

ADDENDUM NO. 1

DETENTION ANNEX RENOVATION

WAKE COUNTY
RALEIGH, NORTH CAROLINA

Architect's Project Number: 642088

Prepared by

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DATE OF ISSUE – OCTOBER 28, 2025

**DETENTION ANNEX RENOVATION
WAKE COUNTY, NC**

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GENERAL:

Planholders are requested to insert this Addendum in the front of their Project Manual. Inform all concerned that the Bidding Documents are modified by this Addendum.

The following modifications and clarifications are hereby made a part of the Bidding Documents and supersede or otherwise modify the provisions of the published *Project Manual* and *Drawings*, dated October 13, 2025.

Refer to the Drawings, Specification Sections, or other Documents, if any, attached to this Addendum, which are hereby made a part of this Addendum.

MODIFICATIONS TO THE PROJECT MANUAL:

- SECTION 000001 – TABLE OF CONTENTS
REPLACE this entire section

- SECTION 000009 – SUPPLEMENTAL GENERAL CONDITIONS
REPLACE this entire section

- SECTION 012100 – ALLOWANCES
REPLACE this entire section

- SECTION 014520 – TESTING, ADJUSTING, AND BALANCING FOR HVAC
REPLACE this entire section

- SECTION 064100 – ARCHITECTURAL WOODWORK AND CASEWORK
REPLACE this entire section

- SECTION 285000 – SECURITY CONTROL SYSTEM
DELETE this entire section

- SECTION 285010 – PLC, NETWORK, AND UPS SYSTEMS
DELETE this entire section

- SECTION 285020 – VIDEO GRAPHICAL USER INTERFACE
DELETE this entire section

- SECTION 285030 – CABINETS AND ENCLOSURES
DELETE this entire section

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SECTION 285100 – AUDIO COMMUNICATION SYSTEMS

DELETE this entire section

SECTION 285200 – VIDEO SURVEILLANCE

DELETE this entire section

SECTION 285260 – VIDEO MANAGEMENT SYSTEM

DELETE this entire section

SECTION 285300 – ACCESS CONTROL

DELETE this entire section

SECTION 285400 – DURESS – MISC. SYSTEMS

DELETE this entire section

SECTION 285500 – AUXILIARY CONTROL SYSTEMS

DELETE this entire section

SECTION 285900 – SECURITY MANAGEMENT SERVER

DELETE this entire section

MODIFICATIONS TO THE DRAWINGS:

SHEET G0.1

REPLACE with attached

SHEET A7.1.1

REPLACE with attached

SHEET A8.1

REPLACE with attached

SHEET E0.1

REPLACE with attached

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73 SHEET E2.1.1
74 REPLACE with attached
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76 SHEET E2.4
77 REPLACE with attached
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79 SHEET E2.6.1
80 ADD sheet attached
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82 SHEET E2.6.2
83 ADD sheet attached
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85 SHEET E2.6.3
86 ADD sheet attached
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88 SHEET E4.1
89 REPLACE with attached

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92 **ATTACHMENTS:**

93 SPECIFICATIONS:

94 000009
95 012100
96 014520
97 064100

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99 DRAWINGS:

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101 A7.1.1
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END OF ADDENDUM NO. 01

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- Wake County Instructions to Bidders
- Wake County Notice of Electronic Contracting Processes for Construction Agreements
- Wake County Bid Proposal Form
- Wake County Bid Bond
- Wake County Minority and Women Business Enterprise Resolutions for Construction Contracts
- Wake County Form MBE-1 – Identification of Minority Business Participation
- Wake County Construction Agreement Form
- Wake County Payment and Performance Bond Forms
- Wake County General Conditions of the Contract
- Wake County Supplemental General Conditions
- Wake County Appendix A – Dispute Resolution and Mediator List
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**COUNTY OF WAKE
DETENTION ANNEX RENOVATION**

TYPICAL SUPPLEMENTARY GENERAL CONDITIONS (*AD-01)

GENERAL

These Supplementary Conditions contain changes and additions to the project "GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION", as published herein. Where any Article of the General Conditions is modified or any Paragraph, Subparagraph or Clause thereof is modified or deleted by these Supplementary Conditions, the unaltered provisions of the Article, Paragraph, Subparagraph or Clause shall remain in effect.

ARTICLE 1 - DEFINITIONS

Paragraph 1.13: At the end of the existing paragraph, add the following:

The Contract Time is ~~490 calendar days~~ 304 calendar days, beginning on the Date of Commencement as specified in the written Notice-to-Proceed. (*AD-01)

Paragraph 1.18: Delete the last sentence in its entirety and substitute the following in lieu thereof:

“A list of the Drawings is contained in the “Supplementary General Conditions.”

The Drawings applicable to this Contract are as follows:

GENERAL

- G0.1 COVER
- G1.1 SECURE AREA & SECURITY WALLS FLOOR PLAN
- G2.1 GENERAL INFORMATION - AIR BARRIER

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ARTICLE 3. FAMILIARITY WITH WORK, CONDITIONS AND LAWS

Paragraph 3.3: At the end of the existing paragraph, add the following paragraph:

“To ensure compliance with the E-Verify requirements of the General Statutes of North Carolina, all contractors, including any subcontractors employed by the contractor(s), by submitting a bid, proposal or any other response, or by providing any material, equipment, supplies, services, etc., attest and affirm that they are aware and in full compliance with Article 2 of Chapter 64, (NCGS64-26(a)) relating to the E-Verify requirements.”

“By signing this agreement; accepting this contract/purchase order; or submitting any bid, proposal, etc., vendors and contractors certify that as of the date of execution, receipt, or submission they are not listed on the Final Divestment List created by the NC Office of State Treasurer pursuant to NCGS 147 Article 6E, Iran Divestment Act, Iran Divestment Act Certification. Vendors and contractors shall not utilize any subcontractor that is identified on the Final Divestment List.”

“Any organization defined under NCGS 147-86.80(2), Divestment from Companies Boycotting Israel, shall not engage in business totaling more than \$1,000 with any company/business, etc. that boycotts Israel. A list of companies that boycott Israel is maintained by the NC Office of State Treasurer, pursuant to NCGS 147-86.81(a)(1). Any company listed as boycotting Israel is not eligible to do business with any State agency or political subdivision of the State.”

“If the source of funds for this contract is federal funds, the following federal provisions apply pursuant to 2 C.F.R. § 200.326 and 2 C.F.R. Part 200, Appendix II (as applicable): Equal Employment Opportunity (41 C.F.R. Part 60); Davis-Bacon Act (40 U.S.C. 3141-3148); Copeland “Anti-Kickback” Act (40 U.S.C. 3145); Contract Work Hours and Safety Standards Act (40 U.S.C. 3701- 3708); Clean Air Act (42 U.S.C. 7401-7671q.) and the Federal Water Pollution Control Act (33 U.S.C. 1251-1387); Debarment and Suspension (Executive Orders 12549 and 12689); Byrd Anti-Lobbying Amendment (31 U.S.C. 1352); Procurement of Recovered Materials (2 C.F.R. § 200.322); and Record Retention Requirements (2 CFR § 200.324).”

“In consideration of signing this Agreement, the Parties hereby agree not to discriminate in any manner on the basis of race, natural hair or hairstyles, ethnicity, creed, color, sex, pregnancy, marital or familial status, sexual orientation, gender identity or expression, national origin or ancestry, marital or familial status, pregnancy, National Guard or veteran status, religious belief or non-belief, age, or disability with reference to the subject matter of this Contract. The Parties agree to comply with the provisions and intent of Wake County Ordinance SL 2017-4.

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This anti-discrimination provision shall be binding on the successors and assigns of the Parties with reference to the subject matter of this Contract.”

Add the following paragraph:

- “3.5 A Pre-Bid Conference will be held at 2 PM local prevailing time on November 5, 2025, at the Wake County Detention Center Annex, located at 3400 Hammond Road. All prime bidder Contractors are to be present. Purpose of conference is for prospective Bidders to familiarize themselves with the site and to ask questions pertaining to the Contract Documents. Bidders are reminded that no oral interpretations of meaning of Drawings and Specifications can be made. Conflicts in documents, if any, will be resolved by written addendum. (Reference “Instructions to Bidders, Paragraph 5 (for formal).”) **All Contractors shall be advised that there is currently construction activity at the site for a separate contract. All Contractors shall bring appropriate construction site PPE (hard hat, gloves, eye protection, sturdy closed toe shoes, and high visibility vest/clothing at minimum) and shall be required to wear PPE during the pre-bid walkthrough.**

ARTICLE 5. INSURANCE AND INDEMNITY

Paragraph 5.1.2: In addition to all other endorsements required by the General Conditions, if the Contractor is required to transport, dispose of or otherwise handle hazardous or toxic waste, material, chemicals, compounds or substances, the policy of insurance shall be further endorsed to include the following:

Insurance Service Office (ISO) Form #CA 00 01 06 92 or its equivalent, amending exclusion 11 in the following manner:

- i. Delete section a. (1) a.: (Pollution) "being transported or towed by, or handled for movement into, onto or from, the covered auto."
- ii. Delete section a. (1) b.: "Otherwise in the course of transit by the insured."

The Contractor and transporter must comply with all applicable DOT and EPA requirements.

Paragraph 5.1.4: Add the following Paragraph [as necessary if the Contractor or its Subcontractor is required to consolidate, transfer, transport, dispose of, store or otherwise handle hazardous or toxic waste, material, chemicals, compounds or substances at any location]:

“Pollution Legal Liability (PLL)”

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A PLL policy must be provided for the Project. Coverage must be sudden and non-sudden, and include:

- a) Bodily injury, sickness, disease, mental anguish, or shock sustained by any person, including death;
- b) property damage including physical injury to or destruction of tangible property including the resulting loss of use thereof, cleanup costs, and the loss of use of tangible property that has not been physically injured or destroyed; and
- c) Defense including costs, charges, and expenses incurred in the investigation, adjustment, or defense of claims for such compensatory damages.

The Owner must be named as Additional Insured, and a Non-Owned Disposal Site Endorsement must be provided, scheduling the appropriate landfill.

Minimum PLL limits of coverage shall be:

Per Loss	\$1,000,000
All Losses	\$2,000,000

ARTICLE 6. OTHER RECORD DOCUMENTS AND SUBMITTALS

Paragraph 6.1: At the end of the existing paragraph, add the following:

“The Contract Documents shall be furnished to the General Contractor electronically in PDF format.”

ARTICLE 7. CONTRACTOR

Paragraph 7.2: Use this paragraph in lieu of the existing paragraph:

“The Contractor shall keep on the Project at all times during its progress a competent Project Manager and a competent Resident Superintendent and necessary assistants who shall not be replaced without prior written approval by the Architect except under extraordinary circumstances, in which event immediate written notice shall be given to the Architect and the Owner. The Project Manager and Resident Superintendent shall each have a minimum of ten (10) years experience on projects of similar scope and complexity with job responsibilities equivalent to those required on this Project. At any time, the Owner, in its sole discretion, may require the Contractor to replace the Project Manager and Resident Superintendent or both with an experienced and competent person or persons upon seven (7) days written notice

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from the Owner to the Contractor. Such replacement shall be at the Contractor's expense and at no cost to the Owner. The Project Manager shall be the Contractor's representative at the Project and shall have full authority to act on behalf of the Contractor and to receive any and all notices or instructions given pursuant to the Contract Documents."

Paragraph 7.13: Amend with the addition of the following paragraph:

"The General Contractor shall secure and pay for all building permits, including plumbing, electrical, HVAC and for the permit from the office of the Fire Marshall. The Cost for the Express Permit Review, if necessary, will be paid by others and is not the responsibility of the Contractor."

ARTICLE 10. DESIGNER

Add the following paragraphs:

- "10.5 As a part of its Basic Services under the Owner-Designer Agreement, the Designer will conduct a single site visit to determine Substantial Completion of the Work. If, after the performance of said site visit, the Designer determines that the Work is not substantially complete, successive site visits to determine Substantial Completion will be deemed Additional Services under the Owner-Designer Agreement. The Contractor shall be liable to the Owner for any Designer's fees incurred as a result of any such Additional Services of the Designer. Any funds due under this paragraph may be deducted by the Owner from the amounts due the Contractor for such additional Designer's fees and paid directly to the Designer. Should the cost for such Additional Services of the Designer exceed the amount due or to become due to the Contractor, then the Contractor and his sureties shall be liable for and shall pay to the Owner the amount of any such excess.
- "10.6 As a part of its Basic Services under the Owner-Designer Agreement, the Designer will conduct a single site visit to determine Final Completion of the Work. If, after the performance of said site visit, the Designer determines that the Work is not complete, successive site visits to determine Final Completion of the Work will be deemed Additional Services under the Owner-Designer Agreement. The Contractor shall be liable to the Owner for any Designer's fees incurred as a result of any such Additional Services of the Designer. Any funds due under this paragraph may be deducted by the Owner from the amounts due the Contractor for such additional Designer's fees and paid directly to the Designer. Should the cost for such Additional Services of the Designer exceed the amount due or to become due to the Contractor, then the Contractor and his sureties shall be liable for and shall pay to the Owner the amount of any such excess."

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ARTICLE 13 - CONTRACT TIME

Paragraph 13.18: Add the following:

“If the Contractor fails to achieve Substantial Completion of the Work within the Contract Time and as otherwise required by the Contract Documents, the Owner shall be entitled to retain or recover from the Contractor, as Step One Liquidated Damages and not as a penalty, the following per diem amount commencing upon the first day following expiration of the Contract Time and continuing until the actual date of Substantial Completion. Such liquidated damages are hereby agreed to be a reasonable pre-estimate of damages the Owner will incur as a result of delayed Substantial Completion of the Work:

One Thousand Dollars (\$1,000) per consecutive calendar day

If the Contractor fails to achieve Final Completion of the Work within thirty (30) consecutive calendar days of the actual date of Substantial Completion of the Work, the Owner shall be entitled to retain or recover from the Contractor, as Step Two Liquidated Damages and not as a penalty, the following per diem amount commencing upon the first day following the actual date of Substantial Completion and continuing until the actual date of Final Completion. Such liquidated damages are hereby agreed to be a reasonable pre-estimate of damages the Owner will incur as a result of delayed Final Completion of the Work:

Five Hundred Dollars (\$500) per consecutive calendar day

The Owner may deduct liquidated damages described above from any unpaid amounts then or thereafter due the Contractor under this Agreement. Should the amount of any liquidated damages exceed the amount due or to become due to the Contractor, then the Contractor and his sureties shall be liable for and shall pay to the Owner the amount of any such excess.”

ARTICLE 29 – TAXES

Paragraph 29.1: Add the following to the existing paragraph:

“The Contractor is to use the Sales Tax Reporting Form attached to the contract documents for reporting taxes paid.

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Add the following paragraph under Article 29

29.3 This project is considered a “Capital Improvement” with respect to Real Property Contracts, and the collection of State sales and use tax, as referenced in North Carolina General Statutes and further clarified in sales and use tax bulletins issued by the North Carolina Department of Revenue. It shall be the responsibility of the Contractor to issue any affidavits of capital improvement to their subcontractors as necessary.

ARTICLE 36. GENERAL

Add the following paragraph:

“36.3 Any specific requirement in this Contract that the responsibilities or obligations of the Contractor also apply to a Subcontractor is added for emphasis and is also hereby deemed to include a Subcontractor of any tier. The omission of a reference to a Subcontractor in connection with any of the Contractor’s responsibilities or obligations shall not be construed to diminish, abrogate, or limit any responsibilities or obligations of a Subcontractor of any tier under the Contract Documents or the applicable subcontract.”

END OF SUPPLEMENTARY GENERAL CONDITIONS

SECTION 012100
ALLOWANCES (*AD-01)

PART 1 GENERAL

1.01 SUBMITTALS

- A. Allowance Proposal: Submit initial proposal for purchase of products and materials, on Change Order form.
- B. Supporting Documentation:
 - 1. Products and Material: Provide invoices and other documents as required, for products and materials indicating quantities, prices, taxes, delivery fees, and other costs.
 - 2. Labor and Installation: Provide time sheets and other documents as required, indicating all on-site Subcontractor costs, including hours worked, quantity or amount of product/material installed, hourly wages, and Subcontractor overhead and profit.

1.02 LUMP-SUM AND QUANTITY ALLOWANCES

- A. Costs Included in Lump-Sum and Quantity Allowances: All Subcontractor's costs: Cost of products and materials, taxes, freight, delivery, receiving and handling, labor and installation, Subcontractor overhead and profit.
- B. Costs Not Included in Lump-Sum and Quantity Allowances: All General Contractor's costs: General coordination, GC's overhead and profit.
- C. Contractor Responsibilities:
 - 1. Assist Architect in selection of products.
 - 2. Obtain proposals from suppliers and installers and offer recommendations.
 - 3. On notification of which products have been selected, execute purchase agreement with designated supplier and installer.
 - 4. Arrange for and process shop drawings, product data, and samples. Arrange for delivery.
- D. Contractor shall return unused products and materials that were purchased under allowance to the manufacturer or supplier, and provide credit to the Owner.
- E. At closeout of contract, differences in costs for each allowance will be adjusted by Change Order to increase the contract sum or to provide a credit to the Owner, as applicable.

1.03 LUMP SUM ALLOWANCE SCHEDULE

- A. Lump Sum Allowances, General: Include all lump sum allowances in the Base Bid price on the Bid Proposal Form.
- B. **Lump Sum Allowance No. 1: Include the stipulated sum of \$1,400,000 for security electronics. Purpose: To provide an allowance in the bid price for the selected General Contractor to perform a separate security electronics bid once the project commences. The results of the security electronics bid will be deducted from this allowance. General Contractor shall provide all infrastructure and rough-in, as indicated on electrical drawings, in the base bid price and not as part of the allowance. Devices, cabling, equipment, system install, and configuration shall all be provided under the allowance. (*AD-01)**
- C. **Lump Sum Allowance No. 2: Include the stipulated sum of \$340,000 for data systems. Purpose: To provide an allowance in the bid price for the selected General Contractor to perform a separate telecommunications bid once the project commences. The results of the security electronics bid will be deducted from this allowance. General Contractor**

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shall provide all infrastructure and rough-in, as indicated on electrical drawings, in the base bid price and not as part of the allowance. Devices, cabling, equipment, system install, and configuration shall all be provided under the allowance. (*AD-01)

- D. Lump Sum Allowance No. 3: Include the stipulated sum of \$150,000 for cleaning of the existing building.
- E. Lump Sum Allowance No. 4: Include the stipulated sum of \$10,000 for interior and exterior panel signage, as specified in Division 10 Section "Signage."
- F. Lump Sum Allowance No. 5: Include the stipulated sum of \$150,000 for Owner's contingency to cover minor or unforeseen items of work arising during construction. This allowance does not include errors or omissions by Contractor. Work shall be charged against this allowance only under the direction of the Architect with approval of Owner.

1.04 QUANTITY ALLOWANCE SCHEDULE - BASE BID

- A. Quantity Allowances, General:
 - 1. Coordinate with Division 1 Section "Unit Prices" for unit price requirements that will be used to determine allowance adjustments.
 - 2. The following allowances shall be included in the Base Bid price on the Bid Proposal Form.
- B. Quantity Allowance No. 1: Include 20 cubic yards of soil removal and replacement with crushed stone.
- C. Quantity Allowance No. 2: Include 20 cubic yards of off site disposal of waste soil or rock.
- D. Quantity Allowance No. 3: Include 2,000 square feet of moisture vapor treatment (MVT).
- E. Quantity Allowance No. 4: Include 200 square feet of removal of deteriorated wall construction at fire walls/partitions and replacement with new rated assembly material. Coordinate with Division 1 "Unit Prices" for unit price requirements that will be used to determine allowance adjustments.

1.05 QUANTITY ALLOWANCE SCHEDULE - ALTERNATE NO. 6 (ROOF WORK)

- A. Quantity Allowances, General:
 - 1. Coordinate with Division 1 Section "Unit Prices" for unit price requirements that will be used to determine allowance adjustments.
 - 2. The following quantity allowances shall be included in the Alternate No. 6 price on the Bid Proposal Form.
- B. Quantity Allowance No. 5: Include 2,000 square feet of removal and replacement of Pre-Fabricated Insulated Pavers. Refer to Section 072216 "Roof Board Insulation."
- C. Quantity Allowance No. 6: Include 300 square feet of preparation of metal substrates and application of rust inhibitor coating, primer, and two coats of paint to rusted exposed steel components. Refer to Section 070152 "Preparation for Fluid-Applied Roofing."
- D. Quantity Allowance No. 7: Include 500 square feet of removal of deteriorated modified bitumen roofing membrane(s), down to the gypsum coverboard, and furnish and installation of new 2-ply torch applied modified bitumen membrane.
- E. Quantity Allowance No. 8: Include 500 square feet of removal of deteriorated 1/2-inch gypsum coverboard, and furnish and installation of new 1/2-inch thick gypsum coverboard.
- F. Quantity Allowance No. 9: Include 500 square feet of removal of deteriorated 1 inch polyisocyanurate insulation and furnish and installation of 1 inch of new polyisocyanurate insulation.

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PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION 012100

SECTION 014520 - TESTING, ADJUSTING, AND BALANCING FOR HVAC (*AD-01)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Provisions of the Contract and of the Contract Documents apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Balancing Air Systems:
 - a. Constant-volume air systems.
 - b. Variable-air-volume systems.
- 2. Testing, Adjusting, and Balancing Equipment:
 - a. Motors.
 - b. Condensing units.
 - c. Heat-transfer coils.
- 3. Testing, adjusting, and balancing existing systems and equipment.

1.3 DEFINITIONS

- A. AABC: Associated Air Balance Council.
- B. BAS: Building automation system.
- C. NEBB: National Environmental Balancing Bureau.
- D. TAB: Testing, adjusting, and balancing.
- E. TAB Specialist: An independent entity meeting qualifications to perform TAB work.

1.4 PREINSTALLATION MEETINGS

- A. TAB Conference: If requested by the Owner or Architect, conduct a TAB conference at Project site after approval of the TAB strategies and procedures plan to develop a mutual understanding of the details. Provide a minimum of 14 days' notice of scheduled meeting time and location.

- 1. Minimum Agenda Items:
 - a. The Contract Documents examination report.

- b. The TAB plan.
- c. Needs for coordination and cooperation of trades and subcontractors.
- d. Proposed procedures for documentation and communication flow.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: Within 30 days of Contractor's Notice to Proceed, submit documentation that the TAB agent and this Project's TAB team members meet the qualifications specified in "Quality Assurance" Article.
- B. Contract Documents Examination Report: Within 60 days of Contractor's Notice to Proceed, submit the Contract Documents review report as specified in Part 3.
- C. Strategies and Procedures Plan: Within 90 days of Contractor's Notice to Proceed, submit TAB strategies and step-by-step procedures as specified in "Preparation" Article.
- D. System Readiness Checklists: Within 90 days of Contractor's Notice to Proceed, submit system readiness checklists as specified in "Preparation" Article.
- E. Examination Report: Submit a summary report of the examination review required in "Examination" Article.
- F. Certified TAB reports: Within 14 days of completion of balancing work, submit testing and balancing report.
- G. Sample report forms.

1.6 QUALITY ASSURANCE

- A. TAB Specialists Qualifications: Certified by AABC or NEBB. TAB provider shall be an independent company from the contractors performing the work.
 - 1. TAB Field Supervisor: Employee of the TAB specialist and certified by AABC or NEBB.
 - 2. TAB Technician: Employee of the TAB specialist and certified by AABC or NEBB as a TAB technician.
- B. Instrumentation Type, Quantity, Accuracy, and Calibration: Comply with requirements in ASHRAE 111, Section 4, "Instrumentation."
- C. The following information shall be submitted as part of the Quality Assurance Submittal:
 - 1. Provide evidence of satisfactory completion of at least two projects of similar size and scope. **These projects must include an engineered smoke control system that utilizes the same strategy utilized on this project (pressurization method).** Submit the following for each project:
 - a. Completed testing and balancing reports for each project.

- b. If not included in the testing and balancing report, provide equipment startup checklists for each project.
 - c. Owner contact for each project.
 - d. Design engineer contact for each project.
 - e. Architect contact for each project.
2. The Architect shall determine whether the agent is qualified and the decision shall be final. Re-submittals on behalf of the same company shall not be considered.
- D. TAB Conference: After approval of the TAB submittals, the TAB specialist shall arrange a meeting with the Owner's and the Architect's representatives to develop a mutual understanding of the details and review the TAB strategies and procedures plan. Ensure the participation of TAB team members, equipment manufacturers' authorized service representatives, HVAC controls installer, and other support personnel. Provide 14 days' notice of scheduled meeting time and location.
1. Minimum Agenda:
- a. Submittal distribution requirements.
 - b. Contract documents examination report.
 - c. TAB strategies and procedures plan.
 - d. Work schedule and project site access requirements.
 - e. Coordination and cooperation of trades and subcontractors.
 - f. Coordination of documentation and communication flow.
 - g. Systems readiness checklists.
- E. TAB Reports: Use standard forms from AABC's "National Standards for TAB" or NEBB's "Procedural Standards for TAB of Environmental Systems."
- F. Instrumentation Type, Quantity, and Accuracy: As described in the "AABC National Standards for Total System Balance" or NEBB's "Procedural Standards for TAB of Environmental Systems," Section II, "Required Instrumentation for NEBB Certification."

1.7 COORDINATION

- A. Coordinate the efforts of work performed under other sections for operation of systems and equipment to support and assist TAB activities.
- B. Notice: Provide 7 days' notice to the Contractor and Architect for each test. Include scheduled test dates and times.
- C. Perform TAB after any required leakage and pressure tests on air and water distribution systems have been satisfactorily completed.

1.8 WARRANTY

- A. General Warranty: The national project performance guarantee indicated in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

- B. Special Guarantee: Provide a guarantee on NEBB or AABC forms stating that NEBB or AABC will assist in completing the requirements of the Contract Documents if the TAB Agent fails to comply with the Contract Documents. Guarantee includes the following provisions:
 - 1. The certified Agent has tested and balanced systems according to the Contract Documents.
 - 2. Systems are balanced to optimum performance capabilities within design and installation limits.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine the Contract Documents to become familiar with Project requirements and to discover conditions in systems designs that may preclude proper TAB of systems and equipment.

- B. Examine installed systems for balancing devices, such as test ports, gage cocks, thermometer wells, flow-control devices, balancing valves and fittings, and manual volume dampers. Verify that locations of these balancing devices are applicable for intended purpose and are accessible.

- C. Examine the approved submittals for HVAC systems and equipment.

- D. Examine design data including HVAC system descriptions, statements of design assumptions for environmental conditions and systems output, and statements of philosophies and assumptions about HVAC system and equipment controls.

- E. Examine ceiling plenums and underfloor air plenums used for supply, return, or relief air to verify that they are properly separated from adjacent areas. Verify that penetrations in plenum walls are sealed and fire-stopped if required.

- F. Examine equipment performance data including fan and pump curves.
 - 1. Relate performance data to Project conditions and requirements, including system effects that can create undesired or unpredicted conditions that cause reduced capacities in all or part of a system.
 - 2. Calculate system-effect factors to reduce performance ratings of HVAC equipment when installed under conditions different from the conditions used to rate equipment performance. To calculate system effects for air systems, use tables and charts found in

AMCA 201, "Fans and Systems," or in SMACNA's "HVAC Systems - Duct Design."
Compare results with the design data and installed conditions.

- G. Examine system and equipment installations and verify that field quality-control testing, cleaning, and adjusting specified in individual Sections have been performed.
- H. Examine test reports specified in individual system and equipment Sections.
- I. Examine HVAC equipment and verify that bearings are greased, belts are aligned and tight, filters are clean, and equipment with functioning controls is ready for operation.
- J. Examine terminal units, such as variable-air-volume boxes, and verify that they are accessible and their controls are connected and functioning.
- K. Examine strainers. Verify that startup screens have been replaced by permanent screens with indicated perforations.
- L. Examine control valves for proper installation for their intended function of throttling, diverting, or mixing fluid flows.
- M. Examine heat-transfer coils for correct piping connections and for clean and straight fins.
- N. Examine system pumps to ensure absence of entrained air in the suction piping.
- O. Examine operating safety interlocks and controls on HVAC equipment.
- P. Report deficiencies discovered before and during performance of TAB procedures. Observe and record system reactions to changes in conditions. Record default set points if different from indicated values.

3.2 PREPARATION

- A. Prepare a TAB plan that includes the following:
 - 1. Equipment and systems to be tested.
 - 2. Strategies and step-by-step procedures for balancing the systems.
 - 3. Instrumentation to be used.
 - 4. Sample forms with specific identification for all equipment.
- B. Perform system-readiness checks of HVAC systems and equipment to verify system readiness for TAB work. Include, at a minimum, the following:
 - 1. Airside:
 - a. Verify that leakage and pressure tests on air distribution systems have been satisfactorily completed.
 - b. Duct systems are complete with terminals installed.
 - c. Volume, smoke, and fire dampers are open and functional.
 - d. Clean filters are installed.
 - e. Fans are operating, free of vibration, and rotating in correct direction.

- f. Variable-frequency controllers' startup is complete and safeties are verified.
- g. Automatic temperature-control systems are operational.
- h. Ceilings are installed.
- i. Windows and doors are installed.
- j. Suitable access to balancing devices and equipment is provided.

3.3 GENERAL PROCEDURES FOR TESTING AND BALANCING

- A. Perform testing and balancing procedures on each system according to the procedures contained in AABC's "National Standards for Total System Balance," ASHRAE 111, or NEBB's "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems" and in this Section.
- B. Cut insulation, ducts, pipes, and equipment cabinets for installation of test probes to the minimum extent necessary for TAB procedures.
 - 1. After testing and balancing, patch probe holes in ducts with same material and thickness as used to construct ducts.
 - 2. Install and join new insulation that matches removed materials. Restore insulation, coverings, vapor barrier, and finish according to Section 230713 "Duct Insulation," Section 230716 "HVAC Equipment Insulation," and Section 230719 "HVAC Piping Insulation."
- C. Mark equipment and balancing devices, including damper-control positions, valve position indicators, fan-speed-control levers, and similar controls and devices, with paint or other suitable, permanent identification material to show final settings.
- D. Take and report testing and balancing measurements in inch-pound (IP) units.

3.4 GENERAL PROCEDURES FOR BALANCING AIR SYSTEMS

- A. Prepare test reports for both fans and outlets. Obtain manufacturer's outlet factors and recommended testing procedures. Cross-check the summation of required outlet volumes with required fan volumes.
- B. Prepare schematic diagrams of systems' "as-built" duct layouts.
- C. For variable-air-volume systems, develop a plan to simulate diversity.
- D. Determine the best locations in main and branch ducts for accurate duct-airflow measurements.
- E. Check airflow patterns from the outdoor-air louvers and dampers and the return- and exhaust-air dampers through the supply-fan discharge and mixing dampers.
- F. Locate start-stop and disconnect switches, electrical interlocks, and motor starters.
- G. Verify that motor starters are equipped with properly sized thermal protection.
- H. Check dampers for proper position to achieve desired airflow path.

- I. Check for airflow blockages.
- J. Check condensate drains for proper connections and functioning.
- K. Check for proper sealing of air-handling-unit components.
- L. Verify that air duct system is sealed as specified in Section 233113 "Metal Ducts."
- M. Verify total dryer vent static pressure with dryer in operation and with ductwork clean. Dryer vent static pressure will be used to determine BAS monitoring and alarm to indicate dryer vent needs cleaning. Coordinate with Division 23 Section "Sequence of Operations for HVAC Controls."

3.5 PROCEDURES FOR CONSTANT-VOLUME AIR SYSTEMS

- A. Adjust fans to deliver total indicated airflows within the maximum allowable fan speed listed by fan manufacturer.
 - 1. Measure total airflow.
 - a. Set outside-air, return-air, and relief-air dampers for proper position that simulates minimum outdoor-air conditions.
 - b. Where duct conditions allow, measure airflow by Pitot-tube traverse. If necessary, perform multiple Pitot-tube traverses to obtain total airflow.
 - c. Where duct conditions are not suitable for Pitot-tube traverse measurements, a coil traverse may be acceptable.
 - d. If a reliable Pitot-tube traverse or coil traverse is not possible, measure airflow at terminals and calculate the total airflow.
 - 2. Measure fan static pressures as follows:
 - a. Measure static pressure directly at the fan outlet or through the flexible connection.
 - b. Measure static pressure directly at the fan inlet or through the flexible connection.
 - c. Measure static pressure across each component that makes up the air-handling system.
 - d. Report artificial loading of filters at the time static pressures are measured.
 - 3. Review Record Documents to determine variations in design static pressures versus actual static pressures. Calculate actual system-effect factors. Recommend adjustments to accommodate actual conditions.
 - 4. Obtain approval from Architect for adjustment of fan speed higher or lower than indicated speed. Comply with requirements in HVAC sections for air-handling units for adjustment of fans, belts, and pulley sizes to achieve indicated air-handling-unit performance.
 - 5. Do not make fan-speed adjustments that result in motor overload. Consult equipment manufacturers about fan-speed safety factors. Modulate dampers and measure fan-motor amperage to ensure that no overload occurs. Measure amperage in full-cooling, full-heating, economizer, and any other operating mode to determine the maximum required brake horsepower.

- B. Adjust volume dampers for main duct, submain ducts, and major branch ducts to indicated airflows.
 - 1. Measure airflow of submain and branch ducts.
 - 2. Adjust submain and branch duct volume dampers for specified airflow.
 - 3. Re-measure each submain and branch duct after all have been adjusted.

- C. Adjust air inlets and outlets for each space to indicated airflows.
 - 1. Set airflow patterns of adjustable outlets for proper distribution without drafts.
 - 2. Measure inlets and outlets airflow.
 - 3. Adjust each inlet and outlet for specified airflow.
 - 4. Re-measure each inlet and outlet after they have been adjusted.

- D. Verify final system conditions.
 - 1. Re-measure and confirm that minimum outdoor, return, and relief airflows are within design. Readjust to design if necessary.
 - 2. Re-measure and confirm that total airflow is within design.
 - 3. Re-measure all final fan operating data, rpms, volts, amps, and static profile.
 - 4. Mark all final settings.
 - 5. Test system in economizer mode. Verify proper operation and adjust if necessary.
 - 6. Measure and record all operating data.
 - 7. Record final fan-performance data.

3.6 PROCEDURES FOR VARIABLE-AIR-VOLUME SYSTEMS

- A. Adjust the variable-air-volume systems as follows:
 - 1. Verify that the system static pressure sensor is located two-thirds of the distance down the duct from the fan discharge.
 - 2. Verify that the system is under static pressure control.
 - 3. Select the terminal unit that is most critical to the supply-fan airflow. Measure inlet static pressure, and adjust system static pressure control set point so the entering static pressure for the critical terminal unit is not less than the sum of the terminal-unit manufacturer's recommended minimum inlet static pressure plus the static pressure needed to overcome terminal-unit discharge system losses.
 - 4. Calibrate and balance each terminal unit for maximum and minimum design airflow as follows:
 - a. Adjust controls so that terminal is calling for maximum airflow. Some controllers require starting with minimum airflow. Verify calibration procedure for specific project.
 - b. Measure airflow and adjust calibration factor as required for design maximum airflow. Record calibration factor.
 - c. When maximum airflow is correct, balance the air outlets downstream from terminal units.
 - d. Adjust controls so that terminal is calling for minimum airflow.

- e. Measure airflow and adjust calibration factor as required for design minimum airflow. Record calibration factor. If no minimum calibration is available, note any deviation from design airflow.
 - f. When in full cooling or full heating, ensure that there is no mixing of hot-deck and cold-deck airstreams unless so designed.
 - g. On constant volume terminals, in critical areas where room pressure is to be maintained, verify that the airflow remains constant over the full range of full cooling to full heating. Note any deviation from design airflow or room pressure.
5. After terminals have been calibrated and balanced, test and adjust system for total airflow. Adjust fans to deliver total design airflows within the maximum allowable fan speed listed by fan manufacturer.
- a. Set outside-air, return-air, and relief-air dampers for proper position that simulates minimum outdoor-air conditions.
 - b. Set terminals for maximum airflow. If system design includes diversity, adjust terminals for maximum and minimum airflow so that connected total matches fan selection and simulates actual load in the building.
 - c. Where duct conditions allow, measure airflow by Pitot-tube traverse. If necessary, perform multiple Pitot-tube traverses to obtain total airflow.
 - d. Where duct conditions are not suitable for Pitot-tube traverse measurements, a coil traverse may be acceptable.
 - e. If a reliable Pitot-tube traverse or coil traverse is not possible, measure airflow at terminals and calculate the total airflow.
6. Measure fan static pressures as follows:
- a. Measure static pressure directly at the fan outlet or through the flexible connection.
 - b. Measure static pressure directly at the fan inlet or through the flexible connection.
 - c. Measure static pressure across each component that makes up the air-handling system.
 - d. Report any artificial loading of filters at the time static pressures are measured.
7. Set final return and outside airflow to the fan while operating at maximum return airflow and minimum outdoor airflow.
- a. Balance the return-air ducts and inlets the same as described for constant-volume air systems.
 - b. Verify that terminal units are meeting design airflow under system maximum flow.
8. Re-measure the inlet static pressure at the most critical terminal unit and adjust the system static pressure set point to the most energy-efficient set point to maintain the optimum system static pressure. Record set point and give to controls contractor.
9. Verify final system conditions as follows:
- a. Re-measure and confirm that minimum outdoor, return, and relief airflows are within design. Readjust to match design if necessary.
 - b. Re-measure and confirm that total airflow is within design.
 - c. Re-measure final fan operating data, rpms, volts, amps, and static profile.
 - d. Mark final settings.

- e. Test system in economizer mode. Verify proper operation and adjust if necessary. Measure and record all operating data.
- f. Verify tracking between supply and return fans.

3.7 PROCEDURES FOR MOTORS

- A. Motors 1/2 HP and Larger: Test at final balanced conditions and record the following data:
 - 1. Manufacturer's name, model number, and serial number.
 - 2. Motor horsepower rating.
 - 3. Motor rpm.
 - 4. Phase and hertz.
 - 5. Nameplate and measured voltage, each phase.
 - 6. Nameplate and measured amperage, each phase.
 - 7. Starter size and thermal-protection-element rating.
 - 8. Service factor and frame size.
- B. Motors Driven by Variable-Frequency Controllers: Test manual bypass of controller to prove proper operation.

3.8 PROCEDURES FOR CONDENSING UNITS

- A. Verify proper rotation of fans.
- B. Measure entering- and leaving-air temperatures.
- C. Record fan and motor operating data.

3.9 PROCEDURES FOR HEAT-TRANSFER COILS

- A. Measure, adjust, and record the following data for each water coil:
 - 1. Entering- and leaving-water temperature.
 - 2. Water flow rate.
 - 3. Water pressure drop for major (more than 20 gpm) equipment coils, excluding unitary equipment such as reheat coils, unit heaters, and fan-coil units.
 - 4. Dry-bulb temperature of entering and leaving air.
 - 5. Wet-bulb temperature of entering and leaving air for cooling coils.
 - 6. Airflow.
- B. Measure, adjust, and record the following data for each electric heating coil:
 - 1. Nameplate data.
 - 2. Airflow.
 - 3. Entering- and leaving-air temperature at full load.
 - 4. Voltage and amperage input of each phase at full load.
 - 5. Calculated kilowatt at full load.
 - 6. Fuse or circuit-breaker rating for overload protection.

- C. Measure, adjust, and record the following data for each steam coil:
 - 1. Dry-bulb temperature of entering and leaving air.
 - 2. Airflow.
 - 3. Inlet steam pressure.

- D. Measure, adjust, and record the following data for each refrigerant coil:
 - 1. Dry-bulb temperature of entering and leaving air.
 - 2. Wet-bulb temperature of entering and leaving air.
 - 3. Airflow.

3.10 PROCEDURES FOR SMOKE CONTROL SYSTEM TESTING

- A. Before testing smoke control systems, verify that construction is complete and verify the integrity of each smoke control zone boundary. Verify that windows and doors are closed and that applicable gaskets and sealants are installed. Report deficiencies and postpone testing until after the reported deficiencies are corrected.

- B. Measure and record wind speed and direction, outside-air temperature, and relative humidity on each test day.

- C. Measure, adjust, and record airflow of each smoke control system with all fans that are a part of the system operating as intended in design.

- D. Measure, adjust, and record the airflow of each fan. For ducted systems, measure the fan airflow by duct Pitot-tube traverse.

- E. After air balancing is complete, perform the following pressurization testing for each smoke control zone in the system:
 - 1. Verify the boundaries of each smoke control zone.
 - 2. With the HVAC systems in their normal mode of operation and smoke control not operating, measure and record the pressure difference across each smoke control zone. Make measurements after closing doors that separate the zones. Make one measurement across each door. Clearly indicate the high and low-pressure side of each door.
 - 3. With the system operating in the smoke control mode and with each zone in the smoke control system activated, perform the following:
 - a. Measure and record the pressure difference across each door that separates the smoke zone from adjacent zones. Make measurements with the doors that separate the smoke zone from the other zones closed. Clearly indicate the high and low-pressure side of the door. Adjust smoke control fans as necessary to achieve the following pressure differentials across the boundaries:
 - 1) Minimum pressure differential: +0.05 in. w.c.
 - 2) Maximum pressure differential: +0.08 in. w.c.
 - b. After testing a smoke zone's smoke control system, return the HVAC systems to their normal operating mode before activating another zone's smoke control system.

- F. Operational Tests:

1. Check proper activation of each zoned smoke control system in response to all means of activation, both automatic and manual.
2. Check automatic response to the fire alarm signals received from the building's fire alarm and detection system. Initiate a separate alarm for each means of activation to ensure that the proper operation of the correct zoned smoke control system occurs.
3. Check and record the proper operation of fans, dampers, and related equipment as outlined below for each separate zone of the smoke control system.
 - a. Fire zone in which smoke control system automatically activates.
 - b. Type of signal that activates a smoke control system, such as sprinkler water flow, space smoke detector, or duct mounted smoke detector.
 - c. Fan(s) "ON" as required to start the smoke control system.
 - d. Fan(s) or unit(s) "OFF" as required to start smoke control system.
 - e. Auxiliary functions to achieve the smoke control system configuration such as changes or overrides of normal operating sequences.
 - f. Test to verify that the system functions while operating under both normal and standby power.

- G. Demonstrate by the use of a smoke puffer that smoke moves in the correct direction.
- H. Provide smoke machine capable of filling typical smoke control zone for use during Department of Corrections system operation demonstration.
- I. Prepare a complete report of observations, measurements, and deficiencies.

3.11 TOLERANCES

- A. Set HVAC system's airflow rates and water flow rates within the following tolerances:
1. Supply, Return, and Exhaust Fans and Equipment with Fans: 0 to plus 10 percent.
 2. Air Outlets: Plus or minus 10 percent.
 3. Return Inlets: Plus or minus 10 percent.
 4. Exhaust Inlets: 0 to plus 10 percent.
 5. Unless indicated otherwise: Plus or minus 10 percent.
- B. Maintaining pressure relationships as designed shall have priority over the tolerances specified above.

3.12 PROGRESS REPORTING

- A. Initial Construction-Phase Report: Based on examination of the Contract Documents as specified in "Examination" Article, prepare a report on the adequacy of design for systems balancing devices. Recommend changes and additions to systems balancing devices to facilitate proper performance measuring and balancing. Recommend changes and additions to HVAC systems and general construction to allow access for performance measuring and balancing devices.
- B. Status Reports: Prepare monthly progress reports to describe completed procedures, procedures in progress, and scheduled procedures. Include a list of deficiencies and problems found in

systems being tested and balanced. Prepare a separate report for each system and each building floor for systems serving multiple floors.

3.13 FINAL REPORT

- A. General: Prepare a certified written report; tabulate and divide the report into separate sections for tested systems and balanced systems.
1. Include a certification sheet at the front of the report's binder, signed and sealed by the certified testing and balancing engineer.
 2. Include a list of instruments used for procedures, along with proof of calibration.
 3. Certify validity and accuracy of field data.
- B. Final Report Contents: In addition to certified field-report data, include the following:
1. Fan curves.
 2. Manufacturers' test data.
 3. Field test reports prepared by system and equipment installers.
 4. Other information relative to equipment performance; do not include Shop Drawings and Product Data.
- C. General Report Data: In addition to form titles and entries, include the following data:
1. Title page.
 2. Name and address of the TAB specialist.
 3. Project name.
 4. Project location.
 5. Architect's name and address.
 6. Engineer's name and address.
 7. Contractor's name and address.
 8. Report date.
 9. Signature of TAB supervisor who certifies the report.
 10. Table of Contents with the total number of pages defined for each section of the report. Number each page in the report.
 11. Summary of contents including the following:
 - a. Indicated versus final performance.
 - b. Notable characteristics of systems.
 - c. Description of system operation sequence if it varies from the Contract Documents.
 12. Nomenclature sheets for each item of equipment.
 13. Data for terminal units, including manufacturer's name, type, size, and fittings.
 14. Notes to explain why certain final data in the body of reports vary from indicated values.
 15. Test conditions for fans and pump performance forms including the following:
 - a. Settings for outdoor-, return-, and exhaust-air dampers.
 - b. Conditions of filters.
 - c. Cooling coil, wet- and dry-bulb conditions.
 - d. Face and bypass damper settings at coils.

- e. Fan drive settings including settings and percentage of maximum pitch diameter.
 - f. Inlet vane settings for variable-air-volume systems.
 - g. Settings for supply-air, static-pressure controller.
 - h. Other system operating conditions that affect performance.
- D. System Diagrams: Include schematic layouts of air and hydronic distribution systems. Present each system with single-line diagram and include the following:
- 1. Quantities of outdoor, supply, return, and exhaust airflows.
 - 2. Water and steam flow rates.
 - 3. Duct, outlet, and inlet sizes.
 - 4. Pipe and valve sizes and locations.
 - 5. Terminal units.
 - 6. Balancing stations.
 - 7. Position of balancing devices.
- E. Air-Handling-Unit Test Reports: For air-handling units with coils, include the following:
- 1. Unit Data:
 - a. Unit identification.
 - b. Location.
 - c. Make and type.
 - d. Model number and unit size.
 - e. Manufacturer's serial number.
 - f. Unit arrangement and class.
 - g. Discharge arrangement.
 - h. Sheave make, size in inches, and bore.
 - i. Center-to-center dimensions of sheave and amount of adjustments in inches.
 - j. Number, make, and size of belts.
 - k. Number, type, and size of filters.
 - 2. Motor Data:
 - a. Motor make, and frame type and size.
 - b. Horsepower and rpm.
 - c. Volts, phase, and hertz.
 - d. Full-load amperage and service factor.
 - e. Sheave make, size in inches, and bore.
 - f. Center-to-center dimensions of sheave and amount of adjustments in inches.
 - 3. Test Data (Indicated and Actual Values):
 - a. Total airflow rate in cfm.
 - b. Total system static pressure in inches wg.
 - c. Fan rpm.
 - d. Discharge static pressure in inches wg.
 - e. Filter static-pressure differential in inches wg.
 - f. Preheat-coil static-pressure differential in inches wg.
 - g. Cooling-coil static-pressure differential in inches wg.

- h. Heating-coil static-pressure differential in inches wg.
- i. Outdoor airflow in cfm.
- j. Return airflow in cfm.
- k. Outdoor-air damper position.
- l. Return-air damper position.
- m. Vortex damper position.

F. Apparatus-Coil Test Reports:

1. Coil Data:

- a. System identification.
- b. Location.
- c. Coil type.
- d. Number of rows.
- e. Fin spacing in fins per inch.
- f. Make and model number.
- g. Face area in square feet.
- h. Tube size in NPS.
- i. Tube and fin materials.
- j. Circuiting arrangement.

2. Test Data (Indicated and Actual Values):

- a. Airflow rate in cfm.
- b. Average face velocity in fpm.
- c. Air pressure drop in inches wg.
- d. Outdoor-air, wet- and dry-bulb temperatures in deg F.
- e. Return-air, wet- and dry-bulb temperatures in deg F.
- f. Entering-air, wet- and dry-bulb temperatures in deg F.
- g. Leaving-air, wet- and dry-bulb temperatures in deg F.
- h. Water flow rate in gpm.
- i. Water pressure differential in feet of head or psig.
- j. Entering-water temperature in deg F.
- k. Leaving-water temperature in deg F.
- l. Refrigerant expansion valve and refrigerant types.
- m. Refrigerant suction pressure in psig.
- n. Refrigerant suction temperature in deg F.
- o. Inlet steam pressure in psig.

G. Electric-Coil Test Reports: For electric furnaces, duct coils, and electric coils installed in central-station air-handling units, include the following:

1. Unit Data:

- a. System identification.
- b. Location.
- c. Coil identification.
- d. Capacity in Btu/h.
- e. Number of stages.

- f. Connected volts, phase, and hertz.
 - g. Rated amperage.
 - h. Airflow rate in cfm.
 - i. Face area in square feet.
 - j. Minimum face velocity in fpm.
2. Test Data (Indicated and Actual Values):
- a. Heat output in Btu/h.
 - b. Airflow rate in cfm.
 - c. Air velocity in fpm.
 - d. Entering-air temperature in deg F.
 - e. Leaving-air temperature in deg F.
 - f. Voltage at each connection.
 - g. Amperage for each phase.
- H. Fan Test Reports: For supply, return, and exhaust fans, include the following:
1. Fan Data:
- a. System identification.
 - b. Location.
 - c. Make and type.
 - d. Model number and size.
 - e. Manufacturer's serial number.
 - f. Arrangement and class.
 - g. Sheave make, size in inches, and bore.
 - h. Center-to-center dimensions of sheave and amount of adjustments in inches.
2. Motor Data:
- a. Motor make, and frame type and size.
 - b. Horsepower and rpm.
 - c. Volts, phase, and hertz.
 - d. Full-load amperage and service factor.
 - e. Sheave make, size in inches, and bore.
 - f. Center-to-center dimensions of sheave, and amount of adjustments in inches.
 - g. Number, make, and size of belts.
3. Test Data (Indicated and Actual Values):
- a. Total airflow rate in cfm.
 - b. Total system static pressure in inches wg.
 - c. Fan rpm.
 - d. Discharge static pressure in inches wg.
 - e. Suction static pressure in inches wg.
- I. Round, Flat-Oval, and Rectangular Duct Traverse Reports: Include a diagram with a grid representing the duct cross-section and record the following:

1. Report Data:
 - a. System and air-handling-unit number.
 - b. Location and zone.
 - c. Traverse air temperature in deg F.
 - d. Duct static pressure in inches wg.
 - e. Duct size in inches.
 - f. Duct area in square feet.
 - g. Indicated airflow rate in cfm.
 - h. Indicated velocity in fpm.
 - i. Actual airflow rate in cfm.
 - j. Actual average velocity in fpm.
 - k. Barometric pressure in psig.

J. Air-Terminal-Device Reports:

1. Unit Data:
 - a. System and air-handling unit identification.
 - b. Location and zone.
 - c. Apparatus used for test.
 - d. Area served.
 - e. Make.
 - f. Number from system diagram.
 - g. Type and model number.
 - h. Size.
 - i. Effective area in square feet.
2. Test Data (Indicated and Actual Values):
 - a. Airflow rate in cfm.
 - b. Air velocity in fpm.
 - c. Preliminary airflow rate as needed in cfm.
 - d. Preliminary velocity as needed in fpm.
 - e. Final airflow rate in cfm.
 - f. Final velocity in fpm.
 - g. Space temperature in deg F.

K. System-Coil Reports: For reheat coils of terminal units, include the following:

1. Unit Data:
 - a. System and air-handling-unit identification.
 - b. Location and zone.
 - c. Room or riser served.
 - d. Coil make and size.
2. Test Data (Indicated and Actual Values):
 - a. Airflow rate in cfm.

- b. Entering-water temperature in deg F.
- c. Leaving-water temperature in deg F.
- d. Entering-air temperature in deg F.
- e. Leaving-air temperature in deg F.

L. Instrument Calibration Reports:

1. Report Data:

- a. Instrument type and make.
- b. Serial number.
- c. Application.
- d. Dates of use.
- e. Dates of calibration.

3.14 VERIFICATION OF TAB REPORT

- A. The TAB specialist's test and balance engineer shall conduct the inspection in the presence of Owner.
- B. Owner shall randomly select measurements, documented in the final report, to be rechecked. Rechecking shall be limited to either 10 percent of the total measurements recorded or the extent of measurements that can be accomplished in a normal 8-hour business day.
- C. If rechecks yield measurements that differ from the measurements documented in the final report by more than the tolerances allowed, the measurements shall be noted as "FAILED."
- D. If the number of "FAILED" measurements is greater than 10 percent of the total measurements checked during the final inspection, the testing and balancing shall be considered incomplete and shall be rejected.
- E. If TAB work fails, proceed as follows:
 - 1. TAB specialists shall recheck all measurements and make adjustments. Revise the final report and balancing device settings to include all changes; resubmit the final report and request a second final inspection.
 - 2. If the second final inspection also fails, Owner may contract the services of another TAB specialist to complete TAB work according to the Contract Documents and deduct the cost of the services from the original TAB specialist's final payment.
 - 3. If the second verification also fails, design professional may contact AABC Headquarters regarding the AABC National Performance Guaranty.
- F. Prepare test and inspection reports.

3.15 ADDITIONAL TESTS

- A. Within 90 days of completing TAB, perform additional TAB to verify that balanced conditions are being maintained throughout and to correct unusual conditions.

- B. When requested, provide up to 32 hours by the technician that provided services under this Section to support commissioning.

- C. **Provide static pressure sensor readings of dryer vents during dryer operation when the dryer vent is clean for BAS static pressure monitoring alarm. (*AD-01)**

END OF SECTION 014520

SECTION 064100
ARCHITECTURAL WOODWORK AND CASEWORK (*AD-01)

PART 1 GENERAL

1.01 DEFINITIONS

- A. Exposed: Portions of casework visible when drawers and cabinet doors are closed, including end panels, bottoms of cases more than 42 inches above finished floor, tops of cases less than 72 inches above finished floor and all members visible in open cases or behind glass doors.
- B. Semi-Exposed: Portions of casework and surfaces behind solid doors, tops of cases more than 72 inches above finished floor and bottoms of cabinets more than 30 inches but less than 42 inches above finished floor.
- C. Concealed: Sleepers, web frames, dust panels and other surfaces not generally visible after installation and cabinets less than 30 inches above finished floor.

1.02 REFERENCE STANDARDS

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- B. AWI (QCP) - Quality Certification Program.
- C. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition.
- D. ISFA 2-01 - Classification and Standards for Solid Surfacing Material.
- E. NEMA LD 3 - High-Pressure Decorative Laminates.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene a preinstallation meeting not less than one week before starting work of this section; require attendance by all affected installers.

1.04 SUBMITTALS

- A. Product Data: Component dimensions, configurations, construction details, joint details, attachments.
 - 1. Include product data for each type of hardware and accessory.
- B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
 - 1. Include field measurements, and indicate where field measurements differ from documents.
- C. Selection Samples: Submit manufacturer's color charts indicating full range of available colors, for each product requiring color selection. Architect will request samples from chart.
- D. Fabricator Qualifications: Include evidence of accreditation with quality control program.
- E. Certificate: Submit labels and certificates required by quality assurance and quality control programs.
- F. **Maintenance Materials: (*AD-01)**
 - 1. **Furnish one unopened box of security fasteners of each type used.**
 - 2. **Provide two sets of specialty tools for security fasteners, including both installation and removal.**

1.05 QUALITY ASSURANCE

- A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with experience on Projects of similar size and scope.
 - 1. Accredited participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.
- B. Quality Certification:
 - 1. Comply with AWI (QCP) woodwork association quality certification service/program in accordance with requirements for work specified in this section: www.awiqcp.org/#sle.
 - 2. Provide labels or certificates indicating that the installed work complies with AWI/AWMAC/WI (AWS) requirements for grade or grades specified.
 - 3. Provide designated labels on shop drawings as required by certification program.
 - 4. Provide designated labels on installed products as required by certification program.
 - 5. Submit certifications upon completion of installation that verifies this work is in compliance with specified requirements.
 - 6. Replace, repair, or rework all work for which certification is refused.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Comply with Section 2 of the Architectural Woodwork Standards: "Care & Storage."
- B. Deliver woodwork after finishes are complete, including painting, and HVAC is operating at occupancy conditions in all spaces where woodwork will be installed.
- C. Store in an environmentally controlled location. Protect units from moisture damage.

1.07 FIELD CONDITIONS

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

PART 2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

- A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS), unless noted otherwise.
- B. Surface Burning Characteristics: Flame spread index of 25, maximum; smoke developed index of 450, maximum; when tested in accordance with ASTM E84, unless otherwise indicated for specific products.
- C. Accessibility Requirements: Fabricate and install woodwork and casework in compliance with ICC/ANSI A117.1 and with ADA Standards for Accessible Design.

2.02 CABINETS

- A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS), unless noted otherwise.
- B. Plastic-Laminate-Clad Cabinets: Custom grade, except as modified below. Solid wood and wood panel construction; each unit self-contained and not dependent on adjacent units or building structure for rigidity; in sizes necessary to avoid field cutting except for scribes and filler panels. Include adjustable levelers for base cabinets.
 - 1. Style: Reveal overlay. Ease doors and drawer fronts slightly at edges.
 - 2. Cabinet Nominal Dimensions: Unless otherwise indicated, provide cabinets of widths and heights indicated on drawings, and with following front-to-back dimensions:

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- a. Base Cabinets: 24 inches.
 - b. Wall Cabinets: 12-1/2 inches. (Minimum clear interior depth shall be 11 inches)
 3. Drawer Construction: Provide AWI premium grade for drawer box construction.
 4. Base Construction: Provide adjustable levelers for all base cabinets to facilitate load transfer to the floor, isolate cabinet ends from the floor, and permit leveling.
 - a. Toe Kick: Toe kick shall be nominal 4 inch height. Reduce as necessary via field modification due to construction tolerances and concrete slab levelness to maintain maximum height dimensions indicated.
 5. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline.
 - a. Exposed Interior and Semi-Exposed Surfaces: Provide HPDL, type VGS or CLS, at semi-exposed interiors of cabinets (cabinets with doors) and drawer boxes. Provide type VGS for exposed interior horizontal shelving surfaces and interiors of open cabinets (no doors).
- C. ADA Sink Cabinets: Provide casework manufacturer's standard hinged front door panels, with matching veneer/cladding material and toe kick built into door panels, to match appearance of adjacent base cabinets. Front door panels swing open to 160 degrees minimum to allow for ADA-compliant undercounter knee space and for plumbing access to sink.

2.03 WOOD-BASED COMPONENTS

2.04 LAMINATE MATERIALS

- A. Manufacturers:
1. Formica Corporation; High Pressure Laminate.
 2. Panolam Industries International, Inc; Nevamar Standard HPL.
 3. Panolam Industries International, Inc; Pionite Standard HPL.
 4. Wilsonart LLC; High Pressure Laminate (HPL).
- B. High Pressure Decorative Laminate (HPDL): NEMA LD 3, types as recommended for specific applications.
- C. Color and Pattern: To be selected by Architect from Manufacturer's full range (standard and premium colors) in standard textured finish (textured gloss, fine textured, or suede finish). High gloss, heavy textured, metallic, or other special surface products (abrasion-resistant, chemical-resistant) will not be required for use in this project.
- D. Provide specific types as follows:
1. Horizontal Countertop Surfaces: HGS, 0.048 inch (1.2 mm) nominal thickness.
 2. Vertical Surfaces and Non-Countertop Horizontal Surfaces: VGS, 0.028 inch (0.7 mm) nominal thickness.
 3. Cabinet Liner: CLS, 0.020 inch (0.5 mm) nominal thickness.
 4. Laminate Backer: BKL, 0.020 inch nominal thickness, undecorated; for application to concealed backside of panels faced with high pressure decorative laminate.

2.05 SOLID SURFACING MATERIAL

- A. Solid Surfacing Material: ISFA 2-01.
1. Products:
 - a. E. I. du Pont de Nemours and Company; Corian.
 - b. Formica Group; Solid Surfacing.
 - c. LG Hausys America; HI-MACS.

- d. Meganite, Inc; Meganite Acrylic Solid Surface.
- e. Wilsonart LLC; Solid Surface.
- 2. Thickness: 1/2-inch.
- 3. Type: Standard Type.
- 4. Color and Pattern: To be selected by Architect from manufacturer's full range.
- 5. Color and Pattern: Provide colors per the following:
 - a. Colors and Patterns for Countertops: As selected by Architect from manufacturer's full range of colors equivalent to Dupont Corian price group 4.

2.06 COUNTERTOPS

- A. Fabricate in accordance with AWI/AWMAC/WI (AWS), Section 11 - Countertops, Custom Grade and with manufacturer's requirements.
- B. Solid Surfacing Countertops: Solid surfacing sheet or plastic resin casting over structural substrate/core material.
 - 1. Solid Surfacing Sheet and Plastic Resin Castings: Complying with ISFA 2-01 and NEMA LD 3; acrylic or polyester resin, mineral filler, and pigments; homogenous, non-porous and capable of being worked and repaired using standard woodworking tools; no surface coating; color and pattern consistent throughout thickness.
 - 2. Core: Fabricate solid surface countertop core of manufacturer's recommended moisture-resistant MDF. Provide continuous structural substrate at unsupported/overhang conditions; ladder construction acceptable over cabinets. Build up core material for total countertop thickness indicated.
 - 3. Fabricate in accordance with manufacturer's standard requirements, and in one piece to the greatest extent possible.
 - a. Shop-fabricate cutouts and holes in solid surface for plumbing fixtures, deck-mounted soap dispensers, and other items indicated on Drawings.
 - 4. Provide manufacturer's standard configuration for exposed edges, back and end splashes, and per the requirements below:
 - a. Edge and Corner Profiles: Eased.
 - b. Provide built up edges to standard thickness indicated (1-1/2 inches unless otherwise indicated).
 - c. Provide 4 inch high back and end splashes, unless otherwise indicated.

2.07 ACCESSORIES & ACCESSORY MATERIALS

- A. Trash/Recycle Bin Grommets: Stainless steel grommets for circular countertop cut-outs; satin finish.
 - 1. Grommet Size: Unless otherwise indicated, provide 12-inch diameter, by 3-inch depth. Basis-of-Design is Doug Mockett TM12B-SSS.

2.08 DETENTION CASEWORK

- A. Fabricate casework indicated on the Drawings as "Detention Casework," or casework that is located within Detention areas, in accordance with AWI/AWMAC/WI (AWS) Premium grade. Locate equipment consoles, cabinets, and countertops in locations and configuration as indicated on Drawings.
 - 1. Provide plastic laminate casework utilizing particleboard core material as specified for general Division 06 casework.
 - 2. Provide solid surfacing countertops utilizing veneer-core plywood subtop.

3. **Security Fasteners: For all casework located within Detention areas, provide fasteners that are operable only with manufacturer's specialty tool. Unless otherwise indicated or otherwise approved by Architect and Owner, provide pinned Torx-Plus drive system with socket-flat countersunk head fasteners. (*AD-01)**
- B. Solid Surface Countertops: Fabricate in accordance with AWI/AWMAC/MI (AWS) Premium grade and the following additional requirements:
1. Countertops shall be constructed of 1/2 inch thickness solid-surface material with 3/4 inch veneer-core plywood subtop.
 2. Unsupported countertop spans shall not exceed 48 inches, and the shall be reinforced to prevent deflection in excess of 1/4 inch under a 100 lb per square foot load.
 3. The maximum distance a solid-surface material countertop (with or without subtop) may cantilever from a support is 12 inches for 3/4 inch thick, or 6 inches for 1/2 inch thick material, whether in the front, back, or end.
 4. Install solid-surface countertops with support adequately furnished to minimize stresses and maximum full perimeter and joint support on all horizontal applications with a maximum on center separation between supports of 24" and with a maximum unsupported and unloaded overhang of 6" for countertop with subtop.
- C. Provide the following hardware items in addition to hinges, shelf supports, and basic items specified for general casework applications:
1. Provide recessed door and drawer pulls, in lieu of the back-mounted wire pulls specified for non-security applications.
 2. Provide grommets and wiretray required for installation of equipment items.
 3. Provide locks for all drawers and doors.
- D. Mount security control equipment within or on consoles as indicated on Drawings.
1. Coordinate equipment requirements with the Security Control System Contractor (SCSC) prior to submitting shop drawings. Show coordination of detention equipment on the shop drawings.
 2. Locate wire management slots in countertop of size and location required to install monitors and keyboard with minimal exposure of wires from the countertop view. Finish wire management slots with vinyl grommets as specified.
 3. Provide for and coordinate installation of hopper pass and package pass units specified in Division 11 detention equipment sections.

2.09 FABRICATION

- A. Assembly: Shop assemble casework items for delivery to site in units easily handled and to permit passage through building openings.
- B. Edging: Fit shelves, doors, and exposed edges with specified edging. Do not use more than one piece for any single length.
- C. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site cutting.
1. Fittings and Fixture Locations: Cut and drill components for fittings and fixtures.
 2. Scribes and Fillers: Panels of matching construction and finish, for locations where cabinets do not fit tight to adjacent construction.
 3. Seal or prime paint concealed cut edges of wood and laminate casework.
- D. Hardware Application: Factory-machine casework members for hardware that is not surface applied.
- E. Apron Frames: Construction similar to other cabinets, with modifications.
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1. Frames fabricated from panels standard with the manufacturer. Include front and back panels, with drawer suspension framing mechanically fastened to support channels spanning between them.
- F. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel exposed edges.
- G. Solid Surfacing: Fabricate in one piece to greatest extent possible; join pieces with adhesive sealant and finish joints smooth in accordance with manufacturer's recommendations and instructions.
 1. Fabricate with butt-jointed / square edge at all solid surface corners. Mitered solid surface corners are not acceptable.
- H. Countertop Fabrication: Fabricate tops and splashes in the largest sections practicable, with top surface of joints flush.
 1. Fabricate to overhang fronts and ends of cabinets 1 inch except where top butts against cabinet or wall, or as indicated.
 2. Prepare all cutouts accurately to size; replace tops having improperly dimensioned or unnecessary cutouts or fixture holes.
- I. Provide back/end splash wherever counter edge abuts vertical surface unless otherwise indicated.
 1. Height: 4 inches, unless otherwise indicated.
 2. Mechanically fasten back and end splashes to countertops with steel brackets at 16 inches on center.
- J. Wall-Mounted Counters (not mounted over cabinets): Provide ADA compliant knee space with brackets, skirts, or aprons, as indicated on Drawings.

2.10 SHOP FINISHING

- A. Sand work smooth and set exposed nails and screws.
- B. On items to receive transparent finishes, use wood filler matching or blending with surrounding surfaces and of types recommended for applied finishes.
- C. Finish work in accordance with AWI/AWMAC/WI (AWS), Section 5 - Finishing for grade specified and as follows:
 1. Transparent:
 - a. System - 3, Lacquer, Postcatalyzed OR System - 5, Varnish, Conversion.
 - b. Stain: As selected by Architect.
 - c. Sheen: Satin.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Site Verification of Environmental Conditions:
 1. Do not deliver woodwork or casework until the following conditions have been met:
 - a. Building has been enclosed (windows and doors sealed and weather-tight).
 - b. An operational HVAC system that maintains temperature and humidity at occupancy levels has been put in place.
 - c. Ceiling, overhead ductwork, piping, and lighting have been installed.
 - d. Installation areas do not require further "wet work" construction.

DETENTION ANNEX RENOVATION
WAKE COUNTY, NORTH CAROLINA
Architect's Project No.: 642088

- B. For Base Cabinets Installation: Examine floor levelness and flatness of installation space. Do not proceed with installation if encountered floor conditions required more than 1/2 inch leveling adjustment. When installation conditions are acceptable, for each space, establish the high point of the floor. Set and make level and plumb first cabinet in relation to this high point, and provide field modifications as required to not exceed maximum height dimensions.
 - 1. Construction tolerances shall not apply to casework maximum height dimensions; maximum indicated dimension shall be maintained at any point along the length of casework, regardless of floor levelness.
 - 2. Field modifications shall be made to the toe kick to account for leveling due to floor levelness.
- C. For Wall Cabinets Installation: Examine wall surfaces in installation space. Do not proceed with installation if the following conditions are encountered:
 - 1. Maximum variation from plane of masonry wall exceeds 1/4 inch in 10 ft and 1/2 inch in 20 ft or more, and/or maximum variation from plumb exceeds 1/4 inch per story.
 - 2. Maximum Variation of finished gypsum board surface from true flatness: 1/8 inch in 10 feet in any direction.
- D. Verify adequacy of backing and support framing.
- E. Verify location and sizes of utility rough-in associated with work of this section.

3.02 INSTALLATION

- A. Install work in accordance with AWI/AWMAC/WI (AWS) requirements for grade(s) indicated and in accordance with manufacturer's instructions.
- B. Set and secure custom cabinets in place, assuring that they are rigid, plumb, and level.
- C. Use fixture attachments in concealed locations for wall mounted components.
- D. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim for this purpose.
- E. Secure cabinets to floor using appropriate angles and anchorages.
- F. Fasten together cabinets in continuous runs, with joints flush, uniform and tight. Misalignment of adjacent units not to exceed 1/16 inch. In addition, do not exceed the following tolerances:
 - 1. Variation of Tops of Base Cabinets from Level: 1/16 inch in 10 feet.
 - 2. Variation of Bottoms of Wall Cabinets from Level: 1/8 inch in 10 feet.
 - 3. Variation of Faces of Cabinets from a True Plane: 1/8 inch in 10 feet.
 - 4. Variation of Adjacent Surfaces from a True Plane (Lippage): 1/32 inch.
 - 5. Variation in Alignment of Adjacent Door and Drawer Edges: 1/16 inch.
- G. Secure wall cabinets at top and bottom, at each end and no more than 16 inches on center. Secure directly into metal wall framing, or into FRT wood or metal channel blocking with No. 10 wafer head screws. Wall mounted hanger strips are not acceptable.
- H. Countertops: Install countertops intended and furnished for field installation in one true plane, with ends abutting at hairline joints, and no raised edges.
- I. Countersink anchorage devices at exposed locations. Conceal with solid wood plugs of species to match surrounding wood; finish flush with surrounding surfaces.

3.03 ADJUSTING

- A. Test installed work for rigidity and ability to support loads.
- B. Adjust moving or operating parts to function smoothly and correctly.

3.04 CLEANING

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

3.05 PROTECTION

- A. Do not permit finished casework to be exposed to continued construction activity.
- B. Protect casework and countertops from ongoing construction activities. Prevent workmen from standing on, or storing tools and materials on casework or countertops.
- C. Repair damage, including to finishes, that occurs prior to Date of Substantial Completion, using methods prescribed by manufacturer; replace units that cannot be repaired to like-new condition.

END OF SECTION 064100

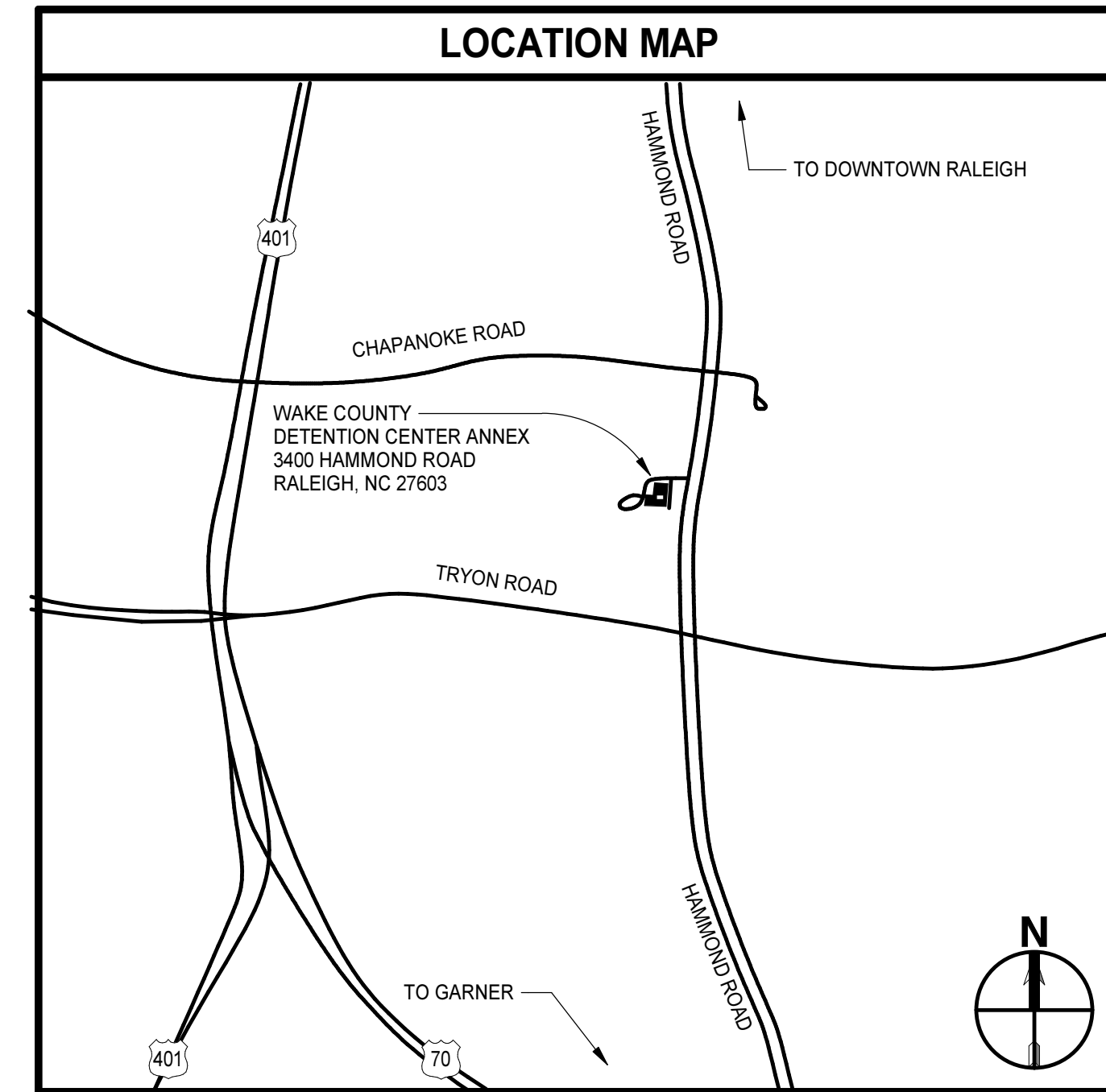
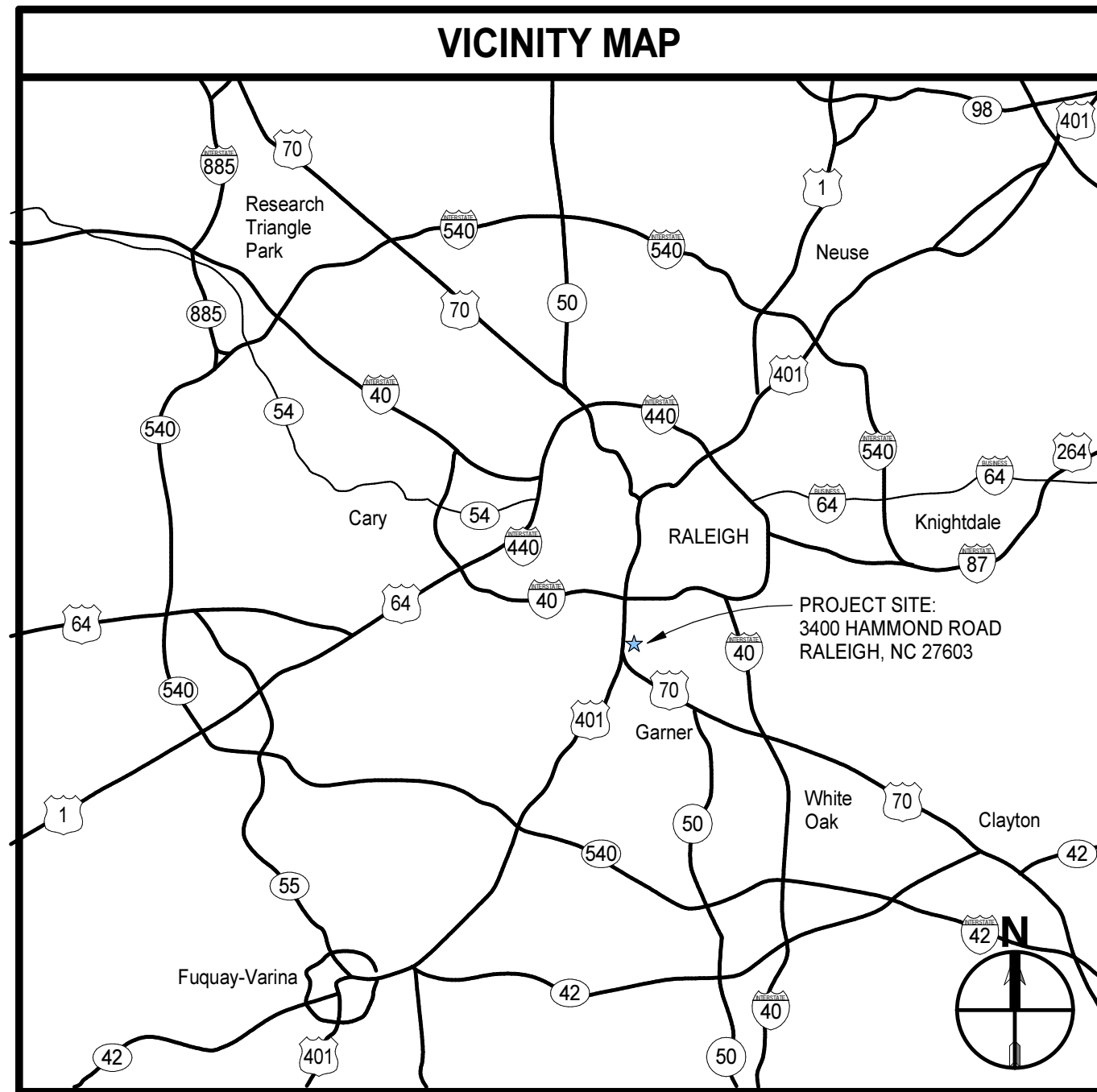
DETENTION ANNEX RENOVATION

Wake County, North Carolina

J-397-SJD/DWC

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8303 University Executive Park Drive, Suite 410	Charlotte, North Carolina
REI Engineers	ROOFING CONSULTANT
9121 Anson Way, Suite 100	Raleigh, North Carolina
Palacio Collaborative	COST CONSULTANT
128 Millport Circle, Suite 200	Greenville, South Carolina

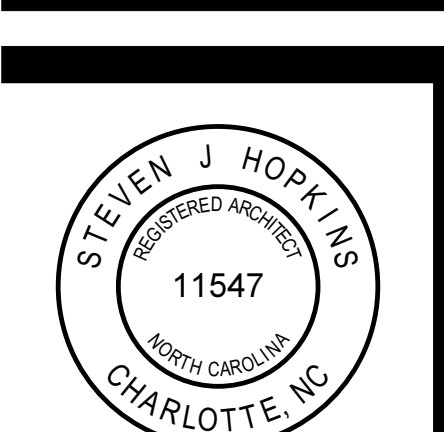
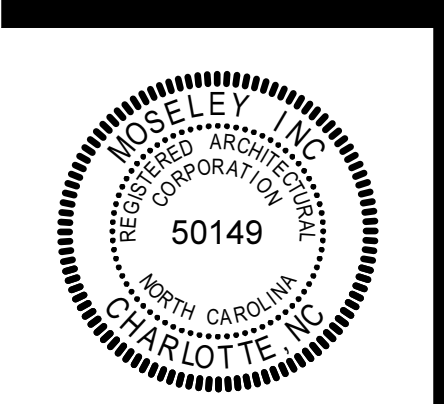
*AD-01

DRAWING INDEX

GENERAL	PLUMBING	MECHANICAL	ELECTRICAL
G0.1 COVER	P0.1 LEGENDS, ABBREVIATIONS AND GENERAL NOTES	M0.1 LEGENDS, ABBREVIATIONS AND GENERAL NOTES	E0.1 LEGENDS, ABBREVIATIONS AND GENERAL NOTES
G1.1 SECURE AREA & SECURITY WALLS FLOOR PLAN	P1.1 PLUMBING - DEMOLITION FLOOR PLAN - PART A	M0.2 SCHEDULES	E1.1 ELECTRICAL SITE PLAN
G2.1 GENERAL INFORMATION - AIR BARRIER	P1.2 REFLECTED CEILING PLAN - PART A	M1.1.1 FLOOR PLAN - PART A - DEMOLITION	E1.1.1 FIRST FLOOR PLAN - DEMOLITION - PART A
LIFE SAFETY	P1.3 REFLECTED CEILING PLAN - PART B	M1.2.1 FLOOR PLAN - PART B - DEMOLITION	E1.1.2 FIRST FLOOR PLAN - DEMOLITION - PART B
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C1.1 STAKING AND LANDSCAPE PLAN	P2.3 PLUMBING - SANITARY FLOOR PLAN - PART A	M2.2.1 FLOOR PLAN - PART B - DUCTWORK	E2.1.3 FIRST FLOOR PLAN - LIGHTING - PART B
C2.1 EXISTING CONDITIONS AND DEMOLITION PLAN	P2.4 PLUMBING - SANITARY FLOOR PLAN - PART B	M2.3.1 FLOOR PLAN - PART C - DUCTWORK	E2.1.4 FIRST FLOOR PLAN - POWER - PART B
C3.1 GRADING, EROSION CONTROL AND SITE UTILITY PLAN	P2.5 PLUMBING - DOMESTIC FLOOR PLAN - PART A	M2.3.2 FLOOR PLAN - PART C - PIPING	E2.1.5 FIRST FLOOR PLAN - LIGHTING - PART C
C4.1 DETAILS	P2.6 PLUMBING - DOMESTIC FLOOR PLAN - PART B	M3.1 ROOF PLAN	E2.1.6 FIRST FLOOR PLAN - POWER - PART C
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A1.1 SITE DETAILS	P3.3 PLUMBING DETAILS	M7.1 CONTROLS	E2.6.1 FIRST FLOOR PLAN - SECURITY ELECTRONICS ROUGH-IN - PART A
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A1.3 DEMOLITION PLAN - PART B	P4.1 LEGENDS, ABBREVIATIONS AND GENERAL NOTES		E2.6.3 FIRST FLOOR PLAN - SECURITY ELECTRONICS ROUGH-IN - PART C
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A3.0.1 FINISH SCHEDULE			
A3.1.1 INTERIOR-EXTERIOR SIGNAGE			
A3.2.1 DOOR & FRAME DETAILS, SCHEDULE, LOUVER & GLAZING TYPES			
A3.3.1 DETENTION DOOR SCHEDULE			
A3.4.1 DETENTION DOOR AND FRAME DETAILS			

THE CONTRACT DOCUMENTS ARE COMPLEMENTARY, AND WHAT IS REQUIRED BY ONE SHALL BE AS BINDING AS IF REQUIRED BY ALL.
IN CASE OF A CONFLICT, DISAGREEMENT, OR AMBIGUITY, PROVIDE THE BETTER QUALITY. IN CASE OF A CONFLICT, DISAGREEMENT, OR AMBIGUITY, PROVIDE THE GREATER QUANTITY OF WORK.

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DETENTION ANNEX RENOVATION
3400 Hammond Road, Raleigh, NC 27603
Wake County, North Carolina
J-397-SJD/DWC

PROJECT NO:	642088
DATE:	10/19/2025
REVISIONS	
DATE	DESCRIPTION
10/27/25	*AD-01

COVER

G0.1

TOILET ASSEMBLIES, SCHEDULE AND ENLARGED PLAN GENERAL NOTES

A. PLAN DIMENSIONS ARE TO FACE OF WALL OR PARTITION. WHERE APPLIED FINISHES OCCUR SUCH AS CERAMIC TILE, DIMENSIONS ARE TO FACE OF APPLIED FINISH. FOR WAINSCOTS, FLOOR PLAN DIMENSIONS ARE TO FACE OF WAINSCOT MATERIAL. APPLIED FINISHES ARE NOT ALLOWED TO REDUCE CLEAR DIMENSIONS. 'APPLIED FINISHES' IN THIS CASE DO NOT INCLUDE TRIM, BASE, AND ACOUSTIC WALL PANELS.

B. CLEAR DIMENSIONS ARE TO FACE OF APPLIED WALL AND PARTITION FINISHES.

KEYNOTES
 REPRESENTED BY []
 APPLIES TO DRAWINGS A7.1

- 1 RAISED DIRECT SUPERVISION PLATFORM
- 2 BUILD RAISED PLATFORM PER DIMENSIONS INDICATED
- 3 CONCRETE SLAB ON DECK ABOVE SLEEPER STUDS. SEE STRUCTURAL DWGS.
- 4 CAST IN PLACE CONCRETE STEPS.
- 5 SECURITY CAULK AT TRANSITION
- 6 HAND RAIL - FLOOR MOUNTED
- 7 STALL DOORS PER DIV. 08 - TYP.
- 8 PROVIDE TOOLED NOSING WITH FOUR 1/4" DEEP GROOVES 3/4" O.C. PARALLEL WITH TREAD EDGE. TOOL NOSING AT 1/2" RADIUS EDGE AT CAST IN-PLACE CONCRETE STEPS.
- 9 EXISTING CORNER MULLION TO REMAIN
- 10 ATTACH JAMB TO EXISTING SECURITY H.M. CORNER FRAME
- 11 SOLID SURFACE MATERIAL
- 12 UNDERCOUNTER UTILITY BRACKET. PAINT TO MATCH WALL COLOR
- 13 EXISTING WINDOW ABOVE
- 15 8" CMU LOW WALL PER DETAIL ON SHEET A0.2.
- 16 8" CMU LOW WALL PER DETAIL ON SHEET A0.2.
- 17 P1 WALL BELOW COUNTER PER DETAIL ON SHEET A0.2.
- 18 5" CHASE WITH SECURE ACCESS PANEL.

TOILET ASSEMBLIES
 APPLIES TO DRAWINGS A7.1 - A7.m
 REPRESENTED BY [TA#]

MARK	REMARKS	PLAN	TA12	TA13
TA7	BARRIER FREE			
TA8	BARRIER FREE OMIT (E)			
TA11	CENTER OVER LAVATORY			

LEGEND NOTES:
 A. HANDING/ORIENTATION MAY VARY. REFER TO PLANS FOR PROPER ORIENTATION.
 B. PLUMBING FIXTURE GRAPHICS IN THIS LEGEND ARE REPRESENTATIVE ONLY. ACTUAL PLUMBING FIXTURES MAY VARY.
 C. COAT/ROBE HOOKS INDICATED ON THE BACK OF TOILET COMPARTMENT DOORS ARE PART OF THE TOILET COMPARTMENT ASSEMBLY AND ARE NOT CONSIDERED A TOILET ACCESSORY.

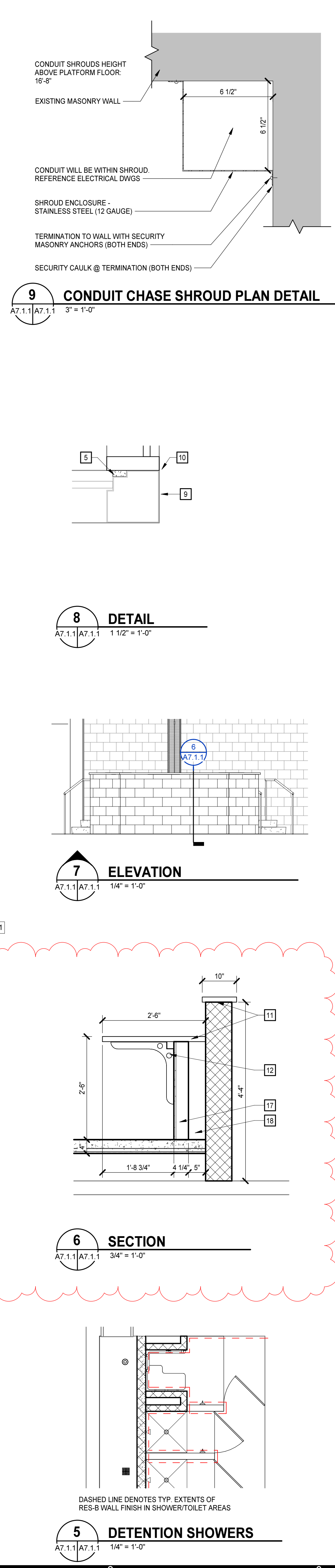
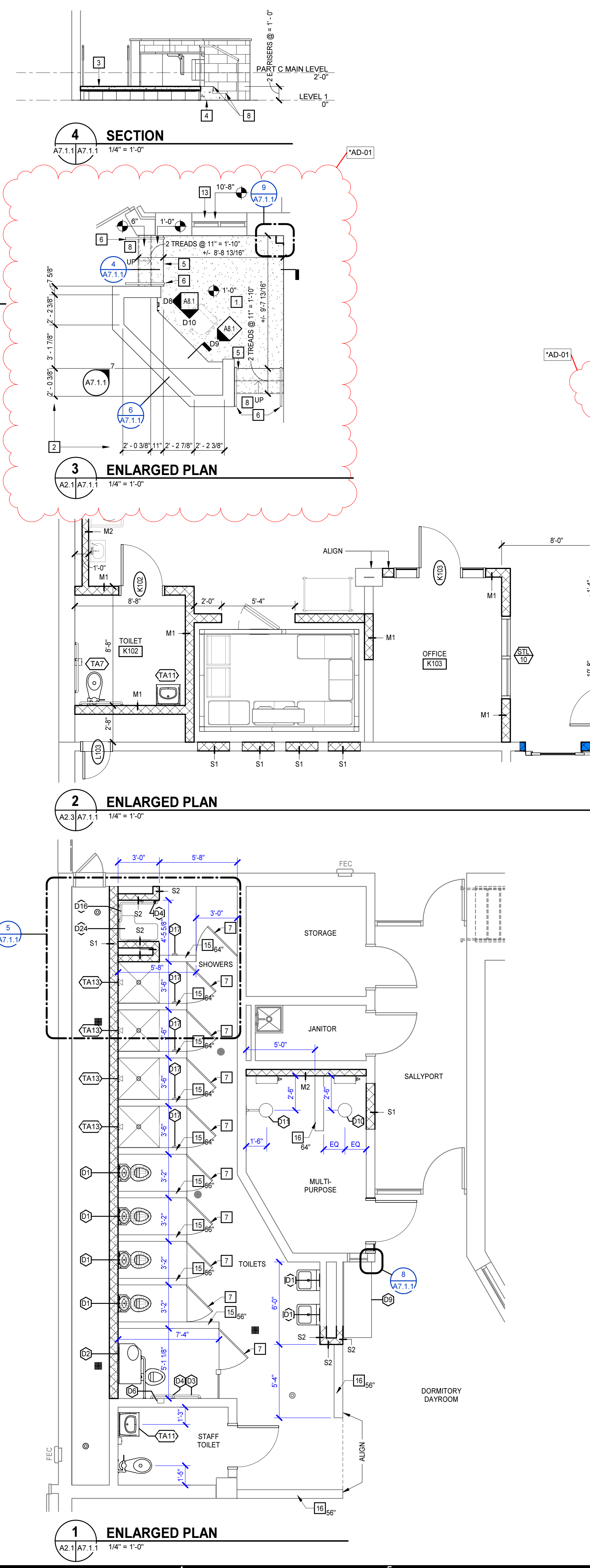
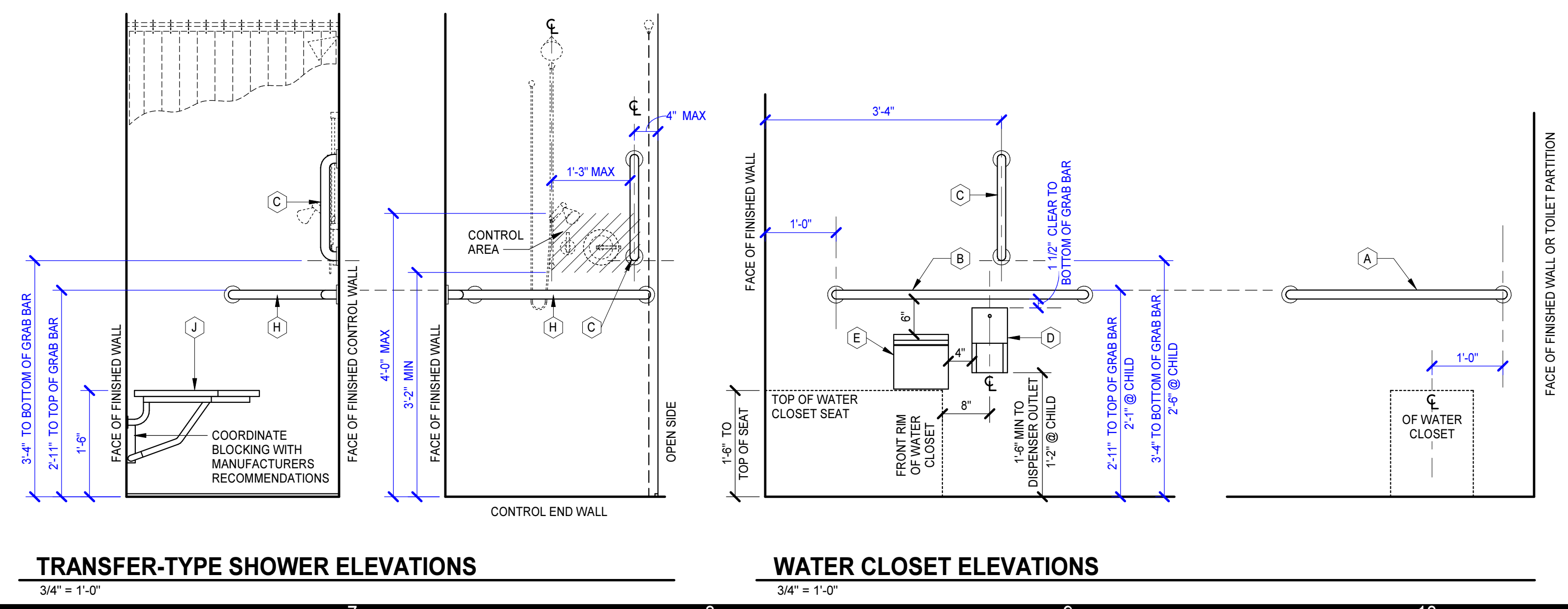
TOILET ACCESSORIES SCHEDULE

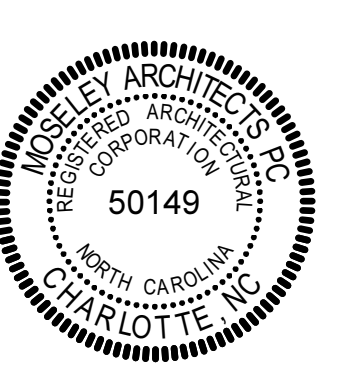
MARK	DESCRIPTION	MOUNTING HEIGHT	REMARKS
A	36" HORIZONTAL GRAB BAR	REFER TO WATER CLOSET ELEVATIONS	
B	42" HORIZONTAL GRAB BAR	REFER TO WATER CLOSET ELEVATIONS	
C	18" VERTICAL GRAB BAR	REFER TO WATER CLOSET ELEVATIONS	
D	TOILET TISSUE DISPENSER	REFER TO WATER CLOSET ELEVATIONS	
E	SANITARY NAPKIN DISPOSAL	REFER TO WATER CLOSET ELEVATIONS	
F	SOAP DISPENSER	3'-4" AFF TO DISPENSING OUTLET	
G	MIRROR (18" x 36"), OVER LAV AND COUNTERTOP	3'-4" AFF TO BOTTOM OF REFLECTIVE SURFACE	

1. ACCESSORY ITEMS ARE IDENTIFIED BY [] ON PLANS. LETTERS CORRESPOND TO SCHEDULE ABOVE.
 2. ACTUAL DIMENSIONS OF ACCESSORIES MAY VARY. COORDINATE DIFFERENCES, IF ANY.
 3. REFER TO ALL CASEWORK ELEVATIONS FOR ADDITIONAL TOILET ACCESSORY LOCATIONS.
 4. PROVIDE MOP AND BROOM HOLDER W/ SHELF [] AT ALL CUSTODIAL/JANITORIAL SINKS. MOUNT AT 5'-0" AFF TO CENTERLINE AND LOCATE ON SIDE WALL OF SINK (NOT ON WALL ABOVE FAUCET).
 5. PROVIDE ROBE HOOK ON INTERIOR FACE OF ALL TOILET ROOM DOORS WHEREIN ONLY ONE WATER CLOSET IS PROVIDED. MOUNT AT 3'-11" AFF TO TOP.

DETENTION EQUIPMENT SCHEDULE

NO	DESCRIPTION	MOUNTING HEIGHT	DETAIL	NOTES
D1	PENAL COMBINATION FIXTURE		1/A7.2.1	
D2	DETENTION MIRROR, SINGLE	PER DETAIL	2/A7.2.1	
D3	DETENTION MIRROR, DOUBLE	PER DETAIL	3/A7.2.1	
D4	GRAB BAR, ANTI-LIGATURE, 42"	REFER TO WATER CLOSET ELEVATIONS	3/A7.2.1	FOR SHOWER LOCATIONS, SEE TRANSFER-TYPE SHOWER ELEVATIONS
D4	GRAB BAR, ANTI-LIGATURE, 18"	REFER TO WATER CLOSET ELEVATIONS	3/A7.2.1	
D6	RECESSED TOILET PAPER HOLDER	PER DETAIL	6/A7.2.1	
D9	DETENTION SS COUNTER, 24" DEPTH	PER DETAIL	9/A7.2.1	SALVAGED SS COUNTER TOP. INSTALL IN LOCATIONS SHOWN
D10	DETENTION STOOL, FLOOR-MOUNTED	FLOOR MOUNTED	9/A7.2.1	
D11	DETENTION SWING STOOL, WALL-MOUNTED	PER DETAIL	4/A7.2.1	INCLUDES WALL EMBED PLATE
D16	18"x36" CORNER GRAB BAR ASSEMBLY, ANTI-LIGATURE	REFER TO SHOWER ELEVATIONS		
D17	SAFETY HOOK, SINGLE	PER DETAIL	8/A7.2.1	
D18	DETENTION TABLE, 6-MAN	FLOOR MOUNTED	13/A.7.2.1 SIM	EXISTING TABLE. RE-INSTALL IN LOCATION SHOWN.
D19	DETENTION TABLE, 4-MAN	FLOOR MOUNTED	13/A.7.2.1	
D20	DETENTION TABLE, 4-MAN, ACCESSIBLE	FLOOR MOUNTED	14/A.7.2.1	
D21	DETENTION BUNK, SINGLE, FLOOR-MOUNTED	FLOOR MOUNTED	12/A7.2.1	
D22	DETENTION BUNK, DOUBLE, FLOOR-MOUNTED	FLOOR MOUNTED	12/A7.2.1	EXISTING BUNK INSTALL IN NEW LOCATION SHOWN.
D24	L-SHAPED FOLDING SHOWER SEAT	1'-6" TO SEAT SURFACE		





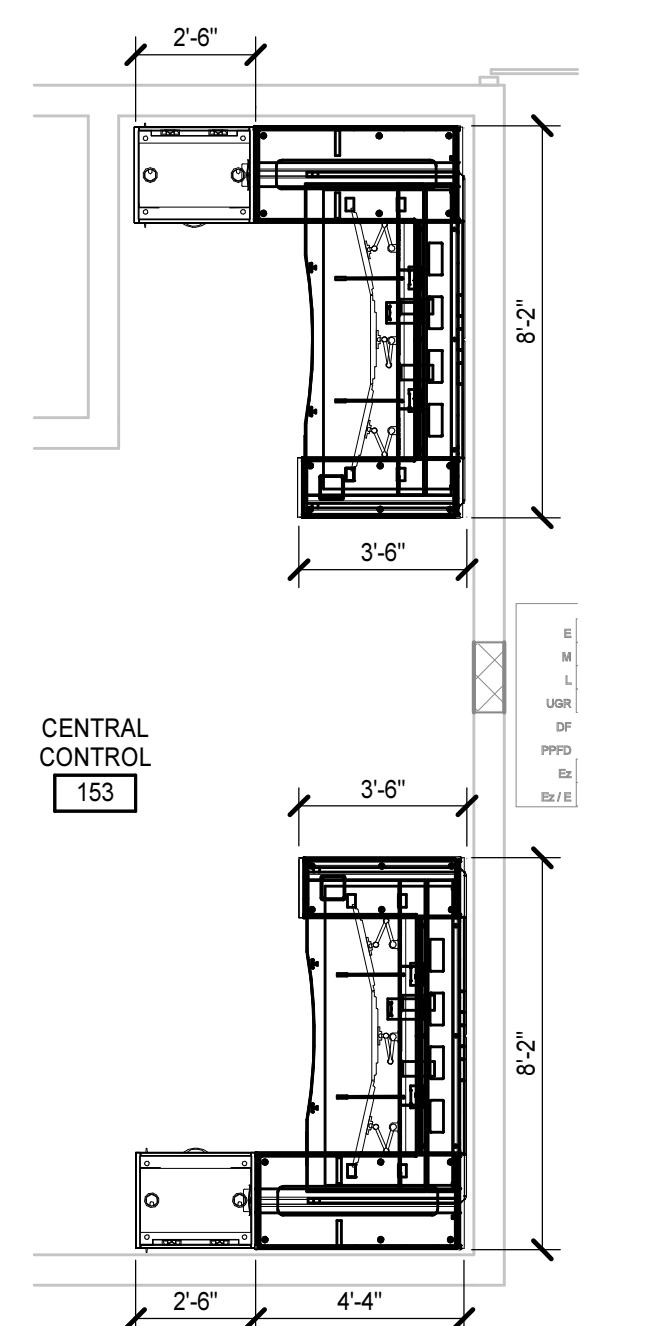
CASEWORK GENERAL NOTES	
A.	UNLESS INDICATED OTHERWISE, ALL COUNTERTOP(S): a. 2'-10" AFF MAX OR 2'-10" MAX TO TOP OF RIM AT DROP-IN SINKS AND LAVATORIES WHERE OCCURS b. 2'-1" DEEP c. HIGH PRESSURE SOLID SURFACE d. BACKSPASHES: 4" HIGH AT ALL SIDES AND BACK e. EXTEND COUNTERTOP 1/2" PAST BASE CABINET AT ALL EXPOSED CASEWORK ENDS f. VERIFY SLAB LEVELNESS AT CASEWORK PRIOR TO INSTALL. CONSTRUCTION TOLERANCES DO NOT APPLY TO ACCESSIBILITY DIMENSIONS. MAX DIMENSIONS SHALL BE MAINTAINED.
B.	UNLESS INDICATED OTHERWISE, ALL BASE CABINET(S): a. 2'-0" DEEP NOMINAL b. 2" NOMINAL HIGH (REDUCE AS NEEDED FOR TOLERANCES) AND 3" DEEP c. SINK LOCATIONS: 3'-0" WIDE CABINET WITH ATTACHED TOE KICK FOR BARRIER FREE ACCESS.
C.	UNLESS INDICATED OTHERWISE, ALL WALL CABINET(S): a. 1'-0" 1/2" DEEP NOMINAL b. 2'-6" HIGH c. TOP AT 7'-0" AFF d. MINIMUM 11" CLEAR INTERIOR DEPTH
D.	UNLESS INDICATED OTHERWISE, ALL TALL CABINET(S): a. 2'-0" DEEP NOMINAL b. 7'-2" HIGH c. TOE KICKS: 4" HIGH AND 3" DEEP
E.	BUILT-IN EQUIPMENT: SIZE OPENING (HEIGHT, WIDTH, AND DEPTH) AND ROUGH-IN REQUIREMENTS AS REQUIRED BASED ON APPROVED MANUFACTURER SUBMITTED.
F.	ALL SHELVES: ADJUSTABLE UNLESS INDICATED OTHERWISE.
G.	PROVIDE FINISH END PANELS AT ALL EXPOSED CASEWORK ENDS.
H.	LOCKS ON ALL DETENTION CASEWORK.
I.	ALL CASEWORK NOTED WITH "D" TO BE DETENTION GRADE CASEWORK.
J.	PROVIDE FULL BULLNOSE EDGE FOR DETENTION CASEWORK QSM COUNTERTOPS.
K.	PROVIDE 2" RADIUS CORNERS FOR QSM COUNTERTOPS.

CASEWORK KEYNOTES	
REPRESENTED BY [Symbol]	
APPLIES TO DRAWING A8.1	
1	ACCESSIBLE SINK CABINET WITH ATTACHED TOE KICK; REFER TO 13A8.1
2	OPEN KNEE SPACE
3	UNDERCOUNTER BRACKET
4	REFRIGERATOR (NIC)
5	BULLNOSE ALL EDGES OF THE COUNTER
6	COFFEE MAKER (NIC)
7	MICROWAVE (NIC)
8	TRASH BIN CABINET
9	ICE MAKER (NIC)
10	18"x18" METAL ACCESS PANEL CENTERED ON BACK WALL, COLOR TO MATCH WALL
11	DETENTION CABINET

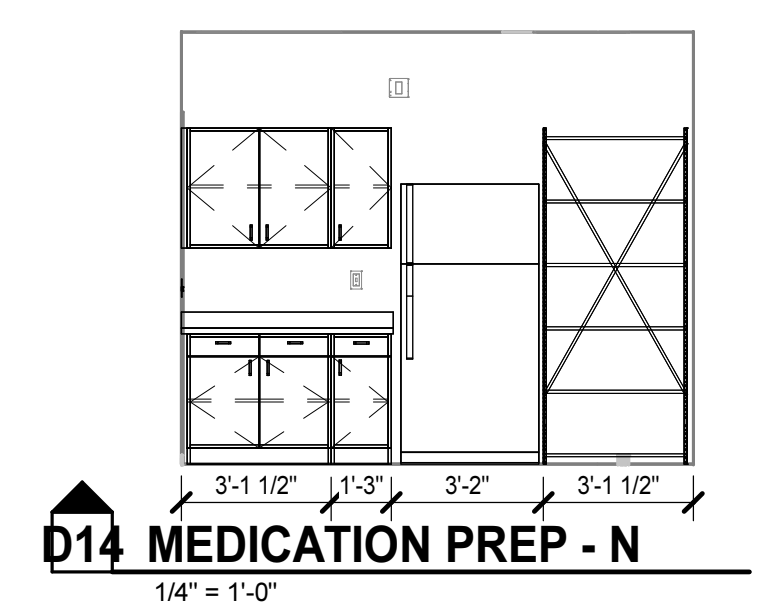


REFER TO SPECIFICATIONS FOR REQUIREMENTS

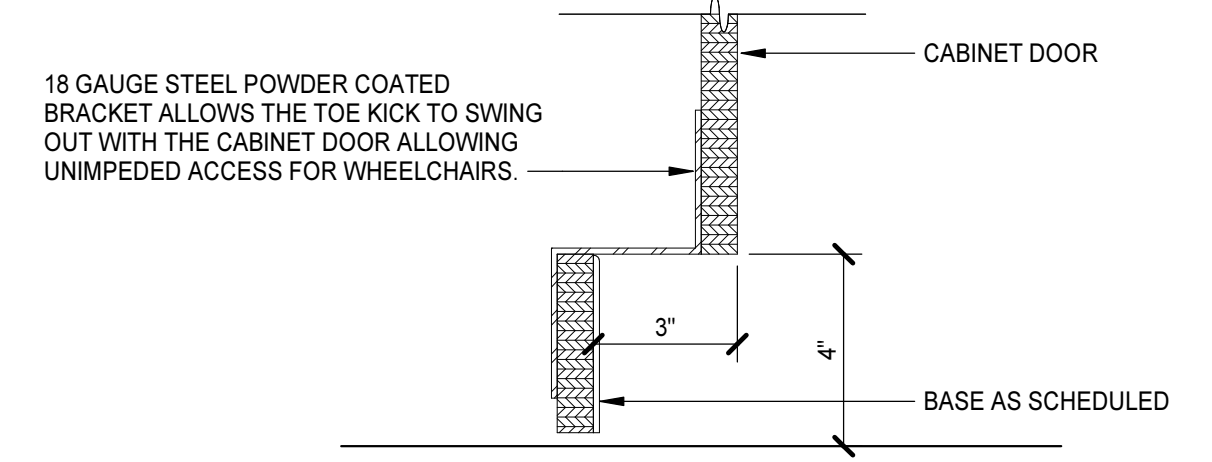
12 CONTROL ROOM TYPICAL CONSOLE
 A8.1 1/2" = 1'-0"



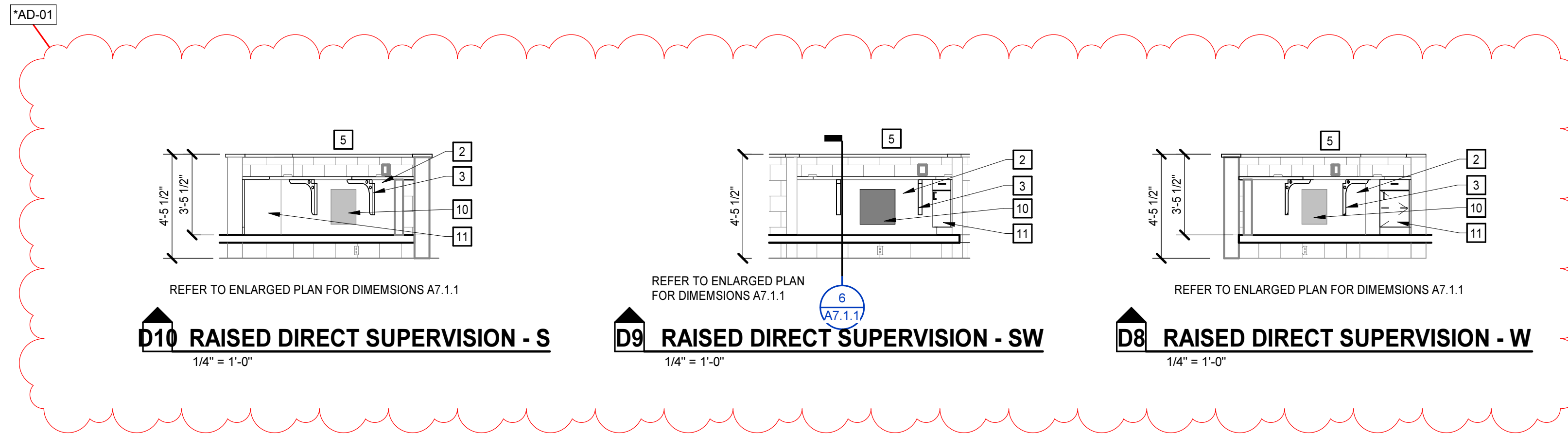
11 CONTROL ROOM
 1/4" = 1'-0"



D14 MEDICATION PREP - N
 1/4" = 1'-0"



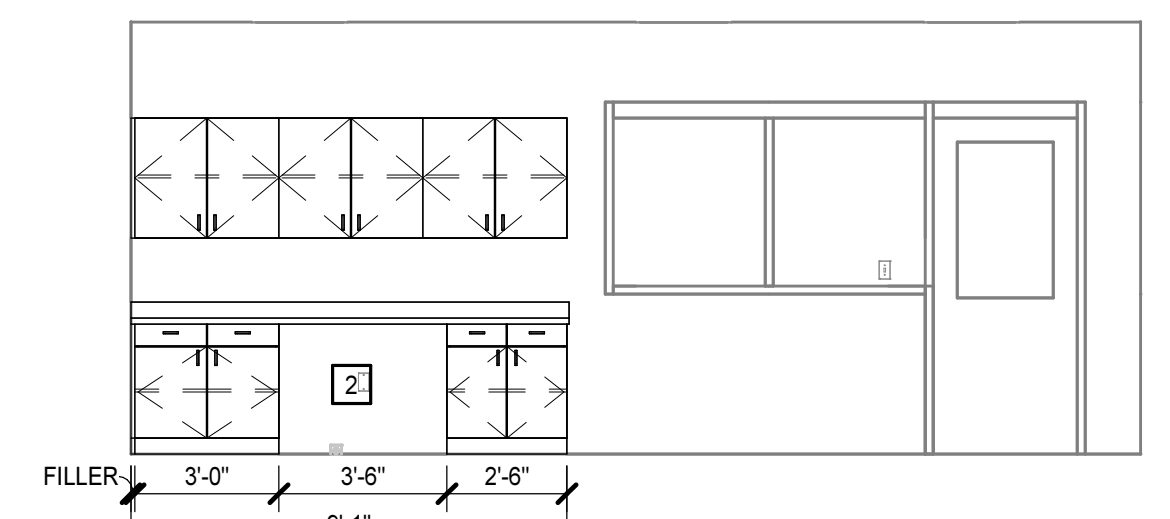
13 TYP ACCESSIBLE INTEGRAL TOEKICK
 A8.1 3" = 1'-0"



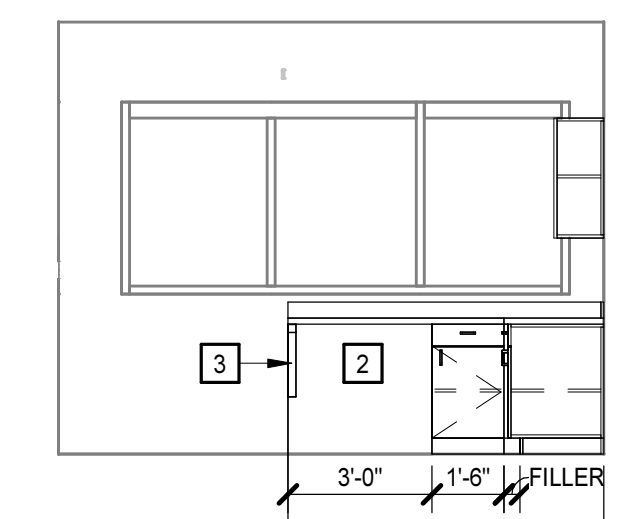
D10 RAISED DIRECT SUPERVISION - S
 1/4" = 1'-0"

D9 RAISED DIRECT SUPERVISION - SW
 1/4" = 1'-0"

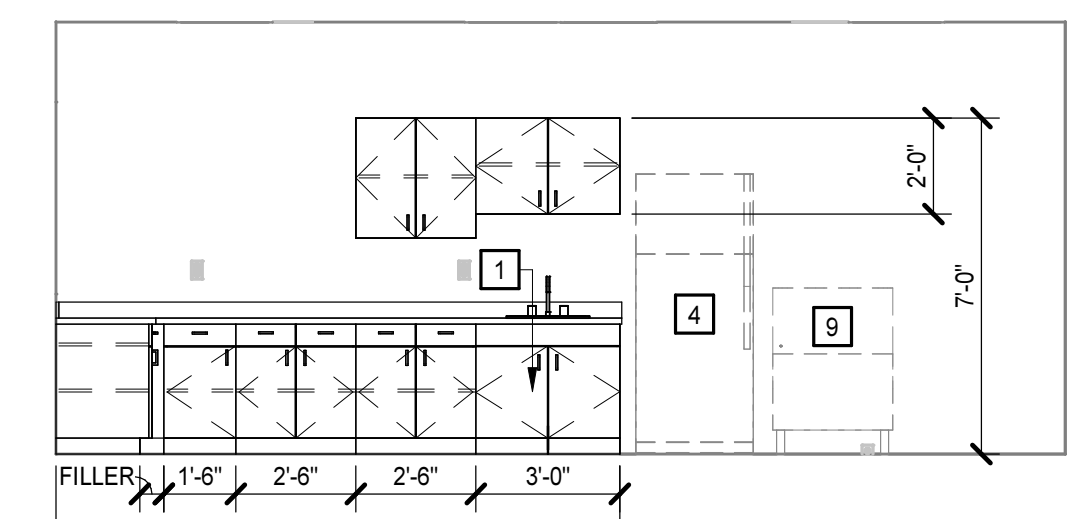
D8 RAISED DIRECT SUPERVISION - W
 1/4" = 1'-0"



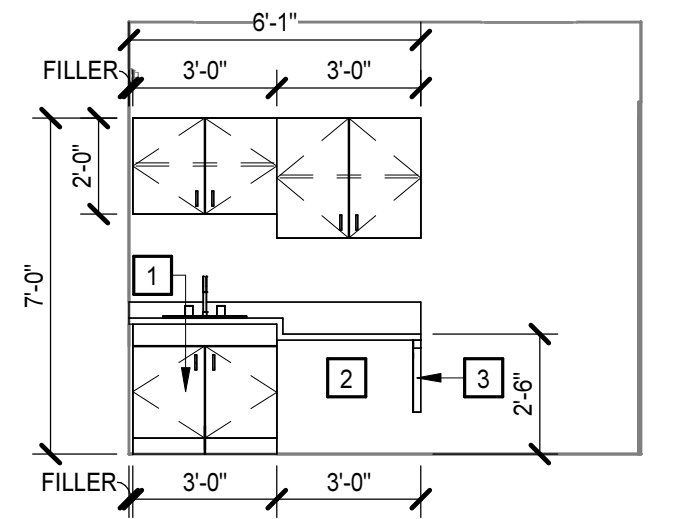
D7 131 NURSE STATION - N
 1/4" = 1'-0"



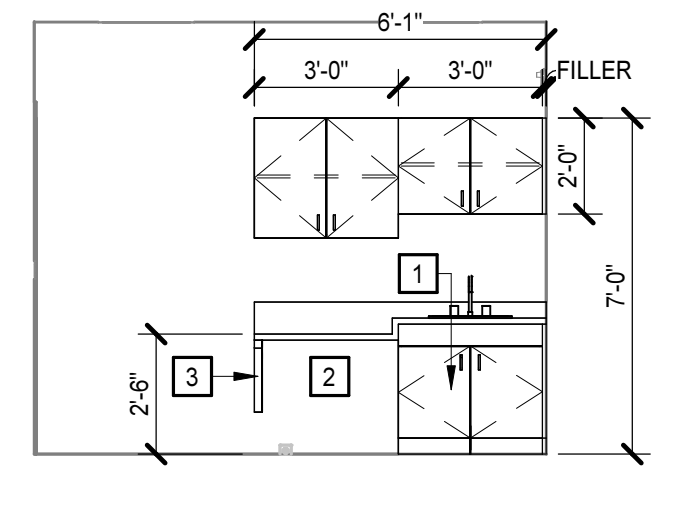
D6 131 NURSE STATION - E
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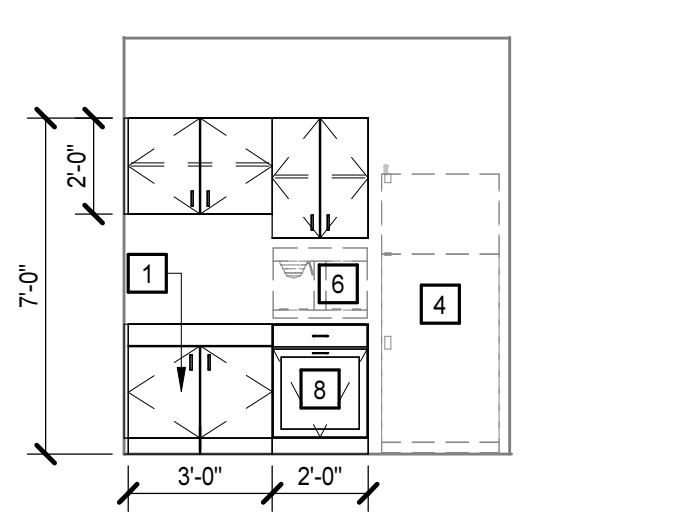
D5 131 NURSE STATION - S
 1/4" = 1'-0"



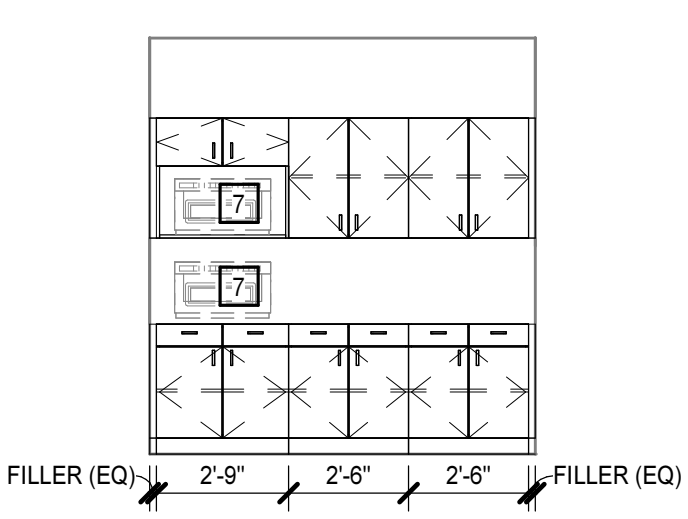
D4 126 MEDICATION PREP - S
 1/4" = 1'-0"



D3 125 EXAM - N
 1/4" = 1'-0"



2 112 STAFF BREAKROOM - W
 1/4" = 1'-0"



1 112 STAFF BREAKROOM - E
 1/4" = 1'-0"

DETENTION ANNEX RENOVATION

3400 Hammond Road, Raleigh, NC 27603
 Wake County, North Carolina
 J-397-SJD/DWC

PROJECT NO:	642088
DATE:	10/13/2025
REVISIONS	
DATE	DESCRIPTION
10/27/25	*AD-01

CASEWORK AND ELEVATIONS

SECURITY ELECTRONICS LEGEND

(ALL SYMBOLS NOT NECESSARILY USED)

	WALL MOUNTED EQUIPMENT RACK/CABINET
	SECURITY EQUIPMENT RACK
	GLASS BREAK (VIBRATION) SENSOR
	DURESS ALARM - WALL MTD (48" AFF)
	DURESS ALARM - FURNITURE MOUNTED - COORDINATE WITH FURNITURE PROVIDER
	MASTER INTERCOM
	INTERCOM WALL STATION (48" AFF TO BUTTON)
	INMATE EMERGENCY INTERCOM TO MAIN CONTROL (DOOR FRAME MOUNT 18" AFF)
	PAGING SPEAKER
	VIDEO INTERCOM MASTER
	VIDEO INTERCOM REMOTE
	MICROPHONE
	INTERVIEW LIGHT
	CALL BUTTON
	TALK THRU COMMUNICATOR
	TALK THRU UNIT
	CAMERA - FIXED
	CAMERA - PTZ
	CAMERA - MULTI-LENS (180°, 270°, 360°)
	PROXIMITY CARD READER
	CARD READER AND KEYPAD
	GUARD TOUR
	DOOR RELEASE PUSHBUTTON
	GRAPHICAL USER INTERFACE: A & B = CENTRAL CONTROL X = EXISTING TO REMOVE
	VIDEO VISITATION UNIT
REFER TO SPEC SECTION 08 71 00	
	DOOR POSITION SWITCH
	ELECTRIC LOCK DEVICE WITH REQUEST TO EXIT (REX) AND DOOR POSITION SWITCH (DPS)
	REQUEST TO EXIT DEVICE

*AD-01

GENERAL DEMOLITION NOTES

- PROVIDE ALL ELECTRICAL DEMOLITION WORK REQUIRED TO INSTALL THE WORK INDICATED. REMOVE, REROUTE, AND RECONNECT ALL BRANCH CIRCUITS THAT WILL REMAIN IN USE BUT INTERFERES WITH THE WORK.
- REMOVE ALL EXISTING CONDUITS THAT WILL NOT BE REUSED AND WHERE THEY WILL BE EXPOSED AFTER COMPLETION. ABANDON ALL OTHERS IN THE WALLS ONLY. DISCONNECT ALL WIRING INDICATED AND/OR REQUIRED TO BE REMOVED FROM ALL POWER SOURCES. REMOVE ALL WIRES FROM ABANDONED CONDUITS AND PROVIDE BLANK COVER PLATES FOR BOXES NOT UTILIZED FOR THE WORK.
- MAINTAIN CONTINUITY OF ALL EXISTING CIRCUITS TO REMAIN OR PORTIONS THEREOF AFFECTED BY THE WORK.
- BEFORE DEMOLITION, VERIFY WITH THE OWNER ALL EQUIPMENT TO BE SALVAGED TO OWNER AND NOT REMOVED FROM THE SITE. FOR ALL REMAINING EQUIPMENT INDICATED FOR REMOVAL (AND NOT RELOCATED), REMOVE AND DISPOSE IN A LEGAL MANNER.
- EXERCISE CARE IN REMOVING DEMOLITION ITEMS. REPAIR OR REPLACE ALL DAMAGE CAUSED TO EXISTING CONSTRUCTION AND EQUIPMENT TO REMAIN.
- DRAWINGS ARE BASED UPON EXISTING PLANS AND FIELD INVESTIGATION WITHOUT DEMOLITION. VISIT THE EXISTING BUILDING AND BECOME FAMILIAR WITH ALL EXISTING CONDITIONS AND EXAMINE ALL DRAWINGS TO AVOID CONFLICTS.
- WHERE DEMOLITION OF TELECOMMUNICATIONS DEVICES OCCUR, REMOVE CABLING NOT INDICATED TO REMAIN BACK TO POINT OF ORIGIN.
- DEMOLITION FLOOR PLANS ARE PROVIDED FOR REFERENCE ONLY TO AID IN DEFINING THE SCOPE OF DEMOLITION WORK.

DEMOLITION LEGEND

SYMBOL	DESCRIPTION
	REMOVE DEVICES, EQUIPMENT, IN ACCORDANCE WITH THE GENERAL DEMOLITION NOTES.
	DEVICES ARE EXISTING TO REMAIN.
	WITHIN HATCHED AREAS, DISCONNECT AND REMOVE ALL ELECTRICAL MATERIALS INCLUDING BUT NOT LIMITED TO LIGHTS, DEVICES, EQUIPMENT, SPEAKERS, FIRE ALARM, COMMUNICATIONS, AND CIRCUITRY.

POWER DEVICE / EQUIPMENT LEGEND

SYMBOL	DESCRIPTION
	REFER TO TYPICAL DEVICE ELEVATION DETAIL FOR DEVICE MOUNTING REQUIREMENTS. FOLLOWING DEVICES ARE DENOTED AS KEYNOTE TWO IN DETAIL:
	OVERHEAD DOOR CONTROLLER.
	DOORBELL PUSH BUTTON.
	EMERGENCY POWER OFF (E.P.O.) SWITCH.
	HANDICAP DOOR OPERATOR SWITCH.
	REFER TO TYPICAL DEVICE ELEVATION DETAIL FOR DEVICE MOUNTING REQUIREMENTS. FOLLOWING DEVICES ARE DENOTED AS KEYNOTE THREE IN DETAIL:
	NON-FUSIBLE DISCONNECT SWITCH.
	FUSIBLE DISCONNECT SWITCH.
	ENCLOSED CIRCUIT BREAKER, CHARACTERISTICS AS INDICATED.
	MANUAL MOTOR STARTER, OVERLOAD PROTECTION AS REQUIRED PER NAME PLATE RATINGS, WITH 'ON' INDICATOR PILOT LIGHT.
	MAGNETIC MOTOR STARTER, OVERLOAD RELAYS AS REQUIRED TO SERVE MANUFACTURER REQUIREMENTS OF EQUIPMENT SERVED. PROVIDE WITH HAND-OFF-AUTOMATIC SELECTOR SWITCH AND INDICATOR LIGHTS.
	COMBINATION MAGNETIC STARTER AND DISCONNECT SWITCH, OVERLOAD ELEMENTS AND FUSING AS REQUIRED TO SERVE MANUFACTURER REQUIREMENTS OF EQUIPMENT SERVED. PROVIDE WITH HAND-OFF-AUTOMATIC SELECTOR SWITCH AND INDICATOR LIGHTS.
	REFER TO TYPICAL DEVICE ELEVATION DETAIL FOR DEVICE MOUNTING REQUIREMENTS. FOLLOWING DEVICES ARE DENOTED AS KEYNOTE FOUR IN DETAIL:
	DOORBELL CHIME, WALL MOUNTED.
	MOUNT THE FOLLOWING DEVICES AS NOTED:
	FLUSH VALVE TRANSFORMER POWER CONNECTION. PROVIDE A 4"x4" RECESSED JB AND MOUNT POWER SUPPLY PROVIDED BY DIV 22. COORDINATE CONNECTION WITH DIV 22. PROVIDE A 2"x4" JB AT EACH TOILET, SINK AND WATER CLOSET AS RECOMMENDED BY THE MANUFACTURER. PROVIDE 2 #14 IN 1/2" CDAISY CHAINED BETWEEN UP TO EIGHT BOXES AND TERMINATING AT POWER SUPPLY.
	ISOLATION VALVE. REFER TO ISOLATION VALVE CONTROL DETAIL ON DRAWING E4 SERIES DRAWING. EQUIPMENT POWER CONNECTION.
	JUNCTION BOX, CONCEALED ABOVE CEILING, UNO.
	JUNCTION BOX, WALL MOUNTED. MOUNTING HEIGHT AS INDICATED ON PLANS.
	MOTOR POWER CONNECTION.
	MOTOR RATED SWITCH WITH OVERLOAD PROTECTION.
	LINE VOLTAGE THERMOSTAT. DIVISION 23 FURNISH, DIVISION 26 INSTALL. REFER TO DIVISION 23 DRAWINGS FOR LOCATIONS AND QUANTITY.
	POWER FOR DIV 23 MOTORIZED DAMPER. REFER TO DIVISION 23 DRAWINGS FOR LOCATIONS AND PLANS.
	NON-METALLIC SURFACE RACEWAY, DEVICES AS INDICATED, MOUNTING HEIGHT INDICATED ON PLANS.
	PANELBOARD OR SWITCHBOARD. PROVIDE 6 INCH CONCRETE HOUSEKEEPING PAD FOR ALL GROUND MOUNTED EQUIPMENT UNLESS NOTED OTHERWISE. DENOTED BY PANELBOARD/SWITCHBOARD TAG PER ONE-LINE DIAGRAM.
	TRANSFORMER, PROVIDE 4 INCH CONCRETE HOUSEKEEPING PAD UNLESS NOTED OTHERWISE. DENOTED BY TRANSFORMER TAG PER ONE-LINE DIAGRAM.
	UTILITY METER. MOUNT PER UTILITY STANDARDS, UNO.
	FEEDER TAG. REFER TO FEEDER SCHEDULE ON DWG ES.1.
	FOR MULTI-FAMILY HOUSING PROJECTS ONLY. RESIDENTIAL UNIT METERCENTER IDENTIFICATION TAG. IDENTIFIES THE METERCENTER THAT PROVIDES POWER TO THE RESIDENTIAL UNIT LOADCENTER.
	FOR SENIOR LIVING PROJECTS ONLY. RESIDENTIAL UNIT PANELBOARD DESIGNATION TAG. IDENTIFIES THE PANELBOARD & CIRCUIT THAT PROVIDES POWER TO THE RESIDENTIAL UNIT LOADCENTER.
	BRANCH CIRCUIT RUN CONCEALED, UNO. DASHED INDICATES CIRCUITRY REQUIRED TO BE RUN BELOW SLAB.
	BRANCH CIRCUIT HOME RUN TO PANELBOARD AND CIRCUIT INDICATED.

ONE LINE DIAGRAM LEGEND

SYMBOL	DESCRIPTION
	CIRCUIT BREAKER
	FUSED SWITCH
	TRANSFORMER
	TRANSFER SWITCH
	FEEDER DESIGNATION
	CURRENT TRANSFORMER
	POTENTIAL TRANSFORMER

RECEPTACLE DEVICE LEGEND

SYMBOL	DESCRIPTION
	REFER TO TYPICAL DEVICE ELEVATION DETAIL FOR DEVICE MOUNTING REQUIREMENTS. FOLLOWING DEVICES ARE DENOTED AS KEYNOTE ONE IN DETAIL:
	APPLIANCE RECEPTACLE. PROVIDE NEMA CONFIGURATION TO MATCH PLUG FOR EQUIPMENT SERVED.
	DUPLICATE RECEPTACLE, NEMA 5-20R.
	DOUBLE DUPLICATE RECEPTACLE, NEMA 5-20R.
	GFCI DUPLICATE RECEPTACLE, NEMA 5-20R.
	SINGLE DUPLICATE RECEPTACLE, NEMA 5-20R.
	SWITCHED DUPLICATE RECEPTACLE WITH SPLIT YOKES, THE BOTTOM OUTLET IS SWITCHED & THE TOP OUTLET IS UNSWITCHED, NEMA 5-15R.
	REFER TO TYPICAL DEVICE ELEVATION DETAIL FOR DEVICE MOUNTING REQUIREMENTS. FOLLOWING DEVICES ARE DENOTED AS KEYNOTE TWO IN DETAIL:
	DUPLICATE RECEPTACLE, NEMA 5-20R.
	DOUBLE DUPLICATE RECEPTACLE, NEMA 5-20R.
	GFCI DUPLICATE RECEPTACLE, NEMA 5-20R.
	SINGLE DUPLICATE RECEPTACLE, NEMA 5-20R.
	REFER TO TYPICAL DEVICE ELEVATION DETAIL FOR DEVICE MOUNTING REQUIREMENTS. FOLLOWING DEVICES ARE DENOTED AS KEYNOTE FOUR IN DETAIL:
	DUPLICATE RECEPTACLE, NEMA 5-20R.
	GFCI DUPLICATE RECEPTACLE, NEMA 5-20R.
	SINGLE RECEPTACLE, NEMA 5-20R.
	MOUNT THE FOLLOWING DEVICES AS NOTED:
	DUPLICATE RECEPTACLE, NEMA 5-20R, CEILING MOUNT.
	DOUBLE DUPLICATE RECEPTACLE, NEMA 5-20R, CEILING MOUNT.
	DUPLICATE RECEPTACLE, NEMA 5-20R, RECESS FLOOR MOUNT.
	DOUBLE DUPLICATE RECEPTACLE, NEMA 5-20R, RECESS FLOOR MOUNT.
	CORD REEL OUTLET, CEILING MOUNT.
	SYMBOL VARIATIONS
	RECEPTACLE CONNECTED TO EMERGENCY POWER. PROVIDE RED DEVICE. TYPE OF RECEPTACLE MAY VARY.
	GFCI RECEPTACLE CONNECTED TO EMERGENCY POWER. PROVIDE RED DEVICE. TYPE OF RECEPTACLE MAY VARY.
	PROTECTIVE COVER FOR RECEPTACLE. PROVIDE NEMA 3R 'WHILE IN USE' ENCLOSURE FOR ALL EXTERIOR LOCATIONS. TYPE OF RECEPTACLE MAY VARY.
	PLUG LOAD CONTROLLED RECEPTACLE. TYPE OF RECEPTACLE MAY VARY.
	RECEPTACLE WITH USB PORTS. TYPE OF RECEPTACLE MAY VARY.

POWER / COMMUNICATION DEVICE LEGEND

SYMBOL	DESCRIPTION
	POWER/COMMUNICATIONS RECESSED FLOOR BOX. WHERE INDICATED, SUBSCRIPT NUMBER INDICATES OUTLET TYPE. REFER TO DETAIL ON E4 SERIES DRAWINGS.
	POWER/COMMUNICATIONS POKE THRU FLOOR BOX. WHERE INDICATED, SUBSCRIPT NUMBER INDICATES OUTLET TYPE. REFER TO DETAIL ON E4 SERIES DRAWINGS.
	SYSTEM FURNITURE FLEX POWER CABLE CONNECTION VIA FLOOR BOX WITH COVER SUITABLE FOR SYSTEM FURNITURE CONNECTION. REFER TO DETAIL ON E4 SERIES DRAWINGS. COORDINATE WITH SYSTEM FURNITURE PROVIDER PRIOR TO ROUGH-IN.
	SYSTEM FURNITURE FLEX POWER CABLE CONNECTION VIA FLUSH WALL BOX MOUNTED 4" AFF. REFER TO DETAIL ON E4 SERIES DRAWINGS. COORDINATE WITH FURNITURE PROVIDER PRIOR TO ROUGH-IN.
	POWER/COMMUNICATIONS POWER POLE, FURNISHED WITH (NIC) SYSTEM FURNITURE. PROVIDE POWER J-BOX MOUNTED TO STRUCTURE ABOVE CEILING AND FLEXIBLE CONDUIT CONNECTION TO J-BOX MOUNTED TO TOP OF POLE AND CONNECTED TO DIGITAL(S) FURNISHED WITH POLE LOCATION IS APPROXIMATE, COORDINATE WITH SYSTEM FURNITURE PROVIDER PRIOR TO ROUGH-IN.
	POWER AND COMMUNICATIONS FOR CEILING MOUNTED VIDEO PROJECTOR. PROVIDE CEILING MOUNTED DUPLICATE RECEPTACLE, NEMA 5-20R AND CEILING MOUNTED TELECOMMUNICATION OUTLET. COORDINATE FINAL LOCATION PRIOR TO ROUGH-IN.
	RECEPTACLE MOUNTED BESIDE TELECOMMUNICATION OUTLET. PROVIDE RECEPTACLE BASED ON 'F' IN LEFT SYMBOL BOX, 'P' INSIDE LEFT SYMBOL BOX SHALL BE ONE OF THE SYMBOLS FROM RECEPTACLE DEVICE LEGEND. PROVIDE TELECOMMUNICATION OUTLET BASED ON 'T' IN RIGHT SYMBOL BOX, 'T' INSIDE RIGHT SYMBOL BOX SHALL BE ONE OF THE SYMBOLS FROM COMMUNICATIONS LEGEND.
	RECEPTACLE AND TELECOMMUNICATION OUTLET MOUNTED INSIDE WALL MOUNTED FLAT DISPLAY BOX. PROVIDE RECEPTACLE BASED ON 'F' IN LEFT SYMBOL BOX, 'P' INSIDE LEFT SYMBOL BOX SHALL BE ONE OF THE SYMBOLS FROM RECEPTACLE DEVICE LEGEND. COORDINATE MOUNTING HEIGHTS WITH ARCHITECTURAL DRAWINGS.
	SYMBOL VARIATIONS
	POWER/COMMUNICATIONS RECESSED FLOOR BOX OR POKE THRU CONNECTED TO EMERGENCY POWER. PROVIDE RED DEVICES.
	PROTECTIVE COVER FOR RECEPTACLE AND TELECOMMUNICATION OUTLET. PROVIDE NEMA 3R 'WHILE IN USE' ENCLOSURE FOR ALL EXTERIOR LOCATIONS. TYPE OF RECEPTACLE AND TELECOMMUNICATION OUTLET MAY VARY.
	PLUG LOAD CONTROLLED RECEPTACLE MOUNTED BESIDE TELECOMMUNICATION OUTLET. TYPE OF RECEPTACLE AND TELECOMMUNICATION OUTLET MAY VARY.
	RECEPTACLE WITH USB PORTS MOUNTED BESIDE TELECOMMUNICATION OUTLET. TYPE OF RECEPTACLE AND TELECOMMUNICATION OUTLET MAY VARY.

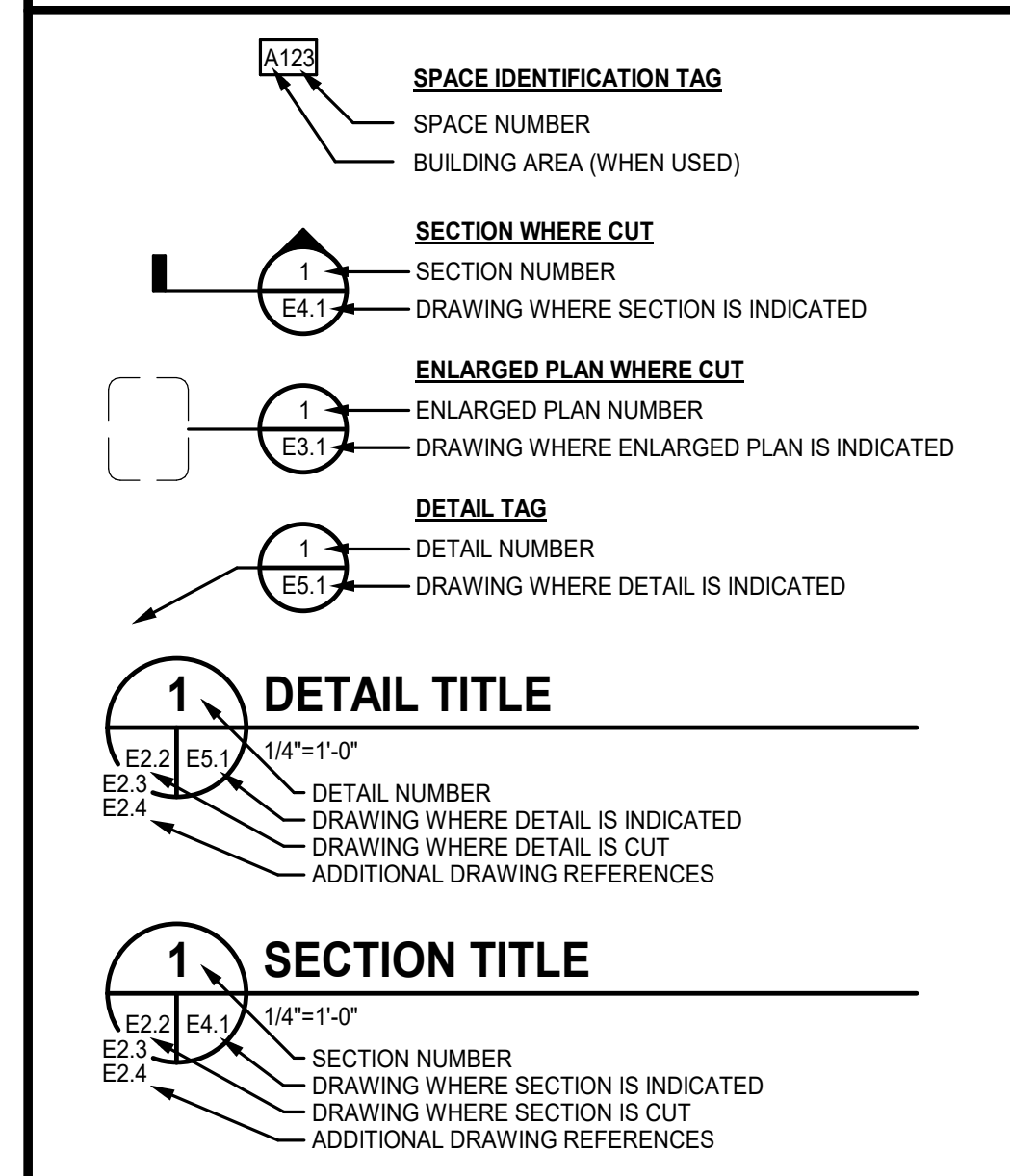
LIGHTING LEGEND

SYMBOL	DESCRIPTION
	REFER TO TYPICAL DEVICE ELEVATION DETAIL FOR DEVICE MOUNTING REQUIREMENTS.
	LIGHT SWITCH, RATED 120/277 VOLTS, 20-AMPS.
	LIGHT SWITCHES WIRED FOR INBOARD/OUTBOARD SWITCHING, RATED 120/277 VOLTS, 20-AMPS.
	SUBSCRIPT/SUPERSRIPT LETTERS, NUMBERS, AND SYMBOLS INDICATES SWITCH TYPE AS FOLLOWS:
	INDICATES 3-WAY LIGHT SWITCH
	INDICATES 4-WAY LIGHT SWITCH
	INDICATES DIMMER SWITCH
	INDICATES 3-WAY DIMMER LIGHT SWITCH
	INDICATES 4-WAY DIMMER LIGHT SWITCH
	INDICATES KEY OPERATED LIGHT SWITCH
	INDICATES KEY OPERATED 3-WAY LIGHT SWITCH
	INDICATES KEY OPERATED 4-WAY LIGHT SWITCH
	INDICATES LOW VOLTAGE LIGHT SWITCH
	INDICATES SWITCH WITH INTEGRAL OCCUPANCY SENSOR
	INDICATES DIMMER SWITCH WITH INTEGRAL OCCUPANCY SENSOR
	INDICATES PILOT LIGHT, ON WHEN SWITCH IS ON
	INDICATES TIMER LIGHT SWITCH
	INDICATES SWITCH WITH INTEGRAL VACANCY SENSOR
	INDICATES DIMMER SWITCH WITH INTEGRAL VACANCY SENSOR
	LOWER CASE LETTER INDICATES LIGHT FIXTURE CONTROL DESIGNATION
	OMNI-DIRECTIONAL LIGHTING CONTROL OCCUPANCY DETECTOR, CEILING MOUNT.
	DIRECTIONAL LIGHTING CONTROL OCCUPANCY DETECTOR, WALL MOUNT AT 6" BELOW FINISHED CEILING.
	OMNI-DIRECTIONAL LIGHTING CONTROL VACANCY DETECTOR, CEILING MOUNT.
	DIRECTIONAL LIGHTING CONTROL VACANCY DETECTOR, WALL MOUNT AT 6" BELOW FINISHED CEILING.
	PHOTOCELL SENSOR FOR LIGHTING CONTROL, WALL MOUNT AT +10-0" AFF. AIM NORTH.
	DAYLIGHT HARVESTING SENSOR FOR LIGHTING CONTROL, CEILING MOUNT.
	GENERATOR RELAY DEVICE.
	LIGHT FIXTURE, CEILING MOUNT.
	LIGHT FIXTURE ON EMERGENCY POWER, CEILING MOUNT.
	LIGHT FIXTURE, WALL MOUNT, HEIGHT AS INDICATED.
	LIGHT FIXTURE ON EMERGENCY POWER, WALL MOUNT, HEIGHT AS INDICATED.
	EMERGENCY EGRESS LIGHTING FIXTURE, WALL MOUNT, HEIGHT AS INDICATED.
	EXIT SIGN, CEILING MOUNT. DIRECTIONAL ARROWS AS INDICATED. SHADING INDICATES FACE(S) OF SIGN.
	EXIT SIGN, WALL MOUNT. DIRECTIONAL ARROWS AS INDICATED. SHADING INDICATES FACE(S) OF SIGN.
	TRACK LIGHTS.
	LIGHT FIXTURE, POLE MOUNT.
	SPORTS LIGHTING POLE.
	CEILING FAN WITH LIGHTING FIXTURE.

TELECOMMUNICATIONS LEGEND

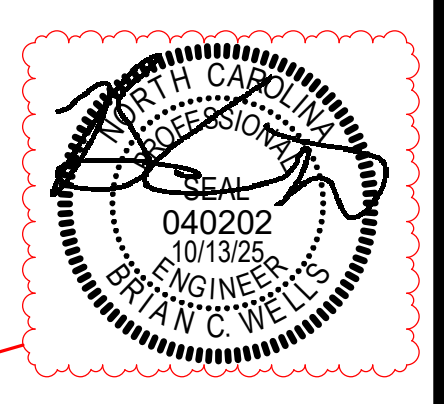
SYMBOL	DESCRIPTION
	REFER TO TYPICAL DEVICE ELEVATION DETAIL FOR DEVICE MOUNTING REQUIREMENTS. FOLLOWING DEVICES ARE DENOTED AS KEYNOTE ONE IN DETAIL:
	TELECOMMUNICATIONS OUTLET. REFER TO DETAIL ON E4 SERIES DRAWINGS.
	TELECOMMUNICATIONS GROUND BUS BAR.
	TELECOMMUNICATIONS MAIN GROUND BUS BAR.
	REFER TO TYPICAL DEVICE ELEVATION DETAIL FOR DEVICE MOUNTING REQUIREMENTS. FOLLOWING DEVICES ARE DENOTED AS KEYNOTE TWO IN DETAIL:
	TELECOMMUNICATIONS OUTLET. REFER TO DETAIL ON E4 SERIES DRAWINGS.
	REFER TO TYPICAL DEVICE ELEVATION DETAIL FOR DEVICE MOUNTING REQUIREMENTS. FOLLOWING DEVICES ARE DENOTED AS KEYNOTE FOUR IN DETAIL:
	TELECOMMUNICATIONS OUTLET. REFER TO DETAIL ON E4 SERIES DRAWINGS.
	MOUNT DEVICES AS INDICATED.
	RECESSED FLOOR MOUNT DEVICE COMPLETE WITH FITTINGS FOR FLOOR COVERING. REFER TO DETAIL ON E4 SERIES DRAWINGS.
	2 POST TELECOMMUNICATIONS EQUIPMENT RACK.
	4 POST TELECOMMUNICATIONS EQUIPMENT RACK.

GRAPHICS SYMBOLS LEGEND



GENERAL NOTES

- THE CONTRACT DOCUMENTS ARE COMPLEMENTARY AND WHAT IS REQUIRED BY ONE SHALL BE AS BINDING AS IF REQUIRED BY ALL. IN THE CASE OF A CONFLICT, DISAGREEMENT, OR AMBIGUITY, PROVIDE THE BETTER QUALITY. IN THE CASE OF A CONFLICT, DISAGREEMENT, OR AMBIGUITY, PROVIDE THE GREATER QUANTITY OF WORK.
- FOLLOW MOUNTING HEIGHTS INDICATED IN THE ELECTRICAL LEGEND UNLESS OTHERWISE INDICATED, INCLUDING ON ARCHITECTURAL ELEVATIONS. MEASURE ALL MOUNTING HEIGHTS FROM THE LOCATION CENTER LINE UNLESS OTHERWISE INDICATED.
- FIELD VERIFY EXACT FEEDER LOCATIONS FOR MECHANICAL EQUIPMENT PRIOR TO ROUGH-IN.
- EQUIPMENT CONNECTIONS ARE INDICATED IN THEIR APPROXIMATE LOCATIONS. VERIFY EXACT LOCATIONS OF ALL CONNECTIONS WITH OTHER TRADES SUPPLYING EQUIPMENT TO AVOID CONFLICTS AT INSTALLATION.
- LOCATED ALL SWITCHES FOR LOCAL CONTROL OF LIGHTING ON STRIKE SIDE OF SINGLE DOORS



DETENTION ANNEX RENOVATION
 3400 Hammond Road, Raleigh, NC 27603
 Wake County, North Carolina

PROJECT NO:	642988
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10/28/25	*AD-01

FIRST FLOOR PLAN - LIGHTING - PART A

E2.1.1

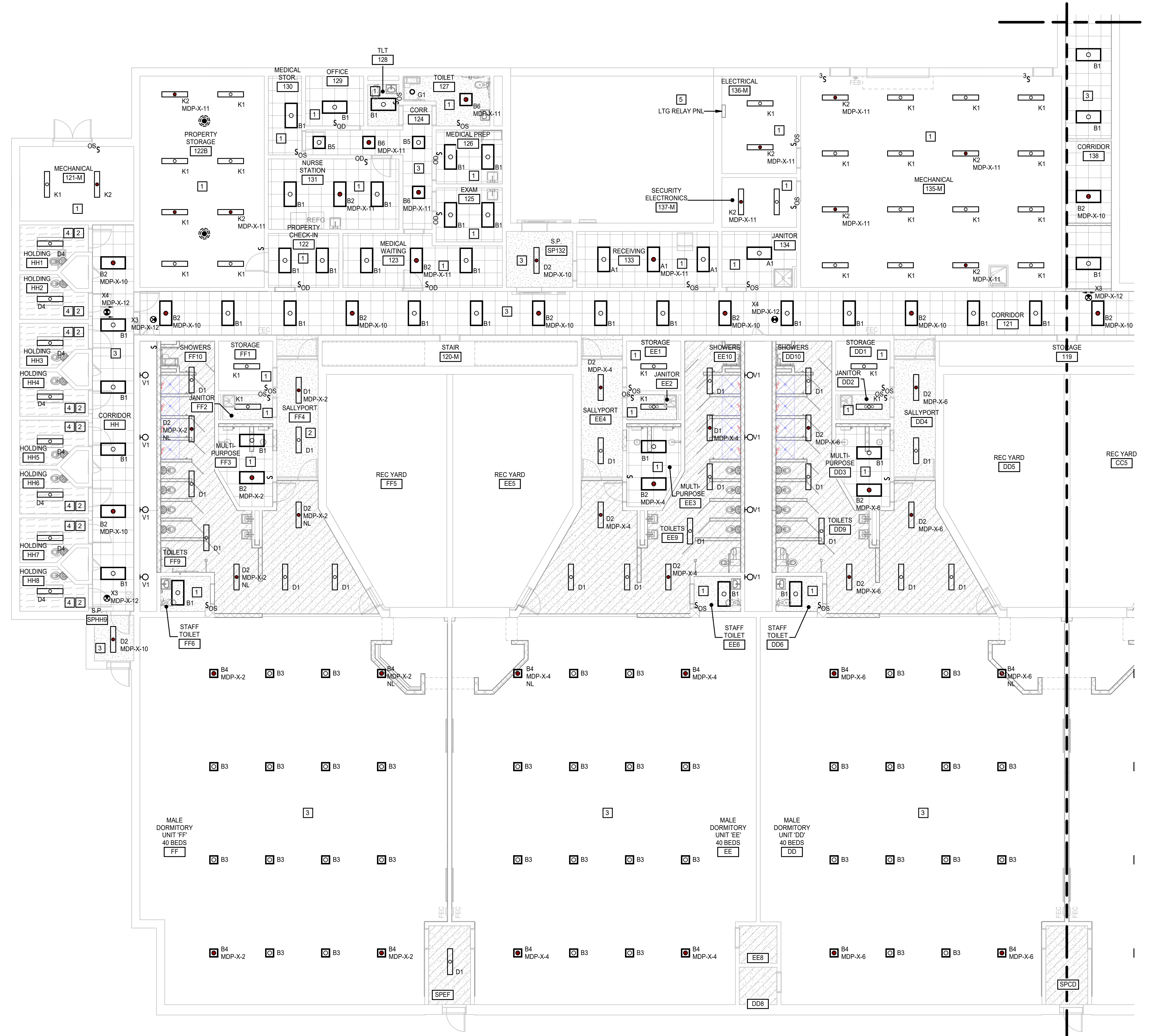
KEYNOTES

APPLIES TO THIS DRAWING

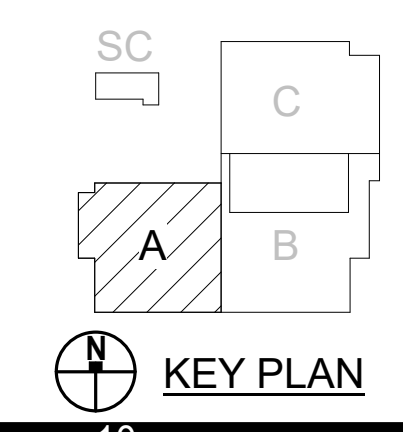
1. U.N.O. PROVIDE FIXTURES & SWITCHING AS INDICATED & RECONNECT TO EXISTING BRANCH CIRCUIT HOMERUN. EXTEND EXISTING CIRCUITING AS REQUIRED UTILIZING (2) #12, (1) #12 E.G. IN 3/4".
2. U.N.O. PROVIDE FIXTURES AS INDICATED & RECONNECT TO EXISTING SWITCHING AND BRANCH CIRCUIT. EXTEND EXISTING CIRCUITING AS REQUIRED UTILIZING (2) #12, (1) #12 E.G. IN 3/4".
3. U.N.O. PROVIDE FIXTURES AS INDICATED & RECONNECT TO EXISTING UNSWITCHED BRANCH CIRCUIT. EXTEND EXISTING CIRCUITING AS REQUIRED UTILIZING (2) #12, (1) #12 E.G. IN 3/4".
4. CONNECT EXISTING RELAY CONTROLLED NIGHT LIGHT CIRCUIT CONDUCTOR TO NIGHT LIGHT CONNECTION POINT ON FIXTURE AND RELAY CONTROLLED NORMAL CONDUCTOR TO MAIN FIXTURE CONNECTION POINT.
5. UPDATE RELAY SCHEDULE WITH FINAL ROOM NUMBERS OF SPACES CONNECT TO EACH RELAY.

GENERAL NOTES

- A. WITHIN DAYROOMS, FIXTURES INDICATED AS EMERGENCY AND NOT NIGHT LIGHT (NL) SHALL BE RELAY CONTROLLED VIA THE EXISTING RELAY CIRCUIT(S). PROVIDE UL924 DEVICE FOR EACH DAYROOM. LOCATED IN MEZZANINE ADJACENT TO DAYROOM. EXTEND EXISTING CIRCUITRY AS REQUIRED UTILIZING (2) #12, (1) #12 E.G. IN 3/4".
- B. FIXTURES INDICATED AS NIGHT LIGHT (NL) SHALL BE ON 24/7, NOT SWITCHED. MODIFY EXISTING CIRCUITRY AS REQUIRED UTILIZING (2) #12, (1) #12 E.G. IN 3/4".
- C. FIXTURES INDICATED AS EMERGENCY, NOT WITHIN DAYROOMS, SHALL BE PROVIDED WITH A UL924 DEVICE (MINIMUM ONE DEVICE PER SWITCHING ZONE). IN ADDITION TO UNSWITCHED EMERGENCY CIRCUIT INDICATED, PROVIDE SWITCHED NORMAL CIRCUIT TO UL924 DEVICE FROM ADJACENT NORMAL FIXTURES IN EACH SPACE.



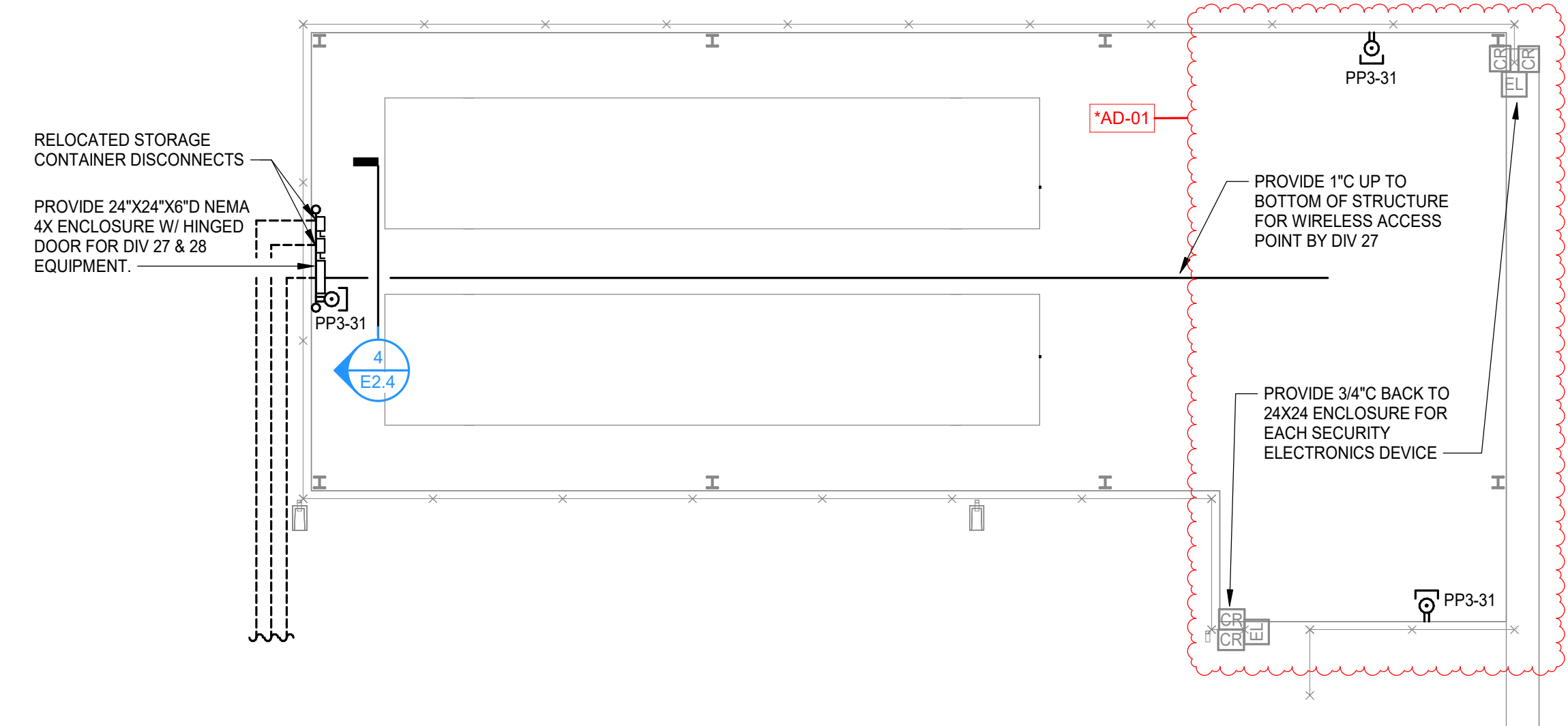
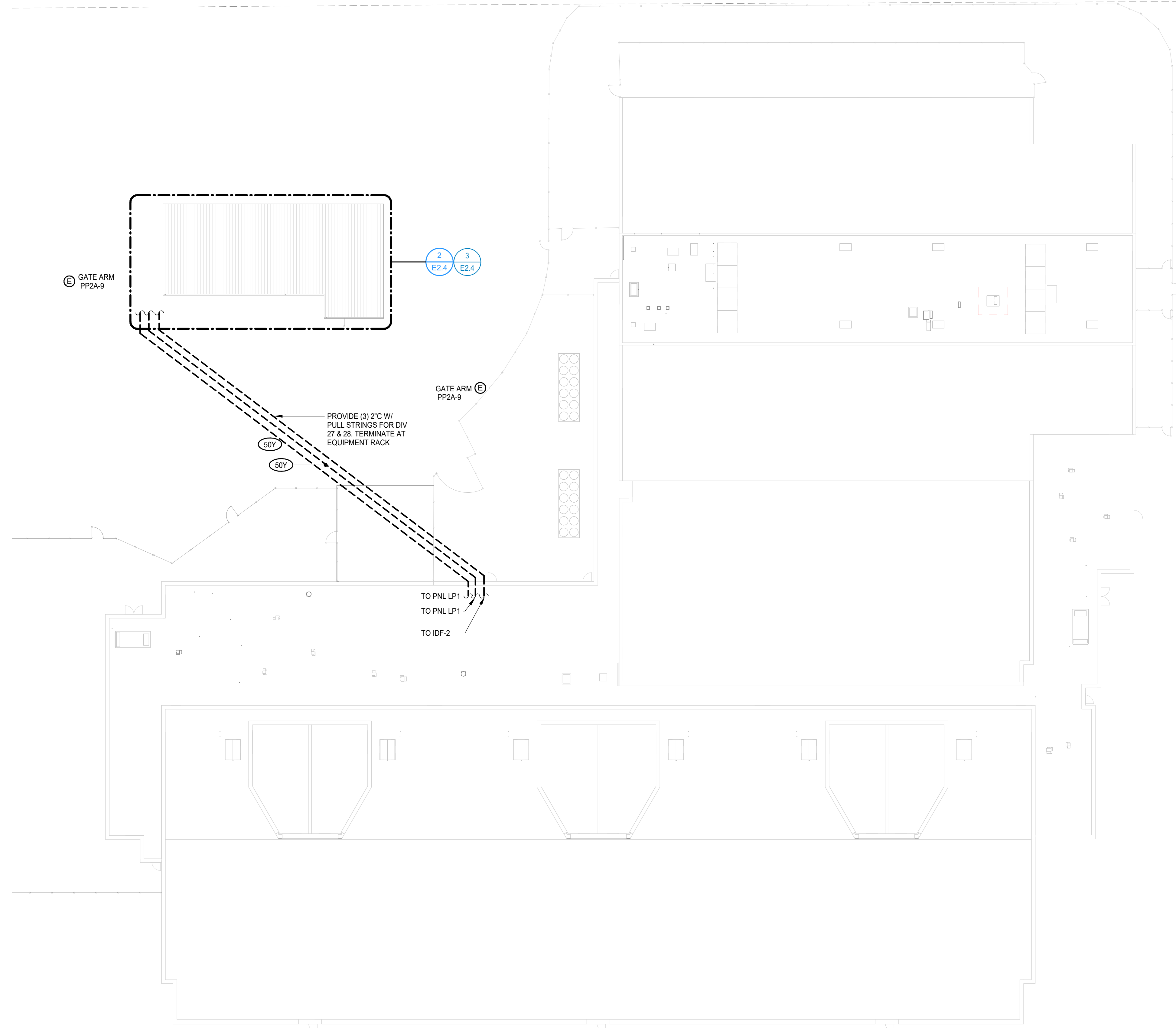
FIRST FLOOR PLAN - LIGHTING - PART A
 1/8" = 1'-0"



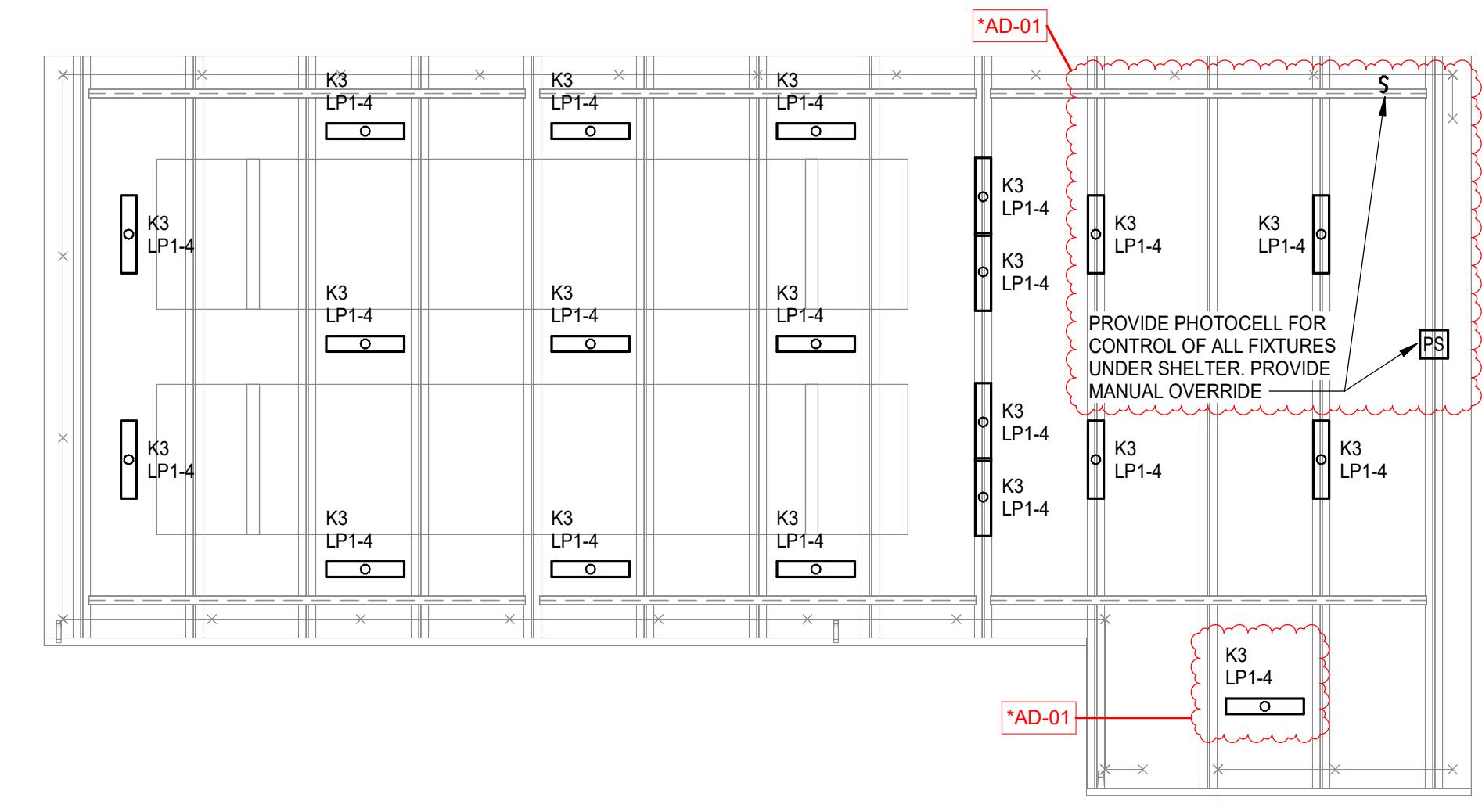
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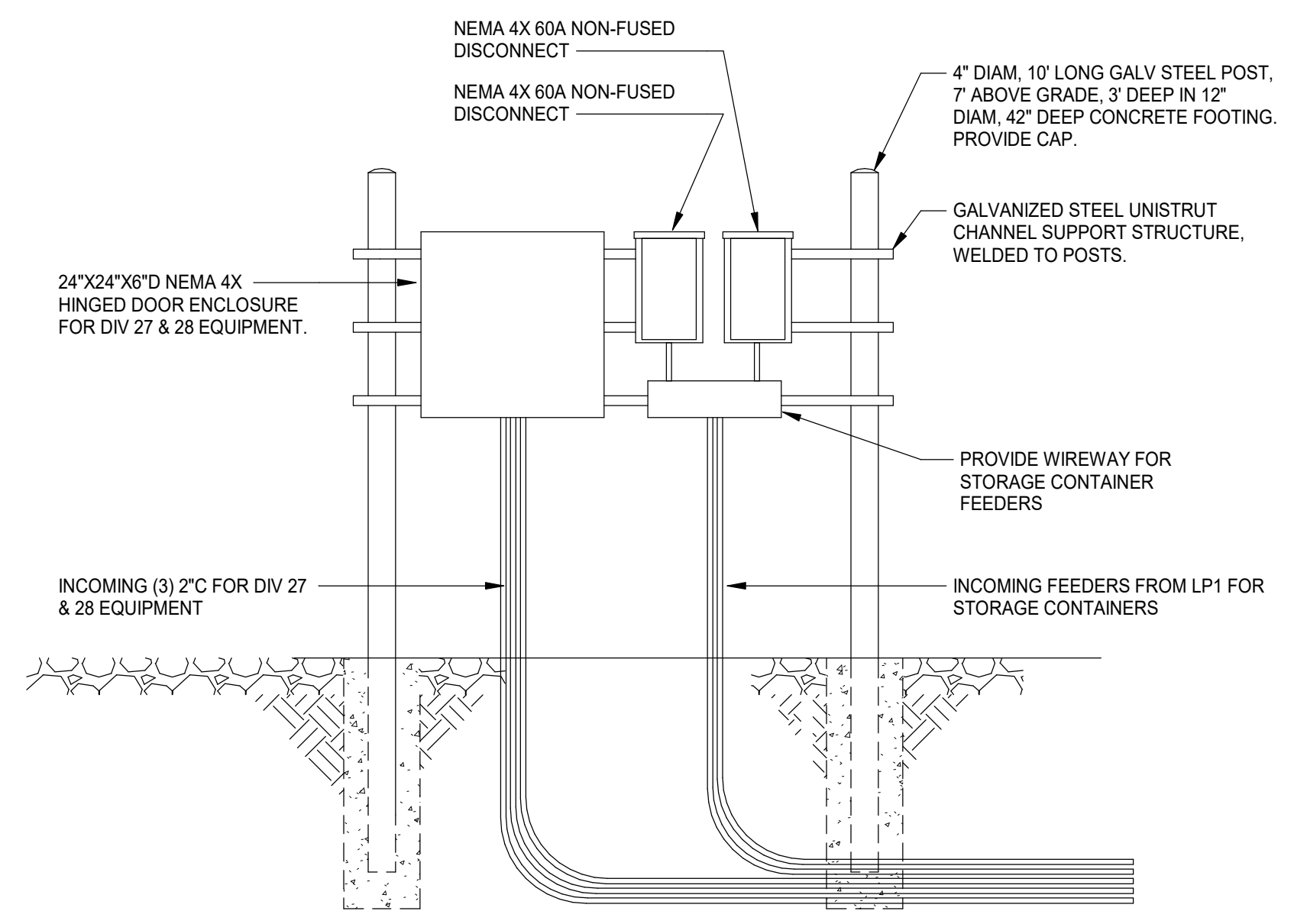
1 ELECTRICAL SITE PLAN - STORAGE CONTAINERS
1" = 20'-0"



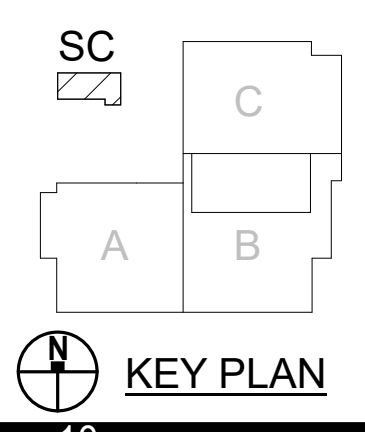
2 STORAGE CONTAINER PLAN - POWER
1/8" = 1'-0"



3 STORAGE CONTAINER PLAN - LIGHTING
1/8" = 1'-0"

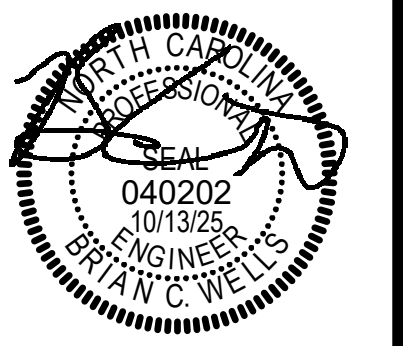


4 ELECTRICAL EQUIPMENT SUPPORT RACK ELEVATION
NO SCALE

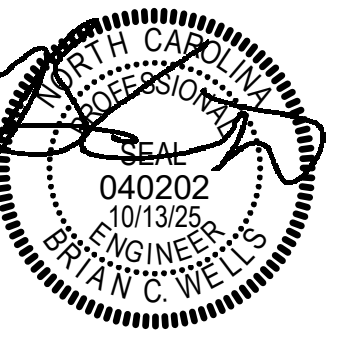


STORAGE CONTAINER PLANS

E2.4

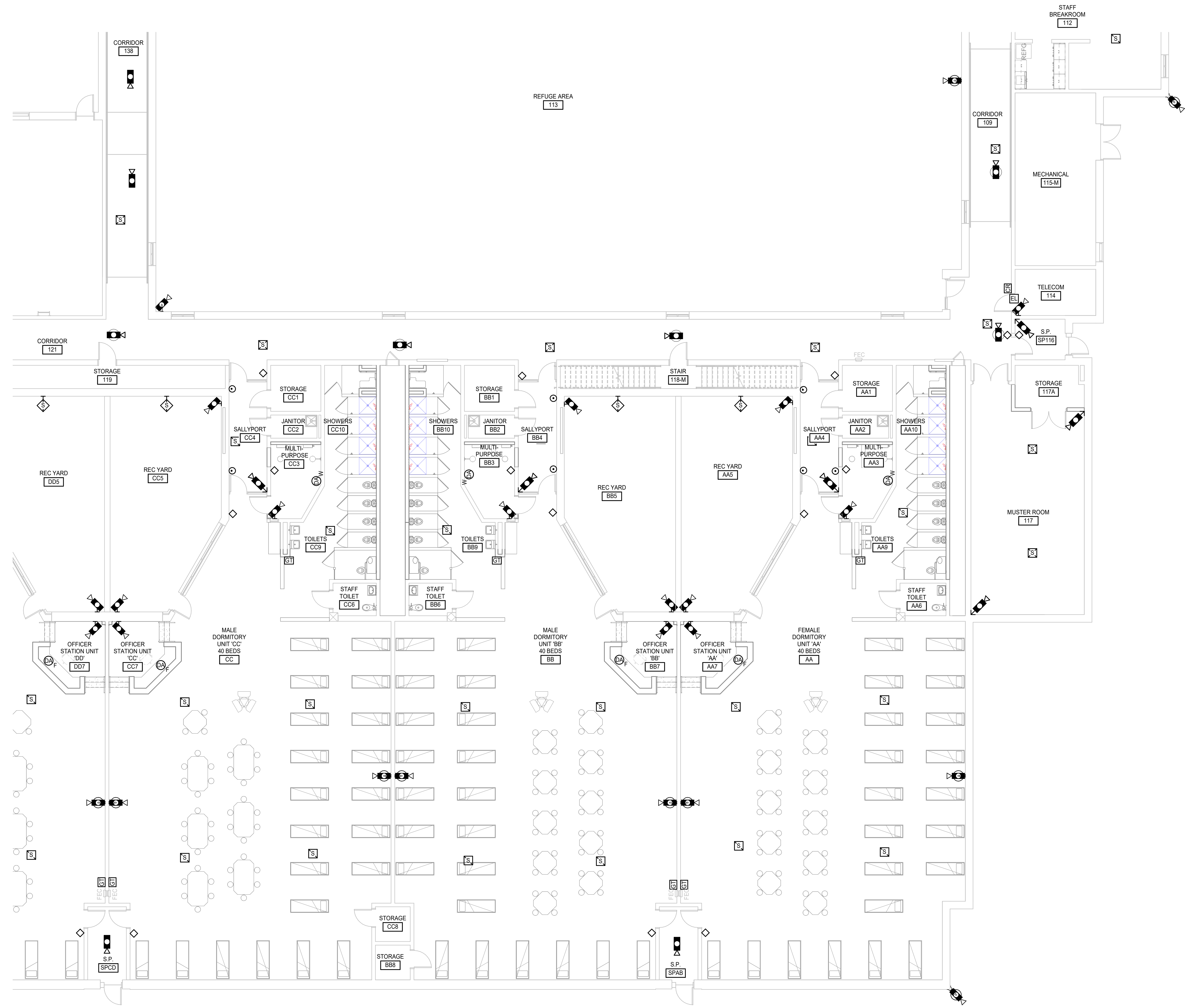


PROJECT NO:	642988
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GENERAL NOTES

- A. ALL SECURITY DEVICES SHALL HOMERUN TO SECURITY ELECTRONICS HEAD END ROOM IN CONDUIT THE ENTIRE DISTANCE.
- B. COORDINATE FINAL CAMERA HEIGHT AND LOCATION WITH DIV 28 SECURITY ELECTRONICS CONTRACTOR.
- C. PROVIDE VANDAL RESISTANT COVER WITH SECURITY SCREWS ON ANY OPEN BOXES LEFT FROM DEMOED DEVICES.
- D. REFER TO E4.1 FOR SECURITY ELECTRONICS DEVICE ROUGH-IN DETAIL FOR CONDUIT AND BOX REQUIREMENTS AT EACH LOCATION.
- E. WHERE DEVICES ARE BEING REPLACED IN KIND, THE CONTRACTOR SHALL ASSUME THE EXISTING RACEWAYS ARE NOT REUSABLE. THROUGH FIELD VERIFICATION, IF THE CONTRACTOR HAS DETERMINED SPECIFIC RACEWAYS ARE REUSABLE AND ARE OF SUFFICIENT SIZE, PROVIDE MARKUP OF LOCATIONS AND CONDUIT SIZE TO THE ENGINEER FOR REVIEW AND APPROVAL TO UTILIZE EXISTING RACEWAY.
- F. REFER TO G SERIES DRAWINGS FOR SECURE/IN-SECURE AREAS. REFER TO 260533 & 270533 FOR RACEWAYS USED IN EACH AREA.

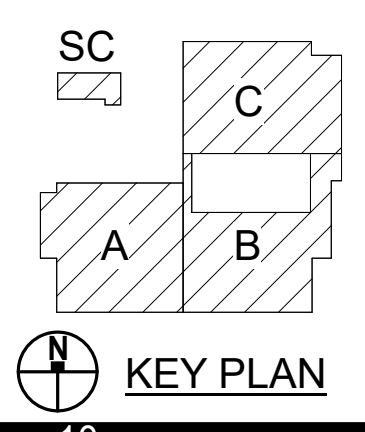


FIRST FLOOR PLAN - SECURITY ELECTRONICS ROUGH-IN - PART B
1/8" = 1'-0"

DETENTION ANNEX RENOVATION

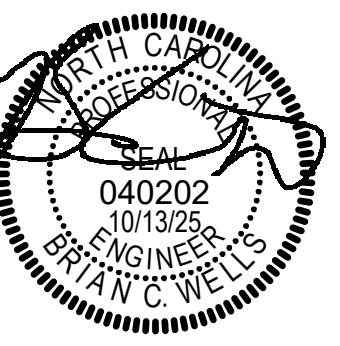
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FIRST FLOOR PLAN - SECURITY ELECTRONICS ROUGH-IN - PART B

E2.6.2



GENERAL NOTES

- A. ALL SECURITY DEVICES SHALL HOMERUN TO SECURITY ELECTRONICS HEAD END ROOM IN CONDUIT THE ENTIRE DISTANCE.
- B. COORDINATE FINAL CAMERA HEIGHT AND LOCATION WITH DIV 28 SECURITY ELECTRONICS CONTRACTOR.
- C. PROVIDE VANDAL RESISTANT COVER WITH SECURITY SCREWS ON ANY OPEN BOXES LEFT FROM DEMOED DEVICES.
- D. REFER TO E4.1 FOR SECURITY ELECTRONICS DEVICE ROUGH-IN DETAIL FOR CONDUIT AND BOX REQUIREMENTS AT EACH LOCATION.
- E. WHERE DEVICES ARE BEING REPLACED IN KIND, THE CONTRACTOR SHALL ASSUME THE EXISTING RACEWAYS ARE NOT REUSABLE. THROUGH FIELD VERIFICATION, IF THE CONTRACTOR HAS DETERMINED SPECIFIC RACEWAYS ARE REUSABLE AND ARE OF SUFFICIENT SIZE, PROVIDE MARKUP OF LOCATIONS AND CONDUIT SIZE TO THE ENGINEER FOR REVIEW AND APPROVAL TO UTILIZE EXISTING RACEWAY.
- F. REFER TO G SERIES DRAWINGS FOR SECURE/IN-SECURE AREAS. REFER TO 200533 & 270533 FOR RACEWAYS USED IN EACH AREA.

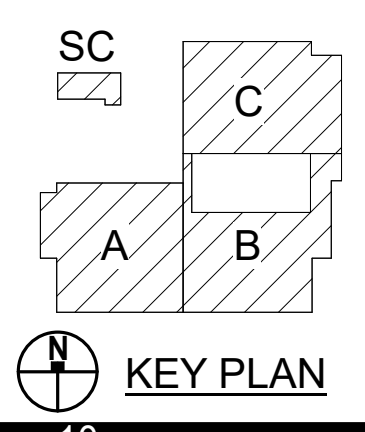


FIRST FLOOR PLAN - SECURITY ELECTRONICS ROUGH-IN - PART C
1/8" = 1'-0"

DETENTION ANNEX RENOVATION

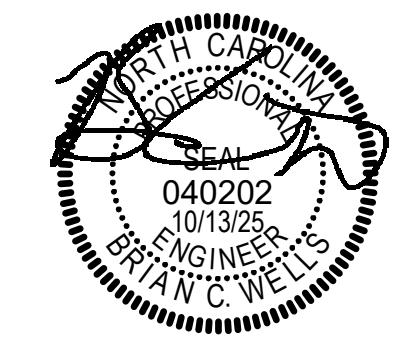
3400 Hammond Road, Raleigh, NC 27603
Wake County, North Carolina

PROJECT NO:	642088
DATE:	OCTOBER 13, 2025
REVISIONS	
DATE	DESCRIPTION
10/28/25	*AD-01

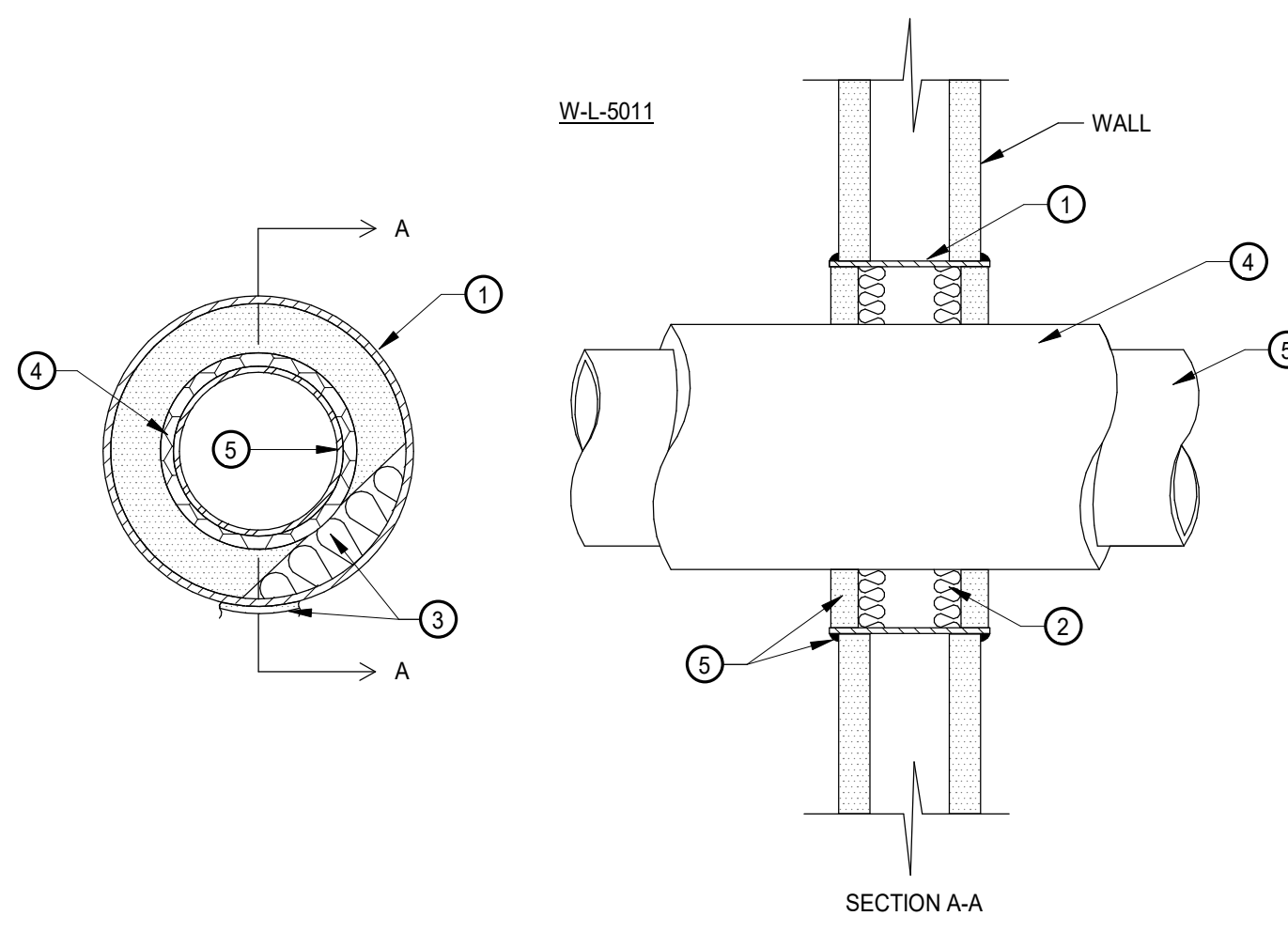


FIRST FLOOR PLAN - SECURITY ELECTRONICS ROUGH-IN - PART C

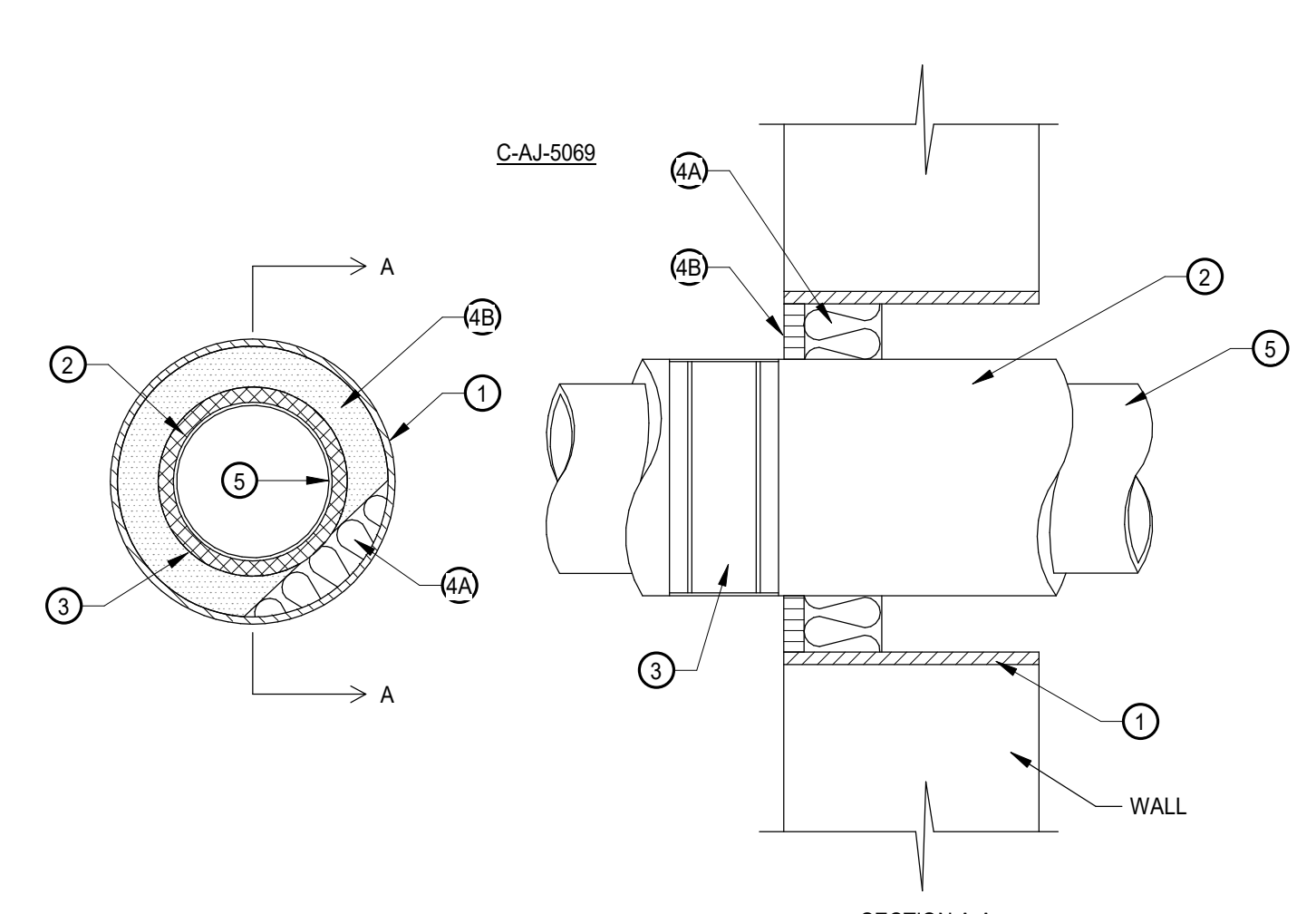
E2.6.3



PROJECT NO:	642988
DATE:	OCTOBER 13, 2025
REVISIONS:	
DATE:	DESCRIPTION
10/28/25	*AD-01

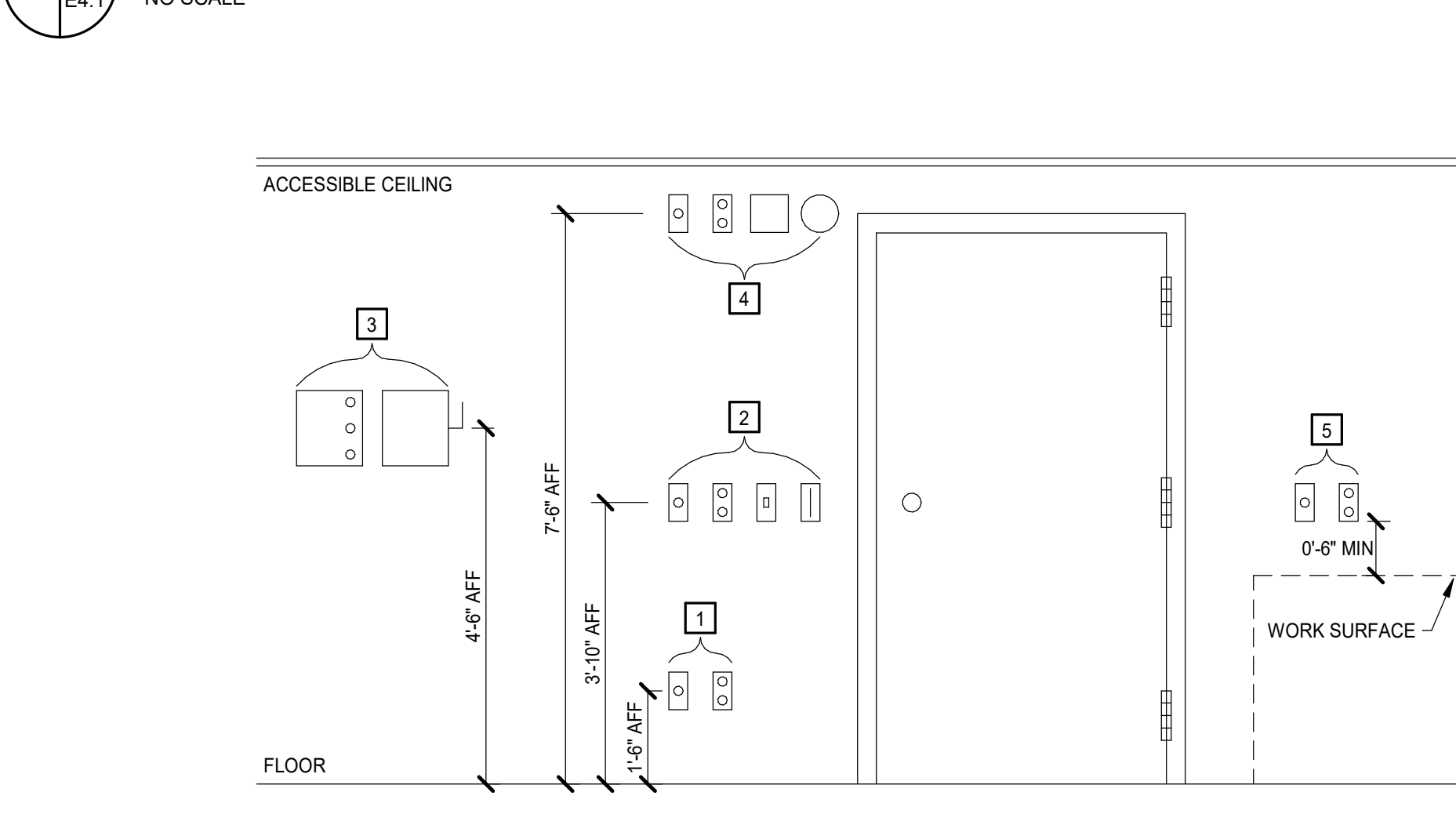


- 1 STEEL SLEEVE** - CYLINDRICAL SLEEVE FABRICATED FROM MINIMUM 0.019" THICK (NO. 28 GAUGE) GALVANIZED SHEET STEEL AND HAVING A MINIMUM 2" LAP ALONG THE LONGITUDINAL SEAM. LENGTH OF STEEL SLEEVE TO BE EQUAL TO THICKNESS OF WALL PLUS 1" SUCH THAT, WHEN INSTALLED, THE ENDS OF THE SLEEVE WILL PROJECT APPROXIMATELY 1/2" BEYOND THE SURFACE OF THE WALL ON BOTH SIDES OF THE WALL ASSEMBLY. THE DIAMETER OF THE OPENINGS CUT IN THE GYPSUM WALLBOARD LAYERS ON EACH SIDE OF THE WALL ASSEMBLY (CONCENTRIC WITH PIPE) TO BE 2" TO 2-1/2" LARGER THAN OUTSIDE DIAMETER OF PIPE INSULATION SUCH THAT, WHEN THE STEEL SLEEVE IS INSTALLED, A 1" TO 1-1/4" ANNULAR SPACE WILL BE PRESENT BETWEEN THE STEEL SLEEVE AND THE PIPE INSULATION AROUND THE ENTIRE CIRCUMFERENCE OF THE PIPE. SLEEVE INSTALLED BY COILING THE SHEET STEEL TO A DIAMETER SMALLER THAN THE THROUGH OPENING, INSERTING THE COIL THROUGH THE OPENING AND RELEASING THE COIL TO LET IT UNCOIL AGAINST THE CIRCULAR CUTOUTS IN THE GYPSUM WALLBOARD LAYERS.
- 2 PACKING MATERIAL** - POLYETHYLENE BACKER ROD OR MINIMUM 1" THICKNESS OF MINERAL WOOL BATT INSULATION FIRMLY PACKED INTO STEEL SLEEVE ON BOTH SIDES OF THE WALL ASSEMBLY AS PERMANENT FORMS. PACKING MATERIAL TO BE RECESSED MINIMUM 1" FROM END OF STEEL SLEEVE (RECESSED MINIMUM 1/2" INTO GYPSUM WALLBOARD SURFACE) ON BOTH SIDES OF WALL ASSEMBLY.
- 3 FILL, VOID OR CAVITY MATERIALS** - CAULK: MINIMUM 1" THICKNESS OF FILL MATERIAL APPLIED WITHIN ANNULUS ON BOTH SIDES OF WALL ASSEMBLY. THICKNESS FOR FILL MATERIAL FOR NOMINAL 3" DIAMETER (OR SMALLER) STEEL PIPES MAY BE REDUCED TO A MINIMUM 1/2". A NOMINAL 1/4" DIAMETER CONTINUOUS BEAD OF CAULK SHALL BE APPLIED AROUND THE CIRCUMFERENCE OF THE STEEL SLEEVE AT ITS EGRESS FROM THE GYPSUM WALLBOARD LAYERS ON BOTH SIDES OF THE WALL ASSEMBLY.
- MINNESOTA MINING & MFG. CO. - CP 25WB*
- 4 PIPE COVERINGS** - NOMINAL 1" OR 1-1/2" THICK HOLLOW CYLINDRICAL HEAVY DENSITY (MINIMUM 3.5 PCF) GLASS FIBER UNITS JACKETED ON THE OUTSIDE WITH AN ALL SERVICE JACKET. LONGITUDINAL JOINTS SEALED WITH METAL FASTENERS OR FACTORY-APPLIED SELF-SEALING LAP TAPE. TRANSVERSE JOINTS SEALED WITH METAL FASTENER STRIP TAPE SUPPLIED WITH THE PRODUCT.
- 5 THROUGH PENETRANT** - ONE METALLIC PIPE, CONDUIT OR TUBING TO BE CENTERED WITHIN THE FIRESTOP SYSTEM. PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES, CONDUITS OR TUBING MAY BE USED:
- A. STEEL PIPE** - NOMINAL 1/2" DIAMETER (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE. WHEN STEEL PIPE IS USED, T RATING IS 1 HR.
 - B. CONDUIT** - NOMINAL 3" DIAMETER (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING OR STEEL CONDUIT. WHEN STEEL CONDUIT IS USED, T RATING IS 1/4 HR.
 - C. COPPER TUBING** - NOMINAL 6" DIAMETER (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING. WHEN COPPER TUBING IS USED, T RATING 1/2 AND 1 HR WHEN INSTALLED IN 1 AND 2 HR RATED WALLS, RESPECTIVELY.
 - D. COPPER PIPE** - NOMINAL 6" DIAMETER (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.
- * BEARING THE UL CLASSIFICATION MARKING

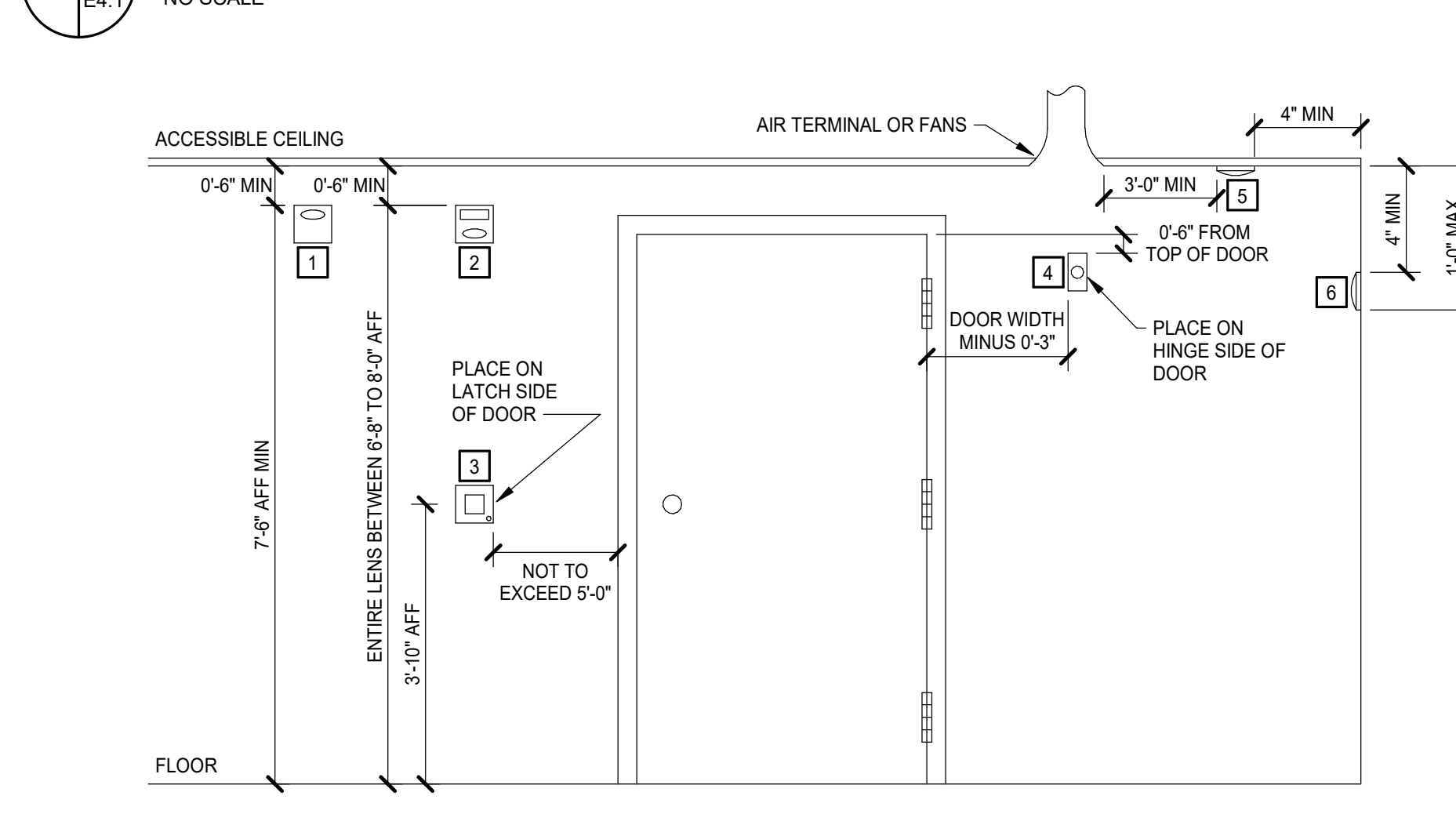


- 1 METALLIC SLEEVE** - (OPTIONAL) NOMINAL 2" DIAMETER (OR SMALLER) SCHEDULE 40 STEEL PIPE CAST OR GROUTED INTO WALL ASSEMBLY, FLUSH WITH WALL SURFACES.
- 2 PIPE COVERING MATERIALS** - CELLULAR GLASS INSULATION, NOMINAL 1-1/2" OR 3" THICK CELLULAR GLASS PIPE INSULATION SIZED TO THE OUTSIDE DIAMETER OF THE STEEL PIPE OR TUBE AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. T RATING IS 0 HR WHEN NOMINAL 1-1/2" THICK PIPE INSULATION IS USED. T RATING IS 1 HR WHEN NOMINAL 3" THICK PIPE INSULATION IS USED. THE ANNULAR SPACE SHALL BE MINIMUM 3/4" TO MAXIMUM 3".
- PITTSBURGH CORNING CORP. - FOAMGLASS
- 3 METAL JACKET** - MINIMUM 1/2" LONG JACKET FORMED OF MINIMUM 0.010" THICK STEEL OR ALUMINUM SHEET CUT TO WRAP TIGHTLY AROUND THE PIPE INSULATION WITH A MINIMUM 2" LAP. JACKET SECURED WITH MINIMUM 1/2" WIDE STAINLESS STEEL HOSE CLAMPS OR BANDS LOCATED WITHIN 2" OF EACH END OF THE JACKET AND SPACED A MAXIMUM OF 10" O.C. JACKET TO BE INSTALLED WITH ABUTTING SURFACE OF SEALANT (ITEM 6B) ON BOTH SURFACES OF WALL.
- 4 FIRESTOP SYSTEM** - THE FIRESTOP SYSTEM SHALL CONSIST OF THE FOLLOWING:
- A. PACKING MATERIAL** - MINIMUM 3" THICKNESS OF MINIMUM 4 PCF MINERAL WOOL BATT INSULATION FIRMLY PACKED INTO OPENING AS A PERMANENT FORM. PACKING MATERIAL TO BE RECESSED FROM BOTH SURFACES OF WALL AS REQUIRED TO ACCOMMODATE THE REQUIRED THICKNESS OF FILL MATERIAL.
 - B. FILL, VOID OR CAVITY MATERIAL** - SEALANT - MINIMUM 3/4" THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNULUS. FLUSH WITH BOTH SURFACES OF WALL. HILTI CONSTRUCTION CHEMICALS, INC. - FS605 OR FS-ONE SEALANT
 - 5 THROUGH PENETRANT** - ONE METALLIC PIPE OR TUBING TO BE POSITIONED WITHIN THE FIRESTOP SYSTEM. PIPE OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES OR CONDUITS MAY BE USED:
- A. STEEL PIPE** - NOMINAL 1/2" DIAMETER (OR SMALLER) SCHEDULE 40 (OR HEAVIER) STEEL PIPE.
 - B. COPPER TUBING** - NOMINAL 6" DIAMETER (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING.
 - C. COPPER PIPE** - NOMINAL 6" DIAMETER (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.
- * BEARING THE UL CLASSIFICATION MARKING

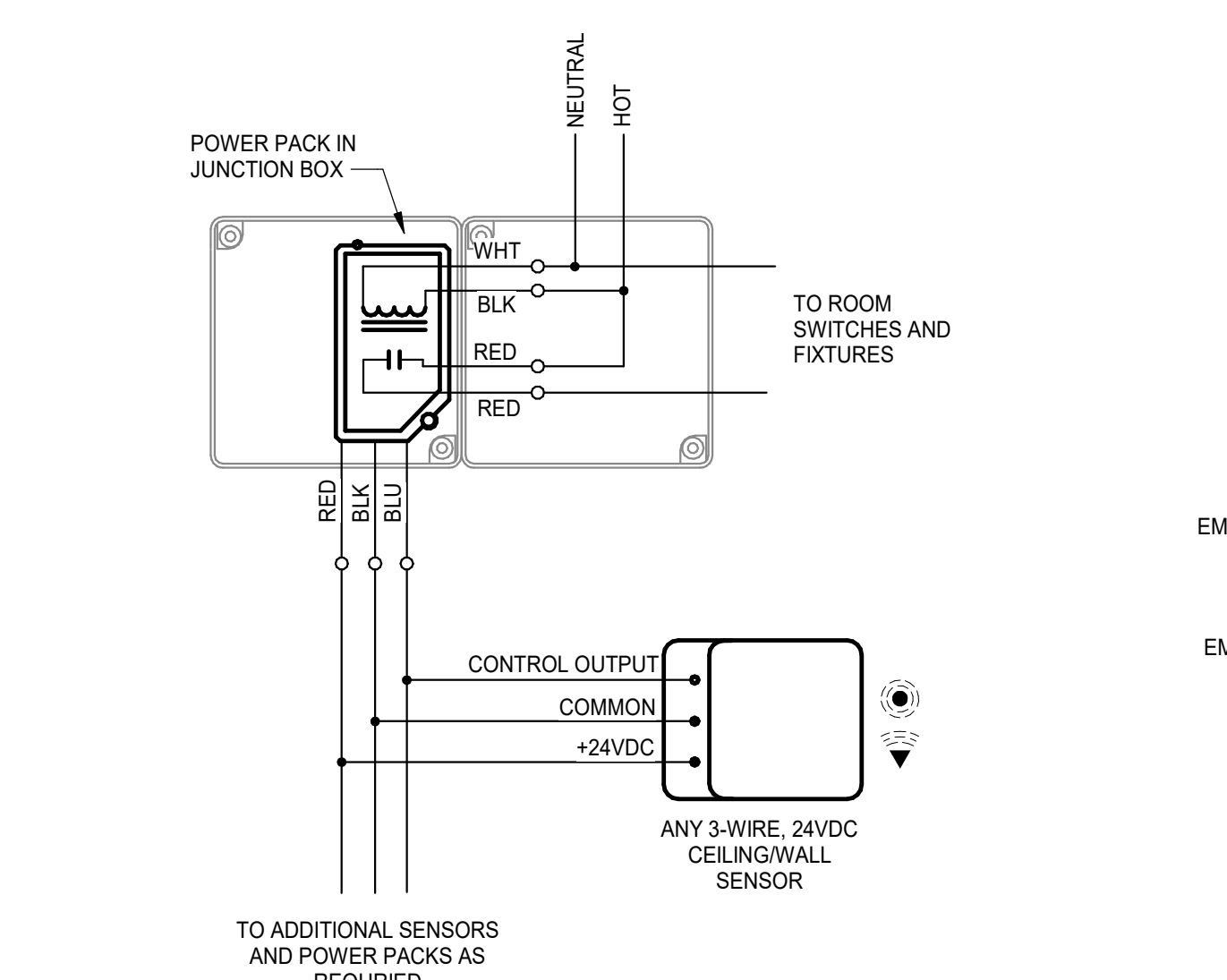
3 LOW VOLTAGE SWITCH WIRING DIAGRAM
NO SCALE



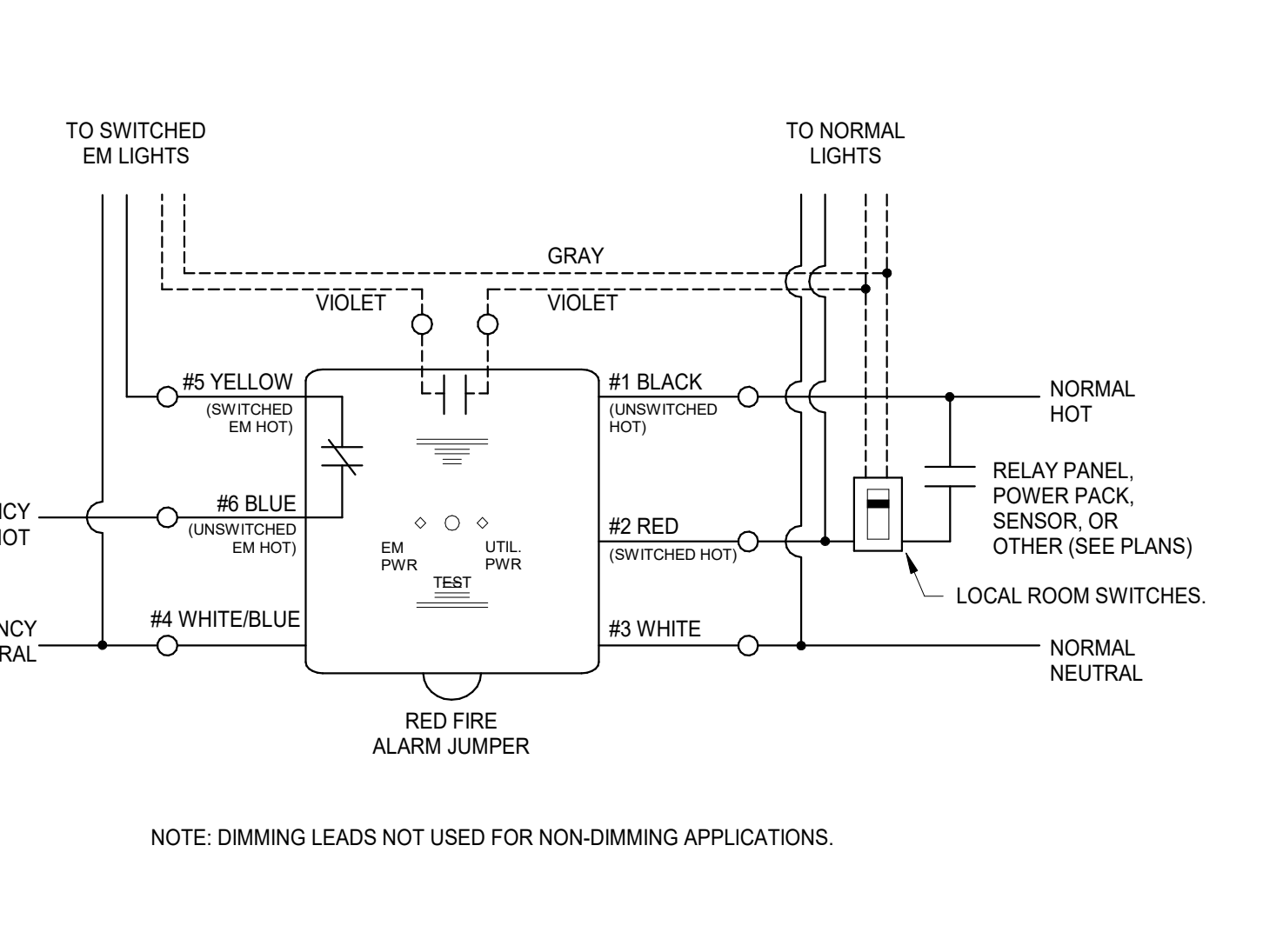
4 TELECOMMUNICATIONS OUTLET CONDUIT DETAIL
NO SCALE



1 PENETRATION THROUGH 1 HOUR FIRE RATED WALL
NO SCALE

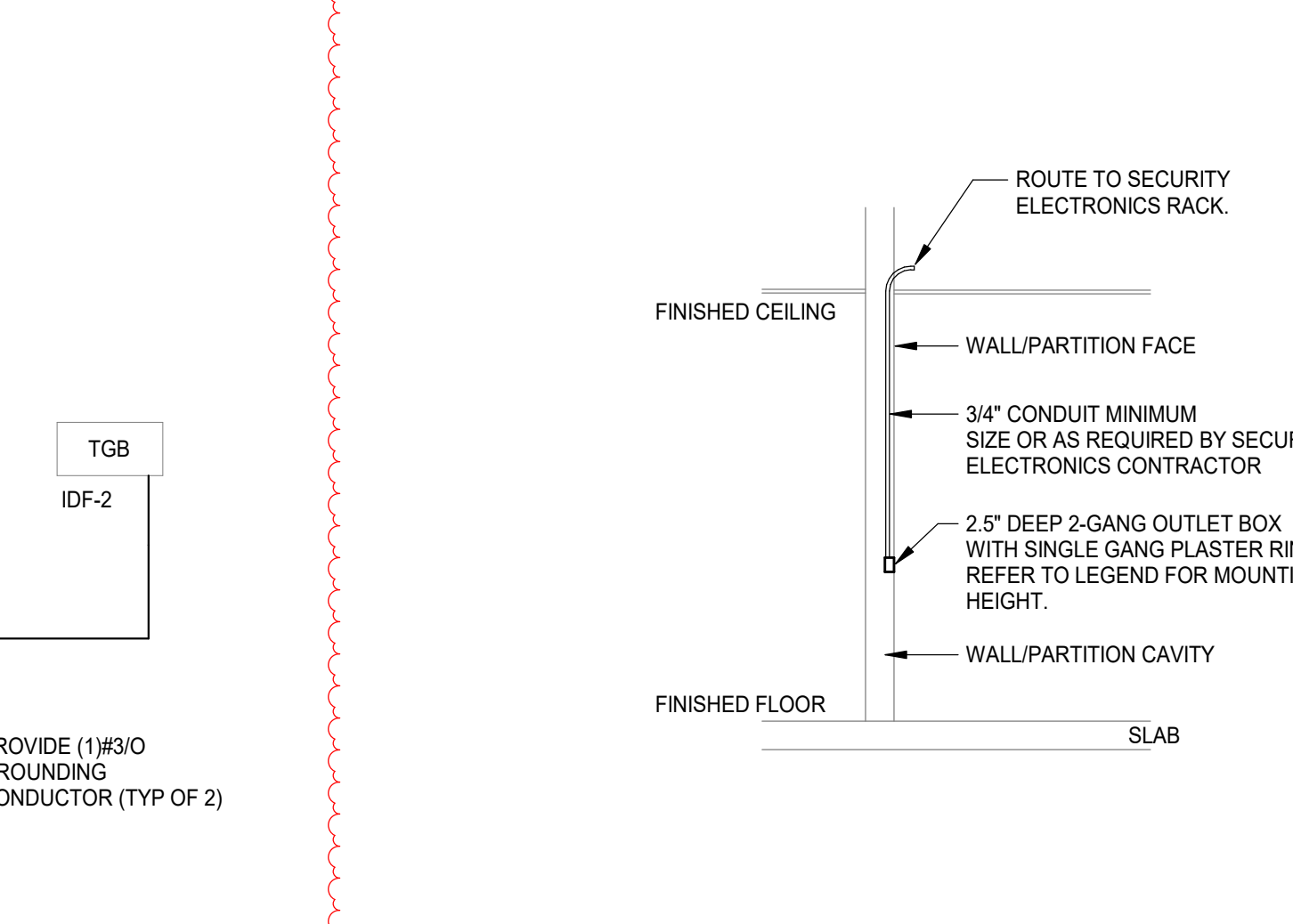


2 PENETRATION THROUGH 2 HOUR FIRE RATED WALL
NO SCALE

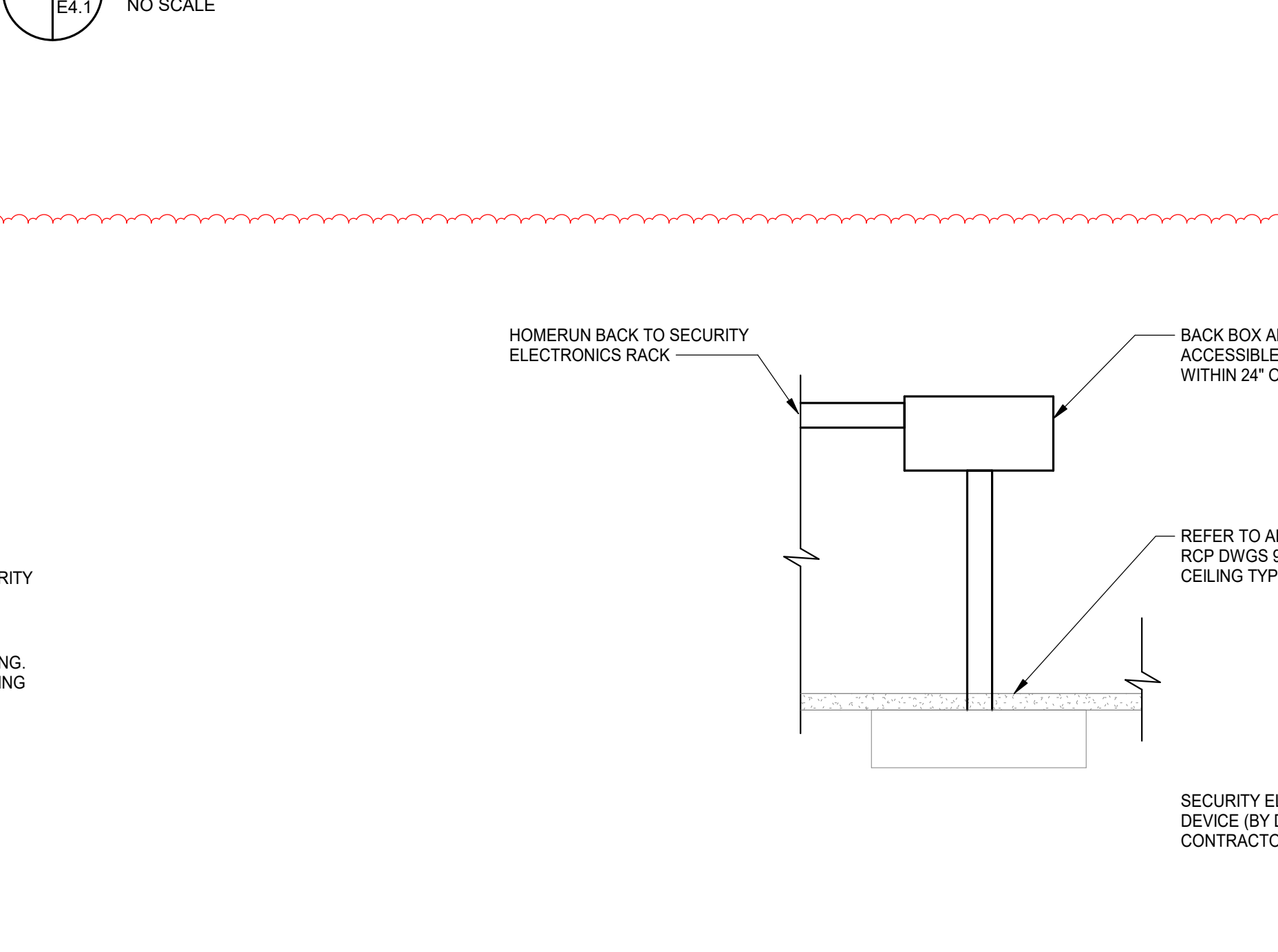


6 OCCUPANCY SENSOR WIRING DIAGRAM
NO SCALE

7 UL924 ALCR WIRING DIAGRAM
NO SCALE

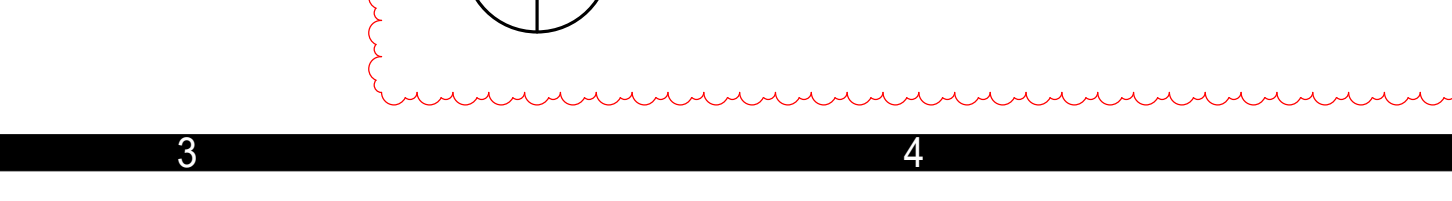


5 E4 TYPICAL DEVICE ELEVATION DETAIL
NO SCALE



8 GROUNDING SYSTEM DIAGRAM
1/2" = 1'-0"

9 SECURITY ELECTRONICS DEVICE ROUGH-IN DETAIL
1/4" = 1'-0"



10 CEILING MOUNTED SECURITY ELECTRONICS DEVICE ROUGH-IN DETAIL
3" = 1'-0"

