the brushless DC motor.
2. Three-phase power motor module with permanent magnet rotor.
3. digital speed controller/LED display.
4. Building Automation System Interface: Via Digital Serial Interface (DSI).

## 2.2 SLEEVES AND SLEEVE SEALS

### A. Sleeves without Waterstop:

1. Steel Pipe Sleeves: ASTM A53/A53M, Type E, Grade B, Schedule 40, hot-dip galvanized, with plain ends.
2. Steel Sheet Sleeves: ASTM A653/A653M, 24 gauge minimum thickness; hot-dip galvanized, round tube closed with welded longitudinal joint.

### B. Sleeves with Waterstop:

1. Description: Manufactured galvanized-steel, sleeve-type, waterstop assembly, made for imbedding in concrete slab or wall.

### C. Stack-Sleeve Fittings:

1. Description: Manufactured, galvanized cast-iron sleeve with integral cast flashing flange for use in waterproof floors and roofs. Include clamping ring, bolts, and nuts for membrane flashing.
  - a. Underdeck Clamp: Clamping ring with setscrews.

### D. Sleeve-Seal Systems:

1. Description: Modular sealing-element unit, designed for field assembly, for filling annular space between piping and sleeve.
  - a. Hydrostatic seal: 20 psig.
  - b. Sealing Elements: EPDM-rubber interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size.
  - c. Pressure Plates: Carbon steel .
  - d. Connecting Bolts and Nuts: Carbon steel, with zinc coating. ASTM B633 of length required to secure pressure plates to sealing elements.

### E. Grout:

1. Description: Nonshrink, for interior and exterior sealing openings in non-fire-rated walls or floors.
2. Standard: ASTM C1107/C1107M, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.
3. Design Mix: 5000 psi, 28-day compressive strength.
4. Packaging: Premixed and factory packaged.

### F. Silicone Sealants:

1. Silicone Sealant, S, NS, 25, NT: Single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant.
  - a. Standard: ASTM C920, Type S, Grade NS, Class 25, Use NT.

## 2.3 ESCUTCHEONS

### A. Escutcheon Types:

1. One-Piece, Steel Type: With polished, chrome-plated finish and setscrew fastener.
2. One-Piece, Cast-Brass Type: With polished, chrome-plated finish and setscrew fastener.

### B. Floor Plates:

1. Split Floor Plates: Steel with concealed hinge.

## PART 3 - EXECUTION

### 3.1 INSTALLATION OF SLEEVES - GENERAL

#### A. Install sleeves for piping passing through penetrations in floors, partitions, roofs, and walls.

#### B. For sleeves that will have sleeve-seal system installed, select sleeves of size large enough to provide 1-inch annular clear space between piping and concrete slabs and walls.

1. Sleeves are not required for core-drilled holes.

#### C. Install sleeves in concrete floors, concrete roof slabs, and concrete walls as new slabs and walls are constructed.

1. Cut sleeves to length for mounting flush with both surfaces.
  - a. Extend sleeves installed in floors of mechanical equipment areas or other wet areas 2 inches above finished floor level.
2. Using grout or silicone sealant, seal space outside of sleeves in floors/slabs/walls without sleeve-seal system. Select to maintain fire resistance of floor/slab/wall.

#### D. Install sleeves for pipes passing through interior partitions.

1. Cut sleeves to length for mounting flush with both surfaces.
2. Seal annular space between sleeve and piping or piping insulation; use joint sealants that joint sealant manufacturer's literature indicates is appropriate for size, depth, and location of joint.

#### E. Fire-Resistance-Rated Penetrations, Horizontal Assembly Penetrations, and Smoke-Barrier Penetrations: Maintain indicated fire or smoke rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with fire- and smoke-stop materials. Comply with requirements for firestopping and fill materials specified in Section 078413 "Penetration Firestopping."

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### 3.2 INSTALLATION OF SLEEVES WITH WATERSTOP

- A. Install sleeve with waterstop as new walls and slabs are constructed.
- B. Assemble fitting components of length to be flush with both surfaces of concrete slabs and walls. Position waterstop flange centered across width of concrete slab or wall.
- C. Secure nailing flanges to wooden concrete forms.
- D. Using grout or silicone sealant, seal space around outside of sleeves.

### 3.3 INSTALLATION OF STACK-SLEEVE FITTINGS

- A. Install stack-sleeve fittings in new slabs as slabs are constructed.
  - 1. Install fittings that are large enough to provide 1/4-inch annular clear space between sleeve and pipe or pipe insulation.
  - 2. Secure flashing between clamping flanges for pipes penetrating floors with membrane waterproofing. Comply with requirements for flashing specified in Section 076200 "Sheet Metal Flashing and Trim."
  - 3. Install section of cast-iron soil pipe to extend sleeve to 3 inches above finished floor level.
  - 4. Extend cast-iron sleeve fittings below floor slab as required to secure clamping ring if ring is specified.
  - 5. Using silicone sealant, seal space between top hub of stack-sleeve fitting and pipe.
- B. Fire-Resistance-Rated Penetrations, Horizontal Assembly Penetrations, and Smoke Barrier Penetrations: Maintain indicated fire or smoke rating of floors at pipe penetrations. Seal pipe penetrations with fire- and smoke-stop materials. Comply with requirements for firestopping specified in Section 078413 "Penetration Firestopping."

### 3.4 INSTALLATION OF SLEEVE-SEAL SYSTEMS

- A. Install sleeve-seal systems in sleeves in exterior concrete walls and slabs-on-grade at service piping entries into building, and passing through exterior walls.
- B. Select type, size, and number of sealing elements required for piping material and size and for sleeve ID or hole size. Assemble sleeve-seal system components, and install in annular space between piping and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make a watertight seal.

### 3.5 INSTALLATION OF ESCUTCHEONS

- A. Install escutcheons for piping penetrations of walls, ceilings, and finished floors.

- B. Install escutcheons with ID to closely fit around pipe, tube, and insulation of insulated piping and with OD that completely covers opening.

### 3.6 FIELD QUALITY CONTROL

#### A. Sleeves and Sleeve Seals:

1. Perform the following tests and inspections:
  - a. Leak Test: After allowing for a full cure, test sleeves and sleeve seals for leaks. Repair leaks and retest until no leaks exist.
  - b. Sleeves and sleeve seals will be considered defective if they do not pass tests and inspections.
2. Prepare test and inspection reports.

#### B. Escutcheons:

1. Using new materials, replace broken and damaged escutcheons and floor plates.

### 3.7 SLEEVES APPLICATION

#### A. Use sleeves and sleeve seals for the following piping-penetration applications:

1. Exterior Concrete Walls above and below Grade:
  - a. Sleeves with waterstops.
    - 1) Select sleeve size to allow for 1-inch annular clear space between piping and sleeve for installing sleeve-seal system.
2. Concrete Slabs-on-Grade:
  - a. Sleeves with waterstops.
    - 1) Select sleeve size to allow for 1-inch annular clear space between piping and sleeve for installing sleeve-seal system.
3. Concrete Slabs above Grade:
  - a. Sleeves with waterstops .
4. Interior Walls and Partitions:
  - a. Sleeves without waterstops.

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### 3.8 ESCUTCHEONS APPLICATION

- A. Escutcheons for New Piping and Relocated Existing Piping:
  - 1. Piping with Fitting or Sleeve Protruding from Wall: One piece, deep pattern.
  - 2. Insulated Piping:
    - a. One piece, steel with polished, chrome-plated finish.
  - 3. Bare Piping at Wall and Floor Penetrations in Finished Spaces:
    - a. One piece, steel with polished, chrome-plated finish.
  - 4. Bare Piping at Ceiling Penetrations in Finished Spaces:
    - a. One piece, steel with polished, chrome-plated finish.
  - 5. Bare Piping in Unfinished Service Spaces:
    - a. One piece, steel with polished, chrome-plated finish.
  - 6. Bare Piping in Equipment Rooms:
    - a. One piece, steel with polished, chrome-plated finish.
- B. Install floor plates for piping penetrations of equipment-room floors.
- C. Install floor plates with ID to closely fit around pipe, tube, and insulation of piping and with OD that completely covers opening.
  - 1. New Piping and Relocated Existing Piping: Split floor plate.

END OF SECTION 230500



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## SECTION 230553 - IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
1. Equipment labels.
  2. Warning signs and labels.
  3. Pipe labels.

#### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For color, letter style, and graphic representation required for each identification material and device.
- C. Equipment-Label Schedule: Include a listing of all equipment to be labeled with the proposed content for each label.

### PART 2 - PRODUCTS

#### 2.1 EQUIPMENT LABELS

- A. Metal Labels for Equipment:
1. Material and Thickness: Brass, 0.032-inch minimum thickness, with predrilled or stamped holes for attachment hardware.
  2. Letter and Background Color: As indicated for specific application under Part 3.
  3. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
  4. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances of up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
  5. Fasteners: Stainless steel rivets or self-tapping screws.
  6. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.



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## 2.2 WARNING SIGNS AND LABELS

- A. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/16 inch thick, with predrilled holes for attachment hardware.
- B. Letter and Background Color: As indicated for specific application under Part 3.
- C. Maximum Temperature: Able to withstand temperatures of up to 160 deg F.
- D. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
- E. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances of up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
- F. Fasteners: Stainless steel rivets or self-taping screws.
- G. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.
- H. Arc-Flash Warning Signs: Provide arc-flash warning signs in locations and with content in accordance with requirements of OSHA and NFPA70E and other applicable codes and standards.
- I. Label Content: Include caution and warning information plus emergency notification instructions.

## 2.3 PIPE LABELS

- A. General Requirements for Manufactured Pipe Labels: Preprinted, color coded, with lettering indicating service and showing flow direction in accordance with ASME A13.1.
- B. Letter and Background Color: As indicated for specific application under Part 3.
- C. Pretensioned Pipe Labels: Precoiled, semirigid plastic formed to cover full circumference of pipe and to attach to pipe without fasteners or adhesive.
- D. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings. Also include:
  - 1. Flow-Direction Arrows: Include flow-direction arrows on main distribution piping. Arrows may be either integral with label or applied separately.

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## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Clean piping and equipment surfaces of incompatible primers, paints, and encapsulants, as well as dirt, oil, grease, release agents, and other substances that could impair bond of identification devices.

### 3.2 INSTALLATION, GENERAL REQUIREMENTS

- A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.
- B. Coordinate installation of identifying devices with locations of access panels and doors.
- C. Install identifying devices before installing acoustical ceilings and similar concealment.
- D. Locate identifying devices so that they are readily visible from the point of normal approach.

### 3.3 INSTALLATION OF EQUIPMENT LABELS, WARNING SIGNS, AND LABELS

- A. Permanently fasten labels on each item of mechanical equipment.
- B. Sign and Label Colors:
  - 1. White letters on an ANSI Z535.1 safety-blue background .
- C. Locate equipment labels where accessible and visible.
- D. Arc-Flash Warning Signs: Provide arc-flash warning signs on electrical disconnects and other equipment where arc-flash hazard exists, as indicated on Drawings, and in accordance with requirements of OSHA and NFPA 70E, and other applicable codes and standards.

### 3.4 INSTALLATION OF PIPE LABELS

- A. Install pipe labels showing service and flow direction with permanent adhesive on pipes.
- B. Pipe-Label Locations: Locate pipe labels where piping is exposed or above accessible ceilings in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior exposed locations as follows:
  - 1. Within 3 ft. of each valve and control device.
  - 2. At access doors, manholes, and similar access points that permit view of concealed piping.
  - 3. Within 3 ft. of equipment items and other points of origination and termination.

4. Spaced at maximum intervals of 25 ft. along each run. Reduce intervals to 10 ft. in areas of congested piping, ductwork, and equipment.
- C. Do not apply plastic pipe labels or plastic tapes directly to bare pipes conveying fluids at temperatures of 125 deg F or higher. Where these pipes are to remain uninsulated, use a short section of insulation or use stenciled labels.
- D. Flow-Direction Arrows: Use arrows to indicate direction of flow in pipes, including pipes where flow is allowed in both directions.
- E. Pipe-Label Color Schedule:
  1. Refrigerant Piping: White letters on an ANSI Z535.1 safety-blue background .
  2. Potable and Other Water: White letters on an ANSI Z535.1 safety-green background .

END OF SECTION 230553

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## SECTION 238126 - HYDRONIC PIPING

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
1. Copper tube and fittings.
  2. Piping joining materials.
  3. Transition fittings.
  4. Dielectric fittings.

#### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of the following:
1. Pipe and tube.
  2. Fittings.
  3. Joining materials.
  4. Transition fittings.

### PART 2 - PRODUCTS

#### 2.1 PERFORMANCE REQUIREMENTS

- A. Hydronic piping components and installation are to be capable of withstanding the following minimum working pressures and temperatures unless otherwise indicated:
1. Condensate-Drain Piping: 150 deg F .
  2. Air-Vent Piping: 180 deg F .

#### 2.2 COPPER TUBE AND FITTINGS

- A. Drawn-Temper Copper Tube: ASTM B88, Type K .
- B. Copper-Tube, Mechanically Formed Tee Fitting: For forming T-branch on copper water tube.
1. Description: Tee formed in copper tube in accordance with ASTM F2014.

#### 2.3 PIPING JOINING MATERIALS

- A. Pipe-Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.

1. ASME B16.21, nonmetallic, flat, asbestos free, 1/8-inch maximum thickness unless otherwise indicated.

a. Full-Face Type: For flat-face, Class 125, cast-iron and cast-bronze flanges.

b. Narrow-Face Type: For raised-face, Class 250, cast-iron and steel flanges. B. Flange Bolts and Nuts: ASME B18.2.1, carbon steel, unless otherwise

indicated.

C. Solder Filler Metals: ASTM B32, lead-free alloys.

D. Flux: ASTM B813, water flushable.

E. Brazing Filler Metals: AWS A5.8/A5.8M, BCuP Series, copper-phosphorus alloys for joining copper with copper; or BAg-1, silver alloy for joining copper with bronze or steel.

## 2.4 TRANSITION FITTINGS

A. General Requirements:

1. Same size as pipes to be joined.
2. Pressure rating at least equal to pipes to be joined.
3. End connections compatible with pipes to be joined.

B. Fitting-Type Transition Couplings: Manufactured piping coupling or specified piping system fitting.

C. Plastic-to-Metal Transition Fittings:

1. Source Limitations: Obtain plastic-to-metal transition fittings from single manufacturer.
2. Description:

a. CPVC or PVC one-piece fitting with manufacturer's Schedule 80 equivalent dimensions.

b. One end with threaded brass insert and one solvent-cement-socket end.

3. One-piece fitting with one threaded brass or copper insert and one solvent-cement-joint end of material and wall thickness to match plastic pipe material.

D. Plastic-to-Metal Transition Unions:

1. Source Limitations: Obtain plastic-to-metal transition unions from single manufacturer.
2. Brass or copper end and solvent-cement-joint end of union to match pipe in size and material.
3. Description:

- 
- a. CPVC or PVC four-part union.

## 2.5 DIELECTRIC FITTINGS

- A. General Requirements: Assembly of copper alloy and ferrous materials with separating nonconductive insulating material. Include end connections compatible with pipes to be joined.
- B. Dielectric Unions:
  1. Source Limitations: Obtain dielectric unions from single manufacturer.
  2. Description:
    - a. Standard: ASSE 1079.
    - b. Pressure Rating: 125 psig minimum at 180 deg F .
    - c. End Connections: Solder-joint copper alloy and threaded ferrous. Solder joints are not to be used on pipe sizes greater than NPS 4.
- C. Dielectric Flanges:
  1. Source Limitations: Obtain dielectric flanges from single manufacturer.
  2. Description:
    - a. Standard: ASSE 1079.
    - b. Factory-fabricated, bolted, companion-flange assembly.
    - c. Pressure Rating: 125 psig minimum at 180 deg F .
    - d. End Connections: Solder-joint copper alloy and threaded ferrous; threaded solderjoint copper alloy and threaded ferrous.
- D. Dielectric Nipples:
  1. Source Limitations: Obtain dielectric nipples from single manufacturer.
  2. Description:
    - a. Standard: IAPMO PS 66.
    - b. Electroplated steel nipple, complying with ASTM F1545.
    - c. Pressure Rating: Minimum 300 psig at 225 deg F .
    - d. End Connections: Male threaded or grooved.
    - e. Lining: Inert and noncorrosive, propylene.

## PART 3 - EXECUTION

### 3.1 PIPING APPLICATIONS

- A. Condensate-Drain Piping Installed Aboveground to Be Any of the Following:
  1. Type K , drawn-temper copper tubing, wrought-copper fittings, and brazed joints.



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### 3.2 INSTALLATION OF PIPING

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements are used to size pipe and calculate friction loss, expansion, and other design considerations. Install piping as indicated unless deviations to layout are approved on coordination drawings.
- B. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.
- C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- D. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
- E. Install piping to permit valve servicing.
- F. Install piping at indicated slopes.
- G. Install piping free of sags and bends.
- H. Install fittings for changes in direction and branch connections.
- I. Install piping to allow application of insulation.
- J. Select system components with pressure rating equal to or greater than system operating pressure.
- K. Install groups of pipes parallel to each other, spaced to permit applying insulation and servicing of valves.
- L. Install drains, consisting of a tee fitting, NPS 3/4 ball valve, and short NPS 3/4 threaded nipple with cap, at low points in piping system mains and elsewhere as required for system drainage. M. Install piping at a uniform grade of 0.2 percent upward in direction of flow.
- N. Reduce pipe sizes using eccentric reducer fitting installed with level side up.
- O. Install branch connections to mains using mechanically formed tee fittings in main pipe, with the branch connected to the bottom of the main pipe. For up-feed risers, connect the branch to the top of the main pipe.
- P. Install shutoff valve immediately upstream of each dielectric fitting.

### 3.3 JOINT CONSTRUCTION

- A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

- 
- B. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
  - C. Soldered Joints: Apply ASTM B813, water-flushable flux, unless otherwise indicated, to tube end. Construct joints in accordance with ASTM B828 or CDA's "Copper Tube Handbook," using lead-free solder alloy complying with ASTM B32.
  - D. Brazed Joints: Construct joints in accordance with AWS's "Brazing Handbook," "Pipe and Tube" chapter, using copper-phosphorus brazing filler metal complying with AWS A5.8/A5.8M.
  - E. Threaded Joints: Thread pipe with tapered pipe threads in accordance with ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
    - 1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
    - 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
  - F. Mechanically Formed Tee Fittings: Use manufacturer-recommended tools, procedure, and brazed joints.
  - G. Pressure-Seal Joints: Use manufacturer-recommended tools and procedure. Leave insertion marks on pipe after assembly.

### 3.4 INSTALLATION OF DIELECTRIC FITTINGS

- A. Install dielectric fittings in piping at connections of dissimilar metal piping and tubing.
- B. Dielectric Fittings for NPS 2 (DN 50) and Smaller: Use dielectric nipples.

### 3.5 INSTALLATION OF HANGERS AND SUPPORTS

- A. Install hangers for copper tubing, with maximum horizontal spacing and minimum rod diameters, to comply with MSS SP-58, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.
- B. Support horizontal piping within 12 inches of each fitting and coupling.
- C. Support vertical runs of copper tubing to comply with MSS SP-58, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.

### 3.6 FIELD QUALITY CONTROL

- A. Prepare hydronic piping in accordance with ASME B31.9 and as follows:

1. Leave joints, including welds, uninsulated and exposed for examination during test.
  2. Flush hydronic piping systems with clean water; then remove and clean or replace strainer screens.
- B. Perform the following tests on hydronic piping:
1. Use ambient-temperature water as a testing medium unless there is risk of damage due to freezing. Another liquid that is safe for workers and compatible with piping may be used.
  2. While filling system, use vents installed at high points of system to release air. Use drains installed at low points for complete draining of test liquid.
  3. Isolate expansion tanks and determine that hydronic system is full of water.
  4. Subject piping system to hydrostatic test pressure that is not less than 1.5 times the system's working pressure. Test pressure is not to exceed maximum pressure for any vessel, pump, valve, or other component in system under test. Verify that stress due to pressure at bottom of vertical runs does not exceed 90 percent of specified minimum yield strength or 1.7 times the "SE" value in Appendix A in ASME B31.9.
  5. After hydrostatic test pressure has been applied for at least 10 minutes, examine piping, joints, and connections for leakage. Eliminate leaks by tightening, repairing, or replacing components, and repeat hydrostatic test until there are no leaks.
  6. Prepare written report of testing.

END OF SECTION 232113

## SECTION 238126 - HYDRONIC PIPING

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
1. Copper tube and fittings.
  2. Piping joining materials.
  3. Transition fittings.
  4. Dielectric fittings.

#### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of the following:
1. Pipe and tube.
  2. Fittings.
  3. Joining materials.
  4. Transition fittings.

### PART 2 - PRODUCTS

#### 2.1 PERFORMANCE REQUIREMENTS

- A. Hydronic piping components and installation are to be capable of withstanding the following minimum working pressures and temperatures unless otherwise indicated:
1. Condensate-Drain Piping: 150 deg F .
  2. Air-Vent Piping: 180 deg F .

#### 2.2 COPPER TUBE AND FITTINGS

- A. Drawn-Temper Copper Tube: ASTM B88, Type K .
- B. Copper-Tube, Mechanically Formed Tee Fitting: For forming T-branch on copper water tube.
1. Description: Tee formed in copper tube in accordance with ASTM F2014.

## 2.3 PIPING JOINING MATERIALS

- A. Pipe-Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.
  - 1. ASME B16.21, nonmetallic, flat, asbestos free, 1/8-inch maximum thickness unless otherwise indicated.
    - a. Full-Face Type: For flat-face, Class 125, cast-iron and cast-bronze flanges.
    - b. Narrow-Face Type: For raised-face, Class 250, cast-iron and steel flanges.
- B. Flange Bolts and Nuts: ASME B18.2.1, carbon steel, unless otherwise indicated.
- C. Solder Filler Metals: ASTM B32, lead-free alloys.
- D. Flux: ASTM B813, water flushable.
- E. Brazing Filler Metals: AWS A5.8/A5.8M, BCuP Series, copper-phosphorus alloys for joining copper with copper; or BAg-1, silver alloy for joining copper with bronze or steel.

## 2.4 TRANSITION FITTINGS

- A. General Requirements:
  - 1. Same size as pipes to be joined.
  - 2. Pressure rating at least equal to pipes to be joined.
  - 3. End connections compatible with pipes to be joined.
- B. Fitting-Type Transition Couplings: Manufactured piping coupling or specified piping system fitting.
- C. Plastic-to-Metal Transition Fittings:
  - 1. Source Limitations: Obtain plastic-to-metal transition fittings from single manufacturer.
  - 2. Description:
    - a. CPVC or PVC one-piece fitting with manufacturer's Schedule 80 equivalent dimensions.
    - b. One end with threaded brass insert and one solvent-cement-socket end.
  - 3. One-piece fitting with one threaded brass or copper insert and one solvent-cement-joint end of material and wall thickness to match plastic pipe material.
- D. Plastic-to-Metal Transition Unions:
  - 1. Source Limitations: Obtain plastic-to-metal transition unions from single manufacturer.
  - 2. Brass or copper end and solvent-cement-joint end of union to match pipe in size and material.
  - 3. Description:

- a. CPVC or PVC four-part union.

## 2.5 DIELECTRIC FITTINGS

- A. General Requirements: Assembly of copper alloy and ferrous materials with separating nonconductive insulating material. Include end connections compatible with pipes to be joined.
- B. Dielectric Unions:
  1. Source Limitations: Obtain dielectric unions from single manufacturer.
  2. Description:
    - a. Standard: ASSE 1079.
    - b. Pressure Rating: 125 psig minimum at 180 deg F .
    - c. End Connections: Solder-joint copper alloy and threaded ferrous. Solder joints are not to be used on pipe sizes greater than NPS 4.
- C. Dielectric Flanges:
  1. Source Limitations: Obtain dielectric flanges from single manufacturer.
  2. Description:
    - a. Standard: ASSE 1079.
    - b. Factory-fabricated, bolted, companion-flange assembly.
    - c. Pressure Rating: 125 psig minimum at 180 deg F .
    - d. End Connections: Solder-joint copper alloy and threaded ferrous; threaded solder-joint copper alloy and threaded ferrous.
- D. Dielectric Nipples:
  1. Source Limitations: Obtain dielectric nipples from single manufacturer.
  2. Description:
    - a. Standard: IAPMO PS 66.
    - b. Electroplated steel nipple, complying with ASTM F1545.
    - c. Pressure Rating: Minimum 300 psig at 225 deg F .
    - d. End Connections: Male threaded or grooved.
    - e. Lining: Inert and noncorrosive, propylene.

## PART 3 - EXECUTION

### 3.1 PIPING APPLICATIONS

- A. Condensate-Drain Piping Installed Aboveground to Be Any of the Following:
  1. Type K , drawn-temper copper tubing, wrought-copper fittings, and brazed joints.

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### 3.2 INSTALLATION OF PIPING

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements are used to size pipe and calculate friction loss, expansion, and other design considerations. Install piping as indicated unless deviations to layout are approved on coordination drawings.
- B. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.
- C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- D. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
- E. Install piping to permit valve servicing.
- F. Install piping at indicated slopes.
- G. Install piping free of sags and bends.
- H. Install fittings for changes in direction and branch connections.
- I. Install piping to allow application of insulation.
- J. Select system components with pressure rating equal to or greater than system operating pressure.
- K. Install groups of pipes parallel to each other, spaced to permit applying insulation and servicing of valves.
- L. Install drains, consisting of a tee fitting, NPS 3/4 ball valve, and short NPS 3/4 threaded nipple with cap, at low points in piping system mains and elsewhere as required for system drainage.
- M. Install piping at a uniform grade of 0.2 percent upward in direction of flow.
- N. Reduce pipe sizes using eccentric reducer fitting installed with level side up.
- O. Install branch connections to mains using mechanically formed tee fittings in main pipe, with the branch connected to the bottom of the main pipe. For up-feed risers, connect the branch to the top of the main pipe.
- P. Install shutoff valve immediately upstream of each dielectric fitting.

### 3.3 JOINT CONSTRUCTION

- A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

- B. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
- C. Soldered Joints: Apply ASTM B813, water-flushable flux, unless otherwise indicated, to tube end. Construct joints in accordance with ASTM B828 or CDA's "Copper Tube Handbook," using lead-free solder alloy complying with ASTM B32.
- D. Brazed Joints: Construct joints in accordance with AWS's "Braze Handbook," "Pipe and Tube" chapter, using copper-phosphorus brazing filler metal complying with AWS A5.8/A5.8M.
- E. Threaded Joints: Thread pipe with tapered pipe threads in accordance with ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
  - 1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
  - 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
- F. Mechanically Formed Tee Fittings: Use manufacturer-recommended tools, procedure, and brazed joints.
- G. Pressure-Seal Joints: Use manufacturer-recommended tools and procedure. Leave insertion marks on pipe after assembly.

### 3.4 INSTALLATION OF DIELECTRIC FITTINGS

- A. Install dielectric fittings in piping at connections of dissimilar metal piping and tubing.
- B. Dielectric Fittings for NPS 2 (DN 50) and Smaller: Use dielectric nipples.

### 3.5 INSTALLATION OF HANGERS AND SUPPORTS

- A. Install hangers for copper tubing , with maximum horizontal spacing and minimum rod diameters, to comply with MSS SP-58, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.
- B. Support horizontal piping within 12 inches of each fitting and coupling.
- C. Support vertical runs of copper tubing to comply with MSS SP-58, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.

### 3.6 FIELD QUALITY CONTROL

- A. Prepare hydronic piping in accordance with ASME B31.9 and as follows:



1. Leave joints, including welds, uninsulated and exposed for examination during test.
2. Flush hydronic piping systems with clean water; then remove and clean or replace strainer screens.

B. Perform the following tests on hydronic piping:

1. Use ambient-temperature water as a testing medium unless there is risk of damage due to freezing. Another liquid that is safe for workers and compatible with piping may be used.
2. While filling system, use vents installed at high points of system to release air. Use drains installed at low points for complete draining of test liquid.
3. Isolate expansion tanks and determine that hydronic system is full of water.
4. Subject piping system to hydrostatic test pressure that is not less than 1.5 times the system's working pressure. Test pressure is not to exceed maximum pressure for any vessel, pump, valve, or other component in system under test. Verify that stress due to pressure at bottom of vertical runs does not exceed 90 percent of specified minimum yield strength or 1.7 times the "SE" value in Appendix A in ASME B31.9.
5. After hydrostatic test pressure has been applied for at least 10 minutes, examine piping, joints, and connections for leakage. Eliminate leaks by tightening, repairing, or replacing components, and repeat hydrostatic test until there are no leaks.
6. Prepare written report of testing.

END OF SECTION 232113

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## SECTION 238126 - SPLIT-SYSTEM AIR-CONDITIONERS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Split-system air-conditioners.

#### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include rated capacities, operating characteristics, and furnished specialties and accessories. Include performance data in terms of capacities, outlet velocities, static pressures, sound power characteristics, motor requirements, and electrical characteristics.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
  - 1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
  - 2. Wiring Diagrams: For power, signal, and control wiring.

#### 1.3 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For split-system air-conditioning units to include in emergency, operation, and maintenance manuals.

#### 1.4 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. ASHRAE Compliance:
  - 1. Fabricate and label refrigeration system to comply with ASHRAE 15, "Safety Standard for Refrigeration Systems."
  - 2. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1, Section 4 - "Outdoor Air Quality," Section 5 - "Systems and Equipment," Section 6 - "Procedures," and Section 7 - "Construction and System Start-up."
- C. ASHRAE/IES Compliance: Applicable requirements in ASHRAE/IES 90.1.

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1.5 COORDINATION

- A. Coordinate sizes and locations of concrete bases with actual equipment provided. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork are specified in Section 033000 "Cast-in-Place Concrete."

1.6 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of split-system air-conditioning units that fail in materials or workmanship within specified warranty period.

- 1. Warranty Period:

- a. For Compressor: One year(s) from date of Substantial Completion.
- b. For Parts: One year(s) from date of Substantial Completion.
- c. For Labor: One year(s) from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SPLIT-SYSTEM AIR-CONDITIONERS

- A. Provide equipment by basis of design manufacturer.

- B. Indoor Units (5 tons (18 kW) or Less):

- 1. Wall-Mounted, Evaporator-Fan Components:

- a. Cabinet: Enameled steel with removable panels on front and ends in color selected by Architect, and discharge drain pans with drain connection.
- b. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins and thermal-expansion valve. Comply with ARI 206/110.
- c. Fan: Direct drive, centrifugal.
- d. Fan Motors:
  - 1) Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements specified in Section 230500 "Common Work Results for HVAC."
  - 2) Multitapped, multispeed with internal thermal protection and permanent lubrication.
  - 3) Enclosure Type: Totally enclosed, fan cooled.
  - 4) NEMA Premium (TM) efficient motors as defined in NEMA MG 1.
  - 5) Controllers, Electrical Devices, and Wiring: Comply with requirements for electrical devices and connections specified in electrical Sections.
  - 6) Mount unit-mounted disconnect switches on exterior of unit.

- 
- e. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1.
  - f. Condensate Drain Pans:
    - 1) Fabricated with one percent slope in at least two planes to collect condensate from cooling coils (including coil piping connections, coil headers, and return bends) and humidifiers, and to direct water toward drain connection.
      - a) Length: Extend drain pan downstream from leaving face to comply with ASHRAE 62.1 .
      - b) Depth: A minimum of 1 inch deep.
    - 2) Single-wall, stainless-steel sheet.
    - 3) Drain Connection: Located at lowest point of pan and sized to prevent overflow. Terminate with threaded nipple on one end of pan.
    - 4) Minimum Connection Size: NPS 1 .
- C. Outdoor Units (5 tons (18 kW) or Less:
- 1. Air-Cooled, Compressor-Condenser Components:
    - a. Casing: Steel, finished with baked enamel in color selected by Architect, with removable panels for access to controls, weep holes for water drainage, and mounting holes in base. Provide brass service valves, fittings, and gage ports on exterior of casing.
    - b. Compressor: Hermetically sealed with crankcase heater and mounted on vibration isolation device. Compressor motor shall have thermal- and current-sensitive overload devices, start capacitor, relay, and contactor.
      - 1) Compressor Type: Scroll.
      - 2) Two-speed compressor motor with manual-reset high-pressure switch and automatic-reset low-pressure switch.
      - 3) Refrigerant: R-410A .
      - 4) Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins and liquid subcooler. Comply with ARI 206/110.
    - c. Heat-Pump Components: Reversing valve and low-temperature-air cutoff thermostat.
    - d. Fan: Aluminum-propeller type, directly connected to motor.
    - e. Motor: Permanently lubricated, with integral thermal-overload protection.
    - f. Low Ambient Kit: Permits operation down to 45 deg F.
    - g. Mounting Base: Polyethylene.
- D. Accessories
- 1. Thermostat:
    - a. Low voltage with subbase to control compressor and evaporator fan.
  - 2. Automatic-reset timer to prevent rapid cycling of compressor.

- 
3. Refrigerant Line Kits: Soft-annealed copper suction and liquid lines factory cleaned, dried, pressurized, and sealed; factory-insulated suction line with flared fittings at both ends.
  4. Drain Hose: For condensate.
  5. Monitoring:
    - a. Monitor constant and variable motor loads.
    - b. Monitor variable-frequency-drive operation.
    - c. Monitor economizer cycle.
    - d. Monitor cooling load.
    - e. Monitor air distribution static pressure and ventilation air volumes.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Install units level and plumb.
- B. Install evaporator-fan components using manufacturer's standard mounting devices securely fastened to building structure.
- C. Equipment Mounting:
  1. Install ground-mounted, compressor-condenser components on cast-in-place concrete equipment base(s). Comply with requirements for equipment bases and foundations specified in Section 033000 "Cast-in-Place Concrete."
  2. Install ground-mounted, compressor-condenser components on polyethylene mounting base.
- D. Install and connect precharged refrigerant tubing to component's quick-connect fittings. Install tubing to allow access to unit.

#### 3.2 CONNECTIONS

- A. Piping installation requirements are specified in other Sections. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Where piping is installed adjacent to unit, allow space for service and maintenance of unit.

#### 3.3 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.
- B. Tests and Inspections:

- 
1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
  2. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
  3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- C. Remove and replace malfunctioning units and retest as specified above.
- D. Prepare test and inspection reports.

### 3.4 STARTUP SERVICE

- A. Engage a factory-authorized service representative to perform startup service.
1. Complete installation and startup checks according to manufacturer's written instructions.

### 3.5 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain units.

END OF SECTION 238126

## SECTION 238239.19 - WALL AND CEILING UNIT HEATERS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes: Wall and ceiling unit heaters with propeller fans and electric-resistance heating coils.

#### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
  - 1. Include rated capacities, operating characteristics, furnished specialties, and accessories.
- B. Shop Drawings:
  - 1. Include plans, elevations, sections, and details.
  - 2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
  - 3. Include details of anchorages and attachments to structure and to supported equipment.
  - 4. Include equipment schedules to indicate rated capacities, operating characteristics, furnished specialties, and accessories.
  - 5. Wiring Diagrams: Power, signal, and control wiring.

#### 1.3 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For wall and ceiling unit heaters to include in emergency, operation, and maintenance manuals.

### PART 2 - PRODUCTS

#### 2.1 WALL AND CEILING UNIT HEATERS

- A. Provide basis of design manufacturer.
- B. Heaters: Assembly including chassis, electric heating coil, fan, motor, and controls. Comply with UL 2021.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

## 2.2 CABINET

- A. Front Panel: Extruded-aluminum bar grille, with removable panels fastened with tamperproof fasteners.
- B. Finish: Baked enamel over baked-on primer with manufacturer's standard color selected by Architect, applied to factory-assembled and -tested wall and ceiling heaters before shipping.
- C. Airstream Surfaces: Surfaces in contact with the airstream comply with requirements in ASHRAE 62.1.
- D. Surface-Mounted Cabinet Enclosure: Steel with finish to match cabinet.

## 2.3 COIL

- A. Electric-Resistance Heating Coil: Nickel-chromium heating wire, free from expansion noise and 60-Hz hum, embedded in magnesium oxide refractory and sealed in corrosion-resistant metallic sheath. Terminate elements in stainless steel, machine-staked terminals secured with stainless steel hardware, and limit controls for high-temperature protection. Provide integral circuit breaker for overcurrent protection.

## 2.4 FAN AND MOTOR

- A. Fan: Aluminum propeller directly connected to motor.
- B. Motor: Permanently lubricated. Comply with requirements in Section 230500 "Common Work Results for HVAC."

## 2.5 CONTROLS

- A. Controls: Unit-mounted thermostat.
- B. Electrical Connection: Factory wire motors and controls for a single field connection with disconnect switch.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine areas to receive wall and ceiling unit heaters for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine roughing-in for electrical connections to verify actual locations before unit-heater installation.



- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION OF WALL AND CEILING UNIT HEATERS

- A. Install wall and ceiling unit heaters to comply with NFPA 90A.
- B. Install wall and ceiling unit heaters level and plumb.
- C. Install wall-mounted thermostats and switch controls in electrical outlet boxes at heights to match lighting controls. Verify location of thermostats and other exposed control sensors with Drawings and room details before installation.
- D. Ground equipment in accordance with Section 260526 "Grounding and Bonding for Electrical Systems."
- E. Connect wiring in accordance with Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

END OF SECTION 238239.19

SECTION 26 05 05  
SELECTIVE DEMOLITION FOR ELECTRICAL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Electrical demolition.

PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT

- A. Materials and equipment for patching and extending work: As specified in individual sections.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that abandoned wiring and equipment serve only abandoned facilities.
- B. Demolition drawings are based on casual field observation.
- C. Report discrepancies to Engineer before disturbing existing installation.
- D. Beginning of demolition means installer accepts existing conditions.

3.02 PREPARATION

- A. Disconnect electrical systems in walls, floors, and ceilings to be removed.
- B. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.
- C. Existing Electrical Service: Maintain existing system in service until new system is complete and ready for service. Disable system only to make switchovers and connections. Minimize outage duration.
  - 1. Obtain permission from Owner at least 24 hours before partially or completely disabling system.
- D. Existing Fire Alarm System: Maintain existing system in service until new system is accepted. Disable system only to make switchovers and connections. Minimize outage duration.
  - 1. Notify Owner before partially or completely disabling system.



2. Notify local fire service.
3. Make notifications at least 24 hours in advance.

### 3.03 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

- A. Perform work for removal and disposal of equipment and materials containing toxic substances regulated under the Federal Toxic Substances Control Act (TSCA) in accordance with applicable federal, state, and local regulations. Applicable equipment and materials include, but are not limited to:
  1. Mercury-containing lamps and tubes, including fluorescent lamps, high intensity discharge (HID), arc lamps, ultra-violet, high pressure sodium, mercury vapor, ignitron tubes, neon, and incandescent.
- B. Remove, relocate, and extend existing installations to accommodate new construction.
- C. Remove abandoned wiring to source of supply.
- D. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.
- E. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets that are not removed.
- F. Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.
- G. Disconnect and remove abandoned luminaires. Remove brackets, stems, hangers, and other accessories.
- H. Repair adjacent construction and finishes damaged during demolition and extension work.
- I. Maintain access to existing electrical installations that remain active. Modify installation or provide access panel as appropriate.

### 3.04 CLEANING AND REPAIR

- A. See Section 01 74 19 - Construction Waste Management and Disposal for additional requirements.
- B. Clean and repair existing materials and equipment that remain or that are to be reused.
- C. Panelboards: Clean exposed surfaces and check tightness of electrical connections. Replace damaged circuit breakers and provide closure plates for vacant positions. Provide typed circuit directory showing revised circuiting arrangement.

END OF SECTION 26 05 05

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SECTION 26 05 19  
LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Single conductor building wire.
- B. Wiring connectors.
- C. Electrical tape.
- D. Heat shrink tubing.
- E. Oxide inhibiting compound.
- F. Wire pulling lubricant.
- G. Cable ties.
- H. Firestop sleeves.

1.02 RELATED REQUIREMENTS

- A. Section 07 84 00 - Firestopping.
- B. Section 26 05 26 - Grounding and Bonding for Electrical Systems: Additional requirements for grounding conductors and grounding connectors.
- C. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

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 D3005 - Standard Specification for Low-Temperature Resistant Vinyl Chloride Plastic Pressure-Sensitive Electrical Insulating Tape 2017.

- F. ASTM D4388 - Standard Specification for Nonmetallic Semi-Conducting and Electrically Insulating Rubber Tapes 2020.
- G. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2022.
- H. FM 3971 - Fire Protective Coatings and Wraps for Grouped Cables 2019.
- I. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
- J. NEMA WC 70 - Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy 2021.
- K. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems 2021.
- L. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- M. UL 44 - Thermoset-Insulated Wires and Cables Current Edition, Including All Revisions.
- N. UL 83 - Thermoplastic-Insulated Wires and Cables Current Edition, Including All Revisions.
- O. UL 267 - Outline of Investigation for Wire-Pulling Compounds Most Recent Edition, Including All Revisions.
- P. UL 486A-486B - Wire Connectors Current Edition, Including All Revisions.
- Q. UL 486C - Splicing Wire Connectors Current Edition, Including All Revisions.
- R. UL 486D - Sealed Wire Connector Systems Current Edition, Including All Revisions.
- S. UL 510 - Polyvinyl Chloride, Polyethylene, and Rubber Insulating Tape 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 Engineer of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

#### 1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for conductors and cables, including detailed information on materials, construction, ratings, listings, and available sizes, configurations, and stranding.
- C. Field Quality Control Test Reports.

#### 1.06 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

#### 1.07 DELIVERY, STORAGE, AND HANDLING

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

#### 1.08 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 Engineer 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.
  - 1. Exceptions:
- C. Nonmetallic-sheathed cable is not permitted.
- D. Underground feeder and branch-circuit cable is not permitted.
- E. Service entrance cable is not permitted.
- F. Armored cable is not permitted.
- G. Metal-clad cable is not permitted.

- H. Manufactured wiring systems are not permitted.

## 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. Provide new conductors and cables manufactured not more than one year prior to installation.
- D. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, etc. as required for a complete operating system.
- E. Comply with NEMA WC 70.
- F. Thermoplastic-Insulated Conductors and Cables: Listed and labeled as complying with UL 83.
- G. Thermoset-Insulated Conductors and Cables: Listed and labeled as complying with UL 44.
- H. Conductors for Grounding and Bonding: Also comply with Section 26 05 26.
- I. 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.
- J. 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.
- K. Minimum Conductor Size:
  - 1. Branch Circuits: 12 AWG, up to 100 feet (30 m) for 20 A, 120 V circuits and 200 feet (61 m) for 20 A, 277 V circuits.
    - a. Exceptions:
      - 1) 20 A, 120 V circuits from 100 feet (30 m) to 150 feet (46 m) in length: 10 AWG, for voltage drop.
      - 2) 20 A, 120 V circuits from 150 feet (46 m) to 240 feet (73 m) in length: 8 AWG, for voltage drop.
      - 3) 20 A, 120 V circuits from 240 feet (73 m) to 385 feet (117 m) in length: 6 AWG, for voltage drop.
      - 4) 20 A, 277 V circuits from 200 feet (61 m) to 360 feet (110 m) in length: 10 AWG, for voltage drop.
      - 5) 20 A, 277 V circuits from 360 feet (110 m) to 550 feet (168 m) in length: 8 AWG, for voltage drop.
      - 6) 20 A, 277 V circuits from 550 feet (168 m) to 885 feet (270 m) in length: 6 AWG, for voltage drop.



- 7) For any 20 A, 120 V or 20 A, 277 V circuits exceeding the maximum lengths listed above, submit proposed wire sizes to the Engineer for approval..
2. Control Circuits: 14 AWG.
- L. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
- M. Conductor Color Coding:
  1. Conductors shall be color coded per the list below. The preferred method of color coding is to use conductors with permanently colored insulation. If field applied color coding is required, use pressure sensitive vinyl tape like Scotch 35. Tape shall be applied in half-lapped turns for a distance of 6" from the terminal point and in boxes where splices or taps are made. The last two laps of tape shall be applied with no tension to prevent possible unwinding. If colored tape is applied, do not obliterate cable identification marking.
  2. Color code conductors as indicated unless otherwise required by the authority having jurisdiction. Maintain consistent color coding throughout project.
  3. Color Coding Method: Integrally colored insulation.
    - a. Conductors size 4 AWG and larger may have black insulation color coded using vinyl color coding electrical tape.
  4. Color Code:
    - a. 480Y/277 V, 3 Phase, 4 Wire System:
      - 1) Phase A: Brown.
      - 2) Phase B: Orange.
      - 3) Phase C: Yellow.
      - 4) Neutral/Grounded: Gray.
    - b. 208Y/120 V, 3 Phase, 4 Wire System:
      - 1) Phase A: Black.
      - 2) Phase B: Red.
      - 3) Phase C: Blue.
      - 4) Neutral/Grounded: White.
    - c. Equipment Ground, 208Y/120 V System: Green.
    - d. Equipment Ground, 480Y/277 V System: Green with yellow stripe.
    - e. 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.
    - f. Conductors shall be labeled at each end with circuit information; e.g. panel label and circuit number. Labeling shall also be attached to each conductor at each pull or junction box the conductor passes through.
    - g. For control circuits, comply with manufacturer's recommended color code.
- N. Control and Signal Wires:
  1. Motor control and relaying wiring shall be no smaller than #14 AWG stranded copper conductor type THWN, or MTW, installed in conduit and shall not be run with feeder or branch circuits.

2. Fire alarm and door access control system wiring shall be installed in a raceway system. Fire alarm wiring shall be stranded.
3. Class 2 Temperature control cables, occupancy sensor wiring, LED lighting dimming wiring and other low-voltage control cables are to be installed in a raceway system. However, these cables may be installed in open air providing the following criteria is satisfied.
  - a. Cables are not installed above inaccessible ceilings.
  - b. Cables are not subject to damage.
  - c. Cables are provided with plenum rated jackets.
  - d. Cables are properly supported by J-hooks and/or bridle rings.
4. Telecommunications System Wiring: Refer to the latest version of Telecomm Design Guidelines and Communications Systems - Structured Cabling prepared by IU University Information Technology Services (UITS) for telecommunication system wiring requirements. These standards can be found on the IU Capital Planning & Facilities website.

### 2.03 SINGLE CONDUCTOR BUILDING WIRE

- A. Manufacturers:
  1. Copper Building Wire:
    - a. Encore Wire Corporation.
    - b. General Cable Technologies Corporation.
    - c. Republic Wire, Inc
    - d. Southwire Company.
- B. Description: Single conductor insulated wire.
- C. Branch circuit conductors #10 AWG and smaller shall be spliced together using properly sized and listed twist-on spring type insulated connectors, i.e. wire nuts. Conductors #8 AWG and larger shall be spliced using a non-insulated compression type sleeve or mechanical type connectors. Install taped covering on sleeves to maintain insulation level of system. Polaris type connectors can also be utilized when approved by Engineering Services or CFS. Split-bolts are not permitted.
- D. Where not provided with equipment use mechanical type lugs (allen-head screw type) to terminate wire.
- E. All feeder and branch circuit wiring shall be installed in raceway.
- F. Homerun conductors shall be installed unspliced from panelboard source to first device.
- G. Multiwire branch circuits are not acceptable. Each branch circuit requiring a neutral conductor shall be installed with a full-sized, dedicated neutral conductor. Special care must be taken when coordinating power feeds to systems furniture to avoid multiwire branch circuits.
- H. Megger tests shall be performed on all feeders and three phase motor branch circuit conductors to motors 20HP and larger. Do not megger check solid state equipment.

- I. Conductor Stranding:
  - 1. Feeders and Branch Circuits:
    - a. Size 12 AWG and Smaller: Solid.
    - b. Size 10 AWG: Solid or stranded.
    - c. Size 8 AWG and Larger: Stranded.
- J. Insulation Voltage Rating: 600 V.
- K. Insulation:
  - 1. Copper Building Wire: Type THHN/THWN or THHN/THWN-2.
    - a. Installed in Environments Designed for 14 degrees F (-10 degrees C) Operating Temperatures or Lower: Type XHHW-2 or RHH/RHW-2.

## 2.04 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 26 05 26.
- C. Wiring Connectors for Splices and Taps:
  - 1. Copper Conductors Size 10 AWG and Smaller: Use twist-on insulated spring connectors.
  - 2. Copper Conductors Size 8 AWG and Larger: Use compression connectors.
- D. Wiring Connectors for Terminations:
  - 1. Provide terminal lugs for connecting conductors to equipment furnished with terminations designed for terminal lugs.
  - 2. Provide compression adapters for connecting conductors to equipment furnished with mechanical lugs when only compression connectors are specified.
  - 3. Where over-sized conductors are larger than the equipment terminations can accommodate, provide connectors suitable for reducing to appropriate size, but not less than required for the rating of the overcurrent protective device.
  - 4. Provide compression connectors with lug holes for all motor lead connections. Do not remove factory installed motor lead terminal rings.
  - 5. Copper Conductors Size 8 AWG and Larger: Use mechanical connectors or compression connectors where connectors are required.
  - 6. Stranded Conductors Size 10 AWG and Smaller: Use crimped terminals for connections to terminal screws.
  - 7. Conductors for Control Circuits: Use crimped terminals for all connections.
- 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](http://www.3m.com/#sle).
  - b. Ideal Industries, Inc: [www.idealindustries.com/#sle](http://www.idealindustries.com/#sle).
  - c. NSI Industries LLC: [www.nsiindustries.com/#sle](http://www.nsiindustries.com/#sle).
- H. Mechanical Connectors: Provide bolted type or set-screw type.
  1. Manufacturers:
    - a. Burndy LLC: [www.burndy.com/#sle](http://www.burndy.com/#sle).
    - b. IlSCO: [www.ilsco.com/#sle](http://www.ilsco.com/#sle).
    - c. Thomas & Betts Corporation: [www.tnb.com/#sle](http://www.tnb.com/#sle).
- I. Compression Connectors: Provide circumferential type or hex type crimp configuration.
  1. Manufacturers:
    - a. Burndy LLC: [www.burndy.com/#sle](http://www.burndy.com/#sle).
    - b. IlSCO: [www.ilsco.com/#sle](http://www.ilsco.com/#sle).
    - c. Thomas & Betts Corporation: [www.tnb.com/#sle](http://www.tnb.com/#sle).
- J. Crimped Terminals: Nylon-insulated, with insulation grip and terminal configuration suitable for connection to be made.
  1. Manufacturers:
    - a. Burndy LLC: [www.burndy.com/#sle](http://www.burndy.com/#sle).
    - b. IlSCO: [www.ilsco.com/#sle](http://www.ilsco.com/#sle).
    - c. Thomas & Betts Corporation: [www.tnb.com/#sle](http://www.tnb.com/#sle).

## 2.05 ACCESSORIES

- A. Electrical Tape:
  1. Manufacturers:
    - a. 3M: [www.3m.com/#sle](http://www.3m.com/#sle).
    - b. Substitutions: See Section 01 60 00 - Product Requirements.
  2. 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).
  3. 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).
  4. 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.
  5. 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).
  6. 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).
7. 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.
1. Manufacturers:
    - a. 3M: [www.3m.com/#sle](http://www.3m.com/#sle).
    - b. Burndy LLC: [www.burndy.com/#sle](http://www.burndy.com/#sle).
    - c. Thomas & Betts Corporation: [www.tnb.com/#sle](http://www.tnb.com/#sle).
    - d. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Oxide Inhibiting Compound: Listed; suitable for use with the conductors or cables to be installed.
1. Manufacturers:
    - a. Burndy LLC: [www.burndy.com/#sle](http://www.burndy.com/#sle).
    - b. Ideal Industries, Inc: [www.idealindustries.com/#sle](http://www.idealindustries.com/#sle).
    - c. IlSCO: [www.ilsco.com/#sle](http://www.ilsco.com/#sle).
    - d. Substitutions: See Section 01 60 00 - Product Requirements.
- D. Wire Pulling Lubricant:
1. Manufacturers:
    - a. 3M: [www.3m.com/#sle](http://www.3m.com/#sle).
    - b. American Polywater Corporation: [www.polywater.com/#sle](http://www.polywater.com/#sle).
    - c. Ideal Industries, Inc: [www.idealindustries.com/#sle](http://www.idealindustries.com/#sle).
    - d. Substitutions: See Section 01 60 00 - Product Requirements.
  2. Listed and labeled as complying with UL 267.
  3. Suitable for use with conductors/cables and associated insulation/jackets to be installed.
  4. Suitable for use at installation temperature.
- E. Cable Ties: Material and tensile strength rating suitable for application.
1. Manufacturers:
    - a. Burndy LLC: [www.burndy.com/#sle](http://www.burndy.com/#sle).
    - b. Ideal Industries, Inc: [www.idealindustries.com/#sle](http://www.idealindustries.com/#sle).
    - c. Substitutions: See Section 01 60 00 - Product Requirements.
- F. Sealing Systems for Roof Penetrations: Premanufactured components and accessories as required to preserve integrity of roofing system and maintain roof warranty; suitable for cables and roofing system to be installed; designed to accommodate existing penetrations where applicable.
- G. Firestop Sleeves: Listed; provide as required to preserve fire resistance rating of building elements.
1. Products:
    - a. HoldRite, a brand of Reliance Worldwide Corporation; HydroFlame Pro Series/HydroFlame Custom Built: [www.holdrite.com/#sle](http://www.holdrite.com/#sle).
    - b. Hilti; [www.hilti.com](http://www.hilti.com)

- c. Substitutions: See Section 01 60 00 - Product Requirements.
- H. Fire-Protective Coating for Electrical Conductors and Cables: Field-applied, intumescent or ablative coating designed to prevent ignition and propagation of fire along thermoplastic-insulated conductors and cables.
  - 1. Pass flammability tests of one of the following:
    - a. ASTM E84, Class A; maximum flame spread index of 25.
    - b. FM 3971.

### 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 INSTALLATION

- A. Circuiting Requirements:
  - 1. Undersized, 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. Home run conductors shall be unspliced to the first device.
  - 5. Maintain separation of Class 1, Class 2, and Class 3 remote-control, signaling, and power-limited circuits in accordance with NFPA 70.
  - 6. Maintain separation of wiring for emergency systems in accordance with NFPA 70.
  - 7. 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.
  - 8. Common Neutrals: Unless otherwise indicated, sharing of neutral/grounded conductors among 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. 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.
- E. Exposed Cable Installation (only where specifically permitted):
  - 1. Route cables parallel or perpendicular to building structural members and surfaces.
  - 2. Protect cables from physical damage.
- 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.
- I. Install conductors with a minimum of 6 inches (150 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 contaminants. 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.
  - 7. Motor Leads: Use Grade 5 hardware consisting of bolt, flat washer, Belleville lock washer, and nut. Bolts shall not be longer than necessary to allow connection to be

torqued per manufacturer's recommendation. Arrange all motor lead terminal rings and circuit compression connectors so that all pads are flat against each other.

- 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. Field-Applied Color Coding: Where vinyl color coding electrical tape is used in lieu of integrally colored insulation as permitted in Part 2 under "Color Coding", apply half overlapping turns of tape at each termination and at each location conductors are accessible.
- P. Identify conductors and cables in accordance with Section 26 05 53.
- Q. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 84 00.
- R. 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.

### 3.03 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - 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 only required for services and feeders. 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 26 05 19

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SECTION 26 05 26  
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.

1.02 RELATED REQUIREMENTS

- A. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables: Additional requirements for conductors for grounding and bonding, including conductor color coding.
- B. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

1.03 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
- B. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems 2021.
- C. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- D. UL 467 - Grounding and Bonding Equipment Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
  - 1. Notify Engineer of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittals procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for grounding and bonding system components.
- C. Field quality control test reports.

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1.06 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

PART 2 PRODUCTS

2.01 GROUNDING AND BONDING REQUIREMENTS

A. Medium Voltage Distribution System

The following medium voltage distribution systems are present on the Indiana University Campuses:

- 1. IU Bloomington: 4,160 volt and 12,470 volt
- 2. IU Indianapolis: 4,160 volt and 13,800 volt
- 3. IU Northwest: 12,470 volt
- 4. IU South Bend: 12,470 volt

In general, all systems are solidly grounded; verify system configuration at Campus locations. Distribution consists of phase conductors plus an insulated ground cable. This ground cable should be a 600 volt THW or THWN-2 insulated cable. The existing system ground while not perfect is one of the best grounds available. This system ground should be extended to ground buses in the medium voltage switchgear and bonded to the other grounding electrodes used in the building. The size of the system ground cable shall be the smaller of #4/0 AWG or the size of the phase conductors or another size as approved by Engineering Services or CFS.

B. Service Entrance

- 1. Simply referring to the National Electrical Code Article 250 on Grounding is not acceptable. The NEC is not a design manual and while we must meet the requirements of the NEC, additional information on the installation of the grounding system is the responsibility of the Consulting Engineer. The installation of ground mats, connection to water service, building steel, footing grounds, etc. should be shown on the drawings and included in specifications.
- 2. A readily accessible ground bar connected to the grounding electrode conductor shall be installed in each main electrical equipment room. The ground bar shall be copper or tinned copper material, minimum 1/4" thick X 4" wide X 20" long. In lieu of a ground bar a ground loop may be installed. The ground loop shall consist of a #4/0 AWG bare copper conductor installed around the entire perimeter of the electrical room. Bond all metal items in the electrical rooms to ground. Using a ground bar inside equipment is not an acceptable substitute.

3. Grounding Electrode:
    - a. Utilize building steel where available
    - b. Metal underground piping shall be used. Natural gas piping shall not be used.
    - c. A building footing ground shall be installed per NEC Article 250.52(A)(3)
    - d. A ground mat consisting of at least three driven ground rods (8'-0" long X 3/4" diameter copper clad steel) 10 foot on center shall be installed.
  4. The maximum acceptable impedance to ground at the building service entrance is 5ohms and the grounding system should be designed accordingly. The project specifications shall require testing and documentation of this ground impedance testing. Testing shall be performed by an independent, third party, approved testing agency in accordance to current InterNational Electrical Testing Association (INETA) acceptance test standards. Test results shall be included in project record documents.
  5. All Grounding electrode systems shall be bonded together at the service entrance (Main Electrical Room/Vault) ground bar. No independent grounding electrode systems are allowed.
- C. Branch Circuits: Receptacle, lighting, power utilization equipment, etc., shall have separate insulated equipment ground conductors installed.
  - D. Telecommunication System: The telecommunication systems installed shall be grounded in accordance with the latest version of the Telecomm Design Guidelines and Communications Systems - Structured Cabling prepared by IU University Information Technology Services (UITS) for telecommunication system wiring requirements. These standards can be found on the IU Capital Planning & Facilities web site.
  - E. Terminations: Terminations of grounding system conductors shall be done using listed lugs and fittings specifically made for the use intended. Any ground connections in wet or damp locations shall be by Cadwelding or irreversible Compression Fittings – using Mechanical connectors is not acceptable. Using sheet metal bolts with lock washers and Sta-Con connections on the wire is not acceptable.
  - F. Inspection: The Consulting Engineer and Engineering Services shall jointly inspect the main distribution equipment to verify that the main bonding jumper between the system ground and the grounded conductor (neutral in most cases) has been installed before the equipment is energized. The main bonding jumpers at separately derived systems and at the generator shall also be jointly inspected. Engineering Services has found several installations where this jumper was not properly installed resulting in an unsafe working condition.
  - G. Underground Electrical Vaults: All metal parts, e.g. lid, ring, frame and support, ladder, and etc., shall be bonded to ground rod and ductbank ground conductor with a minimum #6 THW or THWN-2 conductor.
  - H. 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.
  - I. Do not use products for applications other than as permitted by NFPA 70 and product listing.

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- J. 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.
  - K. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
  - L. 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.

## 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 26 05 26:
  - 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 or compression connectors for underground, concealed and other inaccessible connections.
    - a. Exceptions:
      - 1) Use mechanical connectors for connections to electrodes at ground access wells.

3. Unless otherwise indicated, use mechanical connectors, compression connectors, or exothermic welded connections for accessible connections.
4. Manufacturers - Mechanical and Compression Connectors:
  - a. allG Fabrication: [www.allgfab.com/#sle](http://www.allgfab.com/#sle).
  - b. Burndy LLC: [www.burndy.com/#sle](http://www.burndy.com/#sle).
  - c. Harger Lightning & Grounding: [www.harger.com/#sle](http://www.harger.com/#sle).
  - d. nVent ERICO: [www.nvent.com/#sle](http://www.nvent.com/#sle).
  - e. Thomas & Betts Corporation: [www.tnb.com/#sle](http://www.tnb.com/#sle).
5. Manufacturers - Exothermic Welded Connections:
  - a. Burndy LLC: [www.burndy.com/#sle](http://www.burndy.com/#sle).
  - b. nVent ERICO; Cadweld: [www.nvent.com/#sle](http://www.nvent.com/#sle).
  - c. thermOweld, subsidiary of Continental Industries; division of Burndy LLC : [www.thermoweld.com/#sle](http://www.thermoweld.com/#sle).

### 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 26 05 53.

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3.03 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - 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.
- F. Submit detailed reports indicating inspection and testing results and corrective actions taken.

END OF SECTION 26 05 26



SECTION 26 05 29  
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 03 30 00 - Cast-in-Place Concrete: Concrete equipment pads.
- B. Section 26 05 33.13 - Conduit for Electrical Systems: Additional support and attachment requirements for conduits.
- C. Section 26 05 36 - Cable Trays for Electrical Systems: Additional support and attachment requirements for cable tray.
- D. Section 26 05 33.16 - Boxes for Electrical Systems: Additional support and attachment requirements for boxes.
- E. Section 26 05 48 - Vibration and Seismic Controls for Electrical Systems.
- F. Section 26 51 00 - Interior Lighting: Additional support and attachment requirements for interior luminaires.
- G. Section 26 56 00 - Exterior Lighting: Additional support and attachment requirements for exterior 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 2023.
- 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 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
  - 1. Coordinate sizes and arrangement of supports and bases with actual equipment and components to be installed.
  - 2. Coordinate work to provide additional framing and materials required for installation.
  - 3. Coordinate compatibility of support and attachment components with mounting surfaces at installed locations.
  - 4. Coordinate arrangement of supports with ductwork, piping, equipment and other potential conflicts.
  - 5. Notify Engineer of 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 cured; see Section 03 30 00.

#### 1.05 SUBMITTALS

- A. See Section 01 30 00 - 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, and post-installed concrete/masonry anchors.

#### 1.06 QUALITY ASSURANCE

- A. Product Listing Organization Qualifications: Organization recognized by OSHA as Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

### 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. Applicable building code.
    - c. 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 plus 200 pounds (90 Kg) or with a minimum safety factor of four, whichever is greater. 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. Do not use wire, chain, perforated pipe strap, or wood for permanent supports unless specifically indicated or permitted.
    - a. Exceptions:
      - 1) Listed cable hanger assembly with steel braided cable and steel fittings.
      - 2) Manufacturers:
        - a) Gripple, Inc: [www.gripple.com/#sle](http://www.gripple.com/#sle)
        - b) Substitutions: See Section 01 60 00 - Product Requirements.
  7. Steel Components: Use corrosion-resistant materials suitable for environment where installed.
    - a. Indoor Dry Locations: Use zinc-plated steel or approved equivalent unless otherwise indicated.
    - b. Outdoor and Damp or Wet Indoor Locations: Use galvanized steel, stainless steel, or approved equivalent unless otherwise indicated.
    - c. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.
    - d. 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. Manufacturers:
    - a. ABB: [www.electrification.us.abb.com/#sle](http://www.electrification.us.abb.com/#sle).
    - b. Eaton Corporation: [www.eaton.com/#sle](http://www.eaton.com/#sle).
    - c. Emerson Electric Co; O-Z/Gedney: [www.emerson.com/#sle](http://www.emerson.com/#sle).
    - d. HoldRite, a brand of Reliance Worldwide Corporation: [www.holdrite.com/#sle](http://www.holdrite.com/#sle).
    - e. nVent; Caddy: [www.nvent.com/#sle](http://www.nvent.com/#sle).
    - f. Substitutions: See Section 01 60 00 - Product Requirements.
  2. Conduit Straps: One-hole or two-hole type; steel or malleable iron.
  3. Conduit Clamps: Bolted type unless otherwise indicated.
  4. Products:
    - a. Gripple, Inc; Universal Bracket: [www.gripple.com/#sle](http://www.gripple.com/#sle).
    - b. Gripple, Inc; Fast Trak: [www.gripple.com/#sle](http://www.gripple.com/#sle).
    - c. Gripple, Inc; Universal Clamp (Threaded): [www.gripple.com/#sle](http://www.gripple.com/#sle).
    - d. Gripple, Inc; Low Profile Bracket Kits: [www.gripple.com/#sle](http://www.gripple.com/#sle).
    - e. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Outlet Box Supports: Hangers and brackets suitable for boxes to be supported.

1. Manufacturers:
  - a. ABB: [www.electrification.us.abb.com/#sle](http://www.electrification.us.abb.com/#sle).
  - b. Eaton Corporation: [www.eaton.com/#sle](http://www.eaton.com/#sle).
  - c. Emerson Electric Co; O-Z/Gedney: [www.emerson.com/#sle](http://www.emerson.com/#sle).
  - d. HoldRite, a brand of Reliance Worldwide Corporation: [www.holdrite.com/#sle](http://www.holdrite.com/#sle).
  - e. nVent; Caddy: [www.nvent.com/#sle](http://www.nvent.com/#sle).
  - f. Substitutions: See Section 01 60 00 - Product Requirements.
  
- D. Metal Channel/Strut Framing Systems:
  1. Manufacturers:
    - a. ABB: [www.electrification.us.abb.com/#sle](http://www.electrification.us.abb.com/#sle).
    - b. Atkore International Inc; Unistrut: [www.unistrut.us/#sle](http://www.unistrut.us/#sle).
    - c. Eaton Corporation: [www.eaton.com/#sle](http://www.eaton.com/#sle).
    - d. Elgen Manufacturing Company, Inc: [www.elgenmfg.com/#sle](http://www.elgenmfg.com/#sle).
    - e. Substitutions: See Section 01 60 00 - Product Requirements.
    - f. Source Limitations: Furnish channel/strut and associated fittings, accessories, and hardware produced by single manufacturer.
  2. Description: Factory-fabricated, continuous-slot, metal channel/strut and associated fittings, accessories, and hardware required for field assembly of supports.
  3. Comply with MFMA-4.
  
- E. Hanger Rods: Threaded, zinc-plated steel unless otherwise indicated.
  1. Minimum Size, Unless Otherwise Indicated or Required:
    - a. Equipment Supports: 1/2-inch (13 mm) diameter.
    - b. Single Conduit up to 1-inch (27 mm) Trade Size: 1/4-inch (6 mm) diameter.
    - c. Single Conduit Larger than 1-inch (27 mm) Trade Size: 3/8-inch (10 mm) diameter.
    - d. Trapeze Support for Multiple Conduits: 3/8-inch (10 mm) diameter.
    - e. Outlet Boxes: 1/4-inch (6 mm) diameter.
    - f. Luminaires: 1/4-inch (6 mm) diameter.
  
- F. Anchors and Fasteners:
  1. Manufacturers - Mechanical Anchors:
    - a. Dewalt: [anchors.dewalt.com/#sle](http://anchors.dewalt.com/#sle).
    - b. Hilti, Inc: [www.hilti.com/#sle](http://www.hilti.com/#sle).
    - c. ITW Red Head, a division of Illinois Tool Works, Inc: [www.itwredhead.com/#sle](http://www.itwredhead.com/#sle).
    - d. Simpson Strong-Tie Company Inc: [www.strongtie.com/#sle](http://www.strongtie.com/#sle).
    - e. Substitutions: See Section 01 60 00 - Product Requirements.
  2. Unless otherwise indicated and where not otherwise restricted, use anchor and fastener types indicated for specified applications.
  3. Concrete: Use preset concrete inserts, expansion anchors, or screw anchors.
  4. Solid or Grout-Filled Masonry: Use expansion anchors or screw anchors.
  5. Hollow Masonry: Use toggle bolts.
  6. Hollow Stud Walls: Use toggle bolts.

7. Steel: Use beam clamps or machine bolts.
8. Sheet Metal: Use sheet metal screws.
9. Wood: Use wood screws.
10. Plastic and lead anchors are not permitted.
11. Powder-actuated fasteners are not permitted.
12. Hammer-driven anchors and fasteners are not permitted.
13. Preset Concrete Inserts: Continuous metal channel/strut and spot inserts specifically designed to be cast in concrete ceilings, walls, and floors.
  - a. Manufacturer: Same as manufacturer of metal channel/strut framing system.
  - b. Comply with MFMA-4.
  - c. Channel Material: Use galvanized steel.
  - d. Minimum Channel Thickness: Steel sheet, 12 gauge, 0.1046 inch (2.66 mm) minimum base metal thickness.
14. Post-Installed Concrete and Masonry Anchors: Evaluated and recognized by ICC Evaluation Service, LLC (ICC-ES) for compliance with applicable building code.

### 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. Install anchors and fasteners in accordance with ICC Evaluation Services, LLC (ICC-ES) evaluation report conditions of use where applicable.
- D. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
- E. Unless specifically indicated or approved by Engineer, do not provide support from suspended ceiling support system or ceiling grid.
- F. Unless specifically indicated or approved by Engineer, do not provide support from roof deck.
- G. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.

- H. Do not install anchors in concrete structural members, including columns or beams, without approval of Structural Engineer and in coordination with structural drawings and details.
  - I. Provide required vibration isolation and/or seismic controls; see Section 26 05 48.
  - J. 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. Unless otherwise indicated, mount floor-mounted equipment on properly sized concrete pad 4 inches (100 mm) in height, extending a minimum of 4 inches (100 mm) on all accessible sides and with 3/4 inch (20 mm) chamfered edge; see Section 03 30 00.
    - 5. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.
  - K. Conduit Support and Attachment: See Section 26 05 33.13 for additional requirements.
  - L. Cable Tray Support and Attachment: See Section 26 05 36 for additional requirements.
  - M. Box Support and Attachment: See Section 26 05 33.16 for additional requirements.
  - N. Interior Luminaire Support and Attachment: See Section 26 51 00 for additional requirements.
  - O. Exterior Luminaire Support and Attachment: See Section 26 56 00 for additional requirements.
  - P. Preset Concrete Inserts: Use manufacturer provided closure strips to inhibit concrete seepage during concrete pour.
  - Q. Secure fasteners in accordance with manufacturer's recommended torque settings.
  - R. Remove temporary supports.
- 3.03 FIELD QUALITY CONTROL
- A. See Section 01 40 00 - 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 26 05 29

SECTION 26 05 33  
RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Metal conduits, tubing, and fittings.
  2. Metal wireways and auxiliary gutters.
  3. Boxes, enclosures, and cabinets.

1.2 ACTION SUBMITTALS

- A. Product Data: For wireways and fittings, hinged-cover enclosures, and cabinets.

PART 2 - PRODUCTS

2.1 METAL CONDUITS, TUBING, AND FITTINGS

- A. Listing and Labeling: Metal conduits, tubing, and fittings shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. GRC: Comply with ANSI C80.1 and UL 6.
- C. IMC: Comply with ANSI C80.6 and UL 1242.
- D. EMT: Comply with ANSI C80.3 and UL 797.
- E. Fittings for Metal Conduit: Comply with NEMA FB 1 and UL 514B.
1. Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 886 and NFPA 70.
  2. Fittings for EMT:
    - a. Material: Steel. Die-cast is not permitted.
    - b. Type: Compression.
- F. Joint Compound for IMC and GRC: Approved, as defined in NFPA 70, by authorities having jurisdiction for use in conduit assemblies, and compounded for use to lubricate and protect threaded conduit joints from corrosion and to enhance their conductivity.





## 2.2 METAL WIREWAYS AND AUXILIARY GUTTERS

- A. Description: Sheet metal, complying with UL 870 and NEMA 250, Type 1 unless otherwise indicated, and sized according to NFPA 70.
  - 1. Metal wireways installed outdoors shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Fittings and Accessories: Include covers, couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.

## 2.3 BOXES, ENCLOSURES, AND CABINETS

- A. General Requirements for Boxes, Enclosures, and Cabinets: Boxes, enclosures, and cabinets installed in wet locations shall be listed for use in wet locations.
- B. Sheet Metal Outlet and Device Boxes: Comply with NEMA OS 1 and UL 514A.
- C. Cast-Metal Outlet and Device Boxes: Comply with NEMA FB 1, corrosion resistant malleable iron, Type FD, with gasketed cover.
- D. Nonmetallic Outlet and Device Boxes: Comply with NEMA OS 2 and UL 514C.
- E. Luminaire Outlet Boxes: Nonadjustable, designed for attachment of luminaire weighing 50 lb. Outlet boxes designed for attachment of luminaires weighing more than 50 lb shall be listed and marked for the maximum allowable weight.
- F. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.
- G. Cast-Metal Access, Pull, and Junction Boxes: Comply with NEMA FB 1 and UL 1773, cast aluminum or galvanized, cast iron with gasketed cover.
- H. Box extensions used to accommodate new building finishes shall be of same material as recessed box.
- I. Device Box Dimensions: 4 inches square by 2-1/8 inches deep.
- J. Gangable boxes are prohibited.
- K. Hinged-Cover Enclosures: Comply with UL 50 and NEMA 250, Type 1 with continuous-hinge cover with flush latch unless otherwise indicated.
  - 1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
  - 2. Nonmetallic Enclosures: Plastic or fiberglass.
  - 3. Interior Panels: Steel; all sides finished with manufacturer's standard enamel.
- L. Cabinets:

1. NEMA 250, Type 1 galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.
2. Hinged door in front cover with flush latch and concealed hinge.
3. Key latch to match panelboards.
4. Metal barriers to separate wiring of different systems and voltage.
5. Accessory feet where required for freestanding equipment.
6. Nonmetallic cabinets shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

### PART 3 - EXECUTION

#### 3.1 RACEWAY APPLICATION

- A. Where multiple conduit/tubing types are listed as acceptable select the type appropriate for your project/application. Listing of all types in your specification is not acceptable – we expect the designer to choose, not the contractor.
- B. For rigid metal conduit (RMC), intermediate metal conduit (IMC) and electrical metallic tubing (EMT) use galvanized steel type. Stainless steel and aluminum may be used for special applications – discuss with Engineering Services or CFS before specifying.
- C. Use of RMC, IMC and EMT with integral couplings or fittings is not permitted.
- D. Conduit shall be installed with NO MORE THAN the equivalent of THREE 90- DEGREE BENDS in any conduit run. Pull boxes, properly sized to the latest requirements of the NEC, shall be installed if more than the equivalent of three 90-degree bends are needed in a conduit run. The location of the box shall be such that it eliminates a 90-degree bend in the conduit run.
- E. Minimum conduit size shall be 3/4"; 1/2" conduit is allowed for lighting switch legs.
- F. All conduit shall be labeled every 25 feet (Minimum one label per conduit) in accordance with the following.
  1. Normal Power: Black lettering on White background identifying voltage of conductors.
  2. Emergency Power: Red lettering on White background identifying voltage of conductors.
  3. Fire Alarm: White letters on Red background – “FIRE ALARM”.
  4. Telecommunications: Black letters on White background – “TELECOMMUNICATIONS”.
  5. Temperature Control: Black letters on White background – “TEMPERATURE CONTROL”.
  6. Security Systems: Black letters on White background – “SECURITY”.
  7. Audio / Visual: Black letters on White background – “AUDIO / VISUAL”
  8. Consult with Engineering Services or CFS on how to label conduit for other systems.
- G. Minimum Raceway Size: 3/4-inch trade size.
- H. Power Feeder Conduit
  - a. Interior exposed conduit shall be RMC or IMC.
  - b. Interior concealed conduit 2" trade size and larger shall be RMC or IMC.

- c. Interior concealed conduit 1-1/2" trade size and smaller may be RMC, IMC, or EMT.
  - d. Interior conduits for Medium Voltage Cables shall be RMC.
  - e. DO NOT install power feeder conduits within concrete floor slabs.
  - f. Installation of power feeder conduits below on-grade concrete floor slabs is not desired and exceptions other than for conduits from pad mounted transformer secondaries must be approved by Engineering Services or CFS.
  - g. Below grade conduit refer to Section E - Underground Site and Electrical Utilities (Section 26 05 43).
  - h. Exterior conduit shall be RMC or IMC.
  - i. Connection to Equipment: The use of flexible metal conduit (FMC) or liquid-tight flexible metal conduit (LFMC), not less than 12" nor more than 6' in length, may be allowed for terminations of feeder runs serving low- voltage (less than 600 volt) equipment with inherent vibration, e.g. dry type transformer, motor terminal box, and etc. In Mechanical Rooms only use LFMC. The use of flexible conduit shall be reviewed with Engineering Services or CFS. FMC shall be UL-1 listed and LFMC shall be UL-360 listed.
  - j. In Mechanical Rooms with Steam use only RMC.
2. Branch Circuit and Control Conduit
- a. Interior exposed conduit shall be RMC or IMC.
  - b. Temperature control conduit in Mechanical and Electrical equipment rooms may be EMT.
  - c. Interior exposed conduit in electrical closets containing only branch circuit panelboards, EMT may be used.
  - d. Interior concealed conduit 2" trade size and larger shall be RMC or IMC.
  - e. Interior concealed conduit 1-1/2" trade size and smaller may be RMC, IMC or EMT.
  - f. Branch circuit and control conduit installed in or under concrete slabs is not preferred. Coordinate any conduit installed in concrete slab with Engineering Services or CFS.
    - 1) If installed under on grade concrete slabs use RMC, RNC 40, or RNC 80. If installed in concrete slab use RMC, RNC 40, or RNC 80.
    - 2) In addition, conduit installed in a concrete slab shall not exceed 1" trade size and must be installed in middle 1/3 of concrete slab.
  - g. In existing buildings where conduits cannot be concealed, cut and channel walls and ceilings or install surface raceway where specifically directed by Engineering Services or CFS.
  - h. Below grade conduit refer to Underground Site and Electrical Utilities (Section 26 05 43).
  - i. Exterior conduit shall be RMC or IMC. Where conduits transition from below grade directly up to a junction / pull box located within 18 inches of the ground they can be RNC 80 to match the below grade conduit.
  - j. Connection to Equipment: Flexible metal conduit (FMC) or liquid-tight flexible metal conduit (LFMC), not less than 12" nor more than 6' in length, as required by environment, shall be used for terminating recessed light fixtures or vibrating equipment. In Mechanical Rooms only use LFMC. Coordinate any other proposed uses with Engineering Services or CFS. FMC shall be UL-1 listed and LFMC shall be UL-360 listed.
3. Fire Alarm System Conduit
- a. Interior concealed dry spaces

- 1) Use RMC, IMC, or EMT
  - 2) Where conduit cannot be installed, and with Engineering Services or CFS approval, plenum rated, MC type cable specifically manufactured for use with Fire Alarm Systems may also be used in interior concealed dry spaces (MC-FPLP). Jacket is to have red coloring.
  - b. Interior exposed use RMC, IMC, or EMT.
  - c. In moist locations use RMC or IMC.
  - d. The conduit system including junction boxes shall be painted red.
- I. Raceway Fittings: Compatible with raceways and suitable for use and location.
1. Rigid and Intermediate Steel Conduit: Use threaded corrosion resistant, malleable iron conduit bodies, unless otherwise indicated. Comply with NEMA FB 2.10.
    - a. No threadless fittings for GRC or IMC shall be used.
  2. EMT: Use compression, steel fittings for 2" and smaller and steel set-screw type for larger than 2". Comply with NEMA FB 2.10.
  3. Flexible Conduit: Use only fittings listed for use with flexible conduit. Comply with NEMA FB 2.20.
- J. Do not install aluminum boxes or fittings in contact with concrete or earth.

### 3.2 INSTALLATION

- A. Comply with NECA 1 and NECA 101 for installation requirements except where requirements on Drawings or in this article are stricter. Comply with NFPA 70 limitations for types of raceways allowed in specific occupancies and number of floors.
- B. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.
- C. Comply with requirements in Section 26 05 29 "Hangers and Supports for Electrical Systems" for hangers and supports.
- D. Arrange stub-ups so curved portions of bends are not visible above finished slab.
- E. Install no more than the equivalent of three 90-degree bends in any conduit. Support within 12 inches of changes in direction.
- F. Conceal conduit and EMT within finished walls, ceilings, and below floors unless otherwise indicated. Install conduits parallel or perpendicular to building lines.
- G. Support conduit within 12 inches of enclosures to which attached.
- H. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.
- I. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 12 inches of slack at each end of pull wire. Cap

underground raceways designated as spare above grade alongside raceways in use.

- J. Mount boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, give priority to ADA requirements. Install boxes with height measured to bottom of box unless otherwise indicated.
- K. Horizontally separate boxes mounted on opposite sides of walls so they are not in the same vertical channel.
- L. Locate boxes so that cover or plate will not span different building finishes.
- M. Support boxes of three gangs or more from more than one side by spanning two framing members or mounting on brackets specifically designed for the purpose.
- N. Fasten junction and pull boxes to or support from building structure. Do not support boxes by conduits.

### 3.3 SLEEVE AND SLEEVE-SEAL INSTALLATION FOR ELECTRICAL PENETRATIONS

- A. Install sleeves and sleeve seals at penetrations of exterior floor and wall assemblies. Comply with requirements in Section 26 05 44 "Sleeves and Sleeve Seals for Electrical Raceways and Cabling."

### 3.4 FIRESTOPPING

- A. Install firestopping at all new and existing penetrations of fire-rated floor and wall assemblies.

### 3.5 PROTECTION

- A. Protect coatings, finishes, and cabinets from damage and deterioration.

END OF SECTION 26 05 33



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SECTION 26 05 53  
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 09 91 13 - Exterior Painting.
- B. Section 09 91 23 - Interior Painting.
- C. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables: Color coding for power conductors and cables 600 V and less; vinyl color coding electrical tape.
- D. Section 26 27 26 - Wiring Devices - Lutron: Device and wallplate finishes; factory pre-marked wallplates.
- E. Section 27 10 00 - Structured Cabling: Identification for communications cabling and devices.

1.03 REFERENCE STANDARDS

- A. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- B. UL 969 - Marking and Labeling Systems Current Edition, Including All Revisions.

1.04 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.

1.05 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. 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 power source and circuit number. Include location when not within sight of equipment.
    - 2) Identify main overcurrent protective device. Use identification label for panelboards with a door. For power distribution panelboards without a door, use identification nameplate.
    - 3) Use typewritten circuit directory to identify load(s) served for panelboards with a door. Identify spares and spaces.
    - 4) 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. Enclosed switches, circuit breakers, and motor controllers:
    - 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.
2. Use voltage marker to identify highest voltage present for each piece of electrical equipment.
3. Use identification label to identify equipment utilizing series ratings, where permitted, in accordance with NFPA 70.
4. Use identification nameplate to identify disconnect location for equipment with remote disconnecting means.
5. Use identification label or handwritten text using indelible marker on inside of door at each fused switch to identify required NEMA fuse class and size.
6. Use identification label to identify overcurrent protective devices for branch circuits serving fire alarm circuits. Identify with text "FIRE ALARM CIRCUIT".

#### B. Identification for Conductors and Cables:

1. Color Coding for Power Conductors 600 V and Less: Comply with Section 26 05 19.
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. At each source and load connection.

#### C. Identification for Raceways:



1. Use voltage markers or identification labels to identify highest voltage present for accessible conduits at maximum intervals of 25 feet (7.6 m).
2. Use factory-painted conduits or identification labels to identify systems other than normal power system for accessible conduits.
  - a. Maximum Intervals: 25 feet (7.6 m).
  - b. Color Code:
    - 1) Fire Alarm System: Red.

D. Identification for Boxes:

1. Use color coded boxes to identify specified systems.
  - a. Color-Coded Boxes: Field-painted in accordance with Section 09 91 23 and 09 91 13 or factory-painted per the same color code used for raceways.
2. Use identification labels or handwritten text using indelible marker to identify circuits enclosed.
  - a. For exposed boxes in public areas, provide identification on inside face of cover.

E. Identification for Devices:

1. Identification for Communications Devices: Comply with Section 27 10 00.
2. Wiring Device and Wallplate Finishes: Comply with Section 26 27 26.
3. Use identification label to identify fire alarm system devices.
4. 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.

## 2.02 IDENTIFICATION NAMEPLATES AND LABELS

A. Identification Nameplates:

1. Materials:
  - a. Indoor Clean, Dry Locations: Use plastic nameplates.
  - b. Outdoor Locations: Use plastic, stainless steel, or aluminum 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. Stainless Steel Nameplates: Minimum thickness of 1/32 inch (0.8 mm); engraved or laser-etched text.
4. Aluminum Nameplates: Anodized; minimum thickness of 1/32 inch (0.8 mm); engraved or laser-etched text.
5. 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. Manufacturers:
  - a. Brady Corporation: [www.bradyid.com/#sle](http://www.bradyid.com/#sle).
  - b. Brother International Corporation: [www.brother-usa.com/#sle](http://www.brother-usa.com/#sle).

- c. Panduit Corp: [www.panduit.com/#sle](http://www.panduit.com/#sle).
  - d. Substitutions: See Section 01 60 00 - Product Requirements.
  2. Materials: Use self-adhesive laminated plastic labels; UV, chemical, water, heat, and abrasion resistant.
    - a. Use only for indoor locations.
  3. Text: Use factory pre-printed or machine-printed text. Do not use handwritten text unless otherwise indicated.
- C. Format for Equipment Identification:
1. Minimum Size: 1 inch (25 mm) by 2.5 inches (64 mm).
  2. Legend:
    - a. System designation where applicable:
      - 1) Emergency Power System: Identify with text "EMERGENCY".
      - 2) Fire Alarm System: Identify with text "FIRE ALARM".
      - 3) Telecommunications System: Identify with text "TELECOMMUNICATIONS".
      - 4) Temperature Control System: Identify with text "TEMPERATURE CONTROL".
    - b. Equipment designation or other approved description.
  3. Text: All capitalized unless otherwise indicated.
  4. Minimum Text Height:
    - a. System Designation: 1 inch (25 mm).
    - b. Equipment Designation: 1/2 inch (13 mm).
    - c. Other Information: 1/4 inch (6 mm).
  5. Color:
    - a. Normal Power System: Black text on white background.
    - b. Emergency Power System: Red text on white background.
    - c. Fire Alarm System: White text on red background.
    - d. Telecommunications System: Black text on white background.
    - e. Temperature Control System: Black text on white background.
- D. Format for General Information and Operating Instructions:
1. Minimum Size: 1 inch (25 mm) by 2.5 inches (64 mm).
  2. Legend: Include information or instructions indicated or as required for proper and safe operation and maintenance.
  3. Text: All capitalized unless otherwise indicated.
  4. Minimum Text Height: 1/4 inch (6 mm).
  5. Color: Black text on white background unless otherwise indicated.
    - a. Exceptions:
      - 1) Provide white text on red background for general information or operational instructions for emergency systems.
      - 2) Provide white text on red background for general information or operational instructions for fire alarm systems.
- E. Format for Caution and Warning Messages:

1. Minimum Size: 2 inches (51 mm) by 4 inches (100 mm).
2. Legend: Include information or instructions indicated or as required for proper and safe operation and maintenance.
3. Text: All capitalized unless otherwise indicated.
4. Minimum Text Height: 1/2 inch (13 mm).
5. Color: Black text on yellow background unless otherwise indicated.

F. 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.

G. Format for Fire Alarm Device Identification:

1. Minimum Size: 3/8 inch (10 mm) by 1.5 inches (38 mm).
2. Legend: Designation indicated and device zone or address.
3. Text: All capitalized unless otherwise indicated.
4. Minimum Text Height: 3/16 inch (5 mm).
5. Color: Red text on white background.

## 2.03 WIRE AND CABLE MARKERS

A. Manufacturers:

1. Brady Corporation: [www.bradyid.com/#sle](http://www.bradyid.com/#sle).
2. HellermannTyton: [www.hellermanntyton.com/#sle](http://www.hellermanntyton.com/#sle).
3. Panduit Corp: [www.panduit.com/#sle](http://www.panduit.com/#sle).
4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Markers for Conductors and Cables: Use wrap-around self-adhesive vinyl cloth or wrap-around self-adhesive vinyl self-laminating type markers suitable for the conductor or cable to be identified.

C. Markers for Conductor and Cable Bundles: Use plastic marker tags secured by nylon cable ties.

D. Legend: Power source and circuit number or other designation indicated.

E. Text: Use factory pre-printed or machine-printed text, all capitalized unless otherwise indicated.

F. Minimum Text Height: 1/8 inch (3 mm).

G. Color: Black text on white background unless otherwise indicated.

## 2.04 VOLTAGE MARKERS

A. Manufacturers:

1. Brady Corporation: [www.bradyid.com/#sle](http://www.bradyid.com/#sle).
  2. Brimar Industries, Inc: [www.brimar.com/#sle](http://www.brimar.com/#sle).
  3. Seton Identification Products: [www.seton.com/#sle](http://www.seton.com/#sle).
  4. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Markers for Conduits: Use factory pre-printed self-adhesive vinyl, self-adhesive vinyl cloth, or vinyl snap-around type markers.
- C. Markers for Boxes and Equipment Enclosures: Use factory pre-printed self-adhesive vinyl or self-adhesive vinyl cloth type markers.
- D. Minimum Size:
1. Markers for Equipment: 1 1/8 by 4 1/2 inches (29 by 110 mm).
  2. Markers for Conduits: As recommended by manufacturer for conduit size to be identified.
- E. Legend:
1. Markers for Voltage Identification: Highest voltage present.
- F. Color: Black text on orange background unless otherwise indicated.

## 2.05 WARNING SIGNS AND LABELS

- A. Manufacturers:
1. Brimar Industries, Inc: [www.brimar.com/#sle](http://www.brimar.com/#sle).
  2. Clarion Safety Systems, LLC: [www.clarionsafety.com/#sle](http://www.clarionsafety.com/#sle).
  3. Insite Solutions, LLC: [www.stop-painting.com/#sle](http://www.stop-painting.com/#sle).
  4. Seton Identification Products: [www.seton.com/#sle](http://www.seton.com/#sle).
  5. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Comply with ANSI Z535.2 or ANSI Z535.4 as applicable.
- C. Warning Signs:
1. Materials:
    - a. Indoor Dry, Clean Locations: Use factory pre-printed rigid plastic or self-adhesive vinyl signs.
    - b. Outdoor Locations: Use factory pre-printed rigid aluminum signs.
  2. Rigid Signs: Provide four mounting holes at corners for mechanical fasteners.
  3. Minimum Size: 7 by 10 inches (178 by 254 mm) unless otherwise indicated.
- D. 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.
    - a. Do not use labels designed to be completed using handwritten text.
  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 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. Conduits: Legible from the floor.
  8. Boxes: Outside face of cover.
  9. Conductors and Cables: Legible from the point of access.
  10. 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, rivets, self-adhesive backing, or epoxy cement 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. Secure rigid signs using stainless steel screws.
- G. Mark all handwritten text, where permitted, to be neat and legible.

### 3.02 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - 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 26 05 53

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SECTION 26 24 16  
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 03 30 00 - Cast-in-Place Concrete: Concrete equipment pads.
- B. Section 26 05 26 - Grounding and Bonding for Electrical Systems.
- C. Section 26 05 29 - Hangers and Supports for Electrical Systems.
- D. Section 26 05 48 - Vibration and Seismic Controls for Electrical Systems.
- E. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.
- F. Section 26 05 73 - Power System Studies: Additional criteria for the selection and adjustment of equipment and associated protective devices specified in this section.

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.

#### 1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
  - 1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and 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. Coordinate the work with other trades to provide walls suitable for installation of flush-mounted panelboards where indicated.
  - 4. Verify with manufacturer that conductor terminations are suitable for use with the conductors to be installed.
  - 5. Notify Engineer of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

#### 1.05 SUBMITTALS

- A. See Section 01 30 00 - 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. Include dimensioned plan and elevation views of panelboards and adjacent equipment with all required clearances indicated.
  - 2. Clearly indicate whether proposed short circuit current ratings are fully rated or, where acceptable, series rated systems.
  - 3. Include documentation of listed series ratings upon request.
  - 4. Identify mounting conditions required for equipment seismic qualification.
- D. Manufacturer's equipment seismic qualification certification.



- E. Field Quality Control Test Reports.
- F. Maintenance Data: Include information on replacement parts and recommended maintenance procedures and intervals.

#### 1.06 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years experience.
- C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

#### 1.07 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.

### PART 2 PRODUCTS

#### 2.01 MANUFACTURERS

- A. ABB/GE: [www.electrification.us.abb.com/#sle](http://www.electrification.us.abb.com/#sle).
- B. Eaton Corporation: [www.eaton.com/#sle](http://www.eaton.com/#sle).
- C. Schneider Electric; Square D Products: [www.schneider-electric.us/#sle](http://www.schneider-electric.us/#sle).
- D. Siemens Industry, Inc: [www.usa.siemens.com/#sle](http://www.usa.siemens.com/#sle).
- E. Substitutions: See Section 01 60 00 - Product Requirements.
- F. Source Limitations: Furnish panelboards 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 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 as indicated on the drawings.
  - 2. Listed series ratings are not acceptable.
  - 3. Label equipment utilizing series ratings as required by NFPA 70.
- 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:
    - a. Indoor Clean, Dry Locations: Type 1.
  - 2. Boxes: Galvanized steel unless otherwise indicated.
    - a. Provide wiring gutters sized to accommodate the conductors to be installed.
    - b. Increase gutter space as required where sub-feed lugs, feed-through lugs, gutter taps, or oversized lugs are provided.
  - 3. Fronts:
    - a. Fronts for Surface-Mounted Enclosures: Same dimensions as boxes.
    - b. Fronts for Flush-Mounted Enclosures: Overlap boxes on all sides to conceal rough opening.
    - c. Finish for Painted Steel Fronts: Manufacturer's standard grey unless otherwise indicated.
  - 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.
- J. Selectivity: Where the requirement for selectivity is indicated, furnish products as required to achieve selective coordination.

- K. Multi-Section Panelboards: Provide enclosures of the same height, with feed-through lugs or sub-feed lugs and feeders as indicated or as required to interconnect sections.
- L. Load centers are not acceptable.
- M. Provide the following features and accessories where indicated or where required to complete installation:
  - 1. Feed-through lugs.
  - 2. Sub-feed lugs.

### 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: Copper, suitable for terminating copper conductors only
  - 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: Copper.
  - 3. Ground Bus Material: Copper.
- D. Circuit Breakers: Thermal magnetic bolt-on type unless otherwise indicated.
- E. Enclosures:
  - 1. Provide surface-mounted or flush-mounted enclosures as indicated.
  - 2. Fronts: Provide door-in-door trim with hinged cover for access to load terminals and wiring gutters, and separate 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:
      - 1) 22,000 rms symmetrical amperes at 240 VAC or 208 VAC.

- 2) 14,000 rms symmetrical amperes at 480 VAC.
  - 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: Copper, suitable for terminating copper conductors only.
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.
  - a. Provide field-adjustable magnetic instantaneous trip setting for circuit breaker frame sizes 225 amperes and larger.
5. Multi-Pole Circuit Breakers: Furnish with common trip for all poles.
6. Do not use tandem circuit breakers.
7. Do not use handle ties in lieu of multi-pole circuit breakers.
8. Provide the following features and accessories where indicated or where required to complete installation:
  - a. Shunt Trip: Provide coil voltage as required for connection to indicated trip actuator.
  - b. Handle Pad-Lock Provision: For locking circuit breaker handle in OFF position.

### 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 26 05 29.
- F. Provide required seismic controls in accordance with Section 26 05 48.

- G. Install panelboards plumb.
- H. Install flush-mounted panelboards so that trims fit completely flush to wall with no gaps and rough opening completely covered.
- I. 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.
- J. Mount floor-mounted power distribution panelboards on properly sized 4 inch (100 mm) high concrete pad constructed in accordance with Section 03 30 00.
- K. 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.
- L. Provide grounding and bonding in accordance with Section 26 05 26.
- M. Install all field-installed branch devices, components, and accessories.
- N. Set field-adjustable circuit breaker tripping function settings as determined by overcurrent protective device coordination study performed according to Section 26 05 73.
- O. Provide filler plates to cover unused spaces in panelboards.
- P. Provide circuit breaker lock-on devices to prevent unauthorized personnel from de-energizing essential loads where indicated. Also provide for the following:
  - 1. Emergency and night lighting circuits.
  - 2. Fire detection and alarm circuits.
  - 3. Communications equipment circuits.
  - 4. Intrusion detection and access control system circuits.
  - 5. Video surveillance system circuits.
- Q. Identify panelboards in accordance with Section 26 05 53.

### 3.03 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - 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 shunt trips 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 26 24 16

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SECTION 26 27 26  
WIRING DEVICES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Wall switches.
- B. Receptacles.
- C. Wall plates.

1.02 RELATED REQUIREMENTS

- A. Section 26 05 33.16 - Boxes for Electrical Systems.
- B. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

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.



#### 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. Notify Engineer of any conflicts or deviations from Contract Documents to obtain direction prior to proceeding with work.

#### 1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's catalog information showing dimensions, colors, and configurations.

#### 1.06 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years experience.
- C. Products: Listed, classified, and labeled as suitable for the purpose intended.
- D. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

#### 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 wiring devices suitable for intended use and with ratings adequate for load served.
- B. For single receptacles installed on an individual branch circuit, provide receptacle with ampere rating not less than that of the branch circuit.
- C. Provide weather resistant GFCI receptacles with specified weatherproof covers for receptacles installed outdoors or in damp or wet locations.

- D. Unless noted otherwise, do not use combination switch/receptacle devices.

## 2.02 WIRING DEVICE FINISHES

- A. Provide wiring device finishes matching existing finishes unless otherwise indicated.

## 2.03 WALL SWITCHES

- A. Manufacturers:
  1. Hubbell Incorporated: [www.hubbell.com/#sle](http://www.hubbell.com/#sle).
  2. Leviton Manufacturing Company, Inc: [www.leviton.com/#sle](http://www.leviton.com/#sle).
  3. Pass & Seymour, a brand of Legrand North America, Inc: [www.legrand.us/#sle](http://www.legrand.us/#sle).
  4. Substitutions: See Section 01 60 00 - Product Requirements.
- 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.
  2. TOGGLE SWITCHES: Toggle switches shall be back and side wired, heavy duty, specification grade, AC only, quiet-type, quick make, quick break, 20 ampere, 120/277 volt. Use of modular connectors is not approved.
- C. Standard Wall Switches: Commercial 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.
- D. Pilot Light Wall Switches: Commercial specification grade, 20 A, 120/277 V with red illuminated standard toggle type switch actuator and maintained contacts; illuminated with load on; single pole single throw, double pole single throw, three way, or four way as indicated on the drawings.

## 2.04 RECEPTACLES

- A. Manufacturers:
  1. Hubbell Incorporated: [www.hubbell.com/#sle](http://www.hubbell.com/#sle).
  2. Leviton Manufacturing Company, Inc: [www.leviton.com/#sle](http://www.leviton.com/#sle).
  3. Lutron Electronics Company, Inc; Designer Style: [www.lutron.com/#sle](http://www.lutron.com/#sle).
  4. Pass & Seymour, a brand of Legrand North America, Inc: [www.legrand.us/#sle](http://www.legrand.us/#sle).
  5. Substitutions: See Section 01 60 00 - Product Requirements.
  6. 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. Wiring Devices

1. Receptacles

- a. CONVENIENCE RECEPTACLES: Convenience receptacles shall be back and side wired, heavy duty, specification grade, parallel blade, U- grounding slot, 20 ampere, 125 volt, NEMA configuration 5-20R, with a one-piece brass or brass alloy plated backstrap and single ground strap with integral ground contacts.
- b. SURGE SUPPRESSOR RECEPTACLES: Surge suppressor receptacles (SSR) shall be specification grade grounding type duplex receptacle with integral protection from line to ground, line to neutral, and neutral to ground surges that meet or exceed the standards published in the latest edition of UL Standards 1449 and 498. SSR shall have visible and audible surge protection status indicators. The audible indicator shall sound continuously when surge protection is no longer functioning and shall continue until the device is replaced. The audible alarm shall be capable of being muted without removing coverplate. SSR shall be rated 20 amperes, 125 volts, NEMA configuration 5-20R.
- c. GROUND FAULT CURRENT INTERRUPTING RECEPTACLES: Ground fault current interrupting (GFCI) receptacles shall be specification grade grounding type duplex receptacle with integral ground fault circuit interrupter UL listed to standard 498 and 943 Class GFCI receptacles shall be rated 20 amperes, 125 volts, NEMA configuration 5- 20R. GFCI receptacles shall be installed in accordance with the latest published version of the NEC. Downstream protection feature of GFCI receptacles shall not be utilized except where approved by Engineering Services or CFS.
- d. USB COMBINATION RECEPTACLES: USB combination type receptacles, i.e. single device with USB charger ports and tamper- resistant convenience receptacle, shall be considered for use in student lounges, informal learning areas, and similar areas where students congregate. USB combination receptacles shall contain both Type A and Type C USB charger ports.
- e. Only install controlled receptacles as required for LEED or other energy codes. They shall be controlled via occupancy sensors. The controlled receptacles and cover plates shall be marked in accordance with the latest version of the NEC. Do not use time clocks to control the receptacles.
- f. In damp or wet locations use listed weather-resistant type receptacles.
- g. Use tamper-resistant receptacles as required by the latest version of the NEC.
- h. Use of modular connectors is not permitted. WALL PLATES

C. Manufacturers:

1. Hubbell Incorporated: [www.hubbell-wiring.com/#sle](http://www.hubbell-wiring.com/#sle).
2. Leviton Manufacturing Company, Inc: [www.leviton.com/#sle](http://www.leviton.com/#sle).
3. Lutron Electronics Company, Inc: [www.lutron.com/#sle](http://www.lutron.com/#sle).

4. Pass & Seymour, a brand of Legrand North America, Inc: [www.legrand.us/#sle](http://www.legrand.us/#sle).
  5. Eaton (Cooper Wiring Devices – Arrow Hart)
- D. Wall Plates: Comply with UL 514D.
1. Device coverplates in interior spaces shall be brushed stainless steel (302/304), satin smooth finish.
  2. Where brown colored devices are used, use brass coverplates.
  3. Where specifically required by Architects/Interior Designers, heavy duty thermoplastic plates may be used in some areas. It is anticipated that the reason for using plastic device plates will be to obtain a unique color.
  4. In historical buildings or other special spaces IU interiors should be consulted for the color to use.
  5. WEATHERPROOF COVERS
    - a. Receptacle covers shall be listed as “extra-duty” while in use style. Both the box and cover shall be metal.
    - b. Switch covers shall be high impact polycarbonate lever style, like Carlon E98TSCN. Also acceptable switch covers are clear silicon bubble plate style, like

#### Hubbell HBL1795. 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 conditions are satisfactory for installation prior to starting work.

##### 3.02 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 26 05 33.16 as required for installation of wiring devices provided under this section.
  1. Orient outlet boxes for vertical installation of wiring devices unless otherwise indicated.

2. Where multiple receptacles, wall switches, or wall dimmers are installed at the same location and at the same mounting height, gang devices together under a common wall plate.
  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 vertically mounted receptacles with grounding pole on top and horizontally mounted receptacles with grounding pole on left.
  - L. 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.
  - M. Install blank wall plates on junction boxes and on outlet boxes with no wiring devices installed or designated for future use.
  - N. Identify wiring devices in accordance with Section 26 05 53.
- 3.03 FIELD QUALITY CONTROL
- A. See Section 01 40 00 - 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.

3.04 ADJUSTING

- A. Adjust devices and wall plates to be flush and level.

3.05 CLEANING

- A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

END OF SECTION 26 27 26



SECTION 26 28 13  
FUSES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fuses.

1.02 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 248-10 - Low-Voltage Fuses - Part 10: Class L Fuses Current Edition, Including All Revisions.
- E. UL 248-12 - Low-Voltage Fuses - Part 12: Class R Fuses Current Edition, Including All Revisions.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
1. Coordinate fuse clips furnished in equipment provided under other sections for compatibility with indicated fuses.
  2. Coordinate fuse requirements according to manufacturer's recommendations and nameplate data for actual equipment to be installed.
  3. Notify Engineer of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.04 SUBMITTALS

- A. See Section 01 30 00 - 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.
- C. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
1. See Section 01 60 00 - Product Requirements, for additional provisions.
  2. Extra Fuses: One set(s) of three for each type and size installed.
  3. Fuse Pullers: One set(s) compatible with each type and size installed.



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1.05 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years experience.
- C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Bussmann, a division of Eaton Corporation: [www.cooperindustries.com/#sle](http://www.cooperindustries.com/#sle).
- B. Littelfuse, Inc: [www.littelfuse.com/#sle](http://www.littelfuse.com/#sle).
- C. Mersen: [ep-us.mersen.com/#sle](http://ep-us.mersen.com/#sle).
- D. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 APPLICATIONS

- A. Feeders:
  - 1. Fusible Switches up to 600 Amperes: Class RK1, time-delay.
  - 2. Fusible Switches Larger Than 600 Amperes: Class L, 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.
  - 1. Class RK5, Time-Delay Fuses.

- H. Class L Fuses: Comply with UL 248-10.

### PART 3 EXECUTION

#### 3.01 EXAMINATION

- A. Verify that fuse ratings are consistent with circuit voltage and manufacturer's recommendations and nameplate data for equipment.
- B. Verify that conditions are satisfactory for installation prior to starting work.

#### 3.02 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 26 28 13

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SECTION 26 28 16.16  
ENCLOSED SWITCHES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Enclosed safety switches.

1.02 RELATED REQUIREMENTS

- A. Section 26 05 26 - Grounding and Bonding for Electrical Systems.
- B. Section 26 05 29 - Hangers and Supports for Electrical Systems.
- C. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.
- D. Section 26 28 13 - 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 Engineer of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

#### 1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for enclosed switches and other installed components and accessories.

#### 1.06 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years experience.
- C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

#### 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.

### PART 2 PRODUCTS

#### 2.01 MANUFACTURERS

- A. ABB/GE: [www.electrification.us.abb.com/#sle](http://www.electrification.us.abb.com/#sle).
- B. Eaton Corporation: [www.eaton.com/#sle](http://www.eaton.com/#sle).
- C. Schneider Electric; Square D Products: [www.schneider-electric.us/#sle](http://www.schneider-electric.us/#sle).
- D. Siemens Industry, Inc: [www.usa.siemens.com/#sle](http://www.usa.siemens.com/#sle).
- E. Substitutions: See Section 01 60 00 - Product Requirements.

- F. 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. Heavy Duty Single Throw Switches Protected by Class R or Class L Fuses: 200,000 rms symmetrical amperes.
- G. Provide with switch blade contact position that is visible when the cover is open.
- H. Fuse Clips for Fusible Switches: As required to accept fuses indicated.
  - 1. Where NEMA Class R fuses are installed, provide rejection feature to prevent installation of fuses other than Class R.
- I. Conductor Terminations: Suitable for use with the conductors to be installed.
- J. Provide insulated, groundable fully rated solid neutral assembly where a neutral connection is required, with a suitable lug for terminating each neutral conductor.
- K. Provide solidly bonded equipment ground bus in each enclosed safety switch, with a suitable lug for terminating each equipment grounding conductor.
- L. 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:
    - a. Indoor Clean, Dry Locations: Type 1.
    - b. Outdoor Locations: Type 3R.
  - 2. Finish for Painted Steel Enclosures: Manufacturer's standard, factory applied grey unless otherwise indicated.
- M. Provide safety interlock to prevent opening the cover with the switch in the ON position with capability of overriding interlock for testing purposes.

- N. 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 26 05 29.
- 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 26 05 26.
- H. Provide fuses complying with Section 26 28 13 for fusible switches as indicated or as required by equipment manufacturer's recommendations.
- I. Identify enclosed switches in accordance with Section 26 05 53.

#### 3.03 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - 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 26 28 16.16



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SECTION 26 51 00  
INTERIOR LIGHTING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Interior luminaires.
- B. Ballasts and drivers.

1.02 RELATED REQUIREMENTS

- A. Section 26 05 29 - Hangers and Supports for Electrical Systems.
- B. Section 26 05 33 – Raceway and Boxes for Electrical Systems.
- C. Section 26 27 26 - 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/IESNA 500 - Standard for Installing Indoor Lighting Systems 2006.
- D. NECA/IESNA 502 - Standard for Installing Industrial Lighting Systems 2006.
- E. NEMA 410 - Performance Testing for Lighting Controls and Switching Devices with Electronic Drivers and Discharge Ballasts 2020.
- 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. UL 1598 - Luminaires Current Edition, Including All Revisions.
- I. 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.

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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 Engineer of any conflicts or deviations from Contract Documents to obtain direction prior to proceeding with work.

#### 1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. 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.
- C. 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.
- D. Operation and Maintenance Data: Instructions for each product including information on replacement parts.

#### 1.06 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.
- B. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

#### 1.07 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Provide 5-year manufacturer warranty for LED luminaires, including drivers.

### PART 2 PRODUCTS

#### 2.01 LUMINAIRE TYPES

- A. Furnish products as indicated in luminaire schedule included on the drawings.

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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.
  - 2. Luminaires Recessed in Insulated Ceilings: Listed and labeled as IC-rated, suitable for direct contact with insulation and combustible materials.
- 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. All lighting systems and components shall be classified by Underwriter's Laboratories, Inc. (UL) as suitable for the purpose specified and shown, bearing the appropriate "UL" label.
- J. Lighting designers shall follow IES standards to determine proper illumination levels for any given area or activity.
- K. Provide point-by-point photometric calculations of lighting design to Engineering Services or CFS for review and comment during the design process and prior to the completion of construction documents.

2.03 CIRCUIT DESIGN AND LOADING

- A. A. Circuit Loading: Lighting system power circuits shall not exceed 80% of the maximum allowed by the National Electrical Code.
  - 1. Maximum connected load on a branch circuit with a 20-amp overcurrent protective device shall not exceed 13 amps.

2.04 DRIVERS

- A. Drivers - General Requirements:

1. Electronic Ballasts/Drivers: Inrush currents not exceeding peak currents specified in NEMA 410.

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 26 27 26.

C. Circuit Design:

1. Use two circuits in hallways, alternating connections to fixtures, to minimize outages during repairs

## 2.05 FIXTURE INSTALLATION AND SUPPORT

- A. Fixtures shall be supported independently from ceilings.

- B. Stairwell Lighting: Fixtures in stairwells shall be installed for maintenance accessibility using a 6' stepladder. Dual technology motion sensors (infra-red and ultrasonic) and/or daylight sensors are encouraged for automatic control.

- C. Night Lights: Provide separate, non-switched night light circuits in mechanical equipment rooms, electrical rooms, and corridors.

1. Connect night lights to emergency power circuits where available.

## 2.06 LIGHTING CONTROLS

- A. Use occupancy sensors, timers, and/or daylight sensors to meet energy efficiency requirements. Stand-alone devices are preferred over building-wide systems.

1. Refer to Section 26 27 26 - Wiring Devices, Item C for occupancy sensor specifications.

- B. For new buildings or large renovations, specify the lighting controls supplier to provide a one-page summary explaining system functionality in spaces such as offices, classrooms, and conference rooms.

## 2.07 INTERIOR LIGHTING FIXTURES

- A. All interior lighting fixtures shall be LED type.

- B. Use dimming controls where practical, and coordinate dimming zones with Engineering Services or CFS.

1. Use 0-10V dimming controls wherever feasible.

- C. In non-accessible ceilings, downlights shall have a minimum diameter of 6 inches to facilitate maintenance.

## 2.08 LAMPS

- A. LED Lamp Requirements:

1. Color Temperature: 3500 Kelvin (University standard).

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2. Color Rendering Index (CRI): Minimum of 0.85.

## 2.09 DRIVERS AND BALLASTS

### A. LED Drivers:

1. Drivers shall be UL-listed and labeled for intended purposes.

### B. Spare Materials:

1. Contractor to provide 10% spare materials (minimum of two) for each type of driver used in the project.

## 2.10 EMERGENCY LIGHTING

### A. Emergency Lighting: Provide emergency lighting as required by referenced standards to ensure safe evacuation.

### B. Power Source:

1. Connect emergency lighting to emergency power systems where available.
2. Where emergency power systems are unavailable, use central inverter systems designed for the environment.

## 2.11 EXIT SIGNS

### A. Exit Signs: Preferred exit signs shall have cast aluminum housings with stencil faces and matte black finishes. Letters shall be red or green as required to match existing signage.

1. Light source must be LED.
2. Diffuser lenses must ensure even illumination, free from dots or hotspots.

## 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.

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3.02 INSTALLATION

- A. Coordinate locations of outlet boxes provided under Section 26 05 33 as required for installation of luminaires provided under this section.
- B. Install products in accordance with manufacturer's instructions.
- C. Install luminaires securely, in a neat and workmanlike manner, as specified in NECA 500 (commercial lighting) and NECA 502 (industrial lighting).
- D. Provide required support and attachment in accordance with Section 26 05 29.
- E. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.
- F. 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 surface-mounted and recessed luminaires to ceiling support channels or framing members or to building structure.
  - 4. Secure pendant-mounted luminaires to ceiling grid system framing members or to building structure.
  - 5. Secure lay-in luminaires to ceiling support channels using listed safety clips at four corners.
  - 6. In addition to ceiling support wires, provide two galvanized steel safety wire(s), minimum 12 gauge, connected from opposing corners of each recessed luminaire to building structure.
  - 7. See appropriate Division 9 section where suspended grid ceiling is specified for additional requirements.
- G. Recessed Luminaires:
  - 1. Install trims tight to mounting surface with no visible light leakage.
  - 2. Non-IC Rated Luminaires: Maintain required separation from insulation and combustible materials according to listing.
  - 3. Luminaires Recessed in Fire-Rated Ceilings: Install using accessories and firestopping materials to meet regulatory requirements for fire rating.
- H. Suspended Luminaires:
  - 1. Unless otherwise indicated, specified mounting heights are to bottom of luminaire.
  - 2. Install using the suspension method indicated, with support lengths and accessories as required for specified mounting height.
  - 3. Install canopies tight to mounting surface.
- I. Wall-Mounted Luminaires: Unless otherwise indicated, specified mounting heights are to center of luminaire.
- J. Install accessories furnished with each luminaire.
- K. Bond products and metal accessories to branch circuit equipment grounding conductor.

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- L. Install lamps in each luminaire.

### 3.03 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - 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. Correct wiring deficiencies and repair or replace damaged or defective products. Repair or replace excessively noisy ballasts as determined by Engineer.

### 3.04 ADJUSTING

- A. Aim and position adjustable luminaires to achieve desired illumination as indicated or as directed by Engineer. Secure locking fittings in place.

END OF SECTION 26 51 00





SECTION 28 46 00  
FIRE DETECTION AND ALARM

General

1. Fire alarm and detection systems shall be designed in compliance with applicable editions of NFPA 70 - “National Electrical Code”, and NFPA 72 – “National Fire Alarm Code” as adopted by the State of Indiana. Fire alarm and detection systems shall be UL listed and labeled, and FM approved.
  
2. Fire alarm and detection systems shall be an addressable system consisting of a microprocessor controlled fire alarm system control panel, manual fire alarm stations, automatic smoke and heat detectors, fire alarm signaling appliances, auxiliary fire alarm equipment, and raceways and conductors.
  
3. Unless directed otherwise, the fire alarm system shall be designed as a voice evacuation type system. As a minimum, provide a wired microphone, speaker zone selectivity, addressable notification devices and single button activation of manufacturer’s standard pre-recorded emergency messages at the main fire alarm control panel and at a remote annunciator / command center located at the fireman’s entry. In addition to the manufacturer’s standard pre-recorded alarm messages, permanently install Owner’s standard emergency messages to the system. Owner’s standard messages are to be accessed through discrete push-buttons located at the main fire alarm control panel and at each remote annunciator. The Owner currently has six (6) messages that are to be added to the system. Provisions shall be made to allow up to two (2) future messages to be added to the system. See Section I.5 for the exact wording to be used in the Owner’s pre-recorded emergency messages.
  
4. When the fire alarm system is not in alarm, the University allows the voice evacuation system to be used by qualified building occupants as a limited public address system. Speaker zones must be carefully coordinated with Engineering Services during the design process to allow this feature to be fully realized.
  
5. Initiating loops and signaling circuits shall not exceed 70 percent of capacity. Class B wiring shall be limited to a maximum of 60 devices per circuit. Layout of initiating loops shall follow the logical layout of the building (i.e. by floor or section); consult with Engineering Services.
  
6. System design calculations shall be submitted to the Engineering Services for review prior to release for bid.

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7. System design shall be coordinated with all disciplines. Particular attention shall be paid in coordination with the architectural design for doors and elevators, and the mechanical design for fire sprinkler piping and appliances, energy management system, and HVAC system equipment.
8. All field devices shall be labeled with loop or circuit and device number. Devices shall be labeled in a manner acceptable to manufacturer and Owner. Record drawings shall indicate all devices and corresponding device numbers in both plan and riser. Plan drawings shall indicate actual conduit routing, pull/access points, and conduit fill. Riser diagrams or tabular charts shall depict entire system including spare addresses. Record drawings must also include tabular charts indicating circuit loading and capacity for each strobe, speaker, and horn circuit.
9. System service shall be available from manufacturer qualified technicians with a maximum response time of eight hours. Parts shall be available within twenty-four hours.
10. Training and manuals shall be provided by the manufacturer. Field training and installation and operation manuals shall be provided as base bid. Where directed by Engineering Services an alternate shall be provided for the cost of factory certified training and technical manuals for the certification of an Indiana University technician. The technician shall be certified for the service of Indiana University systems only.
11. Owners acceptance testing shall not commence until installer provides written certification that system is installed in compliance with plans and specifications. This testing shall also include IU Fire Alarm Techs signing off/ witnessing testing of all tamper and flow switches. Within 14 days of completion of system testing the Contractor shall turn over to the Owner the "Record of Completion." This document shall include:
- a. Completed and certified NFPA 72 Inspection and Testing Form.
  - b. Original copies of Owner's Manuals.
  - c. Original copies of installation instructions, and record drawings. Record drawings are to indicate device locations, settings and routing of conductors. A copy (in addition to the copy included in the O&M manuals) of the As-Built Fire Alarm system drawings shall be left inside the main fire alarm control panel at the end of the project.
  - d. The "Record of Completion" shall be bound in 3-ring binders.
- B. Fire Alarm System Control Panels
1. Fire alarm system control panels shall be addressable microprocessor-controlled units.
  2. Provide field programmability to Add / Delete / Reprogram point identified addressable devices.

3. Fire alarm system control panel shall have sensitivity testing of initiating devices and/or verification of device status. System shall employ digital sensitivity measurement techniques. Analog sensitivity measurements are not During normal operation, devices approaching sensitivity threshold limits shall initiate a "threshold warning" trouble status at the fire alarm system control panel. This trouble signal shall be reported at the campus control center.
5. Provide separate historical logging of alarm and trouble events by device, including time, date, and status in log entry. Log shall store 100 incidents minimum, scrollable display, and wrap back to beginning.
6. System shall employ internal software supervision with parity checking.
7. Provide Fire Alarm Control Panels with an RS-232 interface (serial output) for connections by Owner provided monitoring equipment.
8. Do not locate Fire Alarm Control Panels (Does not apply to remote annunciators) in areas accessible to the public. They should be installed in Security Rooms, Electrical Rooms, etc. Annunciator panels should be located in a location most available to responding emergency crews, without excessive travel, keys or special knowledge. In student housing an annunciator panel shall be located within close proximity to the front desk. Both locations can be served by one panel if the building configuration allows. Confirm locations with INLOCC.
9. Install a 120V receptacle for general use within 10 feet of the main fire alarm panel.
10. Preferred Manufacturers – Other manufacturers must be approved by Engineering Services.
  - a. Simplex, a Johnson Controls Company
  - b. Siemens Building Technologies, Cerberus Division.
  - c. Ademco and Fire Lite (Small Buildings under 4000 square feet only). Verify with Engineering Services the manufacturers to be specified on each project.

#### C. Manual Fire Alarm Stations

1. Manual fire alarm stations shall be semi-flush mounted, single action station, point identification addressable and key reset.
2. Keys used to reset the manual stations shall be the same as the control panels, no hex keys allowed.
3. Plastic rods shall be used. Glass-break rods shall not be used.
4. In addition to Code required manual fire alarm stations, a single manual firealarm station shall be installed at the following location(s). Coordinate exact location(s) with Engineering Services.

- a. By each fire pump in buildings served by a fire pump.
- b. Where a single fire pump serves multiple buildings, a manual fire alarm station shall be installed in each building by each sprinkler riser.
- c. By the main sprinkler riser in buildings without a fire pump.
- d. In residence halls at the “center desk” area.
- e. In buildings with 100% fire suppression and the manual pull stations are being limited by design, only install manual pull stations at locations indicated in items a, b, c and d.

#### D. Automatic Smoke and Heat Detectors

1. Automatic smoke and heat detectors shall be point identification addressable.
2. The system shall use photoelectric type smoke detectors, heat detectors (restorable, rate compensated type), and where specifically required photoelectric beam detectors. Variation from these devices shall be obtained from Engineering Services. Application of the detection systems shall be coordinated with fire sprinkler systems. The minimum coverage of detection devices shall include public corridors, storage rooms, electrical and telecommunications rooms. Heat detectors shall be installed in mechanical equipment spaces. See schedule at end of section.
3. Duct mounted smoke detector location is to be in strict accordance with NFPA standards and manufacturers recommendations. Specifically note distance from fan, duct sizing, duct velocities, and temperature range. Coordinate detector location with any humidification equipment. Maintain manufacturer’s recommended clearance for proper operation of both systems.
4. In areas where the maintenance of smoke detectors is not readily available; e.g. atriums, MRI rooms with limited access, etc., or in areas of significant importance, e.g. Data Center machine rooms, Lilly Library stacks area, etc. a Aspirating Smoke Detection System shall be considered in lieu of standard smoke detection devices.
5. Use of beam detectors is not preferred and any use must be approved by Engineering Services.

#### E. Fire Alarm Notification Appliances

1. Fire alarm notification appliances and their location shall comply with the requirements NFPA 72, which exceeds the requirements of the Americans with Disabilities Act. Consider placing audible alarms in occupied areas where separated by two or more doors from nearest alarms.
2. Audible, visual, and audio/visual combination appliances shall be wired with audible portion of appliance on one set of wires and visual on a second. Visual and audible appliances shall be synchronized where applicable.

3. Red colored devices shall be used. The use of white colored notification appliances is acceptable in finished spaces. Verify the use of white colored devices with Engineering Services. Make sure the Architects understand the plastic used in the white devices will eventually “yellow” and the appearance may not be very attractive.

4. In large open rooms or spaces such as gymnasiums, lobbies, etc use a HyperSpike speaker in lieu of many standard speaker devices.

5. Preferred Manufacturers

- a. Simplex
- b. Siemens Building Technologies, Cerberus Division
- c. Wheelock

F. Remote Annunciators

1. Remote annunciators are to be supervised, including audible and visual indication of fire alarm by zone address, English descriptor, and audible and visual indication of system trouble. Communication with fire alarm system control panel shall be accomplished using a multiplexed signal over a shielded, twisted pair cable.

2. Contact Engineering Services (who will interface with INLOCC (Office of Insurance and Loss Control and Claims) for location of remote annunciators and Knox Boxes. In general they will be located at the normal building access point location for the fire department - Contacting the fire department will be by the university.

3. Install exterior strobes and bells as required by code or as directed by Engineering Services or CFS.

4. The Knox box will be furnished by INLOCC at no cost to the project for installation by the contractor. The Knox box shall be supervised, typically by the building door access control system. Do not contact the local fire department about the Knox box.

G. Auxiliary Fire Alarm Equipment

1. In new buildings door releases shall be installed on all fire doors. On retrofit projects when conducting field surveys note where existing doors are being propped or wedge open and discuss with Engineering Services if door releases need to be installed. Door release devices shall be magnetic devices with integral diodes to reduce buzzing. Zoning of door release devices shall be considered. Point identification addressable auxiliary relays shall be used for the monitoring and control of alternate automatic fire extinguishing systems, elevator recall, door holders, fire pumps, water flow, tamper, and pre-action sprinkler systems. Minimum contact rating 5 amperes at 24 volts, 5 amperes at 120 volts, and 3 amperes at 240 volts.

3. Surge protection modules shall be employed when an initiating circuit leaves a building shell. The devices shall provide for protection in the common and normal modes of the circuit. The device shall be listed and labeled to UL 497B.
4. Alternate automatic fire extinguishing system release module and power supply shall be included where these systems are installed.
5. Auxiliary power supply systems shall meet all NFPA 72 standards as adopted by the State of Indiana, including requirements for supervision, location, and accessibility. Battery system shall be sized to provide 24 hours of supervision and then provide 10 minutes operation of all signaling devices. System shall have common keyed locks with fire alarm system control panel.
6. Fire alarm system alarm and trouble signals shall be communicated using programmable output relays. Provide sufficient number of auxiliary relays to remotely signal fire alarm, trouble, and water flow conditions. The output relays shall activate automatic dialers.
  - a. A minimum of two (2) automatic dialers must be installed. General alarm signals shall be sent to IU Police Department through one (1) dialer; all other signals shall be sent to Campus Control Center through the other dialer.
  - b. If both automatic dialers can not be integrated into Fire Alarm Control Panel then specify Honeywell Vista-20P auto dialers be specified on the IUB campus. Contact Engineering Services or CFS for the directions regarding the other campuses.

#### H. Fire Alarm System Wire and Cable

1. Raceways, branch circuit conductors, boxes and devices shall be in accordance with respective Division 26 Design Standards.
2. Initiating loops and control/monitoring circuits shall be stranded, copper, shielded, twisted pair cable and sized in accordance with manufacturers written specifications, but shall not be smaller than 22 AWG. Signal circuits and 24 VDC power circuits shall be stranded, copper, twisted pair cable and sized in accordance with manufacturers written specifications, but not smaller than 18 AWG.
3. Terminations and splices shall be labeled with circuit and device number and must be made in appropriate junction boxes and indicated on record documents.
4. Fire Alarm Conduit system shall be painted red. Junction boxes shall be labeled as "FIRE ALARM" and have visual label identifying circuiting.
5. Power limited circuit conductors and their installation shall meet all applicable requirements of NEC Article 760.

#### I. Fire Alarm System Standard Voice Messages

1. These voice messages are in addition to the manufacturer's standard fire evacuation message and are activated by pressing a single button located at the Main Fire Alarm Control Panel. They are silenced by pressing a reset button at the same panel.

2. When activated, these messages are to be repeated three (3) times, and then every five (5) minutes thereafter until manually reset.
3. The manufacturer's standard fire evacuation message is to be repeated three (3) times, then go to horns three times and then repeat message until manually reset.
4. Pre-tones – pre-tones are sounds played prior to a voice message being broadcast.
  - a. Prior to any of the IU standard voice messages being broadcast, there will be no pre-tone sound played.
  - b. Prior to the manufacturer's standard fire evacuation message being broadcast, the pre-tone shall be a Slow Whoop.
5. IU standard voice messages are as follows (Verify with Engineering Services if the list below is up to date).
  - a. Shelter (generic weather) – "Attention. Attention. Attention. A weather emergency has been reported in the area. Please move to a designated severe weather shelter immediately and await further instruction. Do not delay."
  - b. Shelter (active shooter, hostile intruder) – "Attention. Attention. Attention. There is an armed individual at large on campus. Trust your instincts and take safe shelter in the nearest available room and lock the door if possible. Remain in place until the police, or a campus administrator known to you, gives the all clear."
  - c. Shelter (all clear) – "Attention. Attention. Attention. The building condition has been cleared. You may resume normal activities."
  - d. Evacuation (fire, bomb threat, other) – "Attention. Attention. Attention. An immediate evacuation of this building has been ordered. outdoor assembly area. Do NOT use the elevators. Walk to the nearest stairway exit and move to the designated outdoor assembly area."
  - e. Attention (all) – "Attention. Attention. Attention. An IU Notify Alert has been issued. Please check your email or text messages."
  - f. Shelter (child areas: active shooter, hostile intruder) - "Attention. Attention. Attention. Implement classroom lock down immediately. Do not delay." outdoor assembly area. Do NOT use the elevators. Walk to the nearest stairway exit and move to the designated outdoor assembly area."
  - e. Attention (all) – "Attention. Attention. Attention. An IU Notify Alert has been issued. Please check your email or text messages."
  - f. Shelter (child areas: active shooter, hostile intruder) - "Attention. Attention. Attention. Implement classroom lock down immediately. Do not delay."



6. Currently there are three (3) known recordings of these messages.
  - a. JCI-Simplex – IUB recording. Use on all regional campuses except IUPUI and IUS.
  - b. JCI-Simplex – IUS recording.
  - c. Siemens Industry, Inc.– IUPUI recording.

#### J. Fire Alarm System Interface with HVAC Equipment

1. In general, do not use relay base type duct smoke detectors to shut down air handling unit supply and/or return fans.
2. The following sequence shall be followed, unless directed otherwise by Engineering Services.
  - a. Fan Shut Down Relay: Install separate fire alarm system relay near air handling unit supply and/or return fan motor controller. Connect to shut down fan upon receipt of signal from Main Fire Alarm Control Panel.
  - b. Temperature Control Panel Notification Relay: Install separate fire alarm system relay near building temperature control panel monitoring/controlling air handling unit. This relay is a notification relay only and shall be activated by the Main Fire Alarm Control Panel.
  - c. The signal to activate Fan Shut Down Relay, and Temperature Control Panel Notification Relay shall be sent by main Fire Alarm Control Panel upon receipt of alarm status from duct smoke detector.

#### K. Fire Alarm System Interface with Campus Wide Mass Notification

1. All fire alarm systems shall interface with campus wide mass notification system. Provide each main fire alarm control panel with the necessary equipment to allow this interface to occur.
2. The mass notification system consists of the following devices contained in a cabinet located as close as possible to the main fire alarm control panel.
  - a. radio receiver
  - b. control station
  - c. power supply with battery backup
  - d. antenna – maybe internal to cabinet or may need to be installed elsewhere to obtain adequate reception
3. A dedicated power circuit terminated in a receptacle will be required to be
6. Currently there are three (3) known recordings of these messages.
  - a. JCI-Simplex – IUB recording. Use on all regional campuses except IUPUI and IUS.
  - b. JCI-Simplex – IUS recording.
  - c. Siemens Industry, Inc.– IUPUI recording.

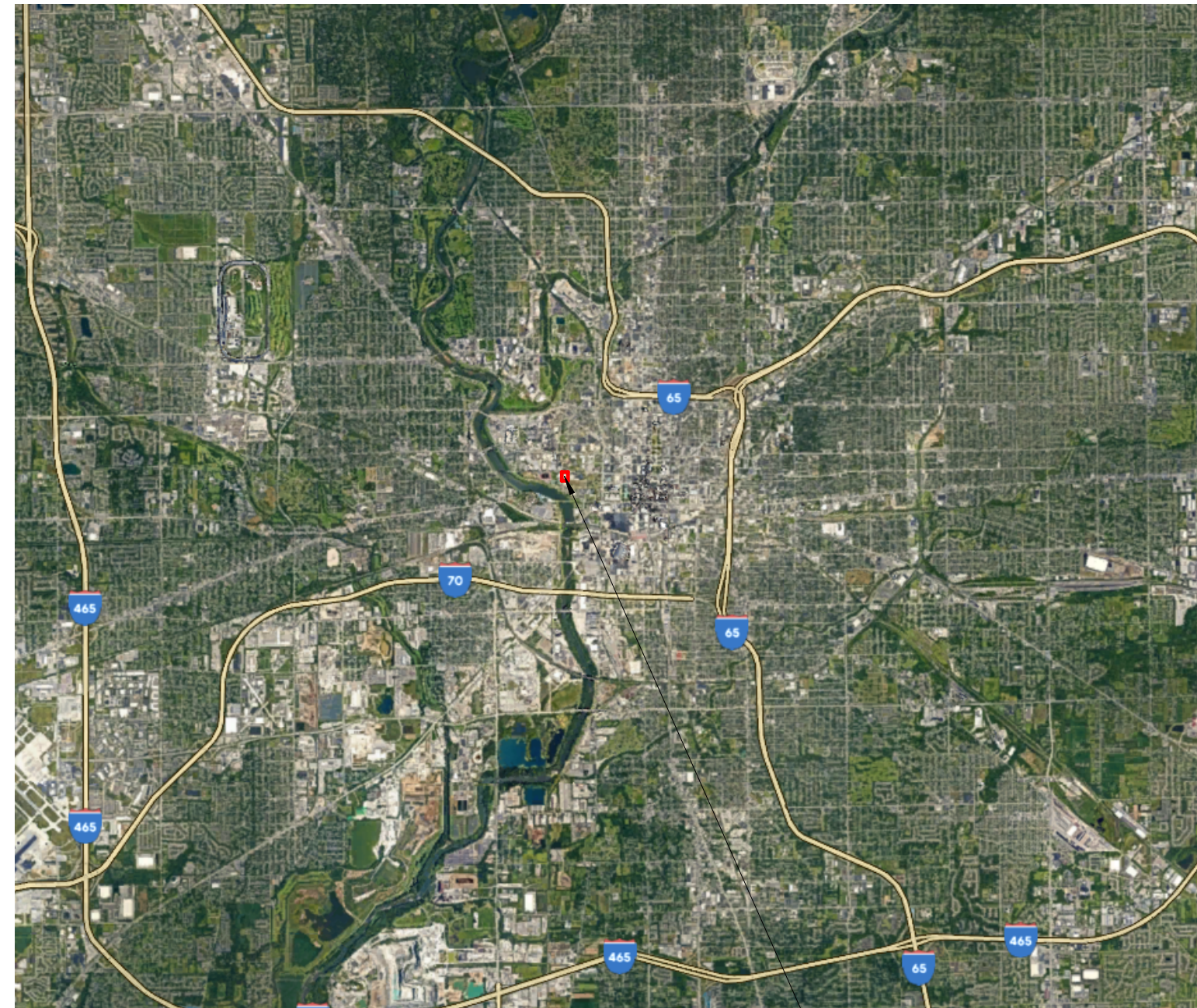
#### J. Fire Alarm System Interface with HVAC Equipment

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#### K. Fire Alarm System Interface with Campus Wide Mass Notification

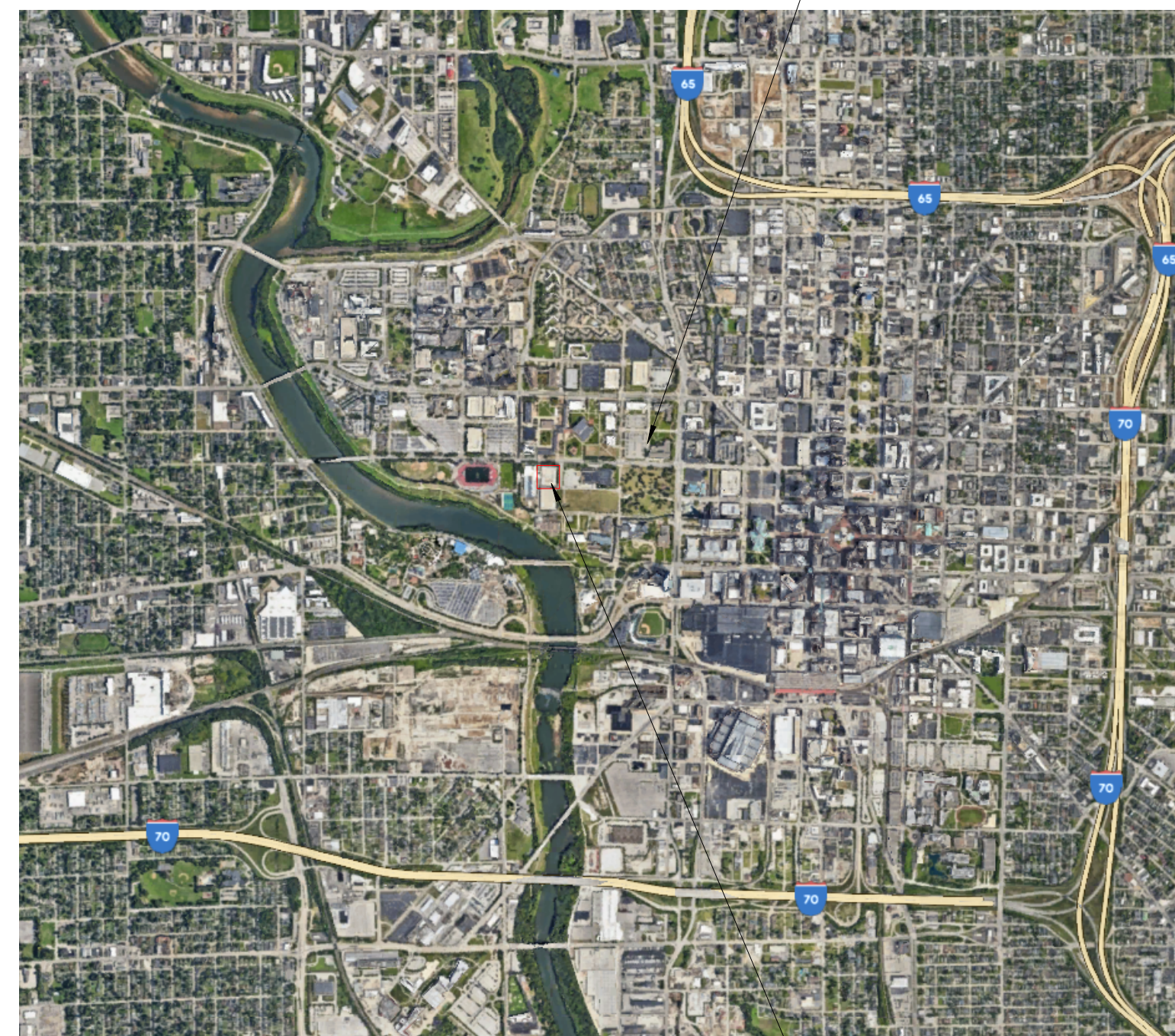
1. All fire alarm systems shall interface with campus wide mass notification system. Provide each main fire alarm control panel with the necessary equipment to allow this interface to occur.
2. The mass notification system consists of the following devices contained in a cabinet located as close as possible to the main fire alarm control panel.
  - a. radio receiver
  - b. control station
  - c. power supply with battery backup
  - d. antenna – maybe internal to cabinet or may need to be installed elsewhere to obtain adequate reception
3. A dedicated power circuit terminated in a receptacle will be required to be installed inside the cabinet housing the mass notification system. The power circuit shall originate from a generator backed up panelboard if the building has generator power.
4. The current supplier / integrator of the mass notification equipment is ERS-OCI Wireless.

END OF SECTION 28 46 00



AREA MAP

PROJECT LOCATION



VICINITY MAP

PROJECT LOCATION



CAMPUS MAP

# INDIANA UNIVERSITY INDIANAPOLIS 498 BLAKE ST, INDIANAPOLIS, IN 46202 100% CONSTRUCTION DOCUMENTS SPORTS COMPLEX ELEVATOR ALTERATIONS 23.1015



**OWNER**

THE TRUSTEES OF INDIANA UNIVERSITY

Contact:  
Donald S. Lukes  
University Treasurer

107 S. Indiana Ave  
Bryan Hall, Room 212  
Bloomington, IN 47405

p: 812.855.4206  
e: dlukes@iu.edu

**ARCHITECT**

GUIDON DESIGN INC.

Contact:  
Mike Davis  
Project Architect

1221 North Pennsylvania Street  
Indianapolis, IN 46202

p: 812.453.2940  
e: mdavis@guidon.com

**MECHANICAL ENGINEER**

GUIDON DESIGN INC.

Contact:  
Tony McNeil  
Mechanical Engineer

1221 North Pennsylvania Street  
Indianapolis, IN 46202

p: 317.800.6388 x 182  
e: tmcneil@guidon.com

**ELECTRICAL ENGINEER**

GUIDON DESIGN INC.

Contact:  
Eric Elpers  
Electrical Engineer

1221 North Pennsylvania Street  
Indianapolis, IN 46202

p: 317.397.9212  
e: eelpers@guidon.com

**VERTICAL TRANSPORTATION CONSULTANT**

LERCH BATES

Contact:  
Jim Hoppensteadt  
Consultant

216 S. Jefferson St  
Suite LL2  
Chicago, IL 60661

p: 312.256.1010  
e: jim.hoppensteadt@lerchbates.com

**SHEET INDEX**

SHEET NUMBER	SHEET NAME
GENERAL	
G1000	COVER SHEET
G1101	LIFE SAFETY PLAN
G1101	PHASING PLANS AND MODERNIZATION SCOPE
ARCHITECTURAL	
AE001	ARCHITECTURAL SYMBOLS AND ABBREVIATIONS
AE100	BASEMENT DEMOLITION AND ARCHITECTURAL PLANS
AE101	FIRST FLOOR DEMOLITION AND ARCHITECTURAL PLANS
AE102	SECOND FLOOR DEMOLITION AND ARCHITECTURAL PLANS
AE103	TYPICAL UPPER FLOORS DEMOLITION AND ARCHITECTURAL PLANS
AE104	FOURTH FLOOR DEMOLITION AND ARCHITECTURAL PLANS
AE105	FIFTH FLOOR GARAGE ARCHITECTURAL PLANS
AE501	SECTIONS AND DOOR SCHEDULE
A201	CAB INTERIORS AND FINISH SCHEDULE
PLUMBING	
P000	PLUMBING SYMBOLS AND ABBREVIATIONS
MECHANICAL	
M000	MECHANICAL SYMBOLS AND ABBREVIATIONS
MD100	DEMOLITION BASEMENT MECHANICAL HVAC PLAN
MH100	BASEMENT MECHANICAL HVAC PLAN
MH101	FIRST FLOOR MECHANICAL HVAC PLAN
MM500	MECHANICAL DETAILS AND SCHEDULES
ELECTRICAL	
E000	ELECTRICAL SYMBOLS AND ABBREVIATIONS
E001	ELECTRICAL GENERAL NOTES
E100	BASEMENT ELECTRICAL PLANS
E101	FIRST FLOOR ELECTRICAL PLANS
E102	SECOND THROUGH FOURTH FLOOR ELECTRICAL PLANS
E105	FIFTH FLOOR ELECTRICAL PLANS
EP400	ELECTRICAL ONE-LINE DIAGRAM
EP500	ELECTRICAL DETAILS & SCHEDULES

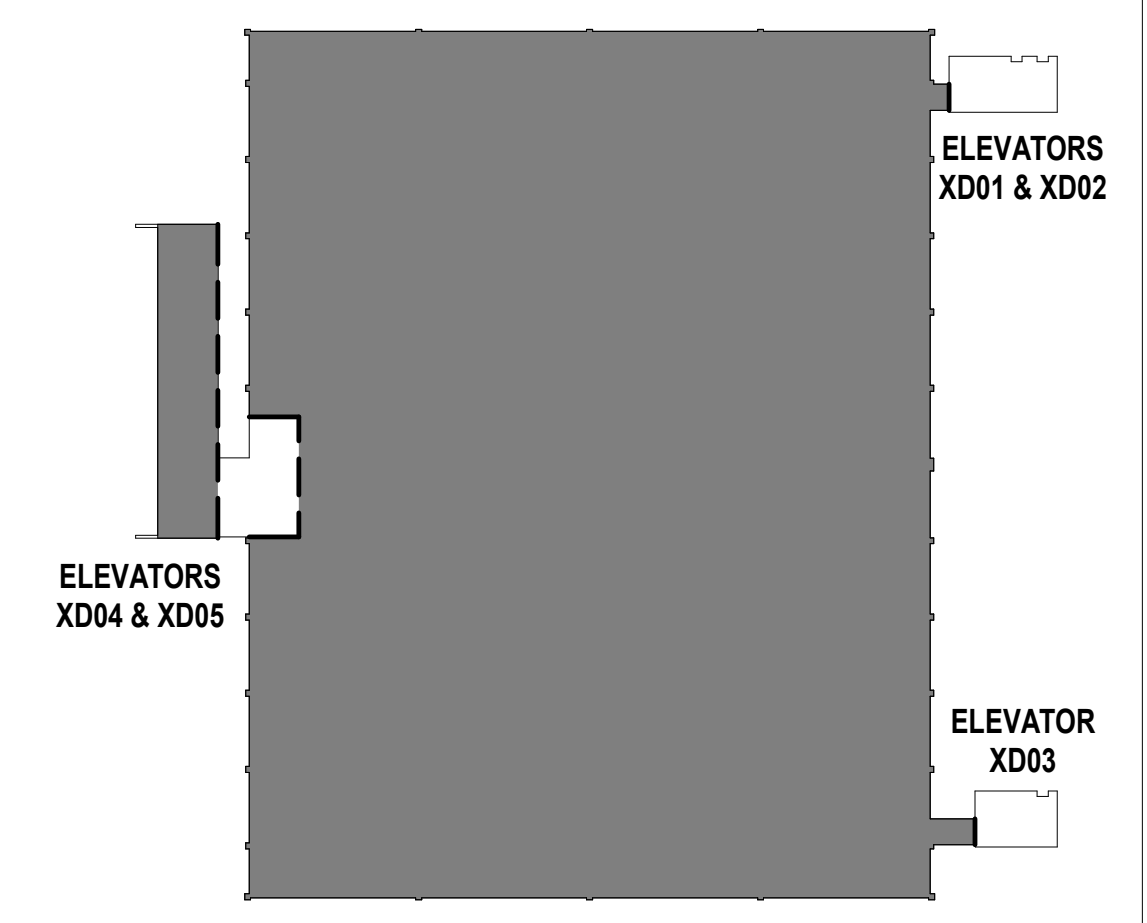
REVISIONS	DATE	REMARKS

OWNER / CLIENT

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SUSTAINABLE ARCHITECTURE + ENGINEERING  
1221 N PENNSYLVANIA ST. INDIANAPOLIS, IN 46202  
317.800.6388 WWW.GUIDONDESIGN.COM  
DESIGN ARCHITECT/ENGINEER

ENGINEER/ARCHITECTS SEAL

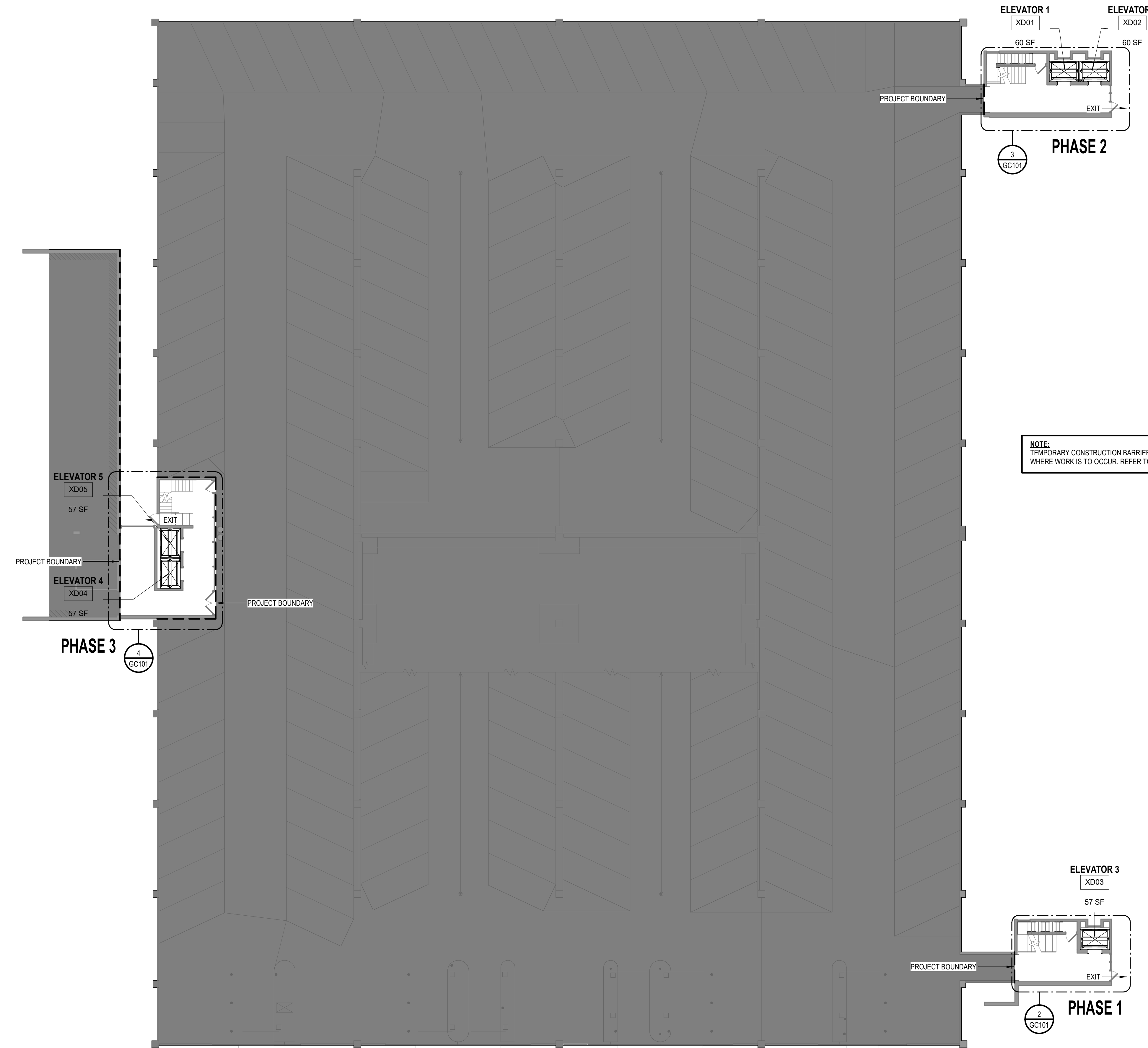
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SPORTS COMPLEX ELEVATOR ALTERATIONS  
498 BLAKE ST, INDIANAPOLIS, IN 46202  
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KEYPLAN

PROJECT ADDRESS	
DESIGNED: TD	DRAWN: TD
APPROVED: MD	CHECKED: MD
CLIENT PROJECT NUMBER	
N/A	
PROJECT NUMBER	
23.1015	
DATE	
12/17/2024	
COVER SHEET	

**G1000**



1 LIFE SAFETY PLAN  
SCALE: 1/16" = 1'-0"

**BUILDING CODE PROJECT ANALYSIS**

BUILDING ADDRESS	488 BLAKE ST., INDIANAPOLIS, IN 46202		NFPA 101	NFPA	IBC 2021
GOVERNING CODE PROVISIONS			101	101	101
BUILDING INFORMATION			3021	2019	2021
BUILDING USE AND OCCUPANCY CLASSIFICATION	GROUP S-2		CHAPTER 42	88A	CH. 3
CONSTRUCTION TYPE	TYPE X-X				
PARKING GARAGE OPEN OR ENCLOSED	OPEN				
PARKING GARAGE FULLY FIRE SPRINKLERED	NO				
STANDPIPE	YES				
AREA PER TIER	ALLOWABLE	ACTUAL			
RAMP ACCESS		EXISTING			405.4
ALLOWABLE BUILDING HEIGHT ABOVE GRADE		EXISTING			504.3
ALLOWABLE BUILDING STORIES		EXISTING			504.4
ALLOWABLE BUILDING AREA		EXISTING			508.2
OCCUPANCY SEPARATION		EXISTING			508.4
<b>CONSTRUCTION RATING OF BUILDING ELEMENTS</b>					
FIRE RESISTANT RATING REQUIREMENTS FOR BUILDING ELEMENTS (HOURS)					
STRUCTURAL FRAME	-HR FIRE RATING	EXISTING			601
BEARING WALLS - EXTERIOR	-HR FIRE RATING	EXISTING			
BEARING WALLS - INTERIOR	-HR FIRE RATING	EXISTING			
NON BEARING WALLS - EXTERIOR	-HR FIRE RATING	EXISTING			
NON BEARING WALLS - INTERIOR	-HR FIRE RATING	EXISTING			
FLOOR CONSTRUCTION	-HR FIRE RATING	EXISTING			
ROOF CONSTRUCTION	-HR FIRE RATING	EXISTING			
ELEVATOR SHAFT (FOR OPEN GARAGES)	-HR FIRE RATING	EXISTING			54.8
ELEVATOR MACHINE ROOM (FOR OPEN GARAGES)	-HR FIRE RATING	EXISTING			3005.4
MEANS OF EGRESS					
MEANS OF EGRESS - FUNCTIONAL OCCUPANT LOAD					
FUNCTIONAL OCCUPANT LOAD	OCC X.DX1 (IBC)	OCC X.DX2 (NFPA)			1004.5
EGRESS WIDTH	REQUIRED	PROVIDED			1005
EXIT STAIR WIDTH	OCC X.DX1	EXISTING			1005.1.1
EXIT DOOR WIDTH	OCC X.DX1	EXISTING			1005.2
MINIMUM NUMBER OF EXITS	REQUIRED	PROVIDED			1006
EXITS PER FLOOR	2	EXISTING			428.2.2.1
STAIR SHAFT RATING	0 HR FIRE RATING	EXISTING			4.1.5 1019.3
COMMON PATH OF TRAVEL	OCCUPANT	EXISTING			428.2.2.2 1006.2.1
EXIT ACCESS TRAVEL DISTANCE	DISTANCE 50'	EXISTING			428.2.2.1 1017.2
EXIT ACCESS TRAVEL DISTANCE	OCCUPANT	EXISTING			
STRUCTURE					
RISK CATEGORY	II				1004.5
BASIC DESIGN WIND SPEED, V	120 MPH				1609.3
ALLOWABLE STRESS DESIGN WIND SPEED, V <sub>ASD</sub>	93 MPH				1609.3.1
WINDBORNE DEBRIS REGION	NO				202
WINDBORNE DEBRIS WIND ZONE	NA				1609.2.2
SEISMIC DESIGN CATEGORY	C				1613.2.5

**BUILDING CODES**

IBHS GOVERNING CODES	
INDIANA BUILDING CODE	2014 ED.
INDIANA PLUMBING CODE	2012 ED.
INDIANA ELECTRIC CODE	2008 ED.
INDIANA MECHANICAL CODE	2014 ED.
INDIANA ENERGY CONSERVATION CODE	2007 ED.
INDIANA GAS CODE	2014 ED.
INDIANA FIRE CODE	2014 ED.
ISCH GOVERNING CODES	
NFPA 101 LIFE SAFETY CODE	2012 ED.
NFPA 99 HEALTHCARE CODE	2012 ED.

**CODE ANALYSIS LEGEND**

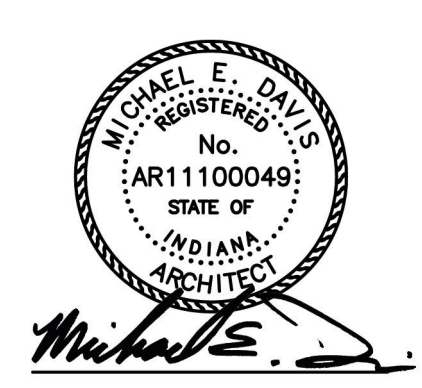
---	PROJECT BOUNDARY
→	EGRESS EXIT SIGNAGE

**REVISIONS**

NO.	DATE	REVISIONS

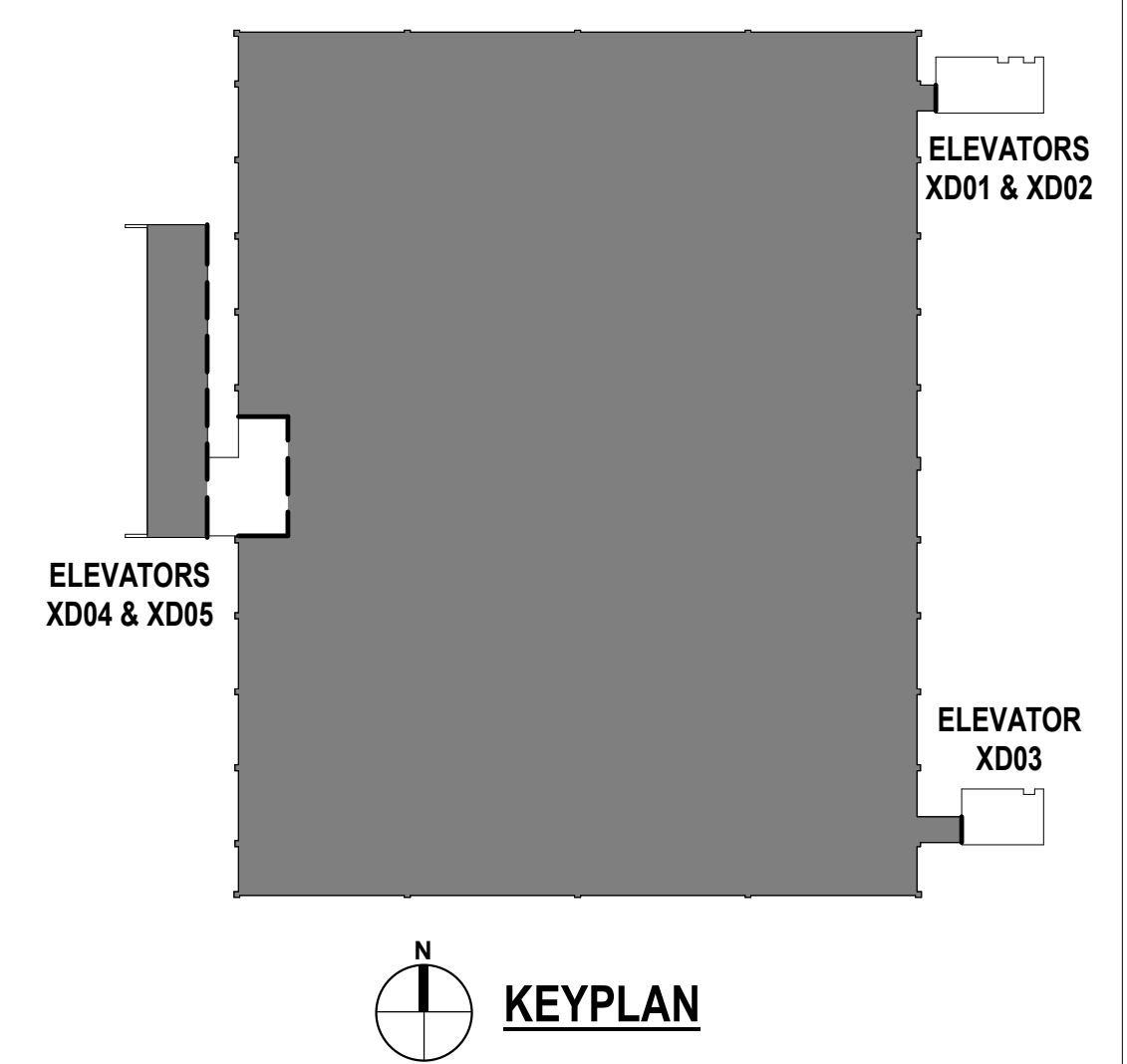
**OWNER / CLIENT**

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SUSTAINABLE ARCHITECTURE + ENGINEERING  
1221 IN PENNSYLVANIA ST., INDIANAPOLIS, IN 46202  
317.630.6388 WWW.GUIDONDESIGN.COM



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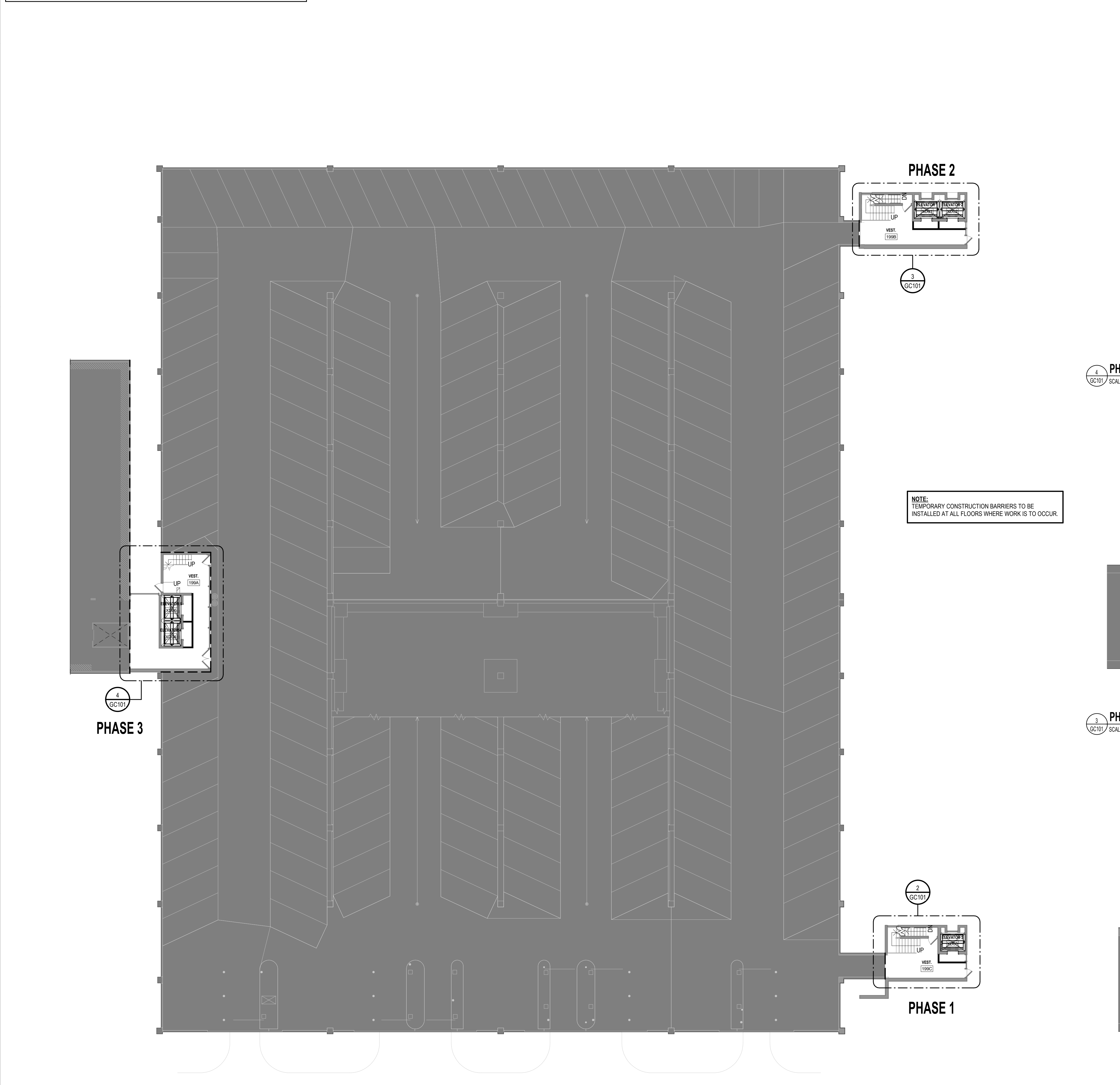
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APPROVED: MD	CHECKED: MD
CLIENT PROJECT NUMBER	
N/A	
PROJECT NUMBER	
23 1015	
DATE	
12/17/2024	
LIFE SAFETY PLAN	
<b>G1101</b>	



**MODERNIZATION SCHEDULE**

	HOISTWAY ENTRANCE	CAB	MACHINE ROOM	HALLWAY	HOISTWAY	PIT	HOISTWAY AND PIT
ELEVATOR XD01	N	N	N	N	N	N	N
ELEVATOR XD02	N	N	N	N	N	N	N
ELEVATOR XD03	N	N	N	N	N	N	N
ELEVATOR XD04	A	N	N	N	N	N	N
ELEVATOR XD05	A	N	N	N	N	N	N

**NOTE:**  
REFER TO REPORT IN BASIS OF DESIGN FROM THE ELEVATOR SUB-CONSULTANT FOR MORE INFORMATION.



**1** OVERALL PHASING PLAN  
SCALE: 1/8" = 1'-0"

**PHASING GENERAL NOTES**

- PROJECT AREAS TO BE OCCUPIED BY VISITORS THROUGHOUT CONSTRUCTION. MAINTAIN STAIR EGRESS THROUGHOUT PROJECT.
- REFER TO SPECIFICATION 01 00 00 FOR INFORMATION ON WORK DURATION FOR EACH PHASE AND AREA OF WORK.
- ONLY ONE ELEVATOR TO BE OFFLINE AT A TIME. EACH ELEVATOR TO BE FULLY OPERATIONAL PRIOR TO STARTING WORK ON THE NEXT ELEVATOR. COORDINATE FINAL PHASING PLAN & SCHEDULE WITH OWNER PRIOR TO STARTING ANY WORK.
- 

**PHASING PLAN NOTES**

- PROVIDE TEMPORARY CONSTRUCTION BARRIERS FULLY AROUND ELEVATOR IN CONSTRUCTION. ONLY CLOSE OFF ONE ELEVATOR AT A TIME.

REVISIONS	DATE	REMARKS

OWNER / CLIENT

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317.600.6388 WWW.GUIDONDESIGN.COM

DESIGN ARCHITECT/ENGINEER

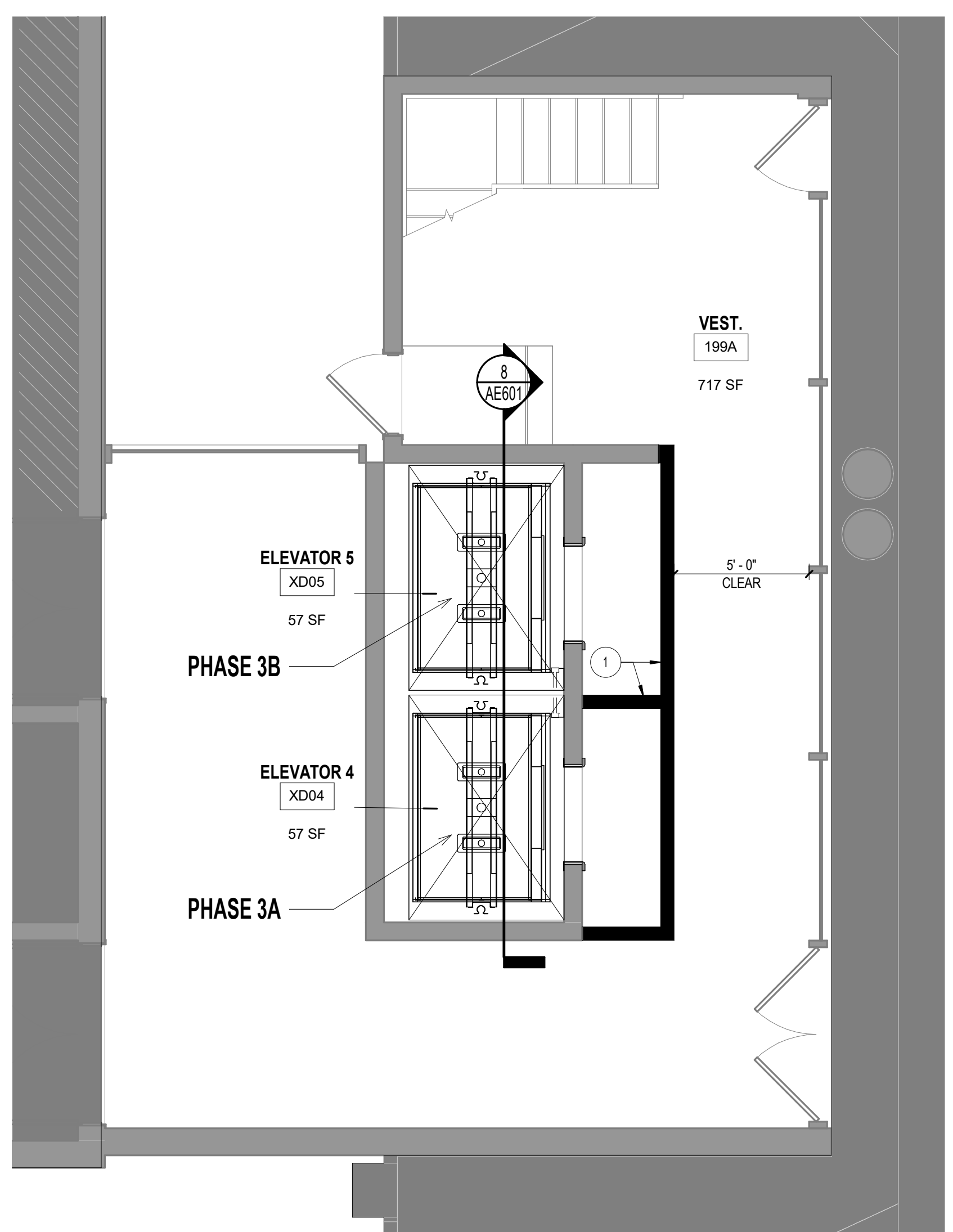
Professional Engineer Seal for Michael E. Davis, No. AR11100049, State of Indiana.

ENGINEER/ARCHITECTS SEAL

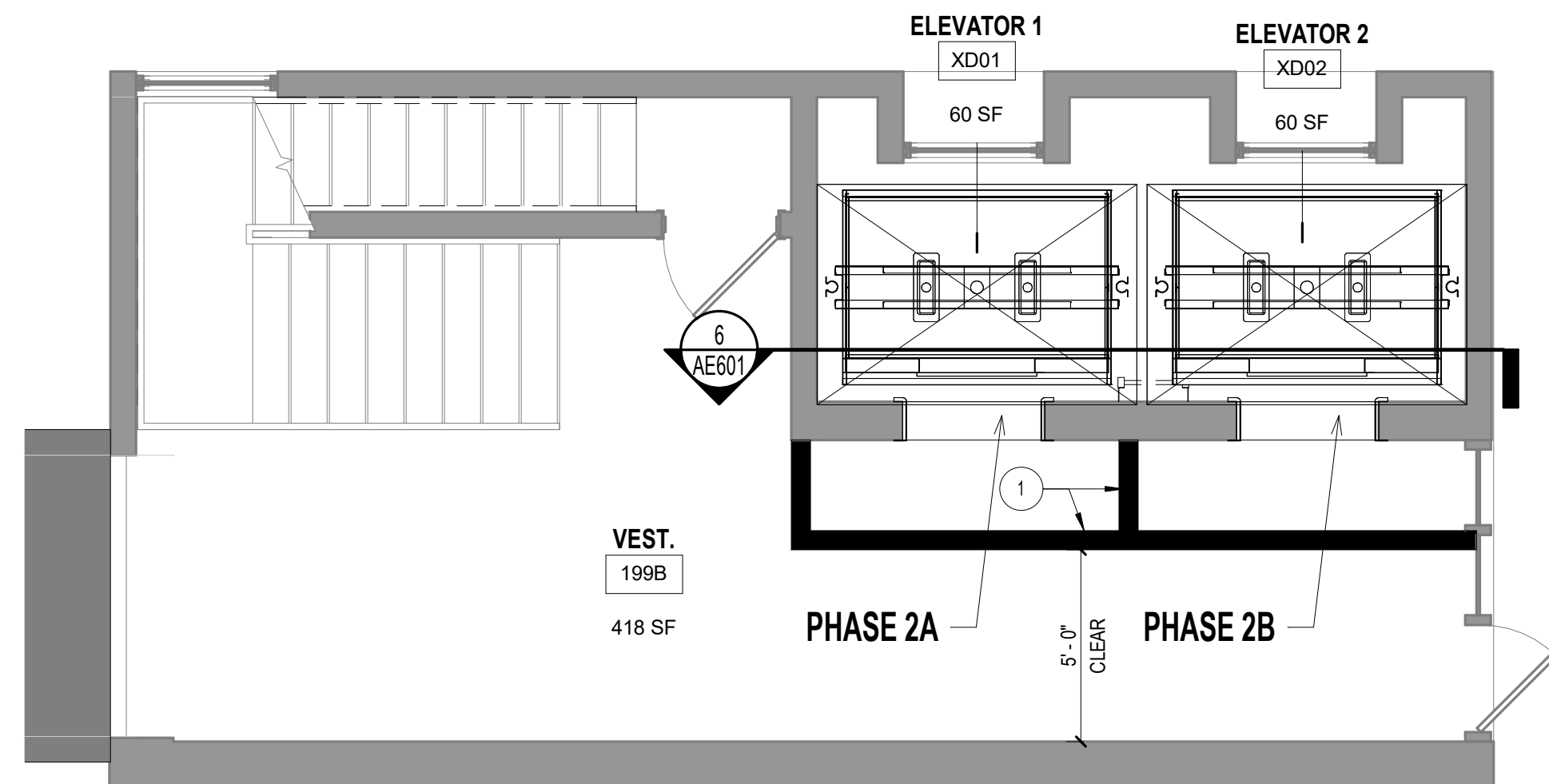
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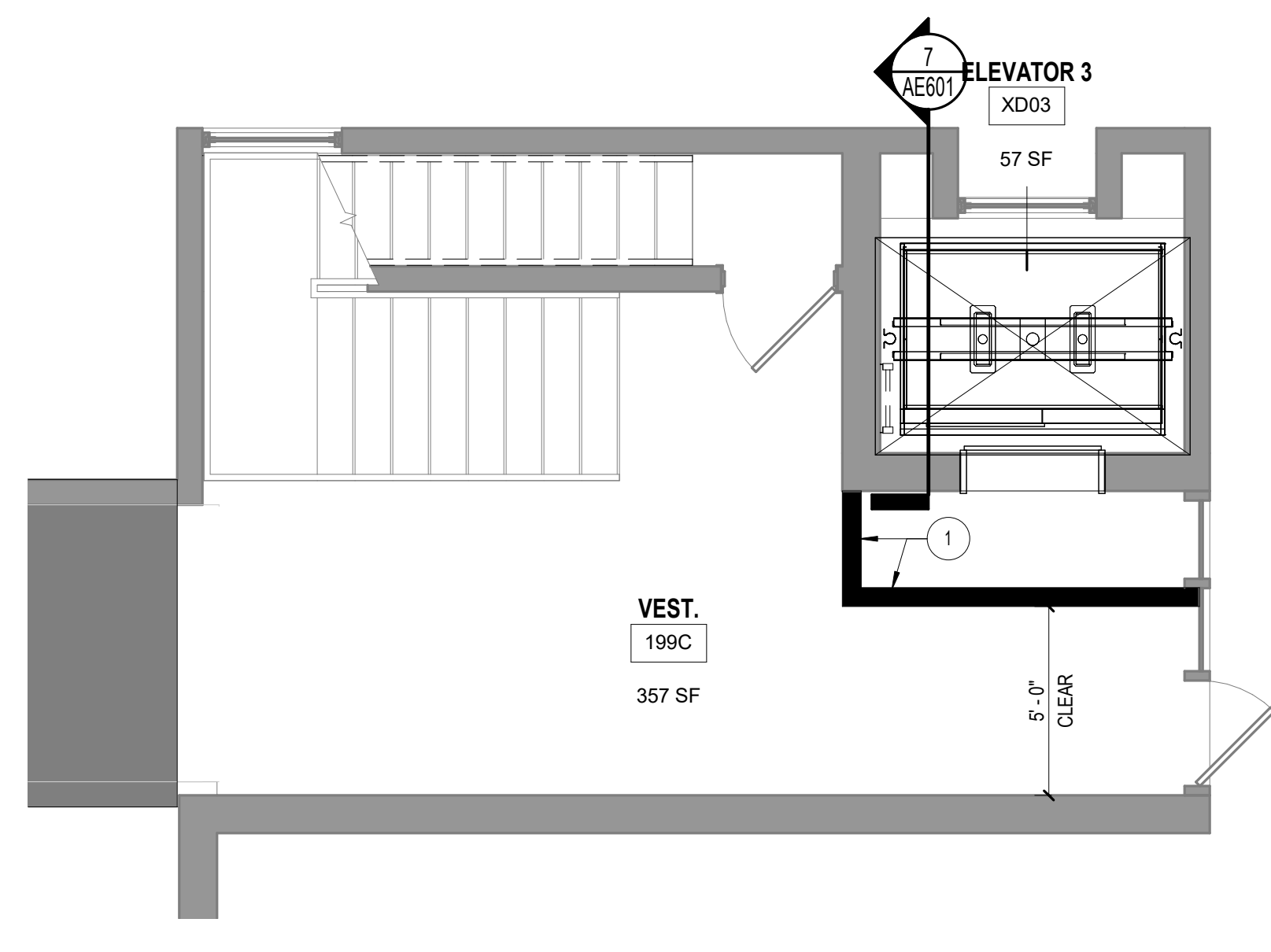
PHASING PLANS AND MODERNIZATION SCOPE  
**GC101**



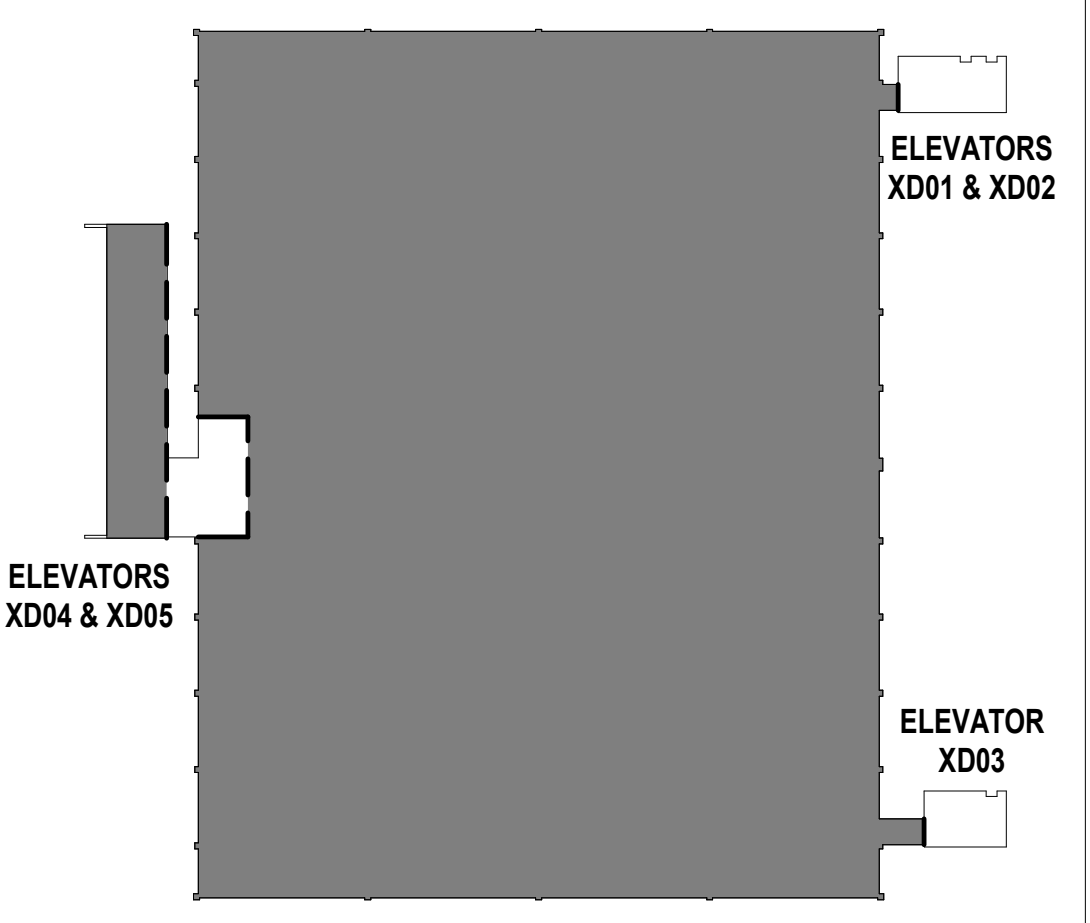
**4** PHASE 3 - ELEVATOR XD04 & XD05  
SCALE: 1/4" = 1'-0"



**3** PHASE 2 - ELEVATORS XD01 & XD02  
SCALE: 1/4" = 1'-0"



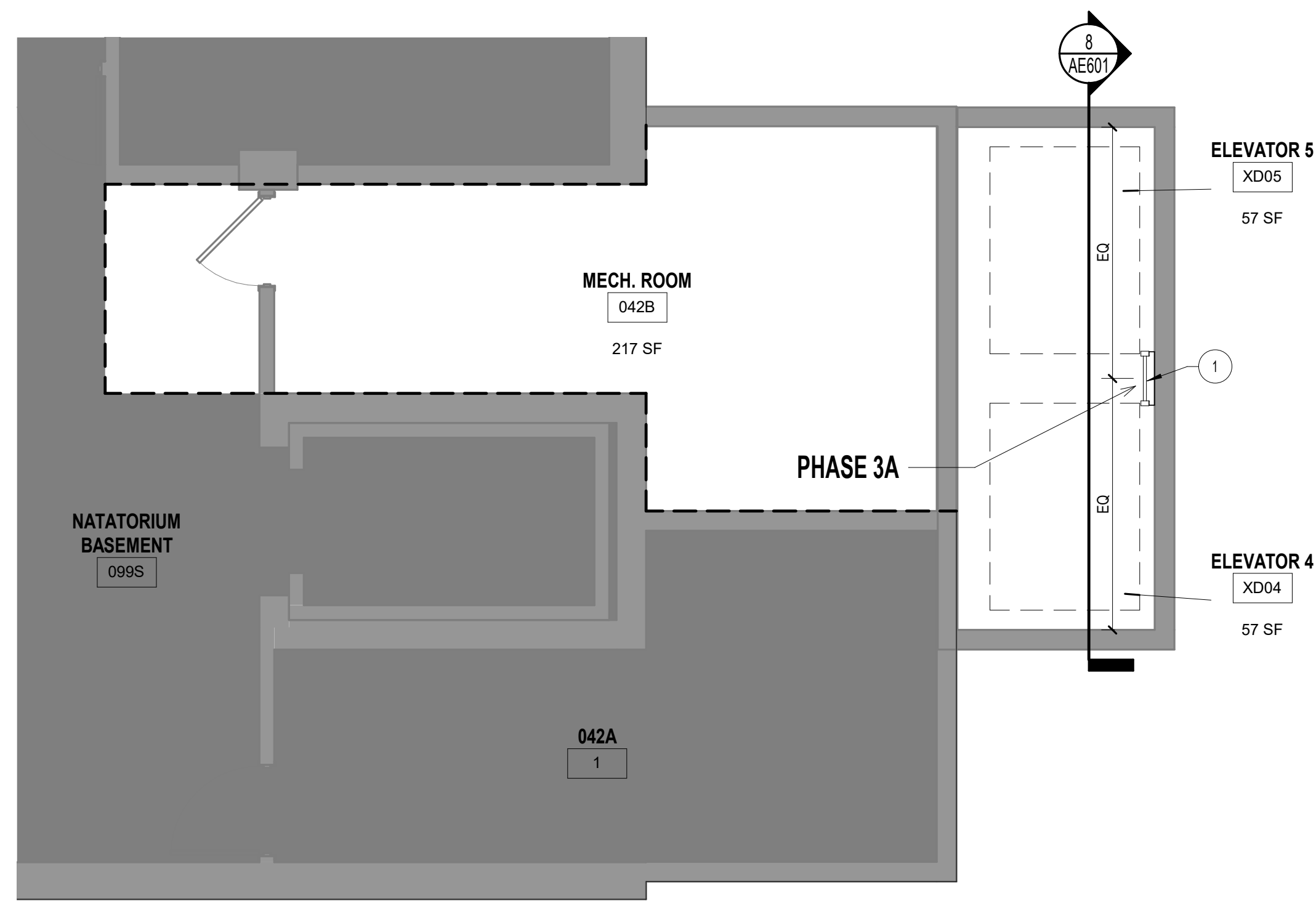
**7** PHASE 1 - ELEVATOR XD03  
SCALE: 1/4" = 1'-0"



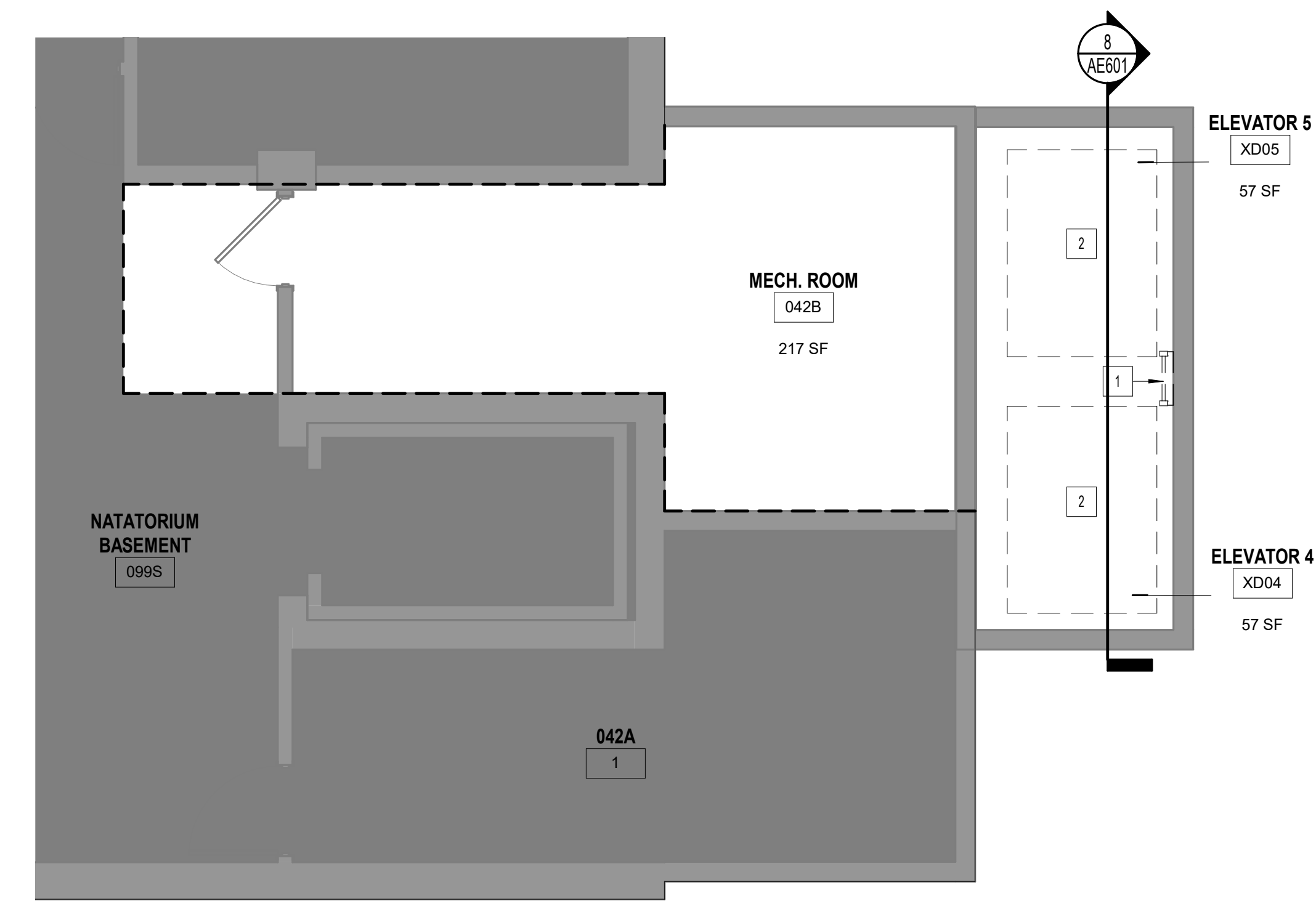
**KEYPLAN**

ARCHITECTURAL ABBREVIATIONS

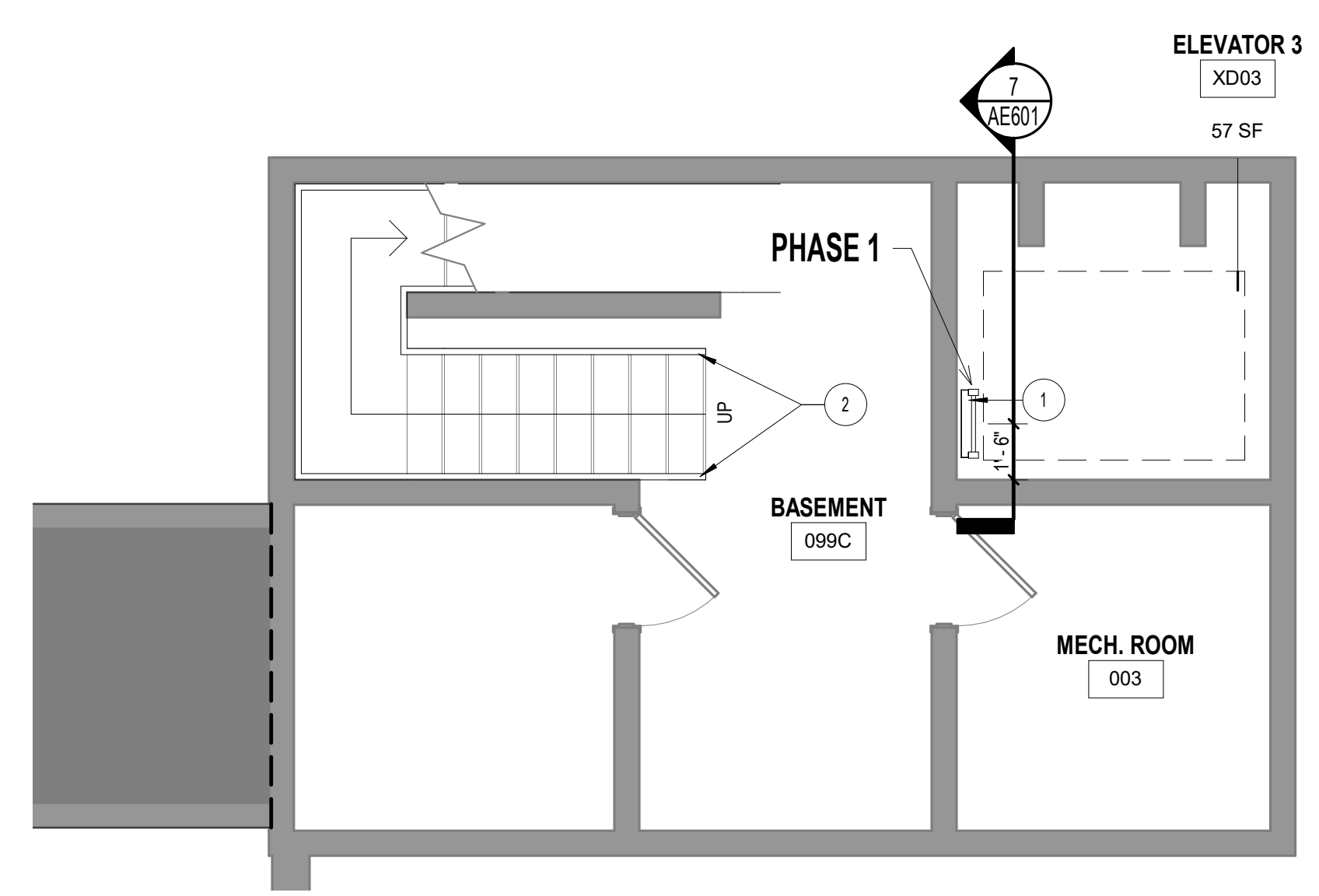
AC	AIR CONDITION	D	DEPTH OR PENNY (NAIL)	H	H PLAM	N	NORTH	SA	SUPPLY AIR	W	WITH
AE	ARCHITECT/ENGINEER	L	LABEL	HP	HIGH PRESSURE PLASTIC LAMINATE	NA	NOT APPLICABLE	SAV	SALV	WO	WITHOUT
AB	ANCHOR BOLT	DB	DOUBLE BOLT	NAT	HAZARDOUS MATERIALS	NATL	NATURAL	SAMP	SAMPLE	WBL	WARRANTY
ABC	AGGREGATE BASE COURSE	DBL	DOUBLE BOLT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SAN	SANITARY	WBR	WOOD BLOCKING
AC	ASBESTOS CEMENT OR ASPHALTIC CONCRETE	DC	DOUBLE GLAZE	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SAT	SANITARY	WC	WALL COVERING OR WATER CLOSET
ACS DR	ACCESS DOOR	DLZ	DOUBLE GLAZE	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SAT	SANITARY	WC WL HNG	WATER CLOSET, WALL HUNG
ACS FLR	ACCESS FLOOR	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SB	SPRINKLER	WCHR	WATER CHILLER
ACS PNL	ACCESS PANEL	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SBS	STYRENE BUTADIENE STYRENE	WCL WL MTD	WATER COOLER, WALL HUNG
ACST	ACOUSTIC	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SBSTR	SUBSTRATE	WD	WOOD
ACT	ACOUSTICAL CEILING TILE	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SC	SHAING COEFFICIENT OR SOLID CORE	WDW	WINDOW
AD	AREA DRAM	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SCD	SCHOOL	WF	WIDE FLANGE
ADA	AMERICANS WITH DISABILITIES ACT	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SCHED	SCHEDULE	WFB	WALL FABRIC
ADC	AUTOMATIC DOOR CLOSER	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SCHEM	SCHEMATIC	WFR	WOOD FRAMING
ADDL	ADDITIONAL	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SCOP	SCOPPER	WFS	WOOD FLOORING STRIPS
ADDN	ADDITION	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SCRN	SCREEN	WH	WATER HEATER
ADH	ADHESIVE	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SCRT	STRUCTURAL CLAY TILE	WHSE	WAREHOUSE
ADJ	ADJACENT, ADJOINING, OR ADJUSTABLE	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SCSD	SOLO CORE WOOD DOOR	WLD	WELDED
ADMN	ADMINISTRATION	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SD	SHOP DRAWINGS, SMOKE DETECTOR OR SOAP	WM	WIRE MESH
AFC	ABOVE FINISHED COUNTER	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER	WP	WATERPROOFING
AFF	ABOVE FINISHED FLOOR	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER	WPD	WATER PRESSURE DROP
AFG	ABOVE FINISHED GRADE	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER	WPM	WEATHER RESISTANT
AFS	ABOVE FINISHED SLAB	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER	WR	WEATHER RESISTANT
AGGR	AGGREGATE	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER	WS	WEATHERSTRIP
AHJ	AUTHORITY HAVING JURISDICTION	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER	WSCT	WAINSCOT
AHR	AIR HANDLING UNIT	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER	WT	WEIGHT
AIA	AMERICAN INSTITUTE OF ARCHITECTS	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER	WTF	WELDED WIRE FABRIC
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER	X BRACE	CROSS BRACE
ALT	ALTERNATE	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER	YD	YARD
ALT NO	ALTERNATE NUMBER	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER	YR	YEAR
ALUM	ALUMINUM	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
AMP	AMPERE	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
AMT	AMOUNT	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
ANOD	ANODIZE	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
ANTEN	ANTENNA	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
APPD	APPROVED	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
APPROX	APPROXIMATE	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
AR	ARCHITECT	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
ASB	ASBESTOS	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
ASD	ARCHITECT'S SUPPLEMENTAL INSTRUCTION	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
ASKLR	AUTOMATIC SPRINKLER	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
ASPH	ASPHALT	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
ASSN	ASSOCIATION	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
ATCH	ATTACHMENT	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
ATS	AUTOMATIC TRANSFER SWITCH	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
AUTOM	AUTOMATIC	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
AUX	AUXILIARY	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
AV	AUDIO VISUAL	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
AVG	AVERAGE	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
AW	ACID WASTE	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
AWI	ARCHITECTURAL WOODWORKING INSTITUTE	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
AWIS	AMERICAN WELDING SOCIETY	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
AWT	ACOUSTICAL WALL TREATMENT	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
B PL	BASE PLATE	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
BALC	BALCONY	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
BAT	BATTEN	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
BB	BULLETIN BOARD	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
BD	BOARD	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
BEV	BEVEL	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
BIFOLD DR	BIFOLDING DOORS	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
BITUM	BITUMINOUS	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
BKG	BACKING	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
BLD	BUILD	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
BLDG	BUILDING	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
BLKG	BLOCKING	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
BLKT	BLANKET	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
BM	BEAM OR BENCHMARK	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
BOT	BOTTOM	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
BRG	BRACING	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
BRG	BRIDGING	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
BRG	BRACING	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
BRKT	BRACKET	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
BRZ	BRONZE	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
BSMT	BASEMENT	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
BTWN	BETWEEN	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
BUR	BUILT UP ROOFING	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
C	CELSIUS CHANNEL OR CHANNEL CELSIUS	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
C CONC	CABINET	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
C TO C	CENTER TO CENTER	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
CAB	CABINET	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
CB	CORNER BEAD	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
CCB	CEMENTITIOUS (BACKER) BOARD	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
CC	CUBIC CENTIMETER	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
CCM	CLOSED CELL FOAM	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
CCW	COUNTERLOCKWISE	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
CEM	CEMENT	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
CEM PLAS	CEMENT PLASTER	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
CER	CERAMIC	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
CF	CONTRACTOR FURNISHED	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
CFD	CONTRACTOR FURNISHED/CONTRACTOR INSTALLED	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
CFIO	CONTRACTOR FURNISHED/OWNER INSTALLED	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
CFLG	COUNTERFLASHING	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
CFM	CUBIC FEET PER MINUTE	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
CFMF	COLD-FORMED METAL FRAMING	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
CFS	CUBIC FEET PER SECOND	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
CG	CORNER GUARD	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
CGSFU	CERAMIC GLAZED STRUCTURAL FACING UNITS	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
CH BD	CHALKBOARD	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
CHM	CHEMICAL	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
CHMFR	CHAMFER	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
CI	CAST IRON	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
CI	CAST IRON	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
CIR	CIRCLE	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
CIRC	CIRCULAR	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
CJ	CONSTRUCTION JOINT OR CONTROL JOINT	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
CL	CLADDING	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
CLD	CLADDING	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
CLG	CEILING	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
CLR	CLEAR	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
CMU	CONCRETE MASONRY UNIT	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
CNR	CORNER	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
CONTR	COUNTER	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
CO	CARBON MONOXIDE, CLEANOUT	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
CO2	CARBON DIOXIDE	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
COL	COLUMN	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
COM	COMMON	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
COMB	COMBINATION, COMBINED	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
COMM	COMMUNICATION	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
COMP	COMPONENT	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
CONC	CONCRETE	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
COND	CONDENSER OR CONDITION	DC	DIRECT CURRENT	NATL	HAZARDOUS MATERIALS	NATL	NATURAL	SDG	DISPENSER		
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CONN	CONNECT	DC	DIRECT								



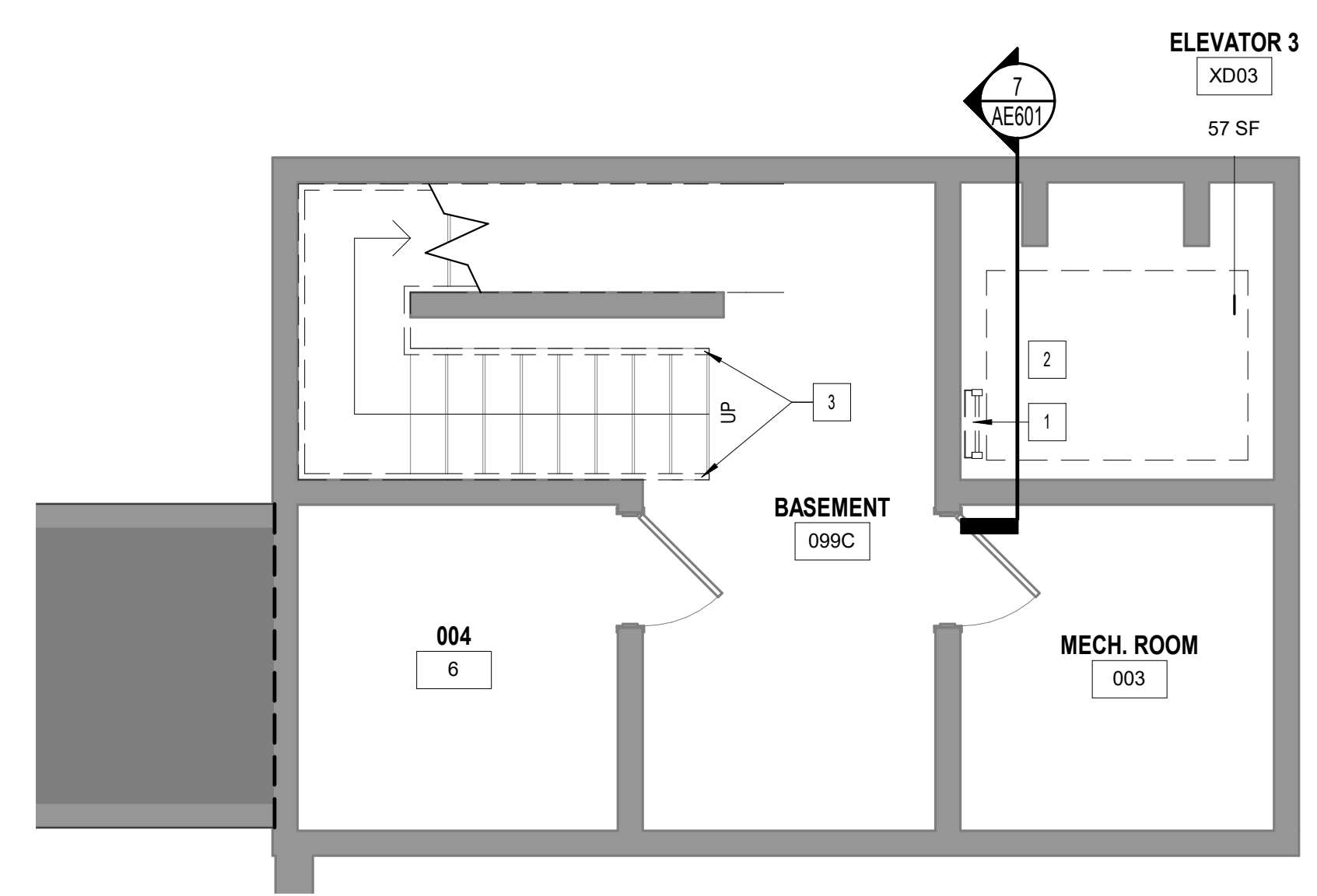
8 ARCHITECTURAL PLAN - BASEMENT - ELEVATOR XD04 & XD05  
SCALE: 1/4" = 1'-0"



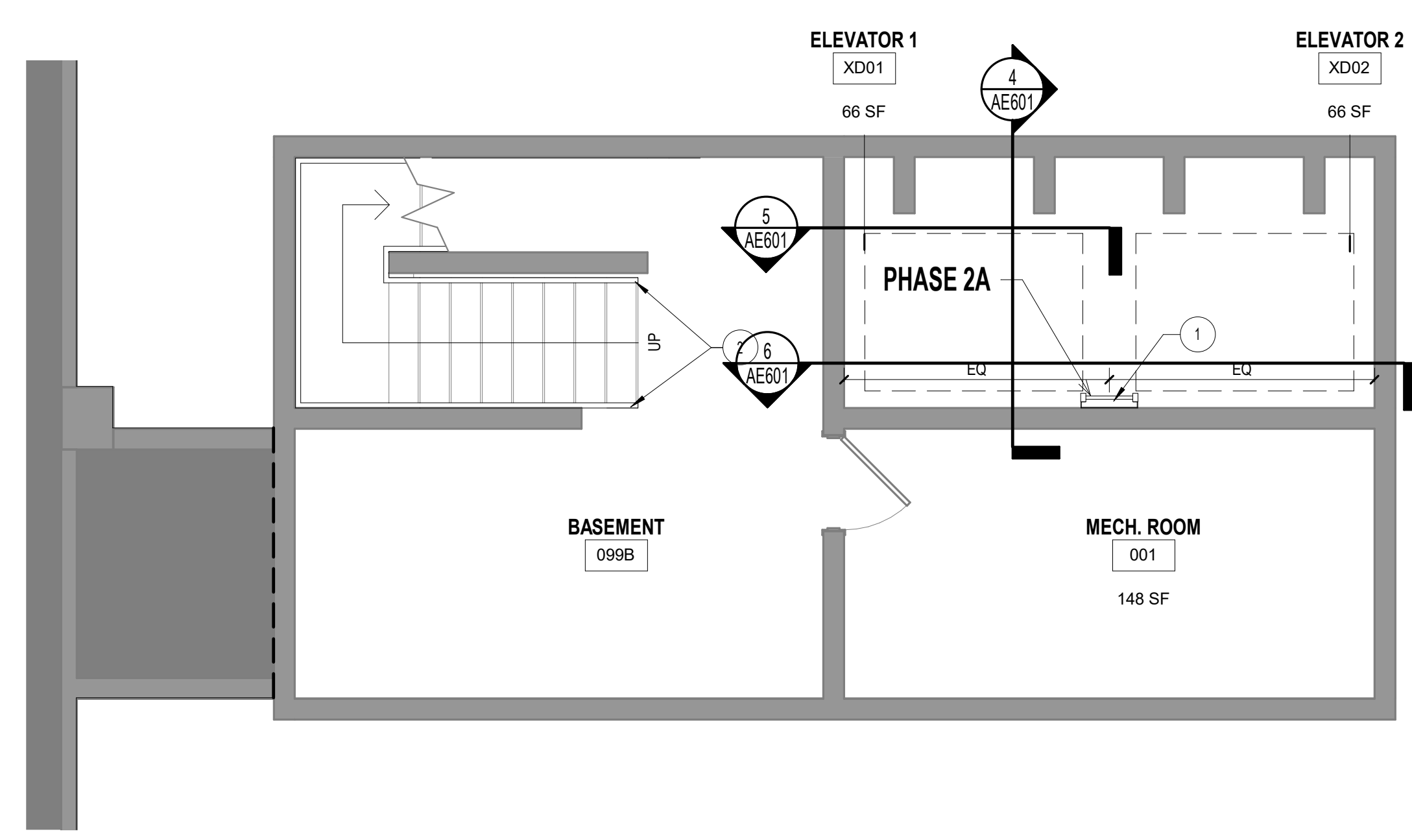
3 DEMOLITION PLAN - BASEMENT - ELEVATOR XD04 & XD05  
SCALE: 1/4" = 1'-0"



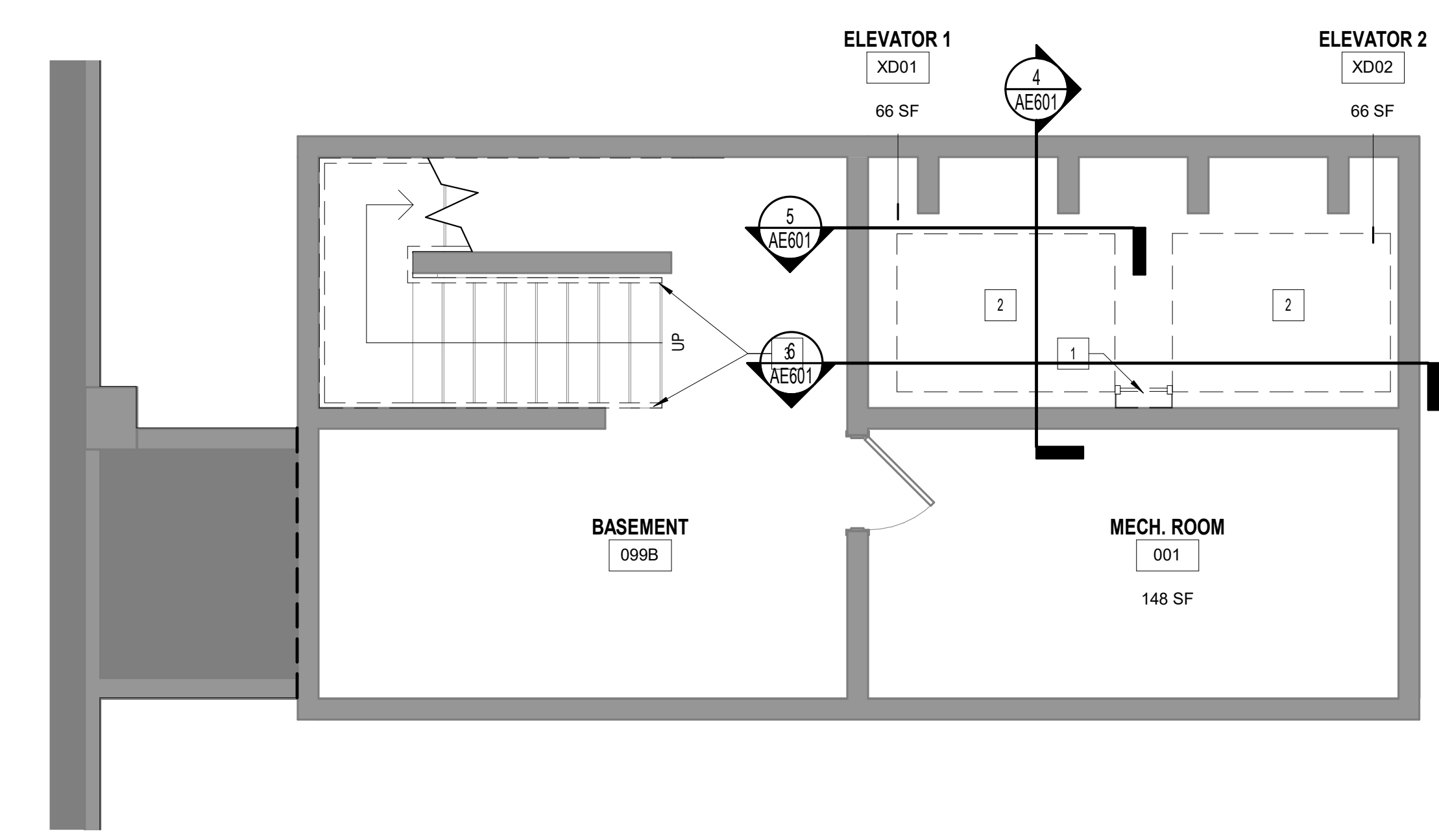
5 ARCHITECTURAL PLAN - BASEMENT - ELEVATOR XD03  
SCALE: 1/4" = 1'-0"



2 DEMOLITION PLAN - BASEMENT - ELEVATOR XD03  
SCALE: 1/4" = 1'-0"



4 ARCHITECTURAL PLAN - BASEMENT - ELEVATOR XD01 & XD02  
SCALE: 1/4" = 1'-0"



1 DEMOLITION PLAN - BASEMENT - ELEVATOR XD01 & XD02  
SCALE: 1/4" = 1'-0"

ARCHITECTURAL GENERAL NOTES

- A. REFERENCE MECHANICAL, FIRE PROTECTION AND ELECTRICAL FOR COORDINATION ITEMS. COORDINATE AS REQUIRED INCLUDING NECESSARY FRAMING, BLOCKING, ETC.
- B. VERIFY EXISTING FIELD CONDITIONS PRIOR TO BEGINNING WORK. AND REPORT DISCREPANCIES IMMEDIATELY TO ARCHITECT FOR CLARIFICATION.
- C. PROVIDE MINIMUM CLEARANCES AT ALL DOORS PER ADA REQUIREMENTS.
- D. ALL DIMENSIONS SHOWN ARE TO FACE OF WALL FRAMING/ MASONRY UNLESS NOTED OTHERWISE. DIMENSIONS DESIGNATED AS "CLR" OR "CLEAR" INDICATE A CLEAR DIMENSION FROM FACE OF FINISH TO FACE OF FINISH.
- E. CONTRACTOR TO MAINTAIN/REPAIR RATING OF EXISTING PARTITIONS AS AFFECTED BY DEMOLITION/NEW CONSTRUCTION, TYPICAL THROUGHOUT.
- F. DIMENSIONS INDICATED AS "VIF" MAY INCREASE OR DECREASE TO MATCH FIELD CONDITIONS. ALL OTHER DIMENSIONS WITHIN THE DIMENSION STRING MUST BE MAINTAINED.

ARCHITECTURAL PLAN NOTES

- 1. INSTALL NEW PIT LADDER. REFER TO AE201 FOR DETAILS.
- 2. INSTALL NEW HANDRAIL FOR STAIRS. REFER TO AE201 FOR DETAILS.

NOTE:  
REFER TO THE ELEVATOR MODERNIZATION SCOPE ON SHEET GC101 FOR THE FULL EXTENT OF WORK.

DEMOLITION GENERAL NOTES

- A. COORDINATE DEMOLITION WITH NEW CONSTRUCTION. ALL DEMOLITION AND REPAIR NECESSARY TO COMPLETE NEW AND REMODEL CONSTRUCTION SHALL BE PROVIDED. CONTRACTOR SHALL REMOVE EXISTING IMPROVEMENTS WHETHER OR NOT SPECIFICALLY INDICATED ON THE DRAWINGS TO FACILITATE THE COMPLETION OF ALL REQUIRED WORK. CONTRACTOR SHALL VISIT THE SITE AND VERIFY ALL QUANTITIES AND ITEMS REQUIRED TO BE REMOVED.
- B. REFER TO ARCHITECTURAL SYMBOLS ON SHEET AE201 FOR DEMOLITION SYSTEMS AND DRAWING NOMENCLATURE.
- C. EXISTING STRUCTURE WITHIN THE PROJECT BOUNDARY SHALL REMAIN UNLESS OTHERWISE NOTED.
- D. SURFACES TO BE CUT AND CONDITIONS UNDER WHICH CUTTING IS TO BE PERFORMED SHALL BE REVIEWED BY CONTRACTOR PRIOR TO CUTTING TO VERIFY NO UNSAFE OR UNSATISFACTORY CONDITIONS EXIST. SUCH CONDITIONS SHALL BE RECTIFIED BEFORE WORK MAY PROCEED.
- E. EXTENTS OF DEMOLITION SHALL BE COORDINATED WITH THE ARCHITECTURAL FLOOR PLANS AND ENGINEERING DRAWINGS FOR ADDITIONAL INFORMATION.
- F. DIMENSIONS SHOWN FOR EXISTING CONSTRUCTION TO BE DEMOLISHED ARE APPROXIMATE AND ARE INTENDED TO GIVE A GENERAL SCOPE OF WORK TO BE REMOVED OR TEMPORARILY REMOVED TO ACCOMMODATE NEW CONSTRUCTION. COORDINATE DEMOLITION WORK WITH DESIGN INTENT OF NEW CONSTRUCTION TO PROVIDE ADEQUATE AREA FOR THIS WORK.
- G. CONTRACTORS SHALL REMOVE INDICATED DEMOLITION OF CONSTRUCTION ASSEMBLIES IN THEIR ENTIRETY, UNLESS OTHERWISE NOTED, TO ACCOMMODATE NEW CONSTRUCTION.
- H. MAKE ALL DEMOLITION CLEAN AND COMPLETE IN A MANNER TO RECEIVE NEW FINISHES. DEMOLITION SHOULD BE PERFORMED IN A MANNER SUCH THAT THE CONTRACTOR CAN SEAMLESSLY PATCH NEW WORK TO BE SMOOTH AND UNDETECTABLE.
- I. COORDINATE FULL SCOPE OF DEMOLITION WORK WITH ENGINEERING AND VENDOR DRAWINGS.

DEMOLITION PLAN NOTES

- 1. REMOVE PIT LADDER.
- 2. REMOVE ALL ELEVATOR COMPONENTS, EXCEPT FOR PLUNGER, PLUNGER ISOLATION, AND CYLINDER.
- 3. REMOVE EXISTING STAIR HANDRAIL.

REVISIONS	DATE	REMARKS

OWNER / CLIENT

DESIGN ARCHITECT/ENGINEER

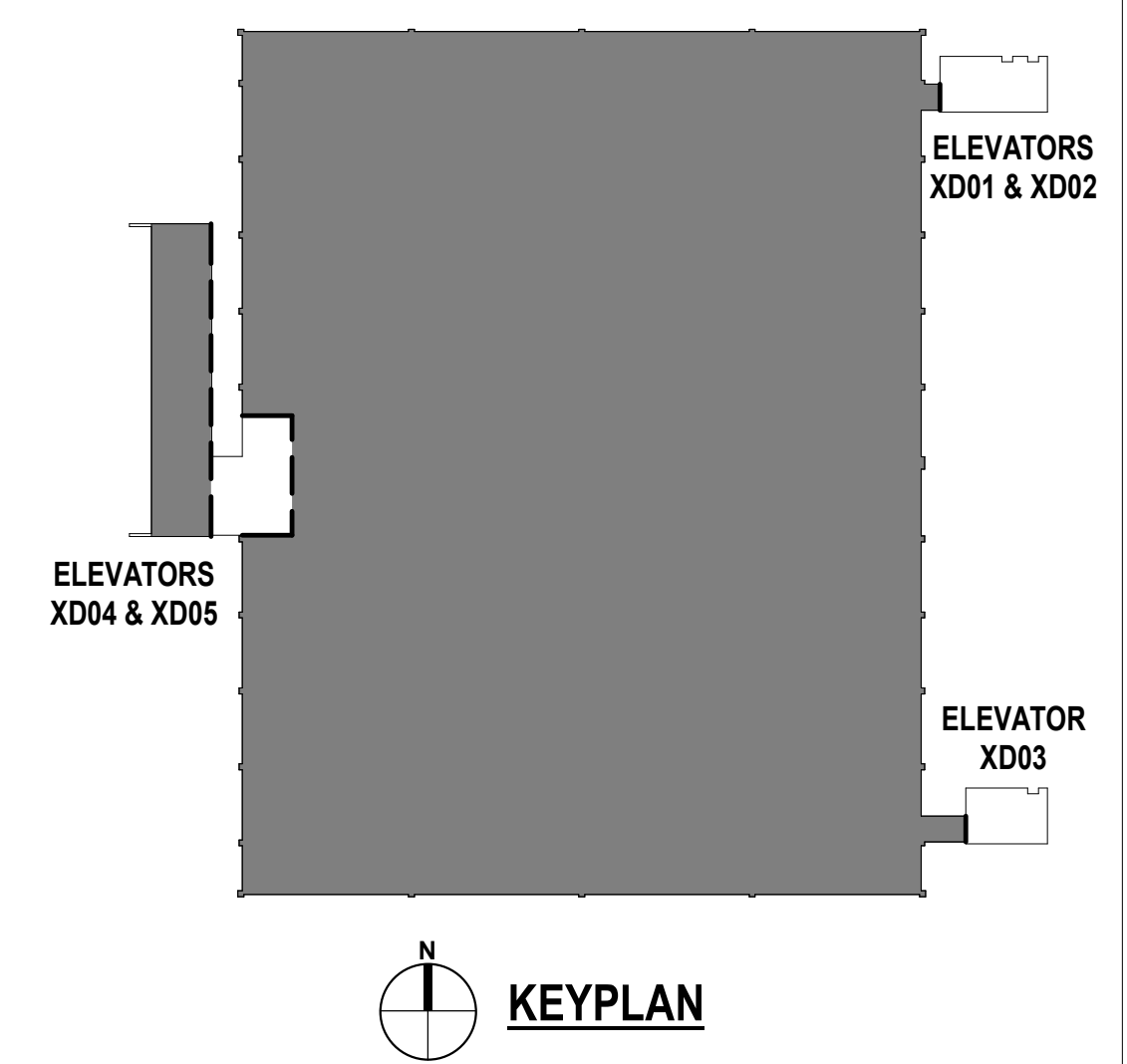
INDIANA UNIVERSITY INDIANAPOLIS  
SPORTS COMPLEX ELEVATOR ALTERATIONS  
498 BLAKE ST. INDIANAPOLIS, IN 46202  
100% CONSTRUCTION DOCUMENTS

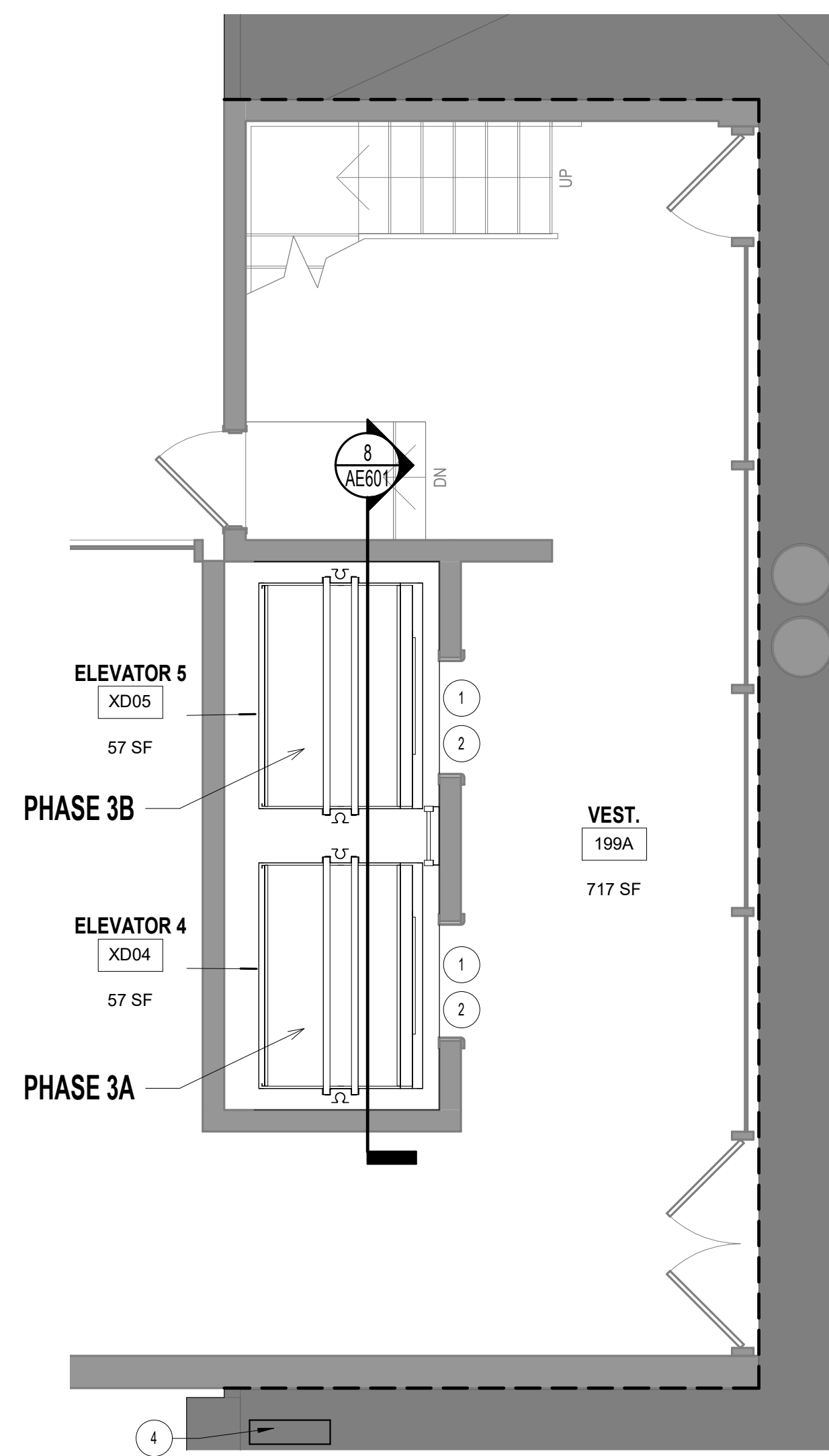
ENGINEERS/ARCHITECTS SEAL

DESIGNED: JC	DRAWN: TD
APPROVED: MD	CHECKED: MD
CLIENT PROJECT NUMBER	
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23 1015	
DATE	
12/17/2024	

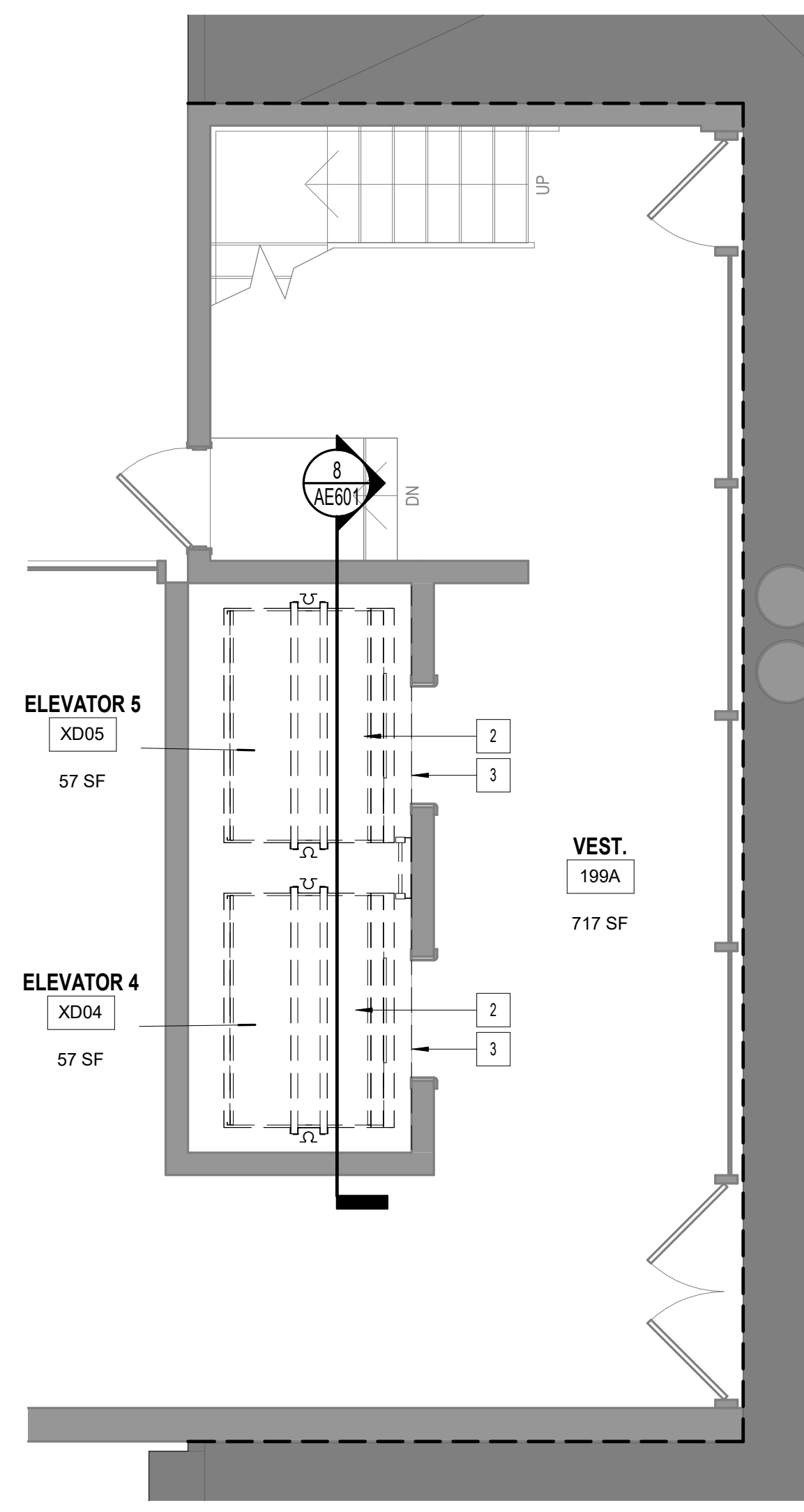
BASEMENT DEMOLITION AND ARCHITECTURAL PLANS

**AE100**

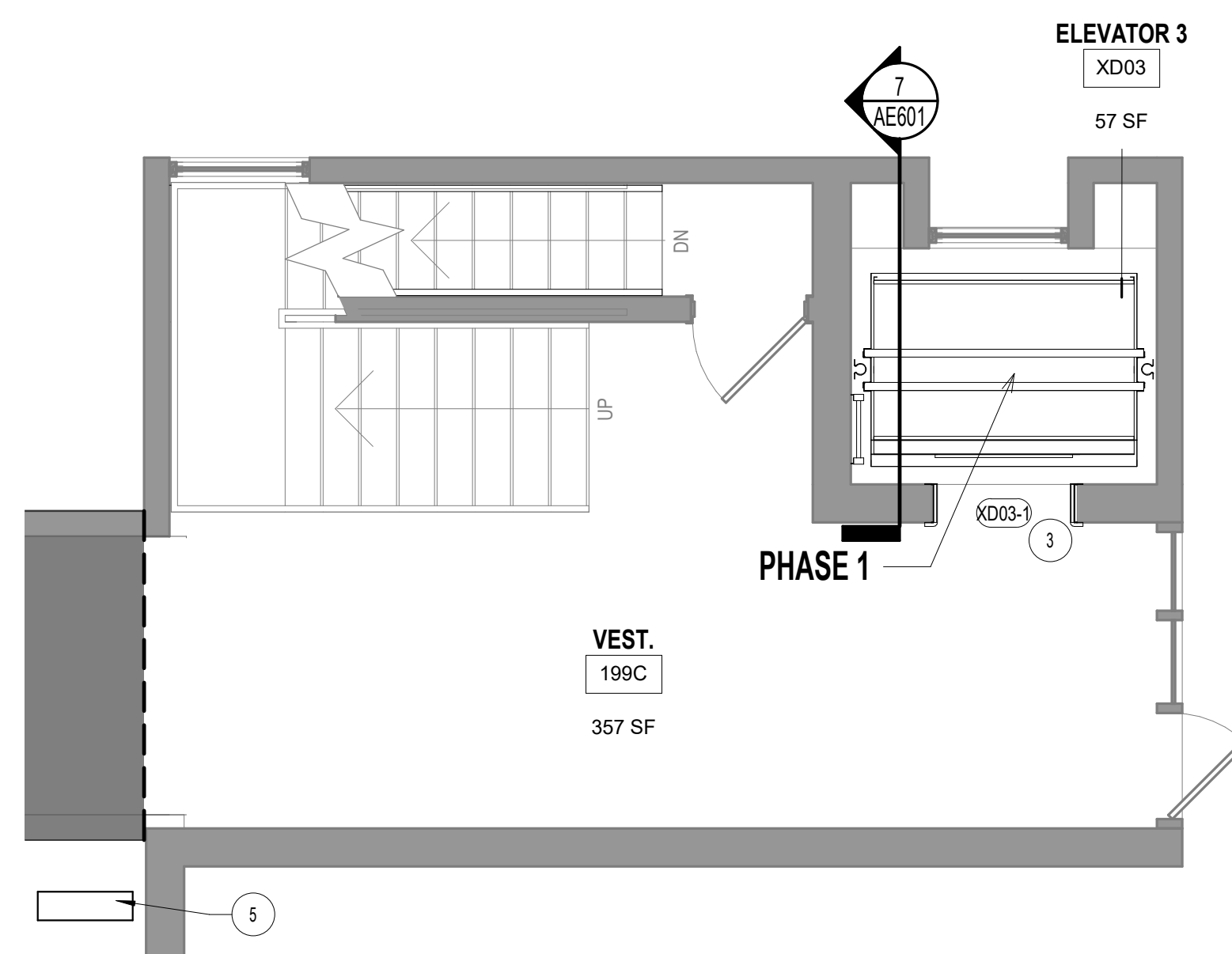




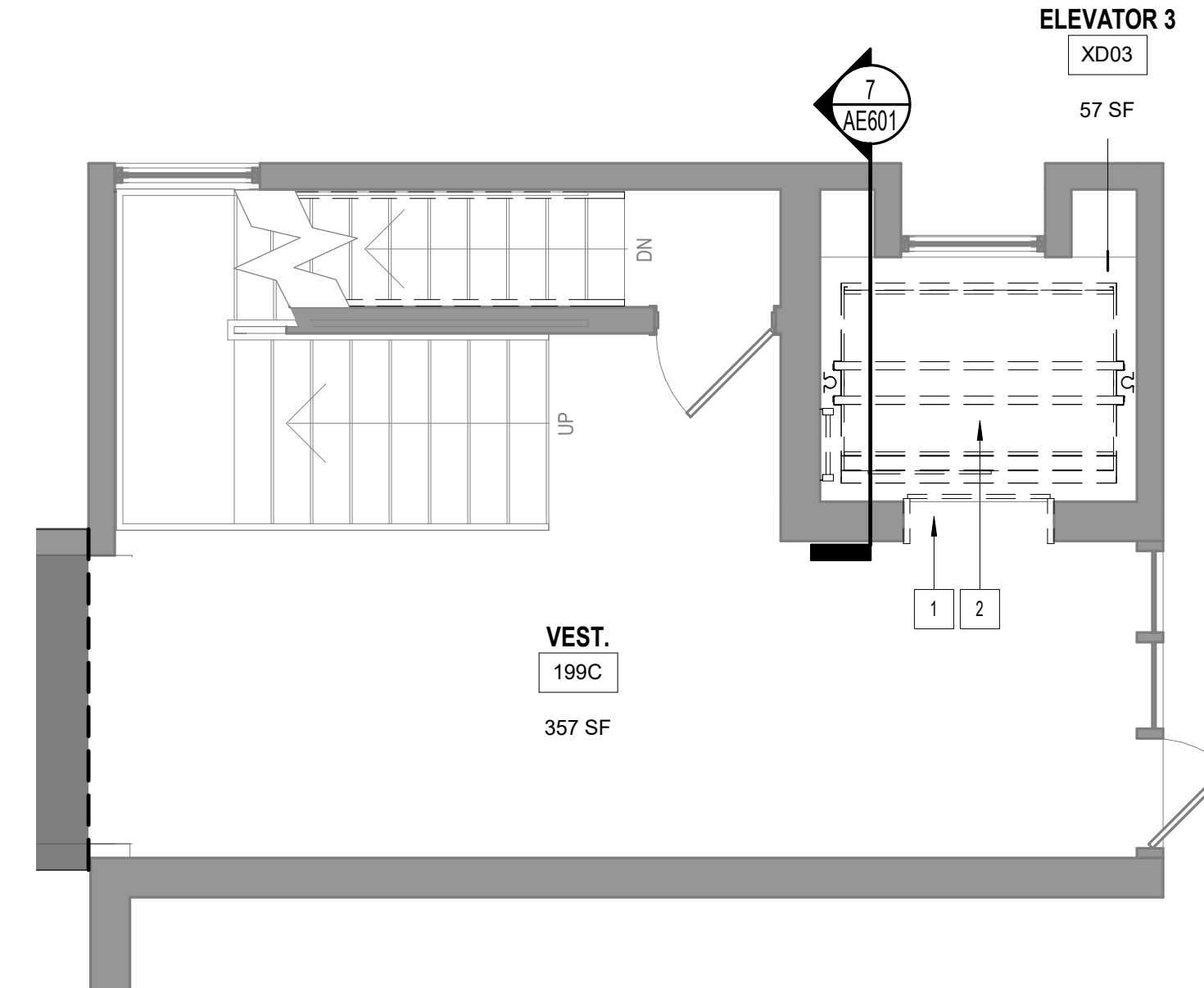
2 ARCHITECTURAL PLAN - FIRST FLOOR - ELEVATORS XD04 & XD05  
SCALE: 1/4" = 1'-0"



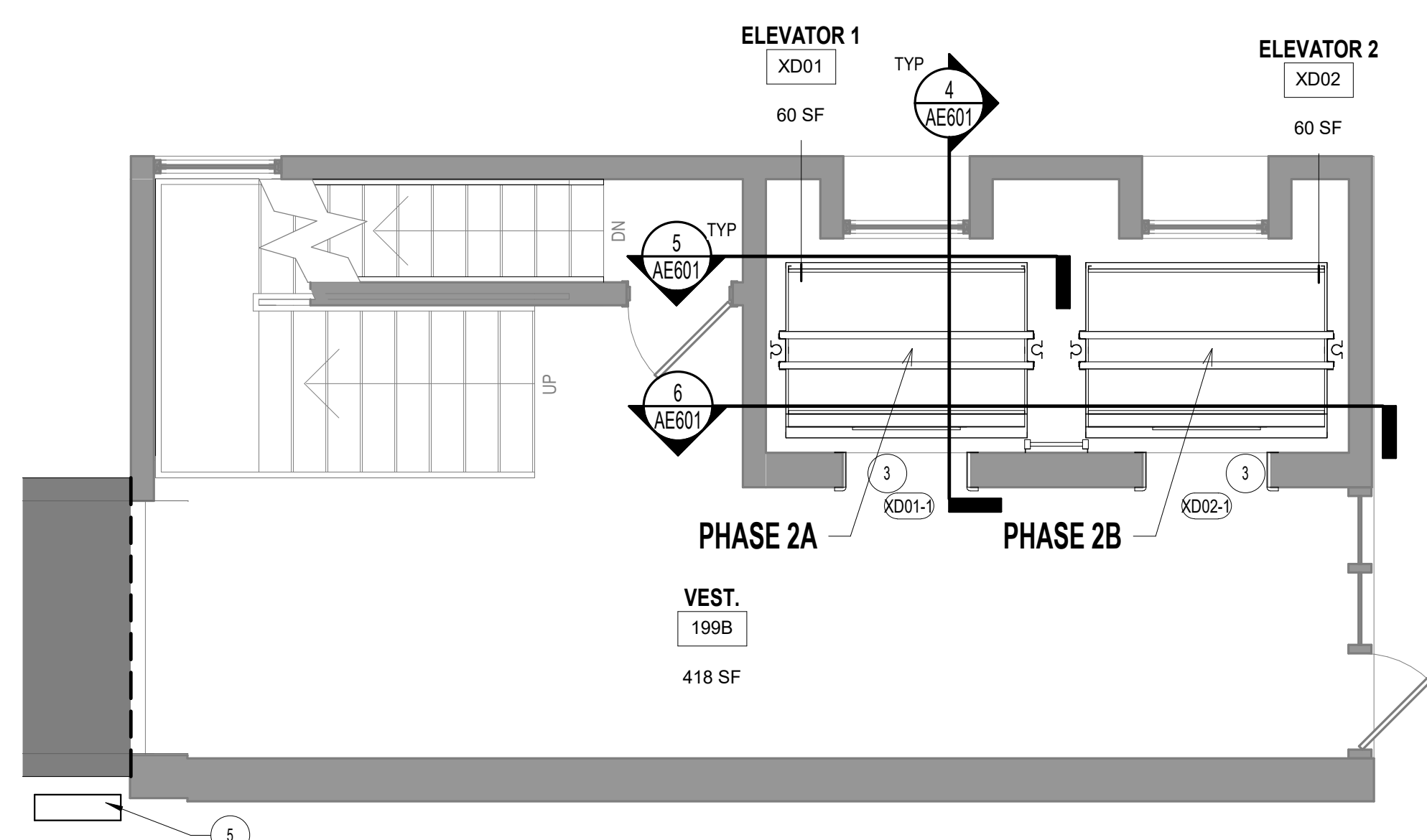
3 DEMOLITION PLAN - FIRST FLOOR - ELEVATORS XD04 & XD05  
SCALE: 1/4" = 1'-0"



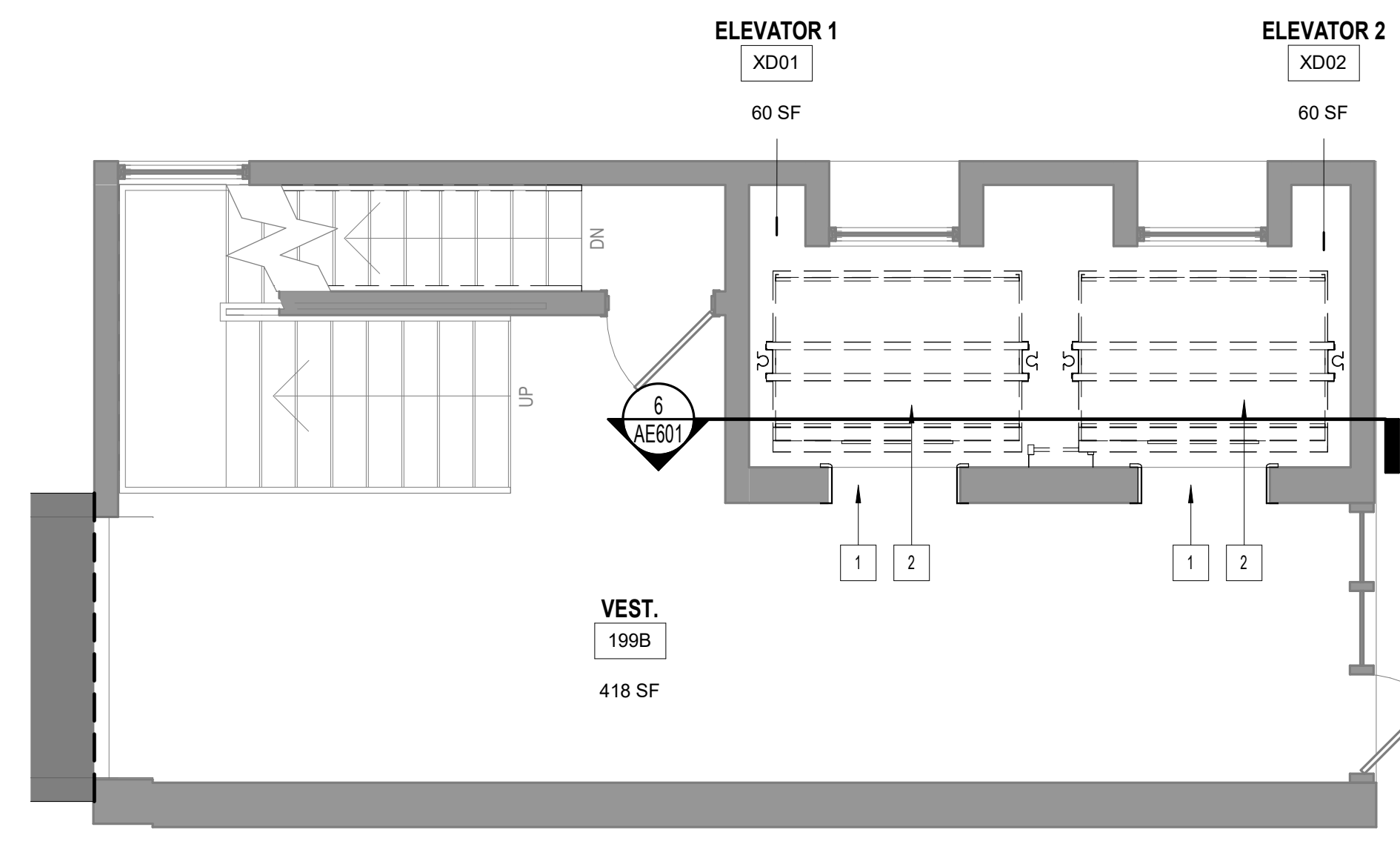
5 ARCHITECTURAL PLAN - FIRST FLOOR - ELEVATOR XD03  
SCALE: 1/4" = 1'-0"



2 DEMOLITION PLAN - FIRST FLOOR - ELEVATOR XD03  
SCALE: 1/4" = 1'-0"



4 ARCHITECTURAL PLAN - FIRST FLOOR - ELEVATORS XD01 & XD02  
SCALE: 1/4" = 1'-0"



1 DEMOLITION PLAN - FIRST FLOOR - ELEVATORS XD01 & XD02  
SCALE: 1/4" = 1'-0"

**ARCHITECTURAL GENERAL NOTES**

- A. REFERENCE MECHANICAL, FIRE PROTECTION AND ELECTRICAL FOR COORDINATION ITEMS. COORDINATE AS REQUIRED INCLUDING NECESSARY FRAMING, BLOCKING, ETC.
- B. VERIFY EXISTING FIELD CONDITIONS PRIOR TO BEGINNING WORK. AND REPORT DISCREPANCIES IMMEDIATELY TO ARCHITECT FOR CLARIFICATION.
- C. PROVIDE MINIMUM CLEARANCES AT ALL DOORS PER ADA REQUIREMENTS.
- D. ALL DIMENSIONS SHOWN ARE TO FACE OF WALL FRAMING/ MASONRY UNLESS NOTED OTHERWISE. DIMENSIONS DESIGNATED AS "CLR" OR "CLEAR" INDICATE A CLEAR DIMENSION FROM FACE OF FINISH TO FACE OF FINISH.
- E. CONTRACTOR TO MAINTAIN/REPAIR RATING OF EXISTING PARTITIONS AS AFFECTED BY DEMOLITION/NEW CONSTRUCTION. TYPICAL THROUGHOUT.
- F. DIMENSIONS INDICATED AS "VIF" MAY INCREASE OR DECREASE TO MATCH FIELD CONDITIONS. ALL OTHER DIMENSIONS WITHIN THE DIMENSION STRING MUST BE MAINTAINED.

**ARCHITECTURAL PLAN NOTES**

- 1. EXISTING ELEVATOR ENTRANCE TO REMAIN.
- 2. REFINISH EXISTING FRAME TO MATCH NEW FRAMES BEING INSTALLED.
- 3. INSTALL NEW ELEVATOR ENTRANCE FRAME.
- 4. INSTALL NEW MINI SPLIT UNIT, WALL MOUNTED. REFER TO MEP DRAWINGS FOR ADDITIONAL INFORMATION. COORDINATE FINAL LOCATION WITH OWNER PRIOR TO INSTALLATION.
- 5. INSTALL NEW MINI SPLIT UNIT, GROUND MOUNTED. REFER TO MEP DRAWINGS FOR ADDITIONAL INFORMATION. COORDINATE FINAL LOCATION WITH OWNER PRIOR TO INSTALLATION.

**NOTE:**  
REFER TO THE ELEVATOR MODERNIZATION SCOPE ON SHEET GC101 FOR THE FULL EXTENT OF WORK.

**DEMOLITION GENERAL NOTES**

- A. COORDINATE DEMOLITION WITH NEW CONSTRUCTION. ALL DEMOLITION AND REPAIR NECESSARY TO COMPLETE NEW AND REMODEL CONSTRUCTION SHALL BE PROVIDED. CONTRACTOR SHALL REMOVE EXISTING IMPROVEMENTS WHETHER OR NOT SPECIFICALLY INDICATED ON THE DRAWINGS TO FACILITATE THE COMPLETION OF ALL REQUIRED WORK. CONTRACTOR SHALL VISIT THE SITE AND VERIFY ALL QUANTITIES AND ITEMS REQUIRED TO BE REMOVED.
- B. REFER TO ARCHITECTURAL SYMBOLS ON SHEET AE001 FOR DEMOLITION SYSTEMS AND DRAWING NOMENCLATURE.
- C. EXISTING STRUCTURE WITHIN THE PROJECT BOUNDARY SHALL REMAIN UNLESS OTHERWISE NOTED.
- D. SURFACES TO BE CUT AND CONDITIONS UNDER WHICH CUTTING IS TO BE PERFORMED SHALL BE REVIEWED BY CONTRACTOR PRIOR TO CUTTING TO VERIFY NO UNSAFE OR UNSATISFACTORY CONDITIONS EXIST. SUCH CONDITIONS SHALL BE RECTIFIED BEFORE WORK MAY PROCEED.
- E. EXTENTS OF DEMOLITION SHALL BE COORDINATED WITH THE ARCHITECTURAL FLOOR PLANS AND ENGINEERING DRAWINGS FOR ADDITIONAL INFORMATION.
- F. DIMENSIONS SHOWN FOR EXISTING CONSTRUCTION TO BE DEMOLISHED ARE APPROXIMATE AND ARE INTENDED TO GIVE A GENERAL SCOPE OF WORK TO BE REMOVED OR TEMPORARILY REMOVED TO ACCOMMODATE NEW CONSTRUCTION. COORDINATE DEMOLITION WORK WITH DESIGN INTENT OF NEW CONSTRUCTION TO PROVIDE ADEQUATE AREA FOR THIS WORK.
- G. CONTRACTORS SHALL REMOVE INDICATED DEMOLITION OF CONSTRUCTION ASSEMBLIES IN THEIR ENTIRETY, UNLESS OTHERWISE NOTED, TO ACCOMMODATE NEW CONSTRUCTION.
- H. MAKE ALL DEMOLITION CLEAN AND COMPLETE IN A MANNER TO RECEIVE NEW FINISHES. DEMOLITION SHOULD BE PERFORMED IN A MANNER SUCH THAT THE CONTRACTOR CAN SEAMLESSLY PATCH NEW WORK TO BE SMOOTH AND UNDETECTABLE.
- I. COORDINATE FULL SCOPE OF DEMOLITION WORK WITH ENGINEERING AND VENDOR DRAWINGS.

**DEMOLITION PLAN NOTES**

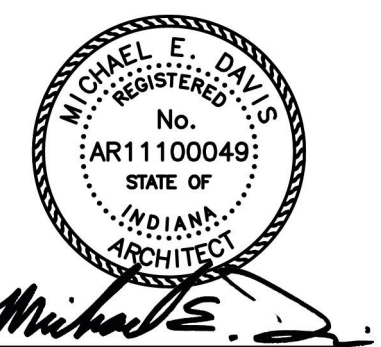
- 1. REMOVE ELEVATOR ENTRANCE FRAME AND DOOR ASSEMBLY IN ITS ENTIRETY.
- 2. REMOVE ELEVATOR CAB IN ITS ENTIRETY.
- 3. ELEVATOR ENTRANCE FRAME AND DOOR ASSEMBLY TO REMAIN EXISTING. PREPARE FOR NEW FINISH.

REVISIONS	DATE	REMARKS

OWNER / CLIENT

**GUIDON**  
SUSTAINABLE ARCHITECTURE + ENGINEERING  
1221 IN PENNSYLVANIA ST. INDIANAPOLIS, IN 46202  
317.600.6388 WWW.GUIDONDESIGN.COM

DESIGN ARCHITECT/ENGINEER

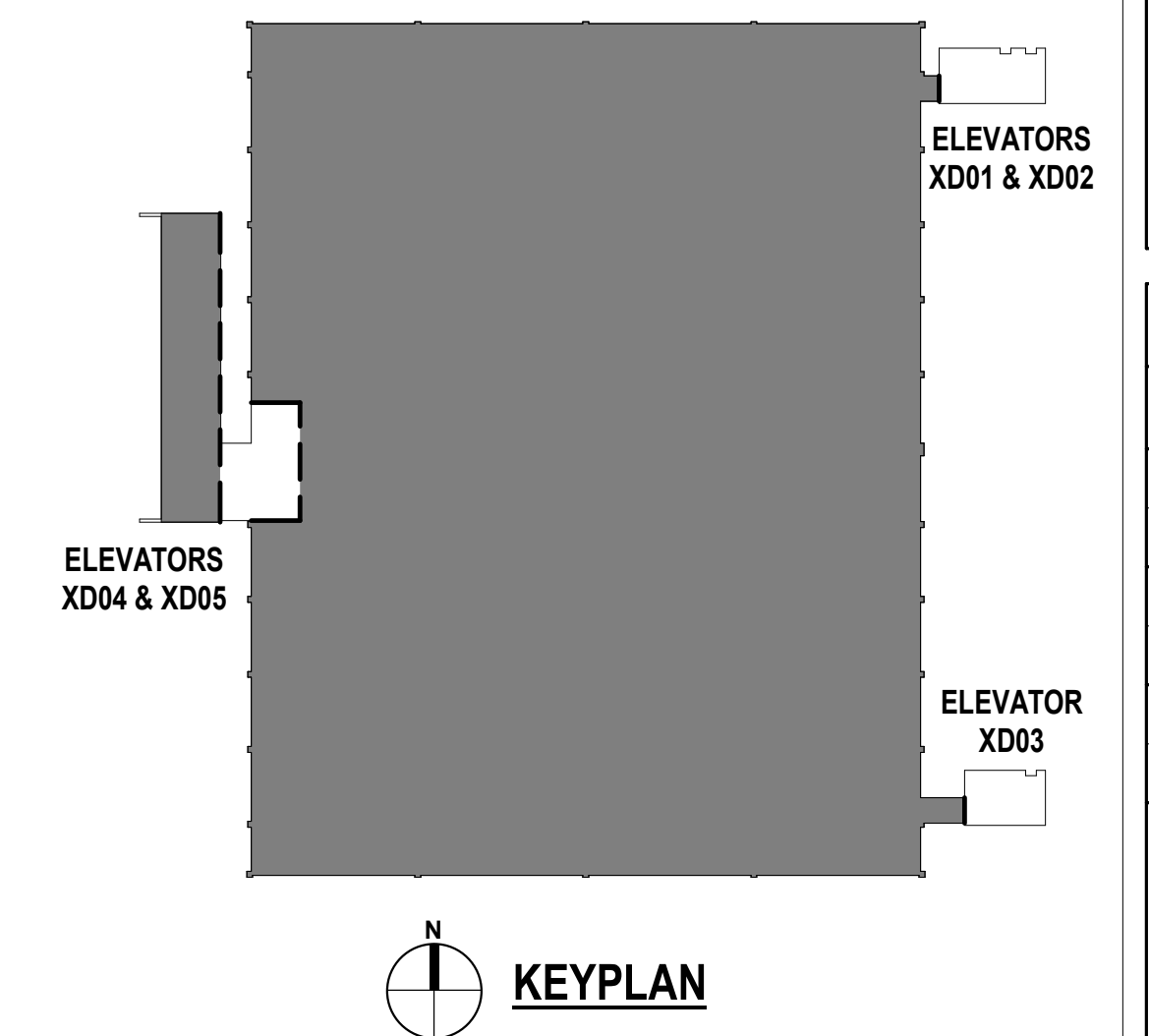


ENGINEER/ARCHITECTS SEAL

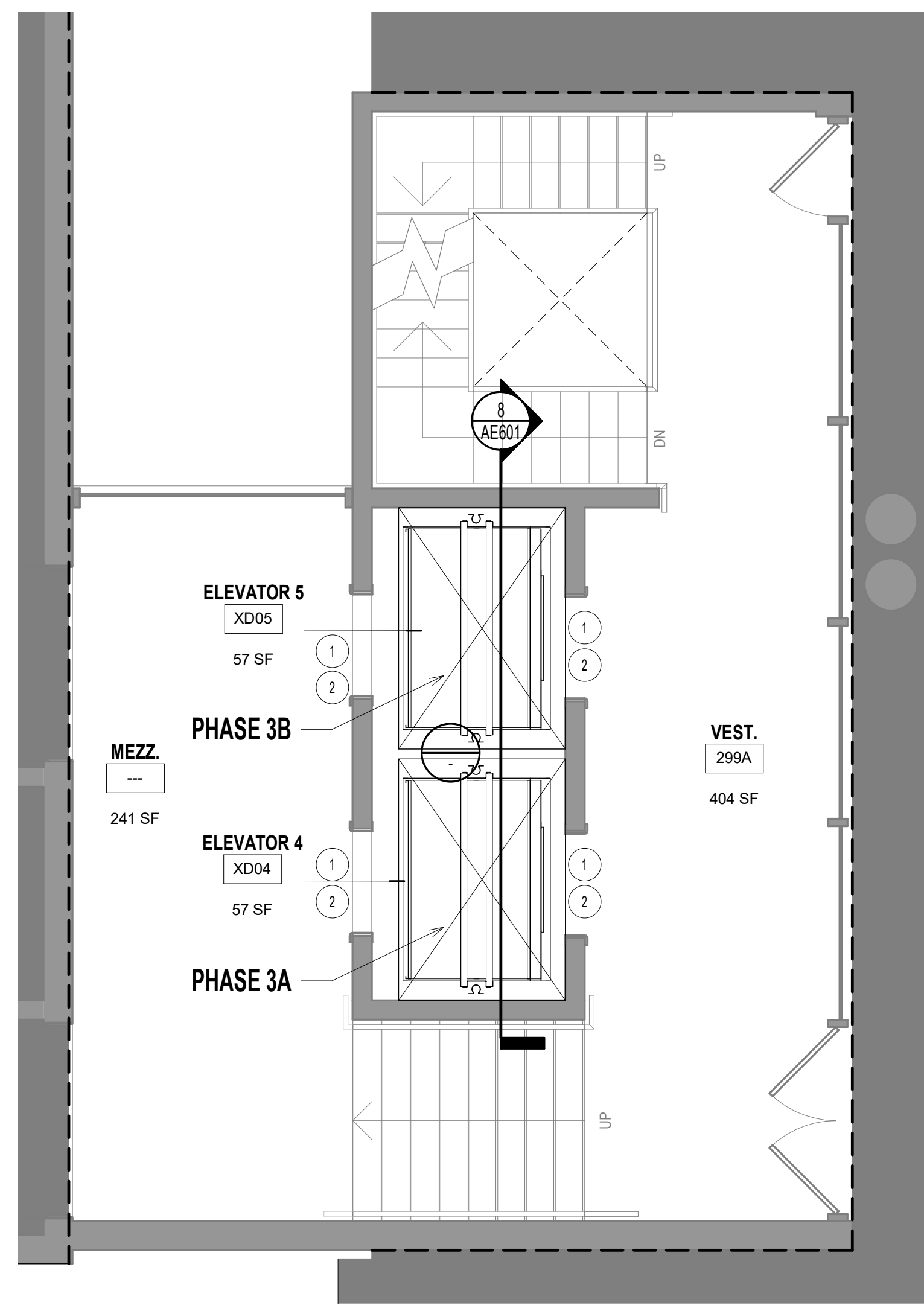
INDIANA UNIVERSITY INDIANAPOLIS  
SPORTS COMPLEX ELEVATOR ALTERATIONS  
498 BLAKE ST. INDIANAPOLIS, IN 46202  
100% CONSTRUCTION DOCUMENTS

PROJECT ADDRESS	
DESIGNED: DC	DRAWN: DC
APPROVED: MD	CHECKED: MD
CLIENT PROJECT NUMBER	
N/A	
PROJECT NUMBER	
23 1015	
DATE	
12/17/2024	

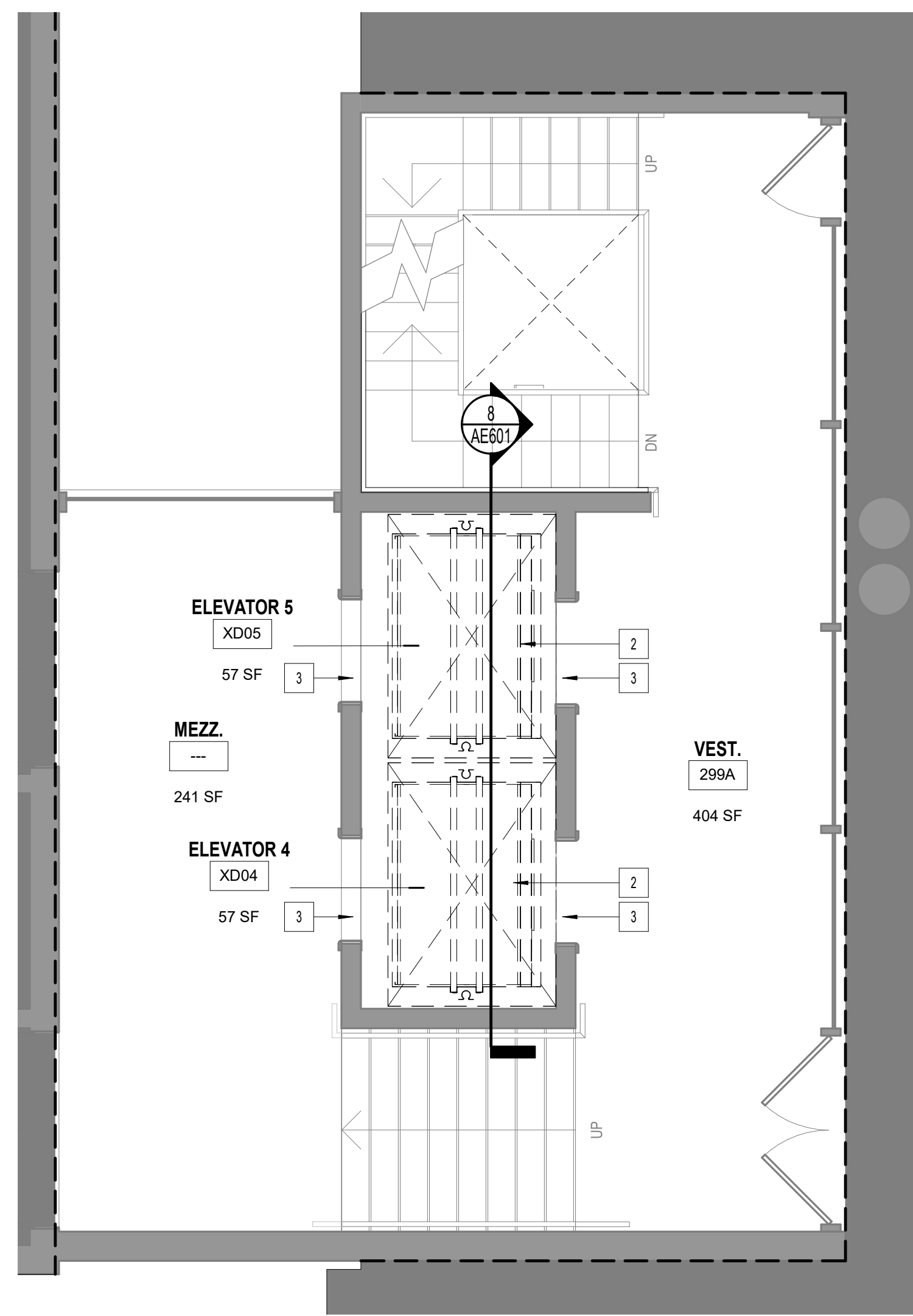
FIRST FLOOR DEMOLITION AND ARCHITECTURAL PLANS  
**AE101**



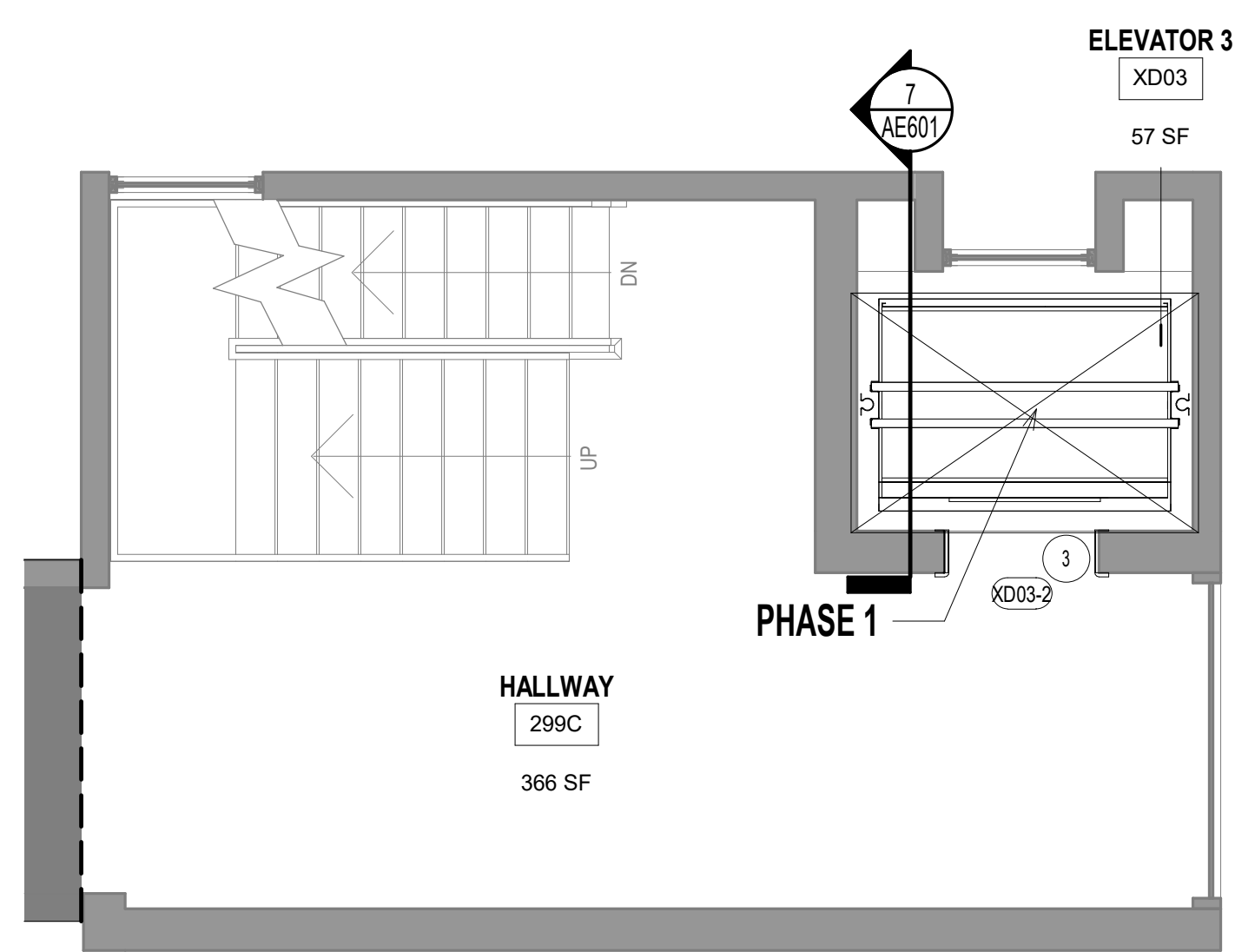




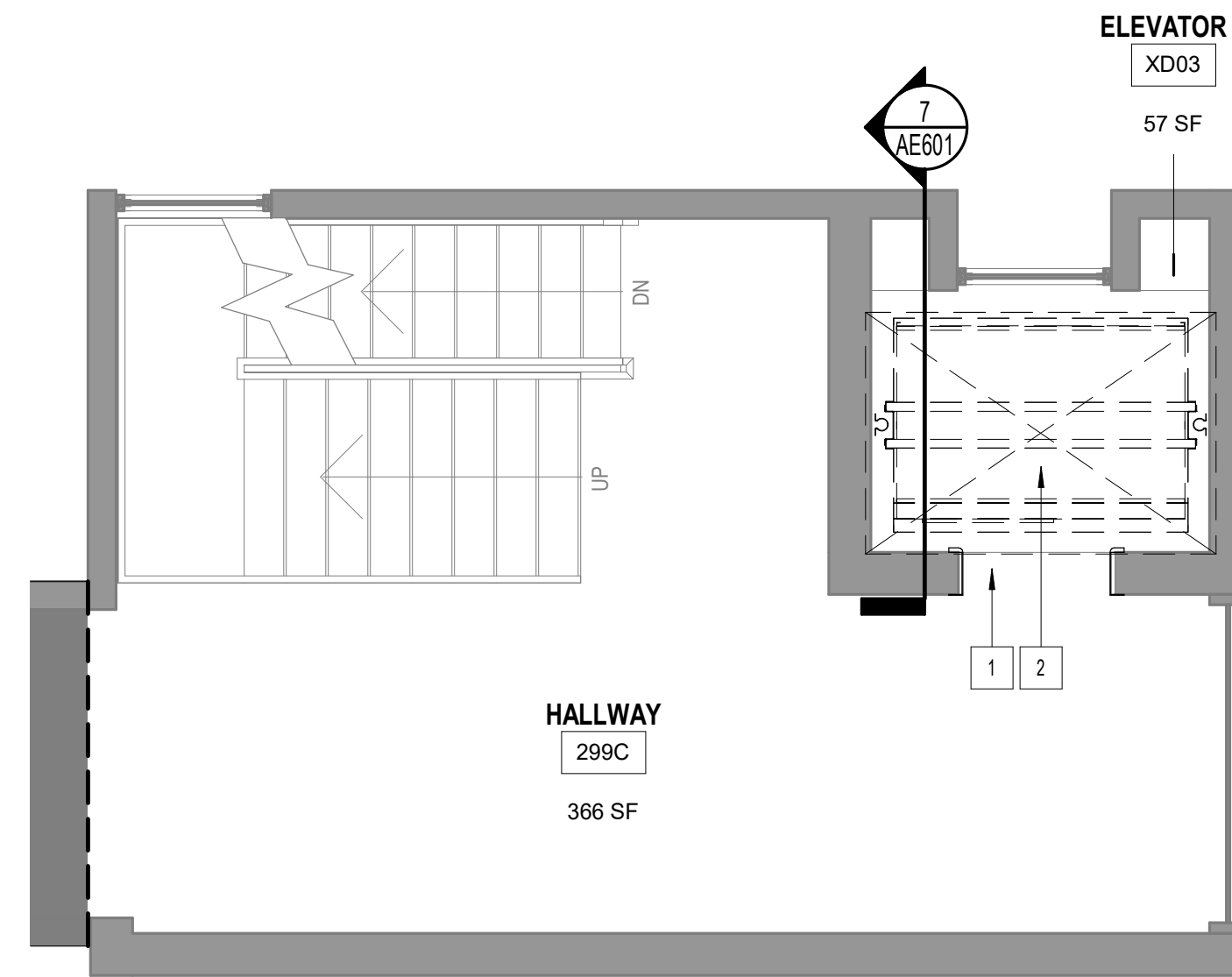
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SCALE: 1/4" = 1'-0"



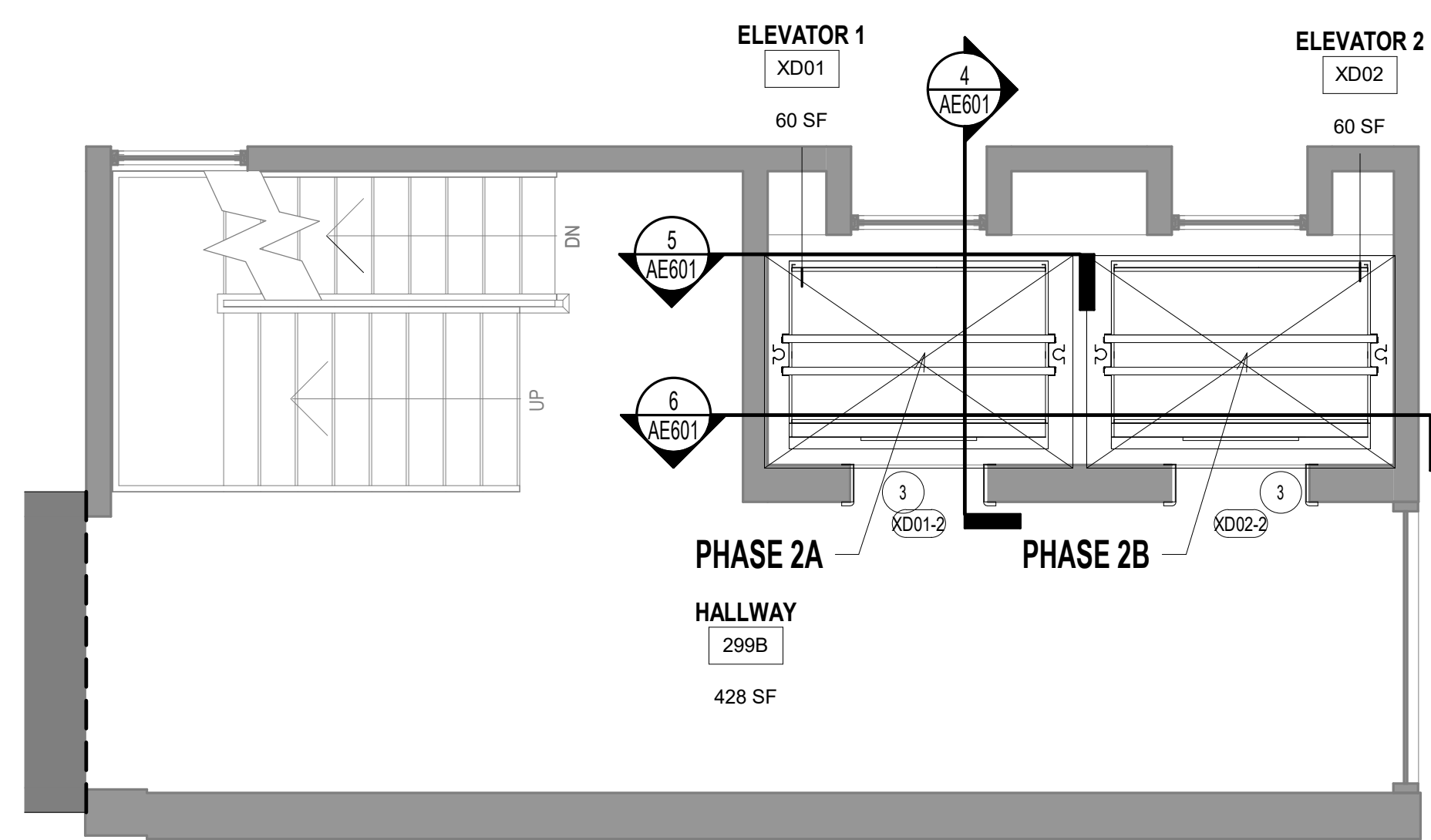
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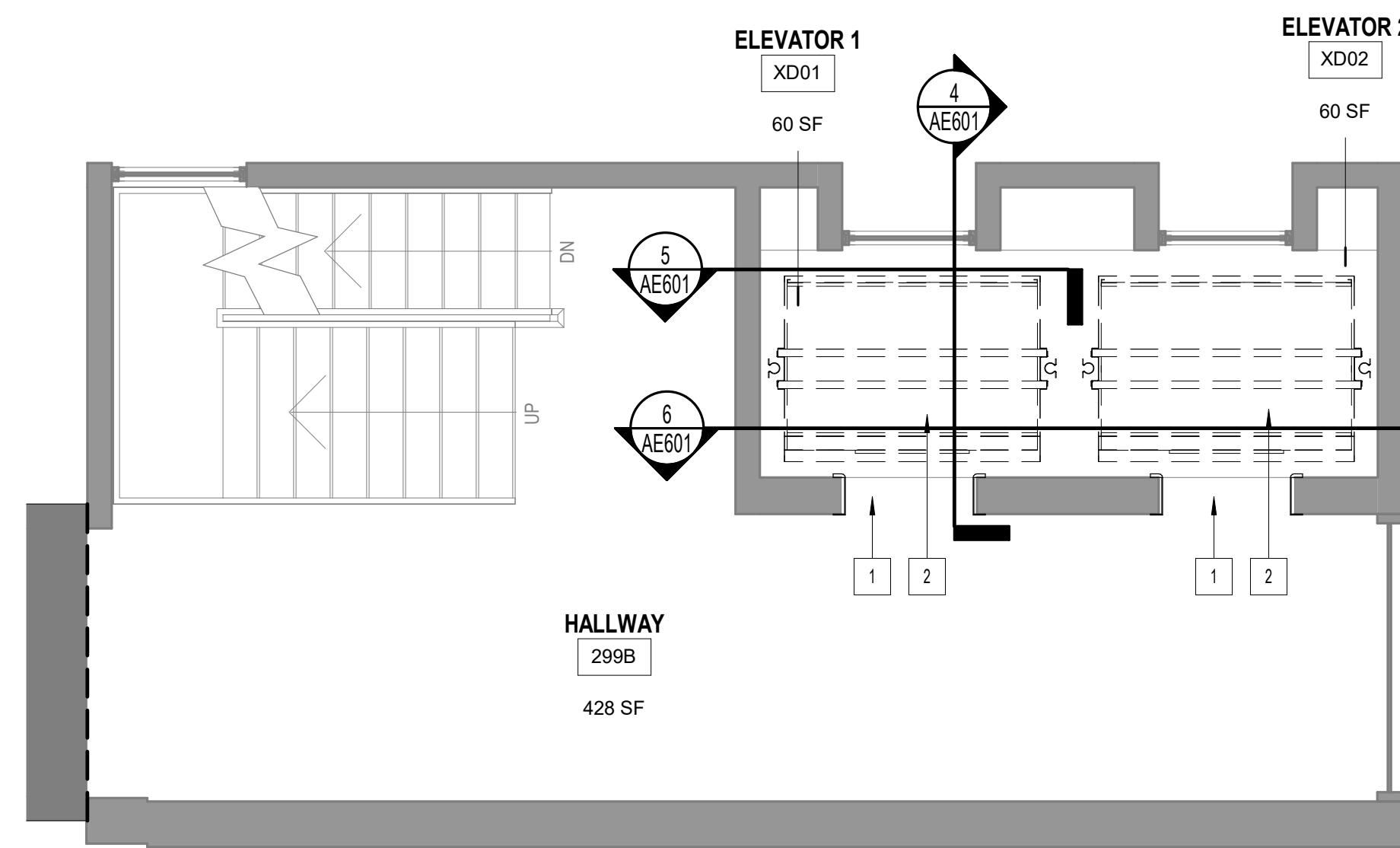
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SCALE: 1/4" = 1'-0"



2 DEMOLITION - SECOND FLOOR PLAN - ELEVATOR XD03  
SCALE: 1/4" = 1'-0"



4 ARCHITECTURAL - SECOND FLOOR PLAN - ELEVATORS XD01 & XD02  
SCALE: 1/4" = 1'-0"



1 DEMOLITION - SECOND FLOOR PLAN - ELEVATORS XD01 & XD02  
SCALE: 1/4" = 1'-0"

ARCHITECTURAL GENERAL NOTES

- A. REFERENCE MECHANICAL, FIRE PROTECTION AND ELECTRICAL FOR COORDINATION ITEMS. COORDINATE AS REQUIRED INCLUDING NECESSARY FRAMING, BLOCKING, ETC.
- B. VERIFY EXISTING FIELD CONDITIONS PRIOR TO BEGINNING WORK, AND REPORT DISCREPANCIES IMMEDIATELY TO ARCHITECT FOR CLARIFICATION.
- C. PROVIDE MINIMUM CLEARANCES AT ALL DOORS PER ADA REQUIREMENTS.
- D. ALL DIMENSIONS SHOWN ARE TO FACE OF WALL FRAMING/ MASONRY UNLESS NOTED OTHERWISE. DIMENSIONS DESIGNATED AS "CLR" OR "CLEAR" INDICATE A CLEAR DIMENSION FROM FACE OF FINISH TO FACE OF FINISH.
- E. CONTRACTOR TO MAINTAIN/REPAIR RATING OF EXISTING PARTITIONS AS AFFECTED BY DEMOLITION/NEW CONSTRUCTION, TYPICAL THROUGHOUT.
- F. DIMENSIONS INDICATED AS "VIF" MAY INCREASE OR DECREASE TO MATCH FIELD CONDITIONS. ALL OTHER DIMENSIONS WITHIN THE DIMENSION STRING MUST BE MAINTAINED.

ARCHITECTURAL PLAN NOTES

- 1. EXISTING ELEVATOR ENTRANCE TO REMAIN.
- 2. REFINISH EXISTING FRAME TO MATCH NEW FRAMES BEING INSTALLED.
- 3. INSTALL NEW ELEVATOR ENTRANCE FRAME.

NOTE:  
REFER TO THE ELEVATOR MODERNIZATION SCOPE ON SHEET GC101 FOR THE FULL EXTENT OF WORK.

DEMOLITION GENERAL NOTES

- A. COORDINATE DEMOLITION WITH NEW CONSTRUCTION. ALL DEMOLITION AND REPAIR NECESSARY TO COMPLETE NEW AND REMODEL CONSTRUCTION SHALL BE PROVIDED. CONTRACTOR SHALL REMOVE EXISTING IMPROVEMENTS WHETHER OR NOT SPECIFICALLY INDICATED ON THE DRAWINGS TO FACILITATE THE COMPLETION OF ALL REQUIRED WORK. CONTRACTOR SHALL VISIT THE SITE AND VERIFY ALL QUANTITIES AND ITEMS REQUIRED TO BE REMOVED.
- B. REFER TO ARCHITECTURAL SYMBOLS ON SHEET AE01 FOR DEMOLITION SYSTEMS AND DRAWING NOMENCLATURE.
- C. EXISTING STRUCTURE WITHIN THE PROJECT BOUNDARY SHALL REMAIN UNLESS OTHERWISE NOTED.
- D. SURFACES TO BE CUT AND CONDITIONS UNDER WHICH CUTTING IS TO BE PERFORMED SHALL BE REVIEWED BY CONTRACTOR PRIOR TO CUTTING TO VERIFY NO UNSAFE OR UNSATISFACTORY CONDITIONS EXIST. SUCH CONDITIONS SHALL BE RECTIFIED BEFORE WORK MAY PROCEED.
- E. EXTENTS OF DEMOLITION SHALL BE COORDINATED WITH THE ARCHITECTURAL FLOOR PLANS AND ENGINEERING DRAWINGS FOR ADDITIONAL INFORMATION.
- F. DIMENSIONS SHOWN FOR EXISTING CONSTRUCTION TO BE DEMOLISHED ARE APPROXIMATE AND ARE INTENDED TO GIVE A GENERAL SCOPE OF WORK TO BE REMOVED OR TEMPORARILY REMOVED TO ACCOMMODATE NEW CONSTRUCTION. COORDINATE DEMOLITION WORK WITH DESIGN INTENT OF NEW CONSTRUCTION TO PROVIDE ADEQUATE AREA FOR THIS WORK.
- G. CONTRACTORS SHALL REMOVE INDICATED DEMOLITION OF CONSTRUCTION ASSEMBLIES IN THEIR ENTIRETY, UNLESS OTHERWISE NOTED, TO ACCOMMODATE NEW CONSTRUCTION.
- H. MAKE ALL DEMOLITION CLEAN AND COMPLETE IN A MANNER TO RECEIVE NEW FINISHES. DEMOLITION SHOULD BE PERFORMED IN A MANNER SUCH THAT THE CONTRACTOR CAN SEAMLESSLY PATCH NEW WORK TO BE SMOOTH AND UNDETECTABLE.
- I. COORDINATE FULL SCOPE OF DEMOLITION WORK WITH ENGINEERING AND VENDOR DRAWINGS.

DEMOLITION PLAN NOTES

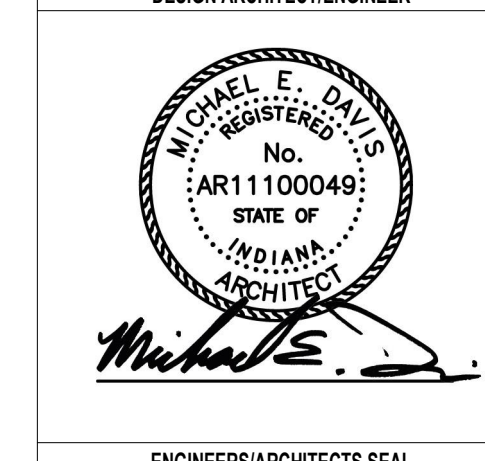
- 1. REMOVE ELEVATOR ENTRANCE FRAME AND DOOR ASSEMBLY IN ITS ENTIRETY. PREP FOR NEW ENTRANCE INSTALL.
- 2. REMOVE ELEVATOR CAB IN ITS ENTIRETY.
- 3. ELEVATOR ENTRANCE FRAME AND DOOR ASSEMBLY TO REMAIN EXISTING. PREPAIR FOR NEW FINISH.

REVISIONS	DATE	REMARKS

OWNER / CLIENT

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317.600.6388 WWW.GUIDONDESIGN.COM

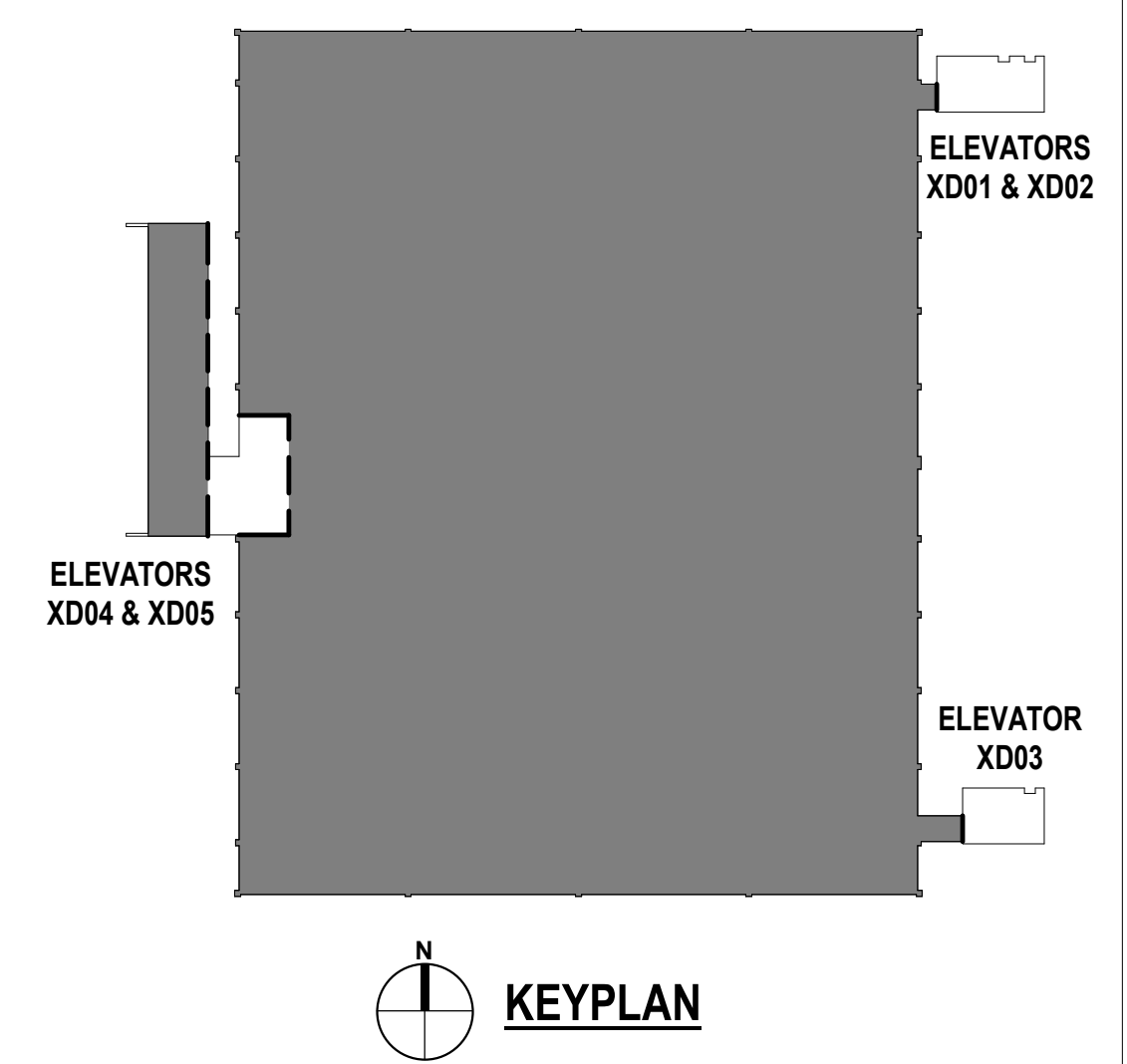
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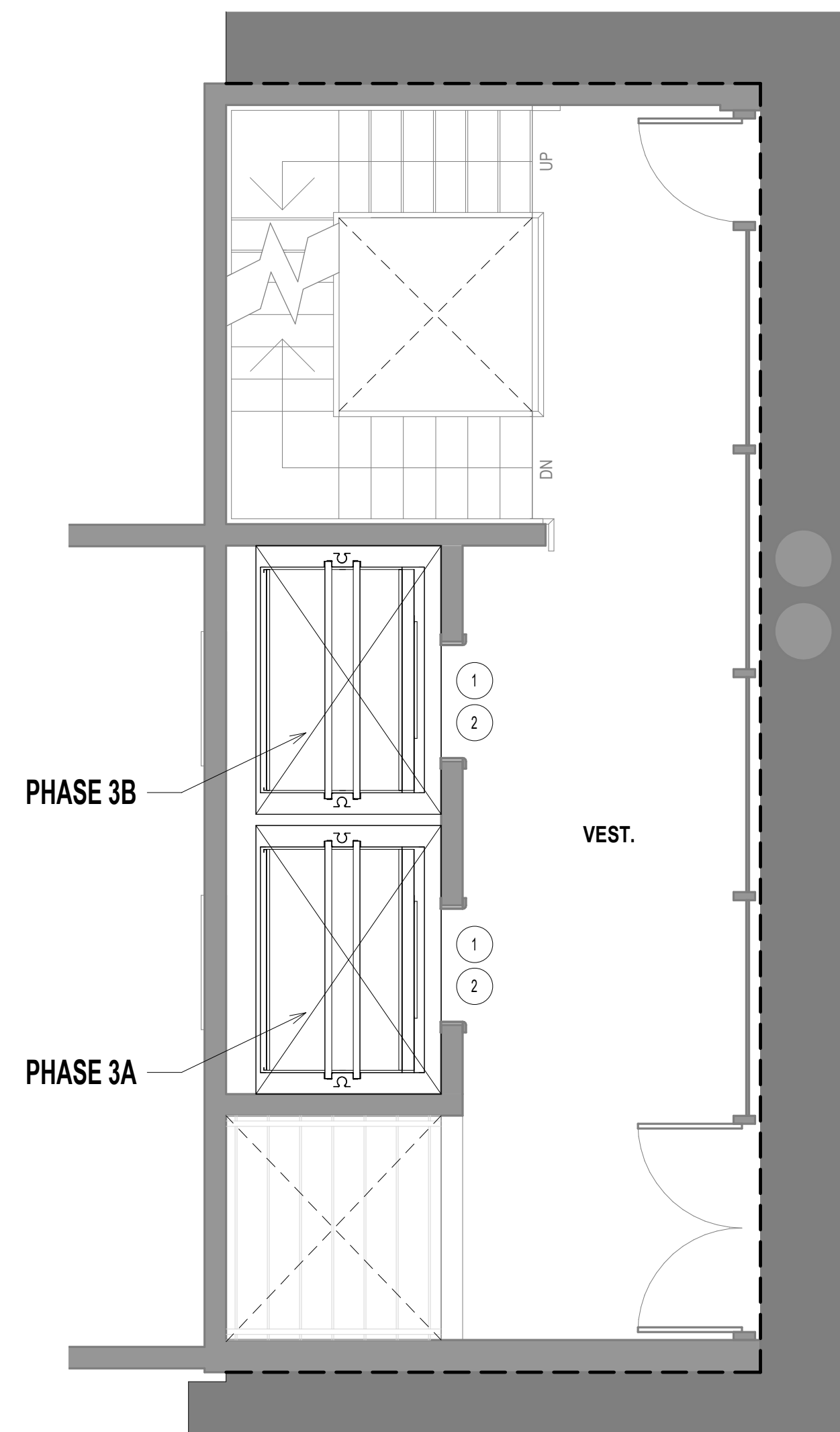


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100% CONSTRUCTION DOCUMENTS

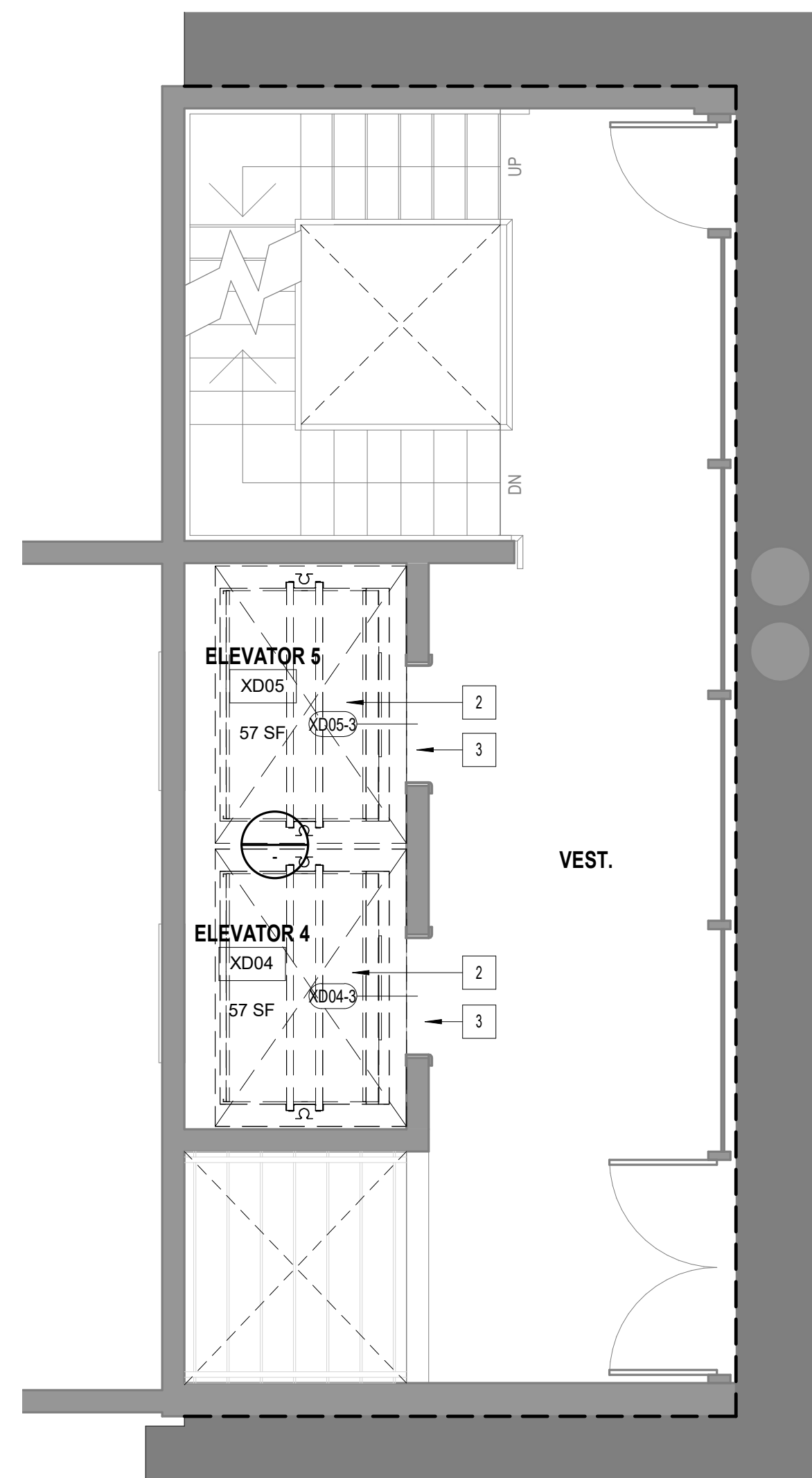
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DATE 12/17/2024	

SECOND FLOOR DEMOLITION AND ARCHITECTURAL PLANS  
**AE102**

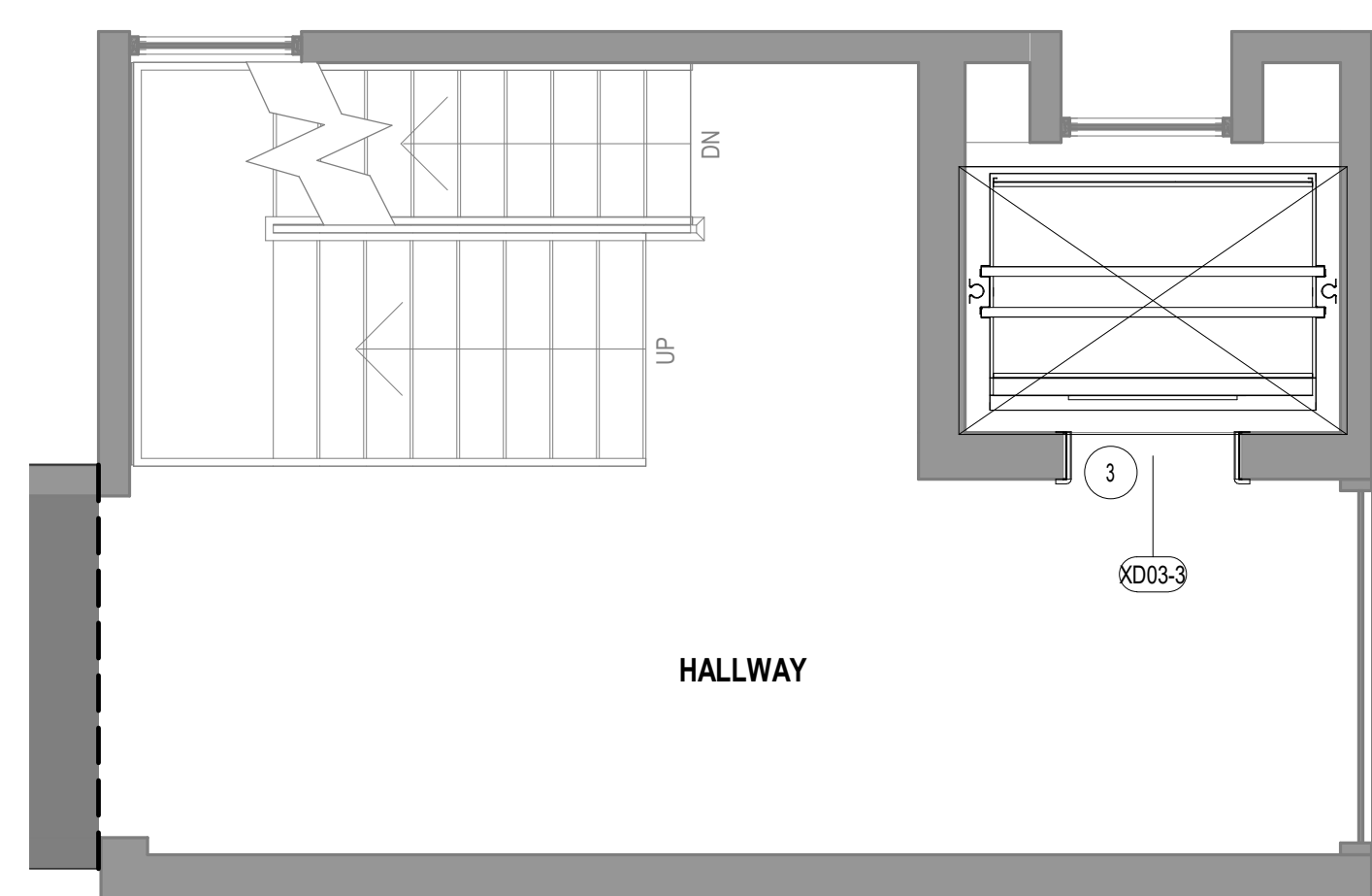




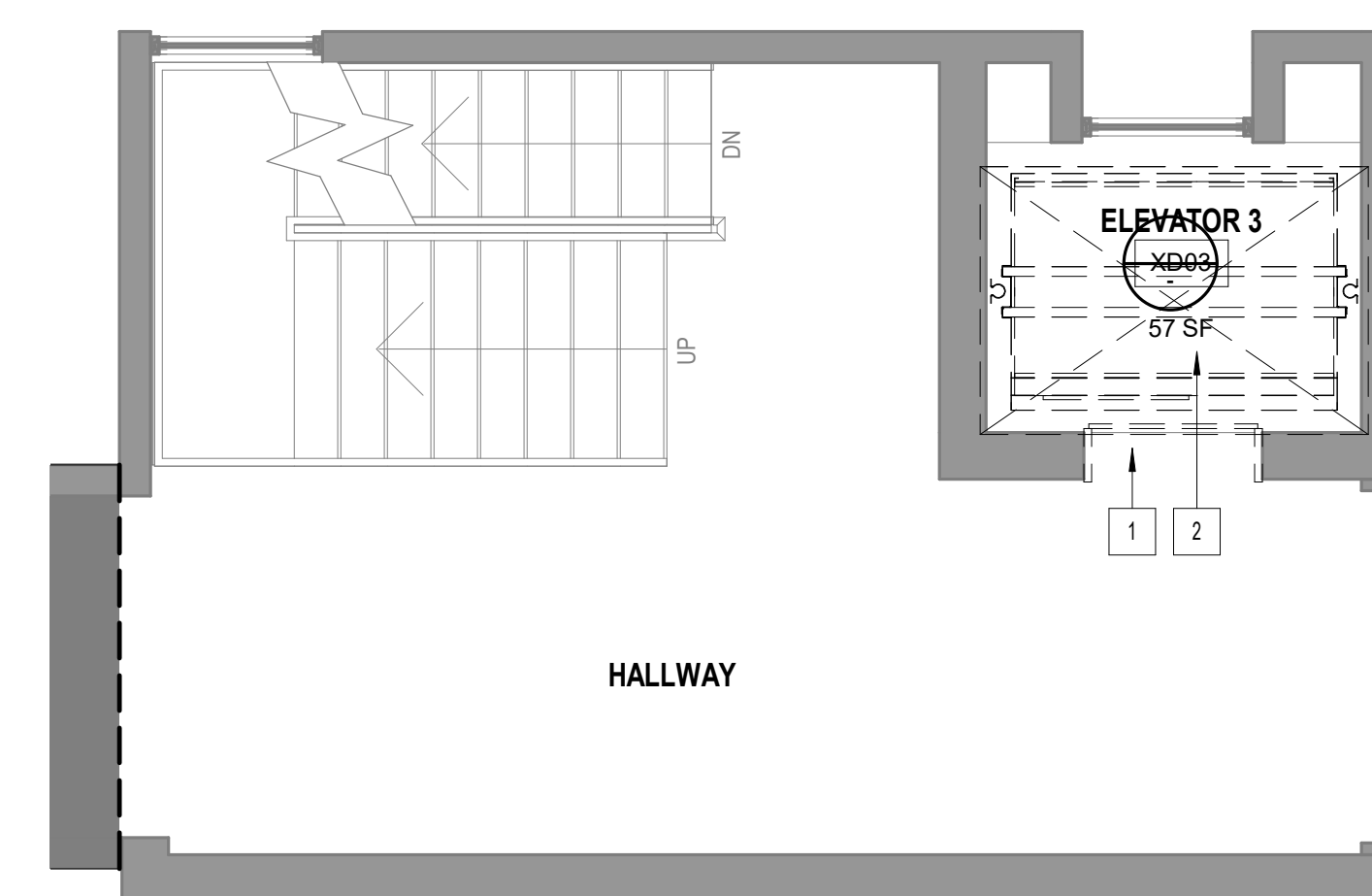
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 AE103 SCALE: 1/4" = 1'-0"



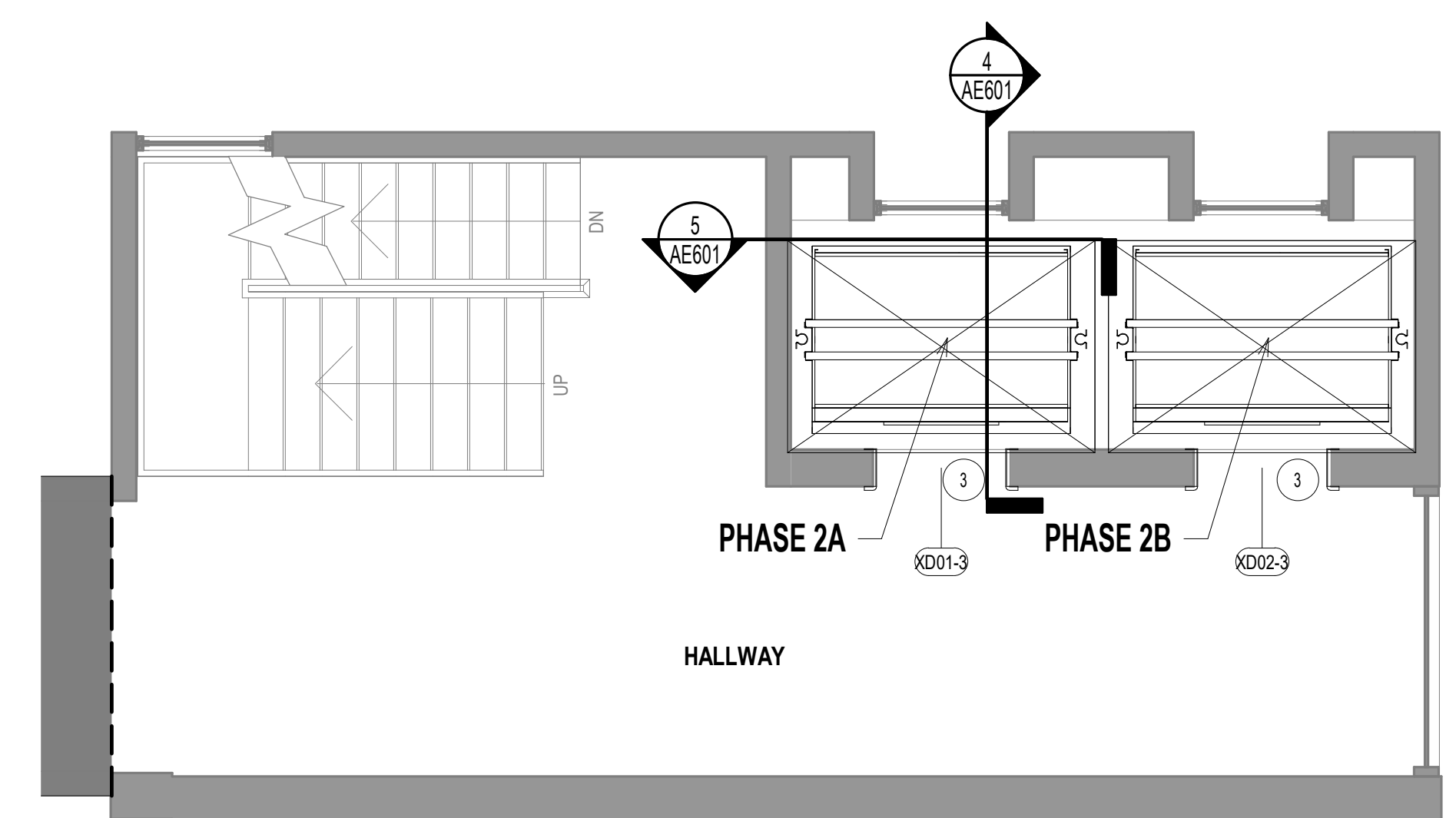
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 AE103 SCALE: 1/4" = 1'-0"



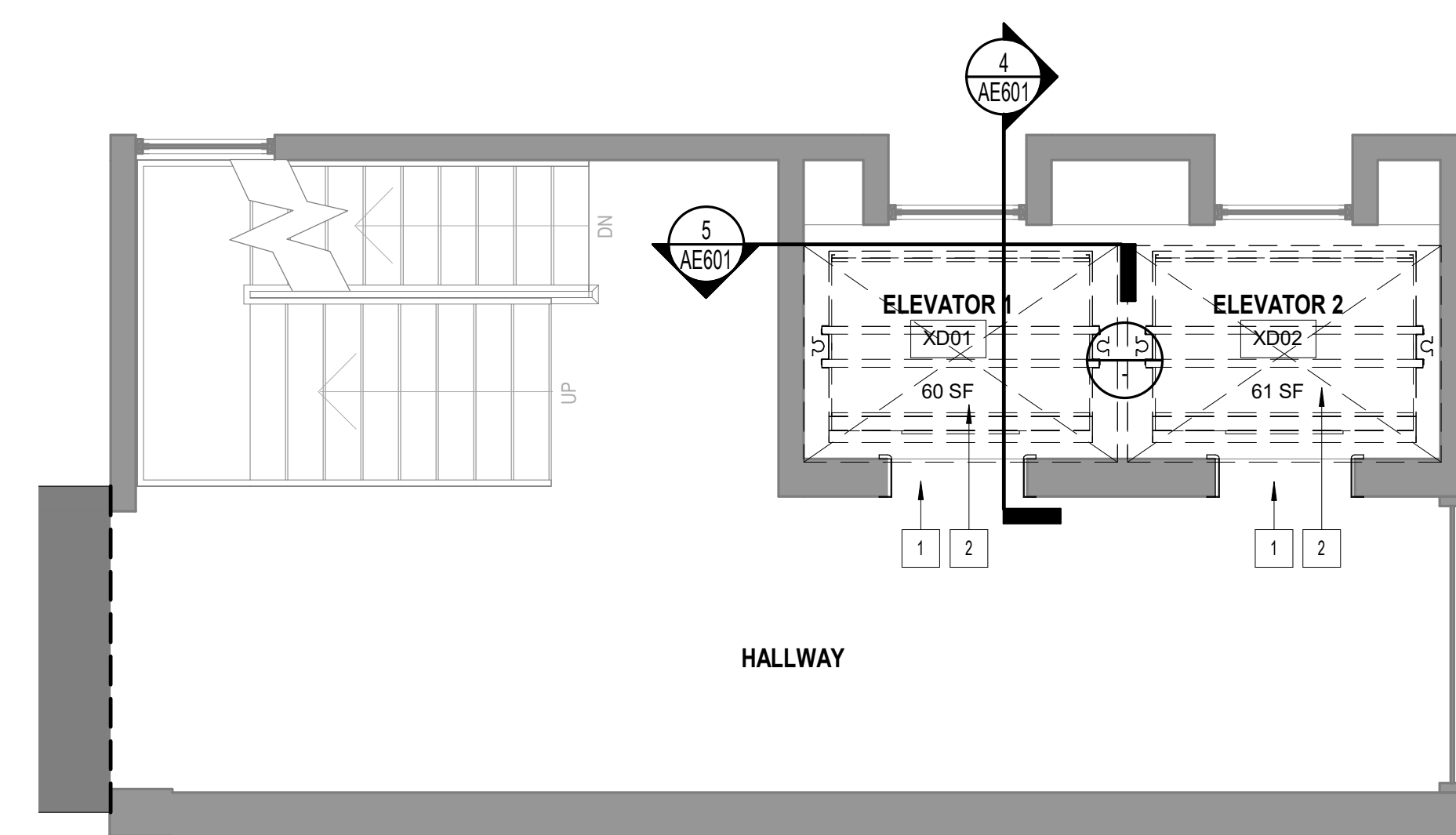
5 ARCHITECTURAL - THIRD THRU FIFTH FLOOR PLAN - ELEVATOR XD03  
 AE103 SCALE: 1/4" = 1'-0"



2 DEMOLITION - THIRD THRU FIFTH FLOOR PLAN - ELEVATOR XD03  
 AE103 SCALE: 1/4" = 1'-0"



4 ARCHITECTURAL - THIRD THRU FIFTH FLOOR PLAN - ELEVATOR XD01 & XD02  
 AE103 SCALE: 1/4" = 1'-0"



1 DEMOLITION - THIRD THRU FIFTH FLOOR PLAN - ELEVATOR XD01 & XD02  
 AE103 SCALE: 1/4" = 1'-0"

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**DEMOLITION PLAN NOTES**

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REVISIONS	DATE	REMARKS

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 317.600.6388 WWW.GUIDONDESIGN.COM

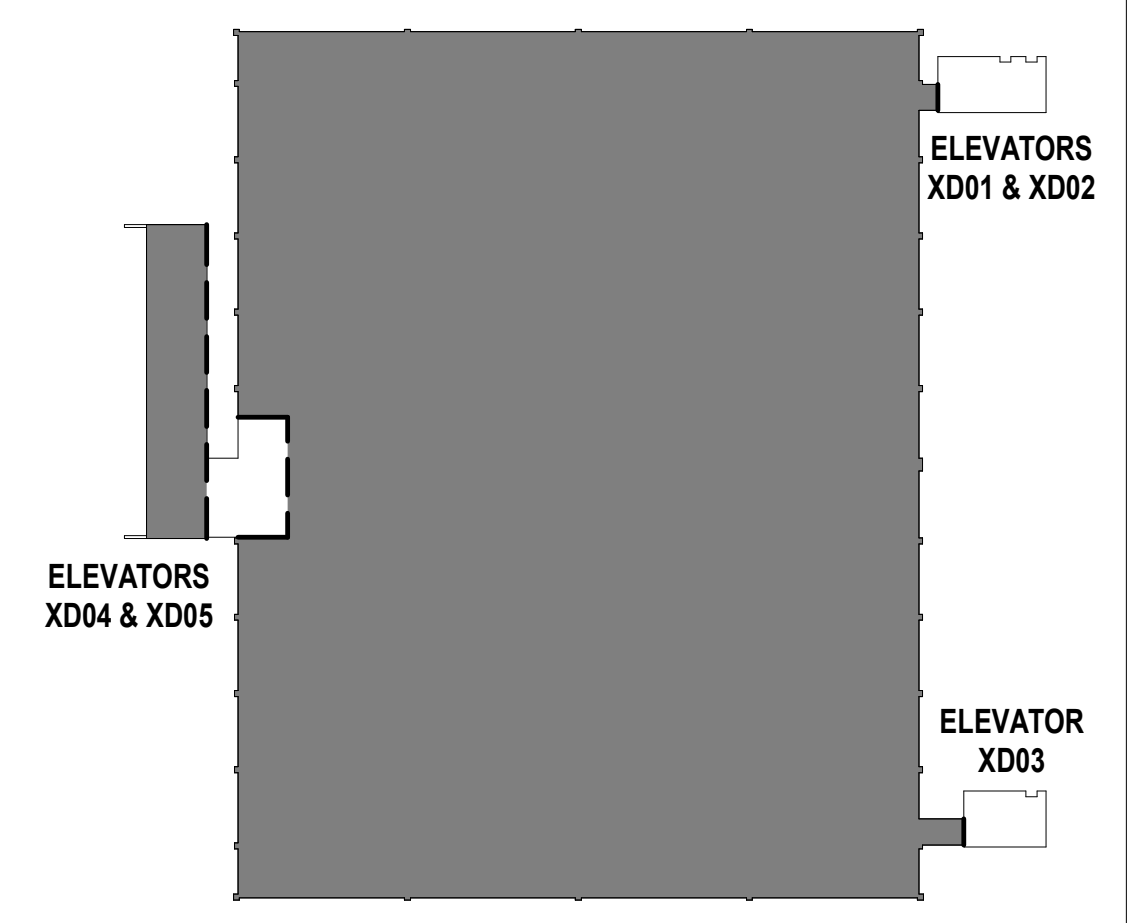


ENGINEER/ARCHITECTS SEAL

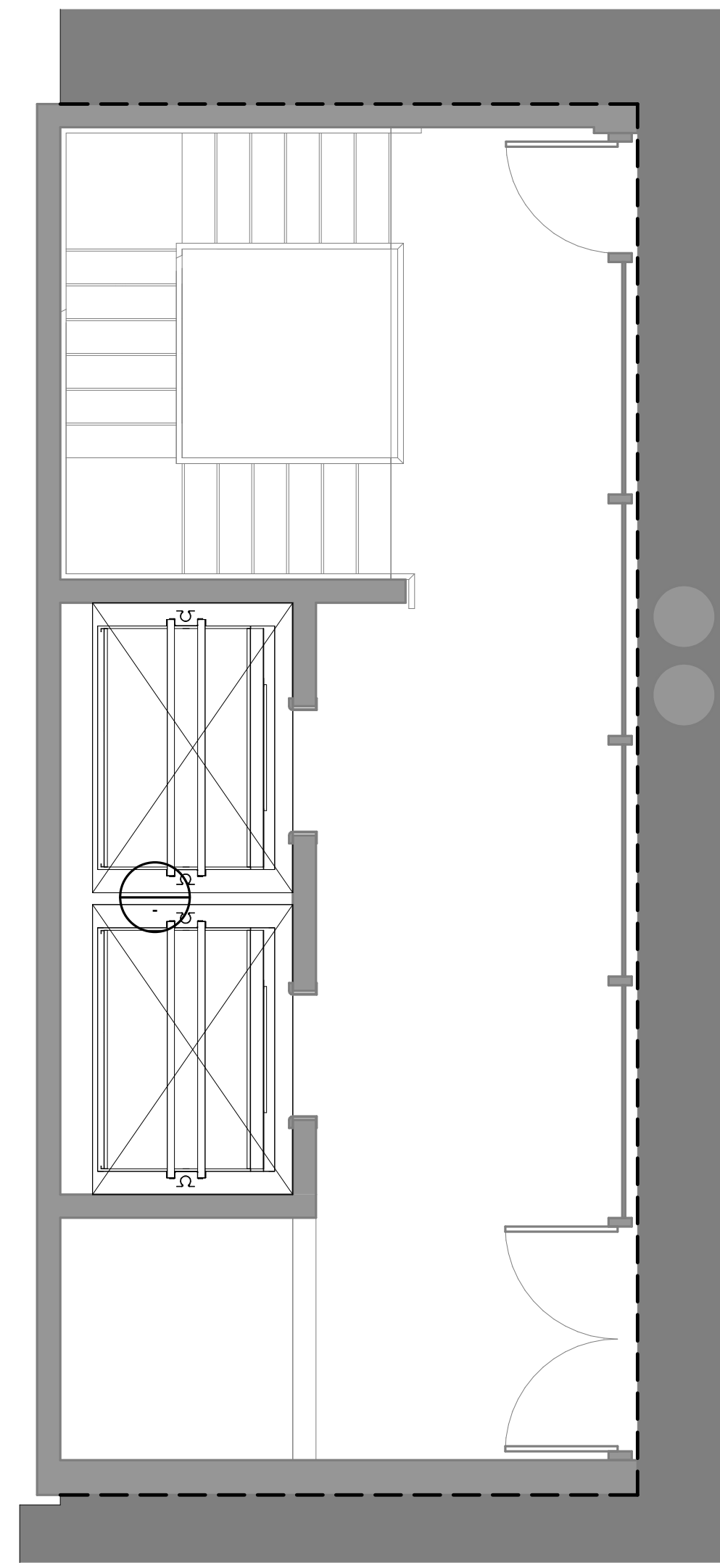
INDIANA UNIVERSITY INDIANAPOLIS  
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 498 BLAKE ST. INDIANAPOLIS, IN 46202  
 100% CONSTRUCTION DOCUMENTS

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DESIGNED: DC	DRAWN: DC
APPROVED: MD	CHECKED: MD
CLIENT PROJECT NUMBER	
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DATE	
12/17/2024	

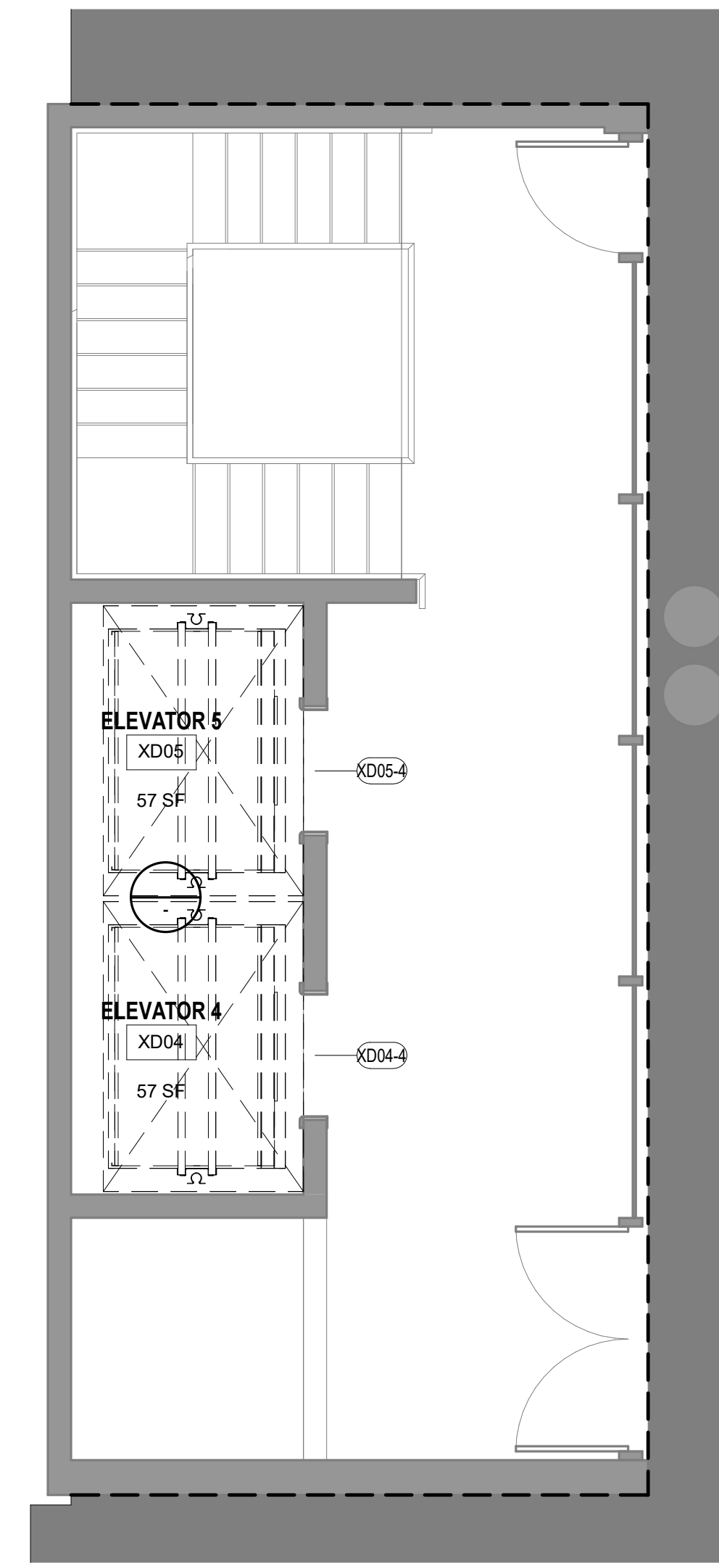
TYPICAL UPPER FLOORS  
 DEMOLITION AND  
 ARCHITECTURAL PLANS  
**AE103**



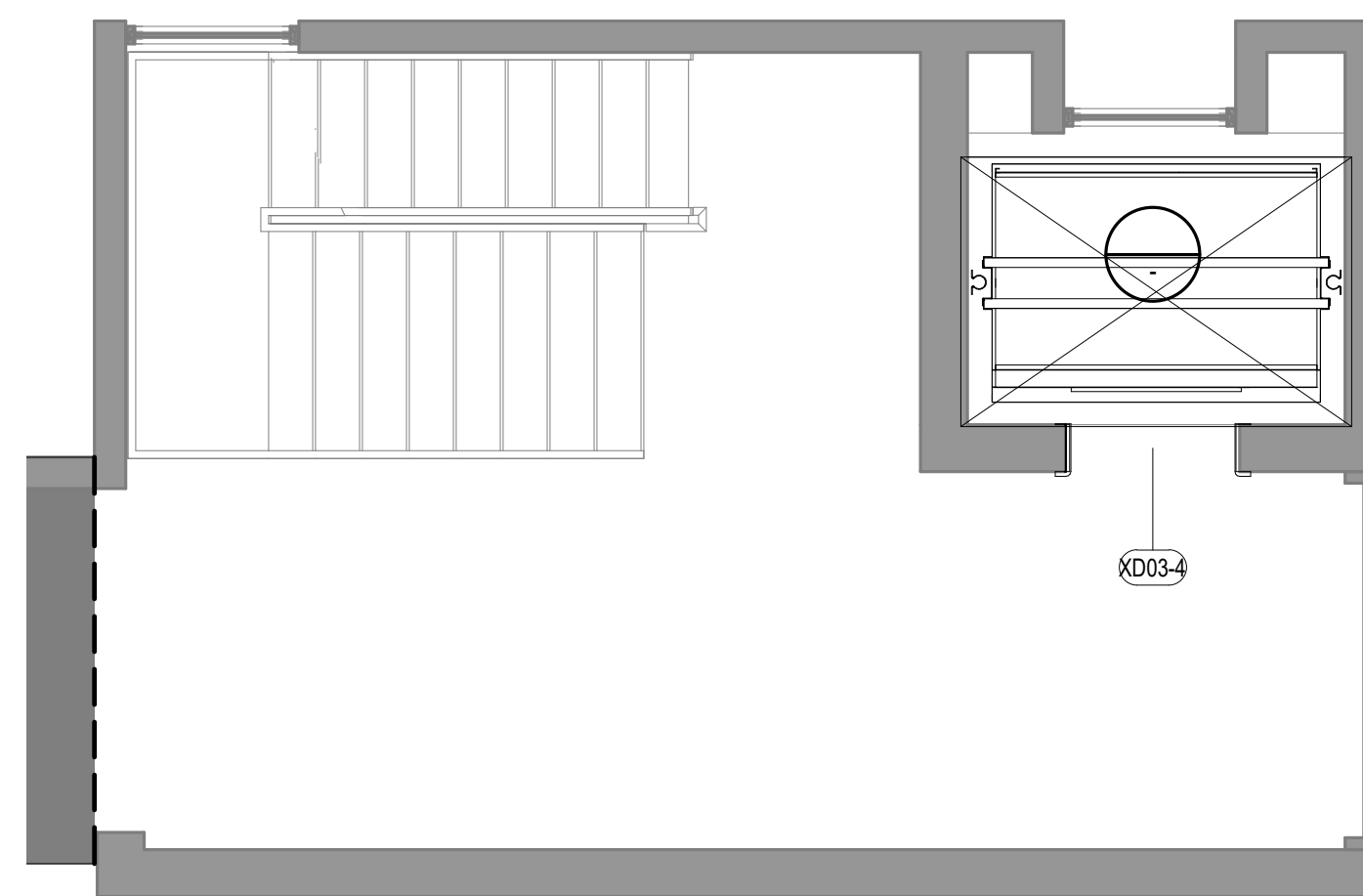
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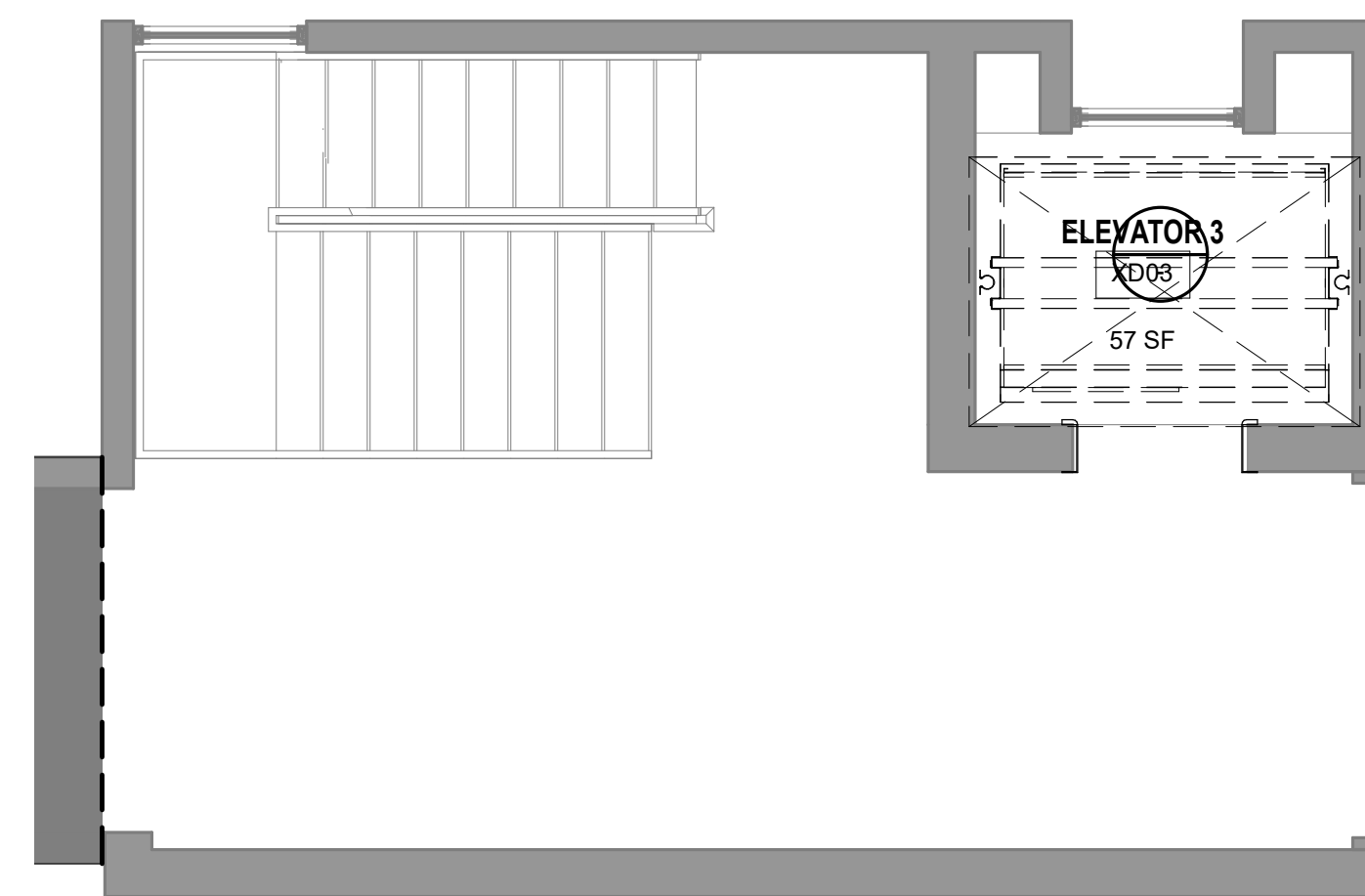
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AE104 / SCALE: 1/4" = 1'-0"



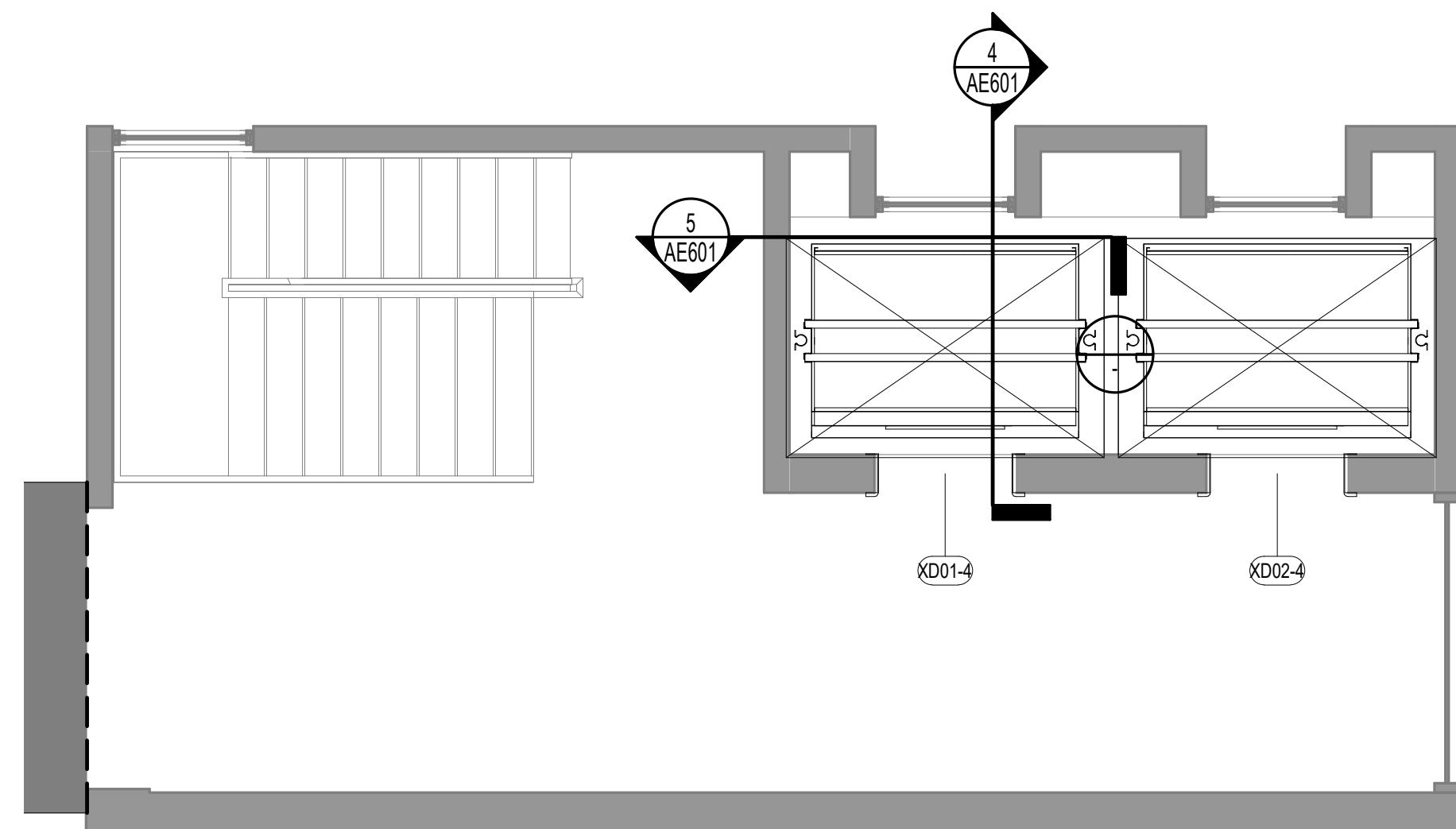
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AE104 / SCALE: 1/4" = 1'-0"



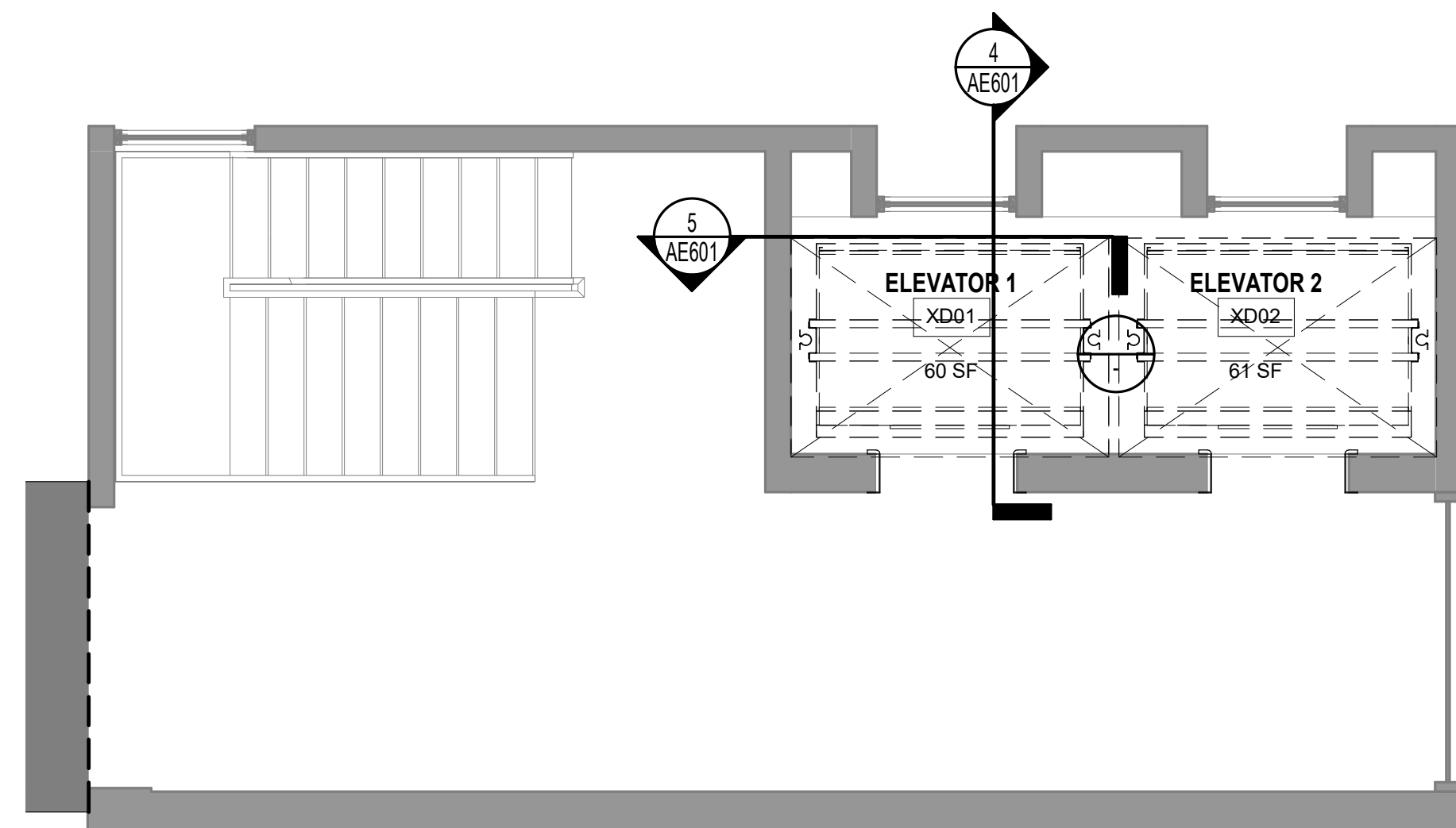
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AE104 / SCALE: 1/4" = 1'-0"



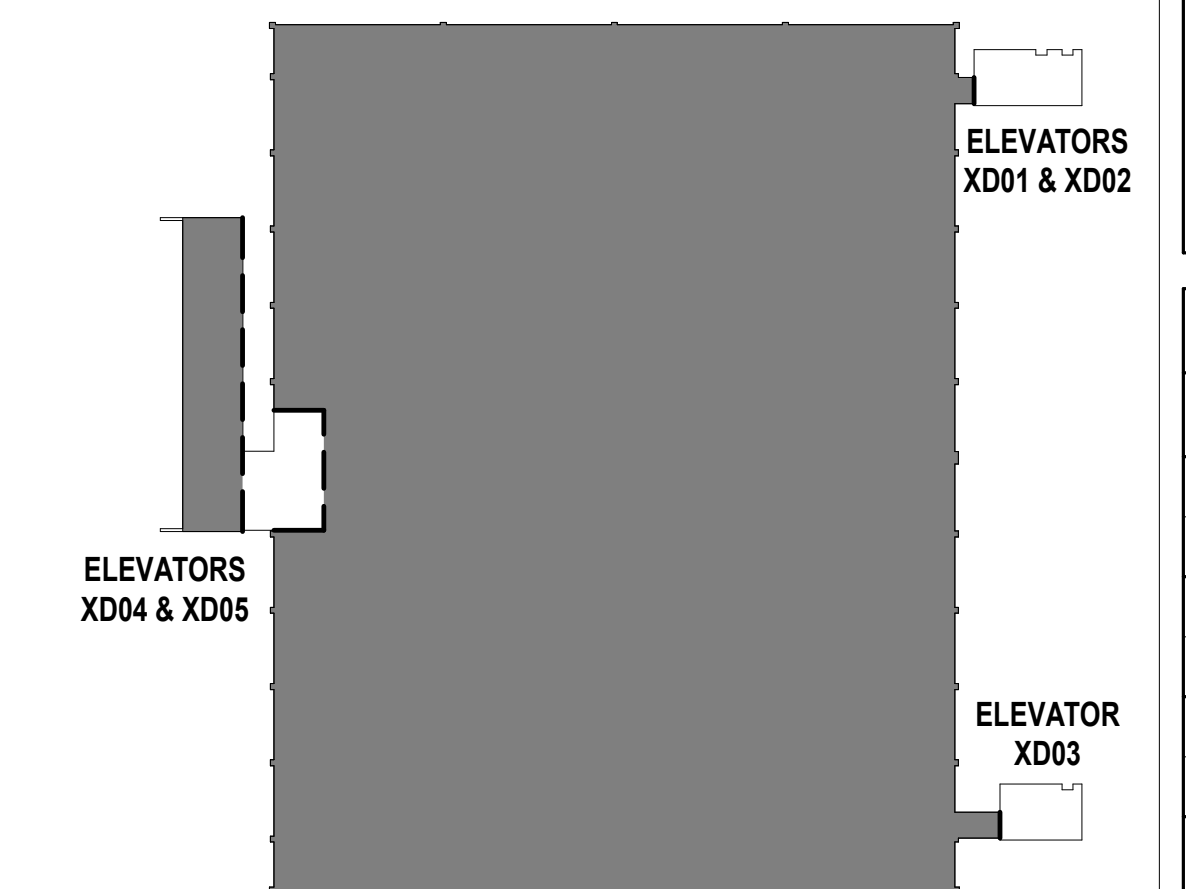
2 DEMOLITION - FOURTH FLOOR - ELEVATOR XD03  
AE104 / SCALE: 1/4" = 1'-0"



4 ARCHITECTURAL - FOURTH FLOOR - ELEVATORS XD01 & XD02  
AE104 / SCALE: 1/4" = 1'-0"



1 DEMOLITION - FOURTH FLOOR - ELEVATORS XD01 & XD02  
AE104 / SCALE: 1/4" = 1'-0"



KEYPLAN

ARCHITECTURAL GENERAL NOTES

- A. REFERENCE MECHANICAL, FIRE PROTECTION AND ELECTRICAL FOR COORDINATION ITEMS. COORDINATE AS REQUIRED INCLUDING NECESSARY FRAMING, BLOCKING, ETC.
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ARCHITECTURAL PLAN NOTES

- 1. X

DEMOLITION GENERAL NOTES

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DEMOLITION PLAN NOTES

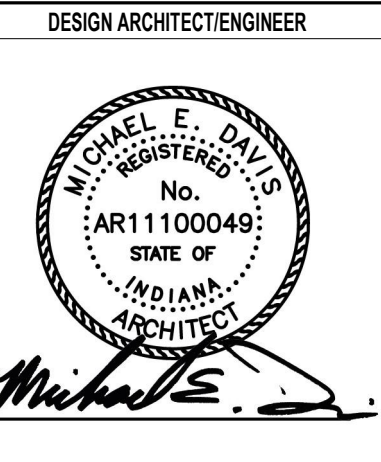
- 1. REMOVE ELEVATOR ENTRANCE FRAME AND DOOR ASSEMBLY IN ITS ENTIRETY.
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- 3. ELEVATOR ENTRANCE FRAME AND DOOR ASSEMBLY TO REMAIN EXISTING.

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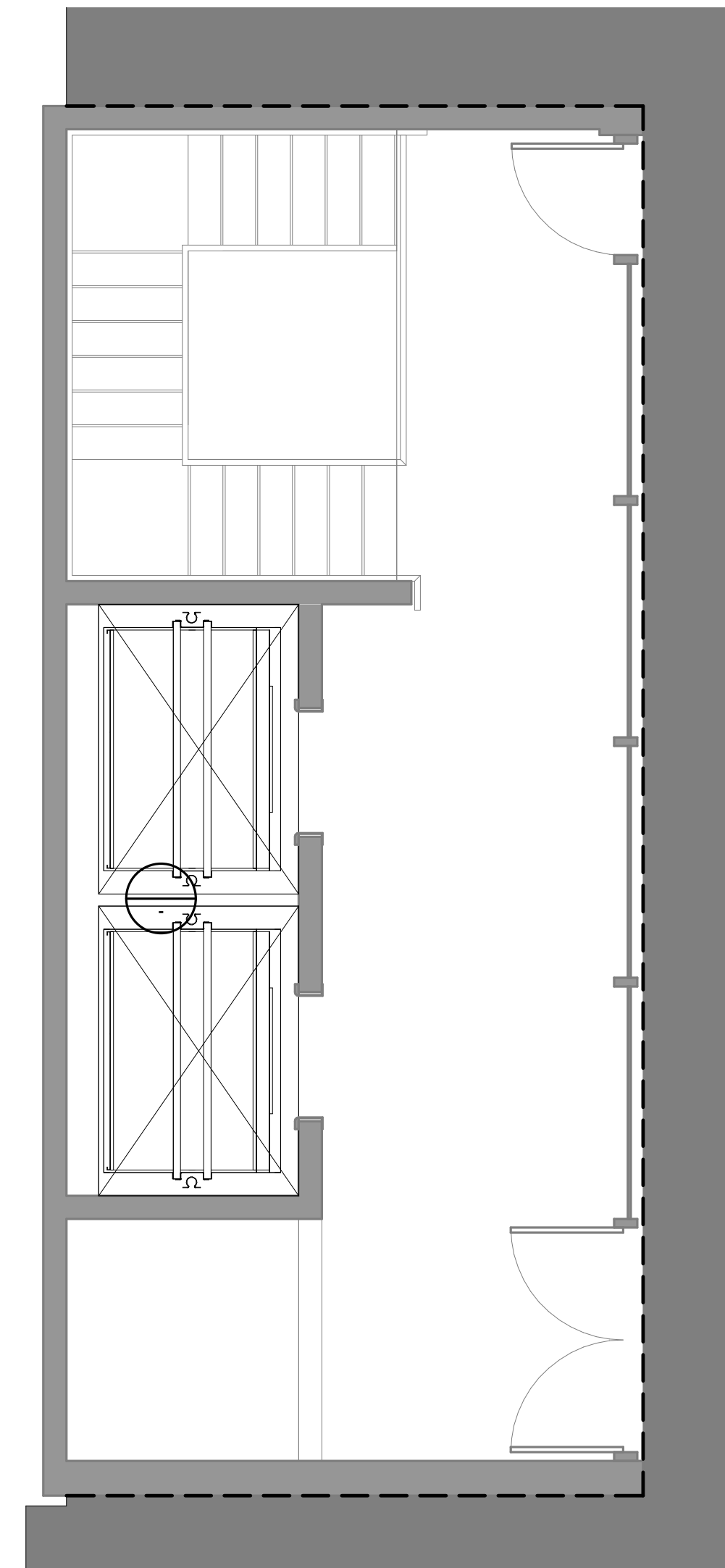
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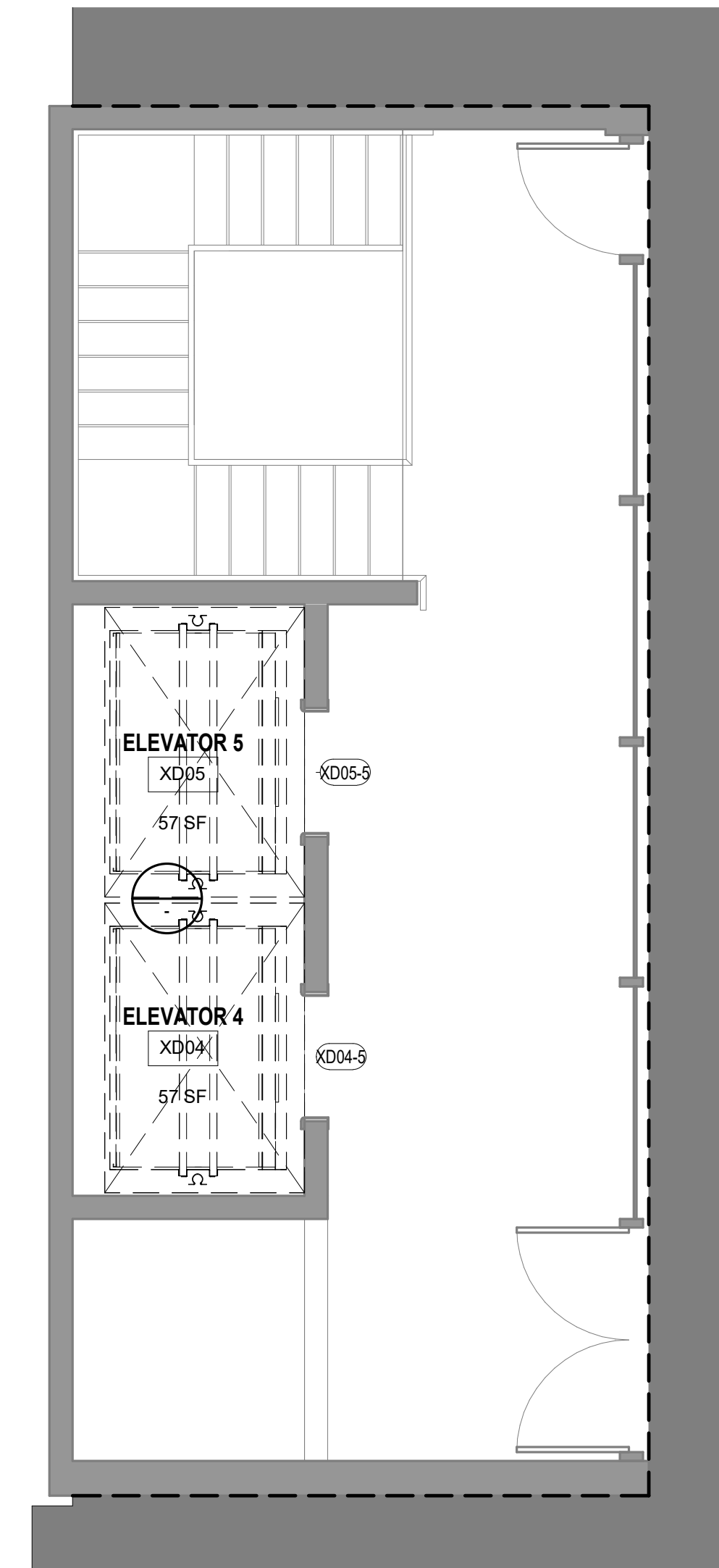
ENGINEER/ARCHITECTS SEAL

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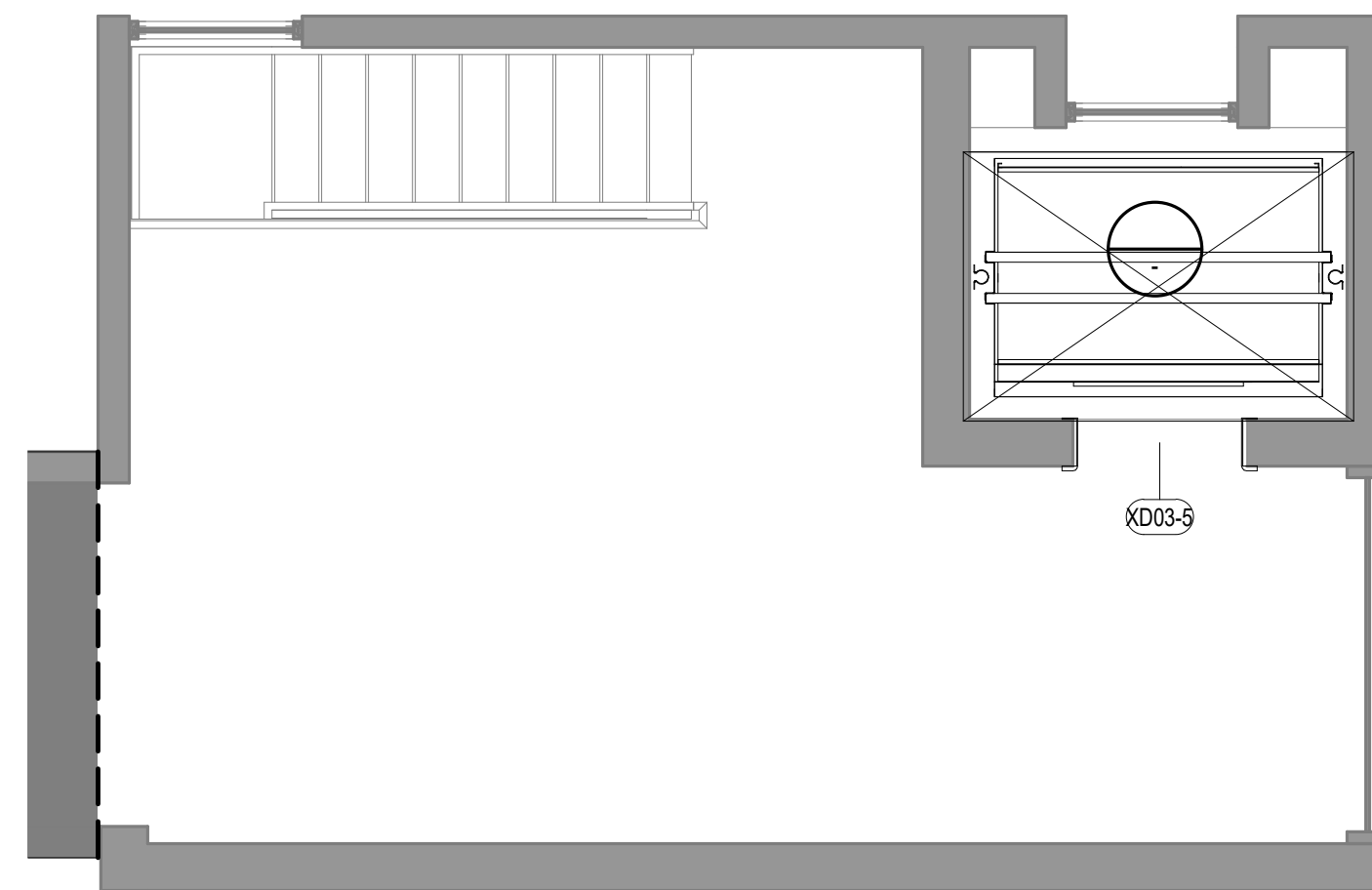
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DATE	
12/17/2024	
FOURTH FLOOR DEMOLITION AND ARCHITECTURAL PLANS	
<b>AE104</b>	



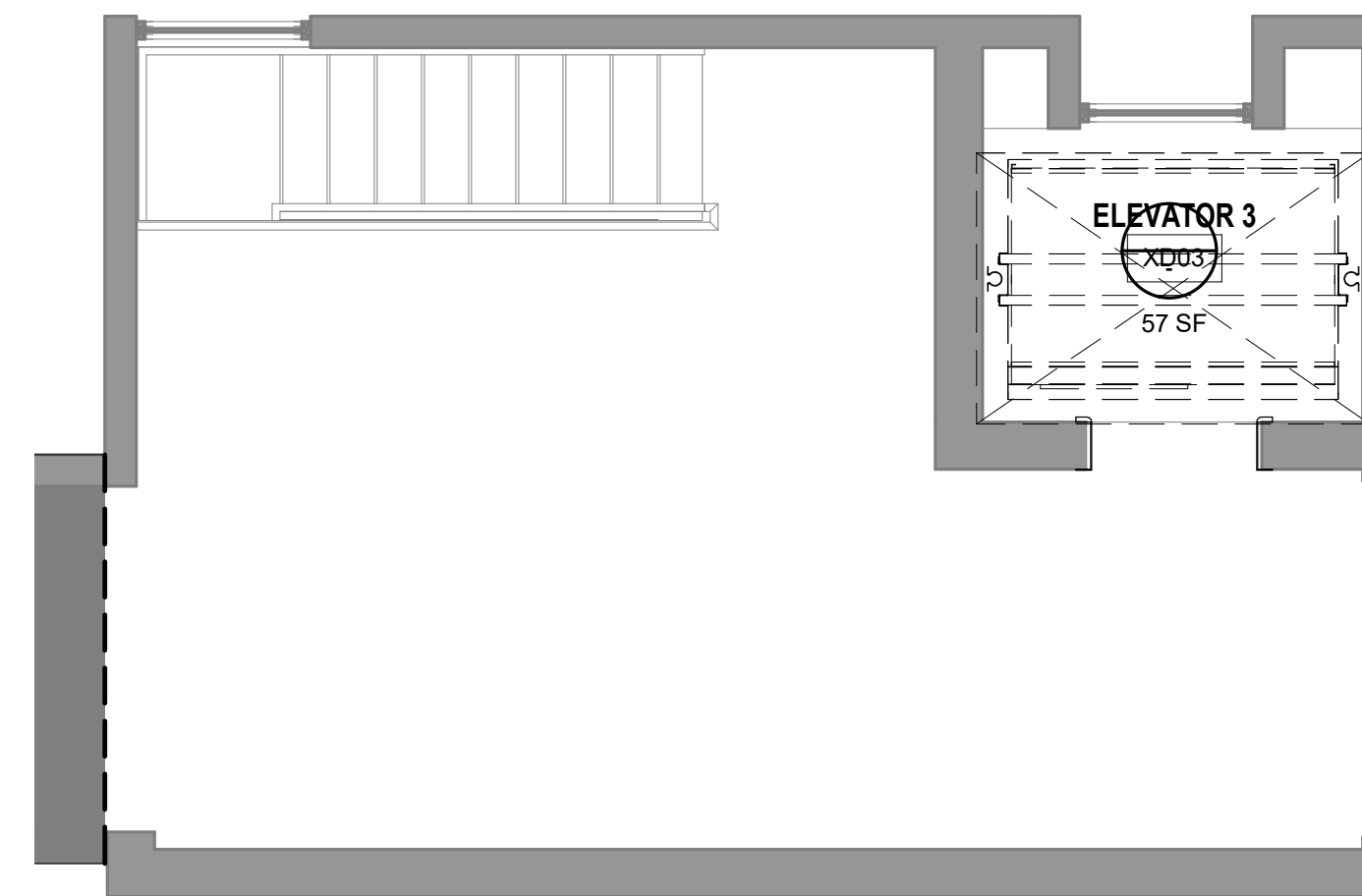
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AE105 SCALE: 1/4" = 1'-0"



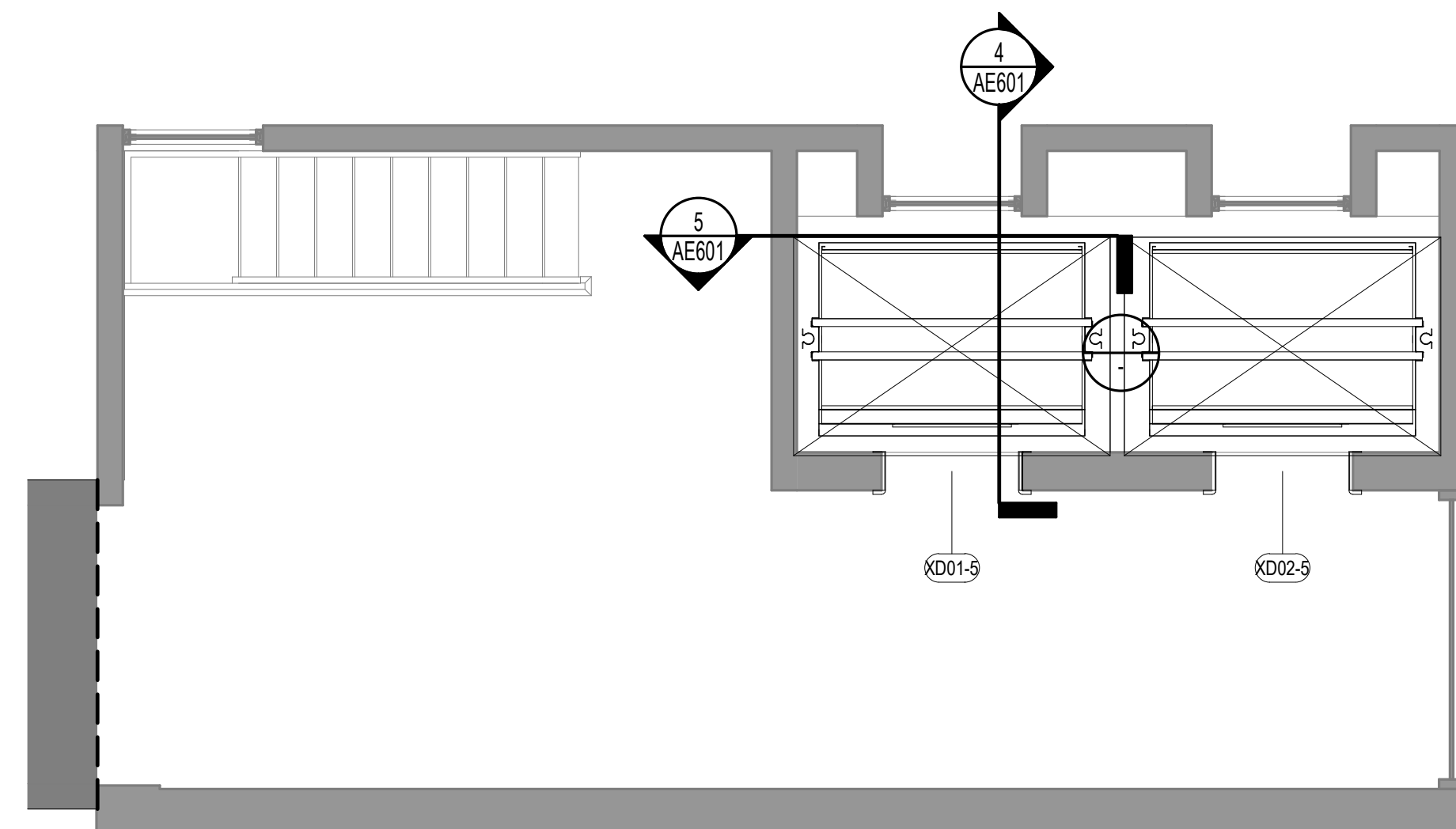
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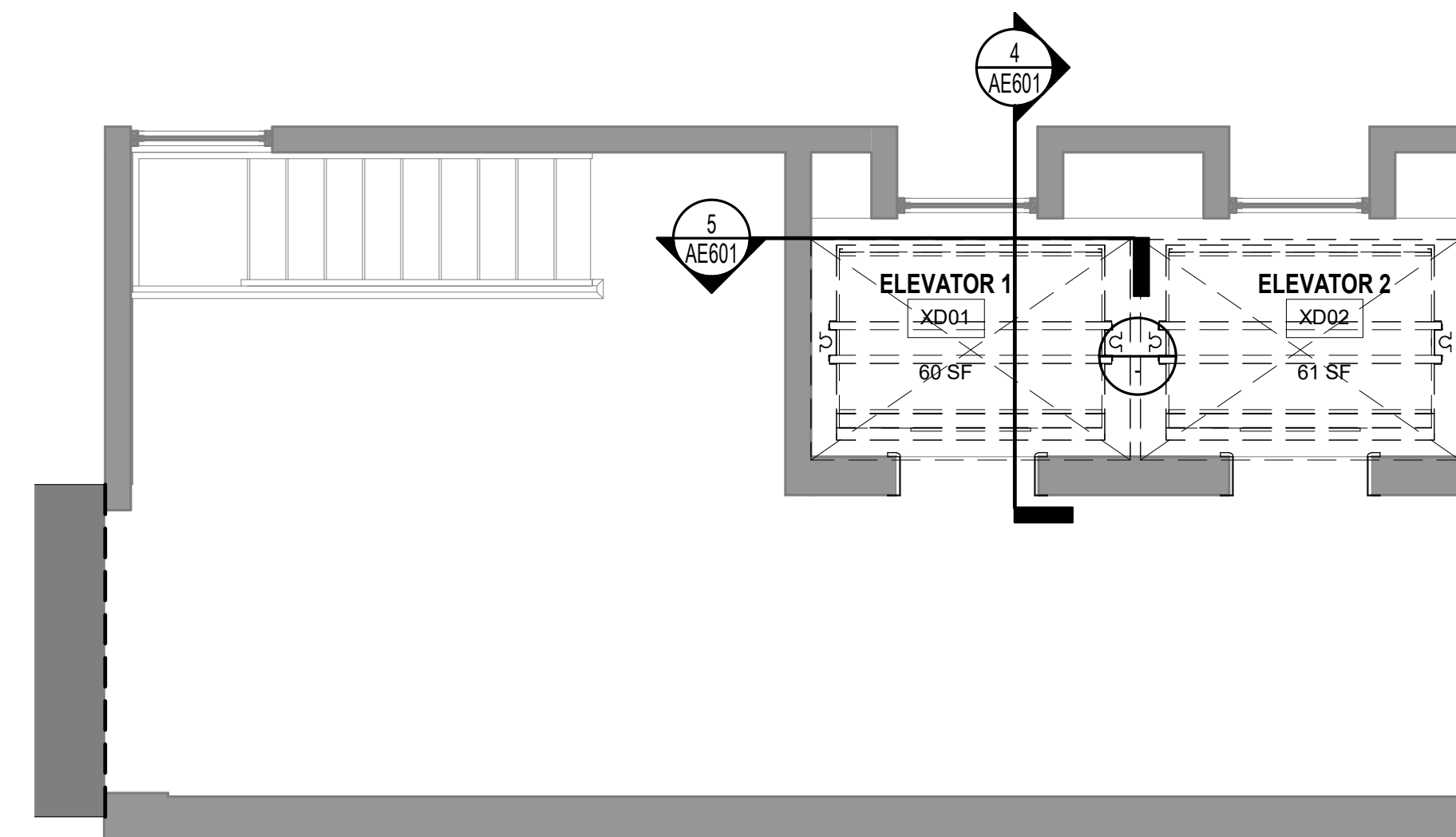
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AE105 SCALE: 1/4" = 1'-0"



2 DEMOLITION - FIFTH FLOOR - ELEVATOR XD03  
AE105 SCALE: 1/4" = 1'-0"



4 ARCHITECTURAL - FIFTH FLOOR - ELEVATORS XD01 & XD02  
AE105 SCALE: 1/4" = 1'-0"



1 DEMOLITION - FIFTH FLOOR - ELEVATORS XD01 & XD02  
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- 4. INSTALL NEW MINI SPLIT UNIT, WALL MOUNTED. REFER TO MEP DRAWINGS FOR ADDITIONAL INFORMATION. COORDINATE FINAL LOCATION WITH OWNER PRIOR TO INSTALLATION.
- 5. INSTALL NEW MINI SPLIT UNIT, GROUND MOUNTED. REFER TO MEP DRAWINGS FOR ADDITIONAL INFORMATION. COORDINATE FINAL LOCATION WITH OWNER PRIOR TO INSTALLATION.

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- E. EXTENTS OF DEMOLITION SHALL BE COORDINATED WITH THE ARCHITECTURAL FLOOR PLANS AND ENGINEERING DRAWINGS FOR ADDITIONAL INFORMATION.
- F. DIMENSIONS SHOWN FOR EXISTING CONSTRUCTION TO BE DEMOLISHED ARE APPROXIMATE AND ARE INTENDED TO GIVE A GENERAL SCOPE OF WORK TO BE REMOVED OR TEMPORARILY REMOVED TO ACCOMMODATE NEW CONSTRUCTION. COORDINATE DEMOLITION WORK WITH DESIGN INTENT OF NEW CONSTRUCTION TO PROVIDE ADEQUATE AREA FOR THIS WORK.
- G. CONTRACTORS SHALL REMOVE INDICATED DEMOLITION OF CONSTRUCTION ASSEMBLIES IN THEIR ENTIRETY, UNLESS OTHERWISE NOTED, TO ACCOMMODATE NEW CONSTRUCTION.
- H. MAKE ALL DEMOLITION CLEAN AND COMPLETE IN A MANNER TO RECEIVE NEW FINISHES. DEMOLITION SHOULD BE PERFORMED IN A MANNER SUCH THAT THE CONTRACTOR CAN SEAMLESSLY PATCH NEW WORK TO BE SMOOTH AND UNDETECTABLE.
- I. COORDINATE FULL SCOPE OF DEMOLITION WORK WITH ENGINEERING AND VENDOR DRAWINGS.

DEMOLITION PLAN NOTES

- 1. REMOVE ELEVATOR ENTRANCE FRAME AND DOOR ASSEMBLY IN ITS ENTIRETY.
- 2. REMOVE ELEVATOR CAB IN ITS ENTIRETY.
- 3. ELEVATOR ENTRANCE FRAME AND DOOR ASSEMBLY TO REMAIN EXISTING.

REVISIONS	DATE	REMARKS

OWNER / CLIENT

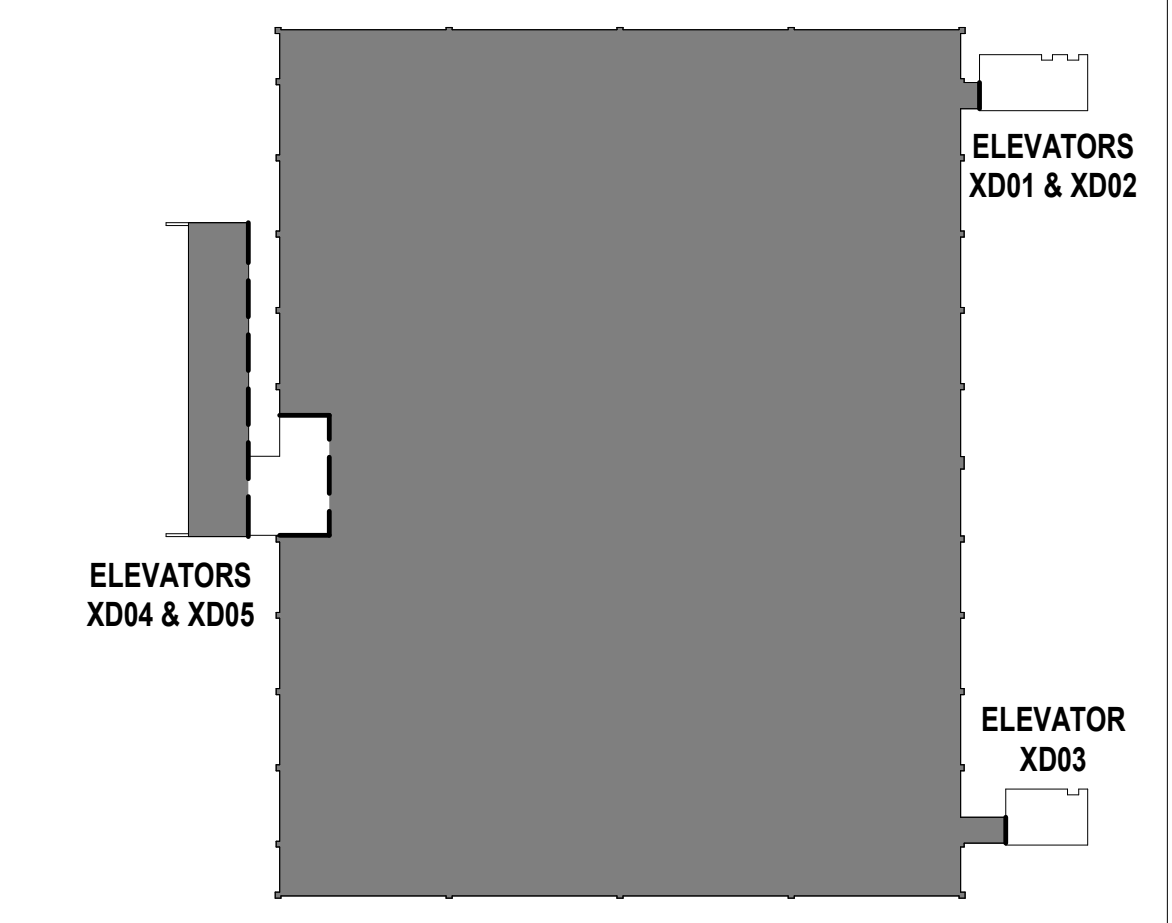
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DESIGN ARCHITECT/ENGINEER



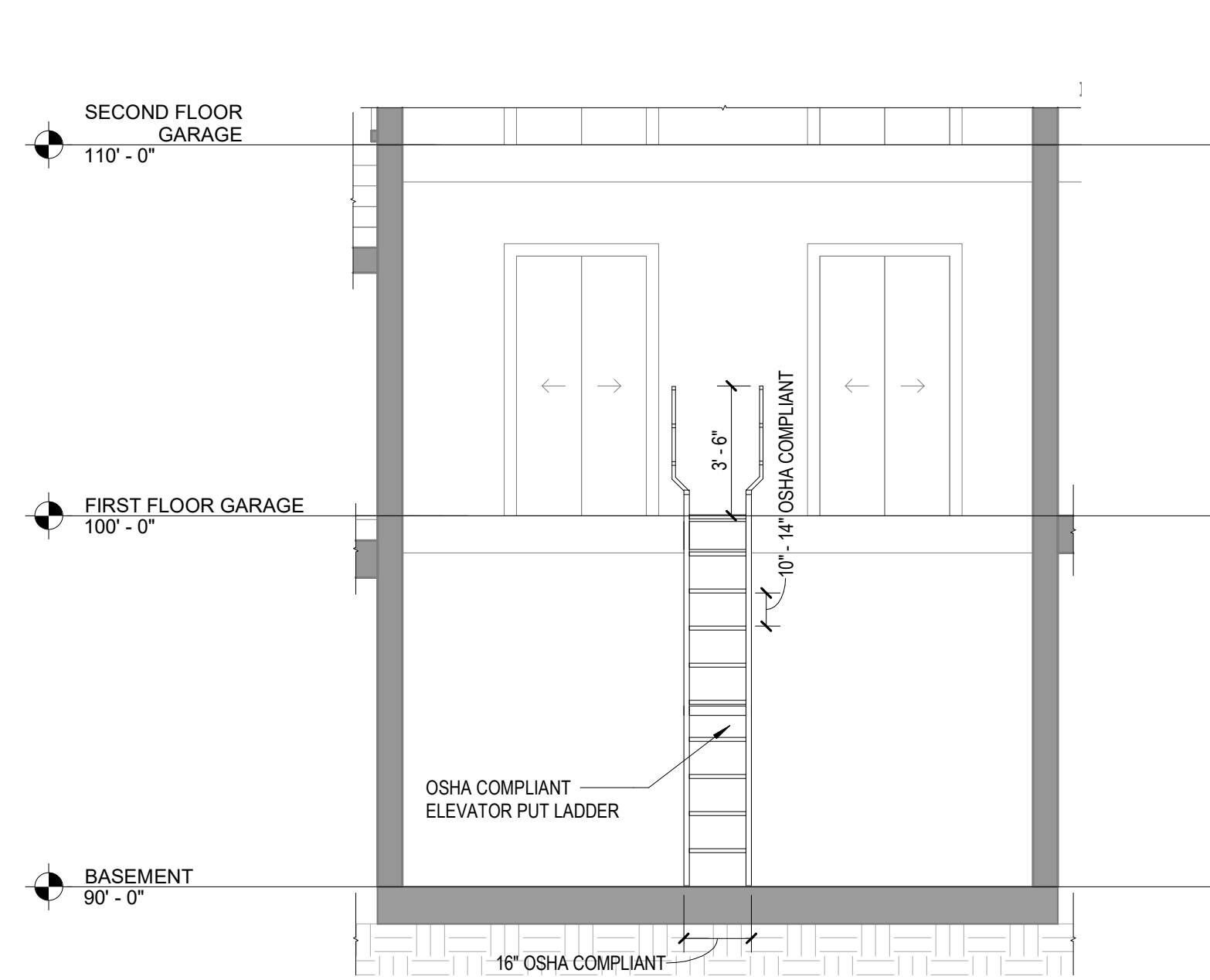
ENGINEER/ARCHITECTS SEAL

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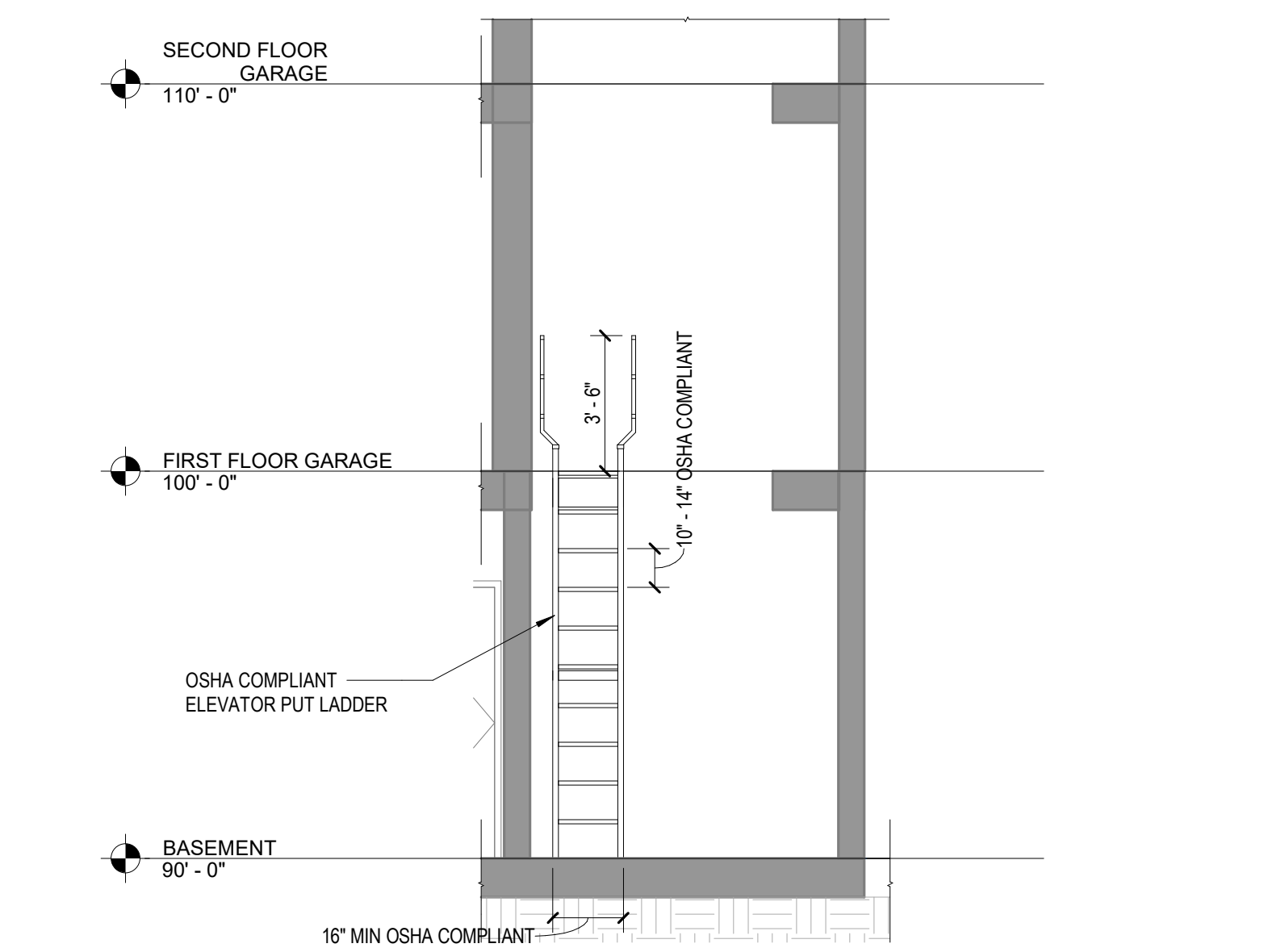


KEYPLAN

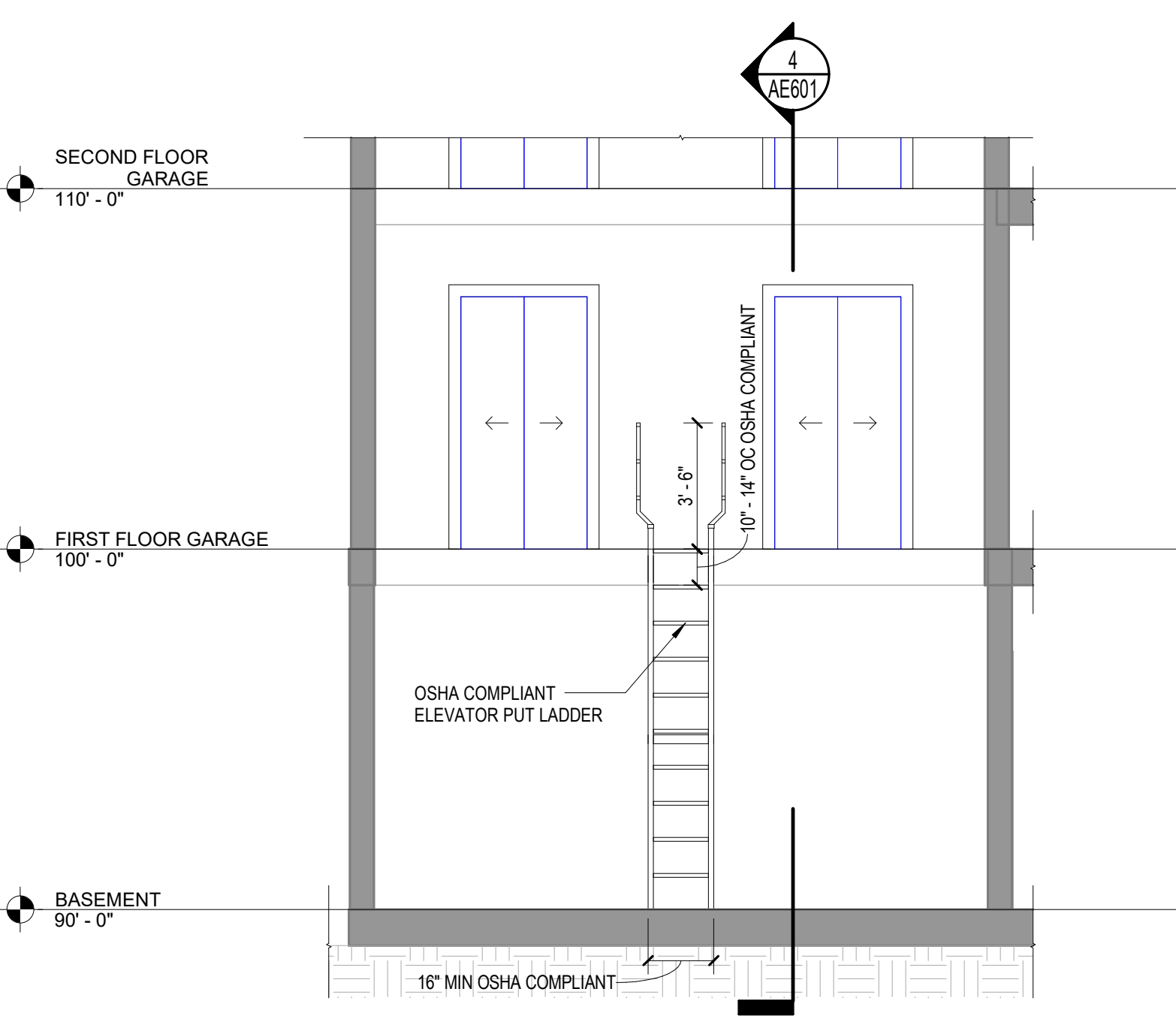
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APPROVED: MD	CHECKED: MD
CLIENT PROJECT NUMBER	
N/A	
PROJECT NUMBER	
23 1015	
DATE	
12/17/2024	
FIFTH FLOOR GARAGE ARCHITECTURAL PLAN	
<b>AE105</b>	



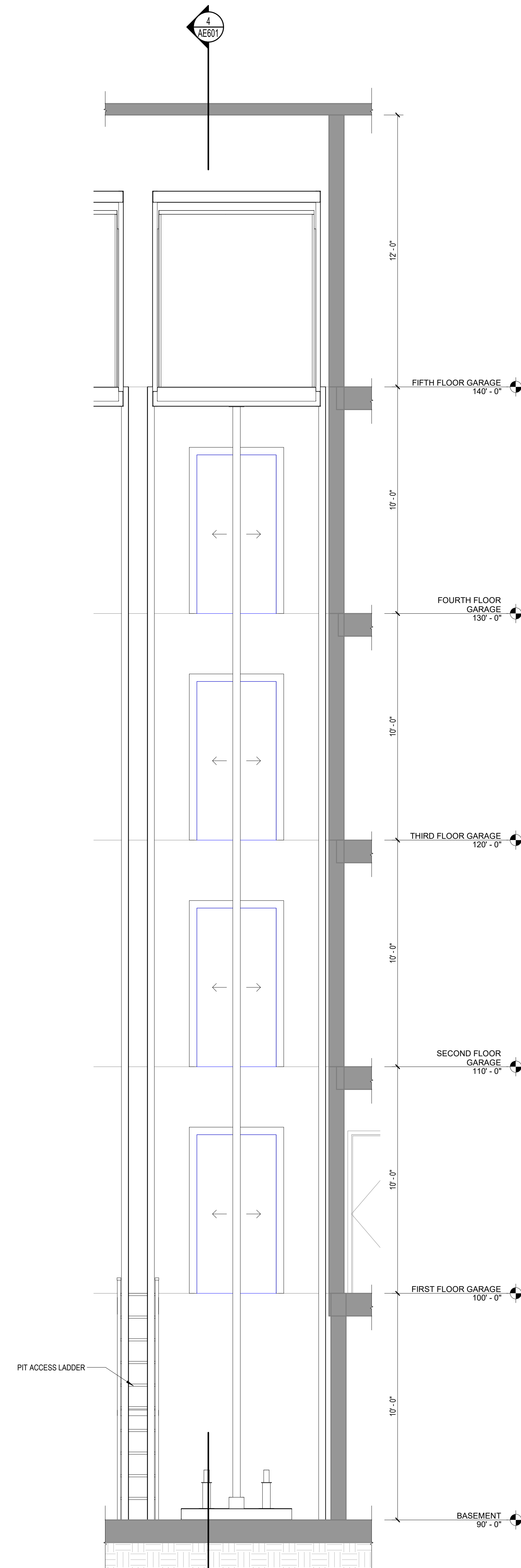
XD04 & XD05 ELEVATOR PIT LADDER SECTION  
SCALE: 1/4" = 1'-0"



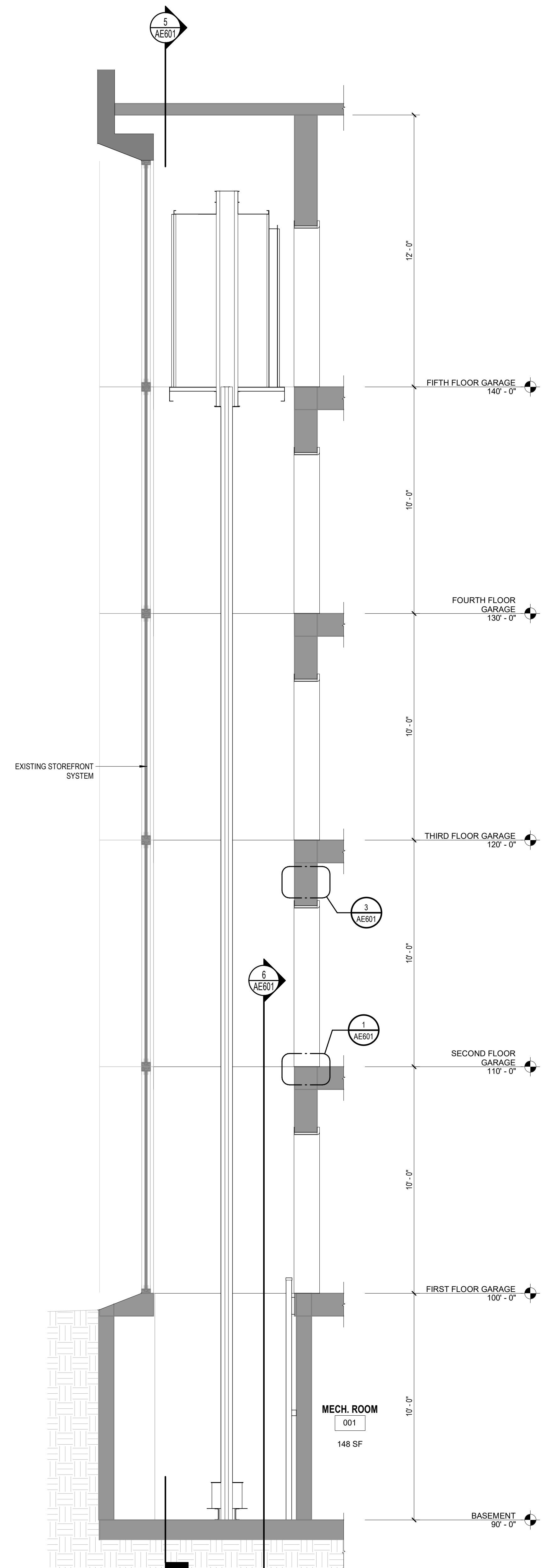
XD03 ELEVATOR PIT LADDER SECTION  
SCALE: 1/4" = 1'-0"



XD01 & XD02 ELEVATOR PIT LADDER SECTION  
SCALE: 1/4" = 1'-0"



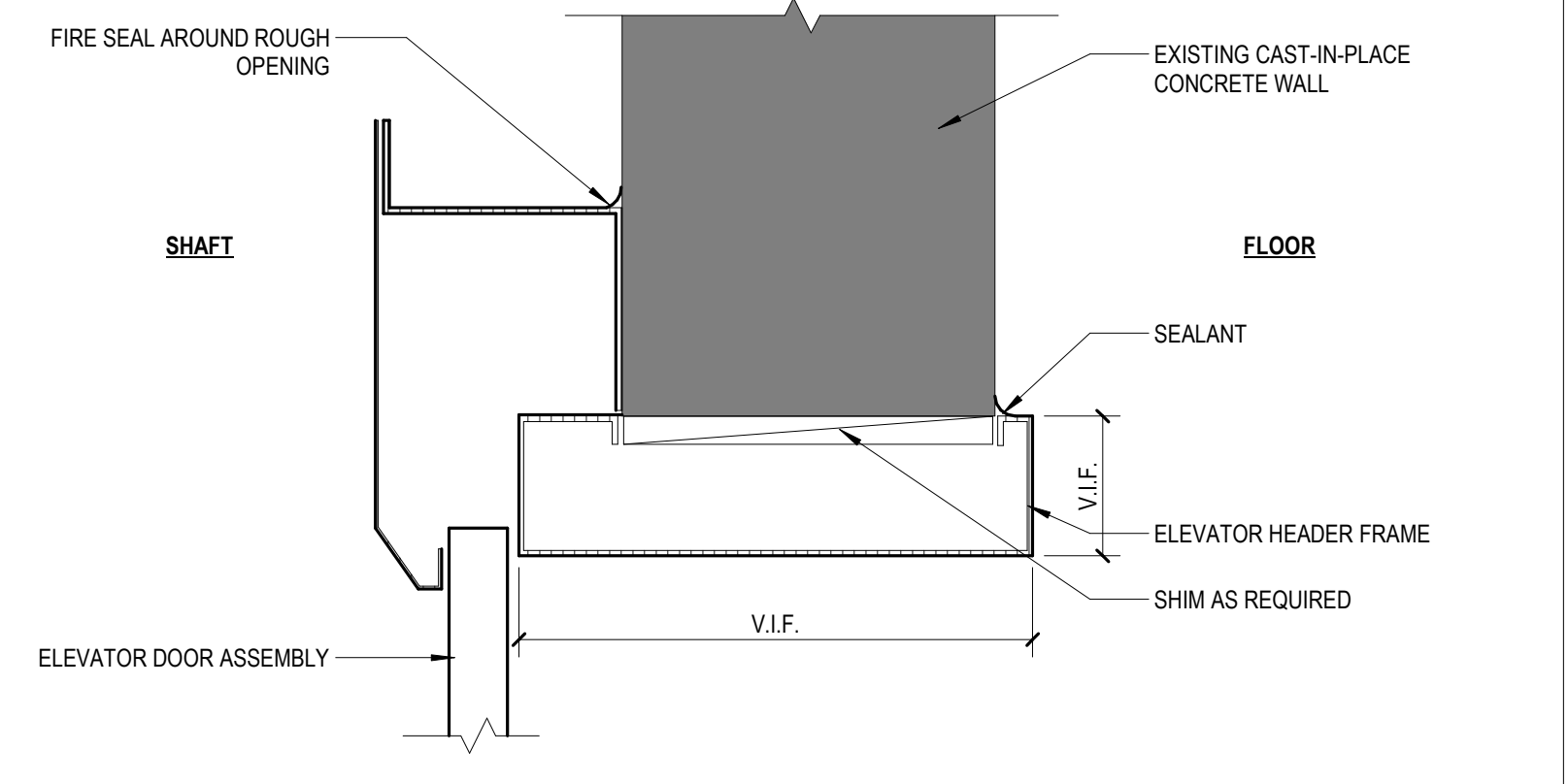
TYPICAL SECTION - SIDE / SIDE  
SCALE: 3/8" = 1'-0"



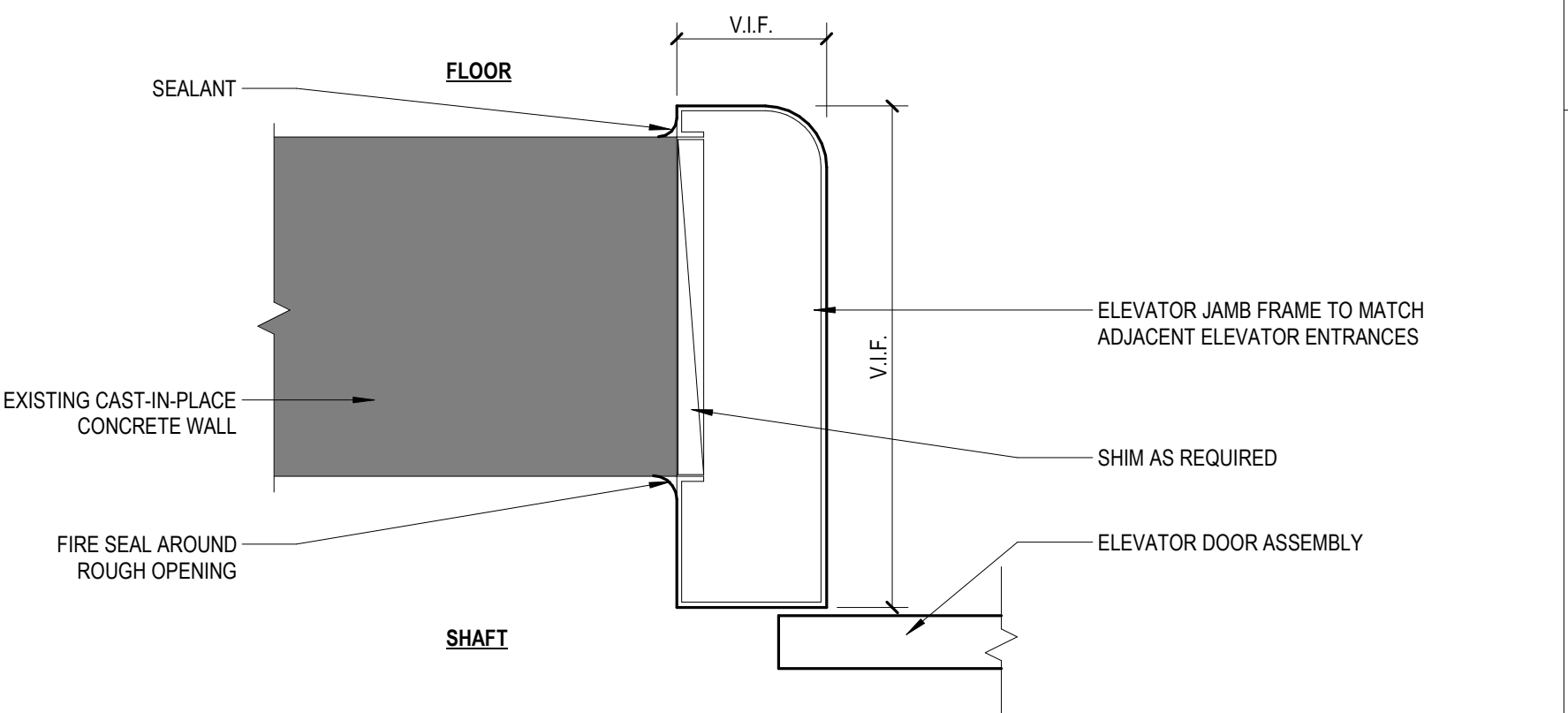
TYPICAL SECTION - FRONT / BACK  
SCALE: 3/8" = 1'-0"

DOOR SCHEDULE									
DOOR NUMBER	ROOM NUMBER	ROOM NAME	DIMENSIONS		DETAILS			COMMENTS	
			WIDTH	HEIGHT	HEAD	JAMB	SILL		
XD01-1	XD01	ELEVATOR 1	3'-6"	7'-0"	3/AE601	2/AE601	1/AE601	1	
XD01-2	XD01	ELEVATOR 1	3'-6"	7'-0"	3/AE601	2/AE601	1/AE601	1	
XD01-3	XD01	ELEVATOR 1	3'-6"	7'-0"	3/AE601	2/AE601	1/AE601	1	
XD01-4	XD01	ELEVATOR 1	3'-6"	7'-0"	3/AE601	2/AE601	1/AE601	1	
XD01-5	XD01	ELEVATOR 1	3'-6"	7'-0"	3/AE601	2/AE601	1/AE601	1	
XD02-1	XD02	ELEVATOR 2	3'-6"	7'-0"	3/AE601	2/AE601	1/AE601	1	
XD02-2	XD02	ELEVATOR 2	3'-6"	7'-0"	3/AE601	2/AE601	1/AE601	1	
XD02-3	XD02	ELEVATOR 2	3'-6"	7'-0"	3/AE601	2/AE601	1/AE601	1	
XD02-4	XD02	ELEVATOR 2	3'-6"	7'-0"	3/AE601	2/AE601	1/AE601	1	
XD02-5	XD02	ELEVATOR 2	3'-6"	7'-0"	3/AE601	2/AE601	1/AE601	1	
XD03-1	XD03	ELEVATOR 3	3'-6"	7'-0"	3/AE601	2/AE601	1/AE601	1	
XD03-2	XD03	ELEVATOR 3	3'-6"	7'-0"	3/AE601	2/AE601	1/AE601	1	
XD03-3	XD03	ELEVATOR 3	3'-6"	7'-0"	3/AE601	2/AE601	1/AE601	1	
XD03-4	XD03	ELEVATOR 3	3'-6"	7'-0"	3/AE601	2/AE601	1/AE601	1	
XD03-5	XD03	ELEVATOR 3	3'-6"	7'-0"	3/AE601	2/AE601	1/AE601	1	
XD04-1	XD04	ELEVATOR 4	3'-6"	7'-0"	3/AE601	2/AE601	1/AE601	2	
XD04-2	XD04	ELEVATOR 4	3'-6"	7'-0"	3/AE601	2/AE601	1/AE601	2	
XD04-2R	XD04	ELEVATOR 4	3'-6"	7'-0"	3/AE601	2/AE601	1/AE601	2	
XD04-3	XD04	ELEVATOR 4	3'-6"	7'-0"	3/AE601	2/AE601	1/AE601	2	
XD04-4	XD04	ELEVATOR 4	3'-6"	7'-0"	3/AE601	2/AE601	1/AE601	2	
XD04-5	XD04	ELEVATOR 4	3'-6"	7'-0"	3/AE601	2/AE601	1/AE601	2	
XD05-1	XD05	ELEVATOR 5	3'-6"	7'-0"	3/AE601	2/AE601	1/AE601	2	
XD05-2	XD05	ELEVATOR 5	3'-6"	7'-0"	3/AE601	2/AE601	1/AE601	2	
XD05-2R	XD05	ELEVATOR 5	3'-6"	7'-0"	3/AE601	2/AE601	1/AE601	2	
XD05-3	XD05	ELEVATOR 5	3'-6"	7'-0"	3/AE601	2/AE601	1/AE601	2	
XD05-4	XD05	ELEVATOR 5	3'-6"	7'-0"	3/AE601	2/AE601	1/AE601	2	
XD05-5	XD05	ELEVATOR 5	3'-6"	7'-0"	3/AE601	2/AE601	1/AE601	2	

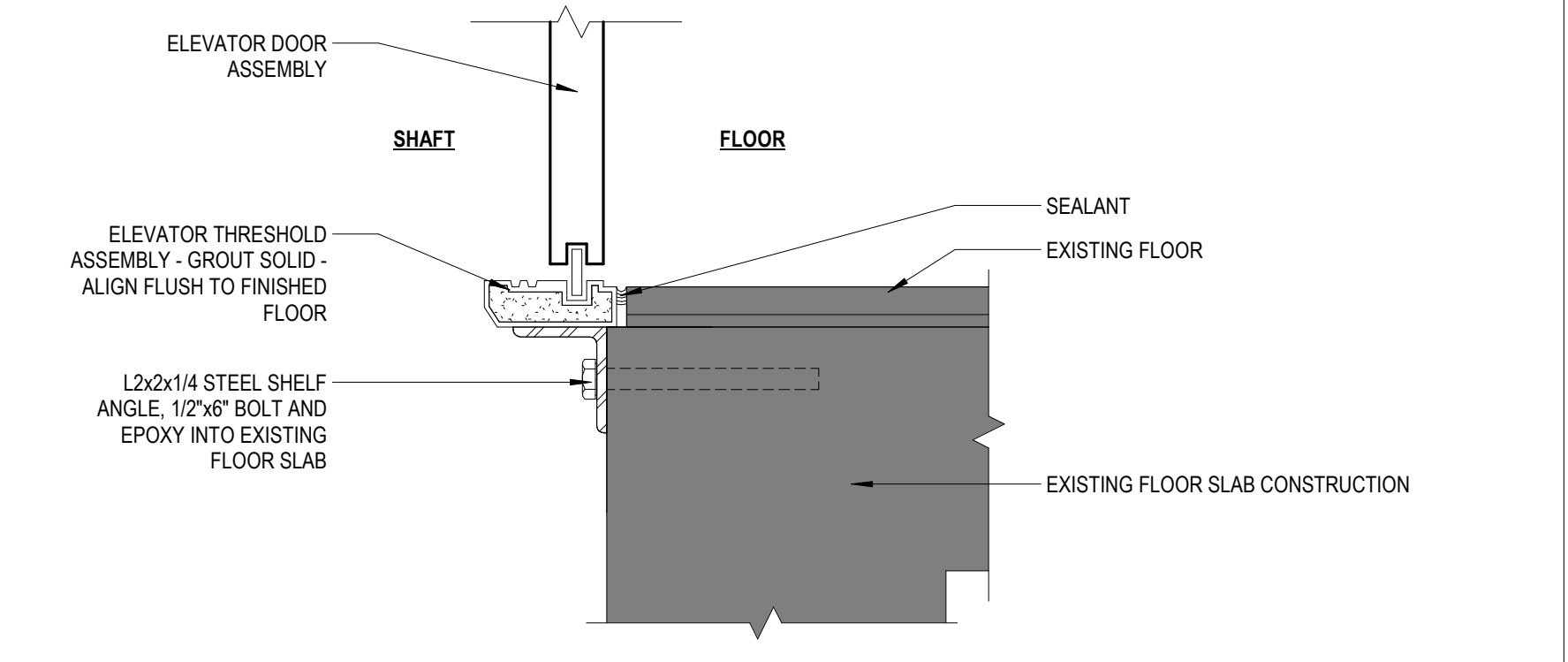
- DOOR SCHEDULE NOTES**
- NEW DOOR WITH NEW FRAME.
  - EXISTING DOOR FRAMES TO BE REFINISHED TO MATCH NEW DOOR FRAMES.



ELEVATOR ENTRANCE DETAIL - HEAD  
SCALE: 3/4" = 1'-0"



ELEVATOR ENTRANCE DETAIL - JAMB  
SCALE: 3/4" = 1'-0"



ELEVATOR ENTRANCE DETAIL - SILL  
SCALE: 3/4" = 1'-0"

REVISIONS	DATE	REMARKS

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DESIGN ARCHITECT/ENGINEER

REGISTERED PROFESSIONAL ENGINEER  
No. AR11100046  
SINCE 06  
Indiana  
ARCHITECT

*Michael*

ENGINEERS/ARCHITECTS SEAL

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PROJECT ADDRESS

DESIGNED: DC DRAWN: DC  
APPROVED: MD CHECKED: MD

CLIENT PROJECT NUMBER  
N/A

PROJECT NUMBER  
23 1015

DATE  
12/17/2024

SECTIONS AND DOOR SCHEDULE

**AE601**

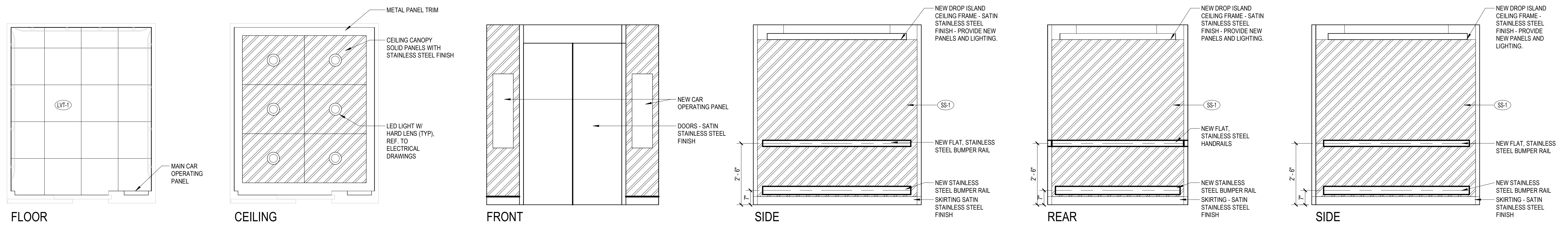
FINISH SCHEDULE						
FINISH MARK	FINISH	MANUFACTURER	PATTERN/STYLE	COLOR	SIZES	COMMENTS
CR-1	CRASH RAIL	FORMS & SURFACES	SEASTONE STAINLESS STEEL			
HR-1	HANDRAIL	FORMS & SURFACES	RECTANGULAR	SEASTONE STAINLESS STEEL		
LVT-1	LUXURY VINYL TILE	ARMSTRONG	NONA	VALERIE	18X18, 2.5mm	DIAMOND 10
MF-1	METAL FLOORING	RIMEX METALS	DIAMOND PLATE TREADTEX	STAINLESS STEEL		
SS-1	SWL STAINLESS STEEL PANEL	RIGIDIZED METALS	SWL STAINLESS STEEL	STAINLESS STEEL	0.016" - 0.075"	MDF Core, wrapped edges

REVISIONS	DATE	REMARKS



**PANEL REFERENCES**  
A201 SCALE: 3/4" = 1'-0"

FINISH LEGEND	
	LUXURY VINYL TILE- 18X18 LVT-1
	STAINLESS STEEL WALL PANEL SS-1

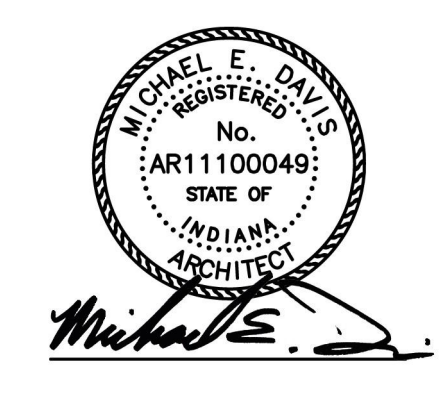


**TYPICAL CAB INTERIOR**  
A201 SCALE: 1/2" = 1'-0"

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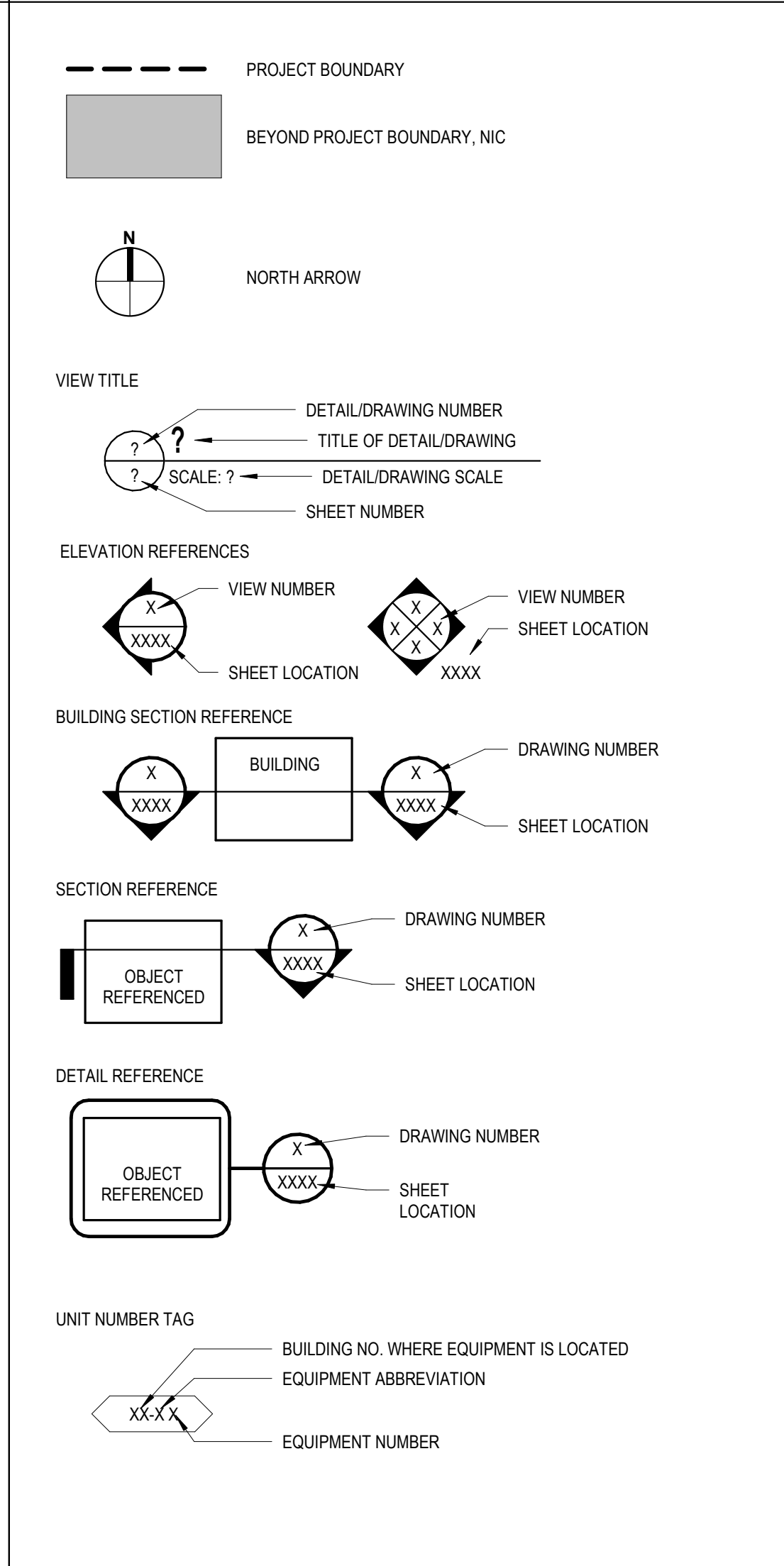
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DESIGNED: LC	DRAWN: DC
APPROVED: MD	CHECKED: MD
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PROJECT NUMBER 23 1015	
DATE 12/17/2024	

CAB INTERIORS AND FINISH SCHEDULE  
**A1201**

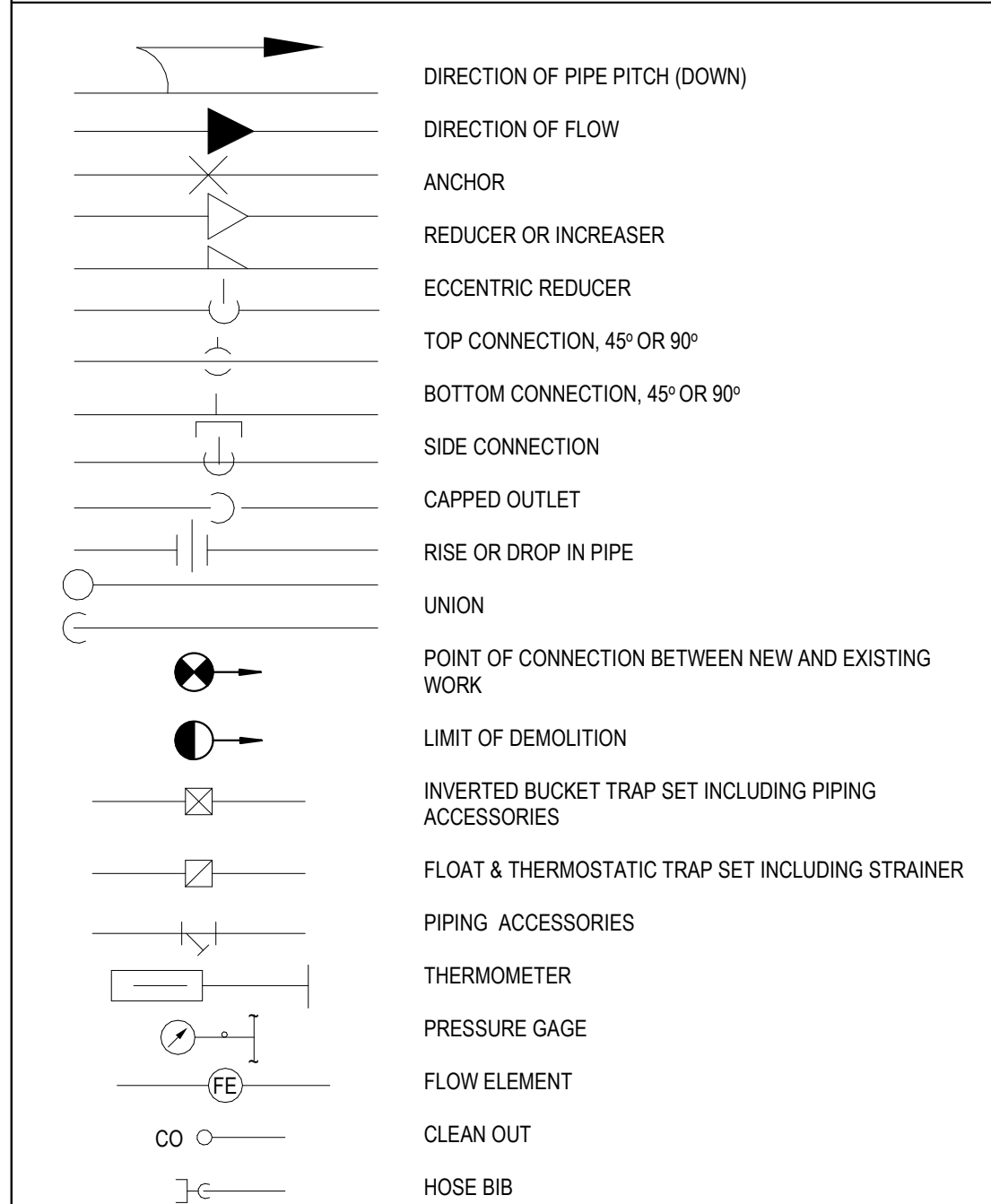
**PLUMBING ABBREVIATIONS**

A/E	ARCHITECT / ENGINEER	L/S	LITER PER SECOND
AD	AREA DRAIN/ACCESS DOOR	LA	LABORATORY AIR
AF	ABOVE FINISH FLOOR	LAV	LABATORY
AFG	ABOVE FINISH GRADE	LBSHR	POUNDS PER HOUR
AG	AIR GAP	LOW	LABORATORY COLD WATER
AF	ACCESS PANEL	LHW	LABORATORY HOT WATER
AS	AUTOMATIC SPRINKLER	LNG	LIQUID NATURAL GAS
ASD	ADJUSTABLE SPEED DRIVES	LOX	LIQUID OXYGEN
ASD	AUTOMATIC SPRINKLER DRAIN	LV	LABORATORY VACUUM
ASHRAE	AMERICAN SOCIETY OF HEATING, REFRIGERATION, AIR CONDITIONING ENGINEERS	LW	LOW WATER
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS	M	METER
ASPE	AMERICAN SOCIETY OF PLUMBING ENGINEERS	MA	MEDICAL AIR
ASR	AUTOMATIC SPRINKLER RISER	MAV	MANUAL AIR VENT
AV	ACID VENT	MBH	100 BTUH
AW	ACID WASTE	MEQ	MEDICAL
BFP	REDUCED PRESSURE BACKFLOW PREVENTER	MER	MECHANICAL EQUIPMENT ROOM
BHP	BREAK HORSEPOWER	MH	MANHOLE
BSP	BLACK STEEL PIPE	MOU	MEMORANDUM OF UNDERSTANDING
BT	BATH TUB	MSB	MOP SERVICE BASIN
BTU	BRITISH THERMAL UNIT	MV	MEDICAL VACUUM
BTUH	BRITISH THERMAL UNIT PER HOUR	N2	NITROGEN
C	CELSIUS	N2O	NITROUS OXIDE
CA	COMPRESSED AIR	NC	NORMALLY CLOSED
CGA	COMPRESSED GAS ASSOCIATION	NG	NATURAL GAS
CFM	CUBIC FEET PER MINUTE	NIC	NOT IN CONTRACT
CI	CAST IRON	NO	NORMALLY OPEN
CO	CLEANOUT	NOM.	NOMINAL
CS	CLINICAL SINK	NPW	NON POTABLE WATER
CV	CONTROL VALVE	NTS	NOT TO SCALE
DCW	DOMESTIC COLD WATER	O2	OXYGEN
DFU	DRAINAGE FIXTURE UNITS	OC	ON CENTER
DHW	DOMESTIC HOT WATER	OD	OUTSIDE DIAMETER
DHW	DOMESTIC HOT WATER RETURN	OFD	OVERFLOW DRAIN
DHWS	DOMESTIC HOT WATER SUPPLY	OR	OPERATING ROOM
DI	DEIONIZED WATER	OVFL	OVERFLOW
DN	DOWN	PA	PASCAL
DOE	DEPARTMENT OF ENERGY	PD	PRESSURE DROP OR DIFFERENCE
DS	DOWNSPOUT	PDI	PLUMBING AND DRAINAGE INSTITUTE
DW	DISHWASHER	PG	PRESSURE GAGE
DWG	DRAWING	PP	PLUMBING PUMP
DWH	DOMESTIC WATER HEATER	PPM	PARTS PER MILLION
DWB	DRINKING WATER RETURN	PRS	PRESSURE REDUCING STATION
DWS	DRINKING WATER SUPPLY	PRV	PRESSURE REDUCING VALVE
DWV	DRAIN WASTE VENT	PSI	POUNDS PER SQUARE INCH
EL	ELEVATION	PSIA	POUNDS PER SQUARE INCH ATMOSPHERE
EMCS	ENERGY MONITORING AND CONTROL SYSTEM	PSIG	POUNDS PER SQUARE INCH GAGE
EPA	ENVIRONMENTAL PROTECTION AGENCY	PTRV	PRESSURE TEMPERATURE RELIEF VALVE
EPACT	ENERGY POLICY ACT	PW	POTABLE WATER
ESC	ESCUTCHEON	RD	ROOF DRAIN
ESH	EMERGENCY SHOWER	RDL	ROOF DRAIN LEADER
ET	EXPANSION TANK	RL	ROOF LEADER
EW	ELECTRIC WATER HEATER	RP	RECIRCULATION PUMP
EWS	EYE WASH STATION	RO	REVERSE OSMOSIS WATER
EWSSH	EYE WASH/SHOWER	RWL	RAIN WATER LEADER
EX	EXISTING	RSN	SANITARY SEWER
F	FAHRENHEIT	SAN/CNA	SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION
FCO	FLOOR CLEANOUT	SCFM	STANDARD CUBIC FOOT/MINUTE
FD	FLOOR DRAIN	SCW	SOFTENED COLD WATER
FDC	FIRE DEPARTMENT (HOSE) CONNECTION	SDMH	STORM DRAIN MANHOLE
FM	FLOW METER	SMH	SANITARY MANHOLE
FOP	FUEL OIL PUMP	SP	SUMP PUMP
FOR	FUEL OIL RETURN	SPR	SPRINKLER LINE
FOS	FUEL OIL SUPPLY	SQFT/SF	SQUARE FEET
FOV	FUEL OIL VENT	SS	STAINLESS STEEL
FS	FLOOR SINK	ST	STORAGE TANK
FS	FLOW SWITCH	SW	STORM WATER
FU	FIXTURE UNITS	TCV	TEMPERATURE CONTROL VALVE
GAL	GALLON	TD	TEMPERATURE DIFFERENCE
GCD	GRADE CLEANOUTS	TD	TRENCH DRAIN
GPD	GALLONS PER DAY	TDH	TOTAL DYNAMIC HEAD
GPH	GALLONS PER HOUR	TEMP	TEMPERATURE
GPM	GALLONS PER MINUTE	TMV	THERMOSTATIC MIXING VALVE
GPR	GAS PRESSURE REGULATOR	TP	TRAP PRIMER
GRS	GAS REGULATOR STATION	TSTAT	THERMOSTAT
GT	GREASE TRAP	TWR	TEMPERED WATER RETURN
GVTR	GAS VENT THROUGH ROOF	TWS	TEMPERED WATER SUPPLY
GWH	GAS FIRED WATER HEATER	TYP	TYPICAL
H&CW	HOT AND COLD WATER	V	VENT
HB	HOSE BIBB	VAC	VACUUM
HD	HUB DRAIN	VACB	VACUUM BREAKER
HEX	HEAT EXCHANGER	VCO	VACUUM CLEANER OUTLET
HP	HORSEPOWER	VP	VACUUM PUMP
HS	HAND SINK	VS	VENT STACK
HST	HOT WATER STORAGE TANK (DOMESTIC)	VSD	VARIABLE SPEED DRIVE
HWB	HOT WATER BOILER	VTR	VENT THROUGH ROOF
HWCP	HOT WATER CIRCULATING PUMP	W	WASTE
HWP	HOT WATER PUMP	WC	WATER CLOSET
HYD	HYDRANT	WCO	WALL CLEANOUT
ID	INSIDE DIAMETER	WS	WATER GAGE
IE	INVERT ELEVATION	WH	WALL HYDRANT
ICW	INDUSTRIAL COLD WATER	WH	WATER HEATER
IHW	INDUSTRIAL HOT WATER	WHA	WATER HAMMER ARRESTER
INV	INVERT	WL	WATER LINE
IPC	INTERNATIONAL PLUMBING CODE	WM	WATER METER
IRW	IRRIGATION WATER	WPD	WATER PRESSURE DROP
IW	INDIRECT WASTE	WS	WASTE STACK
IWH	INSTANTANEOUS WATER HEATER	WSFU	WATER SUPPLY FIXTURE UNITS
IWR	INDUSTRIAL WATER RETURN	YCO	YARD CLEANOUT
IWS	INDUSTRIAL WATER SUPPLY	YH	YARD HYDRANT
KW	KILOWATT		
KWH	KILOWATT-HOUR		

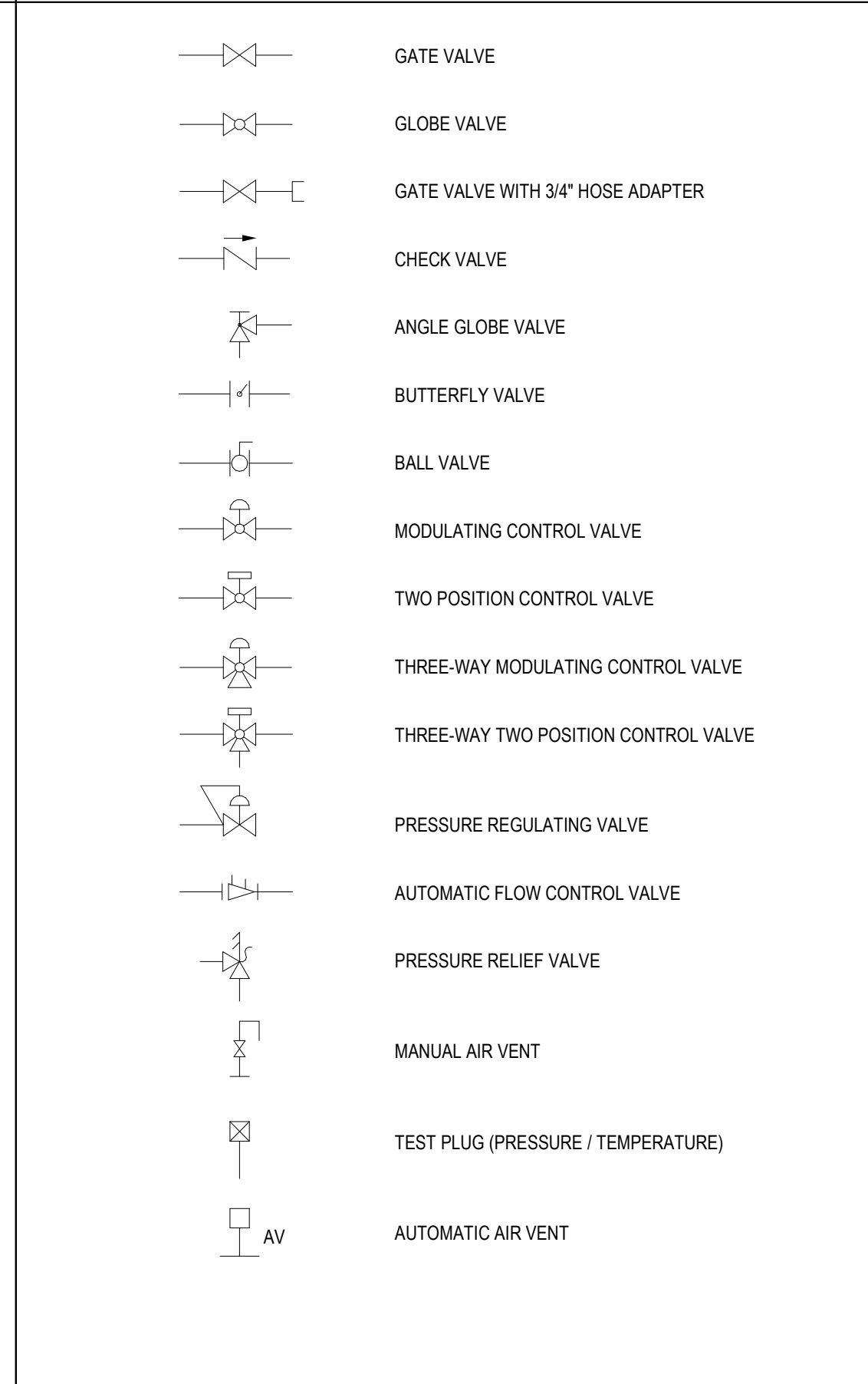
**DRAWING SYMBOLS**



**GENERAL PLUMBING SYMBOLS**



**PLUMBING VALVE SYMBOLS**



**PLUMBING GENERAL NOTES**

- A. COORDINATE INSTALLATION OF PLUMBING SYSTEMS WITH ALL OTHER SYSTEMS. ANY COST DUE TO LACK OF COORDINATION OF THIS SYSTEM WITH OTHER SYSTEMS WILL BE THE RESPONSIBILITY OF THE PLUMBING CONTRACTOR.
- B. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VISITING THE AREA TO BECOME FAMILIAR WITH THE EXISTING CONDITIONS, VERIFY SIZE, LOCATION AND USAGE OF EXISTING UTILITIES PRIOR TO CONSTRUCTION. ROUTE PIPING AND CONNECT AS REQUIRED.
- C. DO NOT ROUTE ANY SYSTEMS OVER EXISTING AND/OR NEW ELECTRICAL AND/OR IT AND TELECOMMUNICATIONS ROOMS.
- D. CUT, PATCH & REPAIR ALL OPENINGS IN WALLS, FLOORS, CEILING, ETC. WHERE REQUIRED FOR NEW CONSTRUCTION. PATCHING SHALL MATCH EXISTING CONSTRUCTION & FINISHES. COORDINATE ALL PATCHING AND FINISHES WITH ARCHITECT.
- E. PROVIDE VALVE TAGS & PLASTIC LAMINATE IDENTIFICATION ON CEILING FOR ALL NEW AND EXISTING VALVES AND EQUIPMENT LOCATED WITHIN THE CONSTRUCTION LIMITS AS INDICATED IN THE SPECIFICATIONS.

REVISIONS	DATE	REVISIONS

OWNER / CLIENT
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DESIGN ARCHITECT/ENGINEER

REGISTERED PROFESSIONAL ENGINEER  
LUKE J. LEISING  
No. PE10809551  
STATE OF INDIANA

ENGINEERS/ARCHITECTS SEAL

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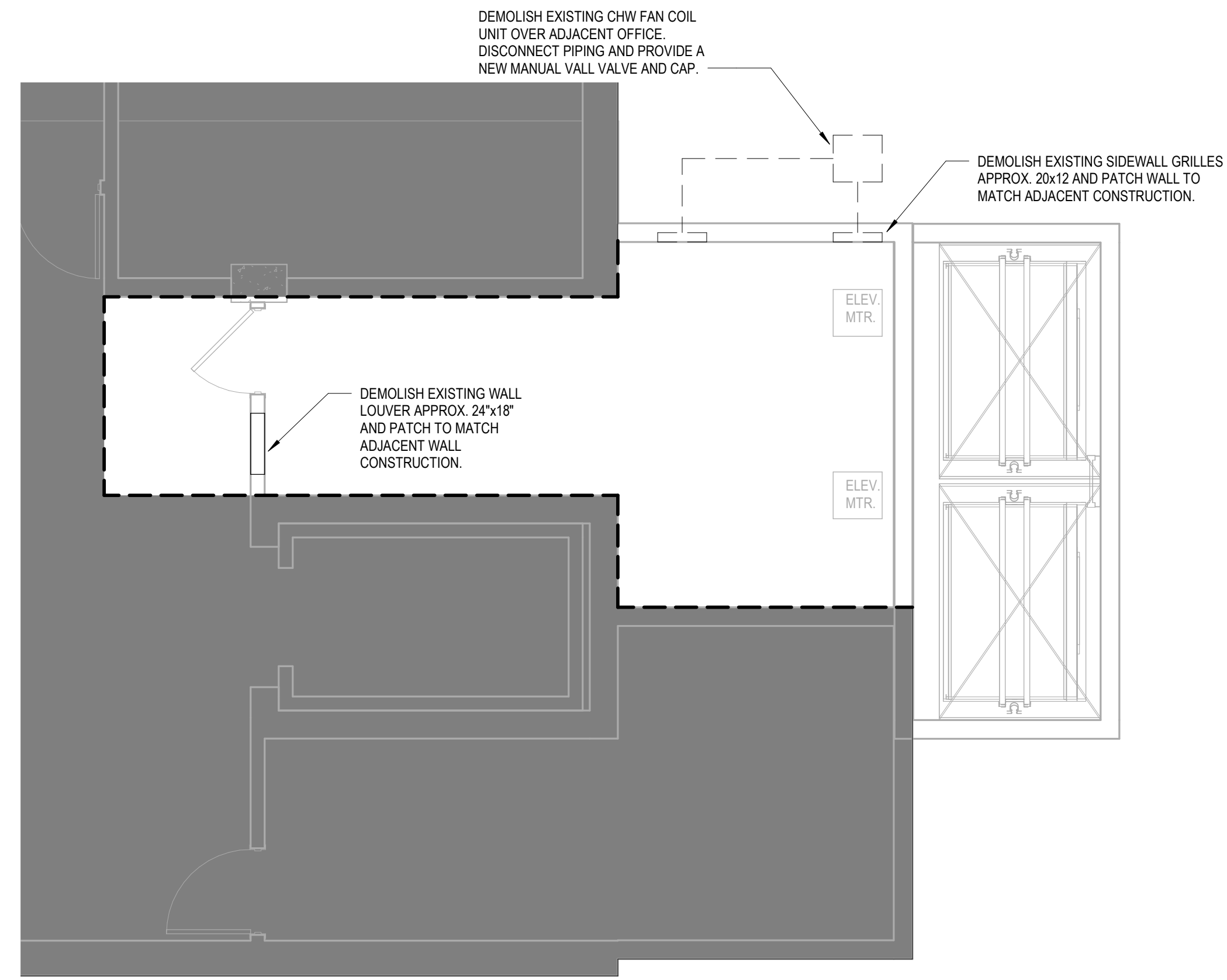
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APPROVED: EAE	CHECKED: EAE
CLIENT PROJECT NUMBER	
N/A	
PROJECT NUMBER	
23 1015	
DATE	
12/17/2024	

PLUMBING SYMBOLS AND ABBREVIATIONS

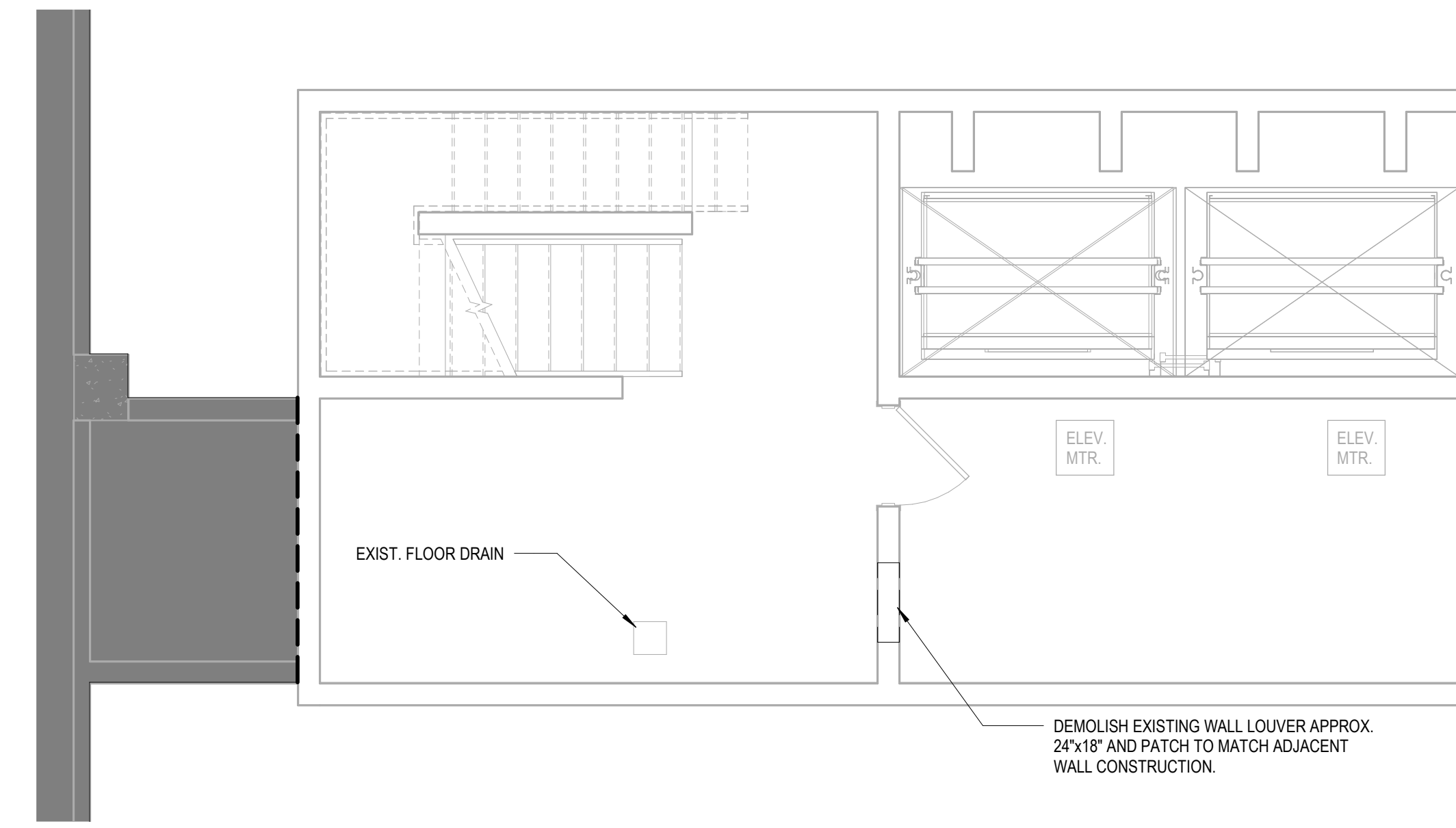
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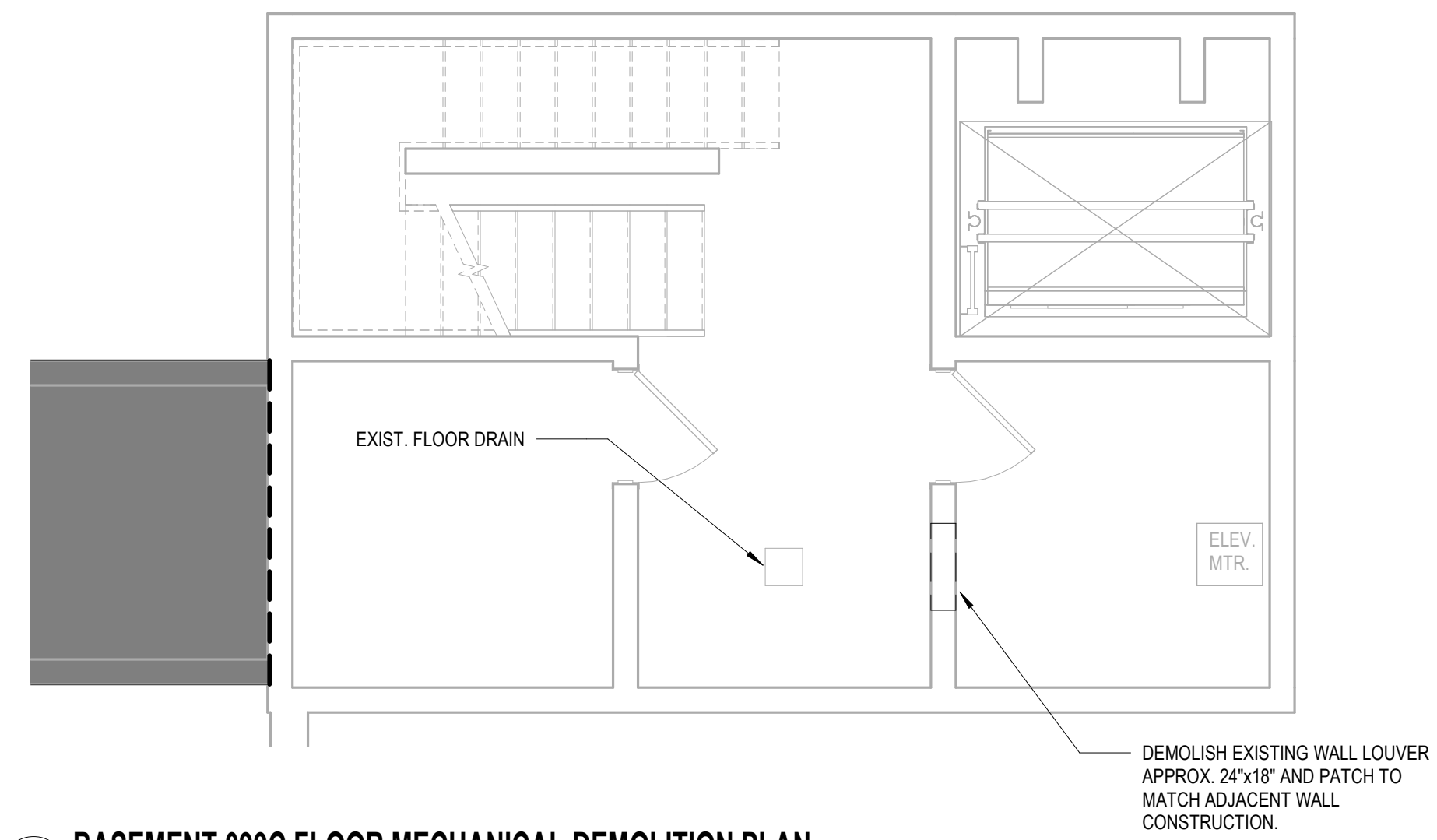




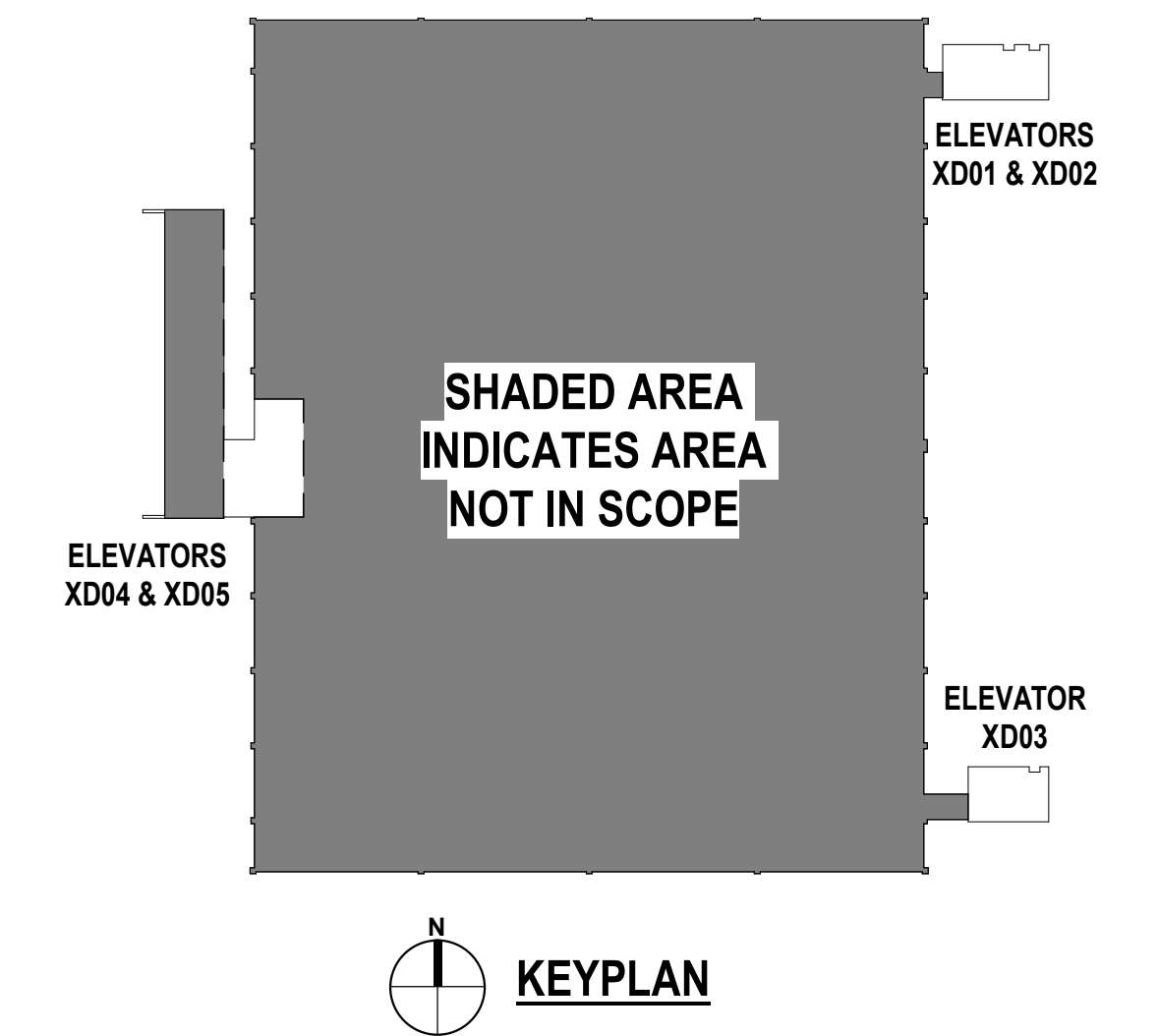
2 BASEMENT 099T FLOOR MECHANICAL DEMOLITION PLAN  
MD100 SCALE: 1/4" = 1'-0"



BASEMENT 099B FLOOR MECHANICAL DEMOLITION PLAN  
MD100 SCALE: 1/4" = 1'-0"



3 BASEMENT 099C FLOOR MECHANICAL DEMOLITION PLAN  
MD100 SCALE: 1/4" = 1'-0"

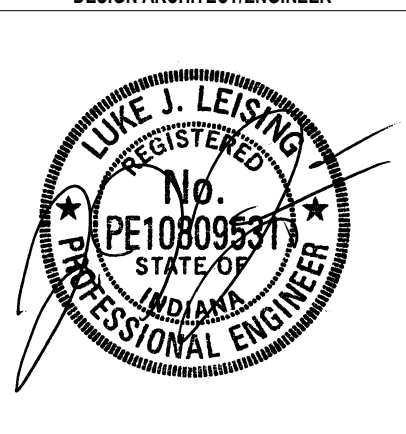


REVISIONS	DATE	REMARKS

OWNER / CLIENT

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DESIGN ARCHITECT/ENGINEER

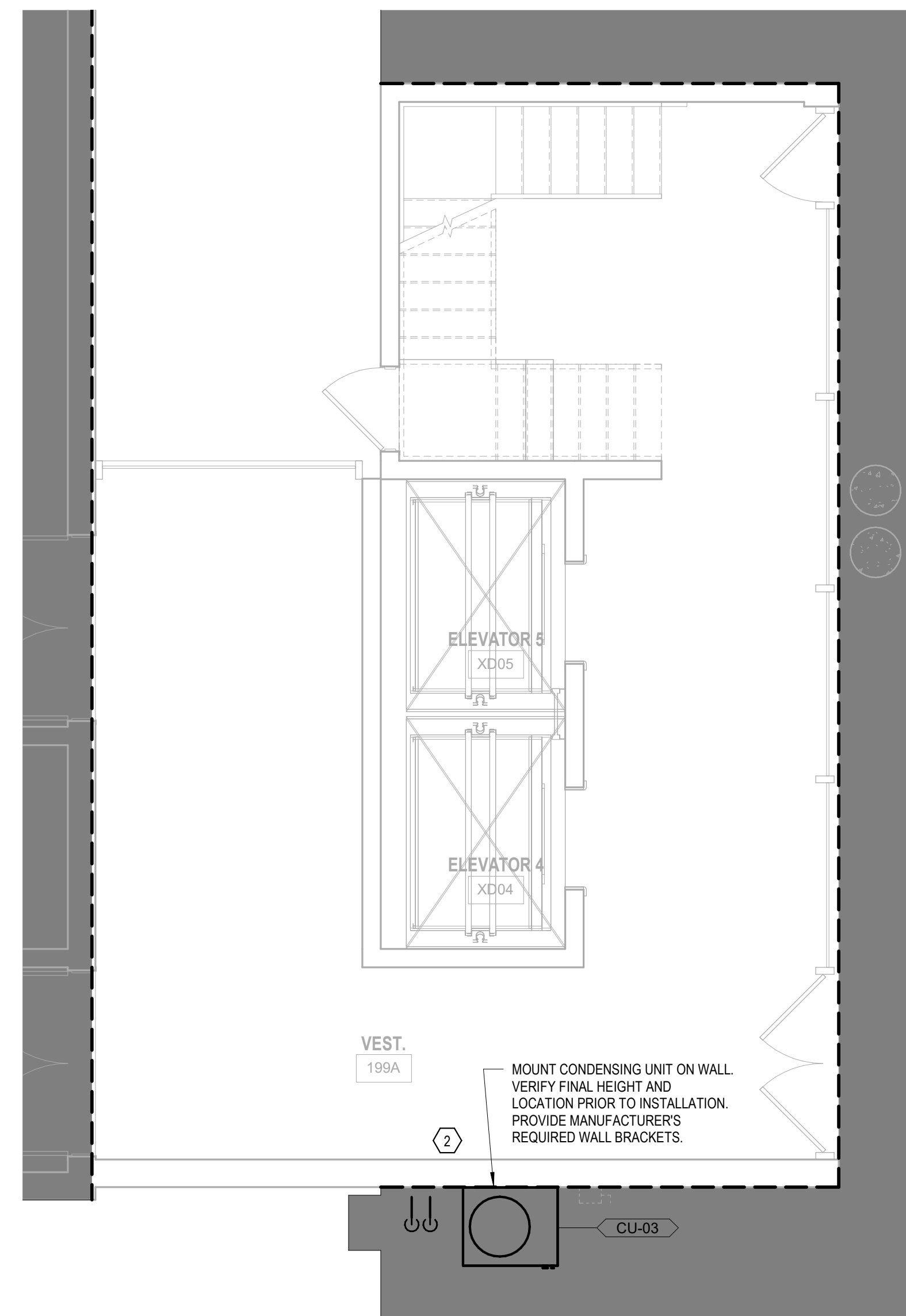


ENGINEER/ARCHITECTS SEAL

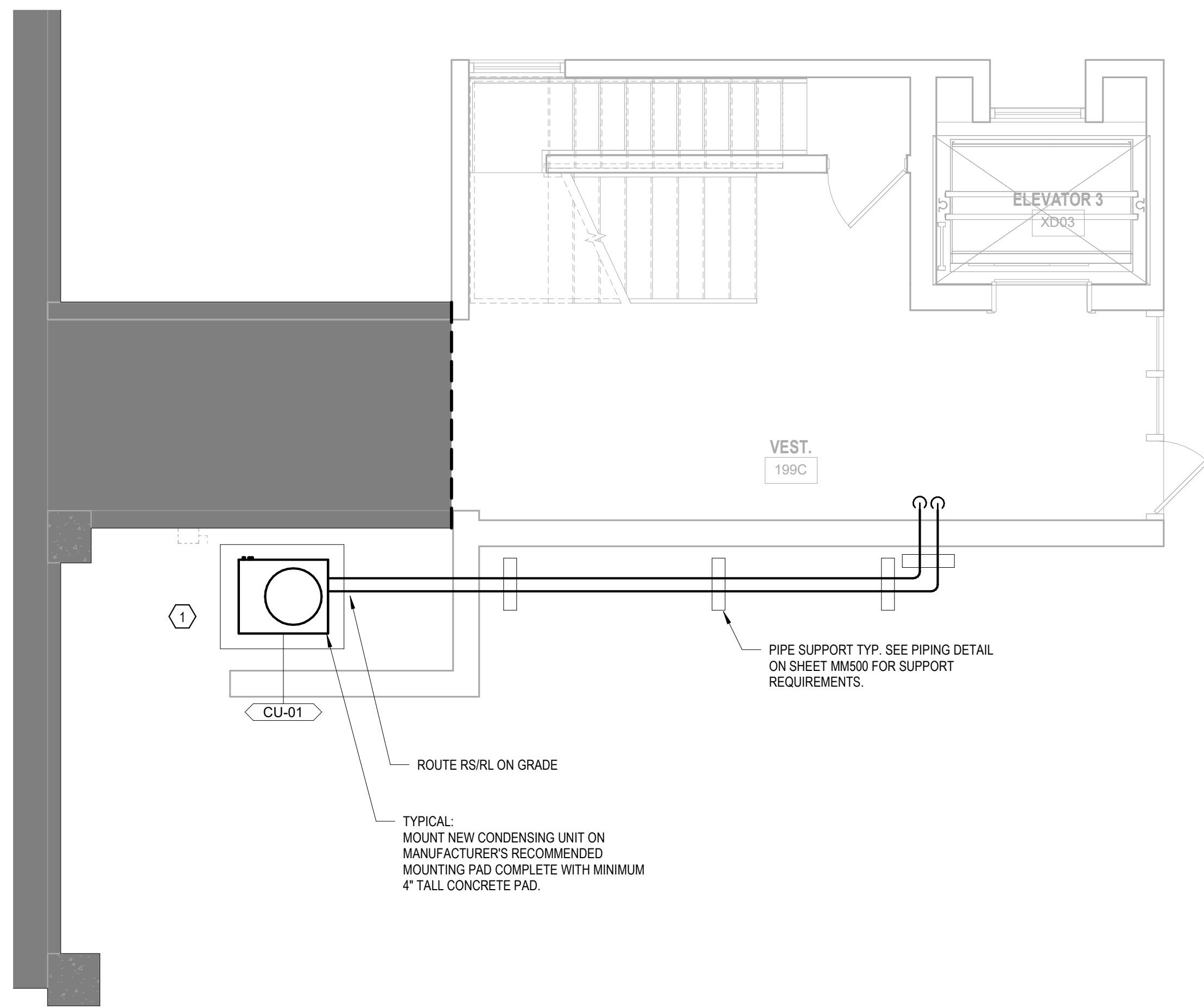
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PROJECT ADDRESS	
DESIGNED: TMM	DRAWN: JAR
APPROVED: TMM	CHECKED: TMM
CLIENT PROJECT NUMBER N/A	
PROJECT NUMBER 23 1015	
DATE 12/17/2024	
DEMOLITION BASEMENT MECHANICAL HVAC PLAN	
<b>MD100</b>	

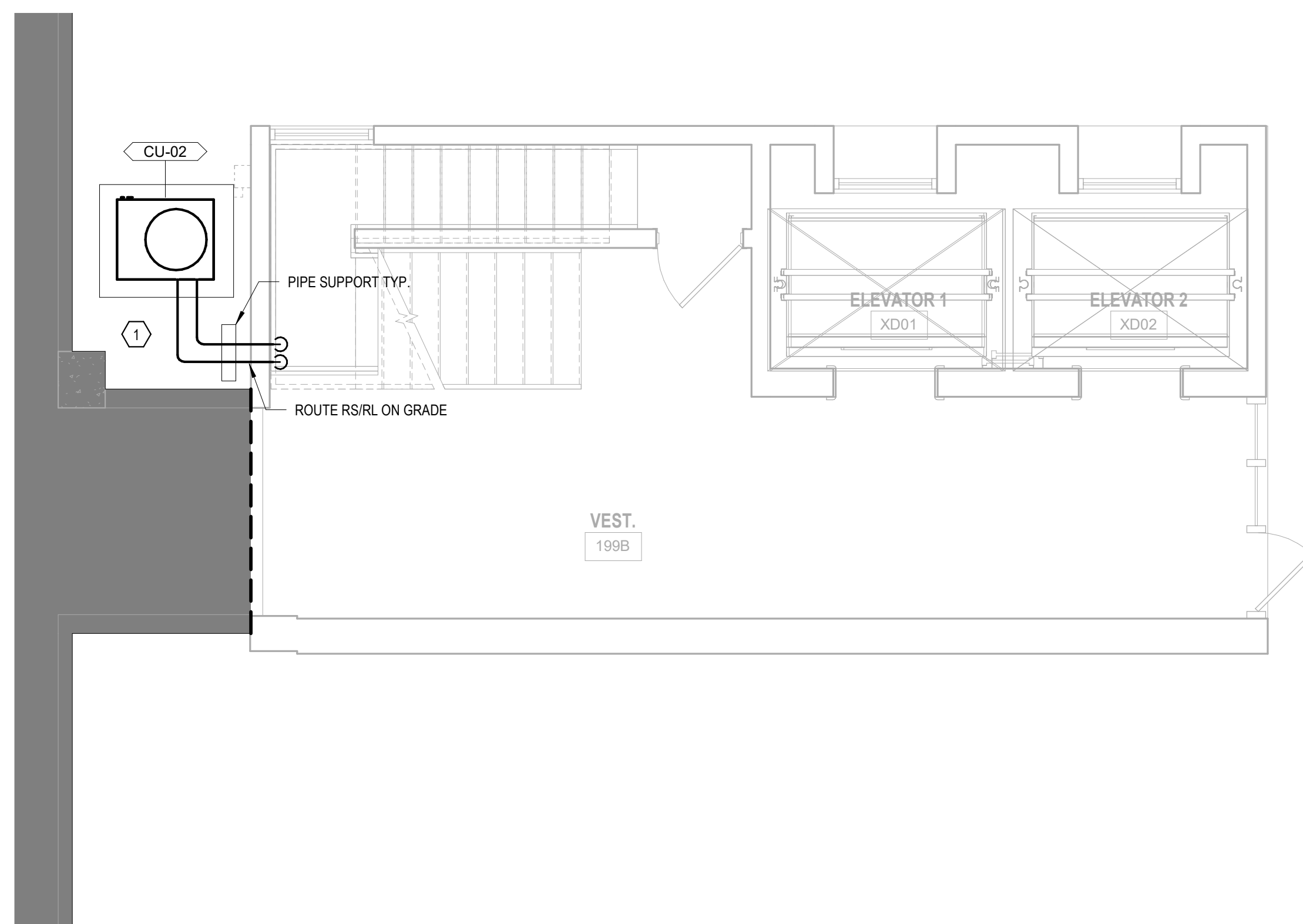




2 FIRST FLOOR 199A MECHANICAL HVAC PLAN  
MH101 / SCALE: 1/4" = 1'-0"

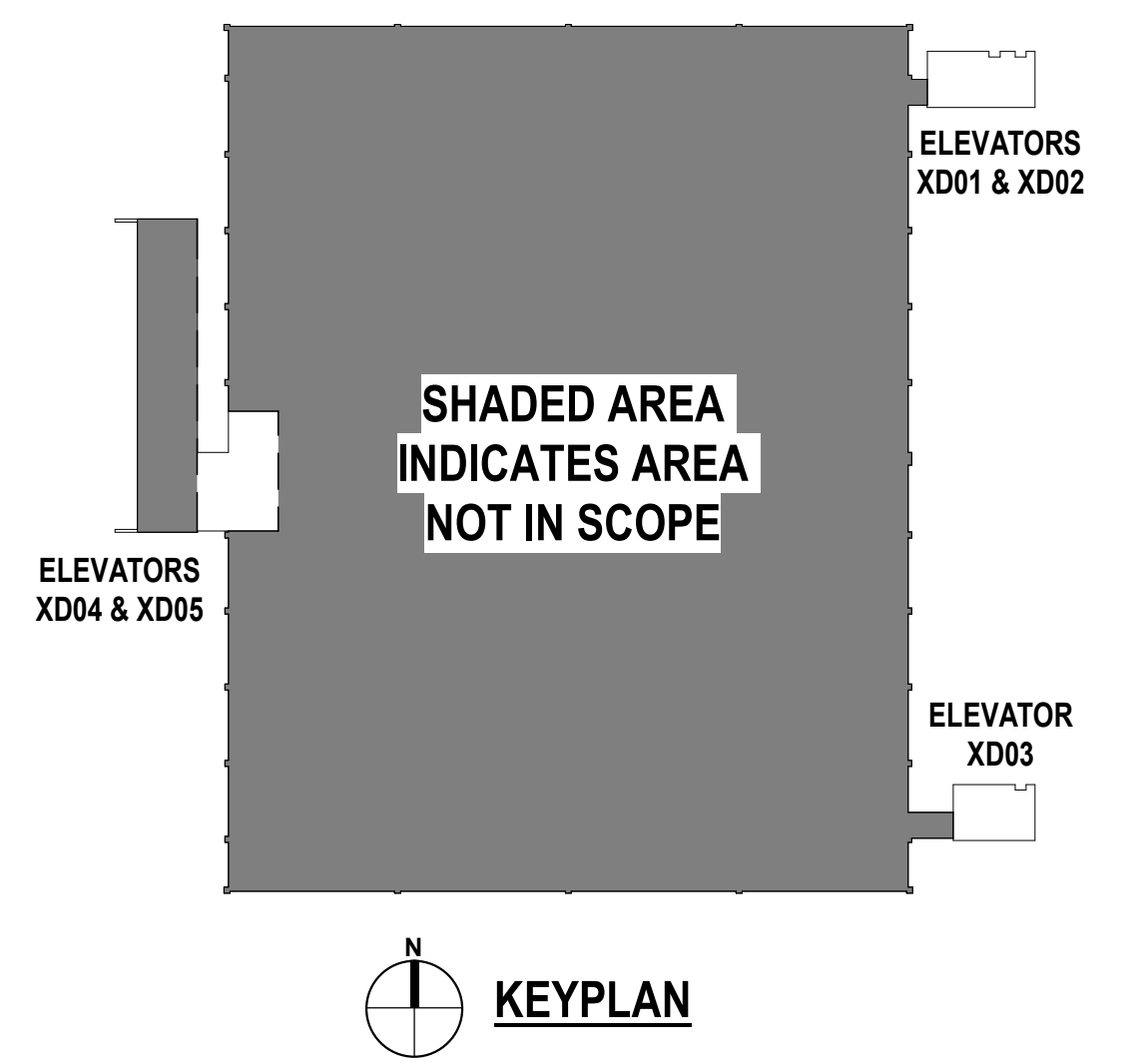


3 FIRST FLOOR 199C MECHANICAL HVAC PLAN  
MH101 / SCALE: 1/4" = 1'-0"



1 FIRST FLOOR 199B MECHANICAL HVAC PLAN  
MH101 / SCALE: 1/4" = 1'-0"

HVAC PLAN NOTES		
1.	MOUNT ASSOCIATED CONDENSING UNIT ON GRADE. SEE MM500 FOR DETAILS. MOUNT HIGH WALL SPLIT SYSTEM ABOVE DOOR AS INDICATED. ROUTE RS/RL PIPING TO/FROM CONDENSING UNIT. INDOOR UNIT IS POWERED FROM OUTDOOR UNIT. ROUTE ALL WIRING NECESSARY BETWEEN UNITS. COORDINATE LOCATION AND ROUTING WITH FIELD CONDITIONS AND APPROVED ELEVATOR EQUIPMENT SHOP DRAWINGS.	
2.	MOUNT ASSOCIATED CONDENSING UNIT ON WALL. SEE MM500 FOR DETAILS. MOUNT HIGH WALL SPLIT SYSTEM ABOVE DOOR AS INDICATED. ROUTE RS/RL PIPING TO/FROM CONDENSING UNIT. INDOOR UNIT IS POWERED FROM OUTDOOR UNIT. ROUTE ALL WIRING NECESSARY BETWEEN UNITS. COORDINATE LOCATION AND ROUTING WITH FIELD CONDITIONS AND APPROVED ELEVATOR EQUIPMENT SHOP DRAWINGS.	

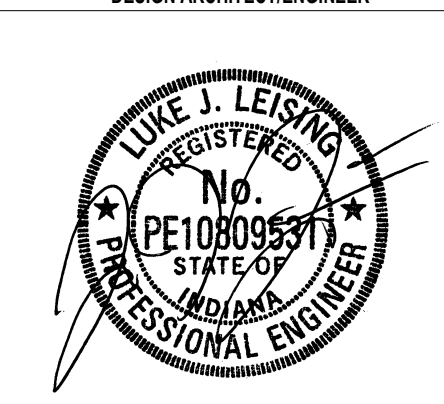


REVISIONS	DATE	REMARKS

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**GUIDON**  
SUSTAINABLE ARCHITECTURE + ENGINEERING  
1221 IN PENNSYLVANIA ST. INDIANAPOLIS, IN 46202  
317.600.6388 WWW.GUIDONDESIGN.COM

DESIGN ARCHITECT/ENGINEER



ENGINEER/ARCHITECTS SEAL

INDIANA UNIVERSITY INDIANAPOLIS  
SPORTS COMPLEX ELEVATOR ALTERATIONS  
498 BLAKE ST. INDIANAPOLIS, IN 46202  
100% CONSTRUCTION DOCUMENTS

PROJECT ADDRESS	
DESIGNED: TMM	DRAWN: JAR
APPROVED: TMM	CHECKED: TMM
CLIENT PROJECT NUMBER	
N/A	
PROJECT NUMBER	
23 1015	
DATE	
12/17/2024	

FIRST FLOOR MECHANICAL HVAC PLAN  
**MH101**

SPLIT SYSTEM AIR CONDITIONER GAS/ELECTRIC SCHEDULE																							
MARK	MANUFACTURER	MODEL	LOCATION	ASSOC. CONDENSING UNIT (CU)	MAX. SUPPLY AIRFLOW CFM	COOLING CHARACTERISTICS						HEATING CHARACTERISTICS			ELECTRICAL CHARACTERISTICS				WEIGHT LBS	COMMENTS			
						MIN. TOTAL CAP.		ENTERING AIR TEMP.		LEAVING AIR TEMP.		OUTDOOR AIR TEMP.		CLG COMP. KW	BTUH	ENTERING AIR TEMP.		MCA			MOCP	VOLTS	PHASE
						BTUh	MIN. SEER	DRY BULB °F	WET BULB °F	DRY BULB °F	WET BULB °F	DRY BULB °F	WET BULB °F			DRY BULB °F	WET BULB °F						
AC-01	TRANE	TPKA0A024	001	CU-01	700 CFM	24,000 Btu/h	21.4	80 °F	67 °F	55 °F	54 °F	95 °F	74 °F	0.07	27,000 Btu/h	70 °F	95 °F	1.0	15	208	1	60 lb	1, 2, 3, 4
AC-02	TRANE	TPKA0A018	003	CU-02	385 CFM	18,000 Btu/h	24.6	80 °F	67 °F	55 °F	54 °F	95 °F	74 °F	0.05	20,000 Btu/h	70 °F	95 °F	1.0	15	208	1	60 lb	1, 2, 3, 4
AC-03	TRANE	TPKA0A024	042B	CU-03	700 CFM	24,000 Btu/h	21.4	80 °F	67 °F	55 °F	54 °F	95 °F	74 °F	0.07	27,000 Btu/h	70 °F	95 °F	1.0	15	208	1	60 lb	1, 2, 3, 4

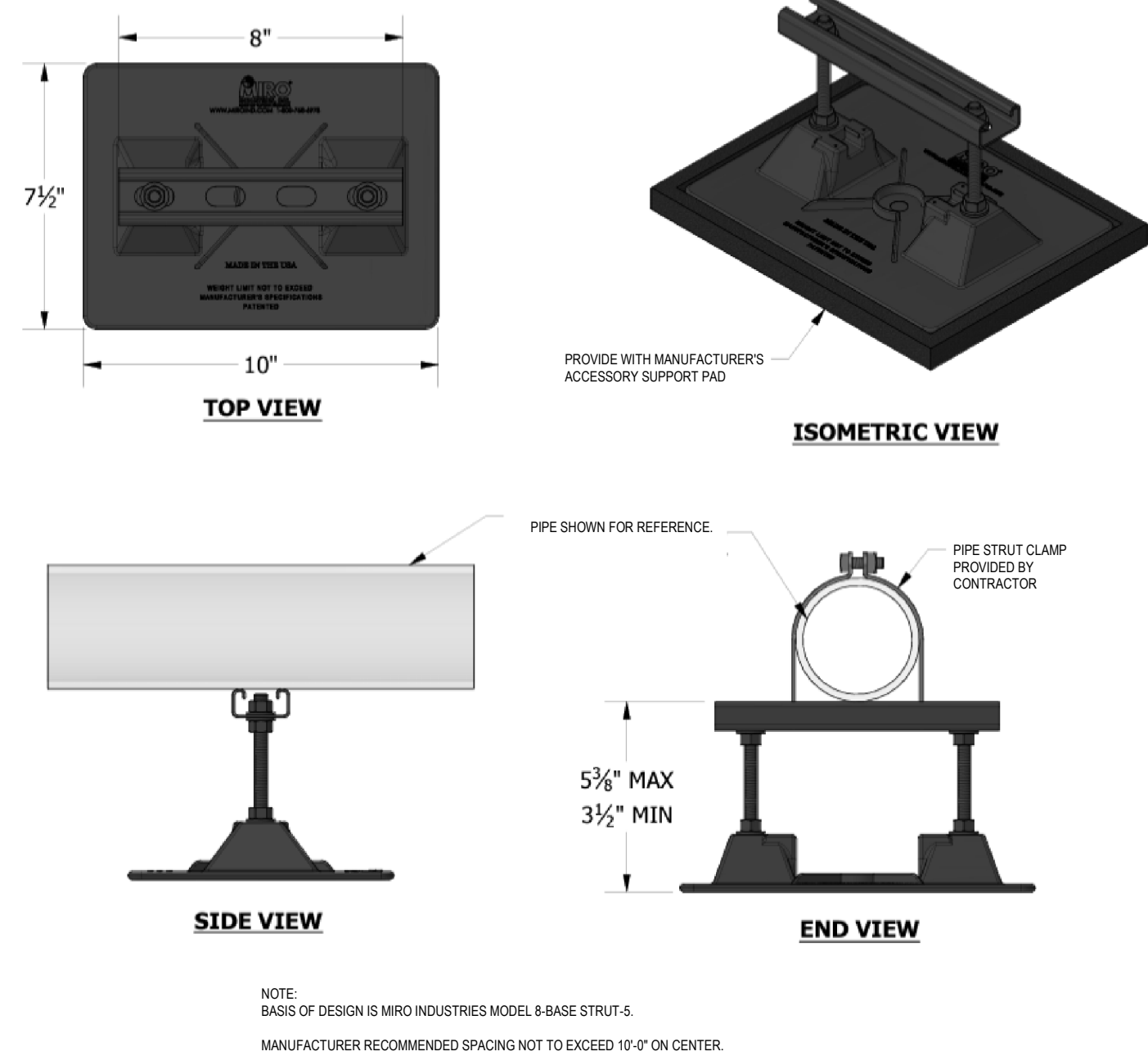
- REMARKS:
- PROVIDE WITH MANUFACTURER'S RECOMMENDED CONDENSATE REMOVAL PUMP.
  - INDOOR UNIT IS POWERED FROM OUTDOOR UNIT. EC IS RESPONSIBLE FOR ALL WIRING BETWEEN OUTDOOR AND INDOOR UNIT.
  - PROVIDE ALL ACCESSORIES REQUIRED TO MOUNT UNIT ABOVE DOOR IN ELEVATOR MACHINE ROOM.
  - PROVIDE WITH INTEGRAL CONTROL PANEL WITH FUSED DISCONNECT. PROVIDE WITH MANUFACTURER'S SACNET INTERFACE, REMOATE MTD THERMOSTAT.

AIR COOLED CONDENSING UNIT (ACCU) SCHEDULE													
MARK	MANUFACTURER	MODEL	ASSOC. AIR HANDLER	CAPACITY BTUh	AMBIENT AIR TEMP.		ELECTRICAL CHARACTERISTICS					WEIGHT LBS	COMMENTS
					DB °F	WB °F	MCA	MOCP	VOLTS	PHASE			
CU-01	TRANE	TRUZA024	AC-01	24,000 Btu/h	95 °F	75 °F	19	26	208	1	200 lb	1, 2, 3	
CU-02	TRANE	TRUZA018	AC-02	18,000 Btu/h	95 °F	75 °F	11	28	208	1	150 lb	1, 2, 3	
CU-03	TRANE	TRUZA024	AC-03	24,000 Btu/h	95 °F	75 °F	19	28	208	1	200 lb	1, 2, 3	

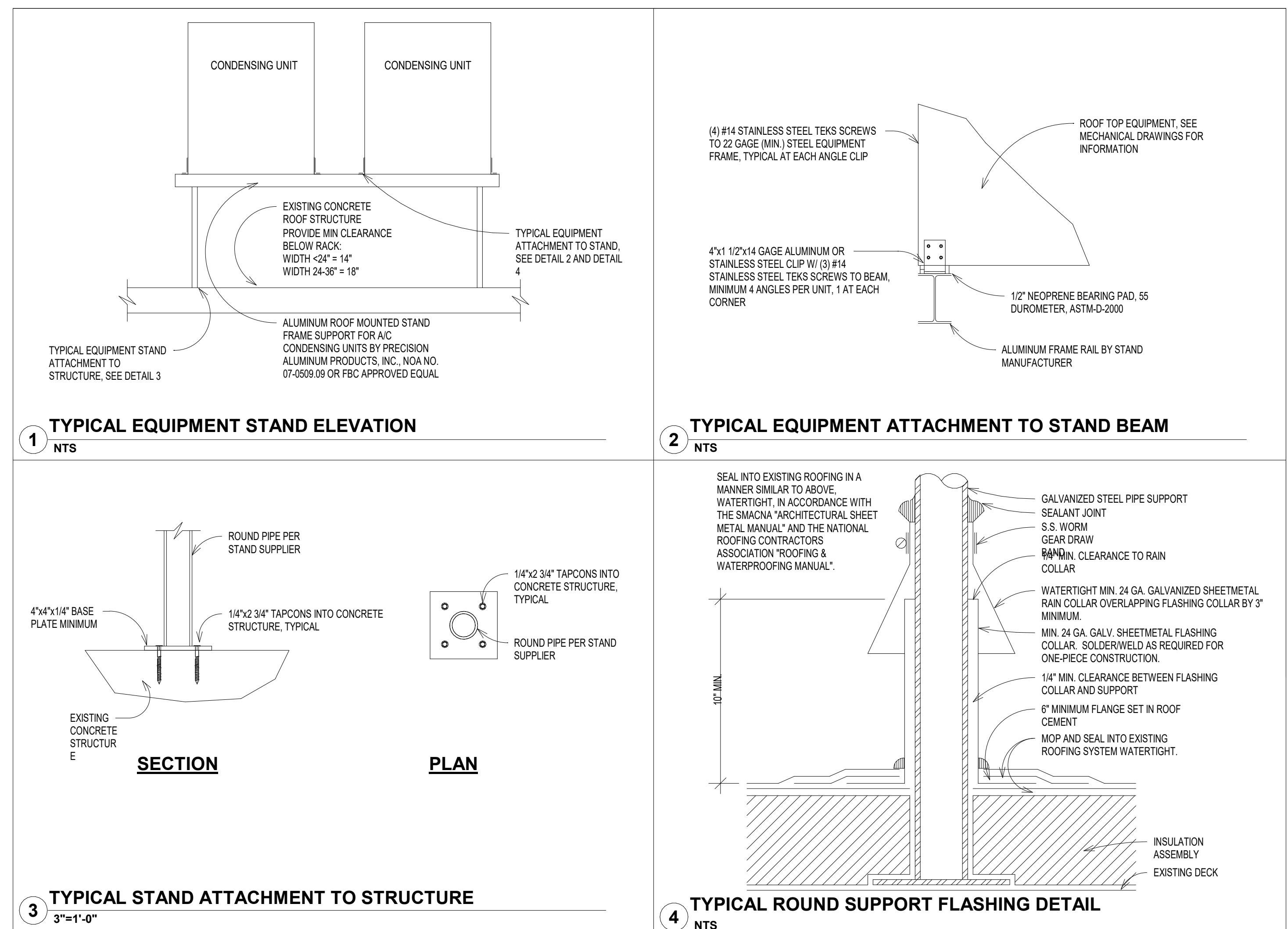
- REMARKS:
- INDOOR AC UNIT IS POWERED BY OUTDOOR CONDENSING UNIT. EC RESPONSIBLE FOR ALL ASSOCIATED WIRING.
  - PROVIDE WITH MANUFACTURER'S LOW AMBIENT KIT FOR FULL COOLING OPERATION TO -5°F OUTDOOR TEMPERATURE.
  - PROVIDE WITH MANUFACTURER'S STANDARD MOUNTING PAD, STAND, OR WALL BRACKET AS REQUIRED FOR INSTALLATION AS INDICATED ON CONTRACT DOCUMENTS.

ELECTRIC UNIT HEATER (ERH) SCHEDULE												
MARK	MANUFACTURER	MODEL	LOCATION	UNIT TYPE	AIRFLOW	EAT	MIN. CAPACITY	POWER			FAN MOTOR	COMMENTS
					CFM	°F	BTUH	AMP	PHASE	VOLT	FAN POWER HP	

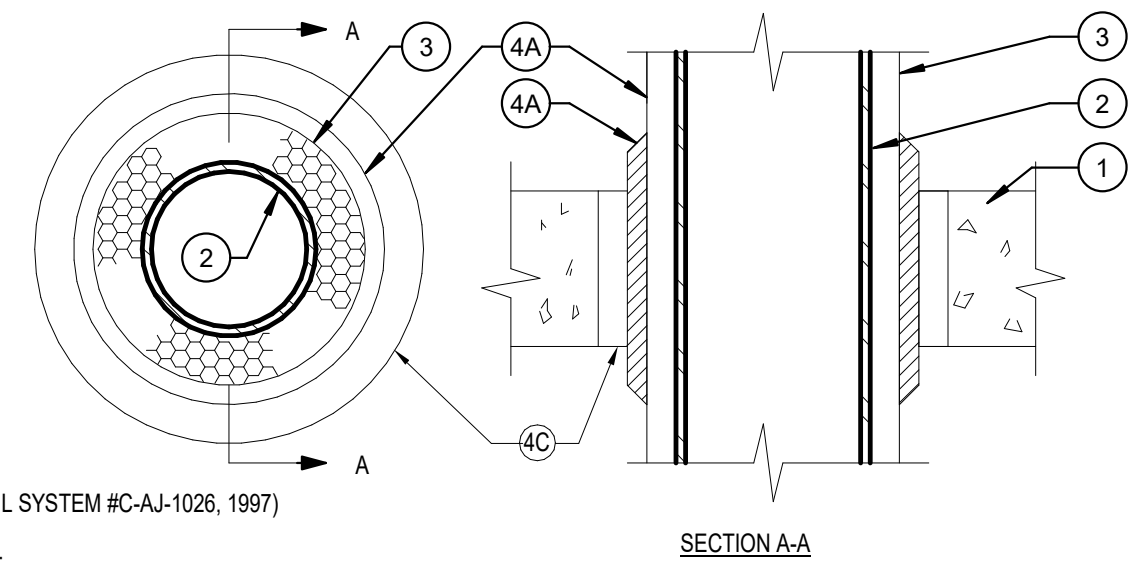
- REMARKS:
- PROVIDE WITH MANUFACTURER'S STANDARD FUSED DISCONNECT SWITCH.
  - PROVIDE WITH MANUFACTURER'S STANDARD UNIT MOUNTED THERMOSTAT. PROVIDE WITH MANUFACTURER'S STANDARD SACNET INTERFACE CARD.
  - PROVIDE WITH MANUFACTURER'S STANDARD WALL BRACKET AS REQUIRED FOR INSTALLATION AS INDICATED ON CONTRACT DOCUMENTS. COORDINATE INSTALLATION WITH APPROVED ELEVATOR SHOP DRAWINGS.



3 PIPE SUPPORT DETAIL  
MM500 / NOT TO SCALE



2 EQUIPMENT STAND DETAIL  
MM500 / NOT TO SCALE



(REF. UL SYSTEM #C-AJ-1026, 1997)

SECTION A-A

NOTES:

- Floor or Wall Assembly - Min. 4 1/2 in. thick lightweight or normal weight (100-150 pcf) concrete with a max. 15 in. dia. opening.
- Steel Pipe or Conduit - Nom. 8 in. dia. (or smaller) Schedule 10S (or heavier) steel pipe or rigid galvanized steel conduit centered in the opening. A max. of one pipe or conduit is permitted in the fire-stop system.
- Pipe Covering Material - Optional - The following types of pipe covering may be used:
  - Nominal 2 in. thick hollow cylindrical heavy density (min. 3.5 pcf) glass fiber units jacketed on the outside with a PVC facing. Longitudinal joints sealed with metal fasteners or factory applied SSL. Transverse joints sealed with metal fasteners or with butt strip tape supplied with the product.
  - Nominal 1 in. thick hollow cylindrical heavy density (min. 6 pcf) hydroxide calcium silicate units covered with a PVC facing pipe insulation secured together with steel tie wire.
 See Pipe and Equipment Covering Materials - (BRGU) category in Building Materials Directory for names of manufacturers. Any pipe covering meeting the above specifications and bearing the UL Classification Marking.
- Fire-Stop System - The hourly T-rating of the fire-stop system is dependent upon the size of the pipe or conduit, the type of pipe covering (item 3) the absence of pipe covering, and annular space between the periphery of the opening/absence of pipe covering, and annular space between the periphery of the opening and pipe covering and annular space within the opening.
 

Max. pipe or Conduit Dia.	Type of Pipe Covering	Thickness of Pipe Covering	Annular Space	T Rating
8"	CS	1"	1-1/2"	1-1/2h
8"	FG	2"	1-1/2"	1 h
8"	-	-	2-1/2"	0 h

 (a) CS = Calcium silicate  
(b) FG = Fiberglass
- Installation - ceramic fiber blanket nom. 1 in. thick, min. 1 pcf density wrapped around the circumference of the pipe or conduit and secured together by means of fiberglass tape. Blanket position such that it extends a min. of 2 in. beyond both surfaces of the floor or wall assembly.
- Fill, Void, or Cavity Material - Blanket - Blanket wrapped around the circumference of the pipe and insulation with vertical seams overlapping 1 in. Position blanket within the opening such that it extends a min. of 4 in. beyond both surfaces and secured together with metal staples and plastic cable ties.
- Fill, Void, or Cavity Material - Mastic - Material that is troweled or applied with a caulking gun to fill the annular space between the blanket and the periphery of the opening. Min. thickness shall be 4-1/2 in.

1 FIRE RATED FLOOR / WALL PIPE PENETRATION DETAIL  
MM500 / NOT TO SCALE

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SUSTAINABLE ARCHITECTURE + ENGINEERING  
1221 IN PENNSYLVANIA ST. INDIANAPOLIS, IN 46202  
317.600.6388 WWW.GUIDONDESIGN.COM

DESIGN ARCHITECT/ENGINEER

LUKE J. LEISMAN  
REGISTERED PROFESSIONAL ENGINEER  
No. PE10809537  
12/17/12

ENGINEERS/ARCHITECTS SEAL

INDIANA UNIVERSITY INDIANAPOLIS  
SPORTS COMPLEX ELEVATOR ALTERATIONS  
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N/A	
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23 1015	
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MECHANICAL DETAILS AND SCHEDULES  
**MM500**

ELECTRICAL / TECHNOLOGY ABBREVIATIONS	ONE-LINE DIAGRAM SYMBOL LEGEND	ELECTRICAL GENERAL SYMBOL LEGEND	TECHNOLOGY SYMBOL LEGEND	LIGHT SYMBOL LEGEND	POWER SYMBOL LEGEND
<p>1PH SINGLE-PHASE 1P SINGLE POLE 2/C TWO-CONDUCTOR 3/C THREE-CONDUCTOR 3PH THREE-PHASE 4/C FOUR-CONDUCTOR 4W FOUR-WIRE AC UNIT AIR CONDITIONING UNIT AE ARCHITECT/ENGINEER AFP ALARM ANNUNCIATOR PANEL AC ALTERNATING CURRENT OR ARMORED CABLE ACC ACCESSIBLE ADOL ADDITIONAL ADJ ADJACENT, ADJOINING ADO AUTOMATIC DOOR OPENER AFC ABOVE FINISHED COUNTER AFF ABOVE FINISHED FLOOR AFG ABOVE FINISHED GRADE AHJ AUTHORITY HAVING JURISDICTION ALT ALTERNATE AMB OR A AMBIENT ARCH ARCHITECT ATS AUTOMATIC TRANSFER SWITCH AUTO AUTOMATIC AV AUDIO VISUAL BOARD BD BELOW FINISH FLOOR BFF BUILDING BY PASS BY PASS C CABINET CALC CALCULATE CAP CAPACITY CAT CATALOGS CATV COMMUNITY ANTENNA TELEVISION CCR CONTROL CONTACTOR CCTV CLOSED CIRCUIT TELEVISION CD CONSTRUCTION DOCUMENTS CLG CEILING CMU CONCRETE MASONRY UNIT COX COAXIAL CABLE COMM COMMUNICATION COMP COMPARTMENT CONC CONCRETE CONT CONTINUE CONTR CONTRACTOR COORD COORDINATE COR CONTRACTING OFFICER'S REPRESENTATIVES COTV CABLE TELEVISION CU COPPER CUR CURRENT DB DECEASEL OR DIRECT BURIAL DC DIRECT CURRENT DEG C DEGREES CELSIUS DEG F DEGREES FAHRENHEIT DEM DEMOLITION DIAG DIAGRAM DISTR DISTRIBUTION DN DOWN DRSW DOOR SWITCH DWG DRAWING EG EMPTY CONDUIT EG EQUIPMENT GROUND EL ELEVATION ELEC ELECTRIC OR ELECTRICAL ELEV ELEVATOR EMER EMERGENCY EMI ELECTROMAGNETIC INTERFERENCE EMT ELECTRICAL METALLIC TUBING ENCL ENCLOSURE EMERGENCY POWER OFF EASEMENT EXIST EXISTING FLEX FLEXIBLE METALLIC CONDUIT FOUT TELEPHONE FLOOR OUTLET FP FIRE PROTECTION FT FEET OR FOOT FUS FUSED SWITCH G OR GND GROUND OR GENERATOR GEN GENERATOR GTB GROUND TERMINAL BOX HOA HAND-OFF-AUTOMATIC HT HEIGHT HERTZ IMC INTERMEDIATE METAL CONDUIT J BOX JUNCTION BOX LF LINEAR FEET (FOOT) LGT LIGHTING LV LOW VOLTAGE MATV MASTER ANTENNA TELEVISION SYSTEM MAX MAXIMUM MECH MECHANICAL MIN MINIMUM MT MOUNT MTD MOUNTED MTG MOUNTING NA NOT APPLICABLE NEC NATIONAL ELECTRICAL CODE NEUT OR N NEUTRAL NIC NOT IN CONTRACT NS NO SCALE NTS NOT TO SCALE OC ON CENTER OD OUTSIDE DIAMETER P POLE PA PUBLIC ADDRESS PB PANELBOARD, PULL BOX, OR PUSHBUTTON PBPU PREFABRICATED BEDSIDE PATIENT UNIT PED PEDESTAL PEND PENDANT PF POWER FACTOR PH PHASE PVL POLYVINYL CHLORIDE (PLASTIC) PWR POWER RCP REFLECTED CEILING PLAN REC RECESSED RECP RECEPTACLE RGS RIGID GALVANIZED STEEL RM ROOM REQD REQUIRED SF SQUARE FOOT (FEET) SHT SHEET SI INTERNATIONAL SYSTEM OF UNITS SPEC SPECIFICATION SURF SURFACE SW SWITCH TEL TELEPHONE TP TWISTED PAIR TPS TWISTED PAIR SHIELDED TIB TELEPHONE TERMINAL BOARD TV TELEVISION TYP TYPICAL UFD UNDERFLOOR DUCT UGND UNDERGROUND UL UNDERWRITERS LABORATORY UNLESS OTHERWISE NOTED UNINTERRUPTIBLE POWER SUPPLY UTIL UTILITY V VOLT VP WEATHERPROOF</p>	<p> FLOOR ROOM NAME &amp; NO.  CIRCUIT BREAKER F = FRAME SIZE (AMPS) T = TRIP SETTINGS (AMPS)  SWITCH  CIRCUIT BREAKER F = FRAME SIZE (AMPS) T = FUSE SIZE (AMPS)  FUSED DISCONNECT SWITCH F = FRAME SIZE (AMPS) T = FUSE SIZE (AMPS)  NON-FUSED DISCONNECT SWITCH F = FRAME SIZE (AMPS)  MOTOR STARTER S = STARTER SIZE  VARIABLE FREQUENCY DRIVE  AUTOMATIC TRANSFER SWITCH  JUNCTION BOX  FUSE  ELECTRICAL MOTOR S = SIZE (HP) N = NAME L = ELECTRICAL LOAD (AMPS)  ELECTRICAL DEVICE S = SIZE (kW) N = NAME L = ELECTRICAL LOAD (AMPS)  SPECIAL RECEPTACLE / EQUIPMENT DESCRIPTION 1 DESCRIPTION 2 N = NAME PLATE L = ELECTRICAL LOAD (AMPS)  DELTA-Y DRY-TYPE TRANSFORMER N = NAME PV = PRIMARY VOLTAGE S = SIZE (kW) SV = SECONDARY VOLTAGE  EARTH GROUND  PUSHBUTTON SWITCH - NORMALLY CLOSED  PUSHBUTTON SWITCH - NORMALLY OPEN  CONTACT - NORMALLY CLOSED  CONTACT - NORMALLY OPEN  CURRENT TRANSFORMER  SOLENOID COIL  RC = RELAY COIL, NUMBER INDICATES RELAY TYPE 50 = INSTANTANEOUS OVERCURRENT OR RATE-OF-RISE S1 = AC-TIME OVERCURRENT 87 = AC-DIRECTIONAL OVERCURRENT 86 = LOCKING OUT  PILOT LIGHT  FEEDER SIZE, REFER TO FEEDER SCHEDULE  EXISTING FEEDER TO REMAIN  FEEDER TO BE REMOVED</p>	<p> KEYED NOTE, REFER TO DRAWINGS FOR NOTES  DEMOLITION KEYED NOTE, REFER TO DRAWINGS FOR NOTES  DETAIL NOTE, REFER TO DETAILS FOR NOTES AND ADDITIONAL INFORMATION PANEL: 1,3 BRANCH CIRCUIT IS REPRESENTED WITH PANEL NAME AND NUMBER OF CIRCUITS. REFER TO FLOOR PLANS AND PANELBOARD SCHEDULES FOR ADDITIONAL INFORMATION. (E) EXISTING DEVICE OR EQUIPMENT TO REMAIN (ER) EXISTING DEVICE OR EQUIPMENT TO BE RELOCATED ELECTRICAL ITEMS SHOWN LIGHT WITH A SOLID LINETYPE ARE EXISTING TO REMAIN UNLESS NOTED OTHERWISE. ELECTRICAL ITEMS SHOWN BOLD WITH A HIDDEN LINETYPE ARE TO BE REMOVED UNLESS NOTED OTHERWISE. ELECTRICAL ITEMS SHOWN BOLD WITH A SOLID LINETYPE ARE NEW UNLESS NOTED OTHERWISE. PROJECT BOUNDARY BEYOND PROJECT BOUNDARY, NIC NORTH ARROW VIEW TITLE DETAIL/DRAWING NUMBER TITLE OF DETAIL/DRAWING SCALE: ? SHEET NUMBER ELEVATION REFERENCES VIEW NUMBER SHEET LOCATION BUILDING SECTION REFERENCE BUILDING DRAWING NUMBER SHEET LOCATION SECTION REFERENCE OBJECT REFERENCED DRAWING NUMBER SHEET LOCATION DETAIL REFERENCE OBJECT REFERENCED DRAWING NUMBER SHEET LOCATION BUILDING NO. WHERE EQUIPMENT IS LOCATED EQUIPMENT ABBREVIATION UNIT NUMBER TAG EQUIPMENT NUMBER NURSE CALL SYMBOL LEGEND ALL DEVICE LOCATIONS ARE SCHEMATIC ONLY. VERIFY ACTUAL LOCATION WITH ARCHITECTURAL DRAWINGS AND VERIFY MOUNTING HEIGHT WITH APPROVED NURSE CALL SYSTEM SHOP DRAWINGS. xx [N] NURSE CALL STATION DENOTES THE FOLLOWING: (1) SINGLE PATIENT STATION (A) AUXILIARY JACK (AN) ANNUNCIATOR (B) BED INTERFACE STATION (CB) CODE BLUE STATION (DS) DUTY STATION (E) EMERGENCY (EM) EMERGENCY WET (SHOWER MOUNT 78" AFF, TUB MOUNT 54" AFF OR TOILET MOUNT 30" AFF) (H) ENHANCED DUTY STATION (I) TELEVISION CHANNEL INTERFACE (P) PUSH FOR HELP STATION (PS) PILLOW SPEAKER (S) STAFF TERMINAL (Z) ZONE LIGHT, CEILING MOUNTED NURSE CALL STATION DOME LIGHTS, CEILING MOUNTED NURSE CALL STATION "ZONE" DOME LIGHTS, CEILING MOUNTED NURSE CALL MASTER STATION, MOUNTED ON NURSES COUNTER TOP</p>	<p>TELEPHONE/DATA DEVICE, TYPE AND QUANTITY AS SHOWN ON DRAWINGS. PROVIDE SINGLE-GANG BOX AND 3/4" CONDUIT WITH BUSHING TO ACCESSIBLE CEILING ABOVE. COORDINATE MOUNTING WITH ARCHITECTURAL DRAWINGS. (MOUNT 18" AFF UNLESS NOTED OTHERWISE) #D, #V = NUMBER OF DATA AND VOICE DATA OUTLET (MOUNT 18" AFF UNLESS NOTED OTHERWISE) #D = NUMBER OF DATA OUTLET BOX WITH CONDUIT TO ABOVE ACCESSIBLE CEILING WITH BUSHING AND PULLSTRINGS. TV CABLES AND OUTLET DEVICE BY COMMUNICATIONS CONTRACTOR. WALL MOUNTED TELEPHONE OUTLET (MOUNT 48" AFF UNLESS NOTED OTHERWISE) TELEPHONE/DATA/POWER JACK WITH A BLANK FACEPLATE (MOUNTED AT 18" AFF UNLESS OTHERWISE NOTED) POKE-THRU DEVICE, WITH POWER AND COMMUNICATIONS. FLUSH MOUNTED IN-FLOOR BOX FOR COMMUNICATIONS AND AV IF APPLICABLE. REFER TO FURNITURE VENDORS DRAWINGS FOR DIMENSIONS. ROUTE A 1-1/2" CONDUIT TO THE NEAREST COLUMN THEN TO ABOVE AN ACCESSIBLE CEILING. CARD READER, PROVIDE A 1-GANG BACK BOX AND 1/2" CONDUIT WITH PULLSTRING TO ABOVE ACCESSIBLE CEILING FOR CARD READER. DOOR CONTACT, PROVIDE A 1-GANG BACK BOX AND 1/2" CONDUIT WITH PULLSTRING TO ABOVE CEILING. PUSH PAD FOR POWER DOOR OPERATOR, PROVIDE A 1-GANG BACK BOX AND 3/4" CONDUIT WITH PULLSTRING TO ABOVE CEILING. DURESS BUTTON, WALL MOUNTED 48" AFF CAMERA, DOME TYPE, CEILING MOUNTED CAMERA, DOME TYPE, WALL MOUNTED CAMERA, LINEAR TYPE, CEILING MOUNTED CAMERA, LINEAR TYPE, WALL MOUNTED FIRE ALARM SYMBOL LEGEND FIRE ALARM DEVICE SHOWN DASHED LINETYPE TO BE REMOVED. REFER TO DRAWINGS FOR ADDITIONAL INFORMATION FIRE ALARM PULL STATION, WALL MOUNT 42" AFF FIRE ALARM SPEAKER / STROBE LIGHT COMBINATION UNIT, WALL MOUNT 80" AFF FIRE ALARM STROBE LIGHT ONLY, WALL MOUNT 80" AFF SMOKE DETECTOR, CEILING MOUNTED SMOKE DETECTOR, CEILING MOUNTED FIRE ALARM STROBE LIGHT ONLY, CEILING MOUNTED SMOKE DETECTOR, CEILING MOUNTED SMOKE DUCT DETECTOR, MOUNTED ON UNIT HEAT DETECTOR, CEILING MOUNTED FIRE ALARM CONTROL PANEL FIRE ALARM ANNUNCIATOR PANEL FIRE ALARM CENTRAL CONSOLE FIRE ALARM TERMINAL CABINET MASTER FIRE ALARM CONTROL CABINET DOOR HOLD OPEN, ELECTROMAGNETIC, WALL MOUNT 80" AFF</p>	<p>LIGHT FIXTURE OR DEVICE SHOWN DASHED LINETYPE TO BE REMOVED. REFER TO DRAWINGS FOR ADDITIONAL INFORMATION LIGHT FIXTURE TYPE IDENTIFICATION (LARGE) GEOMETRY LIGHT FIXTURE TYPE IDENTIFICATION (SMALL) GEOMETRY PARTIAL SHADING OF A LIGHT FIXTURE DESIGNATION INDICATES EMERGENCY LIGHT (EM), NIGHT LIGHT (NL) OR LIGHT ON A CRITICAL CIRCUIT (CR). CONNECT EMERGENCY LIGHTING AHEAD OF ALL SWITCHING UNLESS OTHERWISE NOTED. 2' X 4' RECESSED LIGHT FIXTURE b = SWITCH CONTROLLING LIGHT FIXTURE CKT = CIRCUIT 2' X 2' RECESSED LIGHT FIXTURE b = SWITCH CONTROLLING LIGHT FIXTURE CKT = CIRCUIT 1' X 4' RECESSED LENSED LIGHT b = SWITCH CONTROLLING LIGHT FIXTURE CKT = CIRCUIT LINEAR STRIP LIGHT FIXTURE b = SWITCH CONTROLLING LIGHT FIXTURE CKT = CIRCUIT PENDANT MOUNTED LIGHT FIXTURE b = SWITCH CONTROLLING LIGHT FIXTURE CKT = CIRCUIT UNDERCABINET LIGHT FIXTURE b = SWITCH CONTROLLING LIGHT FIXTURE IF NO ROCKER SWITCH CKT = CIRCUIT RECESSED DOWNLIGHT FIXTURE b = SWITCH CONTROLLING LIGHT FIXTURE CKT = CIRCUIT RECESSED WALL WASH DOWNLIGHT FIXTURE b = SWITCH CONTROLLING LIGHT FIXTURE CKT = CIRCUIT WALL-MOUNTED LIGHT FIXTURE b = SWITCH CONTROLLING LIGHT FIXTURE CKT = CIRCUIT SINGLE FACE EXIT SIGN WITH DIRECTIONAL ARROWS CEILING OR WALL MOUNTED CKT = CIRCUIT DOUBLE FACE EXIT SIGN WITH DIRECTIONAL ARROWS CEILING OR WALL MOUNTED CKT = CIRCUIT EXIT SIGN WITH EMERGENCY LIGHTS CEILING OR WALL MOUNTED EMERGENCY LIGHT FIXTURE (MOUNT 96" AFF UNLESS NOTED OTHERWISE) CKT = CIRCUIT LIGHT SWITCH (MOUNT 48" AFF) b = FIXTURES CONTROLLED BY LIGHT SENSOR OS: OCCUPANCY SENSOR 3 = 3 WAY 4 = 4 WAY LV: LOW VOLTAGE T: TIMER K: KEYS D: DIMMER OCCUPANCY SENSOR - CEILING MOUNTED b = LIGHT FIXTURE CONTROLLED DAYLIGHT HARVESTING SENSOR - CEILING-MOUNTED b = LIGHT FIXTURE CONTROLLED PHOTOCELL SITE LIGHTING, POLE MOUNTED REFER TO DRAWINGS FOR NUMBER OF HEADS CKT = CIRCUIT WIRING LEGEND CONDUIT OR RACEWAY POWERWIRE TYPICAL CONDUIT CONDUIT CAP EQUIPMENT CONNECTION CONDUIT UP/DOWN GROUND</p>	<p>ELECTRICAL DEVICE OR EQUIPMENT SHOWN DASHED LINETYPE TO BE REMOVED. REFER TO DRAWINGS FOR ADDITIONAL INFORMATION DISTRIBUTION PANEL, 480V OR 208V, FLOOR MOUNTED 208 / 120V PANEL, RECESSED OR SURFACE MOUNTED 480 / 277V PANEL, RECESSED OR SURFACE MOUNTED DUPLEX 120V, 20A RECEPTACLE (MOUNT 18" AFF, UNLESS NOTED OTHERWISE) GFCI = GROUND FAULT CIRCUIT INTERRUPTER DED = DEDICATED CIRCUIT WP = WEATHER PROOF T = TAMPER-RESISTANT DUPLEX 120V, 20A RECEPTACLE EMERGENCY OR CRITICAL POWER (MOUNT 18" AFF, UNLESS NOTED OTHERWISE) QUAD 120V, 20A RECEPTACLE (MOUNT 18" AFF, UNLESS NOTED OTHERWISE) QUAD 120V, 20A RECEPTACLE EMERGENCY OR CRITICAL POWER (MOUNT 18" AFF, UNLESS NOTED OTHERWISE) SINGLE 120V, 20A RECEPTACLE (MOUNT 18" AFF, UNLESS NOTED OTHERWISE) RECEPTACLE, SPECIAL PURPOSE OR EQUIPMENT CONNECTION. REFER TO DRAWINGS FOR DIMENSIONS. ROUTE A 1" CONDUIT TO THE NEAREST COLUMN THEN TO ABOVE AN ACCESSIBLE CEILING. A = 120V, 20A, 1 PHASE, 2-POLE, 3W, NEMA 5-20R B = 208V, 20A, 1 PHASE, 2-POLE, 3W, NEMA 6-20R C = 120V, 30A, 1 PHASE, 2-POLE, 3W, NEMA 5-30R D = 208V, 30A, 1 PHASE, 2-POLE, 3W, NEMA 6-30R E = 208V, 60A, 1 PHASE, 3-POLE, 4W, NEMA 14-60R F = 208V, 30A, 3 PHASE, 3-POLE, 4W, NEMA 15-30R G = 208V, 50A, 3 PHASE, 3-POLE, 4W, NEMA 15-30R H = 208V, 60A, 3 PHASE, 3-POLE, 4W, NEMA 15-60R SPECIAL 208V RECEPTACLE. REFER TO DRAWINGS (MOUNT 18" AFF, UNLESS NOTED OTHERWISE) POKE-THRU DEVICE, WITH POWER AND COMMUNICATIONS REFER TO DIMENSIONS ON DRAWINGS FOR EXACT LOCATION FLUSH MOUNTED IN-FLOOR BOX DEVICE FOR POWER. REFER TO FURNITURE VENDORS DRAWING FOR DIMENSIONS. ROUTE A 1" CONDUIT TO THE NEAREST COLUMN THEN TO ABOVE AN ACCESSIBLE CEILING. BASE POWER IN = POWER DROP TO FURNITURE SYSTEM PROVIDE SINGLE-GANG BOX AND 3/4" FLEX CONDUIT WITH BUSHING TO ACCESSIBLE CEILING SPACE ABOVE. ELECTRIC MOTOR JUNCTION BOX / OUTLET BOX FUSED DISCONNECT SWITCH NON-FUSED DISCONNECT SWITCH STARTER, COMBINATION WITH DISCONNECT SWITCH STARTER OR MOTOR CONTROLLER MOTOR RATED SWITCH, OTHER TYPES AS FOLLOWS. F = FUSED SWITCH MP = MOTOR SNAP W/ PILOTLIGHT K = KEYS OPERATED P = PILOT LIGHT L = LOCK RC = REMOTE CONTROL M = MANUAL MOTOR STARTING WP = WEATHER PROOF MO = MOMENTARY CONTACT X = EXPLOSION PROOF VARIABLE FREQUENCY DRIVE TRANSFORMER, FLOOR MOUNTED UNLESS NOTED OTHERWISE</p>

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SUSTAINABLE ARCHITECTURE + ENGINEERING  
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DESIGN ARCHITECT/ENGINEER

ENGINEERS/ARCHITECTS SEAL

LUKE J. LEISMAN  
REGISTERED PROFESSIONAL ENGINEER  
No. PE10809557  
EXPIRES 12/31/2024

INDIANA UNIVERSITY INDIANAPOLIS	PROJECT ADDRESS
SPORTS COMPLEX ELEVATOR ALTERATIONS	DESIGNED: EAE DRAWN: EAE
498 BLAKE ST. INDIANAPOLIS, IN 46202	APPROVED: EAE CHECKED: EAE
100% CONSTRUCTION DOCUMENTS	CLIENT PROJECT NUMBER
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ELECTRICAL SYMBOLS AND ABBREVIATIONS

**E000**

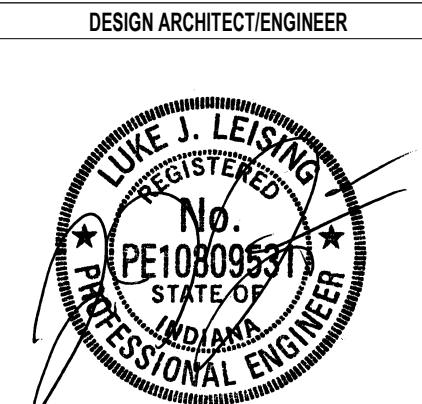
ELECTRICAL DEMOLITION GENERAL NOTES	GENERAL ELECTRICAL NOTES	GENERAL ELECTRICAL NOTES
<p>A. REFER TO SHEET E000 FOR ELECTRICAL SYMBOL LEGEND AND ABBREVIATIONS.</p> <p>B. EXISTING ELECTRICAL ITEMS TO REMAIN ARE INDICATED WITH A LIGHT SOLID LINEWEIGHT AND/OR ARE NOTED AS 'EXISTING TO REMAIN'.</p> <p>C. ELECTRICAL ITEMS TO BE REMOVED ARE INDICATED WITH A BOLD DASHED LINEWEIGHT AND/OR ARE NOTED TO BE REMOVE.</p> <p>D. INFORMATION SHOWN ON THE LIGHTING, POWER, TECHNOLOGY, AND SYSTEMS PLANS IS BASED ON GENERAL FIELD OBSERVATION AND EXISTING RECORD DRAWINGS WHERE AVAILABLE. THE DEMOLITION DRAWINGS DO NOT PURPORT TO SHOW ALL EXISTING EQUIPMENT, WIRING, CONDUITS OR FIELD CONDITIONS. FIELD VERIFY EXISTING BUILDING AND SITE CONDITIONS TO DETERMINE THE ACTUAL EXTENT OF DEMOLITION WORK REQUIRED. THE CONTRACTOR IS RESPONSIBLE FOR ANY ADDITIONAL TRACING, REMOVING, RELOCATION AND EXTENDING CIRCUITS AND DEVICES NECESSARY TO MAINTAIN CONTINUITY OF EXISTING EQUIPMENT NOT IN THE AREA OF WORK.</p> <p>E. SEQUENCE, COORDINATE, AND INTEGRATE DEMOLITION OF ELECTRICAL MATERIALS AND EQUIPMENT FOR EFFICIENT FLOW OF THE WORK. COORDINATE ELECTRICAL DISCONNECTION OF EQUIPMENT TO BE REMOVED BY THE OTHER TRADES.</p> <p>F. COORDINATE DEMOLITION OF ALL AFFECTED ELECTRICAL SYSTEMS AS REQUIRED TO PREVENT OR MINIMIZE DISRUPTION TO THE OWNER AND DOWNTIME.</p> <p>G. CONTRACTOR SHALL VISIT THE SITE TO BECOME FAMILIAR WITH THE EXISTING CONDITIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REVIEW THE EXISTING CONDITIONS AS THEY RELATE TO THE SCOPE OF WORK AS DEFINED ON THE CONSTRUCTION DOCUMENTS. CONTRACTOR SHALL REVIEW LOCATIONS AND QUANTITIES OF ALL EXISTING EQUIPMENT INCLUDING SWITCHBOARDS, TRANSFORMERS, PANELBOARDS, LIGHTING FIXTURES, OUTLETS, FIRE ALARM DEVICES, TELECOMMUNICATIONS OUTLETS, SECURITY DEVICES AND ALL OTHER ELECTRICAL DEVICES, COMPONENTS, ETC. IN THE EXISTING FACILITY. AT THE BEGINNING OF DEMOLITION, THE CONTRACTOR ACCEPTS THE EXISTING CONDITIONS, AND HAS INCLUDED ALL NECESSARY MODIFICATIONS, REMOVAL, DEMOLITION, AND RELOCATION OF THE EXISTING COMPONENTS FOR THE EXECUTION OF THE SCOPE OF WORK.</p> <p>H. FIELD VERIFY ALL EXISTING CIRCUITS TO BE REMOVED AND TO REMAIN PRIOR TO COMMENCEMENT OF ANY DEMOLITION ACTIVITIES.</p> <p>I. WHERE EXISTING EQUIPMENT (SUCH AS LIGHT FIXTURES, WIRING DEVICES, CONDUITS, ETC.) IS SHOWN ON PLANS TO BE REMOVED, DISCONNECT AND COMPLETELY REMOVE ALL ASSOCIATED WIRING AND CONDUIT BACK TO PANEL SOURCE OR BACK TO EXISTING JUNCTION BOX SERVING OTHER DEVICES TO REMAIN.</p> <p>J. WHERE EXISTING CIRCUITS ARE TO BE REMOVED, DISCONNECT WIRING AT THE OVERCURRENT PROTECTIVE DEVICE AND MARK DEVICE AS SPARE.</p> <p>K. DISCONNECT ALL WIRING SERVING EQUIPMENT TO BE REMOVED AT THE OVERCURRENT PROTECTIVE DEVICE. COMPLETELY REMOVE ALL ABANDONED WIRING AND ASSOCIATED CONDUITS WHERE NOT INDICATED OR REQUIRED TO BE REUSED.</p> <p>L. PROVIDE TEMPORARY WIRING AND CONNECTIONS TO MAINTAIN EXISTING SYSTEMS TO REMAIN IN SERVICE DURING CONSTRUCTION. WHERE EXISTING CIRCUITS ARE INTERRUPTED BY ELECTRICAL DEMOLITION, MAINTAIN, RESTORE, AND REFEED EXISTING CIRCUITS TO REMAIN INCLUDING ASSOCIATED WIRING AND CONDUITS THAT PASSES THROUGH AREAS TO BE RENOVATED THAT SERVE AREAS OUTSIDE OF PROJECT SCOPE.</p> <p>M. PROTECT EXISTING ELECTRICAL EQUIPMENT AND INSTALLATIONS INDICATED TO REMAIN. IF DAMAGED OR DISTURBED IN THE COURSE OF THE WORK, REMOVE DAMAGED PORTIONS AND INSTALL NEW PRODUCTS OF EQUAL CAPACITY, QUALITY, AND FUNCTIONALITY.</p> <p>N. FIELD VERIFY EXACT DEMOLITION REQUIREMENTS AND INCLUDE ASSOCIATED COSTS, ASSOCIATED WIRING, CONDUITS, FITTING, BOXES, SUPPORTS, SHALL BE REMOVED FROM THE DEVICES BACK TO THE RESPECTIVE SOURCE PANEL.</p> <p>O. UPDATE EXISTING PANEL DIRECTORIES AS REQUIRED. ALL OVERCURRENT PROTECTIVE DEVICES FOR REMOVED CIRCUITS THAT ARE NOT RE-USED SHALL REMAIN AND BE MARKED AS "SPARE" ON THE UPDATED PANEL DIRECTORY.</p> <p>P. REFER TO THE SPECIFICATIONS FOR ADDITIONAL ELECTRICAL DEMOLITION REQUIREMENTS.</p> <p>Q. DASHED WALLS INDICATE EXISTING WALLS BEING REMOVED. REFER TO ARCHITECTURAL DEMOLITION AND PHASING PLANS FOR THE EXACT EXTENT OF GENERAL CONSTRUCTION DEMOLITION REQUIRED.</p> <p>R. CONTRACTOR SHALL SUPPORT AND PROTECT ELECTRICAL INFRASTRUCTURE EXISTING TO REMAIN, INCLUDING BUT NOT LIMITED TO CONDUITS, WIRING, DEVICES, AND LIGHTING FIXTURES AS REQUIRED.</p> <p>S. COORDINATE REMOVAL AND REPLACEMENT OF ANY EXISTING ELECTRICAL CEILING MOUNTED DEVICES (I.E. LIGHT FIXTURES, FIRE ALARM) OUTSIDE THE MAIN PROJECT AREA OF WORK TO ACCOMMODATE THE NEW CONSTRUCTION.</p> <p>T. REFER TO THE ARCHITECTURAL PLANS FOR LOCATIONS OF SMOKE PARTITIONS AND FIRE RATED WALLS, FLOORS, AND CEILINGS AND THEIR HOURLY RATINGS. PROVIDE FIRE STOPPING FOR CONDUITS AND OTHER PENETRATIONS COVERED UNDER DIVISION 26 IN THESE SURFACES. FIRE STOPPING SHALL MEET OR EXCEED THE RATING OF THE SURFACE BEING PENETRATED. REFER TO SPECIFICATION 07 81 00 FOR ADDITIONAL INFORMATION.</p> <p>U. WHERE INDICATED ON THE DRAWINGS, DISCONNECT AND REMOVE ALL HORIZONTAL COMMUNICATIONS, FIRE ALARM, ACCESS CONTROL, VIDEO SURVEILLANCE, AND NURSE CALL SYSTEM CABLING AND ASSOCIATED CONDUIT BACK TO RESPECTIVE I.T. ROOM OR SECURITY CONTROL PANEL AS REQUIRED. COORDINATE ALL COMMUNICATIONS AND SYSTEMS DEMOLITION WORK WITH THE OWNER'S I.T. AND SECURITY PERSONNEL PRIOR TO THE COMMENCEMENT OF DEMOLITION.</p>	<p>A. REFER TO SHEET E000 FOR ELECTRICAL SYMBOLS LEGEND AND ABBREVIATIONS.</p> <p>B. EXISTING ELECTRICAL ITEMS TO REMAIN ARE INDICATED WITH A LIGHT SOLID LINEWEIGHT AND/OR ARE NOTED AS 'EXISTING TO REMAIN'.</p> <p>C. NEW ELECTRICAL ITEMS ARE INDICATED WITH A BOLD SOLID LINEWEIGHT.</p> <p>D. THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC ONLY AND ARE INTENDED TO CONVEY THE SCOPE OF WORK AND INDICATE GENERAL ARRANGEMENT OF EQUIPMENT, CONDUITS, DEVICES, FIXTURES, ETC. THE ELECTRICAL DRAWINGS SHALL NOT BE SCALED FOR PURPOSES OF EQUIPMENT INSTALLATION. ALL MEASUREMENTS SHALL BE VERIFIED AS REQUIRED TO INSTALL ALL EQUIPMENT IN A NEAT AND WORKMANLIKE MANNER. REFER TO THE ENTIRE CONSTRUCTION DRAWING SET AND SPECIFICATIONS FOR GUIDANCE ON DIMENSIONS, CEILING HEIGHTS, DOOR SWINGS, ROOM FINISHES, STRUCTURAL DETAILS, LOCATIONS OF PIPING, DUCTWORK, STRUCTURAL MEMBERS, AND OTHER OBSTRUCTIONS.</p> <p>E. THE CONTRACTOR SHALL, WITHOUT EXTRA CHARGE, MAKE REASONABLE MODIFICATIONS TO THE ELECTRICAL LAYOUT FOR THE FOLLOWING:</p> <ol style="list-style-type: none"> <li>AS NEEDED TO PREVENT CONFLICT WITH THE WORK OF OTHER TRADES OR FOR PROPER EXECUTION OF THE WORK</li> <li>AS DIRECTED BY THE ENGINEER AND/OR OWNER IN WRITING, PRIOR TO COMPONENT INSTALLATION, FOR MINOR REVISIONS TO ELECTRICAL INSTALLATION.</li> </ol> <p>F. COOPERATE AND COORDINATE WORK WITH OTHER TRADES SO AS TO NOT DELAY THE COMPLETION DATE OF THE PROJECT. STUDY AND BE FAMILIAR WITH THE WORK OF OTHER TRADES AS REQUIRED FOR PROPER COORDINATION.</p> <p>G. CERTAIN ELECTRICAL WORK IS INDICATED ON THE DRAWINGS AND SPECIFICATIONS OF OTHER TRADES AND MAY NOT BE REPEATED ON THE ELECTRICAL DRAWINGS AND SPECIFICATIONS. EXAMINE THE DOCUMENTS OF OTHER TRADES AND OUTLETS ALL ELECTRICAL WORK IN THE BID AS REQUIRED FOR A COMPLETE ELECTRICAL SYSTEM(S), UNLESS SPECIFICALLY NOTED AS FURNISHED AND INSTALLED BY OTHERS.</p> <p>H. COMPLETE ROUGH-IN REQUIREMENTS OF ALL EQUIPMENT TO BE WIRED OR CONNECTED UNDER THIS PROJECT ARE NOT SHOWN ON THE DRAWINGS. VERIFY ALL REQUIREMENTS WITH THE CONTRACTOR FURNISHING THE EQUIPMENT OR WITH THE OWNER WHERE THE EQUIPMENT IS OWNER FURNISHED. FOR THE EXACT INSTALLATION REQUIREMENTS.</p> <p>I. EXAMINE THE ARCHITECTURAL DRAWINGS AND VERIFY SUFFICIENT WALL THICKNESS FOR PROPER RECESSING DEPTH FOR ALL FLUSH MOUNTED EQUIPMENT. ALL INSTANCES OF INADEQUATE DEPTH SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE THE BID DATE OR PROVIDED FOR BY THE BID.</p> <p>J. WORK SHOWN ON THE DRAWINGS AS 'EXISTING' IS ASSUMED TO BE IN PLACE AND SUITABLE FOR MODIFICATIONS AND ADDITIONS AS INDICATED ON THE DRAWINGS. VERIFY THESE ITEMS AND MAKE NECESSARY FIELD MEASUREMENTS PRIOR TO BID AND SHALL MAKE ALL NECESSARY PROVISIONS REQUIRED FOR PROPER INSTALLATION AS REQUIRED BY THE DRAWINGS AND SPECIFICATIONS. SUBMIT ANY QUESTIONS REQUIRING CLARIFICATION IN WRITING TO THE ENGINEER NOT LESS THAN TEN DAYS PRIOR TO THE BID DATE.</p> <p>K. SCHEDULE TIMES FOR ALL NECESSARY POWER OUTAGES FOR INSTALLATION OF NEW ELECTRICAL DISTRIBUTION EQUIPMENT, MODIFICATIONS TO EXISTING ELECTRICAL DISTRIBUTION EQUIPMENT, INSTALLATION OR MODIFICATION OF FEEDER OR BRANCH CIRCUITS, TERMINATION OF CIRCUITS, AND CUTOVERS SHALL WITH THE OWNER. ALL POWER OUTAGES SHALL BE AT TIMES APPROVED BY THE OWNER AND SHALL BE OF THE SHORTEST POSSIBLE DURATION.</p> <p>L. VERIFY AVAILABLE RECESSING DEPTHS FOR LUMINAIRES (LIGHT FIXTURES) AGAINST LUMINAIRE CATALOG REFERENCE MATERIAL PRIOR TO FURNISHING SUBMITTALS FOR REVIEW TO THE ENGINEER.</p> <p>M. REVIEW THE ARCHITECTURAL PLANS AND SHALL PROVIDE ALL NECESSARY HARDWARE, PLASTER RINGS, DRYWALL FRAMING KITS, AND SURFACE MOUNTING KITS AS REQUIRED BY CEILING CONSTRUCTION.</p> <p>N. VERIFY ALL NECESSARY VERTICAL AND HORIZONTAL CLEARANCES FOR THE INSTALLATION OF ELECTRICAL EQUIPMENT AND SHALL SHARE THIS INFORMATION WITH ALL ASSOCIATED PARTIES AS NECESSARY FOR PROPER COORDINATION.</p> <p>O. PROVIDE A SUITABLE BRANCH CIRCUIT FOR EACH AND EVERY LIGHT FIXTURE, RECEPTACLE, UTILIZATION EQUIPMENT, ETC. INSIDE OR OUTSIDE OF THE BUILDING WHETHER OR NOT SPECIFICALLY NOTED ON THE ELECTRICAL DRAWINGS AND SPECIFICATIONS, INCLUDING THE DRAWINGS AND SPECIFICATIONS OF OTHER TRADES.</p> <p>P. ALL SERVICE ENTRANCE, FEEDER, AND BRANCH CIRCUIT CONDUCTORS SHALL BE COPPER, THE USE OF ALUMINUM IS NOT ACCEPTABLE.</p> <p>Q. PROVIDE MINIMUM OF #12 AWG CONDUCTOR SIZE FOR ALL LIGHTING AND POWER BRANCH CIRCUITS WHERE A WIRE SIZE IS NOT SPECIFICALLY INDICATED ON THE DRAWINGS OR REQUIRED BY CODE. INCREASE CONDUCTOR SIZE AS SHOWN ON THE DRAWINGS, REQUIRED BY LOAD, OR AS REQUIRED TO LIMIT BRANCH CIRCUIT VOLTAGE DROP TO A MAXIMUM OF 3 PERCENT.</p> <p>R. CONDUITS SHALL BE LIMITED TO A MAXIMUM OF NINE BRANCH CIRCUIT CONDUCTORS OF WHICH A MAXIMUM OF FOUR PHASE CONDUCTORS SHALL BE PERMITTED. GROUNDING CONDUCTORS SHALL NOT BE INCLUDED IN THE COUNT.</p> <p>S. PROVIDE A FULL SIZE NEUTRAL FOR EACH 120-VOLT AND 277-VOLT BRANCH CIRCUIT.</p> <p>T. PERMANENTLY AND EFFECTIVELY IDENTIFY AND TAPE TOGETHER EACH NEUTRAL CONDUCTOR WITH ITS RESPECTIVE PHASE CONDUCTOR IN EACH JUNCTION BOX, OUTLET BOX AND PANELBOARD WHERE TWO OR MORE NEUTRALS ARE INSTALLED WITHIN THE SAME CONDUIT. PROVIDE MARKERS ON THE NEUTRAL WIRE NUMBERED THE SAME AS THE RESPECTIVE BRANCH CIRCUIT CONDUCTOR.</p> <p>U. PROVIDE AN INSULATED GROUNDING CONDUCTOR IN EACH BRANCH CIRCUIT CONDUIT AND EACH FEEDER CONDUIT.</p> <p>V. WIRING FOR ALL SERVICE ENTRANCE, FEEDER CIRCUITS AND BRANCH CIRCUITS SHALL BE INSTALLED IN CONDUITS IN ACCORDANCE WITH THE SPECIFICATIONS.</p> <p>W. WIRING FOR ALL LOW-VOLTAGE COMMUNICATIONS AND SIGNALING SYSTEMS SHALL BE INSTALLED IN CONDUITS IN ACCORDANCE WITH THE SPECIFICATIONS. THIS REQUIREMENT SHALL APPLY, BUT NOT BE LIMITED TO THE FOLLOWING SYSTEMS: FIRE ALARM SYSTEM, SOUND SYSTEMS, ACCESS CONTROL SYSTEMS, INTRUSIONS DETECTION SYSTEM, NURSE CALL SYSTEM, AND OTHER SPECIAL SYSTEMS.</p> <p>X. WIRING FOR ALL TELECOMMUNICATIONS SYSTEMS SHALL BE INSTALLED IN PATHWAYS IN ACCORDANCE WITH DIVISION 27 SPECIFICATION REQUIREMENTS.</p> <p>Y. GENERAL CONDUIT INSTALLATION</p> <ol style="list-style-type: none"> <li>AREAS WITHOUT SUSPENDED CEILINGS: SUPPORT CONDUITS FROM THE STRUCTURE AND INSTALL EXPOSED AS HIGH AS POSSIBLE TO AVOID FUTURE CONFLICTS WHEN NEW CEILINGS ARE INSTALLED OR WHEN ADDITIONAL WORK IS INSTALLED. ROUTE ALL CONDUITS PARALLEL AND PERPENDICULAR WITH THE STRUCTURE.</li> <li>AREAS WITH SUSPENDED CEILINGS: INSTALL CONDUITS CONCEALED ABOVE SUSPENDED CEILINGS.</li> <li>NEW WALLS: INSTALL CONDUITS CONCEALED IN NEW WALLS EXCEPT WHERE SPECIFICALLY SHOWN AND NOTED AS EXPOSED ON THE DRAWINGS.</li> <li>EXISTING WALLS: INSTALL CONDUITS CONCEALED IN EXISTING WALLS EXCEPT WHERE SPECIFICALLY SHOWN AND NOTED AS EXPOSED ON THE DRAWINGS. PROVIDE ALL CUTTING, PATCHING, REPAIR AND FINISHING OF EXISTING WALLS AS REQUIRED.</li> </ol> <p>Z. COORDINATE, CHECK, AND VERIFY ROUGH-IN HEIGHTS AND LOCATIONS OF ALL EQUIPMENT, DEVICES, RECEPTACLES, ETC. WITH THE DRAWINGS, EXISTING CONDITIONS, AND THE WORK OF OTHER TRADES.</p>	<p>AA. PROVIDE ALL CUTTING AND PATCHING OF EXISTING CONSTRUCTION EXCEPT WHERE SPECIFIED TO BE PROVIDED BY OTHERS ELSEWHERE IN THESE SPECIFICATIONS. VERIFY EXACT LOCATIONS AND MATERIALS BEFORE PERFORMING WORK. THE CUTTING OF STRUCTURAL MEMBERS AND BEARING WALLS IS PROHIBITED EXCEPT WHERE SPECIFICALLY SHOWN AND NOTED ON THE DRAWINGS AND/OR WHERE SPECIFICALLY PERMITTED BY THE ARCHITECT AND STRUCTURAL ENGINEER.</p> <p>BB. PATCH ALL HOLES IN EXISTING WALLS OR FLOORS WHERE EQUIPMENT OR CONDUITS HAVE BEEN REMOVED WITH THE PROPER MATERIAL TO MATCH EXISTING CONSTRUCTION. PATCH ALL HOLES IN FIRE RATED CONSTRUCTION WITH APPROVED FIRE RESISTANT MATERIALS TO MATCH EXISTING RATINGS OF CONSTRUCTION.</p> <p>CC. COLOR FOR ALL WIRING DEVICES AND WALL MOUNTED LIGHTING CONTROLS TO BE SELECTED BY THE ARCHITECT.</p> <p>DD. DEVICE PLATE TYPE (NYLON OR STAINLESS STEEL) TO BE SELECTED BY THE ARCHITECT. COLOR FOR NYLON DEVICE PLATES TO BE SELECTED BY THE ARCHITECT.</p> <p>EE. PROVIDE TAMPER-RESISTANT RECEPTACLES FOR ALL RECEPTACLES TO BE PROVIDED IN WAITING ROOMS, LOUNGES, AND LOBBY AREAS.</p> <p>FF. UPON COMPLETION OF WORK, DISCONNECT AND RECONNECT BRANCH LIGHTING CIRCUITS AT PANELBOARDS TO OBTAIN AS NEAR LOAD BALANCE ON CIRCUITS AS POSSIBLE. DEMONSTRATE ALL RESULTS TO THE OWNER'S REPRESENTATIVE WITH DIGITAL AMMETER.</p> <p>GG. PROVIDE A COMPLETED PROTECTED TYPEWRITTEN PANELBOARD DIRECTORY CARD IN EACH PANELBOARD. THE DIRECTORY SHALL BE APPROXIMATELY 5' X 8' AND SHALL INDICATE LOAD DESIGNATIONS WITH THE OWNER'S ASSOCIATED ROOM NUMBERS FOR EACH CIRCUIT. UPDATE THE PANEL DIRECTORY CARD FOR EACH EXISTING PANEL IN WHICH CIRCUITS ARE MODIFIED, ADDED, OR SUBTRACTED. VERIFY ALL EXISTING CIRCUITS TO REMAIN AND LIST ON THE UPDATED PANEL DIRECTORY.</p>

REVISIONS	DATE	REMARKS

OWNER / CLIENT
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**GUIDON**  
SUSTAINABLE ARCHITECTURE + ENGINEERING  
1221 IN PENNSYLVANIA ST. INDIANAPOLIS, IN 46202  
317.500.6388 WWW.GUIDONDESIGN.COM

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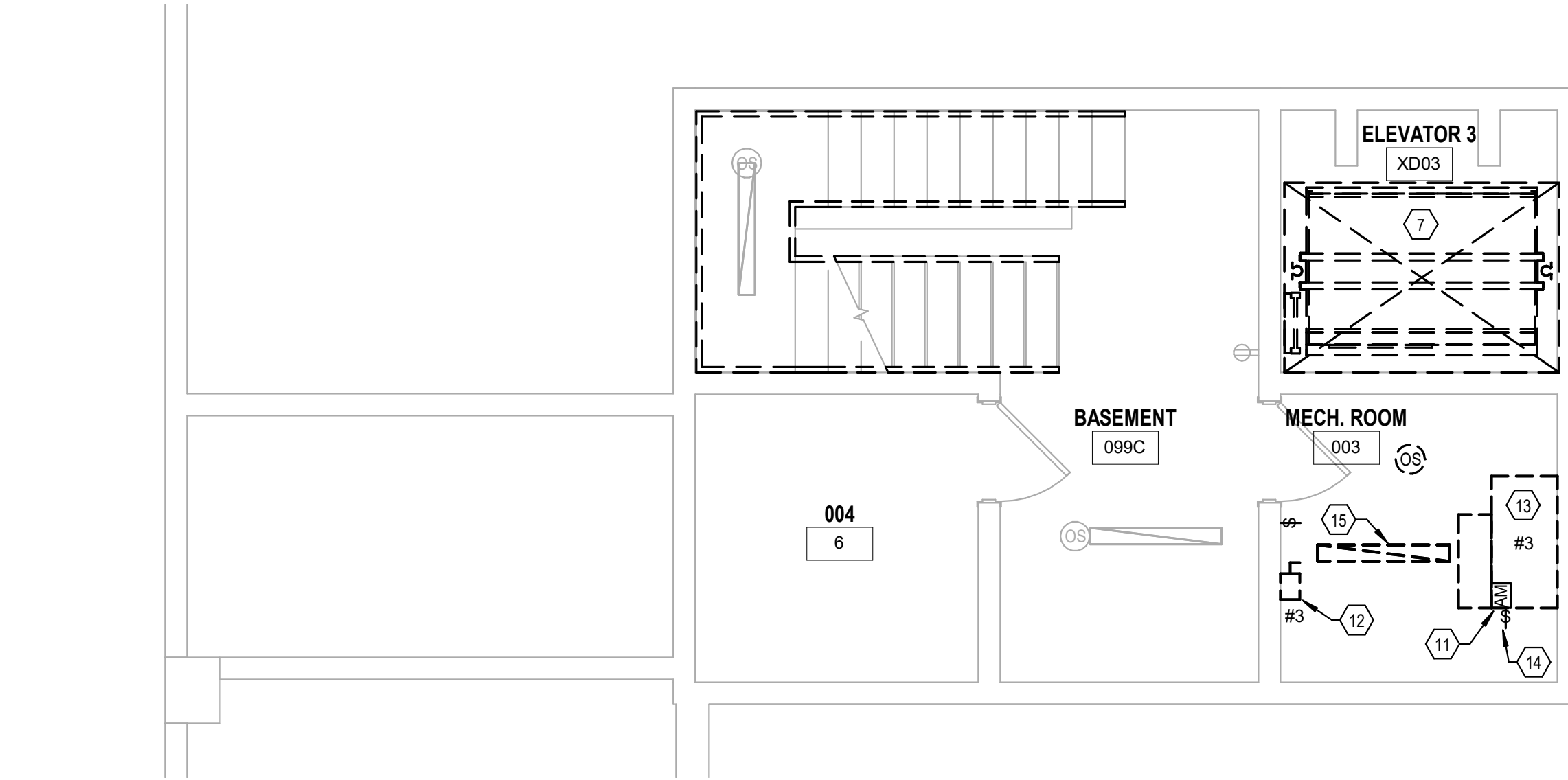
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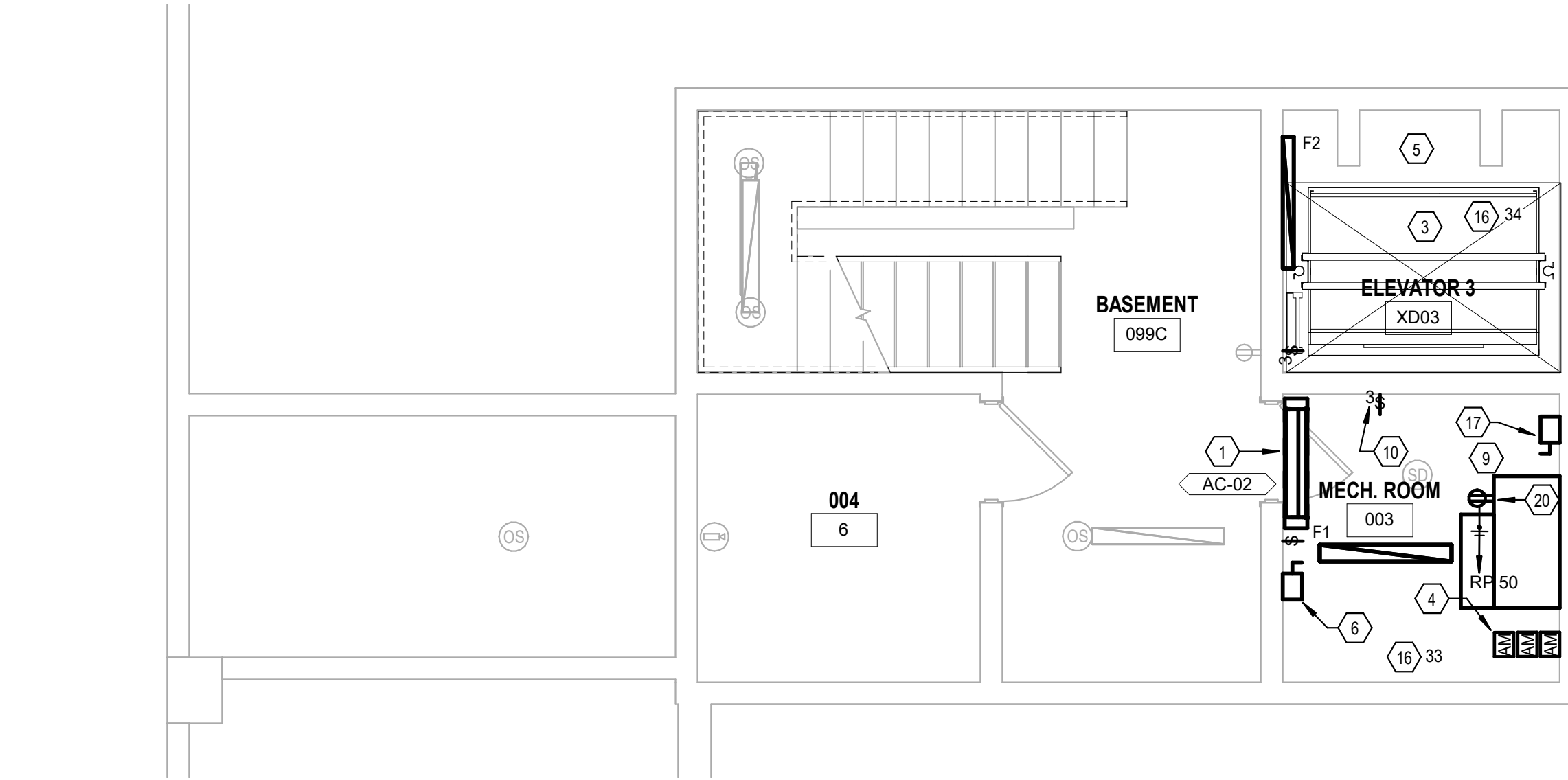
ELECTRICAL GENERAL NOTES

**E001**

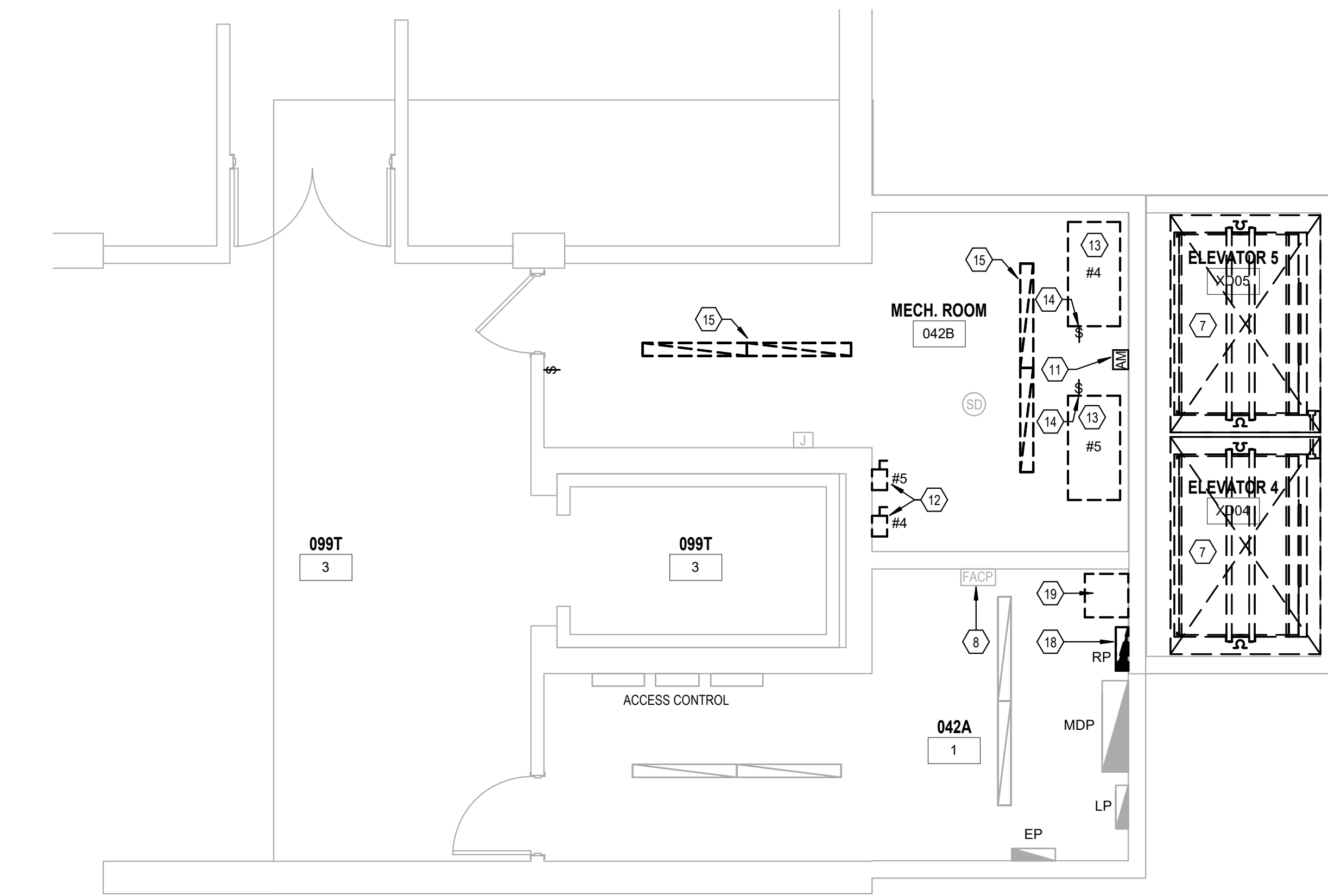
1 BASEMENT - XD01 & XD02 - ELECTRICAL DEMOLITION PLAN  
E100 SCALE: 1/4" = 1'-0"



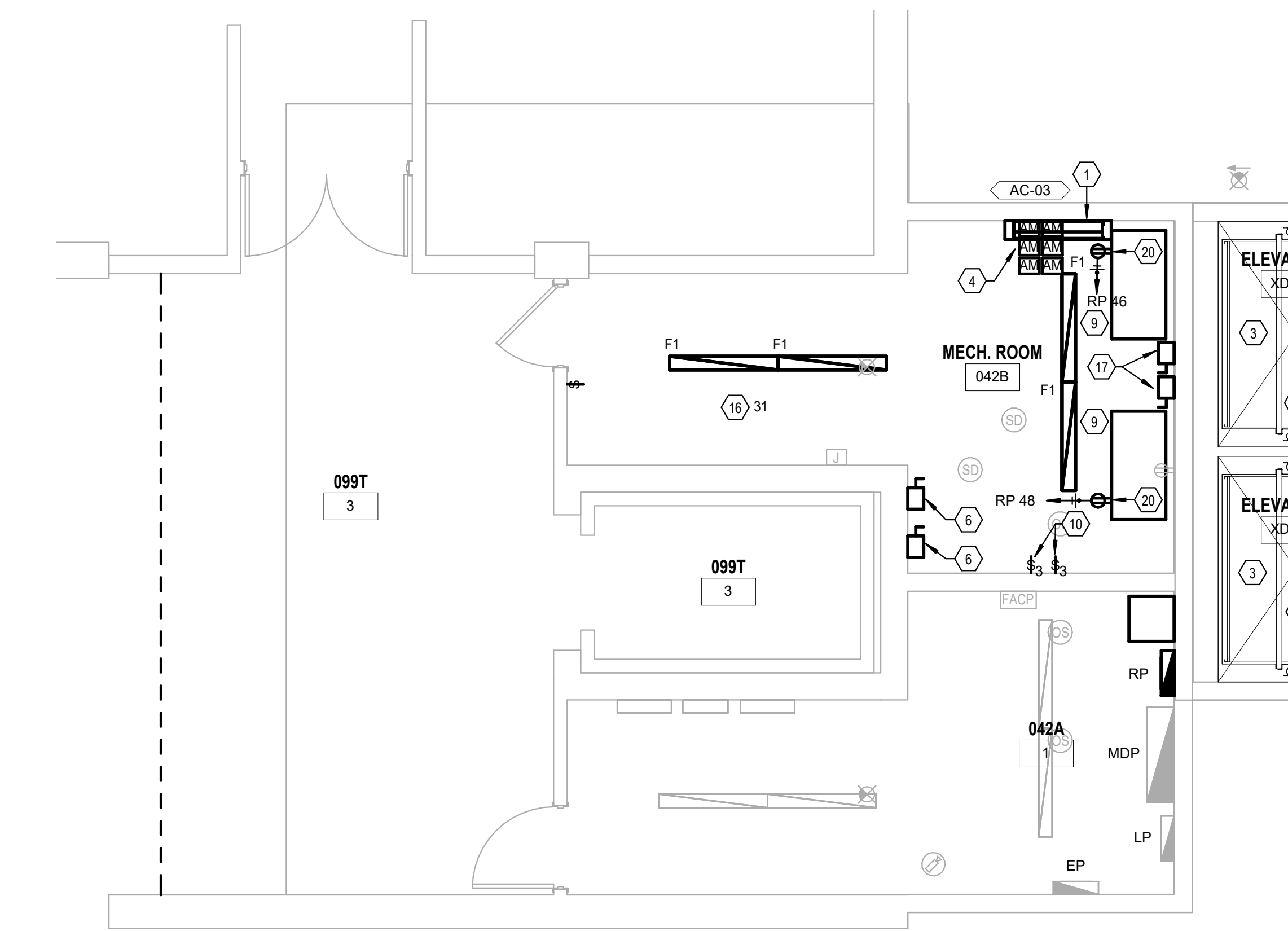
4 BASEMENT - XD01 & XD02 - ELECTRICAL PLAN  
E100 SCALE: 1/4" = 1'-0"



2 BASEMENT - XD03 - ELECTRICAL DEMOLITION PLAN  
E100 SCALE: 1/4" = 1'-0"



5 BASEMENT - XD03 - ELECTRICAL PLAN  
E100 SCALE: 1/4" = 1'-0"



3 BASEMENT - XD04 & XD05 - ELECTRICAL DEMOLITION PLAN  
E100 SCALE: 1/4" = 1'-0"



6 BASEMENT - XD04 & XD05 - ELECTRICAL PLAN  
E100 SCALE: 1/4" = 1'-0"



#	NOTE
1	INSTALL AC UNIT ABOVE DOOR AT APPROXIMATELY 7'-6" AFF. ROUTE PUMPED CONDENSATE TO NEAREST FLOOR DRAIN. ASSOCIATED ACCU UNIT ON ROOF ABOVE.
2	NEW ELEVATOR POWER UNIT AND CONTROLLER, PROVIDED BY ELEVATOR CONTRACTOR. ALL POWER WIRING FROM LOAD SIDE OF DISCONNECTS ARE PROVIDED BY ELEVATOR CONTRACTOR. AND SHALL BE IN IMC OR GRC CONDUIT.
3	COORDINATE RELOCATION OF EXISTING COMMUNICATIONS LINES FROM THE HOISTWAY TO NEAR THE NEW ELEVATOR CONTROLLER WITH THE ELEVATOR CONTRACTOR. ELECTRICAL CONTRACTOR TO PROVIDE ALL NECESSARY CABLING AND TERMINATIONS.
4	CONTROL MODULES SHALL BE LOCATED WITHIN 3' OF ELEVATOR MACHINE ELECTRICAL CONTRACTOR TO PROVIDE ALL FIRE ALARM WIRING AND VERIFY THAT EXISTING FA MODULES PROVIDE THE FOLLOWING FUNCTIONS TO THE ELEVATOR CONTROLLER. IF RELAYS DO NOT PROVIDE THESE FUNCTIONS, THE ELECTRICAL CONTRACTOR SHALL PROVIDE NEW MODULES AND ALL WIRING NECESSARY TO PROVIDE THESE FUNCTIONS. 1. PRIMARY RECALL. 2. ALTERNATE RECALL. 3. FIRE HAT (SMOKE DETECTED IN HOISTWAY OR MACHINE ROOM).
5	THE ELECTRICAL CONTRACTOR SHALL VERIFY EXISTING SMOKE DETECTORS IN EACH ELEVATOR LOBBY, HOISTWAY, AND ELEVATOR MACHINE ROOM ARE FULLY FUNCTIONAL AND PROVIDING PRIMARY AND ALTERNATE RECALL SIGNALS AS REQUIRED BY CODE. IF THESE FUNCTIONS ARE NOT WORKING OR PRESENT, THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY WIRING AND DEVICES TO PROVIDE CORRECT FUNCTIONING.
6	100A/3P/60V FUSED DISCONNECT FOR ELEVATOR. VERIFY THAT CODE REQUIRED CLEARANCES CAN BE MET WITH NEW ELEVATOR POWER UNIT SIZE AND LOCATION.
7	DISCONNECT AND REMOVE EXISTING LIGHTS AND ASSOCIATED SWITCHES WITHIN ELEVATOR HOISTWAY. REMOVE ASSOCIATED CONDUIT AND WIRING COMPLETE BACK TO SOURCE.
8	EXISTING SIEMENS FIRE ALARM CONTROL PANEL TO REMAIN.
9	ELEVATOR RECALL IS INITIATED BY ELEVATOR LOBBY SMOKE DETECTORS OR SMOKE DETECTORS IN THE ELEVATOR MACHINE ROOM. UPON DETECTION OF SMOKE BY ANY OF THESE DETECTORS, THE CONTROL MODULE FOR PRIMARY FLOOR RECALL SHALL SIGNAL THE ELEVATOR CONTROLLER TO RECALL THE ELEVATOR TO THE PRIMARY DISCHARGE FLOOR. UPON DETECTION OF SMOKE BY THE LOBBY DETECTOR ON THE PRIMARY FLOOR, THE CONTROL MODULE FOR SECONDARY FLOOR RECALL SHALL SIGNAL THE ELEVATOR CONTROLLER TO RECALL THE ELEVATOR TO THE SECONDARY DISCHARGE FLOOR.
10	PROVIDE 3-WAY TOGGLE SWITCH FOR ELEVATOR HOISTWAY LIGHTING, LABELED AS 'HOISTWAY 1'S' WITH PILOT LIGHT.
11	DISCONNECT AND REMOVE FIRE ALARM MODULES. RETAIN FIRE ALARM CIRCUIT.
12	DISCONNECT AND REMOVE FUSED DISCONNECT SWITCH AND ASSOCIATED CONDUIT AND FEEDER TO ELEVATOR MACHINE. RETAIN LOAD SIDE CONDUIT AND FEEDER.
13	DISCONNECT AND REMOVE CONDUIT POWER, LIGHTING, AND TELECOMMUNICATIONS CONNECTIONS FROM ELEVATOR MACHINE.
14	DISCONNECT AND REMOVE CAB LIGHT FUSED DISCONNECT SWITCH AND ASSOCIATED CONDUIT AND FEEDER TO ELEVATOR MACHINE. RETAIN LOAD SIDE CONDUIT AND FEEDER.
15	DISCONNECT AND REMOVE LIGHTING FIXTURES CIRCUITED TO PANEL LP. REMOVE WIRING BACK TO NEAREST EXISTING TO REMAIN LIGHTING FIXTURE.
16	PROVIDE POWER TO LIGHTS IN THIS AREA FROM PANEL RP-1 AND INDICATED CIRCUIT NUMBER.
17	NEW FUSED DISCONNECT SWITCH FOR ELEVATOR CAB LIGHTS. RECONNECT TO EXISTING CIRCUIT THAT FED REMOVED ELEVATOR CAB LIGHTS.
18	EXISTING PANEL TO BE REMOVED COMPLETE. EXISTING LOADS SHALL BE TRANSFERRED TO NEW PANEL "RP".
19	EXISTING TRANSFORMER TO BE REMOVED. REMOVE ASSOCIATED CONDUIT AND WIRING BACK TO SOURCE COMPLETE.
20	PROVIDE DEDICATED RECEPTACLE AND CIRCUIT FOR TANK HEATER.

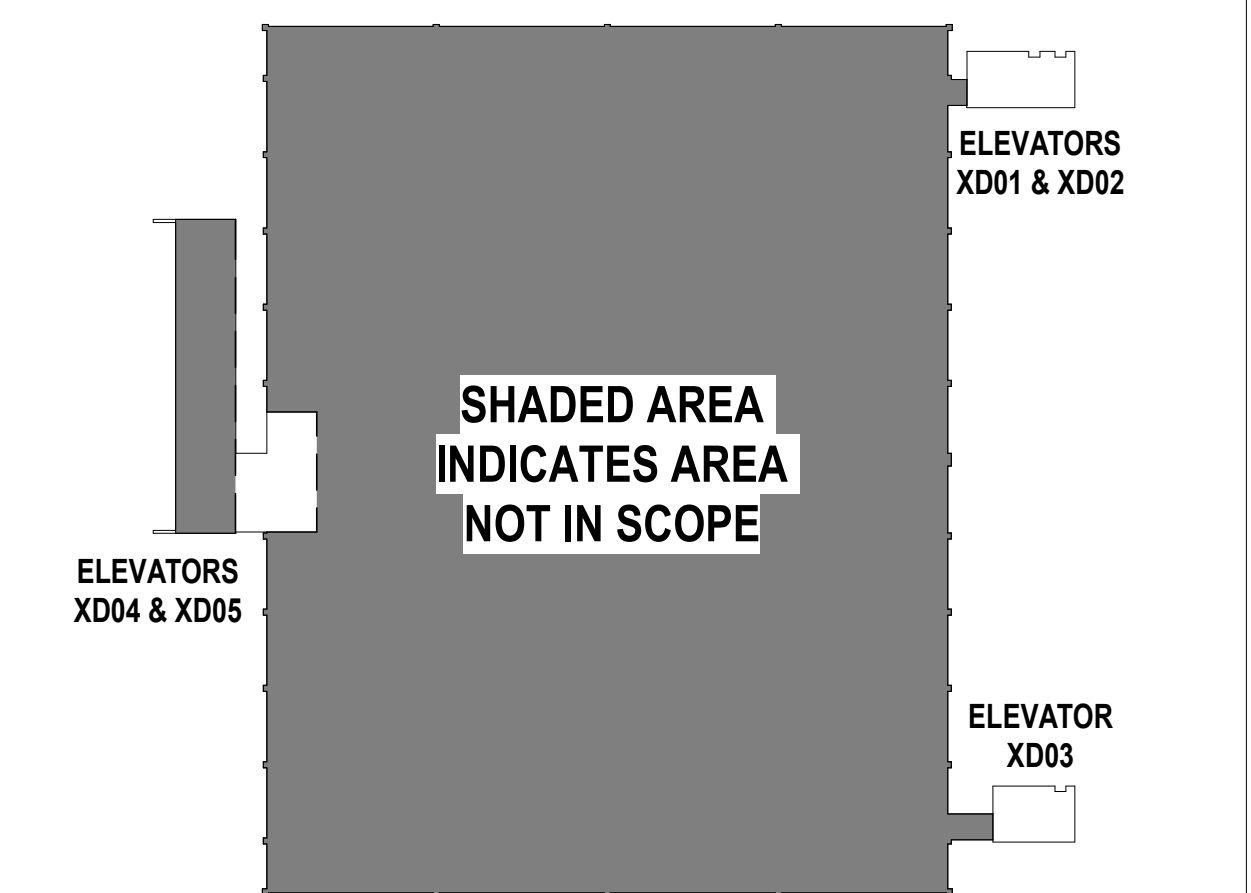
POWER DEMOLITION GENERAL NOTES	
A.	REFER TO SHEET E000 FOR ELECTRICAL SYMBOL LEGEND AND ABBREVIATIONS.
B.	ELECTRICAL ITEMS SHOWN LIGHT WITH A SOLID LINETYPE ARE EXISTING TO REMAIN UNLESS NOTED OTHERWISE.
C.	ELECTRICAL ITEMS SHOWN BOLD WITH A HIDDEN LINETYPE ARE TO BE REMOVED UNLESS NOTED OTHERWISE.
D.	EXISTING EQUIPMENT, SUCH AS LIGHT FIXTURES, WIRING DEVICES, CONDUITS, ETC. SHOWN ON PLANS TO BE REMOVED COMPLETELY CUT/CAF CONDUITS AT THE AREA OF WORK PERIMETER AND REMOVE CONDUIT WITHIN THE WORK AREA. DISCONNECT WIRING AT THE OVERCURRENT PROTECTIVE DEVICE AND REMOVE WIRING COMPLETELY FROM THE ABANDON CONDUITS.
E.	DISCONNECT ALL ABANDONED WIRING OF ALL TYPES AT THE OVERCURRENT PROTECTIVE DEVICE. COMPLETELY REMOVE ALL ABANDONED WIRING.
F.	MAINTAIN AND RESTORE, IF INTERRUPTED, ALL CONDUITS AND CONDUCTORS PASSING THROUGH RENOVATED AREAS AND SERVICING UNDISTURBED AREAS.
G.	CONTRACTOR TO NOTE THAT THE INTENT OF DEMOLITION IS TO REMOVE EXISTING ELEMENTS IN THEIR ENTIRETY TO ACCOMMODATE NEW CONSTRUCTION. ITEMS NOTED FOR DEMOLITION ARE FOR REFERENCE AND DO NOT REPRESENT EVERY ITEM TO BE DEMOLISHED. CONTRACTOR TO ENSURE ALL ITEMS LOCATED WITHIN SCOPE BOUNDARY NECESSARY FOR INSTALLATION OF NEW CONSTRUCTION ARE REMOVED AND DISPOSED OF.
H.	EQUIPMENT IN SCOPE AREA IS EXISTING TO BE REMOVED UNLESS NOTED OTHERWISE. IN ADDITION TO REMOVING DEVICES, REMOVE ASSOCIATED ELECTRICAL CIRCUITS AND EMPTY RACEWAYS BACK TO SOURCE. REFER TO THE SPECIFICATIONS FOR ELECTRICAL DEMOLITION REQUIREMENTS.
I.	INFORMATION SHOWN ON THE PLANS WAS GATHERED FROM FIELD OBSERVATION AND EXISTING DRAWINGS. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND IS RESPONSIBLE FOR ANY ADDITIONAL TRACING, REMOVING, RELOCATION AND EXTENDING CIRCUITS AND DEVICES NECESSARY TO MAINTAIN CONTINUITY OF EXISTING EQUIPMENT NOT IN THE AREA OF WORK. CONTRACTOR SHALL FIELD VERIFY EXACT DEMOLITION REQUIREMENTS AND INCLUDE ASSOCIATED COSTS, ABANDONED WIRING, CONDUITS, FITTING, BOXES, SUPPORTS, SHALL BE REMOVED FROM THE DEVICES BACK TO THE RESPECTIVE SOURCE PANEL. UPDATE PANEL DIRECTORIES. REFER TO THE SPECIFICATIONS FOR ADDITIONAL ELECTRICAL DEMOLITION REQUIREMENTS.
J.	DASHED WALLS INDICATE EXISTING WALLS BEING REMOVED. REFER TO ARCHITECTURAL DEMOLITION AND PHASING PLANS FOR THE EXACT EXTENT OF GENERAL CONSTRUCTION DEMOLITION REQUIRED.
K.	CONTRACTOR SHALL SUPPORT AND PROTECT ELECTRICAL INFRASTRUCTURE EXISTING TO REMAIN, INCLUDING BUT NOT LIMITED TO CONDUITS, WIRING, DEVICES, AND FIXTURES AS REQUIRED.
L.	CONTRACTOR SHALL COORDINATE REMOVAL AND REPLACEMENT OF ANY ELECTRICAL CEILING DEVICES (I.E. LIGHT FIXTURES, FIRE ALARM) OUTSIDE THE MAIN PROJECT AREA OF WORK TO ACCOMMODATE THE NEW CONSTRUCTION.
M.	CONTRACTOR SHALL REFER TO THE ARCHITECTURAL PLANS FOR LOCATIONS OF SMOKE PARTITIONS AND FIRE RATED WALLS, FLOORS, AND CEILINGS AND THEIR HOURLY RATINGS. CONTRACTOR SHALL PROVIDE FIRE STOPPING FOR CONDUITS AND OTHER PENETRATIONS COVERED UNDER DIVISION 26 IN THESE SURFACES. FIRESTOPPING SHALL MEET OR EXCEED THE RATING OF THE SURFACE BEING PENETRATED. REFER TO SPECIFICATION 07 84 00 FOR ADDITIONAL INFORMATION.

POWER GENERAL NOTES	
A.	REFER TO SHEET E000 FOR ELECTRICAL SYMBOL LEGENDS AND ABBREVIATIONS.
B.	REFER TO EP600 SERIES DRAWINGS FOR PANEL SCHEDULES.
C.	REFER TO SHEET EP400 FOR THE ELECTRICAL ONE-LINE DIAGRAM.
D.	REFER TO SHEET EP300 FOR ENLARGED ELECTRICAL AND DATA ROOM PLANS.
E.	ELECTRICAL ITEMS SHOWN LIGHT WITH A SOLID LINETYPE AND LABELED (E) ARE EXISTING TO REMAIN UNLESS NOTED OTHERWISE.
F.	ELECTRICAL ITEMS SHOWN BOLD WITH A SOLID LINETYPE ARE NEW UNLESS NOTED OTHERWISE.
G.	ELECTRICAL CONTRACTOR SHALL COORDINATE ANY REQUIRED ADDITIONAL WORK, MOUNTING LOCATIONS AND HEIGHTS OF DEVICES RELATED TO COMMUNICATION, AV, DOOR CONTROL, FIRE ALARM, SECURITY, ETC WITH THE ASSOCIATED CONTRACTOR'S CONSTRUCTION DOCUMENTS AND/OR APPROVED SHOP DRAWINGS.
H.	ALL DEVICES ARE TO BE MOUNTED PER ADA REQUIREMENTS.
I.	COORDINATE LOCATIONS AND MOUNTING HEIGHTS OF ALL DEVICES MOUNTED IN OR ABOVE CASEWORK AND MILLWORK WITH ARCHITECTURAL INTERIOR DETAILS AND ELEVATIONS.
J.	ELECTRICAL CONTRACTOR SHALL VERIFY PRE-WIRED SYSTEMS FURNITURE WIRING CONFIGURATION. IF SEPARATE NEUTRALS ARE UTILIZED FOR EACH CIRCUIT THEN 20A/1-POLE CIRCUIT BREAKERS SHALL BE USED TO FEED EACH CIRCUIT. IF A SHARED NEUTRAL IS USED, PROVIDE AN APPROPRIATE MULTI-POLE CIRCUIT BREAKER FOR THE FURNITURE FEED PER N.E.C. 210.4.
K.	PANELBOARDS ARE ABBREVIATED FOR CIRCUITING PURPOSES. REFER TO PANELBOARD ABBREVIATION LIST.
L.	VERIFY RECEPTACLE OR JUNCTION BOX MOUNTING HEIGHT AND CONNECTION TYPE WITH APPROVED EQUIPMENT VENDOR SHOP DRAWINGS PRIOR TO ROUGH-IN.
M.	ALL RECEPTACLES WITHIN 6 FEET OF A SINK MUST BE GFCI PROTECTED.
N.	ALL JUNCTION AND PULL BOXES SHALL BE SIZED PER NEC ARTICLE 314.16 AND 314.28.
O.	PROVIDE TAMPER-RESISTANT RECEPTACLES IN WAITING ROOMS, LOUNGES AND LOBBY AREA.

3 BASEMENT - XD04 & XD05 - ELECTRICAL DEMOLITION PLAN  
E100 SCALE: 1/4" = 1'-0"



6 BASEMENT - XD04 & XD05 - ELECTRICAL PLAN  
E100 SCALE: 1/4" = 1'-0"



REVISIONS	DATE	REMARKS

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**GUIDON**  
SUSTAINABLE ARCHITECTURE + ENGINEERING  
1221 N PENNSYLVANIA ST. INDIANAPOLIS, IN 46202  
317.600.6388 WWW.GUIDONDESIGN.COM

DESIGN ARCHITECT/ENGINEER

LIKE J. LEISNER  
REGISTERED  
No. PE108095371  
1977-04  
Professional Engineer

ENGINEERS/ARCHITECTS SEAL

INDIANA UNIVERSITY INDIANAPOLIS  
SPORTS COMPLEX ELEVATOR ALTERATIONS  
498 BLAKE ST. INDIANAPOLIS, IN 46202  
100% CONSTRUCTION DOCUMENTS

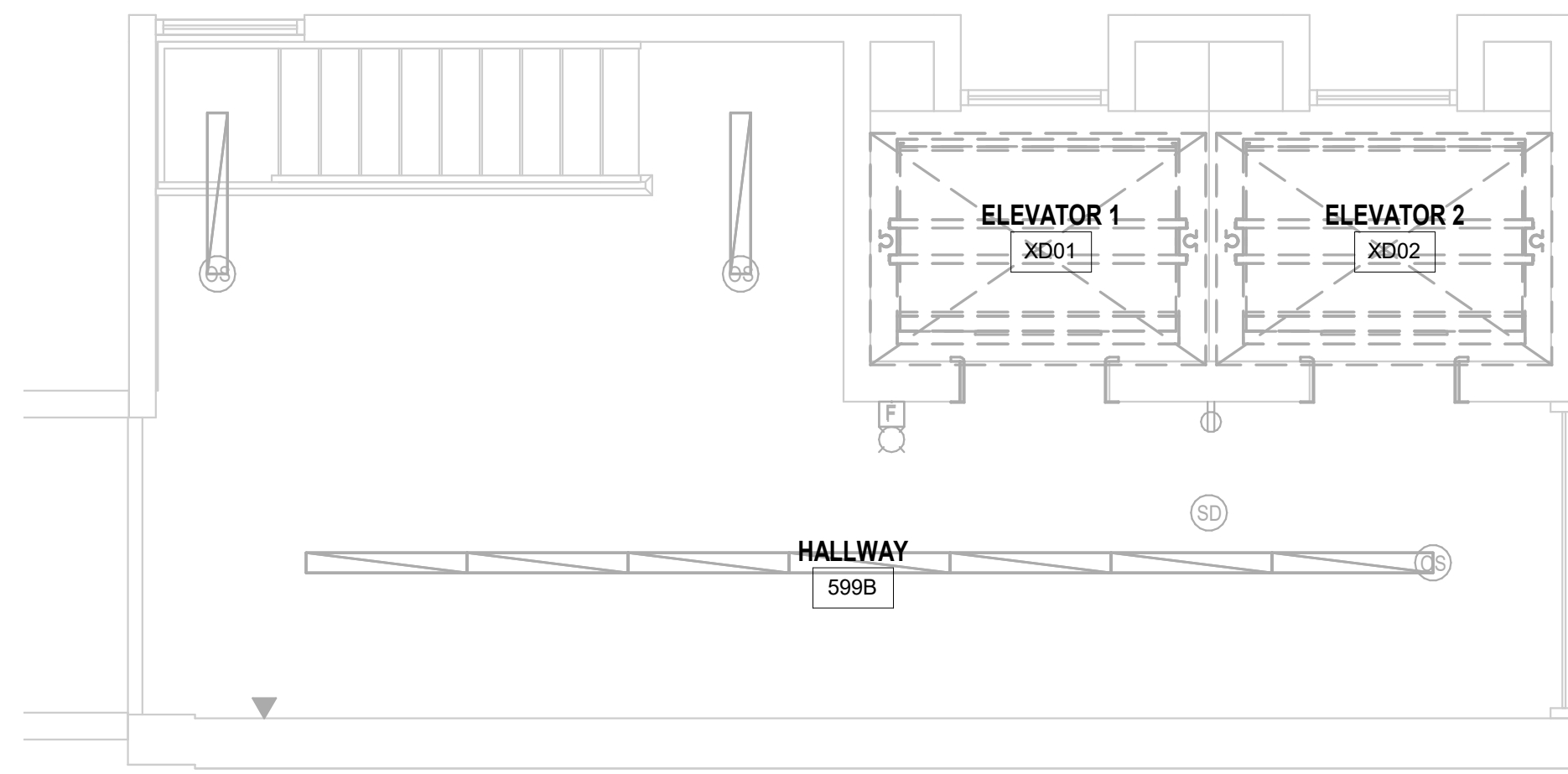
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DESIGNED: EAE	DRAWN: EAE
APPROVED: EAE	CHECKED: EAE
CLIENT PROJECT NUMBER	N/A
PROJECT NUMBER	23 1015
DATE	12/17/2024

BASEMENT ELECTRICAL PLANS  
**E100**

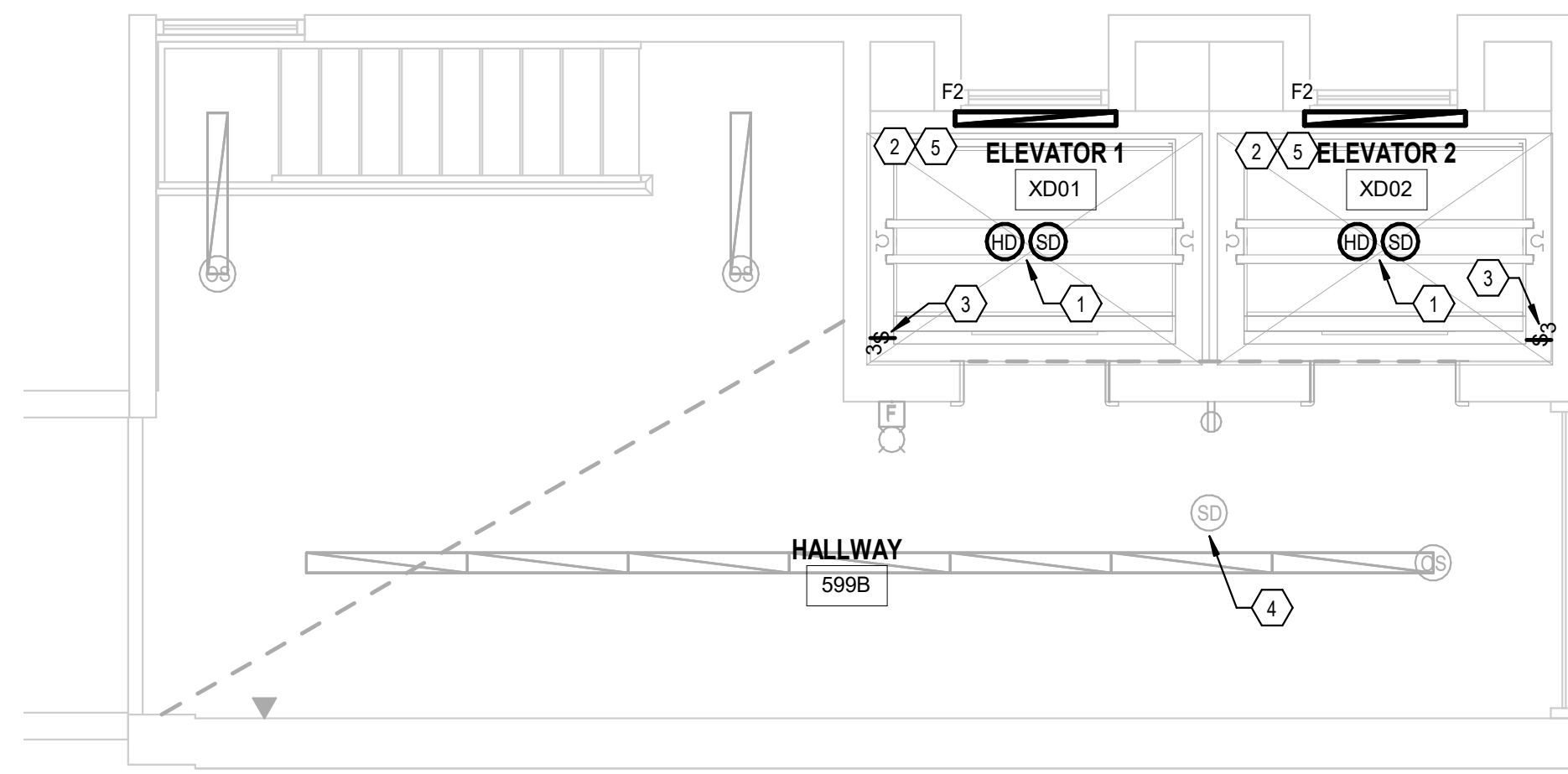




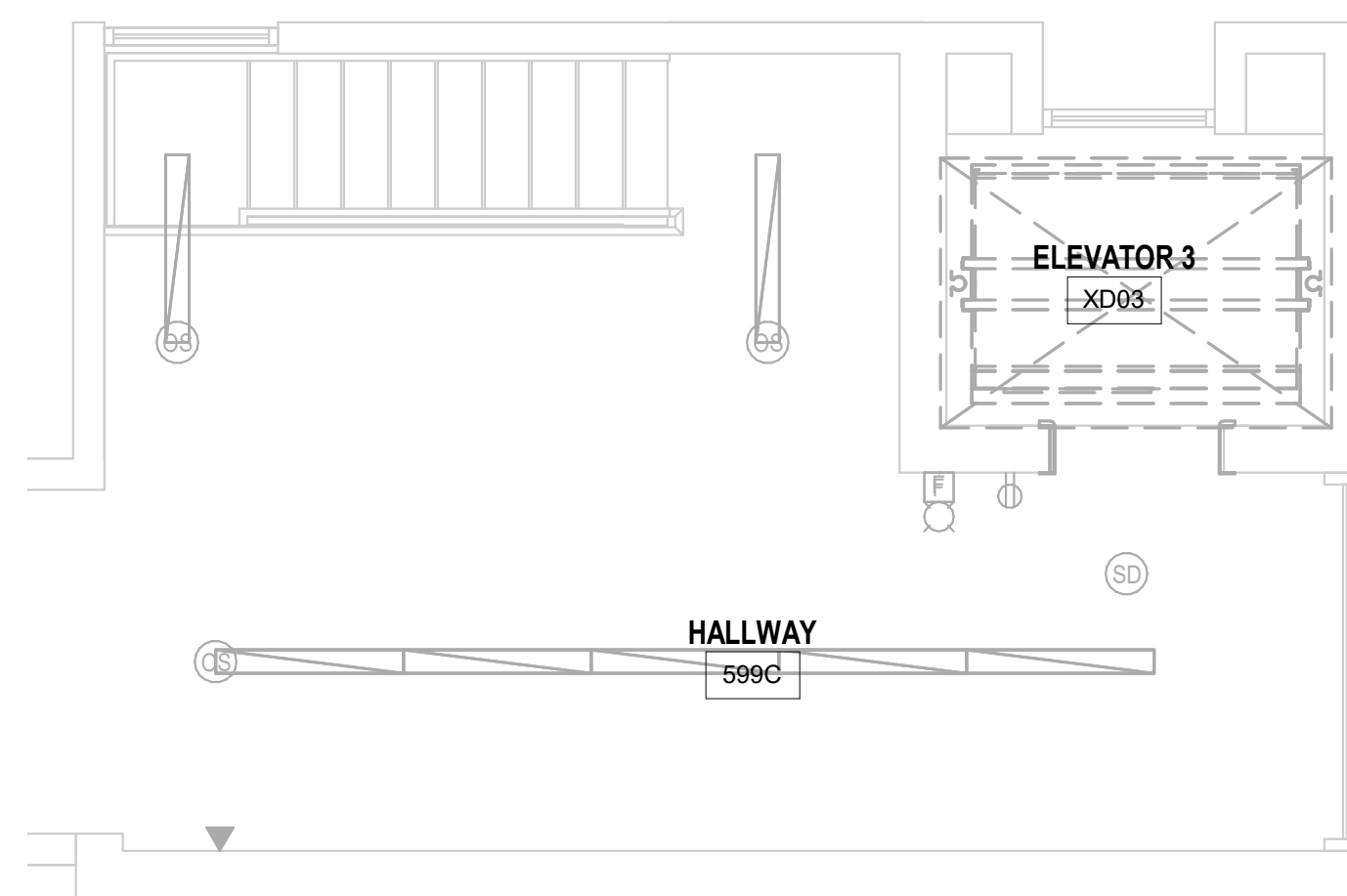




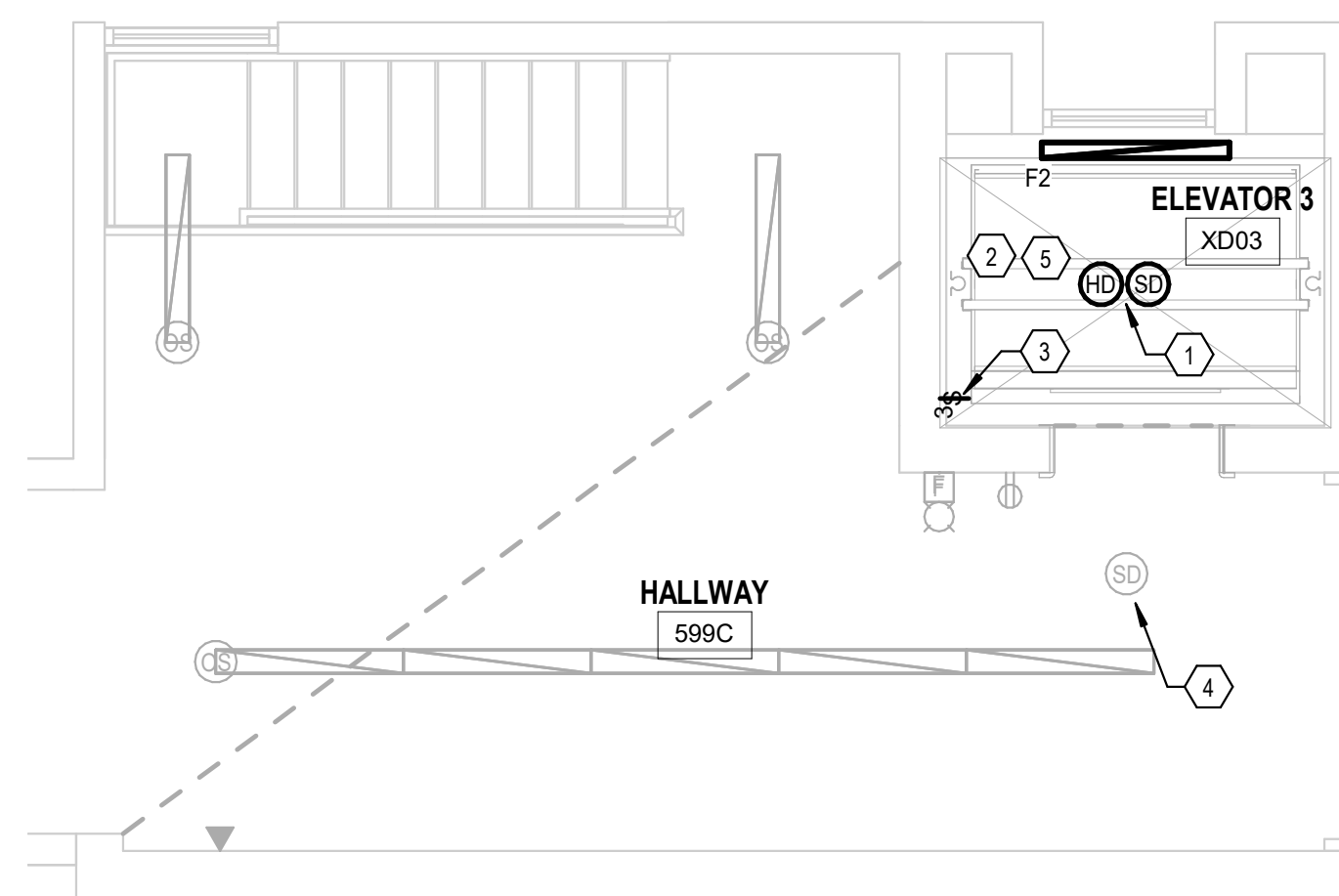
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E105 / SCALE: 1/4" = 1'-0"



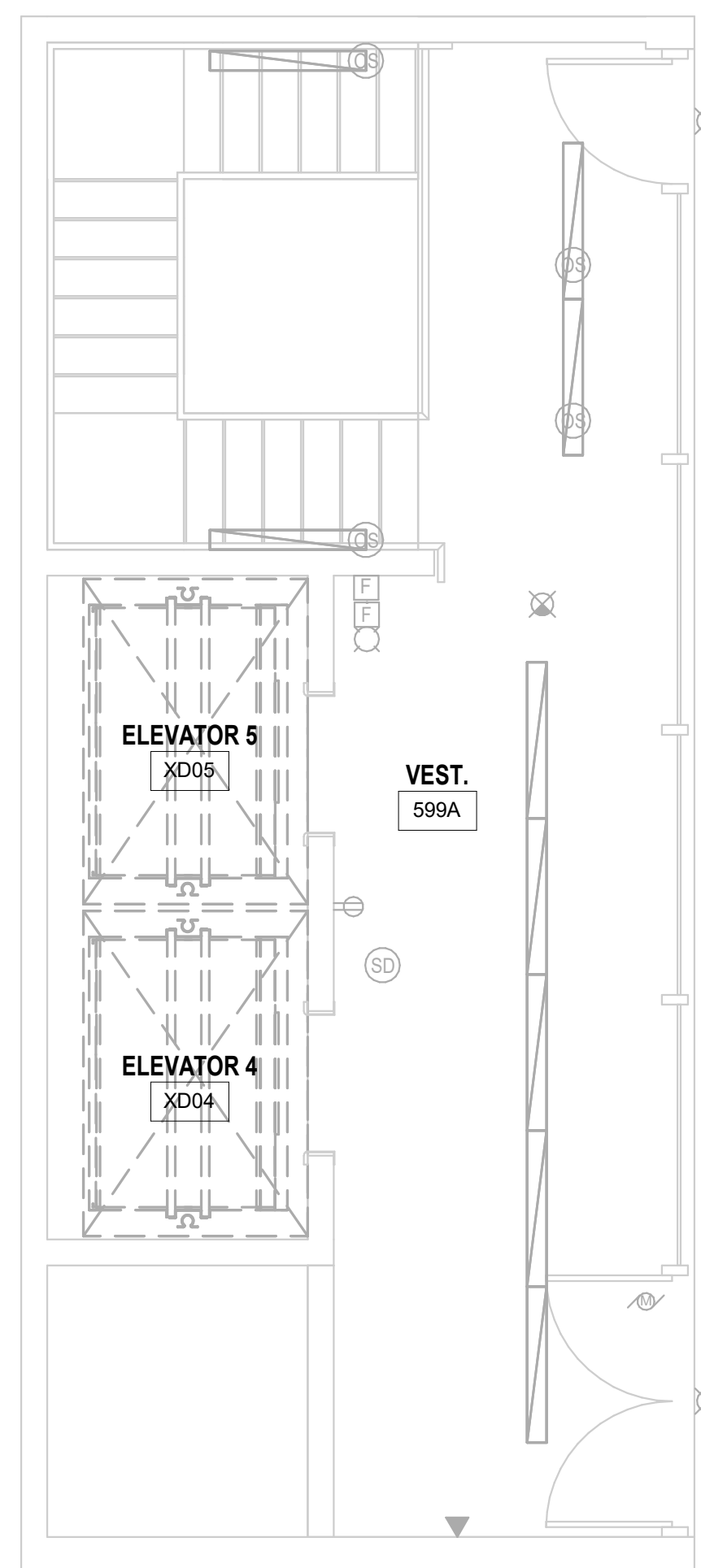
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E105 / SCALE: 1/4" = 1'-0"



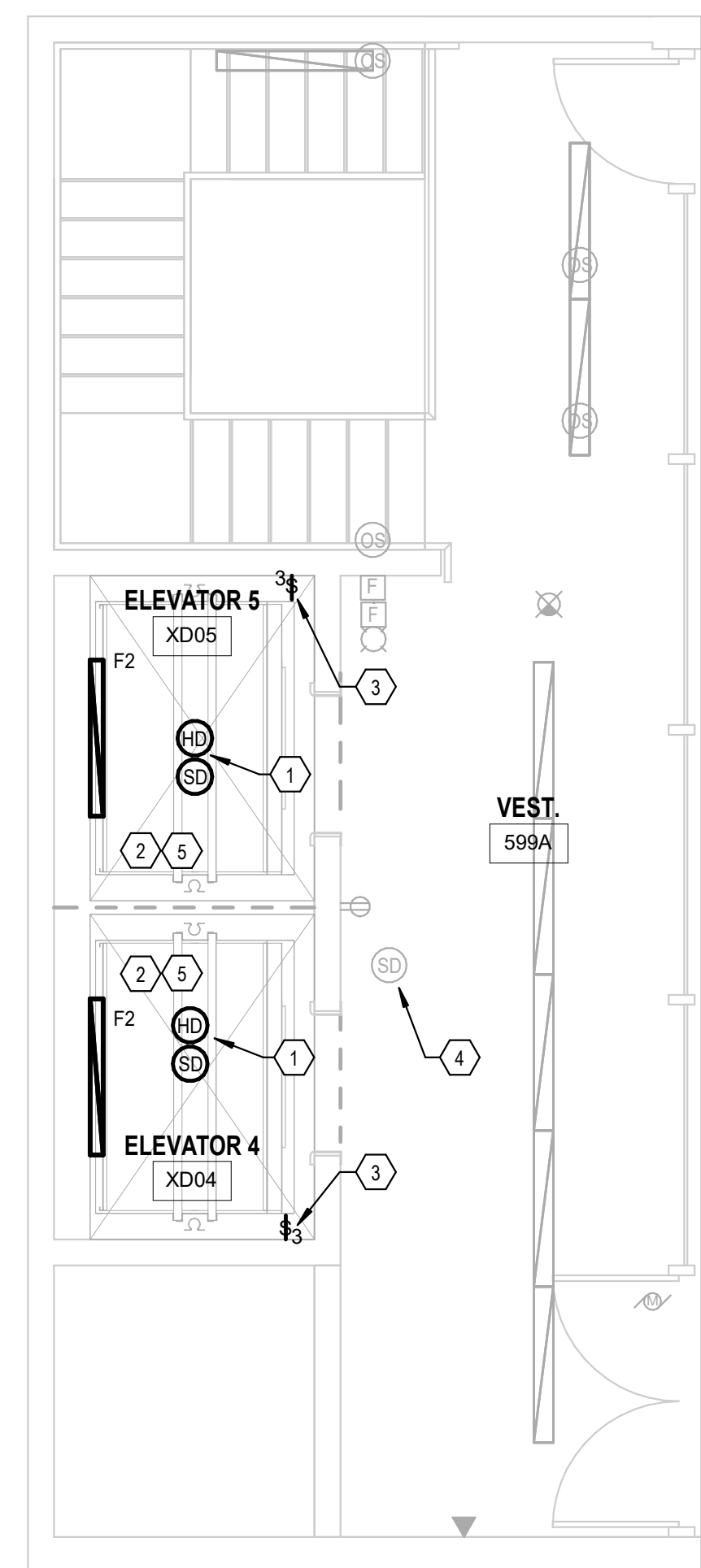
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E105 / SCALE: 1/4" = 1'-0"



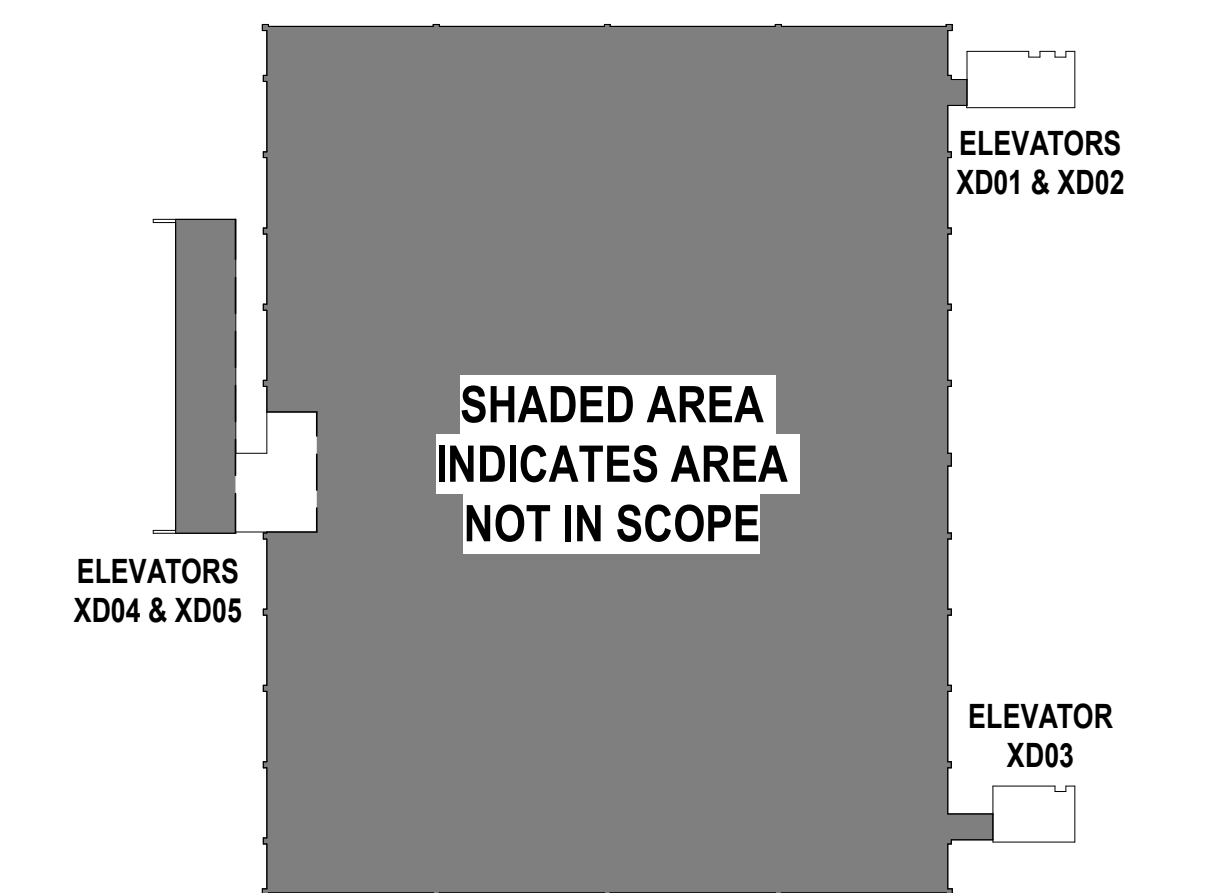
5 FIFTH FLOOR - XD03 - ELECTRICAL PLAN  
E105 / SCALE: 1/4" = 1'-0"



3 FIFTH FLOOR - XD04 & XD05 - ELECTRICAL DEMOLITION PLAN  
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6 FIFTH FLOOR - XD04 & XD05 - ELECTRICAL PLAN  
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PLAN NOTES	
#	NOTE
1	REPLACE EXISTING SMOKE DETECTOR WITH COMBINATION PHOTOELECTRIC SMOKE DETECTOR / HEAT DETECTOR
2	ELECTRICAL CONTRACTOR TO VERIFY EXISTING HOISTWAY VENTING FA CONTROL, MODULES, RELAY BASES, OR OTHER CONTROL DEVICES AND POWER ARE PRESENT AND FUNCTIONING PROPERLY TO OPEN VENT WHEN REQUIRED.
3	PROVIDE 3-WAY AND 4-WAY SWITCHES AS REQUIRED TO CONTROL HOISTWAY LIGHTING FROM PIT, TOP OF HOISTWAY, AND ELEVATOR MACHINE ROOM.
4	THE ELECTRICAL CONTRACTOR SHALL VERIFY EXISTING SMOKE DETECTORS IN EACH ELEVATOR LOBBY, HOISTWAY, AND ELEVATOR MACHINE ROOM ARE FULLY FUNCTIONAL AND PROVIDING PRIMARY AND ALTERNATE RECALL SIGNALS AS REQUIRED BY CODE. IF THESE FUNCTIONS ARE NOT WORKING OR PRESENT, THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY WIRING AND DEVICES TO PROVIDE CORRECT FUNCTIONING.
5	ELECTRICAL CONTRACTOR TO VERIFY EXISTING HOISTWAY VENTING FA CONTROL, MODULES, RELAY BASES, OR OTHER CONTROL DEVICES AND POWER ARE PRESENT AND FUNCTIONING PROPERLY TO OPEN VENT WHEN REQUIRED.

POWER DEMOLITION GENERAL NOTES	
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B.	ELECTRICAL ITEMS SHOWN LIGHT WITH A SOLID LINETYPE ARE EXISTING TO REMAIN UNLESS NOTED OTHERWISE.
C.	ELECTRICAL ITEMS SHOWN BOLD WITH A HIDDEN LINETYPE ARE TO BE REMOVED UNLESS NOTED OTHERWISE.
D.	EXISTING EQUIPMENT, SUCH AS LIGHT FIXTURES, WIRING DEVICES, CONDUITS, ETC. SHOWN ON PLANS TO BE REMOVED, COMPLETELY CUT/CAP CONDUITS AT THE AREA OF WORK PERIMETER AND REMOVE CONDUIT WITHIN THE WORK AREA. DISCONNECT WIRING AT THE OVERCURRENT PROTECTIVE DEVICE AND REMOVE WIRING COMPLETELY FROM THE ABANDONED CONDUITS.
E.	DISCONNECT ALL ABANDONED WIRING OF ALL TYPES AT THE OVERCURRENT PROTECTIVE DEVICE. COMPLETELY REMOVE ALL ABANDONED WIRING.
F.	MAINTAIN AND RESTORE, IF INTERRUPTED, ALL CONDUITS AND CONDUCTORS PASSING THROUGH RENOVATED AREAS AND SERVICING UNDISTURBED AREAS.
G.	CONTRACTOR TO NOTE THAT THE INTENT OF DEMOLITION IS TO REMOVE EXISTING ELEMENTS IN THEIR ENTIRETY TO ACCOMMODATE NEW CONSTRUCTION. ITEMS NOTED FOR DEMOLITION ARE FOR REFERENCE AND DO NOT REPRESENT EVERY ITEM TO BE DEMOLISHED. CONTRACTOR TO ENSURE ALL ITEMS LOCATED WITHIN SCOPE BOUNDARY NECESSARY FOR INSTALLATION OF NEW CONSTRUCTION ARE REMOVED AND DISPOSED OF.
H.	EQUIPMENT IN SCOPE AREA IS EXISTING TO BE REMOVED UNLESS NOTED OTHERWISE. IN ADDITION TO REMOVING DEVICES, REMOVE ASSOCIATED ELECTRICAL CIRCUITS AND EMPTY RACEWAYS BACK TO SOURCE. REFER TO THE SPECIFICATIONS FOR ELECTRICAL DEMOLITION REQUIREMENTS.
I.	INFORMATION SHOWN ON THE PLANS WAS GATHERED FROM FIELD OBSERVATION AND EXISTING DRAWINGS. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND IS RESPONSIBLE FOR ANY ADDITIONAL TRACING, REMOVING, RELOCATION AND EXTENDING CIRCUITS AND DEVICES NECESSARY TO MAINTAIN CONTINUITY OF EXISTING EQUIPMENT NOT IN THE AREA OF WORK. CONTRACTOR SHALL FIELD VERIFY EXACT DEMOLITION REQUIREMENTS AND INCLUDE ASSOCIATED COSTS, ABANDONED WIRING, CONDUITS, FITTING, BOXES, SUPPORTS, SHALL BE REMOVED FROM THE DEVICES BACK TO THE RESPECTIVE SOURCE PANEL. UPDATE PANEL DIRECTORIES. REFER TO THE SPECIFICATIONS FOR ADDITIONAL ELECTRICAL DEMOLITION REQUIREMENTS.
J.	DASHED WALLS INDICATE EXISTING WALLS BEING REMOVED. REFER TO ARCHITECTURAL DEMOLITION AND PHASING PLANS FOR THE EXACT EXTENT OF GENERAL CONSTRUCTION DEMOLITION REQUIRED.
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1221 IN PENNSYLVANIA ST. INDIANAPOLIS, IN 46202  
317.600.6388 WWW.GUIDONDESIGN.COM

DESIGN ARCHITECT/ENGINEER

LUKE J. LEISONS  
REGISTERED  
No. PE108095371  
Professional Engineer

ENGINEER/ARCHITECTS SEAL

INDIANA UNIVERSITY INDIANAPOLIS  
SPORTS COMPLEX ELEVATOR ALTERATIONS  
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PROJECT NUMBER	
23 1015	
DATE	
12/17/2024	

FIFTH FLOOR ELECTRICAL PLANS  
**E105**



