



THE SCHOOL DISTRICT OF
PHILADELPHIA

BOARD OF EDUCATION
Office of Capital Programs
440 North Broad Street, 3rd Floor – Suite 371
Philadelphia, PA 19130

TELEPHONE: (215) 400-4730

Addendum No. 2

Subject: Pratt Elementary Major Renovation: B-051C, B-052C, B-053C OF 2019/2020

Location: Pratt Elementary School

This Addendum, dated March 27, 2020, shall modify and become part of the Bid Documents. Any items not mentioned herein, or affected by, shall remain strictly in accordance with the original document.

1. BID OPENING POSTPONED TO 2:00 PM ON THURSDAY, APRIL 9, 2020

2. BIDDERS MUST USE THE ATTACHED REVISED BID PROPOSAL FORMS

3. DIVISION 01, SECTION 01 1000-SUMMARY OF WORK:

ADD the following to Paragraph 1.03 C. Mechanical Contractor Scope of Work:

NOTE: MECHANICAL CONTRACTOR MUST CONTRACT WITH TOZOUR-TRANE FOR SERVICES DESCRIBED IN ITS PROPOSAL DATED MARCH 27, 2020, 7 PAGES, IN CONNECTION WITH. THE INSTALLATION OF THE UNIT VENTILATORS PROVIDED BY THE DISTRICT. SEE PROPOSAL ATTACHED TO ADDENDUM NO. 2

4. CHANGES TO SPECIFICATIONS

(a) . ADD the attached Section 01 1650 ALLOWANCES to Division 01-GENERAL REQUIREMENTS

(b). ADD the following Sections to the Technical Specifications. See Attached.

08 1213 Hollow Metal Frames
08 1416 Flush Wood Doors
08 7100 Door Hardware
09 3000 Tiling
10 2113 Metal Toilet Compartment
22 0529 Hangers and Supports for Plumbing Piping and Equipment
22 1005 Plumbing Piping
22 4000 Plumbing Fixtures
23 3423 HVAC Power Ventilators
26 0500 Common Work Results for Electrical
26 0519 Low Voltage Electrical Power Conductors and Cables

Addendum No. 2 (cont'd)

26 0526 Grounding and Bonding for Electrical Systems
26 0529 Hangers and Supports for Electrical Systems
26 0533 Raceways and Boxes for Electrical Systems

26 0553 Identification for Electrical Systems
26 2200 Low Voltage Transformers
26 2416 Panelboards
26 2726 Wiring Devices
26 2813 Fuses
26 2816 Enclosed Circuit Breakers

5. DRAWING REVISIONS

- CHANGE “The *Mechanical Contractor* is responsible for procurement of the commissioning agent...” to “The *General Contractor* is responsible for procurement of the commissioning agent...”

REVISE the following Drawings.

G001

AD101

- REVISE area of VCT demolition. See revised AD101.
- ADD demolition legend and mastic removal note. See revised AD101.

AD102

- ADD Toilet demolition work. See revised AD102
- ADD cubbies and sink demolition work. See revised AD102.
- ADD demolition legend and mastic removal note. See revised AD102.

A101

- ADD finishes to clarify scope. See revised A101.

A102

- ADD 106A and 110B Toilet Renovations scope. See revised A102.
- REVISE size of curbs under unit ventilators. See revised A102.
- REVISE ramp layout to main entrance. See revised A102.

A103

- REVISE size of curbs under unit ventilators. See revised A103.
- REVISE location of existing data server. See revised A103.

A201

- REVISE ramp elevation. See revised A201.
- ADD new ADA-compliant railing. See revised A201.

A401

- ADD enlarged view of Toilet 106A and 110B; fixture mounting height details; and ceramic tile detail. See revised A401.
- ADD unit ventilator concrete pads details. See revised A401.

A402

- ADD enlarged elevations of Toilet 106A and 110B; finish legend; toilet accessory legend; plumbing fixture schedule; and toilet accessory schedule. See revised A402.

Addendum No. 2 (cont'd)

A501

- REVISE unit ventilator, coat hook, and storage cubby details. See revised A502.

A601

- REVISE Signage and Room Finish schedules for Toilets 106A and 110B. See revised A601.
- ADD door details and schedule for proposed bathroom doors. See revised A601.
- ADD partition type details. See revised A601.

A901

- ADD finish floor plan for new bathrooms and storage room. See revised A901.

S-101

- REVISE Detail 1 for sidewalk demolition and extents of new landing. REMOVE notes calling for demolition of existing manholes and knee walls. See revised S-101.
- REVISE Detail 2 for sidewalk replacement and extents of new landing. REMOVE notes detailing closure of coal chutes. See revised S-101.
- REMOVE previous Detail 3 – Traverse Ramp Section.
- ADD new Detail 3 Transverse Landing Section to show design and extents of new concrete landing. See revised S-101.
- REVISE Detail 4 to remove notes regarding demolition and replacement of sidewalk slab. ADD note regarding contractor responsibility for backfill and replacement of damaged sidewalk. See revised S-101.
- REMOVE previous Detail 5 Transverse Ramp Section.
- REMOVE previous Detail 6 Closure for Existing Wall Opening.
- ADD a note to Detail 7 – Typical Reinforcing Spall Detail: “Provide 100 Square Feet of delamination removal, cleaning, and coating as directed by the SDP Construction Manager.”

S-102

- ADD Detail 6 New Chimney Section detailing the new chimney addition above the roof structure and the concrete chimney cap. See revised S-102.

M-103

- ADD Enlarged Mechanical Demolition Plan. See revised M-103.
- ADD Enlarged Mechanical New Work Plan. See revised M-103.
- ADD Plumbing Riser Diagram. See revised M-103.
- ADD Keynote #2: “Remove existing ceiling mounted exhaust fan including hangers, drip pan, and associated ductwork. Coordinate with electrical contractor for disconnecting remaining wiring.”
- ADD Keynote #3: “Remove ductwork to point and prepare for reconnection.”
- ADD Keynote #4: “Remove sanitary riser piping and patch concrete penetrations in floor.”
- ADD Keynote #5: “Remove domestic water piping and patch concrete penetrations in floor.”
- ADD Keynote #6: “Provide new bathroom exhaust fan based upon Greenheck CSPA-110 (100 CFM @ .25” w.c.) 230V/1Ph. Furnish disconnect switch and two (2) relays for fan light switch and occupancy sensor control to the electrical contractor for installation.”
- ADD Keynote #7: “Provide vent piping and connect to existing vent riser in chase.”
- ADD Keynote #8: “Provide 8”x8” wall mounted exhaust grille with integral damper. Balance to 50 CFM.”
- ADD Keynote #9: “Provide 8”x8” wall mounted exhaust grille with integral damper. Balance to 50 CFM.”

Addendum No. 2 (cont'd)

M-401

- ADD scope of piping work associated with Toilet 106A and 110B Renovations. See revised M-401.

M-501

- ADD Plumbing Fixture Schedule. See revised M-501.
- ADD Plumbing Piping Schedule. See revised M-501.
- REMOVE Steam Cabinet Unit Heater Control Diagram.

E-102

- ADD scope of electrical work associated with Toilet 106A and 110B Renovations. See revised E-401.
- ADD Demo Keynote #2: "Existing light fixture to be removed. Maintain existing electrical circuit for connection of new lights."
- ADD Demo Keynote #3: "Existing light switch shall be removed."
- ADD Demo Keynote #4: "Existing exhaust fan to be removed by M.C. E.C. shall disconnect the unit and remove disconnect switch. Maintain existing circuit for connection to new exhaust fan."
- ADD New Work Keynote #8: "Connect to existing lighting circuit available after demolition of existing lights in the area. Field verify circuit number."
- ADD New Work Keynote #9: "Provide new light fixtures..." See Revised E-102.
- ADD New Work Keynote #10: "New exhaust fan, furnished with disconnect switch and (2) relays by M.C. Electrical Contractor shall connect to existing circuit available after demolition is completed. Extend wiring as required. Provide additional wiring as needed to allow control of this fan with either occupancy sensor/switch in each bathroom. Replace existing 20/2 circuit breaker with new 15/2 (compatible with existing panelboard. A.I.C. rating shall match existing. Field Verify.

E601

- REVISE Min. A.I.C. of panel HB from "22,000" to "65,000"

6. BIDDER QUESTIONS AND ANSWERS

1. Question:

[Reference E101 Key Note 1] Key Notes – New Work #1 states "Any Cable found not to pass the tests shall be reported to the owner and the engineer, and be removed and replaced". How do we bid this note? We do not know how many cables need replacement until we do the tests. Can you put an allowance in the bid for cable replacement, so all bidders quote the same work?

Response:

Electrical Contractor shall include an allowance in his bid for Cable Replacement. See attached Revised Bid Proposal for description and amount.

2. Question:

Concrete Spalling Detail on 7/S101. Where is this detail located? Quantity?

Response:

General Contractor shall include in his base bid the cost of removal, cleaning, and coating of incidental amounts of visible concrete spalling, located at various portions of the concrete finish surrounding the outside of the building, as directed by the SDP Construction Manager.

Addendum No. 2 (cont'd)

3. **Question:**
Storage Cubby Detail on 3/A501. Where is this detail located? What is the quantity?
Response:
Remove existing and provide new cubbies in Classroom 114 and Classroom 110. See revised AD102, revised A102, and revised A501.
4. **Question:**
Missing Toilet Partition Spec 102113. Where are new partitions located?
Response:
Provide new toilet partitions. See revised A401 and Specification Section 10 2113.
5. **Question**
Summary of Work #10- Commissioning services for equipment. Should this be under the other contracts?
Response:
The General Contractor shall provide commissioning services per 01 1000 Summary of Work Article 1.03.B.10. Refer to Specification Section 01 9113 General Commissioning Requirements and 23 0800 Commissioning of HVAC.
6. **Question**
Do the pipe hangers have to be changed to accommodate the new insulation?
Response:
The Mechanical Contractor shall include an allowance for pipe hanger modifications in his bid form. See attached Revised Bid Proposal Form for description and amount of allowance.
7. **Question:**
Spec. 01130 indicates substantial completion date as 8/24 2020. What date can work actually start ?
Response:
Notice to Proceed is anticipated to be issued on or about June 1st, 2020
8. **Question:**
Please confirm all existing flooring @ rooms indicated to receive new flooring will be removed by a separate contract (environmental remediation) including note on Drawing AD-101 witch states remove VCT and Underlayment @ cafeteria, teachers lounge & dining room.
Response:
The Asbestos Abatement Contractor for the separate abatement project is responsible for removal and disposal of all 9" x 9" and 12" x 12" floor tile throughout the building. No abatement is anticipated under this project; however, replacement of the all the floor tile called for under this project is the responsibility of the General Contractor, including the areas in the note on AD101.
9. **Question**
Drawing A-401 indicates new toilet partitions. Please confirm removal of existing toilet partitions are by separate contract (environmental remediation)
Response:
Removal of transite partitions is the responsibility of the Asbestos Abatement Contractor.

Addendum No. 2 (cont'd)

- 10. Question**
Regarding Lead Paint Stabilization(scrape and encapsulate) . Please confirm this work is by separate contract (environmental remediation)
- Response:**
Lead based paint stabilization is the responsibility of the Asbestos Abatement Contractor.
- 11. Question**
Reference drawing A 903,note states reinstall existing chairs and repair hardware. The cost to repair hardware would be very difficult to determine. Please consider a Unit price and or an allowance to be included in project cost (Fair to PSD and Contractor)
- Response:**
The General Contractor shall include an allowance in his base bid for auditorium hardware repair, as directed by the SDP Construction Manager. See attached Revised Bid Proposal Form for description and amount.
- 12. Question**
Demo drawings do not indicate any existing mill work (cubbies, coat racks ,etc.) to be removed. Please confirm any mill work to be removed in order to accommodate new mill work is by separate contract (environmental remediation) and not in G.C. scope of work. If in G.C. scope of work please identify all locations.
- Response:**
See Question #3.
- 13. Question**
Reference drawing A501 detail 3 storage cubbies . Please indicate on floor plans location and width of new cubbies @ each class room.
- Response:**
See Question #3.
- 14. Question**
Can arrangements be made for an additional site visit by sub contractors.? If yes Please provide contact information ASAP.
- Response:**
No additional site visits will be scheduled due to current circumstances.
- 15. Question**
Asbestos inspection report indicates where 9"x9" tile is removed mastic is to remain in place. Will mastic be required to receive skim coat before installation of new VCT ?
- Response:**
General Contractor shall remove mastic and prepare surfaces for new finishes per manufacturer's recommendations. See Revised AD102 and Revised AD103.
- 16. Question**
Spec. 01 1000- G.C. contract item 10 indicates G.C. to provide Commissioning Services for HVAC equipment and Electrical Systems. Since these scopes of work are not in G.C. scope of work it seems appropriate that commissioning for HVAC AND ELECTRIC should be in each of these contracts scope of work. Please clarify.
- Response:**

Addendum No. 2 (cont'd)

Refer to Question #5.

17. Question

Subsequent to the removal of Auditorium seating by the Environmental Remediation Project contractor, in what condition will the chairs be? Specifically, will any additional work need to be done to the metal feet and/or legs of the seats? Will we need to replace bolts to reattach the feet to the new flooring? Do we need to repair any portion of the seating? Generally, will any additional work and/or materials/hardware be needed to complete the reinstallation of all seating?

Response:

Refer to question #11.

18. Question

Can you provide a set of electrical specifications for the phase changer, panels, safety switches and short circuit study?

Response:

Phase changer - Refer to Transformer Schedule (Sht. E601) and Specification Section 26 2200

Panels - Refer to Specification Section 26 2416

Safety Switches - Refer to Specification Section 26 2816

Short Circuit Study and Arc Fault Analysis are to be provided by Electrical Contractor - Refer to Sheet E501

19. Question

How will the Mechanical Contractor Receive the unit ventilators?

Response:

Mechanical Contractor must coordinate delivery of unit ventilators and provide five (5) business days' notice to SDP of request to receive.

End of Addendum #2

Attachments:

Revised Bid Proposal Forms: GC, MC, EC (3)

Tozour-Trane Proposal

Section 01 1650-ALLOWANCES

Additional Technical Specifications

Revised Drawings

BID PROPOSAL FORM –Revised
MAJOR RENOVATION-PHASE I
ANNA B. PRATT ELEMENTARY SCHOOL

Contract No. B-051C of 2019/20 General Construction

TO: The School District of Philadelphia
Board of Education

OWNER

Office of Capital Programs
The School District of Philadelphia
440 North Broad Street
Third Floor - Suite 371
Philadelphia, PA 19130-4015

ADDRESS

FROM: _____

**CONTRACTOR
ADDRESS**

**CITY/STATE
CONTACT NAME
PHONE NO.**

BASE CONTRACT PROPOSAL:

1. Having become completely familiar with the local conditions affecting the cost of Work at the place where Work is to be executed, and having carefully examined the site conditions as they currently exist, and having carefully examined the Bidding and Contract Documents prepared for this project, together with any Addenda to such Bidding and Contract Documents as listed hereinafter, the Undersigned hereby proposes and agrees to provide all labor, materials, plant, equipment, transportation and other facilities as necessary and/or required to execute all of the Work described by the Contract Documents for the above cited contract for the lump sum consideration of:

_____ Dollars
(\$ _____), said amount being hereinafter referred to as the Base Proposal Amount. Base proposal Amount includes Unit Price and Allowance Items listed below.

BID ALLOWANCES:

ALLOWANCE NO.1 - This Allowance is for Repairs to Reinstall Auditorium Seats, as directed by the Construction Project Manager, to be paid in accordance with Section 01 1650 ALLOWANCES.

AMOUNT OF ALLOWANCE INCLUDED IN BASE BID: \$10,000

BID ALTERNATES: NOT APPLICABLE TO THIS CONTRACT

UNIT PRICES: NOT APPLICABLE TO THIS CONTRACT

ACKNOWLEDGEMENT OF RECEIPT OF ADDENDA:

- 2 The Undersigned acknowledges receipt of the following Addenda (list by number and date appearing on Addenda):

<u>Addendum No.</u>	<u>Date</u>	<u>Addendum No.</u>	<u>Date</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

TIME OF COMPLETION:

- 3 The Undersigned agrees to Substantially Complete all Work under this Contract within the time periods specified in Division 1, General Requirements, Section 00 1300 entitled "Time of Completion, Milestones and Phasing or Sequencing Requirements".

INSURANCE:

- 4 All Bidders are instructed to refer to Article GC-11 of the General Conditions. All Contractors or Subcontractors bidding Work on the Project shall include in their bids the costs of Workers Compensation and Employer's Liability Insurance, Commercial General Liability Insurance, Automobile Liability Insurance, Excess Umbrella Liability

Insurance (Commercial Umbrella Liability Insurance) and any other types of insurance identified in Division 1- General Requirements, Section 01200 (or 01 1200) entitled “Special Insurance Requirements”.

LIQUIDATED DAMAGES:

5. Upon failure by the Contractor to achieve Substantial Completion within the time specified in Article GC-8 of the General Conditions from the Date of Commencement as set forth in the Notice to Proceed, the Contractor shall pay to the School District, as liquidated damages and not as a penalty, the sum of One Thousand Dollars (\$1,000.00) per day for each consecutive calendar day of delay until such time as Substantial Completion of the Work is achieved.

In addition, the Contractor shall be responsible for and pay for the cost of completion of construction of the Work, as well as for any and all additional charges of the School District, Architect/Engineer, other Project Contractors, and any other Consultants to the School District relating to the Contractor's failure to achieve Substantial Completion on a timely basis, including, but not limited to, delay damages, disruption damages, acceleration costs or expenses, investigative expenses, consulting fees, experts' fees, and attorneys' fees.

6. The Contractor and the School District agree that the amounts so fixed herein as liquidated damages are reasonable forecasts of just compensation for the harm that will be caused to the School District by the Contractor's breach.

GENERAL STATEMENT:

7. The Undersigned declares that the person or persons signing this Proposal is/are fully authorized to sign on behalf of the firm listed and to fully bind the firm listed to all the Proposal's conditions and provisions thereof.
8. It is agreed that the Undersigned has complied or will comply with all requirements of local, state, and federal laws, and that no legal requirement has been or will be violated in making or accepting this Proposal, in awarding the Contract to it and/or in prosecution of the Work.
9. Bid Security in the amount of ten percent (10%) of the Base Bid, plus all additive Alternates Proposal amounts, is attached hereto and made a part hereof, without endorsement, in the sum of _____ Dollars (\$ _____), which shall become the property of the School District in the event the Contract and Performance Bond and Labor and Materialmen's Bond are not executed within the time set forth, as liquidated damages.

10. The Undersigned further agrees within five (5) calendar days from date of Notice of Acceptance of this Proposal or Contract award, to sign and deliver to the School District, all required copies of the School District/Contractor Agreement, the Performance Bond, the Labor and Materialmen's Bond, and the Maintenance Bond, in the forms included in the Bidding Documents, and the policies of insurance or insurance certificates as required by the General Conditions.

11. In case the undersigned fails or neglects to deliver within the specified time the School District/Contractor Agreement, the Performance Bond, the Labor and Materialmen's Bond, and the Maintenance Bond, and the insurance policies or certificates, all as aforesaid, the undersigned shall be considered as having abandoned the Contract, and the Bid Bond accompanying this Proposal shall be forfeited to the School District by reason of such failure on the part of the undersigned, as liquidated damages and not as a penalty.

Undersigned further agrees that the Bid Security may be retained by the School District and shall remain with the School District until the School District/Contractor Agreement has been signed and delivered to the School District and the Performance Bond, the Labor and Materialmen's Bond, and the Maintenance Bond, and insurance policies or certificates have been made and delivered to the School District.

Respectfully submitted this _____ day of _____, 202_.

Individual Proprietorship or Partnership

If Contractor is an individual proprietorship or is a partnership, sign here:

(Trade Name of Firm)

By: _____ By: _____ (SEAL)
(Witness) (Owner or Partner)

Corporation

If Contractor is a corporation, sign here:

(Name of Corporation)

ATTEST:

By: _____ By: _____ (SEAL)
(Secretary or Treasurer) (President or Vice President)

(CORPORATE SEAL)

Signature by anyone other than the President or Vice President and the Secretary or Treasurer of the Corporation must be accompanied by a power of attorney, executed by the proper corporate officers under the corporate seal indicating authority to execute this Bid.

BID PROPOSAL FORM-REVISED

MAJOR RENOVATION-PHASE I

AT

ANNA B. PRATT ELEMENTARY SCHOOL

Contract No. B-052C of 2019/20 Mechanical Construction

TO: The School District of Philadelphia
Board of Education

OWNER

Office of Capital Programs
The School District of Philadelphia
440 North Broad Street
Third Floor - Suite 371
Philadelphia, PA 19130-4015

ADDRESS

FROM: _____

CONTRACTOR

ADDRESS

CITY/STATE

CONTACT NAME

PHONE NO.

BASE CONTRACT PROPOSAL:

1. Having become completely familiar with the local conditions affecting the cost of Work at the place where Work is to be executed, and having carefully examined the site conditions as they currently exist, and having carefully examined the Bidding and Contract Documents prepared for this project, together with any Addenda to such Bidding and Contract Documents as listed hereinafter, the Undersigned hereby proposes and agrees to provide all labor, materials, plant, equipment, transportation and other facilities as necessary and/or required to execute all of the Work described by the Contract Documents for the above cited contract for the lump sum consideration of:

_____ Dollars (\$_____),

said amount being hereinafter referred to as the Base Proposal Amount. Base proposal Amount includes Unit Price or Allowance Items listed below, if applicable.

BID ALLOWANCE NO. 1-This Allowance is for Work to be performed by Tozour-Trane, per Proposal dated March 27, 2020, 7 pages, attached to Addendum No 2

AMOUNT OF ALLOWANCE INCLUDED IN BASE BID: \$32,500

BID ALLOWANCE NO.2- This Allowance is for Pipe Hanger Modifications, as specified in Section 23 0529 Hangers and Supports for HVAC Piping and Equipment, and shown on the Electrical Drawings, to be paid in accordance with Section 01 1650 ALLOWANCES.

AMOUNT OF ALLOWANCE INCLUDED IN BASE BID: \$10,000

BID ALTERNATES (NOT APPLICABLE TO THIS CONTRACT)

UNIT PRICES: NOT APPLICABLE TO THIS CONTRACT

ACKNOWLEDGEMENT OF RECEIPT OF ADDENDA:

- 2 The Undersigned acknowledges receipt of the following Addenda (list by number and date appearing on Addenda):

<u>Addendum No.</u>	<u>Date</u>	<u>Addendum No.</u>	<u>Date</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

TIME OF COMPLETION:

- 3 The Undersigned agrees to Substantially Complete all Work under this Contract within the time periods specified in Division 1, General Requirements, Section 00 1300 entitled "Time of Completion, Milestones and Phasing or Sequencing Requirements".

INSURANCE:

- 4 All Bidders are instructed to refer to Article GC-11 of the General Conditions. All Contractors or Subcontractors bidding Work on the Project shall include in their bids the costs of Workers Compensation and Employer's Liability Insurance, Commercial General Liability Insurance, Automobile Liability Insurance, Excess Umbrella Liability Insurance (Commercial Umbrella Liability Insurance) and any other types of insurance identified in Division 1- General Requirements, Section 01200 (or 01 1200) entitled "Special Insurance Requirements".

LIQUIDATED DAMAGES:

5. Upon failure by the Contractor to achieve Substantial Completion within the time specified in Article GC-8 of the General Conditions from the Date of Commencement as set forth in the Notice to Proceed, the Contractor shall pay to the School District, as liquidated damages and not as a penalty, the sum of One Thousand Dollars (\$1,000.00) per day for each consecutive calendar day of delay until such time as Substantial Completion of the Work is achieved. In addition, the Contractor shall be responsible for and pay for the cost of completion of construction of the Work, as well as for any and all additional charges of the School District, Architect/Engineer, other Project Contractors, and any other Consultants to the School District relating to the Contractor's failure to achieve Substantial Completion on a timely basis, including, but not limited to, delay damages, disruption damages, acceleration costs or expenses, investigative expenses, consulting fees, experts' fees, and attorneys' fees.
6. The Contractor and the School District agree that the amounts so fixed herein as liquidated damages are reasonable forecasts of just compensation for the harm that will be caused to the School District by the Contractor's breach.

GENERAL STATEMENT:

7. The Undersigned declares that the person or persons signing this Proposal is/are fully authorized to sign on behalf of the firm listed and to fully bind the firm listed to all the Proposal's conditions and provisions thereof.
8. It is agreed that the Undersigned has complied or will comply with all requirements of local, state, and federal laws, and that no legal requirement has been or will be violated in making or accepting this Proposal, in awarding the Contract to it and/or in prosecution of the Work.
9. Bid Security in the amount of ten percent (10%) of the Base Bid, plus all additive Alternates Proposal amounts, is attached hereto and made a part hereof, without endorsement, in the sum of _____ Dollars (\$ _____), which shall become the property of the School District in the event the Contract and Performance Bond and Labor and Materialmen's Bond are not executed within the time set forth, as liquidated damages.
10. The Undersigned further agrees within five (5) calendar days from date of Notice of Acceptance of this Proposal or Contract award, to sign and deliver to the School District, all required copies of the School District/Contractor Agreement, the Performance Bond, the Labor and Materialmen's Bond, and the Maintenance Bond, in the forms included in the Bidding Documents, and the policies of insurance or insurance certificates as required by the General Conditions. In case the undersigned fails or neglects to deliver within the specified time the School District/Contractor Agreement, the Performance Bond, the Labor and Materialmen's Bond, and the Maintenance Bond, and the insurance policies or certificates, all as aforesaid, the undersigned shall be considered as having abandoned the Contract,

and the Bid Bond accompanying this Proposal shall be forfeited to the School District by reason of such failure on the part of the undersigned, as liquidated damages and not as a penalty.

The Undersigned further agrees that the Bid Security may be retained by the School District and shall remain with the School District until the School District/Contractor Agreement has been signed and delivered to the School District and the Performance Bond, the Labor and Materialmen's Bond, and the Maintenance Bond, and insurance policies or certificates have been made and delivered to the School District.

Respectfully submitted this _____ day of _____, 202_.

Individual Proprietorship or Partnership

If Contractor is an individual proprietorship or is a partnership, sign here:

(Trade Name of Firm)

By: _____ By: _____ (SEAL)
(Witness) (Owner or Partner)

Corporation

If Contractor is a corporation, sign here:

(Name of Corporation)

ATTEST:

By: _____ By: _____ (SEAL)
(Secretary or Treasurer) (President or Vice

President) (CORPORATE SEAL)

Signature by anyone other than the President or Vice President and the Secretary or Treasurer of the Corporation must be accompanied by a power of attorney, executed by the proper corporate officers under the corporate seal indicating authority to execute this Bid.

BID PROPOSAL FORM-REVISED
MAJOR ENOVATION-PHASE I
ANNA B. PRATT ELEMENTARY SCHOOL

Contract No. B-053C of 2019/20 Electrical Construction

TO: The School District of Philadelphia
Board of Education

OWNER

Office of Capital Programs
The School District of Philadelphia
440 North Broad Street
Third Floor - Suite 371
Philadelphia, PA 19130-4015

ADDRESS

FROM: _____

**CONTRACTOR
ADDRESS**

**CITY/STATE
CONTACT NAME
PHONE NO.**

BASE CONTRACT PROPOSAL:

1. Having become completely familiar with the local conditions affecting the cost of Work at the place where Work is to be executed, and having carefully examined the site conditions as they currently exist, and having carefully examined the Bidding and Contract Documents prepared for this project, together with any Addenda to such Bidding and Contract Documents as listed hereinafter, the Undersigned hereby proposes and agrees to provide all labor, materials, plant, equipment, transportation and other facilities as necessary and/or required to execute all of the Work described by the Contract Documents for the above cited Contract for the lump sum consideration of:

_____ Dollars

(\$ _____), said amount being hereinafter referred to as the Base Proposal Amount. Base proposal Amount includes Unit Price and Allowance Items listed below, if applicable.

BID ALLOWANCES:

ALLOWANCE NO 1: This Allowance is for Cable Replacement work described in Section 26 0579 Low Voltage Electric Power Conductors and Cable and shown on the Electrical Drawings, to be paid in accordance with Section 01 1650 ALLOWANCES.

AMOUNT OF ALLOWANCE INCLUDED IN BASE BID: \$20,000

BID ALTERNATES: (NOT APPLICABLE TO THIS CONTRACT)

UNIT PRICES: (NOT APPLICABLE TO THIS CONTRACT)

ACKNOWLEDGEMENT OF RECEIPT OF ADDENDA:

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_____	_____	_____	_____
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_____	_____	_____	_____
_____	_____	_____	_____

TIME OF COMPLETION:

- 3 The Undersigned agrees to Substantially Complete all Work under this Contract within the time periods specified in Division 1, General Requirements, Section 00 1300 entitled "Time of Completion, Milestones and Phasing or Sequencing Requirements".

INSURANCE:

- 4 All Bidders are instructed to refer to Article GC-11 of the General Conditions. All Contractors or Subcontractors bidding Work on the Project shall include in their bids the costs of Workers Compensation and Employer's Liability Insurance, Commercial

General Liability Insurance, Automobile Liability Insurance, Excess Umbrella Liability Insurance (Commercial Umbrella Liability Insurance) and any other types of insurance identified in Division 1- General Requirements, Section 01200 (or 01 1200) entitled “Special Insurance Requirements”.

LIQUIDATED DAMAGES:

5. Upon failure by the Contractor to achieve Substantial Completion within the time specified in Article GC-8 of the General Conditions from the Date of Commencement as set forth in the Notice to Proceed, the Contractor shall pay to the School District, as liquidated damages and not as a penalty, the sum of One Thousand Dollars (\$1,000.00) per day for each consecutive calendar day of delay until such time as Substantial Completion of the Work is achieved. In addition, the Contractor shall be responsible for and pay for the cost of completion of construction of the Work, as well as for any and all additional charges of the School District, Architect/Engineer, other Project Contractors, and any other Consultants to the School District relating to the Contractor's failure to achieve Substantial Completion on a timely basis, including, but not limited to, delay damages, disruption damages, acceleration costs or expenses, investigative expenses, consulting fees, experts' fees, and attorneys' fees.
6. The Contractor and the School District agree that the amounts so fixed herein as liquidated damages are reasonable forecasts of just compensation for the harm that will be caused to the School District by the Contractor's breach.

GENERAL STATEMENT:

7. The Undersigned declares that the person or persons signing this Proposal is/are fully authorized to sign on behalf of the firm listed and to fully bind the firm listed to all the Proposal's conditions and provisions thereof.
8. It is agreed that the Undersigned has complied or will comply with all requirements of local, state, and federal laws, and that no legal requirement has been or will be violated in making or accepting this Proposal, in awarding the Contract to it and/or in prosecution of the Work.
9. Bid Security in the amount of ten percent (10%) of the Base Bid, plus all additive Alternates Proposal amounts, is attached hereto and made a part hereof, without endorsement, in the sum of _____ Dollars (\$ _____), which shall become the property of the School District in the event the Contract and Performance Bond and Labor and Materialmen's Bond are not executed within the time set forth, as liquidated damages.
10. The Undersigned further agrees within five (5) calendar days from date of Notice of Acceptance of this Proposal or Contract award, to sign and deliver to the School District, all required copies of the School District/Contractor Agreement, the Performance Bond,

the Labor and Materialmen's Bond, and the Maintenance Bond, in the forms included in the Bidding Documents, and the policies of insurance or insurance certificates as required by the General Conditions. In case the undersigned fails or neglects to deliver within the specified time the School District/Contractor Agreement, the Performance Bond, the Labor and Materialmen's Bond, and the Maintenance Bond, and the insurance policies or certificates, all as aforesaid, the undersigned shall be considered as having abandoned the Contract, and the Bid Bond accompanying this Proposal shall be forfeited to the School District by reason of such failure on the part of the undersigned, as liquidated damages and not as a penalty.

11. The Undersigned further agrees that the Bid Security may be retained by the School District and shall remain with the School District until the School District/Contractor Agreement has been signed and delivered to the School District and the Performance Bond, the Labor and Materialmen's Bond, and the Maintenance Bond, and insurance policies or certificates have been made and delivered to the School District.

Respectfully submitted this _____ day of _____, 202_.

Individual Proprietorship or Partnership

If Contractor is an individual proprietorship or is a partnership, sign here:

(Trade Name of Firm)

By: _____ By: _____ (SEAL)
(Witness) (Owner or Partner)

Corporation

If Contractor is a corporation, sign here:

(Name of Corporation)

ATTEST:

By: _____ By: _____ (SEAL)
(Secretary or Treasurer) (President or Vice President)

(CORPORATE SEAL)

Signature by anyone other than the President or Vice President and the Secretary or Treasurer of the Corporation must be accompanied by a power of attorney, executed by the proper corporate officers under the corporate seal indicating authority to execute this Bid.

SECTION 01 1650 - ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for allowances.

An Allowance is a lump sum amount included in the Bid Form to be paid to the Contractor for materials or services to be provided by the contractor or others and described or shown elsewhere in the Contract Documents as work to be paid for as an allowance. The amount paid under an allowance shall be adjusted by appropriate modification for the actual amount of materials or services provided

1.3 PROCEDURES FOR ALLOWANCES

- A. Allowances for materials or services to be provided by the Contractor include all necessary costs of labor, materials and equipment plus cost for delivery, installation, insurance, applicable taxes, overhead and profit. Disposal of materials shall include all cost of demolition, excavation, handling, transportation, testing and permit fees. Compensation for allowances for materials or services provided by the Contractor shall be paid in accordance with the provisions of GC-12.1.4.1
- B. Allowances for materials or services to be provided by others shall include the net amount invoiced by the other party without further markup.
- C. Allowances for materials or services to be provided by the Contractor shall be paid upon receipt of documentation that the materials have been provided or services covered by the allowance have been satisfactorily completed.
- D. Allowances for materials or services to be provided by others shall be paid upon receipt of the invoice(s) submitted to the Contractor by the other party providing the materials or services and proof of payment.
- E. List of Allowances: See the Bid Proposal Forms for the respective prime contractors for lists of Allowances. Specification sections or drawings referenced in the Allowance description contain requirements for materials or services described under each Allowance.

**School District of Philadelphia
PRATT MAJOR RENOVATION-PHASE 1
Unit Vent Field Work Scope
3/27/2020**

Scope of Work:

Tozour Trane to provide technician to perform to following work:

- Provide and install the Plasma Air Ionizer in 40 Unit Vents
- Tozour Trane to mount CO2 sensor in the unit and set up sequence for this device
- Programming of BACNet capable controller
- Complete startup, operational test and check of unit ventilators listed below in the proposal
- Please see the attached equipment schedule of equipment that this scope encompasses

Clarifications:

- All work to be executed by Tozour Trane Technician
- All work is done on standard hrs (M-F) 7AM to 3 PM
- Installation of unit vent is not provided
- Power wiring is not provided
- Making of final connections is not provided
- Mounting and wiring of Wall Thermostat is not included in this scope
 - Mechanical contractor shall be responsible for mounting and wiring of thermostat from wall location to the unit
- Commissioning is not provided
- Balancing is not provided
- Integration to central control system is not provided
- Installing contractor to provide 5 day advanced notice when at least 10 units vents are ready for scope of work provided above
- Tozour Trane contact:
 - Andrew Bees
 - Tozour-Trane
 - 484 678 8926
 - abees@tozourtrane.com

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Equipment included in the described scope of work:

Item	Tag(s)	Qty	Description	Model Number
A1	UV-106 A, UV-106 B	2	VUVE Unit Ventilator (UV)	VUVE0750
A2	UV-109	1	VUVE Unit Ventilator (UV)	VUVE1250
A3	UV-110	1	VUVE Unit Ventilator (UV)	VUVE1250
A4	UV-111	1	VUVE Unit Ventilator (UV)	VUVE1250
A5	UV-112	1	VUVE Unit Ventilator (UV)	VUVE1250
A6	UV-113	1	VUVE Unit Ventilator (UV)	VUVE1250
A7	UV-114	1	VUVE Unit Ventilator (UV)	VUVE1250
A8	UV-202 A, UV-202 B	2	VUVE Unit Ventilator (UV)	VUVE0750
A9	UV-201 A, UV-201 B	2	VUVE Unit Ventilator (UV)	VUVE0750
A10	UV-202 A, UV-202 B	2	VUVE Unit Ventilator (UV)	VUVE0750
A11	UV-209	1	VUVE Unit Ventilator (UV)	VUVE1250
A12	UV-208 A, UV-208 B	2	VUVE Unit Ventilator (UV)	VUVE0750
A13	UV-211	1	VUVE Unit Ventilator (UV)	VUVE1250
A14	UV-210 A, UV-210 B	2	VUVE Unit Ventilator (UV)	VUVE0750
A15	UV-213	1	VUVE Unit Ventilator (UV)	VUVE1250
A16	UV-212 A, UV-212 B	2	VUVE Unit Ventilator (UV)	VUVE0750
A17	UV-214	1	VUVE Unit Ventilator (UV)	VUVE0750
A18	UV-302 A, UV-302 B	2	VUVE Unit Ventilator (UV)	VUVE0750
A19	UV-301 A, UV-301 B	2	VUVE Unit Ventilator (UV)	VUVE0750
A20	UV-308 A, UV-308 B	2	VUVE Unit Ventilator (UV)	VUVE0750
A21	UV-309	1	VUVE Unit Ventilator (UV)	VUVE1250
A22	UV-310 A, UV-310 B	2	VUVE Unit Ventilator (UV)	VUVE0750
A23	UV-311	1	VUVE Unit Ventilator (UV)	VUVE1250
A24	UV-312 A, UV-312 B	2	VUVE Unit Ventilator (UV)	VUVE0750
A25	UV-313	1	VUVE Unit Ventilator (UV)	VUVE1250
A26	UV-314 A, UV-314 B	2	VUVE Unit Ventilator (UV)	VUVE0750
A27	UV-315	1	VUVE Unit Ventilator (UV)	VUVE0750

Total Net Price (excluding Sales Tax)..... \$ 32,500

Tozour-Trane thanks you for this opportunity. If you have any questions or concerns, please do not hesitate to call.

Sincerely,
Tozour Trane

Acceptance of this proposal by buyer is expressly conditioned upon each of the terms, provisions and conditions set forth on the attached.

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TERMS OF SALE - Equipment

“Company” shall mean Tozour-Trane.

1. Acceptance. These terms and conditions are an integral part of Company’s offer and form the basis of any agreement (the “Agreement”) resulting from Company’s proposal (the “Proposal”) for the sale of the described equipment and any ancillary services (the “Equipment”). **COMPANY’S TERMS AND CONDITIONS ARE SUBJECT TO PERIODIC CHANGE OR AMENDMENT.** The Proposal is subject to acceptance in writing by the party to whom this offer is made or an authorized agent (“Customer”) delivered to Company within 30 days from the date of the Proposal. If Customer accepts the Proposal by placing an order, without the addition of any other terms and conditions of sale or any other modification, Customer’s order shall be deemed acceptance of the Proposal subject to Company’s terms and conditions. If Customer’s order is expressly conditioned upon Company’s acceptance or assent to terms and/or conditions other than those expressed herein, return of such order by Company with Company’s terms and conditions attached or referenced serves as Company’s notice of objection to Customer’s terms and as Company’s counter-offer to provide Equipment in accordance with the Proposal and the applicable Company terms and conditions in effect at the time of delivery or acceptance of the Equipment. If Customer does not reject or object in writing to Company within 10 days, Company’s counter-offer will be deemed accepted. Customer’s acceptance of the Equipment will in any event constitute an acceptance by Customer of Company’s terms and conditions. In the case of a dispute, the applicable terms and conditions will be those in effect at the time of delivery or acceptance of the Work. This Agreement is subject to credit approval by Company. Upon disapproval of credit, Company may delay or suspend performance or, at its option, renegotiate prices and/or terms and conditions with Customer. If Company and Customer are unable to agree on such revisions, this Agreement shall be cancelled without any liability.

2. Title and Risk of Loss. All Equipment sales with destinations to the U.S. shall be made as follows: FOB Company’s U.S. manufacturing facility or warehouse (full freight allowed). Title and risk of loss or damage to Equipment will pass to Customer upon tender of delivery of such to carrier at Company’s U.S. manufacturing facility or warehouse.

3. Pricing and Taxes. Following acceptance without addition of any other terms and condition of sale or any other modification by Customer, the prices stated are firm provided that notification of release for immediate production and shipment is received at Company’s factory not later than 3 months from order acceptance. If such release is received later than 3 months from order acceptance date, prices will be increased a straight 1% (not compounded) for each 1 month period (or part thereof) beyond the 3 month firm price period up to the date of receipt of such release. If such release is not received within 6 months after the date of order acceptance, the prices are subject to renegotiation or at Company’s option, the order will be cancelled. Any delay in shipment caused by Customer’s actions will subject prices to increase equal to the percentage increase in list prices during that period of delay and Company may charge Customer with incurred storage fees. In no event will prices be decreased. The price of Equipment does not include any present or future foreign, federal, state, or local property, license, privilege, sales, use, excise, value added, gross receipts or other like taxes or assessments. Such amounts will be itemized separately to Customer, who will make prompt payment to Company. Company will accept valid exemption documentation for such from Customer, if applicable. All prices include packaging in accordance with Company’s standard procedures. Charges for special packaging, crating or packing are the responsibility of Customer.

4. Delivery and Delays. Delivery dates are approximate and not guaranteed. Company will use commercially reasonable efforts to deliver the Equipment on or before the estimated delivery date and will notify Customer if the estimated delivery dates cannot be honored and will deliver the and services as soon as practicable thereafter. In no event will Company be liable for any damages or expenses caused by delays in delivery times.

5. Performance. Company shall be obligated to furnish only the Equipment described in the Proposal, and submittal data (if such data is issued in connection with the order), and Company may rely on the acceptance of the Proposal and submittal data as acceptance of the suitability of the Equipment for the particular project or location. If Company and Customer are unable to agree on revised prices or terms, the order may be cancelled without any liability. Unless specifically stated in the Proposal, compliance with any local building codes or other laws or regulations relating to specifications or the location, use or operation of the Equipment is the sole responsibility of Customer. If Equipment is tendered which does not fully comply with the provisions of this Agreement, and Equipment is rejected by Customer, Company will have the right to cure within a reasonable time after notice thereof by substituting a conforming tender whether or not the time for performance has passed.

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6. Force Majeure. Company's duty to perform under this Agreement and the Equipment prices are contingent upon the non-occurrence of an Event of Force Majeure. If the Company shall be unable to carry out any material obligation under this Agreement due to an Event of Force Majeure, this Agreement shall at Company's election (i) remain in effect but Company's obligations shall be suspended until the uncontrollable event terminates or (ii) be terminated upon 10 days notice to Customer, in which event Customer shall pay Company for all parts of the Work furnished to the date of termination. An "Event of Force Majeure" shall mean any cause or event beyond the control of Company. Without limiting the foregoing, "Event of Force Majeure" includes: acts of God; acts of terrorism, war or the public enemy; flood; earthquake; tornado; storm; fire; civil disobedience; pandemic insurrections; riots; labor/labour disputes; labor/labour or material shortages; sabotage; restraint by court order or public authority (whether valid or invalid); and action or non-action by or inability to obtain or keep in force the necessary governmental authorizations, permits, licenses, certificates or approvals if not caused by Company; and the requirements of any applicable government in any manner that diverts either the material or the finished product to the direct or indirect benefit of the government.

7. Limited Warranty. Company warrants the Equipment manufactured by Company for a period of the lesser of 12 months from initial start-up or 18 months from date of shipment, whichever is less, against failure due to defects in material and manufacture and that it has the capacities and ratings set forth in Company's catalogs and bulletins ("Warranty"). **Equipment manufactured by Company that includes required start-up and sold in North America will not be warranted by Company unless Company performs the Equipment startup.** Exclusions from this Warranty include damage or failure arising from: wear and tear; corrosion, erosion, deterioration; modifications made by others to the Equipment; repairs or alterations by a party other than Company that adversely affects the stability or reliability of the Equipment; vandalism; neglect; accident; adverse weather or environmental conditions; abuse or improper use; improper installation; commissioning by a party other than Company; unusual physical or electrical or mechanical stress; operation with any accessory, equipment or part not specifically approved by Company; and/or lack of proper maintenance as recommended by Company. Company shall not be obligated to pay for the cost of lost refrigerant or lost product. Company's obligations and liabilities under this Warranty are limited to furnishing replacement equipment or parts, at its option, FCA (Incoterms 2000) factory or warehouse (f.o.b. factory or warehouse for US domestic purposes) at Company-designated shipping point, freight-allowed to Company's warranty agent's stock location, for all non-conforming Company-manufactured Equipment (which have been returned by Customer to Company. Returns must have prior written approval by Company and are subject to restocking charge where applicable. Equipment, material and/or parts that are not manufactured by Company are not warranted by Company and have such warranties as may be extended by the respective manufacturer. **COMPANY MAKES NO REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, REGARDING PREVENTION OF MOLD/MOULD, FUNGUS, BACTERIA, MICROBIAL GROWTH, OR ANY OTHER CONTAMINATES.** No warranty liability whatsoever shall attach to Company until Customer's complete order has been paid for in full and Company's liability under this Warranty shall be limited to the purchase price of the Equipment shown to be defective. Additional warranty protection is available on an extra-cost basis and must be in writing and agreed to by an authorized signatory of the Company. Additional terms and conditions of warranty coverage are applicable for refrigeration equipment. **EXCEPT FOR COMPANY'S WARRANTY EXPRESSLY SET FORTH HEREIN, COMPANY DOES NOT MAKE, AND HEREBY EXPRESSLY DISCLAIMS, ANY WARRANTIES, EXPRESS OR IMPLIED CONCERNING ITS PRODUCTS, EQUIPMENT OR SERVICES, INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF DESIGN, MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE, OR OTHERS THAT ARE ALLEGED TO ARISE FROM COURSE OF DEALING OR TRADE.**

8. Indemnity. Company and Customer shall indemnify, defend and hold harmless each other from any and all claims, actions, costs, expenses, damages and liabilities, including reasonable attorneys' fees, resulting from death or bodily injury or damage to real or personal property, to the extent caused by the negligence or misconduct of their respective employees or other authorized agents in connection with their activities within the scope of this Agreement. Neither party shall indemnify the other against claims, damages, expenses or liabilities to the extent attributable to the acts or omissions of the other party. If the parties are both at fault, the obligation to indemnify shall be proportional to their relative fault. The duty to indemnify will continue in full force and effect, notwithstanding the expiration or early termination hereof, with respect to any claims based on facts or conditions that occurred prior to expiration or termination.

9. Insurance. Upon request, Company will furnish evidence of its standard insurance coverage. If Customer has requested to be named as an additional insured under Company's insurance policy, Company will do so but only subject to Company's manuscript additional insured endorsement under its primary Commercial General Liability policies. In no event does Company does not waive any rights of subrogation.

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10. Customer Breach. Each of the following events or conditions shall constitute a breach by Customer and shall give Company the right, without an election of remedies, to terminate this Agreement, require payment prior to shipping, or suspend performance by delivery of written notice declaring termination, upon which event Customer shall be liable to the Company for all Equipment furnished to date and all damages sustained by Company (including lost profit and overhead): (1) Any failure by Customer to pay amounts when due; or (2) any general assignment by Customer for the benefit of its creditors, or if Customer becomes bankrupt or insolvent or takes the benefit of any statute for bankrupt or insolvent debtors, or makes or proposes to make any proposal or arrangement with creditors, or if any steps are taken for the winding up or other termination of Customer or the liquidation of its assets, or if a trustee, receiver, or similar person is appointed over any of the assets or interests of Customer; (3) Any representation or warranty furnished by Customer in connection with this Agreement is false or misleading in any material respect when made; or (4) Any failure by Customer to perform or comply with any material provision of this Agreement.

11. Limitation of Liability. NOTWITHSTANDING ANYTHING TO THE CONTRARY, IN NO EVENT SHALL COMPANY BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT CONSEQUENTIAL, OR PUNITIVE OR EXEMPLARY DAMAGES (INCLUDING WITHOUT LIMITATION REFRIGERANT LOSS, BUSINESS INTERRUPTION, LOST DATA, LOST REVENUE, LOST PROFITS, LOST DOLLAR SAVINGS, OR LOST ENERGY USE SAVINGS, EVEN IF A PARTY HAS BEEN ADVISED OF SUCH POSSIBLE DAMAGES OR IF SAME WERE REASONABLY FORESEEABLE AND REGARDLESS OF WHETHER THE CAUSE OF ACTION IS FRAMED IN CONTRACT, NEGLIGENCE, ANY OTHER TORT, WARRANTY, STRICT LIABILITY, OR PRODUCT LIABILITY). In no event will Company's liability in connection with the provision of products or services or otherwise under this Agreement exceed the entire amount paid to Company by Customer under this Agreement.

12. Nuclear Liability. In the event that the Equipment sold hereunder is to be used in a nuclear facility, Customer will, prior to such use, arrange for insurance or governmental indemnity protecting Company against all liability and hereby releases and agrees to indemnify Company and its suppliers for any nuclear damage, including loss of use, in any manner arising out of a nuclear incident, whether alleged to be due, in whole or in part to the negligence or otherwise of Company or its suppliers.

13. Intellectual Property; Patent Indemnity. Company retains all ownership, license and other rights to all patents, trademarks, copyrights, trade secrets and other intellectual property rights related to the Equipment, and, except for the right to use the Equipment sold, Customer obtains no rights to use any such intellectual property. Company agrees to defend any suit or proceeding brought against Customer so far as such suit or proceeding is solely based upon a claim that the use of the Equipment provided by Company constitutes infringement of any patent of the United States of America, provided Company is promptly notified in writing and given authority, information and assistance for defense of same. Company will, at its option, procure for Customer the right to continue to use said Equipment, or modify it so that it becomes non-infringing, or replace same with non-infringing Equipment, or to remove said Equipment and to refund the purchase price. The foregoing will not be construed to include any Agreement by Company to accept any liability whatsoever in respect to patents for inventions including more than the Equipment furnished hereunder, or in respect of patents for methods and processes to be carried out with the aid of said Equipment. The provision of Equipment by Company does not convey any license, by implication, estoppel, or otherwise, under patent claims covering combinations of said Equipment with other devices or elements. The foregoing states the entire liability of Company with regard to patent infringement. Notwithstanding the provisions of this paragraph, Customer will hold Company harmless against any expense or loss resulting from infringement of patents or trademarks arising from compliance with Customer's designs or specifications or instructions.

14. Cancellation. Equipment is specially manufactured in response to orders. An order placed with and accepted by Company cannot be delayed, canceled, suspended, or extended except with Company's written consent and upon written terms accepted by Company that will reimburse Company for and indemnify Company against loss and provide Company with a reasonable profit for its materials, time, labor, services, use of facilities and otherwise. Customer will be obligated to accept any Equipment shipped, tendered for delivery or delivered by Company pursuant to the order prior to any agreed delay, cancellation, suspension or extension of the order. Any attempt by Customer to unilaterally revoke, delay or suspend acceptance for any reason whatever after it has agreed to delivery of or accepted any shipment shall constitute a breach of this Agreement. For purposes of this paragraph, acceptance shall be any waiver of inspection, use or possession of Equipment, payment of the invoice, or any indication of exclusive control exercised by Customer.

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15. Invoicing and Payment. Equipment shall be invoiced to Customer upon tender of delivery thereof to the carrier. Customer shall pay Company's invoices within net 30 days of shipment date. Company reserves the right to add to any account outstanding for more than 30 days a service charge equal to the lesser of the maximum allowable legal interest rate or 1.5% of the principal amount due at the end of each month. Customer shall pay all costs (including attorneys' fees) incurred by Company in attempting to collect amounts due and otherwise enforcing these terms and conditions. If requested, Company will provide appropriate lien waivers upon receipt of payment. Company may at any time decline to ship, make delivery or perform work except upon receipt of cash payment, letter of credit, or security, or upon other terms and conditions satisfactory to Company in accordance with its credit and collections policy. Customer agrees that, unless Customer makes payment in advance, Company will have a purchase money security interest in all Equipment to secure payment in full of all amounts due Company and its order for the Equipment, together with these terms and conditions, form a security agreement (as defined by the UCC in the United States and as defined in the Personal Property Security Act in Canada). Customer shall keep the Equipment free of all taxes and encumbrances, shall not remove the Equipment from its original installation point and shall not assign or transfer any interest in the Equipment until all payments due Company have been made. The purchase money security interest granted herein attaches upon Company's acceptance of Customer's order and on receipt of the Equipment described in the accepted Proposal but prior to its installation. The parties have no agreement to postpone the time for attachment unless specifically noted in writing on the accepted order. Customer will have no rights of set off against any amounts, which become payable to Company under this Agreement or otherwise.

16. Claims. Company will consider claims for concealed shortages in shipments or rejections due to failure to conform to an order only if such claims or rejections are made in writing within 15 days of delivery and are accompanied by the packing list and, if applicable, the reasons in detail why the Equipment does not conform to Customer's order. Upon receiving authorization and shipping instructions from authorized personnel of Company, Customer may return rejected Equipment, transportation charges prepaid, for replacement. Company may charge Customer any costs resulting from the testing, handling, and disposition of any Equipment returned by Customer which are not found by Company to be nonconforming. All Equipment damaged during shipment and all claims relating thereto must be made with the freight carrier in accordance with such carrier's policies and procedures. Claims for Equipment damaged during shipment are not covered under the warranty provision stated herein.

17. Export Laws. The obligation of Company to supply Equipment under this Agreement is subject to the ability of Company to supply such items consistent with applicable laws and regulations of the United States and other governments. Company reserves the right to refuse to enter into or perform any order, and to cancel any order, under this Agreement if Company in its sole discretion determines that performance of the transaction to which such order relates would violate any such applicable law or regulation. Customer will pay all handling and other similar costs from Company's factories including the costs of freight, insurance, export clearances, import duties and taxes. Customer will be "exporter of record" with respect to any export from the United States of America and will perform all compliance and logistics functions in connection therewith and will also comply with all applicable laws, rules and regulations. Customer understands that Company and/or the Equipment are subject to laws and regulations of the United States of America which may require licensing or authorization for and/or prohibit export, re-export or diversion of Company's Equipment to certain countries, and agrees it will not knowingly assist or participate in any such diversion or other violation of applicable United States of America laws and regulations. Customer agrees to hold harmless and indemnify Company for any damages resulting to Customer or Company from a breach of this paragraph by Customer.

18. General. Except as provided below, to the maximum extent provided by law, this Agreement is made and shall be interpreted and enforced in accordance with the laws of the Commonwealth of Pennsylvania. To the extent the Equipment is being used at a site owned and/or operated by any agency of the Federal Government, determination of any substantive issue of law shall be according to the Federal common law of Government contracts as enunciated and applied by Federal judicial bodies and boards of contract appeals of the Federal Government. This Agreement contains all of the agreements, representations and understandings of the parties and supersedes all previous understandings, commitments or agreements, oral or written, related to the subject matter hereof. This Agreement may not be amended, modified or terminated except by a writing signed by the parties hereto. No documents shall be incorporated herein by reference except to the extent Company is a signatory thereon. If any term or condition of this Agreement is invalid, illegal or incapable of being enforced by any rule of law, all other terms and conditions of this Agreement will nevertheless remain in full force and effect as long as the economic or legal substance of the transaction contemplated hereby is not affected in a manner adverse to any party hereto. Customer may not assign, transfer, or convey this Agreement, or any part hereof, or its right, title or interest herein, without the written consent of the Company. Subject to the foregoing, this Agreement shall be binding upon and inure to the benefit of Customer's permitted successors and assigns. This Agreement may be executed in several counterparts, each of which when executed shall be deemed to be an original, but all

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together shall constitute but one and the same Agreement. A fully executed facsimile copy hereof or the several counterparts shall suffice as an original.

SECTION 08 1213
HOLLOW METAL FRAMES

PART 1 GENERAL

1.01 RELATED REQUIREMENTS

- A. Section 08 1416 - Flush Wood Doors: Non-hollow metal door for hollow metal frames.
- B. Section 08 7100 - Door Hardware: Hardware, silencers, and weatherstripping.

1.02 REFERENCE STANDARDS

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- B. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100); 2017.
- C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2019a.
- D. ASTM A879/A879M - Standard Specification for Steel Sheet, Zinc Coated by the Electrolytic Process for Applications Requiring Designation of the Coating Mass on Each Surface; 2012 (Reapproved 2017).
- E. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable; 2018.
- F. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2018a.
- G. BHMA A156.115 - American National Standard for Hardware Preparation in Steel Doors and Steel Frames; 2016.
- H. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.
- I. NAAMM HMMA 830 - Hardware Selection for Hollow Metal Doors and Frames; 2002.
- J. NAAMM HMMA 831 - Hardware Locations for Hollow Metal Doors and Frames; 2011.
- K. NAAMM HMMA 840 - Guide Specifications For Receipt, Storage and Installation of Hollow Metal Doors and Frames; 2007.
- L. NAAMM HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames; 2014.
- M. SDI 117 - Manufacturing Tolerances for Standard Steel Doors and Frames; 2013.

1.03 SUBMITTALS

- A. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and identifying location of different finishes, if any.
- B. Samples: Submit one sample of frame metal, 2 inch by 2 inch (50 mm by 50 mm), showing factory finishes, colors, and surface textures.

1.04 QUALITY ASSURANCE

- A. Maintain at project site copies of reference standards relating to installation of products specified.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store in accordance with applicable requirements and in compliance with standards and/or custom guidelines as indicated.
- B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion.

PART 2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

- A. Refer to Door and Frame Schedule on the drawings for frame sizes, fire ratings, sound ratings, finishing, door hardware to be installed, and other variations, if any.
- B. Door Frame Type: Provide hollow metal door frames with applied casings.
- C. Steel Sheet: Comply with one or more of the following requirements; galvanized steel complying with ASTM A653/A653M, cold-rolled steel complying with ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel complying with ASTM A1011/A1011M, commercial steel (CS) Type B, for each.
- D. Accessibility: Comply with ICC A117.1 and ADA Standards.
- E. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with the specified requirements for each type; for instance, an exterior frame that is also indicated as being sound-rated must comply with the requirements specified for exterior frames and for sound-rated frames; where two requirements conflict, comply with the most stringent.
- F. Hardware Preparations, Selections and Locations: Comply with BHMA A156.115, NAAMM HMMA 830, NAAMM HMMA 831 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.

2.02 HOLLOW METAL DOOR FRAMES WITH APPLIED CASINGS

- A. Frame Type: Knockdown, slip-on drywall frames; separate jambs and head with separate snap-on casings both sides; factory-applied finish on exposed surfaces.
 - 1. Frame Material: Cold-rolled steel complying with ASTM A1008/A1008M.
 - 2. Casing Material: Formed steel.
 - 3. Casing Profile: As indicated.
 - 4. Finish: Factory-applied baked enamel finish, or electrostatically applied water-based paint.
 - a. Color: As selected from manufacturer's full line.
- B. Interior Door Frames, Non-Fire-Rated:
 - 1. Frame Metal Thickness: 14 gage, .064 inch (1.6 mm), minimum.
 - 2. Frames in Wet Areas: Electro-galvanize components prior to finishing in accordance with ASTM A879/A879M, with manufacturer's standard coating thickness.

2.03 ACCESSORIES

- A. Silencers: Resilient rubber, fitted into drilled hole; 3 on strike side of single door, 3 on center mullion of pairs, and 2 on head of pairs without center mullions.

PART 3 EXECUTION

3.01 EXAMINATION

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

3.02 INSTALLATION

- A. Install frames in accordance with manufacturer's instructions and related requirements of specified frame standards or custom guidelines indicated.
- B. Install prefinished frames after painting and wall finishes are complete.
- C. Coordinate frame anchor placement with wall construction.
- D. Install door hardware as specified in Section 08 7100.
- E. Touch up damaged factory finishes.

3.03 TOLERANCES

- A. Clearances Between Door and Frame: Comply with related requirements of specified frame standards or custom guidelines indicated in accordance with SDI 117 or NAAMM HMMA 861.
- B. Maximum Diagonal Distortion: 1/16 inch (1.6 mm) measured with straight edges, crossed corner to corner.

END OF SECTION

SECTION 08 1416
FLUSH WOOD DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

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

1.02 RELATED REQUIREMENTS

- A. Section 08 1213 - Hollow Metal Frames.
- B. Section 08 7100 - Door Hardware.

1.03 REFERENCE STANDARDS

- A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014, with Errata (2018).
- B. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards, U.S. Version 3.1; 2016, with Errata (2018).

1.04 SUBMITTALS

- A. Product Data: Indicate door core materials and construction; veneer species, type and characteristics.
- B. Shop Drawings: Show doors and frames, elevations, sizes, types, swings, undercuts, beveling, blocking for hardware, factory machining, factory finishing, cutouts for glazing and other details.
- C. Samples: Submit two samples of door veneer, 5 by 5 inch (127 by 127 mm) in size illustrating wood grain, stain color, and sheen.

1.05 QUALITY ASSURANCE

- A. Maintain one copy of the specified door quality standard on site for review during installation and finishing.

1.06 DELIVERY, STORAGE, AND HANDLING

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

PART 2 PRODUCTS

2.01 DOORS

- A. Doors: Refer to drawings for locations and additional requirements.
 - 1. Quality Standard: Custom Grade, Heavy Duty performance, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
 - 2. Wood Veneer Faced Doors: 5-ply unless otherwise indicated.
- B. Interior Doors: 1-3/4 inches (44 mm) thick unless otherwise indicated; flush construction.
 - 1. Provide solid core doors at each location.

2.02 DOOR AND PANEL CORES

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

2.03 DOOR FACINGS

- A. Veneer Facing for Transparent Finish: Red oak, veneer grade in accordance with quality standard indicated, plain sliced (flat cut), with book match between leaves of veneer, running match of spliced veneer leaves assembled on door or panel face.
 - 1. Vertical Edges: Same species as face veneer.

2.04 DOOR CONSTRUCTION

- A. Fabricate doors in accordance with door quality standard specified.
- B. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.
- C. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.
- D. Provide edge clearances in accordance with the quality standard specified.

2.05 FACTORY FINISHING - WOOD VENEER DOORS

- A. Finish work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 5 - Finishing for grade specified and as follows:
 - 1. Transparent:
 - a. System - 1, Lacquer, Nitrocellulose.
 - b. Sheen: Flat.
 - 2. Opaque:
 - a. System - 1, Lacquer, Nitrocellulose.
 - b. Color: As selected by Engineer of Record.
 - c. Sheen: Flat.
- B. Factory finish doors in accordance with approved sample.

2.06 ACCESSORIES

- A. Hollow Metal Door Frames: As specified in Section 08 1213.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that opening sizes and tolerances are acceptable.
- C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

3.02 INSTALLATION

- A. Install doors in accordance with manufacturer's instructions and specified quality standard.
- B. Factory-Finished Doors: Do not field cut or trim; if fit or clearance is not correct, replace door.
- C. Use machine tools to cut or drill for hardware.
- D. Coordinate installation of doors with installation of frames and hardware.

3.03 TOLERANCES

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

3.04 ADJUSTING

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

END OF SECTION

SECTION 08 7100
DOOR HARDWARE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Hardware for wood doors.

1.02 RELATED REQUIREMENTS

- A. Section 08 1213 - Hollow Metal Frames.
- B. Section 08 1416 - Flush Wood Doors.

1.03 REFERENCE STANDARDS

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- B. BHMA A156.1 - American National Standard for Butts and Hinges; 2016.
- C. BHMA A156.4 - American National Standard for Door Controls - Closers; 2013.
- D. BHMA A156.7 - American National Standard for Template Hinge Dimensions; 2016.
- E. BHMA A156.8 - American National Standard for Door Controls - Overhead Stops and Holders; 2015.
- F. BHMA A156.13 - American National Standard for Mortise Locks & Latches Series 1000; 2017.
- G. BHMA A156.18 - American National Standard for Materials and Finishes; 2016.
- H. BHMA A156.115W - American National Standard for Hardware Preparation in Wood Doors with Wood or Steel Frames; 2006.
- I. DHI WDHS.3 - Recommended Locations for Architectural Hardware for Flush Wood Doors; 1993; also in WDHS-1/WDHS-5 Series, 1996.
- J. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the manufacture, fabrication, and installation of products that door hardware is installed on.
- B. Furnish templates for door and frame preparation to manufacturers and fabricators of products requiring internal reinforcement for door hardware.

1.05 SUBMITTALS

- A. Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project, and includes construction details, material descriptions, finishes, and dimensions and profiles of individual components.
- B. Shop Drawings - Door Hardware Schedule: Submit detailed listing that includes each item of hardware to be installed on each door. Use door numbering scheme as included in Contract Documents.
 - 1. Prepared by or under supervision of Architectural Hardware Consultant (AHC).
 - 2. Provide complete description for each door listed.
 - 3. Provide manufacturer's and product names, and catalog numbers; include functions, types, styles, sizes and finishes of each item.
 - 4. Include account of abbreviations and symbols used in schedule.
- C. Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.
 - 1. Submit manufacturer's parts lists and templates.

1.06 DELIVERY, STORAGE, AND HANDLING

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

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

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

2.02 HINGES

- A. Manufacturers:
 - 1. Basis of Design: Mckinney TB2714.
 - 2. McKinney; an Assa Abloy Group company: www.assaabloydss.com/#sle.
 - 3. Hager Companies: www.hagerco.com/#sle.
 - 4. Stanley, dormakaba Group: www.stanleyhardwarefordoors.com/#sle.
 - 5. Or approved equal.
- B. Hinges: Comply with BHMA A156.1, Grade 1.
 - 1. Butt Hinges: Comply with BHMA A156.1 and BHMA A156.7 for templated hinges.
 - a. Provide hinge width required to clear surrounding trim.
 - 2. Provide hinges on every swinging door.
 - 3. Provide following quantity of butt hinges for each door:
 - a. Doors From 60 inches (1.5 m) High up to 90 inches (2.3 m) High: Three hinges.

2.03 PASSAGE MORTISE LOCKS

- A. Manufacturers:
 - 1. Basis of Design: Sargent 8215 LW1B.
 - 2. Corbin Russwin or Sargent; an Assa Abloy Group company: www.assaabloydss.com/#sle.
 - 3. Hager Companies: www.hagerco.com/#sle.
 - 4. Schlage, an Allegion brand: www.allegion.com/us/#sle.
 - 5. Stanley, dormakaba Group: www.stanleyhardwarefordoors.com/#sle.
 - 6. Or approved equal.
- B. Mortise Locks: Comply with BHMA A156.13, Grade 1, Security, 1000 Series. Meet A117.1 Accessibility Code.
 - 1. Latchbolt Throw: 3/4 inch (19 mm), minimum.
 - 2. Deadbolt Throw: 1 inch (25.4 mm), minimum.
 - 3. Backset: 2-3/4 inch (70 mm) unless otherwise indicated.
 - 4. Strikes: Provide manufacturer's standard strike for each latchset or lockset with strike box and curved lip extending to protect frame in compliance with indicated requirements.
 - a. Finish: To match lock or latch.

2.04 CLOSERS

- A. Manufacturers; Surface Mounted:
 - 1. Basis of Design: LCN 1461.

2. Corbin Russwin or Sargent; an Assa Abloy Group company: www.assaabloydss.com/#sle.
3. LCN, an Allegion brand: www.allegion.com/us/#sle.
4. Stanley, dormakaba Group: www.stanleyhardwarefordoors.com/#sle.
5. Or approved equal.

- B. Closers: Comply with BHMA A156.4, Grade 1.
1. Type: Surface mounted to door.
 2. At outswinging doors, mount closer on interior side of door.

2.05 OVERHEAD STOPS AND HOLDERS

- A. Manufacturers:
1. Basis of Design: Glynn Johnson 81 Series.
 2. Sargent; an Assa Abloy Group company: www.assaabloydss.com/#sle.
 3. Glynn-Johnson, an Allegion brand: www.allegion.com/us/#sle.
 4. Or approved equal.
- B. Overhead Stops and Holders (Door Checks): Comply with BHMA A156.8, Grade 1.
1. Provide stop for every swinging door, unless otherwise indicated.
 2. Stop is not required if positive stop feature is specified for door closer; positive stop feature of door closer is not an acceptable substitute for a stop, unless otherwise indicated.

2.06 KICK PLATES

- A. Manufacturers:
1. Basis of Design: Ives 8400-BHMA 630-B4E.
 2. Hiawatha, Inc, an Activar Construction Products Group company: www.activarcpg.com/hiawatha/#sle.
 3. Ives, an Allegion brand: www.allegion.com/us/#sle.
 4. Trimco: www.trimcohardware.com/#sle.
 5. Or approved equal.
- B. Kick Plates: Provide along bottom edge of push side of every door with closer, except aluminum storefront and glass entry doors, unless otherwise indicated.
1. Size: 8 inch (203 mm) high by 2 inch (51 mm) less door width (LDW) on push side of door.

2.07 SILENCERS

- A. Manufacturers:
1. Basis of Design: Ives SR64.
 2. Ives, an Allegion brand: www.allegion.com/us/#sle.
 3. Rockwood; an Assa Abloy Group company: www.assaabloydss.com/#sle.
 4. Or approved equal.
- B. Silencers: Provide at equal locations on door frame to mute sound of door's impact upon closing.
1. Single Door: Provide three on strike jamb of frame.
 2. Material: Rubber, gray color.

2.08 FINISHES

- A. Finishes: Provide door hardware of same finish, unless otherwise indicated.
1. Finish: 630; satin stainless steel, with stainless steel 300 series base material (former US equivalent US32D); BHMA A156.18.
 2. Exceptions:
 - a. Where base material metal is specified to be different, provide finish that is an equivalent appearance in accordance with BHMA A156.18.

PART 3 EXECUTION

3.01 EXAMINATION

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

3.02 INSTALLATION

- A. Install hardware in accordance with manufacturer's instructions and applicable codes.
- B. Use templates provided by hardware item manufacturer.
- C. Do not install surface mounted items until application of finishes to substrate are fully completed.
- D. Door Hardware Mounting Heights: Distance from finished floor to center line of hardware item. As indicated in following list; unless noted otherwise in Door Hardware Schedule or on drawings.
 - 1. For Wood Doors: Install in compliance with DHI WDHS.3 recommendations.
 - 2. Flush Wood Doors: Refer to Section 08 1416.
 - 3. Mounting heights in compliance with ADA Standards:
 - a. Deadlocks (Deadbolts): 48 inch (1219 mm).

3.03 ADJUSTING

- A. Adjust hardware for smooth operation.
- B. Adjust gasketing for complete, continuous seal; replace if unable to make complete seal.

3.04 CLEANING

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

3.05 PROTECTION

- A. Do not permit adjacent work to damage hardware or finish.

END OF SECTION

SECTION 09 3000

TILING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Tile for floor applications.
- B. Tile for wall applications.
- C. Cementitious backer board as tile substrate.
- D. Stone thresholds.
- E. Ceramic trim.

1.02 REFERENCE STANDARDS

- A. ANSI A108.1a - American National Standard Specifications for Installation of Ceramic Tile in the Wet-Set Method, with Portland Cement Mortar; 2017.
- B. ANSI A108.1b - American National Standard Specifications for Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex-Portland Cement Mortar; 2017.
- C. ANSI A108.1c - Specifications for Contractors Option: Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar or Installation of Ceramic Tile on a Cured Portland Cement Mortar Bed with Dry-Set or Latex-Portland Cement; 1999 (Reaffirmed 2016).
- D. ANSI A108.2 - American National Standard General Requirements: Materials, Environmental and Workmanship; 2019.
- E. ANSI A108.4 - American National Standard Specifications for Installation of Ceramic Tile with Organic Adhesives or Water Cleanable Tile-Setting Epoxy Adhesive; 2009 (Revised).
- F. ANSI A108.5 - American National Standard Specifications for Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar; 1999 (Reaffirmed 2010).
- G. ANSI A108.6 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy; 1999 (Reaffirmed 2010).
- H. ANSI A108.8 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant Furan Resin Mortar and Grout; 1999 (Reaffirmed 2010).
- I. ANSI A108.9 - American National Standard Specifications for Installation of Ceramic Tile with Modified Epoxy Emulsion Mortar/Grout; 1999 (Reaffirmed 2010).
- J. ANSI A108.10 - American National Standard Specifications for Installation of Grout in Tilework; 2017.
- K. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units; 2018.
- L. ANSI A108.12 - American National Standard for Installation of Ceramic Tile with EGP (Exterior Glue Plywood) Latex-Portland Cement Mortar; 1999 (Reaffirmed 2010).
- M. ANSI A108.13 - American National Standard for Installation of Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone; 2005 (Reaffirmed 2016).
- N. ANSI A108.19 - American National Standard Specifications for Interior Installation of Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs by the Thin-Bed Method Bonded with Modified Dry-Set Cement Mortar or Improved Modified Dry-Set Cement Mortar; 2017.
- O. ANSI A118.4 - American National Standard Specifications for Modified Dry-Set Cement Mortar; 2012 (Revised).
- P. ANSI A118.7 - American National Standard Specifications for High Performance Cement Grouts for Tile Installation; 2010 (Reaffirmed 2016).

- Q. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 1999 (Reaffirmed 2016).
- R. ANSI A118.10 - American National Standard Specifications for Load Bearing, Bonded, Waterproof Membranes For Thin-Set Ceramic Tile And Dimension Stone Installation; 2014.
- S. ANSI A118.12 - American National Standard Specifications for Crack Isolation Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation; 2014.
- T. ANSI A137.1 - American National Standard Specifications for Ceramic Tile; 2012.
- U. ASTM C373 - Standard Test Methods for Determination of Water Absorption and Associated Properties by Vacuum Method for Pressed Ceramic Tiles and Glass Tiles and Boil Method for Extruded Ceramic Tiles and Non-tile Fired Ceramic Whiteware Products; 2018.
- V. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation; 2019.

1.03 SUBMITTALS

- A. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.
- B. Shop Drawings: Indicate tile layout, patterns, color arrangement, perimeter conditions, control and expansion joints, thresholds, and setting details.
- C. Samples: Mount tile and apply grout on two plywood panels, minimum 18 by 18 inches (457 by 457 mm) in size illustrating pattern, color variations, and grout joint size variations.
- D. Maintenance Data: Include recommended cleaning methods, cleaning materials, and stain removal methods.
- E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. Extra Tile: 10 square feet (1 square meters) of each size, color, and surface finish combination.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, with minimum five years of documented experience.
- B. Installer Qualifications:
 - 1. Company specializing in performing tile installation, with minimum of five years of documented experience.
 - a. Accredited Five-Star member of the National Tile Contractors Association (NTCA) or Trowel of Excellence member of the Tile Contractors' Association of America (TCAA).

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.

1.06 FIELD CONDITIONS

- A. Do not install solvent-based products in an unventilated environment.
- B. Maintain ambient and substrate temperature above 50 degrees F (10 degrees C) and below 100 degrees F (38 degrees C) during installation and curing of setting materials.

PART 2 PRODUCTS

2.01 TILE

- A. Manufacturers:
 - 1. American Olean Corporation: www.americanolean.com/#sle.
 - 2. Dal-Tile Corporation: www.daltile.com/#sle.
 - 3. Emser Tile, LLC: www.emser.com/#sle.
 - 4. Terrazzo & Marble Supply Companies: www.tmsupply.com/#sle.
- B. Ceramic Mosaic Tile: ANSI A137.1, standard grade.
 - 1. Moisture Absorption: 0 to 0.5 percent as tested in accordance with ASTM C373.
 - 2. Size: 1 by 1 inch (25 by 25 mm), nominal.

3. Shape: Square.
 4. Edges: Smooth, all purpose edge.
 5. Surface Finish: Unglazed.
 6. Color(s): To be selected by Engineer of Record from manufacturer's standard range.
- C. Glazed Wall Tile: ANSI A137.1, standard grade.
1. Size: 4-1/4 by 4-1/4 inch (108 by 108 mm), nominal.
 2. Edges: Cushioned.
 3. Color(s): To be selected by Engineer of Record from manufacturer's standard range.

2.02 TRIM AND ACCESSORIES

- A. Ceramic Trim: Matching bullnose, double bullnose, cove base, and cove ceramic shapes in sizes coordinated with field tile.
1. Applications:
 - a. Open Edges: Bullnose.
 - b. Inside Corners: Jointed.
 - c. Floor to Wall Joints: Cove base.
 2. Manufacturers: Same as for tile.
- B. Thresholds: 6 inches (152.4 mm) wide by full width of wall or frame opening; beveled edge on both long edges; without holes, cracks, or open seams.
1. Thickness: 3/4 inch (19 mm).
 2. Material: Marble, honed finish.
 3. Applications:
 - a. At doorways where tile terminates.

2.03 SETTING MATERIALS

- A. Latex-Portland Cement Mortar (Thin Set): ANSI A118.4.
1. Prepackaged dry set mix mortar incorporating dry polymer additive in the form of a re-emulsifiable powder to which only water is added at Project site, or latex additive, serving as a replacement for part or all of gauging water, added at Project site to dry mortar mix. Comply with mixing directions of latex additive manufacturer and mortar manufacturer.
 2. Products:
 - a. ARDEX Engineered Cements: www.ardexamericas.com/#sle.
 - b. Custom Building Products: www.custombuildingproducts.com/#sle.
 - c. Merkrete, by Parex USA, Inc: www.merkrete.com/#sle.
 - d. TEC, an H.B. Fuller Construction Products Brand: www.tecspecialty.com/#sle.
 - e. MAPEI Corporation.
 - f. Laticrete International, Inc..

2.04 GROUTS

- A. High Performance Polymer Modified Grout: ANSI A118.7 polymer modified cement grout.
1. Use sanded grout for joints 1/8 inch (3.2 mm) wide and larger; use unsanded grout for joints less than 1/8 inch (3.2 mm) wide.
 2. Color(s): As selected by Engineer of Record from manufacturer's full line.
 3. Products:
 - a. ARDEX Engineered Cements; ARDEX FL: www.ardexamericas.com/#sle.
 - b. Custom Building Products; Prism Color Consistent Grout: www.custombuildingproducts.com/#sle.
 - c. LATICRETE International, Inc; LATICRETE PERMACOLOR Grout: www.laticrete.com/#sle.
 - d. Merkrete, by Parex USA, Inc; Merkrete Pro Grout: www.merkrete.com/#sle.
 - e. TEC, an H.B. Fuller Construction Products Brand; TEC AccuColor Plus Grout: www.tecspecialty.com/#sle.

2.05 MAINTENANCE MATERIALS

- A. Tile Sealant: Gunnable, silicone, siliconized acrylic, or urethane sealant; moisture and mildew resistant type.
 - 1. Applications: Between tile and plumbing fixtures.
 - 2. Color(s): As selected by Engineer of Record from manufacturer's full line.

2.06 ACCESSORY MATERIALS

- A. Waterproofing Membrane at Floors: Specifically designed for bonding to cementitious substrate under thick mortar bed or thin-set tile; complying with ANSI A118.10.
 - 1. Crack Resistance: No failure at 1/16 inch (1.6 mm) gap, minimum; comply with ANSI A118.12.
 - 2. Fluid or Trowel Applied Type:
 - a. Material: Synthetic rubber.
 - b. Products:
 - 1) LATICRETE International, Inc; 9235; Waterproof Membrane, cold applied liquid rubber and reinforcing fabric.: www.laticrete.com/#sle.
 - 2) Mapei Mapelastic AquaDefense cold-applied, roller applied synthetic liquid rubber and fiber reinforcing fabric..
 - 3) Pro Spec B-6000; Latex polymer based waterproofing membrane and reinforcing mesh.
- B. Backer Board: Cementitious type complying with ANSI A118.9; high density, glass fiber reinforced, 1/2 inch (12.7 mm) thick; 2 inch (51 mm) wide coated glass fiber tape for joints and corners.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that subfloor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive tile.
- B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive tile.
- C. Verify that subfloor surfaces are dust free and free of substances that could impair bonding of setting materials to subfloor surfaces.
- D. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

- A. Protect surrounding work from damage.
- B. Vacuum clean surfaces and damp clean.
- C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.
- D. Install backer board in accordance with ANSI A108.11 and board manufacturer's instructions. Tape joints and corners, cover with skim coat of setting material to a feather edge.

3.03 INSTALLATION - GENERAL

- A. Install tile, thresholds, and stair treads and grout in accordance with applicable requirements of ANSI A108.1a through ANSI A108.19 , manufacturer's instructions, and TCNA (HB) recommendations.
- B. Lay tile to pattern indicated. Do not interrupt tile pattern through openings.
- C. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.
- D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.
- E. Form internal angles square and external angles bullnosed.

- F. Install thresholds where indicated.
- G. Sound tile after setting. Replace hollow sounding units.
- H. Keep control and expansion joints free of mortar, grout, and adhesive.
- I. Prior to grouting, allow installation to completely cure; minimum of 48 hours.
- J. Grout tile joints unless otherwise indicated. Use standard grout unless otherwise indicated.
- K. At changes in plane and tile-to-tile control joints, use tile sealant instead of grout, with either bond breaker tape or backer rod as appropriate to prevent three-sided bonding.

3.04 INSTALLATION - FLOORS - THIN-SET METHODS

- A. Over interior concrete substrates, install in accordance with TCNA (HB) Method F113, dry-set or latex-Portland cement bond coat, with standard grout, unless otherwise indicated.
 - 1. Where waterproofing membrane is indicated, install in accordance with TCNA (HB) Method F122, with latex-Portland cement grout.

3.05 INSTALLATION - WALL TILE

- A. Over cementitious backer units on studs, install in accordance with TCNA (HB) Method W244, using membrane at toilet rooms.
- B. Over interior concrete and masonry install in accordance with TCNA (HB) Method W202, thin-set with dry-set or latex-Portland cement bond coat.

3.06 CLEANING

- A. Clean tile and grout surfaces.

3.07 PROTECTION

- A. Do not permit traffic over finished floor surface for 4 days after installation.

END OF SECTION

SECTION 10 2113.13
METAL TOILET COMPARTMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Metal toilet compartments.
- B. Urinal and Vestibule screens.

1.02 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Blocking and supports.

1.03 REFERENCE STANDARDS

- A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2019a.
- B. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.

1.04 SUBMITTALS

- A. Shop Drawings: Indicate partition plan, elevation views, dimensions, details of wall and floor supports, door swings.
- B. Product Data: Provide data on panel construction, hardware, and accessories.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Metal Toilet Compartments:
 - 1. All American Metal Corp - AAMCO: www.allamericanmetal.com/#sle.
 - 2. General Partitions Mfg. Corp: www.generalpartitions.com/#sle.
 - 3. Global Steel Products Corp: www.globalpartitions.com/#sle.
 - 4. Metpar Corp: www.metpar.com/#sle.
 - 5. Or approved equal.

2.02 MATERIALS

- A. Steel Sheet: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G90/Z275 coating.

2.03 COMPONENTS

- A. Toilet Compartments: Powder coated steel, floor-mounted unbraced.
- B. Doors, Panels, and Pilasters: Sheet steel faces, pressure bonded to sound deadening core, formed and closed edges; corners made with corner clips or mitered, welded, and ground smooth.
 - 1. Panel Faces: 20 gage, 0.0359 inch (0.91 mm).
 - 2. Door Faces: 22 gage, 0.0299 inch (0.76 mm).
 - 3. Pilaster Faces: 20 gage, 0.0359 inch (0.91 mm).
 - 4. Reinforcement: 12 gage, 0.1046 inch (2.66 mm).
 - 5. Internal Reinforcement: Provide in areas of attached hardware and fittings. Mark locations of reinforcement for partition mounted washroom accessories.
- C. Door and Panel Dimensions:
 - 1. Thickness: 1 inch (25 mm).
 - 2. Door Width: 24 inch (610 mm).
 - 3. Door Width for Handicapped Use: 36 inch (915 mm), out-swinging.
 - 4. Height: 58 inch (1473 mm).
- D. Pilasters: 1-1/4 inch (32 mm) thick, of sizes required to suit compartment width and spacing.
- E. Urinal Screens: Wall mounted with two panel brackets, and floor-to-ceiling vertical upright consisting of pilaster anchored to floor and ceiling.

2.04 ACCESSORIES

- A. Pilaster Shoes: Formed ASTM A666, Type 304 stainless steel with No. 4 finish, 4 inch (102 mm) high, concealing floor fastenings.
 - 1. Provide adjustment for floor variations with screw jack through steel saddles integral with pilaster.
- B. Head Rails: Hollow anodized aluminum tube, 1 by 1-5/8 inch (25 by 41 mm) size, with anti-grip strips and cast socket wall brackets.
- C. Brackets: Polished chrome-plated non-ferrous cast metal.
- D. Attachments, Screws, and Bolts: Stainless steel, tamper proof type.
 - 1. For attaching panels and pilasters to brackets: Through-bolts and nuts; tamper proof.
- E. Hardware: Polished chrome plated non-ferrous cast metal:
 - 1. Pivot hinges, gravity type, adjustable for door close positioning; two per door.
 - 2. Thumb turn or sliding door latch with exterior emergency access feature.
 - 3. Door strike and keeper with rubber bumper; mounted on pilaster in alignment with door latch.
 - 4. Coat hook with rubber bumper; one per compartment, mounted on door.
 - 5. Provide door pull for outswinging doors.

2.05 FINISHING

- A. Powder Coated Steel Compartments: Clean, degrease, and neutralize. Follow immediately with a phosphatizing treatment, prime coat and two finish coats powder coat enamel.
- B. Color: To be selected by the Architect from the Manufacturer's standard line of colors.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that field measurements are as indicated.
- C. Verify correct spacing of and between plumbing fixtures.
- D. Verify correct location of built-in framing, anchorage, and bracing.

3.02 INSTALLATION

- A. Install partitions secure, rigid, plumb, and level in accordance with manufacturer's instructions.
- B. Maintain 3/8 to 1/2 inch (9 to 13 mm) space between wall and panels and between wall and end pilasters.
- C. Attach panel brackets securely to walls using anchor devices.
- D. Attach panels and pilasters to brackets. Locate head rail joints at pilaster center lines.
- E. Field touch-up of scratches or damaged enamel finish will not be permitted. Replace damaged or scratched materials with new materials.

3.03 TOLERANCES

- A. Maximum Variation From True Position: 1/4 inch (6 mm).
- B. Maximum Variation From Plumb: 1/8 inch (3 mm).

3.04 ADJUSTING

- A. Adjust and align hardware to uniform clearance at vertical edge of doors, not exceeding 3/16 inch (5 mm).
- B. Adjust hinges to position doors in partial opening position when unlatched. Return out swinging doors to closed position.
- C. Adjust adjacent components for consistency of line or plane.

END OF SECTION

SECTION 22 0529

HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

PART 2 PRODUCTS

1.01 SUPPORT AND ATTACHMENT COMPONENTS

- A. General Requirements:
 - 1. Provide all required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for the complete installation of plumbing work.
 - 2. Provide products listed, classified, and labeled as suitable for the purpose intended, where applicable.
 - 3. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for the load to be supported with a minimum safety factor of _____. Include consideration for vibration, equipment operation, and shock loads where applicable.
 - 4. Steel Components: Use corrosion resistant materials suitable for the environment where installed.
 - a. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.
 - b. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.
- B. Metal Channel (Strut) Framing Systems:
 - 1. Comply with MFMA-4.
- C. Hanger Rods: Threaded zinc-plated steel unless otherwise indicated.
- D. Anchors and Fasteners:
 - 1. Unless otherwise indicated and where not otherwise restricted, use the anchor and fastener types indicated for the specified applications.

END OF SECTION

SECTION 22 1005
PLUMBING PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Pipe, pipe fittings, specialties, and connections for piping systems.
 - 1. Sanitary sewer.
 - 2. Domestic water.
 - 3. Flanges, unions, and couplings.
 - 4. Pipe hangers and supports.
 - 5. Manufactured sleeve-seal systems.
 - 6. Valves.

1.02 REFERENCE STANDARDS

- A. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings; 2018.
- B. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings; 2018.
- C. ASME B31.9 - Building Services Piping; 2017.
- D. ASTM A74 - Standard Specification for Cast Iron Soil Pipe and Fittings; 2020.
- E. ASTM B32 - Standard Specification for Solder Metal; 2008 (Reapproved 2014).
- F. ASTM B88 - Standard Specification for Seamless Copper Water Tube; 2016.
- G. ASTM B88M - Standard Specification for Seamless Copper Water Tube (Metric); 2018.
- H. ASTM B813 - Standard Specification for Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube; 2016.
- I. ASTM B828 - Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings; 2016.
- J. ASTM C564 - Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings; 2014.
- K. CISPI 301 - Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste and Vent Piping Applications; 2017 (Revised 2018).
- L. CISPI 310 - Specification for Coupling for Use in Connection with Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications; 2012 (Revised 2018).
- M. ICC-ES AC01 - Acceptance Criteria for Expansion Anchors in Masonry Elements; 2015.
- N. ICC-ES AC193 - Acceptance Criteria for Mechanical Anchors in Concrete Elements; 2015.
- O. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; 2018.
- P. MSS SP-110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends; 2010.
- Q. NSF 61 - Drinking Water System Components - Health Effects; 2019.
- R. NSF 372 - Drinking Water System Components - Lead Content; 2016.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Potable Water Supply Systems: Provide piping, pipe fittings, and solder and flux (if used), that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.

2.02 SANITARY SEWER PIPING, ABOVE GRADE

- A. Cast Iron Pipe: ASTM A74, service weight.
 - 1. Fittings: Cast iron.
 - 2. Joint Seals: ASTM C564 neoprene gaskets, or lead and oakum.

- B. Cast Iron Pipe: CISPI 301, hubless, service weight.
 - 1. Fittings: Cast iron.
 - 2. Joints: CISPI 310, neoprene gaskets and stainless steel clamp-and-shield assemblies.

2.03 DOMESTIC WATER PIPING, ABOVE GRADE

- A. Copper Tube: ASTM B88 (ASTM B88M), Type K (A), Drawn (H).
 - 1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22, wrought copper and bronze.
 - 2. Joints: ASTM B32, alloy Sn95 solder.

2.04 FLANGES, UNIONS, AND COUPLINGS

- A. Unions for Pipe Sizes 3 Inches (80 mm) and Under:
 - 1. Copper Tube and Pipe: Class 150 bronze unions with soldered joints.

2.05 PIPE HANGERS AND SUPPORTS

- A. Provide hangers and supports that comply with MSS SP-58.
 - 1. If type of hanger or support for a particular situation is not indicated, select appropriate type using MSS SP-58 recommendations.
 - 2. Overhead Supports: Individual steel rod hangers attached to structure or to trapeze hangers.
 - 3. Trapeze Hangers: Welded steel channel frames attached to structure.
 - 4. Vertical Pipe Support: Steel riser clamp.
- B. Plumbing Piping - Drain, Waste, and Vent:
 - 1. Hangers for Pipe Sizes 1/2 Inch (15 mm) to 1-1/2 Inches (40 mm): Malleable iron, adjustable swivel, split ring.
- C. Plumbing Piping - Water:
 - 1. Hangers for Pipe Sizes 1/2 Inch (15 mm) to 1-1/2 Inches (40 mm): Malleable iron, adjustable swivel, split ring.
- D. Hanger Fasteners: Attach hangers to structure using appropriate fasteners, as follows:
 - 1. Concrete Wedge Expansion Anchors: Complying with ICC-ES AC193.
 - 2. Masonry Wedge Expansion Anchors: Complying with ICC-ES AC01.

2.06 MANUFACTURED SLEEVE-SEAL SYSTEMS

- A. Modular/Mechanical Seal:
 - 1. Synthetic rubber interlocking links continuously fill annular space between pipe and wall/casing opening.
 - 2. Provide watertight seal between pipe and wall/casing opening.
 - 3. Elastomer element size and material in accordance with manufacturer's recommendations.
 - 4. Glass reinforced plastic pressure end plates.

2.07 BALL VALVES

- A. Construction, 4 Inches (100 mm) and Smaller: MSS SP-110, Class 150, 400 psi (2760 kPa) CWP, bronze or ductile iron body, 304 stainless steel or chrome plated brass ball, regular port, teflon seats and stuffing box ring, blow-out proof stem, lever handle with balancing stops, threaded or grooved ends with union.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that excavations are to required grade, dry, and not over-excavated.

3.02 PREPARATION

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

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.
- C. Copper Pipe and Tube: Make soldered joints in accordance with ASTM B828, using specified solder, and flux meeting ASTM B813; in potable water systems use flux also complying with NSF 61 and NSF 372.
- D. Sleeve pipes passing through partitions, walls, and floors.
- E. Inserts:
 - 1. Provide inserts for placement in concrete formwork.
 - 2. Provide inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
 - 3. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.
 - 4. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut above slab.
- F. Pipe Hangers and Supports:
 - 1. Install in accordance with ASME B31.9.
 - 2. Install hangers to provide minimum 1/2 inch (15 mm) space between finished covering and adjacent work.
 - 3. Place hangers within 12 inches (300 mm) of each horizontal elbow.
 - 4. Use hangers with 1-1/2 inch (40 mm) minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.
 - 5. Support vertical piping at every other floor. Support riser piping independently of connected horizontal piping.
 - 6. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.
 - 7. Provide copper plated hangers and supports for copper piping.
- G. Manufactured Sleeve-Seal Systems:
 - 1. Install manufactured sleeve-seal systems in sleeves located in grade slabs and exterior concrete walls at piping entrances into building.
 - 2. Provide sealing elements of the size, quantity, and type required for the piping and sleeve inner diameter or penetration diameter.
 - 3. Locate piping in center of sleeve or penetration.
 - 4. Install field assembled sleeve-seal system components in annular space between sleeve and piping.
 - 5. Tighten bolting for a watertight seal.
 - 6. Install in accordance with manufacturer's recommendations.
- H. When installing more than one piping system material, ensure system components are compatible and joined to ensure the integrity of the system. Provide necessary joining fittings. Ensure flanges, union, and couplings for servicing are consistently provided.

3.04 TOLERANCES

- A. Drainage Piping: Establish invert elevations within 1/2 inch (10 mm) vertically of location indicated and slope to drain at minimum of 1/4 inch per foot (1:50) slope.
- B. Water Piping: Slope at minimum of 1/32 inch per foot (1:400) and arrange to drain at low points.

3.05 SCHEDULES

- A. Pipe Hanger Spacing:
 - 1. Metal Piping:
 - a. Pipe Size: 1/2 inches (15 mm) to 1-1/4 inches (32 mm):
 - 1) Maximum Hanger Spacing: 6.5 ft (2 m).

- 2) Hanger Rod Diameter: 3/8 inches (9 mm).

END OF SECTION

**SECTION 22 4000
PLUMBING FIXTURES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Water closets.
- B. Lavatories.

1.02 RELATED REQUIREMENTS

- A. Section 07 9200 - Joint Sealants: Sealing joints between fixtures and walls and floors.

1.03 REFERENCE STANDARDS

- A. ASME A112.6.1M - Supports for Off-the-Floor Plumbing Fixtures for Public Use; 1997 (Reaffirmed 2017).
- B. ASME A112.18.1 - Plumbing Supply Fittings; 2018.
- C. ASME A112.19.2 - Ceramic Plumbing Fixtures; 2018.
- D. NSF 61 - Drinking Water System Components - Health Effects; 2019.
- E. NSF 372 - Drinking Water System Components - Lead Content; 2016.
- F. UL (DIR) - Online Certifications Directory; Current Edition.

1.04 SUBMITTALS

- A. Product Data: Provide catalog illustrations of fixtures, sizes, rough-in dimensions, utility sizes, trim, and finishes.
- B. Samples: Submit two lavatory supply fittings.
- C. Manufacturer's Instructions: Indicate installation methods and procedures.
- D. Sustainable Design Documentation: Submit appropriate evidence that materials used in potable water systems comply with the specified requirements.
- E. Maintenance Data: Include fixture trim exploded view and replacement parts lists.
- F. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.
- G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 6000 - Product Requirements, for additional provisions.
 - 2. Extra Lavatory Supply Fittings: One set of each type and size.
 - 3. Extra Toilet Seats: One of each type and size.
 - 4. Flush Valve Service Kits: One for each type and size.

1.05 QUALITY ASSURANCE

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

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Accept fixtures on site in factory packaging. Inspect for damage.
- B. Protect installed fixtures from damage by securing areas and by leaving factory packaging in place to protect fixtures and prevent use.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Potable Water Systems: Provide plumbing fittings and faucets that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.
- B. Water Efficiency: EPA WaterSense label is required for all water closets, urinals, lavatory faucets, and showerheads.

2.02 REGULATORY REQUIREMENTS

- A. Comply with applicable codes for installation of plumbing systems.
- B. Comply with UL (DIR) requirements.
- C. Perform work in accordance with local health department regulations.
- D. Provide certificate of compliance from Authority Having Jurisdiction indicating approval of installation.

2.03 FLUSH VALVE WATER CLOSETS

- A. Water Closets: Vitreous china, ASME A112.19.2, floor mounted, siphon jet flush action, china bolt caps.
 - 1. Bowl: ASME A112.19.2; 16.5 inches (420 mm) high with elongated rim.
 - 2. Flush Valve: Exposed (top spud).
 - 3. Flush Operation: Manual, oscillating handle.
 - 4. Handle Height: 44 inches (1117 mm) or less.
 - 5. Color: White.
 - 6. Manufacturers:
 - a. American Standard, Inc: www.americanstandard-us.com/#sle.
 - b. Kohler Company: www.kohler.com/#sle.
 - c. Zurn Industries, Inc: www.zurn.com/#sle.
- B. Flush Valves: ASME A112.18.1, diaphragm type, complete with vacuum breaker stops and accessories.
 - 1. Exposed Type: Chrome plated, escutcheon, adjustable tailpiece non-hold-open handle, vandal-resistant stop cap.
 - 2. Manufacturers:
 - a. American Standard, Inc: www.americanstandard-us.com/#sle.
 - b. Sloan Valve Company: www.sloanvalve.com/#sle.
 - c. Zurn Industries, Inc: www.zurn.com/#sle.
- C. Seats:
 - 1. Solid white plastic, open front, extended back, self-sustaining hinge, brass bolts, with cover.

2.04 LAVATORIES

- A. Lavatory Manufacturers:
 - 1. American Standard, Inc: www.americanstandard-us.com/#sle.
 - 2. Kohler Company: www.kohler.com/#sle.
 - 3. Zurn Industries, Inc: www.zurn.com/#sle.
- B. Vitreous China Wall Hung Basin: ASME A112.19.2; vitreous china wall hung lavatory with 4 inch (100 mm) high back, rectangular basin with splash lip, front overflow, and soap depression.
- C. Supply Faucet Manufacturers:
 - 1. American Standard, Inc: www.americanstandard-us.com/#sle.
 - 2. Kohler Company: www.kohler.com/#sle.
 - 3. Zurn Industries, Inc: www.zurn.com/#sle.
- D. Supply Faucet: ASME A112.18.1; chrome plated supply fitting with open grid strainer, water economy aerator with maximum flow of 0.5 gallon per minute (low-flow) (1.9 liters per minute (low-flow)), indexed handles.
- E. Provide lavatory with combination stop and strainer.
- F. Accessories:
 - 1. Chrome plated 17 gage, 0.0538 inch (1.37 mm) brass P-trap with clean-out plug and arm with escutcheon.
 - 2. Offset waste with plug and strainer.
 - 3. Wheel handle stops.
 - 4. Rigid supplies.

5. Carrier:
 - a. ASME A112.6.1M; cast iron and steel frame with tubular legs, lugs for floor and wall attachment, threaded studs for fixture hanger, bearing plate and studs.

END OF SECTION

SECTION 23 3423
HVAC POWER VENTILATORS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Inline centrifugal fans.

1.02 RELATED REQUIREMENTS

- A. Section 23 0548 - Vibration and Seismic Controls for HVAC.
- B. Section 23 3300 - Air Duct Accessories: Backdraft dampers.

1.03 REFERENCE STANDARDS

- A. AMCA (DIR) - (Directory of) Products Licensed Under AMCA International Certified Ratings Program; 2015.
- B. AMCA 99 - Standards Handbook; 2016.
- C. AMCA 204 - Balance Quality and Vibration Levels for Fans; 2005 (Reaffirmed 2012).
- D. AMCA 210 - Laboratory Methods of Testing Fans for Certified Aerodynamic Performance Rating; 2016.
- E. AMCA 300 - Reverberant Room Method for Sound Testing of Fans; 2014.
- F. AMCA 301 - Methods for Calculating Fan Sound Ratings from Laboratory Test Data; 2014.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate the installation with size, location and installation of service utilities.
- B. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by all affected installers.
- C. Sequencing: Ensure that utility connections are achieved in an orderly and expeditious manner.

1.05 SUBMITTALS

- A. Product Data: Provide data on fans and accessories including fan curves with specified operating point clearly plotted, power, RPM, sound power levels at rated capacity, and electrical characteristics and connection requirements.
- B. Manufacturer's Instructions: Indicate installation instructions.
- C. Maintenance Data: Include instructions for lubrication, motor and drive replacement, spare parts list, and wiring diagrams.

1.06 QUALITY ASSURANCE

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

PART 2 PRODUCTS

2.01 POWER VENTILATORS - GENERAL

- A. Static and Dynamically Balanced: AMCA 204 - Balance Quality and Vibration Levels for Fans.
- B. Performance Ratings: Determined in accordance with AMCA 210 and bearing the AMCA Certified Rating Seal.
- C. Sound Ratings: AMCA 301, tested to AMCA 300 and bearing AMCA Certified Sound Rating Seal.
- D. Fabrication: Comply with AMCA 99.
- E. Electrical Components: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

2.02 INLINE CENTRIFUGAL FANS

- A. Manufacturers:
 - 1. Greenheck Fan Corporation: www.greenheck.com/#sle.
 - 2. Loren Cook Company: www.lorencook.com/#sle.
 - 3. PennBarry, Division of Air System Components: www.pennbarry.com/#sle.
- B. Centrifugal Fan Unit: V-belt or direct driven with galvanized steel housing lined with acoustic insulation, resilient mounted motor, gravity backdraft damper in discharge.
- C. Disconnect Switch: Cord and plug in housing for thermal overload protected motor and wall mounted switch.
- D. Sheaves: Cast iron or steel, dynamically balanced, bored to fit shafts and keyed; variable and adjustable pitch motor sheaves selected so required rpm is obtained with sheaves set at mid-position; fan shaft with self-aligning pre-lubricated ball bearings.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Hung Cabinet Fans:
 - 1. Install fans with resilient mountings and flexible electrical leads. Refer to Section 23 0548.
 - 2. Install flexible connections specified in Section 23 3300 between fan and ductwork. Ensure metal bands of connectors are parallel with minimum one inch (25 mm) flex between ductwork and fan while running.
- C. Install backdraft dampers on inlet to roof and wall exhausters.

END OF SECTION

SECTION 26 0500

COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Sleeves for raceways and cables.
 - 2. Sleeve seals.
 - 3. Grout.
 - 4. Common electrical installation requirements.

1.2 SUBMITTALS

- A. Product Data: For sleeve seals.

PART 2 - PRODUCTS

2.1 SLEEVES FOR RACEWAYS AND CABLES

- A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.
- B. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.
- C. Sleeves for Rectangular Openings: Galvanized sheet steel.
 - 1. Minimum Metal Thickness:
 - a. For sleeve cross-section rectangle perimeter less than 50 inches (1270 mm) and no side more than 16 inches (400 mm), thickness shall be 0.052 inch (1.3 mm).
 - b. For sleeve cross-section rectangle perimeter equal to, or more than, 50 inches (1270 mm) and 1 or more sides equal to, or more than, 16 inches (400 mm), thickness shall be 0.138 inch (3.5 mm).
- D. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and raceway or cable.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Advance Products & Systems, Inc.
 - b. Calpico, Inc.
 - c. Metraflex Co.
 - d. Pipeline Seal and Insulator, Inc.
 - 2. Sealing Elements: EPDM interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
 - 3. Pressure Plates: Carbon steel. Include two for each sealing element.

4. Connecting Bolts and Nuts: Carbon steel with corrosion-resistant coating of length required to secure pressure plates to sealing elements. Include one for each sealing element.

2.2 GROUT

- A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

PART 3 - EXECUTION

3.1 COMMON REQUIREMENTS FOR ELECTRICAL INSTALLATION

- A. Comply with NECA 1.
- B. Measure indicated mounting heights to bottom of unit for suspended items and to center of unit for wall-mounting items.
- C. Headroom Maintenance: If mounting heights or other location criteria are not indicated, arrange and install components and equipment to provide maximum possible headroom consistent with these requirements.
- D. Equipment: Install to facilitate service, maintenance, and repair or replacement of components of both electrical equipment and other nearby installations. Connect in such a way as to facilitate future disconnecting with minimum interference with other items in the vicinity.
- E. Right of Way: Give to piping systems installed at a required slope.

3.2 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

- A. Electrical penetrations occur when raceways, cables, wireways, cable trays, or busways penetrate concrete slabs, concrete or masonry walls, or fire-rated floor and wall assemblies.
- B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.
- C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.
- D. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.
- E. Cut sleeves to length for mounting flush with both surfaces of walls.
- F. Extend sleeves installed in floors **2 inches (50 mm)** above finished floor level.
- G. Size pipe sleeves to provide **1/4-inch (6.4-mm)** annular clear space between sleeve and raceway or cable, unless indicated otherwise.
- H. Seal space outside of sleeves with grout for penetrations of concrete and masonry
 1. Promptly pack grout solidly between sleeve and wall so no voids remain. Tool exposed surfaces smooth; protect grout while curing.
- I. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint. Comply with requirements in Division 07 Section "Joint Sealants."

- J. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway and cable penetrations. Install sleeves and seal raceway and cable penetration sleeves with firestop materials. Comply with requirements in Division 07 Section "Penetration Firestopping."
- K. Roof-Penetration Sleeves: Seal penetration of individual raceways and cables with flexible boot-type flashing units applied in coordination with roofing work.
- L. Aboveground, Exterior-Wall Penetrations: Seal penetrations using steel pipe sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch (25-mm) annular clear space between pipe and sleeve for installing mechanical sleeve seals.
- M. Underground, Exterior-Wall Penetrations: Install cast-iron pipe sleeves. Size sleeves to allow for 1-inch (25-mm) annular clear space between raceway or cable and sleeve for installing mechanical sleeve seals.

3.3 SLEEVE-SEAL INSTALLATION

- A. Install to seal exterior wall penetrations.
- B. Use type and number of sealing elements recommended by manufacturer for raceway or cable material and size. Position raceway or cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway or cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.4 FIRESTOPPING

- A. Apply firestopping to penetrations of fire-rated floor and wall assemblies for electrical installations to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 07 Section "Penetration Firestopping."

END OF SECTION

SECTION 26 0519
LOW VOLTAGE POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Building wires and cables rated 600 V and less.
 - 2. Connectors, splices, and terminations rated 600 V and less.
 - 3. Sleeves and sleeve seals for cables.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Field quality-control test reports.

1.3 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 CONDUCTORS AND CABLES

- A. Copper Conductors: Comply with NEMA WC 70.
- B. Conductor Insulation: Comply with NEMA WC 70 for Types THHN-THWN, XHHW, USE and SO.
- C. Multiconductor Cable: Comply with NEMA WC 70 for metal-clad cable, Type MC mineral-insulated, metal-sheathed cable, Type MI, nonmetallic-sheathed cable, Type NM, Type SO and Type USE with ground wire.

2.2 CONNECTORS AND SPLICES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. AFC Cable Systems, Inc.
 - 2. Hubbell Power Systems, Inc.
 - 3. O-Z/Gedney; EGS Electrical Group LLC.
 - 4. 3M; Electrical Products Division.
 - 5. Tyco Electronics Corp.
- B. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

2.3 SLEEVES FOR CABLES

- A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.
- B. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.
- C. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Penetration Firestopping."

2.4 SLEEVE SEALS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Advance Products & Systems, Inc.
 - 2. Calpico, Inc.
 - 3. Metraflex Co.
 - 4. Pipeline Seal and Insulator, Inc.
- B. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and cable.
 - 1. Sealing Elements: EPDM interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
 - 2. Pressure Plates: Carbon steel. Include two for each sealing element.
 - 3. Connecting Bolts and Nuts: Carbon steel with corrosion-resistant coating of length required to secure pressure plates to sealing elements. Include one for each sealing element.

PART 3 - EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

- A. Feeders: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
- B. Branch Circuits: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

- A. Service Entrance: Type THHN-THWN, single conductors in raceway
- B. Exposed Feeders: Type THHN-THWN, single conductors in raceway
- C. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspace: Type THHN-THWN, single conductors in raceway, Metal-clad cable, Type MC.
- D. Feeders Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN-THWN, single conductors in raceway
- E. Exposed Branch Circuits, Including in Crawlspace: Type THHN-THWN, single conductors in raceway

- F. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN, single conductors in raceway, Metal-clad cable, Type MC
- G. Coordinate first paragraph below with Division 26 Section "Underground Ducts and Raceways for Electrical Systems."
- H. Branch Circuits Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN-THWN, single conductors in raceway
- I. Cord Drops and Portable Appliance Connections: Type SO, hard service cord with stainless-steel, wire-mesh, strain relief device at terminations to suit application.
- J. Class 1 Control Circuits: Type THHN-THWN, in raceway.
- K. Class 2 Control Circuits: Type THHN-THWN, in raceway

3.3 INSTALLATION OF CONDUCTORS AND CABLES

- A. Conceal cables in finished walls, ceilings, and floors, unless otherwise indicated.
- B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.
- D. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
- E. Support cables according to Division 26 Sections "Hangers and Supports for Electrical Systems."
- F. Identify and color-code conductors and cables according to Division 26 Section "Identification for Electrical Systems."
- G. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.
- H. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.
 - 1. Use oxide inhibitor in each splice and tap conductor for aluminum conductors.
- I. Wiring at Outlets: Install conductor at each outlet, with at least **12 inches (300 mm)** of slack.

3.4 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

- A. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Penetration Firestopping."
- B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.
- C. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.

- D. Cut sleeves to length for mounting flush with both wall surfaces.
- E. Extend sleeves installed in floors 2 inches (50 mm) above finished floor level.
- F. Size pipe sleeves to provide 1/4-inch (6.4-mm) annular clear space between sleeve and cable unless sleeve seal is to be installed or unless seismic criteria require different clearance.
- G. Seal space outside of sleeves with grout for penetrations of concrete and masonry and with approved joint compound for gypsum board assemblies.
- H. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and cable, using joint sealant appropriate for size, depth, and location of joint according to Division 07 Section "Joint Sealants."
- I. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at cable penetrations. Install sleeves and seal with firestop materials according to Division 07 Section "Penetration Firestopping."
- J. Roof-Penetration Sleeves: Seal penetration of individual cables with flexible boot-type flashing units applied in coordination with roofing work.
- K. Aboveground Exterior-Wall Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Size sleeves to allow for 1-inch (25-mm) annular clear space between pipe and sleeve for installing mechanical sleeve seals.
- L. Underground Exterior-Wall Penetrations: Install cast-iron "wall pipes" for sleeves. Size sleeves to allow for 1-inch (25-mm) annular clear space between cable and sleeve for installing mechanical sleeve seals.

3.5 SLEEVE-SEAL INSTALLATION

- A. Install to seal underground exterior-wall penetrations.
- B. Use type and number of sealing elements recommended by manufacturer for cable material and size. Position cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.6 FIRESTOPPING

- A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly according to Division 07 Section "Penetration Firestopping."

3.7 FIELD QUALITY CONTROL

- A. Perform tests and inspections and prepare test reports.
- B. Tests and Inspections:
 - 1. After installing conductors and cables and before electrical circuitry has been energized, test service entrance and feeder conductors for compliance with requirements.
 - 2. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.

3. Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each splice in cables and conductors No. 3 AWG and larger. Remove box and equipment covers so splices are accessible to portable scanner.
 - a. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each splice 11 months after date of Substantial Completion.
 - b. Instrument: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
 - c. Record of Infrared Scanning: Prepare a certified report that identifies splices checked and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.
- C. Test Reports: Prepare a written report to record the following:
 1. Test procedures used.
 2. Test results that comply with requirements.
 3. Test results that do not comply with requirements and corrective action taken to achieve compliance with requirements.
- D. Remove and replace malfunctioning units and retest as specified above.

END OF SECTION

SECTION 26 0526
GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes methods and materials for grounding systems and equipment.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Field quality-control test reports.

1.3 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with UL 467 for grounding and bonding materials and equipment.

PART 2 - PRODUCTS

2.1 CONDUCTORS

- A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.
- B. Bare Copper Conductors:
 - 1. Solid Conductors: ASTM B 3.
 - 2. Stranded Conductors: ASTM B 8.
 - 3. Tinned Conductors: ASTM B 33.
 - 4. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG conductor, 1/4 inch (6 mm) in diameter.
 - 5. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.
 - 6. Bonding Jumper: Copper tape, braided conductors, terminated with copper ferrules; 1-5/8 inches (41 mm) wide and 1/16 inch (1.6 mm) thick.
 - 7. Tinned Bonding Jumper: Tinned-copper tape, braided conductors, terminated with copper ferrules; 1-5/8 inches (41 mm) wide and 1/16 inch (1.6 mm) thick.

2.2 CONNECTORS

- A. Listed and labeled by a nationally recognized testing laboratory acceptable to authorities having jurisdiction for applications in which used, and for specific types, sizes, and combinations of conductors and other items connected.
- B. Bolted Connectors for Conductors and Pipes: Copper or copper alloy, bolted pressure-type, with at least two bolts.
 - 1. Pipe Connectors: Clamp type, sized for pipe.

- C. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.

2.3 GROUNDING ELECTRODES

- A. Ground Rods: Copper-clad; 3/4 inch by 10 feet (19 mm by 3 m) in diameter.

PART 3 - EXECUTION

3.1 APPLICATIONS

- A. Conductors: Install solid conductor for No. 8 AWG and smaller, and stranded conductors for No. 6 AWG and larger, unless otherwise indicated.
- B. Underground Grounding Conductors: Install bare copper conductor, No. 2/0 AWG minimum. Bury at least 24 inches (600 mm) below grade.
- C. Isolated Grounding Conductors: Green-colored insulation with continuous yellow stripe. On feeders with isolated ground, identify grounding conductor where visible to normal inspection, with alternating bands of green and yellow tape, with at least three bands of green and two bands of yellow.
- D. Conductor Terminations and Connections:
 - 1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
 - 2. Underground Connections: Welded connectors, except at test wells and as otherwise indicated.
 - 3. Connections to Ground Rods at Test Wells: Bolted connectors.
 - 4. Connections to Structural Steel: Welded connectors.

3.2 EQUIPMENT GROUNDING

- A. Install insulated equipment grounding conductors with the following items, in addition to those required by NFPA 70:
 - 1. Feeders and branch circuits.
 - 2. Lighting circuits.
 - 3. Receptacle circuits.
 - 4. Single-phase motor and appliance branch circuits.
 - 5. Three-phase motor and appliance branch circuits.
 - 6. Flexible raceway runs.
 - 7. Armored and metal-clad cable runs.
 - 8. Busway Supply Circuits: Install insulated equipment grounding conductor from grounding bus in the switchgear, switchboard, or distribution panel to equipment grounding bar terminal on busway.
 - 9. Computer and Rack-Mounted Electronic Equipment Circuits: Install insulated equipment grounding conductor in branch-circuit runs from equipment-area power panels and power-distribution units.

10. X-Ray Equipment Circuits: Install insulated equipment grounding conductor in circuits supplying x-ray equipment.
- B. Air-Duct Equipment Circuits: Install insulated equipment grounding conductor to duct-mounted electrical devices operating at 120 V and more, including air cleaners, heaters, dampers, humidifiers, and other duct electrical equipment. Bond conductor to each unit and to air duct and connected metallic piping.
- C. Water Heater, Heat-Tracing, and Antifrost Heating Cables: Install a separate insulated equipment grounding conductor to each electric water heater and heat-tracing cable. Bond conductor to heater units, piping, connected equipment, and components.
- D. Isolated Grounding Receptacle Circuits: Install an insulated equipment grounding conductor connected to the receptacle grounding terminal. Isolate conductor from raceway and from panelboard grounding terminals. Terminate at equipment grounding conductor terminal of the applicable derived system or service, unless otherwise indicated.
- E. Isolated Equipment Enclosure Circuits: For designated equipment supplied by a branch circuit or feeder, isolate equipment enclosure from supply circuit raceway with a nonmetallic raceway fitting listed for the purpose. Install fitting where raceway enters enclosure, and install a separate insulated equipment grounding conductor. Isolate conductor from raceway and from panelboard grounding terminals. Terminate at equipment grounding conductor terminal of the applicable derived system or service, unless otherwise indicated.
- F. Signal and Communication Equipment: For telephone, alarm, voice and data, and other communication equipment, provide No. 4 AWG minimum insulated grounding conductor in raceway from grounding electrode system to each service location, terminal cabinet, wiring closet, and central equipment location.
 1. Service and Central Equipment Locations and Wiring Closets: Terminate grounding conductor on a 1/4-by-2-by-12-inch (6-by-50-by-300-mm) grounding bus.
 2. Terminal Cabinets: Terminate grounding conductor on cabinet grounding terminal.
- G. Metal Poles Supporting Outdoor Lighting Fixtures: Install grounding electrode and a separate insulated equipment grounding conductor in addition to grounding conductor installed with branch-circuit conductors.

3.3 INSTALLATION

- A. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
- B. Ground Rods: Drive rods until tops are 2 inches (50 mm) below finished floor or final grade, unless otherwise indicated.
 1. Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating, if any.
 2. For grounding electrode system, install at least three rods spaced at least one-rod length from each other and located at least the same distance from other grounding electrodes, and connect to the service grounding electrode conductor.
- C. Test Wells: Ground rod driven through drilled hole in bottom of handhole. Handholes are specified in Division 26 Section "Underground Ducts and Raceways for Electrical Systems," and shall be at least 12 inches (300 mm) deep, with cover.

1. Test Wells: Install at least one test well for each service, unless otherwise indicated. Install at the ground rod electrically closest to service entrance. Set top of test well flush with finished grade or floor.
- D. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance, except where routed through short lengths of conduit.
1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
 2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install so vibration is not transmitted to rigidly mounted equipment.
 3. Use exothermic-welded connectors for outdoor locations, but if a disconnect-type connection is required, use a bolted clamp.
- E. Grounding and Bonding for Piping:
1. Metal Water Service Pipe: Install insulated copper grounding conductors, in conduit, from building's main service equipment, or grounding bus, to main metal water service entrances to building. Connect grounding conductors to main metal water service pipes, using a bolted clamp connector or by bolting a lug-type connector to a pipe flange, using one of the lug bolts of the flange. Where a dielectric main water fitting is installed, connect grounding conductor on street side of fitting. Bond metal grounding conductor conduit or sleeve to conductor at each end.
 2. Water Meter Piping: Use braided-type bonding jumpers to electrically bypass water meters. Connect to pipe with a bolted connector.
 3. Bond each aboveground portion of gas piping system downstream from equipment shutoff valve.
- F. Bonding Interior Metal Ducts: Bond metal air ducts to equipment grounding conductors of associated fans, blowers, electric heaters, and air cleaners. Install bonding jumper to bond across flexible duct connections to achieve continuity.

3.4 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections and prepare test reports:
1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
 2. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal, and at ground test wells.
 - a. Measure ground resistance not less than two full days after last trace of precipitation and without soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
 - b. Perform tests by fall-of-potential method according to IEEE 81.
- B. Report measured ground resistances that exceed the following values:
1. Power and Lighting Equipment or System with Capacity 500 kVA and Less: 10 ohms.
 2. Power and Lighting Equipment or System with Capacity 500 to 1000 kVA: 5 ohms.

3. Power and Lighting Equipment or System with Capacity More Than 1000 kVA: 3 ohms.
 4. Power Distribution Units or Panelboards Serving Electronic Equipment: 3 ohm(s).
- C. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Architect promptly and include recommendations to reduce ground resistance.

END OF SECTION

SECTION 26 0259
HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes:
 - 1. Hangers and supports for electrical equipment and systems.
 - 2. Construction requirements for concrete bases.

1.2 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design supports for multiple raceways, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Design supports for multiple raceways capable of supporting combined weight of supported systems and its contents.
- C. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.
- D. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project, with a minimum structural safety factor of five times the applied force.

1.3 SUBMITTALS

- A. Product Data: For steel slotted support systems.
- B. Shop Drawings: Show fabrication and installation details and include calculations for the following:
 - 1. Trapeze hangers. Include Product Data for components.
 - 2. Steel slotted channel systems. Include Product Data for components.
 - 3. Equipment supports.
- C. Welding certificates.

1.4 QUALITY ASSURANCE

- A. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

- A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.

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1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Allied Tube & Conduit.
 - b. Cooper B-Line, Inc.; a division of Cooper Industries.
 - c. ERICO International Corporation.
 - d. GS Metals Corp.
 - e. Thomas & Betts Corporation.
 - f. Unistrut; Tyco International, Ltd.
 - g. Wesanco, Inc.
 3. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
 4. Nonmetallic Coatings: Manufacturer's standard PVC, polyurethane, or polyester coating applied according to MFMA-4.
 5. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.
 6. Channel Dimensions: Selected for applicable load criteria.
- B. Raceway and Cable Supports: As described in NECA 1 and NECA 101.
- C. Conduit and Cable Support Devices: Steel hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.
- D. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for non-armored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be malleable iron.
- E. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.
- F. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:
1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
 - a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - b. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) Hilti Inc.

- 2) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
 - 3) MKT Fastening, LLC.
 - 4) Simpson Strong-Tie Co., Inc.; Masterset Fastening Systems Unit.
2. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.
- a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - b. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) Cooper B-Line, Inc.; a division of Cooper Industries.
 - 2) Empire Tool and Manufacturing Co., Inc.
 - 3) Hilti Inc.
 - 4) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
 - 5) MKT Fastening, LLC.
3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
6. Toggle Bolts: All-steel springhead type.
7. Hanger Rods: Threaded steel.

2.2 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

- A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.
- B. Materials: Comply with requirements in Division 05 Section "Metal Fabrications" for steel shapes and plates.

PART 3 - EXECUTION

3.1 APPLICATION

- A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.
- B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, IMC, and RMC as required by NFPA 70. Minimum rod size shall be 1/4 inch (6 mm) in diameter.

- C. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.
 - 1. Secure raceways and cables to these supports with two-bolt conduit clamps.
- D. Spring-steel clamps designed for supporting single conduits without bolts may be used for 1-1/2-inch (38-mm) and smaller raceways serving branch circuits and communication systems above suspended ceilings and for fastening raceways to trapeze supports.

3.2 SUPPORT INSTALLATION

- A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.
- B. Raceway Support Methods: In addition to methods described in NECA 1, EMT, IMC, and RMC may be supported by openings through structure members, as permitted in NFPA 70.
- C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb (90 kg).
- D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:
 - 1. To Wood: Fasten with lag screws or through bolts.
 - 2. To New Concrete: Bolt to concrete inserts.
 - 3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
 - 4. To Existing Concrete: Expansion anchor fasteners.
 - 5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches (100 mm) thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches (100 mm) thick.
 - 6. To Steel: Beam clamps (MSS Type 19, 21, 23, 25, or 27) complying with MSS SP-69
 - 7. To Light Steel: Sheet metal screws.
 - 8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate.
- E. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

3.3 INSTALLATION OF FABRICATED METAL SUPPORTS

- A. Comply with installation requirements in Division 05 Section "Metal Fabrications" for site-fabricated metal supports.

- B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.
- C. Field Welding: Comply with AWS D1.1/D1.1M.

3.4 CONCRETE BASES

- A. Construct concrete bases of dimensions indicated but not less than 4 inches (100 mm) larger in both directions than supported unit, and so anchors will be a minimum of 10 bolt diameters from edge of the base.
- B. Use 3000-psi (20.7-MPa), 28-day compressive-strength concrete. Concrete materials, reinforcement, and placement requirements are specified in Division 03 Section Cast-in-Place Concrete.
- C. Anchor equipment to concrete base.
 - 1. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 2. Install anchor bolts to elevations required for proper attachment to supported equipment.
 - 3. Install anchor bolts according to anchor-bolt manufacturer's written instructions.

3.5 PAINTING

- A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
 - 1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils (0.05 mm).
- B. Touchup: Comply with requirements in Division 09 painting Sections for cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal.
- C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION

SECTION 26 0533

RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.
- B. See Division 26 Section "Underground Ducts and Raceways for Electrical Systems" for exterior ductbanks and manholes, and underground handholes, boxes, and utility construction.

1.2 SUBMITTALS

- A. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.
- B. Shop Drawings: For custom enclosures and cabinets. Include plans, elevations, sections, details, and attachments to other work.

1.3 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 METAL CONDUIT AND TUBING

- A. Rigid Steel Conduit: ANSI C80.1.
- B. IMC: ANSI C80.6.
- C. EMT: ANSI C80.3.
- D. FMC: Zinc-coated steel.
- E. LFMC: Flexible steel conduit with PVC jacket.
- F. Fittings for Conduit (Including all Types and Flexible and Liquidtight), EMT, and Cable: NEMA FB 1; listed for type and size raceway with which used, and for application and environment in which installed.
 - 1. Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 886.
 - 2. Fittings for EMT: set-screw or compression type.

2.2 NONMETALLIC CONDUIT AND TUBING

- A. ENT: NEMA TC 13.
- B. RNC: NEMA TC 2, Type EPC-40-PVC, unless otherwise indicated.

- C. LFNC: UL 1660.
- D. Fittings for ENT and RNC: NEMA TC 3; match to conduit or tubing type and material.
- E. Fittings for LFNC: UL 514B.

2.3 METAL WIREWAYS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Cooper B-Line, Inc.
 - 2. Hoffman.
 - 3. Square D; Schneider Electric.
- C. Description: Sheet metal sized and shaped as indicated, NEMA 250, Type 1, unless otherwise indicated.
- D. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.
- E. Wireway Covers: Screw-cover type
- F. Finish: Manufacturer's standard enamel finish.

2.4 NONMETALLIC WIREWAYS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Hoffman.
 - 2. Lamson & Sessions; Carlon Electrical Products.
- C. Description: PVC plastic, extruded and fabricated to size and shape indicated, with snap-on cover and mechanically coupled connections with plastic fasteners.
- D. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.

2.5 BOXES, ENCLOSURES, AND CABINETS

- A. Sheet Metal Outlet and Device Boxes: NEMA OS 1.
- B. Cast-Metal Outlet and Device Boxes: NEMA FB 1, aluminum, Type FD, with gasketed cover.
- C. Nonmetallic Outlet and Device Boxes: NEMA OS 2.
- D. Metal Floor Boxes: Cast or sheet metal, fully adjustable, rectangular.

- E. Nonmetallic Floor Boxes: Nonadjustable, round.
- F. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.
- G. Cast-Metal Access, Pull, and Junction Boxes: NEMA FB 1, cast aluminum with gasketed cover.
- H. Hinged-Cover Enclosures: NEMA 250, Type 1, with continuous-hinge cover with flush latch, unless otherwise indicated.
 - 1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
 - 2. Nonmetallic Enclosures: Plastic
- I. Cabinets:
 - 1. NEMA 250, Type 1, galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.
 - 2. Hinged door in front cover with flush latch and concealed hinge.
 - 3. Key latch to match panelboards.
 - 4. Metal barriers to separate wiring of different systems and voltage.
 - 5. Accessory feet where required for freestanding equipment.

PART 3 - EXECUTION

3.1 RACEWAY APPLICATION

- A. Outdoors: Apply raceway products as specified below, unless otherwise indicated:
 - 1. Exposed Conduit: Rigid steel conduit or RNC, Type EPC-80-PVC.
 - 2. Concealed Conduit, Aboveground: Rigid steel conduit or Type EPC-40-PVC.
 - 3. Underground Conduit: RNC, Type EPC-40-PVC.
 - 4. Underground Conduit under roadways/parking: RNC, Type EPC-80-PVC.
 - 5. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFNC.
 - 6. Boxes and Enclosures, Aboveground: NEMA 250, Type 3R.
- B. Comply with the following indoor applications, unless otherwise indicated:
 - 1. Exposed, Not Subject to Physical Damage: EMT.
 - 2. Exposed, Not Subject to Severe Physical Damage: EMT.
 - 3. Exposed and Subject to Severe Physical Damage: Rigid steel conduit. Includes raceways in the following locations:
 - a. Loading dock.
 - b. Corridors used for traffic of mechanized carts, forklifts, and pallet-handling units.
 - c. Mechanical rooms.
 - 4. Concealed in Ceilings and Interior Walls and Partitions: EMT
 - 5. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.
 - 6. Damp or Wet Locations: Rigid steel conduit.
 - 7. Raceways for Optical Fiber or Communications Cable: EMT.
 - 8. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4, nonmetallic in damp or wet locations.
- C. Minimum Raceway Size: 3/4-inch (21-mm) trade size.

- D. Raceway Fittings: Compatible with raceways and suitable for use and location.
 - 1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings, unless otherwise indicated.

3.2 INSTALLATION

- A. Comply with NECA 1 for installation requirements applicable to products specified in Part 2 except where requirements on Drawings or in this Article are stricter.
- B. Keep raceways at least 6 inches (150 mm) away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.
- C. Complete raceway installation before starting conductor installation.
- D. Support raceways as specified in Division 26 Section "Hangers and Supports for Electrical Systems."
- E. Arrange stub-ups so curved portions of bends are not visible above the finished slab.
- F. Install no more than the equivalent of three 90-degree bends in any conduit run except for communications conduits, for which fewer bends are allowed.
- G. Conceal conduit and EMT within finished walls, ceilings, and floors, unless otherwise indicated.
- H. Raceways Embedded in Slabs:
 - 1. Run conduit larger than 1-inch (27-mm) trade size, parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support.
 - 2. Arrange raceways to cross building expansion joints at right angles with expansion fittings.
 - 3. Change from ENT to RNC, Type EPC-40-PVC, rigid steel conduit, or IMC before rising above the floor.
- I. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors, including conductors smaller than No. 4 AWG.
- J. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb (90-kg) tensile strength. Leave at least 12 inches (300 mm) of slack at each end of pull wire.
- K. Raceways for Optical Fiber and Communications Cable: Install as follows:
 - 1. 3/4-Inch (19-mm) Trade Size and Smaller: Install raceways in maximum lengths of 50 feet (15 m).
 - 2. 1-Inch (25-mm) Trade Size and Larger: Install raceways in maximum lengths of 75 feet (23 m).
 - 3. Install with a maximum of two 90-degree bends or equivalent for each length of raceway unless Drawings show stricter requirements. Separate lengths with pull or junction boxes or terminations at distribution frames or cabinets where necessary to comply with these requirements.
- L. Install raceway sealing fittings at suitable, approved, and accessible locations and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a

blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings at the following points:

1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
 2. Where otherwise required by NFPA 70.
- M. Expansion-Joint Fittings for RNC: Install in each run of aboveground conduit that is located where environmental temperature change may exceed 30 deg F (17 deg C), and that has straight-run length that exceeds 25 feet (7.6 m).
1. Install expansion-joint fittings for each of the following locations, and provide type and quantity of fittings that accommodate temperature change listed for location:
 - a. Outdoor Locations Not Exposed to Direct Sunlight: 125 deg F (70 deg C) temperature change.
 - b. Outdoor Locations Exposed to Direct Sunlight: 155 deg F (86 deg C) temperature change.
 - c. Indoor Spaces: Connected with the Outdoors without Physical Separation: 125 deg F (70 deg C) temperature change.
 - d. Attics: 135 deg F (75 deg C) temperature change.
 2. Install fitting(s) that provide expansion and contraction for at least 0.00041 inch per foot of length of straight run per deg F (0.06 mm per meter of length of straight run per deg C) of temperature change.
 3. Install each expansion-joint fitting with position, mounting, and piston setting selected according to manufacturer's written instructions for conditions at specific location at the time of installation.
- N. Flexible Conduit Connections: Use maximum of 72 inches (1830 mm) of flexible conduit for recessed and semirecessed lighting fixtures, equipment subject to vibration, noise transmission, or movement; and for transformers and motors.
1. Use LFMC in damp or wet locations subject to severe physical damage.
 2. Use LFMC or LFNC in damp or wet locations not subject to severe physical damage.
- O. Recessed Boxes in Masonry Walls: Saw-cut opening for box in center of cell of masonry block, and install box flush with surface of wall.
- P. Set metal floor boxes level and flush with finished floor surface.
- Q. Set nonmetallic floor boxes level. Trim after installation to fit flush with finished floor surface.

3.3 INSTALLATION OF UNDERGROUND CONDUIT

- A. Direct-Buried Conduit:
1. Excavate trench bottom to provide firm and uniform support for conduit. Prepare trench bottom as specified in Division 31 Section "Earth Moving" for pipe less than 6 inches (150 mm) in nominal diameter.
 2. Install backfill as specified in Division 31 Section "Earth Moving."
 3. After installing conduit, backfill and compact. Start at tie-in point, and work toward end of conduit run, leaving conduit at end of run free to move with expansion and contraction as temperature changes during this process. Firmly hand tamp backfill around conduit to provide maximum supporting strength. After placing controlled backfill to within 12 inches

- (300 mm) of finished grade, make final conduit connection at end of run and complete backfilling with normal compaction as specified in Division 31 Section "Earth Moving."
4. Install manufactured duct elbows for stub-ups at poles and equipment and at building entrances through the floor, unless otherwise indicated. Encase elbows for stub-up ducts throughout the length of the elbow.
 5. Install manufactured rigid steel conduit elbows for stub-ups at poles and equipment and at building entrances through the floor.
 - a. Couple steel conduits to ducts with adapters designed for this purpose, and encase coupling with 3 inches (75 mm) of concrete.
 - b. For stub-ups at equipment mounted on outdoor concrete bases, extend steel conduit horizontally a minimum of 60 inches (1500 mm) from edge of equipment pad or foundation. Install insulated grounding bushings on terminations at equipment.
 6. Install conduits with primary high voltage cables covered by a concrete slurry per PECO requirements.
 7. Warning Planks: Bury warning planks approximately 12 inches (300 mm) above direct-buried conduits, placing them 24 inches (600 mm) o.c. Align planks along the width and along the centerline of conduit.

3.4 FIRESTOPPING

- A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 07 Section "Penetration Firestopping."

END OF SECTION

SECTION 26 0553
IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Identification for raceways.
 2. Identification of power and control cables.
 3. Identification for conductors.
 4. Underground-line warning tape.
 5. Warning labels and signs.
 6. Instruction signs.
 7. Equipment identification labels.
 8. Miscellaneous identification products.

1.2 SUBMITTALS

- A. Product Data: For each electrical identification product indicated.

1.3 QUALITY ASSURANCE

- A. Comply with ANSI A13.1.
- B. Comply with NFPA 70.
- C. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.
- D. Comply with ANSI Z535.4 for safety signs and labels.
- E. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.

PART 2 - PRODUCTS

2.1 POWER RACEWAY IDENTIFICATION MATERIALS

- A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway size.
- B. Colors for Raceways Carrying Circuits at 600 V or Less:
1. Black letters on an orange field.
 2. Legend: Indicate voltage.
- C. Self-Adhesive Vinyl Labels for Raceways Carrying Circuits at 600 V or Less: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

- D. Snap-Around Labels for Raceways Carrying Circuits at 600 V or Less: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeve, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.
- E. Snap-Around, Color-Coding Bands for Raceways Carrying Circuits at 600 V or Less: Slit, pretensioned, flexible, solid-colored acrylic sleeve, 2 inches (50 mm) long, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.
- F. Write-On Tags: Polyester tag, 0.015 inch (0.38 mm) thick, with corrosion-resistant grommet and cable tie for attachment to conductor or cable.
 - 1. Marker for Tags: Permanent, waterproof, black ink marker recommended by tag manufacturer.
 - 2. Marker for Tags: Machine-printed, permanent, waterproof, black ink marker recommended by printer manufacturer.

2.2 ARMORED AND METAL-CLAD CABLE IDENTIFICATION MATERIALS

- A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway and cable size.
- B. Colors for Raceways Carrying Circuits at 600 V and Less:
 - 1. Black letters on an orange field.
 - 2. Legend: Indicate voltage.
- C. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.
- D. Self-Adhesive Vinyl Tape: Colored, heavy duty, waterproof, fade resistant; 2 inches (50 mm) wide; compounded for outdoor use.

2.3 POWER AND CONTROL CABLE IDENTIFICATION MATERIALS

- A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway and cable size.
- B. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.
- C. Write-On Tags: Polyester tag, 0.015 inch (0.38 mm) thick, with corrosion-resistant grommet and cable tie for attachment to conductor or cable.
 - 1. Marker for Tags: Permanent, waterproof, black ink marker recommended by tag manufacturer.
 - 2. Marker for Tags: Machine-printed, permanent, waterproof, black ink marker recommended by printer manufacturer.
- D. Snap-Around Labels: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeve, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

- E. Snap-Around, Color-Coding Bands: Slit, pretensioned, flexible, solid-colored acrylic sleeve, 2 inches (50 mm) long, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

2.4 CONDUCTOR IDENTIFICATION MATERIALS

- A. Color-Coding Conductor Tape: Colored, self-adhesive vinyl tape not less than 3 mils (0.08 mm) thick by 1 to 2 inches (25 to 50 mm) wide.
- B. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.
- C. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.
- D. Write-On Tags: Polyester tag, 0.015 inch (0.38 mm) thick, with corrosion-resistant grommet and cable tie for attachment to conductor or cable.
 - 1. Marker for Tags: Permanent, waterproof, black ink marker recommended by tag manufacturer.
 - 2. Marker for Tags: Machine-printed, permanent, waterproof, black ink marker recommended by printer manufacturer.

2.5 FLOOR MARKING TAPE

- A. 2-inch- (50-mm-) wide, 5-mil (0.125-mm) pressure-sensitive vinyl tape, with black and white stripes and clear vinyl overlay.

2.6 UNDERGROUND-LINE WARNING TAPE

- A. Tape:
 - 1. Recommended by manufacturer for the method of installation and suitable to identify and locate underground electrical and communications utility lines.
 - 2. Printing on tape shall be permanent and shall not be damaged by burial operations.
 - 3. Tape material and ink shall be chemically inert, and not subject to degrading when exposed to acids, alkalis, and other destructive substances commonly found in soils.
- B. Color and Printing:
 - 1. Comply with ANSI Z535.1 through ANSI Z535.5.
 - 2. Inscriptions for Red-Colored Tapes: ELECTRIC LINE, HIGH VOLTAGE.
 - 3. Inscriptions for Orange-Colored Tapes: TELEPHONE CABLE, CATV CABLE, COMMUNICATIONS CABLE, OPTICAL FIBER CABLE.
- C. Tag: Type I:
 - 1. Pigmented polyolefin, bright-colored, continuous-printed on one side with the inscription of the utility, compounded for direct-burial service.
 - 2. Thickness: 4 mils (0.1 mm).
 - 3. Weight: 18.5 lb/1000 sq. ft. (9.0 kg/100 sq. m).

4. 3-Inch (75-mm) Tensile According to ASTM D 882: 30 lbf (133.4 N), and 2500 psi (17.2 MPa).
- D. Tag: Type ID:
1. Detectable three-layer laminate, consisting of a printed pigmented polyolefin film, a solid aluminum-foil core, and a clear protective film that allows inspection of the continuity of the conductive core, bright-colored, continuous-printed on one side with the inscription of the utility, compounded for direct-burial service.
 2. Overall Thickness: 5 mils (0.125 mm).
 3. Foil Core Thickness: 0.35 mil (0.00889 mm).
 4. Weight: 28 lb/1000 sq. ft. (13.7 kg/100 sq. m).
 5. 3-Inch (75-mm) Tensile According to ASTM D 882: 70 lbf (311.3 N), and 4600 psi (31.7 MPa).

2.7 WARNING LABELS AND SIGNS

- A. Comply with NFPA 70 and 29 CFR 1910.145.
- B. Self-Adhesive Warning Labels: Factory-printed, multicolor, pressure-sensitive adhesive labels, configured for display on front cover, door, or other access to equipment unless otherwise indicated.
- C. Baked-Enamel Warning Signs:
1. Preprinted aluminum signs, punched or drilled for fasteners, with colors, legend, and size required for application.
 2. 1/4-inch (6.4-mm) grommets in corners for mounting.
 3. Nominal size, 7 by 10 inches (180 by 250 mm).
- D. Metal-Backed, Butyrate Warning Signs:
1. Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs with 0.0396-inch (1-mm) galvanized-steel backing; and with colors, legend, and size required for application.
 2. 1/4-inch (6.4-mm) grommets in corners for mounting.
 3. Nominal size, 10 by 14 inches (250 by 360 mm).
- E. Warning label and sign shall include, but are not limited to, the following legends:
1. Multiple Power Source Warning: "DANGER - ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES."
 2. Workspace Clearance Warning (208V-3Ph equipment): "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 36 INCHES (915 MM)."
 3. Workspace Clearance Warning (480V-3Ph equipment): "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 48 INCHES."

2.8 INSTRUCTION SIGNS

- A. Engraved, laminated acrylic or melamine plastic, minimum 1/16 inch (1.6 mm) thick for signs up to 20 sq. inches (129 sq. cm) and 1/8 inch (3.2 mm) thick for larger sizes.
 - 1. Engraved legend with black letters on white face.
 - 2. Punched or drilled for mechanical fasteners.
 - 3. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.
- B. Adhesive Film Label: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch (10 mm).
- C. Adhesive Film Label with Clear Protective Overlay: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch (10 mm). Overlay shall provide a weatherproof and UV-resistant seal for label.

2.9 EQUIPMENT IDENTIFICATION LABELS

- A. Adhesive Film Label with Clear Protective Overlay: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch (10 mm). Overlay shall provide a weatherproof and UV-resistant seal for label.
- B. Self-Adhesive, Engraved, Laminated Acrylic or Melamine Label: Adhesive backed, with white letters on a dark-gray background. Minimum letter height shall be 3/8 inch (10 mm).
- C. Stenciled Legend: In nonfading, waterproof, black ink or paint. Minimum letter height shall be 1 inch (25 mm).

2.10 MISCELLANEOUS IDENTIFICATION PRODUCTS

- A. Paint: Comply with requirements in Division 09 painting Sections for paint materials and application requirements. Select paint system applicable for surface material and location (exterior or interior).
- B. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.
- B. Apply identification devices to surfaces that require finish after completing finish work.
- C. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.
- D. Attach signs and plastic labels that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
- E. System Identification Color-Coding Bands for Raceways and Cables: Each color-coding band shall completely encircle cable or conduit. Place adjacent bands of two-color markings in contact, side by side. Locate bands at changes in direction, at penetrations of walls and floors,

at 50-foot (15-m) maximum intervals in straight runs, and at 25-foot (7.6-m) maximum intervals in congested areas.

- F. **Underground-Line Warning Tape:** During backfilling of trenches install continuous underground-line warning tape directly above line at 6 to 8 inches (150 to 200 mm) below finished grade. Use multiple tapes where width of multiple lines installed in a common trench exceeds 16 inches (400 mm) overall.
- G. **Painted Identification:** Comply with requirements in Division 09 painting Sections for surface preparation and paint application.

3.2 IDENTIFICATION SCHEDULE

- A. **Accessible Raceways and Metal-Clad Cables, 600 V or Less, for Service, Feeder, and Branch Circuits More Than 30A, and 120V to ground:** Install labels at 30-foot (10-m) maximum intervals.
- B. **Accessible Raceways and Cables within Buildings:** Identify the covers of each junction and pull box of the following systems with self-adhesive vinyl labels with the wiring system legend and system voltage. System legends shall be as follows:
 - 1. Emergency Power.
 - 2. Power.
 - 3. UPS.
- C. **Power-Circuit Conductor Identification, 600 V or Less:** For conductors in vaults, pull and junction boxes, manholes, and handholes, use color-coding conductor tape to identify the phase.
 - 1. **Color-Coding for Phase and Voltage Level Identification, 600 V or Less:** Use colors listed below for ungrounded service, feeder and branch-circuit conductors.
 - a. Color shall be factory applied or field applied for sizes larger than No. 8 AWG, if authorities having jurisdiction permit.
 - b. **Colors for 208/120-V Circuits:**
 - 1) Phase A: Black.
 - 2) Phase B: Red.
 - 3) Phase C: Blue.
 - c. **Colors for 480/277-V Circuits:**
 - 1) Phase A: Brown.
 - 2) Phase B: Orange.
 - 3) Phase C: Yellow.
 - d. **Field-Applied, Color-Coding Conductor Tape:** Apply in half-lapped turns for a minimum distance of 6 inches (150 mm) from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding. Locate bands to avoid obscuring factory cable markings.

- D. Install instructional sign including the color-code for grounded and ungrounded conductors using adhesive-film-type labels.
- E. Conductors to Be Extended in the Future: Attach write-on tags to conductors and list source.
- F. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.
 - 1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.
 - 2. Use system of marker tape designations that is uniform and consistent with system used by manufacturer for factory-installed connections.
 - 3. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual.
- G. Locations of Underground Lines: Identify with underground-line warning tape for power, lighting, communication, and control wiring and optical fiber cable.
 - 1. Limit use of underground-line warning tape to direct-buried cables.
 - 2. Install underground-line warning tape for both direct-buried cables and cables in raceway.
- H. Workspace Indication: Install floor marking tape to show working clearances in the direction of access to live parts. Workspace shall be as required by NFPA 70 and 29 CFR 1926.403 unless otherwise indicated. Do not install at flush-mounted panelboards and similar equipment in finished spaces.
- I. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Self-adhesive warning labels.
 - 1. Comply with 29 CFR 1910.145.
 - 2. Identify system voltage with black letters on an orange background.
 - 3. Apply to exterior of door, cover, or other access.
 - 4. For equipment with multiple power or control sources, apply to door or cover of equipment including, but not limited to, the following:
 - a. Power transfer switches.
 - b. Controls with external control power connections.
- J. Operating Instruction Signs: Install instruction signs to facilitate proper operation and maintenance of electrical systems and items to which they connect. Install instruction signs with approved legend where instructions are needed for system or equipment operation.
- K. Emergency Operating Instruction Signs: Install instruction signs with white legend on a red background with minimum 3/8-inch- (10-mm-) high letters for emergency instructions at equipment used for power transfer.
- L. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and the Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.

1. Labeling Instructions:
 - a. Indoor Equipment: Engraved, laminated acrylic or melamine label. Unless otherwise indicated, provide a single line of text with 1/2-inch- (13-mm-) high letters on 1-1/2-inch- (38-mm-) high label; where two lines of text are required, use labels 2 inches (50 mm) high.
 - b. Outdoor Equipment: Engraved, laminated acrylic or melamine label.
 - c. Elevated Components: Increase sizes of labels and letters to those appropriate for viewing from the floor.
 - d. Unless provided with self-adhesive means of attachment, fasten labels with appropriate mechanical fasteners that do not change the NEMA or NRTL rating of the enclosure.

END OF SECTION

SECTION 262200
LOW-VOLTAGE TRANSFORMERS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following types of dry-type transformers rated 600 V and less, with capacities up to 1000 kVA:
 - 1. Distribution transformers.

1.2 SUBMITTALS

- A. Product Data: For each product indicated.
- B. Shop Drawings: Indicate dimensions and weights.
 - 1. Wiring Diagrams: Power, signal, and control wiring.
- C. Field quality-control test reports.
- D. Operation and maintenance data.

1.3 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with IEEE C57.12.91, "Test Code for Dry-Type Distribution and Power Transformers."

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Eaton Electrical Inc.; Cutler-Hammer Products.
 - 2. General Electric Company.
 - 3. Siemens Energy & Automation, Inc.
 - 4. Square D; Schneider Electric.
 - 5. Power Magnetism Inc.

2.2 GENERAL TRANSFORMER REQUIREMENTS

- A. Description: Factory-assembled and -tested, air-cooled units for 60-Hz service.
- B. Cores: Grain-oriented, non-aging silicon steel.
- C. Coils: Continuous windings without splices except for taps.

1. Internal Coil Connections: Brazed or pressure type.
2. Coil Material: Copper.

2.3 DISTRIBUTION TRANSFORMERS

- A. Comply with NEMA ST 20, and list and label as complying with UL 1561.
 - B. Provide transformers that are constructed to withstand seismic forces specified in Division 26 Section "Vibration and Seismic Controls for Electrical Systems."
 - C. Cores: One leg per phase.
 - D. Enclosure: Ventilated, NEMA 250.
 1. Core and coil shall be encapsulated within resin compound, sealing out moisture and air.
 - E. Transformer Enclosure Finish: Comply with NEMA 250.
 1. Finish Color: Gray.
 - F. Taps for Transformers Smaller Than 3 kVA: None
 - G. Taps for Transformers 7.5 to 24 kVA: One 5 percent tap above and one 5 percent tap below normal full capacity.
 - H. Taps for Transformers 25 kVA and Larger: Two 2.5 percent taps above and two 2.5 percent taps below normal full capacity.
 - I. Insulation Class: 220 deg C, UL-component-recognized insulation system with a maximum of 80 deg C rise above 40 deg C ambient temperature.
 - J. Energy Efficiency for Transformers Rated 15 kVA and Larger:
 1. Complying with NEMA TP 1, Class 1 efficiency levels.
 2. Tested according to NEMA TP 2.
 - K. K-Factor Rating: Transformers indicated to be K-factor rated shall comply with UL 1561 requirements for nonsinusoidal load current-handling capability to the degree defined by designated K-factor.
 1. Unit shall not overheat when carrying full-load current with harmonic distortion corresponding to designated K-factor.
 2. Indicate value of K-factor on transformer nameplate.
 - L. Electrostatic Shielding: Each winding shall have an independent, single, full-width copper electrostatic shield arranged to minimize interwinding capacitance.
 - M. Wall Brackets: Manufacturer's standard brackets.
- ### **2.4 IDENTIFICATION DEVICES**
- A. Nameplates: Engraved, laminated-plastic or metal nameplate. Nameplates are specified in Division 26 Section "Identification for Electrical Systems."

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install wall-mounting transformers level and plumb with wall brackets fabricated by transformer manufacturer.
 - 1. Brace wall-mounting transformers as specified in Division 26 Section "Vibration and Seismic Controls for Electrical Systems."
- B. Construct concrete bases and anchor floor-mounting transformers according to manufacturer's written instructions and requirements in Division 26 Section "Hangers and Supports for Electrical Systems."

3.2 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Tests and Inspections:
 - 1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
 - 2. Infrared Scanning: Two months after Substantial Completion, perform an infrared scan of transformer connections.
 - a. Use an infrared-scanning device designed to measure temperature or detect significant deviations from normal values. Provide documentation of device calibration.
 - b. Perform 2 follow-up infrared scans of transformers, one at 4 months and the other at 11 months after Substantial Completion.
 - c. Prepare a certified report identifying transformer checked and describing results of scanning. Include notation of deficiencies detected, remedial action taken, and scanning observations after remedial action.

3.3 ADJUSTING

- A. Adjust transformer taps to provide optimum voltage conditions at secondary terminals. Optimum is defined as not exceeding nameplate voltage plus 10 percent and not being lower than nameplate voltage minus 3 percent at maximum load conditions. Submit recording and tap settings as test results.
- B. Output Settings Report: Prepare a written report recording output voltages and tap settings.

END OF SECTION 262200

SECTION 26 2416
PANELBOARDS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes distribution panelboards and lighting and appliance branch-circuit panelboards.

1.2 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Panelboards shall withstand the effects of earthquake motions determined according to SEI/ASCE 7.
 - 1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For each panelboard and related equipment.
 - 1. Include dimensioned plans, elevations, sections, and details. Show tabulations of installed devices, equipment features, and ratings.
 - 2. Detail enclosure types and details for types other than NEMA 250, Type 1.
 - 3. Detail bus configuration, current, and voltage ratings.
 - 4. Short-circuit current rating of panelboards and overcurrent protective devices.
 - 5. Include evidence of NRTL listing for series rating of installed devices.
 - 6. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
 - 7. Include wiring diagrams for power, signal, and control wiring.
 - 8. Include time-current coordination curves for each type and rating of overcurrent protective device included in panelboards.
- C. Seismic Qualification Certificates: Submit certification that panelboards, overcurrent protective devices, accessories, and components will withstand seismic forces defined in Division 26 Section "Vibration and Seismic Controls for Electrical Systems."
- D. Field quality-control reports.
- E. Panelboard schedules for installation in panelboards.
- F. Operation and maintenance data.

1.4 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with NEMA PB 1.

- C. Comply with NFPA 70.

1.5 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace transient voltage suppression devices that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR PANELBOARDS

- A. Fabricate and test panelboards according to IEEE 344 to withstand seismic forces defined in Division 26 Section "Vibration and Seismic Controls for Electrical Systems."
- B. Enclosures: Flush- and surface-mounted cabinets.
 - 1. Rated for environmental conditions at installed location.
 - a. Indoor Dry and Clean Locations: NEMA 250, Type 1.
 - b. Outdoor Locations: NEMA 250, Type 3R.
 - c. Kitchen Areas: NEMA 250, Type 4X .
 - d. Other Wet or Damp Indoor Locations: NEMA 250, Type 4.
 - 2. Front: Secured to box with concealed trim clamps. For surface-mounted fronts, match box dimensions; for flush-mounted fronts, overlap box.
 - 3. Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover.
 - 4. Directory Card: Inside panelboard door, mounted in transparent card holder.
- C. Incoming Mains Location: Top and bottom
- D. Phase, Neutral, and Ground Buses: Hard-drawn copper, 98 percent conductivity
- E. Conductor Connectors: Suitable for use with conductor material and sizes.
 - 1. Material: Hard-drawn copper, 98 percent conductivity
 - 2. Main and Neutral Lugs: Mechanical type.
 - 3. Ground Lugs and Bus Configured Terminators: Mechanical type.
 - 4. Feed-Through Lugs: Mechanical type, suitable for use with conductor material. Locate at opposite end of bus from incoming lugs or main device.
 - 5. Subfeed (Double) Lugs: Mechanical type suitable for use with conductor material. Locate at same end of bus as incoming lugs or main device.
- F. Service Equipment Label: NRTL labeled for use as service equipment for panelboards with one or more main service disconnecting and overcurrent protective devices.
- G. Future Devices: Mounting brackets, bus connections, filler plates, and necessary appurtenances required for future installation of devices.

- H. Panelboard Short-Circuit Current Rating: Rated for series-connected system with integral or remote upstream overcurrent protective devices and labeled by an NRTL. Include size and type of allowable upstream and branch devices, and listed and labeled for series-connected short-circuit rating by an NRTL.
- I. Panelboard Short-Circuit Current Rating: Fully rated to interrupt symmetrical short-circuit current available at terminals.

2.2 DISTRIBUTION PANELBOARDS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following
 - 1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 - 2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
 - 3. Siemens Energy & Automation, Inc.
 - 4. Square D; a brand of Schneider Electric.
- B. Panelboards: NEMA PB 1, power and feeder distribution type.
- C. Doors: Secured with vault-type latch with tumbler lock; keyed alike.
- D. Mains: As indicated on panel schedules.
- E. Branch Overcurrent Protective Devices: For Circuit-Breaker Frame Sizes 125 A and Smaller: Bolt-on circuit breakers.
- F. Branch Overcurrent Protective Devices: For Circuit-Breaker Frame Sizes Larger Than 125 A: Bolt-on circuit breakers.
- G. Branch Overcurrent Protective Devices: Circuit breakers or Fused switches as indicated on drawings.

2.3 LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 - 2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
 - 3. Siemens Energy & Automation, Inc.
 - 4. Square D; a brand of Schneider Electric.
- B. Panelboards: NEMA PB 1, lighting and appliance branch-circuit type.
- C. Mains: As indicated on drawings.
- D. Branch Overcurrent Protective Devices: Bolt-on circuit breakers, replaceable without disturbing adjacent units.
- E. Contactors in Main Bus: NEMA ICS 2, Class A, general-purpose controller, with same short-circuit interrupting rating as panelboard.

1. External Control-Power Source: 120-V branch circuit
- F. Doors: Concealed hinges; secured with flush latch with tumbler lock; keyed alike.
- G. Column-Type Panelboards: Narrow gutter extension, with cover, to overhead junction box equipped with ground and neutral terminal buses.

2.4 DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
 3. Siemens Energy & Automation, Inc.
 4. Square D; a brand of Schneider Electric.
- B. Molded-Case Circuit Breaker (MCCB): Comply with UL 489, with interrupting capacity to meet available fault currents.
1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
 2. Adjustable Instantaneous-Trip Circuit Breakers: Magnetic trip element with front-mounted, field-adjustable trip setting.
 3. Electronic trip circuit breakers with rms sensing; field-replaceable rating plug or field-replicable electronic trip; and the following field-adjustable settings:
 - a. Instantaneous trip.
 - b. Long- and short-time pickup levels.
 - c. Long- and short-time time adjustments.
 - d. Ground-fault pickup level, time delay, and I^2t response.
 4. Current-Limiting Circuit Breakers: Frame sizes 400 A and smaller; let-through ratings less than NEMA FU 1, RK-5.
 5. GFCI Circuit Breakers: Single- and two-pole configurations with Class A ground-fault protection (6-mA trip).
 6. Ground-Fault Equipment Protection (GFEP) Circuit Breakers: Class B ground-fault protection (30-mA trip).
 7. Arc-Fault Circuit Interrupter (AFCI) Circuit Breakers: Comply with UL 1699; 120/240-V, single-pole configuration.
 8. Molded-Case Circuit-Breaker (MCCB) Features and Accessories:
 - a. Standard frame sizes, trip ratings, and number of poles.
 - b. Lugs: Mechanical style, suitable for number, size, trip ratings, and conductor materials.

- c. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge (HID) lighting circuits.
 - d. Ground-Fault Protection: Integrally mounted relay and trip unit with adjustable pickup and time-delay settings, push-to-test feature, and ground-fault indicator.
 - e. Communication Capability: Integral communication module with functions and features compatible with power monitoring and control system specified in Division 26 Section "Electrical Power Monitoring and Control."
 - f. Shunt Trip: 120V trip coil energized from separate circuit, set to trip at **55** percent of rated voltage.
 - g. Handle Padlocking Device: Fixed attachment, for locking circuit-breaker handle in on or off position.
 - h. Handle Clamp: Loose attachment, for holding circuit-breaker handle in on position.
- C. Fused Switch: NEMA KS 1, Type HD; clips to accommodate specified fuses; lockable handle.
- 1. Fuses, and Spare-Fuse Cabinet: Comply with requirements specified in Division 26 Section "Fuses."

2.5 ACCESSORY COMPONENTS AND FEATURES

- A. Portable Test Set: For testing functions of solid-state trip devices without removing from panelboard. Include relay and meter test plugs suitable for testing panelboard meters and switchboard class relays.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Receive, inspect, handle, store and install panelboards and accessories according to NEMA PB 1.1.
- B. Comply with mounting and anchoring requirements specified in Division 26 Section "Vibration and Seismic Controls for Electrical Systems."
- C. Mount top of trim max. 90 inches (2286 mm) above finished floor unless otherwise indicated.
- D. Mount panelboard cabinet plumb and rigid without distortion of box. Mount recessed panelboards with fronts uniformly flush with wall finish and mating with back box.
- E. Install overcurrent protective devices and controllers not already factory installed.
 - 1. Set field-adjustable, circuit-breaker trip ranges.
- F. Install filler plates in unused spaces.
- G. Stub four 1-inch (27-GRC) empty conduits from panelboard into accessible ceiling space or space designated to be ceiling space in the future. Stub four 1-inch (27-GRC) empty conduits into raised floor space or below slab not on grade.
- H. Arrange conductors in gutters into groups and bundle and wrap with wire ties.
- I. Comply with NECA 1.

3.2 IDENTIFICATION

- A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs complying with Division 26 Section "Identification for Electrical Systems."
- B. Create a directory to indicate installed circuit loads and incorporating Owner's final room designations. Obtain approval before installing. Use a computer or typewriter to create directory; handwritten directories are not acceptable.
- C. Panelboard Nameplates: Label each panelboard with a nameplate complying with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."
- D. Device Nameplates: Label each branch circuit device in distribution panelboards with a nameplate complying with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."

3.3 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Acceptance Testing Preparation:
 - 1. Test insulation resistance for each panelboard bus, component, connecting supply, feeder, and control circuit.
 - 2. Test continuity of each circuit.
- C. Tests and Inspections:
 - 1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
 - 2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
- D. Panelboards will be considered defective if they do not pass tests and inspections.
- E. Prepare test and inspection reports, including a certified report that identifies panelboards included and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

END OF SECTION

SECTION 26 2726
WIRING DEVICES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Receptacles, receptacles with integral GFCI, and associated device plates.
 - 2. Wall-box motion sensors.
 - 3. Snap switches and wall-box dimmers.
 - 4. Solid-state fan speed controls.
 - 5. Wall-switch and exterior occupancy sensors.
 - 6. Communications outlets.
- B. See Division 27 Section "Communications Horizontal Cabling" for workstation outlets.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: List of legends and description of materials and process used for premarking wall plates.
- C. Operation and Maintenance Data: For wiring devices to include in all manufacturers' packing label warnings and instruction manuals that include labeling conditions.

1.3 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers' Names: Shortened versions (shown in parentheses) of the following manufacturers' names are used in other Part 2 articles:
 - 1. Cooper Wiring Devices; a division of Cooper Industries, Inc. (Cooper).
 - 2. Hubbell Incorporated; Wiring Device-Kellems (Hubbell).
 - 3. Leviton Mfg. Company Inc. (Leviton).
 - 4. Pass & Seymour/Legrand; Wiring Devices & Accessories (Pass & Seymour).

2.2 STRAIGHT BLADE RECEPTACLES

- A. Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 configuration 5-20R, and UL 498.
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - 2. Products: Subject to compliance with requirements, provide one of the following:
 - a. Cooper; 5351 (single), 5352 (duplex).
 - b. Hubbell; HBL5351 (single), CR5352 (duplex).
 - c. Leviton; 5891 (single), 5352 (duplex).
 - d. Pass & Seymour; 5381 (single), 5352 (duplex).

2.3 GFCI RECEPTACLES

- A. General Description: Straight blade. Comply with NEMA WD 1, NEMA WD 6, UL 498, and UL 943, Class A, and include indicator light that is lighted when device is tripped.
- B. Duplex GFCI Convenience Receptacles, 125 V, 20 A:
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - 2. Products: Subject to compliance with requirements, provide one of the following:
 - a. Cooper; GF20.
 - b. Pass & Seymour; 2084.

2.4 SNAP SWITCHES

- A. Comply with NEMA WD 1 and UL 20.
- B. Switches, 120/277 V, 20 A:
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - 2. Products: Subject to compliance with requirements, provide one of the following:
 - a. Cooper; 2221 (single pole), 2222 (two pole), 2223 (three way), 2224 (four way).
 - b. Hubbell; CS1221 (single pole), CS1222 (two pole), CS1223 (three way), CS1224 (four way).
 - c. Leviton; 1221-2 (single pole), 1222-2 (two pole), 1223-2 (three way), 1224-2 (four way).
 - d. Pass & Seymour; 20AC1 (single pole), 20AC2 (two pole), 20AC3 (three way), 20AC4 (four way).
- C. Pilot Light Switches, 20 A:
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

2. Products: Subject to compliance with requirements, provide one of the following:
 - a. Cooper; 2221PL for 120 V and 277 V.
 - b. Hubbell; HPL1221PL for 120 V and 277 V.
 - c. Leviton; 1221-PLR for 120 V, 1221-7PLR for 277 V.
 - d. Pass & Seymour; PS20AC1-PLR for 120 V.
 3. Description: Single pole, with neon-lighted handle, illuminated when switch is "ON."
- D. Key-Operated Switches, 120/277 V, 20 A:
1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 2. Products: Subject to compliance with requirements, provide one of the following:
 - a. Cooper; 2221L.
 - b. Hubbell; HBL1221L.
 - c. Leviton; 1221-2L.
 - d. Pass & Seymour; PS20AC1-L.
 3. Description: Single pole, with factory-supplied key in lieu of switch handle.
- E. Single-Pole, Double-Throw, Momentary Contact, Center-Off Switches, 120/277 V, 20 A; for use with mechanically held lighting contactors.
1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 2. Products: Subject to compliance with requirements, provide one of the following:
 - a. Cooper; 1995.
 - b. Hubbell; HBL1557.
 - c. Leviton; 1257.
 - d. Pass & Seymour; 1251.
- F. Key-Operated, Single-Pole, Double-Throw, Momentary Contact, Center-Off Switches, 120/277 V, 20 A; for use with mechanically held lighting contactors, with factory-supplied key in lieu of switch handle.
1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 2. Products: Subject to compliance with requirements, provide one of the following:
 - a. Cooper; 1995L.
 - b. Hubbell; HBL1557L.
 - c. Leviton; 1257L.

- d. Pass & Seymour; 1251L.

2.5 WALL-BOX DIMMERS

- A. Dimmer Switches: Modular, full-wave, solid-state units with integral, quiet on-off switches, with audible frequency and EMI/RFI suppression filters.
- B. Control: Continuously adjustable slider; with single-pole or three-way switching. Comply with UL 1472.
- C. Incandescent Lamp Dimmers: 120 V; control shall follow square-law dimming curve. On-off switch positions shall bypass dimmer module.
1. 600 W; dimmers shall require no derating when ganged with other devices. Illuminated when "OFF."
- D. Fluorescent Lamp Dimmer Switches: Modular; compatible with dimmer ballasts; trim potentiometer to adjust low-end dimming; dimmer-ballast combination capable of consistent dimming with low end not greater than 20 percent of full brightness.

2.6 FAN SPEED CONTROLS

- A. Modular, 120-V, full-wave, solid-state units with integral, quiet on-off switches and audible frequency and EMI/RFI filters. Comply with UL 1917.
1. Continuously adjustable slider 5 A.
 2. Three-speed adjustable slider 1.5 A.

2.7 COMMUNICATIONS OUTLETS

- A. Telephone Outlet:
1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 2. Products: Subject to compliance with requirements, provide one of the following:
 - a. Cooper; 3560-6.
 - b. Leviton; 40649.
 3. Description: Single RJ-45 jack for terminating 100-ohm, balanced, four-pair UTP; TIA/EIA-568-B.1 complying with Category 5e. Comply with UL 1863.
- B. Combination TV and Telephone Outlet:
1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 2. Products: Subject to compliance with requirements, provide one of the following:
 - a. Cooper; 3562.
 - b. Leviton; 40595.
 3. Description: Single RJ-45 jack for 100-ohm, balanced, four-pair UTP; TIA/EIA-568-B.1; complying with Category 5e; and one Type F coaxial cable connector.

2.8 WALL PLATES

- A. Single and combination types to match corresponding wiring devices.
 - 1. Plate-Securing Screws: Metal with head color to match plate finish.
 - 2. Material for Finished Spaces: Smooth, high-impact thermoplastic 0.035-inch- (1-mm-).
 - 3. Material for Unfinished Spaces: Galvanized steel
 - 4. Material for Damp Locations: Cast aluminum with spring-loaded lift cover, and listed and labeled for use in "wet locations."
- B. Wet-Location, Weatherproof Cover Plates: NEMA 250, complying with type 3R weather-resistant, die-cast aluminum with lockable cover.

2.9 FLOOR SERVICE FITTINGS

- A. Type: Modular, flush-type, dual-service units suitable for wiring method used.
- B. Compartments: Barrier separates power from voice and data communication cabling.
- C. Service Plate: Rectangular, die-cast aluminum with satin finish.
- D. Power Receptacle: NEMA WD 6 configuration 5-20R, gray finish, unless otherwise indicated.
- E. Voice and Data Communication Outlet: Blank cover with bushed cable opening or two modular, keyed, color-coded, RJ-45 Category 5e jacks for UTP cable – As indicated on drawings.

2.10 FINISHES

- A. Color: Wiring device catalog numbers in Section Text do not designate device color.
 - 1. Wiring Devices Connected to Normal Power System: As selected by Architect, unless otherwise indicated or required by NFPA 70 or device listing.
 - 2. Wiring Devices Connected to Emergency Power System: Red.
 - 3. TVSS Devices: Blue.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with NECA 1, including the mounting heights listed in that standard, unless otherwise noted.
- B. Coordination with Other Trades:
 - 1. Take steps to insure that devices and their boxes are protected. Do not place wall finish materials over device boxes and do not cut holes for boxes with routers that are guided by riding against outside of the boxes.
 - 2. Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.
 - 3. Install device boxes in brick or block walls so that the cover plate does not cross a joint unless the joint is troweled flush with the face of the wall.

4. Install wiring devices after all wall preparation, including painting, is complete.
- C. Conductors:
1. Do not strip insulation from conductors until just before they are spliced or terminated on devices.
 2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
 3. The length of free conductors at outlets for devices shall meet provisions of NFPA 70, Article 300, without pigtails.
 4. Existing Conductors:
 - a. Cut back and pigtail, or replace all damaged conductors.
 - b. Straighten conductors that remain and remove corrosion and foreign matter.
 - c. Pigtailling existing conductors is permitted provided the outlet box is large enough.
- D. Device Installation:
1. Replace all devices that have been in temporary use during construction or that show signs that they were installed before building finishing operations were complete.
 2. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
 3. Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.
 4. Connect devices to branch circuits using pigtails that are not less than 6 inches (152 mm) in length.
 5. When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, 2/3 to 3/4 of the way around terminal screw.
 6. Use a torque screwdriver when a torque is recommended or required by the manufacturer.
 7. When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
 8. Tighten unused terminal screws on the device.
 9. When mounting into metal boxes, remove the fiber or plastic washers used to hold device mounting screws in yokes, allowing metal-to-metal contact.
- E. Receptacle Orientation:
1. Install ground pin of vertically mounted receptacles down, and on horizontally mounted receptacles to the right.
- F. Device Plates: Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening.
- G. Dimmers:
1. Install dimmers within terms of their listing.

2. Verify that dimmers used for fan speed control are listed for that application.
 3. Install unshared neutral conductors on line and load side of dimmers according to manufacturers' device listing conditions in the written instructions.
- H. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical and with grounding terminal of receptacles on top. Group adjacent switches under single, multigang wall plates.

3.2 IDENTIFICATION

- A. Comply with Division 26 Section "Identification for Electrical Systems."
1. Receptacles: Identify panelboard and circuit number from which served. Use hot, stamped or engraved machine printing with black-filled lettering on face of plate, and durable wire markers or tags inside outlet boxes.

3.3 FIELD QUALITY CONTROL

- A. Perform tests and inspections and prepare test reports.
1. Test Instruments: Use instruments that comply with UL 1436.
 2. Test Instrument for Convenience Receptacles: Digital wiring analyzer with digital readout or illuminated LED indicators of measurement.
- B. Tests for Convenience Receptacles:
1. Line Voltage: Acceptable range is 105 to 132 V.
 2. Percent Voltage Drop under 15-A Load: A value of 6 percent or higher is not acceptable.
 3. Ground Impedance: Values of up to 2 ohms are acceptable.
 4. GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.
 5. Using the test plug, verify that the device and its outlet box are securely mounted.
 6. The tests shall be diagnostic, indicating damaged conductors, high resistance at the circuit breaker, poor connections, inadequate fault current path, defective devices, or similar problems. Correct circuit conditions, remove malfunctioning units and replace with new, and retest as specified above.

END OF SECTION

SECTION 26 2813
FUSES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Cartridge fuses rated 600-V ac and less for use in control circuits, enclosed switches, enclosed controllers and motor-control centers.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Operation and maintenance data.

1.3 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with NEMA FU 1 for cartridge fuses.
- C. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Cooper Bussmann, Inc.
 - 2. Edison Fuse, Inc.
 - 3. Ferraz Shawmut, Inc.
 - 4. Littelfuse, Inc.

2.2 CARTRIDGE FUSES

- A. Characteristics: NEMA FU 1, nonrenewable cartridge fuses with voltage ratings consistent with circuit voltages.

PART 3 - EXECUTION

3.1 FUSE APPLICATIONS

- A. Motor Branch Circuits: Class RK5, time delay.
- B. Other Branch Circuits: Class RK5, time delay.

3.2 INSTALLATION

- A. Install fuses in fusible devices. Arrange fuses so rating information is readable without removing fuse.

3.3 IDENTIFICATION

- A. Install labels complying with requirements for identification specified in Division 26 Section "Identification for Electrical Systems" and indicating fuse replacement information on inside door of each fused switch and adjacent to each fuse block and holder.

END OF SECTION

SECTION 26 2816
ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Fusible switches.
 - 2. Nonfusible switches.
 - 3. Molded-case circuit breakers (MCCBs).
 - 4. Enclosures.

1.2 DEFINITIONS

- A. NC: Normally closed.
- B. NO: Normally open.
- C. SPDT: Single pole, double throw.

1.3 SUBMITTALS

- A. Product Data: For each type of enclosed switch, circuit breaker, accessory, and component indicated.
- B. Shop Drawings: For enclosed switches and circuit breakers. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Wiring Diagrams: For power, signal, and control wiring.
- C. Seismic Qualification Certificates: For enclosed switches and circuit breakers, accessories, and components, from manufacturer.
- D. Field quality-control reports.
- E. Operation and maintenance data.

1.4 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 FUSIBLE SWITCHES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 - 2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.

3. Siemens Energy & Automation, Inc.
 4. Square D; a brand of Schneider Electric.
- B. Type HD, Heavy Duty, Single Throw, 240V or 600V ac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, with clips or bolt pads to accommodate indicated fuses, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.
- C. Type HD, Heavy Duty, Six Pole, Single Throw, 240V or 600V ac, 200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, with clips or bolt pads to accommodate specified fuses, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.
- D. Type HD, Heavy Duty, Double Throw, 240V or 600V ac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, with clips or bolt pads to accommodate specified fuses, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.
- E. Accessories:
1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
 2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
 3. Class R Fuse Kit: Provides rejection of other fuse types when Class R fuses are specified.
 4. Lugs: Suitable for number, size, and conductor material.
 5. Service-Rated Switches: Labeled for use as service equipment.

2.2 NONFUSIBLE SWITCHES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
 3. Siemens Energy & Automation, Inc.
 4. Square D; a brand of Schneider Electric.
- B. Type HD, Heavy Duty, Single Throw, 240 or 600V ac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.
- C. Type HD, Heavy Duty, Six Pole, Single Throw, 240V or 600V ac, 200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.
- D. Type HD, Heavy Duty, Double Throw, 240V or 600V ac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.

- E. Accessories:
1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
 2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
 3. Lugs: Suitable for number, size, and conductor material.

2.3 MOLDED-CASE CIRCUIT BREAKERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
 3. Siemens Energy & Automation, Inc.
 4. Square D; a brand of Schneider Electric.
- B. General Requirements: Comply with UL 489, NEMA AB 1, and NEMA AB 3, with interrupting capacity to comply with available fault currents.
- C. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
- D. Electronic Trip Circuit Breakers: Field-replaceable rating plug, rms sensing, with the following field-adjustable settings:
1. Instantaneous trip.
 2. Long- and short-time pickup levels.
 3. Long- and short-time time adjustments.
 4. Ground-fault pickup level, time delay, and I^2t response (where indicated on the Drawings).
 5. Energy Reduction Maintenance Switch/Setting:
 - a. Where indicated on the Drawings, electronic trip units shall incorporate an Energy Reduction Maintenance Switch or setting, which, when activated, shall allow the trip unit to operate faster should an arc fault occur while a worker is working within the arc flash boundary.
- E. Current-Limiting Circuit Breakers: Frame sizes 400 A and smaller, and let-through ratings less than NEMA FU 1, RK-5.
- F. Features and Accessories:
1. Standard frame sizes, trip ratings, and number of poles.
 2. Lugs: Suitable for number, size, trip ratings, and conductor material.

3. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge lighting circuits.
4. Ground-Fault Protection: Comply with UL 1053; integrally mounted, self-powered type with mechanical ground-fault indicator; relay with adjustable pickup and time-delay settings, push-to-test feature, internal memory, and shunt trip unit; and three-phase, zero-sequence current transformer/sensor.
5. Shunt Trip: Trip coil energized from separate circuit, with coil-clearing contact.
6. Auxiliary Contacts: One SPDT switch with "a" and "b" contacts; "a" contacts mimic circuit-breaker contacts, "b" contacts operate in reverse of circuit-breaker contacts.
7. Alarm Switch: One NO contact that operates only when circuit breaker has tripped.

2.4 ENCLOSURES

- A. Enclosed Switches and Circuit Breakers: NEMA AB 1, NEMA KS 1, NEMA 250, and UL 50, to comply with environmental conditions at installed location.
 1. Indoor, Dry and Clean Locations: NEMA 250 Type 1.
 2. Outdoor Locations: NEMA 250, Type 3R.
 3. Kitchen Areas: NEMA 250, Type 4X
 4. Other Wet or Damp, Indoor Locations: NEMA 250, Type 4.
 5. Indoor Locations Subject to Dust, Falling Dirt, and Dripping Noncorrosive Liquids: NEMA 250, Type 12.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install individual wall-mounted switches and circuit breakers with tops at uniform height unless otherwise indicated.
- B. Comply with mounting and anchoring requirements specified in Division 26 Section "Vibration and Seismic Controls for Electrical Systems."
- C. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.
- D. Install fuses in fusible devices.
- E. Comply with NECA 1.

3.2 IDENTIFICATION

- A. Comply with requirements in Division 26 Section "Identification for Electrical Systems."
 1. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs.
 2. Label each enclosure with engraved metal or laminated-plastic nameplate.

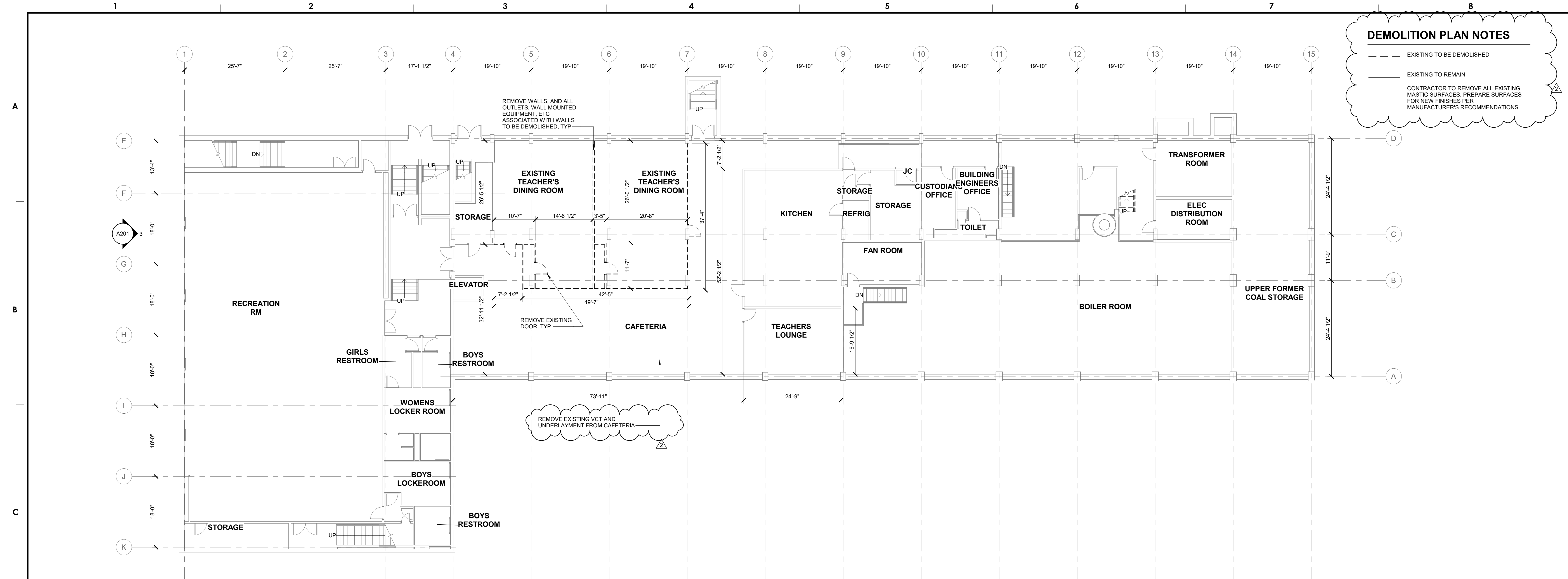
3.3 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Acceptance Testing Preparation:
 - 1. Test insulation resistance for each enclosed switch and circuit breaker, component, connecting supply, feeder, and control circuit.
 - 2. Test continuity of each circuit.
- C. Tests and Inspections:
 - 1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
 - 2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
- D. Enclosed switches and circuit breakers will be considered defective if they do not pass tests and inspections.
- E. Prepare test and inspection reports, including a certified report that identifies enclosed switches and circuit breakers and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

END OF SECTION

NO.	DATE	REVISION
2	03/18/20	ADDENDUM 2
1	02/18/20	BID DOCUMENTS

DRAWING SCALE	3/32" = 1'-0"
LOCATION NO.	4390
FILE NO.	N/A
DRAWN BY	MP
CHECKED BY	KK
B-051(C) OF 2019/2020 B-052(C) OF 2019/2020 B-053(C) OF 2019/2020	



DEMOLITION PLAN NOTES
 --- EXISTING TO BE DEMOLISHED
 ——— EXISTING TO REMAIN
 CONTRACTOR TO REMOVE ALL EXISTING MASTIC SURFACES. PREPARE SURFACES FOR NEW FINISHES PER MANUFACTURER'S RECOMMENDATIONS

1 SUB-BASEMENT ARCHITECTURAL DEMOLITION PLAN
 SCALE: 3/32" = 1'-0"

Local File: B:\2020\10336894 - School District of Philadelphia (2020)\10336894_015_A_P20.rvt
 Central File: 6210
 Project Number: N/A
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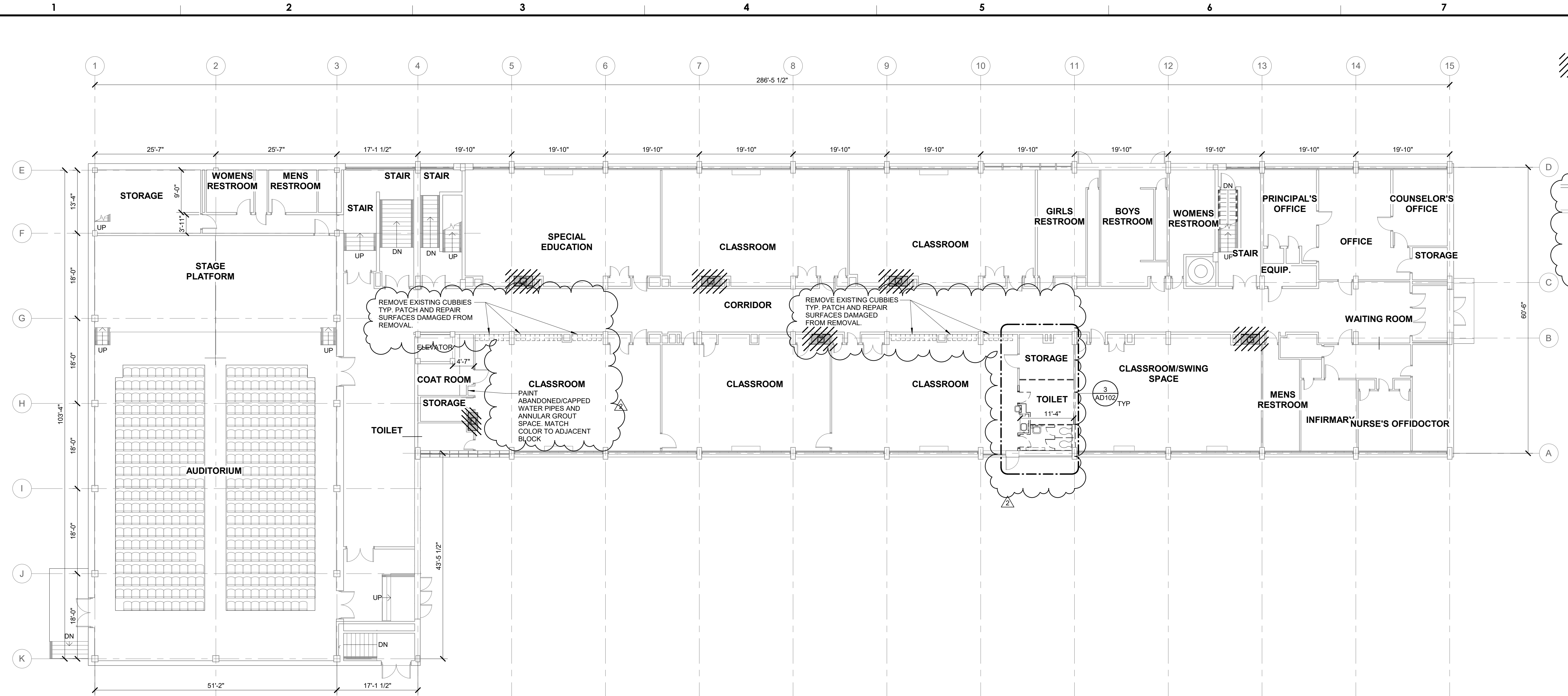
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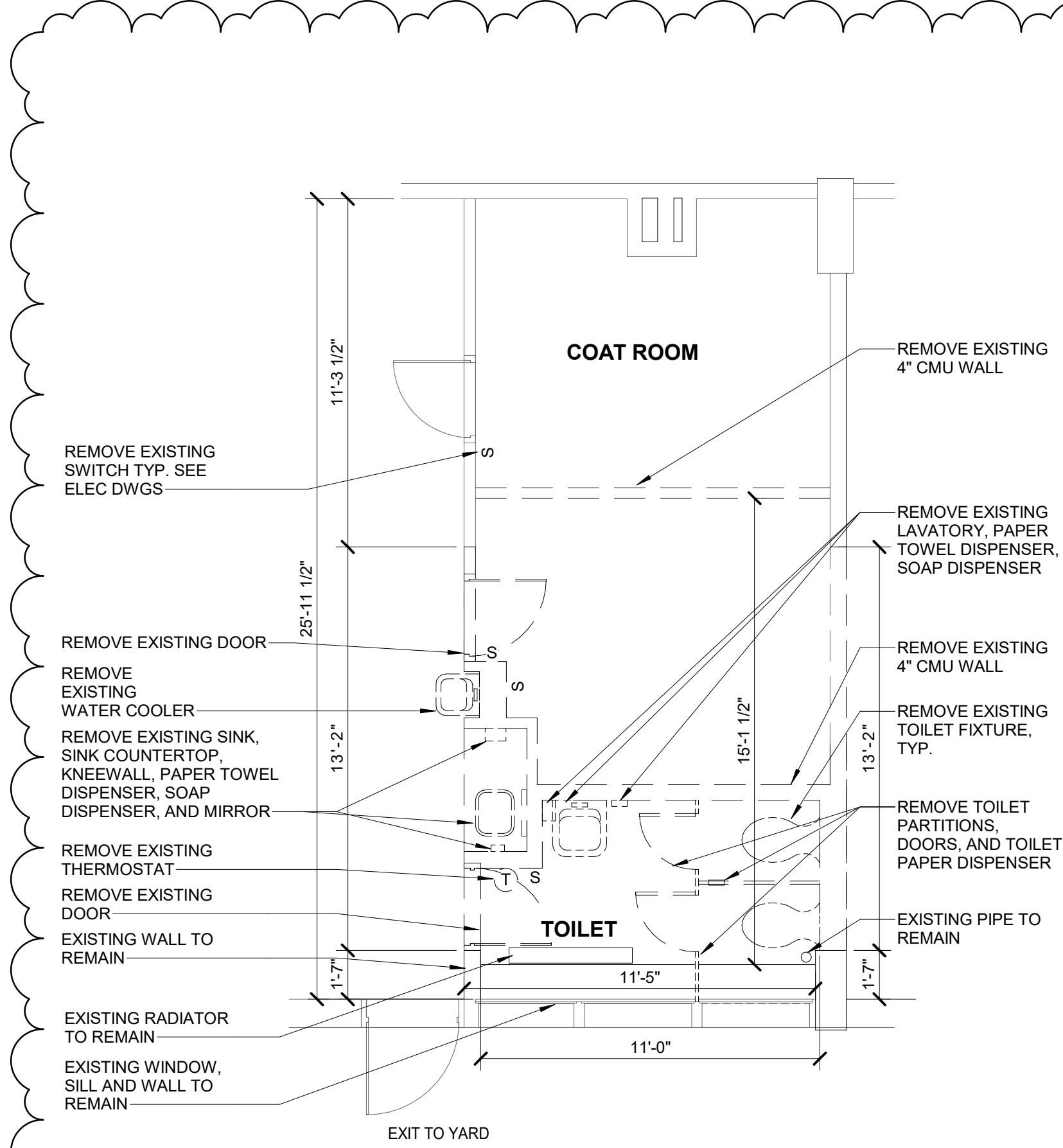
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DEMOLITION PLAN NOTES

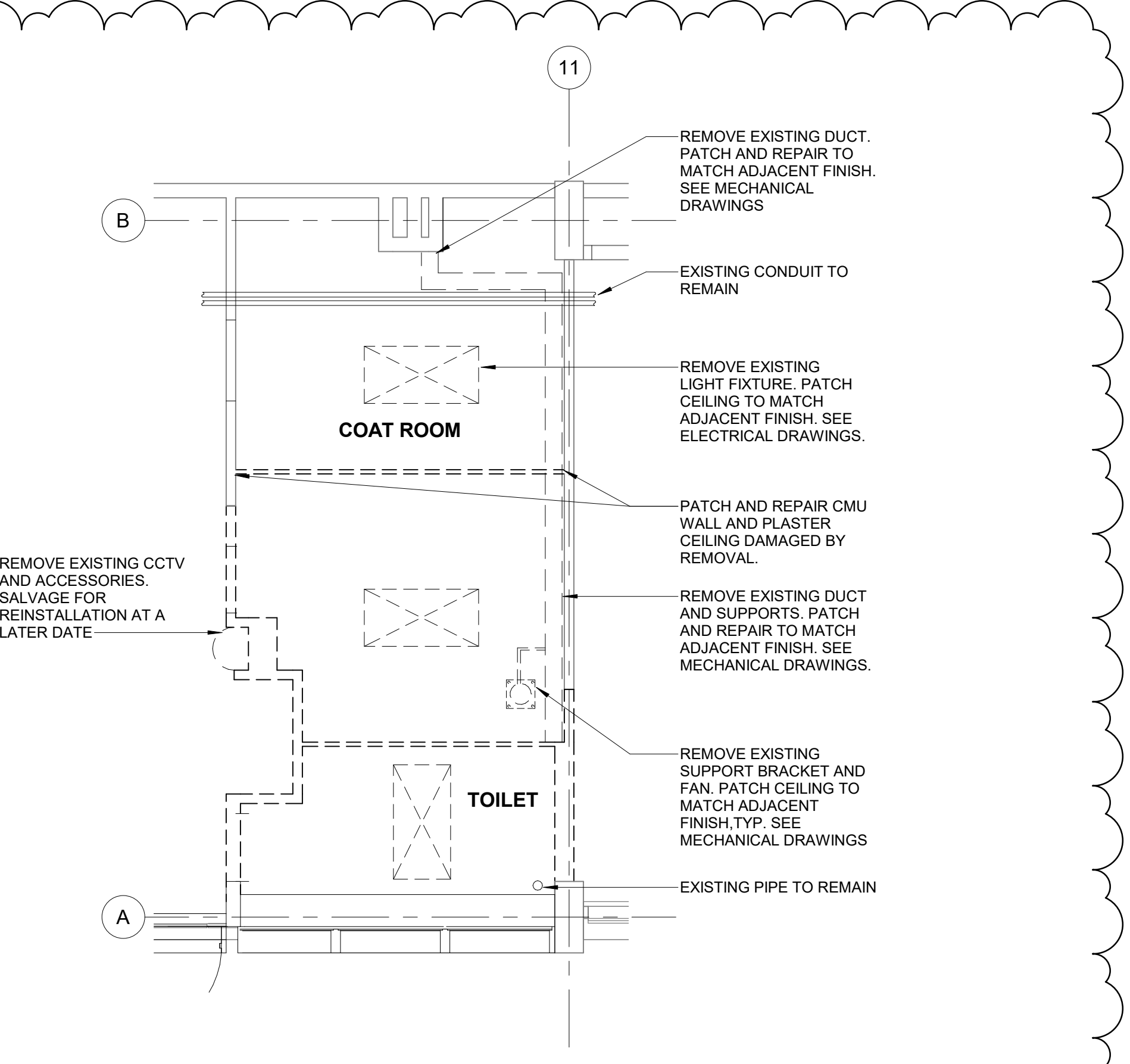
- DEMOLISH THE FOLLOWING ITEMS IN THE LOCATIONS MARKED:
- 1) SINK
 - 2) KNEE WALL
 - 3) STRUCTURAL GLAZING TILE BASE
 - 4) BACKSPLASH
 - 5) PAPER TOWEL DISPENSER
 - 6) SOAP DISPENSER AND COUNTERTOP
- PREPARE WALLS AND PATCH CONCRETE AND PAINT DAMAGED DUE TO DEMOLITION
- COORDINATE DEMOLITION WITH MECHANICAL CONTRACTOR
- EXISTING TO BE DEMOLISHED
- EXISTING TO REMAIN
- CONTRACTOR TO REMOVE ALL EXISTING MASTIC SURFACES. PREPARE SURFACES FOR NEW FINISHES PER MANUFACTURER'S RECOMMENDATIONS



1 FIRST FLOOR ARCHITECTURAL DEMOLITION PLAN
SCALE: 3/32" = 1'-0"
0' 6' 12' 18' 24' 30' 36'



3 BATHROOM ENLARGED DEMOLITION PLAN
SCALE: 1/4" = 1'-0"
0' 4' 8' 12' 16'



4 BATHROOM ENLARGED DEMOLITION REFLECTED CEILING PLAN
SCALE: 1/4" = 1'-0"
0' 4' 8' 12' 16'

100% SUBMISSION
18 FEB 2020

NO.	DATE	REVISION
2	03/18/20	ADDENDUM 2
1	02/18/20	BID DOCUMENTS

ANNEX B. PRATT ELEMENTARY SCHOOL

2200 N. 22ND ST., PHILADELPHIA, PA 19132

PROJECT TITLE

MAJOR RENOVATION, PHASE 1

DRAWING SCALE
ARCHITECTURAL FIRST FLOOR DEMO PLAN

DRAWING SCALE As indicated	FILE NO. N/A
LOCATION NO. 4390	CHECKED BY KK
DRAWN BY MP	
8-051(C) OF 2019/2020 8-052(C) OF 2019/2020 8-053(C) OF 2019/2020	

DRAWING NO.
AD102
SHEET 4 OF 40

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100% SUBMISSION
18 FEB 2020

NO.	DATE	REVISION
2	03/18/20	ADDENDUM 2
1	02/18/20	BID DOCUMENTS

SCHOOL & LOCATION

ANNA B. PRATT ELEMENTARY SCHOOL

2200 N. 22ND ST., PHILADELPHIA, PA 19132

PROJECT TITLE

MAJOR RENOVATION, PHASE 1

DRAWING SCALE
ARCHITECTURAL SECOND AND THIRD FLOOR DEMOLITION PLANS

DRAWING SCALE 3/32" = 1'-0"	FILE NO. N/A
LOCATION NO. 4390	CHECKED BY KK
DRAWN BY MP	8-051(C) OF 2019/2020
	8-052(C) OF 2019/2020
	8-053(C) OF 2019/2020

DRAWING NO.

AD103

SHEET 5 OF 40

DEMOLITION PLAN NOTES

DEMOLISH THE FOLLOWING ITEMS IN THE LOCATIONS MARKED:

- 1) SINK
- 2) KNEE WALL
- 3) STRUCTURAL GLAZING TILE BASE
- 4) BACKSPLASH
- 5) PAPER TOWEL DISPENSER
- 6) SOAP DISPENSER AND COUNTERTOP

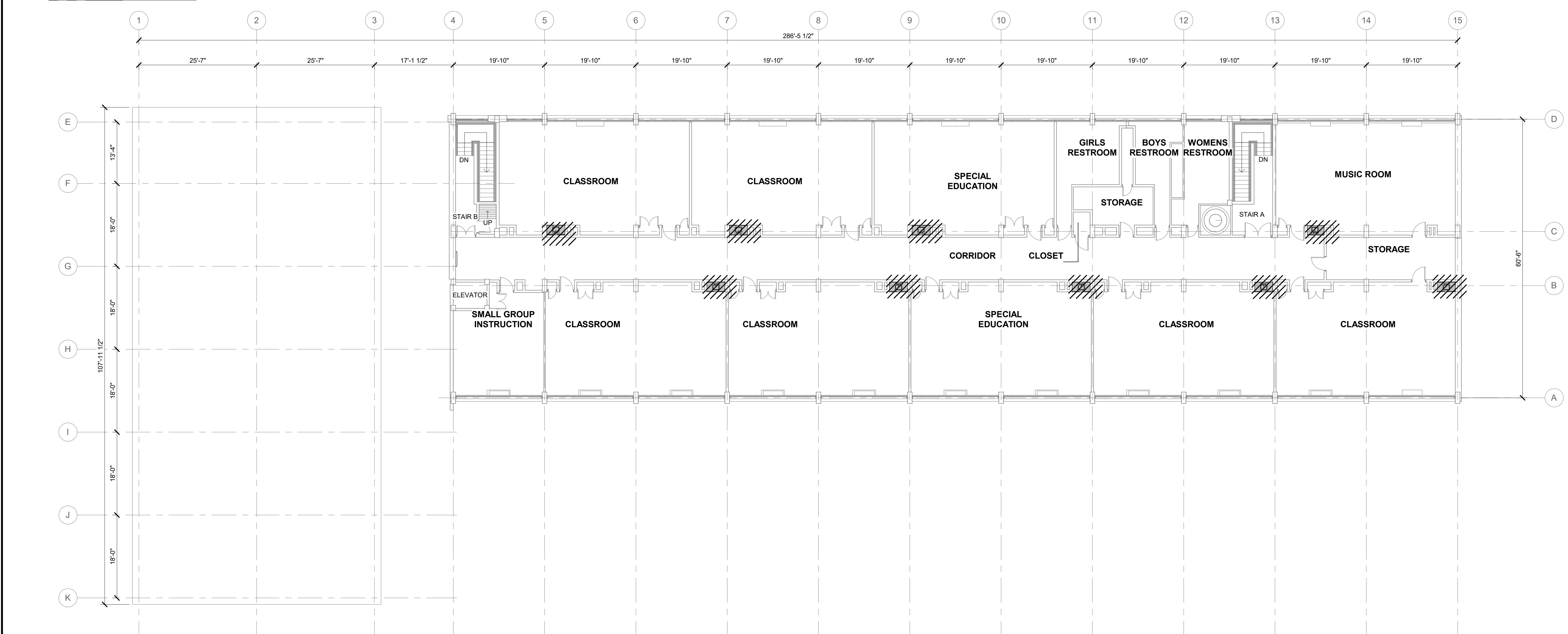
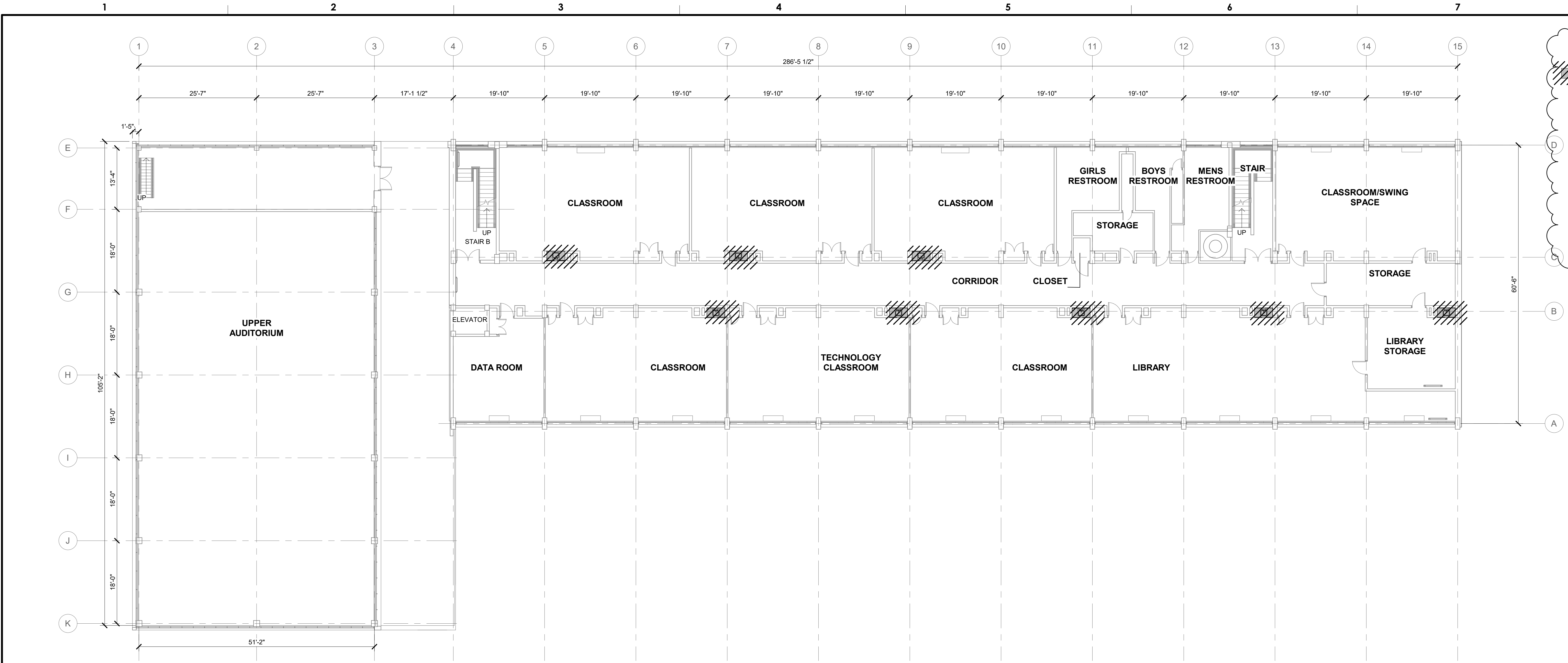
PREPARE WALLS AND PATCH CONCRETE AND PAINT DAMAGED DUE TO DEMOLITION

COORDINATE DEMOLITION WITH MECHANICAL CONTRACTOR

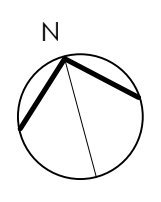
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— EXISTING TO REMAIN

CONTRACTOR TO REMOVE ALL EXISTING MASTIC SURFACES. PREPARE SURFACES FOR NEW FINISHES PER MANUFACTURER'S RECOMMENDATIONS



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 Central File: 6210
 Project Number: N/A
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SEAL:

CHARLES BEADUT, AIA RA011044X DATE

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100% SUBMISSION
18 FEB 2020

NO.	DATE	REVISION
2	03/18/20	ADDENDUM 2
1	02/18/20	BID DOCUMENTS

SCHOOL & LOCATION

ANNA B. PRATT ELEMENTARY SCHOOL

2200 N. 22ND ST., PHILADELPHIA, PA 19132

PROJECT TITLE

MAJOR RENOVATION, PHASE 1

DRAWING SCALE

ARCHITECTURAL BASEMENT
AND BOILER ROOM PLANS

DRAWING SCALE

3/32" = 1'-0"

LOCATION NO. FILE NO.

4390 N/A

DRAWN BY CHECKED BY

MP KK

8-051(C) OF 2019/2020

8-052(C) OF 2019/2020

8-053(C) OF 2019/2020

DRAWING NO.

A101

SHEET 6 OF 40

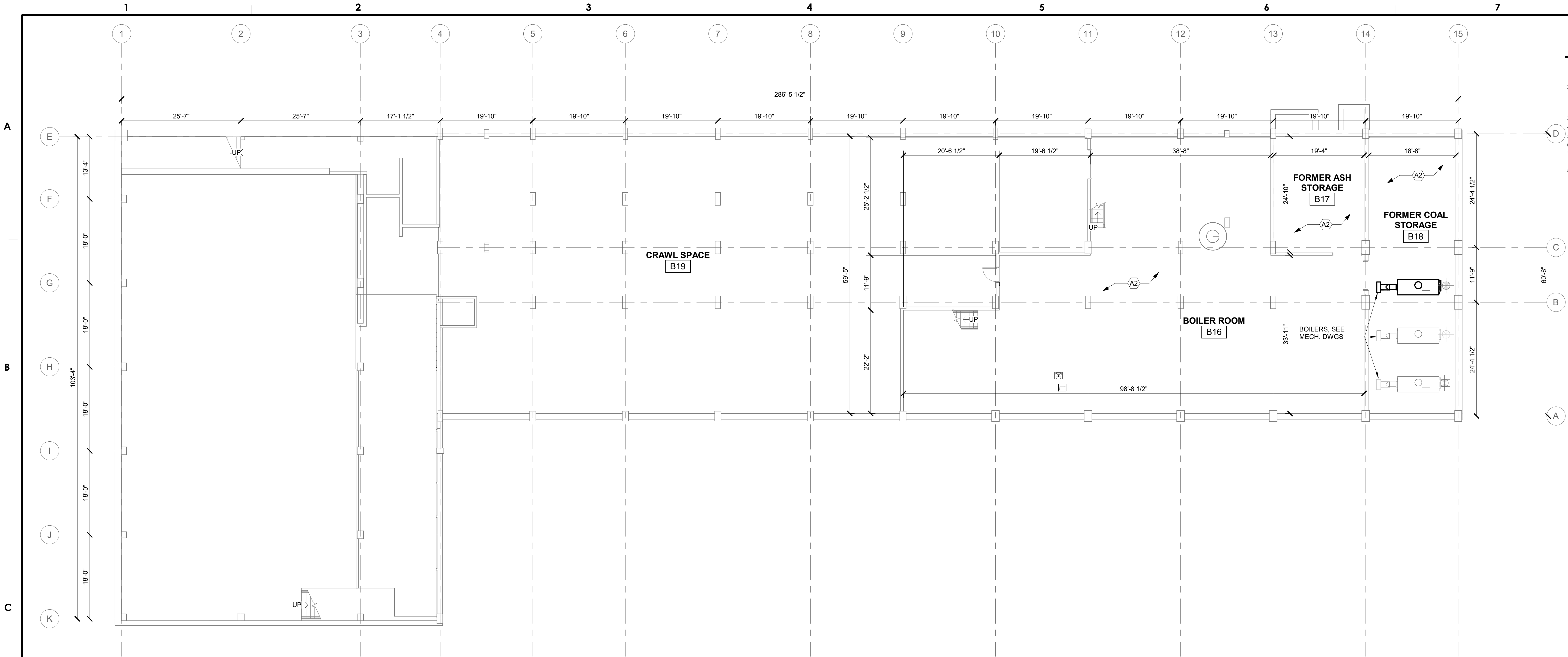
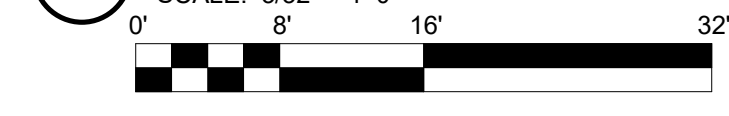
FLOOR PLAN NOTES

- DIMENSIONS AT CMU WALLS ARE TO THE FACE OF CMU UNLESS OTHERWISE NOTED
- TACK BOARDS, MARKER BOARDS, AND BRACKETS SHOWN ON PLAN ARE FOR THE PURPOSES OF DETERMINING TENTATIVE LOCATION AND QUALITY. FINAL LOCATIONS TO BE CONFIRMED IN FIELD BY OWNER
- SEE A601 FOR SIGNAGE SCHEDULE AND DISPLAY BOARDS
- SEE A601 FOR FINISH SCHEDULE
- SEE A801, A802, A803, AND A804 FOR TYPICAL FINISH FLOOR PLANS
- CONTRACTOR TO VERIFY ALL DIMENSIONS
- PATCH CMU CHIPS, SPALLS, AND REMNANT ANCHOR BOLT HOLES IMPACTED BY REMOVALS
- PROTECT ALL EXISTING DEVICES DURING PAINTING

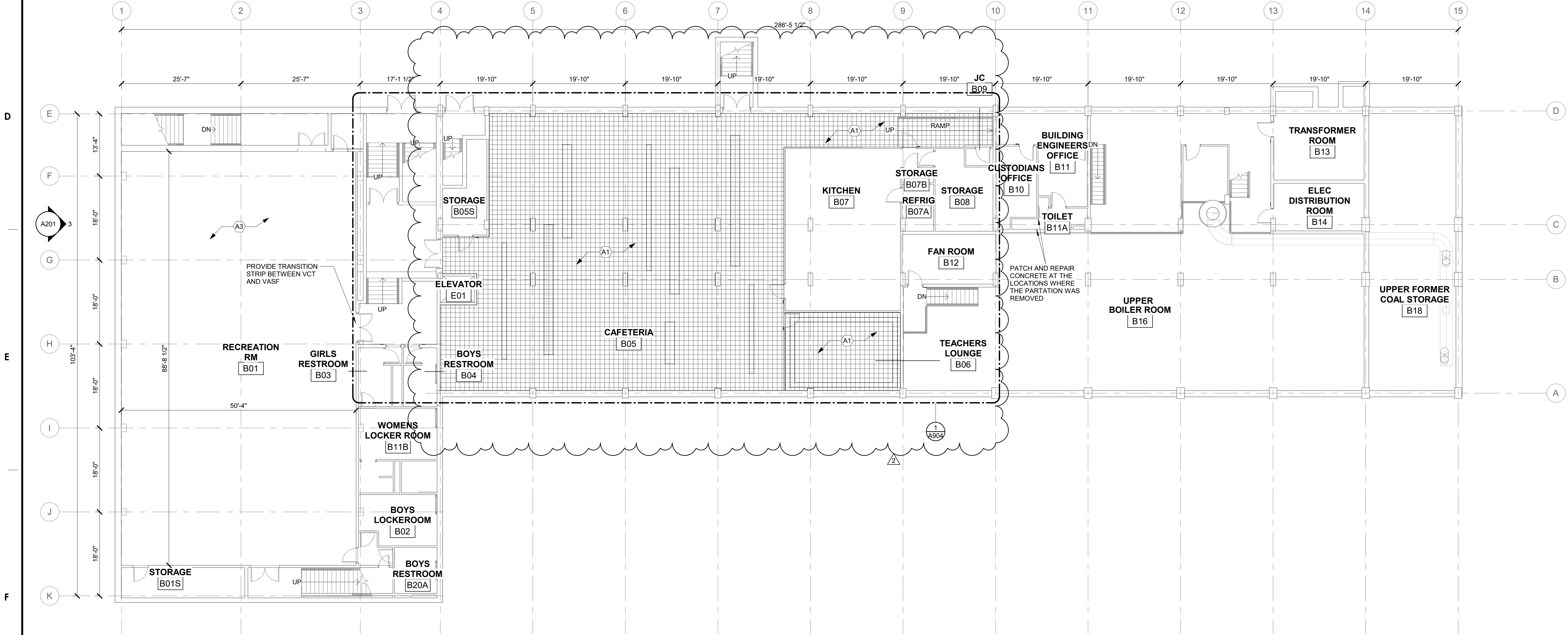
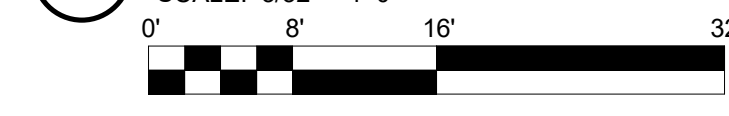
FLOOR PLAN KEY NOTES

NO.	DESCRIPTION
A1	PREPARE AND PAINT WALLS, CEILINGS, AND PROVIDE VCT
A2	PREPARE AND PAINT WALLS AND CEILINGS
A3	PROVIDE VSAF. PREPARE AND PAINT CEILINGS. PREPARE AND PAINT PLASTER SURFACES OF COLUMNS. PREPARE AND PAINT BEAMS AND WALLS.
A4	PREPARE AND PAINT CEILINGS. PROVIDE VCT, AND PREPARE AND PAINT ALL NON BRICK WALLS.
A5	ENLARGE EXISTING CONCRETE PAD SEE 11/A401
A6	ENLARGE EXISTING CONCRETE PAD SEE 12/A401

1 SUB-BASEMENT ARCHITECTURAL NEW WORK PLAN



2 BASEMENT ARCHITECTURAL NEW WORK PLAN



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Central File: 6210
Project Number: N/A
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SEAL:

CHARLES BEADUT, AIA RA011046X DATE

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100% SUBMISSION
18 FEB 2020

NO.	DATE	REVISION
2	03/18/20	ADDENDUM 2
1	02/18/20	BID DOCUMENTS

SCHOOL & LOCATION
ANNA B. PRATT ELEMENTARY SCHOOL

2200 N. 22ND ST., PHILADELPHIA, PA 19132

PROJECT TITLE
MAJOR RENOVATION, PHASE 1

DRAWING SCALE
ARCHITECTURAL FIRST FLOOR PLAN

DRAWING SCALE	As indicated
LOCATION NO.	FILE NO.
4390	N/A
DRAWN BY	CHECKED BY
MP	KK
	8-051(C) OF 2019/2020
	8-052(C) OF 2019/2020
	8-053(C) OF 2019/2020

DRAWING NO.
A102
SHEET 7 OF 40

FLOOR PLAN NOTES

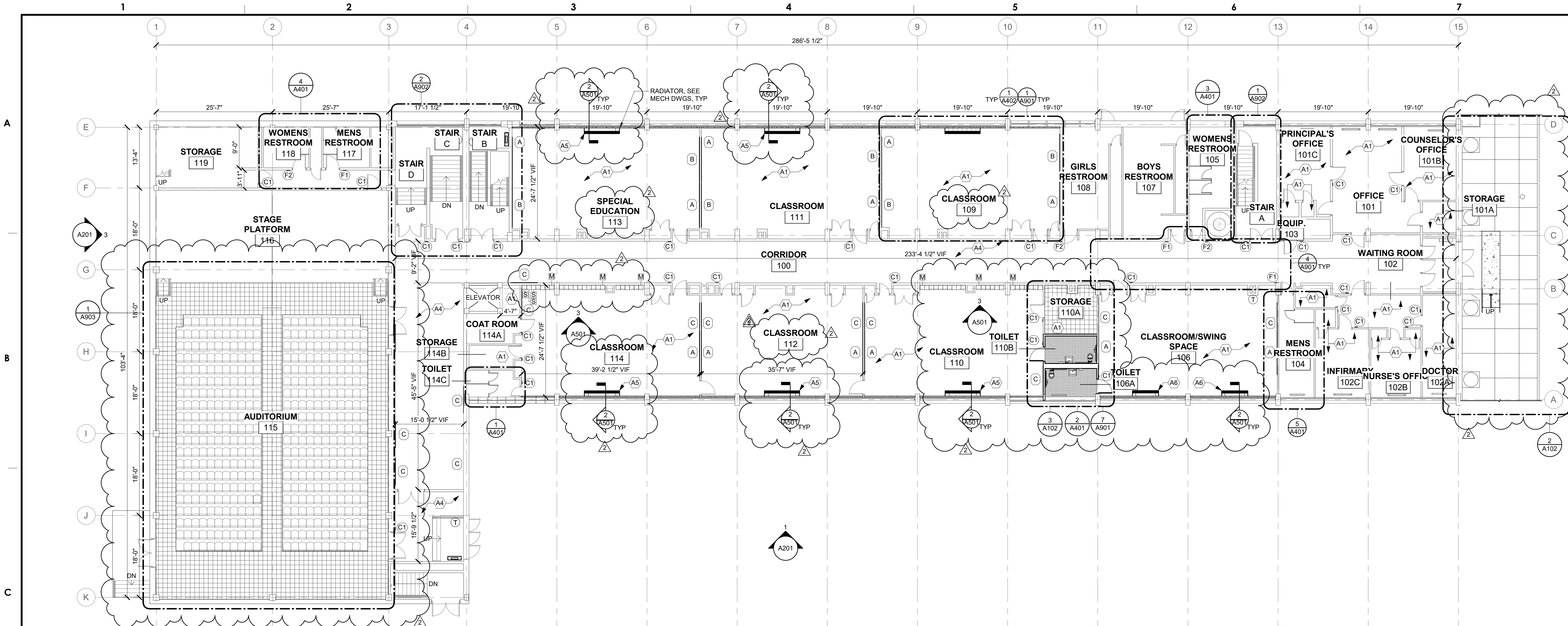
- DIMENSIONS AT CMU WALLS ARE TO THE FACE OF CMU UNLESS OTHERWISE NOTED
- TACK BOARDS, MARKER BOARDS, AND BRACKETS SHOWN ON PLAN ARE FOR THE PURPOSES OF DETERMINING TENTATIVE LOCATION AND QUALITY. FINAL LOCATIONS TO BE CONFIRMED IN FIELD BY OWNER
- SEE A801 FOR SIGNAGE SCHEDULE AND DISPLAY BOARDS
- SEE A801 FOR FINISH SCHEDULE
- SEE A801, A802, A803, AND A804 FOR TYPICAL FINISH FLOOR PLANS
- CONTRACTOR TO VERIFY ALL DIMENSIONS
- PATCH CMU CHIPS, SPALLS, AND REMNANT ANCHOR BOLT HOLES IMPACTED BY REMOVALS.
- PROTECT ALL EXISTING DEVICES DURING PAINTING

FLOOR PLAN LEGEND

- (A) MARKER BOARD
- (A1) KEY NOTE
- (B) TACK BOARD
- (C1) DOOR SIGNAGE
- (F1) DOOR SIGNAGE
- (F2) DOOR SIGNAGE
- (M) METAL CUBBIES SEE 3/A501

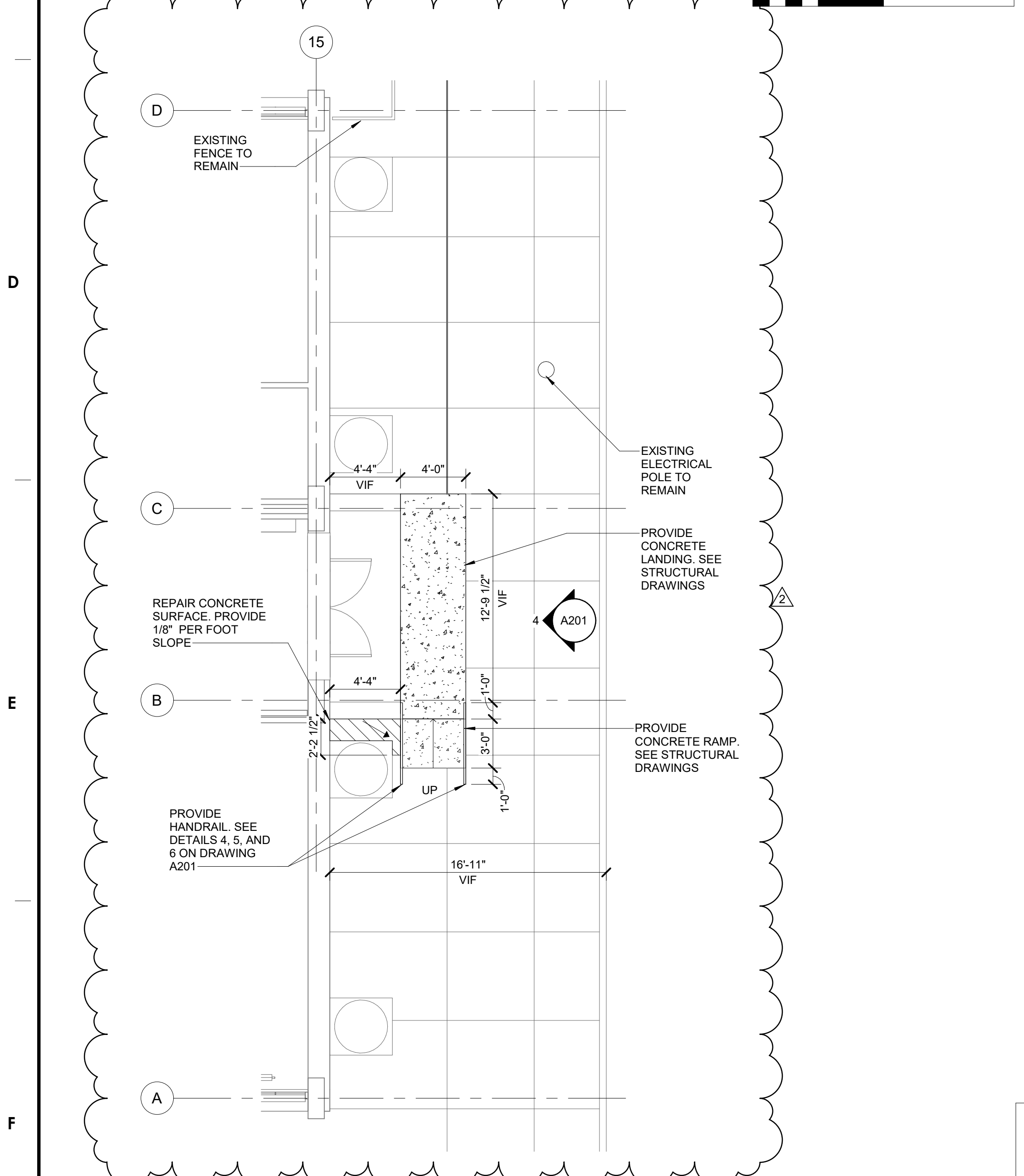
FLOOR PLAN KEY NOTES

NO.	DESCRIPTION
A1	PREPARE AND PAINT WALLS, CEILING, AND PROVIDE VCT
A2	PREPARE AND PAINT WALLS AND CEILING
A3	PROVIDE VSAF. PREPARE AND PAINT CEILING. PREPARE AND PAINT PLASTER SURFACES OF COLUMNS. PREPARE AND PAINT BEAMS AND WALLS
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A5	ENLARGE EXISTING CONCRETE PAD SEE 11/A401
A6	ENLARGE EXISTING CONCRETE PAD SEE 12/A401



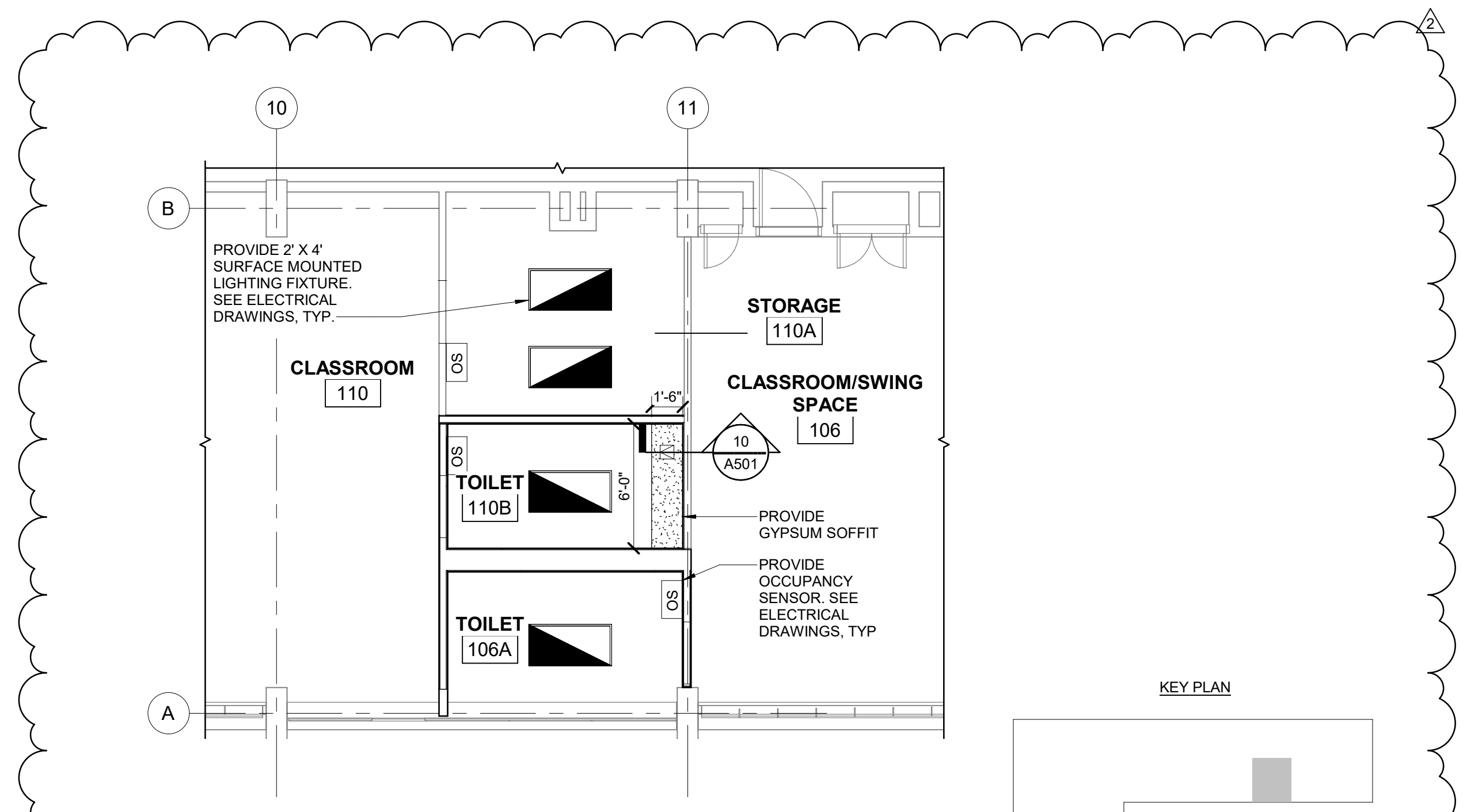
1 FIRST FLOOR ARCHITECTURAL NEW WORK PLAN

SCALE: 3/32" = 1'-0"



2 MAIN ENTRANCE ENLARGED PLAN

SCALE: 3/16" = 1'-0"



3 BATHROOM ENLARGED REFLECTED CEILING PLAN

SCALE: 3/16" = 1'-0"

SEAL:

CHARLES BEADUT, AIA RA011064X DATE

ENGINEER OF RECORD

GANNETT FLEMING, INC. 1010 ADAMS AVENUE AUDUBON, PA 19403 610.650.8101 610.650.8190 BWESSER@GFNET.COM BRIAN M. WESSER, P.E.

ARCHITECT

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ELECTRICAL ENGINEER

DCW ELECTRICAL ENGINEERING, INC. 232 CECILIA ACRES DRIVE WYLAND, PA 18974 215.354.9161 215.354.9163 GRAZYNA@DCWENGINEERING.COM GRAZYNA RUCHTA, P.E.

100% SUBMISSION 18 FEB 2020

Revision table with columns for NO., DATE, REVISION, and SCHOOL & LOCATION.

2 03/18/20 ADDENDUM 2 1 02/18/20 BID DOCUMENTS NO. DATE REVISION

SCHOOL & LOCATION

ANNA B. PRATT ELEMENTRY SCHOOL

2200 N. 22ND ST., PHILADELPHIA, PA 19132

PROJECT TITLE

MAJOR RENOVATION, PHASE 1

DRAWING SCALE

ARCHITECTURAL SECOND AND THIRD FLOOR PLANS

DRAWING SCALE

3/32" = 1'-0"

LOCATION NO. FILE NO.

4390 N/A

DRAWN BY CHECKED BY

MP KK

8-051(C) OF 2019/2020

8-052(C) OF 2019/2020

8-053(C) OF 2019/2020

DRAWING NO.

A103

SHEET 8 OF 40

FLOOR PLAN NOTES

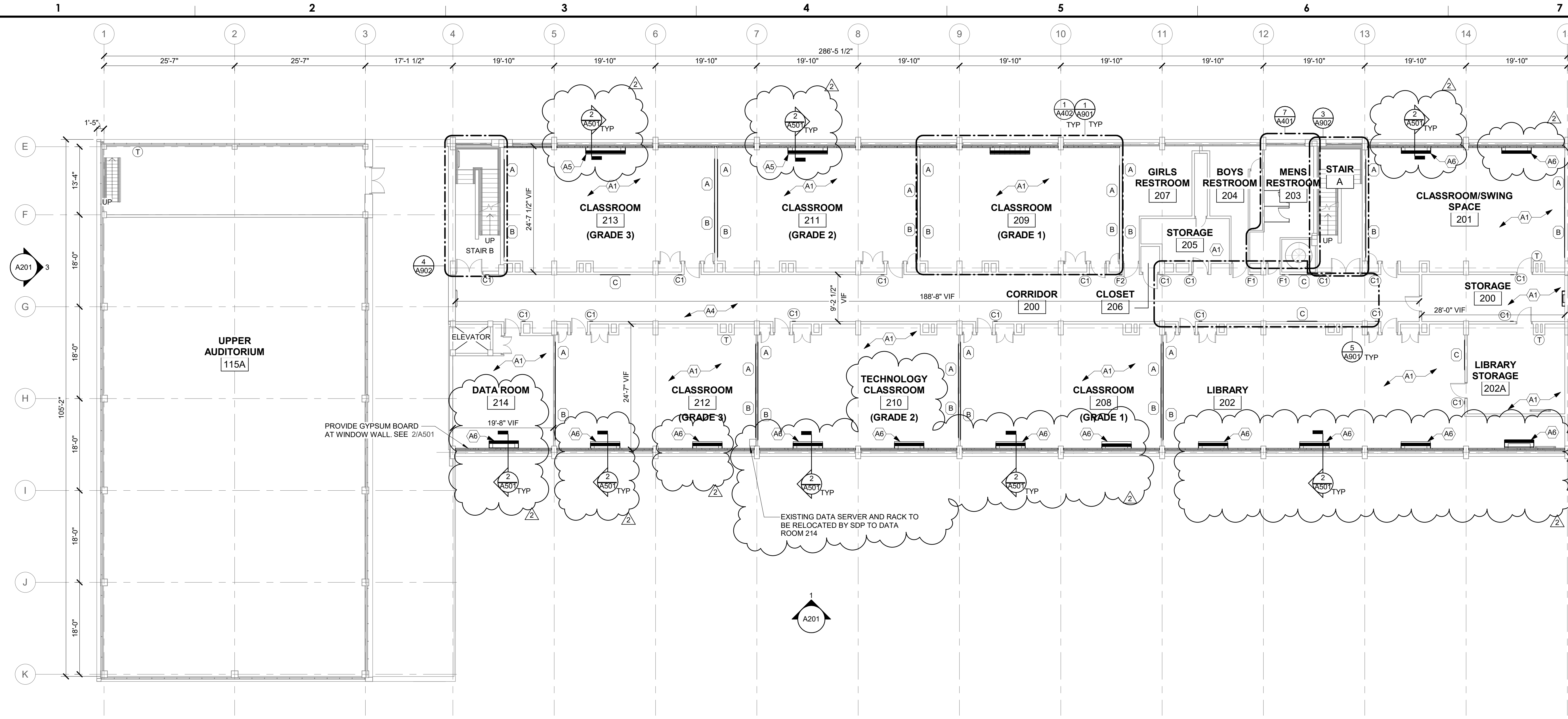
- 1 DIMENSIONS AT CMU WALLS ARE TO THE FACE OF CMU UNLESS OTHERWISE NOTED
2 TACK BOARDS, MARKER BOARDS, AND BRACKETS SHOWN ON PLAN ARE FOR THE PURPOSES OF DETERMINING TENTATIVE LOCATION AND QUALITY. FINAL LOCATIONS TO BE CONFIRMED IN FIELD BY OWNER
3 SEE A601 FOR SIGNAGE SCHEDULE AND DISPLAY BOARDS
4 SEE A601 FOR FINISH SCHEDULE
5 SEE A901, A902, A903, AND A904 FOR TYPICAL FINISH FLOOR PLANS
6 CONTRACTOR TO VERIFY ALL DIMENSIONS
7 PATCH CMU CHIPS, SPALLS, AND REMNANT ANCHOR BOLT HOLES IMPACTED BY REMOVALS
8 PROTECT ALL EXISTING DEVICES DURING PAINTING

FLOOR PLAN LEGEND

- (A) MARKER BOARD (C1) DOOR SIGNAGE
(A1) KEY NOTE (F1) DOOR SIGNAGE
(B) TACK BOARD (F2) DOOR SIGNAGE
(C) TACK BOARD (M) METAL CUBBIES SEE 3/A501

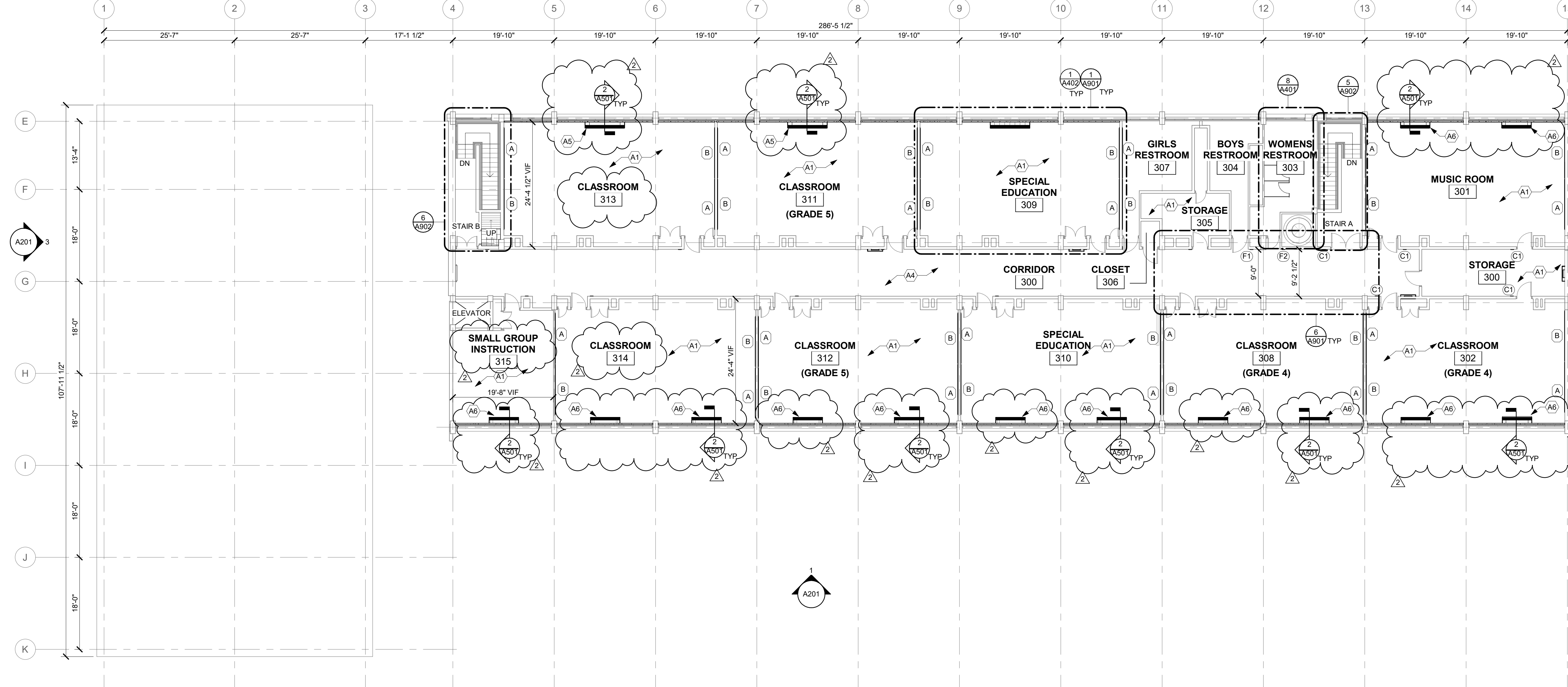
FLOOR PLAN KEY NOTES

Table with columns NO. and DESCRIPTION. Includes notes A1 through A6 regarding painting, VCT, and concrete work.



1 SECOND FLOOR ARCHITECTURAL NEW WORK PLAN

SCALE: 3/32" = 1'-0"



2 THIRD FLOOR ARCHITECTURAL NEW WORK PLAN

SCALE: 3/32" = 1'-0"



Local File: BIM_360/1833894 - School District of Philadelphia (R2020)\\33894_015_A_R20.rvt 3/18/2020 3:47:28 PM Project Number: N/A

ENGINEER OF RECORD

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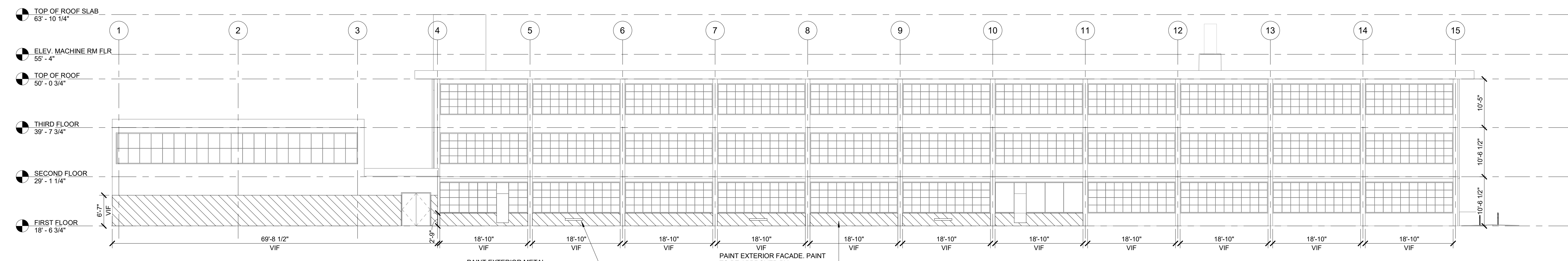
GANNETT FLEMING, INC.
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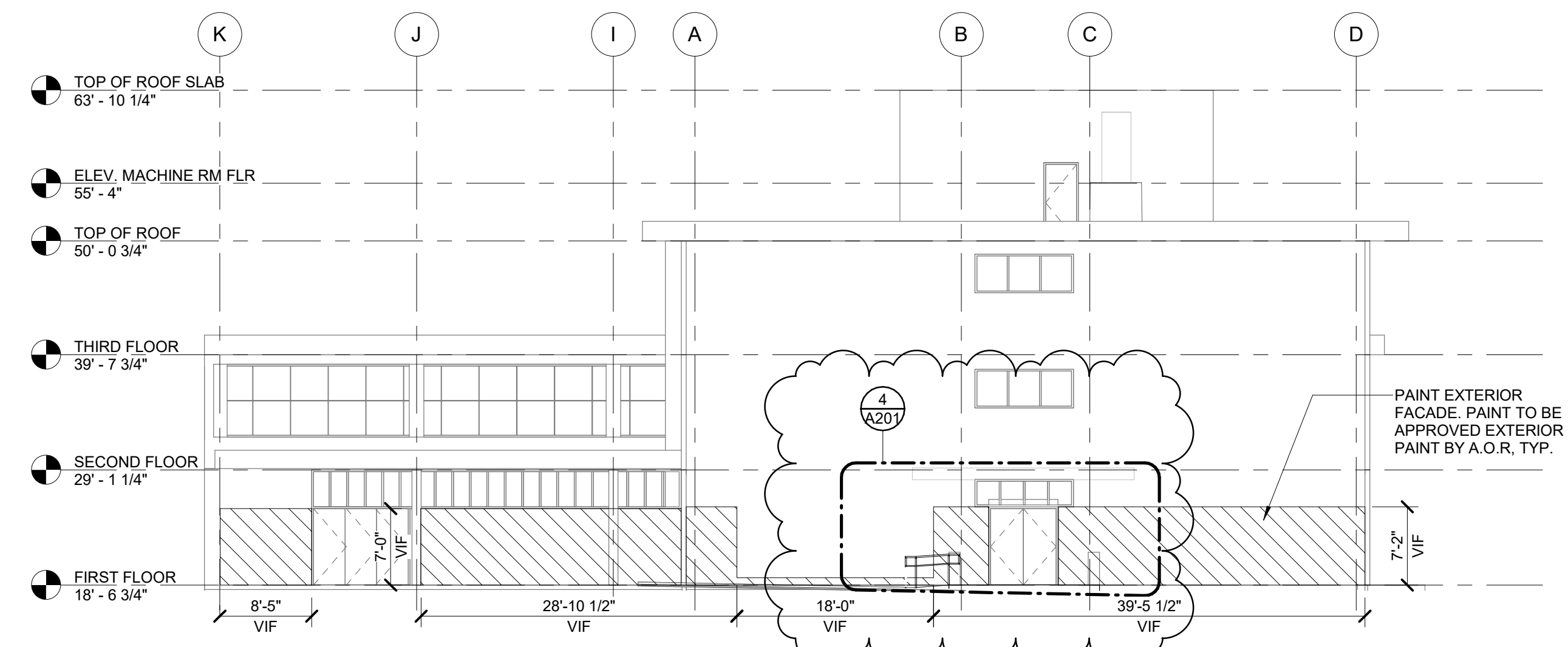
ELEVATION NOTES

1 MATTE FACE PAINT SHALL BE USED AT ALL WALL MOUNTED LIGHT FIXTURES, COPINGS, AND OTHER WALL MOUNTED EQUIPMENT. COLOR TO MATCH ADJACENT MASONRY.



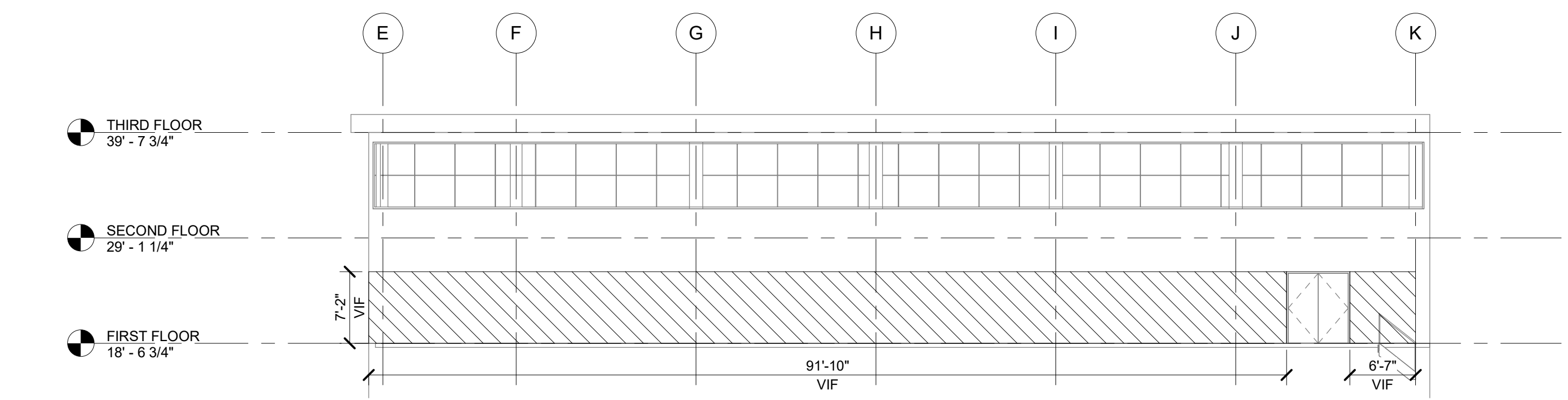
1 SOUTH ELEVATION

SCALE: 3/32" = 1'-0"
0' 8' 16' 32'



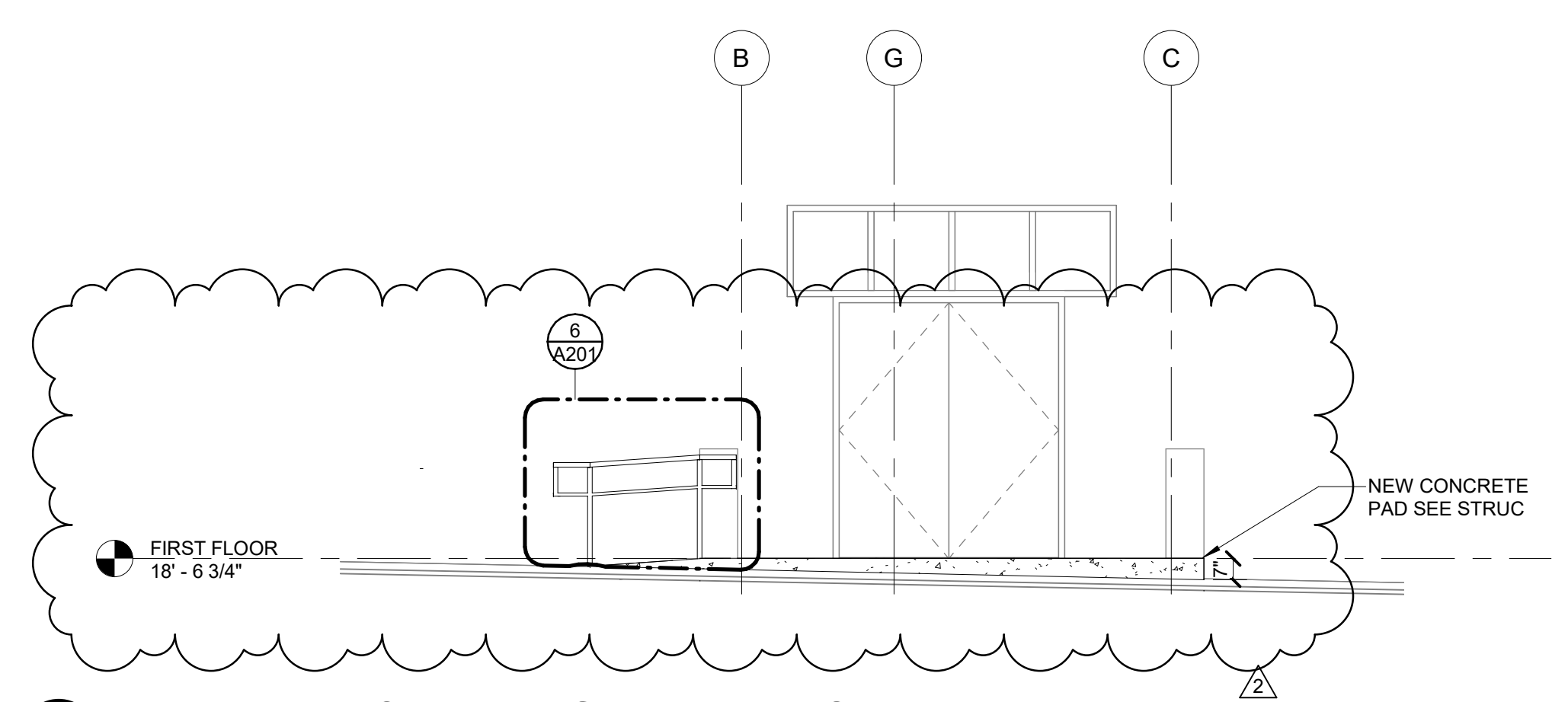
2 EAST ELEVATION

SCALE: 3/32" = 1'-0"
0' 8' 16' 32'



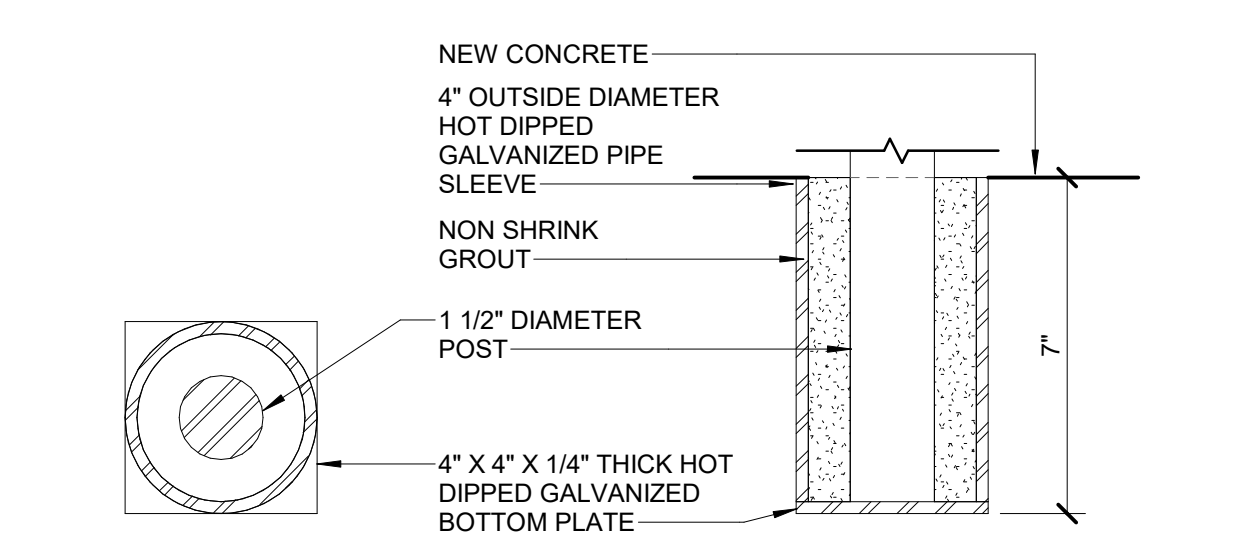
3 WEST ELEVATION

SCALE: 3/32" = 1'-0"
0' 8' 16' 32'



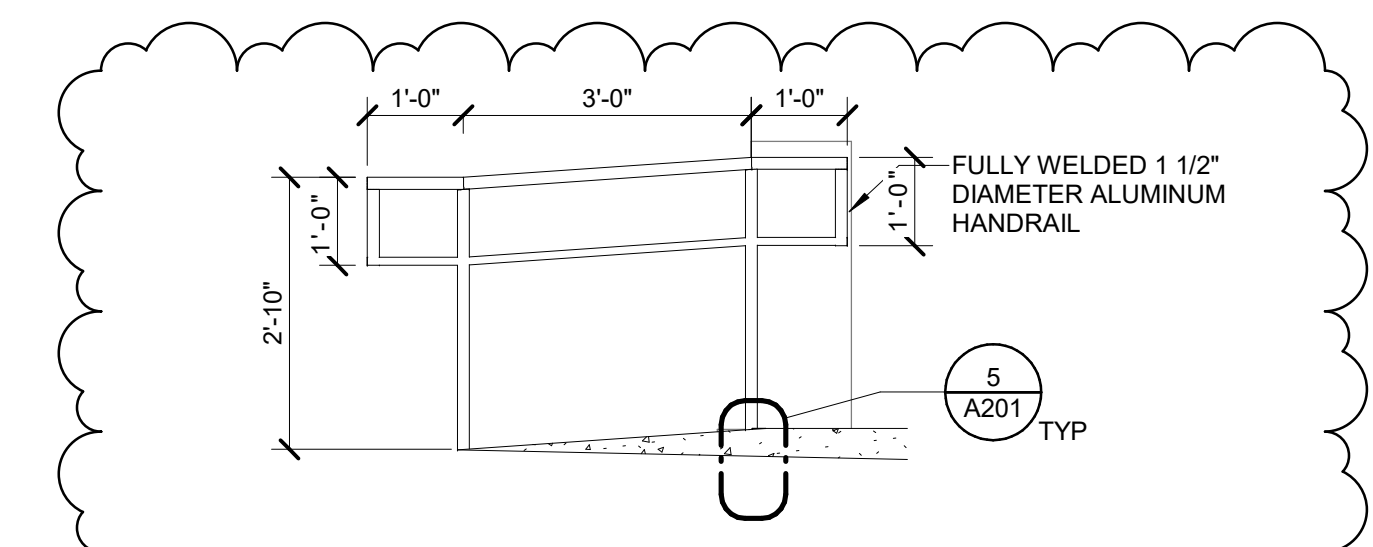
4 MAIN ENTRANCE ENLARGED ELEVATION

SCALE: 1/4" = 1'-0"
0' 4' 8' 16'



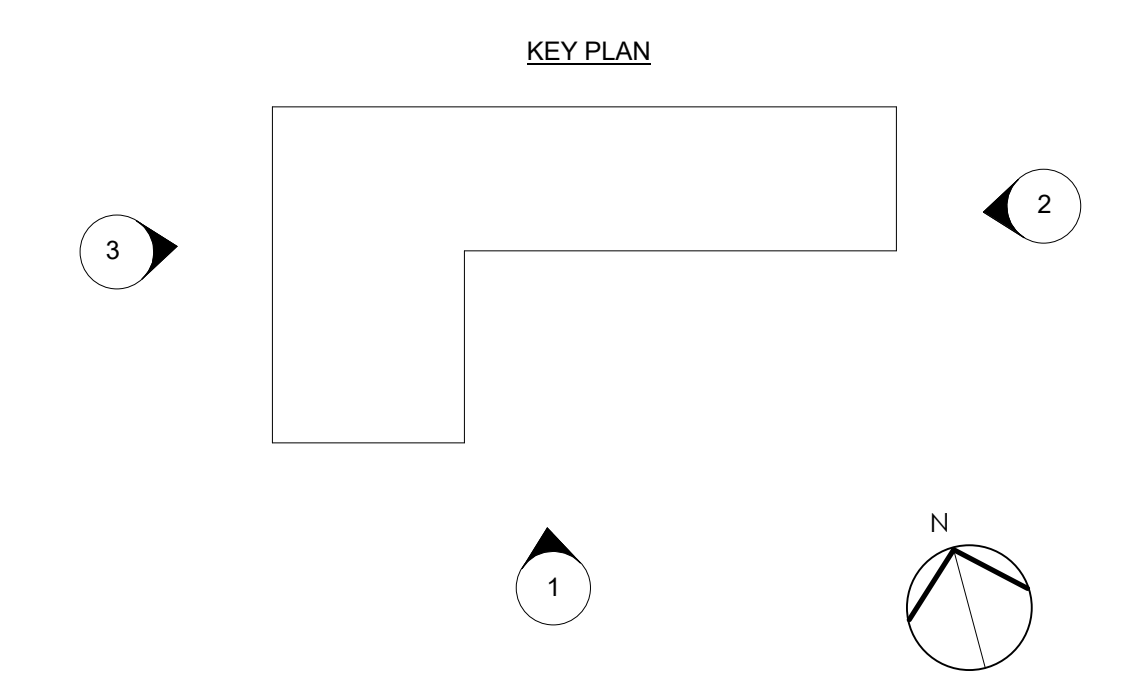
5 PIPE SLEEVE

SCALE: 3" = 1'-0"
0' 3' 6' 12'



6 RAMP HANDRAIL

SCALE: 1/2" = 1'-0"



100% SUBMISSION
18 FEB 2020

NO.	DATE	REVISION
2	03/18/20	ADDENDUM 2
1	02/18/20	BID DOCUMENTS

SCHOOL & LOCATION
ANNA B. PRATT ELEMENTARY SCHOOL

2200 N. 22ND ST., PHILADELPHIA, PA 19132
PROJECT TITLE

MAJOR RENOVATION, PHASE 1

DRAWING SCALE
ARCHITECTURAL ELEVATIONS

LOCATION NO.	FILE NO.
4390	N/A

DRAWN BY: MP CHECKED BY: KK
8-051(C) OF 2019/2020
8-052(C) OF 2019/2020
8-053(C) OF 2019/2020

DRAWING NO.
A201
SHEET 9 OF 40

SEAL:

CHARLES BEADUT, AIA RA011064X DATE

ENGINEER OF RECORD

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100% SUBMISSION
18 FEB 2020

NO.	DATE	REVISION
2	03/18/20	ADDENDUM 2
1	02/18/20	BID DOCUMENTS

SCHOOL & LOCATION
ANNA B. PRATT ELEMENTARY SCHOOL

2200 N. 22ND ST., PHILADELPHIA, PA 19132

PROJECT TITLE

MAJOR RENOVATION, PHASE 1

DRAWING SCALE
ARCHITECTURAL ENLARGED PLANS AND DETAILS

LOCATION NO.	FILE NO.
4390	N/A

DRAWN BY	CHECKED BY
MP	KK

DRAWING SCALE	As indicated
8-051(C) OF 2019/2020	
8-052(C) OF 2019/2020	
8-053(C) OF 2019/2020	

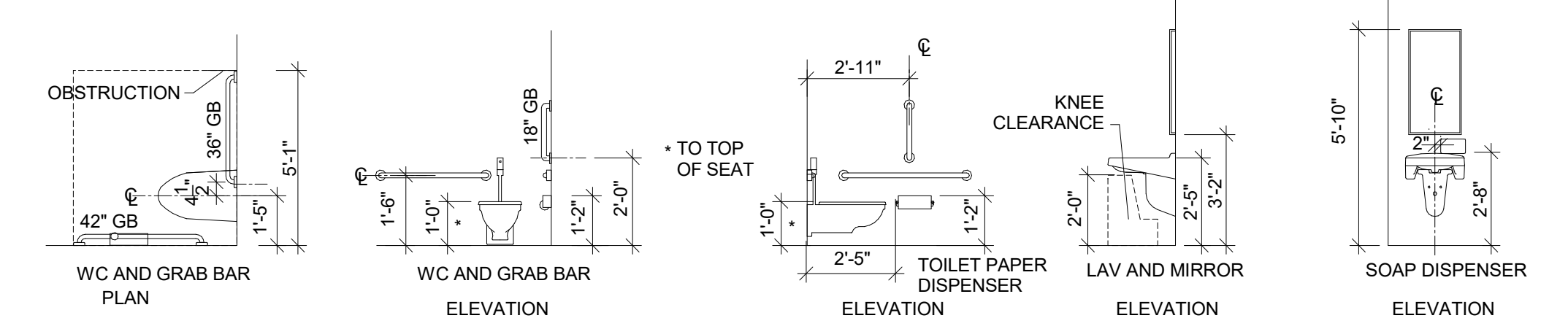
DRAWING NO.
A401
SHEET 10 OF 40

TOILET ACCESSORIES

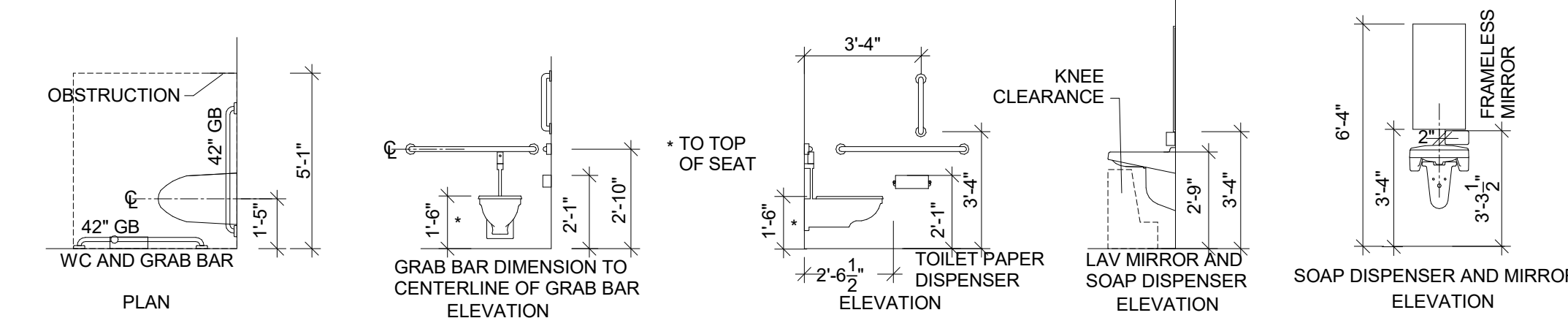
ACCESSORY	MANUFACTURER	DESCRIPTION
TOILET DISPENSER	RENOWN	JR. JUMBO BLACK TWIN TOILET DISPENSER PART NO. REN05150
PAPER TOWEL DISPENSER	RENOWN	8" BLACK MECHANICAL PAPER TOWEL DISPENSER PART NO. REN05173-WB. MOUNT AT 48" ABOVE FINISH FLOOR WHERE PAPER TOWEL IS DISPENSED
SOAP DISPENSER	RENOWN	TOUCH-FREE 1200ML BLACK FOAM HAND DISPENSER PART NO. REN02541
MIRROR	BRADLEY CORPORATION	FIX TILT MIRROR WITH WELDED CORNERS STANDARD MODEL 740-1830-4 (18" X 30") WITH HIGHLY POLISHED NO. 8 ARCHITECTURAL FINISH

NOTE:
1) CONFIRM WITH SCHOOL CUSTODIAL STAFF REGARDING COMPATIBILITY STOCKED BY SCHOOL BEFORE ORDERING.
2) CONTRACTOR TO CONFIRM PARTITION SIZES BEFORE DEMOLITION OF FIXTURES IN THE TOILETS

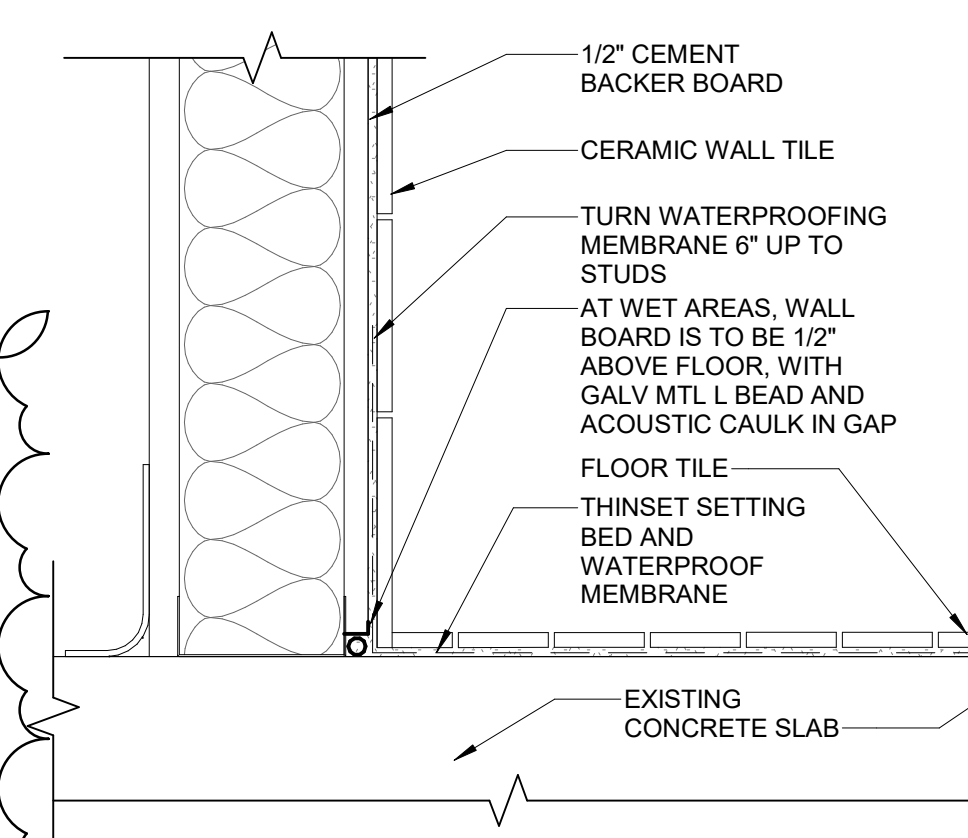
BATHROOM MOUNTING HEIGHTS



KINDERGARTEN BATHROOM

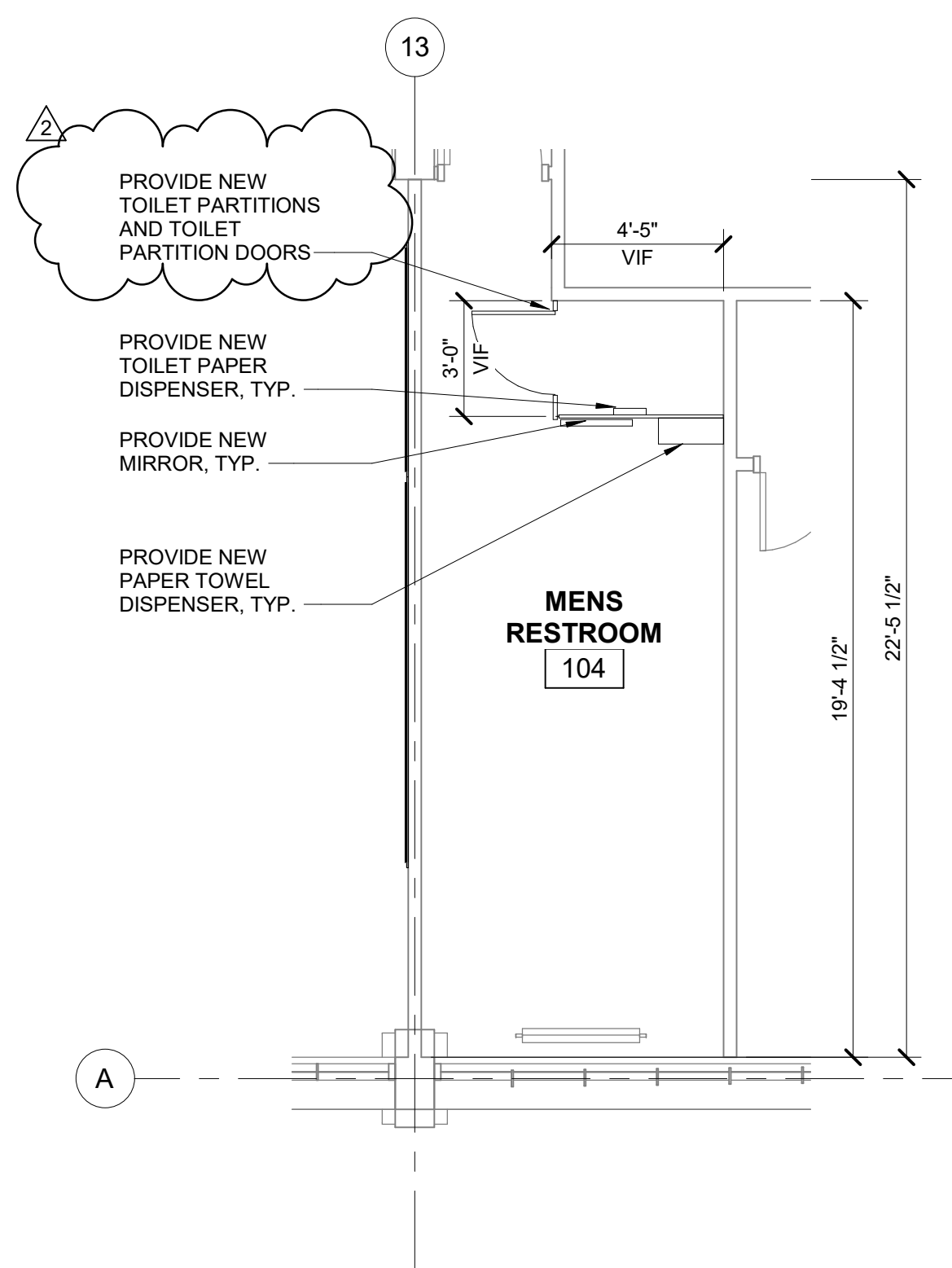


TYPICAL BATHROOM



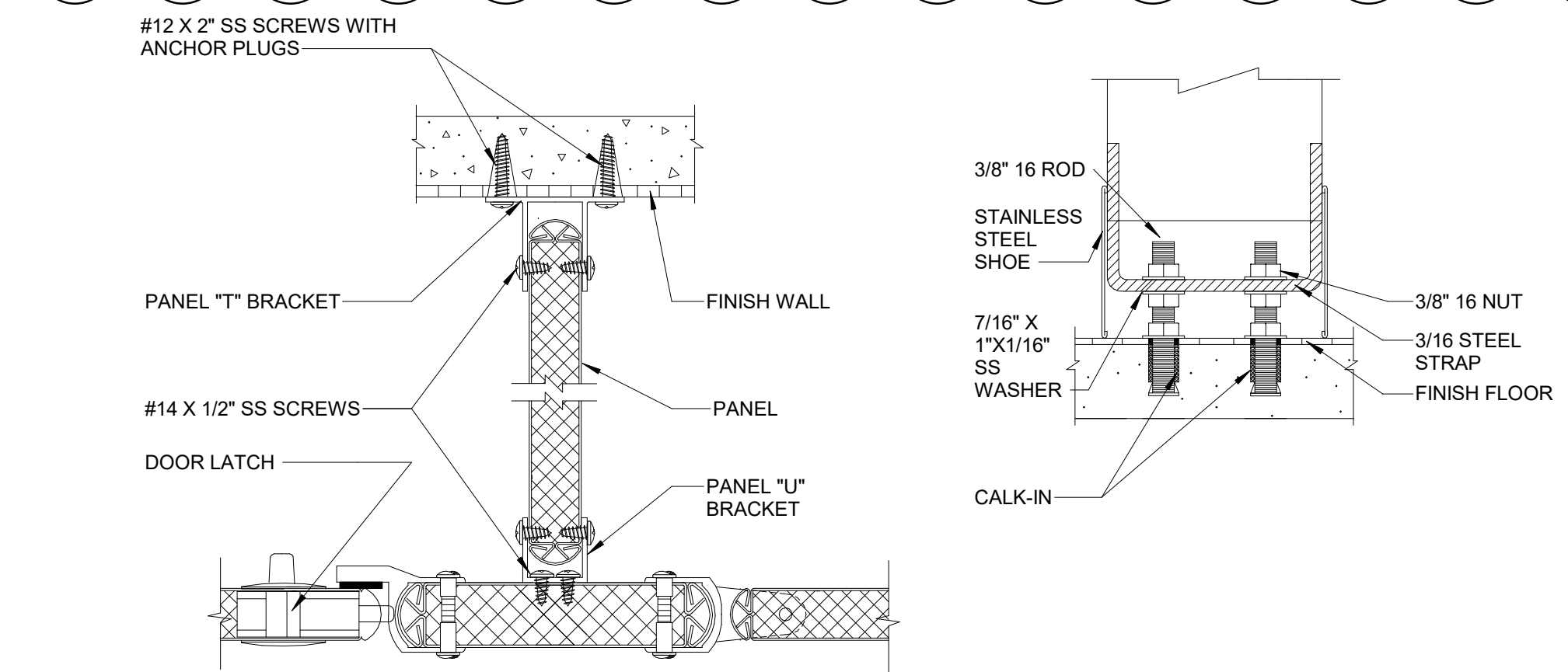
10 CERAMIC TILE DETAIL

SCALE: 3" = 1'-0"



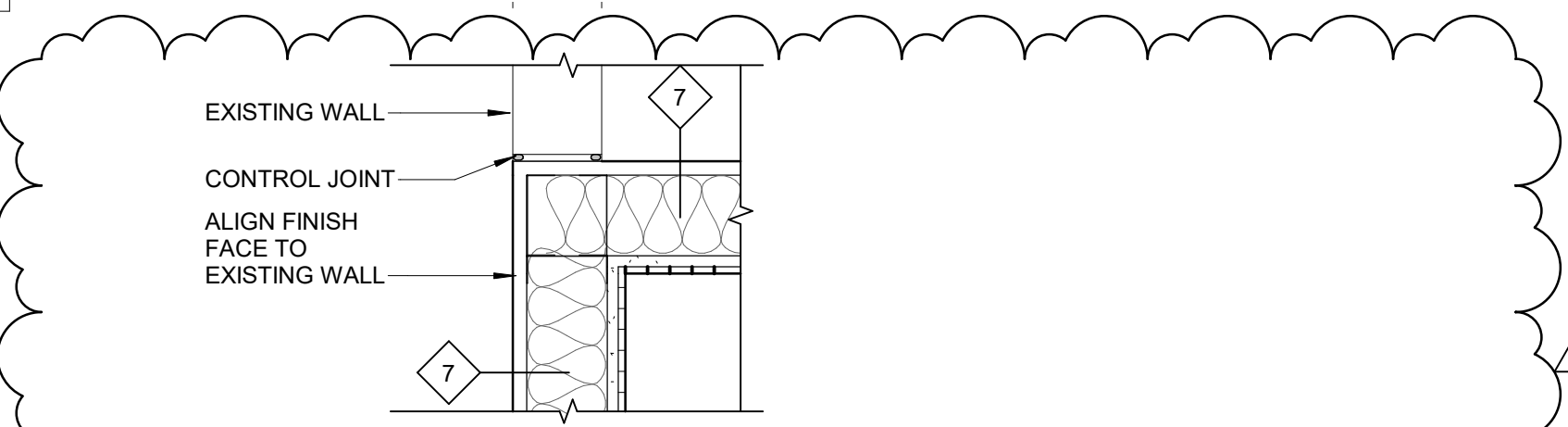
5 MENS RESTROOM 104 - ENLARGED PLAN

SCALE: 1/4" = 1'-0"



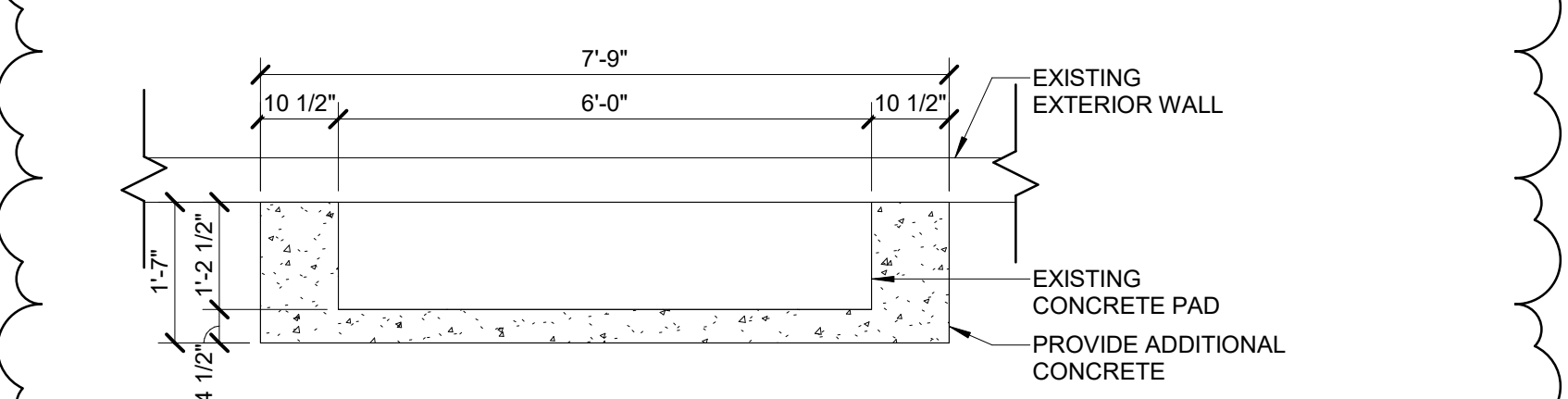
6 TOILET PARTITION WALL DETAIL

SCALE: 3" = 1'-0"



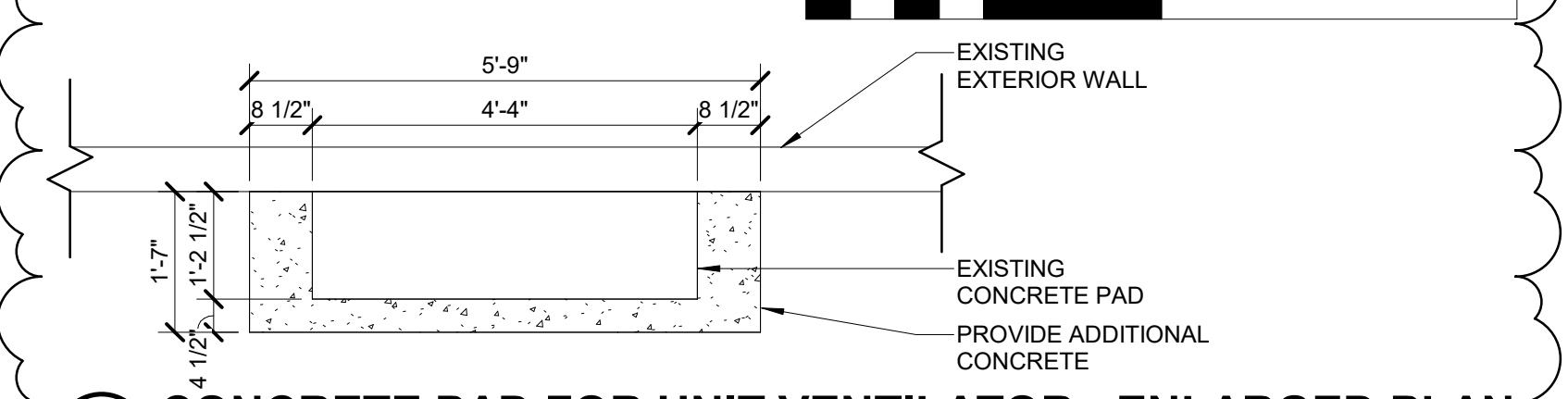
14 TOILET 110B-ENLARGED PLAN DETAIL

SCALE: 1 1/2" = 1'-0"



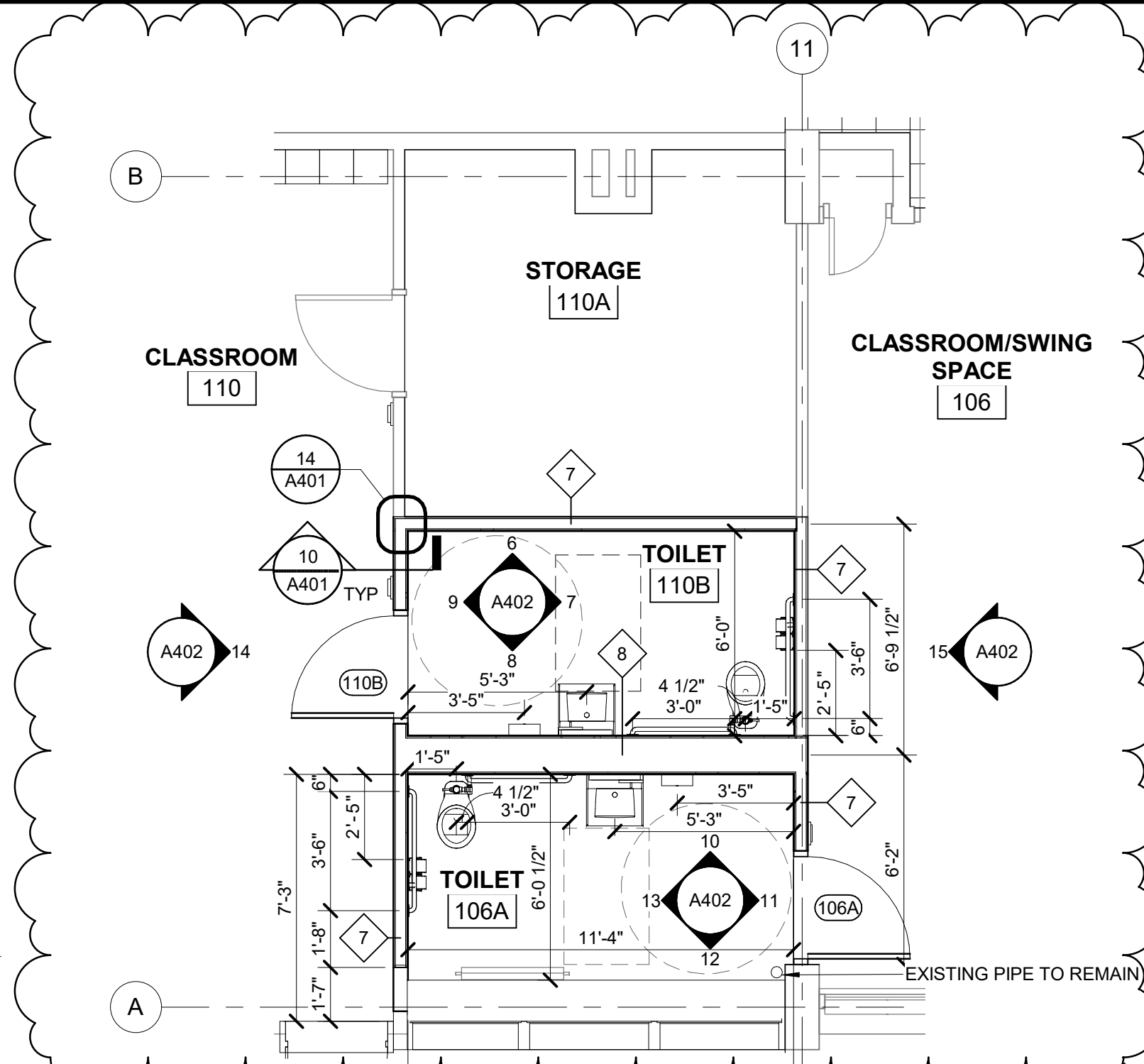
11 CONCRETE PAD FOR UNIT VENTILATOR - ENLARGED PLAN

SCALE: 1/2" = 1'-0"



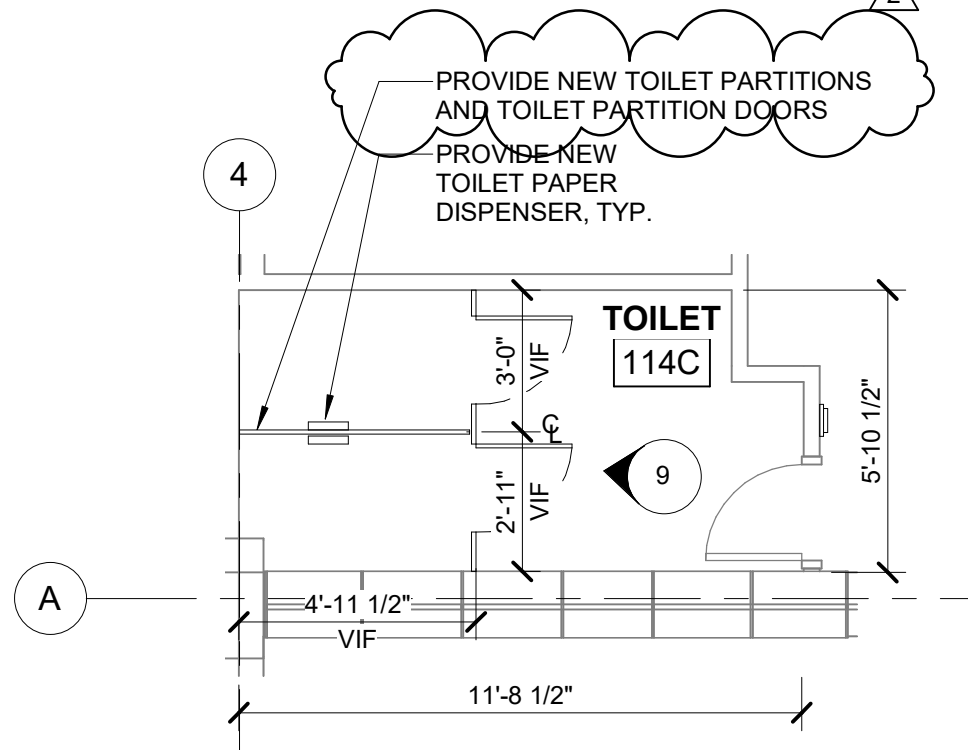
12 CONCRETE PAD FOR UNIT VENTILATOR - ENLARGED PLAN

SCALE: 1/2" = 1'-0"



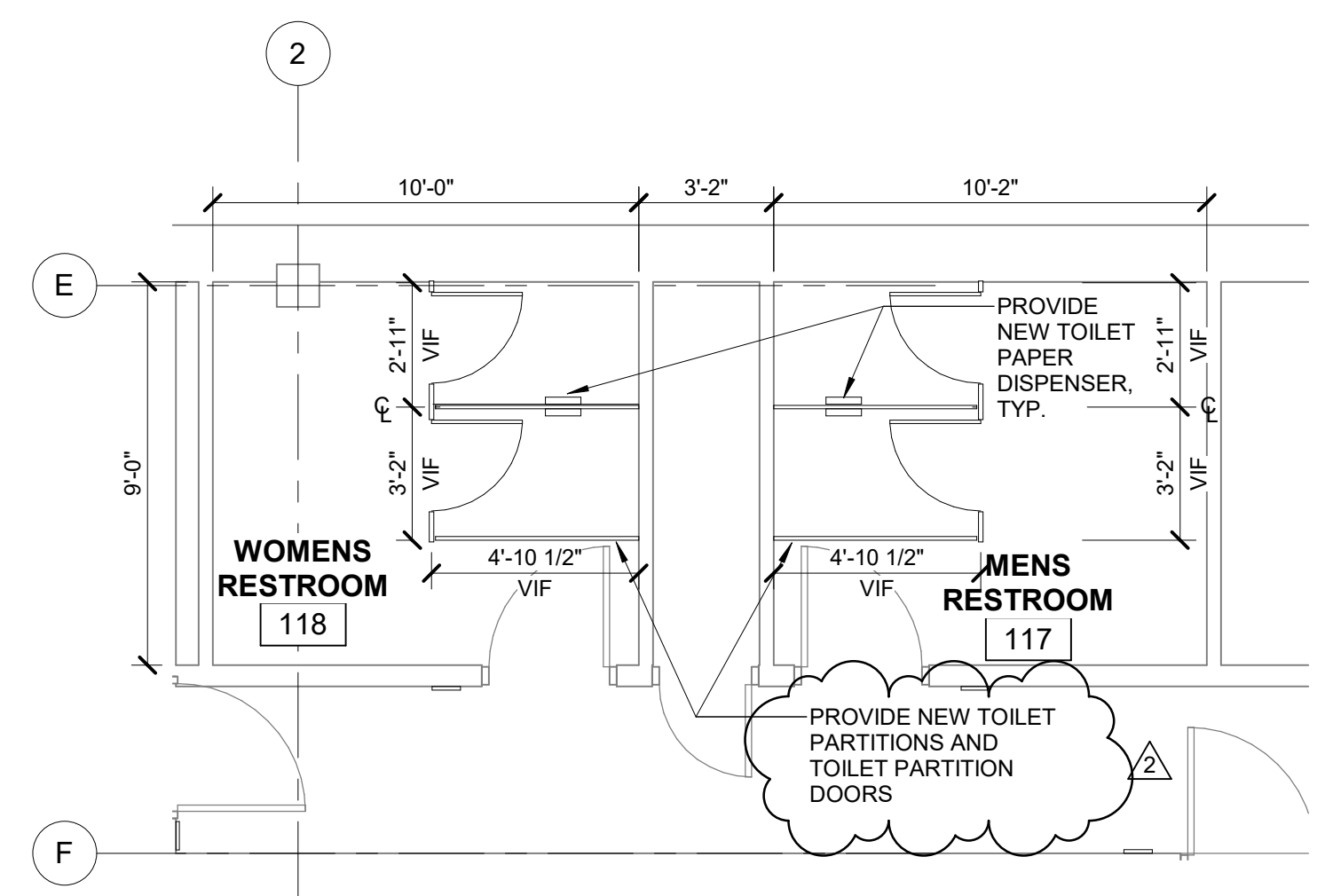
2 TOILET 106A AND 110B - ENLARGED PLAN

SCALE: 1/4" = 1'-0"



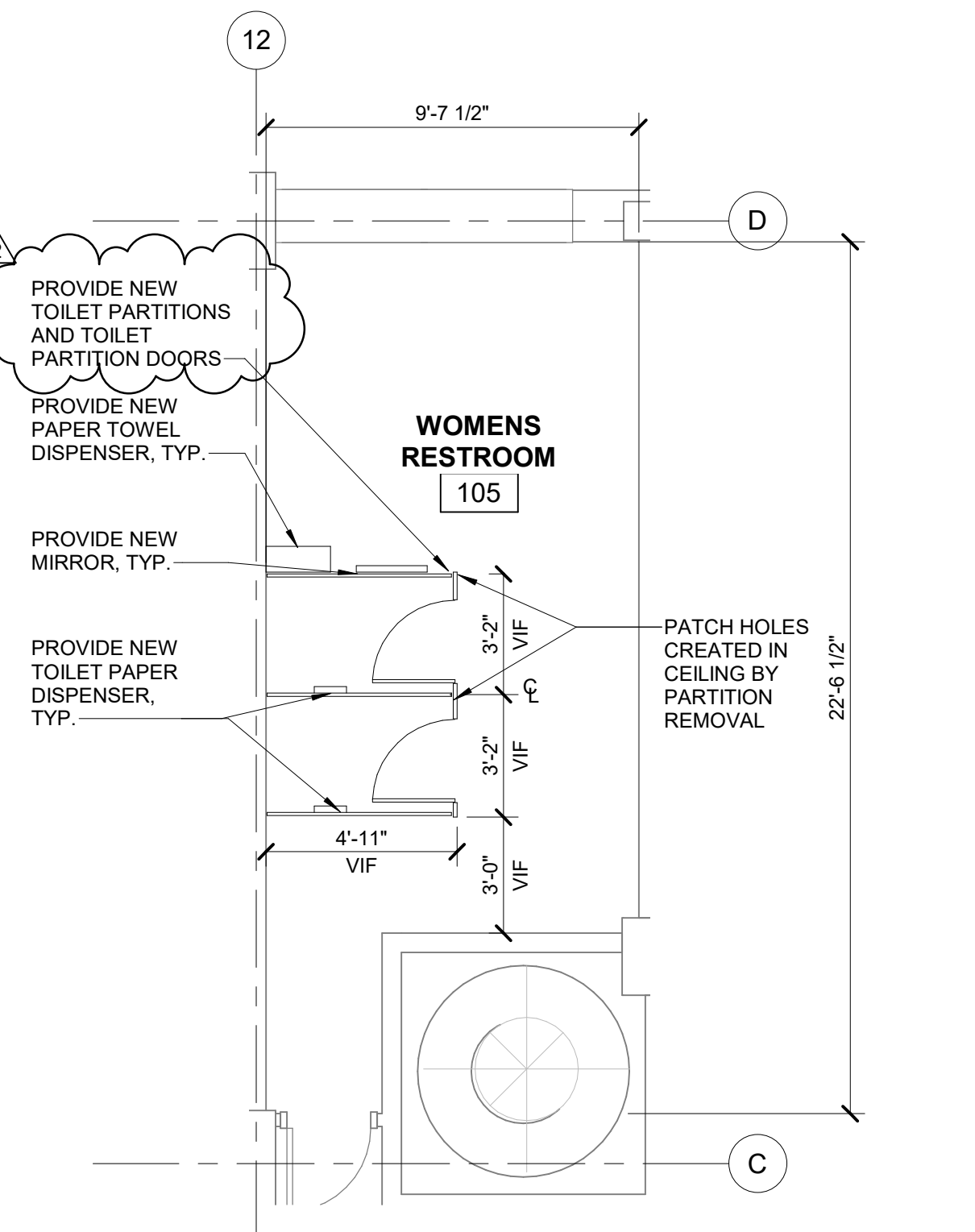
1 TOILET 114C - ENLARGED PLAN KINDERGARTEN

SCALE: 1/4" = 1'-0"



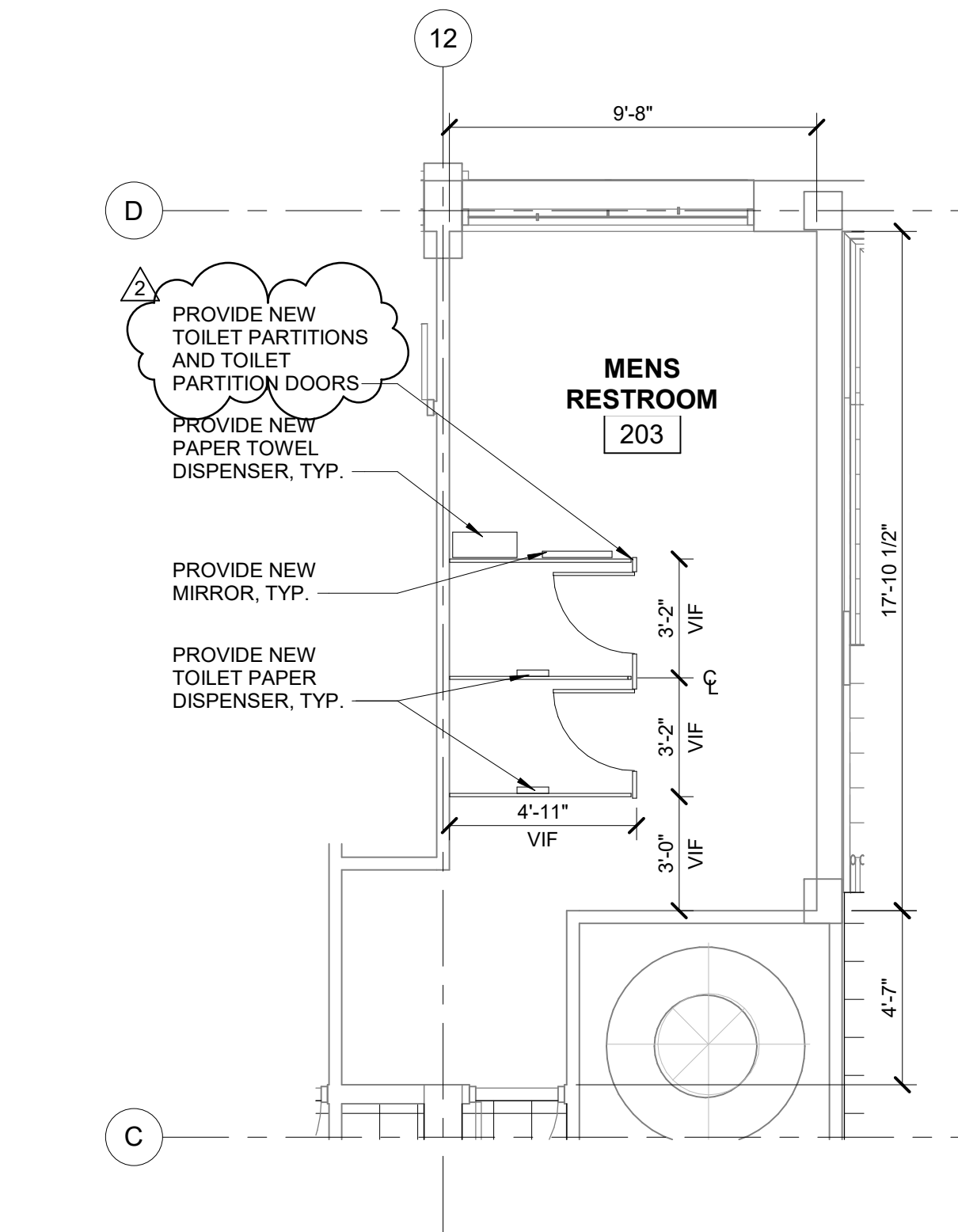
4 ENLARGED RESTROOMS RESTROOM 118 AND 117 ENLARGED PLAN

SCALE: 1/4" = 1'-0"



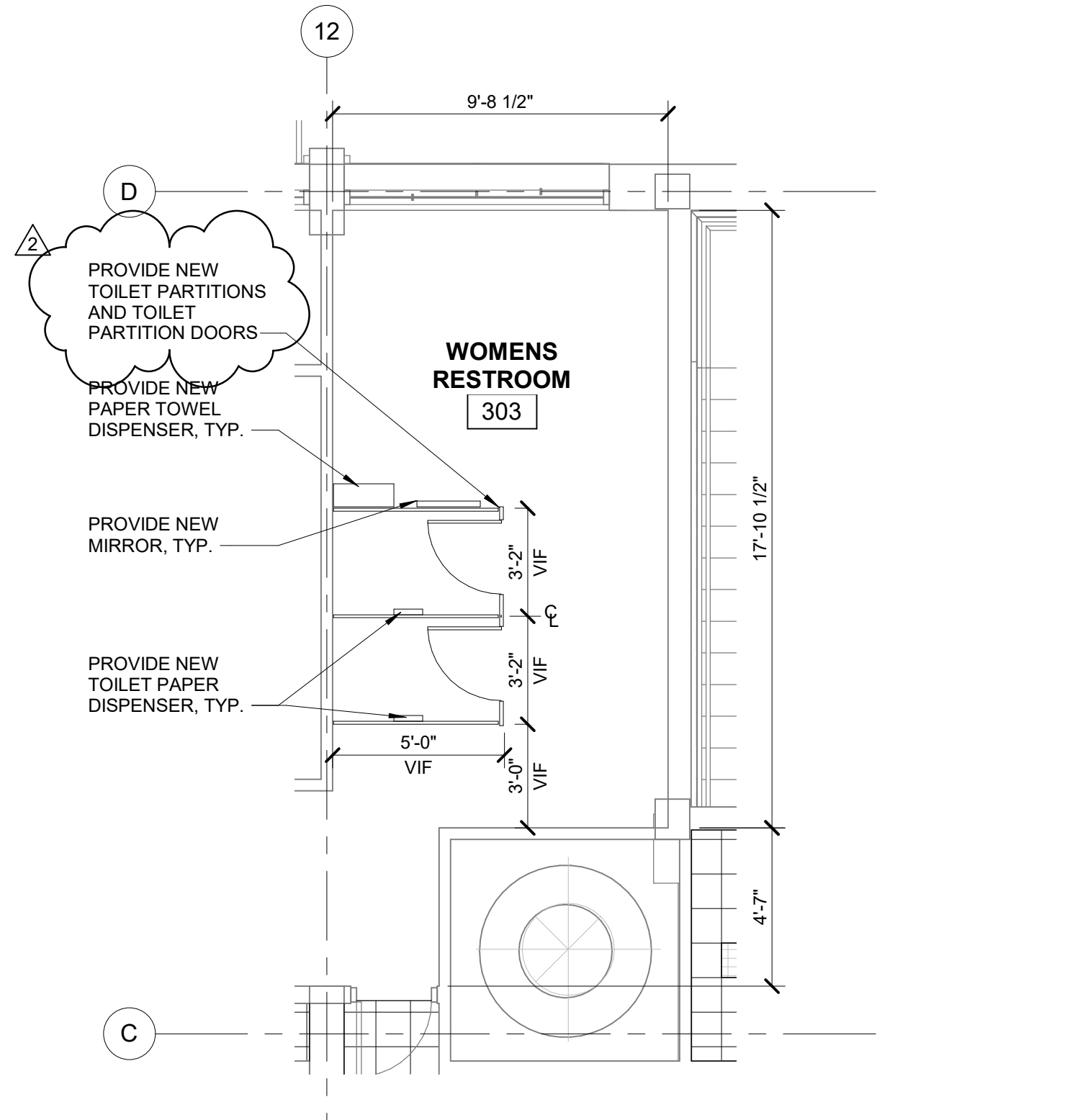
3 WOMEN'S RESTROOM 105 ENLARGED PLAN

SCALE: 1/4" = 1'-0"



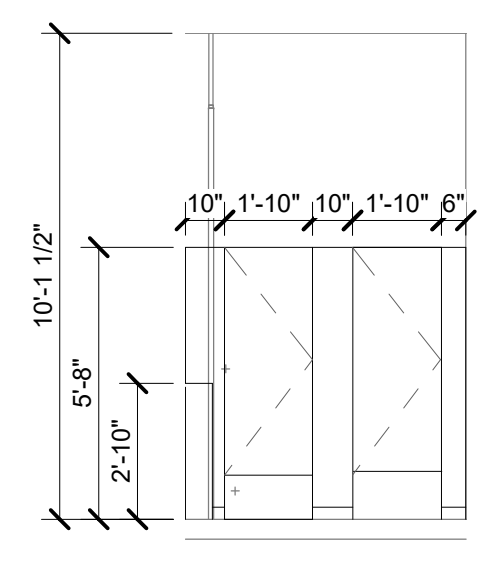
7 MENS RESTROOM 203 - ENLARGED PLAN

SCALE: 1/4" = 1'-0"



8 WOMENS RESTROOM 303 - ENLARGED PLANS

SCALE: 1/4" = 1'-0"



9 ELEVATION TOILET 114C

SCALE: 1/4" = 1'-0"

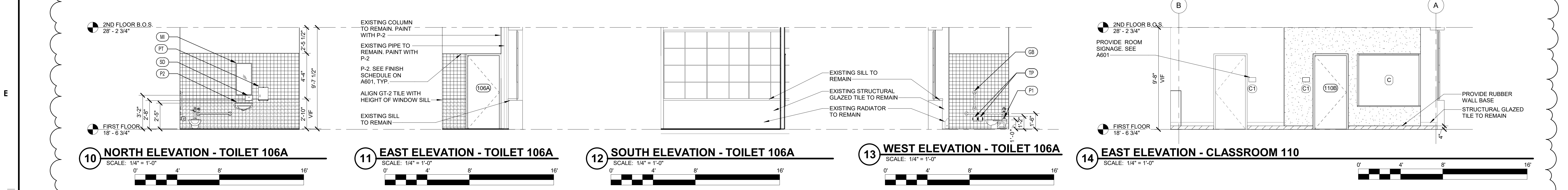
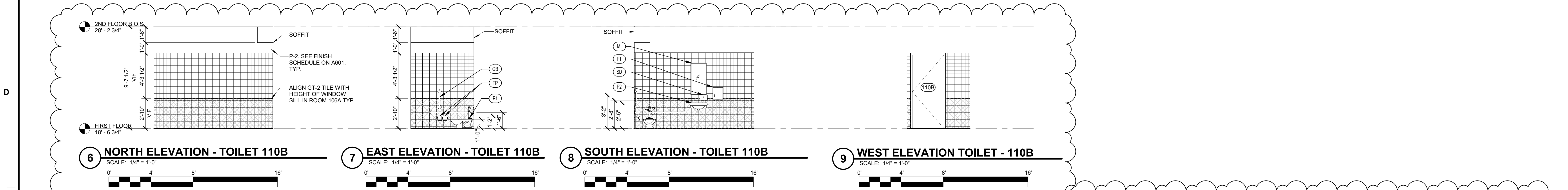
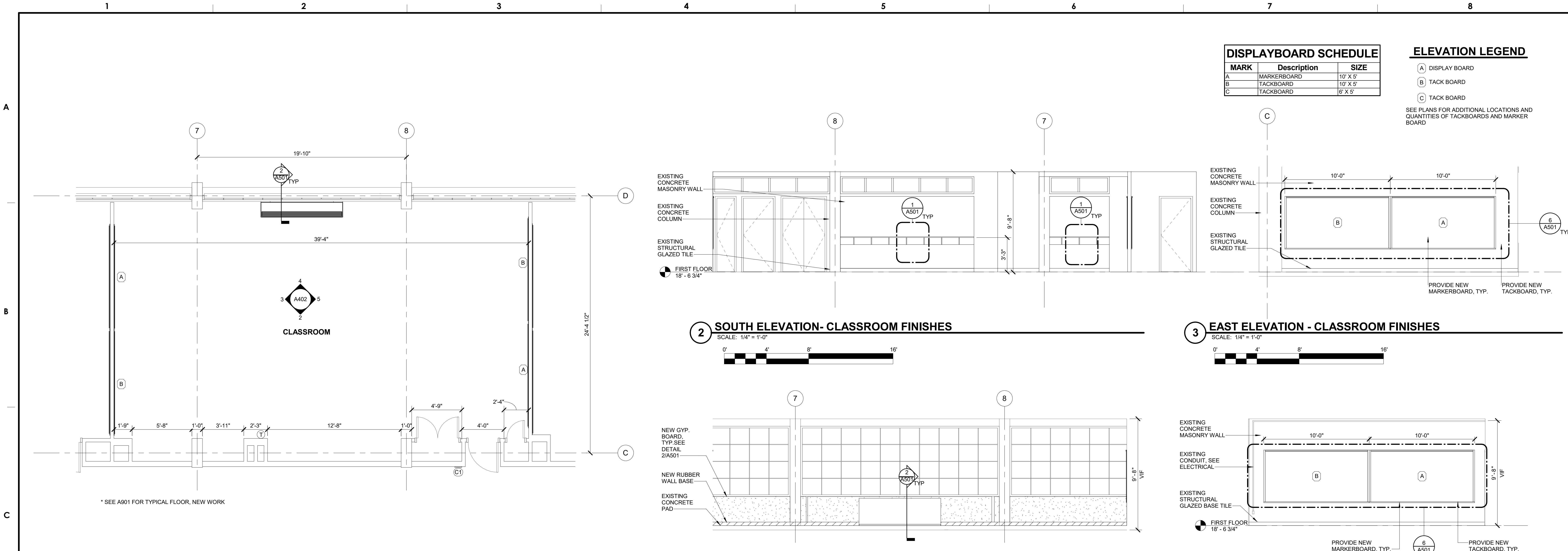
Vertical grid lines: 1, 2, 3, 4, 5, 6, 7, 8, A, B, C, D, E, F

Local File: B:\M\360\163684 - School District of Philadelphia (R2020)\63684_015_A_R20.rvt
3/18/2020 3:47:35 PM
Project Number: N/A
Central File: 0210

MARK	Description	SIZE
A	MARKERBOARD	10' X 5'
B	TACKBOARD	10' X 5'
C	TACKBOARD	6' X 5'

ELEVATION LEGEND

- (A) DISPLAY BOARD
 - (B) TACK BOARD
 - (C) TACK BOARD
- SEE PLANS FOR ADDITIONAL LOCATIONS AND QUANTITIES OF TACKBOARDS AND MARKER BOARD



TOILET ACCESSORIES

ACCESSORY	MANUFACTURER	DESCRIPTION
TOILET DISPENSER	RENOWN	JR JUMBO BLACK TWIN TOILET DISPENSER PART NO. REN05150
	ASI	MODEL NUMBER #820 SAV HALF (BATHROOM 106A AND 110B ONLY)
PAPER TOWEL DISPENSER	RENOWN	8" BLACK MECHANICAL PAPER TOWEL DISPENSER PART NO. REN05173-WB MOUNT AT 48" ABOVE FINISH FLOOR WHERE PAPER TOWEL IS DISPENSED
SOAP DISPENSER	RENOWN	TOUCH-FREE 1200ML BLACK FOAM HAND DISPENSER PART NO. REN02541
MIRROR	BRADLEY CORPORATION	FIX TILT MIRROR WITH WELDED CORNERS STANDARD MODEL 740-1830-4 (18" X 30") WITH HIGHLY POLISHED NO. 8 ARCHITECTURAL FINISH

FINISH LEGEND

GT-1	GT-2	GYPSUM BOARD	RUBBER WALL BASE
------	------	--------------	------------------

TOILET ACCESSORY SCHEDULE

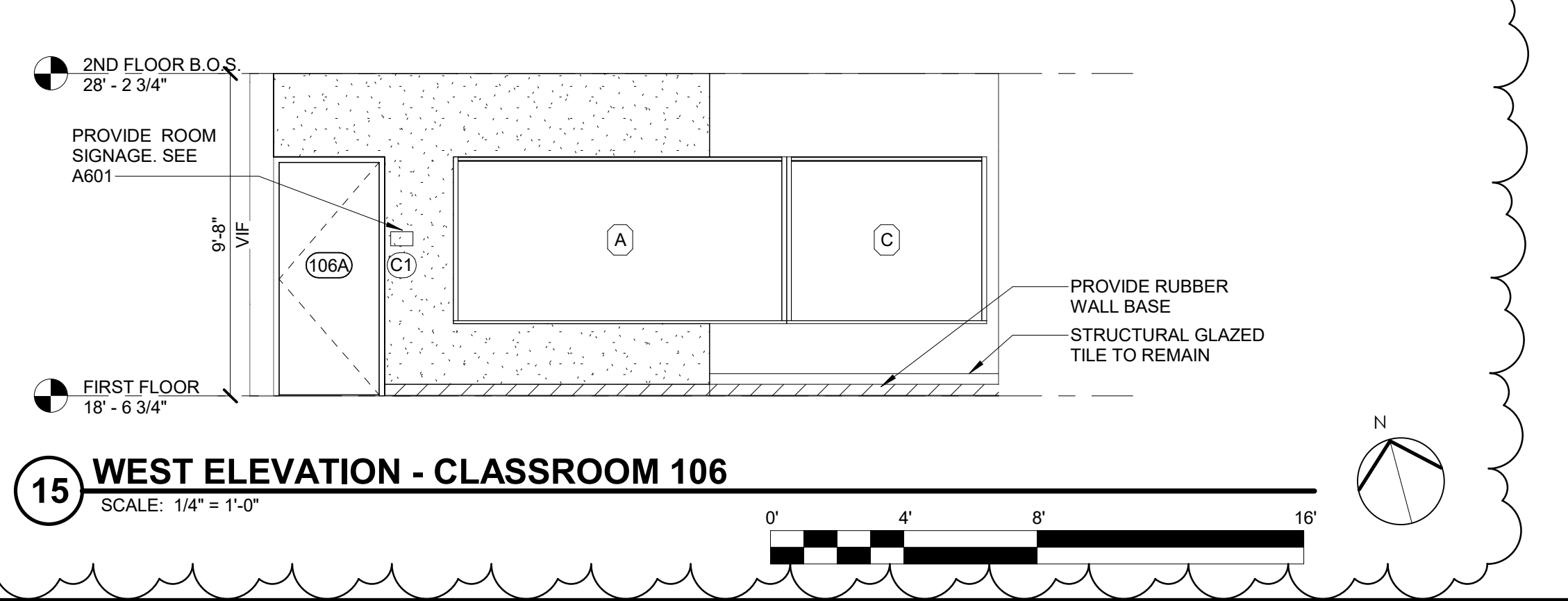
Mark	Description
GB	HC GRAB BARS
MI	MIRROR
PT	PAPER TOWEL DISPENSER
SD	LIQUID SOAP DISPENSER-SURFACE MOUNTED
TP	TOILET PAPER DISPENSER

PLUMBING FIXTURE SCHEDULE

Mark	Description
P1	TOILET
P2	BATHROOM SINK BARRIER FREE

NOTE: PROVIDE TILING FOR TOILET ACCESSORIES

NOTE:
1) CONFIRM WITH SCHOOL CUSTODIAL STAFF REGARDING COMPATIBILITY STOCKED BY SCHOOL BEFORE ORDERING
2) CONTRACTOR TO CONFIRM PARTITION SIZES BEFORE DEMOLITION OF FIXTURES IN THE TOILETS



100% SUBMISSION
18 FEB 2020

NO.	DATE	REVISION
2	03/18/20	ADDENDUM 2
1	02/18/20	BID DOCUMENTS

SCHOOL & LOCATION
ANNA B. PRATT ELEMNTARY SCHOOL

2200 N. 22ND ST., PHILADELPHIA, PA 19132

PROJECT TITLE
MAJOR RENOVATION, PHASE 1

DRAWING SCALE
ARCHITECTURAL INTERIOR ELEVATIONS

LOCATION NO.	FILE NO.
4390	N/A

DRAWN BY: MP
CHECKED BY: KK

8-051(C) OF 2019/2020
8-052(C) OF 2019/2020
8-053(C) OF 2019/2020

DRAWING NO.
A402
SHEET 11 OF 40

SEAL:

CHARLES BEADUT, AIA RA011064X DATE

ENGINEER OF RECORD

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ARCHITECT

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100% SUBMISSION 18 FEB 2020

2 03/18/20 ADDENDUM 2 1 02/18/20 BID DOCUMENTS NO DATE REVISION

SCHOOL & LOCATION

ANNA B. PRATT ELEMENTRY SCHOOL

2200 N. 22ND ST., PHILADELPHIA, PA 19132

PROJECT TITLE

MAJOR RENOVATION, PHASE 1

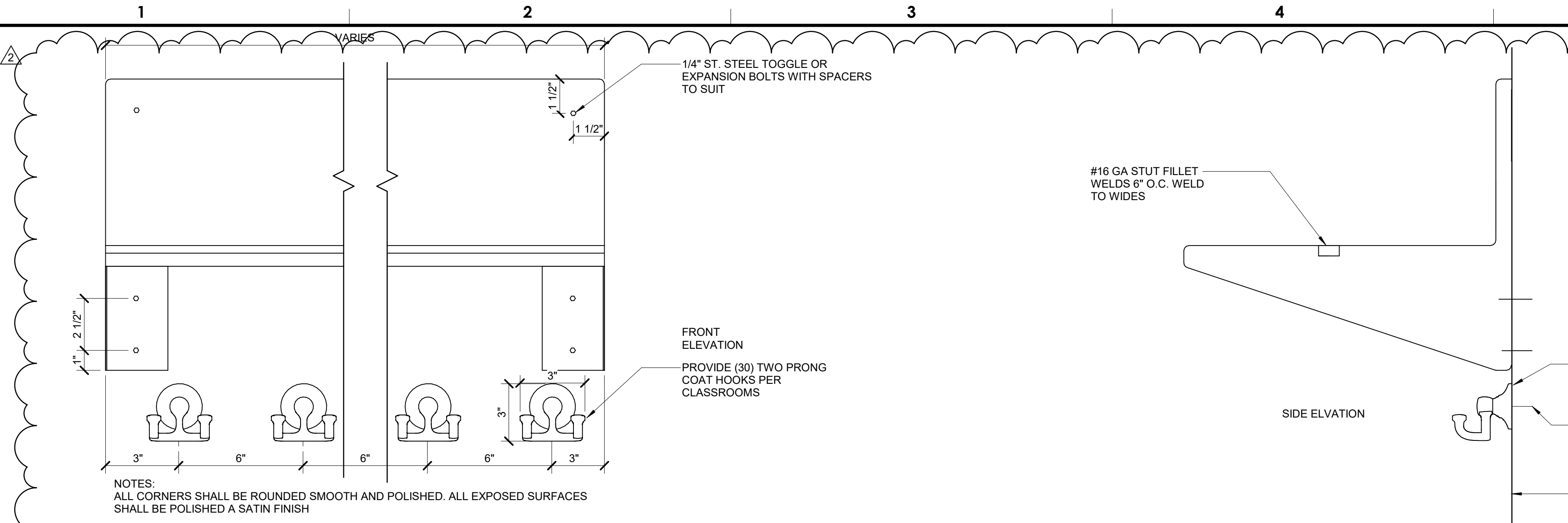
DRAWING SCALE

ARCHITECTURAL DETAILS

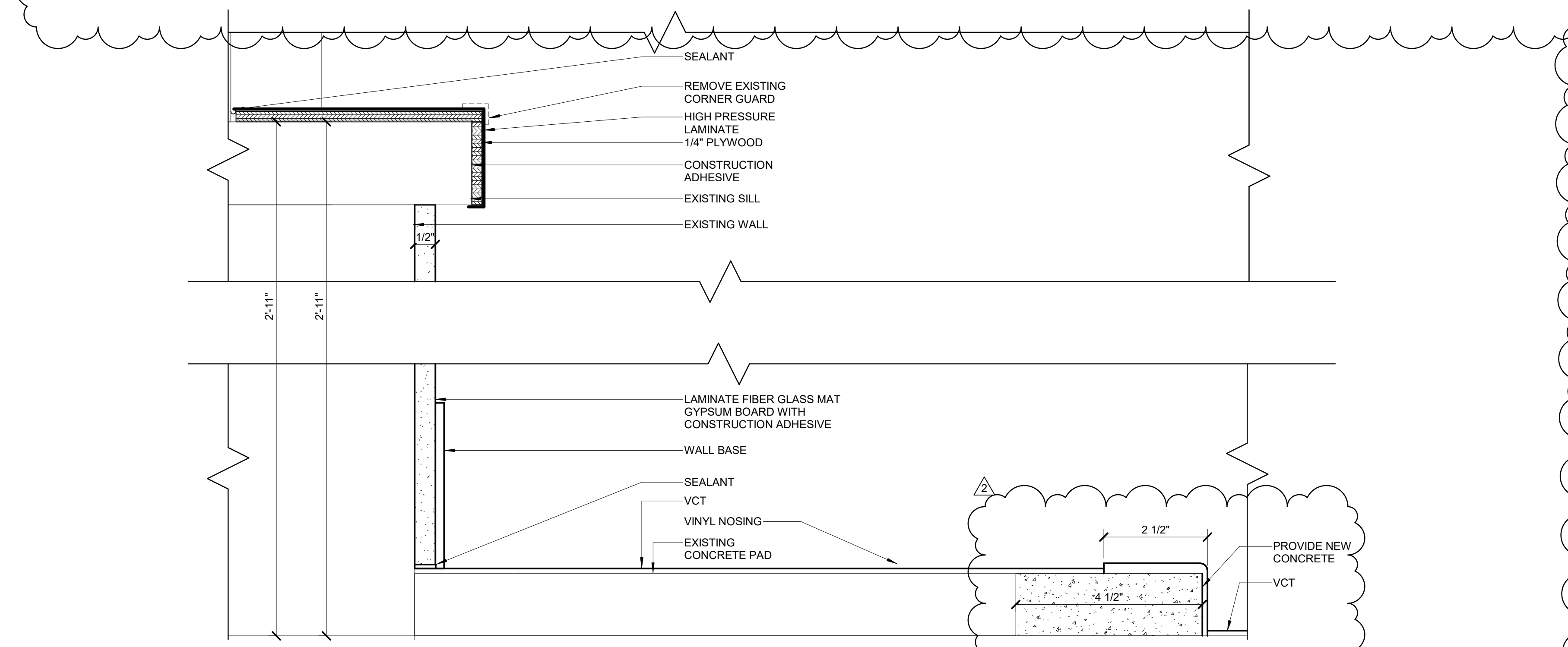
DRAWING SCALE As indicated LOCATION NO. 4390 FILE NO. N/A DRAWN BY MP CHECKED BY KK 8-051(C) OF 2019/2020 8-052(C) OF 2019/2020 8-053(C) OF 2019/2020

DRAWING NO.

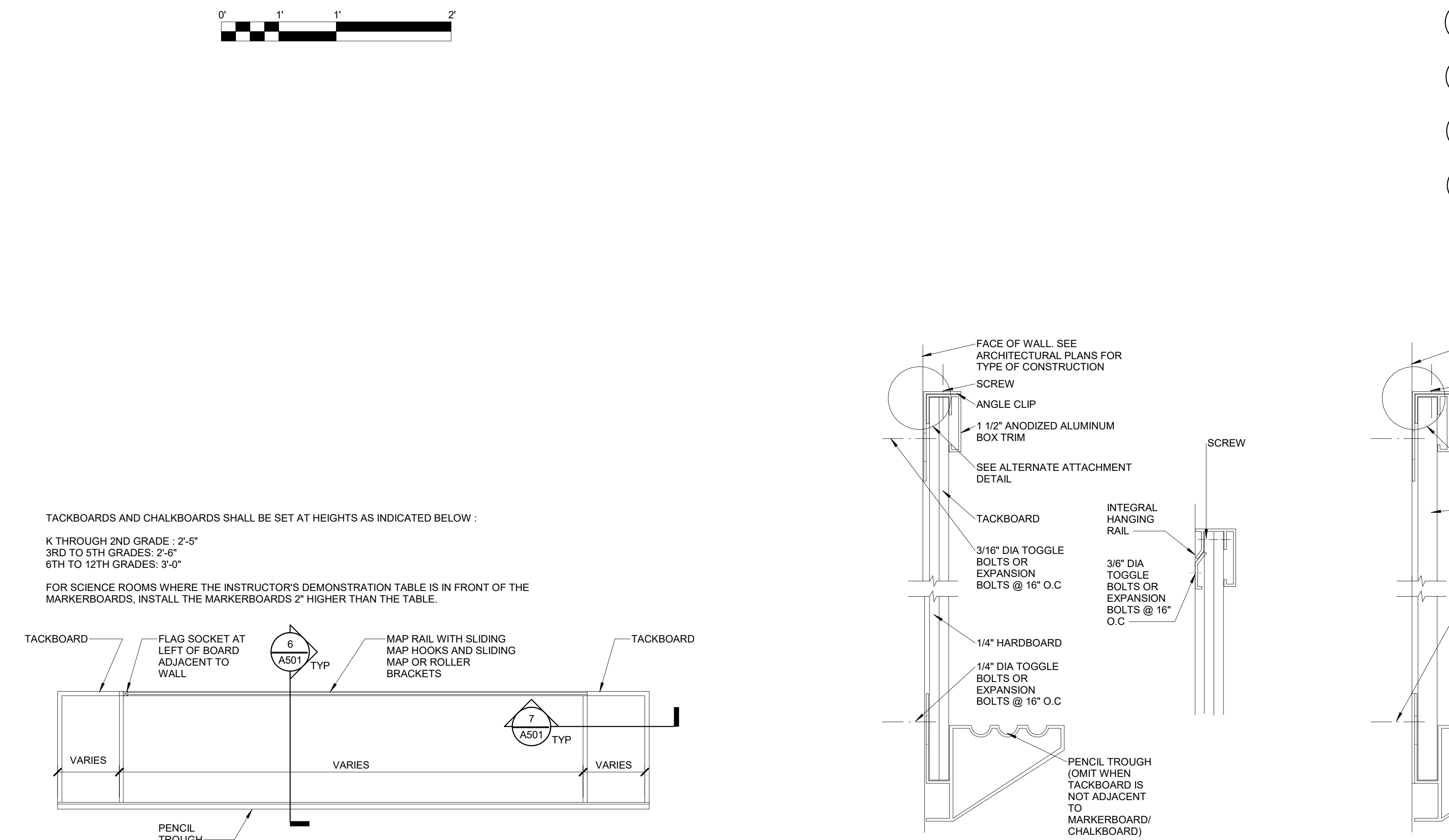
A501 SHEET 12 OF 40



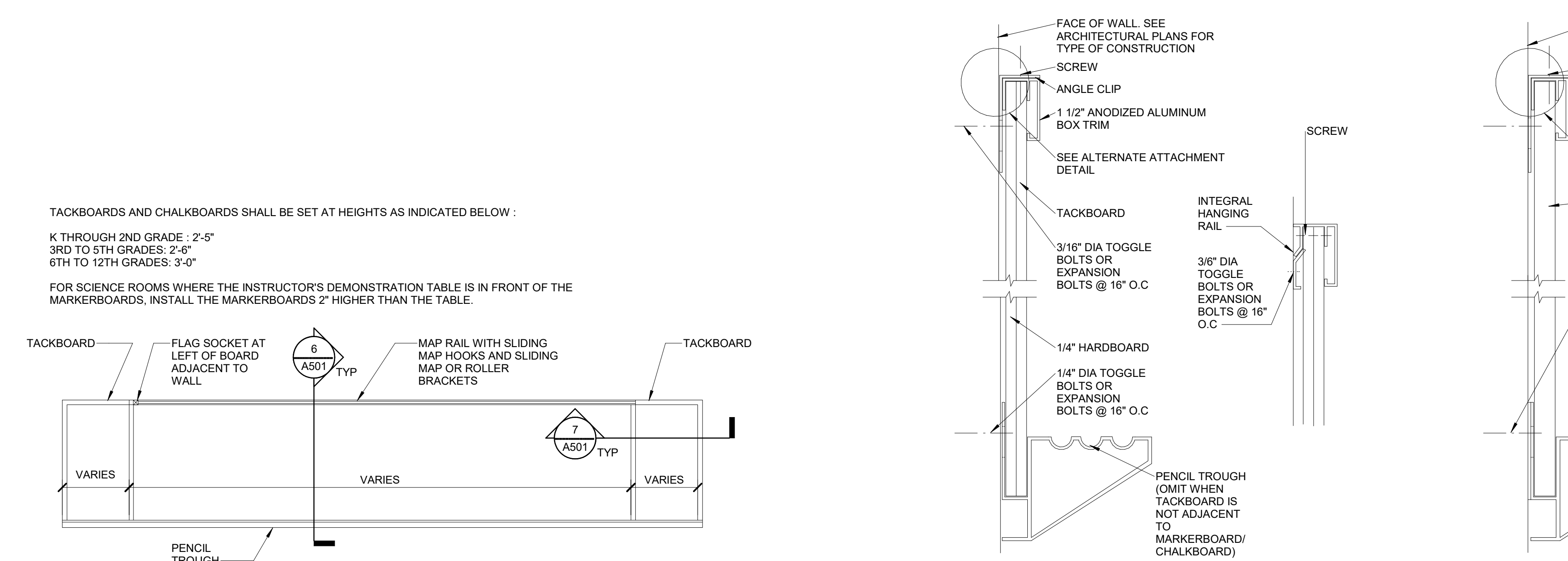
1 STAINLESS STEEL METAL SHELF SCALE: 3/8" = 1'-0"



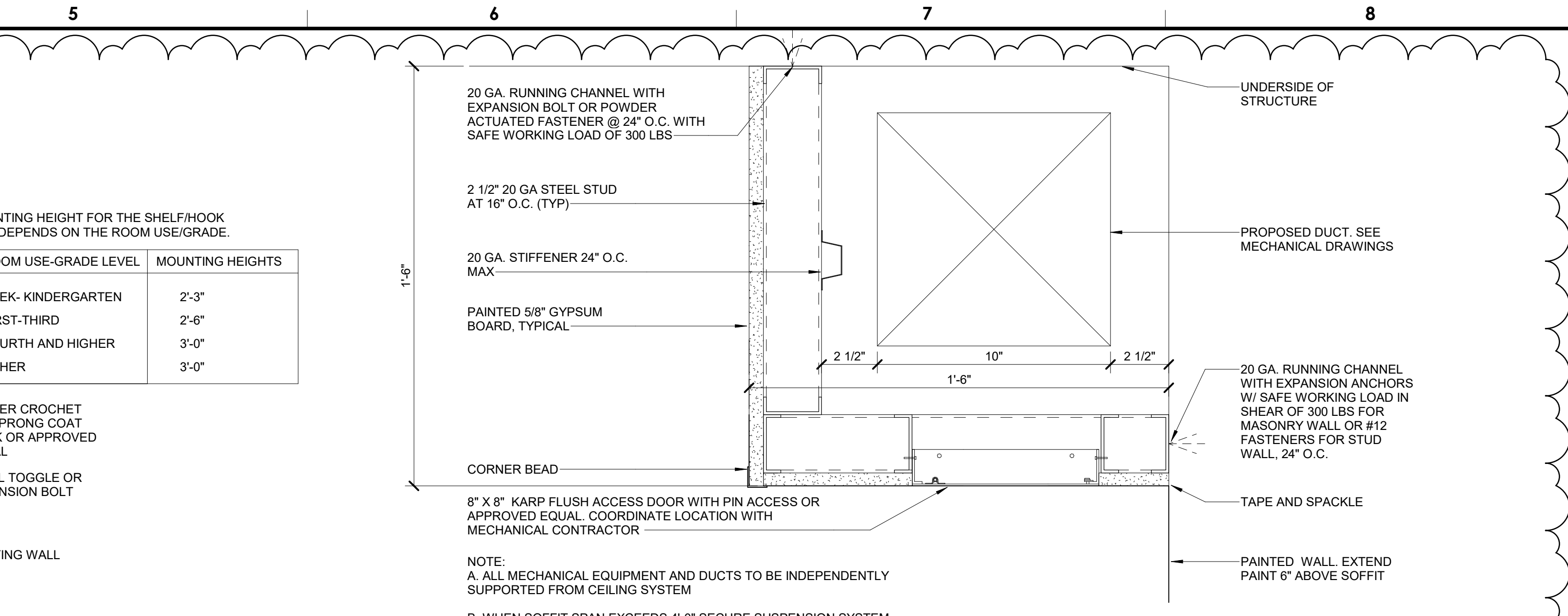
2 TYPICAL LAMINATE AND VCT AT EXISTING SILL, EXTERIOR WALL, AND CONCRETE CURB DETAIL SCALE: 6" = 1'-0"



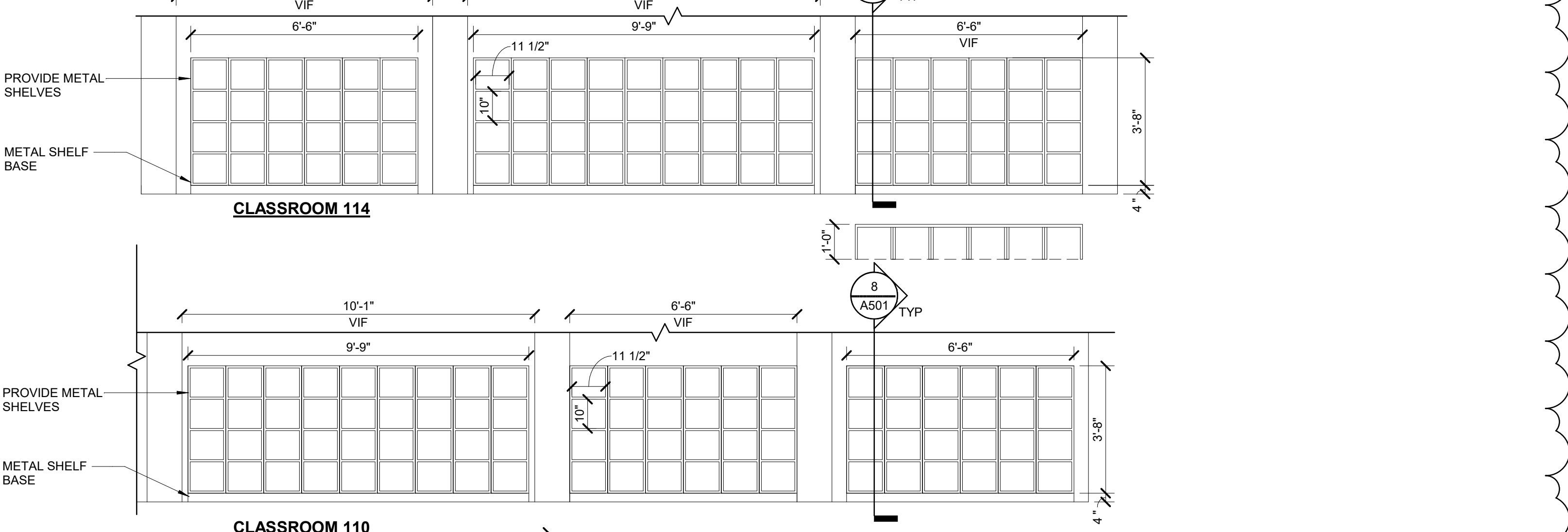
5 TACK BOARD AND MARKER BOARD ELEVATION SCALE: 3/8" = 1'-0"



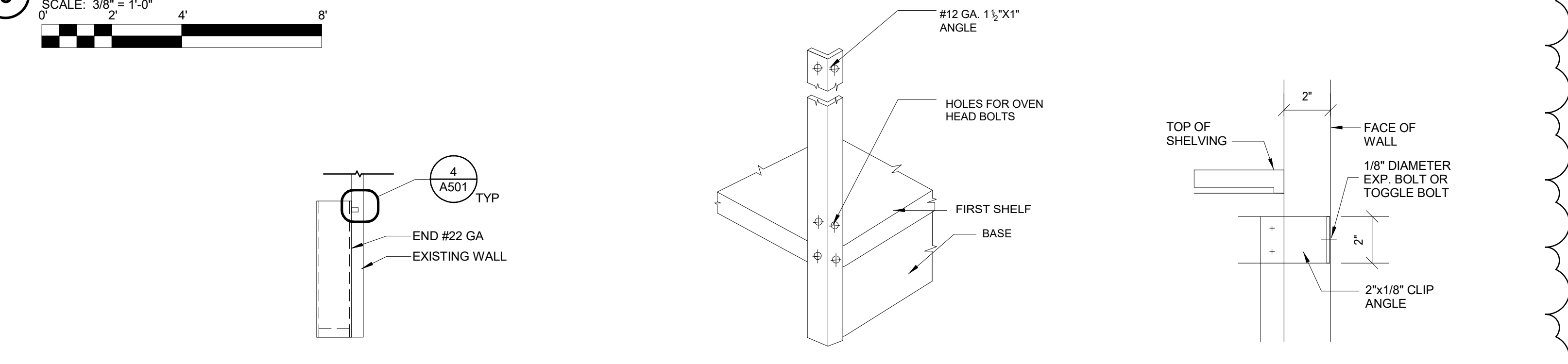
6 TACK BOARD AND MARKER BOARD SECTION SCALE: 6" = 1'-0"



10 CEILING SOFFIT SCALE: 3/8" = 1'-0"



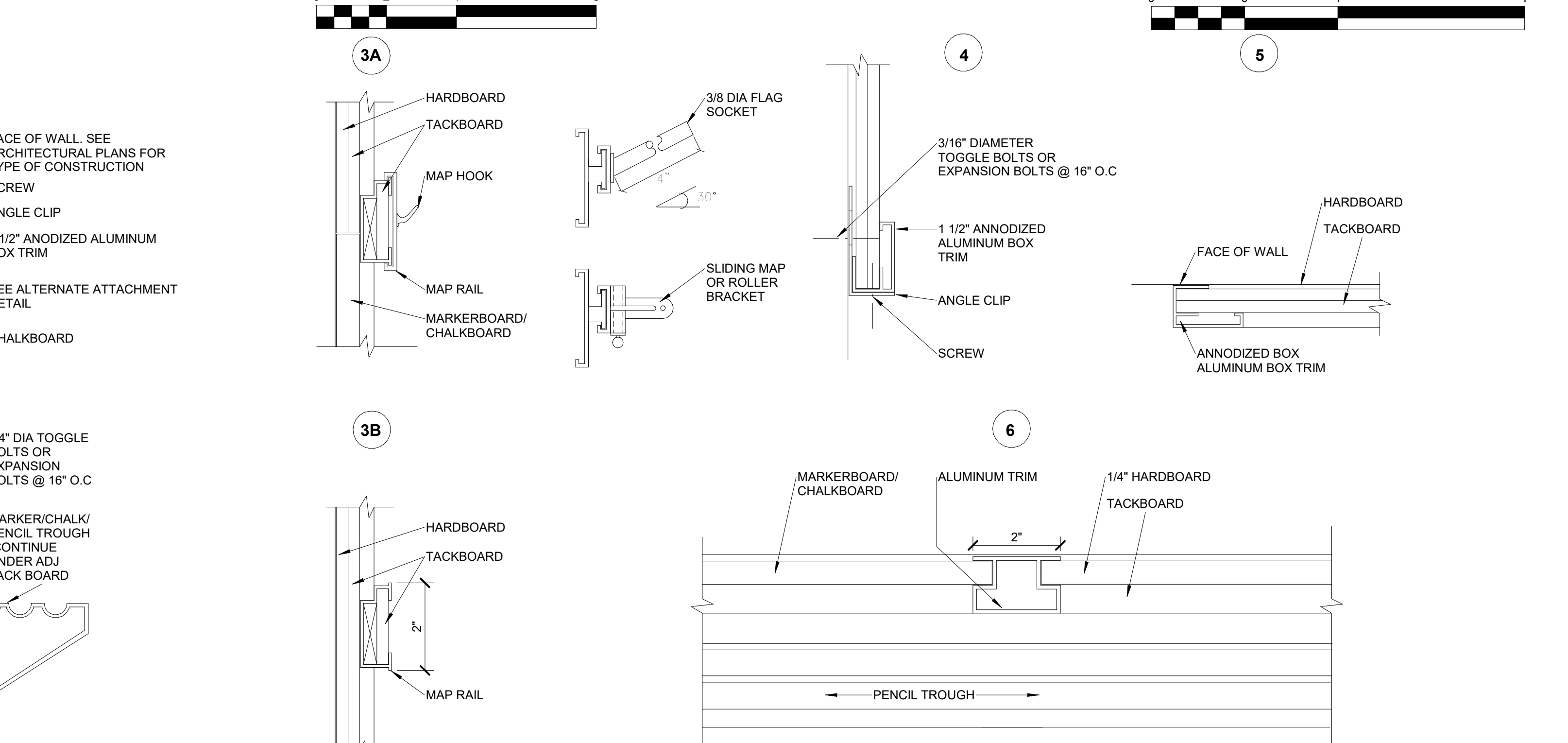
3 STORAGE CUBBY PLAN AND ELEVATION SCALE: 3/8" = 1'-0"



8 CUBBY SECTION SCALE: 3/8" = 1'-0"

9 CUBBY BASE DETAIL SCALE: N/A

4 CUBBY ANCHOR SCALE: 3/8" = 1'-0"



7 TACK BOARD AND MARKER BOARD DETAILS SCALE: 6" = 1'-0"

Local File: BIM 360/1033684 - School District of Philadelphia (2020)033684_015_A_R20.rvt Central File: 6210 Project Number: N/A 3/18/2020 3:47:36 PM

SEAL:

CHARLES BEADUT, AIA RA011066X DATE

ENGINEER OF RECORD
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CRAZYNA FUCHTA, P.E.

100% SUBMISSION
18 FEB 2020

2 03/18/20 ADDENDUM 2
1 02/18/20 BID DOCUMENTS
NO. DATE REVISION

SCHOOL & LOCATION

ANNA B. PRATT ELEMENTARY SCHOOL

2200 N. 22ND ST., PHILADELPHIA, PA 19132

PROJECT TITLE

MAJOR RENOVATION, PHASE 1

DRAWING SCALE

ARCHITECTURAL SCHEDULES AND DETAILS

DRAWING SCALE
As indicated

LOCATION NO. FILE NO.
4390 N/A

DRAWN BY CHECKED BY
MP KK

8-051(C) OF 2019/2020
8-052(C) OF 2019/2020
8-053(C) OF 2019/2020

DRAWING NO.

A601

SHEET 13 OF 40

Number	Name	Sign Type
B16	BOILER ROOM	C1
B17	FORMER ASH STORAGE	C1
B18	FORMER COAL STORAGE	C1
B19	CRAWL SPACE	C1
B01	RECREATION RM	C1
B01S	STORAGE	C1
B02	BOYS LOCKERROOM	C1
B03	GIRLS RESTROOM	C1
B04	BOYS RESTROOM	C1
B05	CAFETERIA	C1
B05S	STORAGE	C1
B07	KITCHEN	C1
B07A	REFRIG	C1
B08	STORAGE	C1
B09	JC	C1
B10	CUSTODIANS OFFICE	C1
B11	BUILDING ENGINEERS OFFICE	C1
B12	FAN ROOM	C1
B13	TRANSFORMER ROOM	C1
B14	ELEC DISTRIBUTION ROOM	C1
101	OFFICE	C1
101A	STORAGE	C1
101B	COUNSELOR'S OFFICE	C1
101C	PRINCIPAL'S OFFICE	C1
102	WAITING ROOM	C1
102A	DOCTOR	C1
102B	NURSE'S OFFICE	C1
102C	INFRMRY	C1
102D	EQUIP	C1
103	MENS RESTROOM	F1
104	WOMENS RESTROOM	F2
105	CLASSROOMSWING SPACE	C1
106A	TOILET	C1
106B	BOYS RESTROOM	F1
106C	GIRLS RESTROOM	F2
106D	CLASSROOM	C1
110	CLASSROOM	C1
110A	STORAGE	C1
110B	TOILET	C1
111	CLASSROOM	C1
112	CLASSROOM	C1
113	SPECIAL EDUCATION	C1
114	CLASSROOM	C1
114A	COAT ROOM	C1
114B	STORAGE	C1
114C	TOILET	C1
115	AUDITORIUM	C1
116	STAGE PLATFORM	C1
117	MENS RESTROOM	F1
118	WOMENS RESTROOM	F2
119	STORAGE	C1
A	STAIR	C1
B	STAIR	C1
C	STAIR	C1
D	STAIR	C1
201	CLASSROOMSWING SPACE	C1
202	LIBRARY	C1
202A	LIBRARY STORAGE	C1
203	MENS RESTROOM	F1
204	BOYS RESTROOM	F1
205	STORAGE	C1
206	CLOSET	C1
207	GIRLS RESTROOM	F2
208	CLASSROOM	C1
209	CLASSROOM	C1
210	TECHNOLOGY CLASSROOM	C1
211	CLASSROOM	C1
212	CLASSROOM	C1
213	CLASSROOM	C1
214	DATA ROOM	C1
A	STAIR	C1
B	STAIR	C1
301	MUSIC ROOM	C1
302	CLASSROOM	C1
303	WOMENS RESTROOM	F2
304	BOYS RESTROOM	F1
305	STORAGE	C1
306	CLOSET	C1
307	GIRLS RESTROOM	F2
308	CLASSROOM	C1
309	SPECIAL EDUCATION	C1
310	SPECIAL EDUCATION	C1
311	CLASSROOM	C1
312	CLASSROOM	C1
313	CLASSROOM	C1
314	CLASSROOM	C1
315	SMALL GROUP INSTRUCTION	C1

ROOM NO	ROOM NAME	AREA	FLOOR FINISH	CEILING FINISH	WALL FINISH
B16	BOILER ROOM	4,072 SF	-	P-1	P-1
B17	FORMER ASH STORAGE	478 SF	-	P-1	P-1
B18	FORMER COAL STORAGE	1,106 SF	-	P-1	P-1
B01	RECREATION RM	4,488 SF	VSAF	P-1	P-1
B05	CAFETERIA	4,348 SF	VCT-1, VCT-2, VCT-3, VCT-4	P-1	P-1
B06	TEACHERS LOUNGE	415 SF	VCT-1, VCT-2	P-1	P-1
100	CORRIDOR	3,167 SF	VCT-1, VCT-2	P-1	P-1
101	OFFICE	379 SF	VCT-1	P-1	P-1
101A	STORAGE	50 SF	VCT-1	P-1	P-1
101B	COUNSELOR'S OFFICE	185 SF	VCT-1	P-1	P-1
101C	PRINCIPAL'S OFFICE	191 SF	VCT-1	P-1	P-1
102	WAITING ROOM	180 SF	VCT-1	P-1	P-1
102A	DOCTOR	293 SF	VCT-1	P-1	P-1
102B	NURSE'S OFFICE	140 SF	VCT-1	P-1	P-1
102C	INFRMRY	177 SF	VCT-1	P-1	P-1
102D	EQUIP	933 SF	VCT-1, VCT-2	P-1	P-1
106A	TOILET	71 SF	CT-1	P-1	GT-1, GT-2, PT-2
106B	BOYS RESTROOM	128 SF	VCT-1, VCT-2	P-1	P-1
106C	GIRLS RESTROOM	128 SF	VCT-1, VCT-2	P-1	P-1
110A	STORAGE	119 SF	VCT-1, VCT-3	P-1	P-1
110B	TOILET	68 SF	CT-1	P-1	GT-1, GT-2, PT-2
111	CLASSROOM	430 SF	VCT-1, VCT-3	P-1	P-1
112	CLASSROOM	835 SF	VCT-1, VCT-2	P-1	P-1
113	SPECIAL EDUCATION	974 SF	VCT-1, VCT-2	P-1	P-1
114	CLASSROOM	940 SF	VCT-1, VCT-2	P-1	P-1
114A	COAT ROOM	99 SF	VCT-1, VCT-2	P-1	P-1
114B	STORAGE	55 SF	VCT-1, VCT-2	P-1	P-1
115	AUDITORIUM	3,548 SF	VCT-1, VCT-2	P-1	P-1
116	STAGE PLATFORM	1,039 SF	VCT-1, VCT-2	P-1	P-1
200	STORAGE	268 SF	VCT-1, VCT-3	P-1	P-1
200	CORRIDOR	1,844 SF	VCT-1, VCT-3	P-1	P-1
201	CLASSROOMSWING SPACE	933 SF	VCT-1, VCT-3	P-1	P-1
202	LIBRARY	1,514 SF	VCT-1, VCT-3	P-1	P-1
202A	LIBRARY STORAGE	331 SF	VCT-1, VCT-3	P-1	P-1
203	STORAGE	137 SF	VCT-1, VCT-3	P-1	P-1
208	CLASSROOM	930 SF	VCT-1, VCT-3	P-1	P-1
209	CLASSROOM	922 SF	VCT-1, VCT-3	P-1	P-1
210	TECHNOLOGY CLASSROOM	930 SF	VCT-1, VCT-3	P-1	P-1
211	CLASSROOM	924 SF	VCT-1, VCT-3	P-1	P-1
212	CLASSROOM	930 SF	VCT-1, VCT-3	P-1	P-1
213	CLASSROOM	972 SF	VCT-1, VCT-3	P-1	P-1
214	DATA ROOM	399 SF	VCT-1, VCT-3	P-1	P-1
300	STORAGE	288 SF	VCT-1, VCT-4	P-1	P-1
300	CORRIDOR	1,837 SF	VCT-1, VCT-4	P-1	P-1
301	MUSIC ROOM	933 SF	VCT-1, VCT-4	P-1	P-1
302	CLASSROOM	923 SF	VCT-1, VCT-4	P-1	P-1
305	STORAGE	137 SF	VCT-1, VCT-4	P-1	P-1
308	CLASSROOM	927 SF	VCT-1, VCT-4	P-1	P-1
309	SPECIAL EDUCATION	922 SF	VCT-1, VCT-4	P-1	P-1
310	SPECIAL EDUCATION	926 SF	VCT-1, VCT-4	P-1	P-1
311	CLASSROOM	924 SF	VCT-1, VCT-4	P-1	P-1
312	CLASSROOM	926 SF	VCT-1, VCT-4	P-1	P-1
313	CLASSROOM	972 SF	VCT-1, VCT-4	P-1	P-1
314	CLASSROOM	928 SF	VCT-1, VCT-4	P-1	P-1
315	SMALL GROUP INSTRUCTION	399 SF	VCT-1, VCT-4	P-1	P-1

FINISHES AND NOTES

P-1 SEMI-GLOSS PAINT TO MATCH EXISTING

P-2 SEMI-GLOSS PAINT TO MATCH EXISTING STRUCTURAL GLAZED TILE

VCT-1 ARMSTRONG BLUE CLOUDS OR APPROVED EQUAL

VCT-2 ARMSTRONG CARIBBEAN DREAM OR APPROVED EQUAL

VCT-3 ARMSTRONG BUBBLE GUM OR APPROVED EQUAL

VCT-4 ARMSTRONG SCREAMING PUMPKIN OR APPROVED EQUAL

VSAF VINYL SILENT ATHLETIC FLOORING

GT-1 DAL TILE 4" X 4" ARCTIC WHITE OR APPROVED EQUAL

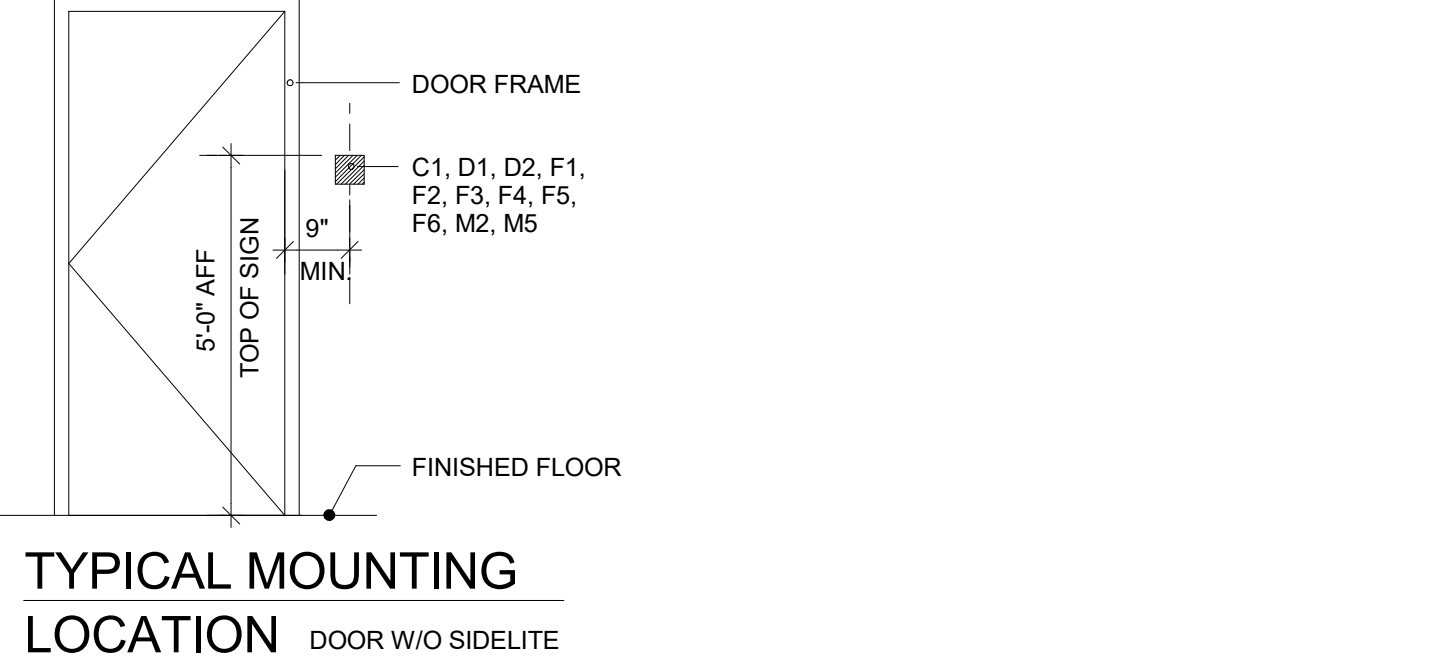
GT-2 DAL TILE 4" X 4" SEABREEZE OR APPROVED EQUAL

CT-1 CERAMIC TILE

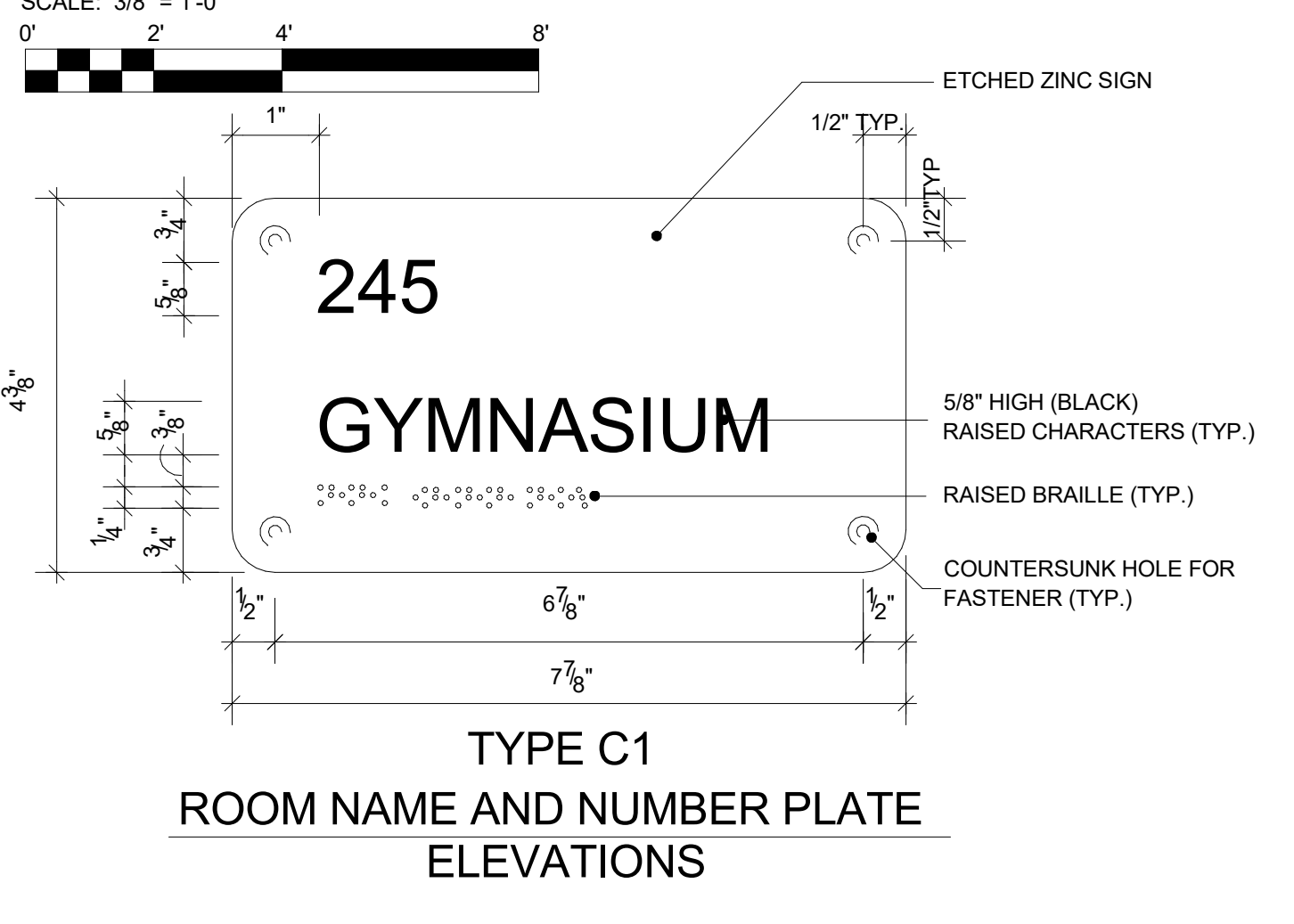
SEE A901, A902, A903, A904, AND NEW WORK PLANS FOR ADDITIONAL FINISH SCOPE AND INFORMATION.

SEE KEY NOTE A3 ON A101 FOR RECREATION ROOM PAINTING SCOPE.

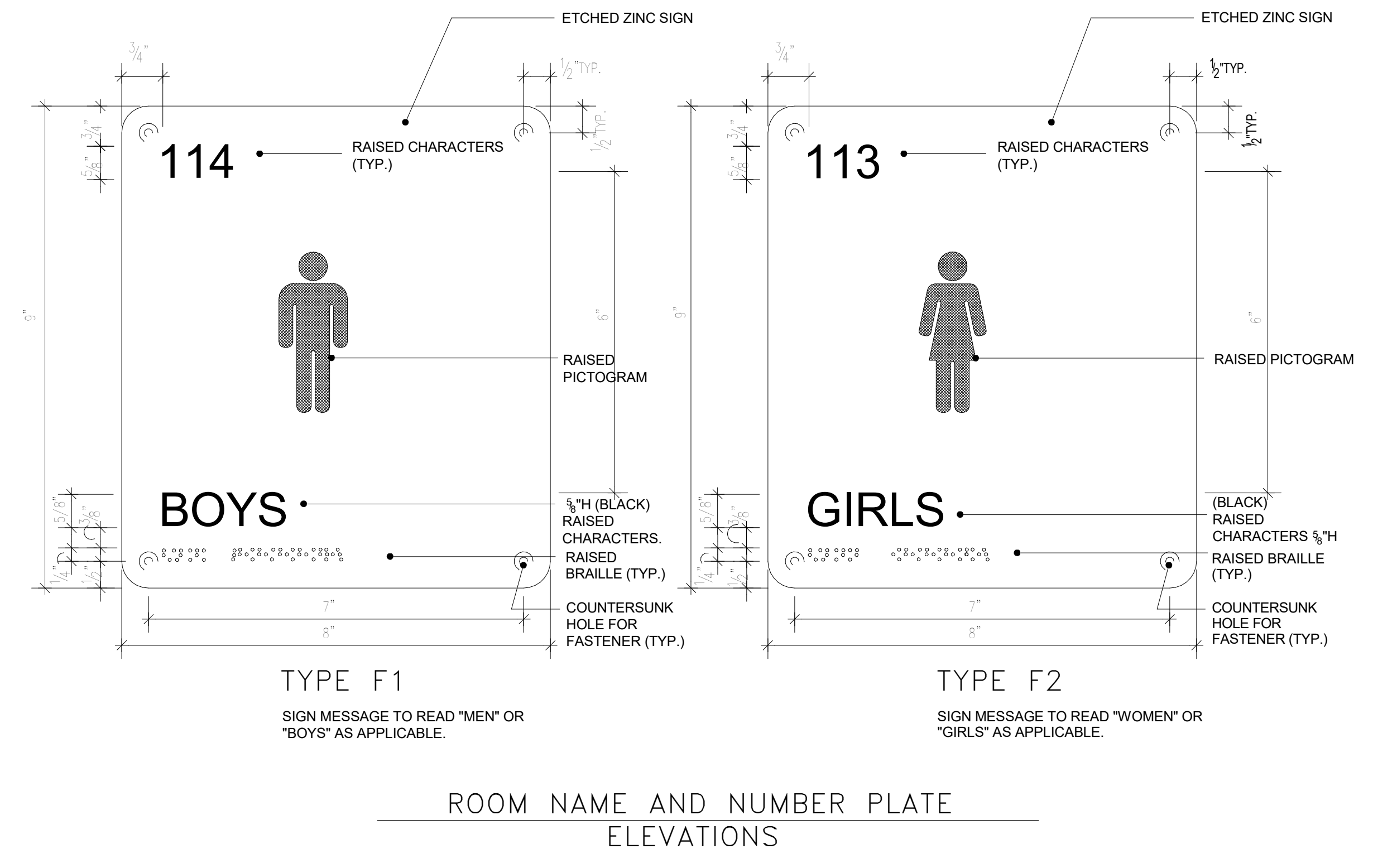
CONTRACTOR TO VERIFY DIMENSIONS AND AREAS OF FINISHES IN FIELD.



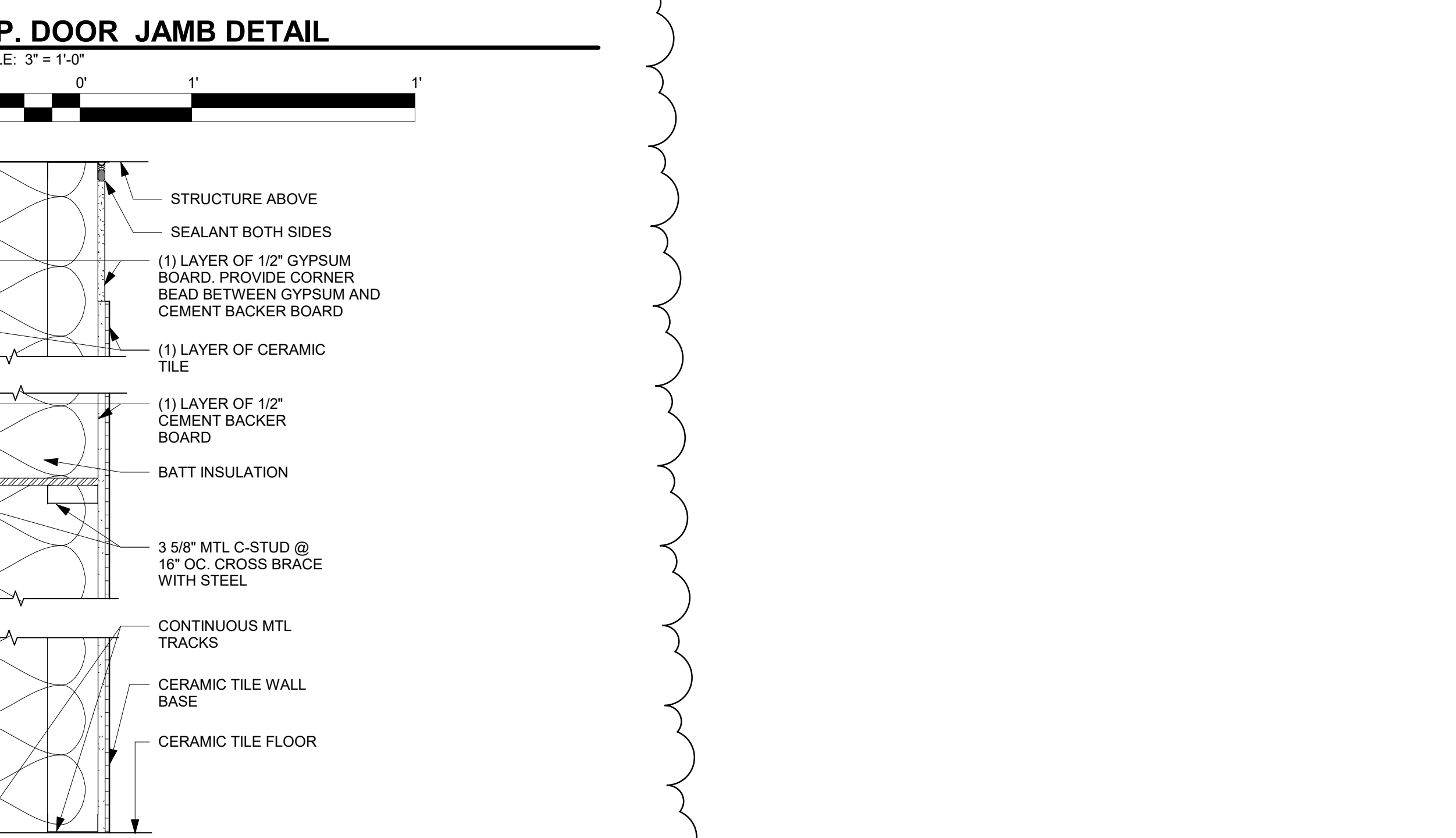
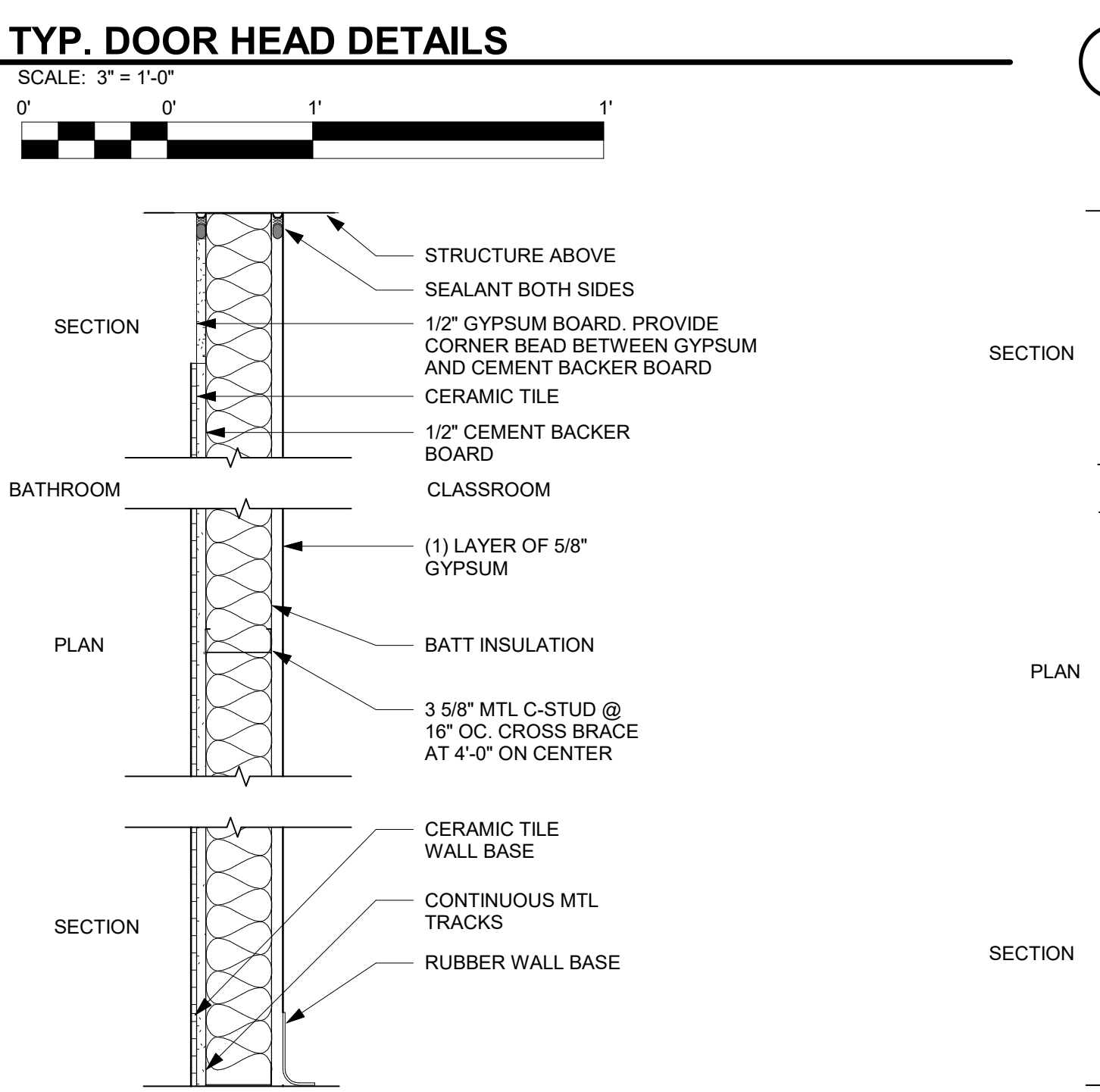
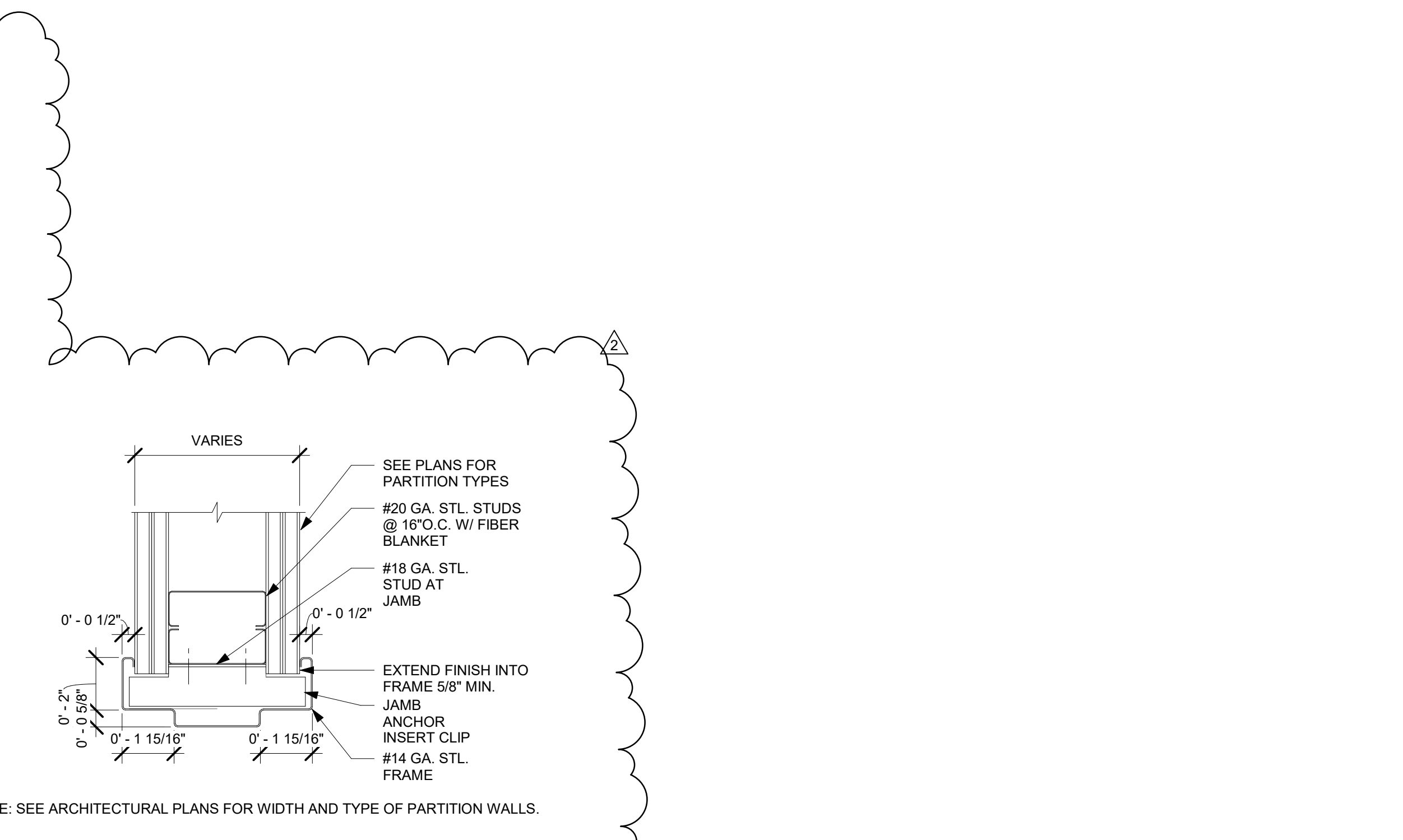
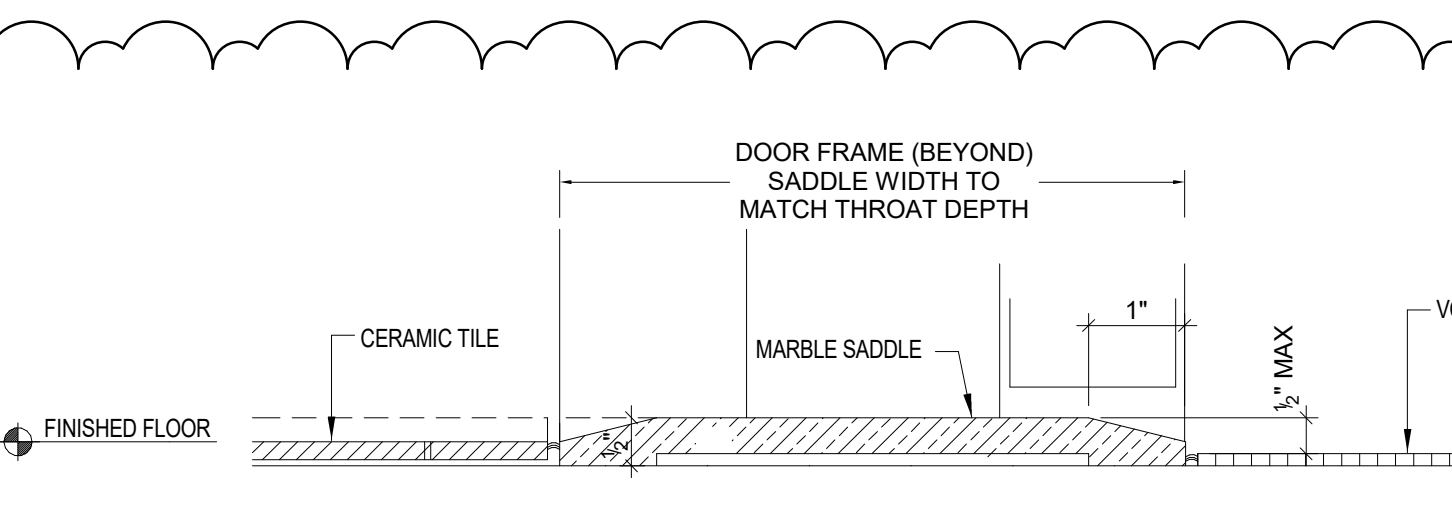
TYPICAL MOUNTING LOCATION



TYPE C1 ROOM NAME AND NUMBER PLATE ELEVATIONS



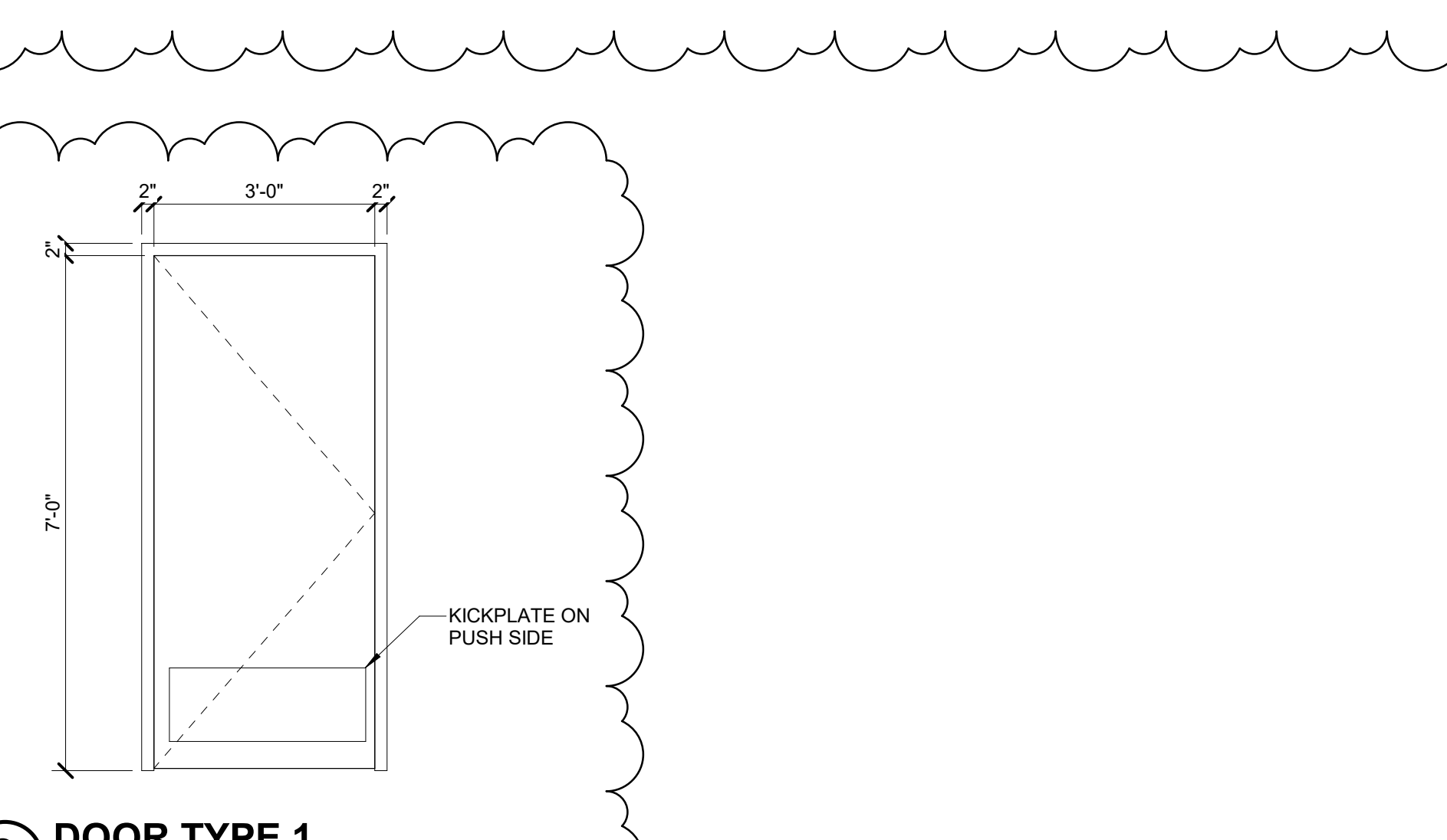
ROOM NAME AND NUMBER PLATE ELEVATIONS



7 CERAMIC TILE PARTITION

8 12" WIDE CERAMIC TILE CHASE WALL PARTITION

DOOR NO	DOOR SIZE			MAT	TYPE	FRAME DETAILS			HARDWARE	FIRE RATING (MINS)	NOTES	
	WIDTH LEAF 1	HEIGHT	THICK			MAT	HEAD	JAMB				SILL
106A	3'-0"	7'-0"	1 3/4"	WD	KD	HM	5/A601	6/A601	4/A601	PASSAGE	0	DOOR TYPE 1
110B	3'-0"	7'-0"	1 3/4"	WD	KD	HM	5/A601	6/A601	4/A601	PASSAGE	0	DOOR TYPE 1



9 DOOR TYPE 1

Local File: B:\360\1633684 - School District of Philadelphia (R2020)\633684_015_A_R20.rvt
3/18/2020 3:47:38 PM
Project Number: N/A
Central File: 0210

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100% SUBMISSION
18 FEB 2020

NO.	DATE	REVISION
2	03/18/20	ADDENDUM 2
1	02/18/20	BID DOCUMENTS

SCHOOL & LOCATION

ANNA B. PRATT ELEMENTARY SCHOOL

2200 N. 22ND ST., PHILADELPHIA, PA 19132

PROJECT TITLE

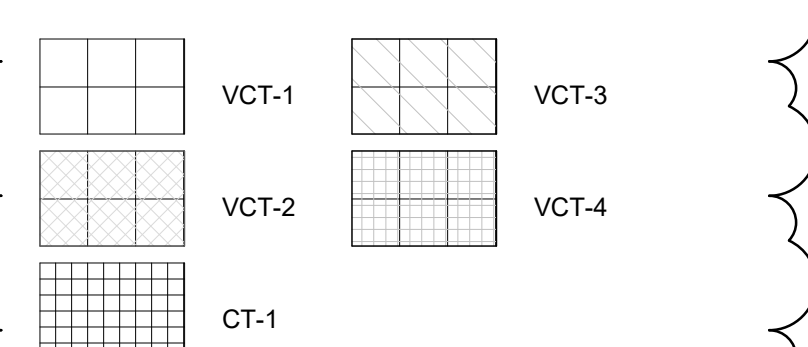
MAJOR RENOVATION, PHASE 1

DRAWING SCALE
ARCHITECTURAL TYPICAL FLOORING PLANS (1 OF 2)

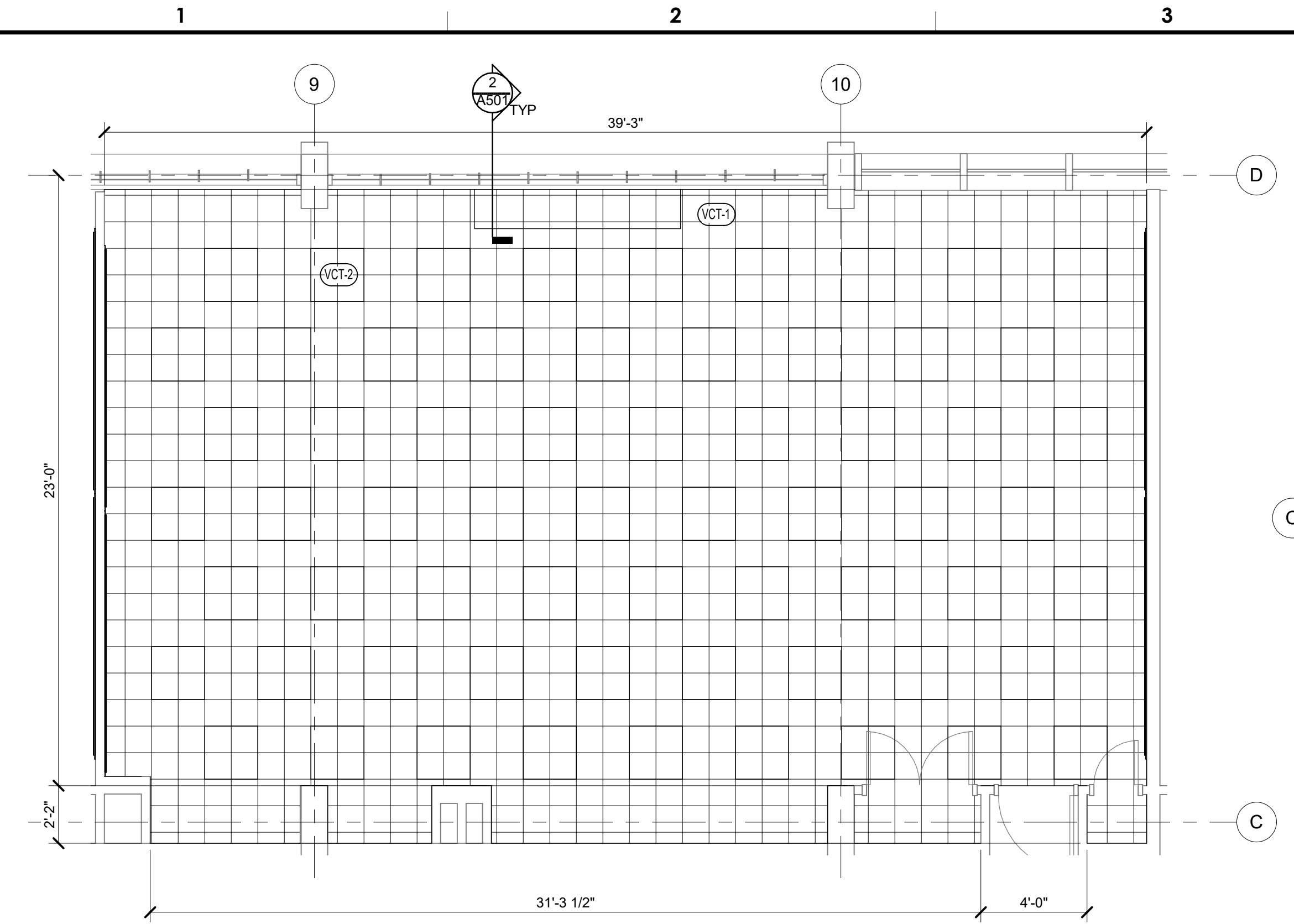
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1/4" = 1'-0"	N/A
LOCATION NO.	CHECKED BY
4390	Checker
DRAWN BY	CHECKED BY
Author	Checker
8-051(C) OF 2019/2020	
8-052(C) OF 2019/2020	
8-053(C) OF 2019/2020	

DRAWING NO.
A901
SHEET 14 OF 40

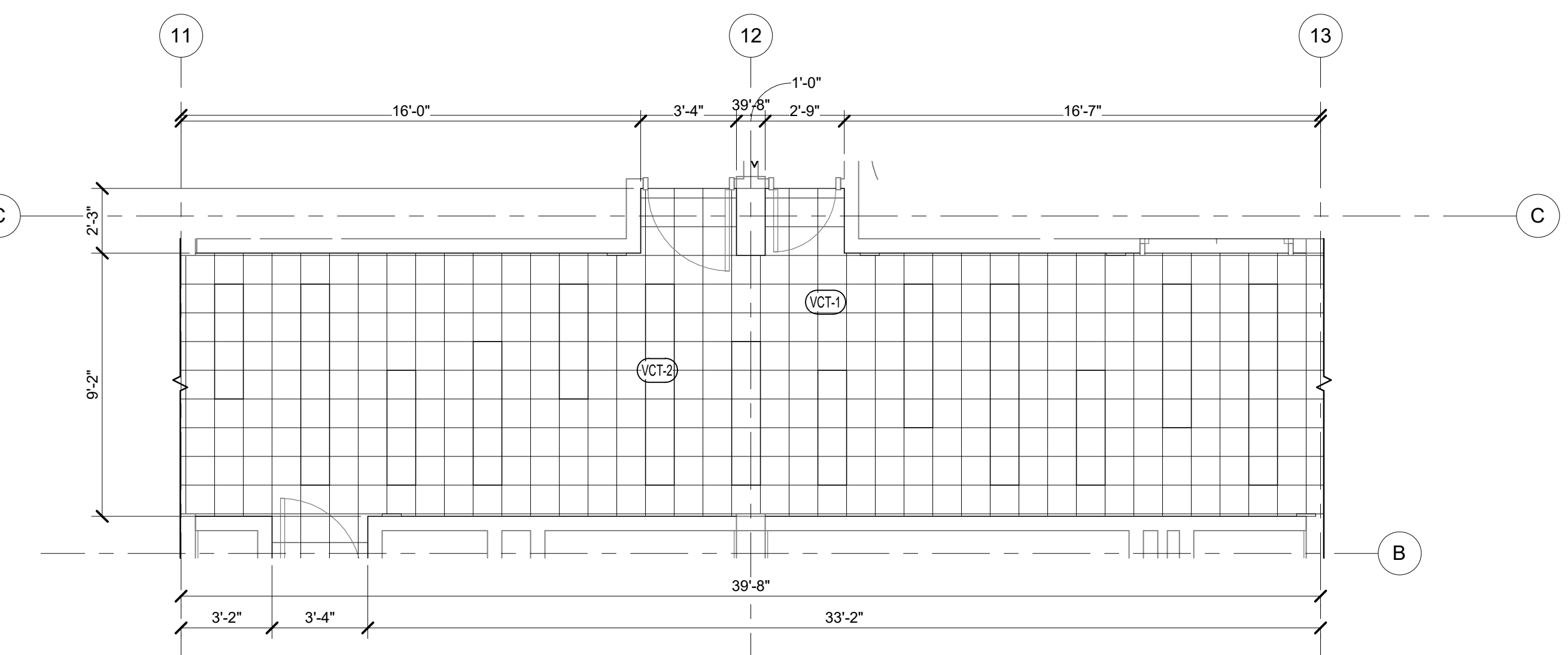
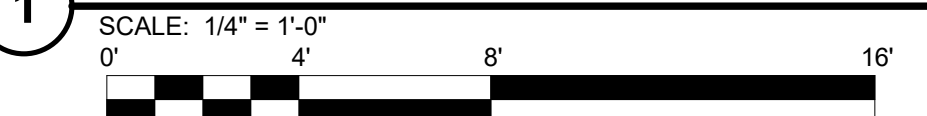
FINISH FLOOR PLAN LEGEND



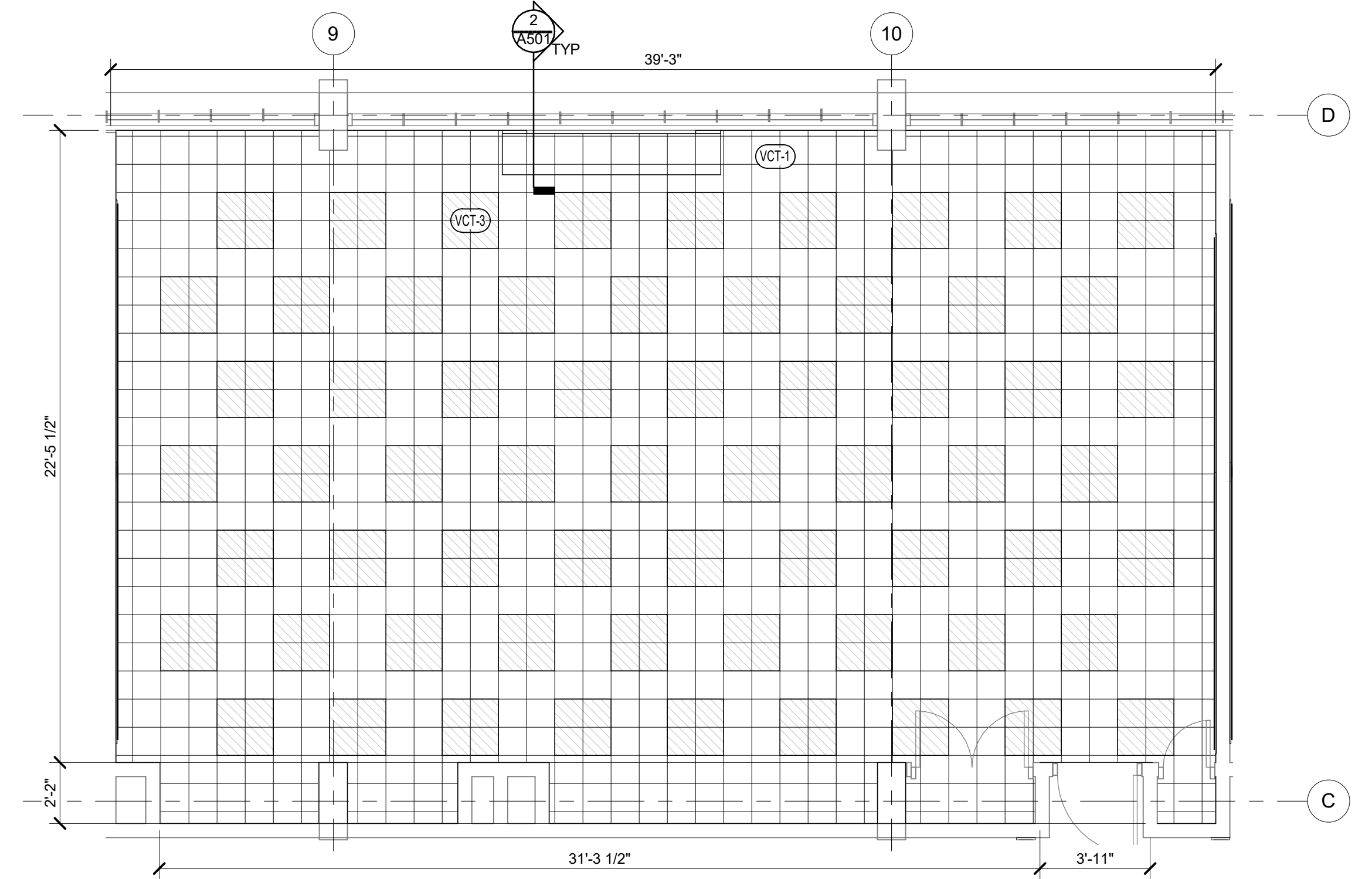
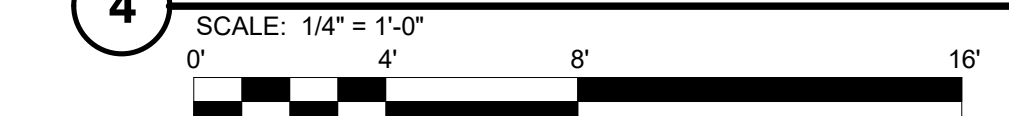
SEE A601 FOR ADDITIONAL FINISH INFORMATION
FINAL FLOOR PATTERN TO BE APPROVED BY ARCHITECT
CONTRACTOR TO VERIFY ALL DIMENSIONS IN FIELD



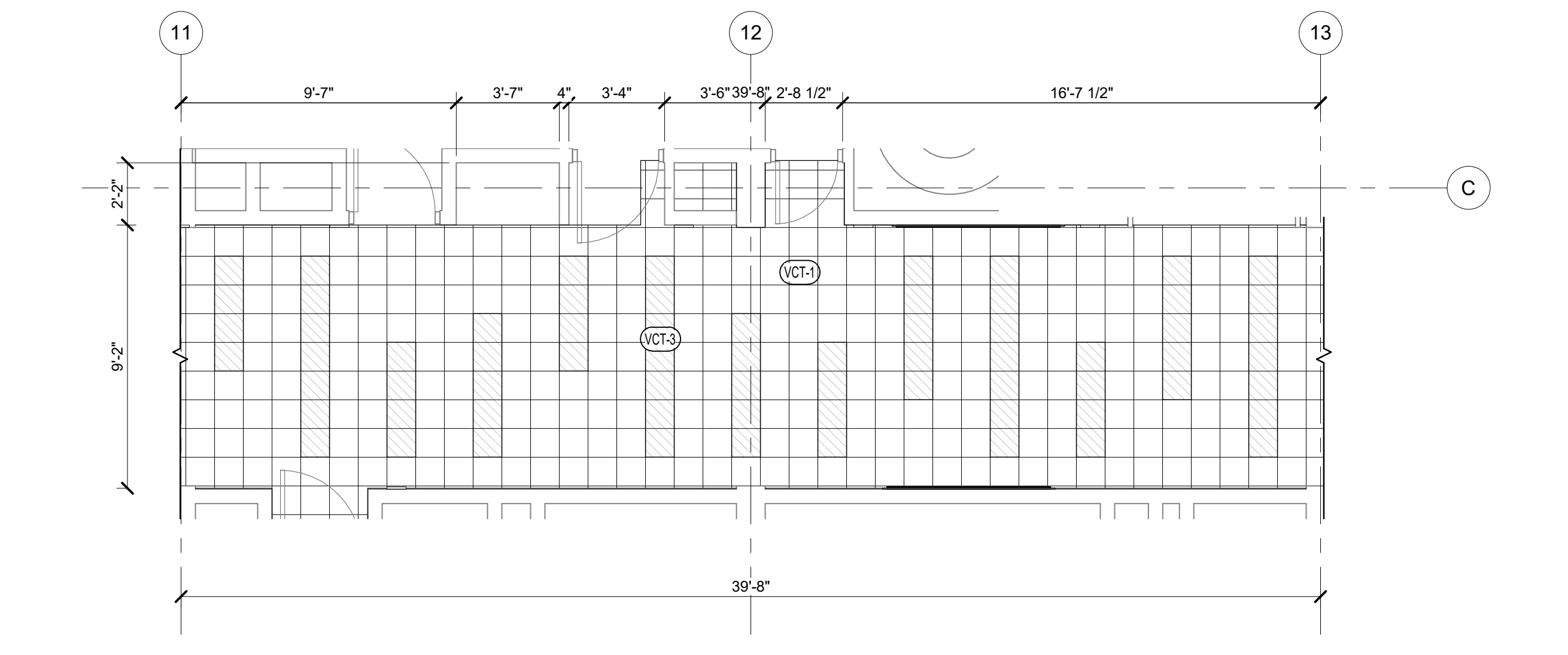
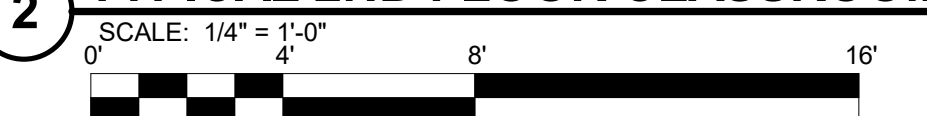
1 TYPICAL 1ST FLOOR CLASSROOM FLOORING PLAN



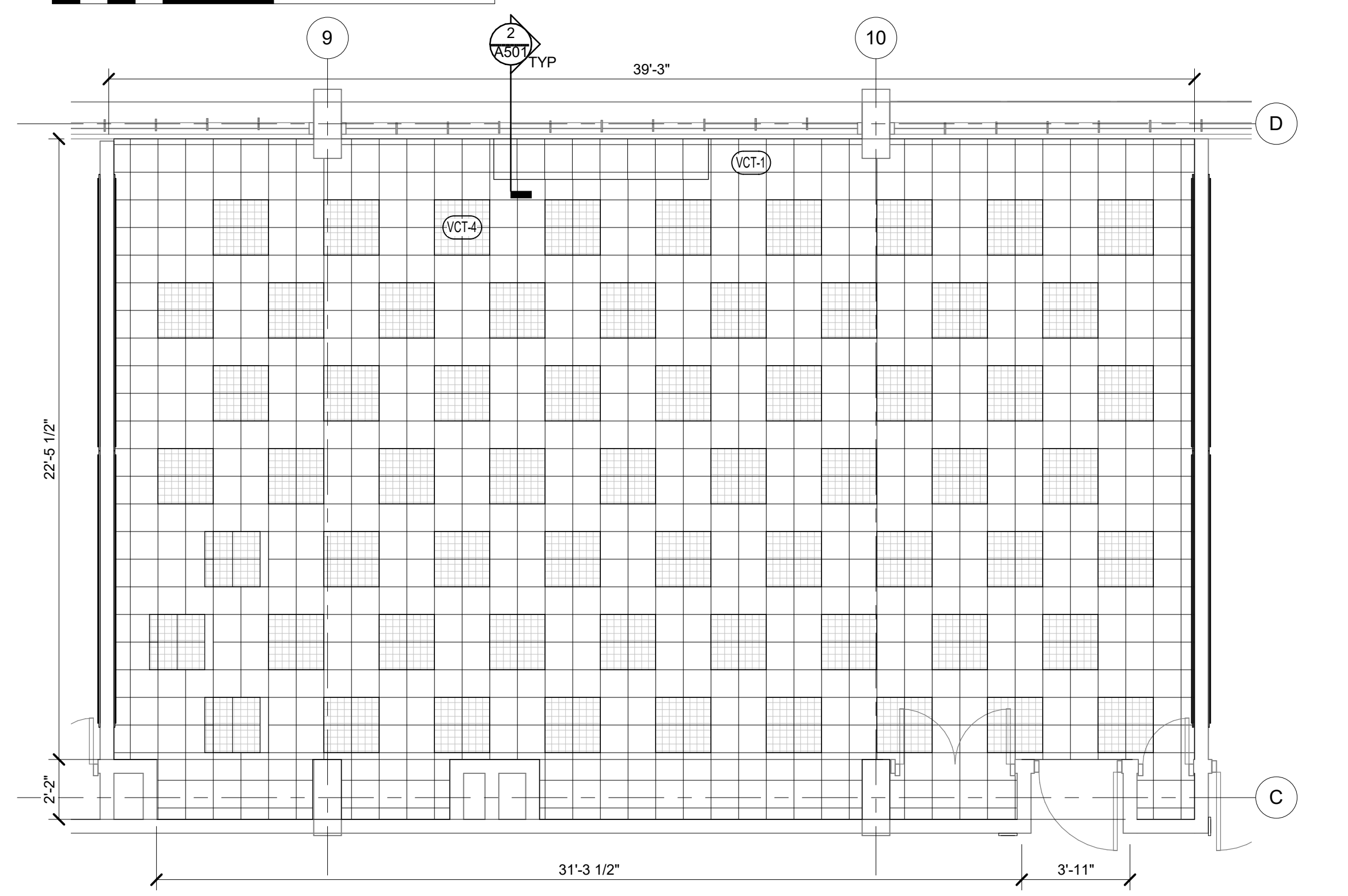
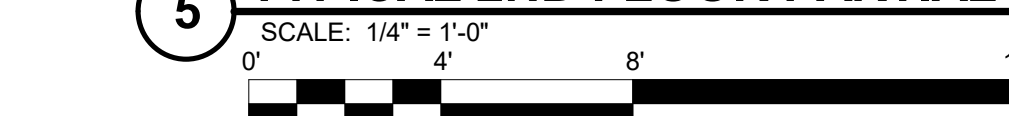
4 TYPICAL 1ST FLOOR PARTIAL CORRIDOR FLOORING PLAN



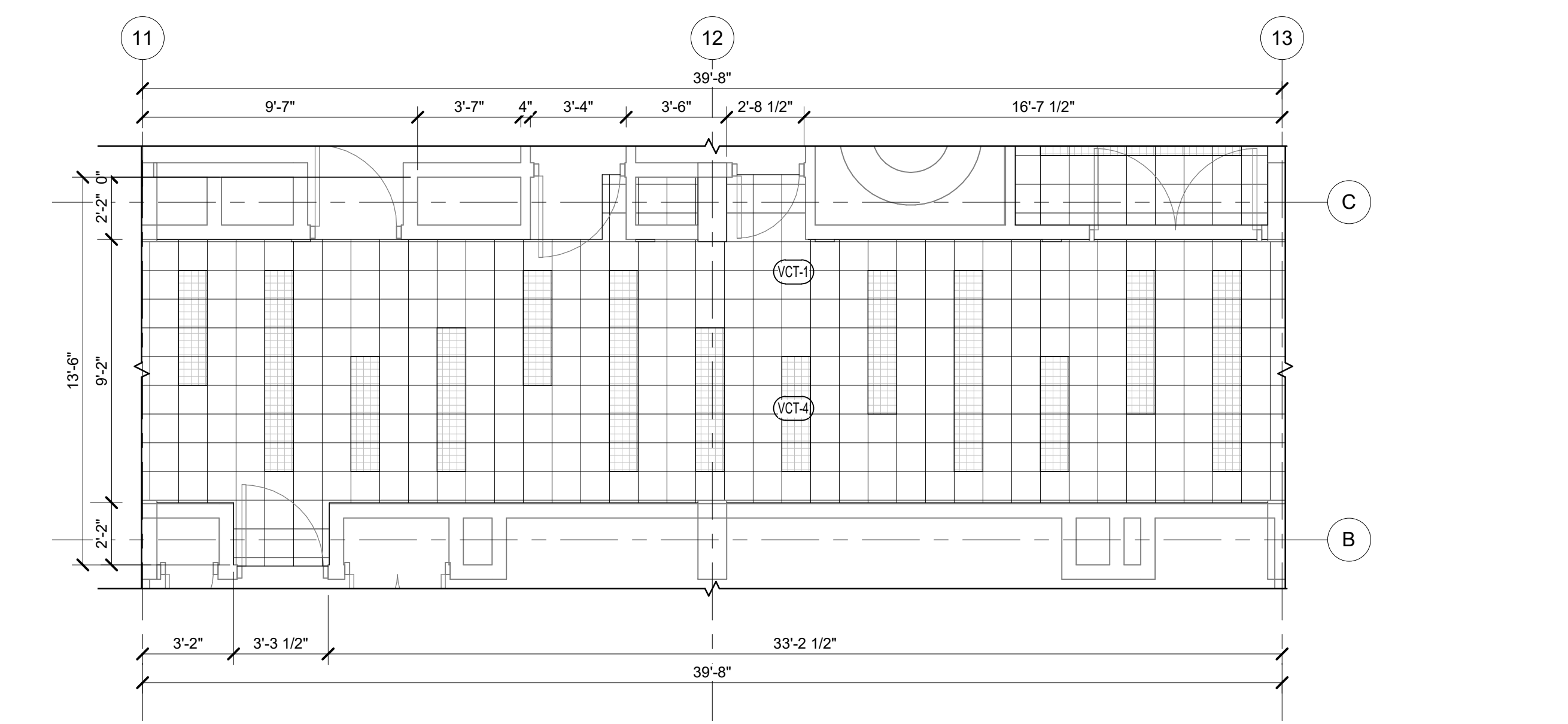
2 TYPICAL 2ND FLOOR CLASSROOM FLOORING PLAN



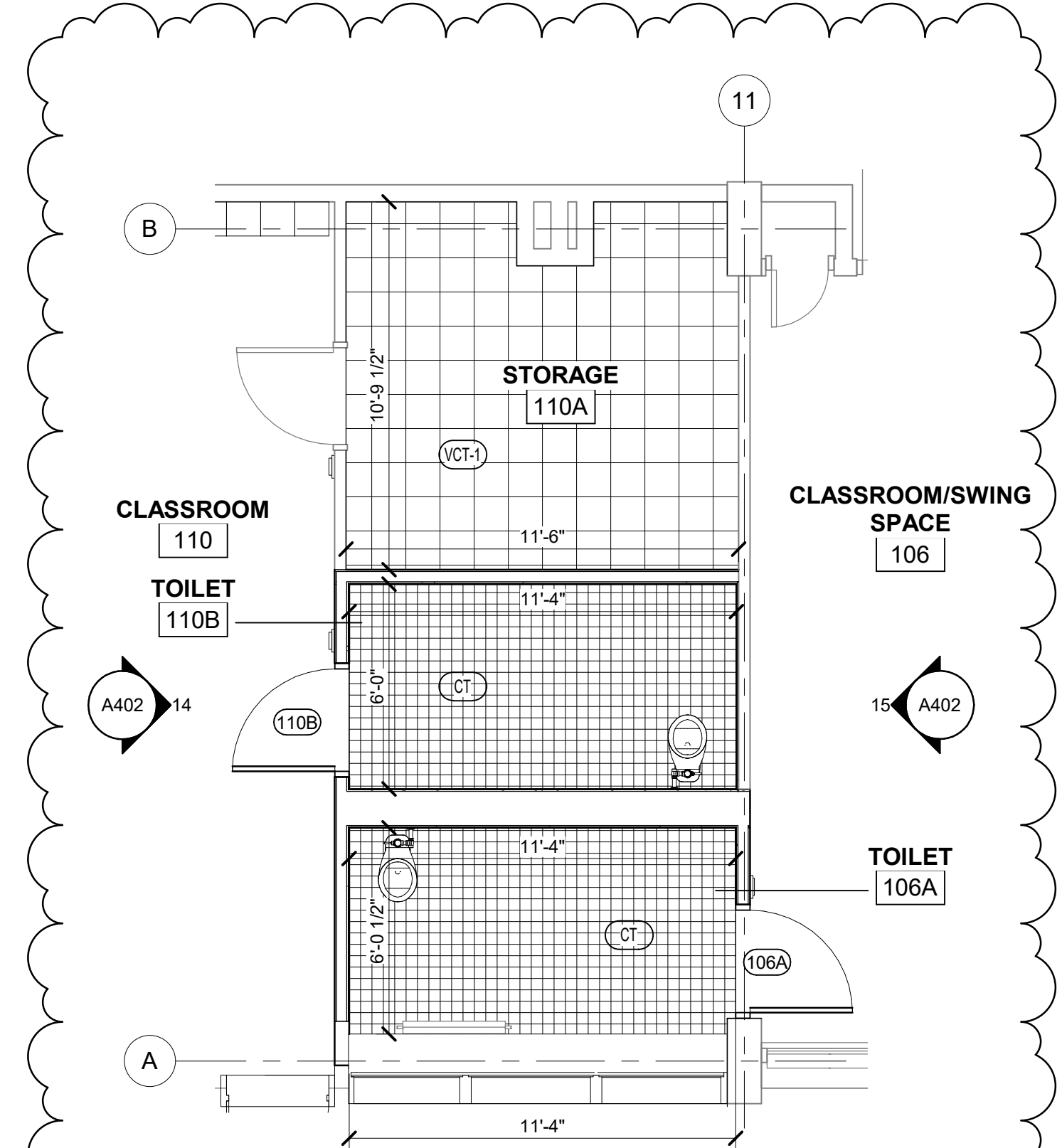
5 TYPICAL 2ND FLOOR PARTIAL CORRIDOR FLOORING PLAN



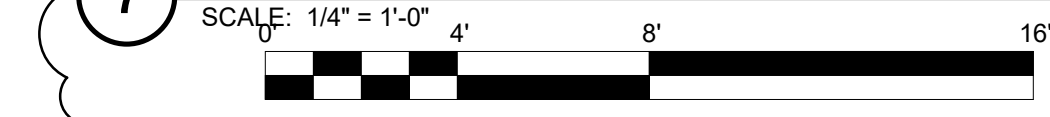
3 TYPICAL 3RD FLOOR CLASSROOM FLOORING PLAN



6 TYPICAL 3RD FLOOR PARTIAL CORRIDOR FLOORING PLAN



7 TOILET 106A AND 106A - ENLARGED PLAN



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BID DOCUMENTS

18 FEB 2020

NO.	DATE	REVISION
1	18 MAR 2020	ADDENDUM 2
0	31 JAN 2020	100% SUBMISSION

SCHOOL & LOCATION

ANNA B. PRATT ELEMENTARY SCHOOL

2200 N. 22ND ST., PHILADELPHIA, PA 19132

PROJECT TITLE

MAJOR RENOVATION, PHASE 1

DRAWING SCALE

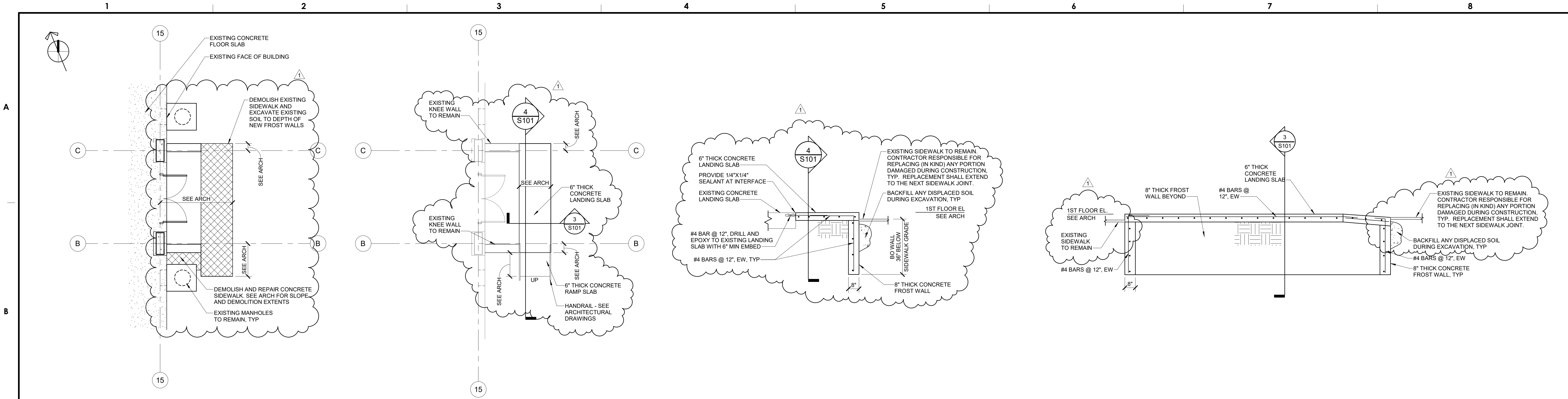
LANDING REMOVAL AND RAMP ADDITION

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As indicated	N/A
LOCATION NO.	4390
DRAWN BY	CHECKED BY
JSM	GDG
8-051(c) OF 2019/2020	8-052(c) OF 2019/2020
	D-053(c) OF 2019/2020

DRAWING NO.

S101

OF 99

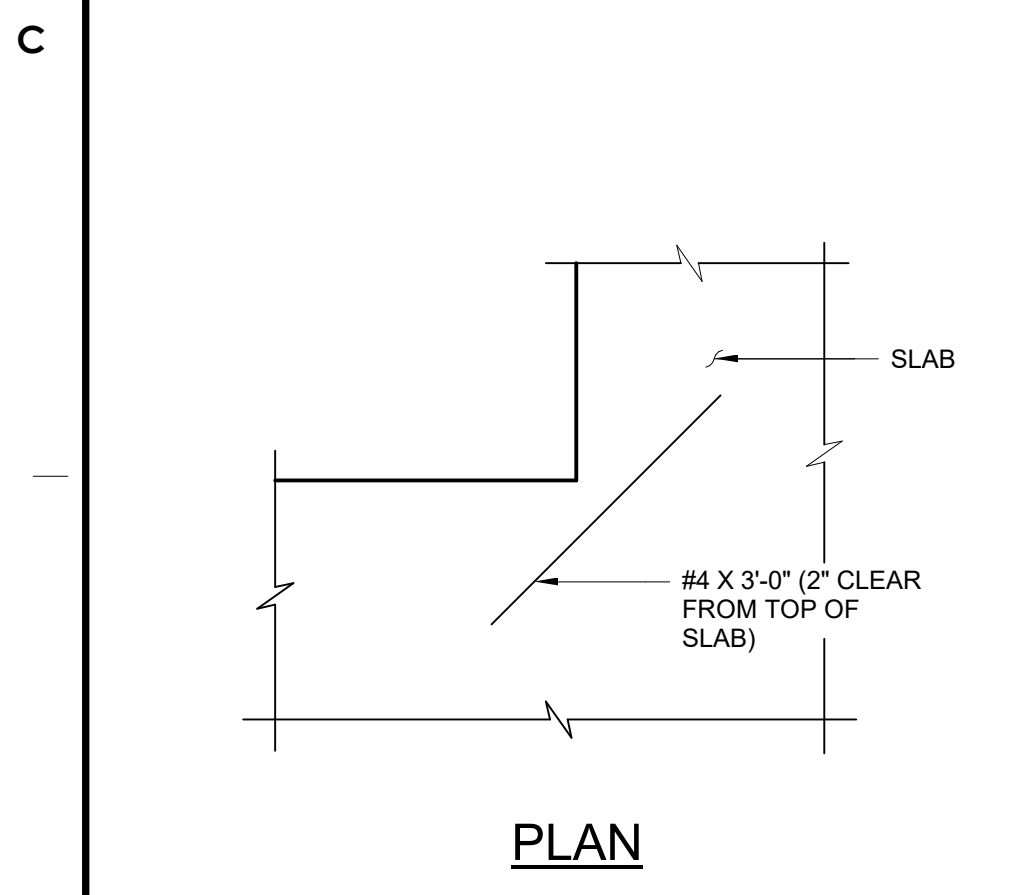


1 VISITORS' ENTRANCE DEMO PLAN
SCALE: 3/16" = 1'-0"

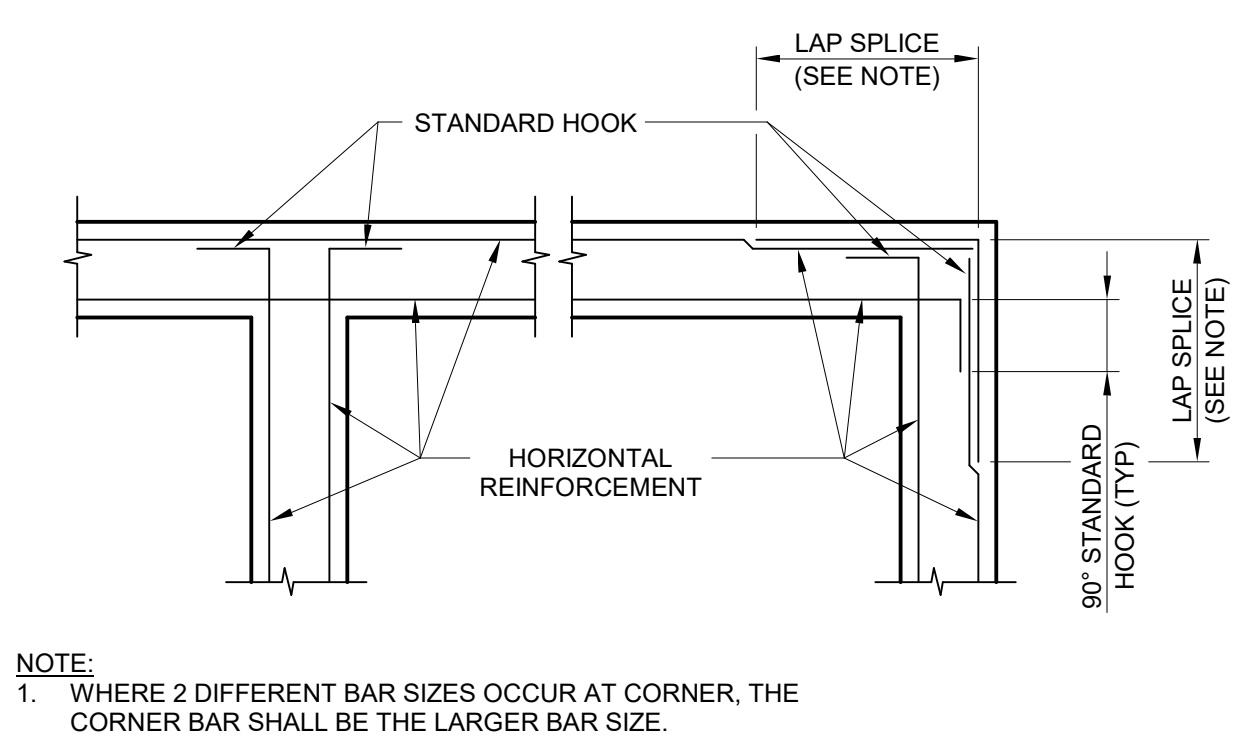
2 VISITORS' ENTRANCE PLAN
SCALE: 3/16" = 1'-0"

3 TRANSVERSE LANDING SECTION
SCALE: 3/8" = 1'-0"

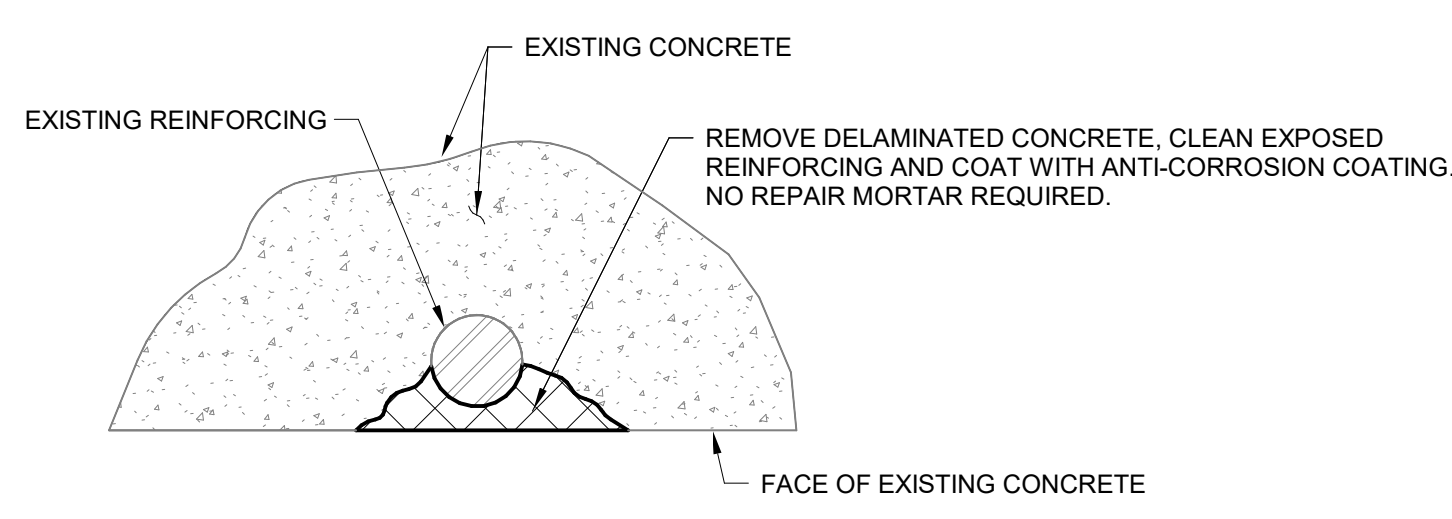
4 LONGITUDINAL RAMP SECTION
SCALE: 3/8" = 1'-0"



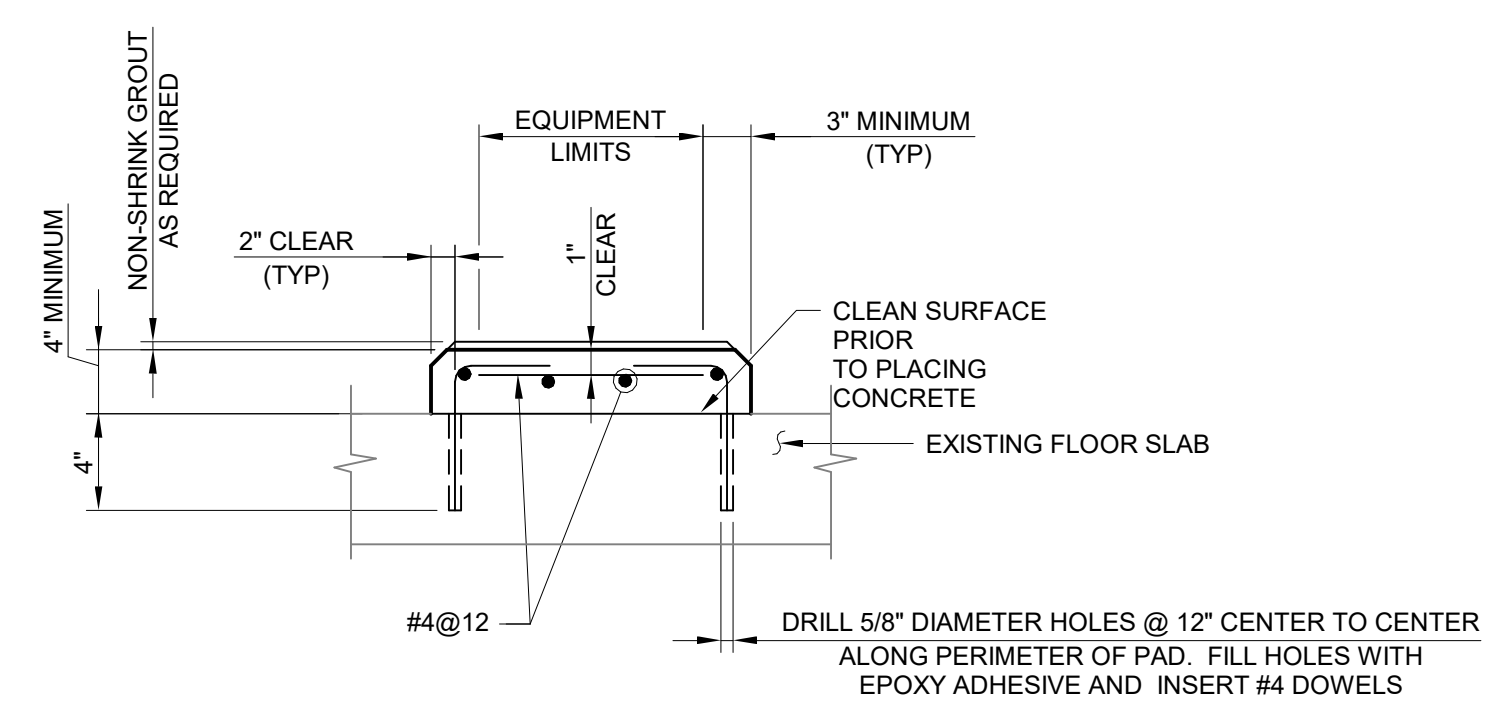
9 TYPICAL SLAB DETAIL AT INSIDE CORNER
SCALE: NOT TO SCALE



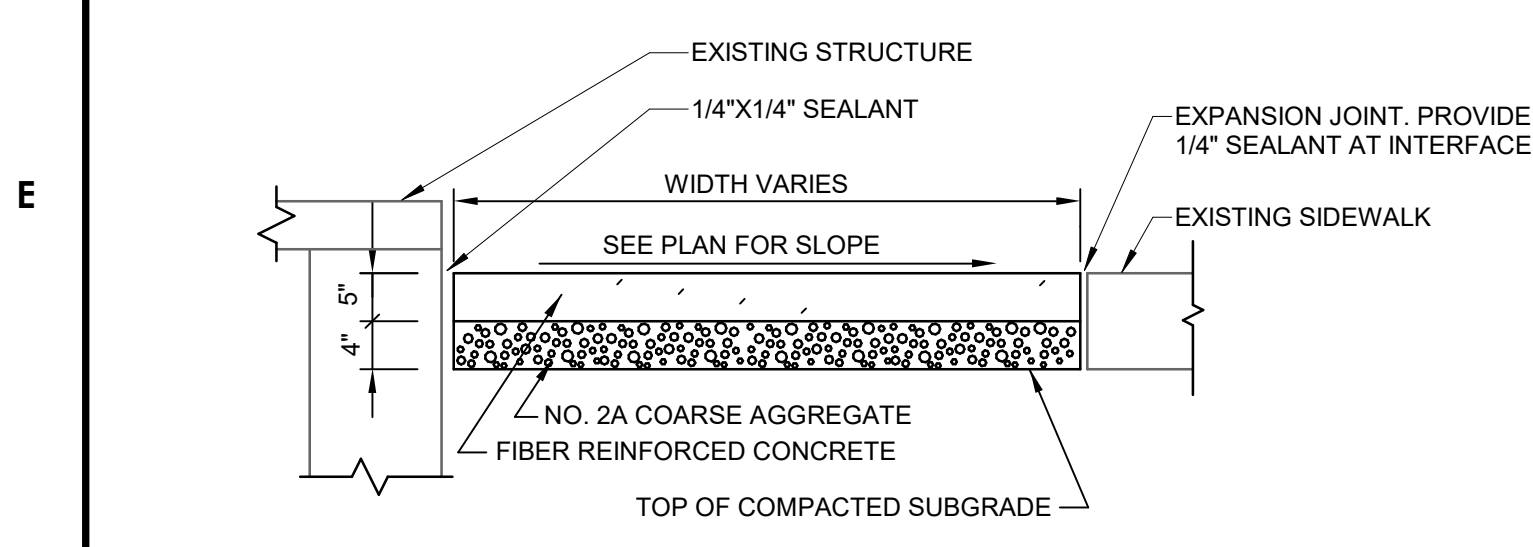
10 WALL CORNER REINFORCEMENT
SCALE: NOT TO SCALE



7 TYPICAL REINFORCING SPALL DETAIL
SCALE: NOT TO SCALE



8 CONCRETE PAD DETAIL (EXISTING FLOOR SLAB)
SCALE: NOT TO SCALE



11 SIDEWALK REPLACEMENT DETAIL
SCALE: 1/2" = 1'-0"

Local File: BIM_360/1636894 - School District of Philadelphia (R2020)1636894_015_S_P20_BIM360.rvt
Central File: 6210
Project Number: N/A
3/8/2020 11:01:50 AM

SEAL:

DATE

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BID DOCUMENTS
18 FEB 2020

NO.	DATE	REVISION
1	18 MAR 2020	ADDENDUM 2
0	31 JAN 2020	100% SUBMISSION

SCHOOL & LOCATION

ANNA B. PRATT ELEMENTARY SCHOOL

2200 N. 22ND ST., PHILADELPHIA, PA 19132

PROJECT TITLE

MAJOR RENOVATION, PHASE 1

DRAWING SCALE

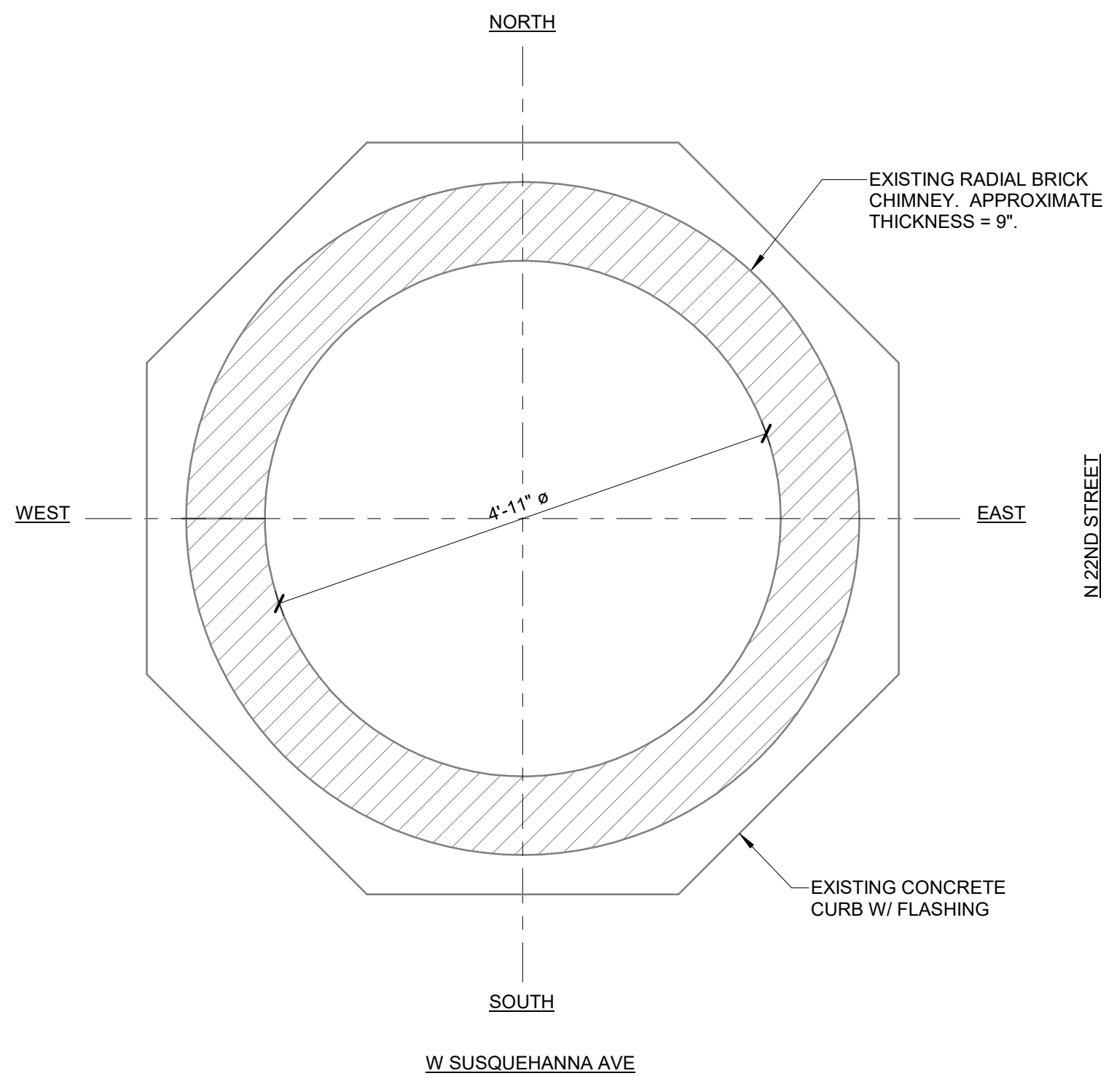
CHIMNEY REPLACEMENT

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DRAWN BY	KMP
CHECKED BY	JCL
8-051(c) OF 2019/2020 8-052(c) OF 2019/2020 D-053(c) OF 2019/2020	

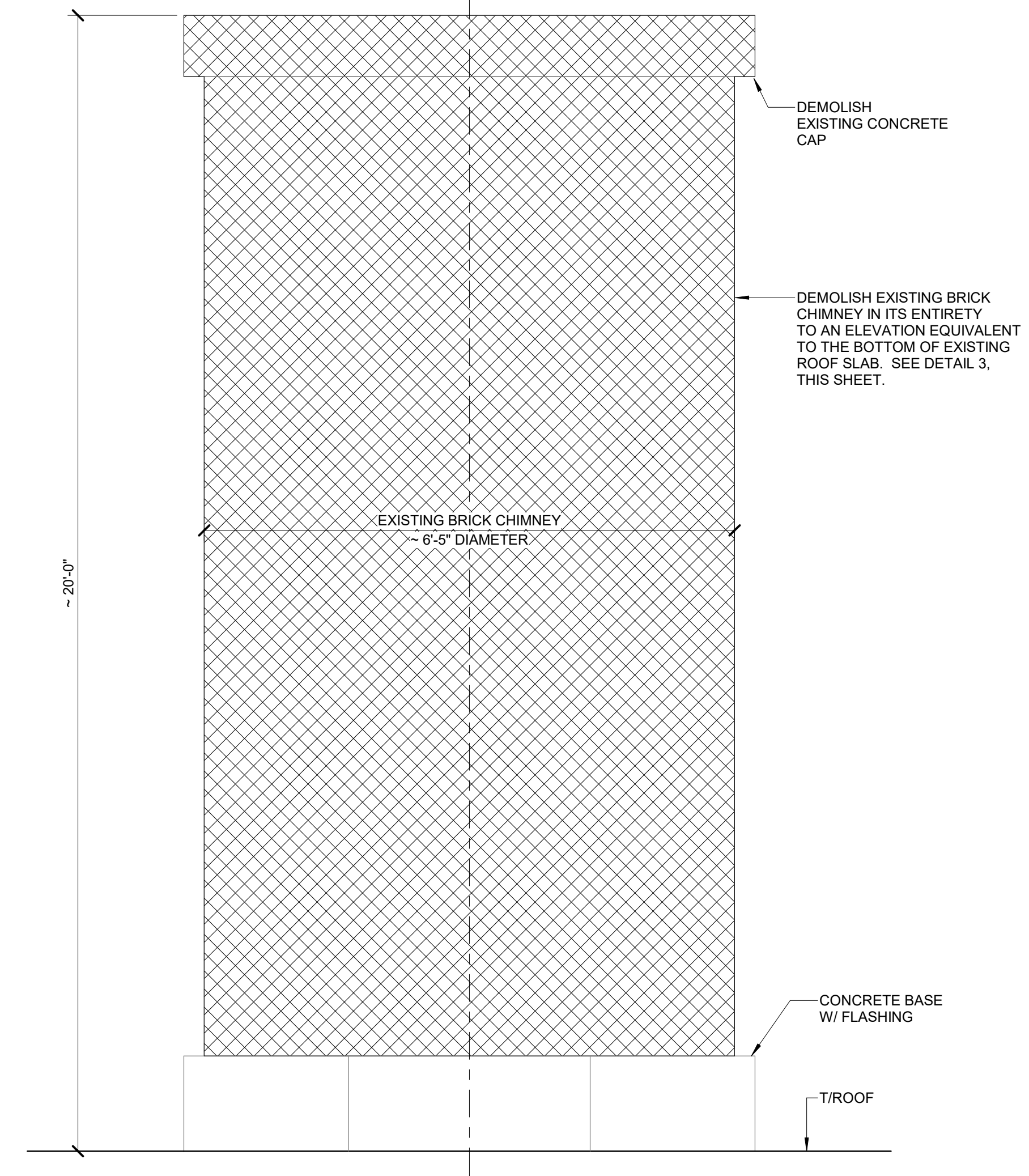
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S102

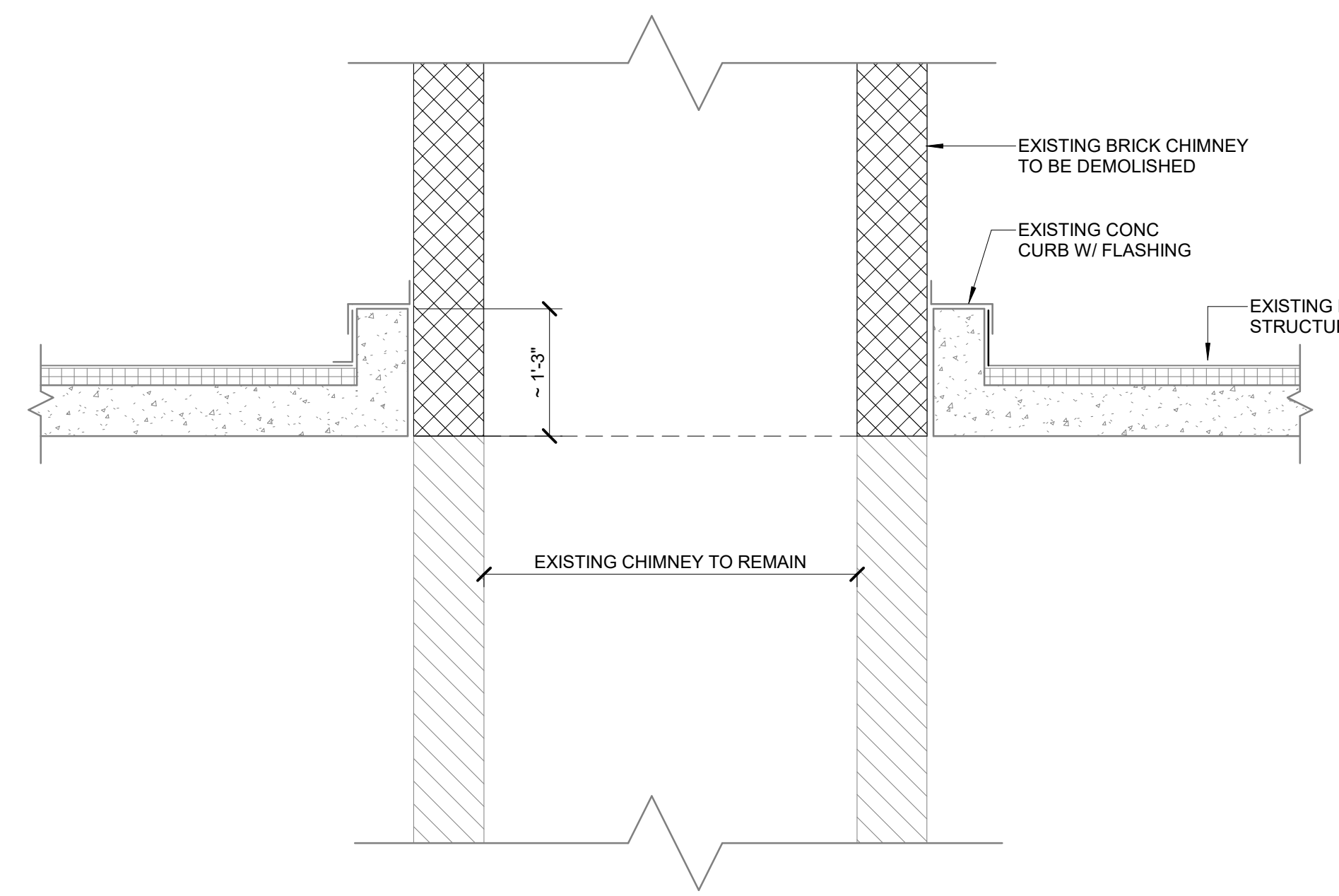
OF 99



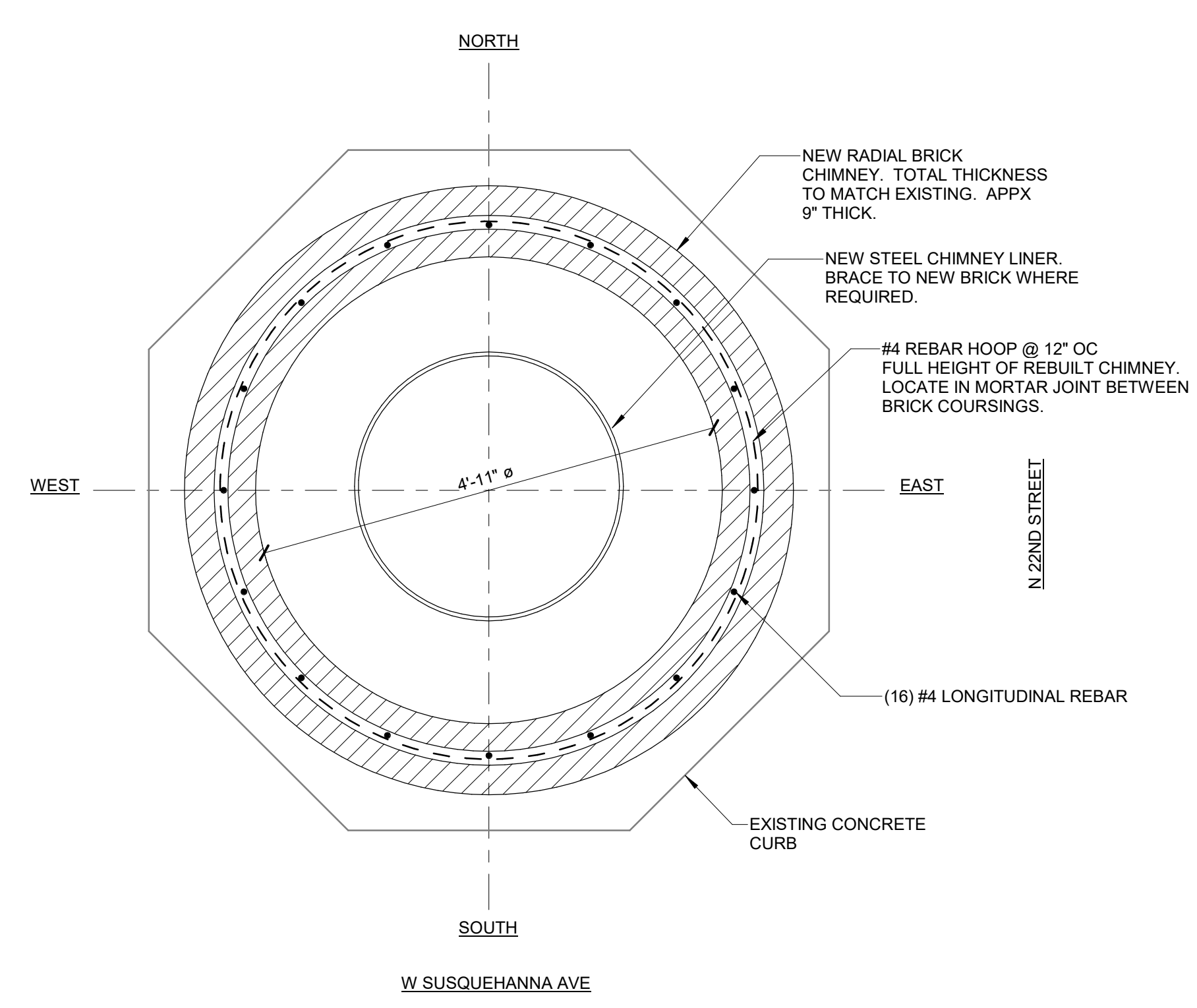
1 EXISTING CHIMNEY PLAN
SCALE: 3/4" = 1'-0"



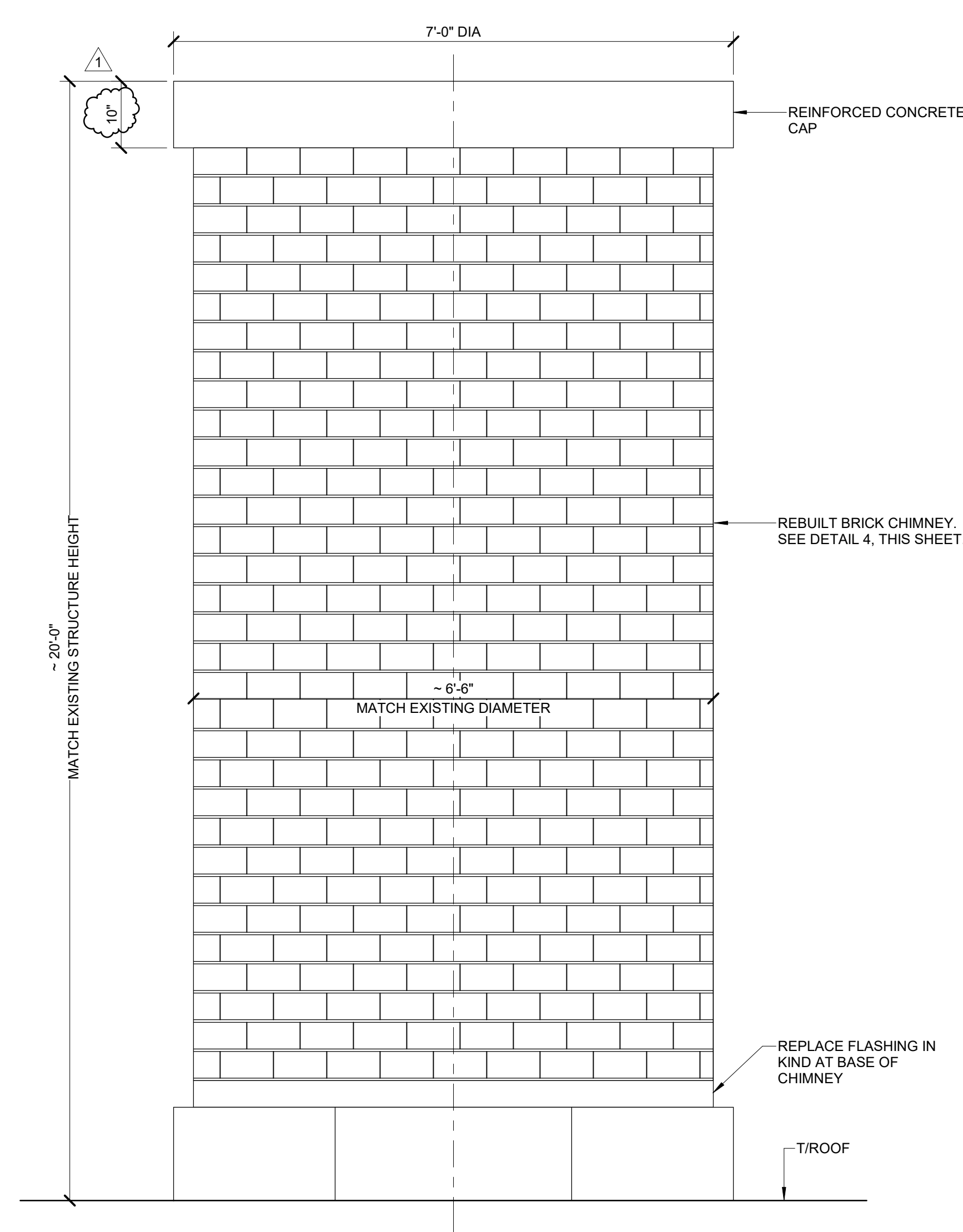
2 EXISTING CHIMNEY DEMOLITION ELEVATION
SCALE: 3/4" = 1'-0"



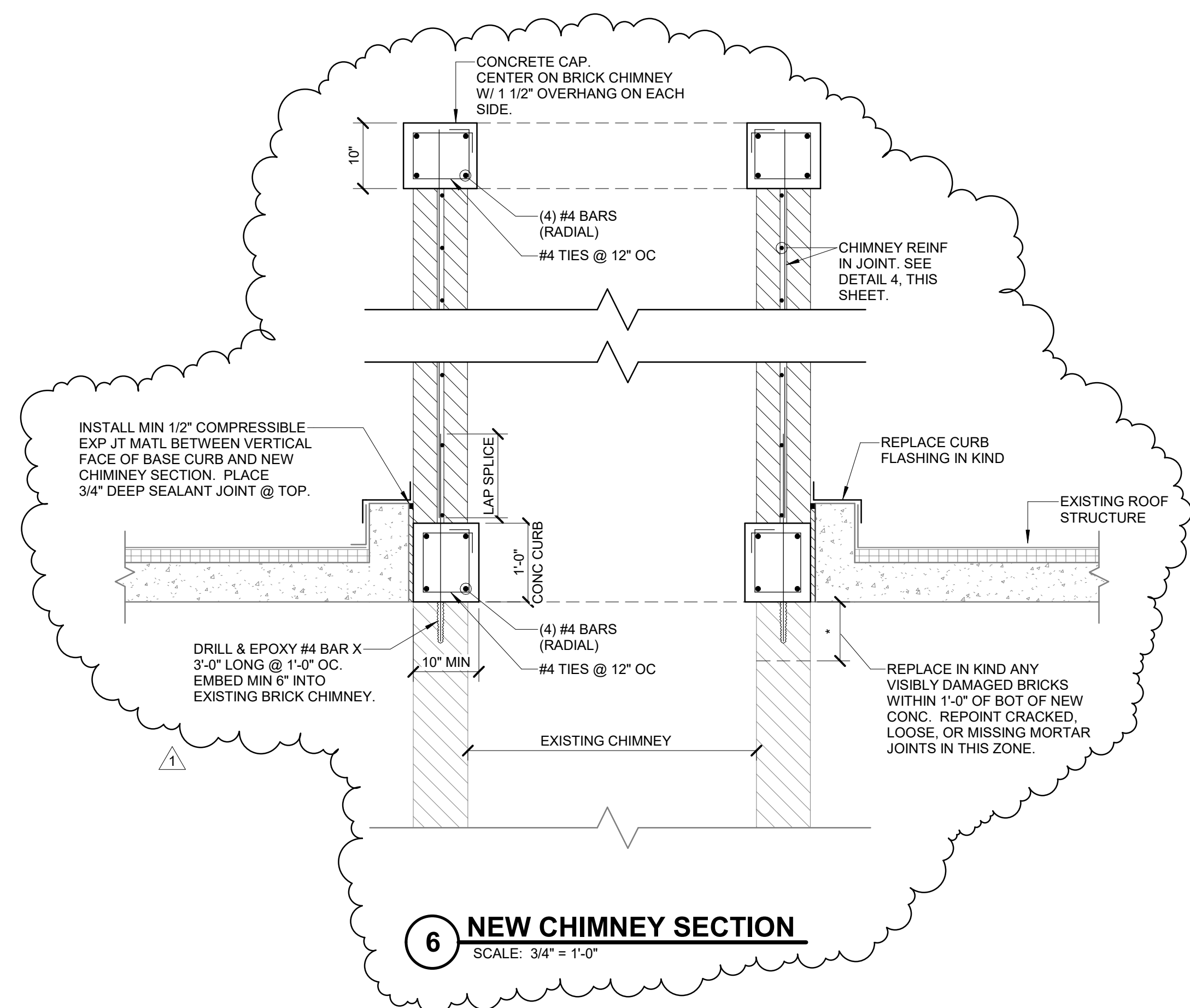
3 EXISTING CHIMNEY DEMOLITION SECTION
SCALE: 3/4" = 1'-0"



4 NEW CHIMNEY PLAN
SCALE: 3/4" = 1'-0"

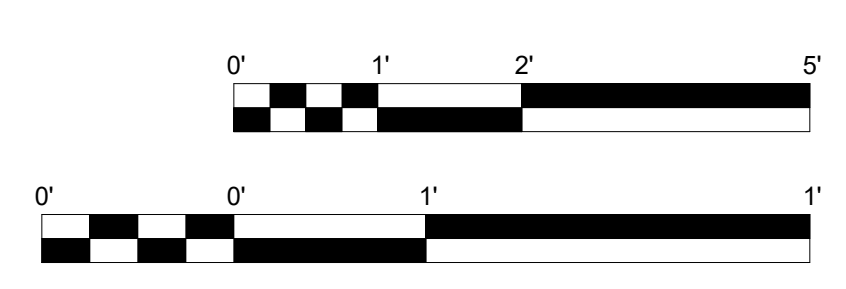


5 NEW CHIMNEY ELEVATION
SCALE: 3/4" = 1'-0"



6 NEW CHIMNEY SECTION
SCALE: 3/4" = 1'-0"

- NOTES:**
1. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE STRUCTURAL INTEGRITY OF THE EXISTING CHIMNEY SEGMENT TO REMAIN THROUGHOUT CONSTRUCTION. PROTECT THE EXISTING ROOF SURFACE AND STRUCTURE THROUGHOUT ALL STAGES OF CONSTRUCTION.
 2. COORDINATE CHIMNEY CONSTRUCTION WITH LINER INSTALLATION REQUIREMENTS DETAILED ON MECHANICAL DRAWINGS AND MANUFACTURER.
 3. CONTRACTOR SHALL SUBMIT FOR ENGINEER REVIEW ALL PRODUCTS ASSOCIATED WITH THE CHIMNEY RECONSTRUCTION PRIOR TO DEMOLISHING THE EXISTING CHIMNEY OR PROCURING NEW MATERIALS.
 4. DOCUMENT ALL EXISTING CONDITIONS INCLUDING SUPPLYING PHOTOGRAPHS AND DIMENSIONS OF ALL EXISTING ELEMENTS TO BE REMOVED. RECORD THE INSIDE AND OUTSIDE DIAMETER OF THE EXISTING CHIMNEY AT 3'-0" ELEVATION INCREMENTS. SUBMIT DOCUMENTATION FOR REVIEW AND APPROVAL PRIOR TO DEMOLISHING EXISTING COMPONENTS. RECONSTRUCTED CHIMNEY TO MATCH ORIGINAL DIMENSIONS.
 5. TEMPORARILY REMOVE THE EXISTING LIGHTNING PROTECTION SYSTEM AS REQUIRED TO RECONSTRUCT THE BRICK CHIMNEY. REPLACE ALL EXISTING MASONRY ANCHORS IN KIND. ASSUME 22 ANCHORS. TYPE #4#1 MASONRY CABLE ATTACHMENT BY THOMPSON LIGHTNING PROTECTION (OR APPROVED EQUAL). REINSTALL LIGHTNING PROTECTION SYSTEM UPON COMPLETION OF MASONRY REBUILD.
 6. PROVIDE TYPE N MORTAR FOR CHIMNEY RECONSTRUCTION. MATCH EXISTING BRICK AND MORTAR COLORS AND PROVIDE SAMPLE FOR ENGINEER REVIEW AND APPROVAL PRIOR TO PROCEEDING WITH FIELD WORK.
 7. REPLACE EXISTING BASE OF CHIMNEY METAL FLASHING IN KIND. ENSURE ALL GAPS AND SEAMS ARE PROPERLY SEALED BETWEEN THE FLASHING AND EXISTING ROOF SYSTEM / BRICK CHIMNEY.



Local File: B:\3607\63694 - School District of Philadelphia (R2020)\63694_015_S_P20_BIM\360.dwg
Central File: 6210
Project Number: N/A
3/8/2020 11:01:51 AM

SEAL:

BRIANNA WESSER, P.E.
PA 0683439

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BID DOCUMENTS
18 FEB 2020

2	18 MARCH 2020	ADDENDUM 2
1	31 JAN 2020	100% SUBMISSION
NO.	DATE	REVISION

SCHOOL & LOCATION

ANNA B. PRATT ELEMENTARY SCHOOL

2200 N. 22ND ST., PHILADELPHIA, PA 19132

PROJECT TITLE

MAJOR RENOVATION, PHASE 1

DRAWING SCALE
MECHANICAL FIRST FLOOR PLANS

DRAWING SCALE As indicated	FILE NO. N/A
LOCATION NO. 4390	CHECKED BY BMW
DRAWN BY ACS	8-051(c) of 2019/2020 8-052(c) of 2019/2020 8-053(c) of 2019/2020

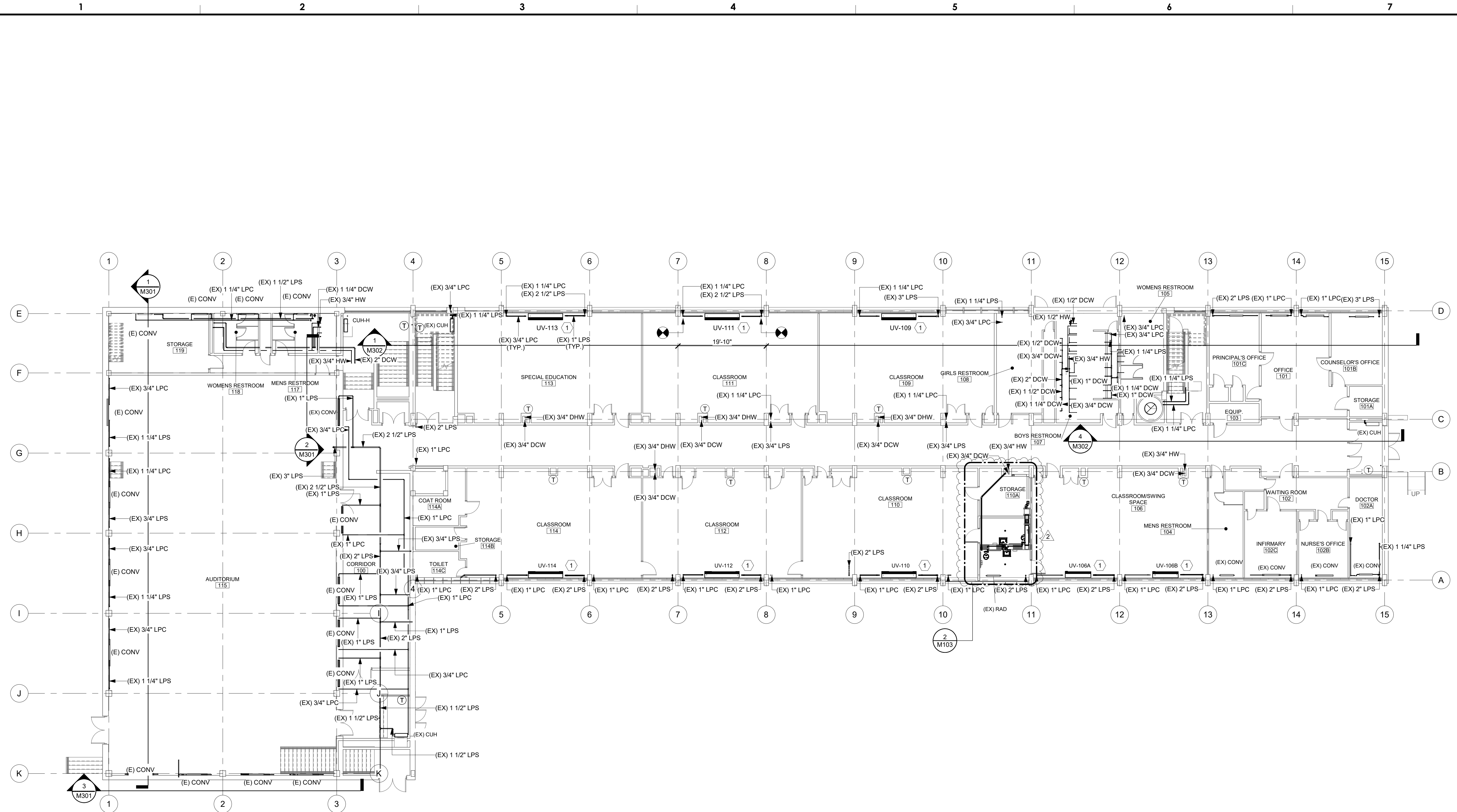
DRAWING NO.
M103
SHEET 24 OF 40

GENERAL NOTES:

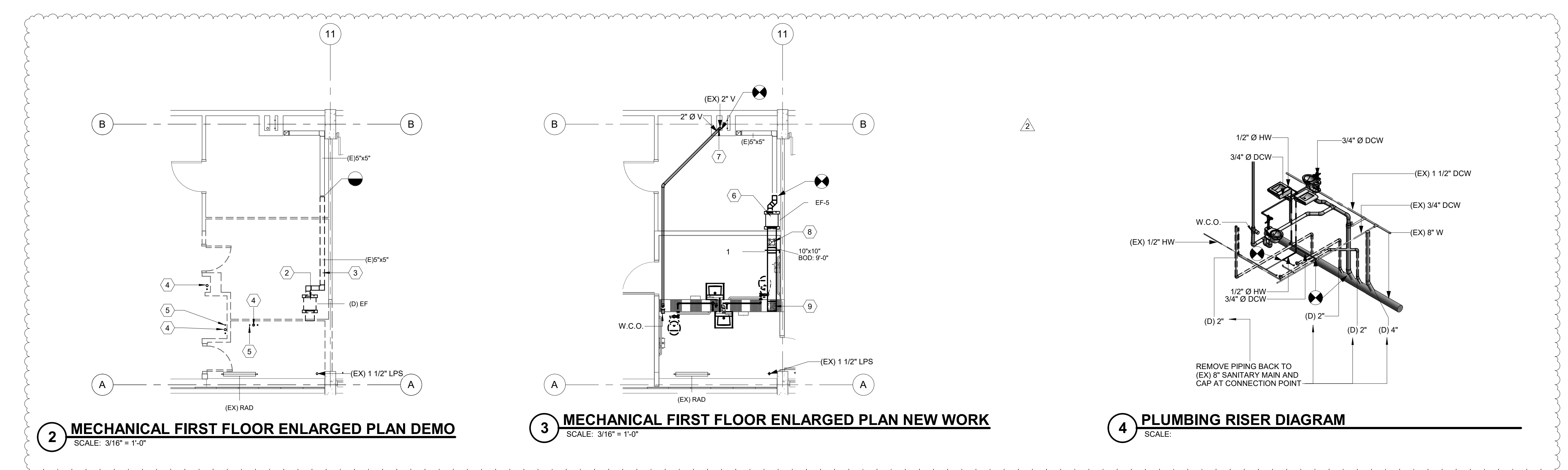
- THE SCHOOL DISTRICT OFFICE OF ENVIRONMENTAL MANAGEMENT (OEM) HAS PROCURED AN ENVIRONMENTAL MANAGEMENT CONTRACTOR VIA A SEPARATE CONTRACT. ALL LEAD-BASED PAINT STABILIZATION AND ASBESTOS ABATEMENT WILL BE CONDUCTED VIA THIS SEPARATE CONTRACT. WORK EXECUTED VIA THIS SEPARATE CONTRACT WILL INCLUDE, BUT IS NOT LIMITED TO:
 - REMOVAL OF ALL PIPING INSULATION THROUGHOUT THE SCHOOL.
 - REMOVAL OF CLASSROOM UNIT VENTILATORS.
 - REMOVAL OF RECESSED CABINET UNIT HEATERS.
 - REMOVAL OF BOILER BREACHING.
- PROVIDE INSULATION FOR ALL EXISTING AND NEW LOW PRESSURE STEAM PIPING, EXISTING AND NEW STEAM CONDENSATE PIPING, EXISTING DOMESTIC HOT WATER PIPING, EXISTING DOMESTIC COLD WATER PIPING, AND ALL EXISTING BOILER FEEDWATER PIPING. CONTRACTOR RESPONSIBLE TO VERIFY ALL PIPING SIZES AND LOCATIONS IN FIELD.
- PAINT ALL NEW UN-INSULATED METAL PIPING, IRON OR STEEL VALVES, AND ALL SUPPORTS AS INDICATED IN SPECIFICATIONS. CONTRACTOR SHALL PRIME PAINT ALL NEW PIPING AND VALVES PRIOR TO INSULATION APPLICATION.
- ALL NEW LOW PRESSURE STEAM PIPING SHALL BE WELDED OR THREADED CARBON STEEL SCHEDULE 40. ALL STEAM CONDENSATE PIPING SHALL BE WELDED OR THREADED THREADED CARBON STEEL SCHEDULE 80.
- REMOVE ANY BRANCH PNEUMATIC PIPING OR TUBING MAINS ABANDONED BY THE OEM CONTRACTOR'S DEMOLITION BACK TO THE MAIN. CAP BRANCH STUB AT MAIN.
- PATCH PENETRATIONS VACATED BY THE REMOVAL OF ANY PNEUMATIC PIPING OR TUBING TO MATCH EXISTING FINISHES. REPAIR ANY PENETRATIONS IN FIRE WALLS AND PERIMETER WALLS TO MAINTAIN FIRE RATINGS.
- LABEL ALL PIPING, NEW EQUIPMENT, AND NEW CONTROLS.

SHEET KEYNOTES

- EXISTING UNIT VENTILATOR SHALL BE REMOVED BY SDP. SDP SHALL FURNISH A NEW UNIT VENTILATOR TO THE MECHANICAL CONTRACTOR. INSTALL STEAM UNIT VENTILATOR, REMOTE THERMOSTAT, REMOTE CARBON DIOXIDE OCCUPANCY SENSORS, CONTROL WIRING AND CONDUIT. FURNISH AND INSTALL 2-WAY STEAM CONTROL VALVE, STEAM TRAPS, PIPING, WALL OPENING INSULATION ASSEMBLY, LOCKING THERMOSTAT COVER, AND ACCESSORIES. DISCONNECT SWITCH WILL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.
- REMOVE EXISTING CEILING MOUNTED EXHAUST FAN INCLUDING HANGERS, DRIP PAN, ASSOCIATED DUCTWORK. COORDINATE WITH ELECTRICAL CONTRACTOR FOR DISCONNECTING REMAINING WIRING.
- REMOVE DUCTWORK TO POINT AND PREPARE FOR RECONNECTION.
- REMOVE SANITARY RISER PIPING AND PATCH CONCRETE PENETRATIONS IN FLOOR.
- REMOVE DOMESTIC WATER PIPING AND PATCH CONCRETE PENETRATIONS IN FLOOR.
- PROVIDE NEW BATHROOM EXHAUST FAN BASE ON GREENHECK CSPA-110 (50 CFM @ 25 W.C.) 230V/1PH FURNISH DISCONNECT SWITCH AND(2) RELAYS FOR FAN LIGHT SWITCH AND OCCUPANCY SENSOR CONTROL TO ELECTRICAL CONTRACTOR FOR INSTALLATION.
- PROVIDE VENT PIPING AND CONNECT TO EXISTING VENT RISER IN CHASE.
- PROVIDE 8"x8" DUCT MOUNTED EXHAUST GRILLE WITH INTEGRAL DAMPER, BALANCE TO 50 CFM.
- PROVIDE 8"x8" WALL MOUNTED EXHAUST GRILLE WITH INTEGRAL DAMPER, BALANCE TO 50 CFM.



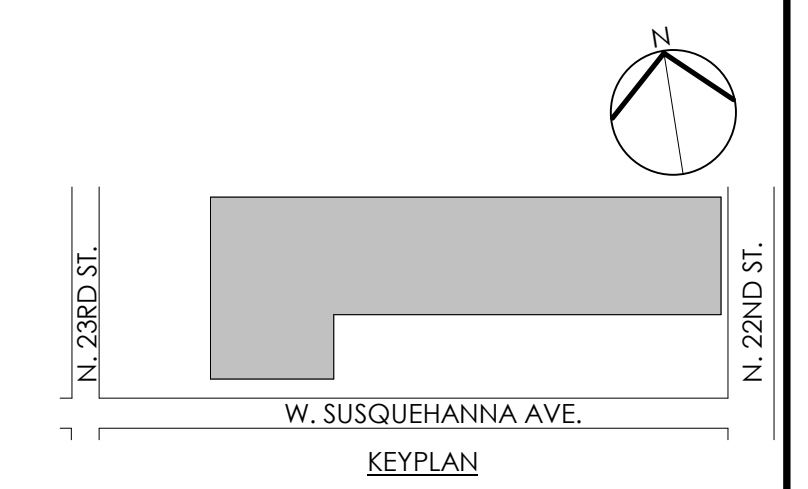
1 MECHANICAL FIRST FLOOR PLAN
SCALE: 3/32" = 1'-0"



2 MECHANICAL FIRST FLOOR ENLARGED PLAN DEMO
SCALE: 3/16" = 1'-0"

3 MECHANICAL FIRST FLOOR ENLARGED PLAN NEW WORK
SCALE: 3/16" = 1'-0"

4 PLUMBING RISER DIAGRAM
SCALE:



Project Number: N/A
 3/18/2020 10:43:21 AM
 Local File: BMW_360/1033684 - School District of Philadelphia (R2020)\\33684_015_M_R20.rvt
 Central File: 6210

SEAL:

BRIAN WESSER, P.E.
PA 1003437 DATE XX/XX/2020

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ELECTRICAL ENGINEER

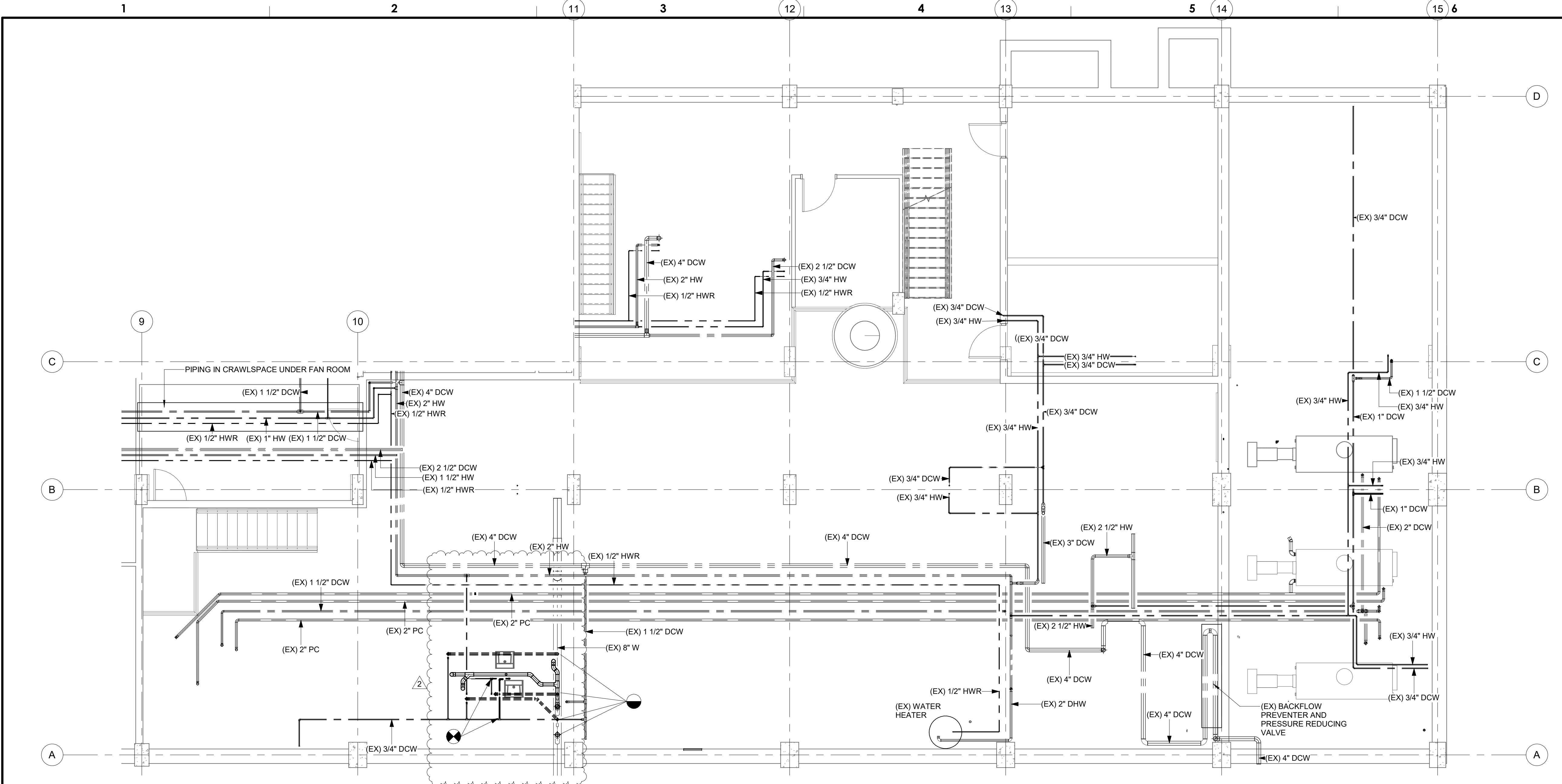
DCW ELECTRICAL ENGINEERING, INC.
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GENERAL NOTES:

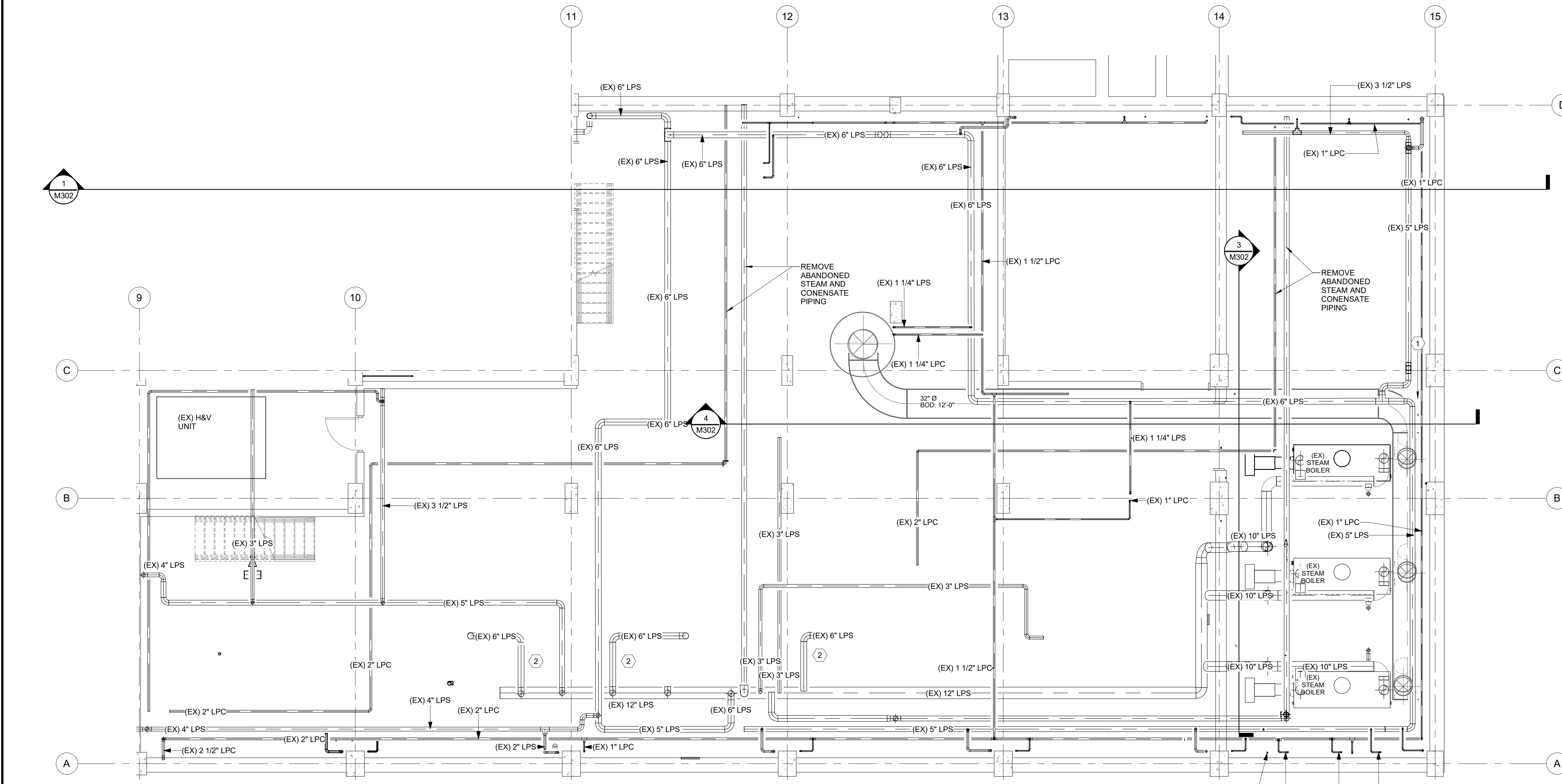
1. THE SCHOOL DISTRICT OFFICE OF ENVIRONMENTAL MANAGEMENT (OEM) HAS PROCURED AN ENVIRONMENTAL MANAGEMENT CONTRACTOR VIA A SEPARATE CONTRACT. ALL LEAD-BASED PAINT STABILIZATION AND ASBESTOS ABATEMENT WILL BE CONDUCTED VIA THIS SEPARATE CONTRACT. WORK EXECUTED VIA THIS SEPARATE CONTRACT WILL INCLUDE, BUT IS NOT LIMITED TO:
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 - REMOVAL OF BOILER BREACHING.
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7. LABEL ALL PIPING, NEW EQUIPMENT, AND NEW CONTROLS.

SHEET KEYNOTES

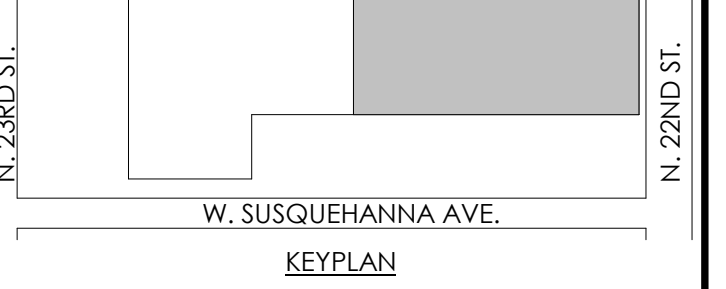
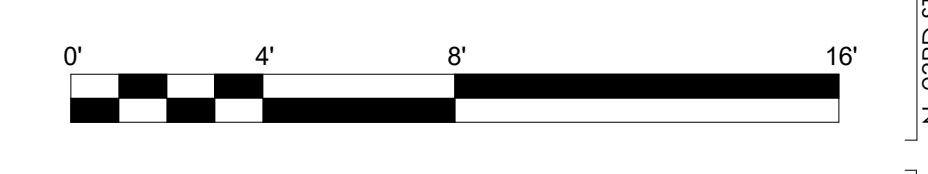
1. PROVIDE INSULATED DOUBLE-WALL BREACHING WITH LONG-SWEEP ELBOWS, BAROMETRIC DAMPERS, CLEANOUTS, ACCESSORIES, AND SUPPORTS FROM BOILERS TO CHIMNEY. TEE CONNECTIONS ARE NOT ACCEPTABLE. PROVIDE Y-TYPE FITTINGS. SUBMIT MANUFACTURER'S BREACHING SIZING CALCULATIONS FOR APPROVAL WITH PRODUCT SUBMITTAL.
2. REMOVE ABANDONED STEAM HEADER PIPING.



1 ENLARGED BOILER ROOM DOMESTIC WATER PIPING PLAN
SCALE: 3/16" = 1'-0"



2 ENLARGED BOILER ROOM HEATING PIPING PLAN
SCALE: 3/16" = 1'-0"



BID DOCUMENTS
18 FEB 2020

NO.	DATE	REVISION
2	18 MARCH 2020	ADDENDUM 2
1	31 JAN 2020	100% SUBMISSION

SCHOOL & LOCATION
ANNA B. PRATT ELEMENTARY SCHOOL
2200 N. 22ND ST., PHILADELPHIA, PA 19132

PROJECT TITLE
MAJOR RENOVATION, PHASE 1

DRAWING SCALE
MECHANICAL ENLARGED BOILER ROOM FLOOR PLANS

DRAWING SCALE	FILE NO.
As indicated	N/A
LOCATION NO.	4390
DRAWN BY	CHECKED BY
ACS	BMW
8-051(c) of 2019/2020	
8-052(c) of 2019/2020	
8-053(c) of 2019/2020	

DRAWING NO.
M401
SHEET 29 OF 40

Local File: BMW_360/1033684 - School District of Philadelphia (R2020)\\33684_015_M_R20.rvt
 Central File: 6210
 Project Number: N/A
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UNIT #	TOTAL CFM	MIN OACFM	STEAM COIL		ELECTRICAL			BASIS OF DESIGN		REMARKS
			HEATING CAPACITY (BTUH)	STEAM PRESSURE (PSIG)	V	PH	HP	MANUFACTURER	MODEL	
UV-106A	750	250	49330	3.00	120	1	0.25	TRANE	VUVE0751	
UV-106B	750	250	49330	3.00	120	1	0.25	TRANE	VUVE0751	
UV-109	1250	415	83930	3.00	120	1	0.25	TRANE	VUVE1251	
UV-110	1250	415	83930	3.00	120	1	0.25	TRANE	VUVE1251	
UV-111	1250	415	83930	3.00	120	1	0.25	TRANE	VUVE1251	
UV-112	1250	415	83930	3.00	120	1	0.25	TRANE	VUVE1251	
UV-113	1250	415	83930	3.00	120	1	0.25	TRANE	VUVE1251	
UV-114	1250	415	83930	3.00	120	1	0.25	TRANE	VUVE1251	
UV-201A	750	250	49330	3.00	120	1	0.25	TRANE	VUVE0751	
UV-201B	750	250	49330	3.00	120	1	0.25	TRANE	VUVE0751	
UV-202A	750	250	49330	3.00	120	1	0.25	TRANE	VUVE0751	
UV-202B	750	250	49330	3.00	120	1	0.25	TRANE	VUVE0751	
UV-202C	750	250	49330	3.00	120	1	0.25	TRANE	VUVE0751	
UV-202D	750	250	49330	3.00	120	1	0.25	TRANE	VUVE0751	
UV-208A	750	250	49330	3.00	120	1	0.25	TRANE	VUVE0751	
UV-208B	750	250	49330	3.00	120	1	0.25	TRANE	VUVE0751	
UV-209	1250	415	83930	3.00	120	1	0.25	TRANE	VUVE1251	
UV-210A	750	250	49330	3.00	120	1	0.25	TRANE	VUVE0751	
UV-210B	750	250	49330	3.00	120	1	0.25	TRANE	VUVE0751	
UV-211	1250	415	83930	3.00	120	1	0.25	TRANE	VUVE1251	
UV-212A	750	250	49330	3.00	120	1	0.25	TRANE	VUVE0751	
UV-212B	750	250	49330	3.00	120	1	0.25	TRANE	VUVE0751	
UV-213	1250	415	83930	3.00	120	1	0.25	TRANE	VUVE1251	
UV-214	750	250	49330	3.00	120	1	0.25	TRANE	VUVE0751	
UV-301A	750	250	49330	3.00	120	1	0.25	TRANE	VUVE0751	
UV-301B	750	250	49330	3.00	120	1	0.25	TRANE	VUVE0751	
UV-302A	750	250	49330	3.00	120	1	0.25	TRANE	VUVE0751	
UV-302B	750	250	49330	3.00	120	1	0.25	TRANE	VUVE0751	
UV-308A	750	250	49330	3.00	120	1	0.25	TRANE	VUVE0751	
UV-308B	750	250	49330	3.00	120	1	0.25	TRANE	VUVE0751	
UV-309	1250	415	83930	3.00	120	1	0.25	TRANE	VUVE1251	
UV-310A	750	250	49330	3.00	120	1	0.25	TRANE	VUVE0751	
UV-310B	750	250	49330	3.00	120	1	0.25	TRANE	VUVE0751	
UV-311	1250	415	83930	3.00	120	1	0.25	TRANE	VUVE1251	
UV-312A	750	250	49330	3.00	120	1	0.25	TRANE	VUVE0751	
UV-312B	750	250	49330	3.00	120	1	0.25	TRANE	VUVE0751	
UV-313	1250	415	83930	3.00	120	1	0.25	TRANE	VUVE1251	
UV-314A	750	250	49330	3.00	120	1	0.25	TRANE	VUVE0751	
UV-314B	750	250	49330	3.00	120	1	0.25	TRANE	VUVE0751	
UV-315	750	250	49330	3.00	120	1	0.25	TRANE	VUVE0751	

- NOTES:
 1. PROVIDE WITH OUTSIDE AIR DAMPER, FACE AND BYPASS DAMPER, ADAPTER BACK, ECM MOTOR(S), 14 GAUGE ENCLOSURE, BACNET CONTROLLER, FILTER ASSEMBLY, AND SINGLE POINT POWER CONNECTION.
 2. FURNISH WITH REMOTE TEMPERATURE SENSOR, FAN SPEED SWITCH, AND CARBON DIOXIDE OCCUPANCY SENSOR.
 FOR INFORMATION ONLY - EQUIPMENT FURNISHED BY THE SCHOOL DISTRICT TO THE MECHANICAL CONTRACTOR

PIPING SYSTEM	INSULATION CONDUCTIVITY (btu-in./h-ft ² -R)	PIPE SIZE	INSULATION THICKNESS
LOW PRESSURE STEAM BLOWDOWN, AND STEAM VENT	0.27 - 0.30	< 4"	2-1/2"
		> 4"	3"
LOW PRESSURE CONDENSATE, PUMPED CONDENSATE, FEEDWATER	0.25 - 0.29	< 4"	1-1/2"
		> 4"	2"
DOMESTIC HOT WATER	0.21 - 0.28	< 1-1/2"	1"
		> 1-1/2"	1-1/2"
DOMESTIC COLD WATER	0.21 - 0.27	< 1-1/2"	1/2"
		> 1-1/2"	1"
RAIN WATER AND SANITARY	0.20 - 0.26	< 8"	1"
		> 8"	1.5"

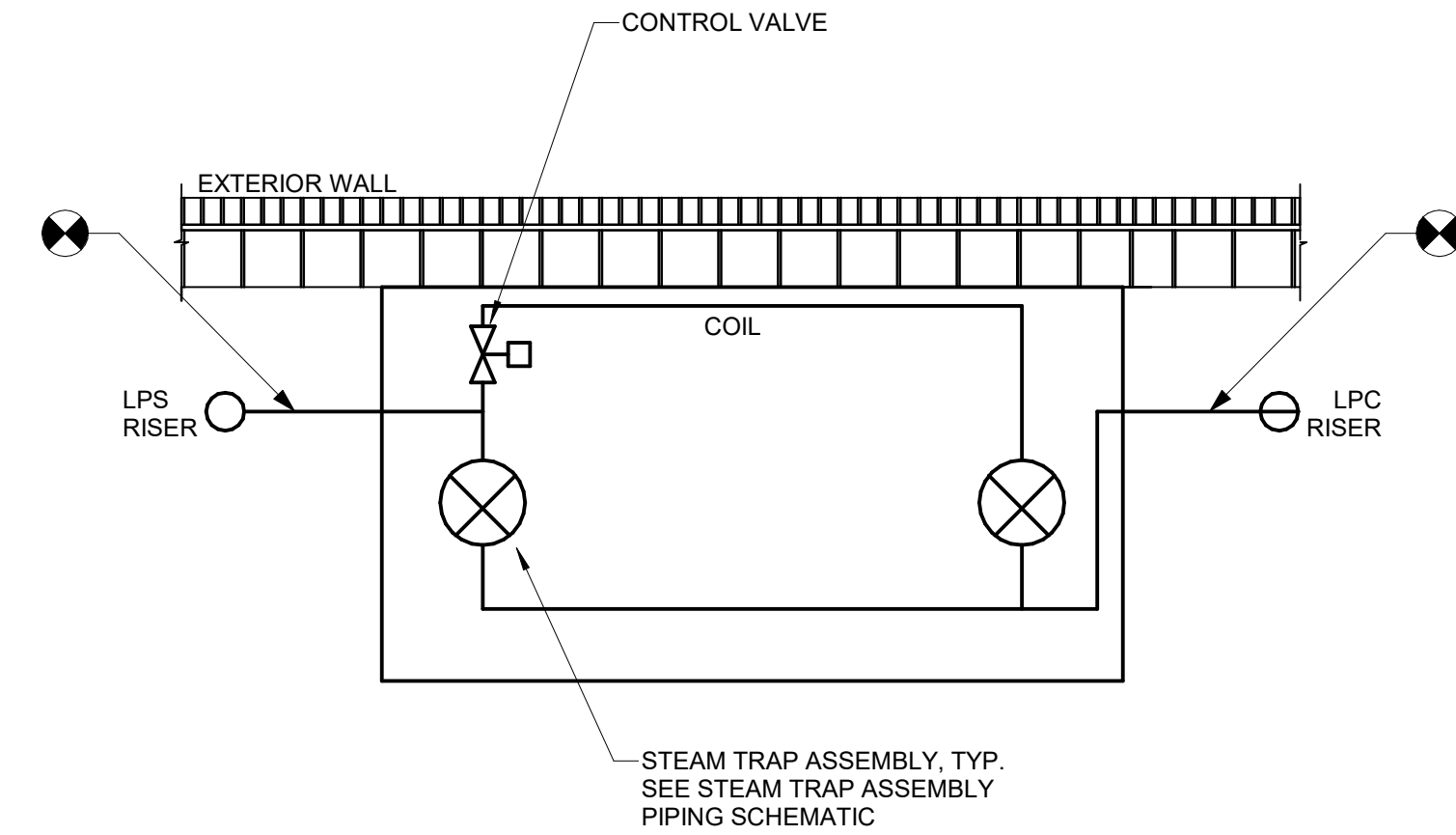
* PROVIDE JACKETING ON ALL EXPOSED PIPING BELOW 7'-0" ABOVE FINISHED FLOOR

PLUMBING FIXTURE SCHEDULE

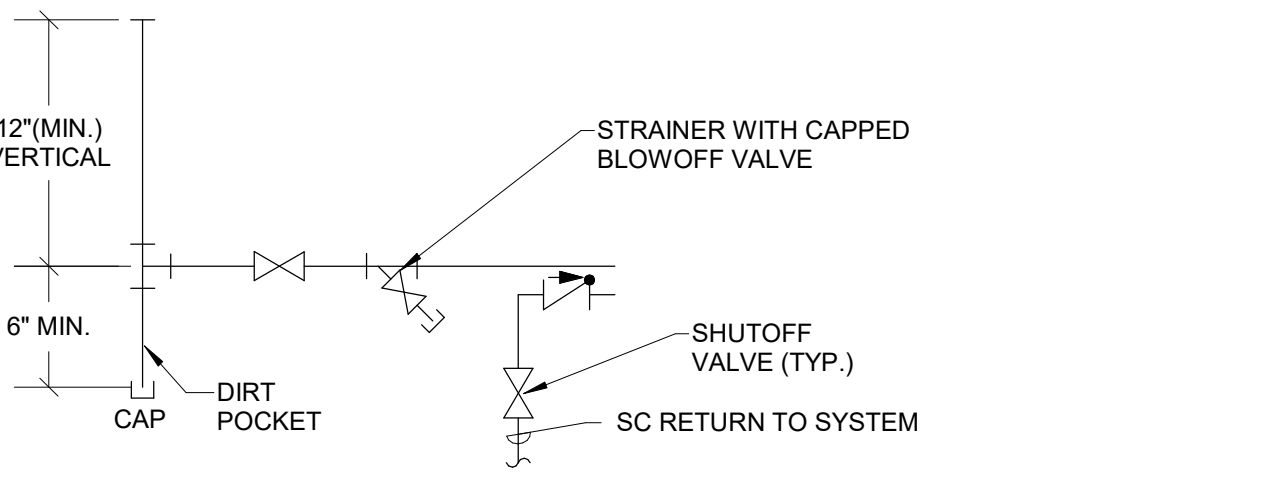
TAG	FIXTURE	MANUFACTURER	FAUCET / FLUSH VALVE	CARRIER / SUPPORT	ACCESSORIES			MISC.
					SUPPLIES	DRAIN ASSEMBLY	TRAP	
WC-1	WATER CLOSET	AMERICAN STANDARD 'BABY DEVRO'	SELETRONIC 60650	N/A			INTEGRAL	SEAT, BABY DEVRO SEAT WHITE
LAV-1	LAVATORY	KOHLER HUDSON K-2805	SPEAKMAN SC-3004-LD-BO	J. R. SMITH FIGURE 0700 OR FIGURE 0700-E	McGUIRE BV170	McGUIRE HD155A-C	McGUIRE 8872-CF	TRUEBRO INC HAND LAV-GUARD MODEL 102 (TRP & SUPPLIES)

PLUMBING PIPE AND FITTING SCHEDULE

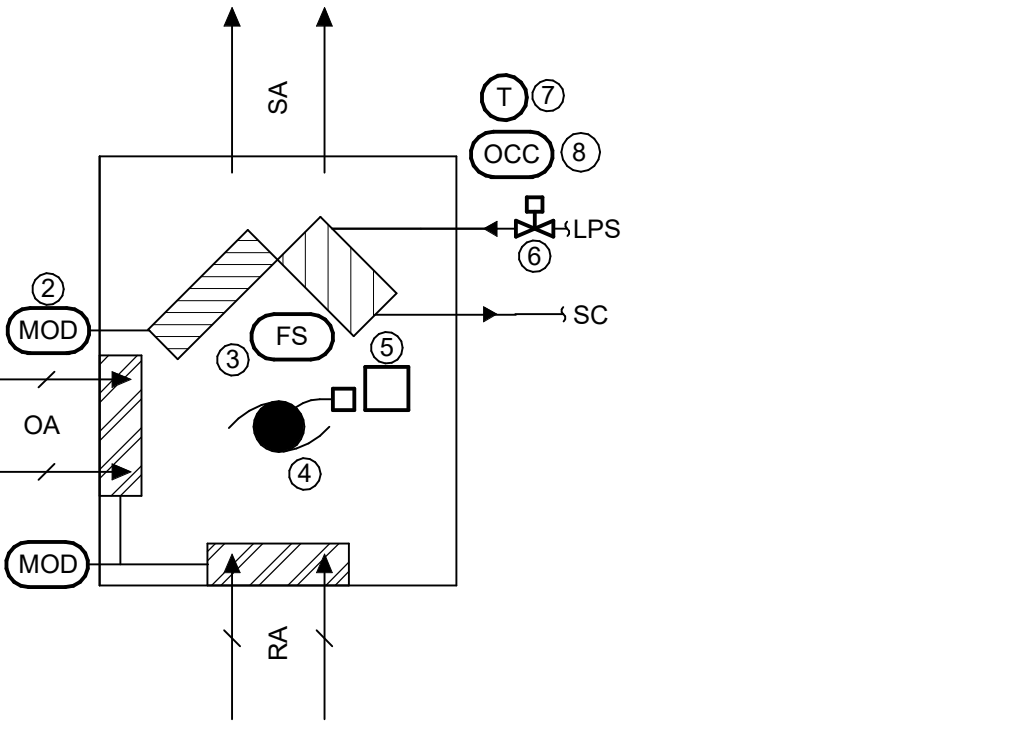
SYSTEM	PIPE SIZE	LOCATION	MATERIAL	SCHEDULE OR TYPE	FITTING	JOINT	REMARKS
SANITARY	2" & LARGER	BELOW GRADE	PVC	SCH 40	PVC	BELL & SPIGOT	PUSH-ON RUBBER GASKET JOINTS
		ABOVE GRADE/GROUND	PVC	SCH 40	PVC	NO-HUB	STAINLESS STEEL CLAMPS & NEOPRENE GASKETS
SANITARY VENT	1 1/2" & SMALLER	ABOVE GRADE/GROUND	COPPER	TYPE "DWV"	COPPER	SOLDERED	95% TIN & 5% ANTIMONY SEE NOTE 1
		ABOVE GROUND	PVC	SCH 40	PVC	NO-HUB	STAINLESS STEEL CLAMPS & NEOPRENE GASKETS
DOMESTIC WATER	1 1/2" & SMALLER	ABOVE GRADE/GROUND	PVC	SCH 40	PVC	SOLDERED	95% TIN & 5% ANTIMONY
		ALL	ABOVE GRADE/GROUND	COPPER	TYPE "L"	COPPER	SOLDERED
DOMESTIC WATER	2" & SMALLER	BELOW GRADE	COPPER	TYPE "K"	SOFT COPPER	SOLDERED	95% TIN & 5% ANTIMONY



1 CLASSROOM UNIT VENTILATOR
SCALE: 12" = 1'-0"



2 STEAM TRAP ASSEMBLY PIPING SCHEMATIC
SCALE: 12" = 1'-0"



3 TYPICAL UNIT VENTILATOR CONTROL DIAGRAM
SCALE: 12" = 1'-0"

INSTRUMENT #	FURNISHED BY	INSTALLED BY	CONTROL WIRING PROVIDED BY	POWER WIRING PROVIDED BY	INSTRUMENT DESCRIPTION	DESCRIPTION
1	SDP	MFG	MFG	MFG	OUTSIDE AIR DAMPER	OA NORMALLY CLOSED
2	SDP	MFG	MFG	N/A	FACE AND BYPASS DAMPER	
3	SDP	MFG	MFG	MFG	FREESTAT	
4	SDP	MFG	MFG	MFG	EC MOTOR FAN STATUS	
5	SDP	MFG	MFG	N/A	UV CONTROLLER	BACNET
6	MC	MC	MC	MC	2-WAY CONTROL VALVE	STEAM, NORMALLY OPEN
7	SDP	MC	MC	N/A	REMOTE THERMOSTAT / TEMPERATURE SENSOR	ROOM TEMP - WALL MOUNTED SETPOINT CONTROL AND OCCUPANCY
8	SDP	MC	MC	N/A	REMOTE OCCUPANCY SENSOR	CEILING MOUNTED - CARBON DIOXIDE

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BID DOCUMENTS

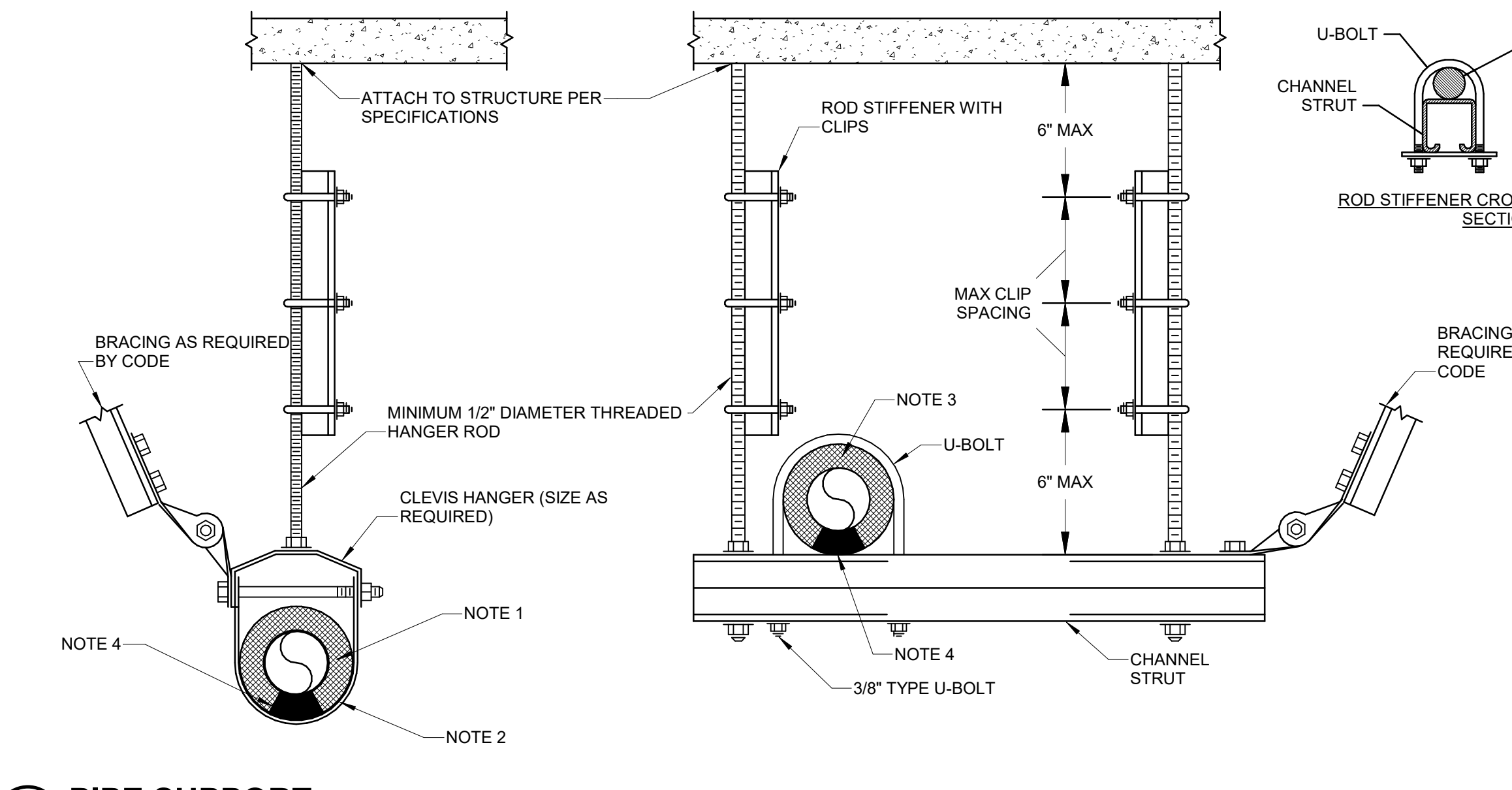
NO	DATE	REVISION
1	31 JAN 2020	100% SUBMISSION
2	18 MARCH 2020	ADDENDUM 2

SCHOOL & LOCATION
ANNA B. PRATT ELEMENTARY SCHOOL
 2200 N. 22ND ST., PHILADELPHIA, PA 19132

PROJECT TITLE
 MAJOR RENOVATION, PHASE 1

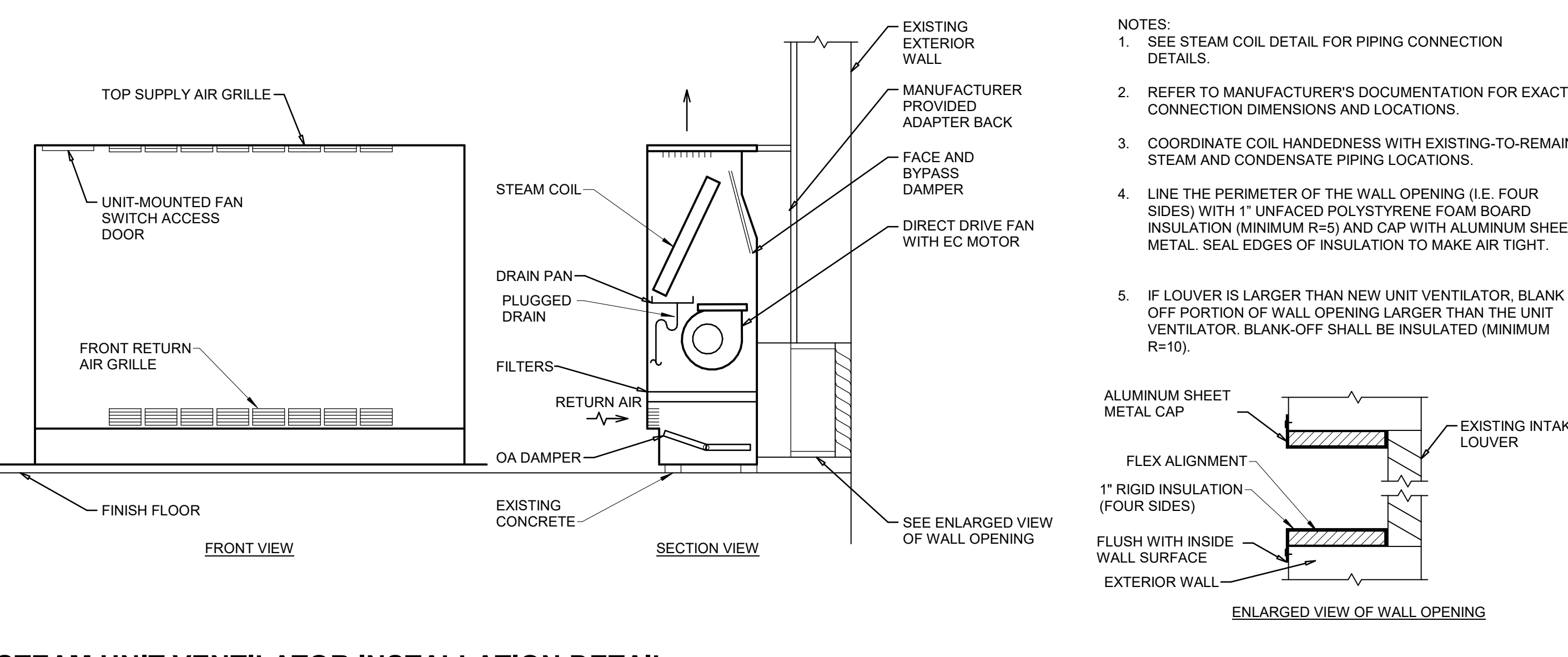
DRAWING SCALE
 MECHANICAL SCHEDULES AND DETAILS

DRAWING SCALE	FILE NO.
12" = 1'-0"	N/A
LOCATION NO.	4390
DRAWN BY	CHEKED BY
ACS	BMW
DRAWING NO.	M501
SHEET 30 OF 40	



ROD SIZE	MAXIMUM SPACING BETWEEN STIFFENER CLIPS		MAXIMUM LENGTH FOR THREADED ROD		
IN	MM	IN	MM	IN	MM
3/8	9.53	19	483	1'-7"	480
1/2	12.70	25	635	2'-1"	640
5/8	15.88	31	787	2'-7"	790
3/4	19.05	37	940	3'-1"	940
7/8	22.23	43	1092	3'-7"	1090
1	25.40	50	1270	4'-2"	1270

NOTES:
 1. ROD STIFFENER ASSEMBLY IS NOT REQUIRED IF ROD LENGTH IS LESS THAN THE MAXIMUM LENGTH SPECIFIED FOR THREADED ROD.
 2. A MINIMUM OF 2 CLIPS IS REQUIRED PER ASSEMBLY.
 3. STIFFENERS ARE REQUIRED ONLY ON HANGER RODS AT BRACE LOCATIONS.
 4. HIGH DENSITY INSULATION INSERT LOWER HALF OF PIPE. EXTEND 2" BEYOND PROTECTION SHIELD EACH WAY.
 5. TYPE 40 PROTECTION SHIELD AT BOTTOM AT EACH HANGER.
 6. HIGH DENSITY INSULATION INSERT UPPER AND LOWER HALF OF PIPE. EXTEND 2" BEYOND PROTECTION SHIELD EACH WAY.
 7. TYPE 40 PROTECTION SHIELD TOP AND BOTTOM, WITH SUPPORT BLOCK.



5 STEAM UNIT VENTILATOR INSTALLATION DETAIL

Local File: B:\2019\103984 - School District of Philadelphia (2020)\103984_015_M_020.rvt
 Central File: 0210
 Project Number: N/A
 3/18/2020 10:43:30 AM

GENERAL DEMOLITION NOTES

- 1. ALL ELECTRICAL DEVICES AND WIRING/CONDUIT ASSOCIATED WITH DEMOLISHED MECHANICAL EQUIPMENT SHALL BE REMOVED OR AS NOTED - SEE SHEET NOTES. REFER TO MECHANICAL DRAWINGS FOR EXTENT OF DEMOLITION AND ADDITIONAL NOTES.
2. E.C. SHALL VERIFY THE PANEL DESIGNATION AND CIRCUIT NUMBER FOR EACH DEVICE TO BE REMOVED.
3. ALL SYMBOLS SHOWN LIGHTLY SOLID ARE EXISTING ELECTRICAL DEVICES/EQUIPMENT TO REMAIN.
4. ALL WIRING/CONDUIT LEFT UNUSED SHALL BE REMOVED TO ITS POINT OF ORIGIN AND CIRCUIT BREAKER TO BECOME SPARE.
5. PANELBOARDS WHICH ARE AFFECTED BY THE DEMOLITION AND NEW WORK SHALL HAVE THE PANEL SCHEDULES REVISED.
6. COORDINATE ALL WORK WITH OTHER TRADES.
7. ELECTRICAL CONTRACTOR SHALL NOT DISCONNECT ANY EQUIPMENT, OR ELECTRICAL CIRCUITS IN THE RENOVATED AREA WITHOUT PRIOR NOTIFICATION AND PERMISSION FROM MAINTENANCE AND ENGINEERING DEPARTMENT. EXTREME CARE SHALL BE TAKEN TO MINIMIZE DISTURBANCE TO SURROUNDING AREAS.
8. VERIFY ALL CONDITIONS AT JOB SITE.

KEY NOTES - DEMOLITION

- 1 EXISTING MECHANICAL EQUIPMENT TO BE REMOVED BY OFFICE OF ENVIRONMENTAL MANAGEMENT (OEM) CONTRACTOR. ELECTRICAL CONTRACTOR SHALL DISCONNECT EQUIPMENT AND REMOVE ALL ELECTRICAL DEVICES AND WIRING. SEE ELECTRICAL DEMOLITION NOTES.
2 EXISTING LIGHT FIXTURE TO BE REMOVED. MAINTAIN EXISTING ELECTRICAL CIRCUIT FOR CONNECTION OF NEW LIGHTS.
3 EXISTING LIGHT SWITCH SHALL BE REMOVED.
4 EXISTING EXHAUST FAN TO BE REMOVED BY M.C. E.C. SHALL DISCONNECT THE UNIT AND REMOVE DISCONNECT SWITCH. MAINTAIN EXISTING CIRCUIT FOR CONNECTION TO NEW EXHAUST FAN.

GENERAL NOTES

- 1. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL DISCONNECT SWITCHES AND PROVIDE CONDUIT AND WIRING FROM PANEL TO DISCONNECT SWITCH AND FROM DISCONNECT SWITCH TO MOTOR FOR ALL NEW HVAC UNITS.
2. MECHANICAL CONTRACTOR WILL PROVIDE WIRING AND CONDUIT FOR CIRCUITS LESS THAN 120V.
3. ELECTRICAL CONTRACTOR WILL PROVIDE WIRING AND CONDUIT FOR CIRCUITS GREATER AND EQUAL TO 120V.

KEY NOTES - NEW WORK

- 1 PROVIDE NEW DEDICATED CIRCUIT (CONDUIT AND WIRE) TO NEW PANELBOARD.
2 PROVIDE NEW SHARED CIRCUIT (CONDUIT AND WIRE) TO NEW PANELBOARD.

TESTING OF MULTIPAIR COPPER CABLES: ALL MULTIPAIR CABLES, EXISTING AND NEW, CAT-6, CAT-5, ETC. SHALL BE TESTED FOR WIRE MAP, CONTINUITY, CABLE LENGTH AND DISTANCE TO FAULTS (IF ANY), THE WIRE MAP TEST SHALL IDENTIFY MISWIRES, SHORTS, OPENS, REVERSALS AND SPLIT PARS. CABLE TESTERS SHALL SUPPORT CAT-6, CAT-5, ETC. CHANNEL AND DEFAULT MODES: 7 9F4 7 5H4 B; MODES: G 5 8DFC J 8 9 5 7 71 F 5 7 M8C B 8 15 LEVEL. REQUIREMENTS TRACEABLE TO LABORATORY REFERENCE STANDARDS. TESTER SHALL SUPPORT A FREQUENCY RANGE 1-550 MHz WITH ACCURACY TO THE CURRENT PROPOSED TIA LEVEL. ALSO, TESTER SHALL SUPPORT THE FOLLOWING TESTS:

- NEAR END CROSSTALK (NEXT)
- ATTENUATION
- EQUAL LEVEL FOR END CROSSTALK (ELFEXT)
- RETURN LOSS
- AMBIENT NOISE
- WIRE MAP
- PROPAGATION DELAY
- LOOP RESISTANCE
TESTER SHALL SUPPORT THE FOLLOWING TEST STANDARDS:
A. TIA CAT-6 AND ISO CLASS 5
B. TIA CAT-5
C. TIA TSB-65
D. TIA CAT-3, 4 AND 5 PER TIA TSB-67
E. UTP, STP, SCVP COAXIAL AND TWINAX CABLING
F. IEEE 802.3/4 AND 10BASE-T/FIBER OPTIC INTERFACES
G. IEC 60385/IEEE 802.3 ABX
H. IEEE 802.3

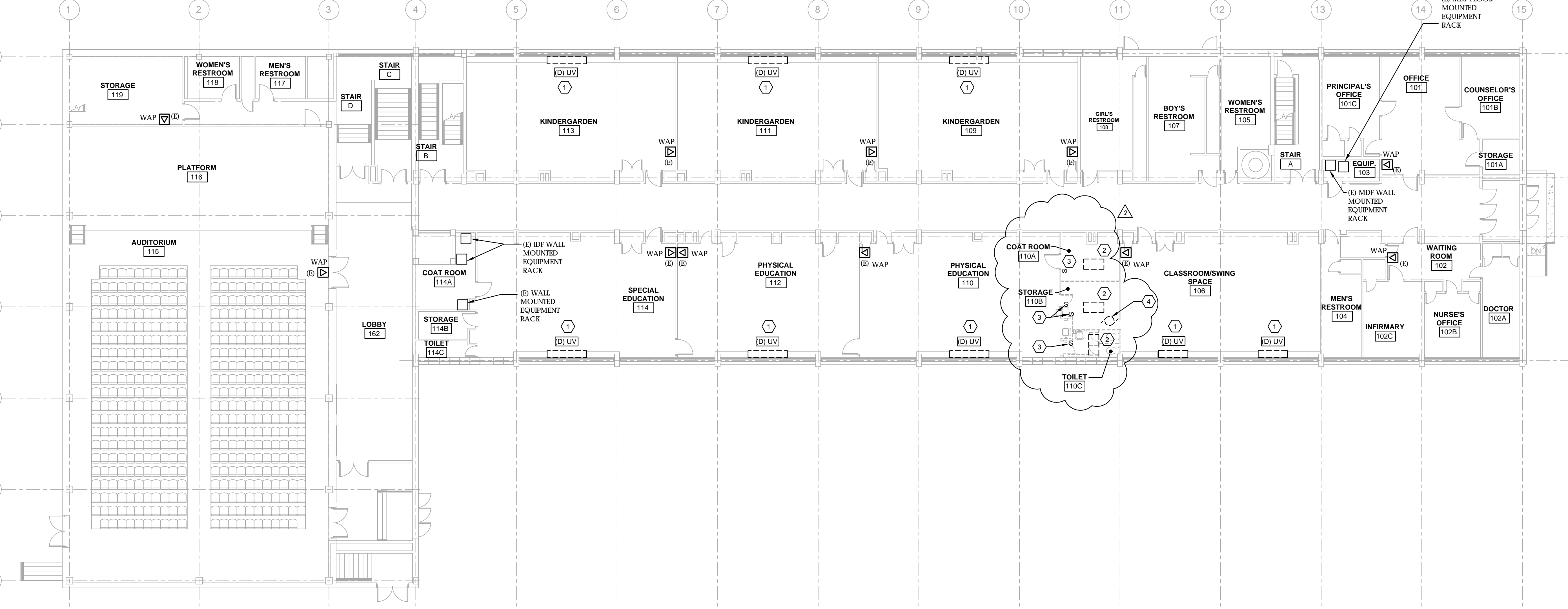
TEST RESULTS SHALL BE PROVIDED IN HARD COPY AND SOFT COPY. ALONG WITH THE SOFT COPY THE CONTRACTOR SHALL PROVIDE A COPY OF THE SOFTWARE REQUIRED TO READ THE TEST RESULTS. ANY CABLE FOUND NOT TO PASS THE TESTS SHALL BE REPORTED TO THE OWNER (ODP-IT PROJECT CONSTRUCTION MANAGER) 318 H DEL. BERKELMAN DR. CHESTER, PA 19380.
4 PATCH PANELS FOR TERMINATION OF UTP AND/OR STP CABLING SHALL BE PROVIDED TO TERMINATE ALL CABLES INSTALLED, EXISTING AND NEW, IN THE BUILDING. ALL PATCH PANELS SHALL BE PROVIDED INTO EXISTING RACKS AND/OR CABINETS LOCATED IN THE MDF AND IDF LOCATIONS AS SHOWN ON THE PLANS. PROVIDE PATCH PANELS TO TERMINATE ALL CABLES EVEN IF THE PANELS ARE NOT SPECIFICALLY SHOWN ON THE RACK LAYOUT DRAWINGS. PANELS SHALL BE STEEL 358 G-5 985 40C; C FACT B18E; C: 5407 511 21 918.48E; 7 5 08K2 5B8 4C F E CAT-6 (6A ONLY) CABLES; JACKS: PANELS SHALL BE BLANK, PANELS IN 24 AND 48 PORT CONFIGURATIONS THAT ACCEPTS ALL MODULAR JACKS; PANELS SHALL HAVE REAR CABLE SUPPORT BAR FOR STRAIN RELIEF WHICH SHALL CLIP TO THE REAR OF THE PATCH PANEL OR TO THE REAR OF THE RACK RAIL. PORTS SHALL BE MARKED ON IFC: 14 9C DDB-8; 0A 5 74C F M05 6065 6065 B 9K2 7 5 606C K 4 14 9 C K B F (SDP) APPROVED LABELS.

5 EXISTING AUDIO SYSTEM - THE CONTRACTOR SHALL VISIT EACH CLASSROOM AND OTHER ROOMS WHERE THE EXISTING AUDIO SYSTEM COMPONENTS ARE INSTALLED. LOCATION OF THE SPEAKERS AND ALL OTHER AUDIO SYSTEM COMPONENTS SHALL BE MARKED UP ON PROVIDED FLOOR PLANS. ALL CABLE INFRASTRUCTURE, EXISTING AND NEW, SHALL BE ACCEPTANCE TESTED, LABELED, AND IT SHALL BE DEMONSTRATED TO THE OWNER THAT EACH SPEAKER IS CONNECTED AND IN GOOD WORKING ORDER. PROVIDE A SAMPLE LABEL TO THE OWNER FOR APPROVAL PRIOR TO INSTALLATION. AFTER CONNECTION OF THE SYSTEM, THE CONTRACTOR SHALL CONFIRM ALL COMPONENTS TO ENSURE THE BEST SOUND POSSIBLE. THE CENTRE 51 8 C 0M4A G-5 009 7 C B-4 1 F98 14 69 5 7 C A D8H9 K C F 7 4; 0M4A "E"

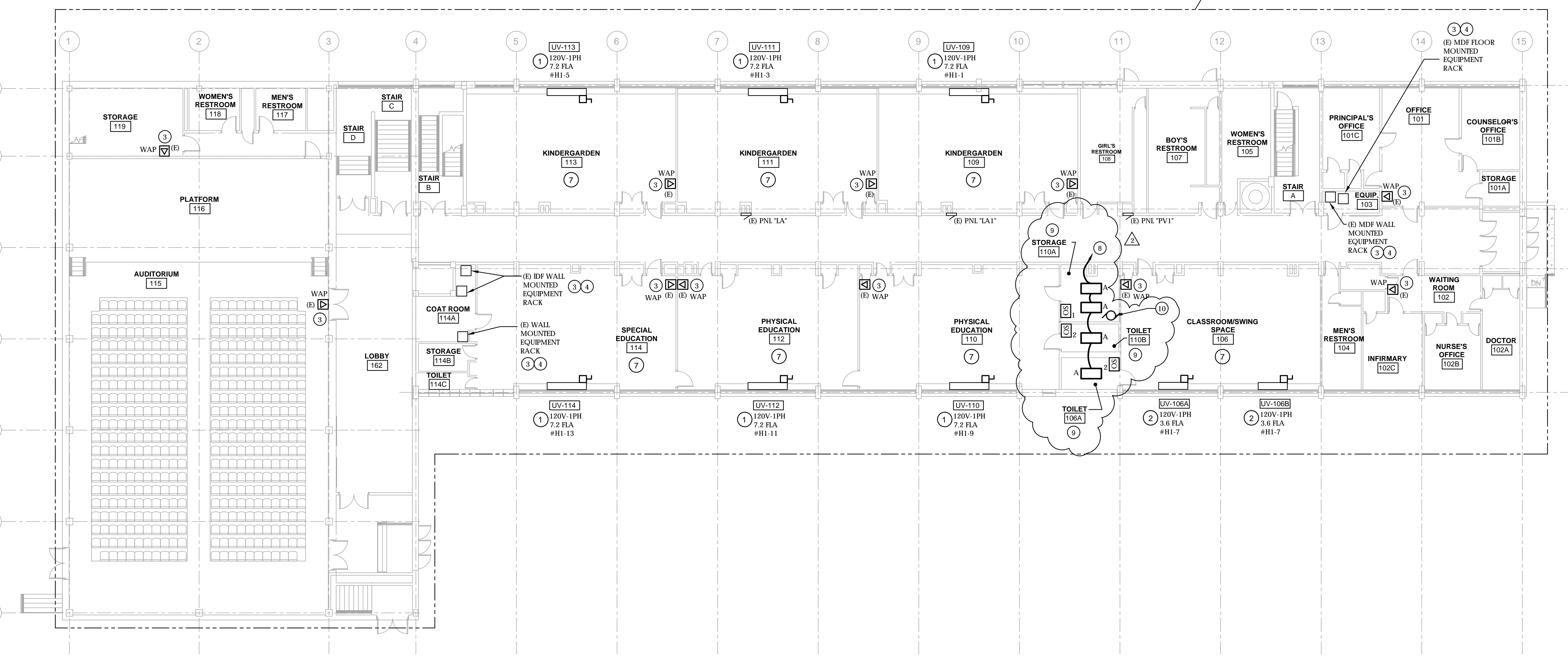
6 EXISTING TELECOMMUNICATION SYSTEM - THE CONTRACTOR SHALL VISIT EACH CLASSROOM AND OTHER ROOMS WHERE THE EXISTING TELECOMMUNICATION SYSTEM COMPONENTS ARE INSTALLED. LOCATION OF THE TELEPHONE, DATA OUTLETS AND ALL OTHER COMPONENTS SHALL BE MARKED UP ON PROVIDED FLOOR PLANS. ALL EXISTING CABLE INFRASTRUCTURE SHALL BE TESTED AS PER SHEET NOTE #1.
7 REPLACE DATA CONDUIT DAMAGED DURING REMOVAL OF TRACKBOARDS, WITH IN KIND TYPE. FIELD VERIFY. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATION OF ALL BOARDS SCHEDULED FOR DEMOLITION.

- 8 CONNECT TO EXISTING LIGHTING CIRCUIT AVAILABLE AFTER DEMOLITION OF EXISTING LIGHTS IN THE AREA. FIELD VERIFY CIRCUIT NUMBER.
9 PROVIDE NEW LIGHT FIXTURES:
A - LITHONIA #2TLX4-30L-A12-EZ1-1P835
1 [CS] WAIT STOPPER DSW-301 (MANUAL ON), OR EQUAL.
2 [CS] WAIT STOPPER WS-301 (AUTO ON), OR EQUAL.

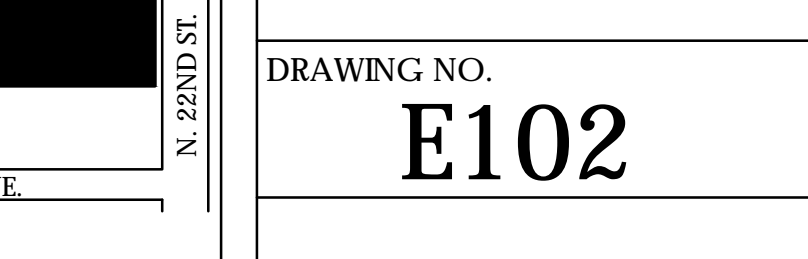
10 NEW EXHAUST FAN, FURNISHED WITH DISCONNECT SWITCH AND (2) RELAYS BY M.C. ELECTRICAL. CONTRACTOR SHALL CONNECT TO EXISTING CIRCUIT AVAILABLE AFTER DEMOLITION IS COMPLETED. EXTEND WIRING AS REQUIRED. PROVIDE ADDITIONAL WIRING AS NEEDED TO ALLOW CONTROL OF THIS FAN WITH OTHER OCCUPANCY SENSOR SWITCH IN EACH BATHROOM. REPLACE EXISTING 30A CIRCUIT BREAKER WITH NEW 15/2 C-COMPATIBLE WITH EXISTING PANELBOARD. A.I.C. RATING SHALL MATCH EXISTING. FIELD VERIFY.



1 FIRST FLOOR DEMOLITION PLAN - ELECTRICAL



2 FIRST FLOOR NEW WORK PLAN - ELECTRICAL



BID DOCUMENTS 18 FEBRUARY, 2020

Table with 2 columns: NO, DATE, REVISION. Contains bid addendum information.

SCHOOL & LOCATION ANNE B. PRATT ELEMENTARY SCHC

2200 N 22ND ST PHILADELPHIA, PA 19131

PROJECT TITLE MAJOR RENOVATION PHASE 1

DRAWING SCALE ELECTRICAL FIRST FLOOR PLANS

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DRAWING NO. E102