



Addendum # 1

New Jersey Schools Development Authority
Office of Procurement
1 West State Street
Trenton, NJ 08625
Phone: 609-777-1922
Fax: 609-656-4609

Date: February 20, 2013

PROJECT #: NT-0003-C02 RBI
New Phillipsburg High School

DESCRIPTION: Addendum # 1

This addendum shall be considered part of the Bid Documents issued in connection with the referenced project. Should information conflict with the Bid Documents, this Addendum shall supersede the relevant information in the Bid Documents.

A. CHANGES TO THE PROCUREMENT PROCESS:

Modifications to Request for Proposals

- 1. Section 4.1.5 of the RFP shall be modified as follows: (additions in bold and underline text; deletions in strikethrough and italics):

4.1.5 Plans and Specifications

Plans and specifications will be made available to the Bidder for review. A copy of the plans and specifications will be available for bidders to purchase upon payment of a non-refundable fee. **Plans and Specifications will be made available to prequalified firms via a controlled access website.**

B. CHANGES TO THE PROJECT MANUAL:

Incorporation of Addendum from Cancelled Procurement into Bid Documents upon Rebid

- 1. This procurement is a rebid of a previously advertised NJSDA procurement, which had been captioned NT-0003-CO2. The previously advertised procurement was cancelled without award.



A single Addendum (Addendum #1, NT-0003-C02) was issued as part of the Bid Documents in the previous procurement. The Addendum included revisions to the Bid Documents originally issued in that procurement, as well as questions submitted by bidders and responses to such questions from the Authority.

In order to ensure that bidders in the present procurement receive the benefit of the revisions and clarifications made in the Addendum issued in the prior, cancelled procurement, the NJSDA, by way of this Addendum, includes in the Bid Documents for the present procurement the full text of, and all attachments to, Addendum #1 from the previously-advertised NT-0003-CO2 procurement, included as Attachment 1.1 to this Addendum. Attachment 1.1. is incorporated into the Bid Documents for this procurement in its entirety, as if originally issued in this procurement, with the exception of one bidder question and the Authority response thereto. Bidder Question 1.16 in the Attachment, and the response thereto, have been redacted, and are not included in this procurement.

In all other respects, Attachment 1.1 hereto, the NT-0003-CO2 Addendum #1, shall be considered to be incorporated into, and appropriately modifying and clarifying, the Bid Documents originally issued for this procurement, NT-0003-C02 RBI.

C. CHANGES TO THE DRAWINGS:

- 1. Please note the changes to the Drawings as indicated in Attachment 1.1 hereto.

D. BIDDER'S QUESTIONS, REQUESTS FOR INFORMATION AND RESPONSES:

- 1. Not applicable.

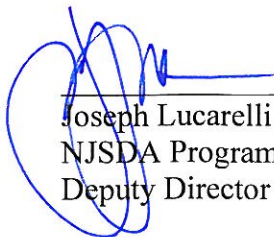
E. CHANGES TO PREVIOUS ADDENDA:

- 1. Not applicable.

F. ATTACHMENTS

Attachment 1.1 NT-0003-C02 Addendum #1 (issued in previous cancelled procurement; redacted as indicated above)

End of Addendum No. 1



Joseph Lucarelli
NJSDA Program Operations
Deputy Director

Date 2/19/13



Addendum #1

New Jersey Schools Development Authority
Office of Procurement
1 West State Street
Trenton, NJ 08625
Phone: 609-777-1922
Fax: 609-656-4609

Date: 2/20/13

PROJECT #: NJSDA # NT-0003-C02 RBI
New Phillipsburg High School

DESCRIPTION: Addendum #1

Addendum No. 1

Acknowledgement of Receipt of Addendum

Contractor hereby acknowledges the receipt of this Addendum by signing in the space provided below and returning via fax to (609-656-4608). Signed acknowledgements must be received prior to the Bid Due Date. Acknowledgement of the Addendum must be made in Section E.6 of the Price Proposal Submission.

Signature

Print Name

Company Name

Date

ATTACHMENT 1.1



Addendum # 1

NJSDA
1 West State Street
Trenton, NJ 08625
Phone: 609-943-5955
Fax: 609-656-4609

Date: November 21, 2012

PROJECT #: NT-0003-C02

DESCRIPTION: New Phillipsburg High School

This addendum shall be considered part of the Bid Documents issued in connection with the referenced project. Should information conflict with the Bid Documents, this Addendum shall supercede the relevant information in the Bid Documents.

A. CHANGES TO THE PROJECT MANUAL:

1.1 Revisions to General Conditions:

Section 21.18.1 of the General Conditions (“Buy American Requirements”) shall be revised as follows (additions in **bold and underlined** text; deletions in *strikethrough-and-italies*):

The Contractor shall comply with N.J.S.A.52:32-1 and N.J.S.A. 52:33-1 et seq., which prohibit the use by the Contractor or any Subcontractor of materials or farm products produced and manufactured outside of the United States on any public work. **The Authority interprets this requirement consistent with analogous federal guidance, which provides that goods may be considered “produced or manufactured in the United States,” without regard to the origin of components or subcomponents used in such manufactured goods, as long as the manufacturing (which includes assembly) occurs in the United States.**

1.2 Revisions to the Specifications:

a. Specifications, Division 1, Section 01010 – Summary of Work, Paragraph A.2, Page 12, Item: Printer/Copier/Fax/Scanner – Quality Level shall be revised as follows (additions in **bold and underlined** text; deletions in *strikethrough-and-italies*):

With multiple-paper trays, minimum 50 page automatic document feeder and duplexing capabilities. The machine must able to connect to all computers and devices within the trailer.

- b. Specifications, Division 1, Section 01850 – Warranties and Bonds, Paragraph 1.5.C shall be revised as follows (additions in **bold and underlined** text; deletions in ~~strikethrough and italics~~):

“Co-sign all Submittals. Contractor is responsible for coordination and completion of all warranty work during **one (1) year** warranty period.”

- c. Specifications, Division 8, Section 08 33 23 OVER HEAD COILING DOORS shall be revised as follows (additions in **bold and underlined** text; deletions in ~~strikethrough and italics~~):

Paragraph 2.2 (before Paragraph 2.3 ELECTRIC OPERATOR):

F: VISION PANELS

- 1. 10” x 1 ½” x ¾” thick oval acrylic pane set with double-sided foam glazing tape and fully contained within slat assembly. Refer to drawings for number and placement.**

- d. Specifications, Division 8, Section 08 80 00 GLAZING shall be revised as follows (additions in **bold and underlined** text; deletions in ~~strikethrough and italics~~):

Paragraph 2.2 – A, TYPE 2 – Insulating Vision Glass Units:

~~a. Outer Pane: Tinted Gray Tempered Glass~~

a. Outer Pane: Clear / Coated Tempered Glass

- e. Specifications, Division 9, Section 09 64 50 - WOOD ATHLETIC FLOORING shall be revised as follows (additions in **bold and underlined** text; deletions in ~~strikethrough and italics~~):

~~2.1, B, 2: Grade: Third and better~~

2.1, B, 2: Grade: Second and Better

~~2.1, B, 9: Length: Random, minimum of 24 inches~~

2.1, B, 9: Length: Random Length (RL)

~~2.1, C: Channel: 16 Gage coated continuous steel~~

2.1, C: Channel: NOT USED

~~2.2, B: Sleepers and Shims: Softwood lumber, pressure treated for moisture protection, 2 x 3 inch size.~~

2.2, B: Sleepers and Shims: Not used

~~2.2, D: Cushion Blocks: Resilient Pads~~

2.2, D: Cushion Blocks: Provide thickness required for specified wood floor depth & slab depression dimension

~~2.4, A: Wood Preservative (Pressure Treatment): A WPA Treatment C! using water borne preservative with 0.25 pef retainage.~~

2.4, A: Wood Preservative: Woodlife F dip treatment

~~3.1, A: Verify that concrete subfloor surface is smooth and flat to plus or minus 1/4 inch in 10 feet.~~

3.1, A: Verify that concrete subfloor surface is smooth and flat to plus or minus 1/8" in a 10' radius.

~~3.3, B: Secure cushion blocks to underside of sleepers.~~

3.3, B: Secure cushion blocks to plywood panel.

~~3.3, C: Lay sleeper end to end across short dimension of room at 12 inches oc, with joints staggered a minimum of 24 inches.~~

3.3, C: Install the lower subfloor perpendicular to the intended finish flooring direction. All joints shall be staggered 4' and spaced 1/4" apart.

~~3.3, C, 2: Shim sleepers to level line.~~

3.3, C, 2: NOT USED

~~3.3, E: Place one layer of plywood subflooring over the sleepers. Lay at right angles to the sleepers and fasten at 12 inches oc.~~

3.3, E: Install the upper subfloor diagonal to the lower subfloor staggering joint 4' and spacing 1/4" apart. Secure these panels using adhesive (box X pattern) and 1" staples placed 6" o.c. at panel perimeter and 12" o.c. throughout interior.

- f. Specifications, Division 10, Section 10 22 13 WIRE MESH PARTITIONS shall be deleted in its entirety.
- g. Specifications, Division 9, Section 11 66 23 GYMNASIUM EQUIPMENT shall be revised as follows (additions in **bold and underlined** text; deletions in *strikethrough and italics*):

~~2.2, 7. HEIGHT ADJUSTERS~~

- h. Specifications, Division 11, 11 66 23 GYMNASIUM EQUIPMENT (additions in **bold and underlined** text; deletions in *strikethrough and italics*):

2.7 WRESTLING MATS:

"Each mat to have block lettering to read PHILLIPSBURG on two sides and an 6 foot diameter school logo in the center".

- i. Specifications, Division 11, Section 11 66 43 SCOREBOARD (additions in **bold and underlined text**; deletions in *strikethrough and italics*):

~~2.3, B: Provide six (6) single face one side wall mounted scoreboards —~~

2.3, B: Provide three (3) single face one sided wall mounted scoreboards

- j. Specifications, Division 12, Section 12 61 00 FIXED AUDIENCE SEATING (additions in **bold and underlined** text; deletions in *strikethrough and italics*):

2.1, 2, A: Audience Seating

2.1, 2, A: Irwin Seating Company

2.1, 2, B: Jezet Seating

2.1, 2, B: Preferred Seating

- k. Specifications, Division 12, Section 12 66 00 TELESCOPING BLEACHERS (additions in **bold and underlined text**; deletions in *strikethrough and italics*):

2.1, B, 3: Or approved equal

2.1, B, 3: Irwin Seating Company

2.1, B, 4: Or approved equal

- l. Specifications, Division 12, Section 12 66 23 TELESCOPIC CHAIR PLATFORMS (additions in **bold and underlined text**; deletions in *strikethrough and italics*):

2.1, B, 1: Audience Seating

2.1, B, 1: Irwin Seating Company

2.1, B, 2: Jezet Seating

2.1, B, 2: Preferred Seating

1.3 REPLACEMENT OF SPECIFICATION SECTIONS:

The following Specification Sections issued with the original RFP package should be deleted in their entirety and replaced with the revised Specification Sections of the same names, issued herewith as Exhibit 1.

- a. Specifications, Division 11, Section 11 40 00 – FOOD SERVICE EQUIPMENT
- b. Specification, Division 22, Section 22 66 00 – CHEMICAL WASTE SYSTEMS FOR LAB FACILITIES
- c. Specifications, Division 23, Section 23 09 00 – INSTRUMENTATION AND CONTROL FOR HVAC
- d. Specifications, Division 23, Section 23 09 93 – SEQUENCE OF OPERATIONS FOR HVAC CONTROLS
- e. Specifications, Division 23, Section 23 43 10 – DUST COLLECTOR

- f. Specifications, Division 26, Section 26 43 13 – SURGE PROTECTIVE DEVICES FOR L.W. ELEC POWER CIRCUITS
- g. Specifications, Division 26, Section 26 55 61 – THEATRICAL EQUIPMENT, DIMMING AND RIGGING
- h. Specifications, Division 26, Section 26 55 63 – REMOTE SOUND REINFORCEMENT SYSTEMS

B. BIDDER QUESTIONS AND NJSDA RESPONSES:

1.4 Question: Reference is made to General Conditions Article 19.2 which differs from specification section 01850 in terms of their stated warranty periods. Please confirm whether the warranty period for this project is for one or two years.

Answer: General Conditions take precedence to the Specifications Division 1- General Requirement sections. Hence, as stated in Article 19.2, the warranties shall commence upon Substantial Completion of the Project and continue for one (1) year. Please refer to Item 1.2b, herein, which modifies Specification Section 08150-Warranties and Bonds, to reflect a one year Contractor's warranty period.

1.5 Question: In reference to the finishing hardware and specification section 087100 Paragraph 2.6G, indicates Sargent manufactured exit devices; also, Paragraph 2.10D indicates Norton door closers. Please confirm equivalent products of manufacturer such as Precision, Von Duprin, Corbin and Yale exit devices along with LCN, Stanley door closures are acceptable.

Answer: Alternates to "Sargent" Exit Devices and "Norton" door closers are NOT acceptable in light the School District Proprietary's requests and SDA's acceptance of same.

1.6 Question: A note on the wall type schedule located on all floor plans indicates that all untagged partitions are either 6" CMU or 6" metal studs. Please confirm that these untagged partitions are either 6" CMU or 6" metal studs based on the wall symbols listed in wall type schedule. For example, the partitions between classrooms shown on Drawing A1.1.1 are untagged and not hatched. Therefore, should these walls be 6" CMU based on symbol shown in wall type schedule?

Answer: As per the footnote on the WALL TYPE SCHEDULE (that appears on the floor plans) all untagged partitions are either CMU or metal stud, depending on the partition hatch as indicated on the symbols.

An unhatched, untagged partition is a D6 type - 6" CMU partition. A double line hatched, untagged partition is a A6 - metal stud & gypsum board partition.

1.7 Question: On the drawings, they refer to a UL classified fire rated block in which the block manufacturers must hold the license to sell that cmu unit under a UL. Just about all manufacturers are using ASTM E 119 the standard test methods for fire tests of building construction and materials. Will this equivalent thickness

fire rating be acceptable?

Answer: The fire-resistance rating of building elements shall be determined in accordance with the test procedures set forth in ASTM E 119 or in accordance with Section 703.3 of the International Building Code 2006, New Jersey Edition.

1.8 Question: In reference to the finishing hardware Spec Section 087100, lock sets and cylinders are referred to as "Best Brand" lock sets and cylinders. Are these products to be keyed into the existing district wide "Best Brand" master key system or are they to be keyed to a new "Best Brand" master key system? Please advise.

Answer: The lock sets and cylinders must be keyed in the existing district wide "Best Brand" master key system.

1.9 Question: "Section 11 6643, 1.1 C. states that ten (10) locker room referee and coaches office clocks with transmitter link to scoreboards are to be included. Transmitter link, or wireless control, of these locker room clocks will not be reliable as there will be a great possibility of time lag using wireless communication.

There are two recommended means of communication between the control console and these clocks to prevent time lag. First, a hard-wired data cable connection to either a wireless scoreboard or a wireless shot clock. The locker room clocks can then be daisy-chained together using data cable. Second, a Wireless receiver(s) may be remotely located inside the gym with data cable running from the receiver to the clock(s). The locker room clocks in this scenario may also be daisy-chained together to reduce the number of remote receivers in the gym.

Please advise how the locker room clocks are to communicate with the scoring system in the gym."

Answer: Wireless receiver to be remotely located inside the gym with data cable running from the receiver to the clocks. Receivers to be in line of sight of wireless control. Locker room clocks to be daisy-chained together to reduce the number of remote receivers in the gym. Amount of receivers to be based on the maximum length of data cable runs as permitted by the manufacture recommendations.

1.10 Question: Spec Section 114000, #5 calls for KM-901MAH ice maker with a B-900 bin. The B-900 bin comes as either a B-900PF or B-900SF. The PF is PVC exterior and the SF is Stainless Steel exterior. Please advise which one.

Answer: B-900 SF (stainless steel)

1.11 Question: Re: Section 096450 - Wood Athletic Flooring Re: Section 096450 - Wood Athletic Flooring Specification Robbins Bio-Cushion Classic – is a two layered plywood

sub-floor system with resilient pads attached to underside of bottom layer of plywood with maple strip flooring attached to top layer of plywood. Installation from concrete substrate up is as follows. Vapor barrier - resilient pads attached to bottom layer of 15/32" plywood and laid on top of vapor barrier. 2nd layer (top) of plywood is attached to bottom layer of plywood by stapling the two layers together. Maple strip flooring is then nailed to the plywood subfloor.

Item in question in specifications are as follows:

Part 2 - Products

Part 2 2.1 B.

Item 2. Grade Third and better Based on the availability of 5/4" lumber and the cost of same to furnish third and better and to meet grade would be very expensive. Best bet is to change grade to 2nd btr from a cost stand point. In today's market 33/32" maple is running about \$ 1.00 per sq. ft. more in cost than standard 25/32" maple strip flooring and with the availability of 33/32" rough lumber in short supply the cost may be even greater later on say 2014-15. Our recommendation might be to use 2nd btr in the main playing field and 3rd grade for the surround, or change the

Answer: Refer to Item 1.2e, above for modifications to the specification in question to refer to "Second or better" grade.

1.12 Question: Item 9. Length: Random minimum 24 inches. No MFMA mill can do this for 33/32" material cost prohibitive.

Part 2.2.1 C. Channel: 16 gage coated continuous steel. There is no steel channel in the Bio-Cushion Classic floor system.

Part 2. 2.2 Accessories

Item B. Sleepers and Shims: There are not sleepers in the Bio-Cushion Classic floor system

Item D. Resilient pads - should read 7/16" for the Bio-Cushion Classic with 33/32" maple and slab depression of 2 3/4" as covered under Part 1 1.1 A. 7. Slab depression 2 3/4"

Part 2. 2.4 Factory Wood Treatment.

Item A. Wood Preservative (pressure Treatment) using water borne injected preservative is not recommended. MFMA manufacturers offer Wood life F dip treatment as a standard preservative treatment for Maple flooring.

Answer: Refer to Item 1.2e, above for modifications to the specification in question.

1.13 Question: "Part 3 Execution

3.1 Examination

Item A. concrete subfloor surface –smooth and flat to plus or minus ¼” in 10. MFMA manufacturers specification call for slab tolerance of 1/8” in a 10’ radius.

3.3 Installation – Flooring

Item B. Secure cushion blocks to underside of sleepers. Should read plywood panel – NO sleepers in the Bio Cushion Classic floor system.

Item C. Over the Vapor Barrier

1. Lay sleepers end to end - No sleepers involved ”Should read lay bottom layer of plywood perpendicular to direction of finished maple flooring - see specification for correct wording”

2. Shim sleepers - No sleepers

Item E. Place layer of plywood subflooring over sleepers. No sleepers involved “ Should read place top layer of plywood at 45 degree angle to bottom layer of plywood – see specification for correct wording””

Answer: Refer to Item 1.2e, above for modifications to the specification section in question.

1.14 Question: Spec Section 114000 - Item #78 is listed as a spare number in the 11 40 00 specs and on the equipment list on drawing FS-2 but on the floor plan sheet FS-1 item #78 is tagged as the L shaped counter at the snack bar. Please clarify.

Answer: Sheets FS-1 and FS-2 are correct. Refer to Item 1.3a regarding the replacement of original Specification Section 11 40 00 – FOOD SERVICE EQUIPMENT with revised specification for clarification regarding Item# 78.

1.15 Question: Spec Section 144000 - Item #90 is listed as a serving counter with tray slide in the 11 40 00 specs with a quantity of 1. Drawing FS-2 also calls for a quantity of 1. On sheet FS-1 item #90 is tagged twice, at the fresh grill and faculty dining. Please clarify.

Answer: The Serving Counter at the Fresh Grill should be tagged as Item# 89 and added to the Spec Section 1140 00. Refer to Item 1.3a regarding the replacement of original Specification Section 11 40 00 – FOOD SERVICE EQUIPMENT with revised specification for clarification regarding Item# 89.

1.16 Question: ~~Placeholder for a question that has been removed from the original document.~~

Answer: ~~Placeholder for an answer that has been removed from the original document.~~



1.17 Question: Section 11 6643, 1.1 C states that ten (10) locker room referee and coaches office clocks with transmitter link to scoreboards are to be included. Transmitter link or wireless control of these locker room clocks will not be reliable as there will be a great possibility of time lag using wireless communication.

There are two recommended means of communication between the control console and these clocks to prevent time lag. First, a hard-wire data cable connection to either a wireless scoreboard or a wireless shot clock. The locker room clocks can then be daisy-chained together using data cable. Second, a wireless receiver(s) may be remotely located inside the gym with data cable running from the receiver to the clock(s). The locker room clocks in this scenario may also be daisy-chained together to reduce the number of remote receivers in the gym.

Please advise how the locker room clocks are to communicate with the scoring system in the gym."

Answer: Wireless receiver to be remotely located inside the gym with data cable running from the receiver to the clocks. Receivers to be in line of sight of wireless control. Locker room clocks to be daisy-chained together to reduce the number of remote receivers in the gym. Amount of receivers to be based on the maximum length of data cable runs as permitted by the manufacture recommendations.

1.18 Question: We are herewith forwarding a Substitution Request from Aalco Manufacturing Company for approval of their athletic equipment per specifications sections 224860 and 116623. Please review and advise. (pdf attachments)

Answer: The architect will accept the Aalco Manufacturing Company as an approved equal for athletic equipment specified in sections 11 48 60 and 11 66 23.

1.19 Question: Spec Section 11 40 00 – Discrepancy between specification and the plan for Item #100. The written spec notes the item as a spare, however, item #100 is shown on the plan as one (1) cashier counter with (2) tray slides, (2) cash drawers. Please advise if we are able to include this item or has it been changed to a spare item?

Answer: The plans are correct. Cashier counter, tray slides and cash drawers are to be included in the bid. Refer to Item 1.3a regarding the replacement of original Specification Section 11 40 00 – FOOD SERVICE EQUIPMENT with revised specification section for clarification.

1.20 Question: Please clarify by an addendum the following:

- Detail 2-2/SW-16 shows retaining wall with 42" chain link fence. However the

location of this detail on SW-2 calls for retaining wall with timber guide rail. Please clarify.

Answer: Reference on the SW-2 drawing is revised to read 1-1 / SW-16 (intent is a retaining wall with timber guide rail).

1.21 Question: In reference to the finishing hardware specification, Section 087100, lock sets and cylinders are referred in the hardware sets as "Best Brand" lock sets and cylinders.

Please confirm via addenda if these products are to be keyed into the existing district wide "Best Brand" master key system, or if the lock sets and cylinders are to be keyed to a new "Best Brand" master key system.

Answer: The lock sets and cylinders must be keyed in the existing district wide "Best Brand" master key system.

1.22 Question: 1. Specification Section 11 66 43, I .I.e states that ten (10) locker room referee and coaches office clocks With transmitter link to scoreboards are to be included. Transmitter link, or wireless controls, of these locker room clocks are not reliable since there is a time lag using wireless communication. There are two recommended means of communication between the control console and the clocks to prevent time lag. First, a hand-wired data cable connection to either a wireless scoreboard or a wireless shot clock. The locker room clocks can then be daisy chained together using data cable. Second, a wireless receiver(s) may be remotely located inside the gym with data cable running from the receiver to the clock(s). The locker room clocks in this scenario may also be daisy-chained together to reduce the number of remote receivers in the gym. Please advise how the locker room clocks are to communicate with the scoring system in the gym.

2. Specification Section 087100- Lock Sets and Cylinders are referred in the hardware sets as "Best Brand" lock sets and cylinders. Are these products to be keyed into the existing district wide ""Best Brand"" master key systems or are they to be keyed to a new "Best Brand" master key system. Please advise.

3. Specification Section 087100 Paragraph 2.6G indicates Sargent manufactured exit devices and Paragraph 2.10D indicates Norton door closers. Please advise if equivalent products of manufacturers such as Precision, Von Duprin, Corbin and Yale exit devices along with LCN, Stanley door closures are acceptable."

Answer: 1. Wireless receiver to be remotely located inside the gym with data cable running from the receiver to the clocks. Receivers to be in line of sight of wireless control. Locker room clocks to be daisy-chained together to reduce the number of remote receivers in the gym. Amount of receivers to be based on the maximum length of data cable runs as permitted by the manufacture recommendations.

2. The lock sets and cylinders must be keyed in the existing district wide ""Best Brand"" master key system.

3. Alternates to ""Sargent"" Exit Devices and ""Norton"" door closers are NOT

acceptable in light the School District Proprietary's requests and SDA's acceptance of same.

1.23 Question: Please refer to Stair GuardRail Details 1 thru 7/A-7.1.0 showing typical Guard Rail Frame & Wire Mesh Infill design. The Vertical Top Rail Bar must be 3/8" or 1/2" thk x 1-1/2" wide. (1/4" thk will not meet load). Please advise.

Answer: Vertical Top Bar changed to 3/8" x 1-1/2" wide. See Exhibit # 2 for revised Drawing A-7.1.0 .

1.24 Question: Please refer to Stair GuardRail Details 1 thru 7/A-7.1.0 showing typical Guard Rail Frame & Wire Mesh Infill design. The Posts must be 3/8" or 1/2" thk x 1-1/2" wide. (1/4" thk will not meet load and 2" wide is too wide for the 1-1/2" wide Channel Stringer). Please advise.

Answer: Posts changed to 3/8" x 1-1/2" wide. See Exhibit #2 for revised Drawing A-7.1.0 .

1.25 Question: What type of Guard Rails are required @ both sides of Load Dock Exterior Concrete Stair? Refer to Plan 1 on design dwg. A-7.0.5, Rev. 6 and please provide design details.

Answer: Loading Dock Stair handrails to be 1-1/2" dia alum. One side wall mounted, the other floor mounted. See Exhibit #2 for revised Drawing A-7.0.5

1.26 Question: Please refer to Area "E" 2nd Floor Plan A-1.2.5 @ Chair Lifts E-4 & E-5. Also refer to Partial Floor Plan Details 6a & 7 on A-7.0.3. What types of Stair & Guard Rails are required for each of the 8-Riser Stairs? The Stairs are located @ Doors D211L and E201F and both are at Elev. +556'-4". Please provide construction Design Details.

Answer: Wall surrounding H/C lift is to be 3'-8" high 8" CMU low wall (including 4" bullnose concrete cap) Handrails to be 1-1/2" Dia Steel wall mounted. See Exhibit #2 for revised Drawing A-7.0.3

1.27 Question: Please refer to Stair GuardRail Details 5,6,7/A-7.1.0 showing typical Wire Mesh Infill design. The wire mesh is shown to have 1" square openings, but there is no mention of the Gage of the Wire. Please provide the wire gage. We suggest using #10 Wire (.135" dia)

Answer: .135" diameter wire is already referenced in the spec.

1.28 Question: Please refer to **Blown-Up Detail above Stair GuardRail Details 1,2,7/A-7.1.0**. This **Blown-Up Detail** shows (2) **Vertical Flat Bars & Fasteners** to accept & hold the **Wire Mesh Infill** all around the infill panel. We suggest using a **steel Bar Channel 1" x 1/2" x 1/8" (0.8#/LF)** toe-down instead. This would be much stronger to hold the wire mesh, easier fabrication, and would be much less expensive than the original design. The current design will cause the wire mesh to loosen in the compression.

Answer: Flat bar thickness to be increase to 3/8". See Exhibit # 2 for revised Drawing A-7.1.0

1.29 Question: Typical masonry wall reinforcing detail on drawing 5-5.1.1 shows reinforcement details for 8" and 12" block walls only. Please provide the reinforcing detail for 4",6" and 10" block walls.

Answer: At 4" & 6" block walls - No vertical reinforcement.

1.30 Question: Ref. Dwg./Sp. No. 15/BE-1 Demo table/Hampden Units:

Detail 15 on Dwg BE-1 Indicates Hampden model BPS-36/18F in the demonstration table Please confirm these are to be furnished by Lab Casework supplier."

Answer: General Contractor is responsible to determine who will provide the item in question under the bid.

1.31 Question: Ref. Dwg./Sp. No. Elv 20/BE-1, Item #20/BE-2-Hampden cordless:

Elv 20-Dwg BE-1, Item #20-Dwg BE-2 indicates a Hampden model HST-200 Cordless power panel unit. Please confirm this is to be provided by the electrical trade."

Answer: General Contractor is responsible to determine who will provide the item in question under the bid.

1.32 Question: Ref. Dwg./Sp. No. DWG BE-1 ELV-03 FUME HOOD BASE CAB:

Hood cabinet on left is called out as a FLAMMABLE base cabinet.

Please confirm if cabinet on right is an ACID STORAGE base cabinet

Answer: Yes. One cabinet to be flammable storage, the other to be Acid Storage.

1.33 Question: Ref. Dwg./Sp. No. DWG BE-1 ELV-03 FUME HOOD:

A ceiling enclosure panel is not shown. Please confirm ceiling enclosures are

NOT required

Answer: A ceiling enclosure panel is to be provided at ALL fume hoods. New detail 3 on revised Drawing BE-2 included in Exhibit # 2.

1.34 Question: Ref. Dwg./Sp. No. DWG BE-1 Detail 14:

Detail 14 calls out (7) rooms. Some of these rooms are offices or toilet rooms (Ie A201, A204, A226, A218). Please clarify.

Answer: Room numbering has been revised. See revised Drawing BE-1 drawing included in Exhibit # 2

1.35 Question: Ref. Dwg./Sp. No. Dwgs BE-1 & BE-2 Re: FUME HOODS:

Elv 03 on BE-1 Calls out a Fisher Hamilton SafeAire-II Hood however Item # 04 on Schedule on Dwg BE-2 calls out a Fisher Hamilton Concept hood. Please confirm which is required in order to meet spec."

Answer: Follow schedule on Revised Drawing BE-2 included in Exhibit # 2.

1.36 Question: Ref. Dwg./Sp. No. BE-1 PERIMETER WALLS:

Please indicate where elevations are for the perimeter walls. (For example: East and West walls in Chemistry Lab)

Answer: Perimeter wall elevations (i.e. East & West walls in Chemistry Lab) were not provide, BE-1 has been revised to further clarify required elements on perimeter walls. See revised Drawing BE-1 drawing included in Exhibit # 2.

1.37 Question: Ref. Dwg./Sp. No. Dwg BE-2 Ex Proof Ref, Schedule Item # 14:

Since no other equipment (Including fume hoods) located in the same rooms as item #14 are expl proof, please confirm Item #14 (U/C Refrigerator) actually needs to be truly "Explosion Proof".

Answer: Yes. U/C refrigerator to be explosion proof.

1.38 Question: Ref. Dwg./Sp. No. BE-1 Discrepancies:

When there is a discrepancy between Plan and Elv (Ie Elv 10 in Chem Prep), Should we presume the plan view is correct. Elv 10 does not show item "2A" as shown in plan view.

Answer: Tall storage (item 2A) to be provided as indicated on plan view. See revised Drawing BE-1 drawing included in Exhibit # 2

1.39 Question: **Request for Information: Shelving for Phillipsburg HS shelving project.**

Specifications:

2.1 Particle board 200 lb capacity shelving

2.2 Case type metal shelving

2.3 Four post metal shelving

Need detailed area for shelving locations for above specified shelving. Many arcas marked storage.

1. Location for each specified shelving

2. Elevations of shelving

3. Size of shelving and details for all areas.

Answer: Contract shall include in his bid 200 (two hundred) 18" deep x 48" wide full height four post style shelves. Location of shelving to be determined with the owner at a later date.

Contract not to include case type metal shelves unless they are specifically called out for on the drawings.

1.40 Question: **What is the correct bid due date? Web site states December 20th, however, advertisement says December 6th, Please advise**

Answer: Sealed bids and Technical Proposals are due to the NJSDA on December 6, 2012. Sealed bids will be opened on December 20, 2012. The web site has been updated to indicate December 6, 2012 as the Bid Due Date.

1.41 Question: **Drawing No. A-1.1.1: Along Grid Line 2.0 details 16/A6.1., 17/A6.1.12 and 18/A6.1.12 are called. These details do not exist. Please clarify**

Answer: Drawing A-6.1.12 sheet has been revised to indicate that the details are on Drawing A-6.1.2.
Revised Drawing A-6.1.2 is included in Exhibit # 2.

1.42 Question: **Drawing No. A-1.2.3: Around the Auditorium the Gypsum wall is called out as Type A8, which is not a Wall Type defined in the schedule. Please clarify.**

Answer: Partition tag "A8" in the auditorium and Large Lecture rooms on sheet A-1.2.3 are to be replaced with a new "Reference Note #10" which will explain that partition in question is comprised of 8" metal studs with 5/8" gypsum board on one side, studs to be braced back and secured to block wall and structure above. Note 10 will also reference wall sections 4 & 4A / A-3.1.1 for additional information. See revised Drawing A-1.2.3 included in Exhibit # 2

1.43 Question: RFP Appendix C, paragraph 1.2 B: Please provide LEED Rating System Project Checklist indicated in Appendix C 1.2B Sustainable Project Goals.

Answer: Project LEED checklist is provided in Exhibit # 3.

1.44 Question: Chemical waste piping. Spec page 226600-113.13 paragraph D under the slab piping. Can regular polypropylene used underground. Underground pipe does not have to be the PVDF for it is not a plenum obviously.

Answer: Regular polypropylene is NOT an acceptable material substitution for underground chemical waste piping. Specification Section 22 66 00 to be revised in addendum #1 for additional acceptable materials.

1.45 Question: Drawing No. A-1.1.1: Detail 1.1/A7.1.0 is called out. This detail does not exist. Please clarify.

Answer: Detail should read Drawing 1.1 / A.7.0.4. See revised Drawing A-1.1.1 included in Exhibit # 2

1.46 Question: Drawing No. A-1.2.4: Between E.16 and E.21. The exterior wall of the stairwell is called out as Wall Type F8, however, it does not match the Wall Type Schedule. Please verify which Wall Type is to be used.

Answer: Inner wall is a F-8 type. Refer to section 41/ A-3.1.16 for clarification on the North side of the E-6 Stairwell.

1.47 Question: Drawing No. A-1.2.4: Between 4.88 and 4.89. Wall Type D14 is called out, but there is no Wall Type D14 in the Wall Type Schedule. Please verify correct Wall Type.

Answer: Wall Type D14 reference should be deleted and substitute Wall type D-8.

1.48 Question: Drawing No. A-1.1.4: Wall bump-out to the right of 4.92. Wall Elevations 5E&5D/A-2.0.3 are called out, however, there is no elevation 5E or 5D. Please verify correct Wall Elevation.

Answer: Reference on Drawing A-1.1.4 to Detail 5E & 5D on Drawing A-2.03 should read Drawing A-2.0.5

1.49 Question: **Drawing No. S-1.1.3: Between 4.7 and 4.71: Foundation Wall Type F1/S-1.1.3 is called out on a CMU hatched Wall. Please verify correct Foundation Wall Type.**

Answer: Section mark F1/S1.1.3 is correct. CMU to be placed on top of the concrete foundation wall.

1.50 Question: **Riverside Supply Co. is requesting to be considered an approved equal supplier for the brick and block specified in Section 042000- Unit Masonry. On their behalf, please see the attached information dated November 11, 2012 and advise if they are an approved equal vendor.**

Answer: Insufficient information therefore request for substitution is rejected at this time.

1.51 Question: **MISCELLANEOUS METALS**

Please refer to a Typical Center Handrail Detail 2/A-7.1.0. Please confirm that this is a typical Intermediate Hand Rail which consists of One Horizontal Rail 3'-0" above the walking surface with Vertical Posts spaced max. 4'-0" center-to-center as shown in Details 4 & 22/A-7.1.0. No attached handrail is shown, the top rail is the hand rail.

Answer: The architect does not take exception to the bidder's interpretation of detail 2/A-7.1.0.

1.52 Question: **TELESCOPING BLEACHERS**

The basis of design for the recessed bleachers has a row rise of 9 5/8". However, the other listed manufacturers have different rises. If one of those is awarded the contract will the balcony area be adjusted to accommodate those or is the intent only to have one bidder based upon this design?

Answer: Approved bleachers will need to conform to dimensions of the Fixed Bleacher areas (Balcony).

1.53 Question: **TELESCOPING BLEACHERS**

Should the ground floor wall attached bleachers be manual. IE bleacher bank letters g, h, j and k ?

Answer: Specifications call for all Telescopic bleachers to be electrically power operated.

1.54 Question: **TELESCOPING BLEACHERS**

If only one manufacture can bid the two recessed bleacher banks will the other manufacturers be accepted for the other banks?

Answer: All bleachers to be from the same Manufacturer.

1.55 Question: TELESCOPING BLEACHERS

If the recessed bleachers were stacked at the base of the wall the stack position would be reduced by approx. 4' thus leaving more open court space. Is this acceptable?

Answer: Drawing A-4.0.3 indicates design clearances of the Field House Bleachers in the open and stacked positions.

1.56 Question: TELESCOPING BLEACHERS

If the seats that are installed are less than 18" wide which is the specification will those seats be considered a net seat or will a run of seats have to equal the amount of net seats multiplied by 18"? I.e. if a run of 10 seats is 178" from end cap to end cap will that be 10 net seats or 9 net seats?

Answer: Bleacher seats to be 18" long.

1.57 Question: STRUCTURAL STEEL

Can the AISC Cert be waived for the Fabricator?

Answer: No

1.58 Question: Ref. Dwg./Sp. No. Dwg BE-2 Science Labs Equipment Schedule:

Item #22 on this schedule calls for a "Heating Station", and is to be provided by the contractor. Manufacturer or model is not indicated. Is this item part of Lab Casework scope? If so, we will need additional information or clarification as to what needs to be provided.

Answer: General Contractor is responsible to determine who will provide the item in question under the bid. Refer to revised Drawing BE-2 included in Exhibit # 2 for additional information on heating station.

1.59 Question: Ref. Dwg./Sp. No. Dwg BE-1 East Elevation Physics Lab A-205:

Here is an elevation which is not elevated. Plan view indicates support legs on each end with angle brackets throughout the assembly. However in plan view it also looks like there may be wall cabinets there also. Please advise where East elevation can be found and confirm whether wall cabinets are required there."

Answer: Item is clarified on revised Drawing BE-1 included in Exhibit # 2.

1.60 Question: Ref. Dwg./Sp. No. Dwg BE-1 Elv #19 in Chemical Stor Rm B-215:

Plan view indicates support legs on each end with angle brackets.

Plan view also seems to show that wall cabinets might be required there as well, however none are shown in Elevation. Please confirm whether wall cabinets are required in Elev #21 for that room.

Answer: Item is clarified on revised Drawing BE-1 included in Exhibit # 2.

1.61 Question: Ref. Dwg./Sp. No. Dwg BE-1 Elevation #07 Cut-outs:

Elv #07 states "Provide cutout for raceway". Will that cut-out be in the wall and therefore provided by the drywall contractor ? Or is Lab Casework supplier expected to cut-out/notch the C-Top support / wall angle? Please advise.

Answer: General Contractor is responsible to determine who will provide the item in question under the bid.

1.62 Question: Ref. Dwg./Sp. No. Dwg BE-1 Detail #13 Chemistry Student Lab:

Are distillation rack required on Chemistry Student Benches. None are drawn in, however some of the model numbers in Detail #13 seem to refer to distillation type racks. Please advise if distillation racks are required there. If so advise if material is Aluminum or Stainless steel.

Answer: Provide Stainless Steel Distillation racks.

1.63 Question: Ref. Dwg./Sp. No. Dwg BE-1 Detail # 13 Chemistry Student Lab:

Detail #13 indicates these Chemistry student lab benches "Located in rooms - A-212, B-203, B-212" We show there are (4) Chemistry Labs with student benches (Lab B-209, B-211, B-212, B-216) Please confirm detail #13 applies to those four labs only.

Answer: Detail 13 applies to Labs B-209, B-211, B-212 & B-216.

1.64 Question: Spec Section 126100

On the fixed seating portion all 3 seating manufacturers do not meet the state code listed in Section 21.18.1 that 100% of the product must be manufactured in the U.S.A. as this is a state funded project.

1. Hussey Seating all of the components are made in China. This can be verified from their website.

2. Audience Systems all of these components are made in England

3. Jezet Seating all of these components are made in Belgium

There are at least 4 manufactures of Fixed seating that are 100% made in the U.S.A. Will all of these be approved?

Answer: Refer to Item 1.1 for amended language of Section 21.18.1 of the General Conditions clarifying Buy American Requirements. Refer to Item 1.2j for revisions to Specification Section 12 61 00 FIXED AUDIENCE SEATING, for identification of additional manufacturers. With respect to substitution requests submitted by bidder, the information provided is insufficient to permit complete, and therefore the request for substitution is rejected at this time. Bidders are advised that the Authority will entertain comparably-priced substitution requests for this item after award.

1.65 Question: Spec Section 126623:

1. Will the plans or the specifications be the rule as both differ from each other.

2. In section 21.18.1 the state law clearly says all products have to be manufactured 100% in the usa.

a. Hussey seating the frames are made in the USA however the seating and moving parts that controls the seats are made in china

b. Audience systems they are made in England

c. Jezet they are made in Belgium

There are at least 3 manufacturers that make these Telescopic Chair Platforms 100% in the U.S.A. Will these be the basis of design and the only ones accepted on the state funded project?

Answer: Refer to Item 1.1 for amended language of Section 21.18.1 of the General Conditions clarifying Buy American Requirements. Refer to Item 1.2l for revisions to Specification Section 12 66 23 TELESCOPIC CHAIR PLATFORMS, for identification of additional manufacturers. With respect to substitution requests submitted by bidder, the information provided is insufficient to permit complete analysis, and therefore the request for substitution is rejected at this time. Bidders are advised that the Authority will entertain comparably-priced substitution requests for this item after award.

1.66 Question: Spec Section 126100 - Fixed Audience Seating. Substitution Request: In this section all 3 seat manufacturers are made outside the U.S.A. thus not meeting section 21.18.1 saying products need to be made in the USA.

I have included enough information on this email for you to submit the Harmony chair from Greystone seating There website is <http://www.gsseats.com/>

The chair itself will be less expensive than the specified seating. The chairs ship from Michigan and the lead time is only 8 weeks.

Answer: Refer to Response in Item 1.64 above. With respect to substitution requests submitted by bidder, the information provided is insufficient to permit complete analysis, and therefore the request for substitution is rejected at this time. Bidders are advised that the Authority will entertain comparably-priced substitution requests for this item after award.

1.67 Question: Drawing P1.2.1 & P1.3.1 show electric water coolers in corridor B-200 and B-300 near column line A.28 and 2.1. Plan P1.1.1 does not show any underground piping going to it or cold water going to it.

Please provide sketch.

Answer: Tie ½” cold water line for EWCs on second and third floors to 2” cold water line in first floor ceiling at that location. Tie the waste stacks to 8” sanitary line in first floor slab. Coordinate risers with wall locations.

1.68 Question: Substitution Request - Polyguard Products (Underslab Membrane): Spec Section 033009, 071416, and 0725000 (refer to e-mail product attachments)

Answer: Architect will accept Polyguard as an approved equal manufacturer for spec sections 03 30 09, 07 14 16 & 07 25 00

C. CHANGES TO THE DRAWINGS:

1.69 Revisions to the Drawings:

- a. Drawing A-1.1.4 - FIRST FLOOR PARTIAL PLANS AREAS “E” & “F” shall be revised as follows (additions in **bold and underlined** text; deletions in ~~strikethrough and italics~~):

Door Opening E – 104C to change from ~~a single door~~ to a **pair door opening**. Door Opening E-104C doors, frame, hardware, fire rating, etc as to be the same as door opening C-217.

- b. Drawing A-1.2.6 - SECOND FLOOR PARTIAL PLAN AREA “F” shall be revised as follows (additions in **bold and underlined** text; deletions in ~~strikethrough and italics~~):

All glazing in door opening F-210 to be obscure glass.

The W-35 window in the animal lab F-210 to be a **W-35a window. This window single pane fixed window, 4’-0” high by 3’-5” wide and shall have obscure glass.**

- c. Drawing A-3.1.10 - WALL SECTIONS:

Provide an 18” x 18” x 18” six sided plastic laminated, ¾” dense particle board box mounted on gym wall with keyed hasp lock for projector. Coordinate with I.T. drawings.

1.70 REPLACE: Substitute following drawings, noted as Revision #8, dated 11/21/2012, issued herewith as Exhibit 2.

- a. SITE DRAWINGS:

SW-2	SITE PLAN
SW-4	GRADING PLAN
SW-5	UTILITY PLAN
SW-14	CONSTRUCTION DETAILS

b. ARCHITECTURAL DRAWINGS:

A-1.1.1	FIRST FLOOR PARTIAL PLAN AREA "A"
A-1.2.2	SECOND FLOOR PARTIAL PLAN AREA "B"
A-1.2.3	SECOND FLOOR PARTIAL PLAN AREA "C"
A-1.2.4	SECOND FLOOR PARTIAL PLAN AREA "D"
A-1.2.6	SECOND FLOOR PARTIAL PLAN AREA "F"
A-1.3.2	THIRD FLOOR PARTIAL PLAN AREA "B"
A-1.3.4	THIRD FLOOR PARTIAL PLAN AREA "D"
A-2.0.1	PARTIAL BUILDING ELEVATIONS
A-2.0.3	PARTIAL BUILDING ELEVATIONS
A-2.0.4	PARTIAL BUILDING ELEVATIONS
A-3.1.0a	WALL SECTIONS
A-3.1.1	WALL SECTIONS
A-3.1.9	WALL SECTIONS
A-3.1.22	WALL SECTIONS
A-5.1.4	FIRST FLOOR PARTIAL REFLECTIVE CEILING PLANS AREA "E"
A-5.2.1	PARTIAL SECOND FLOOR REFLECTED CEILING PLAN AREA "A"
A-5.2.6	PARTIAL SECOND FLOOR REFLECTIVE CEILING PLAN AREA "F"
A-5.3.4	PARTIAL THIRD FLOOR REFLECTIVE CEILING PLAN AREAS "D" & "E"
A-6.0.1	TYPICAL LARGE SCALE COLUMN / PLAN DETAILS
A-7.0.3	STAIR PLANS AND SECTIONS
A-7.0.5	EXTERIOR PATIO, RAMP & LOADING DOCK PLAN
A-7.1.0	STAIR PLANS AND SECTIONS
A-8.2.1	ALUMINUM WINDOW FRAME ELEVATIONS
A-8.2.2	ALUMINUM WINDOW FRAME ELEVATIONS

c. BUILT-IN EQUIPEMENT DRAWINGS:

BE-1	BUILT-IN EQUIPMENT PLANS & SECTIONS
BE-2	BUILT-IN EQUIPMENT SECTIONS & SCHEDULES
BE-3	BUILT-IN EQUIPMENT PLANS, SECTIONS & SCHEDULE
BE-4	BUILT-IN EQUIPMENT PLANS, SECTIONS & SCHEDULE
BE-5	BUILT-IN EQUIPMENT PLANS, SECTIONS & SCHEDULE
BE-7	BUILT-IN EQUIPMENT PLANS, SECTIONS & SCHEDULE
BE-8	BUILT-IN EQUIPMENT PLANS, SECTIONS & SCHEDULE
BE-9	BUILT-IN EQUIPMENT PLANS, SECTIONS & SCHEDULE

d. FOOD SERVICE DRAWINGS:

FS-1	SECOND FLOOR FOOD SERVICE ARRANGEMENT PLAN
FS-2	SECOND FLOOR FOOD SERVICE EQUIPMENT SCHEDULE

e. STRCUTURAL DRAWINGS:

- S-3.1.6 ROOF FRAMING PLAN AREA "F" & PARTIAL ROOF FRAMING PLAN AREA "E"
- S-5.1.3 TYPICAL NOTES & DETAILS.

f. PLUMBING DRAWINGS:

- P- 2.1.1 PLUMBING SECOND FLOOR PARTIAL PLAN AREA "A" - SCIENCE

g. ELECTRICAL DRAWINGS:

- E-0.0.1 LIGHTING FIXTURE SCHEDULE, LEGEND AND DETAILS
- E-1.1.1L LIGHTING FIRST FLOOR PARTIAL PLAN AREA "A"
- E-1.1.4P POWER FIRST FLOOR PARTIAL PLAN AREA "E"
- E-1.2.1L LIGHTING SECOND FLOOR PARTIAL PLAN AREA "A"
- E-1.2.1P POWER SECOND FLOOR PARTIAL PLAN AREA "A"
- E-1.2.2L LIGHTING SECOND FLOOR PARTIAL PLAN AREA "B"
- E-1.2.2P POWER SECOND FLOOR PARTIAL FLOOR PLAN AREA "B"
- E-1.2.4L LIGHTING SECOND FLOOR PARTIAL PLAN AREA "D"
- E-1.2.4P POWER SECOND FLOOR PARTIAL PLAN AREA "D"
- E-1.2.5P POWER SECOND FLOOR PARTIAL PLAN AREA "E"
- E-1.2.5FA FIRE ALARM SECOND FLOOR PARTIAL PLAN AREA "E"
- E-1.2.6P POWER SECOND FLOOR PARTIAL PLAN AREA "F"
- E-1.3.1L LIGHTING THIRD FLOOR PARTIAL PLAN AREA "A"
- E-1.3.1P POWER THIRD FLOOR PARTIAL PLAN AREA "A"
- E-1.3.3P POWER THIRD FLOOR PARTIAL PLAN AREA "C"
- E-1.3.4P POWER THIRD FLOOR PARTIAL PLAN AREA "D"
- E-1.4.0 ELECTRICAL ROOF PLAN
- E-2.0.2 ELECTRICAL DETAILS
- E-2.0.3 ELECTRICAL DETAILS
- E-2.0.5 ELECTRICAL ONE LINE DIAGRAM
- E-2.0.6 ELECTRICAL ONE LINE DIAGRAM
- E-3.0.1 ELECTRICAL PANEL SCHEDULES
- E-3.0.2 ELECTRICAL PANEL SCHEDULES
- E-3.0.5 ELECTRICAL PANEL SCHEDULES
- E-3.0.6 ELECTRICAL PANEL SCHEDULES
- E-4.0.2 ELECTRICAL DETAILS

D. GENERAL CHANGES TO THE BID DOCUMENTS:

1.71 Revisions to the Plumbing Documents:

- a. Provide two 3" floor drains (FD-A) and vent in D-110 Team Room (Men) and connect to nearest sanitary and vent lines in the area.
- b. Provide two 3" floor drains (FD-A) and vent in D-111 Team Room (Women) and connect to nearest sanitary and vent lines in the area.
- c. Typical for all washer machine locations – provide wall box and waste piping located within wall not exposed as shown on plan.
- d. Typical for all washer machine locations - provide wall-mounted inline washing machine Lint Filter/Interceptor. Mount above the washer. Top of unit to finished floor shall not exceed manufacturer-directed discharge height of 60". Septic Solutions Inc. Model # Filtrol-160 or approved equal.
- e. Provide additional cold-water hose bib located between the two whirlpool tubs in rooms D-116 and D-105.
- f. Typical for all water closets and urinals – change solar-powered flushometer to battery power flush valve type G2 Optima Plus Exposed Battery Powered Flushometers or approved equal.
- g. Typical for all Ice Machines – provide filtration system per installation manual for rooms D-116, D-105 and A-234. Provide Everpure SSM1-A or approved equal.
- h. Note room D-301 sink moved/shifted upwards – see architects set for all fixture locations.
- i. Typical for all floor drains – provide sediment buckets as Stainless Steel.
- j. Provide a Dual Purpose Removable Eye/Face Wash Bradley Model S1944011ABC with mixing valve mounted next to the sink in Pottery room D-319, or approved equal.
- k. In Animal Lab F-213, the plumbing fixture P-7F should read as P-7E.
- l. For plumbing fixture P-7E, add inline under-sink Hair Interceptor: J.R. Smith #8714 with stainless steel mesh screen and sediment bucket or approved equal.
- m. In the outdoor fenced in area near Animal Lab F-213 provide recessed non-freeze wall hydrant in stainless steel wall box with cover.
- n. Greenhouse – Provide two (2) separate 3/4" domestic water connections with shut-off and backflow protection per specification 13-13-40 "Greenhouse and Related Equipment" for the mist and watering systems. Coordinate all equipment locations in field with owner's representative.
- o. Greenhouse and Agricultural Labs – For all floor drains and sinks, provide an in-floor sand interceptor near the teacher's desk based on Josam Series 61040-Q14 or approved equal. Provide aluminum cover with extension and 4" pipe connections.
- p. Refer to and coordinate with Architectural, Food Service (FS), and Built-In Equipment (BE) sets for all fixture/drain locations and quantities.
- q. For the Kitchen Ice Machine, provide filtration system per manufacturer's recommendation: Everpure SSM2-A or approved equal.
- r. Provide icemaker connection for faculty dining room refrigerator.

- s. Provide roof hydrant Mifab MHY-58 with vacuum breaker 3/4" DW connection or approved equal. Locate on roof for maintenance of the roof-mounted equipment locate one on the middle of each roof area (A, B, C, D, E, F) for a total of six.
- t. Typical for all pumped discharge drop and spill on grade – provide concrete splash block.
- u. Typical for all rooftop condensate spilling to roof – provide concrete splash blocks with roof pad.
- v. Coordinate all compressed air drop locations with the built-in equipment with the owner's representative and BE drawings. Provide two (2) additional drops and connections for each air system to be located in field.
- w. REPLACE the enclosed drawing P-2.1.1 with the drawing P-2.1.1 issued under Addendum #1. Modifications are clouded. See updated Island sink and Acid Neutralization Tank detail on sheet P-2.1.1.

1.72 Revisions to the Electrical Documents:

- a. Wiring for all 15 and 20 amp 120 volt circuits less than 75 feet in length shall be 2#12 + 1 #12G unless noted larger on plans / schedules.
- b. Wiring for all 15 and 20 amp 120 volt circuits less than 125 feet in length shall be 2#10 + 1 #10G unless noted larger on plans / schedules.
- c. Wiring for all 15 and 20 amp 120 volt circuits less than 175 feet in length shall be 2#8 + 1 #8G unless noted larger on plans / schedules.
- d. Wiring for all 15 and 20 amp 120 volt circuits over 176 feet in length shall be 2#6 + 1 #6G unless noted larger on plans / schedules.
- e. Wiring for all 15 and 20 amp 208 volt single phase circuit less than 125 feet in length shall be 2#12 + 1 #12G unless noted larger on plans / schedules.
- f. Wiring for all 15 and 20 amp 208 volt single phase circuits less than 200 feet in length shall be 2#10 + 1 #10G unless noted larger on plans / schedules.
- g. Wiring for all 15 and 20 amp 208 volt single phase circuits less than 250 feet in length shall be 2#8 + 1 #8G unless noted larger on plans / schedules.
- h. Wiring for all 15 and 20 amp 208 volt single phase circuits over 300 feet in length shall be 2#6 + 1 #6G unless noted larger on plans / schedules.
- i. Wiring for all 15 and 20 amp 208 volt three phase circuit less than 125 feet in length shall be 3#12 + 1 #12G unless noted larger on plans / schedules.
- j. Wiring for all 15 and 20 amp 208 volt three phase circuits less than 200 feet in length shall be 3#10 + 1 #10G unless noted larger on plans / schedules.
- k. Wiring for all 15 and 20 amp 208 volt three phase circuits less than 250 feet in length shall be 3#8 + 1 #8G unless noted larger on plans / schedules.

- l. Wiring for all 15 and 20 amp 208 volt three phase circuits over 300 feet in length shall be 3#6 + 1 #6G unless noted larger on plans / schedules.
- m. Wiring for all 30 amp 208 volt three phase circuits less than 100 feet in length shall be 3#10 + 1 #10G unless noted larger on plans / schedules.
- n. Wiring for all 30 amp 208 volt three phase circuits less than 150 feet in length shall be 3#8 + 1 #8G unless noted larger on plans / schedules.
- o. Wiring for all 30 amp 208 volt three phase circuits over 225 feet in length shall be 3#6 + 1 #6G unless noted larger on plans / schedules.
- p. Wiring for all 15 and 20 amp 277 volt circuits less than 125 feet in length shall be 2#12 + 1 #12G unless noted larger on plans / schedules.
- q. Wiring for all 15 and 20 amp 277 volt circuits less than 200 feet in length shall be 2#10 + 1 #10G unless noted larger on plans / schedules.
- r. Wiring for all 15 and 20 amp 277 volt circuits less than 250 feet in length shall be 2#8 + 1 #8G unless noted larger on plans / schedules.
- s. Wiring for all 15 and 20 amp 277 volt circuits over 300 feet in length shall be 2#6 + 1 #6G unless noted larger on plans / schedules.
- t. Wiring for all 15 and 20 amp 480 volt single phase circuit less than 150 feet in length shall be 2#12 + 1 #12G unless noted larger on plans / schedules.
- u. Wiring for all 15 and 20 amp 480 volt single phase circuits less than 250 feet in length shall be 2#10 + 1 #10G unless noted larger on plans / schedules.
- v. Wiring for all 15 and 20 amp 480 volt single phase circuits less than 300 feet in length shall be 2#8 + 1 #8G unless noted larger on plans / schedules.
- w. Wiring for all 15 and 20 amp 480 volt single phase circuits over 350 feet in length shall be 2#6 + 1 #6G unless noted larger on plans / schedules.
- x. Wiring for all 15 and 20 amp 480 volt three phase circuit less than 150 feet in length shall be 3#12 + 1 #12G unless noted larger on plans / schedules.
- y. Wiring for all 15 and 20 amp 480 volt three phase circuits less than 250 feet in length shall be 3#10 + 1 #10G unless noted larger on plans / schedules.
- z. Wiring for all 15 and 20 amp 480 volt three phase circuits less than 300 feet in length shall be 3#8 + 1 #8G unless noted larger on plans / schedules.
- aa. Wiring for all 15 and 20 amp 480 volt three phase circuits over 350 feet in length shall be 3#6 + 1 #6G unless noted larger on plans / schedules.
- bb. Modify lighting intensity table on all lighting plans to include the following note: LIGHTING LEVELS DESIGNED PER ANSI/IES RP3-00 "RECOMMENDED PRACTICE ON LIGHTING FOR EDUCATIONAL FACILITIES" AS AN ALLOWED ALTERNATIVE BY NJAC 6A:26-6.3(G).

E. LIST OF EXHIBITS:

- Exhibit 1 Specifications
- Exhibit 2 Drawings dated 11/21/2012
- Exhibit 3 LEED Checklist

----- **End of Addendum No. 1** -----



NJSDA
Aruna Reddy, Program Officer

11/21/2012
Date

<Addendum # 1>

NJSDA
1 West State Street
Trenton, NJ 08625
Phone: 609-943-5955
Fax: 609-656-4609

Date: November 21, 2012

PROJECT #: NT-0003-C02

DESCRIPTION: New Phillipsburg High School

Addendum No. 1

Acknowledgement of Receipt of Addendum

Contractor must acknowledge the receipt of the Addendum by signing in the space provided below and returning via fax to (609-656-4609). Signed acknowledgement must be received prior to the Bid Due Date. Acknowledgement of the Addendum must be made in Section E.6 of the Price Proposal Submission.

Signature

Print Name

Company Name

Date

EXHIBIT 1

SECTION 26 55 63 – REMOTE SOUND REINFORCEMENT SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Extent of Sound Reinforcement Systems' work is indicated by the specifications, drawings, and schedules. The systems included (but are not limited to), Gymnasium Sound System, Auxiliary Gymnasium Sound System, Weight Room Sound System, ADA Hearing Assistance Systems, Cafeteria Sound System, Auditorium Sound Systems, Lecture Room Sound Systems, Vocal Music Room Sound System, Instrumental Music Room Sound System, Special Education Classroom Sound Systems, Loudspeakers, Rigging, Housings, Amplifiers, Digital Processors, Power Amplifiers, Raceways, Conduit, System Wire and Cable, and Accessories.
- B. Connections for system(s) wiring shall be via pull-box and terminal strip assemblies.
- C. Work of this section includes conduit, raceways, electrical boxes and fittings, wiring/cabling, as specified and required.
- D. The Contractor shall furnish and install all required equipment and that as described in these specifications, plans, and riser diagrams, schedules, for the proper installation and functions of the system(s) specified.
- E. The term, "Contractor" is defined as the Section - 26 Contractor (Electrical Contractor). The term, "System Contractor" is the firm supplying the systems/equipment to the Contractor.
- F. All systems/equipment that are furnished and installed for this project shall be new.
- G. Contractor shall take special note to specifications section, "Hardware, mounting, and Rigging".
- H. Section includes field-mounted TVSS for low-voltage (120 to 600 V) power distribution and control equipment

1.3 GUARANTEE

- A. The Contractor shall guarantee the systems' operation (labor and components) for one (1) year from date of the system's acceptance. During the guarantee period, any items or components showing inherent mechanical or electrical defects not caused by abuse or negligence, shall be replaced at no cost to the Owner. During the guarantee period, only factory trained and/or authorized personnel shall service equipment.

1.4 SUBMITTALS

- A. Submissions shall include a title page(s), an index with "Item Number", "Quantity", "Description of Product", and "Page Number".
- B. Include data for each type of product specified. Provide color photographs or color chips for selection of finished where applicable. Include line diagrams for all systems.
- C. Upon completion of systems' installation, the Contractor shall furnish three copies of "Operation and Maintenance Manuals". Manuals shall contain complete system block diagrams, component data sheets, voltage charts, and schematic diagrams as well as complete operation instructions, equalization curves and equalization data, and copies of all control and knob settings of all systems' components. (See "System Testing/Proof Of Performance".)

PART 2 - PRODUCTS

2.1 MANUFACTURERS/SYSTEMS

- A. Subject to compliance with requirements of the specified systems, equipment shall be as stated herein.
- B. The paging system is in another Division of the specifications. The paging system shall be integrated with the remote sound reinforcement systems via paging/ducking modules, etc.
- C. Utilizing equipment by said manufacturers does not alleviate the Contractor from providing system equipment that meets or exceeds all of the features, functions, and quality of that specified.

2.2 REMOTE SOUND REINFORCEMENT SYSTEMS

- A. The determination of system equipment equality shall be that of the project architect and/or Engineer.
- B. Main Auditorium Sound Reinforcement System Functions:
 - 1. Provide for the pick-up, mixing, equalization, amplification, recording, stage monitoring, ADA Hearing system amplification, distribution and signal reception, digital delay, and audio distribution of the following inputs to the system's reproducers:
 - a. Twenty-Four (24) low impedance microphone inputs/line level inputs to the hereinafter specified mixing console.
 - b. Remote, key operated, "on-off" power for system from stage area and main equipment location.
 - c. System output shall be distributed to loudspeakers and stage support areas, where indicated on the plans/riser diagrams.

- d. Priority paging override function shall be provided, allowing the building's paging system to override the local sound production. Paging system signal shall be able to be distributed over the Remote Sound System's speakers
- C. Left Rear Auditorium Sound Reinforcement System (Classroom/Lecture Room):
1. Provide for the pick-up, mixing, equalization, amplification, and distribution, of the following inputs to the system's reproducers.
 2. Two (2) low impedance microphone inputs/line level inputs to the system's mixer/preamplifier.
- D. Right Rear Auditorium Sound Reinforcement System (Classroom/Lecture Room):
1. Provide for the pick-up, mixing, equalization, amplification, and distribution, of the following inputs to the system's reproducers.
 - a. Two (2) low impedance microphone inputs/line level inputs to the system's mixer/preamplifier.
- E. Gymnasia Sound Reinforcement Systems' Functions:
1. Provide for the pick-up, mixing, equalization, amplification, ADA Hearing system distribution, and recording of the following inputs to the system's reproducers. System shall consist of three separate channels; each channel consisting of:
 - a. Twelve (12) low impedance microphone inputs/line level inputs to the system's mixer/preamplifier.
 - b. Each Gymnasium section shall be able to operate independently as well as in concert with the other sections.
 - c. Each section shall be able to select the output of the other sections and feed its audio signal into its channel for distribution to its section's speakers.
- F. Auxiliary Gymnasium Sound Reinforcement System Functions:
1. Provide for the pick-up, mixing, equalization, amplification, and distribution, and recording of the following inputs to the system's reproducers.
 2. Four low impedance microphone inputs/line level inputs to the system's mixer/preamplifier.
- G. Instrumental Music Room Sound Reinforcement System Functions:
1. Provide for the pick-up, mixing, equalization, amplification, recording and distribution, of the following inputs to the system's reproducers.
 - a. Sixteen (16) low impedance microphone inputs/line level inputs to the specified mixing console.

- b. Four (4) low impedance microphone inputs/line level inputs to a separate rack mounted mixer/preamplifier for sound reinforcement in the Instrumental Music Room.
 - c. Hanging recording microphones shall be dedicated to the mixing console.
 - H. Vocal Music Room Sound Reinforcement System Functions:
 - 1. Provide for the pick-up, mixing, equalization, amplification, and distribution, and recording of the following inputs to the system's reproducers.
 - a. Sixteen (16) low impedance microphone inputs/line level inputs to the specified mixing console.
 - b. Four (4) low impedance microphone inputs/line level inputs to a separate rack mounted mixer/preamplifier for sound reinforcement in the Vocal Music Room.
 - c. Hanging recording microphones shall be dedicated to the mixing console.
 - I. Cafeteria Sound Reinforcement System Functions:
 - 1. Provide for the pick-up, mixing, equalization, amplification, and distribution, and recording of the following inputs to the system's reproducers.
 - a. Four low impedance microphone inputs/line level inputs to the system's mixer/preamplifier.
 - J. Special Education Sound Reinforcement Systems' Functions:
 - 1. Provide for the pick-up, amplification, and distribution, of the following input to the system's reproducer.

2.3 MATERIALS AND EQUIPMENT

- A. The following equipment shall be provided with all features and functions as specified, and as indicated in the manufacturer's literature.
- B. Main Auditorium Sound Reinforcement System - Electronics: (Equipment mounted and wired into cabinet as indicated by (#).)
 - 1. 1 - Atlas Sound model WA-200-77B equipment cabinet #1 (by Raxxess, MidAtlantic Products, or approved equal)
 - 2. 1 - Atlas Sound Model SACR-191 sequential power switch assembly (#1) (by Furman, FSR or approved equal)
 - 3. 1 - FSR relay control of power to system (#1) (by Furman, Atlas Sound or approved equal)
 - 4. 1 - Key operated switch for power on/off/sequencer system (by Furman, Atlas Sound, FSR or approved equal)

5. 1 - Shure model SCM-810 mixer/preamplifier (#1) (by IED, Lectrosonics or approved equal)
6. 1 - Rane RPM88 Speaker Processing Unit
7. 1 - Whirlwind SP1X3LL line level splitter (by ProCo, Hosa or approved equal)
8. 1 - Crown model CTs600 (by Electrovoice, QSC or approved equal)
9. 1 - Denon model DN-T625 CD/Cassette Deck (#2) (by Marantz, Tascam or approved equal)
10. 5 - Shure model ULXP14/50 wireless lavalier microphone system and accessories (by Lectrosonics, Telex or approved equal)
11. 1 - Shure model ULXP24/58 wireless handheld microphone system and accessories (by Lectrosonics, Telex or approved equal)
12. 2 - Blonder-Tongue model MVB-15 distribution amplifier with required splitters and accessories to accommodate all wireless microphone systems specified (by BT, Drake, RDL or approved equal - as required by audio consultant) (#2)
13. 2 - Shure model WA series, 1/2 wave antennae (by Lectrosonics, Telex or approved equal)
14. 1 - Telex model SM-1 hearing assist system (#1) (by Listen Technologies, Phonic Ear or approved equal)
15. 40 - Telex model SR-50 Receiver (by Listen Technologies, Phonic Ear or approved equal)
16. 40 - Telex model HED-2 Headset (by Listen Technologies, Phonic Ear or approved equal)
17. 1 - Telex system antenna and plaque (by Listen Technologies, Phonic Ear or approved equal)
18. 1 - Lot of blank panels to fill remaining rack space (#1 & #2) (by Whirlwind, Raxxess, MidAtlantic Products or approved equal)
19. 1 - Yamaha M7CL-48 Digital Mixing Console (by Soundcraft, Midas or approved equal)
20. 1 - Lot of connecting cables and connectors for all console inputs and outputs (Whirlwind, Conquest, Custom or approved equal). (Cable lengths, as required by Owner)

C. Stage Production Intercommunications System:

1. 1 - ClearCom WBS680 Two channel wireless master control station (#1) (by Telex, Rane or approved equal)
2. 8 - ClearCom WTR680 Belt pack (by Telex, Rane or approved equal)

3. 8 - ClearCom CC95 Headset/microphone (by Telex, Rane or approved equal)
- D. Main Loudspeaker Cluster Assemblies:
1. 4 - Tannoy model VXP 15HP (white) (by JBL, Renkus-Heinz or approved equal)
 2. 2 - Tannoy model VNET 18DR (white) Subwoofer loudspeaker (JBL, Renkus-Heinz or approved equal)
 3. 2 – Polar Focus rigging assemblies (by ATM Flyware or approved equal)
- E. Mid-Ceiling Loudspeaker Assemblies:
1. 3 - Tannoy VXP 12HP Loudspeaker unit (white) (by JBL, Renkus-Heinz or approved equal)
 2. 3 - Polar Focus rigging assemblies (by ATM Flyware, Convergent Technologies or approved equal)
- F. Stage Monitor Loudspeakers: 2 - JBL VRX-915M w/ 25' Speakon Cable (by Tannoy, Renkus-Heinz or approved equal)
- G. Projection Booth Monitor Speakers (if applicable): 2 - JBL model Control 25 Loudspeaker unit with wall type mounting bracket, (by Tannoy, Electro-Voice or approved equal)
- H. Microphones, Stands, Receptacles & Accessories:
1. 1 - Shure model MX412/C, lectern microphone with cable and connector (by AKG, Electro-Voice or approved equal)
 2. 5 - Shure model ULXP14/50 wireless lavalier microphone system and accessories (by Lectrosonics, Telex or approved equal)
 3. 6 - Crown model CM-30 hanging microphone (hang above stage as directed by Architect (by Shure, AGC or approved equal)
 4. 5 - Shure model ULXP24/58 wireless handheld microphone system and accessories (by Lectrosonics, Telex or approved equal)
 5. 2 - Shure model SM-58 general purpose microphone (by Crown, Electro-Voice or approved equal)
 6. 2 - Conquest model B84-25 microphone cable with connectors (by Canare, Whirlwind or approved equal)
 7. 4 - Atlas model MS-12CE microphone floor stand (by AKG, Ultimate or approved equal)
 8. 4 - Conquest model CP1-DF microphone receptacle (by Atlas Sound, Whirlwind or approved equal)
- I. Analog / Digital Snakes & Speaker Distribution System:

1. 4 – Aviom AN16/o output module w/ 8 Hosa DB25 to 8 XLR-M cables
2. 4 – Aviom AN16-i/M mic/line input module
3. 2 – Aviom AN-16SBR system bridge
4. 1 – Whirlwind Medusa audio snake (16 input, 4 return, XLR jacks, 100' in length)
5. 1 – Aviom AN-16D distributor unit
6. 11 – Aviom AVP2 interface module

(Or approved equal by Roland, Cisco or Whirlwind)

J. Recessed Stage Boxes and Receptacle Plates, (Boxes by Contractor):

1. 3 - Pro-Co model FP6-8 recessed stage floor boxes (by Whirlwind, Taylor or approved equal)
2. 6 - Pro-Co model ND6008 receptacle plate (two required for each FP6-8 floor box). The model ND6008 plates shall be configured as follows:
 - a. Center Stage: Each plate shall be furnished with:
 - 1) 4 - Three-pin XLR female receptacles (Mic Level)
 - 2) 1 - Three-pin XLR male receptacle (Line Level)
 - 3) 2 - Speakon receptacle (Speaker Level)
 - b. Stage Right & Stage Left: Each plate, of the two plates required, shall be furnished with:
 - 1) 4 - Three-pin XLR female receptacles (Mic Level)
 - 2) 1 - Three-pin XLR male receptacle (Line Level)
 - 3) 2 - Speakon receptacle (Speaker Level)

(by Whirlwind, Taylor or approved equal)

K. Left Rear Auditorium Sound Reinforcement System (Classroom/Lecture Room):

1. 1 - Tannoy VXP 12HP Loudspeaker unit (white) (by JBL, Renkus-Heinz or approved equal)
2. 1 - Polar Focus rigging assembly (by ATM Flyware, Convergent Technologies or approved equal)
3. 2 - Conquest model CP1-DF Microphone receptacle (by Atlas Sound, Whirlwind or approved equal)
4. 1 - Shure model SM58 Microphone (by Crown, Electro-Voice or approved equal)

5. 1 - Conquest model B84-15 microphone cable with connectors (by Canare, Whirlwind or approved equal)
 6. 1 - Atlas model MS12CE Microphone Floor stand (by AKG, Ultimate or approved equal)
 7. 1 – Atlas Sound AWR3W tilt out wall cabinet (by MidAtlantic, Raxxess or approved equal)
 8. 1 – Shure model SCM-268 mixer w/ rack mount (by AKG, Sennheiser or approved equal)
 9. 1 – RDL brand override to interface Auditorium sound system to Lecture Room sound system (by FSR, Atlas or approved equal)
 10. 1 – Aviom AVP2 interface module (by Roland, Cisco or approved equal)
 11. 1 - Atlas Sound model ACRL-191 Power panel (by Raxxess, MidAtlantic Products or approved equal)
- L. Right Rear Auditorium Sound Reinforcement System (Classroom/Lecture Room):
1. 1 - Tannoy VXP 12HP Loudspeaker unit (white) (by JBL, Renkus-Heinz or approved equal)
 2. 1 - Polar Focus rigging assembly (by ATM Flyware, Convergent Technologies or approved equal)
 3. 2 - Conquest model CP1-DF Microphone receptacle (by Atlas Sound, Whirlwind or approved equal)
 4. 1 - Shure model SM58 Microphone (by Crown, Electro-Voice or approved equal)
 5. 1 - Conquest model B84-15 microphone cable with connectors (by Canare, Whirlwind or approved equal)
 6. 1 - Atlas model MS12CE Microphone Floor stand (by AKG, Ultimate or approved equal)
 7. 1 – Atlas Sound AWR3W tilt out wall cabinet (by MidAtlantic, Raxxess or approved equal)
 8. 1 – Shure model SCM-268 mixer w/ rack mount (by AKG, Sennheiser or approved equal)
 9. 1 – RDL brand override to interface Auditorium sound system to Lecture Room sound system (by FSR, Atlas or approved equal)
 10. 1 – Aviom AVP2 interface module (by Roland, Cisco or approved equal)
 11. 1 - Atlas Sound model ACRL-191 Power panel (by Raxxess, MidAtlantic Products or approved equal)
- M. Gymnasium Sound Reinforcement System:

1. 1 - Atlas Sound model 244-18 Equipment rack (by Raxxess, MidAtlantic Products or approved equal)
 2. 2 - Shure model SCM-800 mixer/preamplifier (by IED, Lectrosonics or approved equal)
 3. 1 - Denon model DN-T625 CD/Cassette Deck (by Marantz, Tascam or approved equal)
 4. 1 - dBX model # 131 Graphic Equalizer (by White Instruments, Klark-Teknik or approved equal)
 5. 1 - Crown CTS 4200 w/ TP170V (by Electrovoice, QSC or approved equal)
 6. 1 - Telex model SM-1 ADA Hearing Assistance System (by Williams, Phonic Ear or approved equal)
 7. 20 - Telex model SR-50 Receiver (by Williams, Phonic Ear or approved equal)
 8. 20 - Telex model HED-2 Headset (by Williams, Phonic Ear or approved equal)
 9. 1 - Telex system antenna and plaque (by Williams, Phonic Ear or approved equal)
 10. 3 - Atlas Sound model ACRL-191 Power panel (by Raxxess, MidAtlantic Products or approved equal)
 11. As required, Wiremold Power strip
 12. 12 - Soundtube HP129i Loudspeakers w/ Rigging (by Atlas, Soundsphere or approved equal)
 13. 3 - Shure model ULXP24/58 Wireless Microphone system (by Lectrosonics, Telex or approved equal)
 14. 3 - Shure SM58 microphone (by Crown, Electro-Voice or approved equal)
 15. 3 - Conquest model B84-25 microphone cable with connectors (by Canare, Whirlwind or approved equal)
 16. 3 - Atlas model MS-12CE microphone floor stand (by AKG, Ultimate or approved equal)
 17. 3 - Atlas model DS-5 microphone desk stand (by Custom, Middle Atlantic or approved equal)
 18. 6 - Conquest model CP2-DF microphone receptacle (by Atlas Sound, Whirlwind or approved equal)
 19. 1 - Raxxess iRDS-1 rackmountable iPod dock (by Alesis, iPort or approved equal)
- N. Auxiliary Gymnasium Sound Reinforcement System:
1. 1 - Atlas Sound model 244-18 Equipment rack (by Raxxess, MidAtlantic Products or approved equal)

2. 1 - Shure model SCM-800 mixer/preamplifier (by IED, Lectrosonics or approved equal)
 3. 1 - Denon model DN-T625 CD/Cassette Deck (by Marantz, Tascam or approved equal)
 4. 1 - DBX model # 131 Graphic Equalizer (by White Instruments, Klark-Teknik or approved equal)
 5. 1 - Crown CTS 600 dual power amplifier w/ TP170V (by Electrovoice, QSC or approved equal)
 6. 1 - Telex model SM-1 ADA Hearing Assistance System (by Williams, Phonic Ear or approved equal)
 7. 20 - Telex model SR-50 Receiver (by Williams, Phonic Ear or approved equal)
 8. 20 - Telex model HED-2 Headset (by Williams, Phonic Ear or approved equal)
 9. 1 - Telex system antenna and plaque (by Williams, Phonic Ear or approved equal)
 10. 2 - Atlas Sound model ACRL-191 Power panel (by Raxxess, MidAtlantic Products or approved equal)
 11. As required, Wiremold Power strip
 12. 4 - Soundtube HP129i Loudspeakers w/ Rigging (by Atlas, Soundsphere or approved equal)
 13. 2 - Shure model ULXP24/58 Wireless Microphone system (by Lectrosonics, Telex or approved equal)
 14. 2 - Shure SM58 microphone (by Crown, Electro-Voice or approved equal)
 15. 2 - Conquest model B84-25 microphone cable with connectors (by Canare, Whirlwind or approved equal)
 16. 2 - Atlas model MS-12CE microphone floor stand (by AKG, Ultimate or approved equal)
 17. 2 - Atlas model DS-5 microphone desk stand (by Custom, Middle Atlantic or approved equal)
 18. 4 - Conquest model CP2-DF microphone receptacle (by Atlas Sound, Whirlwind or approved equal)
 19. 1 - Raxxess iRDS-1 rackmountable iPod dock (by Alesis, iPort or approved equal)
- O. Instrumental Music Room Sound Reinforcement System:
1. 1 - Atlas Sound model 224-18 Equipment rack (by Raxxess, MidAtlantic Products or approved equal)
 2. 1 - Panel with connectors on side of rack to accommodate mixing console cables

3. 1 - Atlas Sound ACRL-191 Power panel (by Furman, FSR or approved equal)
4. 1 - Shure model SCM-800 mixer/preamplifier (by IED, Lectrosonics or approved equal)
5. 1 - DBX 231, 1/3 Octave equalizer (by White Instrument, Klark-Teknik or approved equal)
6. 1 - Crown model # CTs 1200 dual power amplifier w/ TP170V (by Electrovoice, QSC or approved equal)
7. 1 - Wiremold power strip
8. 1 - Denon model DN-T625 CD/Cassette Deck (by Marantz, Tascam or approved equal)
9. 1 - Yamaha MG16x4, Mixing console with cable & connectors for all inputs & outputs (by Soundcraft, Midas or approved equal)
10. 1 - Shure model ULXP14/50 Wireless microphone system (by Lectrosonics, Telex or approved equal)
11. 1 - Shure model ULXP24/58 Wireless microphone system (by Lectrosonics, Telex or approved equal)
12. 1 - Shure SM58 microphone (by Crown, Electro-Voice or approved equal)
13. 4 - Crown model CM-30 Hanging microphone (by AKG, Shure or approved equal)
14. 1 - Conquest model B84-25 microphone cable with connectors (by Canare, Whirlwind or approved equal)
15. 1 - Atlas model MS-12CE microphone floor stand (by AKG, Ultimate or approved equal)
16. 2 - Conquest model CP1-DF microphone receptacle (by Atlas Sound, Whirlwind or approved equal)
17. 2 - J.B. Lansing model AM4212/95 Loudspeaker (by Tannoy, Electrovoice or approved equal)
18. 2 - J.B. Lansing model MTU-03, "U" bracket (by Polar Focus, ATM Flyware or approved equal)
19. 9 - Atlas Sound model C803AT87 Loudspeaker/transformer (by Electro-Voice, J.B. Lansing or approved equal)
20. 9 - Atlas Sound model 95-8 Back box (or equal by Tannoy or Rauland)
21. 9 - Atlas Sound model 51-8 Grille (or equal by Tannoy or Rauland)
22. 9 - Atlas Sound model 81-8R Support panel (or equal by Tannoy or Rauland)
23. 1 - Crown model # CTs 600 dual power amplifier w/ TP170V (by Electrovoice, QSC or approved equal)

P. Vocal Music Room Sound Reinforcement System:

1. 1 - Atlas Sound model 224-18 Equipment rack (by Raxxess, MidAtlantic Products or approved equal)
2. 1 - Panel with connectors on side of rack to accommodate mixing console cables
3. 1 - Atlas Sound ACRL-191 Power panel (by Furman, FSR or approved equal)
4. 1 - Shure model SCM-800 mixer/preamplifier (by IED, Lectrosonics or approved equal)
5. 1 - DBX 231, 1/3 Octave equalizer (by White Instrument, Klark-Teknik or approved equal)
6. 1 - Crown model # CTs 1200 dual power amplifier w/ TP170V (by Electrovoice, QSC or approved equal)
7. 1 - Wiremold power strip
8. 1 - Denon model DN-T625 CD/Cassette Deck (by Marantz, Tascam or approved equal)
9. 1 - Yamaha MG16x4, Mixing console with cable & connectors for all inputs & outputs (by Soundcraft, Midas or approved equal)
10. 1 - Shure model ULXP14/50 Wireless microphone system (by Lectrosonics, Telex or approved equal)
11. 1 - Shure model ULXP24/58 Wireless microphone system (by Lectrosonics, Telex or approved equal)
12. 1 - Shure SM58 microphone (by Crown, Electro-Voice or approved equal)
13. 4 - Crown model CM-30 Hanging microphone (by AKG, Shure or approved equal)
14. 1 - Conquest model B84-25 microphone cable with connectors (by Canare, Whirlwind or approved equal)
15. 1 - Atlas model MS-12CE microphone floor stand (by AKG, Ultimateo or approved equal)
16. 2 - Conquest model CP1-DF microphone receptacle (by Atlas Sound, Whirlwind or approved equal)
17. 2 - J.B. Lansing model AM4212/95 Loudspeaker (by Tannoy, Electrovoice or approved equal)
18. 2 - J.B. Lansing model MTU-03, "U" bracket (by Polar Focus, ATM Flyware or approved equal)
19. 9 - Atlas Sound model C803AT87 Loudspeaker/transformer (by Electro-Voice, J.B. Lansing or approved equal)

20. 9 - Atlas Sound model 95-8 Back box (or equal by Tannoy or Rauland)
21. 9 - Atlas Sound model 51-8 Grille (or equal by Tannoy or Rauland)
22. 9 - Atlas Sound model 81-8R Support panel (or equal by Tannoy or Rauland)
23. 1 – Crown model # CTs 600 dual power amplifier w/ TP170V (by Electrovoice, QSC or approved equal)

Q. Cafeteria Sound Reinforcement System:

1. 1 - Atlas Sound model 221-18 Equipment rack (by Raxxess, MidAtlantic Products or approved equal)
2. 1 - Shure model SCM-800 mixer/preamplifier (by IED, Lectrosonics or approved equal)
3. 1 - Denon model DN-T625 CD/Cassette Deck (by Marantz, Tascam or approved equal)
4. 1 - dBX 131 graphic equalizer (by White Instruments, Klark-Teknik or approved equal)
5. 1 - Crown CTs600 power amplifier w/ TP170V (by Electrovoice, QSC or approved equal)
6. 1 - Atlas Sound model ACRL-191 Power panel (by Raxxess, MidAtlantic Products or approved equal)
7. 1 - Wiremold Power strip
8. 1 – Shure ULXP24/58 handheld wireless microphone system (by Telex or approved equal)
9. 15 - Atlas Sound model C803AT87 Loudspeaker with transformer (by Electro-Voice, J.B. Lansing or approved equal)
10. 15 - Atlas Sound model 95-8 Loudspeaker back box (by Raxxess, Elkay or approved equal)
11. 15 - Atlas Sound model 51-8 Loudspeaker grille (by Raxxess, Elkay or approved equal)
12. 15 - Atlas Sound model 81-8R Loudspeaker assembly support panel (by Raxxess, Elkay or approved equal)
13. 1 - Shure SM58 microphone (by Crown, Electro-Voice or approved equal)
14. 1 - Atlas model MS-12CE microphone floor stand (by AKG, Ultimate or approved equal)
15. 1 - Conquests model B84-25 microphone extension cable with connectors (by Atlas Sound, Whirlwind or approved equal)
16. 4 - Conquest model CP1-DF microphone receptacle (by Atlas Sound, Whirlwind or approved equal)

R. Weight Room Sound Reinforcement System:

1. 1 - Atlas Sound model 221-18 Equipment rack (by Raxxess, MidAtlantic Products or approved equal)
2. 1 - Shure model SCM-800 mixer/preamplifier (by IED, Lectrosonics or approved equal)
3. 1 - Denon model DN-T625 CD/Cassette Deck (by Marantz, Tascam or approved equal)
4. 1 - dBX 131 graphic equalizer (by White Instruments, Klark-Teknik or approved equal)
5. 1 - Crown CTs600 power amplifier w/ TP170V (by Electrovoice, QSC or approved equal)
6. 1 - Atlas Sound model ACRL-191 Power panel (by Raxxess, MidAtlantic Products or approved equal)
7. 1 - Wiremold Power strip
8. 1 - Shure ULXP24/58 handheld wireless microphone system (by Telex or approved equal)
9. 9 - Atlas Sound model C803AT87 Loudspeaker with transformer (by Electro-Voice, J.B. Lansing or approved equal)
10. 9 - Atlas Sound model 95-8 Loudspeaker back box (by Raxxess, Elkay or approved equal)
11. 9 - Atlas Sound model 51-8 Loudspeaker grille (by Raxxess, Elkay or approved equal)
12. 9 - Atlas Sound model 81-8R Loudspeaker assembly support panel (by Raxxess, Elkay or approved equal)
13. 1 - Shure SM58 microphone (by Crown, Electro-Voice or approved equal)
14. 1 - Atlas model MS-12CE microphone floor stand (by AKG, Ultimate or approved equal)
15. 1 - Conquests model B84-25 microphone extension cable with connectors (by Atlas, Sound, Whirlwind or approved equal)
16. 4 - Conquest model CP1-DF microphone receptacle (by Atlas Sound, Whirlwind or approved equal)
17. Sonance i-Port IW5 in-wall iPod dock. (by Raxxess, Alesis or approved equal)

S. Special Education Classroom Sound: Each system shall be an Extron PoleVault 4 Input System w/ VoiceLift Microphone. Inputs shall consist of HDMI (1), VGA (2) and RCA (1). (by Extron, Crestron, AMX or approved equal)

T. Hardware, Mounting, and Rigging:

1. The Contractor shall furnish and install all necessary and required mounting devices, hardware, and rigging materials for all systems specified herein.
2. The Contractor shall have mounting, rigging, and suspension details for the Main Auditorium Loudspeakers, Mid-Ceiling loudspeakers, Rear Auditorium (Classroom/Lecture Room) Loudspeakers, Gymnasium Loudspeakers, Vocal and Choral Room Loudspeakers, certified and stamped by a professional engineer. The Contractor shall submit said details to the Architect for approval prior to installation.

U. Cabling:

1. All cabling shall be plenum rated.
2. See line diagram for specific details on gauge and shielding requirements

PART 3 - EXECUTION

3.1 ARCHITECT'S INSPECTION/TESTING OF SYSTEMS

- A. The Architect and/or the Audio Consultant will review the System's, "SYSTEM TESTING/PROOF OF PERFORMANCE" reports for all systems.
- B. The Architect and/or the Audio Consultant will conduct a detailed inspection/test of all systems. In the event any system(s) is found to incorporate products and/or equipment not specified herein, or does not function as specified, the Contractor, at no additional cost to the Owner, shall remove the system and furnish and install the specified system(s)/equipment. The Contractor shall also be responsible for all Architect and Engineer's expenses incurred during the second inspection and testing of the systems. The Architect shall strictly enforce compliance with specifications and manufacturer's equipment.

3.2 REMOTE SOUND REINFORCEMENT SYSTEM TESTING/PROOF OF PERFORMANCE

- A. The System Contractor shall set-up, program, and equalize all systems.
- B. The System Contractor shall include the results of the following in the Operation/Maintenance Manuals under the heading, "Proof Of Performance", separately, for each system:
 1. Inspect and test the entire system.
 2. Verify the proper operation of all electronic components and loudspeakers; make and record impedance measurements of each loudspeaker/line circuit.
 3. Verify all connections of all circuits. All miswired and/or shorted connections shall be repaired. Document proof of cable tests.
 4. Test for ground loops and oscillations of any kind.
 5. Observe and record the following impedance measurements:

- a. At, 60Hz, 250Hz, 1kHz, 4kHz, 8kHz, and 16kHz.
6. Equalized house curve utilizing calibrated microphone. Provide documentation for the house curve as well as all materials / software used to perform equalization and documentation.
7. Phase testing of all loudspeakers.
8. SPL distribution throughout the seating area(s); include at least six (6) readings per seating section.
9. Power Amplifier outputs.
10. Sweep test the entire system.
11. Record all buzzes and rattles of any object(s) within an area, which may occur during the following testing procedure, and report it to the project Architect/Engineer.
 - a. Insert a sine-wave signal into the system, producing 90dB of level throughout the area.
 - b. Check for buzzes and rattles of any external object(s).
 - c. Repeat item “a” above, using program materials at a level of 90dB, and then repeat item “b”.
 - d. Repeat item “a” above, using pink noise at a level of 90dB, and then repeat item “b”.
 - e. Verify paging override is operational for all sound system. Provide documentation.
 - f. Report and record all findings.
12. Electronic copies of the saved configuration files for the DSP, mixing console, etc. shall be provided as part of the “Proof of Performance”.

END OF SECTION 26 55 63

SECTION 26 55 61 – THEATRICAL EQUIPMENT, DIMMING AND RIGGING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 GENERAL REQUIREMENTS

- A. It is the responsibility of the Contractor to fully coordinate the integration and installation of all equipment and furnishings as described in this section with an established Theatrical Systems Integrator to ensure proper operation of the system.
- B. This specification requires the fabrication, furnishing, delivery and installation of the stage dimming systems, control, distribution, fixtures and all incidental or related items necessary to complete the work as described herein, even though they may not be specifically enumerated.
- C. This specification requires the fabrication, furnishing, delivery and installation of the stage rigging systems, tracks, draperies and all incidental or related items necessary to complete the work as described herein, even though they may not be specifically enumerated.
- D. The Theatrical Systems Integrator's Rigger shall be Entertainment Technician Certification Program (ETCP) Certified. The Certified Rigger shall be either the project manager or site foreman, and be responsible for the overall project including the layout, inspection, and training.

1.3 SYSTEM DESCRIPTION

- A. Theatrical Lighting System:
 - 1. The system shall be designed for the control of architectural and theatrical lighting and shall consist of factory pre-wired dimming and processing rack enclosures containing dimmers, relays, power supplies, breakers, terminals and/or control electronics.
 - 2. System shall work in conjunction with specified low-voltage control stations.
 - 3. The system shall include theatrical lighting fixtures and accessories as detailed herein.
 - 4. The system shall be designed for the control of, and or interface with, peripheral devices including, but not limited to: Motorized Rigging devices including hoists and curtain machines, Motorized Projection Screens and other A/V components.
- B. Theatrical Rigging System: The system shall provide theatrical rigging devices for the use and support of Stage Draperies, Lighting, and Audio Visual equipment as included within these

specification documents. The system shall also allow for the use and support of Theatrical Scenery Elements as provided by the owner for future use.

- C. The system is designed to meet specific operational requirements of the Philipsburg High School. Performance deviations will not be accepted.

1.4 WORK INCLUDED

- A. The Contractor, as part of the work of this section, shall provide, install and test a complete lighting control system as specified herein for areas indicated on the drawings and circuit schedules.
- B. The Contractor shall furnish all conduit, wire, connectors, hardware and other incidental items necessary for the complete and proper operation of the theatrical systems.
- C. Be advised, it is the responsibility of the Contractor to obtain the services of a Theatrical Systems Integrator to provide the system described herein.
- D. Any errors, omissions or ambiguities are not to condition this requirement, but shall be brought to the attention of the Architect for their possible effect on the intent of the specifications.
- E. Rigging Installer shall mount on-stage connector strips and pantographs to rigging.
- F. Bring main power feed into new dimmer enclosure and terminate per manufacturers specifications.
- G. Install House Light control stations at locations noted on drawings.
- H. Zone control for the House Light system shall be programmed in the architectural control processor.
- I. On-site training of school personnel on the use and maintenance of the systems and equipment provided as part of this specification.
- J. New dimming and control equipment shall be appropriately sized to accommodate all existing loads, as well as leave room for future expansion.
- K. Mounting of the on-stage Auditorium projection screen shall be by the TSI's Rigger. Other projection screens shall be installed by others.
- L. To ensure the proper operation of all systems, the Dimmer Enclosure, Control Console and House Light control stations shall be by a single manufacturer. Major Rigging components shall be by a single manufacturer.
- M. Coordination of all work described in this section shall be the responsibility of the Contractor, including, but not limited to:
 - 1. General Conditions
 - 2. Electrical Section General Provisions
 - 3. Conduit
 - 4. Wire and Cable

5. Over-Stage Motorized Hoist Line Sets
6. Front-of-House Motorized Hoists
7. Stage Drapery Tracks
8. Stage Drapery and Soft Goods

1.5 RELATED WORK

A. Related work that is not included in this section:

1. Electrical equipment and associated distribution as required for supply of power to the dimming and rigging components within this system.
2. Supply, installation and/or engineering of grid-iron, head, mule and loft block beams, bridging steel, hand-rails, and all other structural steel and miscellaneous metals, including Unistrut, that may be required, but not specifically called out as part of this section.
3. Installation of the Gymnasium Projection Screen, provided as a part of this section, shall be by others as is not included in this section.

1.6 CONTRACTOR COORDINATION

A. Due to the complex nature of the coordination of the work associated with the work of this contract, the following is a list of responsibility to be divided between the Contractor (C) and the Theatrical Systems Integrator (TSI).

1. The Contractor shall provide protection for the stage flooring and finish during installation.
2. Installation of all structural and bridging steel shall be the responsibility of the Contractor.
3. The Contractor shall be responsible for furnishing and installing all wiring to the devices that are attached to the battens.
4. The TSI shall supply all theatrical lighting equipment for installation by the Contractor.
5. The TSI shall supply all theatrical rigging equipment for installation by the rigging installer. The rigging installer shall be a subcontractor to the rigging installer.

1.7 THEATRICAL SYSTEMS INTEGRATOR

A. General: The provider of the system herein described shall be acknowledged in business as a Theatrical Systems Integration Company, hereafter referred to as TSI. This company shall employ full time Systems Integrators and Project Managers with experience in completing work of similar or greater size and scope. The role of the TSI in this project shall be to provide all equipment listed in this section to the Contractor for installation. The TSI shall be responsible for the installation of all non-electrical rigging components. The TSI shall furnish a complete working system to the Contractor, meeting the intent of this specification. The TSI shall

coordinate delivery schedules and installation of equipment with the Contractor. Additionally, the TSI shall be responsible for all documentation for equipment in this section, system record drawings, final testing of the system and training of the Owner's personnel as required by this specification.

B. Description:

1. The TSI shall have experience in the operation and installation of similar equipment associated with the construction and/or renovation of facilities similar in scope to this project.
2. The TSI shall have been in business for a minimum of 20 consecutive years and shall have no history of bankruptcy.
3. The TSI shall be an authorized dealer for an adequate number of manufacturers of system products necessary to provide a complete working system meeting the intent of this specification. System products shall include but are not limited to the following:
 - a. Theatrical Lighting Systems to include:
 - 1) Dimming Equipment
 - 2) Control Systems
 - 3) Lighting Fixtures
 - 4) Power Distribution Equipment
 - 5) Stage Accessories
 - b. Moving Rigging Systems to include:
 - 1) Hand Winched Line Sets
 - 2) Counterweight – Single and Double Purchase
 - 3) Motorized Line Sets
 - c. Static Rigging Systems to include:
 - 1) Dead Hung Battens
 - 2) Pipe Grids
 - d. Rigging Accessories to include:
 - 1) Stage Draperies
 - 2) Stage Drapery Tracks
 - 3) Stage Automation equipment
 - 4) Stage Accessories
4. The TSI shall be located within 25 miles of the job-site to ensure availability of emergency service.
5. The TSI shall have on staff at least two full-time manufacturer-certified field service technicians and have technical support and assistance accessible 24 hours a day, seven days a week.

6. The TSI shall offer a Maintenance and Service Contract.
 7. The TSI shall provide a one-year system warranty for the complete system, not including expendable supplies, effective from the date of system acceptance. Within this warranty period, the TSI shall be responsible as the Owner's sole contact for the remedy, repair, or replacement of system deficiencies (through the manufacturer's warranty where applicable).
- C. Project Management:
1. The Systems Integration Company shall designate a dedicated Project Manager. The TSI's Project Manager shall be the main contact between the Systems Integrator, Manufacturers, Architects, Engineers and Contractors from notice-to-proceed until final sign off. The TSI's Project Manager shall be the same person throughout the entire course of the project, unless otherwise approved by the Architect.
 2. The TSI's Project Manager shall attend a Kick-Off Meeting at the project site office or a place to be designated. The objectives of the Kick-Off Meeting are:
 - a. Introduce the Project Team Members
 - b. Review the Project Schedule
 - c. Review the Scope of Work and any additional materials and documents not in the Scope of Work
 - d. Layout the creative intent of the Project
- D. Approved Theatrical Systems Integration Companies shall be Barbizon Electric, Ron Fogel & Associates, Shadowstone or approved equal.

1.8 SUBMITTALS

- A. Requirements for Approval: Theatrical Systems Integrators seeking acceptance must submit the following information along with the equipment submittal. Failure to submit any of the required information will automatically disqualify the contractor from consideration of approval.
1. A listing of 10 equivalent installations including:
 - a. Name, address, and current telephone number of Owner.
 - b. Name, address, and current telephone number of Architect or theater consultant associated with the installation.
 - c. Scope of work of the installation including all sub-contractors and manufacturers.
 2. A brief written description of the TSI's operation, including facilities, departments and key personnel.
 3. Biographical information of the Project Manager and integration team members who will be assigned to this project should the contractor be successful.
 4. A full and complete financial statement sufficient to determine financial viability.

5. A list of all sub-contractors who the TSI proposes to use including their qualifications to perform the work.
- B. Manufacturer shall provide 6 sets of full system submittals. Submittals shall be 11"x17" and include:
 1. Full system riser diagram(s) illustrating interconnection of system components, how the system attaches to building structure, and any special installation considerations.
 2. Full set of printed technical data sheets.
 3. Detailed set of drawings, including a complete list of all deviations from specifications.
- C. Manufacturer shall provide any additional information, including equipment demonstration, as required by the Architect to verify compliance with specifications.
- D. Samples: The TSI shall submit samples without causing delay in work, as required.
 1. 12" x 12" samples and color cards of all fabrics shall be submitted for approval and for color selection. These samples shall be properly tagged as to grade, weight, color, manufacturer and use.
- E. Catalog Cuts: The Contractor shall submit catalog cuts for equipment items. These shall contain full information on dimensions, construction, applications, etc. to permit proper evaluation. In addition, they shall be properly identified as to their intended use. Any options or variations shall be clearly noted.
- F. Drawings: Submit shop and installation drawings and schedules showing all information necessary to explain fully the design features, appearance, function, fabrication, installation, and use of system components in all phases of operation. They shall be approved by the Architect before fabrication, installation, or erection has begun. Such approval does not relieve the TSI of the responsibility of providing equipment in accordance with the specifications. Any deviations from the specifications shall be "starred" and noted in 3/8-inch high letters. Only deviations that are equal or upgrade the quality of the equipment or respond to field conditions will be considered.
- G. Safety: The Systems shall conform to all applicable code requirements and shall be in conformance with industry standards of operation and practices. All materials, arrangements, and procedures shall comply with applicable code requirements, allowing the users to arrange and operate a safe assembly and working environment audience and user personnel.
- H. Affidavits: The TSI shall furnish notarized affidavits certifying that fabrics have been flame retardant treated or are made of inherently flame resistant fibers as specified. If other affidavits are required, the contractor shall supply them without cost to the owner.

1.9 DELIVERY STORAGE AND HANDLING

- A. All materials shall be delivered to the jobsite in the manufacturer's original crate or carton. Products shall be delivered as advised by the Contractor.

- B. The Contractor shall unpack all non-rigging equipment. The contractor shall unpack all rigging equipment. Equipment shall be tested on-site.
- C. All debris and packaging must be removed from the jobsite by the Contractor.
- D. The Contractor shall be responsible for storage of stage equipment, tools, and equipment during the period of the installation.

PART 2 - PRODUCTS

2.1 QUALITY ASSURANCE

- A. Manufacturers shall have been continuously engaged in the manufacturer of Theatrical equipment for a minimum of ten years. All fabrication must take place in a U.S. manufacturing plant.
- B. Proposed equipment shall be UL and C-UL listed, and/or CE marked (where applicable) and bear the appropriate labels.

2.2 ACCEPTABLE MANUFACTURERS

- A. The equipment herein specified shall be manufactured by the following, or approved equal:
 - 1. Altman Stage Lighting Co., Inc.
 - 2. Automated Devices Company
 - 3. DeSisti Rigging and Automation
 - 4. J.R. Clancy Inc.
 - 5. Leviton – Colortran Division
 - 6. Middle Atlantic Products, Inc.
 - 7. Pathway Connectivity
 - 8. SSRC
 - 9. Strong Entertainment Lighting
 - 10. Or approved equal.
- B. Permission to bid does not imply acceptance of the manufacturer. It is the sole responsibility of the Electrical Contractor to ensure that any price quotations received and submittals made are for systems that meet or exceed the specifications.

2.3 SUBSTITUTIONS

- A. All product substitutions must be submitted to the architect 21 days prior to the bid due date to be considered and must include the following:
1. Complete data substantiating compliance with requirements stated in Contract Documents.
 - a. Product identification, including manufacturer's name, address and origin of materials and manufacturing.
 - b. Manufacturer's product information including:
 - 1) Product Description
 - 2) Reference Standards
 - 3) Performance and Test Data
 - c. Samples and Proof-of-Concept
 - 1) A full scale mockup may be required as deemed necessary by the Architect
 - d. Name and address of similar projects on which product has been used and date of each installation.
 2. Itemized comparison of the proposed substitution with product specified; list significant variations
 3. Date relating to changes in construction schedule resulting from proposed substitution.
 4. List of all changes required in other work, trades or products resulting from proposed substitution.
 5. Accurate cost data comparing proposed substitution with product specified.
 - a. Amount of any net change to Contract Sum
 6. Designation of availability of maintenance services, or sources of replacement materials
- B. Substitutions will not be considered for acceptance when:
1. They are indicated or implied on shop drawings or product data submittals without a formal request from Contractor
 2. They are requested directly by subcontractor or supplier.
 3. They are requested directly by subcontractor or supplier.
- C. Regardless of whether or not the Architect of Record approves the proposed substitution, the Architect of Record shall be reimbursed at the published manhour rate plus any direct cost for all time spent by the Architect of Record and/or his consultants in evaluating each proposed

substitution. A Change Order will be issued to reduce the Construction Contract by an amount equal to the fees charged by the Architect of Record for reviewing one or more proposed substitutions, the Owner in accordance with the Change Order amounts will reimburse The Architect of Record.

2.4 i96 DIMMING SYSTEM

A. Dimmer Rack General Description:

1. Each dimmer rack shall contain 48 dimmer module slots for housing up to 96 dimmers.
2. The rack shall offer an option for a redundant control module that provides seamless backup in case of the main control module's failure or removal from the rack.
3. Each dimmer module shall have its own processor that controls all active functions of the module, and monitors the temperature and electrical parameters for each dimmer.

B. Dimmer Rack Mechanical:

1. The dimmer rack shall be a free standing dead front switchboard with sizes as indicated in the Bill of Materials and shall house all specified equipment. It shall be constructed of extruded aluminum structural members and code gauge formed steel, measuring 86" high x 17" wide x 24" deep. All bus bars, lugs, and terminals shall be copper with all load lugs, power terminals, and points of connection being silver plated copper. All exterior surfaces shall be finished in black powder coat finish.
2. Racks and custom auxiliary racks shall be designed to allow for adjacent or back-to-back mounting. The rear section of the rack behind the dimmer modules shall be utilized as a contractor's wireway. Removable conduit panels shall be provided on both the top and bottom of the rack for contractor entry of load and power feed wiring.
3. The rack shall be constructed to permit insertion and removal of dimmers and control modules without the use of tools. Self-aligning connectors shall be provided for precise alignment of the dimmers to the signal and power contacts in the rack. Dimmer supports shall be incorporated into the sides of the rack, allowing clear access to the power, load, and neutral terminals and the wireway. Racks requiring disassembly to access the terminals and wireway or requiring the use of tools for replacement of dimmers and control modules are not equal and not acceptable.
4. The rack shall contain a continuous-duty, low-noise, multi-speed fan to maintain temperatures at proper operating levels with all dimmers under full load and ambient temperatures up to 40 degrees C. (104 degrees F.) Cooling air shall be drawn through the door-mounted air filter, to each individual dimmer, and exhausted through the top of the rack. Racks which pull the same air over multiple dimmer modules, thereby causing some dimmer modules to receive preheated air are not equal and not acceptable.
5. The fan and fan control unit shall be contained in modular housings that are removable for cleaning and maintenance. Systems that require disassembly of sections of the dimmer rack for fan maintenance are not equal and not acceptable.

6. The front of the rack shall contain a rear illuminated "i" logo which shall flash when an error condition exists within the rack. This shall assist in isolating problems in multi-rack installations. Systems which do not provide for visual indication of error conditions in each rack are not equal and not acceptable.
7. The rack shall have a lockable door to prevent unauthorized access to dimmer and control modules. The door shall contain removable electrostatic air filters and space for a Hand-Held Terminal. When in place the backlit LCD screen of the Terminal shall be visible through the door. The Terminal shall provide for system feedback, as well as changing system settings and controlling dimmers directly. Alternate dimmer rack proposals must provide for control of all dimmers at the dimmer rack in order to be considered as equal. Racks that do not provide for Rack and System Status via a LCD Screen without opening the door are not considered equal.
8. Both load and neutral terminals shall accept up to a #2 gauge wire. In systems requiring separate ground wire per circuit, a separate ground buss shall be provided. Provisions shall be made for optional fault current protection devices (Amp Traps) which may be installed and serviced from the front of the rack.
9. Each rack shall have a series of interior wire guides mounted to the rack frame to provide contractors with a dedicated location in which to run load circuit wiring, out of the way of line feed and control wiring. These harnesses shall not require the use of any tools.

C. Dimmer Rack Electrical:

1. The rack shall be designed to operate from 95-140V or 190-270V 45-65Hz and either single or three phase power. Removable panels shall be provided on the sides of the rack to allow simple rack to rack bussing.
2. The rack shall be factory-tested and control modules shall be burned in at elevated temperatures for a minimum of 24 hours. The rack shall be UL listed and shall have an interrupting capacity of 10,000 AIC.
3. Each rack shall house an electronics backplane for the control wiring terminations and the control module connections. The screw terminals shall be modular and removable for easy contractor wiring outside the rack and replacement after terminations are completed. All rack configuration information shall be stored on the rack's backplane in non-volatile memory, so that when any new control module is plugged in, the rack shall come on line with full functionality within ten seconds without requiring any programming of the new control module. Systems that require preprogrammed dedicated control modules for each rack or require user-initiated reprogramming of replacement control modules are not equal and not acceptable.
4. Each dimmer within each rack shall allow for user hardware selectable Panic operation through an external dry contact closure. When the external contact is closed, those dimmers selected as Panic dimmers will be driven to full without affecting any other dimmer control settings. Additionally, the rack shall allow operation of any dimmer in the system without a control module through the use of Panic. Those dimmers selected will be driven to full output when the control module is removed from the rack. Racks which do not allow for operation without control modules, or do not incorporate a Panic scheme are not considered equal and are not acceptable.

D. Plug-in Dimmer Module Mechanical:

1. Each plug-in module shall consist of a die cast aluminum chassis containing one or two circuit breakers, a solid state power device, a high speed processor and two filter chokes.
2. Each plug-in module shall contain multi-color LEDs for each dimmer indicating normal operation and error conditions.
3. An integral handle shall be provided for insertion and removal of the dimmer module without the use of tools.
4. All connections to the rack shall be through floating power and data connectors for precise alignment of all connections. The side mounted spring shall always provide proper alignment of the module when inserted into the rack.

E. Plug-in Dimmer Module Electrical:

1. Each dimming channel shall be capable of hot patching cold incandescent loads up to its full rated capacity.
2. Each dimming channel shall operate satisfactorily on 45 - 65 Hz 95 - 140V (120V nominal) AC lines and in ambient air temperatures from 0-40 degrees C.(32-104 degrees F.)
3. Each dimming channel shall produce essentially a full sine wave when the control signal is full on and an output of zero volts when the control signal is off. When a dimmer is assigned as a non-dim, it shall pass a full sine wave unregulated, at the line input voltage.
4. The line voltage regulation speed of each dimmer shall be user configurable. Line voltage regulation shall maintain output voltage to within +/- 1 Volt for line voltage changes of up to 10 Volts per second and for line frequency changes of up to 1 Hertz per second.
5. The power handling features of each dimmer shall maintain proper operation of the dimmer without any interruption of operation, under the following adverse conditions:
 - a. Complete dropout of line voltage for up to 10 milliseconds.
 - b. A line surge or sag of 25% of nominal operating voltage for at least 500 milliseconds.
 - c. Transient voltages up to 2½ times the nominal line voltage.
 - d. Dimmers that fail for any amount of time under these conditions are not equal and not acceptable.
6. Dimmers shall include the following real time feedback elements:
 - a. Load Sensing with Programmed Alarms for deviations from recorded loads
 - b. Temperature Sensing (with Warning Alarm and Shutdown Alarm)

- c. Current/Voltage Output per dimmer
 - d. Current/Voltage Input per phase
 - e. Summary kiloWatt-hour power usage
 - f. Control level input
 - g. Error Conditions:
 - 1) circuit breaker tripped
 - 2) open circuit
 - 3) overtemp warning (user selectable temperature level)
 - 4) overtemp shutdown
 - 5) wrong module type for this position
 - 6) panic condition from loss of control module signal
 - 7) change in recorded load
7. Feedback data shall be available at the following locations:
- a. Dimmer Module LED's
 - b. On the ColorNet© network at VPC's (Remote Video nodes)
 - c. Remote Personal Computer
8. Dimmers that employ Triac devices are not equal and not acceptable.
9. The dimmer module shall be protected by one or two circuit breakers as indicated.
10. The circuit breakers shall serve as load disconnects and shall have a 10,000 amp interrupting capacity.
11. Each dimmer module shall contain a solid state power device with two or four SCR's in an anti-parallel configuration which are reflow soldered to nickel-plated copper lead frames which are in turn reflowed to a beryllium oxide ceramic substrate. The ceramic substrate shall be reflow soldered to an integral nickel-plated aluminum heat sink for maximum thermal conductivity and maximum semiconductor reliability. Dimmers using separate semiconductor assemblies (such as solid state relays) attached to a heat sink and requiring heat sink grease and mechanical mounting hardware shall not be acceptable. Surface mounted optical isolators shall be utilized to provide a minimum of 4000 volts of electrical isolation between the power semiconductors and the control signal. The active components in the power device shall be encapsulated in a high dielectric potting compound for mechanical protection and electrical isolation. The SCR's shall have a Transient Voltage Rating of at least 600A.
12. Each dimmer module shall contain a high-speed microprocessor PCB that controls all of the dimming and voltage regulation functions, and processes and monitors all feedback parameters, locally within the dimmer module for its dimmer(s). For reliability, each dimmer module shall have its own optically isolated signal line for communication with the control module. In the event of any dimmer module's failure, the operation of all other modules shall remain unaffected. The local electronics shall provide each dimmer with more than 5,000 discrete level values between the zero and full output levels for the

dimmer. Systems in which the control module(s) directly controls the dimming and regulation for all dimmers are not equal and not acceptable.

13. Each 120V dimmer module shall be a recognized component of Underwriters' Laboratory for incandescent and inductive loads and shall be so labeled.

F. Plug-in Dimmer Module Environmental:

1. Each Dimmer Module shall include toroidal filter chokes to limit objectionable harmonics, radiated radio frequencies, electromagnetic interference on the conductors and acoustical noise in the load lamp filament. Current rise time shall be no less than as shown in the following chart, measured at 90 degrees conductive angle from 10% to 90% of the output wave form. Rise time of the dimmer shall not vary by over 10% operating at 25% to 100% of the rated load. Dimmers with rise times that vary by more than 10% between 25% and 100% of the rated load are not acceptable. Alternate proposals must include oscillographic evidence for each dimmer type in order to be considered.
2. Power efficiency of each dimming channel shall be at least 95% or 97% at full load depending on the rise time of the module.

G. Control Module Mechanical:

1. The Control Module shall be a plug-in assembly consisting of a formed steel chassis, one glass epoxy printed circuit board, and two levers for easy tool-free insertion and removal. Control Modules shall contain LED's providing user feedback. Racks using non plug-in control modules or electronics requiring the removal of panels for servicing are not acceptable.
2. Each 48-module rack shall require only one control module. A slot shall be provided in the rack for a second, fully redundant on-line (Backup) control module. In the event of the Main control module's failure or removal from the rack, the Backup control module shall automatically maintain proper rack operation without any noticeable change to current lighting conditions. Systems that do not provide for a fully redundant on-line Backup control module or require user intervention to bring the Backup control module on line are not equal and not acceptable.
3. Each control module shall accept two input control signals of either the industry-standard DMX512 or Colortran (CMX) protocols. A ColorNet© network interface for dimmer and feedback data shall be provided. Each control module's front panel shall provide an RS232 serial port, a Hand Held Terminal port, and a PCMCIA slot.
4. Each system or each rack shall include a Hand Held Terminal which can be used as a means of programming Configuration Features. The backlit LCD Screen of this unit shall be on line and visible through the door of the dimmer rack.

H. Control Module Electrical:

1. The modules shall utilize completely digital electronic circuitry including high speed microprocessors for performing dimmer level calculations and feedback communications. The control modules shall automatically accept either Colortran protocol (156K baud) or

- DMX 512 protocol (250K baud). All control data inputs shall be optically isolated to 4,000V.
2. The Control Modules shall have On-Line and power LED's for each phase, visible from the front of the rack. The power LED's shall indicate if any phase is missing or incorrectly wired.
 3. Each control module will allow for back-up and library storage of the rack's configuration and back-up looks through the use of an industry standard 1MB PCMCIA Memory Card.
 4. The Rack Control Module shall have at least eight 0-10 V DC optically isolated analog inputs which can be patched to one or more of the 96 dimmers in the rack. A memory transfer input shall be provided to switch between digital and analog control of these dimmers.
 5. Each Control Module shall have the following user-programmable Configuration Features:
 - a. Line Voltage Regulation Speed: fast (20ms), slow (200ms), or off (unregulated), per dimmer.
 - b. Control Response: fast (20ms) or slow (200ms), selectable per dimmer.
 - c. Minimum and Maximum Level per dimmer as a percentage.
 - d. Electronic Noise Reduction feature enable/disable per dimmer.
 - e. Unregulated Non-dim function per dimmer.
 - f. IES square law (modified) or one of five user-programmed output curves.
 - g. Cable resistance values for each dimmer.
 - h. Complete Patch (remapping) and Pile-on Priority Functions from multiple dimmer data sources.
 6. The Programming Features shall be accomplished by either PC-compatible software data downloaded into the Control module or by the Hand-Held Terminal connected directly to the Control Module.
 7. Configuration can be downloaded from a PC attached to the serial port of the control module or via the ColorNet© network.
 8. The Control Module shall be able to receive, process, and distribute information both from local sources and from and to the ColorNet© network.
 9. The Hand-Held Terminal shall provide the ability to record, edit and play back up to 99 timed Backup Looks.
 10. The Hand Held Terminal shall be capable of wired operation up to 1000' from the dimmer rack.
 11. A wireless Hand Held Terminal shall be supplied. The unit shall use spread spectrum RF technology.

2.5 Z-MAX ARCHITECTURAL PROCESSING RACK

- A. General: The controller shall feature an LCD user interface to facilitate programming of all switching system and astronomic time-clock parameters.
- B. Control Module Features: The control module shall be provided with the following features and functions: Integrated Astronomic Time Clock (ATC) - ATC shall allow for up to 999 user-defined events and 999 holiday schedules.
- C. System Interface: System interfaces shall include, but not be limited to, the following:
 - 1. LUMA-NET
 - 2. DMX
 - 3. Slave Control Cabinet
 - 4. USB serial interface for programming via a PC
 - 5. RJ-45 for optional TCP/IP Ethernet Board
 - 6. Modem and touch tone interface board

2.6 CONTROL CONSOLE

- A. General Description:
 - 1. The control console shall be a microprocessor based lighting control system specifically designed and constructed for the control of theatrical and television dimming systems. The control console shall provide for the control of up to 1536 dimmers on a maximum of 384 control channels, a maximum 600 cues, and a maximum 512 automated device traits. Output shall be USITT standard (DMX-512), A super VGA color monitor with a minimum of 800 by 600 lines of resolution with a 0.28mm dot pitch shall be supplied as an option.
 - 2. The operating program shall be stored in an internal non-volatile read-only memory. Off-line show data storage shall be accomplished with a high density 3 1/2" floppy disk drive. Operating software updates shall be available through the manufacturer's web site at no additional charge.
 - 3. The console shall provide two modes of operation: two-scene preset operation and multiscene memory operation. In two-scene preset mode, the console shall provide two scenes of 48 control channels each. In multiscene memory mode, the console shall combine the two-scene channel fader controls into one scene of 384 control channels. Selection of the operating mode shall be accomplished in the Set Up display
- B. Physical:
 - 1. The lighting control console shall be a freestanding table assembly with a separate video monitor. The console shall be no larger than 6.75" high x 26" deep x 45." long with a weight of 48 lbs.
 - 2. The console shall be made of heavy-gauge sheet metal finished in a black with white and teal silkscreen graphics.

3. The console shall have a user-replaceable high voltage protection module that will protect the processor engine from any accidental high voltage entering via the control data line.
4. The video monitor shall be a high resolution super VGA monitor with a minimum of 600 by 800 lines of resolution and 0.28 mm dot pitch. The monitor shall be switchable to use either 90 to 132V AC or 180 to 264V AC.
5. The LCD display mounted on the surface of the console shall offer a minimum 256 x 64 pixels. The physical size of this display shall not be less than 1.2" high x 4.7" wide. Consoles not offering both video and LCD displays shall not be considered equal and thus shall not be acceptable.
6. The power supply shall be dual voltage, capable of 85V to 135V or 185 to 250V AC 50 - 60 Hz.
7. The console shall provide at least two (2) switched convenience outlets for providing power to the monitor and any peripheral devices.

C. Mechanical:

1. The lighting control console shall provide, but not be limited to, the following features:
 - a. Grand Master to provide a master level for all operational functions.
 - b. A Black-out switch.
 - c. Airflow LED indicating a loss of proper airflow.
 - d. Two scenes of 48 channel potentiometers for two-scene preset operation.
 - e. 24 individually-programmed, fully overlapping pile-on submasters or effect masters with 8 pages for a total of 192 submasters.
 - f. 96 Bump buttons for momentary control of channels.
 - g. Two independent crossfaders to provide a split dipless fade between Scene A and Scene B, and Scene C and D.
 - h. Integral LCD display on console surface.
2. The Memory section shall have the following controls:
 - a. A group of eight (8) keys for calling up various displays on the monitor. The displays shall allow level setting, previewing, and modification of show data.
 - b. Expanded numeric keypad used to enter information regarding cue levels, cue timing, cue attributes, groups, submasters, effects, profiles, patching, and set-up. Keys shall also be provided for recording cues, groups, intelligent devices, and submasters live from the stage display.
 - c. A cursor position keypad with directional arrow keys.
 - d. A set of 8 "soft" function keys for access of up to 8 different functions in each display or sub display. These keys may change function in each display to focus the operator's attention on commands which are useful in that display and to reduce congestion of the control surface.

- e. Eight (8) macro keys for operator access to up to 2000 operator-programmable macros.
- f. A trackball for adjusting channel levels proportionally, video cursor movements, moving fixture position and movement, and edits.
- g. Seven (7) wheels with integrated LCD for adjusting intelligent device traits.
- h. Two Rate keys for assigning live rate control of a selected effect or cue fade to a wheel.
- i. Two Load keys for loading cues to playback faders.
- j. Two GO buttons for initiating fades between cues in the normal numerically sequential order. The GO button shall provide positive tactile feedback to the operator to confirm its operation.
- k. Two HOLD keys for stopping currently running fades, and two BACK keys for initiating fades backwards through the normal cue sequence.
- l. Four (4) 100mm Playback Faders grouped as two pairs for manual control of cue fades.
- m. All channel faders submasters, and bump buttons operational in two-scene mode shall also be operational in multiscene mode.

D. Operational:

1. Displays:

- a. The console shall provide the following displays that can be selected by the operator to appear on the monitor at any time:
 - 1) Stage shall allow viewing of live channel levels (that appear on the stage), whether they come from cue levels, submasters, effects, or manual control. All channel levels may be viewed simultaneously. Cue fader status, current stage cue and parameters and tracking mode also shall be indicated in the stage display.
 - 2) Preview shall allow blind viewing and editing of cues in memory. the operator shall be able to specify an exclusive list of channels to be shown in the display at any time. The current stage cue and parameters and tracking mode also shall be indicated.
 - 3) Cuesheet shall be a numerically sequential list of all cues and their timing parameters. The Cuesheet display also shall indicate effects, profiles, links, macros, follows, and cleanup status assigned to cues.
 - 4) Tracksheet shall be a spreadsheet matrix of cues and channel levels. Up to 32 cues or cue parts by 24 channels may be viewed at one time. The operator shall be able to specify an exclusive list of channels to be shown in

- the display at any time. The display shall automatically page, centering on the selected preview cue.
- 5) Playback is a non-editable cuesheet display, also showing playback fader status and submaster levels. The submaster levels section may be compressed to show only which submasters are active, and thereby show more cuesheet information.
 - 6) Patch shall allow viewing and editing of dimmer-to-channel assignments, and proportional dimmer delimiting (patch at level). The Patch display shall also indicate dimmer profile assignments, virtual nondim assignments, and parked dimmer status. Patch information shall be selectable in the following formats: by Channel, by Dimmer, Non-dim Dimmers, and Parked Dimmers.
 - 7) Device shall show the status of five (5) intelligent devices at a time.
 - 8) Setup allows configuration of the console and selection of peripheral operations.
- b. Each display shall have the following elements:
- 1) A command line showing command strings prior to their entry.
 - 2) A command history showing the last command entered.
 - 3) A selection of up to eight soft key functions.
- c. Channel levels shall be displayed in different colors to indicate their source of status. Different colors shall indicate levels from cues, submasters, or effects.
- d. To optimize the use of the display area two different modes of text display shall be available for the operator to choose from. 25 lines per screen or 50 lines per screen. Consoles which do not provide expanded display area shall provide a second CRT.
2. Two-Scene Preset Operation:
- a. Fading between scenes shall be accomplished with the split crossfaders. Each crossfader may be assigned a separate fade time of up to 999.9 seconds, or may be operated manually in real time.
3. Multiscene Operation: Channel levels for channels 1 to 96 may be affected at any time by either the individual channel faders or by the keypad. If a channel level has been set by the keyboard, manual control shall be regained by matching the current level with the channel/fader ("match & grab" operation). Channels 97 - 144 are addressable exclusively by the keypad.
4. Cues:
- a. Cues and cue parameters may be recorded in any order. Up to nine (9) cues may be inserted between numerically consecutive cues.
 - b. Each cue may have up to eight (8) separate parts.
 - c. A cue may be assigned split times for channel levels that increase and decrease.

- d. Each cue or cue part may be assigned the following parameters (all times may be set in 0.1 second increments):
 - 1) fade and delay times.
 - 2) split fade and split delay times.
 - 3) manual fades.
 - 4) effects.
 - 5) links to cues out of sequence.
 - 6) link repetitions.
 - 7) return to normal sequence.
 - 8) cue profiles.
 - 9) macros.
 - 10) leanup designation.
 - 11) cue name.
 - 12) cue parameters (time, part, delay, profile, link, etc.) shall be accepted in any order when entered on the command line.
 - 13) groups.
 - e. Cues may be recorded as tracking or not tracking, based on the tracking mode in effect at the time of recording. Three tracking modes shall be available: Tracking, Cue Only, and Cleanup. Cleanup mode shall prevent any kind of tracking whatsoever, and no zero levels shall be displayed while in Cleanup mode. Consoles which do not provide for user-defined cue recording modes are not considered equal and are not acceptable.
 - f. Cues, groups, and submasters may be recorded from any display, resulting in the recording of levels that are currently active on stage. Cues, groups, and effects may be created in the blind displays by selecting them by number within the preview display. Any editing done in the blind displays shall affect memory immediately without necessarily affecting stage levels (no use of the record keys is necessary). Consoles which require manual recording or recording in only limited displays are not equal and are not acceptable.
5. Groups: Any or all channels may be recorded at specific levels as a group. The console shall be able to record at least 500 different groups.
 6. Submasters:
 - a. Submasters shall operate in a Pile-on (highest level takes precedence), Inhibitive, or Effect mode. Visual indication of individual submaster modes shall be shown in the playback display.
 - 1) Normal mode: channel levels under control of the submaster handle.
 - 2) Inhibitive mode: Channels assigned to an inhibitive submaster shall have live stage levels output to dimmers only if the submaster is set above zero (the channel levels are proportionally “inhibited” by the current level setting of the submaster).
 - 3) Effect mode: any effect shall be assignable to the selected submaster, operating proportionally at its current level setting.

- b. Each submaster shall have a memory of its channel level assignments for the pile-on mode. When modes are changed, the submaster will retain the level settings for the pile-on/normal mode. Up to 8 pages of submaster memory shall be provided. Consoles which do not provide for individually programmable submasters, and do not offer 8 pages of submasters or at least 192 total submasters are not considered equal and are not acceptable.
 - c. Each bump button shall be able to be assigned independently to a combination of the following operating modes: momentary, solo, toggle or off. For convenience, the operator shall have the option of assigning the mode of all bump buttons in one command.
 - d. A fade up and fade down time shall be programmable to each submaster. When the bump button is pressed, the submaster or effect will fade up. It will then fade down when the button is released in the momentary mode, or when it is pressed a second time in the toggle mode. The default shall be a time of 0 for instantaneous bump button control.
7. Effects:
- a. 600 different special effects may be recorded; they shall consist of a series of steps which repeat, forward or reverse, in any combination of the following patterns (positive or negative): alternate, bounce, build, and random. Any of a pool of 1000 steps may be assigned to each effect. A step can be built using a cue, group sub, channel list or combination of any of the above. A different dwell time and active and inactive levels may be assigned to each step. The dwell time shall be able to be set in 0.1 second increments.
 - b. Effects shall be designated to operate, in cues or submasters, in pile-on and take-control with device traits. An effect may be assigned to fade up in a cue so that the effect shall continue to run through a series of cues. The effect shall continue unchanged until it is designated to fade down in a subsequent cue. While an effect assigned to a cue is running, additional effects may be faded up in subsequent cues to run simultaneously. All running effects may then be faded out individually or simultaneously. Consoles which require effects to be assigned to a separate fader or submaster or do not fade in and out as part of a cue are not considered equal and are not acceptable.
8. Tracksheet:
- a. The Tracksheet display shall allow level setting and restoration or prevention of tracking to recorded cues. The display shall indicate to the operator which levels are tracking and which are not.
 - b. Any changes made to levels in the tracksheet shall affect tracking levels according to the currently selected tracking mode.
9. Patch:
- a. An electronic soft patch shall be provided for assigning control of the dimmers to specified channels.

- b. It shall be possible to assign to each dimmer the following:
 - 1) Proportional maximum output level when its patched control channel is at full.
 - 2) A profile defining its output curve.
 - 3) A status of "park" at a designated level.
 - 4) A status of virtual non-dim. The trigger point shall be definable.
 - c. Channels may be assigned a device trait for controlling automated devices. This separates the channel from the main stage display.
 - d. It shall be possible to group like traits of automated devices into one control channel.
10. Trackball Operation: Any channel list may be selected for control by the trackball. All channel levels under control of the trackball may be adjusted proportionally even after some have reached full or zero. Systems not offering trackball control shall not be considered equal and are not acceptable.
11. Command Line Syntax:
- a. The operator shall be able to use any combination of the following items for constructing channel lists: channels, groups, submasters, effects, or cues. These lists may be created using the "and", "thru", and "minus" commands.
 - b. When recording cues, the cue parameters shall be accepted in any order on the command line. When editing cue parameters, it shall not be necessary to specify the currently selected (default) cue or cue part.
12. Miscellaneous Operation:
- a. Channel levels shall operate on a "highest level takes precedence" or "last action takes precedence" basis whether the levels originate from channel faders, cues, submasters, or effects.
 - b. A "Release" command shall be provided to release captured channel levels to their settings prior to their capture.
 - c. A facility shall be provided for completing a "dimmer check".
13. Real Time Clock: It shall be possible to trigger up to 500 events using the built in real time clock. Systems not offering real time clock shall not be acceptable.
14. MIDI Interface: A system of MIDI Show Control Commands, general MIDI commands and MIDI Output commands shall be included. MIDI "in, out and through" receptacles shall be provided. Consoles that offer MIDI support software as an option shall include it to be considered equal.

15. Macros:
 - a. For convenience, the operator shall have the option of recording of up to two thousand (2000) different macros.
 - b. It shall be possible to view all macros.
 - c. The macros shall be grouped into pages of eight (8) macros each, with the current page indicated in every display.
 - d. Up to 8 macros may be accessed remotely by contact closures.
16. DMX Input:
 - a. It shall be possible for the console to receive DMX signals. The console shall allow for two modes of use of the DMX input.
 - b. DMX signals may be merged.
 - c. A Nine (9) channel range may be used to select scenes and patterns.
17. Setup:
 - a. Setup shall provide as a minimum the following:
 - 1) Selectable dimmer protocols: Colortran digital signal (CMX) and the USITT standard (DMX-512), (AMX optional).
 - 2) A set of diagnostic programs to check the functioning of the internal electronics, the top panel controls, and the selected peripherals.
 - 3) Full printing functions which print current channel formats as specified by the operator.
 - 4) The ability to view and manage multiple show files on a single floppy disk.
 - 5) Commands to selectively retrieve specific show information from a floppy disk with the ability to renumber items and add them to the existing console memory. Consoles that will load only entire shows are not equal and not acceptable.
 - 6) The ability to selectively clear cues, groups, effects, submasters, macros, patch, profiles, defaults, or the entire system from the console memory. Consoles that do not provide for selective clearing are not equal and not acceptable.
 - 7) An indication of the number of cues, groups, and effects that remain available in memory.
 - b. The ability to format 3½" High Density disks. Standard Pre-formatted (IBM PS/2 or compatible) disks may be used without console formatting. Consoles that

require formatting of all disks or do not use a standard disk format are not acceptable.

- c. Setup shall provide a means for assigning devices and editing device definitions
18. Software Upgrades: Upgrades to the operating software of the console shall be able to be achieved by end user directly from a 3 1/2" floppy disk. Consoles that require the physical replacement of PROMS or other memory devices, or that require site visits by a technician or return of the console to the factory for program upgrading are not acceptable.
19. Options: The following items shall be supplied:
- a. A second local monitor control card.
 - b. Gooseneck worklights. Up to (2) supported.
 - c. A Hand Held Remote with recording and playback capabilities.
 - d. An ink jet or laser jet printer.
 - e. High Resolution VGA remote video supplied through the ColorNet system.
 - f. Remote Macro switch interface.

E. Warranty:

- 1. A complete two (2) year warranty covering all parts and labor shall be provided for the control console and its peripheral devices. All software updates to the console released during the warranty period of the console shall be available to the owner free of charge.
- 2. It shall be required of the owner that a warranty registration card be completed and sent to the manufacturer in order to validate the warranty.

F. Provide:

- 1. One (1) Colortran Innovator 48/96 Control Console with:
 - a. 2 – Console Worklights
 - b. 1 – 17" LCD Flat Screen Monitor
 - c. 1 – Dust Cover
 - d. 1 – 25' DMX Control Cable
- 2. One (1) Hand Held Remote (HHR) with:
 - a. 2 – 25' HHR Control Cable
 - b. 1 – 50' HHR Control Cable
 - c. 1 – 100' HHR Control Cable

2.7 ARCHITECTURAL CONTROL SYSTEM

A. Overview:

- 1. Acceptable manufacturers are Leviton, Lightolier, Ledalite or approved equal.

2. The Architectural Control System shall be based on the Leviton-Colortran Dimension 8000. The Dimension 8000 system shall be a lighting control system designed specifically for the control of architectural lighting. Large networks of wall stations can be assembled using Multiple Protocol Converters (“input/output nodes”), which are capable of utilizing several data transmission methods depending on the application. The network shall offer Lumanet III and Ethernet protocols as a minimum.
 3. Multiple Protocol Converters (“input/output nodes”) may be self-contained within the dimmer system or may be external devices that shall interface to the dimmer system through DMX-512. Multiple DMX I/O nodes may be provided for system redundancy where specified.
 4. The system architecture shall be based on a peer-to-peer network, where the failure of any single component or node shall not cause loss of other system functions. Systems that require a central processor for system operation are not acceptable.
 5. Systems shall be grouped in up to 128 station nodes to form a “subnetwork”. Multiple Protocol Converters (“input/output nodes”) can be used to join subnetworks together. Networks can contain both daisy chained and/or starred wiring configurations.
 6. Each subnetwork shall use 2 or 3 pair RS-485 cable with maximum overall length of 5000 ft.
 7. Each subnetwork shall use LUMANET III as the primary protocol.
 8. Each node on a subnetwork shall have a unique logical identifier (“ID”) numbered from 0 to 255.
 9. Each subnetwork shall control a maximum of 2048 dimmer channels.
 10. Wall stations may have up to 255 unique lighting control programs (“Personalities”).
 11. Station nodes may be linked to other station nodes on the same or different subnetwork. Linkages may be changed at any time by any other station or I/O node capable of transmitting the necessary LUMANET III commands.
 12. Combine and Separate of adjoining rooms shall be accomplished by linking stations and/or through use of station personalities.
 13. Ethernet protocol shall be ColorNet 2.0 (or later revision), TCP/IP based protocol. Protocol shall conform to and be fully compatible with all 10/100 BaseT TCP/IP routers and networks.
- B. Wall Stations:
1. Each Wall Station shall contain its own microprocessor, a LUMANET III connection, re-programmable flash memory for storage of operating program, and additional non-volatile memory for storage of lighting control programming data.
 2. All station nodes shall be capable of having both the internal operating program updated and the lighting control program modified through the LUMANET network, utilizing an

appropriate input/output node. Mechanical removal of the station from the installation location shall not be necessary. Systems that require removal of stations for updating the operating system or programming data are not acceptable.

3. All stations shall be capable of storing up to 255 unique sets of lighting control programming (Personalities).
4. Any station shall be capable of becoming a slave to any other identical station.
5. All buttons shall be captured mechanically to prevent inadvertent removal of button caps.
6. Presets may include any assigned dimmers even though those dimmers are assigned to other presets on the same or other Stations.
7. All stations shall have the ability to assign one of eight function security levels to any of the functions. The lowest security level shall be zero (any access). Seven shall be the highest security level. The station shall also have eight overall security modes. The function security level shall be required to be a lower number than the station security mode before the function can execute. A station security mode of eight will allow all function access. A station security mode of zero will not allow any function access. Station security mode may be set by keyswitch, remote device, or by local password (LCD station only). Systems that allow only one security level, or do not allow security levels for various functions within a station are not acceptable.

C. LCD Wall Station:

1. Station shall have a faceplate made of non-porous, homogeneous material with a composition of acrylic polymer, aluminum trinydrate filler and pigment. A defined selection of standard colors is available. Additional colors are available as custom.
2. Exposed station dimensions shall be 4-1/2"Hx8-7/16"Wx1/2"D. Station shall mount in standard 4-gang back box (min dimension 2-13/16"Hx8-1/8"Wx3"D).
3. Station shall contain a long life (50,000 hours min.) backlit LCD display. Electro Luminescent Displays are not acceptable. LCD shall be 20 characters by 4 lines. LCD shall display text as programmed. Text shall be unique to network selected station Personality (menu). LCD may also be used for local programming prompts.
4. The station shall contain 15 momentary push buttons. Buttons shall be selectively backlit by LED's. Buttons shall operate in momentary or toggle modes. Pressing a button shall cause a pre-programmed lighting control command to be transmitted on the subnetwork.
5. Station shall allow local manual adjustment of assigned dimmer levels for each preset, utilizing the LCD display and pushbuttons. This feature shall be capable of being electronically locked out.
6. The Station shall allow the presets to optionally capture and store the current levels of assigned dimmers (SNAPSHOT), even though the dimmer levels originated from another station, control console, or other external source. Systems with LCD Stations that do not support snapshot function to its presets from multiple sources are not acceptable.

7. The LCD station shall be capable of storing up to 7 passwords. A station security mode from 1 to 7 shall be assigned to each password.
8. The LCD station shall prompt for a password whenever a function is selected that has a security level that is higher or the same of the station security mode.
9. The LCD Station shall have the option to automatically return to a reprogrammed personality (menu) and/or security mode in a preprogrammed time after station is idle.
10. The LCD Station shall have selectable backlight level for active/idle conditions. The selections shall be: High/High, High/Low, and High/Off.

D. Pushbutton Wall Station:

1. Station shall have a faceplate made of non-porous, homogeneous material with a composition of acrylic polymer, aluminum trinydrate filler and pigment. A defined selection of standard colors is available. Additional colors are available as custom.
2. Exposed station dimensions shall be 4-1/2"Hx3"Wx1/2"D. Station shall mount in standard 1-gang back box (min dimension 2-3/4"Hx1-3/4"Wx2"D).
3. Station shall contain from 1 to 15 momentary push buttons. Buttons shall be selectively backlit by LED's. Buttons shall operate in momentary or toggle modes. Pressing a button shall cause a pre-programmed lighting control command to be transmitted on the subnetwork.
4. Button Stations shall be provided with locking covers to deter unauthorized access.

E. Slider Wall Station:

1. Station shall have a faceplate made of non-porous, homogeneous material with a composition of acrylic polymer, aluminum trinydrate filler and pigment. A defined selection of standard colors is available. Additional colors are available as custom.
2. Exposed station dimensions shall be 4-1/2"Hx (3s 2-13/16"W, 6s 6-5/8"W, 9s 8-7/16"W, 12s 10-1/4"W, 15s 12-1/16"D) x 1/2"D. It shall be possible, where mounting conditions will allow, to mount any of these stations onto a single gang back box when required.
3. Station shall contain from 1 to 15 slide potentiometer levers ("sliders"). All slider knobs shall be backlit by LED's when active.
4. Slider knobs shall be captured by mechanical means to prevent inadvertent removal of knob.
5. Slider programming shall control from 1 to 2048 dimmer channels or any slider may be programmed to act as a master for any group of sliders.
6. Station shall contain from 1 to 15 momentary push buttons. Buttons shall be selectively backlit by LED's. Buttons shall operate in momentary or toggle modes. Pressing a button shall cause a pre-programmed lighting control command to be transmitted on the subnetwork.

7. Buttons shall be capable of being programmed locally by using effective lighting control levels represented by slider positions.

F. Smart Jack Wall Station:

1. Station shall have a faceplate made of non-porous, homogeneous material with a composition of acrylic polymer, aluminum trinydrate filler and pigment. A defined selection of standard colors is available. Additional colors are available as custom.
2. Exposed station dimensions shall be 4-1/2"Hx2-11/16"Wx1/2"DD. Station shall mount in standard 1-gang back box (min dimension 2-3/4"Hx1-3/4"Wx3"D).
3. The attached Portable Control Station shall emulate all the functions held in the programming of a Smart Jack Wall Station. A portable LCD Wall Station shall automatically become a slave when connected to a smart jack and shall activate programming stored in the Smart Jack wall station.

G. INTERFACE (Input/Output Nodes):

1. Network Protocol Converter:

- a. Network Protocol Converters ("NPC") are input/output nodes with functions specifically designed as a LUMANET III interface.
- b. The NPC shall contain the following connections:
 - 1) (2) Lumanet subnetwork connectors
 - 2) (3) DMX-512 inputs
 - 3) (3) DMX-512 outputs
 - 4) 10/100 baseT Ethernet connector
 - 5) VGA video ports
- c. The NPC shall mount in a standard 19" equipment rack.
- d. The NPC shall support (3) DMX-512 universe distribution conforming to ColorNet 2.0 protocol or above.
- e. The NPC shall be capable of being connected to and joining two LUMANET III subnetworks.
- f. The NPC shall be use TCP/IP as the Ethernet protocol and shall conform to the ColorNet 2.0 (or above) specification. The NPC shall act as a server for TCP/IP services such as Telnet, FTP, NTP, and HTTP. The NPC shall act as a client for TCP/IP services such as BOOTP, NTP. Systems that do not provide for these Ethernet protocols are not acceptable.
- g. The NPC shall be partially configurable from the front panel when used in conjunction with a standard VGA monitor.

- h. The NPC shall also be configurable from a personal computer connected to the same Ethernet network and using a Web Browser program or a TELNET program over the Internet.
 - i. The NPC shall support Web Browser based control of any supported node on either LUMANET III subnetwork.
 - j. The NPC shall support FTP upload and download of control and programming data to any supported node on the LUMANET III subnetwork.
 - k. The NPC shall be capable of synchronizing time with another NPC or NTP time source and shall broadcast LUMANET III time synchronization messages.
 - l. The DMX-512 outputs/outputs shall be each assignable to distinct DMX-512 universes.
 - m. Each of the 2048 dimmer channels on each LUMANET III subnetwork connected shall be assignable to any DMX-512 dimmer channel on any of the DMX-512 universes.
 - n. The NPC shall be capable of uploading or downloading all lighting control programming from all supported wall station nodes on the subnetwork, to or from a PCMCIA flash memory card.
 - o. The NPC shall be capable of being programmed with a schedule of lighting events. Either an astronomical time clock or sequencer can activate these events.
2. RS-232 Interface Node:
- a. The RS232 I/O node shall be a PCB assembly with a 9-pin RS232 connector and a LUMANET III connector. The assembly may optionally be mounted in a wall plate.
 - b. The RS232 I/O node shall connect a personal computer or other device to the LUMANET III network.
 - c. The RS232 I/O node shall be capable of using simple ASCII commands to directly change dimmer levels or to remote control LUMANET III wall stations.
 - d. The RS232 I/O node shall also serve as an interface for a PC software program to control and configure a LUMANET III system.
3. Combine-Separate Controller Node:
- a. The Combine-Separate Controller node shall be a PCB assembly with 16 optically isolated contact closure inputs, 16 open collector outputs, and a LUMANET III connector.
 - b. The Combine-Separate Controller node shall be capable of joining up to 16 rooms, or 32 rooms when used with a second Combine Separate Controller. A maximum of 512 dimmer channels may be joined.

- c. The Combine-Separate Controller node shall be fit a standard 4-gang back box.
 - d. Room combine shall be controlled with the contact closure inputs or via any Lumanet wall station.
 - e. The Combine-Separate Controller node shall optionally control the Master / Slave operation of wall stations.
4. Combine-Separate Touch Screen Node:
- a. The Combine-Separate node shall be a computer interface with a graphic touch screen display and an Ethernet interface.
 - b. The Combine-Separate Touch Screen node shall be capable of joining up to 128 rooms. A maximum of 512 dimmer channels may be joined.
 - c. The Combine-Separate Touch Screen node shows a graphic representation of the room(s) to be combined, and provides visible feedback as combine functions are executed.
 - d. The Combine-Separate Touch Screen node shall optionally control the Master / Slave operation of wall stations.

2.8 GENERAL NETWORK

A. General:

- 1. Communications physical layer shall comply with the IEEE 802.3 10BASE-T Ethernet specification.
- 2. All network cabling shall be Cat. 5, conforming to TIA-568A/B, and shall be installed and certified by a qualified network installer.
- 3. Data transport shall utilize the TCP/IP suite of protocols to transfer the DMX data.
- 4. ESTA ACN shall be supported when available.
- 5. Hubs and switches shall comply with power-over-Ethernet IEEE 802.3af. Separate in-line power supplies are not acceptable.

2.9 DMX ETHERNET NODE

A. General:

- 1. Provide dual DMX dataport smart nodes to permit DMX512 data to be encoded, routed and decoded over Ethernet.
- 2. Each node shall incorporate two 5-pin XLR type connectors. Output nodes shall utilize female connectors and input nodes shall utilize male connectors.

3. Nodes shall incorporate a backlit graphical LCD display for identification (soft-labeling) and status reporting. Labeling shall be user configurable.
- B. DMX Ports:
1. DMX ports shall comply with the requirements of the USITT DMX512 standard.
 2. DMX inputs shall be fully opto-isolated from the node electronics and from each other.
 3. DMX outputs shall be earth-ground referenced.
 4. DMX ports shall be capable of withstanding fault voltages of up to 250VAC without damage.
- C. Processor:
1. Each node shall have sufficient processing power to manage up to 64 DMX universes.
 2. Maximum delay time from input to output shall not be greater than one packet time (approximately 30 mSec.).
 3. A minimum DMX update rate of 40 Hz shall be sustained under all conditions.
- D. Mechanical:
1. The node faceplate shall be constructed of durable cast aluminum. It shall mount in a standard 2-gang masonry deep backbox.
 2. Nodes shall be of pleasing appearance, suitable for high-visibility architectural locations.
 3. No fasteners shall be visible on the node faceplate.
 4. Nodes shall be provided in (specify one) natural aluminum or matte black finish.
- E. Power:
1. Power for the nodes shall be provided over the Cat 5 cable, complying with IEEE 802.3af. Systems requiring the installation of additional wiring for power shall not be acceptable.
 2. The node electronics shall be electrically isolated from the power supplied over the Cat 5 cable.
 3. Power may be provided from IEEE 802.3af compliant power-over-Ethernet hubs, or by using conventional hubs together with isolated in-line power supplies as provided by the node manufacturer.
- F. Configuration:
1. Nodes on the same network shall be remotely configured from a PC connected to the network.

2. Naming and configuration shall be accomplished using a PC. The node manufacturer shall provide the software for this function.

G. DMX Routing:

1. It shall be possible for the user, with a PC connected to the network, to route complete DMX universes from any input port to any DMX output port at any node. It shall be possible to route universes to any number of nodes.
2. It shall further be possible to route individual DMX channels (or blocks of channels) from any input port to any output port.
3. It shall be possible to merge (HTP) inputs or individual DMX channels.
4. It shall be possible to prioritize DMX inputs or channels.
5. The PC shall only be required for configuration and signal routing, and shall not be required for the normal operation of the system.
6. All relevant routing information shall be stored in non-volatile memory at each node. The system shall recover from a power outage without requiring the PC to be online.

H. System Requirements:

1. Provide the quantity and type of nodes required, as scheduled. Nodes and software shall be as manufactured by Pathway Connectivity, Leviton, Middle Atlantic Products or approved equal.
2. Provide Ethernet hubs and power supplies as scheduled and shown on the drawings.

2.10 EQUIPMENT RACK

- A. The rack shall be the ERK Series Stand-alone rack as manufactured by Leviton, Pathway Connectivity, Middle Atlantic Products or approved equal.
- B. The rack enclosure must be UL Listed,
- C. The rack shall be a 19" equipment rack to feature 16-gauge steel construction.
- D. The rack must be fully welded to provide a 750 lb. Capacity.
- E. Ventilation for cooling must be provided at the front and sides of the rack.
- F. The rack shall be 25" deep and 51-3/8" high (27 space) with a locking door.
- G. Refer to riser diagram for detail of equipment to be included within this rack.

2.11 ELECTRICAL DISTRIBUTION

A. Connector Strips:

1. The connector strips shall be the BAL series as manufactured by SSRC, Pathway Connectivity, Leviton or approved equal.
2. This assembly shall consist of an extruded aluminum wireway, 3.375" x 4.75" in cross section, and in the lengths specified containing terminal strips for feed conduit and wire extending to outlets (flush mount or pigtail), as specified.
3. Connector strip housing shall be fabricated of .125" extruded aluminum alloy #6063-T6, formed into a raceway with internal corner gussets for strength and rigidity. Cover sections shall be interlocking and formed of the same aluminum alloy. Housing shall be inherently rustproof.
4. Connector strip shall have an electrostatic paint finish in black, with outlets identified by 2" high die-cut circuit identification numbers on the vertical surface of the strip.
5. The strip shall contain 125° C XLP wiring of the proper sizes and quantities to connect the individual outlets to the terminal blocks in circuits of capacity as specified.
6. The terminal blocks shall be molded barrier type with screw lugs suitable for connecting multiconductor feed cable or incoming wire. These shall be located in an extended terminal box of appropriate length if the strip contains more than twenty 20 AMP circuits.
7. Units available with 20, 30, 50, 60 and 100 Amp devices in either flush mount or pigtail.
8. Connector strips shall be supplied with .125" thick by 1.5" steel C-channel mounting brackets. Brackets shall be suitable for single or double pipe battens, as specified, and shall extend above and below the strip. Brackets shall be 60" on centers. U-bolts shall be supplied to grip up to 2" O.D. standard steel pipe.
9. The entire assembly shall be listed and labeled by Underwriters Laboratories.

B. Outlet Boxes:

1. The outlet boxes shall be the SM, PM or RM series as manufactured by SSRC, Pathway Connectivity, Leviton or approved equal.
2. This assembly shall consist of a black extruded aluminum enclosure, 3.375" x 4.75" in cross section, containing terminal strips for feed conduit and wire extending to receptacles (flush mount or pigtail), as specified.
3. Housing shall be fabricated of .125" extruded aluminum alloy #6063-T6. Cover sections shall be interlocking, and formed of the same aluminum alloy. Housing shall be inherently rustproof.
4. The box shall be completely pre-wired at the factory, with ground lugs installed.

5. Pipe mounted boxes shall be furnished with two 5/16" x 2" U-bolts for use on 1 1/4" to 2" O.D. pipe.
 6. Recessed mount boxes shall consist of a 16 gauge, galvanized steel housing designed for recessed mounting in the wall. The unit shall be provided with a 16 gauge steel oversized face plate.
 7. The entire assembly shall be listed and labeled by Underwriters Laboratories.
- C. Floor Pockets:
1. This assembly shall consist of a 16 gauge, galvanized housing designed for recessed mounting in the floor. The unit shall be provided with a 3/8" thick self closing, cast iron, non-skid floor plate with hinged door and cable notches.
 2. The box may have up to six flush receptacles mounted on a 16 gauge galvanized steel angled receptacle plate.
 3. The box shall be completely pre-wired at the factory, with ground lugs installed.
 4. The entire assembly shall be listed and labeled by Underwriters Laboratories.

2.12 SERIES 6500, 120V EMERGENCY LIGHTING TRANSFER CABINET

- A. The Emergency Lighting Transfer Cabinet shall provide automatic transfer of the line and neutral conductors of each branch circuit from normal to emergency power when normal power fails. The cabinet shall automatically reconnect circuits to normal power when normal power has been restored.
- B. The transfer cabinet contacts shall be electrically operated and mechanically held. The entire assembly shall be UL1008 listed and labeled. This equipment must comply with the regulations in NFPA 110 for Emergency and Standby Power Systems.
- C. The Emergency Lighting Transfer Cabinet must also satisfy the requirements of NFPA 70 (National Electrical Code).
 1. Article 701 – Legally Required Standby Systems
 2. Article 700 – Emergency Systems
 3. Article 540-11c – Motion Picture Houses
 4. Article 520-7 - Theatres and Similar Locations
 5. Article 518-3c - Places of Public Assembly
- D. The Emergency Lighting Transfer Cabinet shall be a wall-mounted, NEMA 1 enclosure constructed of 14-gauge steel finished in ANSI 61 gray powder coat paint. All terminations and wiring shall be accessible via a hinged lockable door. The cabinet shall be pre-wired and tested at the factory with clearly marked terminals for contractor wiring of normal feed, emergency feed, lighting loads and sensing feeds.
- E. Standard transfer relays shall be available at 20A and 50A current ratings.

- F. Emergency Lighting Transfer Cabinet shall accommodate circuits of two wire, dimmed incandescent or fluorescent lighting as well as three wire, dimmed, fluorescent lighting.
- G. Emergency Lighting Transfer Cabinets with Type 3 emergency power feeds shall provide for power distribution and branch circuit protection internally for all emergency power circuits.
- H. The front panel of the Emergency Lighting Transfer Cabinet shall contain a key-switch to simulate power failure for testing purposes as well as indicator lights to visually signal the presence of normal or emergency power.
- I. Voltage sensing of the Normal source shall cause automatic transfer when the voltage of one or more phases drops below 55% of 120VAC.
- J. Factory default settings for time delay of transfer are as follows: Normal to Emergency – 0 Seconds, Emergency back to Normal 3 Seconds. These settings shall be field adjustable.
- K. Provisions for optional remote signal, fire alarm and other input signals shall be incorporated into the control circuit.
- L. Provide Emergency Lighting Transfer Cabinets as manufactured by Stagecraft Industries, Inc. or approved equal.

2.13 COMPANY SWITCH

- A. General:
 - 1. Unit shall be UL Listed and labeled.
 - 2. The unit shall have a wiring chamber that contains both direct wire lugs and single pole cam output connectors.
 - 3. Both Cam and lug cables shall drape downward when connected.
 - 4. Cam and lug cables shall enter and exit the wiring chamber from access holes in the bottom of the enclosure.
 - 5. A lockable hinged access door shall provide access to the wiring chamber, denying access to the connections when mated.
 - 6. The access door shall engage the shunt trip mechanism of the main circuit breaker whenever it is not fully closed, so that connections cannot be made or broken under load.
 - 7. The unit shall provide clamp type strain relief for lug cables exiting the bottom of the chamber.
 - 8. Output lug connections shall accommodate a maximum of 250mcm cable.
 - 9. A strip of white light-emitting diode worklight shall light the wiring chamber whenever the access door is not fully closed.
 - 10. The unit shall contain (1) 100% rated 3 pole main circuit breaker with a 65K AIC rating.

11. Breaker shall be recessed beneath the plane of the front panel of the unit to prevent accidental operation.
12. Breaker shall be equipped with a padlock attachment to lock the handle in the off position when not in use.
13. The breaker shall be resettable to 200 Amps trip on the unit. A separate plug shall be available to reset the main breaker at 100 Amps.
14. The unit shall be equipped with light emitting diode indicator lights for each supply phase, labeled with NEC specified color-codes and alphabetic names of phases.
15. The unit shall further be supplied with a light emitting diode indicator light indicating supply to ground continuity, labeled with an alphabetic description and color coded green.
16. The ground connection shall be isolated from the frame.
17. Contractor connections to the main circuit breaker shall accept up to 500mcm wire.
18. Enclosure shall be fabricated from 14 gauge steel.
19. Enclosure shall have (4) welded mounting tabs.

2.14 ELLIPSOIDAL SPOTLIGHTS

- A. General: The instrument shall be a LEO ellipsoidal spotlight as manufactured by Leviton Mfg.; Altman Lighting, Inc.; Stage Lighting, Inc. or approved equal.
- B. Physical: The housing shall be constructed of rugged, die-cast aluminum, finished in durable, textured black powder coat.
- C. Features:
 1. The fixture shall employ insulated Cool Grip handles on all operating surfaces.
 2. The fixture shall have body and barrel on-axis rotation of 360°. Fixtures offering limited range of barrel motion are not equal.
 3. Removal of lamp housing shall be tool free and be performed without disturbing the focus or alignment for ease of lamp replacement.
 4. All parts shall be user replaceable.
 5. The shutters shall be made of heavy gauge stainless steel and arranged on four independent planes.
 6. The fixture shall employ Easy Glide lens tubes, providing no metal to metal contact for ease of movement. Ease of movement shall not be affected by the temperature of the unit.

7. Two accessory slots shall be available at a 3" diameter gate.
8. Two integral, die-cast locking gel/media/accessory slots shall be available.
9. The fixture shall employ a sturdy steel yoke allowing multiple mounting positions.
10. The fixture shall support motorized gobo rotators, iris, gobo holders, and other standard Ellipsoidal accessories.
11. Shutters shall be field replaceable without requiring tools or fixture disassembly.
12. The fixture shall support glass and steel gobos, size A or B, in the 3" gate.

D. Optical:

1. The reflector shall be faceted glass with a dichroic coating.
2. The lenses and reflector shall be insulated from the housing.
3. The fixture shall employ Quick-Center, locking lamp centering technology. The lamp centering focus shall not change when changing lamps of identical type.
4. Peak/Cosine adjustment shall be performed separately from lamp centering.
5. Removable, interchangeable lens tubes shall provide a variety of focal degrees ranging from 15 degrees to 50 degrees.
6. The fixture shall employ a system whereby lens can be field repositioned to achieve different beam angles. Units not providing this capability shall not be considered acceptable.
7. Efficacy of reflector is 96%. Fixtures which do not meet this requirement shall not be acceptable.
8. Reflector shall absorb 91% of the heat produced from the lamp.

E. Electrical:

1. The fixture shall accommodate lamps up to 750 watts utilizing HX series and other specifically listed lamps.
2. The fixture shall be rated at 115-240 volts.
3. The fixture shall be UL and cUL listed.
4. The fixture shall employ 3-wire 36 inch sleeved leads.

F. Performance:

1. The fixture shall provide but not be limited to:
 - a. 15, 19, 26,36,or 50 degree field angle

- b. Cosine (flat) and peak/blending focus with all recommended lamps and beam angles
 - c. "30-second" lamp replacement feature
 - d. Repositionable lenses
2. The manufacturer of the fixtures must publish Photometric Performance data in conformance with ANSI standard E1.9-2001 or a more recent standard. Manufacturers which do not publish data per this standard shall not be acceptable.

G. Provide:

1. For mounting, unit shall be provided with a heavy steel yoke and a painted malleable iron C-clamp adjustable for up to 2" I.D. pipe, with a tapped and threaded steel hanger pin. Accessories shall be mounted into front door gel clips and secured with a positive locking safety clip.
2. Unit shall be provided with 36" long 3 wire power cord with stage pin connector.
3. Provide 72 Colortran LEO Ellipsoidal Spotlight with: C-clamp, Colorframe, Safety Cable, 20A connector installed and lamp.

2.15 6" THEATRE FRESNELS

A. General:

1. Housing shall consist of die cast and extruded aluminum components with high temperature black finish.
2. The Optical Train shall consist of medium prefocus tungsten halogen lamp, an etched super pure aluminum clad reflector, 6" x 4" low expansion borosilicate fresnel lens mounted in a hinged door for rapid lamp replacement.

B. Electrical:

1. The Socket shall be medium prefocus, porcelain insulated, UL recognized for 250 volts, 1200 watts, 200oC continuous operation. Rated lamp seal temperatures shall not be exceeded.
2. Performance with 176-171 (ANSI code BTR) lamp in spot focus shall be 175,000 beam candle power with 12.5o field, and in flood focus shall be 11,200 beam candle power with 63.5o field.

C. Provide:

1. For mounting, unit shall be provided with a heavy steel yoke and a painted malleable iron C-clamp adjustable for up to 2" I.D. pipe, with a tapped and threaded steel hanger pin. Accessories shall be mounted into front door gel clips and secured with a positive locking safety clip.

2. Unit shall be provided with 36" long 3 wire leads covered by black sleeving and connector as specified by catalog number.
3. Provide 24 Colortran 6" Theatre Fresnel Fixtures with: C-clamp, Colorframe, Barndoor, Safety Cable, 20A Stage Pin connector installed and 750-watt Lamp.

2.16 MULTI-LENS PAR

A. General:

1. The fixture shall be the Multi-Lens PAR by Leviton Mfg.

B. Physical:

1. The housing shall be constructed of rugged, die-cast aluminum, finished in durable, textured black powder coat.

C. Features:

1. Removal of lamp housing shall be tool free and be performed without disturbing the focus or alignment for ease of lamp replacement.
2. The fixture shall employ insulated Cool Grip handles on all operating knobs.
3. All parts shall be user replaceable.
4. The fixture shall employ a cool touch insulated lens rotating ring for ease and safety of movement. Ease of movement shall not be affected by the temperature of the unit.
5. A locking gel frame retainer clip for color media.
6. The fixture shall employ a sturdy steel yoke allowing multiple mounting positions.
7. Lenses shall be field replaceable without requiring tools or fixture disassembly.

D. Optical:

1. The reflector shall be parabolic aluminum polished to a mirror finish.
2. The lenses and reflector shall be insulated from the housing.
3. Removable, interchangeable lenses shall provide 4 standard field. A complete lens set shall be provided with each fixture.

E. Electrical:

1. The fixture shall accommodate lamps up to 750 watts utilizing HX series and other specifically listed lamps. Fixtures that utilize proprietary lamps shall not be acceptable.
2. The fixture shall be rated at 115-240 volts.

3. The fixture shall be ETL listed.
4. The fixture shall employ 3-wire 36 inch high temperature insulated sleeved leads.

F. Performance:

1. The fixture shall provide but not be limited to:
 - a. Very Narrow Spot, Narrow Spot, Medium Flood, Wide Flood field angles.
 - b. "30-second" lamp replacement feature
 - c. Repositionable, rotatable lenses. Fixtures which require user to touch the lamp or lamp socket to orientate the beam shall not be acceptable
2. The manufacturer of the fixtures must publish Photometric Performance data in conformance with ANSI standard E1.9-2001 or a more recent standard. Manufacturers which do not publish data per this standard shall not be acceptable.

G. Provide:

1. For mounting, unit shall be provided with a heavy steel yoke and a painted malleable iron C-clamp adjustable for up to 2" I.D. pipe, with a tapped and threaded steel hanger pin. Accessories shall be mounted into front door gel clips and secured with a positive locking safety clip.
2. Unit shall be provided with 36" long 3 wire power cord with stage pin connector.
3. Provide 24 Colortran Multi-Lens PAR Spotlight with: C-clamp, Colorframe, Safety Cable, 20A connector installed and lamp.

2.17 FOCUSING CYC

A. General: The luminaire shall be #FC-3, as manufactured by Altman Lighting, Inc.; Stage Lighting, Inc.; Leviton or approved equal. The luminaire shall be compact lightweight cyclorama light constructed of die-cast aluminum and sheet aluminum. Construction shall employ all corrosion-resistant materials and hardware.

B. Mechanical:

1. Luminaire shall be provided with a pair of rugged tool free spring-latches, which allow multiple units to be safety locked together in a number of ways: a straight row, curved horizontal, curved vertically, or any combination of the three. Units not incorporating this feature shall not be acceptable.
2. Luminaire shall accept a wide selection of yokes and other hanging hardware to accommodate virtually all sky cyc mounting configurations.
3. Luminaire shall accept a hinged color frame, which is removable without the use of tools. Each unit is provided with a slot to allow the use of stripped or dichroic glass. An optional unique clip will safely secure the glass without tools.

4. Finish shall be Epoxy Sandtex black, electrostatic application.

C. Electrical:

1. The luminaire shall be for use with 300 to 1500-watt tungsten halogen lamps. Each unit shall have adjustable lampholder, which allow the luminaire to accept T-3 to T-8 lamps of three different lengths: 4-11/16" (119mm), 5-5/8" (143mm), and 6-9/16" (167mm). Units not incorporating this feature shall not be acceptable.
2. The luminaire shall be U.L., c.U.L. Listed and CE Certified and labeled for use with up to 1500-watt lamps.

D. Optical:

1. Luminaire shall be provided with a highly polished and peened reflector with heat sink that pivots about the lamp for precision focusing, and a heat resistant knob with indexed position markings is located on the rear of the housing for adjusting and locking the reflector into position. Units not incorporating this feature shall not be acceptable.
2. A super thin safety screen is specially designed to allow maximum light output, and is readily removable for easy access to the lamp for quick installation and replacement.
3. Provide 4 Altman FC-3 Focusing Cyc fixtures with: C-clamp, (3) Colorframe, (2) Safety Cable, (6) 20A connector installed and (3) Lamp.

2.18 R40 8' BORDERLIGHT

- A. General: The R40 Borderlight shall be a compartmented multi-circuit striplighting device constructed of 20-gauge steel. Each unit shall be supplied with porcelain medium screw-base sockets spaced on 6" centers and wired sequentially in three or four circuits. Each compartment shall contain a lampholder, louvers for heat dissipation, a baffle to minimize light leak and a color filter slot. Integral to the selected length of the luminaire shall be a spring-loaded color filter frame retaining door or doors.
- B. Mechanical: Relamping shall be accomplished by raising the spring-loaded color filter frame retaining door, removing the color filter frame and unscrewing the lamp from the lampholder.
- C. Electrical: The luminaire shall be UL &cUL Listed and labeled for use with up to a 300-watt lamp.
- D. Included Furnishings:
1. The portable luminaire shall be supplied complete with reversible color frames for glass or sheet color filters, one per socket, a three foot three wire Teflon lead in black fiberglass sheathing, one pair per circuit, a pair of adjustable strap iron swivel hangers complete with "C" clamp suitable for installation on 1" to 2" O.D. pipe, and threaded, locking handles for tilt adjustment. Exterior finish shall be baked black enamel.
 2. The luminaire shall be UL &cUL Listed and labeled for use with up to a 300-watt lamp.

3. Provide 12 Altman R40-8 Borderlights with: (2) C-clamp, (16) Colorframe, (16) Roundels {color TBD}, (2) Safety Cable, (8) 20A connector installed and (16) 150-watt Lamp.

2.19 AUTOMATED LUMINAIRE

A. General:

1. The fixture shall be a compact, lightweight, color-mixing LED asymmetrical wash fixture with 8 or 16 bit DMX control of intensity and color. The fixture shall be the Spectra-Cyc 200 as manufactured by Altman Stage Lighting, Inc. or approved equal.
2. The fixture shall incorporate a state of the art microprocessor-controlled solid-state LED light engine incorporating 3-watt Luxeon K2 Red, Green, Blue, and Amber color LEDs, and an on-board power supply
3. The fixture shall incorporate a hammertone aluminum asymmetrical reflector in combination with a blended linear LED engine to provide even coverage on vertical and horizontal surfaces without “scalloping” or hot spots.
4. The fixture shall incorporate silent, convection cooling without employing the use of fans or filters. Fixtures incorporating fan cooling systems generate unacceptable levels of noise are not equal and shall not be accepted
5. IES Photometrics files shall be available upon request from the manufacturer to model light output using industry standard design software.
6. The fixture shall comply with USITT DMX-512 A and ANSI E1.20-2006 Remote Device Management over USITT DMX-512A Standard (RDM).

B. Physical:

1. The fixture shall be constructed of 18-gauge steel. Construction shall employ all corrosion-resistant materials and hardware and shall be free of pits and burrs.
 - a. Standard Finish shall be Epoxy Sandtex black, electrostatic application. The fixture shall be available with optional white, gray, and custom color finishes as specified
 - b. Power supply, cooling and electronics shall be integral to each unit.
 - c. The housing shall serve as a convection chimney when installed in a vertical or horizontal orientation to provide for convection cooling of the LED array, integral driver, and integral power supply
2. Fixture dimensions shall be 25”w x 14”h x 6.4”d. The fixture shall weigh approximately 18 lbs.
3. The fixture shall provide even asymmetrical distribution of light on a vertical or horizontal surface by use of a linear LED source and a hammertone asymmetrical reflector. Fixtures requiring the installation of spread lenses or other linear diffusion

media to approximate asymmetrical distribution of light are not equal and shall not be accepted.

4. The fixture shall incorporate (3) independently adjustable rubber leveling feet on the bottom of the fixture to provide for adjustment when used to light a vertical surface from the bottom.
5. An optional rigid steel yoke with locking dog tilt handle shall be available for overhead pipe mounting.
 - a. Pipe mounted fixtures shall be supplied with a cast iron C-clamp Altman #510 suitable for use on up to 2" O.D. pipe. Clamp must incorporate a 360-degree rotational "safety stud" with locking bolt. Any clamp not offering this safety feature will not be acceptable.
 - b. Fixtures shall be supplied with safety cable for use when securing the fixture to a pipe.
6. An optional rugged 18-gauge steel joining bracket shall be available to safely lock multiple units together. Units not incorporating this feature shall not be acceptable. Hanging Irons shall be available to support multiple fixture configurations from a pipe batten.
7. The fixture shall be designed to provide flat and even coverage of light when placed 4' away from the surface being lit, 10' on center. There shall be no visible dip in coverage or "scalloping" between fixtures when so placed.

C. Environmental:

1. The fixture shall operate in an ambient temperature range of 1°C minimum, to 40° C (104°F) maximum ambient temperature. The fixture shall be rated for IP-20 dry location use.
2. The LED substrate is coupled to a highly efficient heat sink and cooling system for prolonged life of the LEDs. LED fixture housing shall transfer heat from the LED board and associated electronics to the outside environment.
3. The fixture shall be ETL and cETL LISTED, and shall be so labeled when delivered to the job site.

D. Electrical:

1. The fixture shall be equipped with two (2) 100V to 240V 50/60 Hz internal power supplies.
2. The fixture shall receive power via a Neutrik powerCON locking connector and 2m power cord with molded U-Ground plug. An optional 3m power cord shall be available.
3. The fixture requires power from non-dim source.

4. The fixture shall be equipped with a Neutrik powerCON Receptacle to allow for “Daisy Chaining” of up to (4) fixtures from a single power source. The receptacle shall be protected by an integral 10amp circuit breaker.

E. LED Emitters:

1. The fixture shall utilize Red, Green, Blue, and Amber LEDs for a wide variety of color mixing options and selectable CRI
2. All LEDs used in the LED fixture shall be high brightness and proven quality from established and reputable LED manufacturers
3. Manufacturer of LED systems shall utilize an advanced production LED binning process to maintain color consistency.
4. LED emitters should be rated for nominal 50,000 hour LED life.
5. Fixture shall utilize Luxeon® Rebel LED emitters.
6. LED system shall comply with all relevant patents.

F. Color:

1. The fixture shall be provided with a 4-Color (Red, Blue, Green, and Amber) color mixing system to achieve full spectrum color rendition and excellent CRI
2. The fixture shall be equipped with an LED system compatible with standard 8-bit or user selectable 16-bit control for full range high-resolution dimming
 - a. In 8-Bit Mode, one DMX Channel shall be utilized for each of four colors.
 - b. In 16-Bit Mode, (2) DMX Channels shall be utilized for each color in the fixture
3. The fixture shall be optimized for low saturate colors (pastels) as well as high saturate colors used in theatrical applications. Fixtures utilizing 3-color (Red, Green, and Blue) mixing systems shall not be accepted.
4. The LED system shall be capable of at least 16-bit control of each color level in each.
5. The fixture shall interact seamlessly with conventional sources and shall render light tints and skin tones as well as saturate colors similar to tungsten-based fixtures.
6. The fixture shall incorporate blending optics to reduce the projection of multiple shadows from the different color sources in the fixture. The LED system shall be digitally driven using high-speed pulse width modulation (PWM).
7. The fixture shall have an available “smoothing” mode which makes PWM control of LED levels imperceptible to video cameras and related broadcast equipment.

G. Color:

1. A local control keypad with LED display shall be provided for configuration and control of:
 - a. DMX-512A Device Address
 - b. Fixture Personality
 - c. Stand Alone Operation.
2. It shall be possible to lock out the control keypad at the fixture to prevent accidental change in fixture configuration during operation. Locking and unlocking the control keypad shall be via predefined key sequence
3. Each fixture shall be compatible with the USITT DMX512-A control protocol and ANSI E1.20-2006 Remote Device Management over DMX512-A (RDM) standard.
 - a. DMX and RDM Control shall be connected via integral flush mount 5-Pin XLR input and output connectors
 - b. Fixture shall include integral flush mount 5-pin XLR output connector for DMX pass through or "Daisy Chain". Fixtures not including an output receptacle for DMX pass through shall not be acceptable
 - c. The DMX-512A device address for each fixture shall be user selectable
 - d. It shall be possible to set the DMX-512A device address for the fixture while the fixture is installed and connected to the system via the RDM (ANSI E1.20-2006 protocol) and an appropriate device such as a PC or a handheld programmer
 - e. Fixtures which do not allow for setting of the DMX address via both local controls at the fixture and remotely while installed via RDM shall not be accepted
4. System shall provide full range (0-100%) dimming without exhibiting flicker or stepping. Dimming curves shall be optimized for smooth dimming at low intensities and over longer timed fades.
5. The fixture shall have an available "Master" function to provide control of intensity without changing to color of the output of the fixture. The Master shall operate in either 8-bit or 16-bit resolution as defined by the configuration of the fixture
6. The fixture shall have user selected personalities to correctly match response to the application and control system utilized. Personalities shall provide the following options which may be combined as desired.
 - a. 8 or 16 bit operation
 - b. With Master or without Master
 - c. With smoothing or without smoothing

7. The fixture shall be capable of standalone operation, activated and configured at the control keypad. Standalone modes shall include the following:
 - a. Color Chase with selectable colors and speed
 - b. Fixed Color defined with local controls
 - c. Strobe with user selectable color and speed
 - d. Slave

- H. Quantities:
 1. Provide 8 Color Mixing LED Wash Fixtures as an alternate to the Focusing CYC Fixtures as specified in section 2.17.AUTOMATED LUMINAIRE

- I. General:
 1. The lighting fixture shall be the Technobeam as manufactured by Strong Entertainment Lighting, High End Systems, Vari-Lite or approved equal.
 2. The lighting fixture shall use an MSD 250/2 lamp.

- J. Features:
 1. Color wheel with 12 replaceable colors, including one CTO color corrector, plus one open position.
 2. Rotating, indexable gobo wheel with seven replaceable gobo positions plus one open position.
 3. Effects wheel with 4 replaceable effects and one open position.
 4. Static Frost.
 5. 11°-17° Manual zoom.
 6. Variable iris.
 7. Variable strobe.
 8. Remote focus.
 9. Optional wide (30°) or Narrow Angle lens (8° to 12°).
 10. Double stacking litho options for moiré and morphing effects.
 11. Effects macros
 12. Full optical dimming.

- K. Operation:
 1. 180° pan x 95° tilt movement.
 2. 18 DMX channels in full protocol.
 3. 375W; 100V-240V, 50/60 Hz.

- L. Construction:
 1. High resolution microstepping motor control for smooth motion at all speeds.
 2. Computer designed optical components for maximum light efficiency.
 3. Easy maintenance access.

4. Rear lamp replacement system.
 5. Performance-oriented exterior design shall prevent stray light scatter.
 6. Power factor correction.
 7. Low noise, high efficiency cooling system.
 8. Break-resistant mirror.
 9. 3-pin male and female XLR connectors.
- M. Mechanical: Fixture dimensions shall not exceed 34" H, 16.1" W, 9.6" D and 41lbs.
- N. Provide 2 Strong Technobeam Automated Luminaires with: C-clamp, Safety Cable, 15A Edison connector installed, Lamp and (2) 3-pin to 5-pin XLR adapters.

2.20 CANTO 2000TH FOLLOWSPOT

- A. General: The basis of this design shall be the Canto 2000 follow spotlight, as marketed by Strong Entertainment Lighting , or approved equal.
- B. Physical:
1. The unit frame and enclosure shall be constructed of formed cold rolled steel and sturdy aluminum extrusions, free of burrs and protected by a black powder coat finish.
 2. Handles shall be provided to facilitate smooth operation and to lift the unit.
 3. The unit shall be mounted on a stable, folding three-point floor stand, with:
 - a. Easy height adjustments,
 - b. Horizontal Swing Control Lever and
 - c. Vertical Tilt Control Lever
 - d. Weight of Head unit shall not exceed 37 pounds.
 - e. Length of head unit with color changing boomerang shall not exceed 41".
 - f. A sliding panel shall provide access to lenses without the use of tools.
- C. Controls: The Lamphouse shall as a minimum incorporate the following:
1. Quiet forced-air cooling by internally wired blower;
 2. Drop-down single ended lamp holder to permit bulb replacement without the use of hand tools.
- D. Bulb Positioning Controls: The body of the unit shall, as minimum incorporate the following:
1. Optical dimmer iris mechanism for smooth manual dimming;
 2. Four shutters mounted on two planes, for both vertical and horizontal masking
 3. Drop-in Nichrome steel iris
 4. Drop-in Gobo Holder
 5. Zoom focus controls with calibrations silk screened on followspot body.
 6. With the iris fully open this followspot shall be capable of producing a continuous range of field angles from 8.0 degrees in spot to 22 degrees in flood.
 7. At any field angle the beam shall be adjustable between soft and sharp edges.

8. The front of the unit shall house a five color, self-canceling boomerang with color filters.
- E. Optical:
1. The unit's optical train shall consist of:
 - a. Socket mounted 2,000 watt single-ended tungsten halogen lamp.
 - b. Fixed Optical Quality glass reflector and double condenser lens.
 - c. Variable focus lens system utilizing Optical-quality glass.
 - d. Iris/Gobo Holder, Shutters for beam shaping control.
 2. Optical dimmer Iris;
 - a. Five color boomerang.
 - b. The zoom focus shall increase light intensity as it decreases the spot diameter.
- F. Electrical:
1. Tungsten Halogen lamp system input shall be 110-120 V.AC, 60 Hertz, single-phase.
 2. Lamp shall be CP79 2,000 watt as manufactured by Philips, or approved equal.
 3. A double microswitch interlock shall be provided for safe lamp replacement.
- G. Performance:
1. Adjusted for flat field (approximately 70%) the unit shall produce a continuous range of illumination from 198,000 beam candlepower in Flood focus to 478,000 beam candlepower in Spot focus.
 2. The Field diameter at a 60 foot throw shall be continuously adjustable from 15.8 feet in Flood focus to 8.4 feet in Spot focus. With full iris the Field diameter in spot focus shall be less than 15".
 3. Provide 2 #10907070 Canto 2000 followspots, complete with Lamp, Iris, Gobo Holder, Color Changer, Stand and all necessary accessories.

2.21 FIXTURE ACCESSORIES

- A. Types:
1. All fixtures shall be supplied with specified lamps, and shall be installed by Contractor. 10% spare lamps (minimum 1) of each type shall be supplied and turned over to the Owner for future use.
 2. Color Media: 75 sheets of color media shall be supplied and turned over to the Owner. Colors are to be as recommended by the Theatrical Systems Integrator.
 3. Twofers and Extension Cables: 10 each of 5' and 10' extension cables shall be provided. (5) 25' extension cables shall also be provided. Each cable shall be 12/3 type SO and be supplied with a male stage pin connector on one end, and a female stage pin connector on the other end. (10) Twofers shall be provided with one male stage pin connector on one end, and two female stage pin connectors on the other end.

4. Booms and Side Arms: (4) Boom base assemblies shall be provided. Boom base assembly shall contain 50 lb. base with inside thread for 1 1/2" or 2" pipe. Pipe shall be standard black 10' with mating thread for mounting upright within boom base. Units shall be supported with sand bags (2 per base) and shall be utilized with spare fixtures, cables and wall mounted plug boxes. (12) 18" Side arms with mounting C-clamp and dual sliding tees shall be provided.
5. Gobo Patterns: 20 size 'B' patterns and pattern holders shall be provided for the ellipsoidal spotlights. Patterns shall be as recommended by the Theatrical Systems Integrator.

2.22 CABLE MANAGEMENT

- A. Pantographs: Due to the complex cable management requirements, Pantographs, as manufactured by Rigging Innovators, or approved equal, shall be provided for the on-stage electricians.

2.23 RIGGING SYSTEM

- A. Standards:

1. Materials shall conform to the following ASTM and ANSI standard specifications:
 - a. A-36 - Specification for structural steel
 - b. A-47 - Specification for malleable iron casting
 - c. A-48 - Specification for gray iron casting
 - d. A-120 - Specification for black and hot-dipped zinc-coated (galvanized) steel pipe for ordinary use
 - e. B18.2.1&2 - Specification for square and hex bolts and nuts
2. In order to establish minimum standards of safety, the following factors shall be used:
 - a. Cables and fittings - 8:1 Safety Factor
 - b. Cable bending ratio - Sheave tread diameter is 30 times cable diameter
 - c. Tread Pressures - 500 lbs. for cast iron 900 lbs. for Nylatron 1000 lbs. for steel
 - d. Maximum fleet angle - 1-1/2 degrees
 - e. Steel - 1/5 of yield
 - f. Bearings - Two times required load at full speed for 2000 hours
 - g. Bolts - Minimum SAE J429 Grade 5 (ISO R898 Class 8.8), zinc plated
 - h. Motors - 1.0 Service Factor
 - i. Gearboxes - 1.25 Mechanical Strength Service Factor

- B. Materials: All materials used in this project shall be new, unused and of the latest design. Re-furnished and obsolete materials are not permitted.

- C. Sheaves:

1. Sheaves shall be of the following materials, as specified:

- a. ASTM A-48 Class 30 grey iron castings
 - b. Nylatron or Polyamide Nylon (PA6-G)
 - c. Steel
2. Groove depths shall be sufficient to encompass fully the cables and ropes. Grooves shall have sloped sides (8 degree minimum) and conform to rope and cable manufacturers' standards for groove shape and tolerance.
 3. Sheaves shall be supported by bearings and a machined steel shaft, which shall be keyed to one side plate to prevent rotation. Proper adjustment of the bearing shall be accomplished by means of a fine thread, self-locking nut on the opposite end of the shaft. Each sheave shall run plumb and true without rubbing its side plates when rotated.
- D. Fabrication:
1. The mechanical fabrication and workmanship shall incorporate best practices for good fit and finish. There shall be no burrs or sharp edges to cause a hazard nor shall there be any sharp corners accessible to personnel.
 2. All moving parts shall have specified tolerances. Sheaves shall run plumb and true and shall not scrape housings.
 3. All equipment shall be built and installed to facilitate future maintenance and replacement.
- E. Finishes:
1. Paint shall be the manufacturer's standard finish and color except as noted.
 2. All turnbuckles, clips, tracks, chains and other items of incidental hardware shall be furnished plated or painted.
- F. Recommended Working Load: This specification calls for minimum recommended working loads for many hardware items. This is the maximum load which the manufacturer recommends be applied to properly installed, maintained, and operated new equipment. Manufacturer's recommended working loads shall be determined by calculations by a Licensed Professional Engineer and destructive testing by an independent testing laboratory. These calculations and reports shall be available for review.

2.24 POWERLIFT™ WINCH

- A. General:
1. The PowerLift shall have a compact design with all required components integrated into its structure. To allow easy mounting, horizontally or vertically, on beams with up to 12' centers, the winch shall incorporate a sturdy frame and adjustable mounting clips.
 2. The drum shall move along its axis as it rotates so that there is a zero degree fleet angle between the cable takeoff points on the drum and the head block sheaves incorporated in the winch. This shall be accomplished by the drum sliding on it's axle, so that the motor

and its electrical connections do not move. Systems with moving motors and wiring that flexes are not permitted.

3. All components shall be designed to properly support the required loads.
4. Characteristics: The winch shall have the following characteristics:

a. Supply models:

Application	Model	Speed	Capacity	Quantity
On Stage Electrics	018-P0220F	20 fpm	2,000 lbs	4
Scenery	018-P1812V	0 – 180 fpm	1,250 lbs	14

b. Travel: 65'

c. Lift Lines: 7 @ 3/16" diameter, 7X19 galvanized aircraft cable

5. Winch units will be provided with power and control cables with connectors and mating receptacles for electrical installation by Division 16.

B. Gearmotor and Brake:

1. The motor, primary brake, and gearbox shall be an integrated unit from a single manufacturer. For enhanced reliability, a continuous shaft shall carry the brake, motor armature, and the first stage pinion gear without the use of couplings.
2. Motors shall be totally enclosed fan cooled (TEFC) per NEMA MG1. Motors shall have a service factor of 1.0.
3. The gear reducer shall employ helical gearing. The gear case shall be cast iron for protection against shock damage. The output shaft shall have triple lip oil seals to prevent leaks.
4. The integral electro-magnetic brake shall be spring applied and electrically released, with a minimum retarding torque of 200% of motor full load torque.
5. Fixed speed winches shall incorporate a cast iron flywheel fan for soft starts and stops.

C. Drum and Sheaves:

1. The drum shall be helically grooved to accept a single layer of cable accommodating the entire travel distance plus three dead wraps per cable.
2. Cables shall be retained by a Nicopress™ stop sleeve inside the drum.
3. Retainers shall be provided to keep lift lines in their grooves.
4. The pitch diameter of all drums and sheaves shall meet or exceed the wire rope manufacturer's minimum recommended D/d ratio. Load bearing wire rope groove profiles shall meet the recommendations of the Wire Rope Technical Board.
5. Drums and sheaves shall be Nylatron® or Polyamide Nylon (PA6-G).

6. Sheave grooves shall be deeper than the cable diameter for protection. The sheave shall be equipped with a 12 mm diameter machined steel shaft and two sealed, precision ball bearings. Spacers shall positively retain the cable.
 7. Loft blocks shall be provided with idlers to support ongoing lift lines with an individual groove for each lift line to prevent tangling.
- D. Load Brake: For added security the PowerLift shall incorporate the SureBrake™, load brake located on the output shaft of the gearbox. This brake shall be self applied, controlling the load in a manner that prevents runaways and shock loads.
- E. Limit Switches:
1. Computer controlled systems shall have software limits utilizing solid state encoders.
 2. All winches shall have positively driven mechanical limit switches for normal end of travel indication. These switches shall signal control circuits in the solid state drives or the reversing contactors in fixed speed units.
 3. Positively driven mechanical limit switches shall be provided for overtravel indication. Actuation of an overtravel limit switch shall use a separate, redundant circuit than the normal end of travel switches, and positively disconnect power from the winch, per NFPA 79, using a UL580E Type 2, non-welding, positive break contactor.
 4. Limit switches shall be set to match actual site conditions.
- F. Motor Controllers:
1. For fire and electrical safety, motor controllers shall conform to the NEC (NFPA 70), be built in accordance with UL Standard 508, and be “touch safe” per IEC 204-1 “Protection against direct contact” rules.
 2. Controllers shall be wired so that operation of the normal end of travel limit switches shall only allow movement away from the limit switch.
 3. Variable speed controllers shall be solid state flux vector drives designed for hoisting duty. Each controller shall incorporate closed loop feedback using a solid state position encoder mounted on the motor shaft to provide the greatest accuracy and performance. The controller shall provide an essentially infinite speed range, including the ability to produce full torque at zero speed. The use of open loop drives is prohibited.
 4. Power wiring between vector drives and motors shall be shielded to reduce electrical noise.
 5. Controllers shall provide instantaneous over current, overload, and phase loss protection.
 6. Operation of the key switch shall disconnect power to all starters and drives.
- G. Emergency Stop System:
1. The E-stop and overtravel limit switches shall be part of a circuit which is separate from and redundant to the normal end of travel limit switches. This circuit shall meet NFPA

and not depend on software or electronic logic. Operation of an E-stop or overtravel limit switch directly disconnects power from the winch(es) using a UL580E Type 2, non-welding, positive break contactor. An override mechanism to allow resetting of the overtravel limits shall be included.

2. For winches running at more than 50 fpm a Category 1 controlled (ramped) stop is required, with removal of power when a stop is achieved or after a predetermined interval per NFPA-79 (Electrical Standards for Industrial Machinery) to reduce shock loading.
- H. Installation supervision and commissioning of the motorized rigging system shall be performed by a factory authorized and trained technician.

2.25 SCENECONTROL™ 500

A. General:

1. The control system shall be specifically designed for the control of motorized theatrical rigging equipment. It shall provide a level of reliability, accuracy, and integrity appropriate for overhead lifting in places of public assembly.
2. The controller shall be available in wall mounted or free standing configurations. The free standing unit shall be adjustable to meet ADA accessibility requirements as well as allowing operation with an operator standing upright.
3. The manufacturer shall provide any general system software upgrades at no charge for a period of 18 months from the time of system turn-on.

B. Graphic Interface:

1. A 3 dimensional display showing the theatre specified in this document shall be provided, giving the operator a clear, easy to understand view of the rigging system. This shall allow the operator to visualize moves as cues are developed and played back. The 3D visualization offers a simple, clear understanding of the work being done, promoting safety.
2. For easy visualization, an unlimited number of preprogrammed views of the stage area shall be provided. Additionally, the operator shall be able to dynamically select any view of the rigging system by means of “orbit”, “walk”, “zoom”, and “look” functions.
3. A 15" industrial grade color touch screen display will provide clear, easy to understand graphics for simplicity of operation. A touch pad shall also be provided to accommodate operator preferences.
4. The system shall allow the operator to select units to be controlled by touching the unit on the 3D graphic display for quick, intuitive selection.
5. Selection of hoists and targets shall be possible using the 3D display or on screen keyboard for ease of use.
6. Tools shall be provided to allow the user to “draw” scenic items in the display

7. The SceneControl graphic user interface shall provide a hoist controller; preset creation and editing facilities; and a display of the current position and target position of each hoist. A complete display of hoist status and faults shall be provided for ease of troubleshooting and maintenance.

C. Hoist Control:

1. The hoist control section of the operator's panel shall include "Go Up", "Go Down", and "Go Target" pushbuttons, and a Joystick for dynamic speed override, allowing the operator to directly control one or more hoists.
2. For operator convenience, five types of operation shall be available:
 - a. Direct Operation - One or more sets can be selected and operated directly with the Up / Down pushbuttons
 - b. Single Target - One or more sets may be directed to a common target height, using the "Go Target" button
 - c. Multiple Targets - Several sets can be selected, with individual target heights for each set, and directed to the targets using the "Go Target" button.
 - d. Relative Target - One or more sets can be directed to move a specific distance from their present position.
 - e. Current Position as Target – The operators may move a set in direct mode, and then return it to its starting position. An example would be bringing a lighting set in for gel changes and accurately returning it to its previous position.
3. Time and speed control is available only for variable speed hoists.

D. Cues and Presets:

1. Cues and Presets shall be able to be composed, stored, modified, and recalled to allow simple recording and re-creation of movements. In order to suit different production requirements, individual cues shall have the ability to contain any or all of the following features. The operator must select a target position; all other items have default values, allowing the operator to easily develop a cue simply and easily. Speed and time related features are available only with variable speed sets.
 - a. Target position – which may be a specific target position, a relative move (e.g. go up 10'), or to match the present or previous target position. Targets shall be adjustable by virtual slider, +/- buttons, or by entering data using the on-screen keypad.
 - b. Acceleration – An acceleration time or rate may be selected to provide the desired effect, or the default value may be used.
 - c. Speed may be selected as a velocity, a percentage of full speed, or as a travel time, in which case the system will calculate the speed required. If no selection is made, the default value will be used.

- d. Deceleration - A deceleration time or rate may be selected, independently of the acceleration rate.
 2. Multiple hoists: A single cue shall be able to control multiple hoists, each with its own speed and target.
 3. Synchronized Groups: It shall be possible to Group hoists for synchronized operation. If any hoist in a group loses synchronization the entire group shall stop.
 4. Cues shall be able to be named or numbered to suit the user's needs.
 5. The system shall be capable of controlling three dimensional moves (including up/down, pitch, roll, or horizontal movement) if used with hoists with these capabilities.
 6. Presets shall be recorded in a manner similar to cues to provide a defined starting point for the following cues. Cues shall have a sequential relationship with the base preset and preceding and following cues.
- E. Dual Playback Controllers:
1. Two, separate playback controllers shall be provided to allow two sets of movements to be controlled independently. Systems that do not allow two strings of cues to execute independently are not acceptable.
 2. The playback control section shall have two, independent "Go" buttons and a Joystick. The joystick shall allow the operator to make dynamic changes in the hoist speeds during a move.
 3. An "Auto Load" feature shall load the next cue on completion of the current cue.
 4. An "Auto Follow" feature shall cause the next cue to execute automatically on completion of current cue, with time delays from start or completion of the previous cue.
- F. Operation:
1. Actual pushbuttons and a joystick shall be provided for initiation and control of motion. For safety, no movement shall be permitted to be initiated from the touch screen. "Deadman" operation is required, so that the operator must be at the console and pressing a button for motion to continue. Systems that allow hoists to run without an operator actively present at the console are not permitted.
 2. A soft limit function shall allow the operator to set soft limits for each hoist, as well as additional soft limits for each show, for added flexibility and security.
 3. In systems with a load sensing option, the SceneControl shall monitor the loads on PowerLift hoists, first learning the characteristics of a new load, then monitoring each move for changes in the load. Load information shall be obtained from solid state load cells on the PowerLift hoists. The load sensing system shall be able to accommodate changing loads, such as the weight of borderlight cable which changes with elevation, without false tripping.

4. The system shall include password-protected access with the following levels:
 - a. Access level – allows use of the hoist controller and to play back recorded cues and presets.
 - b. Edit level – allows the creation, deletion, and editing of cues, presets, shows and editing of soft limits.
 - c. System level – allows the creation, deletion, and editing of sets and motors.
 5. Height and distance may be entered in feet and inches, decimal feet, or metric units.
 6. A mushroom head "EMERGENCY STOP" button, utilizing a failsafe circuit conforming to NPFA 79 requirements, shall be hard wired to starters and drives.
 7. An "ON/OFF" key operated switch shall be provided to control power to the console, motor starters and drives. The system shall not leave the motors and drives energized when turned off. The system shall retain all positions and soft limits when power is turned off.
- G. System Backup: A solid state flash drive shall be provided for system backup, and shall be continually updated with current positions, presets, and cues to allow the data to be transferred to another controller.
- H. Offline Editing: Software shall be included that will allow the user to develop and edit presets and cues on a PC, and transfer that data to the SceneControl console.
- I. Safety and Reliability:
1. All hardware components shall be industrial grade equipment selected for long term reliability in a typical theatre environment with wide temperature variations, dirt, and electromagnetic interference. Components shall be widely available on an international basis to ensure ease of replacement and maintenance.
 2. The control system shall use an off the shelf industrial grade Programmable Logic Controller (PLC) and/or an industrial grade PC selected for long term, reliable operation under the conditions and environment at the site. "Home" or "office" computers are not allowed, as they do not provide the level of reliability necessary for overhead lifting.
 3. Communication with motor starters and drives shall use an internationally supported, open architecture industrial field bus used for automation systems, such as Profibus™. Systems using proprietary bus systems shall not be permitted.
 4. Motion shall be initiated only by industrial grade pushbuttons. "Deadman" operation is required, so that the operator must be at the console and pressing a button for motion to continue. Systems that allow hoists to run without an operator actively present at the console are not permitted.
 5. A "service" indicator shall be provided to indicate when routine service and inspection of the rigging system is required

- J. Control systems shall be UL or ETL marked as meeting UL 508A Standard for Industrial Control Panels.
- K. Control system turn-on, and user instruction shall be performed by a factory authorized and trained technician. All wiring must be complete, limits switches set and all other predecessor activities required by the manufacturer completed before system turn on.

2.26 CURTAIN TRACKS

- A. ADC 382 Series Curtain Tracks: Curtain tracks (Model 2800) shall be of 14 gauge galvanized steel construction, entirely enclosed except for slot in bottom, each half to be in one continuous piece except where splicing clamps are required. Each curtain carrier (Model 2851) shall be spaced on 12" centers and shall be of steel construction with two nylon-tired ball-bearing wheels held to steel body by rustproof nickel plated rivet, such wheels rolling on two separate parallel treads. Each curtain carrier shall consist of a free-moving plated swivel and sufficient trim chain to accommodate curtain snap hook. Live-end pulley (Model 2863) and Dead-end pulley (Model 2864) blocks shall be adjustable and shall be equipped with 5" diameter sleeve-bearing wheels adequately guarded. A rubber bumper shall be attached to each curtain carrier to function as noise reducer. The manufacturer shall furnish two end stops for placement at each track end and a tension floor pulley (Model 2866) for increasing cord tension. Stretch-resistant operating cord (Model 2828 for hand operation and Model 2829 for machine operation) shall have synthetic or wire center and shall be of 3/8", or 3/16" diameter. If Back-pack devices are used with this track Model 2833 is used for hand operated track systems and Model 2834 is used for machine operated track systems. Model 382 as manufactured by Automatic Devices, Remcar Products, Makita or approved equal.

2.27 CURTAIN FABRICS

- A. General: Provide fabrics permanently and inherently flame resistant to comply with requirements indicated. Provide fabrics from the same dye lot.
- B. Woven Poly Velour: Napped fabric of 100 percent polyester, 54-inch minimum width.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Heavyweight Velour for Front Curtain and Valance: Fabric weighing not less than 25 oz./linear yard before flame-retardant treatment, with pile height not less than 79 mils.
 - 1) JB Martin Ltd.
 - 2) KM Fabrics, Inc.
 - 3) Valley Forge Fabrics.
 - 4) Or approved equal.
 - b. Colors, Textures and Patterns: As selected by Architect from manufacturer's full range.

- c. IFR Chevron for Intermediate and Rear Traveler:
 - 1) Frankel Associates, Inc.
 - 2) Fred Krieger, Inc.
 - 3) Valley Forge Fabrics, Inc.
 - 4) Or approved equal.
- d. Colors, Textures and Patterns: As elected by Architect from manufacturer's full range.

2.28 CURTAIN FABRICATION

- A. General: Affix permanent label, stating compliance with requirements of authorities having jurisdiction in accessible location on curtain not visible to audience. Provide vertical seams, unless otherwise indicated. Arrange vertical seams so they do not fall on Faces of pleats. Do not use fabric cuts less than one-half width.
 - 1. Vertical Hems: Provide vertical hems not less than 2 inches wide, with not less than a 1-inch tuck and machine-sewn with no selvage material visible from front of curtain. Sew open ends of hems closed.
 - 2. Main Curtain Leading Edge Turnbacks: Provide turnbacks formed by folding not less than 12 inches of face fabric back, with not less than a 1-inch tuck, and secured by sewing turnbacks vertically.
 - 3. Top Hems: Reinforce top hems by double-stitching 3.5 inch wide Jute webbing to top edge with not less than 2 inches of Face fabric turned under.
 - 4. Pleats: Provide 50 percent fullness in curtains, exclusive of turnbacks and hems, by sewing additional material into 4-inch double-stitched box pleats spaced at 12 inches o.c. along top hem reinforcement.
 - 5. Grommets: Brass, No. 4, centered on each box pleat and 1 inch from corner of curtain, for S-hooks.
 - 6. Bottom Hems:
 - a. For curtains that do not hang to the floor, provide hems not less than 3 inches deep with $\frac{3}{4}$ inch weight tape sewn in.
 - b. For floor-length curtains, provide hems not less than 6 inches deep with 1 inch weight tape sewn in.
 - 7. Velour Curtains: Fabricate with the fabric nap down.
- B. Provide track and draperies as per schedule, plans, and specifications.

2.29 CURTAIN RIGGING

- A. S-Hooks: Track manufacturer's heavy-duty plated-wire hooks.

- B. Supports, Clamps and Anchors: Sheet steel in manufacturer's standard thicknesses, galvanized after fabrication according to ASTM A 153/A 153M, Class B.
- C. Trim and Support Chain: 3/16 inch proof coil chain with a breaking strength of 750 lbs. Provide fittings complying with manufacturer's written recommendations for size, number, and method of installation.

2.30 FRONT-OF-HOUSE SELF CLIMBING HOIST

- A. The Front-of-House hoists shall be the De Sisti Self-Climbing Hoist or approved equal. The Hoist shall be a completely self contained enclosure housing a drive unit of monoblock design. The assemble shall house a 1,1kw 3-phase motor integrated with a dynamic self sustaining worm-gear set with a screw helix angle less than 4 degrees to prevent back winding. (Systems needing break motors to obtain a dynamic stop or systems with only static self sustaining gear motors will not be accepted).
- B. The motor shall be equipped with a built-in thermal protection device, designed to stop the electrical supply to the motor in case of excessive heat. The device shall automatically reset when the motor temperature decreases and allow the unit to return to normal operation. Incorporated into the hoist system shall be cut out safety micro switches (double activated SPRING –LEVER) for each cable line for slack line and over load detection, plus travel limit switches, one for the top limit plus extra safety stop switch and one bottom limit switch and plus extra safety stop switch.
- C. The hoist frame shall be a folded steel housing (10 feet long) and designed in such a way as to separate all moving parts from the electrical components and power elements. The unit shall house along with the motor, all outlets, circuit wiring, audio video outlets, DMX outlets or three phase outlets as specified. A load terminal box attached to a mounting rail shall be wired to the hoist via flip flop trays or flat cable management system which carry the load circuits to the hoist. It will also support at the bottom a 1.9 inch O.D. Pipe or Rail system for the mounting the lighting instruments. The housing shall also incorporate transparent inspection panels in order to visually inspect all relevant safety parts, including load sensing, lift cable discs and lift cable terminations.
- D. The average lifting speed shall be 25 feet per minute. The SWL(self working load) shall be 309lbs/140kg with a maximum travel of 35 feet. Each of the four steel lifting cables shall be 4mm in diameter, constructed in (7 groups x 19 wires) , with a breaking force on each wire rope of at least 2,356 lbs./ 1,071 kg.
- E. The entire device shall be DIN approved under section #15560 Part 46, (Worldwide Safety Standard for overhead devices) be TÜV certified and carry the U.L. label approved as a complete system. Hoists with U.L. approved components but not tested and approved as a complete system will not be accepted.
- F. Control shall be Up / Down and Positioning via DeSisti HMC Control Station.

2.31 SPIDER PANTOGRAPH PROJECTOR HOIST

- A. The Hoist shall be the Spider Hoist as manufactured by DeSisti Rigging and Automation or approved equal. The hoist shall be a single point suspension system incorporating a double-scissor design mechanism made up of extruded aluminum profiles. The frame structure shall be specifically designed to extend up to 30' (9.1 meters) and retract to as little as 2' 3 1/2" (0.7 meters). It shall have 2 stainless steel wire rope lifting cables of 3-mm. diameter 7 x 19 construction, capable of carrying loads up to 132 lbs (60 kg.), and shall carry up to 4 x 20 amp Circuits, DMX or VIDEO feeds to a terminal box at the bottom of the scissor.
- B. The scissor arms shall be joined by screws and self-locking nuts with brass spacing for accurate control of pivot. Lateral sway is restricted by means of a patented stabilizing geared device installed at the top and bottom of the double scissors framework.
- C. The entire mechanism shall be designed to provide rigidity and stabilization of all moving parts.
- D. The System shall be controlled by way of a DMX signal provided by the Unison Architectural Lighting Control System LCD Lighting Control Station.
- E. Incorporated into the scissor structure is a winch drive unit of monoblock design.

2.32 HMC HOIST CONTROL SYSTEM

- A. The Front-of-House and Spider Pantograph Hoists shall be controlled by the HMC Hoist Manual Control System as manufactured by DeSisti Rigging and Automation, or approved equal.
- B. The HMC shall be a surface mounted enclosure which shall contain 4 – 12 selector switches with indicator lamps to be used to select the hoists to be controlled.
- C. Up/Down control of selected hoists shall be through a Master (Dead Man) Push Button.
- D. The system shall also contain an On/Off Key Switch which will disable to entire motor system when the key is in the off position.
- E. An Emergency Stop Button shall be provided to interrupt the motor feed in case of emergency.

2.33 AUDITORIUM / GYMNASIUM PROJECTION SCREENS

- A. The large format projection screen shall be the Motorized Scenic Roller Screen as manufactured by Da-Lite Screen Co., E-Lite, In Focus or approved equal.
- B. The screen shall be the 80845 projection screen: 21' (H) x 28' (W), electrically operated by two motors and 1/8" steel cable to raise and lower screen. Each motor to be 120 volt (60 Hz) not more than 2.4 amp. Motors to be three wire with ground quick reversal type, oiled for life, with automatic thermal overload cutout, integral gears, capacitor and a built in brake to prevent coasting.

- C. The screen shall have pre-set but adjustable limit switches to automatically stop picture surface in the “up” and “down” positions. Motors to turn drum to allow cable to roll bottom 5" diameter roller “up” and “down” on fabric. Screen to have a straight, rigid tubular metal header, 3" in diameter.
- D. The top of fabric shall be formed into a pocket into which header shall be inserted. 3" wide double “C” type clamps of high tensile strength cast aluminum shall be secured to header for hanging. The screen shall be furnished with a wing nut for adjusting fabric hang. Fabric shall be flame retardant and mildew resistant fiberglass with black masking borders standard on fiberglass fabric. Fabric shall be securely fastened to roller. The header shall be 2" longer than the width of the fabric. Ends of the tubular header shall be protected with cast aluminum end caps. The bottom roller, with the cable drums, will be 12" wider than the width of fabric. Bottom inner drum shall be secured inside the bottom roller. Bottom outer drums shall be adjustable with one bolt and two locking set screws. Bottom roller level can be adjusted by rotating the outer adjustable drums.
- E. The screen shall be listed by Underwriters’ Laboratories.
- F. Matte White: Horizontal seam(s) required when both dimensions exceed 16’.
- G. Provide one (1) screen for the auditorium, as noted on the rigging drawings. Provide one (1) screen for use on the Gymnasium.

2.34 LECTURE HALL PROJECTION SCREENS

- A. The lecture hall projection screen shall be the Tensioned Cosmopolitan Electrol Screen as manufactured by Da-Lite Screen Co., or approved equal.
- B. The screen shall be the 99287 projection screen: 92” (H) x 164” (W), electrically operated 120 volt (60Hz) not more than 2.4 amp.
- C. The screen shall have specially designed motor mounted inside the roller, to be three wire with ground quick reversal type, oiled for life, with automatic thermal overload cut-out, integral gears, capacitor and an electric brake to prevent coasting. The screen shall have pre-set but adjustable limit switches to automatically stop picture surface in the “up” and “down” positions.
- D. The roller shall be constructed of aluminum.
- E. Screen fabric shall be flame retardant and mildew resistant vinyl with black masking borders standard. Each side of fabric to have a tab guide cable system to maintain even lateral tension and hold surface flat. Bottom of fabric to be inserted into a custom aluminum slat bar with added weight to provide vertical tension on the screen surface. The ends of the slat to be protected by heavy duty plastic caps enclosing a preset adjustable mechanism for screen tensioning.
- F. The screen case shall be a two-piece design made of extruded aluminum with a black, lightly textured powder coat finish.
- G. The screen shall to include a three-position control switch and cover plate.

- H. The screen shall be listed by Underwriters' Laboratories.
- I. All viewing surfaces will be seamless.
- J. All viewing surfaces are standard with black backing except for Da-Tex® and Dual Vision.
- K. Provide one (1) screen for each lecture hall at the rear of the auditorium as noted on the rigging drawings.

PART 3 - EXECUTION

3.1 THEATRICAL LIGHTING SYSTEM INSTALLATION

- A. It shall be the responsibility of the Contractor to receive and store the necessary materials and equipment for installation of the dimming system. It is the intent of these specifications and plans to include everything required for proper and complete installation and operation of the dimming system, even though every item may not be specifically mentioned. The contractor shall deliver on a timely basis to other trades any equipment that must be installed during construction.
- B. The Contractor shall be responsible for field measurements and coordinating physical size of all equipment with the architectural requirements of the spaces into which they are to be installed.
- C. The Contractor shall be responsible for removal and disposal of all waste materials created by this installation process including but not limited to:
 - 1. Shipping and packaging materials.
 - 2. Items removed from existing system.
- D. The Contractor shall be responsible for all lifts, ladders, scaffolding and/or other devices required for the complete installation of this system.
- E. The Contractor shall be responsible for all painting and patching that may be required as a product of this installation process.
- F. The Contractor shall run all conduit so that it is concealed above hung ceiling, below floors or in walls whenever possible. Any exposed conduit shall be run in an aesthetically pleasing manner and painted to match existing conditions.
- G. The Contractor shall install all lighting control and dimming equipment in accordance with manufacturer's approved shop drawings. All minimum spacing requirements between 120/208V and various low voltage wire types must be maintained. All installation must be in accordance with National, State and Local codes.
- H. The Contractor shall be responsible for resolving all Union disputes and jurisdictional issues.
- I. All branch load circuits shall be live tested before connecting the loads to the dimmer system load terminals. Each circuit shall require separate neutrals.

- J. It shall be the responsibility of the Contractor to provide all bonding, job permits and related fees as applicable.
- K. The Contractor shall be responsible for coordinating the installation and configuration of this system with the Theatrical Systems Integrator.

3.2 THEATRICAL RIGGING SYSTEM INSTALLATION

- A. The Contractor shall be responsible for storage of stage equipment, tools, and equipment during the period of the installation.
- B. Extent: All specified equipment shall be installed by fully trained superintendents and workmen. Equipment shall be installed in a workman like manner, per plans and specifications. Equipment shall be aligned, adjusted, and trimmed for the most efficient operation, the greatest safety and for the best visual appearance.
- C. Standards: Installation practices shall be in accordance with OSHA Safety and Health Standards and all local codes. All welding must be performed in full compliance with the latest edition of the Structural Welding Code (ANSI/AWS D1.1).
- D. Alignment: Mule blocks, cable rollers and guides shall be installed, as required, to provide proper alignment, to maintain specified fleet angles, and to prevent contact with other surfaces.
- E. Attachments: All equipment shall be securely attached to the building structure. Underhung blocks and mule blocks shall be welded in place unless otherwise directed.
- F. Finishes:
 - 1. All welds must be touched up to match disturbed finishes.
 - 2. All finishes which are disturbed during shipping and installation shall be touched up to match the original.
- G. The Contractor shall be responsible for clean up, including removal of packing materials etc. and the protection of surfaces or equipment provided by other contractors.

3.3 RIGGING INSPECTION AND TESTING

- A. Inspection: During the installation of equipment the Contractor shall arrange for access as necessary for inspection of equipment by the Owner's representatives.
- B. System Inspection & Pre-Testing By Contractor: On completion of installation and testing the Contractor shall conduct a complete pre-test of the system to ensure it is working properly and in conformance with this specification. This shall include a complete test of all electrical systems and components. All tests shall be conducted as if the Architect or Consultant were present and appropriate corrections made before the final inspection. Inspection shall be done using the rigging equipment manufacturer's written inspection forms.
- C. Special Testing: If specifications, the Architect's instructions, laws, ordinances, or any public authority require any work to be specially tested or approved, the Contractor shall give the

Architect timely notice of its readiness for inspection, and of dates of inspections to be made by other authorities.

- D. Completion Testing: Upon completing the installation of all equipment specified under this section, the Contractor shall notify the Architect, who will schedule an inspection. At the time of inspection, the Contractor shall furnish sufficient workers to operate all equipment and to perform such adjustments and tests as may be required by the Owner's representative. Any equipment, which fails to meet with approval, shall be repaired or replaced with suitable equipment and the inspection shall be re-scheduled under the same conditions as previously specified. At the time of these inspections, no other work shall be performed in the auditorium and stage areas. All temporary bracing, scaffolding, etc. shall be removed to permit full operation of, and access to, all equipment. Final approval will be withheld until all systems have been thoroughly tested and found to be in first class operating condition in every particular.
- E. Manuals and instruction in the operation of the equipment shall be provided in accordance with 1.03.
- F. Follow-up Inspection:
 - 1. One year after the completion of installation, the Rigging Contactor shall return to the site and provide the following services:
 - a. Complete inspection of the rigging system.
 - b. Make all required adjustments.
 - c. Correct all warranty items.
 - d. Provide written recommendations for necessary repairs or changes not included in the warranty.
 - e. Conduct a 1 hour rigging operation and safety class.
 - f. Provide a written proposal for the next year's maintenance visit.

3.4 THEATRICAL SYSTEMS INTEGRATOR'S SERVICES

- A. Upon completion of the installation, including testing of dimming load circuits, the contractor shall notify the TSI's Project Manager that the system is available for formal checkout by the dimming system manufacturer.
- B. Notification shall be provided in writing, 21 days prior to the time factory-trained personnel are needed on the job site.
- C. No power is to be applied to the dimming system unless specifically authorized by written instructions from the TSI's Project Manager.
- D. The contractor shall be liable for any return visits by the factory engineer as a result of incomplete or incorrect wiring.
- E. Upon completion of the formal check-out, the dimming factory engineer shall demonstrate operation and maintenance of the lighting system to the owner's representatives. Training session shall not exceed four working hours.

- F. A second training session shall be provided on the lighting system six months after the first training session. Training session shall not exceed four working hours. Additional training shall be available upon request. Scheduling for training sessions shall be made in writing, 21 days prior to the time factory-trained personnel are needed on the job site.

3.5 RECORD DRAWINGS AND MANUALS

A. Record Drawings:

- 1. The TSI shall submit two sets of full sized Record Drawings to the owner for final acceptance. These drawings shall be fully revised and reflect the actual finished installation. The drawing set shall be 100% complete and shall include all schematics, details and Bill of Materials for future maintenance and repair of all systems supplied by the TSI.
 - a. Each drawing shall be dated and stamped as a Record Drawing.
 - b. Prints shall be full sized, stapled into sets. They shall be fully legible.
 - c. Any future revisions or modifications during the warranty period shall require that the owner's Record Drawings be updated also.

- B. Theatrical Systems Integrator shall provide a Repertory Lighting Plot for the purpose of hanging and focusing theatrical lighting fixtures prior to project completion.

C. Manuals:

- 1. Manuals shall be bound by the TSI in loose-leaf binders and labeled with tabbed dividers for easy reference.
- 2. The TSI shall provide two sets of Instructions and Maintenance manuals to the Owner. The manuals shall consist of, but not be limited to:
 - a. System Description
 - b. User Operating Instructions
 - c. User Maintenance Instructions
 - d. Catalogue Cut Sheets from all equipment purchased
 - e. Spare Parts Listing
 - f. 11" x 17" reduced drawings of all system assembly drawings needed to perform system maintenance.

3.6 WARRANTY

A. Lighting System Warranty:

- 1. Manufacturer shall warrant products under normal use and service to be free from defects in materials and workmanship for a period of two years from date of delivery.
- 2. Warranty shall cover repair or replacement of such parts determined defective upon inspection.

3. Warranty does not cover any product or part of a product subject to accident, negligence, alteration, abuse or misuse. Warranty does not cover any accessories or parts not supplied by the manufacturer.
4. Warranty shall not cover any labor expended or materials used to repair any equipment without manufacturer's prior written authorization.

B. Acoustical Shell Warranty:

1. The manufacturer shall warrant this equipment to be free from defects in materials and workmanship, under normal use and service, for a period of five years from date of installation. A full corporate warranty statement shall be provided upon request.
2. The shell shall be designed for a 20 year life cycle based on average usage.

C. Rigging System Warranty: The SceneControl/PowerLift motorized rigging system shall be provided with a one year written guarantee against defects in materials or workmanship that goes into effect on the date of system acceptance by the Owner's Representative. The guarantee shall not cover equipment that has become defective due to misuse, abuse, accident, act of God, alteration, vandalism, ordinary wear and tear, improper maintenance or used not in a manner intended.

END OF SECTION 26 55 61

SECTION 26 43 13 – SURGE PROTECTIVE DEVICE (SPD) FOR LOW-VOLTAGE ELECTRICAL POWER CIRCUITS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 CODES AND REFERENCE

- A. Qualification Data: Products shall be tested and listed by UL.
1. All SPDs shall be tested and listed by ANSI/UL 1449-2006 (UL 1449 3rd Edition) & Complimentary Listed to UL 1283.
- B. Applicable Documents:
1. ANSI/IEEE Std C62.41.1TM-2002, IEEE Guide on the Surge Environment in Low-Voltage (1000 V and Less) AC Power Circuits
 2. ANSI/IEEE Std C62.41.2TM-2002, IEEE Recommended Practice on Characterization of Surges in Low-Voltage (1000 V and Less) AC Power Circuits
 3. ANSI/IEEE Std C62.45TM -2002, IEEE Recommended Practice on Surge Testing for Equipment Connected to Low-Voltage (1000 V and Less) AC Power Circuits
 4. ANSI C84.1, American National Standard for Electric Power Systems and Equipment – Voltage Ratings (60 Hertz)
 5. IEEE Standard 1100-2005, IEEE Recommended Practice for Power and Grounding Electronic Equipment - Clause 8.6.1
 6. National Fire Protection Association (NFPA) 70 (N.E.C.) –2002 – Article 285
 7. ANSI/UL 1449-2006 Surge Protective Devices
 8. IEEE Std C62.72TM-2007 – IEEE Guide for the Application of Surge-Protective Devices for Low-Voltage (1000 V or less) AC Power Circuits

1.3 SUMMARY

- A. Section includes field installed SPDs for low-voltage power distribution equipment.

1.4 GLOSSARY AND ACRONYMS

- A. SPD: Surge Protective Device(s), both singular and plural.
- B. NEC/CEC: National Electrical Code / Canadian Electric Code
- C. Frequency Responsive Circuitry (a.k.a. Sinewave Tracking): Voltage independent, dedicated circuitry intended to mitigate the effects of switching or ringing surges that is specifically designed so that it can survive the surge environment. The performance of sinewave tracking circuitry is defined by the level to which it mitigates Ring Wave transients and can be demonstrated in the test results of IEEE C62.41.2-2002, Category A Ring Wave (2kV).
- D. Voltage Protection Rating (VPR) A rating selected from a list of preferred values as detailed in ANSI/UL 1449-2006 and assigned to each mode of protection. The value of VPR is determined as the nearest highest value taken from a list of preferred values as detailed in ANSI/UL 1449-2006 to the measured limiting voltage determined during the transient-voltage surge suppression test using the combination wave generator at a setting of 6 kV, 3 kA.
- E. Maximum Continuous Operating Voltage (MCOV) – The maximum designated root mean-square (rms) value of the power frequency voltage that may be continuously applied to the mode of protection of an SPD.
- F. Nominal Discharge Current (In) – Peak value of the current, selected by the manufacturer from a list of values specified in ANSI/UL 1449-2006, through the SPD having a current waveshape of 8/20 where the SPD remains functional after 15 surges using the test procedure described in ANSI/UL 1449-2006.
- G. Type 1 SPD – Permanently connected SPDs intended for installation between the secondary of the service transformer and the line side of the service equipment overcurrent device, as well as the load side, including watt-hour meter socket enclosures and intended to be installed without an external overcurrent protective device.
- H. Type 2 SPD – Permanently connected SPDs intended for installation on the load side of the service equipment overcurrent device; including SPDs located at the branch panel.
- I. Type 4 SPD – Recognized Component SPDs, including discrete components as well as component assemblies, which bear specific conditions of acceptability.
- J. Modes Of Protection: Electrical paths where the SPD offers defense against transient overvoltages. e.g. Each Line to Neutral (L-N), Line to Ground (L-G), Line to Line (L-L) and Neutral to Ground (N-G).
- K. Per Phase Ratings: ‘Per-Phase’ ratings for a three-phase Wye-connected SPD are determined by multiplying the kA per mode times the number of discrete modes of protection (directly connected suppression components), minus the value for the Neutral to Ground mode, divided by the number of phases.

- $$\text{Per-Phase} = (((\text{kA per mode}) \times (\# \text{ of modes})) - (\text{N-G mode kA})) / (\# \text{ of phases})$$

1.5 SUBMITTALS FOR REVIEW

- A. Product Data: For each type of product indicated, include all required testing and pertinent manufacturer information described herein section 1.6, rated capacities, maximum continuous operating voltage, weights and dimensions, electrical characteristics interconnecting wiring requirements, accessories, and ANSI/UL 1449-2006 VPRs.
- B. Letter from manufacturer stating products are in strict compliance with the recommendations of IEEE Std 1100-2005, Clause 8.6.1. and incorporate 10 individual dedicated discrete modes of protection for three-phase wye systems, including direct Line-to-Line components. (Reduced-Mode variations will not be accepted).
- C. Warranty duration and replacement policy.
- D. Manufacturer’s installation instructions
- E. Provide a table indicating which panel/switchboard/equipment each SPD will serve. Table shall include project name, panel name, voltage/phase, and SPD model number to be provided, submittals will not be approved without this table.

Panel/Switchboard Name	Volts, Phase	SPD Model Number

1.6 SUBMITTALS FOR INFORMATION

- A. IEEE Std C62.41.2TM-2002 test reports. Include complete let-through voltage/measured limiting voltage test data, test graphs and scope traces for each and every mode for each product submitted for Category’s C, B, A (including Cat A, 2 kV, 67 A, 100 kHz ring wave at both 90 & 270 degree electrical phase angles). Testing shall be conducted as follows:
- B. Test Parameters: Positive Polarity, Net voltages are peak ($\pm 10\%$). All tests are static (unpowered) except 150 V MCOV modes. Let-through voltages on static tests calculated by subtracting sinewave peak from let-through measured from zero. 150 V MCOV mode let-through voltages measured from the insertion point on the sinewave. Each phase is the average of the 3 modes. In order to duplicate the results, the specified mode must be tested for all three phases (except N-G) and averaged together. (Individual mode or shot results may not vary by more than 10%. Scope Settings: Time Base = 10 microseconds, Sampling Rate = 250 Megasamples/sec. These settings assure Let-through voltages test results are accurate). All tests performed with 6” lead length (external to the enclosure), simulating actual installed performance per the ANSI/UL 1449-2006 standard.
- C. Let-through voltages furnished within this testing must not exceed the following to be considered for approval, no exceptions:

1. Service Entrance 120/208V 3Ph Wye (IEEE Cat C High Current Driven Surge Test Results (10 kA)) (L-N 915 V) (L-L 1120 V) (L-G 1030 V) (N-G 1180 V)
 2. Service Entrance 277/480V 3Ph Wye (IEEE Cat C High Current Driven Surge Test Results (10 kA)) (L-N 1050 V) (L-L 1345 V) (L-G 1270 V) (N-G 1575 V)
 3. Distribution 120/208V 3Ph Wye (ANSI/UL 1449-2006 VPRs): (L-N 600 V) (L-G 600 V) (L-L 1000 V) (N-G 600 V)
 4. Distribution 277/480V 3Ph Wye (ANSI/UL 1449-2006 VPRs): (L-N 1000 V) (L-G 1200 V) (L-L 1800 V) (N-G 1200 V)
 5. Branch 120/208V 3Ph Wye (IEEE Cat A Ringwave (2kV 67A)) Test Results (@ 270° phase angle): (L-N 30 V) (L-L 60 V) (L-G 50 V) (N-G 50 V) Sensitive Loads
 6. Branch 277/480V 3Ph Wye (IEEE Cat A Ringwave (2kV 67A)) Test Results (@ 270° phase angle): (L-N 60 V) (L-L 60 V) (L-G 80 V) (N-G 60 V) Sensitive Loads
 7. Branch 120/208V 3Ph Wye (IEEE Cat A Ringwave (6kV 200A)) Test Results (@ 90° phase angle): (L-N 300 V) (L-L 500 V) (L-G 300 V) (N-G 600 V) Non-Sensitive Loads
 8. Branch 277/480V 3Ph Wye (IEEE Cat A Ringwave (6kV 200A)) Test Results (@ 90° phase angle): (L-N 500 V) (L-L 750 V) (L-G 500 V) (N-G 950 V) Non-Sensitive Loads
- D. Certificates of Conformity: For SPDs, certifying compliance with UL listing/certification to the following standards:
1. ANSI/UL 1449-2006 (UL 1449 3rd Edition)
 2. UL 1283 (Type 2 SPDs Only)

1.7 SUBMITTALS FOR CLOSEOUT

- A. Operation and Maintenance Data: Closeout Submittal shall include operation, installation and specification data in closeout submittals.
- B. Certification: By Electrical Contractor (Installer) that installation complies with manufacturer's instructions (SEE FINAL INSPECTION SECTION OF THIS SPECIFICATION).
- C. Warranty duration and replacement policy

1.8 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by UL, and marked for intended location and application.

- B. Manufacturer's Qualifications: Manufacturer must have at least 10 years experience in the engineering, design and manufacture of permanently connected SPDs. Manufacturer operates a Quality System Certified manufacturing facility as ISO 9001:2000 Compliant
- C. Certificate of Declaration that product is CE Low Voltage Directive Compliant

1.9 COORDINATION

- A. Coordinate location of field installed SPDs to allow adequate clearances for maintenance.
- B. SPDs shall be rated for the class and category of service necessary for the application per the ANSI/IEEE Std C62.41.2TM-2002 and IEEE Std C62.72TM-2007 (Categories C, B, A)

1.10 FUSING

- A. Provide as a minimum, over-current, over temperature protection in the form of component-level thermal fusing to ensure safe failure and mitigate thermal runaway. This component-level fusing shall be an integral part of the MOV itself, and not silver wire (or other) independently layed across each MOV.
- B. Provide integral short circuit current fusing with each device. The fusing will be independent of the "component-level" fusing and specifically for over-current protection and shall be constructed utilizing surge rated, cartridge fuses and not rated 'silver-fuse-wire' (or other).
- C. The use of any mechanical or electro-mechanical thermal/over-current protection (i.e. moving parts and/or springs and shutters), in combination with or for the protection of the suppression elements are expressly prohibited and will be rejected.
- D. Large-Block 34mm (50kA) square Thermal Protected MOVs are expressly prohibited and will not be accepted.
- E. The fusing mechanisms employed must effectively coordinate their performance in conjunction with the high current abnormal over-voltage testing under ANSI/UL 1449-2006 (a.k.a. UL 1449 3rd Edition).

1.11 WARRANTY

- A. The manufacturer shall provide unlimited free replacement of the entire SPD (not just modules, components or sub-assemblies) for all inoperable SPDs during the warranty period. Acceptable manufacturers listed below that do not meet the warranty as standard shall submit a letter extending the warranty with the product submittal
 - 1. Warranty Period: Minimum warranty shall be Twenty-Five (25) years from date of installation.

2. Maintenance Restrictions: No SPD shall be supplied which requires scheduled preventative-maintenance, replaceable parts or modules (other than replaceable LEDs or batteries for diagnostic circuits). Units requiring functional testing, special test equipment, or special training to monitor SPD status are not acceptable. SPDs shall require no routine maintenance. SPDs are considered non-repairable items and shall be fully replaced upon failure.

PART 2 - PRODUCTS

2.1 SERVICE ENTRANCE SPDs

- A. Manufacturers: Subject to compliance with requirements, provide specific model numbers listed by one of the following only, no model # variations or substitutions are permitted
- B. All SPDs on the entire project must be provided by the same SPD manufacturer to ensure commonality and ease of Owner maintenance.
- C. Peak-Surge Current Shall be 240 kA per phase
 1. Surge Suppression Incorporated: Sales – 888-987-8877 wbanker@surgesuppression.com: Model # LSEB3Y2K-69 (277/480 VAC Wye) / LSEB3Y1K-69 (120/208 VAC Wye) / LSEB3N4K-69 (480 VAC Delta)
 2. Liebert Corporation: Sales – 614-888-0246 – www.liebert.com: Model # SI-025-277Y-ANSE (277/480) / SI-025-208Y-ANSE (120/208) / SI-025-480D-ANSE (480V Delta)
 3. Current Technology: Sales – 800-238-5000 – www.currenttechnology.com: Model # CGP100-277/480-3GY (277/480) / CGP100-120/208-3GY (120/208) / CGP100-480-3DG (480V Delta)
- D. SPDs shall be:
 1. Listed by ANSI/UL 1449-2006 (a.k.a. UL 1449 3rd Edition) and Complimentary Listed to 1283
 2. SPD shall be Type 2 SPD, Type 4 SPDs are not permitted
 3. SPD shall have a Nominal Discharge Current Rating of 20 kA per mode for all modes.
 4. The Maximum Continuous Operating Voltage (MCOV) shall be as follows:

Nominal System Voltage	Mode	MCOV
120/208 Wye	L-N	150 V
	L-L	300 V
	L-G	150 V
	N-G	150 V
277/480 Wye	L-N	320 V
	L-L	550 V
	L-G	320 V
	N-G	320 V

5. The SPD shall have Voltage Protection Ratings (VPRs) as follows:

Nominal System Voltage	Mode		VPR
120/208 Wye	L-N	150 V	600 V
	L-L	300 V	1000 V
	L-G	150 V	600 V
	N-G	150 V	600 V
277/480 Wye	L-N	320 V	1000 V
	L-L	550 V	1800 V
	L-G	320 V	1200 V
	N-G	320 V	1200 V

6. LED indicator lights for power and protection status.
7. Permanently-mounted, parallel connected.
8. Solid-state clamping components to limit the surge voltage and divert the surge current. SPD components that “crowbar” (e.g. spark gaps, gas tubes, SCR’s, etc.) are not allowed.
9. Self-restoring and fully automatic.
10. Capable of sustaining 115% of nominal RMS voltage continuously without degrading.
11. The SPD shall be tested and listed by UL as a complete assembly to a symmetrical fault current rating greater than or equal to the available fault current at the location of installation at the connected panel, in accordance with NEC Article 285 and shall be marked with the short circuit current rating (SCCR). If the available fault current is unknown, then the SCCR of the SPD shall be 200 kAIC.
12. Bi-directional, thermal stress reducing, encapsulated and solid state circuit configuration.
13. SPD system shall provide discrete protection for all 10 modes for a three-phase Wye-connected SPD. Distinct and independent protection circuitry for each mode is required. Reduced mode SPDs with only 3, 4 or 7 dedicated, distinct, independent protection modes in its voltage configuration are not acceptable and are not to be submitted.

2.2 DISTRIBUTION PANELBOARD SPDs (400 A & Larger)

- A. Manufacturers: Subject to compliance with requirements, provide specific model numbers listed by one of the following only, no model # variations or substitutions are permitted
- B. All SPDS on the entire project must be provided by the same SPD manufacturer to ensure commonality and ease of Owner maintenance.
- C. Peak-Surge Current Shall be 180 kA per phase
 - 1. Surge Suppression Incorporated: Sales – 888-987-8877 wbanker@surgesuppression.com: Model # SDLB3Y2K-69 (277/480 VAC Wye) / SDLB3Y1K-69 (120/208 VAC Wye) / SDLB3N4K-69 (480 VAC Delta)
 - 2. Liebert Corporation: Sales – 614-888-0246 – www.liebert.com: Model # SI-016-277Y-ANSE (277/480) / SI-016-208Y-ANSE (120/208) / SI-016-480D-ANSE (480V Delta) (All devices listed must have a 25yr extended warranty if not standard)
 - 3. Current Technology: Sales – 800-238-5000 – www.currenttechnology.com: Model # CGP80-277/480-3GY (277/480) / CGP80-120/208-3GY (120/208) / CGP80-480-3DG (480V Delta)
- D. SPDs shall be:
 - 1. Listed by ANSI/UL 1449-2006 (UL 1449 3rd Edition) and Complimentary Listed to UL 1283.
 - 2. SPD shall be Type 2 SPD, Type 4 SPDs are not permitted.
 - 3. SPD shall have a Nominal Discharge Current Rating of 20 kA per mode for all modes.
 - 4. The Maximum Continuous Operating Voltage (MCOV) shall be as follows:

Nominal System Voltage	Mode	MCOV
120/208 Wye	L-N	150 V
	L-L	300 V
	L-G	150 V
	N-G	150 V
277/480 Wye	L-N	320 V
	L-L	550 V
	L-G	320 V
	N-G	320 V

5. The SPD shall have Voltage Protection Ratings (VPRs) as follows:

Nominal System Voltage	Mode	VPR
120/208 Wye	L-N	600 V
	L-L	1000 V
	L-G	600 V
	N-G	600 V
277/480 Wye	L-N	1000 V
	L-L	1800 V
	L-G	1200 V
	N-G	1200 V

6. LED indicator lights for power and protection status.
7. Permanently-mounted, parallel connected.
8. Solid-state clamping components to limit the surge voltage and divert the surge current. SPD components that “crowbar” (e.g. spark gaps, gas tubes, SCR’s, etc.) are not allowed.
9. Self-restoring and fully automatic.
10. Capable of sustaining 115% of nominal RMS voltage continuously without degrading.
11. The SPD shall be tested and listed by UL as a complete assembly to a symmetrical fault current rating greater than or equal to the available fault current at the location of installation at the connected panel, in accordance with NEC Article 285 and shall be marked with the short circuit current rating (SCCR). If the available fault current is unknown, then the SCCR of the SPD shall be 200 kAIC.
12. Bi-directional, thermal stress reducing, encapsulated and solid state circuit configuration.
13. SPD system shall provide discrete protection for all 10 modes for a three-phase Wye-connected SPD. Distinct and independent protection circuitry for each mode is required. Reduced mode SPDs with only 3, 4 or 7 dedicated, distinct, independent protection modes in the voltage configuration are not acceptable and are not to be submitted.

2.3 BRANCH PANELBOARD SUPPRESSORS (Less Than 400 A) Sensitive Loads

- A. Manufacturers: Subject to compliance with requirements, provide specific model numbers listed by one of the following only, no model # variations or substitutions are permitted
- B. All SPDs on the entire project must be provided by the same SPD manufacturer to ensure commonality and ease of Owner maintenance.
- C. Peak-Surge Current Shall be 120 kA per phase w/Sine-wave tracking (see section 1.6 for sinewave tracking compliance requirements)

1. Surge Suppression Incorporated: Sales – 888-987-8877 wbanker@surgesuppression.com: Model # CKLB3Y2K-69 (277/480VAC) / CKLB3Y1K-69 (120/208VAC) / CKLB3N4K-69 (480 VAC Delta)
2. Liebert Corporation: Sales – 614-888-0246 – www.liebert.com: Model # SI-016-277Y-ANSE (277/480) / SI-016-208Y-ANSE (120/208) / SI-016-480D-ANSE (480V Delta) (All devices listed must have a 25yr extended warranty if not standard)
3. Current Technology: Sales – 800-238-5000 – www.currenttechnology.com: Model # CGP60-277/480-3GY (277/480) / CGP60-120/208-3GY (120/208) / CGP60-480-3DG (480V Delta)

D. SPDs shall be:

1. Listed by ANSI/UL 1449-2006 (a.k.a. UL 1449 3rd Edition) and Complimentary Listed to UL 1283.
2. SPD shall be Type 2 SPD. Neither Type 1 SPDs nor Type 4 SPDs are permitted.
3. SPD shall have a Nominal Discharge Current Rating of 20 kA per mode for all modes.
4. The Maximum Continuous Operating Voltage (MCOV) shall be as follows:

Nominal System Voltage	Mode	MCOV
120/208 Wye	L-N	150 V
	L-L	300 V
	L-G	150 V
	N-G	150 V
277/480 Wye	L-N	320 V
	L-L	550 V
	L-G	320 V
	N-G	320 V

5. The SPD shall have Voltage Protection Ratings (VPRs) as follows:

Nominal System Voltage	Mode	VPR
120/208 Wye	L-N	600 V
	L-L	1000 V
	L-G	600 V
	N-G	700 V
277/480 Wye	L-N	1200 V
	L-L	1800 V
	L-G	1200 V
	N-G	1200 V

6. LED indicator lights for power and protection status.

7. Incorporate “True” sine-wave tracking based on the results of the Category A (2kV) Ring Wave Measured Limiting Voltages. Products utilizing basic EMI/RFI filter performance or tracking circuits in the L-N mode only are not allowed (see section 1.6 of this specification for specific requirements).
8. Permanently-mounted, parallel connected.
9. Solid-state clamping components to limit the surge voltage and divert the surge current. SPD components that “crowbar” (e.g. spark gaps, gas tubes, SCR’s, etc.) are not allowed.
10. Self-restoring and fully automatic.
11. Capable of sustaining 115% of nominal RMS voltage continuously without degrading.
12. SPD system shall provide discrete protection for all 10 modes for a three-phase Wye-connected SPD. Distinct and independent protection circuitry for each mode is required. Reduced mode TVSS with only 3, 4 or 7 dedicated, distinct, independent protection modes in the voltage configuration are not acceptable and are not to be submitted.
13. The SPD shall be tested and listed by UL as a complete assembly to a symmetrical fault current rating greater than or equal to the available fault current at the location of installation at the connected panel, in accordance with NEC Article 285 and shall be marked with the short circuit current rating (SCCR). If the available fault current is unknown, then the SCCR of the SPD shall be 200 kAIC.
14. Bi-directional, thermal stress reducing, encapsulated and solid state circuit configuration.

2.4 BRANCH PANELBOARD SUPPRESSORS (Less Than 400A) Non-Sensitive Loads

- A. Manufacturers: Subject to compliance with requirements, provide specific model numbers listed by one of the following only, no model # variations or substitutions are permitted
- B. All SPDs on the entire project must be provided by the same SPD manufacturer to ensure commonality and ease of Owner maintenance.
- C. Peak-Surge Current Shall be 120 kA per phase
 1. Surge Suppression Incorporated: Sales – 888-987-8877 wbanker@surgesuppression.com: Model # SKLB3Y2K-69 (277/480VAC) / SKLB3Y1K-69 (120/208VAC) / SKLB3N4K-69 (480 VAC Delta)
 2. Liebert Corporation: Sales – 614-888-0246 – www.liebert.com: Model # SI-016-277Y-ANSE (277/480) / SI-016-208Y-ANSE (120/208) / SI-016-480D-ANSE (480V Delta) (All devices listed must have a 25yr extended warranty if not standard)
 3. Current Technology: Sales – 800-238-5000 – www.currenttechnology.com: Model # CGP60-277/480-3GY (277/480) / CGP60-120/208-3GY (120/208) / CGP60-480-3DG (480V Delta)

D. SPDs shall be:

1. Listed by ANSI/UL 1449-2006 (a.k.a. UL 1449 3rd Edition) and Complimentary Listed to UL 1283.
2. SPD shall be Type 2 SPD. Neither Type 1 SPDs nor Type 4 SPDs are permitted.
3. SPD shall have a Nominal Discharge Current Rating of 20 kA per mode for all modes.
4. The Maximum Continuous Operating Voltage (MCOV) shall be as follows:

Nominal System Voltage	Mode	MCOV
120/208 Wye	L-N	150 V
	L-L	300 V
	L-G	150 V
	N-G	150 V
277/480 Wye	L-N	320 V
	L-L	550 V
	L-G	320 V
	N-G	320 V

5. The SPD shall have Voltage Protection Ratings (VPRs) as follows:

Nominal System Voltage	Mode	VPR
120/208 Wye	L-N	600 V
	L-L	1000 V
	L-G	600 V
	N-G	700 V
277/480 Wye	L-N	1200 V
	L-L	1800 V
	L-G	1200 V
	N-G	1200 V

6. LED indicator lights for power and protection status.
7. Permanently-mounted, parallel connected.
8. Solid-state clamping components to limit the surge voltage and divert the surge current. SPD components that “crowbar” (e.g. spark gaps, gas tubes, SCR’s, etc.) are not allowed.
9. Self-restoring and fully automatic.
10. Capable of sustaining 115% of nominal RMS voltage continuously without degrading.
11. SPD system shall provide discrete protection for all 10 modes for a three-phase Wye-connected SPD. Distinct and independent protection circuitry for each mode is required.

Reduced mode TVSS with only 3, 4 or 7 dedicated, distinct, independent protection modes in the voltage configuration are not acceptable and are not to be submitted.

12. The SPD shall be tested and listed by an NRTL as a complete assembly to a symmetrical fault current rating greater than or equal to the available fault current at the location of installation at the connected panel, in accordance with NEC Article 285 and shall be marked with the short circuit current rating (SCCR). If the available fault current is unknown, then the SCCR of the SPD shall be 200 kAIC.
13. Bi-directional, thermal stress reducing, encapsulated and solid state circuit configuration.

2.5 ENCLOSURES

- A. Indoor Enclosures: NEMA 1 or better.
- B. Outdoor Enclosures: NEMA 4 or better for outdoor/wet locations.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install SPDs in strict accordance with manufacturer's instructions and the NEC [or CEC].
- B. Install SPDs at service entrance on load side, with ground lead bonded to service entrance ground.
- C. Install SPDs with conductors between SPD and the branch circuit breaker as short and straight as possible. When possible do not exceed manufacturer's recommended lead length. In the case where the lead length exceeds 18 inches the installer must contact the SPD manufacturer for installation assistance.
- D. Install the SPDs immediately adjacent to the switchboard or panelboard being protected.
- E. SPDs must be connected to a dedicated circuit breaker rated for (minimum) 30-amps per manufacturer's installation instructions to ensure a means of disconnecting the SPD from the service without de-energizing the panel or the connected loads. The use of direct bus bar connected SPDs is expressly prohibited and will be rejected.
- F. Do not energize service entrance equipment or panelboards until SPDs are properly installed and connected.
- G. Do not perform insulation resistance tests of the distribution wiring equipment with the SPDs installed. Disconnect all SPDs (all Phase, Neutral and Ground connections) before conducting insulation resistance tests, and reconnect immediately after the testing is over.

3.2 FIELD QUALITY CONTROL

- A. Field Service: Electrical Contractor shall inspect, test, and adjust components, assemblies, and equipment installations, including connections to strictly comply with this specification.
 - 1. Verify that electrical wiring installation complies with manufacturer's written installation requirements and NEC requirements
 - 2. After installing SPD devices but before electrical circuitry has been energized, test for compliance with requirements.
 - 3. Complete startup checks according to manufacturer's written instructions, if applicable.

- B. Prepare test and inspection reports as follows:
 - 1. The SPD installation shall be certified by a licensed electrician that the installation is in accordance with the manufacturer's recommendations, NEC requirements and the requirements of the specification above. Any deficiencies noted shall be corrected by the Contractor. Provide written documentation of this inspection as part of the closeout documents/manual.

END OF SECTION 26 43 13

SECTION 23 43 10- DUST COLLECTOR

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Packaged dust collection system.
 - 2. Dust collector ductwork.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include dimensions; operating characteristics; required clearances and access; rated flow capacity, including initial and final pressure drop at rated airflow; efficiency and test method; fire classification; furnished specialties; and accessories for each model indicated.
- B. LEED Submittal:
 - 1. Product Data for Prerequisite EQ 1: Documentation indicating that units comply with ASHRAE 62.1-2004, Section 5 - "Systems and Equipment."
- C. Shop Drawings: For each dust collector. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Show collector assembly, dimensions, materials, and methods of assembly of components.
 - 2. Include setting drawings, templates, and requirements for installing anchor bolts and anchorages.
 - 3. Wiring Diagrams: For power, signal, and control wiring.
- D. Field quality-control reports.
- E. Operation and Maintenance Data: For each dust collector, include in emergency, operation, and maintenance manuals.

1.4 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Firms regularly engaged in manufacture of dust collection units, of types and capacities required, whose products have been in satisfactory use in similar service for not less than five (5) years.
- B. Codes and Standards:
 - 1. Dust collection units shall be listed by UL and have UL label as a unit.
 - 2. Dust collection units shall be designed, manufactured, and tested in accordance with UL requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Handle dust collection units and components carefully to prevent damage. Replace damaged units or components with new.
- B. Store units and components in clean dry place, off the ground and protect from weather, water, and physical damage.
- C. Rig units to comply with manufacturer's rigging and installation instructions for unloading units, and moving them to final location.

1.6 SCHEDULING AND SEQUENCING

- A. Coordinate wall opening locations for mechanical and electrical connections.

1.7 MAINTENANCE

- A. Extra Materials: Furnish to Owner, with receipt, the following spare parts for each dust collection unit:
 - 1. One set of matched fan belts for each belt-driven fan.
 - 2. One set filters for each unit.

PART 2 - PRODUCTS

2.1 DUST COLLECTION UNIT

- A. The dust collector shall be a completely self-contained fabric type unit consisting of a collector housing, fan, motor, filter cartridge and automatic shaker. The unit shall also include a funnel bottom for dust disposal. Overall construction shall be of galvaneal steel for maximum corrosion resistance. The exterior shall be finish coated with a two tone vinyl lacquer. Air inlet shall be right or left and air outlet top front through machine grille openings in the housing steel for maximum safety. Cartridge and fan access shall be through full height doors with quick

- opening, flush latches for speed and security. The unit shall also include 1/4" plate motor mounting brackets assembly with lifting lug openings.
- B. The fan shall be backwardly inclined for non-overloading operation. It shall be constructed of aluminum and shall be direct driven by a 3600 rpm TEFC motor and both fan and motor shall be dynamically balance for smooth vibration free operation. The fan scroll outlet area shall be lined with a strong, smooth fiberglass laminated mat for sound attenuation. This liner shall be designed for operation at velocities up to 5000 fpm and temperatures up to 250°F and shall meet the fire resistance requirements of NFPA 90A and 90B.
- C. The filter cartridge shall consist of individual pockets sewn from one piece of 8.2 ounce cotton sateen fabric, designed to deliver in excess of 99% efficiency by weight on fine industrial dusts. The cartridges shall be available in wide or narrow spacings consisting of 16 or 24 pockets respectively for maximum application flexibility. The filter cartridge shall have rigid corrugated separators to prevent pocket collapse and to channel the cleaned air in a laminar flow profile into the fan inlet cone. Adjacent pockets shall be positioned by steel bars at the top and flat shaker "fingers" at the bottom to prevent mutual blank off and to maintain the dust cake collection area.
- D. The cartridge fabric shall be fitted over a galvanized steel locking frame and all separators securely positioned by a galvanized steel retainer resulting in a tight pocket assembly to minimize pressure drop and maximize dust release. The cartridge assembly shall be locked in place by two lever actuated over-center cam assemblies which force the steel header frame securely against a 3/4" x 1-1/2" neoprene gasket surface.
- E. Shaking action shall be delivered by a horizontal contact system that distributes shaking force throughout the entire surface of each individual filter pocket. Pockets shall be held tightly by a flat shaker "fingers" which impart an acceleration equal to a minimum of seven (7) "G"'s from a motorized eccentric driven shaker assembly. Operation of the automatic shaker shall be controlled by a printed circuit board using complimentary metal oxide, semiconductor (CMOS) technology in a dual timer mode. It shall include a fan delay cycle adjustable from 10 to 20 seconds and an actual shaker cycle adjustable from 6 to 60 seconds. Overall system control shall be designed for initiation by a hand-off auto switch for maximum operator flexibility.
- F. Funnel bottom units shall include a steep 45° funnel terminating in a 12" diameter drum connection device without gates or doors to permit immediate downflow of dislodged dust into the dust disposal container. The unit shall be designed to accommodate a standard 55 gallon drum with a quick opening, positive locking device to prevent air or dust leakage.
- G. Furnish factory mounted and wired control and magnetic starter. Weatherproof motor cover and outlet hood shall be furnished, and all unit controls shall be mounted in weatherproof NEMA enclosures. Furnish unit with local locking type panel with remote start/stop from within shop classroom.
- H. The collector shall be fully assembled and ready for installation and wiring. Protective package shall consist of a complete plastic wrap and wood crating.
- I. Unit shall be furnished with explosion vent consisting of three factory installed rear door panels with Brixon spring latches and guards. Latches shall be factory set and field adjustable.
- J. Furnish silencer weather hood for field installation.

- K. Unit shall be an American Air Filter Model AR Arrestall Self-Contained Dust Collector, Sternvent, Nederman, Inc. or approved equal. See schedule on drawing for size.

2.2 DUST COLLECTION SYSTEM DUCTWORK

- A. Exhaust systems shall be constructed with the materials specified herewith and shall be installed in a permanent and workmanlike manner. Interior of all ducts shall be smooth and free from obstructions with all joints sealed tightly. Exhaust systems shall be constructed of round duct.

- B. Materials:

- 1. Ducts shall be constructed of galvanized steel and be lock seam or spiral wound type.
- 2. The following minimum metal thicknesses must be supplied:

<u>Duct Diameter</u>	<u>Lock Seam</u>	<u>Spiral</u>
To 8"	24 U.S. Stand Gauge Min.	24 U.S. Stand Gauge Min.
Over 8" to 18"	22 U.S. Stand Gauge Min.	24 U. S. Stand Gauge Min.

- 3. Hoods should be a minimum of two gauges heavier than straight sections of connecting branches, free of sharp edges or burrs and reinforced to provide necessary stiffness.
- 4. Longitudinal joints of duct must be lock seam or spiral wound. 8 to 10 foot lengths of round pipe must be used through 12" dia. (over 12", 4' lengths are permitted).
- 5. Girth joints of duct shall be riveted with all inner laps in direction of air flow, with 1" lap minimum. All branch entries must also be in direction of air flow with all tabs on inside of pipe. Entries absolutely must be made on taper when applicable. Refer to design procedure Fig 6-20 of American Conference of Governmental Industrial Hygienists.
- 6. Elbows and angles must be a minimum of two gauges heavier than straight lengths of equal diameter. K & B type prefabricated elbows must be used on all inlet ducting. K & B elbows must have a center line radius of 2-1/2 times pipe diameter whenever possible, but must always be a minimum of 1-1/2 times pipe diameter if space prohibits. Substitute of adjustable elbows will not be permitted except where necessitated by extreme space or mechanical restrictions.
- 7. All branches shall enter main at the large end of transition at an angle not exceeding 45°. Connect branches only to top or sides of main with no two branches entering diametrically opposite.
- 8. Transitions in mains and submains must be tapered; taper to be 5" long minimum for each 1" change in diameter. Large end of taper must have rolled bead for strength.

C. System Details:

1. Flexible piping may be used to each drop to isolate the machine vibration from the system. It must be a noncollapsible type no longer than necessary, with a maximum length not to exceed 3'-0". Flexible ducts shall comply with requirements of BOCA Section M-311.7, shall have a flame spread rating of 25 or less and shall be so labeled.
2. Support ducts sufficiently to place no load on connecting equipment and to carry weight of system if half filled with material. Maximum supporting interval 10', 1/2" or 3/4" minimum EMT with flattened ends used for suspension with 1" minimum wide x 1/8" minimum thick 2024 aluminum bus bar bands performed to proper diameter. 5/16" minimum bolts must be used throughout the system. Alternate suspension will not be permitted. Where connection to blocks is necessary, 1" wide x 1/8" minimum thick bus bar must be used with a minimum of four (4) nylon anchors on each band fastened 1" minimum deep. Substitute connection methods may not be used.
3. Provide adequate clearance between ceiling, wall or floors for installation and maintenance.
4. All branches to have a blast gates to adjust the flow as required. All gates must be K & B type cast aluminum. Sheet metal or substitute gates will not be permitted.
5. Where drops run to the floor, each pipe must be attached with 1/8" minimum thick flange rings anchored with at least three (3) bolts 1" minimum length. All drops connections must have a rolled bead for strength and appearance. Each pipe must be closed off and sealed directly after last entry.
6. Minimum transport velocities must be maintained in the ducts to prevent settling. Linear velocities must conform to table 4-2 entitled Range of Design Velocities as taken from the American Conference of Governmental Industrial Hygienists Ventilation Specifications.
7. All minimum C.F.M. requirements must be supplied at each branch (as per the American Conference of Governmental Industrial Hygienists Ventilation Specifications).
8. Connections to shop equipment shall conform to outlets provided by shop equipment manufacturer, or else to detail of the American Conference of Governmental Industrial Hygienists.
9. Floor sweeps shall be in accordance with and as detailed in the American Conference of Governmental Industrial Hygienists Ventilation Specifications.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions under which dust collection system is to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Installer.

3.2 INSTALLATION

- A. General: Install dust collection units in accordance with manufacturer's installation instructions. Install units plumb and level, firmly anchored in locations indicated, and maintain manufacturer's recommended clearances.
- B. Electrical Connections: Refer to Division 23 Sections for final connections to equipment and installation of loose shipped electrical components.
- C. Unit manufacturer and BCMS Contractor shall coordinate and interface all operating and safety controls for proper system operation.

3.3 DEMONSTRATION

- A. Startup Services: Provide the services of a factory-authorized service representative to startup dust collection unit, in accordance with manufacturer's written startup instructions. Test controls and demonstrate compliance with requirements. Replace damaged or malfunctioning controls and equipment.
- B. Operating and Maintenance Training:
 - 1. Provide services of manufacturer's service representative to instruct Owner's personnel in operation and maintenance of dust collection unit. Training shall include startup and shutdown, servicing and preventative maintenance schedule and procedures, and troubleshooting procedures plus procedures for obtaining repair parts and technical assistance. Review operating and maintenance data contained in the Operating and Maintenance Manuals specified in Division One.
 - 2. Schedule training with Owner, provide at least 7-day prior notice to the Architect/Engineer.

END OF SECTION 23 43 10

SECTION 23 09 93 – SEQUENCE OF OPERATIONS FOR HVAC CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes control sequences for HVAC systems, subsystems, and equipment.
- B. Related Sections include the following:
 - 1. Division 23 Section “Instrumentation and Control for HVAC” for control equipment and devices and for submittal requirements.

1.3 DEFINITIONS

- A. The following definitions are used throughout the section:
 - 1. ATC – Automatic Temperature Control
 - 2. LAN – Local Area Network
 - 3. FMS – Facility Management System
 - 4. DDC – Direct Digital Control
 - 5. BMS – Building Management System

1.4 DESCRIPTION OF WORK

- A. Furnish and install a complete Control System consisting of a Building Automation System and an Automatic Temperature Control System. The system shall be complete in all respects including labor, materials, equipment, and services necessary, and shall be installed by personnel regularly employed by the system manufacturers.
- B. The System specified herein shall be an extension of the Existing Phillipsburg Board of Education (BOE) district wide Honeywell Comfort Point Open Manager (CPOM). The specified system shall be fully interoperable with and seamlessly integrate to the existing Phillipsburg BOE district wide Honeywell Comfort Point Open Manager. Expansion of existing Comfort Point Open Manager shall include, but not be limited to, an increase to the existing points license, ability to fully program and reprogram all new Direct Digital Controllers (DDCs) being installed, and creation of graphics to match existing site standards.
- C. All automation and control components shall be integrated into a distributed network system communicating over a nonproprietary network. This system shall consist of field Stand-alone Direct Digital Controllers (DDC), Smart Local DDC’s and PC-based operator workstations. The ATC System shall support the Internet Protocol (IP) implementation of BAC NET defined in Annex J of the ASHRAE standard.

1.5 SCOPE

A. Extent:

1. The Contractor shall furnish all equipment, materials, labor, supervision and services necessary for or incidental to the installation of a complete and operating electronic system of temperature controls for heating, ventilating and air conditioning to include fully integrated Access Control, Security Management, and Building Exterior Lighting. The Access Control System software and the Energy Management System software must be an integral part of one another. Systems that are interfaced (i.e., ODBC drivers, etc.) are unacceptable. The Facility Management System shall include all workstation software and hardware, Process Control Units (PCU), Terminal Controllers (TC), Local Area Networks (LAN), sensors, control devices, actuators, installation and calibration, supervision, adjustments and fine tuning necessary for a complete and fully operational system. Provide a complete system comprising but not limited to:
 - a. System software
 - b. Energy Management with integrated Access Control
 - c. Sensors and actuators
 - d. Readers
 - e. Monitors
 - f. Controllers
 - g. Printers
 - h. Interconnecting wiring to the required termination points
 - i. Testing and commissioning
 - j. Maintenance during Warranty period
 - k. Workstation and associated equipment, as required
 - l. Standalone Web Server
2. The Facility Management system shall have the following capacities:
 - a. Total number of Hosts: 1 Host
 - b. Total number of optional Hosts / Workstations: 62
 - c. Total number of optional Backup Workstations: 8
 - d. Support for up to 811,000 readers using either magnetic-strip, Wiegand, infrared bar code, proximity technologies or touch memory technologies
 - e. Support for up to 6,120,000 unique ID records
 - f. Support alarm monitoring of up to 1,622,016 supervised digital input points
 - g. Support for 1,622,016 output control points
 - h. Support for 65535 on-line transaction history records with ability to archive history limited only to hard disk space.
 - i. Support for up to 1100 system passwords
 - j. Support for Ethernet LAN: TP (10 Base-T) Twisted pair, AUI Thicknet, BNC (10 Base-2-default) Thinnet, and TCP/IP
 - k. Standalone Web Server
3. The following functional capabilities are considered essential for the Facility Management System described in this specification:
 - a. Integrated Energy Management and Control

- b. Alarm Assessment (Instructions)
- c. Database Reports
- d. If/Then/and/or/not functions
- e. Time Scheduled Events
- f. Calculations
- g. Windows Based, Mouse oriented operations
- h. Dial-up Alarm processing from remote locations
- i. Dial-up processing of Access Control for remote locations
- j. Video Badging and Interface
- k. Web Server Access

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Qualified Bidders:

- 1. Honeywell Corporate –Branch Office
 - a. Contact: Matthew Grande
973-455-2073 (w)
862-579-5054 (c)
973-741-2512
Matthew.Grande@Honeywell.com

- B. As per letter dated August 13th 2012, from the New Jersey Schools Development Authority, the preservation and compatibility of the District Wide system standardization allows Honeywell Corporate to be included as a proprietary item.

2.2 RELATED SECTIONS

- A. Refer to Division 23 Section 230900 “Instrumentation and Control for HVAC” for control equipment and devices.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine areas and conditions under which the control systems are to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Installer.

3.2 INSTALLATION OF CONTROL SYSTEMS

- A. General: Install systems and materials in accordance with manufacturer's instructions and roughing in drawings, and details in drawings. Install electrical components and use electrical products complying with requirements of applicable Division 26 sections of these specifications. Mount controllers at convenient locations and heights.

- B. Control Wiring: The term "control wiring" is defined to include providing of wire, conduit, and miscellaneous materials as required for mounting and connecting electric control devices.
- C. Wiring System: Install complete control wiring system for electric control systems as indicated and in accordance with ANSI/EIA/TIA Standards 568 and 569. Conceal wiring, except in mechanical rooms and areas where other conduit and piping are exposed. Provide multi-conductor instrument harness (bundle) in place of single conductors where a number of conductors can be run along common path. Fasten flexible conductors bridging cabinets and doors, neatly along hinge side, and protect against abrasion. Tie and support conductors neatly. All wiring and cable shall be rated for plenum use. All wiring to follow the lines of the building and to be supported/tied down every 10 feet. All wiring in mechanical rooms to be EM or BX. Allow one foot of wire alone prior to sensor to eliminate vibration.
- D. Numbercode or Colorcode conductors, excluding those used for local individual room controls for future identification and servicing of control system.
- E. Reset Limit Controls: Install manual reset limit controls to be independent of power controllers; automatic duct heater resets may, at Contractor's option, be installed in interlock circuit of power controllers.
- F. Unit Mounted Equipment and Data Gathering Panels: Where control devices are required to be unit mounted, ship electric relays, electric switches, valves, dampers, and damper motors to unit manufacturer for mounting and wiring at factory.

3.3 ELECTRICAL WIRING AND CONNECTIONS

- A. Install raceways, boxes, and cabinets according to Division 26.
- B. Install building wire and cable according to Division 26.
- C. Install signal and communication cable according to the latest applicable Electronics Industries Association and Telecommunications Industry Association standards.
 - 1. Conceal cable, except in mechanical rooms and areas where other conduit and piping are exposed.
 - 2. Install exposed cable in raceway.
 - 3. Install concealed cable in raceway.
 - 4. Bundle and harness multi-conductor instrument cable in place of single cables where a number of cables follow a common path.
 - 5. Fasten flexible conductors, bridging cabinets and doors, neatly along hinge side; protect against abrasion. Tie and support conductors neatly.
 - 6. Number-code or color-code conductors, except local individual room controls, for future identification and servicing of control system.
 - 7. ATC contractor is responsible for any and all data (fiber) cable runs and terminations between ATC system panels and District LAN fiber patch panels.

- D. Connect electrical components to wiring systems and to ground as indicated and instructed by manufacturer. Tighten connectors and terminals, including screws and bolts, according to equipment manufacturer's published torque-tightening values for equipment connectors. Where manufacturer's torquing requirements are not indicated, tighten connectors and terminals according to tightening requirements specified in UL 486A.
- E. Connect manual reset limit controls independent of manual control switch positions. Automatic duct heater resets may be connected in interlock circuit of power controllers.
- F. Connect HAND-OFF-AUTO selector switches to override automatic interlock controls when switch is in HAND position.

3.4 COMMISSIONING

- A. Manufacturer's Field Services: Provide the services of a factory-authorized service representative to start control systems.
- B. Test and adjust controls and safeties.
- C. Replace damaged or malfunctioning controls and equipment.
- D. Start, test, and adjust control systems.
- E. Demonstrate compliance with requirements.
- F. Adjust, calibrate, and fine tune circuits and equipment to achieve sequence of operation specified.

3.5 START-UP, ADJUSTING AND CLEANING

- A. Startup, test, and adjust electric control systems in presence of manufacturer's authorized representative. Demonstrate compliance with requirements. Replace damaged or malfunctioning controls and equipment.
- B. Cleaning: Clean factory finished surfaces. Repair any marred or scratched surfaces with manufacturer's touchup paint.
- C. Final Adjustment: After completion of installation, adjust thermostats, control valves, motors and similar equipment provided as work of this section.
 - 1. Final adjustment shall be performed by specially trained personnel in direct employ of manufacturer of primary temperature control system.

3.6 TRAINING/DEMONSTRATION

- A. Manufacturer's Field Services: Provide the services of a factory-authorized service representative to demonstrate and train Owner's maintenance personnel as specified below.
 - 1. Train Owner's maintenance personnel on procedures and schedules related to startup and shutdown, troubleshooting, servicing, and preventive maintenance.

2. Schedule training with Owner with at least 7 days' notice.
3. Provide additional operator training on data display, alarm and status descriptors, requesting data, execution of commands, and request of logs. Include a forty (40) hours' dedicated instructor time on-site.

3.7 WARRANTY

- A. Contractor shall include a total service and preventative maintenance contract for the first year of warranty. Preventative maintenance shall include:
 1. Lubrication of all dampers.
 2. Stroking of all valves and damper motors to assure operation and tight shut off.
 3. Calibration of all RTDs.
 4. Upgrading of software.
 5. Cleaning of components at host computer.
- B. Contractor shall respond to all product/software problems, as reported by the owner, within four (4) hours.
- C. Contractor shall submit the cost of extending the contract to the second year.

3.8 OPERATOR'S WORK STATION AND SYSTEM ACCESS

- A. The operator's workstation shall be located where shown on the drawings. Access shall be through the District's Ethernet.
- B. Provide an additional Lap Top PC with all software for on-site and off-site access. the Lap Top PC shall have the capability to access the system through:
 1. Direct RS232 connection into one of the controllers.
 2. Via the Web Server using an Internet Browser.
 3. Through the District's Ethernet.
 4. Dial up through phone line via a modem.
- C. Provide a standalone Web Server to access system via the Internet. Access shall be through the District's Ethernet via an Internet Browser.

3.9 LOCAL OVERRIDE PANEL

- A. A control panel located in the main mechanical room shall provide occupied or unoccupied override control. For each zone listed below, provide a manual override hand-off-auto switch on the panel face. A message shall be sent to the FMS whenever one of the switches has changed state. The override shall have software definable time limits.

1. Zone:
 - a. "A" Section - Classrooms - First, Second and Third Floors
 - b. "B" Section – Classrooms – First, Second and Third Floors
 - c. Locker and Treatment
 - d. Shops and Agricultural
 - e. Auditorium
 - f. Main Gymnasium
 - g. Auxiliary Gymnasium
 - h. Media Area
 - i. Vocal and Instrument
 - j. Cafe/Dining
 - k. Weight Room
 - l. Administration Wing
- B. Whenever any zone is indexed to occupied cycle, the unit or units shall run continuously and shall be controlled as specified hereinafter. When indexed to the unoccupied cycle, the room sensors shall be reset to night temperature and shall cycle their respective units to maintain the setback or setup setpoints. In addition, whenever a classroom zone is indexed to occupied cycle, the toilet exhaust fans shall operate. The toilet exhaust fans shall be off during unoccupied cycle.
- C. When any zone is indexed to the unoccupied (night) heating cycle, all rooftop air conditioning units within the zone shall stop, all thermostats shall be indexed to their night setting and shall control their respective units to cycle the unit to maintain a reduced space temperature. When any zone is indexed to the unoccupied (night) cooling cycle, all rooftop air conditioning units within the zone shall stop. During the unoccupied cycle, all associated exhaust fans shall be stopped and all associated outdoor and relief dampers shall be closed. When indexed to the occupied cycle, the units shall run continuously and shall be controlled as specified hereinafter. The automatic occupied - unoccupied signals shall incorporate an adaptive optimum start algorithm that shall utilize both the zone temperature and the outside air temperature to start the mechanical equipment so as to reach occupied temperature targets just in time for occupancy.
- D. For all air conditioning units, provide the necessary devices required to keep the outside air dampers closed during the warm-up cycle prior to occupancy as determined by the optimum start algorithm.
- E. Pressure differential switches at all rooftop unit filters shall indicate a dirty filter alarm at the FMS computer whenever their setting is exceeded.

3.10 ROOFTOP VARIABLE AIR VOLUME UNIT SYSTEM CONTROL

Plan Number	Area Served
RTU-101	First Floor Classrooms (Section A)
RTU-102	First Floor Classrooms (Section B)
RTU-103	Administration
RTU-203	Guidance
RTU-204	Cafeteria

Plan Number	Area Served
RTU-205	Music
RTU-211	SBYS
RTU-212	Second Floor Classrooms – “Clean” (Section A)
RTU-213	Second Floor Classrooms – “Clean” (Section B)
RTU-301	Third Floor Classrooms (Section A)
RTU-302	Third Floor Classrooms (Section B)
RTU-303	TV Studio
RTU-304	Large Lecture Rooms

- A. Provide Direct Digital Controllers, sensors and any relays or control equipment to accomplish the sequence described below.
1. Coordinate the mounting and wiring of the DDC controls with the unit manufacturer. Refer to Section 237413 “Packaged, Outdoor Central Station Air Handling Units” specifications for additional information.
- B. During the occupied warm-up heating cycle of control as determined by the DDC System Controller, the unit supply and return air fans shall run continuously, the DX cooling shall be off, the unit OA-EA dampers shall be closed, the unit RA damper shall be open, the unit heating coil valve shall be open, and the local exhaust fans shall be off.
- C. As the space temperature rises to the heating occupied set point and the warm up cycle is completed, the unit OA-EA dampers shall open to admit minimum OA for ventilation and the local EF(s) shall start and run continuously.
- D. A mixed air temperature sensor shall modulate the OA-RA-EA dampers to maintain a constant air temperature to the unit heating coil.
- E. A duct discharge air temperature air sensor shall modulate the unit heating coil to maintain the discharge air temperature to the VAV boxes.
- F. Static air pressure sensors, located 2/3 the way downstream of the supply fan, shall modulate the supply fan and return fan variable frequency drives to maintain the system pressure.
- G. During the heating unoccupied cycle of control, the unit supply and return air fans shall be off, the local EF(s) shall be off, the unit OA-EA dampers shall be closed, the unit RA damper shall be open, the unit heating coil valve shall be 50 % open, and the VAV induction air boxes shall be open.
- H. As the space temperature drops to the unoccupied heating set point, the unit supply and return air fan shall be cycled to maintain a lower unoccupied heating set point temperature. Whenever the supply fan is energized, the unit heating coil valve shall be 100% open.
- I. During the occupied cool-down cooling cycle of control, as determined by the DDC System Controller, the unit supply and return air fans should be on, the local EF(s) shall be off, the unit OA-EA dampers shall be closed, the unit RA damper shall be open, the unit heating coil valve shall be closed, the DX coil shall be energized and the VAV induction air boxes shall be open.

- J. As the space temperatures drop to the occupied cooling set point, the cool down cycle is completed. The unit OA-EA dampers shall open to their minimum position to admit OA for ventilation, unless the outdoor air enthalpy (or total heat content) is less than the return air enthalpy, and the local EF(s) shall run continuously.
- K. During the unoccupied cooling cycle of control, the supply fan, return fan and local EF(s) shall be off, the unit OA-EA dampers shall be closed, the unit RA damper shall be open and the DX cooling shall be de-energized.
- L. Air flow stations shall be furnished and installed in the unit OA intake for each system. The flow stations shall insure a constant minimum OA CFM regardless of the CFM being delivered by the VAV supply and return relief fan.
- M. A carbon dioxide system shall monitor, control and document the ventilation rates. A tracer gas method shall indirectly measure the outdoor airflow. The flow is calculated by sampling a tracer gas, (carbon dioxide), which is present in the supply, return and outdoor air. This calculation is done continuously. The flow measurements shall be unaffected by outdoor winds, duct configuration, changes in supply airflow or wear and tear in the dampers. To meet the ventilation requirements, the DDC system shall provide closed loop control of the mixing box dampers. The DDC system shall provide proof that ventilation rates are being met by collecting and storing OA flow data and carbon dioxide levels at the PC workstation.
- N. A return air humidity sensor shall activate the unit DX cooling and hot gas reheat coil for dehumidification whenever the setpoint is exceeded and the space sensor cooling setpoint is satisfied.
- O. RTU-204 serving the Café, Dinning, and Kitchen shall operate to interface with the exhaust hood and make-up air equipment for air balancing. Provide a space differential pressure sensor in the Café/dinning areas. During occupied low occupancy periods with all Kitchen exhaust and make-up air units off, RTU-204 shall provide a minimum 50% supply air flow (adjustable). The return air fan shall modulate to maintain an equal pressure relationship in the Café/Dining area. During occupied high occupancy periods with all Kitchen exhaust and make-up air units off, RTU-204 VFD shall control the supply air fan speed in response to the duct mounted static pressure sensor. The return air fan shall modulate to maintain an equal pressure relationship in the Café/Dining area. Whenever the Kitchen Hood exhaust is operational RTU-204 shall run in the high occupancy mode. The return air fan shall modulate to maintain an equal pressure relationship in the Café/Dining area.

ROOFTOP VARIABLE AIR VOLUME UNIT SYSTEM						
POINT DESCRIPTION	OUTPUTS		INPUTS		INTERNAL	GRAPHIC
	DIGITAL	ANALOG	DIGITAL	ANALOG	SOFTWARE	
SUPPLY FAN	X					X
RETURN FAN	X					X
SUPPLY FAN STATUS			X			X
RETURN FAN STATUS			X			X
SUPPLY FAN VFD		X				X
RETURN FAN VFD		X				X
DX COOLING (ALL STAGES)	X					X
OUTDOOR DAMPER		X				X
EXHAUST DAMPER		X				X
RETURN DAMPER		X				X
HEAT VALVE		X				X
MIXED AIR TEMP				X		X
DISCHARGE AIR TEMP				X		X
SUPPLY DUCT STATIC				X		X
OA FLOW CFM				X		X
FREEZE STATUS			X			X
SMOKE STATUS			X			X
SMOKE RESET	X					X
FILTER STATUS			X			X
LOCAL EX-FANS	X					X
WARM UP SET POINT					X	X
COOL DOWN SET POINT					X	X
WARM UP MODE					X	X
COOL DOWN MODE					X	X
DISCHARGE SET POINT					X	X
VAV TEMP LOW					X	X
VAV TEMP AVG					X	X
VAV TEMP HIGH					X	X
MIXED AIR SET POINT					X	X
SUPPLY CARBON DIOXIDE				X		X
RETURN CARBON DIOXIDE				X		X
OUTSIDE CARBON DIOXIDE				X		X
RETURN AIR HUMIDITY				X		X
HOT GAS ENABLE	X					X
HOT GAS REHEAT CONTROL		X				X
OA HUMIDITY				X		X

3.11 ROOFTOP CONSTANT VOLUME (MULTIPLE OCCUPANCY SCHEDULE) UNIT SYSTEM CONTROL

Plan Number	Area Served
RTU-104	Main Gymnasium
RTU-105	Main Gymnasium
RTU-106	Main Gymnasium
RTU-201	Media Center
RTU-207	Auditorium
RTU-209	Auxiliary Gymnasium

- A. Provide Direct Digital Controllers, sensors and any relays or control equipment to accomplish the sequence described below.
1. Coordinate the factory mounting and wiring of the DDC controls with the unit manufacturer. Refer to Section 237413 “Packaged, Outdoor Central Station Air Handling Units” specifications for additional information.
- B. Each unit shall be provided with two (2) occupied schedules. High occupancy and normal occupancy. For example, RTU-104, 105 and 106 serving the Gymnasium, might be operated in the normal occupancy mode during the regular school day, and switched to high occupancy when an event takes place with spectators in the Gymnasium
1. During high occupancy mode, the supply fan and return fan shall be energized and the fans shall deliver 100% of the rated CFM. The outside air minimum position shall be set to provide the scheduled percentage of outside air.
 2. During normal occupancy mode, the supply fan and return fan shall be energized and the fans shall deliver 50% of the rated CFM. The outside air minimum position shall be set to provide the scheduled percentage of outside air based upon 50% of the rate CFM.
 3. The above settings are initial settings and the supply air fan and return fan VFD’s shall be re-settable from the BMS computer.
- C. During the occupied warm-up heating cycle of control as determined by the DDC System Controller, the unit supply fan and return fan shall run continuously, local EF(s) shall be off, the unit OA-EA dampers shall be closed, the DX cooling shall be off and the unit heating coil valve shall be open to the coil.
- D. As the space temperature rises to the occupied heating set point and the warm up cycle is completed, the unit OA-EA dampers shall open to their minimum position to admit OA for ventilation; local EF(s) shall start and run continuously.
- E. A mixed air temperature sensor shall modulate the unit OA-RA-EA dampers to maintain a constant mix air temperature to the unit heating coil.
- F. A space temperature sensor shall, through a supply discharge air low limit sensor, modulate the unit heating coil to maintain the occupied heating set point temperature.

- G. During the unoccupied heating cycle of control, the unit supply fan, return fan and local EF(s) shall be off, the unit OA-EA dampers shall be closed and the heating coil valve shall be 50% open to the coil.
- H. As the space temperature drops to the unoccupied heating set point, the unit supply fan shall be cycled to maintain a lower unoccupied heating set point. Whenever the supply fan is energized, the unit heating coil valve shall be 100% open.
- I. During the occupied cooling cool-down cycle of control, the unit supply and return fans shall run continuously, the local EF(s) shall be off, the heating coil valve shall be closed, the unit OA-EA dampers shall be closed and the DX cooling shall be energized.
- J. As the space temperature drops to the occupied cooling set point, the cool down cycle is completed. The unit OA-EA dampers shall open to admit minimum OA for ventilation unless the outdoor air enthalpy (or total heat content) is less than the return air enthalpy, and the local EF(s) shall start and run continuously.
- K. A space temperature sensor shall energize and de-energize the DX cooling stages to maintain the occupied cooling set point temperature.
- L. During the unoccupied cooling cycle of control, the unit supply and return fans, and local EF(s) shall be off, the unit OA-EA dampers shall be closed and the DX cooling shall be off.
- M. Air flow stations shall be furnished and installed in the unit OA intake for all each system.
- N. A carbon dioxide system shall monitor, control and document the ventilation rates. A tracer gas method shall indirectly measure the outdoor airflow. The flow is calculated by sampling a tracer gas (carbon dioxide), which is present in the supply, return and outdoor air. This calculation is done continuously. The flow measurements shall be unaffected by outdoor winds, duct configuration, changes in supply airflow or wear and tear in the dampers. To meet the ventilation requirements, the DDC system shall provide closed loop control of the mixing box dampers. The DDC system shall provide proof that ventilation rates are being met by collecting and storing OA flow data and carbon dioxide levels at the PC workstation.
- O. A return air humidity sensor shall activate the unit DX cooling and hot gas reheat coil for dehumidification whenever the setpoint is exceeded and the space sensor cooling setpoint is satisfied.

ROOFTOP CONSTANT VOLUME (MULTIPLE OCCUPANCY SCHEDULE)						
POINT DESCRIPTION	OUTPUTS		INPUTS		INTERNAL SOFTWARE	GRAPHIC
	DIGITAL	ANALOG	DIGITAL	ANALOG		
SUPPLY FAN	X					X
EXHAUST FAN	X					X
SUPPLY FAN STATUS			X			X
EXHAUST FAN STATUS			X			X
SUPPLY FAN VFD		X				X
EXHAUST FAN VFD		X				X

ROOFTOP CONSTANT VOLUME (MULTIPLE OCCUPANCY SCHEDULE)						
POINT DESCRIPTION	OUTPUTS		INPUTS		INTERNAL SOFTWARE	GRAPHIC
	DIGITAL	ANALOG	DIGITAL	ANALOG		
DX COOLING (ALL STAGES)	X					X
HOT GAS REHEAT ENABLE	X					X
HOT GAS REHEAT CONTROL		X				X
OUTDOOR DAMPER		X				X
EXHAUST DAMPER		X				X
RETURN DAMPER		X				X
HEAT VALVE		X				X
MIXED AIR TEMP				X		X
DISCHARGE AIR TEMP				X		X
SPACE STATIC				X		X
OA FLOW CFM				X		X
RETURN AIR HUMIDITY				X		X
FREEZE STATUS			X			X
SMOKE STATUS			X			X
SMOKE RESET	X					X
FILTER STATUS			X			X
LOCAL EX-FANS	X					X
WARM UP SET POINT					X	X
COOL DOWN SET POINT					X	X
WARM UP MODE					X	X
COOL DOWN MODE					X	X
DISCHARGE SET POINT					X	X
MIXED AIR SET POINT					X	X
SUPPLY CARBON DIOXIDE				X		X
RETURN CARBON DIOXIDE				X		X
OUTSIDE CARBON DIOXIDE				X		X
OA HUMIDITY				X		X

3.12 HEAT RECOVERY WHEEL UNIT CONTROL SYSTEM

Plan Number	Area Served
HRU-101	Lockers and Treatment
HRU-201	Second Floor Classrooms - Labs (Section A)
HRU-202	Second Floor Classrooms – Labs (Section B)
HRU-204	Shops and Agricultural
HRU-205	Health and Weight Lifting
HRU-205	Nurses Suite
HRU-301	Art and Labs

- A. Provide the DDC controller, sensors, valves and other required control devices to provide the following sequence of control.
 - 1. Coordinate the mounting and wiring of the DDC controls with the unit manufacturer. Refer to Section 237413 "Packaged, Outdoor Central Station Air Handling Units" specifications for additional information.
- B. The unit shall be indexed for occupied/unoccupied mode through its DDC controller.
- C. When the system is in the unoccupied heating mode, the outdoor air and exhaust air damper shall be closed, and the return by-pass damper shall be open, the heat wheel, exhaust fan and supply air fans shall be off. The hot water coil control valve shall be open 50% and the DX cooling shall be inoperative. The unoccupied space sensor shall cycle the supply air fan to maintain a minimum space temperature of 60°F. Whenever the supply fan is energized, the unit heating coil valve shall be 100% open.
- D. In the occupied cycle the supply air fan shall be energized and shall run continuously. The return air sensor shall place the system in the warm-up cycle until the return air temperature rises above 68°F (adjustable). When the system is in the warm-up cycle, the outdoor and exhaust air damper shall remain closed and the return air bypass damper shall remain open. The supply air sensor, through the DDC controller shall proportionately position the hot water coil control valve to maintain a supply air temperature of 100°F. The VAV boxes shall open to the maximum CFM position and their respective room thermostats shall modulate their hot water coil control valves to maintain the desired space occupied temperature. When the return air temperature rises above 68°F (adjustable) the unit shall be placed in the ventilation mode.
- E. When the system is in the ventilation mode, the outdoor air and exhaust air dampers shall open first. When the dampers are fully open; as proven by end switches located on the dampers, the exhaust air fan shall be energized and the return air bypass damper shall close. The supply air sensor located on the leaving air side of the energy wheel shall control the speed of the wheel through its VFD to maintain a supply air temperature of 55°F (adjustable). A low limit sensor, located in the exhaust duct of the energy recovery wheel, shall override the supply air sensor and slow the speed of the heat wheel when the exhaust air temperature falls to 30°F (adjustable). When the outdoor temperature is between 60°F and 80°F (adjustable), the wheel shall remain off. When the outdoor temperature is above 80°F, the wheel shall run at full speed. When the outdoor temperature is below 60°F, the speed of the wheel shall vary to maintain a supply air temp of 55°F.
- F. A low limit discharge sensor, located in the supply air duct of the unit, shall modulate the hot water coil control valve to maintain a minimum supply air temperature of 55°F.
- G. The airflow station shall monitor the amount of outdoor air being supplied to the system. A duct mounted carbon dioxide sensor, located in the common return air ductwork of each system, and the airflow station shall provide readout at the Host Computer and will indicate the amount of outdoor air provided to the system and carbon dioxide concentration in the return air.
- H. A duct mounted static pressure controller, shall be located in the supply air duct work approximately 2/3 distance downstream of the supply air fan. The low pressure tap shall be

open to atmosphere. The static pressure controller shall vary the speed of the supply air fan VFD to maintain a minimum supply air static pressure of 1.5” W.C.

- I. Additional airflow stations in the supply air duct and the exhaust duct shall provide a signal to the exhaust fan VFD, to provide a constant differential between the supply air and exhaust air flow rates.
- J. During the occupied cooling cool-down cycle of the control, the unit supply fan shall run continuously, the exhaust fan shall be off, the local EF(s) shall be off, the heating coil valve shall be closed, the RA dampers shall be open, the unit OE-EA dampers shall be closed and the DX cooling shall be energized.
- K. As the space temperature drops to the occupied cooling set point, the cool down cycle is completed. The unit OA-EA damper shall open to admit minimum air for ventilation unless the outdoor air enthalpy (or total heat content) is less than the return air enthalpy, and the local EF(s) shall run.
- L. A unit discharge temperature sensor shall energize and de-energize the DX cooling stages to maintain constant discharge temperature.
- M. During the unoccupied cooling cycle of control, the unit supply fan, exhaust fan and local EF(s) shall be off, the RA dampers shall be open, the unit OA-EA dampers shall be closed and the DX cooling shall be off.
- N. For units HRU-204 and HRU-301 serving the Wood Shop, Energy Transportation Lab, Agricultural Lab and Art areas, provide a space static pressure sensor to maintain equal pressures when auxiliary (dust collector, spray booth, etc.) exhaust fan is in operation.
- O. A return air humidity sensor shall activate the unit DX cooling and hot gas reheat coil for dehumidification whenever the setpoint is exceeded and the space sensor cooling setpoint is satisfied.

HEAT RECOVERY WHEEL UNIT SYSTEM						
POINT DESCRIPTION	OUTPUTS		INPUTS		INTERNAL SOFTWARE	GRAPHIC
	DIGITAL	ANALOG	DIGITAL	ANALOG		
SUPPLY FAN	X					X
EXHAUST FAN	X					X
SUPPLY FAN STATUS			X			X
EXHAUST FAN STATUS			X			X
SUPPLY FAN VFD		X				X
EXHAUST FAN VFD		X				X
DX COOLING (ALL STAGES)	X					X
HEAT WHEEL	X					X
HEAT WHEEL VFD		X				X
OUTDOOR DAMPER		X				X
OUTDOOR DAMPER END SWITCH			X			X
EXHAUST DAMPER		X				X

HEAT RECOVERY WHEEL UNIT SYSTEM						
POINT DESCRIPTION	OUTPUTS		INPUTS		INTERNAL SOFTWARE	GRAPHIC
	DIGITAL	ANALOG	DIGITAL	ANALOG		
EXHAUST DAMPER END SWITCH			X			X
RETURN BY-PASS DAMPER		X				X
HEAT VALVE		X				X
EXHAUST AIR TEMP				X		X
DISCHARGE AIR TEMP				X		X
RETURN AIR TEMP				X		X
SUPPLY DUCT STATIC				X		X
OUTSIDE AIR FLOW CFM				X		X
SUPPLY AIR FLOW CFM				X		X
EXHAUST AIR FLOW CFM				X		X
FREEZE STATS			X			X
SMOKE STATUS			X			X
SMOKE RESET	X					X
FILTER STATUS			X			X
LOCAL EX-FANS	X					X
WARM UP SETPOINT					X	X
COOL DOWN SETPOINT					X	X
WARM UP MODE					X	X
COOL DOWN MODE					X	X
DISCHARGE SETPOINT					X	X
VAV TEMP LOW					X	X
VAV TEMP AVG					X	X
VAV TEMP HIGH					X	X
RETURN CARBON DIOXIDE				X		X
RETURN AIR HUMIDITY				X		X
OA HUMIDITY				X		X

3.13 MAKE-UP AIR UNIT CONTROL - KITCHEN (MUA-1 AND MUA-2)

- A. Provide Direct Digital Controllers for enable, disable, status and alarms and any relays or control equipment to accomplish the sequence described below.
 - 1. Coordinate the factory mounting and wiring of the DDC controls with the unit manufacturer. Refer to Section 237433 “Dedicated Outdoor Air Units” for additional information.
- B. The kitchen hood exhaust fan shall be furnished with a “hand-off-automatic” motor controller. Whenever the switch is in the hand position, or when the fan is energized by the heat sensors located in the hood or when the gas solenoid valve opens, the associated make-up air unit supply fan shall be started and run continuously until the switch is placed in the “off” position or the heat sensors de-energize the fan based upon heat sensor temperature setpoints or gas solenoid valve is closed.

- C. A supply air discharge temperature sensor shall modulate the gas furnace valve to maintain the supply temperature during the heating cycle of control. The DX cooling shall be de-energized during the heating cycle of control.
- D. During the cooling cycle of control, the discharge temperature sensor shall energize and de-energize the DX cooling to maintain the supply air cooling set point temperature. During the cooling cycle of control the gas furnace shall be off.
- E. When the hood EF is manually or automatically turned off, the associated MUA supply fan shall stop, the unit OA damper shall be closed, the DX cooling shall be off and the gas furnace shall be off.
- F. Whenever the Kitchen hood ansul system is released, the associated MUA unit shall shut down.

KITCHEN MAKE-UP AIR UNIT SYSTEM						
POINT DESCRIPTION	OUTPUTS		INPUTS		INTERNAL SOFTWARE	GRAPHIC
	DIGITAL	ANALOG	DIGITAL	ANALOG		
ENABLE / DISABLE	X					X
SUPPLY FAN STATUS			X			X
KITCHEN EX-FAN STATUS			X			X
DISCHARGE AIR TEMP				X		X
GENERAL ALARM			X			X
FILTER STATUS			X			X
HEAT STATUS			X			X
COOL STATUS			X			X

3.14 ROOFTOP UNIT AND HEAT RECOVERY UNIT CONTROL SAFETIES

- A. Remote reset freeze stats and duct smoke detectors shall stop the unit supply fan, return fan and local EF(s), open the heating coil valve, and close the unit OA-EA dampers should their set points be exceeded. An alarm shall sound at the PC workstation. Units shall be able to reset through the BAS once the alarm condition is cleared.

3.15 SCIENCE ROOM(S) FUME HOOD CONTROL

- A. A switch located on the hood shall manually start and stop the fume hood exhaust fan. Whenever the fume hood fan is energized, the VAV terminal serving that room shall deliver 100% primary air. The quantity of operable hoods shall be monitored by the FMS and proportionally reduce an equal volume of exhaust air removed by its' associated heat recovery unit.

3.16 HOT WATER SYSTEM CONTROL

- A. The hot water boiler modules (8) shall be started and stopped by the factory boiler control panel.
- B. The water supply temperature shall be maintained by the OA temperature sensor-HW discharge temperature: The water temperature shall be supplied to the system in an inverse relationship to the OA temperature (master - sub-master control).
 - 1. At 0°F Outdoor Temperature Supply Water = 180°F
 - 2. At 60°F Outdoor Temperature Supply Water = 140°F
- C. The DDC System Controller shall energize the boilers and the lead hot water pump when the outside air temperature drops to 60°F. (adjustable).
- D. Should the lead hot water pump fail to start when commanded, or should it stop after it was running, an alarm shall sound at the PC workstation and the lag (stand-by) pump shall be energized.
- E. Hot water differential pressure sensors shall modulate the pump variable frequency drives to maintain the system pressure. Provide three (3) remote differential pressure sensors within HW piping distribution serving distant Area "A" (Classroom Wing) on First, Second and Third floors.
- F. The DDC System Controller shall rotate the lead boiler, and the lead hot water pump, on a runtime basis.
- G. Provide an interlock between the outside air intake damper and the boiler system so that when any boiler is activated the outside air intake dampers are opened.
- H. Provide a boiler room gas detection system consisting of three (3) carbon monoxide and three (3) methane sensors. The gas detection system shall provide an input into the BMS and generate an alarm at the Host Computer.

HOT WATER SYSTEM						
POINT DESCRIPTION	OUTPUTS		INPUTS		INTERNAL SOFTWARE	GRAPHIC
	DIGITAL	ANALOG	DIGITAL	ANALOG		
ENABLE / DISABLE	X					X
LOOP SUPPLY TEMP				X		X
LOOP RETURN TEMP				X		X
LOOP SUPPLY RESET TEMP		X				X
GENERAL ALARM				X		X
LEAD HOT WATER PUMP	X					X
LEAD HOT WATER PUMP STATUS			X			X
LAG HOT WATER PUMP	X					X
LAG HOT WATER PUMP STATUS			X			X
LAG HOT WATER PUMP VFD		X				X

HOT WATER SYSTEM						
POINT DESCRIPTION	OUTPUTS		INPUTS		INTERNAL	
	DIGITAL	ANALOG	DIGITAL	ANALOG	SOFTWARE	GRAPHIC
LEAD HOT WATER PUMP VFD		X				X
LOOP DIFFERENTIAL PRESSURE 1				X		X
LOOP DIFFERENTIAL PRESSURE 2				X		X
LOOP DIFFERENTIAL PRESSURE 3				X		X
OUTSIDE AIR TEMPRATURE				X		X

3.17 INDUCTION BOX CONTROL

- A. Coordinate the factory mounting and wiring of the DDC controls with the unit manufacturer.
- B. During the heating occupied cycle of control, the space thermostat or the space temperature sensor shall, on a drop in space temperature, modulate the primary dampers to its minimum position, modulate the induction damper open, and modulate the heating coil 2-way valve to maintain the space occupied heating setpoint.
- C. During the heating unoccupied cycle of control, the primary air damper shall be open, the RTU coil valve shall be open to the coil and the induction damper shall be closed. The induction box sensor calling for the most heating shall cycle the RTU supply fan to maintain a lower unoccupied heating set point temperature.
- D. During the cooling occupied cycle of control, the heating coil valves shall be closed and the primary air and induction dampers shall be modulated to maintain the occupied cooling set point temperature.
- E. During the cooling unoccupied cycle of control, the RTU supply fans shall be off.
- F. Where a radiation valve is under the control of the induction box thermostat, the radiation valve shall be fully open before the induction box coil control valve begins to modulate open.

INDUCTION VAV BOX CONTROL						
POINT DESCRIPTION	OUTPUTS		INPUTS		INTERNAL	
	DIGITAL	ANALOG	DIGITAL	ANALOG	SOFTWARE	GRAPHIC
SPACE TEMPERATURE				X		X
SPACE TEMP SETPOINT					X	X
SPACE TEMP ADJUST				X		X
SPACE TEMP OVERRIDE			X			X
CFM SENSOR				X		
PRIMARY DAMPER		X				X

INDUCTION DAMPER		X				X
RE-HEAT VALVE		X				X
HEAT LOAD %					X	X
MIN CFM					X	X
MAX CFM					X	X
DISCH AIR TEMP				X		X
CFM				X		X

3.18 CABINET HEATER AND UNIT HEATER CONTROL

- A. A space thermostat shall, through a strap-on aquastat, cycle the unit fan to maintain 72°F. (adjustable) space temperature. A 2-position valve shall be interlocked with the unit fan (open when fan is in operation, closed when fan is off).

3.19 RADIATION CONTROL (INDEPENDENT CONTROL WHERE SHOWN ON DRAWINGS)

- A. A space low voltage sensor shall modulate the radiation control valve 0-10V, to maintain its heating set point temperature (adjustable).

3.20 SELECTED RADIATION CONTROL WITH DDC SYSTEM INTERFACE

- A. The selected VAV induction box control sequence shall modulate the radiation control valve in sequence with the heating cycle with the radiation control valve fully open before the VAV coil control valve begins to open.

3.21 GREENHOUSE CONTROL

- A. The Greenhouse will be furnished with self-contained environmental controls and equipment by the Greenhouse manufacturer.
- B. The Greenhouse environmental controller will provide (TBD) contact closures for alarm monitoring by the FMS.
- C. The building HVAC system will provide fixed outdoor air ventilation and exhaust during the occupied building hours only. The Greenhouse temperature control thermostat shall control the induction VAV terminal coil valve and induction damper shall be closed and the box shall function as a constant volume terminal.

3.22 DUCTLESS AC UNIT CONTROL (IT ROOMS TYPICAL)

- A. All controls shall be furnished by the unit manufacturer.
- B. A space, low voltage thermostat, wall mounted by the ATC Contractor, shall energize and de-energize the AC unit to maintain the space temperature.

- C. The ATC subcontractor shall install all required low voltage control wiring.
- D. The ATC contractor shall provide a condensate overflow sensor in the condensate pan on each unit. The sensor shall shut off the compressor and signal an alarm to the FMS.
- E. The ATC contractor shall provide a space temperature sensor for each space to monitor the temperature. Generate an alarm at the FMS if a high temperature limit has occurred.

3.23 DE-HUMIDIFICATION CONTROL

- A. A duct humidity sensor, or wall mounted humidity sensor, shall overcall the space thermostat or space sensor, and activate the units hot gas reheat coils whenever mechanical cooling temperatures have been satisfied prior to humidity level set points. Coordinate interface and unit safeties with unit manufacturer.

3.24 FIRE ALARM SYSTEM

- A. The Fire Alarm Contractor shall provide, in the fire alarm panel, a set of dry contacts, which shall signal the network control module that the system is in the alarm mode. When the system is in the alarm mode, all supply fans, exhaust fans and smoke dampers shall be de-energized. The supply fans, smoke dampers, and exhaust fans shall return to the automatic mode when the fire alarm panel is manually reset. Provide indication at the FMS when the fire alarm panel is in alarm.

3.25 VAV BOX AIR BALANCING

- A. The ATC Contractor shall provide the required software programs to the Air Balancer for balancing the VAV boxes. The Air Balancer through his laptop computer shall set the design minimum and maximum airflow for each box. The ATC Contractor shall provide eight (8) hours instruction to the Air Balancer.

3.26 PUMP HOUSE CONTROLS

- A. The ATC contractor shall provide a local Stand Alone DDC panel within the pump house.
- B. A space temperature sensor shall, on a drop in room temperature below the heating set-point, stage the two electric unit heaters (2-stage) on as need to maintain the heating set-point.
- C. Space temperature sensors shall, on a rise in room temperature above the cooling set-point, open the outdoor air intake (OAI) dampers and start the ventilation fan (PEF-1).
- D. Interlock the OAI damper with Engine Driven Fire Pump so that whenever the pump is running the OAI dampers are open.

3.27 TRANSPORTATION LAB EMERGENCY EXHAUST

- A. The ATC Contractor shall furnish a CH₄/CO gas detection system within the transportation lab with three (3) sensing locations as shown on plans.
- B. Whenever the first alarm setpoint is reached, an audible local alarm and signal to the BMS shall be activated.
- C. Whenever the second alarm setpoint is reached, the emergency exhaust fan shall operate until the levels of CH₄/CO are reduced to below the first alarm setpoints.

3.28 VAV SYSTEM AUTOMATIC VENTILATION VOLUME ADJUSTMENT

- A. The automatic temperature control system computer constantly polls each VAV terminal, on each system, and records its damper set point. Whenever a VAV terminal on a system is at its minimum primary air set point (50% of maximum primary air), the computer shall reset the outside air damper, through the air flow measuring station, to the minimum outside air quantity as determined by equation 4-1 in IMC section 403.3.2 "Common Ventilation System".
- B. The FMS shall automatically adjust the rooftop unit outside air damper to allow the appropriate outdoor air quantity to be introduced in accordance with equation 4-1.
- C. The outside air calculation utilizing equation 4-1 shall be repeated at 15 minute (adjustable) intervals during occupied operation.

END OF SECTION 23 09 93

SECTION 23 09 00 – INSTRUMENTATION AND CONTROL FOR HVAC

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 BASIS OF DESIGN

- A. As per letter dated August 13th 2012, from the New Jersey Schools Development Authority, the preservation and compatibility of the District Wide system standardization allows Honeywell Corporate to be included as a proprietary item.

1.3 SUMMARY

- A. This section includes control equipment for HVAC systems and components, including control components for terminal heating and cooling units not supplied with factory-wired controls.
- B. Related Section include the following:
 - 1. Division 23 Section “Meters and Gages for HVAC Piping” for measuring equipment that relates to this Section.
 - 2. Division 23 Section “Sequence of Operations for HVAC Controls” for requirements that relate to this Section.

1.4 DESCRIPTION

- A. Furnish and install a complete Control System consisting of a Building Automation System and an Automatic Temperature Control System. The system shall be complete in all respects including labor, materials, equipment, and services necessary, and shall be installed by personnel regularly employed by the system manufacturers.
- B. The System specified herein shall be an extension of the Existing Phillipsburg Board of Education (BOE) district wide Honeywell Comfort Point Open Manager (CPOM). The specified system shall be fully interoperable with and seamlessly integrate to the existing Phillipsburg BOE district wide Honeywell Comfort Point Open Manager. Expansion of existing Comfort Point Open Manager shall include, but not be limited to, an increase to the existing points license, ability to fully program and reprogram all new Direct Digital Controllers (DDCs) being installed, and creation of graphics to match existing site standards.

- C. All automation and control components shall be integrated into a distributed network system communicating over a nonproprietary network. This system shall consist of field Stand-alone Direct Digital Controllers (DDC), Smart Local DDC's and PC-based operator workstations. The ATC System shall support the Internet Protocol (IP) implementation of BAC NET defined in Annex J of the ASHRAE standard.

1.5 CONTRACTOR QUALIFICATIONS

- A. Qualified Bidders:
 - 1. Honeywell Corporate –Branch Office
 - a. Contact: Matthew Grande

973-455-2073 (w)
862-579-5054 (c)
973-741-2512
Matthew.Grande@Honeywell.com
- B. Acceptable manufacturers shall comply with and satisfy the requirements as enumerated in this Section and Section 23 09 93.
- C. The Contractor shall also be in compliance with the NJSDA mandatory "Project Labor Agreement.
- D. All automatic temperature control wiring; line voltage and low voltage shall be installed by a New Jersey licensed Electrical Contractor.
 - 1. The Contractor shall submit a copy of the electrical permit at the time of submittal of the automatic temperature control equipment.
- E. All microprocessor based digital controllers shall be provided with EEPROM non-volatile memory. Battery backed up memory shall be used only to maintain the time clock function in the controller. Any controller which does not have EEPROM memory shall be provided with a 12 hour UPS power supply for each controller.
- F. All controls must be provided by a direct factory sales office. Factory authorized sales representative, distributors, dealers and wholesalers of control products or third party contractors are not acceptable.
- G. Engineered Drawings: All control drawings shall be generated using Computer Aided Drafting. All project drawings shall be supplied to the owner on a formatted CD-ROM compact disk using the DXF file format upon project completion. Further additions or changes to the Building Management System (BMS) shall be reflected upon the CAD drawings.

1.6 WORK BY OTHERS

A. Sheet Metal Subcontractor:

1. Setting of automatic control dampers, smoke control dampers, and necessary blank off plates.
2. Access doors where and as required.

B. Heating Contractor:

1. Installation of immersion wells and pressure taps.
2. Installation of flow switches.
3. Setting of automatic control valves.
4. Installation of pressure taps and associated shut-off cocks.

C. Electrical Contractor:

1. All power wiring to the magnetic starters and the transformers associated with DDC panels and/or control devices.
2. Furnishing of 120 volt, 1 pole, 20 amp circuit breakers in power panels as required for automatic temperature controls.

D. Third Party Interfaces:

1. Controls Contractor shall integrate real-time data from building systems by other trades and databases originating from other trades as specified and required by the Contract Documents.
2. The Controls Systems shall include necessary hardware, equipment and software to allow data communications between the Controls Systems and building systems supplied by other trades.
3. The other trade contractors supplying other associated systems and equipment will provide their necessary hardware and software at their cost and will cooperate fully with the Controls Contractor in a timely manner and at their cost to ensure complete functional integration.
4. The Controls Contractor shall not be responsible for the execution or the scheduling of the work of other trades or Divisions.

1.7 DRAWINGS AND LAYOUTS

- A. The BMS manufacturer shall submit description of operation and schematic drawings of the System to the Engineer for approval before starting work. At least eight (8) sets of submittals shall be sent through the HVAC contractor. At least four (4) sets of operator and maintenance manuals with "as-built" drawings, parts list, etc., shall be provided at the project completion.

1.8 ELECTRICAL WORK FOR CONTROLS

- A. Complying with the principle of “unit responsibility” all electrical work for automatic controls, except as otherwise specified, or shown on the electrical drawings shall be included in Division 26.
- B. Power wiring (120v) for the ATC System: Control valve, damper actuators, DDC control panels, shall be provided by the Contractor. The electrical contractor, as part of his contract, shall provide 1P-20A circuit breakers in the power and lighting distribution panels. See electrical drawings for panelboard locations.
- C. Electrical work shall, in general, comply with the following:
 - 1. All low voltage wiring in finished rooms shall be concealed. If any wiring must be exposed in rooms it shall be installed in wiremold raceway.
 - 2. Electrical work may include both line voltage and low voltage wiring, as required.
 - 3. Conduit network for power systems may be used for running control high voltage wiring.
 - 4. All electrical work shall comply with the N.E.C. and local electrical codes.
 - 5. All safety devices shall be wired through both hand and auto positions of motor starting device to insure 100% safety shut-off.
 - 6. All magnetic starters furnished by Mechanical Contractor for control transformers, sized to handle the additional VA needed for the controls – pilots, EP valves, etc.
 - 7. The motor starter supplier shall provide auxiliary contacts as required for interlock by BMS Contractor, the supplier shall estimate an allowance of at least one auxiliary contact per starter. All interlock and control wiring shown on the electrical prints or in the electrical specifications is by the electrical subcontractor.
 - 8. Low voltage plenum rated wiring can be run exposed above accessible ceiling. Wiring shall be neatly tied to pipes, EMT, or other devices and not laid on ceiling tile. All control wiring in mechanical spaces shall be installed in EMT.
 - 9. All ATC wiring - line voltage and low voltage shall be installed by a New Jersey licensed Electrical Contractor.

1.9 CONTROL EQUIPMENT AND DEVICES

- A. The control system shall include all necessary and specified control equipment properly installed in accordance with specifications and drawings, and shall include the automatic control of the following.
- B. Control Dampers: Dampers required in the temperature and smoke control functions of the automatic control system shall be factory fabricated and shall be manufactured by the ATC Systems Manufacturer. All dampers shall be sized as shown on drawings or as specified. All

damper frames shall be constructed of 13 gauge galvanized sheet metal or extruded aluminum of 12 gauge thickness, and shall have a flange or duct mounting. The blades shall be parallel or opposed, as required, and suitable for the air velocities to be encountered in the system. Replaceable Butyl rubber seals are to be provided on damper blades and installed along with the top and bottom of the frame. Stainless steel damper blades and seals shall be installed inside the frame sides. Seals and bearings shall be able to withstand temperatures ranging from minus 40 degrees F to plus 200 degrees F. Dampers shall be leak rated for 3 CFM/foot squared at 1" WG and 10 CFM/foot squared at 4" WG or less in full closed position at 4" WG pressure differential across damper.

- C. Damper blades shall not exceed 6" in width. All blades shall not exceed 6" in width. All blades are to be corrugated type construction, fabricated from two sheets of #22 gauge galvanized sheet steel, spot welded together. Blades are to be suitable for high velocity performance. Damper blades shall be a maximum of 48" long. Longer units shall be fabricated in sections. Dampers shall be Ruskin CD-60 or approved equal.
- D. Control Valves: Valves shall be sized by the control manufacturer to produce the required capacity at a pressure loss not exceeding the allowable pressure drop indicated on the drawing. Nominal body rating shall be not less than 125 PSI; however, the valve body and packing selected shall be sized to withstand the system static head plus the maximum pump head and the maximum temperature of the control medium, chilled water, steam, and/or hot water. Two-way modulating valves shall have close-off ratings exceeding the maximum pressure difference, at any load condition, between the outlet and inlet. Each valve shall be equipped with proper packing to assure there will be no leakage at the valve stem.
- E. Operators: All damper or valve operators shall be 0 to 10vdc electric and be provided for each automatic damper or valve and shall be of sufficient capacity to operate the damper or valve under all conditions and to guarantee tight close-off of valves, as specified, against system pressure encountered. Damper operators shall be provided with spring-return for normally closed or normally open position for fail safe operation to account for fire, low temperatures, or power interruption as indicated. Valve operators shall be spring return or DDC failsafe operated to fail to safe position if the associated fan system is off. Damper and valve operators are to be made out of diecast metal; no plastic or sheet metal bodies will be allowed.
- F. Sensors and Controllers:
 - 1. Differential Pressure Switch for water shall have a single-pole, single-throw (SPST) contact, adjustable set point, UL rated 6 amperes at 120 volts, 100 psig design, and shall have automatic reset. Each switch shall be provided with isolation and drain valves.
 - 2. Differential Pressure Switch for air shall have a single-pole, single-throw (SPST) contact, adjustable set point, UL rated 9.8 amperes at 120 volts.
 - 3. Low Limit Thermostats shall be of manual reset type, with set point adjustment. The sensing element shall be 20 foot minimum and shall be installed completely across the coil. When any one-foot of the element senses a temperature as low as the set point, the thermostat contacts shall open. These shall contain double pole switches for simultaneous remote alarms or as desired.

4. Duct Type Temperature Transmitter shall be a general purpose RTD sensing element, moisture resistant transmitter for mounting into a duct. The operating range shall be as indicated with an accuracy of + 1% over the full range. The output shall be compatible with the panel it serves.
5. Duct Averaging Type Temperature Transmitter shall be a general purpose RTD sensing element, moisture resistant transmitter for mounting into a duct. The operating range shall be as indicated with an accuracy of + 1% over the full range. The output shall be compatible with the panel it serves. Transmitter shall be with 17 feet of sensor capillary.
6. Space Temperature Transmitter shall contain an RTD sensing element to monitor room air temperatures in the range of 30 degrees F to 90 degrees F, unless indicated otherwise. The transmitter shall be factory calibrated to an accuracy of + 1%. The assembly shall be installed within a metal ventilated enclosure suitable for wall mounting. The output shall be a compatible with the panel it serves. Transmitter shall be factory calibrated to an accuracy of + 1% over the full range.
7. Pipe Temperature Transmitter shall contain an RTD sensing element to monitor water temperature. The Contractor shall provide brass wells of sufficient size for the pipe to be installed. The output shall be compatible with the panel it serves. Transmitter shall be factory calibrated to an accuracy of + 1% over the full range.
8. Outdoor Air Temperature Transmitter shall contain an RTD sensing element mounting in an enclosure rated for outdoor use. The output shall be compatible with the panel it serves. Transmitter shall be factory calibrated to an accuracy of + 1% over the full range.
9. Humidity Transmitter Duct shall be capable of providing continuous measurement of percent relative humidity with an accuracy of + 4% over the range of 10 to 80% RH. The output shall be proportional VDC over a cable pair.
10. Humidity Transmitter Outside Air shall be capable of providing continuous measurement of percent relative humidity with an accuracy of + 2% over the range 20 to 90% RH. The output shall be a 4 to 20 Ma signal over a shielded cable pair. Transmitter shall have outside weather enclosure.
11. Humidity Transmitter Space shall be capable of providing continuous measurement of percent relative humidity with an accuracy of + 3% over the range of 20 to 60% RH. The output shall be proportional VDC over a cable pair.
12. Pressure Transducer shall be for steam service and have a stainless steel sensor. The device shall output a 4-20 milliamp signal, which is linear in relation to the sensed pressure. Accuracy shall be + .05% of the full scale. Power shall be from the controller and range from 22-26 volts DC. The unit shall have temperature compensation so that thermal effects are no more than + .05% of the full scale from 0-175 DEGF. The unit shall be suitable for the media and pressure measured.
13. Differential Pressure Transducer shall be for air or water service. The device shall output a 4-20 milliamp signal, which is linear in relation to the sensed pressure. Accuracy shall be + .01% of full scale. The power shall be from the controller and shall be in the range of 22-26 volts DC. The unit shall have temperature compensation so that thermal effects

are no more than + .05% of the full scale from 32-100 DEGF. The transducer shall be suitable for the media and pressure measured.

14. Sensor and thermostat guards of the metal locking type shall be provided for all wall space sensors and thermostats located in public areas.

PART 2 - PRODUCTS

2.1 CONTROLS SYSTEM ARCHITECTURE

A. General:

1. The Building Management System (BMS) system shall use a Client-Server architecture based around a modular PC network, utilizing industry standard operating systems, networks and protocols.
2. The system shall allow the distribution of system functions such as monitoring and control and graphical user interface etc. across the network to allow maximum flexibility and performance. The architecture shall include support of various Wide Area Networks using standard hardware and software to link nodes into a single integrated system. The network protocol used shall be industry standard TCP/IP. The system shall also support remote configuration and operation using standard intranet or internet connections.
3. The BMS system shall allow communications with a wide variety of control devices utilizing off the shelf driver packages. It shall support ASHRAE, BACnet Standard 135, Version 2004 or later for open system communications, and shall be BTL tested and listed, or certified to the BACnet , Advanced Operator Workstation Software (B-AWS) profile.
4. Using appropriate hardware, the system shall be Listed by Underwriters Laboratories Inc (ULI) for use in energy management (category PAZX).

- #### **B. Network:** The Server Computer and Operator Workstation hardware shall be capable of interfacing to an IEEE 802.3 Standard Local Area Network (LAN), and also capable to operate using IEEE 802.11 Wireless Local Area Network (WLAN).

C. Hardware:

1. Server Computer:
 - a. The system server computer shall comprise of the following minimum hardware:
 - 1) Intel Core 2 Duo 2.66Ghz, 3MB Cache
 - 2) 4GB of RAM
 - 3) Graphics card capable of 1280x1024 pixel resolution and 65K colors
 - 4) 12 function-key keyboard
 - 5) Mouse pointing device
 - 6) 80 GB Hard disk drive

- 7) DVD ROM drive
- 8) TCP/IP adaptor

2.2 OPERATOR WORKSTATION

- A. In addition to the mobile user interface, a full feature rich Operator Workstation shall be included supporting up to 10 simultaneous Operator Workstation connections using a TCP/IP Local Area Network (LAN). The Network connection must allow a limitless number of casual users access to the 10 connections on a first-come-first-served basis.
- B. The Operator Workstation shall comprise the following minimum hardware:
 1. Intel Core 2 Duo 2.66Ghz
 2. 4GB of RAM
 3. Graphics card capable of 1280x1024 pixel resolution and 65K colors
 4. A 80 GB Hard disk drive
 5. A 12 function-key keyboard
 6. A mouse pointing device
 7. TCP/IP adaptor
- C. Printers shall be available for printing either reports or online alarms. Report printers shall be any Windows compatible printer such as a laser printer.
- D. Communications
 1. The BMS shall provide communications over a variety of physical media topologies as follows:
 - a. Ethernet
 - b. Proprietary Networks
 2. The system shall perform checks on data integrity of all data acquired from the device. If an invalid or time out response is received, the data shall be ignored and the system will record the transaction as an error. Statistics shall be kept and displayed by the system on errors encountered in communication by means of a communications status display. The system shall alarm separate *marginal* and *failure* conditions based on user-defined limits to advise the operator of the device and link that has failed. Communications statistics shall be displayed as standard on the system and shall also be available as part of the reporting system or custom displays.
- E. System Software:
 1. The BMS server shall be based around the Microsoft Windows 7, 32 bit multi-tasking environment. The BMS system shall be a true 32-bit application to take advantage of Microsoft Windows enabling technologies. Any 16-bit system running on the Microsoft platform (such as those originally based on MS-DOS and Microsoft Windows 3.x) shall not be acceptable.

2. Standard services supported by the server computer operating system will include the following:
 - a. Multi-tasking Multi-user support
 - b. Real Time and relational databases to integrate connected systems into unified presentation layer
 - c. BMS Application software
3. Software at the Operator Workstation shall comprise of:
 - a. Windows 7
 - b. BMS Client Application software
 - c. TCP/IP Networking
4. The networking software shall use the industry standard TCP/IP LAN protocol.
5. The server computer or an alternative network connected computer shall be capable of acting as a File Server for graphic displays and reports. All LAN connected Operator Workstations shall be able to view custom displays and photo images from the server computer.
6. All system peripherals shall be capable of being connected to the server computer via the LAN.

2.3 OPERATOR INTERFACES

A. General:

1. The operator interface provided by the system shall allow for efficient communication of operational data and abnormal conditions. It shall provide a consistent framework for viewing of information. Critical areas (such as alarm icons) shall be visible at all times. A predefined area on the screen shall provide operator messaging, and this area shall also be visible at all times. A set of standard displays for configuration, and navigation around the BMS system are to be provided with every system for operator use without manufacturer support required. The BMS shall also have an unlimited number of custom (facility specific) displays available to be created to meet the needs of the specific facility.
2. The operator interface software shall be capable of running in the Windows 7 environment. The operator interface shall be interactive and totally graphics and/or icon based. Graphics shall be capable of supporting at least 65,000 colors at a minimum 1280 x 1024 pixel resolution. The operator interface shall also be compatible with Windows Terminal Services allowing remote PDA devices to be used as mobile operator interfaces using common Remote Desktop Protocol (RDP) applications and tool.
3. The operator interface shall employ standard Windowing conventions so as to reduce required Operator training. In particular, standard tool bar icons and drop-down menus

shall be available on all standard and custom displays to allow easy access to common functions.

4. The operator interface shall also be fully available through the internet via an Internet Explorer browser. From Microsoft's Internet Explorer, an operator with sufficient privileges shall be able to perform all functions for the BMS without needing a further client workstation or tool.
5. The browser interface shall provide login and security authentication. A minimum of 1000 casual users shall be permitted to be defined with access and operational permissions without additional user licensing. Licensing shall be based on the number of simultaneous operator connections on a "First Come First Served" basis. Those users with casual access shall automatically disconnect from the BMS server after an administrator defined and configured idle timeout period.

B. Web Browser Interface Connection:

1. The operator interface shall be flexible in its connection to the BMS server. An Ethernet LAN or Internet connection shall be used between the Server and the Browser based Operator Workstations. The operator interface shall provide standard remote access support using industry standard tools like VNC, RADMIN, and Windows Terminal Services. Where used, these remote connections must use password protected user authentication and encrypted network / internet protocols
2. The operator interface LAN connection shall support a minimum of 10 casual users without additional licensing . Licensing shall be based on the number of simultaneous operator connections on a "First Come First Served" basis. Those users with casual access shall automatically disconnect from the BMS server after an administer defined and configured idle timeout period.

C. Security Levels:

1. The system shall support at least four levels of operator security.

D. Standard System Displays:

1. The following displays shall be included as part of the system:
 - a. Alarm Summary Display
 - b. Event Summary Display
 - c. Point Detail Template Displays (for each point in the database)
 - d. Trend Set Template Displays
 - e. System Status Displays
 - f. Face Plates for all common point types
 - g. Configuration Displays

- E.** The BMS shall come with a standard Trend display with plant history collected for key plant equipment. Beyond these standard Trend displays, the system shall also support operator creation and configuration of up to 500 custom trends for deeper analysis of associated plant equipments. In the case of these custom Trend displays, configuration of these displays shall

only require entry of a point name to completely configure the display. The Alarm Summary, Event Summary, Point Detail, and System Status shall not require any configuration.

- F. Systems where standard graphical displays, showing all parameters for each system Point, do not exist shall not be acceptable.
- G. Creating Custom Displays:
 - 1. Graphic Display Building Editor:
 - a. The BMS shall provide a Graphic Display Building editor for the creation of site specific graphic displays and floor plans. It shall allow one-step online building of display static and dynamic objects. It shall be a WYSIWYG editor (what you see is what you get) allowing the displays drawn using the editor to appear exactly the same when viewed from an Operator Workstation.
 - b. Custom displays shall be created in the HTML (Hypertext Mark-up Language) format. This is essential so that the displays can also be viewed through the normal web browser BMS operator interface. The displays must be saved in the standard HTML format. All graphic elements shall be available as HTML elements. It is not acceptable to have an HTML format which merely links to a proprietary object or bit map of the entire display. It shall be possible to view and edit the resulting HTML file using a text editor. Systems which do not support HTML displays will not be acceptable.
 - c. Static objects created using the Graphic Display Building Editor shall include static text, rectangles, arcs and circles. However, it shall be possible to animate static objects to give the dynamic characteristics of the real-world object the point represents.
 - d. It shall be possible to link dynamic objects to the BMS database. They shall allow information to be displayed from the database or to allow an operator to interact with them in order to make changes in the database and to perform control actions. Dynamic objects shall include dynamic text, push buttons, indicators, charts, check boxes, combo boxes, pop up boxes, ActiveX controls and scroll bars.
 - e. It shall be possible to include static and dynamic display objects on the one display. The editor shall allow display objects to be manipulated by pointing, clicking and dragging. The editor shall allow display objects to be drawn, re-sized, copied, grouped, rotated, aligned and layered over each other. It shall be possible to copy and paste objects within and between displays.
 - 2. Display Scripting:
 - a. It shall be possible to further animate display elements using standard HTML scripts such as JavaScript or VBScript. A script editor supporting one of the standard script languages shall be provided. By using script programs, individual elements on the display may be manipulated. A proprietary scripting language or additional scripting and drawing package shall not be acceptable. It shall be possible to perform a variety of animations, which include but are not limited to:

- 1) Move objects
- 2) Resize objects
- 3) Recolor objects
- 4) Pop up messages and dialog boxes etc.

b. Scripts may be activated on displays using the following events:

- 1) On mouse click
- 2) On mouse enter
- 3) On mouse move
- 4) On page call-up
- 5) On a timer
- 6) On value or state change of a point on the display

H. Web Technology: Displays created in the Graphic Display Building editor shall be usable in a Web Browser such as Microsoft's Internet Explorer without modification. All displays shall be usable in this manner enabling operators to completely operate the system through a web browser via the internet. Displays may also incorporate data from an intranet, the Internet, along with other building data.

2.4 MONITORING AND CONTROL

A. Monitoring: The system shall support acquisition of data using the following techniques:

1. Periodic Scanning
2. Report by Exception
3. Data on demand

B. Where supported by the controlling device, Report by Exception (RBE) protocols shall be used to reduce the scanning load of the system while improving system response. If necessary, periodic scanning may be used in conjunction with RBE to ensure data integrity.

C. Device Control: Control transactions issued by the operator shall be communicated to control devices using a write followed by read to ensure the integrity of the transaction. If the read following the write to the device indicates that the control action has failed, the operator shall be informed by means of a control failure alarm. The priority of the control failure alarm shall be configurable by the user.

2.5 SYSTEM DATABASE

A. The system shall provide a real-time database incorporating data from analog, logical or pulse inputs. The database shall be configurable by the end user without the need for any programming and shall be able to be modified on-line without interrupting operation of the system. In addition to point-based information, the database shall also provide historization capabilities for analog, digital, pulse and event based information. This information shall be

accessible by all facilities of the system such as custom displays, reports, trends, user written applications, etc.

B. Database Structure:

1. The real-time database shall support collection of data and storage using the following structures:
 - a. Status Point Structures
 - b. Analog Point Structures
 - c. Energy and Equipment Meter Point Structures
 - d. Historical Data Structures
2. Each of the Point database structures shall be comprised as a composite point with a number of associated parameters, which may be referenced relative to a single tag name. Specifically, each of these parameters shall be accessible by various sub-systems such as the Operator Interface and Report Generation system in a simple POINT.PARAMETER format without the need to know any internal storage mechanism.
3. The system shall maintain portions of the database requiring frequent high-speed access as memory resident information and other less frequently accessed data as disk resident data. Memory resident data shall be checkpoint to disk every minute to minimize loss of data in the event of loss of power or other system failure.
4. Database backup shall be possible with the system on-line including backup of historical based data. The backup shall be possible via standard Microsoft Windows operating system utilities.
5. Point data shall be stored in a composite point database structure that provides a wide range of configurable information including but not limited to:
 - a. Point name and description
 - b. Multiple locations for data storage and device scanning addresses
 - c. Scan period
 - d. Multiple types and instances of alarms
 - e. Multiple deadband or hysteresis settings (analog points)
 - f. Monitoring and Control access restriction information
 - g. Location of operator alarm handling instructions
 - h. Location of ancillary information associated with the point.

- i. A list of all recent events pertaining to that point
 - j. All points shall display all recent events on their point detail displays, using a direct link to the BMS Event System.
- C. Analog Points: Analog data shall be stored in an analog point type in the database. This is a composite point type, which consists of multiple point parameters. For example, it is possible to have the analog set point, process variable and output all represented in one single point in the BMS.
- D. Status Points: Status (digital) information shall be stored in a Status Point type in the database. The status point shall be a composite point capable of processing from a single to a three-bit digital input, allowing up to eight possible states.
- E. Equipment and Energy Meter Points: Data associated with Energy or Equipment meters shall be stored in the system in a composite point database structure that shall provide automatic tracking of instrument rollover. Integration of meter values shall occur automatically and display of Energy reports shall be an standard option requiring no additional engineering.
- F. Grouping of Points:
 - 1. The BMS system shall provide a means by which a number of alarm inputs, outputs and other related points can be grouped together for more convenient monitoring and control without the need for custom graphics.
 - 2. These Point Grouping shall be arranged in intelligent Equipment Relationships, which also contains hierarchal relationships between supply relationships in the BMS. As an example a chiller or boiler supplying cool or heated water / air to downstream equipment like an Air Handling Unit (AHU), shall be logically represented with these relationships. Zero additional engineering in the Operator Workstation shall be required to display these relationships.
- G. History Management:
 - 1. Collection of historical point data shall be configurable as part of the point definition. Once configured, this historical data shall be collected automatically. Historical data collection shall be provided for both snapshots and averages with intervals ranging from 1 second to 24 hours.
 - 2. Once assigned to history, point data shall be available by POINT.PARAMETER access used in conjunction with a history offset to locate the particular value of interest. The graphical operator interface, trend, report generation and application interfaces shall be able to access historical data.
 - 3. Modifications to the history collection of a point shall be possible on-line without the loss of previously collected data for the point being changed or any other points in the system currently being historized.
 - 4. History shall be easily configurable to be archived to an alternative file system or offline media. Different archive settings shall be available for different history types.

2.6 TRENDING

- A. The BMS shall support History Data Collection and Trending of BACnet data points, and shall be delivered with a pre-defined set of data points in history collection and assigned to Trends as noted in the drawings for each type of equipment with the defined points. The system shall provide flexible trending allowing real-time, historical or archived data to be trended in a variety of formats. Trend data types shall be able to be combined to allow for comparisons between data e.g. current real-time data versus archived data. In addition, event database information shall be available for comparison and analysis purposes in the same display and shall allow filtering of the event data display based on time and location.
- B. Trend Capabilities:
1. The system shall provide trending capability with the following functions:
 - a. Real time trending integrated with trending of historized data samples
 - b. Historical trending
 - c. Standard Trend Display pre-built for every piece of Equipment in the BMS
 - d. A further 500 custom trends in addition to Equipment Trends, to allow up to 32 points on each trend window
 - e. A total of 1000 separate trend displays automatically built in every system
 - f. Trend with Event Summary integration on any and all of these 1000 trends
 - g. Trend Scrolling (using scroll bar or by directly entering the beginning and ending time of interest)
 - h. Trend Zoom
 - i. Engineering Unit or Percent
 - j. Auto-scaling trended values
 - k. Cursor readout of trend data
 - l. Trend De-cluttering via per-pen enable/disable on multi-plot style trends
 - m. Independent Y-axis per point on multi-plot style trends. It must be possible to display the Y-axis for any point on the trend by simply selecting the point using the mouse or keyboard
 - n. Copying the currently displayed trend data to the clipboard for pasting into spreadsheet or document
 - o. An additional and unlimited number of trends may be used inside custom displays. This is outside of the existing requirement for 1000 system trends

2. Configuration of trends shall only require the entry of the Point Name into the desired trend template to produce the trend. All trend configurations must be possible on-line without interruption to the system. Historization of data shall not be affected by changes to trend configuration. All configurations to the trend configuration shall be possible from any operator interface. It shall be possible to save any changes made to the trend configuration from any operator interface. Systems that only provide trending via a third party package will not be acceptable.
3. The trend must also support annotations with system events within the one display window, allowing operators to view historical plant information in a real time window with system events. This shall include support for filtering the events by location and other standard filters available within the event management system.

C. Trend Types:

1. The system shall be able to present real-time, historical or archived data in a variety of formats, including single, dual and multiple value trends of up to 32 points. For each trend set display it shall be possible for operators to configure the number of historical samples and ranges displayed. Points configured in trend sets shall be changeable on-line.
2. The system shall allow the operator to display the trend data in multiple different views. User shall have the option to view a full screen of the trend only, view trend with events, and trend with tabular history. Each of the views shall have the option to hide or show the legend. It shall be possible to filter the event summary details by the trend time as well as by selecting the location of interest from the hierarchical location pane. Icons indicating the correct event type shall be displayed in the timeline of the trend view to facilitate analysis.
3. Operators shall be able to zoom in on information displayed on trend sets for closer inspection by dragging out an area of interest with the mouse or other pointing device. From such a selection, it shall be possible to copy the underlying data to the Windows clipboard for subsequent pasting into a spreadsheet application such as Microsoft Excel. Systems that do not provide support for Microsoft Excel in this respect shall not be acceptable.
4. Scroll bars as well as time selectors for direct entry of beginning and ending times shall be available to move the Trend set backwards and forwards across the historical records. The trend sets shall automatically access archived history files without operator configuration.
5. It shall be possible to embed trend objects as part of custom displays. The following formats shall be available:
 - a. Line Trend
 - b. Numeric Trend
 - c. Trend with Events

2.7 EVENT MANAGEMENT

- A. As a standard function, the BMS shall log all events automatically into a relational database, and optionally printed on an event printer. The journal shall contain the following event information:
1. Alarms
 2. Alarm Acknowledgements
 3. Return to Normal
 4. Operator Control Actions
 5. Operator Login & Security Level Changes
 6. On-line database Modifications
 7. Communications Alarms
 8. System Restart Messages
 9. Database changes
- B. Standard Displays shall be provided to show the current journal file with the most recent event at the top of the display. Subsequent page forward actions shall allow display of progressively older events. Sorting and filtering of the journal shall be possible directly on screen. Filters shall be able to be saved for future use. Filtered events shall be able to be printed as an event report directly from the Event display.
- C. The event database entries shall contain the following information as a minimum:
1. Time & Date Stamp
 2. Database partition code
 3. Source
 4. Operator
 5. Event Type
 6. Condition
 7. Action
 8. Alarm Priority
 9. Description
 10. Value
 11. Engineering Units
 12. Comments
- D. Events may be sorted by time and date, database partition or source of the event. It shall be possible to apply filters to the list of events to limit the view of events to those which match the filter. Filters may include multiple dimensions and wildcards and shall also be able to be saved and restored for reuse.
- E. There may be additional fields which are relevant for different types of events. It shall be possible to enter comments on all events so that operators can annotate an event with relevant information.
- F. It shall be possible to manually create an event if the operator wishes to record an incident on the site which is unrelated to system equipment.

- G. The event database must also be accessible from other sub-systems such as the Operator Interface, Report Generation and Application Programmers Interface.
- H. It shall be possible to store event files as large as the disk capacity can accommodate. For example, given the appropriate disk space it shall be capable of storing more than 1,000,000 (one million) events on-line. The system shall be able to automatically or manually archive these online events periodically, at a time period specified by the user. Operators shall be notified by an alarm that event archiving is required if manual operation is chosen. Events may be archived to media such as CD, DVD or to other disk based file systems. If archiving does not take place, the event system shall continue to collect events until it reaches a nominated disk space limit. It shall then overwrite the oldest events until archiving takes place or more disk space is made available.
- I. Archived events may be restored to the BMS at a later time if required for reporting purposes. The BMS shall indicate to the operator the range of events in a particular archive file.
- J. The event management system shall be fully integrated with the standard reporting system. The system shall automatically reference the restored archive file if a report is requested containing a time search window covered by the current archive file.
- K. The operator shall be able to restore previously archived files and review or print them from the Operator Workstations.
- L. It shall be possible to directly generate an event report from the event database filtered online without using the reporting system.

2.8 ALARM MANAGEMENT

- A. BMSEach monitored point in the system shall be able to be assigned one of four alarm priorities to individual states. The meaning of the priorities shall be as follows:
 - 1. Journal: Changes of state shall be journalized to the Alarm/Event Log and optionally printed on the Alarm/Event printer.
 - 2. Low: Change of state will generate a Low priority alarm, which will appear on the Alarm Summary. Optionally, the alarm may be printed on the Alarm/Event printer.
 - 3. High: Change of state will generate a High priority alarm, which will appear on the Alarm Summary. Optionally, the alarm may be printed on the Alarm/Event printer.
 - 4. Urgent: This is the highest priority. Change of state will generate an Urgent priority alarm, which will appear on the Alarm Summary. Optionally, the alarm may be printed on the Alarm/Event printer.
 - 5. Within each of the four alarm types there shall be 15 sub-priorities available.
- B. Each alarm priority shall have a configurable color, which shall automatically be presented to the operator in all graphics and alarm display across the BMS system. There shall be no engineering effort to support this alarm priority color from being synchronized across the BMS

system. It shall be possible to configure a time such that if a low priority alarm is not acknowledged within this time the alarm's priority is elevated to high priority. If a high priority alarm is not acknowledged within a configured time, its priority is elevated to urgent priority.

- C. For each alarm priority, it shall be possible to configure a point such that if any alarms of this priority occur, the point is controlled to the configured state. This could be used to drive external enunciators such as sirens or lights.
- D. When an alarm is acknowledged, it shall be possible to automatically issue a reset to a controller to indicate the alarm is acknowledged and to attempt to reset the alarm point.
- E. Alarm Enunciation:
 - 1. Alarms shall be enunciated by:
 - a. Most recent, highest priority alarm message appearing on dedicated alarm banner on the operator interface.
 - b. Alarm message appearing on alarm summary display.
 - c. Alarm indicator flashing on the operator interface
 - 2. Alarm conditions will be indicated in a clear unambiguous manner, and unacknowledged alarms shall be indicated differently to acknowledged alarms. Where alarm conditions are indicated with blinking indicators, the BMS shall ensure these indicators blink synchronously. This shall not require programming or tuning of display driven timers.
 - 3. Points shall be enunciated while in alarm. If a point is set to alarm inhibited the point shall no longer cause annunciation. If a point goes into an alarm state whilst inhibited and then is still in the alarm state when the point is set to alarm enabled, the point shall immediately cause annunciation.
- F. Alarm Processing: Assigning an alarm to the point shall automatically cause the system to perform the following actions when an alarm occurs:
 - 1. The alarm shall be time stamped by the field controller to the nearest millisecond. It shall be time stamped by the BMS server with a separate independent time stamp.
 - 2. It shall be logged in the Event database with the Point Name (source), Alarm type, Alarm Priority, Point Description, New value and Engineering Units
 - 3. The point value which is in alarm shall turn red (or other configurable color) and flash on any standard or custom display which uses that point
 - 4. An Unacknowledged alarm entry shall be made in the system alarm summary for Low, High and Urgent Alarms
 - 5. The alarm annunciation indicator shall flash synchronously on all displays

G. Alarm Summary:

1. Alarms shall be able to be viewed in a consolidated alarm summary which shows all current or prior alarms on the system. This summary display shall be a standard display and require zero engineering to setup and commission. The Alarm Summary display shall support filtering by time and date, database partition or source of the alarm. The fields shown on the alarm summary must be configurable and it shall be easy to move or change the alarms fields displayed. It shall be possible to apply filters to the list of alarms to limit the view of alarms to those which match the filter. Filters may include multiple dimensions and wildcards and shall also be able to be saved and restored for reuse. More detail about an alarm shall be obtained from a configurable details screen which shows all fields associated with that alarm. It shall be possible for the operators to add comments to the alarm and these comments shall be stored with the alarm.
2. The alarm summary shall be capable of displaying a summary of the current alarms filtered by plant equipment and location as well as the highest priority alarm within the corresponding location. The alarm summary shall be filtered based on the selected locations from the location pane.
3. The alarm summary shall support a simple method to reconcile recurring alarms into a common alarm message. This will prevent nuisance alarms from flooding the alarm summary display. When the same alarm from a plant device recurs, the alarm display shall use a counter to represent how many times this alarm has occurred since last acknowledged. This alarm counter shall be a filterable field in the alarm display for all alarms. Each time an alarm recurs, the count shall be increased by 1 and the alarm message must have its date / time updated with the newest alarm instance. Each alarm message shall indicate when each alarm first occurred and how many times its recurred since last acknowledged. Whilst this alarm consolidation shall minimize alarm messages for the operator, the BMS will always track each new alarm into the Event Subsystem thereby ensuring all alarms are present regardless of how often they have recurred.

H. Dedicated Alarm Indicator:

1. A dedicated alarm indicator shall appear on all displays showing the total system count of alarms by Alarm Priority.
2. An alarm indicator shall also appear on all plant equipment displays. This indicator will count the number of Urgent, High and Low priority alarms in that piece of plant Equipment. The indicator will be clear (show zero) if there are no points in an alarm condition.

I. Alarm Logging: Alarms shall be logged to an event file for future retrieval in alarm reports or archived to removable media.

J. Alarm Response Short Cut Functions (Context Menus): The following dedicated system shortcuts shall be accessible from either clicking on the alarm indicators, or directly from point information via an intelligent short cut / context menu:

1. **ACKNOWLEDGE:** After moving the cursor to the point in alarm on the screen and selecting the point the operator shall be able to acknowledge an alarm by the assigned

shortcut in the right click context menu. This action shall be logged in the event file and on the printer showing the operator ID with the alarm.

2. **ALARM SUMMARY:** By pressing a dedicated alarm indicator at any time the operator shall be able to view a display showing all currently active alarms. The alarm messages shall be color-coded showing priorities. The operator shall be able to view the alarms according to priority or sorted based on other fields. It shall be possible to acknowledge alarms from this display and also go to the associated display defined for the point.
3. **ASSOCIATED DISPLAY:** After moving the cursor to the point in alarm on the screen and selecting the point the operator shall be able to bring up the display applicable to that alarm by selecting the option from an intelligent ShortCut menu from the point. This is generally a custom graphic showing the location of the alarm in the facility.

K. Alarm Acknowledgement:

1. The system shall provide for efficient alarm acknowledgement in a number of ways as follows:
 - a. Right-clicking on any POINT.PARAMETER from a custom graphic and selecting 'Acknowledge Alarm' from the standard drop-down menu
 - b. Selection of the alarm in the alarm summary display and pressing the dedicated acknowledge button
 - c. By performing a page acknowledge from the alarm summary display.
2. On acknowledgement by the operator, the flashing indicator shall turn steady, and the point value shall remain colored with the alarm priority color, on any system or custom graphic. The acknowledgement shall also be logged in the Event database identifying the operator or station that acknowledged the alarm. If the point goes out of alarm before being acknowledged by the operator, the alarm shall be shown by a different indication and remain in the list until specifically acknowledged by the operator. If a point is not acknowledged within a configurable period of time, then an additional alarm can be generated and reassigned to another Location to allow other operators to take action.

L. Alarm Filtering: The Alarm Summary shall be able to filter the alarms displayed to the operator. All columns on the alarm summary shall be able to be used as part of a filter allowing sophisticated filters to be configured e.g. all alarms from this particular point, with this value, during this period. Filters shall be able to be saved and restored so that previously configured filters can be reused. It should also be obvious to operators when a filter has been applied to the Alarm Summary.

M. Print Alarms as a Report: The filtered alarm summary should be able to be printed directly as a report. From the alarm summary page, it shall be possible to view the current filtered list of alarms via a print preview button. This shows what the alarms will look like when printed to the configured report printer. From the alarm summary, it shall be possible to print the alarms directly using the print button.

2.9 BMS REPORTING

- A. The system shall support a flexible reporting package to allow easy generation of report data. The reports provided shall include pre-configured standard reports for common requirements such as Alarm Event reports and custom report generation filters that are configurable by the user.
- B. Report Activation: Reports shall be activated in one or more of the following ways:
 - 1. Navigation to a Plant Equipment shall allow immediate context related reports to be demanded from the equipment display. The user shall not need to navigate through report menus to request a report on equipment and subsystems currently displayed on the operator browser workstation.
 - 2. Periodic activation at user specified intervals
 - 3. Operator Demanded
 - 4. Printed directly from the alarm/event summary
- C. Standard Reports:
 - 1. The following pre-formatted reports shall be available on the system:
 - a. Alarm/Event Report
 - b. Alarm Activity by equipment
 - c. Alarm and event daily patterns report
 - d. Override report
 - e. Point State Changes Report
 - f. Schedule Details Report
 - g. Supply and Return Temperature Report
 - h. Meter Profile Report
 - i. Daily Demand Range Report
 - j. Daily Weather Conditions
 - k. Equipment Profile
 - 2. Configuration of these reports shall only require entry of the schedule information, and other parameters such as Point Name or wildcard, filter information, time interval for search and destination printer to fully configure the report. Specifically, no programming or scripting shall be required.
- D. BMS User Definable Database: In order to support other types of data such as user entered or calculated data from application programs, the system shall also provide a User Definable database area that can be fully integrated into the system. Data contained in this database must be accessible by:
 - 1. Custom Graphics
 - 2. Reports
 - 3. Time Schedules
 - 4. Historical Database BMS

E. Historical Data Archiving:

1. The system shall support archiving of historical data to allow a continuous record of history to be built up over a period of time. Archived data may be stored on the hard disk of the system or a remote network drive or moved off-line to removable media . The number of archives maintained on the system before transferral to off-line media shall only be limited by the size of the hard disk or remote network drive. The system shall allow the user to define the specific intervals of history to be archived to avoid archiving of unnecessary data.
2. Once archived, the data shall be available for re-trending through the system trend facilities in combination with the current on-line history or other archives. Providing the archived history is present on the BMS Server's hard disk or remote network drive, the trend facilities must be able to access it transparently for display, when a user scrolls beyond current on-line history limits.
3. The BMS will support display of trend data from up to 10 years of age. Any required upgrades or updates to the BMS system shall also be capable to preserve the Historical information to enable review of data from any earlier release of the system.

F. Time Schedules:

1. It shall be possible to specify time schedules for the control of all BMS points. It shall be possible to control a range of a single point to a large number of points from a single schedule. A single time schedule shall define the control to any combination of day and time.
2. The BMS scheduling management system must be more flexible than providing weekly schedules with a provision for a finite number of special occasions/holidays. The BMS scheduling system shall allow schedules to be entered that recur on a non-weekly basis or only occur once on a given day in the future. Examples:
 - a. Schedules shall be capable of recurring on any multiple of weeks (every 1 week, every 2 weeks, every 7 weeks, etc.).
 - b. It shall be possible to enter a schedule that only occurs once on any given day in the future.
3. The BMS time schedule must also provide the ability to override the normal schedule for holidays or special occasions. The user shall be able to create multiple different grouping of dates (Calendars) that can be assigned to individual points as applicable. Examples:
 - a. Daily or weekly recurring time schedules; capable of recurring until a specified date or without end (Mon-Fri 7:00 to 18:00, Thursday 7:00 to 22:00)
 - b. Time schedules active for greater than 24 hours (Saturday-Sunday 9:00 to 14:00)
 - c. Time schedules that occur on a specified group of Calendar Days (e.g. Holidays)

4. Configuring time schedules must be done through a graphical user interface whereby the operator selects the appropriate time span from a calendar. Systems where times and days must be manually entered or managed by an external spreadsheet type form are not acceptable. The user interface must support the capability of navigating to any future date to allow the user to enter a time schedule. The user interface must provide graphical feedback to indicate to the user whether the time schedule is a:
 - a. One-off exception schedule
 - b. Part of a recurring series
 - c. Recurring schedule that has been altered from the series
 - d. Part of a calendar schedule
 - e. Active Schedule
 - f. Schedule that has completed
 - g. Successfully downloaded schedule to the device (if applicable)
5. The user interface must allow the user to view time schedules that have been configured in the past, present, and future in a graphical calendar interface. It shall be possible to increase or decrease the amount of time on a schedule which is currently active.
6. Where the control device supports an internal time schedule program, the BMS shall be able to upload, display, modify and download the control device time schedules. Support for the control device time schedules shall be in addition to the BMS time schedules.

2.10 OPEN INTEGRATION

- A. BMS BACnet (ANSI / ASHRAE 135): The BMS system shall be capable of communicating to other building subsystems using the ASHRAE standard BACnet. The BMS shall be BTL tested and listed to the BACnet – Advanced Operator Workstation Software (B-AWS) profile capable of acting as both a BACnet Operator Workstation and a BACnet Gateway. The BACnet capability shall support all of the following standard BACnet objects:
 1. Accumulator
 2. Analog Input
 3. Analog Output
 4. Analog Value
 5. Averaging
 6. Binary Input
 7. Binary Output
 8. Binary Value
 9. Calendar
 10. Command
 11. Device
 12. Event Enrollment
 13. File
 14. Group
 15. Loop
 16. Multistate Input
 17. Multistate Output
 18. Multistate Value

19. Notification Class
 20. Program
 21. Pulse Converter
 22. Schedule
 23. Trendlog
- B. BACnet Advanced Workstation Software: An integrated BACnet Advanced Workstation Software (B-AWS) shall be provided which allows the monitoring of BACnet devices via data acquisition and control.
- C. The BACnet Advanced Workstation Software shall support the following BACnet Interoperability Building Blocks:
1. ReadProperty-A (DS-RP-A)
 2. ReadProperty-B (DS-RP-B)
 3. ReadPropertyMultiple-A (DS-RPM-A)
 4. WriteProperty-A (DS-WP-A)
 5. WritePropertyMultiple-A (SW-WPM-A)
 6. COV-A (DS-COV-A)
 7. COV Unsubscribed-A (DS-COV-A)
 8. Data Sharing – COVP-A (DS-COVP-A)
 9. Data Sharing – View-A (DS-V-A)
 10. Data Sharing –Advanced View-A (DS-AV-A)
 11. Data Sharing – Proprietary View-A (DS-PV-A)
 12. Data Sharing – Modify-A (DS-M-A)
 13. Data Sharing – Advanced Modify-A (DS-AM-A)
 14. Alarm and Event-Notification-A (AE-N-A)
 15. Alarm and Event-ACK-A (AE-ACK-A)
 16. Alarm and Event-Summary-A (AE-ASUM-A)
 17. Alarm and Event- Alarm and Event-Enrollment Summary-A (AE-ESUM-A)
 18. Alarm and Event – Advanced View and Modify-A (AE-AVM-A)
 19. Alarm and Event – View Notifications-A (AE-VN-A)
 20. Alarm and Event – Advanced View Notifications-A (AE-AVN-A)
 21. Alarm and Event – Information-A (AE-INFO-A)
 22. Alarm and Event – LifeSafety-A (AE-LS-A)
 23. Dynamic Device Binding – A (DM-DDB-A)
 24. Dynamic Device Binding – B (DM-DDB-B)
 25. Dynamic Object Binding – A (DM-DOB-A)
 26. DeviceCommunicationControl – A (DM-DCC-A)
 27. Device Management – Manual Time Synchronization-A (DM-MTS-A)
 28. TimeSynchronization – A (DM-TS-A)
 29. UTCTimeSynchronization – A (DM-UTC-A)
 30. ReinitializeDevice - A (DM-RD-A)
 31. Connection Establishment - A (NM-CE-A)
 32. List Manipulation-B (DM-LM-B)
 33. Alarm and Event-Information-A (AE-INFO-A)
 34. Scheduling – View and Modify-A (SCHED-VM_A)
 35. Scheduling – Advanced View and Modify-A (SCHED-AVM_A)
 36. Scheduling – Weekly Schedule-A (SCHED-WS-A)

37. Trending-Advanced View and Modify-A (T-AVM-A)
38. Trending-Automated Trend Retrieval-A (T-ATR-A)
39. Trending –View-A (T-V-A)
40. Device Management-Dynamic Device Binding-A (DM-DDB-A)
41. Device Management-Dynamic Device Binding-B (DM-DDB-B)
42. Device Management-Dynamic Object Binding-A (DM-DOB-A)
43. Device Management-Dynamic Object Binding-B (DM-DOB-B)
44. Device Management-Device Communication Control-A (DM-DCC-A)
45. Device Management-Manual Time Synchronization-A (DM-MTS-A)
46. Device Management-Object Creation and Deletion-A (DM-OCD-A)
47. Device Management-Reinitialize Device-A (DM-RD-A)
48. Device Management-Restart-A (DM-R-A)
49. Device Management-Backup and Restore-A (DM-BR-A)
50. Device Management-List Manipulation-A (DM-LM-A)
51. Device Management-Connection Establishment-A (NM-CE-A)
52. Device Management-Automated Network Mapping-A (DM-ANM-A)

D. BACnet Gateway:

1. Standard Application Services - An integrated BACnet Gateway shall be provided which allows third party BACnet Clients to access data. The BACnet Gateway shall support the following BACnet Interoperability Building Blocks:
 - a. • ReadProperty-B (DS-RP-B)
 - b. • ReadPropertyMultiple-B (DS-RPM-B)
 - c. • WriteProperty-B (DS-WP-B)
 - d. • WritePropertyMultiple-B (SW-WPM-B)
 - e. • COV-B (DS-COV-B)
 - f. • COV Unsubscribed-B (DS-COVU-B)
 - g. • Alarm and Event-Notification-B (AE-N-B)
 - h. • Alarm and Event-ACK-B (AE-ACK-B)
 - i. • Alarm and Event-Summary-B (AE-ASUM-B)
 - j. • Dynamic Device Binding - B (DM-DDB-B)
 - k. • Dynamic Object Binding – B (DM-DOB-B)
 - l. • TimeSynchronization – B (DM-TS-B)
2. Interfacing to the BMS system via BACnet shall be possible through either ISO 8802-3 (Ethernet) or BACnet over IP.

2.11 DATA EXCHANGE

- A. The BMS system shall have the capability to interface to the point database of other BMS systems (i.e. nodes) on a TCP/IP network. This shall enable both the acquiring of point data and issuing control outputs to and from connected BMS systems.

2.12 DATA EXCHANGE WITH MICROSOFT EXCEL

- A. The system must be capable of exporting historical data to Microsoft Excel. As a minimum the following shall be supported:
 - 1. Copy and Paste from any Operator Workstation Trend window, to an Excel sheet.

2.13 BMS PAGING AND EXTERNAL ANNUNCIATION OF SYSTEM ALARMS

- A. The BMS shall optionally provide a facility for sending alarm text from configured points to the following external systems:
 - 1. Alphanumeric pagers
 - 2. Digital mobile phones with text message (SMS) support
 - 3. Email
 - 4. SNMP message
- B. Each point's paging priority threshold shall be individually configurable, and individually enabled or disabled. Each external device configured in the system shall have individually selectable times and days of operation, an alarm priority threshold, and an alternative device for use in escalation of unacknowledged alarms.

2.14 BMS ENGINEERING & DATABASE CONFIGURATION TOOL

- A. An engineering and database configuration tool shall be provided with the BMS system that shall allow configuration of all point records, controllers, and Operator Workstation connections. The tool shall also include an online capability to support uploading and downloading files, monitoring data points, and VAV balancing operations. The tool shall also include an object-based graphical display building tool to create and modify system displays including site-specific graphical floor plans in HTML with capabilities to penetrate into controllers and points, and facilitate alarm handling procedures.
- B. This utility shall be in the form of a relational database and operate in a true 32 bit graphical environment such as Windows XP Professional or Windows 2003 Server. The utility shall also have the ability to export information to and import information from Microsoft applications such as Microsoft Excel. Systems that do not provide support for Microsoft Excel in this respect shall not be acceptable
- C. Users with sufficient security access shall be able to configure the database while the system is on-line. Configuration shall not require the need for any programming, compiling or linking and shall not require shutting down or restarting of the system. In addition, historical data collection shall not be interrupted for points not affected by configuration changes.
- D. It shall be possible to launch the database configuration tool from the operator workstation interface. The utility shall have the ability to configure database changes and download them either from the BMS server directly or remotely via the network. The remote download is to provide password protection.

- E. It shall be possible to modify a range of communications and other parameters for each device. The parameters of a particular device made available for modification shall be specific to the device or hardware item being configured – for example baud rate, parity, data and stop bit information in the case of serial devices. Hardware configuration utilities that rely solely on text-based configuration files shall not be acceptable.
- F. All documentation for the configuration utility shall be provided on-line. The help facility shall operate using standard Microsoft features such as context sensitive help using the F1 function key.
- G. The utility shall provide features that reduce configuration time of the BMS system. These features shall include adding multiple points, controllers etc. at once. The utility shall automatically increment names or numbers of any information that is required to be unique by the BMS system (such as point names). The user shall be able to select multiple items (such as points) and then edit fields that are common to all selected items to assist in global changes. Standard copy and paste facilities are to be provided by the utility.
- H. The utility shall provide functionality to create a hierarchical structure of locations to model the system. This model is to be used to manage system information (such as points) as well as user scope of responsibility. The hierarchical model shall support a 10-layer deep architecture. It shall be possible for the locations in this model to span multiple servers.
- I. The utility shall also support free format text fields, which the user can use for additional information such as cabinet or wire numbers. These additional fields shall be simple extensions to existing items in the database such as BMS points.
- J. A filtering mechanism shall be provided with the utility so that the user need view only relevant information. The filter shall provide standard choices for the user to select, and also provide user defined filtering.
- K. Database management reports shall be provided by the utility as standard. The utility shall also provide support for ad-hoc reporting facilities for engineering use.

2.15 DIAGNOSTIC CAPABILITIES

- A. The BMS system must enable easy diagnostics of the health of the system.
- B. Controller Scheduling: A controller scheduling tool shall be provided for creating, editing and maintaining controller time schedules. The controller scheduling tool shall be constructed in a way that allows compatibility with new controller types with minimal additional development.
- C. The controller scheduling tool shall allow downloading of schedules to several (supported) controllers in a single operation by provision of an integrated graphical interface.
- D. The controller scheduling tool shall provide a clear, graphical indication of the status of each downloadable schedule element, and shall automatically recover and complete any schedule download which, for any reason, has failed or been interrupted.

2.16 CONTROLLER EQUIPMENT

- A. BAS Controller hardware specified in this section shall be BTL tested and listed, or certified by an authorized BACnet International Testing Laboratory to the following controller profiles.
- B. Network Controller (NC)[RAK1]:
 - 1. The Network Controller (NC) shall be a Native BACnet® controller based on 32 bit technology to provide the interface between the LAN or WAN and the field control devices, and provide global supervisory control functions over the control devices connected to the NC. The NC shall conform to BACnet® Building Controller (B-BC) profile and be provided with appropriate PIC statement defining BACnet® services and objects supported. BACnet® Data Sharing BIBBs supported shall include at a minimum: RP, RPM, WP, WPM, COV. Alarm and Event, Trending, and scheduling including SCHED-A BIBBs support shall also be supported in BACnet® native communications. The NC shall support Master Communication control on the BACnet communication bus. The NC shall physically connect to the LAN without the need for additional Router hardware. The NC shall support transmitting and receiving segmented messages as well as BACnet® Broadcast Messages over IP. It should be possible to define any NC in an IP subnet as a BBMD device. The NC shall also support both Secure (https://) and non secure (http://) remote web server access using commonly used web browsers. It shall be capable of executing application control programs to provide:
 - a. Calendar functions
 - b. Scheduling
 - c. Trending and Trending Backfill
 - d. Alarm monitoring and routing
 - e. Time synchronization
 - f. Integration of BACnet® devices and BACnet® controller data
 - g. Integration of MODBUS devices and serial MODBUS RTU controller data
 - 2. The Network Controller must provide the following hardware features as a minimum:
 - a. One Ethernet Port -10 / 100 Mbps RJ45
 - b. One RS-232 port
 - c. One RS 485 port
 - d. Three independent BACnet® MS/TP Channel capable of supporting up to 90 total Unitary controllers
 - e. A minimum of 24 On-board I/O, expandable up to 128 hardware points; external expansion I/O on dedicated controller I/O bus is also accepted for up to 256 (alternate maximum of 128 physical points for UUKL applications) physical I/O points where on-board I/O is not supported.
 - f. Battery Backup using Gold Capacitor to avoid low battery alarms and subsequent replacement during service life of the controller.

- g. Flash memory for long term data backup (If battery backup or flash memory is not supplied, the controller must contain a hard disk with at least 1 gigabyte storage capacity)
 - h. A Reset Button
 - i. The NC must be capable of operation over a temperature range of 0 to 50°C
 - j. The NC must be capable of withstanding storage temperatures of between 5 and 70°C
 - k. The NC must be capable of operation over a humidity range of 5 to 93% RH, non-condensing
 - l. Shall include expansion for Input/Output that require Hand-Off-Auto (HOA) switches.
 - m. Field Bus for remote I/O
 - n. Controller shall operate with a fixed cycle time. Controllers with non-deterministic operating system shall not be acceptable.
3. Integration: Any or all the 3 independent MS/TP channels may be used to integrate MODBUS devices like Energy Meters etc. or BACnet® devices and BACnet® controller data. The BMS contractor shall include if any, license required for this interface within their scope.
4. Event Alarm Notification and actions:
- a. The NC shall provide alarm recognition, storage; routing, management, and analysis to supplement distributed capabilities of equipment or application specific controllers.
 - b. Alarm generation shall be selectable for annunciation type and acknowledgement requirements including but limited to:
 - 1) To alarm
 - 2) Return to normal
 - 3) To fault
 - c. Provide for the creation of an unlimited number of alarm classes for the purpose of routing types and or classes of alarms based on priority
 - d. Provide timed (schedule) routing of alarms by class, object, group, or priority.
 - e. Provide alarm generation from binary object “runtime” and /or event counts for equipment maintenance. The user shall be able to reset runtime or event count values with appropriate password control.
5. Control equipment and network failures shall be treated as alarms and be annunciated.

6. A log of alarms shall be maintained by the NC
7. Provide a “query” feature to allow review of specific alarms by user defined parameters.
8. A separate log for system alerts (controller failures, network failures, etc.) shall be provided and available for review by the user.
9. An Error Log to record invalid property changes or commands shall be provided and available for review by the user.

C. Advanced Application Specific Controller (B-AAC)

1. Controller shall be 32 bit microprocessor based BACnet® Advanced Application Controller in accordance with the ANSI/ASHRAE Standard 135-2004. . Advanced Application Controllers shall be provided for Air Handling Units, Variable Air Volume (VAV) Terminals and other applications as shown on the drawings. The application control program shall be resident within the same enclosure as the input/output circuitry, which translates the sensor signals. The system supplier must provide a PICS document showing the installed systems compliance level to the ANSI/ASHRAE Standard 135-2004.
2. All Advanced Application Controller shall be fully programmable with the help of Windows based software programming tool and shall at all times maintain their BACnet® compliance. Controllers offering application selection only (non-programmable), require a 15% spare point capacity to be provided for all applications. All control sequences within or programmed into the B-AAC shall be stored in non-volatile memory, which is not dependent upon the presence of a battery, to be retained.
3. Stand-alone, Native BACnet®, UL Listed Application Controllers shall be used to provide direct digital control of HVAC equipment. In addition to their standalone capabilities, they shall also provide the ability networked in a peer-to-peer, BACnet® MS/TP field network to other MS/TP controllers, and VAV/SPC zone controllers on the single MS/TP channel. These controllers may be used to optimize the energy consumption by implementing various control strategies such as temperature setup/setback etc.
4. Standard features for all Advanced Application Controllers shall include:
 - a. 32 bit microprocessor based controllers
 - b. Stand-alone or networked peer-to-peer capabilities on single MS/TP channel, Masters to slave devices are not acceptable
 - c. Should have on-board Real Time Clock
 - d. Should support BACnet® intrinsic alarm reporting
 - e. Should support calendar objects for scheduling
 - f. Should comply to BACnet® B-AAC device profile

- g. Flexibility to be used and connected to Network Controller to expand the I/O capacity of network controller
 - h. BACnet® MS/TP LAN with configurable baud rate from 9600 to 76.8k baud
 - i. All Inputs to be Universal Inputs with 12 bit resolution- software selectable as analog or digital with standard and custom ranges.
 - j. Pulse counting shall be available for any one of binary inputs up to 15Hz frequency
 - k. Standard P, PI, or PID BACnet® Loop Objects
 - l. Minimum of one Loop Object for each output
 - m. In the particular case of Programmable VAV Controllers (VAV), the following shall apply in addition to the standard features listed above:
 - 1) Standard VAV control sequences are incorporated to provide pressure independent control of a single duct VAV unit
 - 2) Each VAV Controller shall be without actuator to provide flexibility to choose suitable modulating or floating actuator based on the application. For example VAV box controller used in the laboratory should use the modulating actuator and the VAV box controller used in office area should use the floating actuator.
 - 3) Each controller shall have an onboard flow-thru sensor for use with a single or multi-point differential pressure measuring station or pitot tube. Programmable controller to allow customizing of the standard sequences for temperature setback, overrides, proportional wet reheat and other user defined sequences to adapt to changing building conditions. The ability to only change operating parameters or substitute between configurable applications shall not be considered acceptable
 - 4) Should be easily programmable using Microsoft Windows based programming utility.
 - 5) The VAV controller shall communicate with the main network controller at a baud rate of not less than 38.4K baud. The VAV controller shall provide LED indication of communication and controller performance to the technician, without cover removal.
5. In the particular case of Programmable Small Point Control (SPC) Application Controllers, the following shall apply in addition to the standard features listed above:
- a. Programmable control basic to allow customizing of the standard sequences for temperature setback, overrides, proportional wet reheat and other user defined sequences to adapt to changing building conditions. The ability to only change

operating parameters or substitute between configurable applications shall not be considered acceptable

- b. Should be easily programmable using Microsoft Windows based programming utility.
- c. The SPC shall communicate with the main network controller at a baud rate of not less than 38.4K baud. The SPC shall provide LED indication of communication and controller performance to the technician, without cover removal.

D. Application Specific Controller (B-ASC):

1. Controller shall be 32 bit microprocessor based BACnet® Application Specific Controller in accordance with the ANSI/ASHRAE Standard 135-2004. Application Specific Controller shall be provided for Fan Coil unit (FCU) and other unitary applications as shown on the drawings. The application control program shall be resident within the same enclosure as the input/output circuitry, which translates the sensor signals. The BMS Contractor must provide a PICS document showing the installed systems compliance level to the ANSI/ASHRAE Standard 135-2004.
2. All Application Specific Controller shall be fully programmable as per application with the help of Windows based software programming tool. Controllers offering application selection only (non-programmable), require a 15% spare point capacity to be provided for all applications. All control sequences within or programmed into the B-ASC shall be stored in non-volatile memory, which is not dependent upon the presence of a battery, to be retained.
3. Stand-alone, Native BACnet®, UL Listed Application Controllers shall be used to provide direct digital control of HVAC equipment. In addition to their standalone capabilities, they shall also provide the ability networked in a peer-to-peer, BACnet® MS/TP field network to other controllers, or as part of a complete facilities management system which integrates multiple field networks. These controllers may be used to optimize the energy consumption by implementing various control strategies such as temperature setup/setback etc.
4. Standard features for all Application Specific Controllers shall include:
 - a. 32 bit microprocessor based controllers
 - b. Stand-alone or networked peer-to-peer capabilities as MS/TP, Masters to slave devices are not acceptable
 - c. Should have on-board Real Time Clock
 - d. Should support BACnet® intrinsic alarm reporting
 - e. Should support BACnet® B-ASC profile and BTL
 - f. BACnet® MS/TP LAN with configurable baud rate from 9600 to 76.8k baud

- g. All Inputs to be Universal Inputs with 12 bit resolution- software selectable as analog or digital with standard and custom ranges.
- h. Pulse counting shall be available for any one of binary inputs up to 15Hz frequency
- i. All Outputs to be Universal Outputs with 8 bit resolution - software selectable for analog or digital with standard and custom ranges
- j. Maximum 90 objects
- k. Standard P, PI, or PID BACnet® Loop Objects.
- l. Minimum of 1 Loop Object for each output.
- m. In the particular case of Programmable Unitary Applications, the following shall apply in addition to the standard features listed above:
 - 1) Standard FCU control sequences are incorporated to provide control of Fan Coil Unit
 - 2) Programmable control basic to allow customizing of the standard sequences for temperature setback, overrides, proportional wet reheat and other user defined sequences to adapt to changing building conditions. The ability to only change operating parameters or substitute between configurable applications shall not be considered acceptable
 - 3) Should be easily programmable using Microsoft Windows based programming utility.

2.17 CARBON DIOXIDE SENSORS (CO₂)

- A. The carbon dioxide sensor shall be suitable for space or duct mounting as required or as indicated in the specification. This sensor shall have the capability of measuring carbon dioxide concentrations in a duct or space. It shall work on the non-dispersive infrared (NDIR) operating principle with an ambient or duct gas sampling method.
- B. The sensor shall have the following minimum requirements:
 - 1. Range 0 – 1000 PPM
 - 2. Accuracy +/- 5% of reading
 - 3. Response time <4-20 milliamps
 - 4. Relay NO of NC operation
 - 5. Operating life-expectancy 10 years
- C. The CO₂ concentrations shall be able to be read at host computer and at the NAE controller). The NAE will be able to trend the CO₂ concentration of each system over a 24 hour period of time and print the information at a local printer for owner's records. The sensor shall also have the availability for local readout.

2.18 TRAINING

- A. The BMS contractor will provide 40 hours of instructions to the Owner's personnel in the operation and maintenance of the control system. Training will be provided after the system has been commissioned and demonstrated to the Architect or his representative.

2.19 BOILER ROOM

- A. Suitable for small to large applications where the ventilation system will be hooked up directly to the BMS systems. The gas detection sensors/transmitters will only provide a 4-20mA output to the BMS. For all quantities of sensors/transmitters.

1. Scope of work:

- a. Provide all labor, materials, products, equipment and service to supply and install a CO and methane detection and control system indicated on the drawings and specified in this section.

2. Reference Standards:

- a. Units shall be certified to UL and CSA requirements.
b. Manufacturer shall be certified to ISO-9001-2000.

- B. Products (A-201T-Q1-CO-C CO Transmitters complete with 4-20mA output, A-201T-Q1-CH4-C CH4 Transmitters complete with 4-20mA output):

1. Transmitter will be powered by a power transformer rates at 17-27 Vac or by an external power supply rated at 17-27 Vac or 24-38 Vdc. Capable of remote sensing, at distances of up to 300 feet, the gas transmitter will incorporate a catalytic combustion cell and electrochemical for CO. Unit sensing cell must compensate for variations in relative humidity and temperature to maintain high levels of accuracy.
2. Transmitter will have the capability of sending an analogue 4-20mA signal to the BMS/DDC. For local activate of fans or louvers (or other equipment) an optional DPDT relay 5A, 30 Vdc or 250 Vac (resistive load) will be activated at programmable set points (and programmable time delays).
3. A ten step LED display, with the possibility of adding optional an LCD, will provide reading of concentration of gas. A green LED will indicate normal operation; a yellow LED will indict fault operation. Transmitter must also be capable of incorporating an audible alarm (rated at no less than 65Db at a distance of 3 feet), which will be activated at fully programmable levels through the VA-301C control panel.
4. Transmitter will be capable of operating within relative humidity ranges of 5-90% and temperature ranges of 32 degrees F to 100 degrees F (0 degrees C to 40 degrees C). Transmitter must also have optional capacity of operating at lower temperature range.
5. Unit will be manufactured to UL 1244 label and CSA 22.2. Transmitter must be manufactured within an ISO 9001-2000 production environment.

6. Transmitter alarm levels to activate and unit to be installed to the following parameters:

TOXIC GASES	FIRST ALARM SETPOINT (25% LEL)	SECOND ALARM SETPOINT (50% LEL)	SENSOR LOCATION	RADIUS OF COVERAGE
Methane (CH ₄)	25% LEL	50% LEL	1 feet below the ceiling	20 feet
Carbon Monoxide (CO)	35 PPM	2000 PPM	3-5 feet above the floor	20 feet

2.20 AIR FLOW STATIONS

A. Acceptable Manufactures (Gold Series):

1. EBTRON, Inc.
2. KURZ Instruments
3. Sierra Instruments
4. Or approved equal.

B. Products Included in this Section:

1. Duct and plenum mounted airflow measurement devices
2. Fan inlet mounted airflow measurement devices

C. Airflow/temperature measurement devices:

1. Provide airflow/temperature measurement devices where indicated on the plans. Fan inlet sensors shall not be substituted for duct or plenum sensor probes indicated on the plans.
 - a. Duct and plenum mounted sensors shall be fabricated of anodized aluminum alloy tube with 303/304 stainless steel mounting brackets.
 - b. Fan inlet probes shall be field adjustable to fit the fan inlet and have 303/304 stainless steel mounting feet.
2. Each measuring device shall consist of one or more multi-point measuring probes and a single microprocessor-based transmitter. Each transmitter shall have an LCD display capable of displaying airflow and temperature. Airflow shall be field configurable to be displayed as a velocity or volumetric rate. Each transmitter shall operate on 24 VAC.
3. Each sensing point shall independently determine the airflow rate and temperature, which shall be equally weighted and averaged by the transmitter prior to output. Devices, which average multiple non-linear sensing point signals, are not acceptable. Pitot tube arrays are not acceptable.
4. A single manufacturer shall provide both the airflow/temperature measuring probe(s) and transmitter at a given measurement location. Probes and transmitters shall not require field matching for proper operation.

5. The operating airflow range shall be 50-5,000 FPM unless otherwise indicated on the plans.
6. The operating temperature range for the measuring probes shall be -20 degrees F to 140 degrees F. The operating humidity range for the measuring probe shall be 0-99% RH (non-condensing).
7. The operating temperature range for the transmitter shall be -20 degrees F to 120 degrees F. The transmitter shall be protected from weather and water.
8. Each independent airflow sensor shall have a laboratory accuracy of +/-2% of reading over the entire operating airflow range and be wind tunnel calibrated or verified against standards that are traceable to NIST.
 - a. Devices whose accuracy is the combined accuracy of the transmitter and sensor probes must demonstrate that the total accuracy meets the performance requirements of this specification throughout the measurement range.
9. Each independent temperature sensor shall have a laboratory accuracy of +/-0.15 degrees F over the entire operating temperature range and be calibrated or verified against standards that are traceable to NIST.
10. The number of sensors for each location shall be as follows:
 - a. Ducts and plenums:

<u>AREA (sq. ft.)</u>	<u>SENSORS</u>
<=1	2
>1 to <4	4
4 to <8	6
8 to <12	8
12 to <16	12
>=16	16
 - b. Fans inlets: 2 per inlet.
11. The airflow/temperature measuring device shall be capable of displaying the airflow and temperature readings of each sensor on the transmitter's LCD display.
12. The transmitter shall be capable of communicating with the host controls using the following interface options:
 - a. Linear analog output signal: Field selectable, fuse protected and isolated, 0-10VDC and 4-20mA (4 wire).
 - b. RS-485: Field selectable ModBus-RTU and Johnson Controls N2 Bus

- c. 10 Base-T Ethernet: Field selectable ModBus TCP and TCP/IP.
 - d. LonWorks Free Topology
13. Airflow/Temperature measuring devices shall be UL listed as an entire assembly. The manufacturer's authorized representative shall review and approve placement and operating airflow rates for each measurement location indicated on the plans. A written report shall be submitted to the consulting mechanical engineer if any measurement locations do not meet the manufacturer's placement requirements.

2.21 VARIABLE FREQUENCY DRIVES

A. General:

- 1. Furnish complete adjustable frequency controllers as specified herein. All standard and optional features shall be included within the VFD enclosure unless otherwise specified.
- 2. The variable frequency drive shall convert three phase, 60 Hz utility power to adjustable voltage and frequency. Input voltage shall be as specified on the drawing schedules.
- 3. The VFD shall include a converter and an inverter section. The VFD's shall also include input line reactors, or a DC Bus Choke (above 60 HP).
- 4. VFD shall be Utech Systems Model UTV-4000 or approved equal, with a surface mounted circuit board (units 60 HP and lower). Above 60 HP units to be Utech Systems Module UV 4000 or approved equal.
- 5. The VFD and options shall be tested to ANSI/U1 standard 508. The complete system shall be listed by nationally recognized testing agency such as UL or ETL.
- 6. The VFD shall not emit either conducted or radiated RFI in excess of the limitations set forth in the FCC rules and regulations, part 15 sub-part J. The VFD shall not cause objectionable acoustical motor noise. Provide output filters if required.
- 7. Units to have IGBT transistors as standard to reduce motor noise.

B. Provide protective features on STD for VFD's.

C. Interface features:

- 1. The VFD shall be housed in NEMA 12 enclosure.
- 2. Provide LED keypad for indication of status and operation.
- 3. VFD to have terminal strip to accept N.C. safety contacts such as freezestats, smoke alarms, etc. VFD to safely shut down in any mode when contact opens.
- 4. VFD shall accept a 4-20ma, 0-5VDC, 0-10VDC or a 3 -15 psi pneumatic signal (if required).

D. Special feature options:

1. The following special features shall be included in the VFD enclosure. The unit shall maintain its UL or ETL listing.
2. Manual bypass shall provide all the circuitry necessary to transfer the motor from the VFD to the power line, or from the line to the controller. The bypass circuitry shall be mounted in a separate section of the VFD enclosure. Overload protection shall be provided in both drive and bypass modes.
3. A door interlocked, pad lockable, drive disconnect switch shall be provided to disconnect power from the VFD only.
4. A second fused disconnect switch or circuit breaker shall be provided as a means of disconnecting all power to both the VFD and bypass circuits, as well as providing short circuit and locked rotor protection to the motor while in the bypass mode.

2.22 START-UP SERVICE

- A. The Manufacturer shall provide start-up service in the form of a factory trained service technician. The service technician shall verify correct installation, start-up the drive and check for proper operation.
- B. The VFD shall be warranted by the Manufacturer for a period of 36 months from date of shipment. The warranty shall include parts, labor, travel costs and living expenses incurred by the Manufacturer to provide factory authorized service.

2.23 PROGRAMMING/OPERATOR STATION

- A. Included alpha-numeric display of output current (accurate +/- 3%, regardless of output frequency), voltage reference DC bus voltage, output power, input terminal status, output terminal status LED lamp check, and EEPROM number.
- B. Alpha-numeric display of faults. Up to four (4) sequential faults shall be retained in non-volatile memory (maintained even after removal of input power).

2.24 COMMISSIONING

- A. Control system set-up and checkout shall be coordinated with Commissioning Contractor.
- B. Control system shall be set up and checked by factory trained competent technicians skilled in the setting and adjustment of the BMS equipment used in this project. This technician is to be experienced in the type of HVAC systems associated with this project.
- C. At the completion of the commissioning, this Contractor will demonstrate the sequence of operations for each system to the Architect or his representative.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that power supply is available to control units and operator workstation.

3.2 INSTALLATION

- A. Install software in control units and operator workstation(s). Implement all features of programs to specified requirements and as appropriate to sequence of operation.
- B. Connect and configure equipment and software to achieve sequence of operation specified.
- C. Verify location of thermostats, humidistats, and other exposed control sensors with Drawings and room details before installation. Install devices 48 inches above the floor.
 - 1. Install averaging elements in ducts and plenums in crossing or zigzag pattern.
- D. Install metal locking guards on thermostats in the following locations:
 - 1. Entrances.
 - 2. Public areas.
 - 3. Where indicated.
- E. Install automatic dampers according to Division 23 Section "Air Duct Accessories."
- F. Install damper motors on outside of duct in warm areas, not in locations exposed to outdoor temperatures.
- G. Install labels and nameplates to identify control components according to Division 23 Section "Identification for HVAC Piping and Equipment."
- H. Install hydronic instrument wells, valves, and other accessories according to Division 23 Section "Hydronic Piping."
- I. Install steam and condensate instrument wells, valves, and other accessories.
- J. Install refrigerant instrument wells, valves, and other accessories according to Division 23 Section "Refrigerant Piping."
- K. Install duct volume-control dampers according to Division 23 Sections specifying air ducts.

3.3 ELECTRICAL WIRING AND CONNECTION INSTALLATION

- A. Install raceways, boxes, and cabinets according to Division 26 Section "Raceway and Boxes for Electrical Systems."

- B. Install building wire and cable according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."
- C. Install signal and communication cable
 - 1. Conceal cable, except in mechanical rooms and areas where other conduit and piping are exposed.
 - 2. Install exposed cable in raceway.
 - 3. Install concealed cable in raceway.
 - 4. Bundle and harness multi-conductor instrument cable in place of single cables where several cables follow a common path.
 - 5. Fasten flexible conductors, bridging cabinets and doors, along hinge side; protect against abrasion. Tie and support conductors.
 - 6. Number-code or color-code conductors for future identification and service of control system, except local individual room control cables.
 - 7. Install wire and cable with sufficient slack and flexible connections to allow for vibration of piping and equipment.
- D. Connect manual-reset limit controls independent of manual-control switch positions. Automatic duct heater resets may be connected in interlock circuit of power controllers.
- E. Connect hand-off-auto selector switches to override automatic interlock controls when switch is in hand position.

3.4 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: A factory-authorized service representative shall inspect field-assembled components and equipment installation, including connections. Report results in writing.
- B. Replace damaged or malfunctioning controls and equipment and repeat testing procedures.

3.5 ADJUSTING

- A. Calibrating and Adjusting:
 - 1. Coordinate with Test and Balance Contractor and Commissioning Contractor.
 - 2. Calibrate instruments.
 - 3. Make three-point calibration test for both linearity and accuracy for each analog instrument.

4. Calibrate equipment and procedures using manufacturer's written recommendations and instruction manuals. Use test equipment with accuracy at least double that of instrument being calibrated.
 5. Control System Inputs and Outputs:
 - a. Check analog inputs at 0, 50, and 100 percent of span.
 - b. Check analog outputs using milliampere meter at 0, 50, and 100 percent output.
 - c. Check digital inputs using jumper wire.
 - d. Check digital outputs using ohmmeter to test for contact making or breaking.
 - e. Check resistance temperature inputs at 0, 50, and 100 percent of span using a precision-resistant source.
 6. Flow:
 - a. Set differential pressure flow transmitters for 0 and 100 percent values with 3-point calibration accomplished at 50, 90, and 100 percent of span.
 - b. Manually operate flow switches to verify that they make or break contact.
 7. Pressure:
 - a. Calibrate pressure transmitters at 0, 50, and 100 percent of span.
 - b. Calibrate pressure switches to make or break contacts, with adjustable differential set at minimum.
 8. Temperature:
 - a. Calibrate resistance temperature transmitters at 0, 50, and 100 percent of span using a precision-resistance source.
 - b. Calibrate temperature switches to make or break contacts.
 9. Stroke and adjust control valves and dampers without positioners, following the manufacturer's recommended procedure, so that valve or damper is 100 percent open and closed.
 10. Stroke and adjust control valves and dampers with positioners, following manufacturer's recommended procedure, so that valve and damper is 0, 50, and 100 percent closed.
 11. Provide diagnostic and test instruments for calibration and adjustment of system.
 12. Provide written description of procedures and equipment for calibrating each type of instrument. Submit procedures review and approval before initiating startup procedures.
- B. Adjust initial temperature and humidity set points.
- C. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions.

3.6 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain HVAC instrumentation and controls.

END OF SECTION 23 09 00

SECTION 22 66 00 - CHEMICAL-WASTE SYSTEMS FOR LABORATORY FACILITIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Single-wall piping.
 - 2. Piping specialties.
 - 3. Neutralization tanks.
 - 4. Sampling Tank and Monitor.

1.3 DEFINITIONS

- A. CR: Chlorosulfonated polyethylene synthetic rubber.
- B. FPM: Vinylidene fluoride-hexafluoro propylene copolymer rubber.

1.4 PERFORMANCE REQUIREMENTS

- A. Single-Wall Piping Pressure Rating: 10 feet head of water.
- B. Delegated Design: Design seismic restraints for aboveground piping, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. LEED Submittals:
 - 1. Product Data for Credit IEQ 4.1: For solvent cements and adhesive primers, documentation including printed statement of VOC content.

2. Laboratory Test Reports for Credit IEQ 4: For solvent cements and adhesive primers, documentation indicating that products comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- C. Shop Drawings: For neutralization system Include plans, elevations, sections, details, and attachments to other work.
1. Detail neutralization-system assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 2. Wiring Diagrams: For power, signal, and control wiring.
- D. Delegated-Design Submittal: For seismic restraints of aboveground piping, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.6 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Show pipe sizes, locations, and elevations. Show other piping in same spaces and clearances from sewerage system piping. Indicate interface and spatial relationship between piping and proximate structures.
- B. Field quality-control test reports.

1.7 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For chemical-waste specialties and neutralization tank, sampling tank and monitor to include in emergency, operation, and maintenance manuals.

1.8 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Neutralization-Tank Limestone: Equal to 200 percent of amount required for each tank sump initial charge. Furnish limestone in 50-lb bags.

1.9 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. NFPA Compliance: Comply with NFPA 70, "National Electrical Code."

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store piping and specialties with sealing plugs in ends or with end protection.
- B. Do not store plastic pipe or fittings in direct sunlight.
- C. Protect pipe, fittings, and seals from dirt and damage.

1.11 COORDINATION

- A. Coordinate sizes and locations for concrete pit with actual equipment provided. Concrete, reinforcement, and formwork requirements are specified in Division 03.

PART 2 - PRODUCTS

2.1 SINGLE-WALL PIPE AND FITTINGS

- A. PVDF Drainage Pipe and Fittings: ASTM F 1673, Schedule 40, pipe and drainage-pattern fittings. Include fittings with fusion- and mechanical-joint ends.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Orion Fittings, Inc.; a division of Watts Water Technologies, Inc.
 - b. Watts Industries (Canada) Inc.
 - c. Zurn Plumbing Products Group; Chemical Drainage Systems.
- B. CPVC Acid Resistant Piping (ASTM E84):
 - 1. Charlotte Pipe and Foundry Co.
 - 2. Spears Manufacturing Co.
 - 3. Approved equal.
- C. Stainless-Steel Drainage Pipe and Fittings: ASME A112.3.1, ASTM A 666, Type 316L, stainless-steel pipe and drainage-pattern fittings; with socket and spigot ends for gasket joints; and having piping manufacturer's FPM lip-seal rubber gaskets shaped to fit socket groove, with plastic backup ring.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Josam Company; Blucher-Josam Div.
- D. Borosilicate Glass Pipe and Fittings: ASTM C 1053, pipe and drainage-pattern fittings; with manufacturer's standard couplings.
 - 1. Covering: Factory-applied polystyrene for pipe installed underground.

2. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

- a. SCHOTT Corporation.

- E. Adapters and Transition Fittings: Assemblies with combination of clamps, couplings, adapters, and gaskets; compatible with piping and system liquid; made for joining different piping materials.

2.2 JOINING MATERIALS

- A. Couplings: Assemblies with combination of clamps, gaskets, sleeves, and threaded or flanged parts; compatible with piping and system liquid; and made by piping manufacturer for joining system piping.
- B. Adapters and Transition Fittings: Assemblies with combination of clamps, couplings, adapters, gaskets, and threaded or flanged parts; compatible with piping and system liquid; and made for joining different piping materials.
- C. Flanges: Assemblies of companion flanges and gaskets complying with ASME B16.21 and compatible with system liquid, and bolts and nuts.

2.3 PIPING SPECIALTIES

- A. Corrosion-Resistant Traps:

1. Type: P-trap or drum trap.
2. Size: NPS 1-1/2 or NPS 2, as required to match connected piping.
3. PVDF: ASTM D 3222, with mechanical-joint pipe connections.
4. Glass: ASTM C 1053, with coupling pipe connections.

- B. Stainless-Steel Cleanouts:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Josam Company; Blucher-Josam Div.
2. Standard: ASME A112.3.1, ASTM A 666, Type 316L, stainless steel.
3. Aboveground Piping: Cleanout tee of size matching piping.
4. Underground and Underslab Piping: Floor access cleanout of size matching piping.

2.4 NEUTRALIZATION TANKS

A. Plastic Neutralization Tanks :

1. **Manufacturers:** Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Chem-Tainer Industries.
 - b. IPEX Inc.
 - c. Orion Fittings, Inc.; a division of Watts Water Technologies, Inc.
 - d. Schier Products Company.
 - e. Sloane, George Fischer Inc.
 - f. Town & Country Plastics, Inc.
 - g. Watts Industries (Canada) Inc.
2. **Description:** Corrosion-resistant plastic materials; with removable, gastight cover; interior, sidewall, dip-tube inlet; outlet; vent; and threaded or flanged, sidewall pipe connections.
 - a. **Material:** HDPE.
 - b. **Tank Capacity:** 360 Gallons.
 - c. **Extension:** HDPE.
 - d. **Traffic Cover:** Light-duty plastic, bolted.
 - e. **Limestone:** Chips or lumps, with more than 90 percent calcium carbonate content and 1- to 3-inch diameter.

PART 3 - EXECUTION

3.1 PIPING INSTALLATION

A. Chemical-Waste Piping Inside the Building:

1. Install piping next to equipment, accessories, and specialties to allow service and maintenance.
2. Transition and special fittings with pressure ratings at least equal to piping pressure rating may be used unless otherwise indicated.
3. Flanges may be used on aboveground piping unless otherwise indicated.
4. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.
5. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

6. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
7. Install piping at indicated slopes.
8. Install piping free of sags and bends.
9. Install fittings for changes in direction and branch connections.
10. Verify final equipment locations for roughing-in.
11. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Division 15 Section "Sleeves and Sleeve Seals for Plumbing Piping."
12. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Division 15 Section "Sleeves and Sleeve Seals for Plumbing Piping."
13. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Division 15 Section "Escutcheons for Plumbing Piping."

3.2 PIPING SPECIALTY INSTALLATION

- A. Embed floor drains in 4-inch minimum depth of concrete around bottom and sides. Comply with requirements in Division 03 Section "Cast-in-Place Concrete" for concrete.
- B. Install cleanouts and riser extension from sewer pipe to cleanout at floor. Use fittings of same material as sewer pipe at branches for cleanouts and riser extensions to cleanouts. Install piping so cleanouts open in direction of flow in pipe.

3.3 JOINT CONSTRUCTION

- A. Chemical-Waste Piping Inside the Building:
 1. Plastic-Piping Electrofusion Joints: Make polyolefin drainage-piping joints according to ASTM F 1290.
 2. Dissimilar-Material Piping Joints: Make joints using adapters compatible with both system materials.
 3. Adhere to manufacturer's recommendations.

3.4 HANGER AND SUPPORT INSTALLATION

- A. Pipe sizes in this article refer to aboveground, single-wall piping. Comply with requirements in Division 15 Section "Vibration and Seismic Controls for Plumbing Piping and Equipment" for seismic-restraint devices.

- B. Comply with requirements in Division 15 Section "Hangers and Supports for Plumbing Piping and Equipment" for pipe hanger and support devices. Install the following:
 - 1. Vertical Piping: MSS Type 8 or MSS Type 42, riser clamps.
 - 2. Individual, Straight, Horizontal Piping Runs:
 - a. 100 Feet and Less: MSS Type 1, adjustable, steel clevis hangers.
 - b. Longer Than 100 Feet: MSS Type 43, adjustable roller hangers.
 - c. Longer Than 100 Feet, if Indicated: MSS Type 49, spring cushion rolls.
 - 3. Multiple, Straight, Horizontal Piping Runs 100 Feet or Longer: MSS Type 44, pipe rolls. Support pipe rolls on trapeze.
 - 4. Base of Vertical Piping: MSS Type 52, spring hangers.
- C. Comply with requirements in Division 15 Section "Hangers and Supports for Plumbing Piping and Equipment" for installation of supports.
- D. Support horizontal piping and tubing within 12 inches of each fitting and coupling.
- E. Support vertical piping and tubing at base and at each floor.
- F. Rod diameter may be reduced 1 size for double-rod hangers, to minimum of 3/8 inch.
- G. Install vinyl-coated hangers for PVDF piping with the following maximum horizontal spacing and minimum rod diameters:
 - 1. All Sizes: Install continuous support for piping with liquid waste at temperatures above 140 deg F.
 - 2. NPS 1/2 and Smaller: 30 inches with 3/8-inch rod.
 - 3. NPS 3/4 to NPS 1-1/2: 36 inches with 3/8-inch rod.
 - 4. NPS 2: 36 inches with 3/8-inch rod.
 - 5. NPS 2-1/2 and NPS 3: 42 inches with 1/2-inch rod.
 - 6. NPS 4 and NPS 5: 48 inches with 5/8-inch rod.
- H. Install supports for vertical PVDF piping NPS 1-1/2 every 48 inches and NPS 2 and larger every 72 inches.
 - 1. NPS 2 and Smaller: 10 feet with 3/8-inch rod.
 - 2. NPS 2-1/2 and NPS 3: 10 feet with 1/2-inch rod.
 - 3. NPS 4 and NPS 5: 10 feet with 5/8-inch rod.
- I. Install hangers for stainless-steel drainage piping with the following maximum horizontal spacing and minimum rod diameters:
 - 1. NPS 2: 10 feet with 3/8-inch rod.
 - 2. NPS 2-1/2: 11 feet with 1/2-inch rod.
 - 3. NPS 3: 12 feet with 1/2-inch rod.
 - 4. NPS 4 and NPS 5: 12 feet with 5/8-inch rod.

- J. Install supports for vertical stainless-steel drainage piping every 15 feet.
- K. Install vinyl-coated hangers for glass piping with the following maximum horizontal spacing and minimum rod diameters:
 - 1. NPS 1 and NPS 1-1/4: 72 inches with 3/8-inch rod.
 - 2. NPS 1-1/2 and NPS 2: 96 inches with 3/8-inch rod.
 - 3. NPS 3: 96 inches with 1/2-inch rod.
 - 4. NPS 4 and NPS 6: 96 inches with 5/8-inch rod.
- L. Install supports for vertical glass piping every 96 inches.
- M. Support piping and tubing not listed above according to MSS SP-69.

3.5 NEUTRALIZATION TANK INSTALLATION

- A. Install interior neutralization tank, complete with appurtenances indicated.
- B. Install interior neutralization tanks on smooth and level concrete base in concrete pit. Include full initial charge of limestone.

3.6 CONCRETE PLACEMENT

- A. Comply with requirements in Division 03 Section "Cast-in-Place Concrete" for concrete supports.
- B. Place cast-in-place concrete according to ACI 318/318R.

3.7 CONNECTIONS

- A. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Make connections to existing piping so finished Work complies as nearly as practical with requirements specified for new Work.
- C. Use commercially manufactured wye fittings for sewerage piping branch connections. Remove section of existing pipe; install wye fitting into existing piping; and encase entire wye fitting plus 6-inch overlap, with not less than 6 inches of concrete with 28-day compressive strength of 3000 psi.
- D. Protect existing piping to prevent concrete or debris from entering while making connections. Remove debris or other extraneous material that may accumulate.
- E. Install piping adjacent to equipment to allow service and maintenance.

3.8 LABELING AND IDENTIFICATION

- A. Comply with requirements in Division 22 Section "Identification for Plumbing Piping and Equipment" for labeling of equipment and piping.
 - 1. Use warning tape or detectable warning tape over ferrous piping.
 - 2. Use detectable warning tape over nonferrous piping and over edges of underground structures.

3.9 FIELD QUALITY CONTROL

- A. Inspect interior of sewerage piping to determine whether line displacement or other damage has occurred. Inspect after approximately 24 inches of backfill is in place and again at completion of Project.
 - 1. Defects requiring correction include the following:
 - a. Alignment: Less than full diameter of inside of pipe is visible between inspection points.
 - b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
 - c. Crushed, broken, cracked, or otherwise damaged piping.
 - d. Hydrostatic Tests for Drainage Piping:
 - 1) Allowable leakage is a maximum of 50 gal./inch of nominal pipe size per mile of pipe, during 24-hour period.
 - 2) Close openings in system and fill with water.
 - 3) Purge air and refill with water.
 - 4) Disconnect water supply.
 - 5) Test and inspect joints for leaks.
 - e. Air Tests for Drainage Piping: Comply with UNI-B-6.
 - 2. Leaks and loss in test pressure constitute defects that must be repaired.
 - 3. Submit separate reports for each test.
- B. Replace leaking sewerage piping using new materials, and repeat testing until leakage is within allowances specified.
- C. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.

- D. Perform tests and inspections.
 - 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- E. Tests and Inspections:
 - 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect assembled neutralization systems and their installation, including piping and electrical connections, and to assist in testing.
 - 2. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
 - 3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- F. Chemical-waste piping will be considered defective if it does not pass tests and inspections.
- G. Prepare test and inspection reports.

3.10 STARTUP SERVICE

- A. Engage a factory-authorized service representative to perform startup service for neutralization systems.
 - 1. Complete installation and startup checks according to manufacturer's written instructions.
 - 2. Sampling Tank Monitor:
 - a. Verify that neutralization system is installed and connected according to the Contract Documents.
 - b. Verify that electrical wiring installation complies with manufacturer's submittal and installation requirements in Division 26 Sections.
 - c. Install neutralizing solutions and limestone.
 - d. Energize circuits.
 - e. Start and run systems through complete sequence of operations.
 - f. Adjust operating controls.

3.11 CLEANING

- A. Use procedures prescribed by authorities having jurisdiction or, if not prescribed, use procedures described below:

1. Purge new piping and parts of existing piping that have been altered, extended, or repaired before using.
2. Clean piping by flushing with potable water.

3.12 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain neutralization systems.

3.13 PIPING SCHEDULE

- A. Transition and special fittings with pressure ratings at least equal to piping pressure rating may be used in applications below unless otherwise indicated.
- B. Single-Wall, Chemical-Waste Sewerage Piping: Use any of the following piping materials for each size range:
 1. Retain one or more of first eight subparagraphs below. Verify availability of materials in sizes listed. If more than one type of material and joining method is used, identify various materials on Drawings and show points of transition from one material to another.
 2. NPS 2 to NPS 4: Stainless-steel drainage pipe and fittings and gasketed joints.
 3. Cemented joints.
 4. NPS 1-1/2 to NPS 4: PVDF drainage pipe and fittings and electrofusion joints.
 5. NPS 1-1/2 to NPS 4: Glass pipe and fittings and coupled joints.
 6. CPVC
- C. Aboveground Chemical-Waste Piping: Use any of the following piping materials for each size range:
 1. NPS 1-1/2 to NPS 6: PVDF drainage piping and mechanical joints.
 2. NPS 1-1/2 to NPS 6: NPS 2 to NPS 4 stainless-steel drainage piping with socket-and-spigot ends and gasketed joints.
 3. NPS 1-1/2 to NPS 6: Borosilicate glass pipe and fittings, couplings, and coupled joints.
 4. CPVC
- D. Under Slab-on-Grade, Indoor, Chemical-Waste Piping: Use any of the following piping materials for each size range:
 1. NPS 1-1/2 to NPS 6: PVDF drainage piping and electrofusion joints.

2. NPS 1-1/2 to NPS 6: NPS 2 to NPS 4 stainless-steel drainage piping with socket-and-spigot ends and gasketed joints.
3. NPS 1-1/2 to NPS 6: Borosilicate glass piping with covering, couplings, and coupled joints.
4. CPVC

END OF SECTION 22 66 00

GENERAL REQUIREMENTS

GENERAL CONDITIONS

1. DEFINITIONS

The following definitions are intended to clarify the relationships involved in this contract and are used as defined throughout this specification.

a. SPECIFIER IDENTIFICATION SYSTEM.

Each model number includes the code *R124 as a suffix. This code is known as the Specifier Identification System. It is not to be removed by the bidders. Its purpose is to identify the specifier to the vendors providing equipment in the event it is necessary to communicate questions, clarifications and comments, from prior to bid award through the final purchase. It is to be used on all correspondence including fax and e-mail when communicating with manufacturer representatives and factories.

b. KITCHEN EQUIPMENT CONTRACTOR (K.E.C.)

The K.E.C. is the party responsible for the supplying, delivering, and installing of all items included in this contract.

c. SUB-CONTRACTORS

The K.E.C. may contract SUB-CONTRACTORS to perform any portion of this contract, but final responsibility for the proper performance of this contract rests with the K.E.C.

d. GENERAL CONTRACTOR (G.C.)

The G.C. or CONSTRUCTION MANAGER (C.M.) has the responsibility for overall installation, scheduling, deliveries, coordination of various trades, and rough-in and connection of utilities for equipment in this contract. The K.E.C. must closely coordinate his activities and needs with the G.C./C.M.

e. ARCHITECT

The ARCHITECT is the OWNER'S representative for the proper performance of all elements of this project and will be included in the flow of all documents he may require.

f. KITCHEN DESIGNER

ROMANO GATLAND is the KITCHEN DESIGNER for this contract and represents the OWNER in all matters included and also acts as a technical advisor to the ARCHITECT. In order to function effectively, Romano Gatland must be advised of any modifications proposed by any party to this contract which may affect the performance of this contract.

g. OWNER

The OWNER'S responsibility in facilitating the performance of this contract includes:

1. The designation of a representative who has the ability and authority to render prompt decisions and provide pertinent information.
2. Informing all parties to this contract of critical dates, budget limitations, outside contracts, or other factors which could affect the performance of this contract.
3. Issuing all instructions to the K.E.C. through the Kitchen Designer.

h. N.I.K.E.C.

Whenever the abbreviation N.I.K.E.C. is used in this contract, it shall mean the item or items are not part of the foodservice contract.

2. CONTRACT DOCUMENTS

a. Contract Documents for the K.E.C. include:

1. All kitchen equipment and connection plans.
2. These General Conditions, specifications, and details.
3. All addenda issued prior to execution of this contract.

b. Drawings and specifications are intended to complement each other, so that neither is complete without the other. The K.E.C. should not submit bids, enter agreements, or entertain execution of this contract without complete access to all contract documents.

c. Drawings and specifications are for assistance and guidance of the K.E.C. and indicate the arrangement and location of equipment. Exact locations, distances, and levels will be governed by the building. K.E.C. shall accept his contract with this understanding.

d. Romano Gatland will furnish any additional assistance that may be necessary for the execution of the work. The K.E.C. should not perform any work without drawings and/or written instructions.

e. All drawings by Romano Gatland are definitive only and are not to be used for construction or shop details.

3. OWNERSHIP OF DRAWINGS

- a. All contract documents furnished by Romano Gatland are the property of Romano Gatland. They are not to be used on any other project, wholly or in part.

SECTION 11 40 00 - FOOD SERVICE EQUIPMENT

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

Work of this Section shall conform to the requirements of the Contract Documents.

1.2 DESCRIPTION

A. Work Included:

Food Service Equipment required for this work is indicated on the Drawings and includes, but is not necessarily limited to the following:

1. Furnish all labor, materials and services necessary to complete the work of this Section.
2. Supplying and setting in place all new food service equipment and appliances as shown on the drawings and listed in the "Schedule of Equipment".

B. Related Work:

1. Electrical service and connection to Kitchen Equipment, overload protection requirements wiring between starters, when starters and controls are not integral with equipment.
2. Plumbing work and connections, including fittings which are not integral part of equipment, floor drains, water and waste lines to refrigeration compressors including their connections, and miscellaneous plumbing work, except as otherwise specified in this Section.
3. Heating, ventilating and air conditioning except as otherwise specified in this Section.
4. Concrete, masonry and miscellaneous metals, except as otherwise specified in this Section.
5. Stainless steel corner guards attached to building structure.
6. Dining tables, chairs, cash registers, cashiers' stools, pots, pans, dishes, glassware, trays, silverware will be provided by the Owner.

1.3 QUALITY ASSURANCE

A. Manufacturers Instructions

In addition to the requirements of these specifications, comply with manufacturer's instructions and recommendations for all phases of work.

B. Standards

1. Underwriters' Laboratories.
2. Published standards of the National Sanitation Foundation.
3. American Society of Mechanical Engineers
4. National Fire Protection Association Standards Pamphlet No. 96.
5. National Electrical Code.
6. All applicable National, State and Local Codes.

1.4 SUBMITTALS

A. Shop Drawings

1. Shop drawings shall be submitted in accordance with requirements of the General Conditions. (Note: Reproduction or enlargement of contract drawings is not acceptable).
 - a. Floor plans, showing detailed dimensions for utility lines and equipment to a scale of 1/4" equals 1'-0". These dimensions shall be taken from finished walls and columns and include all electrical and plumbing floor "stub-up", "out of wall" and "branch to connection (BTC)" notations for use in the field.
 - b. Floor plans, showing detailed dimensions for elevated bases, floor depressions, wall openings, locations of partitions and wall reinforcing as related to equipment supplied under this Section, to a scale of 1/4" equals 1'-0".
 - c. Dimensioned Equipment Construction Drawings, indicating reinforcement, anchorage and other work required for completion and installation of equipment under this Section to a scale of 3/4" equals 1'-0".
 - d. One (1) print and one (1) reproducible of all shop drawings required shall be submitted for approval.
 - e. Manufacturer's standard catalog cut sheets shall be submitted in a covered, bound booklet preceded by a corresponding cover sheet. Each cover sheet shall include the item number, model number, manufacturer's name, required utilities, and all options and accessories specified. Two (2) booklets shall be submitted for approval.
 - f. Schedule of Equipment and Connections: A schedule similar to what is shown on Drawings including all remarks and general notes submitted as part of the mechanical rough-in, HVAC and base and depression drawings.

Note: Isometric details of Custom Fabricated Equipment will not be acceptable unless they are similar to ones already found on the Food Service Contract Drawings.

Typically, details for all custom fabricated equipment shall include fully detailed plan, elevation and section on views of all applicable specified Items.

B. Samples:

1. Applicable samples shall be submitted with shop drawings and shall be actual size of equipment consisting of, but not limited to the following:
 - a. Leg assembly, with gusset, foot, and crossrail.
 - b. Corner of table top.
 - c. Drawer assembly.
 - d. Section of hinged door.
 - e. Corner of Serving Counter.
 - f. Handles and hardware (hinges, catches, etc.).
 - g. Corner of trayslide.

1.5 PRODUCT HANDLING

A. Protection:

Use all means necessary to protect the materials of this Section before, during, and after installation and to protect the installed work and materials of all other trades.

B. Replacement:

In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect and at no additional cost to the Owner.

1.6 QUALIFICATION

A. To be considered eligible to work on this project, the Contractor for the work of this Section of the Specifications must:

1. Be a fully recognized Food Service Equipment Contractor currently engaged in the installation of standard manufactured and custom fabricated commercial Food Service Equipment for a period of five (5) years prior to submitting bid.
2. Have successfully completed similar projects of the same Food Service Equipment dollar value and design scope within the last two (2) years.

3. Specified Identification System: Each model number designated in this specification includes the code *R-124 as a suffix to identify Romano Gatland as the specifying consultant for this project. This code is part of the international Specifier Identification System (SIS) used throughout the foodservice industry. Its purpose is to identify the specifier to equipment vendors manufacturers in the event that request for clarification or other such communication with Romano Gatland is necessary during bid preparation and project execution. Submission of a bid on this project requires maintenance of this number on all project correspondence, including fax and email, when communicating with manufacturers and/or their representatives and is not to be removed from any documentation by the bidder. Upon bid acceptance the selected Kitchen Equipment Contractor agrees to maintain this code on all purchase orders generated for this project as a condition of the contract.

1.7 PRIOR APPROVALS

The prospective Contractor for the work of this Section of the Specifications shall submit all proposed alternate equipment manufacturers (substitutions) in writing to the Architect PRIOR to submitting their bid. This request shall be accompanied by the following information:

1. List of five similar installations having equipment being proposed for this project and date of completed installations.
2. Complete literature, performance and technical data describing the proposed equipment, as noted above in Section 1.04 e.
3. Location of close service office from which equipment will be maintained, if required.
4. Location of close parts inventory for this equipment, if applicable.

Prior written approval of the Architect is required for proposed alternate equipment. If no substitutions are submitted prior to bid date, it will be presumed by all parties concerned that none are being offered, and the bid is being submitted in full accordance with the Contract Documents.

NO ALTERNATE EQUIPMENT (SUBSTITUTIONS) WILL BE CONSIDERED AFTER CONTRACT HAS BEEN AWARDED.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Stainless steel, where specified, shall be Type 302, No. 4 finish.
- B. Galvanized steel sheets shall conform to ASTM-A164, Type RS. Where galvanized steel has been welded, seams shall be thoroughly cleaned and finished with one coat of zinc-rich paint (70% zinc). Galvanized structural steel shall conform to ASTM-A123 and A-153. Hot dip galvanization shall conform to ASTM-A386.

- C. Steel pipe shall be fully galvanized. All threads are to be cleaned and coated with rust-resistant coating.
- D. Structural Shapes: All angles, band channels, etc., used for framing shall conform to ASTM-A36.
- E. Fastenings: All bolts, screws, nuts, and washers shall be galvanized or cadmium-plated steel, except that where brass or stainless steel is fastened, the fastenings shall be brass or stainless steel respectively. Where dissimilar metals are fastened, bolts, screws, and nuts shall be made of an approved non-corrosive metal.

2.2 WORKMANSHIP

- A. Fasteners: Except as otherwise specified or approved by the Architect, exposed finished surfaces shall be free from bolts, screws, and rivet heads. Wherever threads of bolts and screws occur on the inside of fixtures and are either visible or might come in contact with hands or wiping cloths, such bolts and screws shall be capped with a suitable lockwasher and chrome plated brass or bronze acorn nut. Where screw threads are welded to the underside of trim and tops, their spacing and intent of rivets, bolts, and screws shall be such as to insure proper fastening and prevent bulging of the materials fastened.
- B. Welding shall be done by the electric fusion metal arc method. Carbon arc and gas welding will not be permitted. Welds shall be continuous, strong, and ductile, with excess metal ground off joints finished smooth to match adjoining surfaces. All joints in tops of fixtures, tables, drainboards, overshelving, sinks and other equipment shall be welded. Butt welds made by spot welding straps under seams and filling in the voids with solder and finish by grinding, will not be acceptable. Tops of fixtures shall be fabricated in the factory with welded joints to reduce field joints to a minimum. Field joints shall be welded and exposed welds ground smooth and polished to match factory finish. Wherever material has been depressed by a welding operation, such depressions shall be suitably hammered and peened flush with the adjoining surface and, if necessary, be ground again to eliminate low spots. Care shall be exercised in all grinding operations to avoid excessive heating of the metal, causing discoloration. In all cases, the grain of rough grinding shall be removed by successive polishing operations. Wherever such break bends occur, they shall be free of undue extrudence and shall not be flaky, scaly, and cracked in appearance. Where such breaks mar the uniform surface appearance of the materials, all such marks shall be removed. Sheared edges shall be free from burrs, fins, and irregular projections, and shall be finished to obviate all danger of cutting and laceration when the hand is drawn over the edge. Mitres and bullnosed corners shall be welded.
- C. Exposed stainless steel: All surfaces shall have a No. 4 finish as specified hereinbefore. An exposed surface shall be interpreted as meaning outside surfaces exposed to view and inside surfaces exposed to view when a sliding or swinging door is opened. The underside of a shelf may be a No. 80 ground finish. Final finish to be Contractor's factory finish and not as furnished by mill.
- D. Underside of tops: All work tops, dishtables and drainboards shall be treated with an approved spray-on sound deadening material with an aluminum spray finish. Sound deadening shall be applied to fixtures after tops have been completely fabricated.

- E. Soldering: Shall be done in strict accordance with recommended procedures of the stainless steel manufacturer. In no case shall soldering be relied upon for the stability of seams and joints. The soldering shall serve only as filler to prevent leakage. Soldering shall not at any time be used in and on any surfaces which may come in contact with foods. Soldering shall not at any time be considered as replacing welding or brazing.
- F. Equipment: All equipment shall be mechanically fastened to walls, floors, or ceiling and assembled together.
- G. Protective Coverings: All protective coverings shall be furnished and maintained for the protection of the equipment until ready for inspection and demonstration.
- H. Field Conditions: Where mechanical or structural field conditions have direct cause to alter equipment specified in any manner, notify the Architect in writing for directional purposes before proceeding with that portion of the work.
- I. Control Devices: All fittings, control valves, plumbing works, or electrical operating switches, furnished as part of the equipment shall match and equal in every respect those specified under the Mechanical and Electrical Sections of the Specifications. Each piece of apparatus shall have, in addition to mainline control valves, individual operating valves, so that any piece of apparatus may be removed for repairs without interruption of the remaining apparatus.

All such valves, switches, and fittings shall be located at a point of greatest convenience for operation and shall be furnished by the Kitchen Equipment Contractor.

- J. Appurtenances and Access Panels: Provide all appurtenances which may not be specifically mentioned in the specifications or shown on drawings but which are required for the proper functioning of the equipment. This shall also include plumbing fittings or electrical controls which are not normally furnished by the manufacturer for the proper equipment functioning. Provide proper access panels to service equipment within the units.
- K. Starting Switches: Furnish starting switches including those for remote installation, to the Electrical Contractor, who shall install and wire same.
- L. Pipes, fittings, and Valves: All pipes, fittings, and valves required within the equipment shall be furnished with respective items of equipment. Exposed plumbing, piping, fittings, valves, and conduit shall be chrome plated.

2.3 OTHER MATERIALS

All other materials not specifically described but required for a complete and proper installation of the work of this Section, shall be provided by the Contractor and shall be new, first quality of their respective kinds, and subject to approval of the Engineer.

2.4 FABRICATED EQUIPMENT

- A. Sinks and Drainboards: All sinks and drainboards shall be constructed of 14 gauge stainless steel as follows:
1. Joints shall be welded. Front and ends, unless otherwise indicated on drawings, shall be extended 3", measured at sink edge, and rolled on a diameter of 1-1/2", 180°. Raised, rolled rim at front and ends of drainboard shall be leveled with sink rolled rim and continuous therewith and shall not follow the pitch of the drainboard. Drainboards shall be pitched 1/8" per 1'-0" towards sink compartments. Sinks and drainboards adjacent to walls or adjoining equipment, shall have 10" high splashbacks, level and continuous, not following the pitch of drainboards. Where drainboards are 24" or less, they shall be supported on one inch outside diameter by 16 gauge stainless steel tubular, seamless diagonally braces and secured to sink gussets, welded around entire perimeter. Where drainboards exceed 24" in length, legs shall be provided. All vertical and horizontal corners shall be rounded to a radius of approximately one inch, with intersections meeting in the spherical sections. All sinks having two or more compartments shall have double dividing partitions with fully rounded corners, both vertical and horizontal. All corners of rolled rim shall be fully rounded outside roll and be concentric with inside roll. The bottom of each sink compartment shall be creased to a sufficient pitch toward waste outlet. Openings for hot and cold faucets shall be cut into splashbacks as required. All sinks shall be 16" deep, unless otherwise specified or indicated on the drawings. All divider panels where required shall be a minimum of 3/4" thick double wall stainless steel construction.
 2. Each sink compartment including bain-marie type sink compartments shall be provided with a waste outlet. Each waste outlet, except as otherwise specified, shall be a two inch twist-handle valve constructed of the best grade chrome plated cast brass or bronze. The outlet shall be free-flowing, non-clogging type, with a perforated strainer of stainless steel on the interior of the sink bottom and having two inch pipe size thread at the lower end, and shall provide chrome plated locknut washers and chrome plated tailpiece. The outlet shall be precision machine tee-fitting protected by a sealed stuffing box which shall eliminate the possibility of leakage from key to exterior of outlet. The outlet shall be set into a die depression and attached without rivets to the sink bottom, and shall be furnished with externally operated stainless steel lever handles. The outer body shall have an opening threaded to receive 1-1/4" iron pipe size overflow at the rear. This overflow fitting shall be 1-1/4" brass chrome plated, and shall be provided with a stainless steel strainer on the sink interior and shall be connected to the waste outlet by means of 1-1/2" brass pipe tubing which shall be chrome plated, except as otherwise specified.
 3. Sinks set into work counters or table tops shall be constructed of same gauge and materials as specified for counter top as follows:
 - a. Top perimeter of each sink shall be integrally welded to edge of opening in table or counter top. Table or counter top shall be die-punched to receive faucets.
 - b. Sinks shall have vertical and horizontal corners rounded on a 1" radius, with bottoms pitched to a 1-1/2" or 2" waste outlet, depending which is indicated on drawings. Sinks shall be finished the same as table or counter tops.

4. Water inlets shall be located in all instances above the positive water level to prevent syphoning of liquids into the water system.
 5. Dishtables shall be constructed same as previously specified for sinks and drainboards unless otherwise indicated on drawings.
- B. Stainless Steel Table Tops: All stainless steel table tops shall be 14 gauge polished stainless steel constructed as follows:
1. Edges shall be rounded and free from burrs and any excess material left. Tops shall be rolled 180°, 2" in diameter on all exposed sides. Where tables are placed against building walls, they shall be turned up in back approximately six inches, returned one inch diagonally to wall with all exposed ends welded closed. Corners shall be rounded or bullnosed. Top shall be reinforced 1-1/2" x 1-1/2" x 1/8" galvanized iron angle framework reinforcing, full perimeter of underside of top, with cross angles every 30" or less. Reinforcing shall be secured to the underside of the top with stud welds, lockwashers, and speed nuts.
 2. Underbracing shall be provided for drainboards, and dishtable tops, and shall be 1" x 4" x 1" channels of 14 gauge stainless steel. Bracing shall be welded to the underside of fixtures in a manner suitable to seal out vermin and also to create a noise deadening top surface. All channels shall extend the full length and depth of fixtures and shall be so positioned that no dimension exceeds 30" in any direction.
 3. Legs shall be constructed of not less than 1-5/8" o.d., 16 gauge stainless steel pipe. Legs shall be in no case spaced more than 6'-0" on centers. Leg cross bracing, where required, shall be constructed of not less than 1-1/4" o.d. x 16 gauge stainless steel tubing. All leg bracing shall run horizontal and level between all legs, approximately 10" above the floor, unless otherwise specified. All joints shall be completely welded around the entire perimeter.
- C. Leg Mountings:
1. Units mounted on legs that are 14" or longer shall be provided with underbracing. Legs in such cases are to be provided with not less than 12 gauge stainless steel gussets, extending downward.

Gussets shall be die stamped, fully enclosed, drawn cylindrical or cone shaped of not less than 3" in length, 2-1/2" in diameter at top. Gussets shall be welded continuously around entire circumference against the channel reinforcement.
 2. On legs between 8" and 14" in height, gussets shall be provided, but no underbracing need be furnished.
- D. Feet shall be stainless steel bullet type having an integrally formed shaft with a minimum adjustment of approximately 1-1/2" without the use of threading or adjusting bolts. Feet shall be completely sealed at bottom and shall be close fitting between tubular leg support and foot.

- E. Casters shall be heavy duty, diameter of casters and brakes as hereinafter specified.
- F. Undershelving:
1. Flat undershelving shall be 16 gauge stainless steel turned down on front and sides approximately 1-1/2" and under 1/2" to form a channel shape. Rear of shelf to be turned up 2" and hemmed. Undershelves shall be reinforced with 1" x 4" x 1" 14 gauge stainless steel channel, full length of shelf. Shelves shall be notched to fit the contour of legs. Shelves shall be fully welded to legs, crevice free.
 2. Slotted undershelving is to be constructed same as above except that die-stamped slots approximately 1-1/4" wide and 3" apart are to be furnished full length of shelf units running front to back.
 3. Counter shelves and cabinet shelves shall be constructed of 16 gauge stainless steel. All shelves shall be of the removable type unless otherwise specified on drawings and constructed in sections of not more than 30".
- G. Drawers shall be of the telescoping slide type with completely enclosed 16 gauge stainless steel housing. Provide drawers with 20" x 20" x 5" deep inside liner, 20" x 20" x 10" deep inside liner, to be removable without untracking, gray in color, smooth finish, all thermoplastic construction with all vertical and horizontal corners on a radius, with the top edges flanged out to set into a 16 gauge stainless steel track and housing combination. The housing combination shall operate on a 16 gauge stainless steel outside locking track. Fronts shall have 16 gauge stainless steel front panel with full-grip pull handles, locks hasp and staple, and heavy duty drawer slides. The drawer front shall be double wall type construction filled with an approved sound deadener within. Below specified drawer, there shall be a 21" x 24" x 1" thick, white thermoplastic carving board. Boards to fit into stainless steel "Z" slides.
- H. Wall Cabinets shall be of length as shown on plans or hereinafter specified 13" deep x 30" high, except if otherwise specified or shown on drawings. All cabinet shall have sloped, dust-proof tops. Exterior bottoms shall be of flush construction. Construct cabinet of 18 gauge polished stainless steel, of all welded construction. Cabinet interiors shall be provided with a fixed bottom shelf and two removable, adjustable, intermediate shelves. Shelves shall rest on clips, which shall be secured to keyhole strips fastened to interior of cabinet. Keyhole strips shall be pilaster stainless steel removable thumbscrew type. Door shall be of double wall construction as specified.
- I. Counter and Cabinet Doors:
1. Sliding doors shall be constructed of 18 gauge stainless steel exterior and 20 gauge stainless steel interior unless otherwise specified. Door shall be equipped with pull handles and key locks as specified. Doors shall be removable. Doors shall be double pan construction with

- all corners welded and shall be filled with an approved 1/2" thick sound deadener. Doors shall be provided to permit removal for cleaning and adjustment without the use of tools. Bolts and screws shall be kept to a minimum and shall be of corrosion resisting metal. Spacers, where not exposed to view, shall be 14 gauge 3/4" diameter stainless steel tubing. Upper suspension nylon rollers shall be heavy duty to fit stainless steel track so as to minimize wear and noise. Doors shall operate on rollers freely without friction or rubbing between doors, door suspensions and upper sliding framework including hardware.
2. Double sliding doors shall be provided with double overhead tracks and carriers for maximum clear door opening. Units shall be provided with trackless bottom with concealed guide for overhead roller doors. Guides shall be equipped with limit stops to prevent telescoping of doors.
 3. Hinged doors shall be constructed of 18 gauge stainless steel exterior and 20 gauge stainless steel interior, with all corners welded and insulated with an approved sound deadener material within. Hinges, catches, door handles and locking devices shall be provided as hereinafter specified.
 4. Plastic laminated hinged doors and removable panels shall be constructed of 3/4" thick marine plywood. Flake board, chip board, particle board or any variation of such is not acceptable. Doors and panels to be provided with finished plastic laminate on front and all edges; rear to be provided with backer sheets; all with edges banded. Plastic laminate to be applied to substrate with contact adhesive as recommended by plastic laminate manufacturer. Hinges, catches, touch-type releases and locking devices shall be provided as hereinafter specified.

Note: This Contractor to verify all plastic laminate patterns, colors and finishes with architect.

- J. Wall shelves shall be of length as shown on plans or hereinafter specified. All shelves shall be constructed of 16 gauge stainless steel, turned up 2" at both sides and rear, unless otherwise specified or shown on details. Rear shall be hemmed. Sides shall be fully welded and enclosed above and below shelf, flush with rolled edge as shown on details. Shelves shall be supported on 12 gauge stainless steel brackets spaced no more than 4'-0" o.c.. Brackets shall be welded to shelves as hereinbefore specified.

2.5 HANDLES, BRACKETS, LOCKING DEVICES AND HARDWARE

- A. Wherever equipment is provided with handles, knobs, hinges, brackets, or other miscellaneous hardware, all shall be either satin finish chrome plated or stainless steel. All pull handles to be of the full-grip type.
- B. All sliding and hinged doors and all drawers in tables, cabinets, refrigerators, storage bins, to be furnished with extra heavy duty security type locking devices of cylinder type, chrome plated. Keying for all locks whether used for doors, drawers, storage bins, etc. Owner to verify preferred keying of all locks.

- C. All stainless steel hinged doors shall be provided with stainless steel lift-off type hinges and adjustable tension type catches. Unless otherwise specified, each shall be fully mortised into doors and corresponding mullions to create a flush, clean appearance.
- D. All plastic laminated hinged doors to be furnished with hinges and catches.
- E. All mobile stands and tables to be provided with heavy duty casters and caster brakes.

2.6 MOTORS AND ELECTRICAL CHARACTERISTICS

A. Motors:

- 1. Shall be of the drip-proof, splash-proof, or totally enclosed type having a two hour duty cycle and ball bearings (except small timing motors which may have sleeve bearings). All motors shall have windings impregnated to resist moisture. Motors shall have ample power to operate machinery for which designated, under full load operating conditions, without exceeding nameplate ratings.
- 2. Fractional horsepower motors 1/2 HP and above shall be supplied to operate on 208 volts, 3 phase, 4 wire, and shall be provided with a magnetic pushbutton unless otherwise called for in equipment schedule.
- 3. Motors 1/3 HP and under shall be 120 volt 60 cycle, single phase, provided with a manual starting switch with thermal overload, unless these motors shall be used for devices requiring automatic operation, in which case they shall be of the magnetic type with manual reset.

B. Heating Elements: Wherever heating elements are required for operation of kitchen equipment, each separate heating element shall be interconnected with a switch and pilot light. Where a single element has a three setting, the switch shall have a multiple setting, consisting of high, medium, low and off positions.

C. Portable Equipment: Electrically operated portable equipment shall have a ground wire and a polarized plug approved for use with the type of receptacle of installation.

2.7 FAUCETS, VALVES, FITTINGS

A. Faucets, valves and fittings shall be as follows:

- 1. Dishwashing machine shall have a pressure regulator valve set for twenty pounds discharge pressure. Valves shall be self-regulating and shall have a manual adjustment range between 15-30 pounds. Valve bodies and working parts shall be of brass.

2. Provide an approved anti-water hammer device for dishwashing machine, consisting of synthetic rubber chamber cased in steel housing. Devices utilizing air chambers or coiled copper tubing shall not be accepted.
3. Faucets shall be furnished for all sinks, as follows; all as manufactured by "T & S Brass and Bronze Works, Inc.", or similar models as manufactured by "Fisher", or "Chicago", or an approved equal.
 - a. Kitchen:
 - 1) Backsplash mounted: Model No. B-231.
 - 2) Deck Mounted: Model No. B-221.
Model No. B-207 (Bain-Marie)
 - b. Served:
 - 1) Backsplash mounted: Model No. B-1127.
 - 2) Deck mounted: Model No. B-1122.
 - 3) Hand sink integral in counter: Model No. K11-4000-WH (furnished with strainer type waste outlet).

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Inspection:

1. Prior to all work of this section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.

B. Discrepancies:

1. In the event of discrepancy, immediately notify the Engineer.
2. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

3.2 INSTALLATION

- A. The installation and erection of all kitchen and cafeteria equipment specified in this section shall be performed under the supervision of an approved representative of the kitchen equipment contractor and in strict accordance with the specifications and the approved printed directions of the manufacturer.

3.3 PROTECTION OF WORK

- A. For the period during which other trades shall be on or near equipment and/or work covered by this Contract, this contractor shall cover and protect the exposed surfaces of such equipment in a manner that shall preclude injury to the finish by absorption of oil, grease, chemicals, etc., contact from tools and machinery, and from all other causes which may be incidental to operation performed in the area. Should this Contractor fail to protect his work in the specified manner, he shall absorb all expenses for such work.

3.4 CLEANING

- A. When all the work covered by this Contract, together with the work of other trades has been completed, the equipment contractor shall clean each and every item of equipment so that all traces of grease, stains, protective coatings, abrasive dust, markings, scratches, and other foreign matter are completely removed. The cleaning process shall be one which shall eliminate any further cleaning on the part of the Owner with the exception of that which would ordinarily be undertaken daily to maintain accepted standards of sanitation and appearance.

3.5 TESTINGS

- A. Tests of all equipment shall be performed in the presence of the authorized representative of the respective manufacturers. All defects disclosed by the tests shall be eliminated to the satisfaction of the Architects and the corrected areas retested.
- B. Provide necessary technicians, materials, and equipment required to conduct these tests. A statement shall be furnished by the Architect showing the schedule of testing, date, and results.

3.6 MAINTENANCE

- A. Equipment described herein shall be provided with service at no cost to the Owner, for a period of one year after final acceptance of the building. This service shall also include adjustment of all equipment. It shall also include repair or replacement of electrical and mechanical parts of the equipment whenever this is required during maintenance periods, and only genuine standard parts produced by the manufacturer of the equipment shall be used. Renewals and repairs, as necessary, due to ordinary wear and tear, shall be included as part of this maintenance service. All work under this maintenance and call-back provision shall be performed by competent personnel under the manufacturer's supervision. Work shall be done during the regular working hours and days, but local call-back emergency service shall be available at all times.
- B. For the refrigeration systems, local service at no cost to the Owner, on a twenty-four hour per day call basis shall be provided for a period of one year from date of initial start-up. A representative of the local servicing organization shall be present at a start-up and adjustment of the various systems and shall become thoroughly familiar with the requirements and characteristics of each system.
- C. In addition to the above, all hermetically sealed units shall be furnished with a warranty for a period of five years from after final acceptances and installation.

D. Provisions shall be made for properly trained authorized personnel to demonstrate to the Owner's operators the operation of all equipment including refrigeration systems. In addition, four (4) complete printed copies of the instructions shall be furnished to the Owner, covering the operation and maintenance of all equipment. This information shall be submitted in the following manner for initial review by the Food Service Consultant, prior to use by the Owner:

1. A covered, bound booklet containing Manufacturer's current printed Installation/Operation/Maintenance/Parts manuals for all equipment hereinafter specified (including all accessories, components, faucets, etc.). Each manual shall be clearly labeled with their respective item number designation as hereinafter specified.
2. Booklet shall include a Table of Contents listing each equipment item included within the booklet, complete with corresponding item number, quantity and description as hereinafter specified.
3. Booklet shall also include a Service Agency Listing. This listing shall include the complete name, address and phone number of the local Service Agency for all equipment included within the booklet.

3.7 SPECIAL NOTES

- A. Equipment listed under "Schedule of Equipment" shall match in every respect all mechanical and electrical requirements as indicated on the Contract Drawings.
- B. The installation and erection of all Food Service equipment shall be performed under the supervision of an approved representative of the Food Service Equipment Manufacturer in strict accordance with the specifications and the approved printed directions of the Manufacturer.
- C. Dimensions given herein are approximate only, and in all cases where equipment is intended to occupy fixed locations and spaces, the physical conditions of the building are to control the absolute sizes.
- D. Furnish steam pressure reducing valves as required for steam operated units.
- E. Provide locks for standard manufactured refrigerator and freezer doors, drawers, cabinet doors, etc.
- F. All penetrations in any work table or serving counter tops required to run mechanical services to any equipment items located on same shall be fitted with rubber grommets to protect these service lines (unless otherwise noted) on the Contract Documents.
- G. All troughs and drains related to tilting kettles and skillets must be positioned in such a manner so as to fall within the pour pattern required. This Contractor to coordinate with all applicable trades.

3.8 SCHEDULE OF EQUIPMENT

ITEM NO. 1 – THREE (3) MOBILE POT/PAN RACKS

Model No. UP-4824-M *R-124, as manufactured by “IMC/Teddy Food Service Equipment” or similar models as manufactured by “Piper Products”, “Serv-O-Lift Eastern” or “Market Forge”, or an approved equal.

ITEM NO. 2 - TWO (2) HOSE REEL ASSEMBLIES

Model No. B-1434-RG *R-124, as manufactured by "T&S Brass and Bronze Works, Inc.", or “Fisher”, or “Buss-Boy”, or approved equal. Hose Reel to be furnished with check, shut off and mixing valves, and be complete with vacuum breaker and all mounting hardware. Components to be furnished as specified in this section with piping and installation as supplied as part of Plumbing Section. All piping and components to be 1/2". All exposed piping to be stainless steel, components to be chrome plated. Units to be located as shown on plan.

ITEM NO. 3 – FIVE (5) HAND SINKS

Model No. WS with towel dispenser *R-124, as manufactured by “IMC/Teddy” or similar heavy duty, stainless steel models as manufactured by “Advance” or “Eagle”, or an approved equal.

Provide sink with wrist blade type handles and all mounting hardware.

ITEM NO. 4 - FIVE (5) MOBILE DISH CARTS

Model No. PCD-9 *R-124, as manufactured by “InterMetro Industries Corp.”, or similar models as manufactured by “Cambro” or “Lakeside”, or approved equal. Dispensers to be molded, polymer construction, poker chip type and be complete with vinyl covers. Dispensers to be mobile on 4” diameter casters, two (2) with brakes.

Contractor to verify Owner’s china sizes.

ITEM NO. 5 - ONE (1) ICE MACHINE WITH BIN

Model No. KM-901MAH *R-124, as manufactured by “Hoshizaki”, or similar models as manufactured by “Manitowoc”, “Scotsman”, or approved equal. Ice Maker to be air cooled, 845 pound capacity, to be stacked on Model No. B-900SF *R-124 storage bin unit with 800 pound storage capacity.

Provide with unit, a wall mounted cartridge type in line filter system and stacking kit.

ITEM NO. 6 – ONE (1) WALK-IN REFRIGERATOR

ITEM NO. 7 – ONE (1) WALK-IN FREEZER

Walk-in shall be a Brown Walk-In *R-124, as manufactured by W.A. Brown & Son, Inc., or similar models as manufactured by “Therma Kool” or “Master Built”, or an approved equal.

GENERAL

Walk-In Coolers and Freezers shall be designed with modular panels to facilitate easy assembly and disassembly for relocation and for the expansion of the coolers or freezers at a later date if desired. The prefabricated, sectionally constructed panels shall be metal clad. Finish(s) as specified below.

The urethane foam core of the panels shall be certified by Underwriters Laboratories as having flame spread of 25 or lower and smoke generation of 450 or lower when tested in accordance with UL standard 723 (ASTM Standard E-84).

The foam core of the panels shall be tested in accordance with ASTM Standard d-1929 to determine the self-ignition temperature.

These panels shall be listed by Factory Mutual as having been tested in accordance with the Factory Mutual Full Scale Corner Test. Procedure 4880.

Panels shall be tested in accordance with ASTM Standards E-72, E-455 and E-564 for determination of the structural characteristics of the panel system.

The foam insulation shall be tested in accordance with ASTM Standard C-177 to evaluate the insulation performance of the material.

Certification of the above performance specifications must be provided by the indicated independent testing laboratory or by any other independent agency recognized by the major model building code agencies: UBC, BOCA or the SBBC.

U.L. 25 FLAME SPREAD CLASSIFIED**

Each individual panel shall have a flame spread rating of 25 or less, and have a smoke development of 400 or less. Each section shall have affixed to it a label stating the above ratings. (Class 1 composite panel.) Approval of core rated material only, does not constitute a finished product and therefore does not satisfy the requirements of the various state and local building codes.

**This rating is not intended to reflect hazards presented by this or any other material under actual fire conditions. (See U.L. Classified Buildings Materials Index)

TOXICITY

ALL individual panels shall meet or exceed New York City and New York State Toxicity requirements as established by their standards.

PREFABRICATED PANEL CONSTRUCTION

The panels shall consist of interior and exterior metal skins precisely foamed with steel dies and roll-form equipment and thoroughly checked with gauges for uniformity and accuracy. The insulation

shall be "Foamed-In-Place" rigid urethane and when completely heat cured, shall bind tenaciously to the metal skins and form a rigid four (4) inch thick insulated panel.

The urethane insulation must also adhere to the cam-action locking devices. All panels shall have 100% "Foamed-In-Place" urethane insulation and have no internal wood, metal or high density urethane structural membranes. To insure that all joints are air tight and vapor proof, all panel edges must have a "Foamed-In-Place" double tongue and groove edge on all sides which are of the same density as the rest of the panel. A flexible vinyl gasket which is also "Foamed-In-Place" shall extend around the interior and exterior perimeter of each male edge. This gasket shall not be glued or stapled. Gaskets shall be resistant to damage from oil, grease, water, detergents and sunlight, and must be NSF approved and shall be flame retardant.

The use of Refrigerant 12 as a blowing agent is specifically prohibited. All panels must be totally CFC free.

Wall panels shall be made in 11½", 23" and 46" widths.

Door panels shall be either a 46", 57½" or 69" wide panel.

Corner panels shall measure either 11½" x 11½", 11½" x 23½" or 23½" x 23½". The corners shall be a precise 90 degree angle to assure maximum strength and perfect alignment. All panels must be interchangeable for fast and easy installation.

TEN YEAR PANEL WARRANTY

The manufacturer shall warrant that the Cooler or Freezer sections shall be free from defects in material and workmanship under normal use and service and shall be obligated to repair or replace F.O.B. Salisbury, North Carolina, any section which proves to be defective within the period of ten years from the date of original shipment. This warranty shall not include labor or freight.

This warranty shall not apply to equipment which in the manufacturers opinion, has been subjected to misuse, misapplied, or improperly installed.

FLOOR INSULATION FOR DEPRESSION/FLOORLESS CONSTRUCTION (SEE DRAWINGS FOR FLOOR DETAIL)

K.E.C. to install 4" slab urethane in refrigerator and freezer, one ply of asphalt felt base paper or one ply of 6 mil thickness polyethylene sheets be placed under insulation and extended up interior sides. All joints shall be sealed.

General Contractor to run tile into refrigerator and freezer 2-1/2" bed and tile with cove upsides on interior and exterior. Concrete setting bed to be reinforced with wire mesh 2" X 2" -14-14WWM.

FINISH

The wall panel shall be .040 stucco patterned aluminum on both interior and exterior walls. A variety of other finishes are available if desired. Please consult factory for additional information.

The door shall be either .040 stucco patterned aluminum or stainless steel.

PANEL LOCKING DEVICES

Cam-action locking devices shall be accurately and precisely positioned in the panels to assure a positive joint. Where wall panels are joined together there shall be a minimum of three (3) locking devices. These locking devices shall consist of a cam-action rotating locking arm in the tongue edge. This locking arm shall engage a steel rod which is firmly anchored in the groove edge. This action will draw all tongue and groove joints firmly and tightly together. Each section of the locking device shall have sufficient surface to assure permanent and rigid anchoring. The locking device shall be bonded in the urethane foam without need of additional anchorage arrangements. Both the locking arm and the steel rod shall be housed in steel pockets and "Foamed-in-Place". The steel pockets shall have a flange on each side to give additional rigidity.

All locking sections shall be performed from the interior by means of a hex wrench which is furnished with the cooler or freezer. The wrench holes shall be recessed and covered with a stainless steel plug button. The plug buttons shall be flush with the metal skin of the panel. Surface mounted steel or plastic buttons will not be accepted.

INSULATION

Insulation shall be rigid urethane "Foamed-in-Place". The thermal conductivity factor (K) shall not exceed 0.118 BTU per hour, per square foot, per degree Fahrenheit, per inch. Overall coefficient of heat transfer (U-factor) shall not be more than .029 for 4" walls. The R-Factor shall have a value of 34. Insulation shall have 97% closed cell structure and average in-place density of 2.3 lbs. per cubic foot.

The insulation must retain dimensional stability in an operating temperature of -40 degrees F. (-40°C) to 250 degrees F dry heat (121.2C).

WALK-IN DOORS

Manufacturer's standard door shall be flush mounted. Both door section and door leaf shall be of similar construction as wall panels. Doors shall be available in widths 34", 42", 48, 54" and 60". (See Drawing for door sizes required). Reach-in doors, if required, shall be constructed in a similar fashion as the walk-in doors and shall be available in 24" x 34", 30" x 36" and 24" x 63" sizes.

A heavy duty 14 gauge steel "C" channel of "ADDISON POWER H BRACE" style construction shall be "Foamed-in-Place" around the entire door opening to secure hardware and prevent racking and warping. This steel structure when used in conjunction with the FRP door jamb form a rigid frame that eliminates thermal transfer from the exterior to the interior of the panel thus reducing the requirement for additional anti-condensate heaters.

Each door leaf shall consist of a heavy 4" wide, .250" thick, thermally fused and polished PVC perimeter into which the interior and exterior metal skins are secured and shall create a thermal break between metal facings. In addition, the PVC frame shall include a "RIBBED" channel around the inside perimeter into which the magnetic gasket shall mate and be firmly held. Each door leaf must also include interior 14 gauge steel "C" channels across the entire face of the door at hinge and latch stress points.

Two additional "C" channels are to be "Foamed-in-Place" behind the interior face to accept protector plates when required and to increase strength and rigidity. Interior steel plates for securing additional hardware (i.e., foot treadles, door closers, etc.) shall be standard part of the door construction. Securing hardware into wood blocks will not be accepted.

The door sections shall have a frame which is made of a pultruded FRP (Fiberglass Reinforced Plastic) material that provides both strength and durability. This FRP frame shall have a channel molded into it which will accept the anti-sweat heater and allow easy replacement of the heater.

Each freezer door shall have a single auto-condensate heater and shall be concealed behind the stainless steel edge of the door jamb on all sides to prevent condensation and frost formation. This heater shall be easily accessible for replacement or service. No heater shall be required around the perimeter of the door leaf. Applications of 35°F. and above shall not require a door heater.

A solar thermometer shall be mounted on the door panel. It shall provide temperature readings in a minimum range of -58°F. to +158°F. and be accurate to plus or minus 1 degree F.

When a threshold is required it shall be made of 12 gauge stainless steel and must be an integral part of the door section. The threshold must be installed by the factory and shall be of a universal design which will allow the door section to be moved from one location to another without any preparation by installers.

DOOR HARDWARE

The door hinges shall be cam-lift design and shall be heavy duty chrome plated with steel pins and nylon bushings. Hinges shall have a minimum 9" strap. Each door shall have three (3) hinges.

The door latch shall be constructed of similar materials and finish as the door hinge. The latch shall be designed to open the door easily. The inside safety release features shall comply with OSSA standards.

GASKETS FOR WALK-IN DOORS

A vinyl gasket with a magnetic core shall mate with the top edge and along both sides of the door. The magnetic force of the gasket shall be ample enough to keep the door in a closed position and form a tight seal. The bottom edge of the door shall contain a flexible double wiper gasket of black, FDA approved, 50 durometer, EPDM extrusion.

DEADBOLT LOCKS

Provide deadbolt lock(s) for all hinged doors. A safety release is mounted on the inside of the door cap to prevent entrapment of personnel.

VISION PANEL

All Doors: Vision panel 14" x 14" to be provided in center of door. A glass unit consisting of at least three panels of glass with sealed air space between glass unit, to be removable for replacement and heated.

DOOR PROTECTION

Door shall have 1/8" diamond tread on interior and exterior of lower portion - 36" high. Door shall be provided with Kason 1094 door closers.

LIGHTING

Each entrance door shall be provided with an incandescent vapor-proof light of the door section. The light shall have a coated glass shatterproof globe. A neon pilot light and toggle switch shall be flush mounted on the exterior of the door section and shall have a stainless steel cover. The door panel and door leaf shall be U.L. approved in its entirety, including all mounted accessories.

For safety reasons the vapor proof light shall be capable of accepting up to a 100 watt appliance bulb (not furnished by manufacturer).

The vapor proof light shall have a dual intensity attenuator which shall dim the 100 watt bulb to 16 watts when the light switch is placed in the off position. This will provide a continuous dim glow of light inside the walk-in.

EXTRA VAPOR PROOF LIGHTS

Ceiling sections shall contain incandescent vapor-proof lamps (quantity as shown on plans) connected to a switch and pilot light which shall be mounted in door sections on the exterior. Inlet box shall be provided for 115 volts, 60 cycles, single phase electric. Installation and interwiring shall be provided under the electrical section of the specifications. Lamp fixtures to be provided by Kitchen Equipment Contractor. (Bulbs by others).

ADDITIONAL DIAL THERMOMETER

Provide surface mounted dial thermometers with a range of -40°F to +100°F. Thermometers shall be 4½" in diameter, surface mounted and chrome plated. Capillaries shall be long enough to extend from the door to the inlet air of blower coil. Provide one thermometer for each compartment.

MODEL TAI-200 AUDIO VISUAL ALARM

TAI-200 to be installed for each compartment and to work in the following manner: When refrigeration failure causes temperature to approach the undesirable range, red indicator light goes on and horn alarm sounds instantaneously. Alarm shall be stainless steel exterior with illuminated digital read-out. It shall be flush mounted and it shall have a remote take-off. Feeler bulb shall be located at air intake of evaporator coil.

FAN CONTROL SWITCH

Install at entrance of freezer door a time switch toggle, to shut blower fan motor for freezer to allow entrance by personnel without fan blowing on them. Use Intermatic Series Model #FF30M.

(Note: Electrical connection and interwiring to blower coil by Electrical Contractor).

DRAIN LINE HEATER

Freezer drain line shall be wrapped over interior length with an electric heater cable (15 watts per foot) suitable for 120 volts, 60 cycles, single phase electric. After heater is installed, connected and tested it shall be covered with 1/2" thick insulation.

ELECTRICAL FITTINGS

Electrical Contractor to furnish the number of "sealoff fittings" required to prevent condensation in electrical junction boxes; one (1) fitting for each penetration of conduit through refrigerator and freezer walls, partitions and ceilings.

TRIM

This Contractor shall furnish and install all necessary trim of the same material and finish of the exterior walls to finish off the unit in a workman-like manner. Trim shall include all sectional panels (30" maximum length) between top of refrigerator and finished ceiling and at ends where boxes abut masonry walls and partitions. When compressors are to be mounted above boxes, these panels shall be louvered for proper ventilation of compressors.

BUMPER RAILS

Rails to be 7" high 2" deep channel made of 12 gauge aluminum. Double bumper rails on all exposed sides. Rails to be mounted at 18" and 36" above finished floor. These dimensions to be verified with owner.

CONTROLS

The temperature in each Walk-In Box shall be controlled by means of a thermostat wired to actuate solenoid valve in the liquid line, with the compressor operation controlled by the low-pressure cut-out switch. Thermostats and low pressure controls shall be adjusted to maintain the room temperature specified herein.

PIPING

Refrigerant, drain piping shall be Type L, hard drawn seamless copper tubing, with silver soldered joints. All refrigerant suction lines outside of Walk-In Boxes shall be insulated with 3/4" flexible closed cell foam insulation, applied in accordance with the manufacturer's recommendations. All condensate drain lines inside Walk-In Boxes shall be similarly insulated with 1/2" insulation. Each refrigerant system shall include a dehydrator, liquid line sight glass, shut-off valve, liquid line solenoid, thermostatic expansion valve at each evaporator, vibration isolator, and other fittings and accessories, as required.

Refrigerant lines shall extend vertically from condensing units to above the hung ceiling, then horizontally to above the evaporators, then piped in accordance with manufacturer's instructions and good practice as set forth in ASHRAE Guide and Data Book. All work shall be done in a workmanlike manner.

TESTS

Each system shall be cleaned and dehydrated by maintaining a vacuum of 500 microns or lower, for a minimum period of five (5) hours. The vacuum pump used shall itself be capable of developing a vacuum of 50 microns with its valve in a closed position. The required operating charge of refrigerant and oil shall then be added and each system shall be tested for performance.

INSTALLATION INSTRUCTIONS

A complete set of instructions covering both the assembly of the walk-in and installation of the refrigeration equipment shall be supplied.

SUPERVISION OF INSTALLATION

Contractor shall allow for factory trained supervisor to supervise installation of Walk-Ins.

ERECTION AND SERVICE

Contractor shall provide for complete erection of room(s) in allocated space, start-up of refrigeration system(s) and one-year refrigeration service contract.

CONTRACT RESPONSIBILITY

Walk-in construction and erection by refrigeration contractor.

Refrigeration hook-up by refrigeration contractor.

Condensate drain line installed by refrigeration contractor.

Control wiring and electrical connection by electrical contractor.

Contractor shall furnish to Owner one (1) booklet containing instructions covering assembly of the Walk-In, installation of the refrigeration equipment, wiring diagrams, operating and maintenance instructions, and other data pertaining to proper upkeep and operation of the Walk-In Freezers and Coolers.

WARRANTY/ WARRANTY SERVICE RIDER

The Kitchen Equipment Contractor shall guarantee, for a period of one (1) year after project has been accepted, all materials and workmanship included in his contract. He shall guarantee all requirements included in his contract and bidding documents; he shall further guarantee that all equipment, materials and workmanship be free from defects that may arise during the period of guarantee, except that which may be due to misuse. The compressor units are to carry a five (5) year manufacturer's warranty. Walk-In panels are to carry a ten (10) year manufacturer's warranty.

All equipment in this specification, unless otherwise stated, shall be as manufactured by W.A. Brown and Son, Inc., or approved equal.

Where the manufacturer supplies or relays refrigeration system warranties, the authorized factory service agency shall be certified with accredited training pertaining to refrigerant recovery procedures in effect as of July 1, 1992; the service agency shall at all times utilize approved refrigerant recovery systems and shall properly dispose of used refrigerants and refrigerant oil in accordance with Hazardous Material Regulations in the State; and shall comply with EPA Federal guidelines.

HOUSEKEEPING AND SAFETY PROCEDURE

Each door panel shall have a metal housekeeping and safety release procedure placard and shall be attached with pop-rivets to the metal skin of the door leaf. This placard must be in a highly visible location.

N.S.F. APPROVAL

Construction shall be of a design approved by the National Sanitation Foundation and shall carry the N.S.F. Label of Approval mounted on each door section.

U.L. ELECTRIC APPROVAL

All door sections shall be wired electrically in such a manner and design so as to be approved by Underwriters Laboratories and each door section shall carry the U.L. Listing Mark.

CEILING PANEL SUPPORT SYSTEMS

When the dimensions of an insulated room are such that a single span top panel is not applicable, it must be supported using an interior or exterior beam or must be supported by all thread rods (not furnished by manufacturer) attached to the building superstructure. Regardless of which method is used all beams and "c" channels shall be aluminum. Wood and steel structures, which cause added maintenance requirements, shall not be acceptable.

AIR COOLED SYSTEM:

Air flow through the rack will pass 100% of the condenser air over all the compressors. No evaporative cooled air systems. Condenser will be a master circuited type with 3/8" rifled tubes and lanced finned type, maximum four (4) row thick core. All copper finned condenser for installation near ocean. If system is mounted inside of building, proper ventilation is required.

COMPRESSORS:

Low temperature systems will use R-404a refrigerant. R-22 or R-404a refrigerant will be used for medium temperature. Compressors and refrigeration piping will be installed in such a manner as to eliminate noise, and vibration eliminators in refrigeration lines, as needed. Each compressor shall have a high-low automatic reset pressure control. All compressors over five (5) horsepower shall have an oil failure pressure control.

Each compressor shall have all necessary breakers, wiring and controls for operation for proper operation, a liquid line drier, sight glass properly sized for the compressor, suction line filter/drier and suction accumulator (low temp only), and crankcase heaters (on all compressors). A cold weather package will have temperature initiated fan cycling and head master valves on each compressor. Heated cabinet for receivers used if ambient temperature is extreme.

Time clocks mounted and pre-wired at rack system unless noted on R-1 drawing. Capillary tubes on all controls shall be tightly wrapped and protected with silicone in a manner to eliminate excessive vibration and contact with other metals.

EVAPORATORS:

Walk-in/base coils shall be direct expansion type of such size and design as to effect required temperatures, humidity and to suit the application intended, manufactured by either Bohn, Chandler, Larkin and/or Omni Temp. Evaporators used will be all "Underwriters Laboratory Listed" supplied from factory with an expansion valve, solenoid valve and thermostat, pre-wired and pre-piped under nitrogen pressure to meet the refrigerant listed on the schedule. If not pre-wired by the factory, the supplying contractor will be back charged for all field costs.

PIPING INSTALLATION:

All field piping installed as per ASHRAE standards and the sizing of the piping shall meet proper velocities as per ASHRAE standards. Insulation will be foam type 25/50 smoke and fire type. Medium temperature will use 3/4" thick wall and low temperature will use 1" thick wall. All field piping installed with plastic bushing wherever steel to copper tubing comes together on any type of hangers.

Include all labor, material, equipment, tools, refrigerant, oil, and other required accessories for the complete installation of the systems as shown and specified. Interconnection of all accessories accomplished for ease of servicing. Particular attention given to oil return, refrigerant pressure drops and neatness. Placement of all exposed pipes approved prior to installation with General Contractor. Spacing of piping in accordance with ASHRAE standards and not exceeding 8'-0". Furnish manufacturer's dimensional and schematic drawings, piping and wiring diagrams. After installation, furnish, "as built" diagram of refrigeration piping systems. This entire assembly must be installed by a Licensed Refrigeration Contractor, under the direction of the factory, as a sub-contract to this section of work.

TESTING:

After installation and before charging, evacuate all piping systems to a vacuum, at ASHRAE standards and hold 24 hours. After evacuation, charge system with nitrogen and maintain pressure of 150% working pressure for 6 hours. Cap off, install pressure gauge and hold for 24 hours minimum. Re-evacuate, hold for 6 hours, charge and make electronic detector test all joints.

WORK BY OTHERS:

Final wiring of connections, conduit and/or pull boxes, provided under applicable electrical and plumbing contracts.

WARRANTY AND SERVICE:

Included shall be a full one (1) year warranty for all parts and labor on the entire refrigeration package from the day of final acceptance of the installation as previously specified. Refrigeration Contractor shall also provide an extended one (1) year service and installation warranty on this scope of work.

Manufacturer shall also include a five (5) year extended warranty on the compressors for exchange. Driers and freon are not considered as parts. All defective or replaced parts must be returned to the factory for replacement. Lack of maintenance or missetting of temperature controls at evaporators, are not covered under labor warranty.

ITEM NO. 8 – ONE LOT(1 LOT) WALK-IN SHELVING

Each shelving unit shall consist of four (4) electroplated posts with epoxy finish, fitted with 5” diameter casters two per unit with brakes. Shelves shall be Propylene grid type with four (4) shelves per unit. System shall consist of four (4) Model No. Q1836G2 *R-124 louvered and thirty-eight (36) Model No. Q1848G2 *R-124 , as manufactured by “InterMetro Industries Corp.”, or similar models as manufactured by “Alco” or “Market Forge”, or an approved equal.

ITEM NO. 9 – THREE (3) MOBILE TRAY DRYING RACKS

Each shelving unit shall consist of four (4) electroplated posts with epoxy finish, fitted with 5” diameter casters two per unit with brakes. Shelves shall be Propylene grid type with four (4) shelves per unit. System shall consist of twelve (12) Model No. Q2448G2 *R-124 louvered and twelve (12) Model No. TR2448XE *R-124 , as manufactured by “InterMetro Industries Corp.”, or similar models as manufactured by “Alco” or “Market Forge”, or an approved equal.

ITEM NO. 10 – TEN (10) MOBILE PAN RACKS

Model No. RF78N *R-124, as manufactured by “Inter Metro Industries Corporation” or similar models as manufactured by “Cres Cor”, “Piper Products”, or “Servo Lift Eastern”, or an approved equal.

ITEM NO. 11 – SPARE NUMBER

ITEM NO. 12 – SPARE NUMBER

ITEM NO. 13 – SPARE NUMBER

ITEM NO. 14 – SPARE NUMBER

ITEM NO. 15 – ONE(1) 30 QUART MIXER

Model No. HL-300 *R-124, as manufactured by “Hobart” or similar models as manufactured by “Univex” or “Blackslee”, or an approved equal.

Each unit shall be provided with optional stainless steel 30 quart bowl, bowl guard, beater and whip, bowl dolly and adaptor.

ITEM NO. 16 – ONE (1) MIXER PARTS RACK

Rack shall be comprised of a single 2" x 1/4" stainless steel welded bar measuring 24" in diameter. Rack shall be joined to a center stainless steel collar by means of three (3) welded 2" x 1/4" cross braces or spokes.

Center collar to be welded to a 6" diameter stainless steel upper ball bearing race-plate. Lower race-plate to be welded to a 1-5/8" o.d. stainless steel tubular hanger. Hanger shall be secured to ceiling slab or structure, and above finished ceiling, provide anti-sway bracing. At finished hung ceiling furnish a stainless steel escutcheon plate.

Unit shall be further constructed with stainless steel hooks, as specified hereinbefore, and shown on details.

ITEM NO. 17 – ONE (1) RECEIVING SCALE

Model No. 1100 *R-124, as manufactured by “Detecto”, or similar models as manufactured by “Cardinal” or “Hobart”, or an approved equal.

Unit to be provided with wheeled stand.

ITEM NO. 18 – NINE (9) MOBILE DUNNAGE RACKS

Model No. D-4824-L Mobile *R-124, as manufactured by “IMC/Teddy” or similar models as manufactured by “Piper Products”, “Serv-O-Lift Eastern” or “Market Forge”, or an approved equal.

ITEM NO. 19 – ONE (1) CAN WASH/MOP SINK

Model No. DL20-1 *R-124, as manufactured by “IMC/Teddy” or similar models as manufactured by “Aire Voide” or “Cavie”, or an approved equal.

ITEM NO. 20 – ONE (1) MOP RACK

Model No. 1993 *R-124, as manufactured by “Rubbermaid” or similar models as manufactured by “Carlisle” or “Plasticom”, or an approved equal.

ITEM NO. 21 – THREE (3) ROLL-IN REFRIGERATORS

Model No. RRI232LUT-FHS *R-124, as manufactured by “Traulsen” or similar models as manufactured by “Victory” or “McCall”, or an approved equal.

Unit shall be complete with cord and plug assemblies. Hinge doors as shown on plan.

ITEM NO. 22 – ONE (1) ROLL-IN REFRIGERATOR

Model No. RR132LUT-FHS *R-124, as manufactured by “Traulsen” or similar models as manufactured by “Victory” or “McCall”, or an approved equal.

Unit shall be complete with cord and plug assemblies. Hinge doors as shown on plan.

ITEM NO. 23 – SPARE NUMBER

ITEM NO. 24 – ONE LOT (1 LOT) MOBILE STOREROOM SHELVING

Shall consist of four (4) Model No. N436EBR *R-124 and nineteen (19) Model No. N456EBR *R-124, as manufactured by “Inter Metro Industries Corporation” or similar models as manufactured by “Amco” or “Hodges”, or an approved equal.

Each unit to be four chrome plated wire shelves high on plated posts fitted with 5” diameter casters with bumpers, two with brakes.

ITEM NO. 25 – THREE (3) WORK TABLES

Tables to length as shown on plan x 2’-6” wide including backsplash, x 2'-10" high to work surface; 3'-4" high overall including backsplash.

Table top, gussets, legs, feet, undershelf and one (1) 20" x 20" x 5" deep drawer assembly are to be provided as hereinbefore specified and shown on details.

ITEM NO. 26 – THREE (3) OVERSHELVES

Unit shall be of length as shown on plan x 12" wide, with surface set 21” above table top.

Shelf and supports are to be constructed as hereinbefore specified and shown on details.

ITEM NO. 27 – TWO (2) MOBILE SLICER STANDS

Model No. T-243-A *R-124, as manufactured by “Caddy Corporation of America” or similar models as manufactured by “Cres Cor”, “Piper Products”, or “Serv-O-Lift Eastern”, or an approved equal.

ITEM NO. 28 – TWO (2) SLICERS

Model No. 2712 *R-124, as manufactured by “Hobart” or similar models as manufactured by “Univex” or “Berkel”, or an approved equal.

ITEM NO. 29 – ONE (1) WORK TABLE WITH OVERSHELF

Tables to length as shown on plan x 2’-6” wide including backsplash, x 2'-10" high to work surface; 3'-4" high overall including backsplash.

Table top, gussets, legs, feet, undershelf and one (1) 20" x 20" x 5" deep drawer assembly are to be provided as hereinbefore specified and shown on details.

Provide over top a partial shelf, length as shown on plan x 12" wide, with surface set 21” above table top. Shelf and supports are to be constructed as hereinbefore specified and shown on details.

ITEM NO. 30 - ONE (1) FOOD PROCESSOR

Model No. R2N *R-124, as manufactured by “Robo-Coupe”, or similar models as manufactured by “Hobart” or “Univex”, or approved equal. Unit to be complete with Bowl and chute options. Provide unit with attachment rack and safety micro switch. Unit to process up to 850 servings in three (3) hours. Further provide eight (8) optional cutting discs as selected by the Owner:

ITEM NO. 31 – ONE (1) PREP TABLE W/SINKS

Unit to measure 10'-0" long x 2'-7" wide x 2'-10" high to work surface; 3'-8" high overall including backsplash.

Unit to be provided with a two (2)-compartment sink with each compartment to measure 24" x 27" x 14" deep. Drainboards at left and right to be of equal length, welded integral to sink section. Drainboards, backsplash, sink, gussets, legs, feet, undershelf and cross rails are to be provided as hereinbefore specified and shown on details.

Note: Rear of backsplash shall be provided with stainless steel enclosure fully welded.

ITEM NO. 32 – ONE (1) OVERSHELF

Shall be of length as shown on plan constructed the same as Item No. 26.

ITEM NO. 33 – ONE (1) 3-COMPARTMENT POT/UTENSIL SINK

Sink unit to measure 15'-6" long x 2'-7" wide x 2'-10" high to work surface; 3'-8" high overall, including backsplash.

Provide unit with a three-compartment sink; one (1) compartment to measure 30" x 27" x 16" deep and two (2) compartments to measure 27" x 27" x 16" deep. Drainboard at left and right shall be welded integral to sink section. Drainboards, backsplash, sink, gussets, legs, feet and crossrails are to be provided as hereinbefore specified and shown on details.

ITEM NO. 34 - ONE (1) RECIRCULATING POT WASHER

Model No. PW-106 *R-124, as manufactured by “Wells”, or similar models as manufactured by “Hobart”, “Jackson”, or approved equal. Unit to be installed in soak compartment of Item No. 33. Unit to be complete with cord and plug assembly.

ITEM NO. 35 – ONE (1) SINK HEATER

Model No. 3CS-9B *R-124, as manufactured by “Hatco” , or similar models as manufactured by “Imperial”, “Jackson”, or an approved equal.

ITEM NO. 36 – ONE (1) WALL SHELF

Shelf to measure 15'-6" long x 10" wide, with work surface set 55" above floor; constructed as hereinbefore specified and shown on details.

ITEM NO. 37 – SPARE NUMBER

ITEM NO. 38 – SPARE NUMBER

ITEM NO. 39 – SPARE NUMBER

ITEM NO. 40 – TWO (2) MOBILE HEATED CABINETS

Model No. H-137-SUA-12C *R-124, as manufactured by "CresCor", or similar models as manufactured by "InterMetro Industries Corp.", or "Carter Hoffmann", or an approved equal.

Each unit shall be provided with corner bumpers and be complete with cord and plug assembly.

ITEM NO. 41 – ONE (1) COOKS TABLE W/ SINK

Shall be of length as shown on plan x 2'-6" wide x 2'-10" high to work surface.

Table top, one (1) 20" x 20" x 10" deep fully coved stainless steel sink, gussets, legs, feet, undershelf, crossrails and one (1) 20" x 20" x 5" deep drawer assembly are to be provided as hereinbefore specified and shown on details.

ITEM NO. 42 – ONE (1) UTENSIL RACK

Units shall be of length as shown on plan x 13" wide x 12" high with top of upper bar set 7'-6" above the finished floor. Rack to be two-bar type, wall mounted.

Construct rack of 2" x 1/4" stainless steel flat bar, integrally welded, ground and polished. Top bar to have rounded front end corners, set out 13" from wall; and lower bar set 3" from wall with bottom set 6'-6" above floor. Bars are to be welded to 2" x 1/4" brackets and braces.

Provide rack with polished die-formed stainless steel sliding pot hooks set 6" apart; double prong, Model No. J77-4401, for upper bar and single prong, Model No. J79-4115, for lower bar, both as manufactured by "Component Hardware Group, Inc.". Construct rack in accordance with details shown on drawings.

ITEM NO. 43 – SPARE NUMBER

ITEM NO. 44 – SPARE NUMBER

ITEM NO. 45 – SPARE NUMBER

ITEM NO. 45 – ONE (1) REACH-IN REFRIGERATOR

Model No. RHT232WUT-FHS *R-124, as manufactured by “Traulsen” or similar models as manufactured by “Victory” or “McCall”, or an approved equal.

Unit to be provided with stainless steel finished back with rear louvers.

ITEM NO. 46 – ONE (1) VENTILATOR W/FIRE PROTECTION

- a. Dimensions: Approximately 27'-6" long x 60" deep x 2'-6" high with 4" high exhaust duct collars and 4" high supply collars, consisting of two (2) 13'-9" long sections. Hoods to be furnished with interior end panels cut out for continuous capture.
- b. Ventilators shall be of the high velocity, dry centrifugal extractor type.
- c. Centrifugal grease extraction to be accomplished within the grease extraction chamber by means of strategically placed baffles located within the path of the high velocity air passing through the chamber. All baffles shall extend the full length of the ventilator. Grease extraction efficiencies to be not less than 95%. All extractor cartridges shall be fully removable. No fixed in place baffles are acceptable. Extractors to be easily removable from the floor by means of an extractor removal tool.
- d. Ventilators shall be equipped with a pitched trough with a removable grease collection located at one end.
- e. Ventilators shall operate as designed, utilizing exhaust air quantities as portrayed on the drawings.

Ventilators shall have a fully insulated supply plenum with duct collar assemblies and full length 40% open stainless steel fascia panels for discharge of tempered make-up air directly into the room space. Percentage of make-up air shall not exceed 80% of the exhaust volume. Supply air shall discharge at no more than 250 FPM. Discharge temperature to be approximately 65 degrees Fahrenheit.

- f. Ventilators shall be equipped with an exhaust duct collar fusible link type detectors.
- g. Ventilator shall be equipped with necessary hanger brackets at front and rear, for suspending from building overhead. Entire top perimeter at front and sides of ventilator shall be fully enclosed with matching removable stainless steel closure panels, 30" maximum height.
- h. Ventilators shall be equipped with six (6) 48" long double tube fluorescent type light fixtures. Fixtures shall be vaporproof and greaseproof, U.L. Listed for use in commercial kitchen hood applications. Light fixtures shall be factory pre-wired to a single connection point.
- i. Ventilators to be U.L. Listed under the category “Grease Extractors for Exhaust Ducts, U.L. 710, in compliance with all recommendations of the National Fire Protection Association’s standards for kitchen cooking equipment ventilators, approved by the National Sanitation Foundation, approved by BOCA and ICBO, and be in accordance with all local codes having jurisdiction.

- j. Ventilators to be constructed of all stainless steel, # 18 gauge (swg), type 304, #4 finish, all welded, grease and water tight. No material other than that described above shall be deemed acceptable. No ventilator shall be mounted more than 7'-0" AFF.
- k. Furnish a wet chemical type fire protection system, Ansul R-102 as manufactured by "Ansul Company" of Marinette, Wisconsin, USA or approved equal, including means for automatic and manual activation, along with means for simultaneous automatic shutting down of protected cooking equipment upon activation of said system. System shall be designed to provide surface, plenum and duct collar protection only. All exposed piping to be stainless steel or chrome plated. Fusible link detection system shall be built into ventilator sections by ventilator manufacturer. All exposed fusible links are to be recessed into top of hoods with no visible conduit. Provision shall be made for manual actuation by readily accessible and plainly marked remote manual release station in each cooking area, located no less than 54" and no more than 78" above floor. System to be sized in accordance with new U.L. 300 Test Standards. System shall be furnished and installed by authorized Ansul distributor in accordance with manufacturer's instructions and in accordance with U.L. Listings and shall conform to NFPA Pamphlet 96 and local and/or state codes and standards. This shall include mounting of system units, remote manual releases, nozzles, actuating devices and running of all pipe and control tubing appurtenant to systems.
- l. Exhaust system shall be protected against fire by installation of automatic fire extinguishing system. Unit shall be stored pressure type, of sufficient capacity as determined by published standards to provide high concentration of liquid agent in plenum areas and duct collars. Liquid agent to be stored in containers equipped with pressure gauge to verify operational readiness. Nozzles located in plenum and duct work shall be capable of functioning with heavy accumulation of grease.
- m. Automatic solenoid type gas shut-off valve shall be furnished by the Kitchen Equipment Contractor and installed by the Plumbing Contractor in gas line supplying cooking appliances under the ventilator. The Electrical Contractor shall be responsible to interconnect gas valve to fire suppression system in accordance with Ansul's recommendations and O&M Manual. Valve shall be located as close to the system as possible. Valve shall be 120/1/60 solenoid type, normally closed.

The Electrical Contractor shall be responsible to interconnect PowerGuard Technologies Momentary Power Interruption Device with the Ansul system Automan Release Mechanism.
- n. Micro switches for electrical equipment shut off and/or actuation of fire alarm system shall be furnished as part of the fire protection system by the Kitchen Equipment Contractor. The Electrical Contractor shall furnish and install shunt trip breakers for electrically operated cooking equipment as required to interface with Microswitches furnished by the authorized distributor of the fire protection system. The Electrical Contractor is to interface with the building alarm system and/or the fire command station and the Micro switches as specified by others. The authorized fire protection system installer is to verify the quantity of Micro switches required and furnish same.
- o. All access openings, holes, sleeves, chases, etc. in building structure necessary to permit piping and control tubing to be run between system unit, ventilator, and ductwork are to be provided by the General Contractor.
- p. Provision shall be made to shut off the gas and electric supply to all cooking equipment upon actuation of the system.

- q. System to be U.L. Listed. Ansulex storage container to be I.C.C. approved. Layout to be approved prior to installation by authority having jurisdiction.
- r. The Building Alarm System Contractor is to furnish and install control relay to detect operation of the system by connection to the Micro switches supplied by the Fire Protection System Contractor. The Electrical Contractor is to furnish and install the necessary wiring required for the systems as specified.
- s. Fire Protection System Installer is to provide all necessary Micro switches for interfacing with gas valve and/or shunt trip breakers as installed by the Plumbing Contractor and Electrical Contractor, respectively, to shut down all cooking equipment in the event of a fire.
- t. All ductwork is to be provided and installed by others. All ductwork must be built and installed in accordance with the National Fire Protection Association's Standard Number 96 (NFPA 96) 1998 Edition, Chapter 4 titled Duct Systems.
- u. Unit shall be two (2) CADDY AirSystems Model Number SHC-C-W-PA-165-ND-60, as manufactured by CADDY Corporation, or similar models as manufactured by "Gaylord" or "Avtec", or an approved equal.

ITEM NO. 47 – ONE (1) FLOOR TROUGH WITH GRATE

Provide a trough to measure length as on plan x 25" wide outside top edge. Construct trough of 14 gauge stainless steel with all corners fully coved and top finished with 1-1/2" channel edge having corners filled in, welded, ground, and polished. Trough bottom to have built-in pitch to waste and provide with openings to fit drains, furnished by plumbing section. Exterior sides and ends of trough to have 12 gauge stainless steel anchor straps welded on approximate 24" centers. Trough to be further constructed in accordance with details as shown on drawings.

Provide 21-5/8" wide section of cross bar type grating constructed of 1" x 3/16" stainless steel flat bar spaced 1" on center with three (3) 1/2" rods welded thru bars.

Note: The top of trough shall be set flush with finished floor on all four (4) sides.

Entire assembly to be Model No. FT *R-124, as manufactured by "IMC/Teddy", "Market Forge", "Piper Products", or Serv-O-Lift Eastern", or an approved equal.

ITEM NO. 48 – ONE (1) 40 GALLON TILTING KETTLE

Model No. KDM-40-T *R-124, as manufactured by "Cleveland Range, Inc.", or similar models as manufactured by "Groen" or "Market Forge", or an approved equal.

Unit shall be provided with kettle accessory kit.

Unit shall be interpiped and receive steam from Item No. 50.

ITEM NO. 49 – TWO (2) 20 QUART TRUNION KETTLES WITH BASE

Model No. 36-GM-K66-200 *R-124, as manufactured by “Cleveland”, or similar models as manufactured by “Groen”, or “Market Forge”, or approved equal.

Kettles gas fired and be mounted on full base type stainless steel stand, filler faucet and with built-in drainer/splashguard. Kettle to be complete with thermostat control, pressure gauge, and manual tilt.

Unit to be provided with a water filter and boiler descaling pump kit.

ITEM NO. 50 – ONE (1) STEAMER

Model No. 36-CGM-200 *R-124, as manufactured by “Cleveland Range, Inc.” or similar models as manufactured by “Groen” or “Market Forge”, or an approved equal.

Each unit shall be provided with stainless steel base cabinet, compartment door steam shut off, stainless steel base frame, low water protection, boiler descaling pump kit, kettle interconnecting kit, and water filter.

ITEM NO. 51 – SPARE NUMBER

ITEM NO. 52 – SPARE NUMBER

ITEM NO. 53 - ONE (1) GRIDDLE

Model No. G24-48GTHX *R-124, as manufactured by “Garland”, or similar models as manufactured by “Montague”, or “Vulcan”, or approved equal.

Unit to be provided with stainless steel sides and stainless steel stand.

ITEM NO. 54 – ONE (1) TILTING SKILLET

Model No. SGL-40TI *R-124, as manufactured by “Cleveland” or similar models as manufactured by “Groen” or “Vulcan”, or an approved equal.

Unit shall be provided with SKF-S pantry filler.

ITEM NO. 55 – TWO (2) DOUBLE DECK CONVECTION OVENS

Model No. MCO-GS-20-S *R-124, as manufactured by “Garland” or similar models as manufactured by “Vulcan” or “South Bend”, or an approved equal.

Each unit shall be provided with extra oven racks, stainless steel exposed surfaces and 6” stainless steel legs.

ITEM NO. 56 - FOUR (4) FRYERS W/FILTER AND DUMP STATION

Model No. M35SS *R-124 with built in filter and optional automatic basket lifts, both as manufactured by "Garland", or "Vulcan", or "South Bend", or approved equal.

Spreader cabinet to match to be complete with manifold connection, stainless steel front, top and riser.

Provide unit with full stainless steel riser, stainless steel front top ledge and fry pots, and Model No. MFMA17ES *R-124 in line type filter.

ITEM NO. 57 – ONE (1) TWO BURNER RANGE

Model No. M12S *R-124, as manufactured by "Garland" or similar models as manufactured by "Vulcan" or "South Bend", or an approved equal.

Each unit shall be provided with stainless steel exposed surfaces; 17" high stainless steel back guard, and 3/4" rear gas connection.

ITEM NO. 58 – ONE (1) POT FILLER

Model No. B-0605 *R-124, as manufactured by "T&S Brass & Bronze Works" or similar models as manufactured by "Fisher" or "Chicago", or an approved equal.

ITEM NO. 59 - ONE (1) WARE WASHER WITH BOOSTER

Model EUCC6 *R-124, as manufactured by "Champion" or similar model as manufactured by "Hobart" or "Stero", or an approved equal.

Unit shall be provided with electric tank heat, electric booster for 70 degree rise, and drain water tempering kit.

ITEM NO. 60 – ONE (1) SOILED DISH TABLE WITH SINK

Table to be of length and shape as shown on plan, 2'-6" wide including backsplash x 2'-10" high to work surface, and 3'-8" high overall including backsplash.

Top, sink unit, gussets, legs, feet and cross rails to be constructed as specified hereinbefore and shown on details. Fit end of table to machine in watertight manner.

Where indicated on plan, soiled dish table shall be provided with one (1) 20" x 20" x 8" pre-rinse sink. Provide pre-rinse sink with an all welded 12 gauge stainless steel removable rack guide, two (2) removable perforated fully covered all welded 16 gauge stainless steel scrap baskets set on 1" high stainless steel tubular legs, complete with lift handles and one (1) pre-rinse faucet assembly. Faucet to be Model No. B-113 with B-109 wall bracket, as manufactured by "T&S Brass and Bronze Works, Inc.", or similar models as manufactured by "Fisher" or "Chicago" or an approved equal.

At soiled tray window table top shall measure 4'-0" wide (thickness to suit partition) and 35" high to window sill.

Note: Soiled tray window shall be furnished and installed by General Contractor.

ITEM NO. 61 – TWO (2) HAND SINKS

Model No. WS with towel dispenser *R-124, as manufactured by "IMC/Teddy" or similar models as manufactured by "Advance" or "Eagle", or an approved equal.

ITEM NO. 62 – FOUR (4) MOBILE HEATED CABINETS

Model No. H-137-SUA-12C *R-124, as manufactured by "CresCor", or "InterMetro Industries Corp.", or "Carter Hoffmann", or an approved equal.

Each unit shall be provided with corner bumpers and be complete with cord and plug assembly.

ITEM NO. 63 - TWO (2) VENT DUCTS

Duct shall measure 3-7/8" X 24-7/8", and constructed of 18 gauge stainless steel; all welded, seamless, watertight construction. Duct shall extend from collar at top of washing machine to a point 3" above finished ceiling, ready to receive final connection as specified in HVAC Section. At the finished ceiling, provide and install an 18-gauge stainless steel angle trim around perimeter of duct.

Contractor to verify duct size of Item No. 59.

ITEM NO. 64 - ONE (1) VENTILATOR WITH FIRE PROTECTION SYSTEM

Unit to consist of one (1) Model No. SHC-C-W-PA-94-ND-60 *R-124 and one (1) Model No. SHC-C-W-PA-66-ND-60 *R-124, as manufactured by "Caddy Corporation of America", or similar models as manufactured by "Gaylord" or "Avtec" or an approved equal.

Shall be constructed the same as Item No. 46.

Note: K.E.C. to provide stainless steel filler panel between hood sections.

ITEM NO. 65 – ONE (1) IMPINGER CONVEYOR OVEN

Model No. 1116-000-A *R-124, as manufactured by "Lincoln", "South Bend" or "Turbo Chef", or an approved equal. Oven to be conveyor type of all stainless steel construction. Provide oven with hinged front panel to open fully for cleaning. Oven to be electric and operate at a temperature range of between 200 to 550 degrees F with baking times from 1 to 24 minutes. Unit to be complete with stand.

ITEM NO. 66 - ONE (1) PIZZA PREP TABLE

Model No. F18DC72 *R-124, as manufactured by “Delfield”, or similar models as manufactured by “True” or “Traulsen, or approved equal.

Refrigerator to be mobile on four 5” diameter, locking casters with brakes. Unit to be self contained with cord and plug. Unit to feature a raised ingredient rail with split hinged cover and optional 10” wide cutting board work surface. Unit to be finished on three sides with stainless steel. Unit to be complete with condensate evaporator.

ITEM NO. 67 – ONE (1) BACK COUNTER

Unit shall be length as shown on drawings x 2'-8" wide x 3'-0" high to working surface; 3'-6" high overall including backsplash.

Top, backsplash, cabinet base and interior shelving shall be constructed same as hereinbefore specified.

Front of base cabinet shall be provided with flush full height stainless steel doors and drawers with removable concealed type hinges, heavy duty chrome plate cylinder locks and full grip pulls all as hereinbefore specified.

Counter to rest on 6" high, 1-5/8" o.d. stainless steel tubular legs with stainless steel adjustable bullet feet.

Entire unit is to be constructed as hereinbefore specified.

Unit shall be further constructed in accordance with details as shown on drawings.

ITEM NO. 68 – FIVE (5) REFRIGERATED COLD PANS

Model No. RM-3 *R-124, as manufactured by “Atlas Metal Industries”, or similar models as manufactured by “Wells” or Delfied”, or an approved equal.

~~ITEM NO. 69 – SPARE NUMBER~~

ITEM NO. 69 – TWO (2) DROP-IN COLD PANS

Model No. RM-4 *R-124, as manufactured by “Atlas Metal”, or similar models as manufactured by “Delfield” or “Wells”, or an approved equal.

ITEM NO. 70– SPARE NUMBER

ITEM NO. 71 – ONE (1) ROLL-IN REFRIGERATOR

Model No. RRI232LUT-FHS *R-124, as manufactured by “Traulsen” or similar models as manufactured by “Victory” or “McCall”, or an approved equal.

ITEM NO. 72 – ONE (1) BACK COUNTER

Shall be of length as shown on plan; constructed the same as Item No. 67.

ITEM NO. 73 – ONE (1) REACH-IN REFRIGERATOR

Model No. RHT232WUT-FHS *R-124, as manufactured by “Traulsen” or similar models as manufactured by “Victory” or “McCall”, or an approved equal.

ITEM NO. 74 - ONE (1) SERVING COUNTER WITH TRAYSLIDE

Counter shall be length and shape as shown on plan x 3'-10" wide including the tray slide x 3'-0" high to work surface, 3'-4" high overall including end splashes.

Counter top shall be constructed of 14 gauge stainless steel with patron's side turned down 2" and sealed to tray slide as shown on details.

The top shall set on interior angle framework of 1-1/2" x 1-1/2" x 1/8" galvanized angle, completely boxed, with vertical angle bracing on approximate 30" centers. Top shall be secured to framework with concealed welded studs, lockwashers and acorn nuts.

Understructure of counter shall be constructed as shown on drawings with space provided for components hereinafter specified.

Patron's side of counter and exposed ends shall be finished as shown on details, with 3/4" thick marine plywood panels and hinged doors, finished with plastic laminate, color and pattern to be selected by Architect. Unexposed edges and surfaces to be covered with wax backing sheet. Exposed edges to match finished fronts to be trimmed with a matching laminate.

Counter to rest 6" high 1-5/8" diameter stainless steel adjustable legs complete with stainless steel removable toe base on patrons side.

Top and body of counter to be cut out and provided with components as hereinafter specified. Entire unit is to be constructed as hereinbefore specified.

ITEM NO. 75 - ONE (1) SERVING COUNTER WITH TRAYSLIDE

Shall be of length as shown on plan; constructed the same as Item No. 74.

ITEM NO. 76 – ONE (1) HOT FOOD SLIDE

Model No. GRSDS-36D *R-124, as manufactured by “Hatco”, or similar models as manufactured by “Merco” or “APW Wyott”, or an approved equal.

ITEM NO. 77 - ONE (1) AIR SCREEN MERCHANDISER

Model No. LPRSS4SC *R-124, as manufactured by “Federal”, “RPI” or “Master Built”, or an approved equal.

Unit to be provided with energy saving night cover.

ITEM NO. 78 – SPARE NUMBER

ITEM NO. 78 – ONE (1) BACK COUNTER

Shall be of length as shown on plan; constructed the same as Item No. 67.

ITEM NO. 79 - ONE (1) AIR SCREEN MERCHANDISER

Model No. LPRSS6SC *R-124, as manufactured by “Federal”, “RPI”, or “Master Built”, or an approved equal.

Unit to be provided with energy saving night cover.

ITEM NO. 80 – THREE (3) MOBILE TRAY DISPENSERS

Model No. SCTS-36 *R-124, as manufactured by “Delfield”, or similar models as manufactured by “Piper Products” or “Caddy” or “Carter Hoffman”, or approved equal.

Unit to be provided with silverware cutouts.

ITEM NO. 81 – SPARE NUMBER

ITEM NO. 82 - TWO (2) AIR SCREEN MERCHANDISERS

Model No. LPRSS6SC *R-124, as manufactured by “Federal”, or similar models as manufactured by “RPI” or “Master Built”, or an approved equal.

Unit to be provided with energy saving night cover.

ITEM NO. 83 – ONE (1) MOBILE ICE CREAM FREEZER

Model No. 2SF *R-124 as manufactured by “Kelvinator”, or similar models as manufactured by “Master Built”, or “True”, or an approved equal. Unit to be self contained, complete with cord and plug assembly. Mount freezer on 4” diameter casters, two with brakes. Unit to be finished on all sides and be complete with insulated hinged cover with locking hardware.

ITEM NO. 84 -FOUR (4) SINGLE CASHIER STATIONS

Counter shall be of length shown on plan x 4'-0" wide including the tray slides x 3'-0" high to surface.

Counter top shall be constructed of 14 gauge stainless steel with patron's side turned down 2" and sealed to tray slide as shown on details.

The top shall set on interior angle framework of 1-1/2" x 1-1/2" x 1/8" galvanized angle, completely boxed, with vertical angle bracing on approximate 30" centers. Top shall be secured to framework with concealed welded studs, lockwashers and acorn nuts.

Understructure of counter shall be constructed as shown on drawings, wherever possible line with stainless steel including sections of fixed intermediate and bottom shelves. Provide space for cashiers, fully lined with stainless steel, and provided locking cash drawers and foot rest as shown on drawings.

Exposed surfaces shall be finished as shown on details, with 3/4" thick marine plywood removable panels, finished with a plastic laminate as designed and selected by Architect.

Counter to rest 6" high 1-5/8" diameter stainless steel adjustable legs complete with stainless steel removable toe base on patrons side.

Entire unit is to be constructed as hereinbefore specified and as shown on details.

ITEM NO. 85 - SEVEN (7) CASH REGISTERS (N.I.C.; BY OWNER)

Unit is not in contract; to be provided by the Owner.

ITEM NO. 86 – ONE (1) ROLL-IN FREEZER

Model No. RIF132LUT *R-124, as manufactured by "Traulsen" or similar models as manufactured by "Victory" or "McCall", or an approved equal.

ITEM NO. 87 – ONE (1) HEATED SHELF

Model No. GRBW-54 *R-124, as manufactured by "Hatco", or similar models as manufactured by "Merco" or "APW Wyott", or an approved equal.

ITEM NO. 88- FOUR (4) PROTECTOR CASES

Units shall be of length as shown on plan x 12" wide at top x 14" high. Top shelf shall be constructed of 16 gauge stainless steel, finished on all sides with one inch square (turned down and in) edges, with all corners welded.

Front and ends shall be fully enclosed with 1/4" thick heat resistant glass, with all edges framed in stainless steel. Front glass enclosure to be provided with stainless steel fold down brackets for glass. A 1" air space shall be provided at top and bottom of all glass panels. Units shall be furnished with 1" x 2" stainless steel tubular supports with fully welded cantilever brackets. Ends to be supported by 1" square stainless steel tubular uprights on operator's side, secured to counter top. Ends to be omitted when case work is within 3" of full height partition. Supports shall pass through 1/2" high ferruled holes in counter top secured to framework and galvanized angle below in accordance with details as shown on drawings.

Provide under top shelf stainless steel fluorescent light fixtures complete with lamps and safety shield, interwired at factory to "ON-OFF" switches to location as shown on drawings. Light fixtures shall be full length of top and all wiring concealed through tubular supports as required. All colors of lamps to be selected by Architect.

~~ITEM NO. 89 – TWO (2) DROP-IN COLD PANS~~

~~Model No. RM-4 *R-124, as manufactured by "Atlas Metal", or similar models as manufactured by "Delfield" or "Wells", or an approved equal.~~

ITEM NO. 89 - ONE (1) SERVING COUNTER WITH TRAYSLIDE

Shall be of length as shown on plan; constructed the same as Item No. 74.

ITEM NO. 90 - ONE (1) SERVING COUNTER WITH TRAYSLIDE

Shall be of length as shown on plan; constructed the same as Item No. 74.

In addition, provide 18"x4"x1" deep integrally welded 14 gauge stainless steel trough. Trough to have built-in pitch to waste and provided with opening to fit drain.

ITEM NO. 91 - ONE (1) COFFEE BREWER (N.I.C.; BY VENDOR)

Unit is not in contract; to be provided by Vendor.

ITEM NO. 92 – ONE (1) HAND SINK

Model No. WS with towel dispenser *R-124, as manufactured by "IMC/Teddy" or similar models as manufactured by "Advance" or "Eagle", or an approved equal.

ITEM NO. 93 – ONE (1) MOBILE TRAY DISPENSER

Model No. SCTS-36 *R-124, as manufactured by "Delfield", or similar models as manufactured by "Piper Products", "Caddy" or "Carter Hoffman", or approved equal.

Unit to be provided with silverware cutouts.

ITEM NO. 94 - ONE (1) AIR SCREEN MERCHANDISER

Model No. TMC-34 *R-124, as manufactured by "True", or similar models as manufactured by "Beverage Air" or "Masterbilt", or an approved equal.

ITEM NO. 95 – FIVE (5) DISPLAY CASES

Unit shall be of size and shape as shown on plan x 16" wide x 30" high to top shelf. Shelves to be mounted on 1" x 2" stainless steel tubular supports with fully welded cantilever brackets. Supports shall pass through 1/2" high ferruled holes in counter top and be secured to framework and galvanized angle in accordance with details shown on drawings.

Shelves shall be constructed of 3/8" thick tempered glass with all edges set into stainless steel channel frames. Case shall also be provided with 5" wide adjustable sneeze guards of 1/4" thick plate glass set into stainless steel channel frames.

First shelf shall be positioned 14" above counter top, second shelf 8" above first, and third shelf 8" above second shelf.

ITEM NO. 96 - ONE (1) SERVING COUNTER WITH TRAYSLIDE

Shall be of length as shown on plan; constructed the same as Item No. 74.

ITEM NO. 97 – ONE (1) LOT CORNER GUARDS

Corner guards to be 18 gauge stainless steel, 48” high and mounted 1” above base molding. Unit to be further constructed as hereinbefore specified and shown on drawings.

K.E.C. to provide corner guards on all exposed corners in back of house area.

ITEM NO. 98 –TWO (2) DROP-IN HOT FOOD SECTIONS

Model No. WIH-3 *R-124, as manufactured by “Atlas Metal”, or similar models as manufactured by “Delfied” or “Wells”, or an approved equal.

ITEM NO. 99 – ONE (1) DROP-IN HOT FOOD SECTION

Model No. WIH-4 *R-124, as manufactured by “Atlas Metal”, or similar models as manufactured by “Delfied” or “Wells”, or an approved equal.

~~ITEM NO. 100 – SPARE NUMBER~~

ITEM NO. 100 – ONE (1) CASHIER STATION

Counter shall be of length shown on plan x 7'-0" wide including the tray slides x 3'-0" high to surface.

Counter top shall be constructed of 14 gauge stainless steel with patron's side turned down 2" and sealed to tray slide as shown on details.

The top shall set on interior angle framework of 1-1/2" x 1-1/2" x 1/8" galvanized angle, completely boxed, with vertical angle bracing on approximate 30" centers. Top shall be secured to framework with concealed welded studs, lockwashers and acorn nuts.

Understructure of counter shall be constructed as shown on drawings, wherever possible line with stainless steel including sections of fixed intermediate and bottom shelves. Provide space for cashiers, fully lined with stainless steel, and provided locking cash drawers and foot rest as shown on drawings.

Exposed surfaces shall be finished as shown on details, with 3/4" thick marine plywood removable panels, finished with a plastic laminate as designed and selected by Architect.

Counter to rest 6" high 1-5/8" diameter stainless steel adjustable legs complete with stainless steel removable toe base on patrons side.

Entire unit is to be constructed as hereinbefore specified and as shown on details.

ITEM NO. 101 – SPARE NUMBER

ITEM NO. 102 – SPARE NUMBER

ITEM NO. 103 – ONE (1) WALK-IN REFRIGERATOR

Length and shape as shown on plan; constructed the same as Item no. 6.

ITEM NO. 104 – ONE (1) WALK-IN REFRIGERATOR

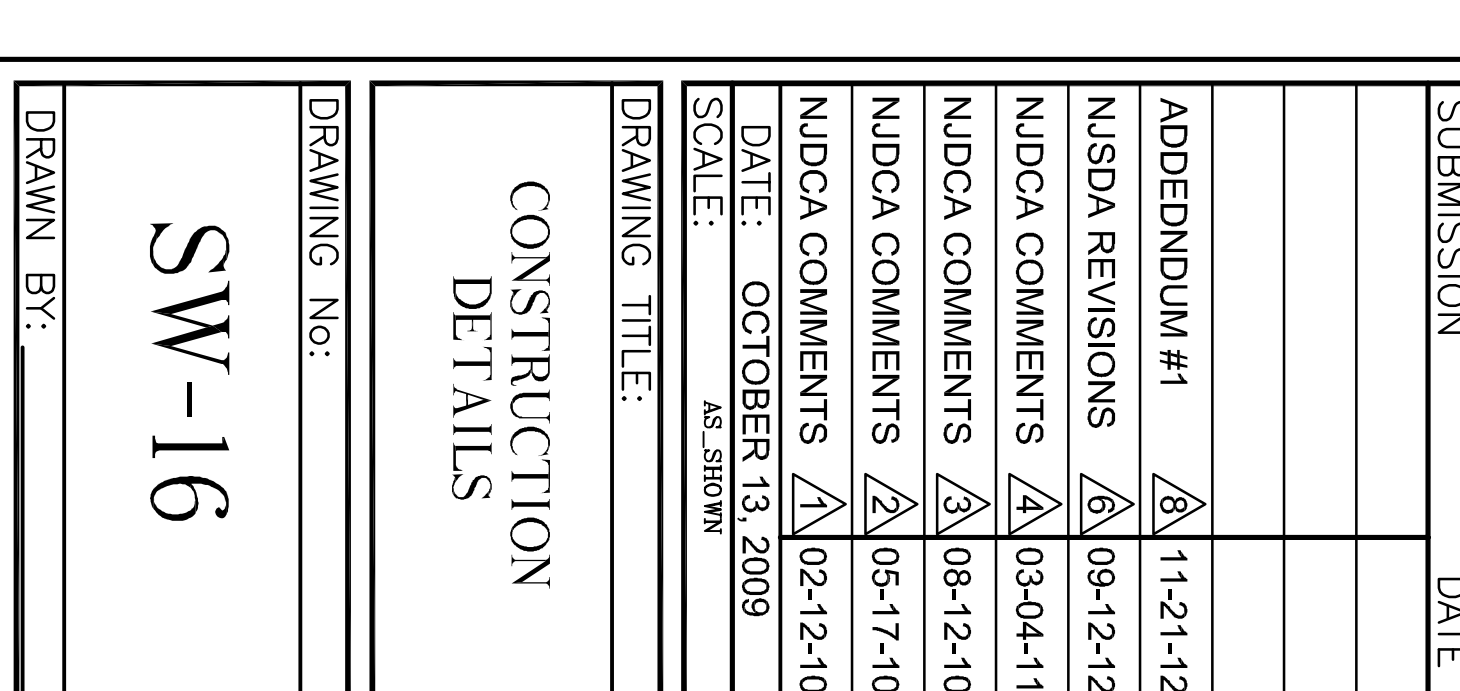
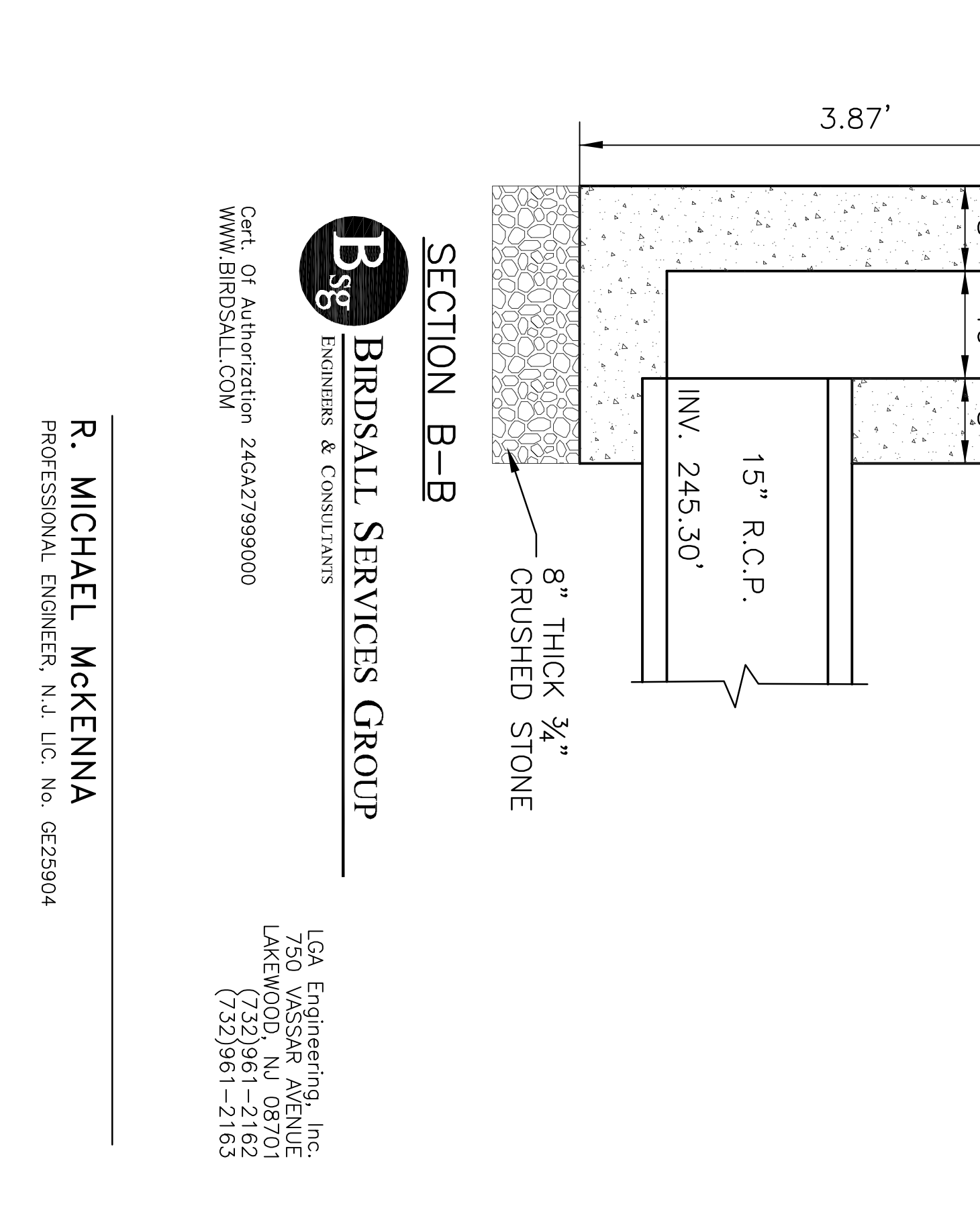
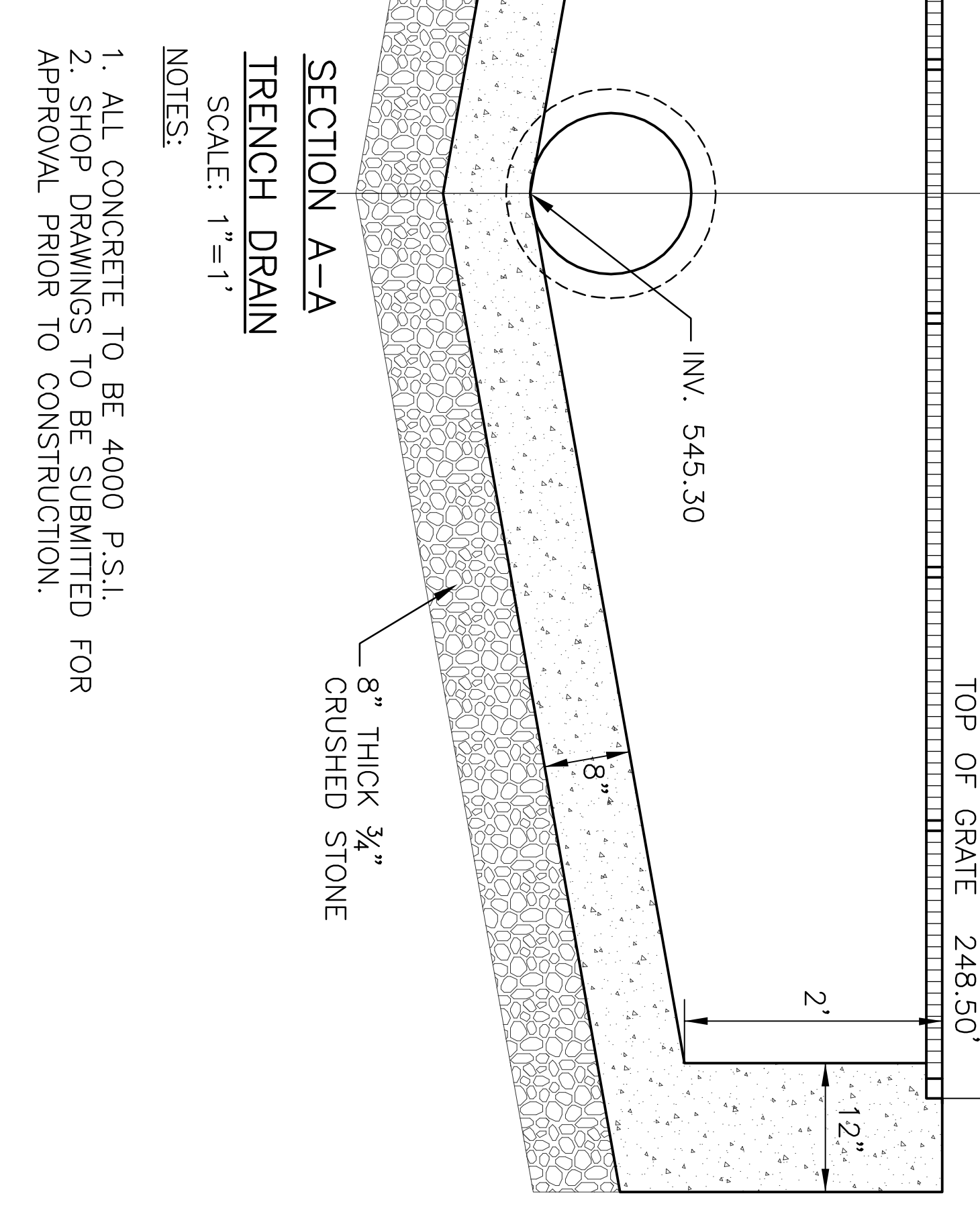
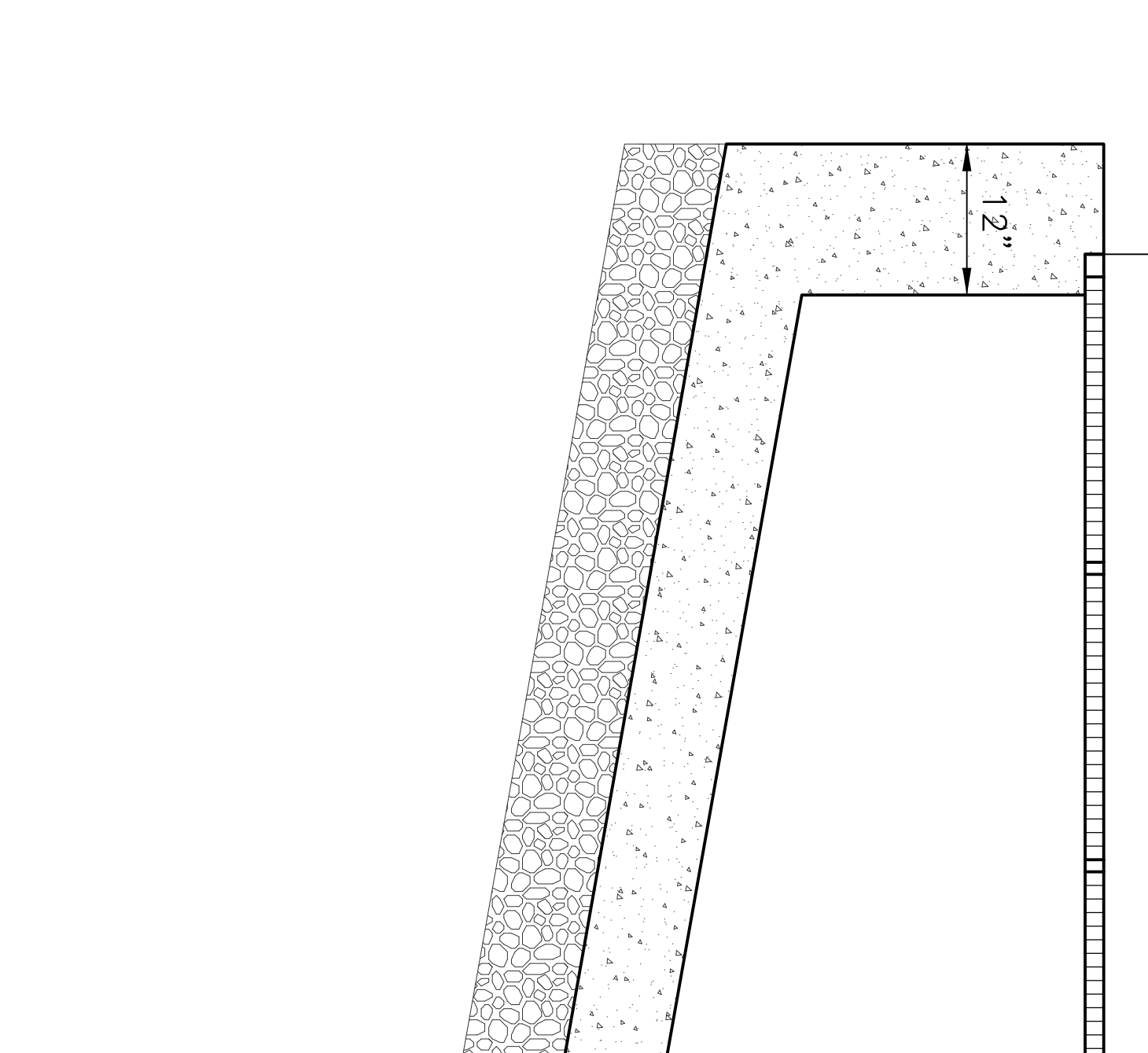
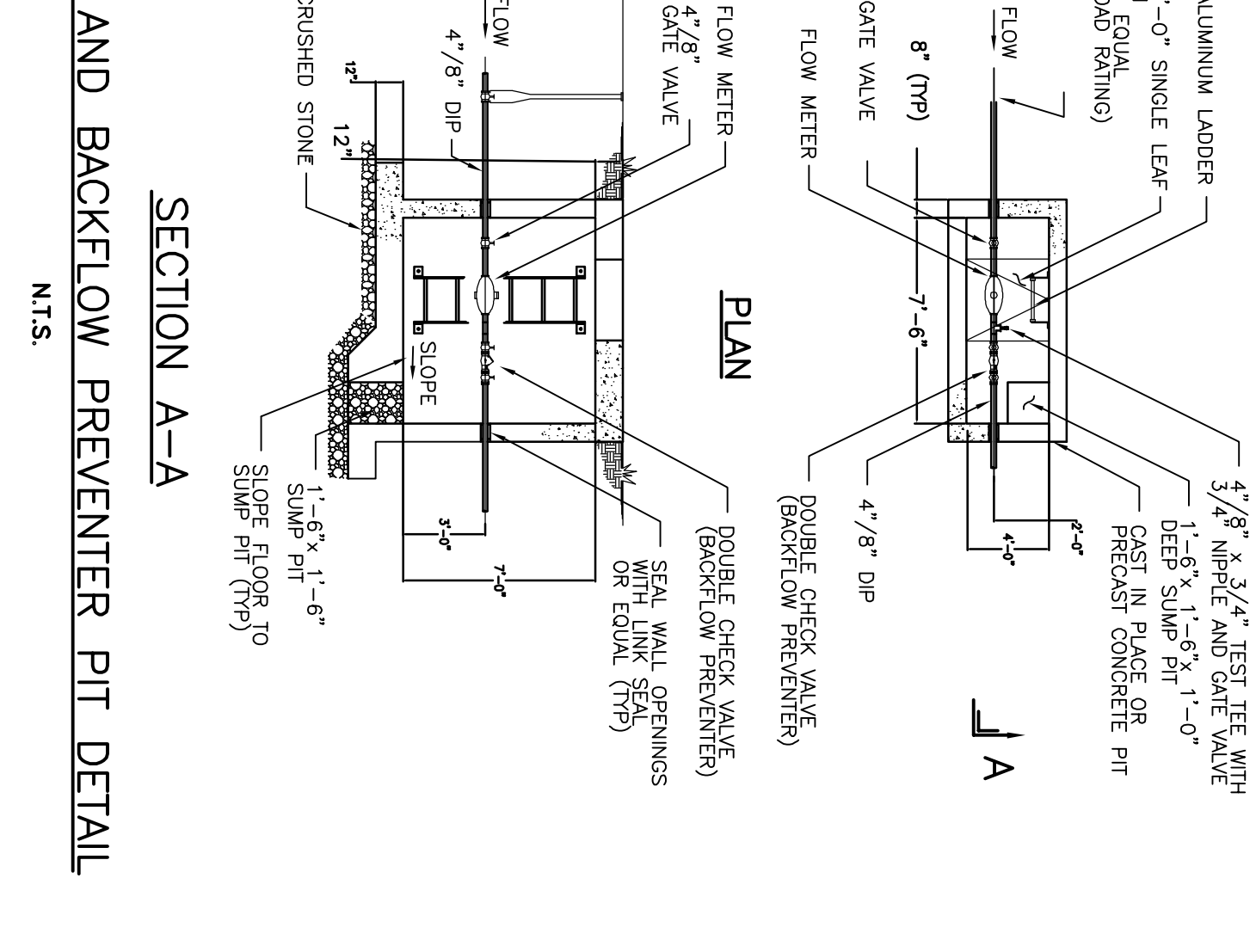
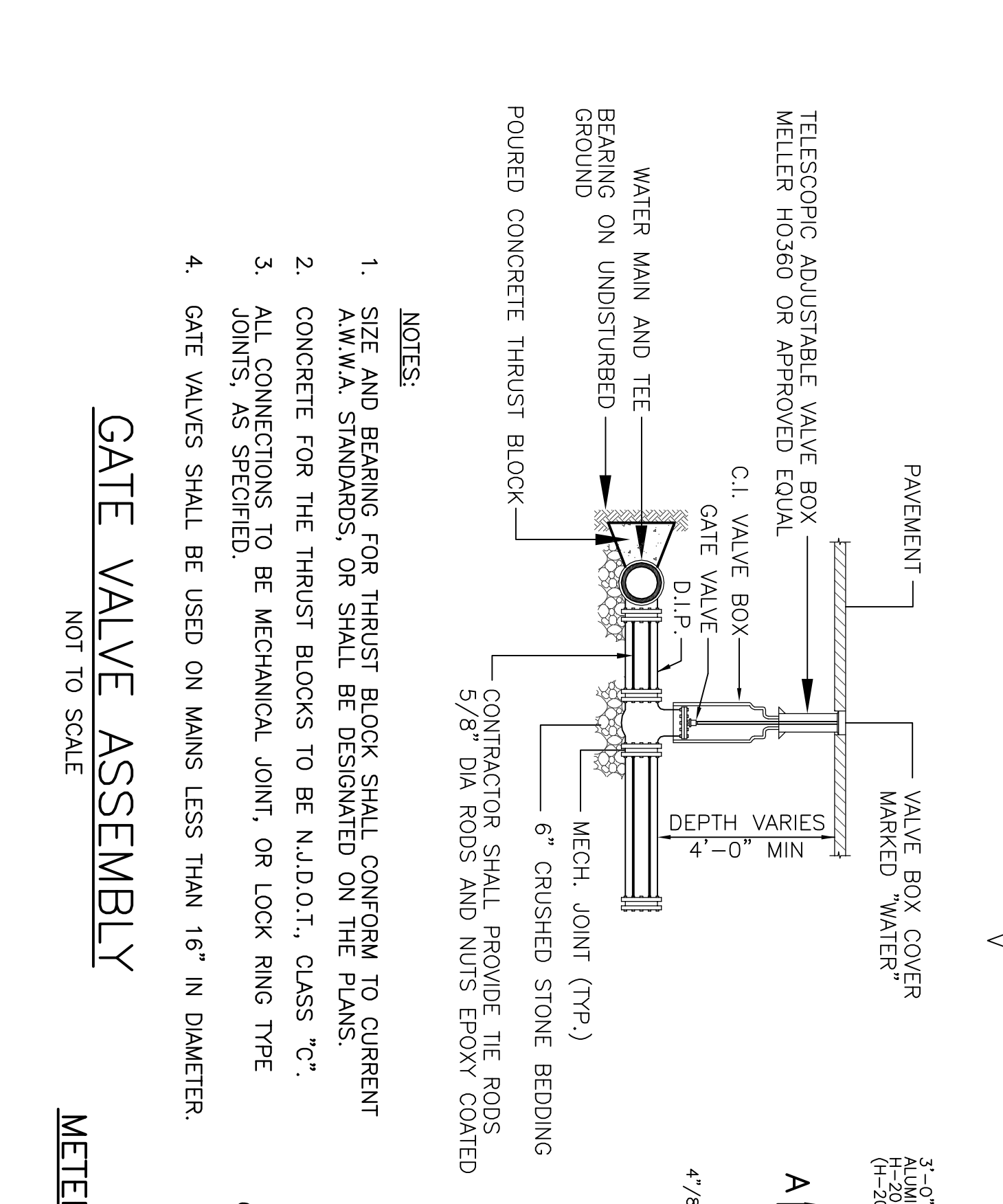
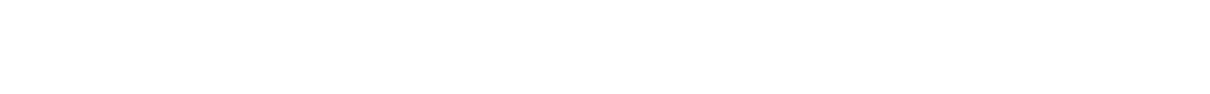
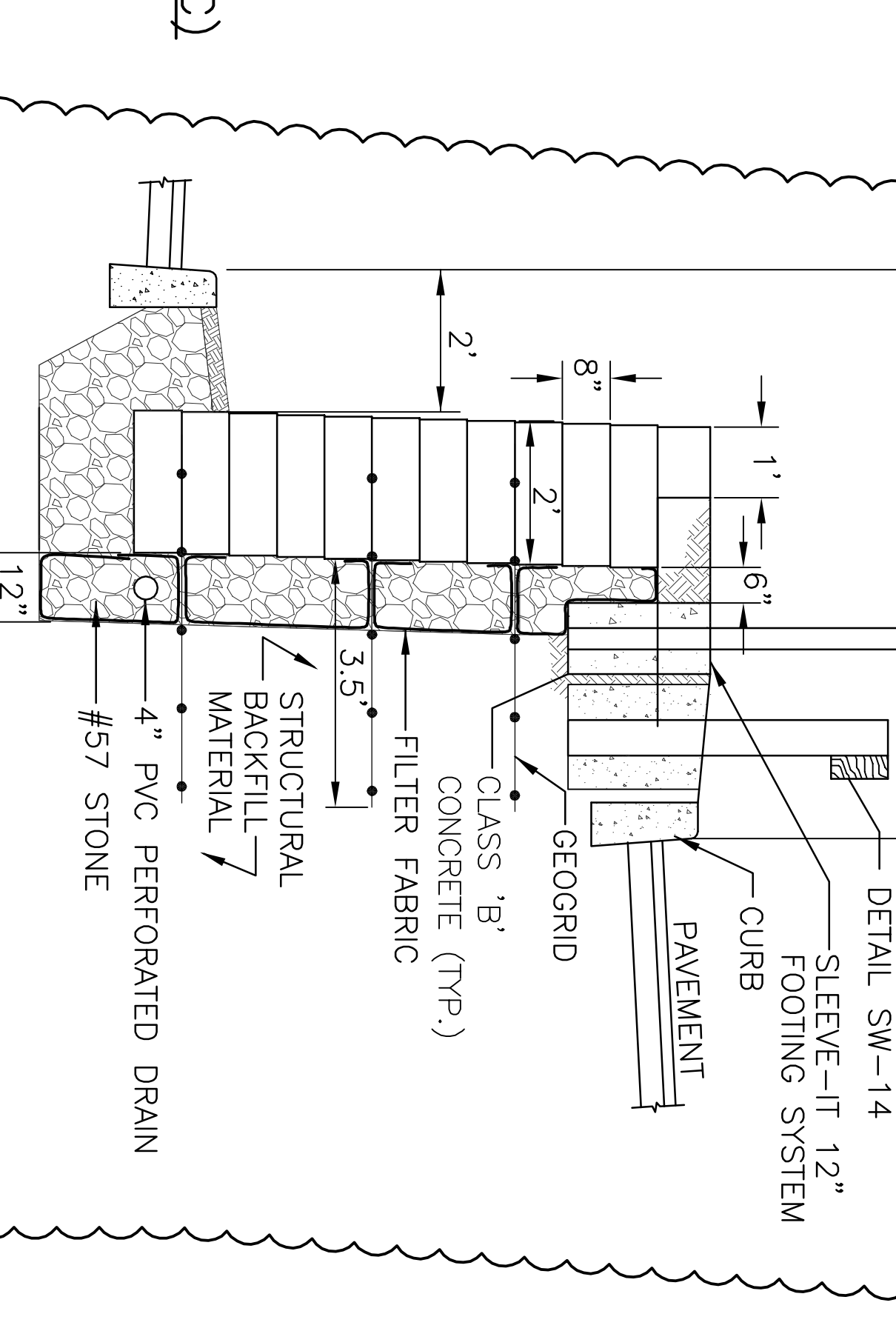
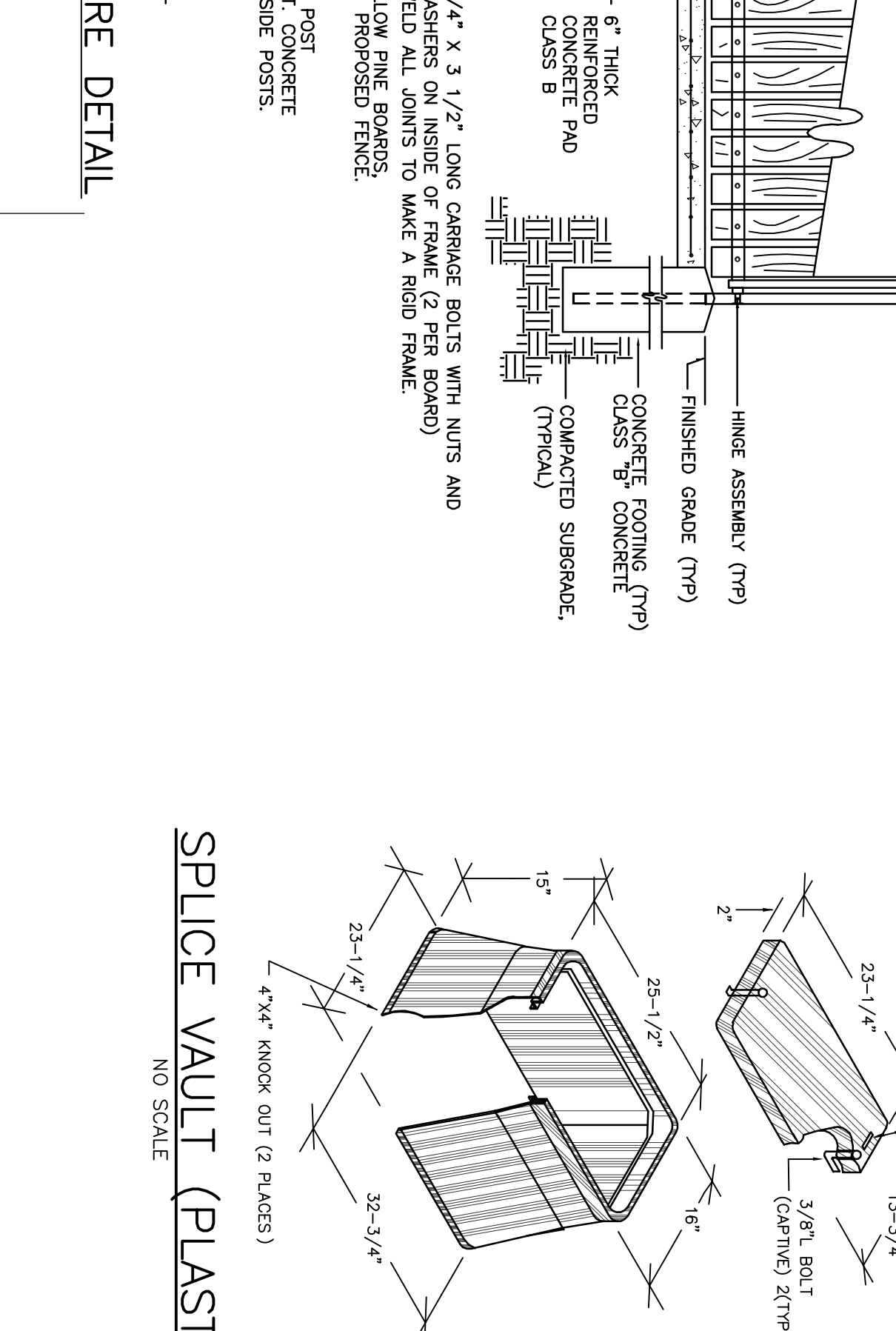
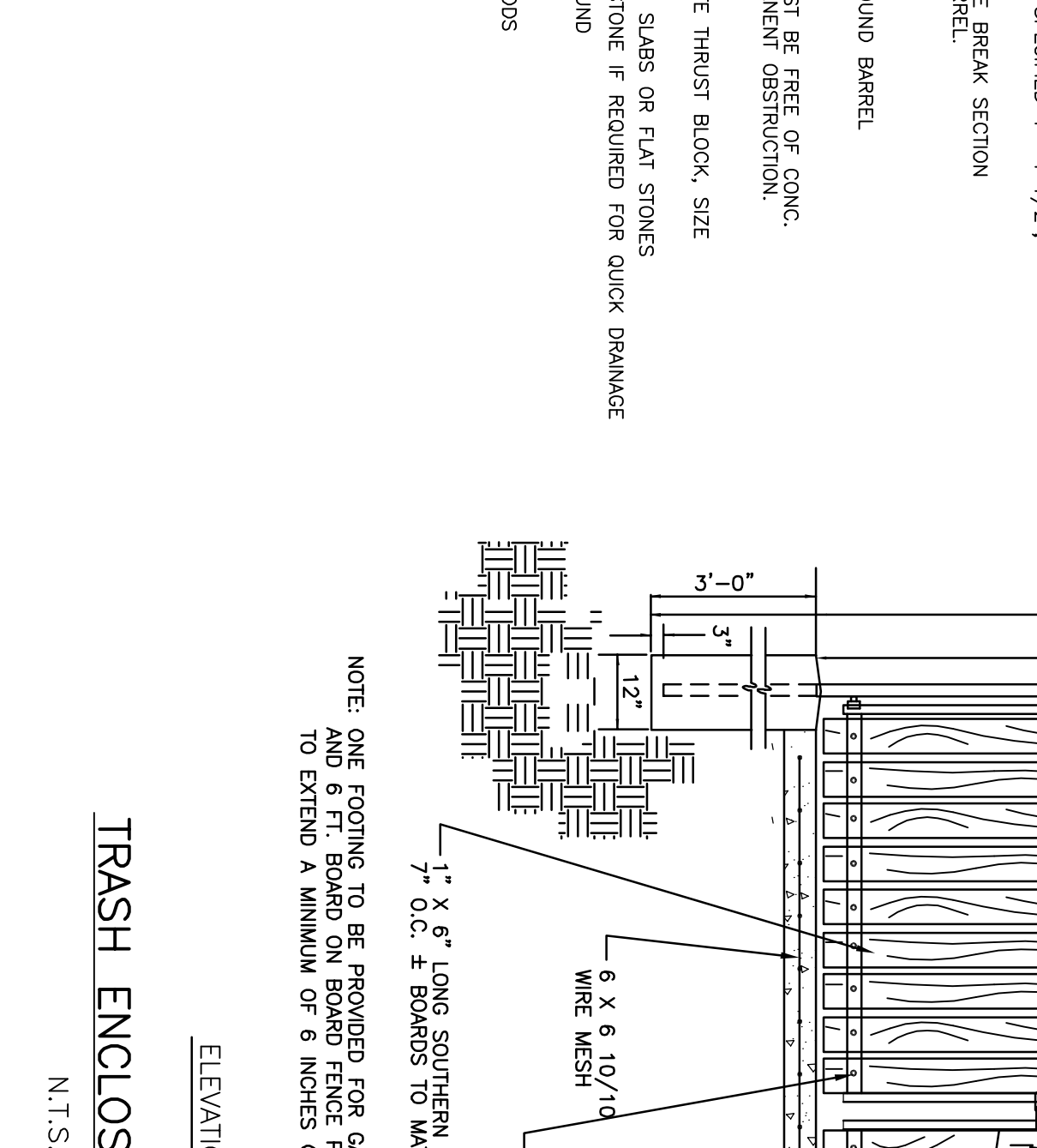
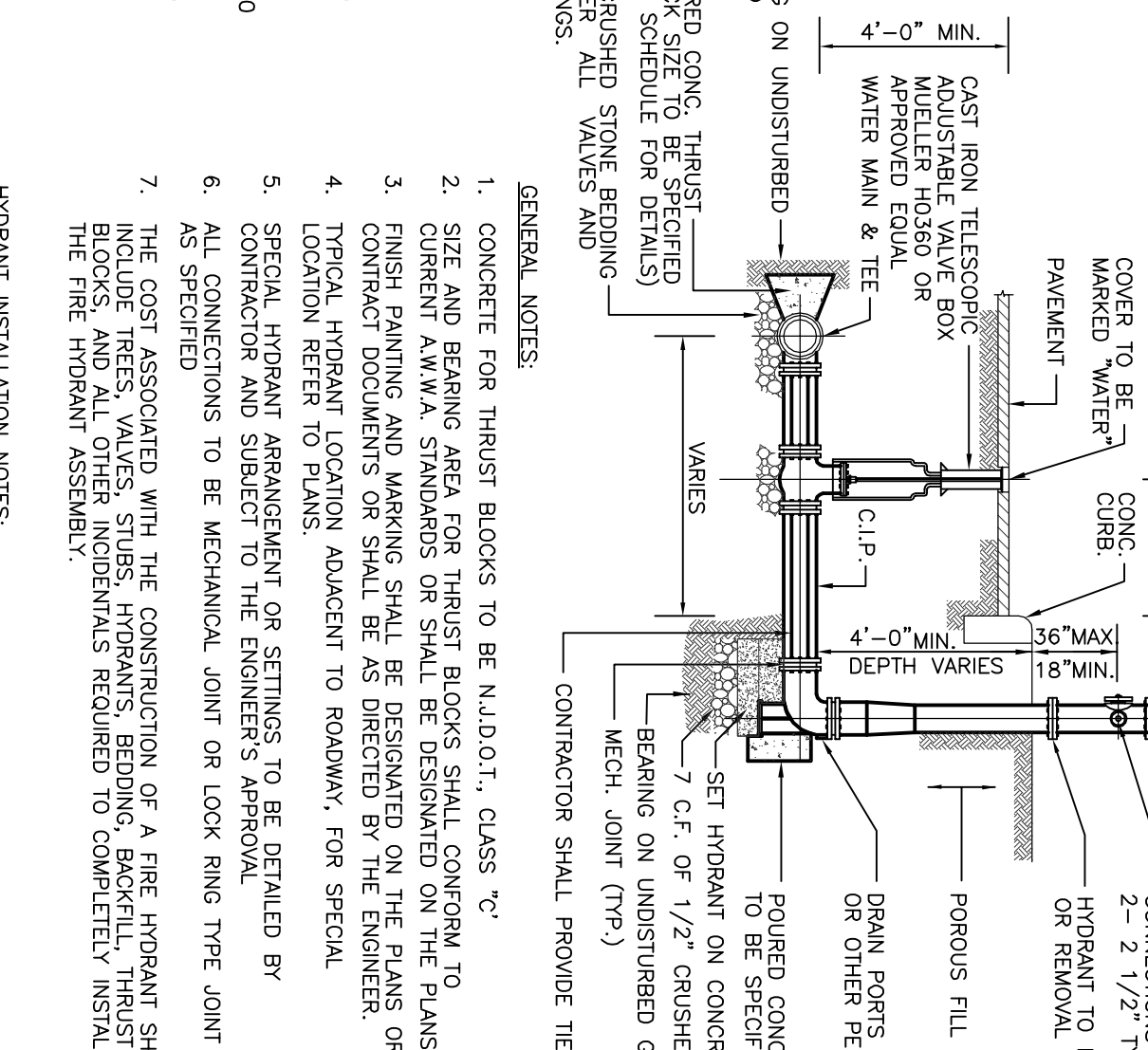
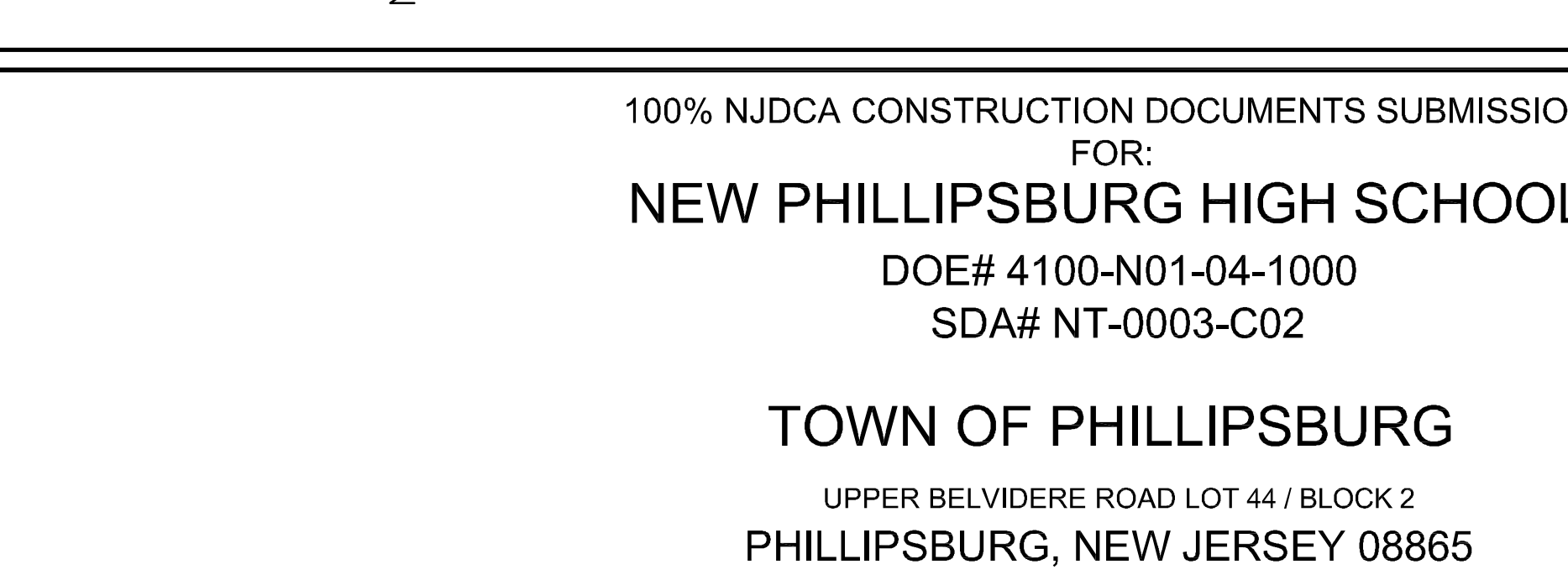
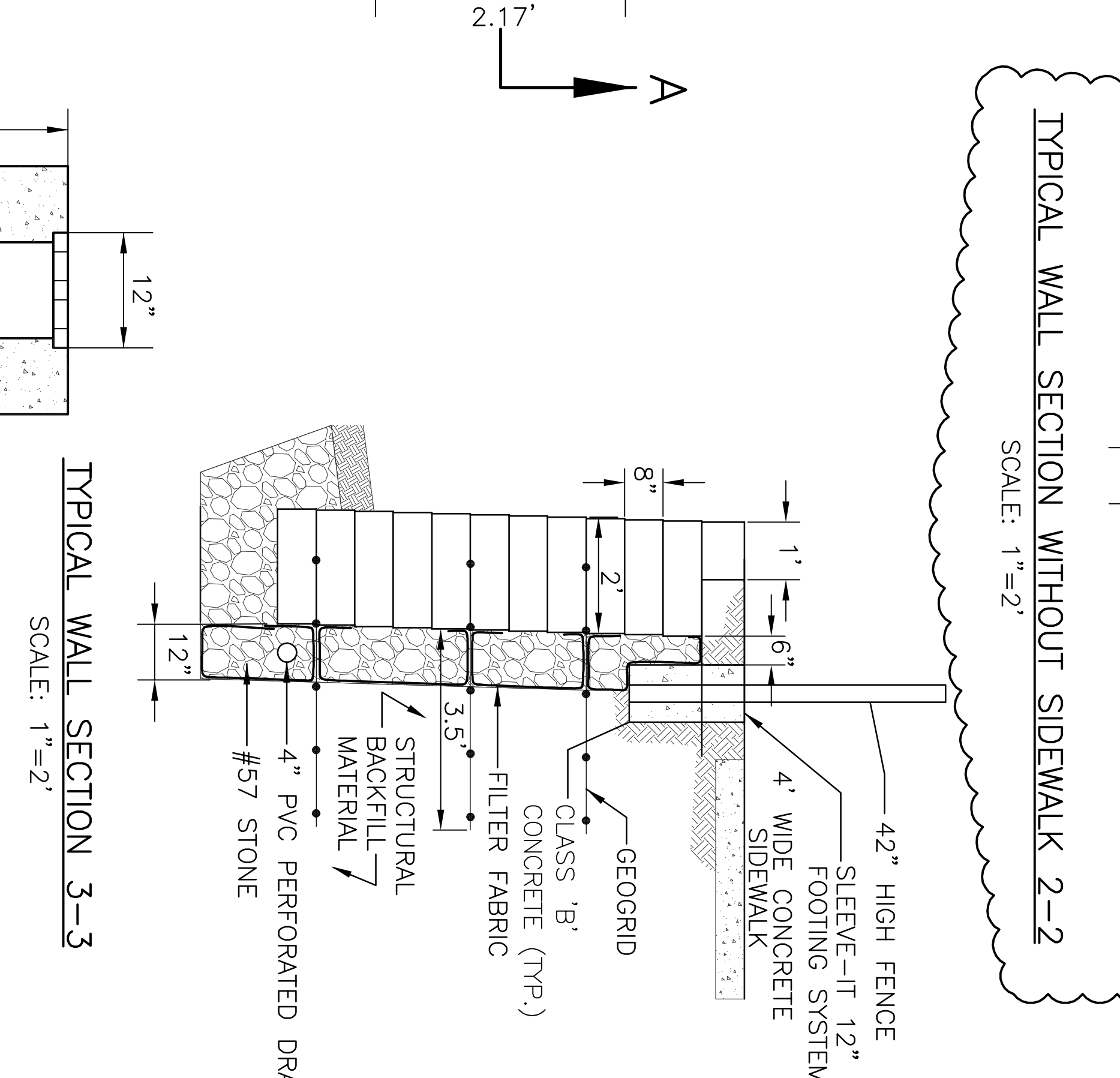
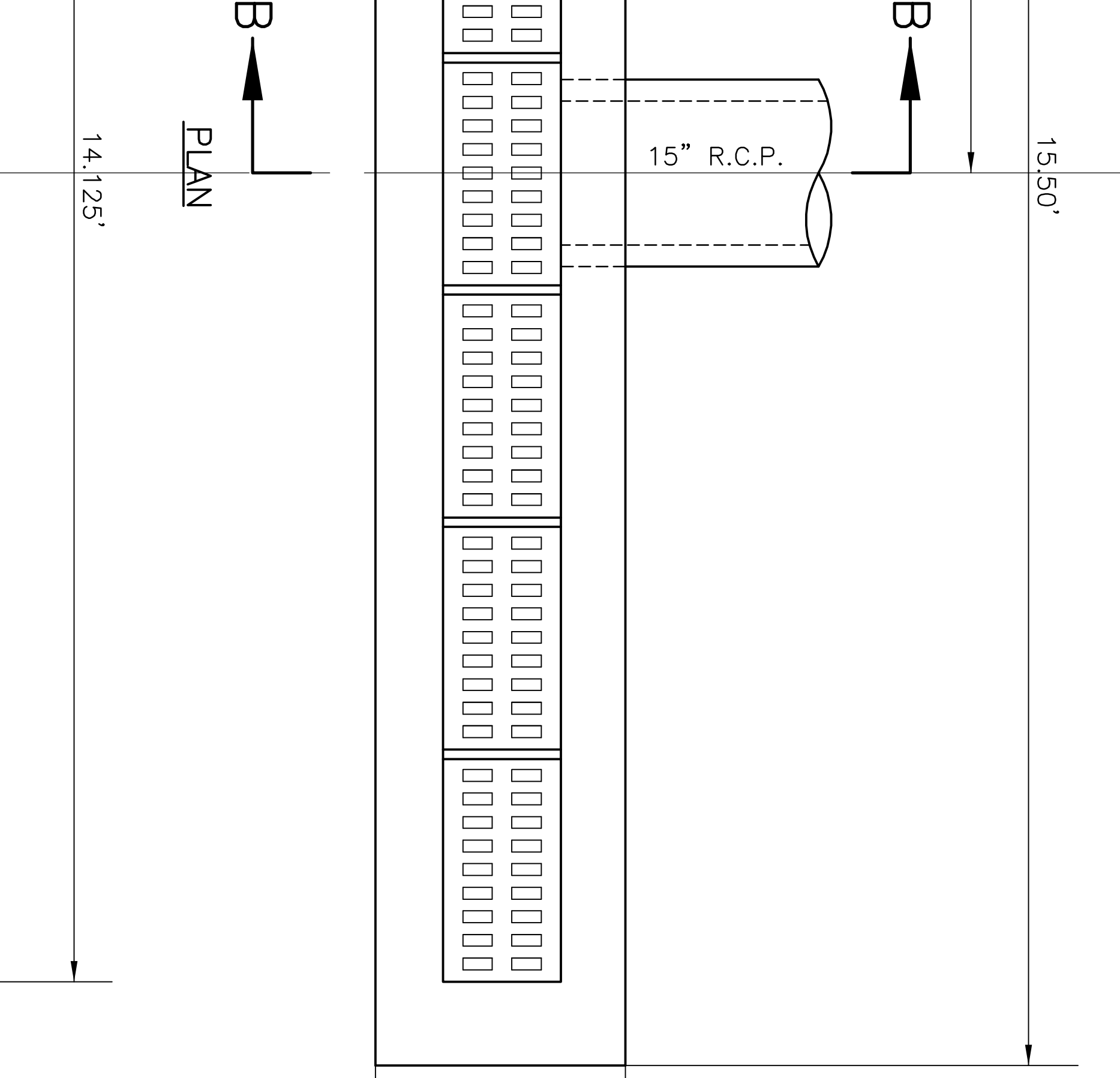
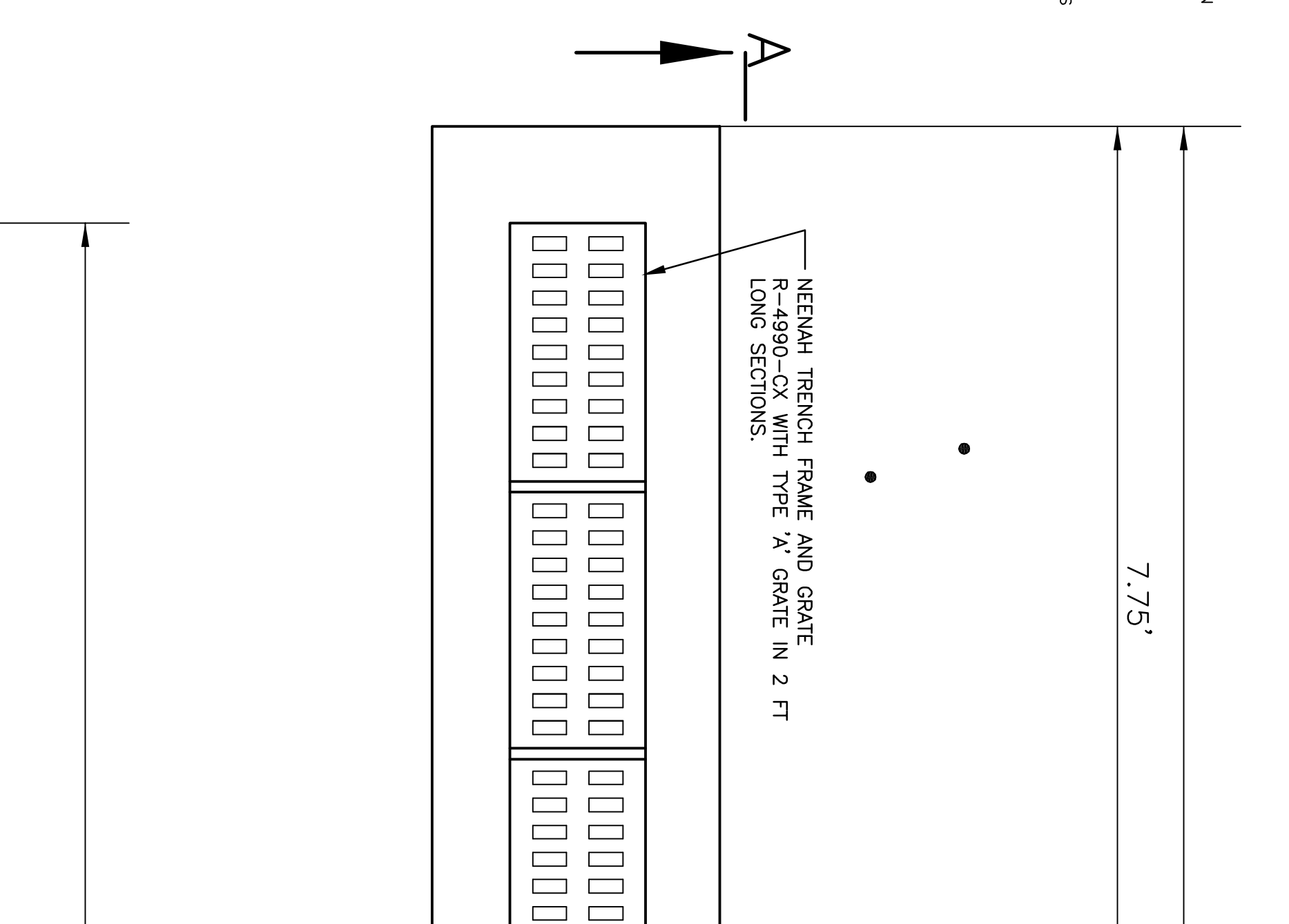
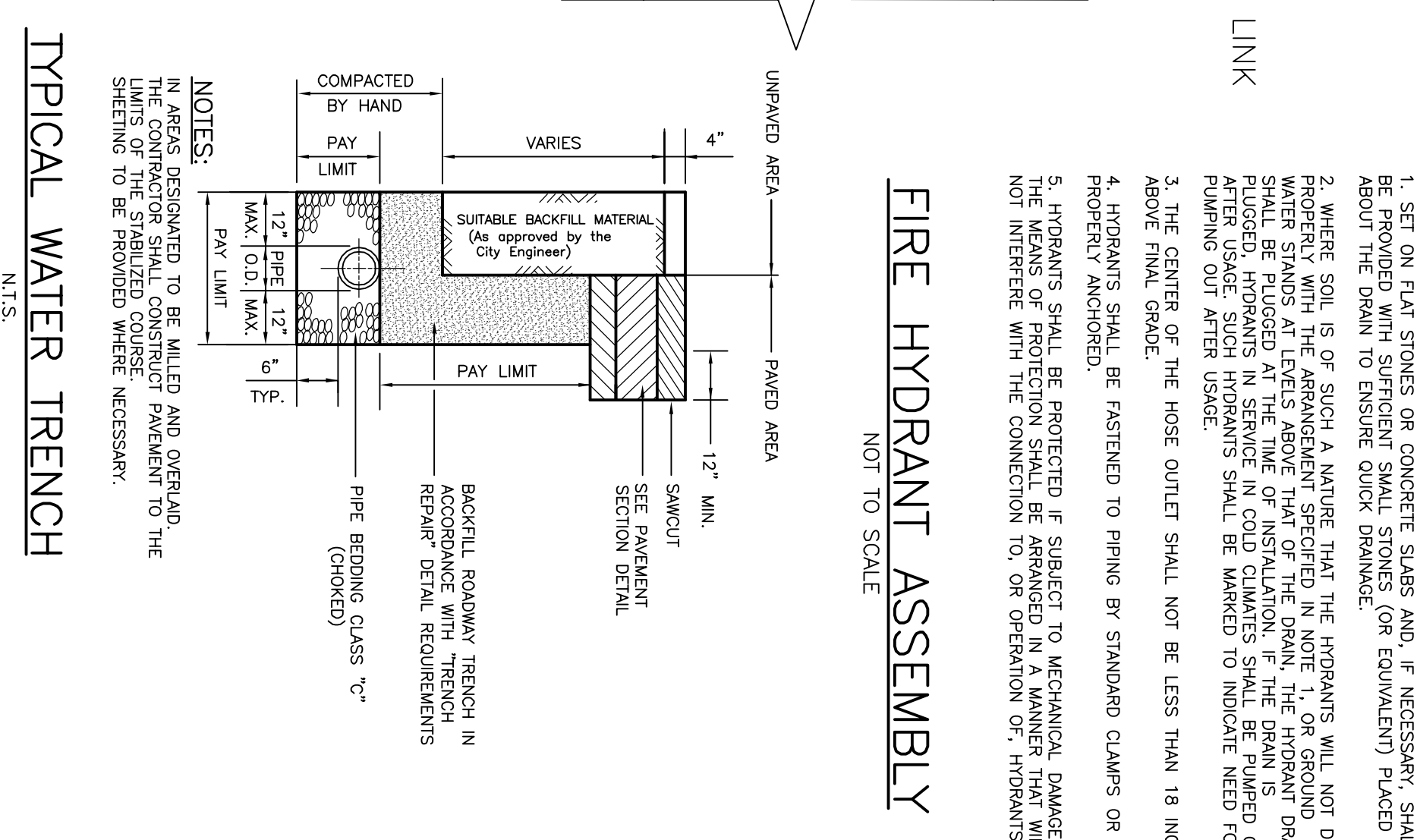
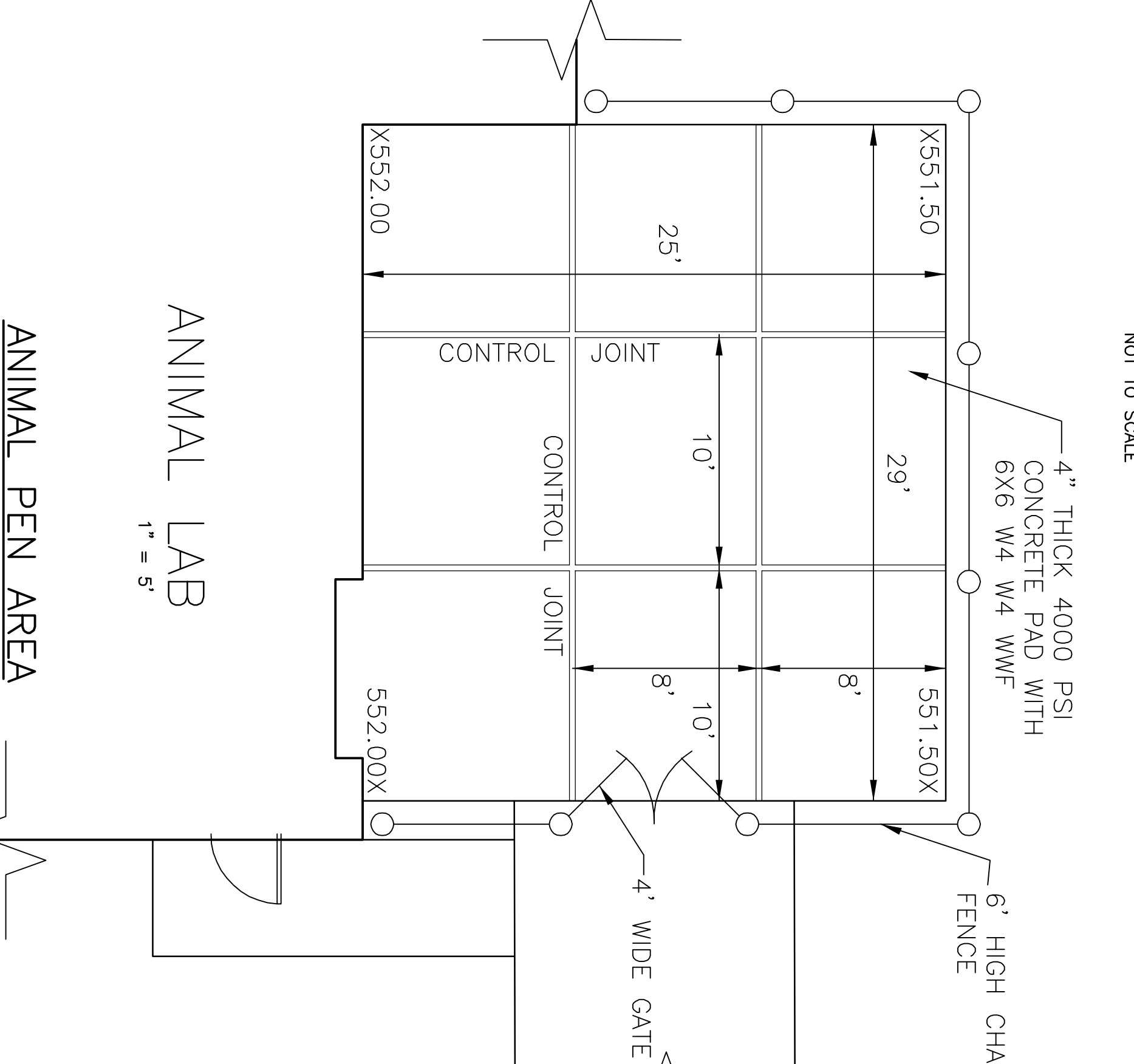
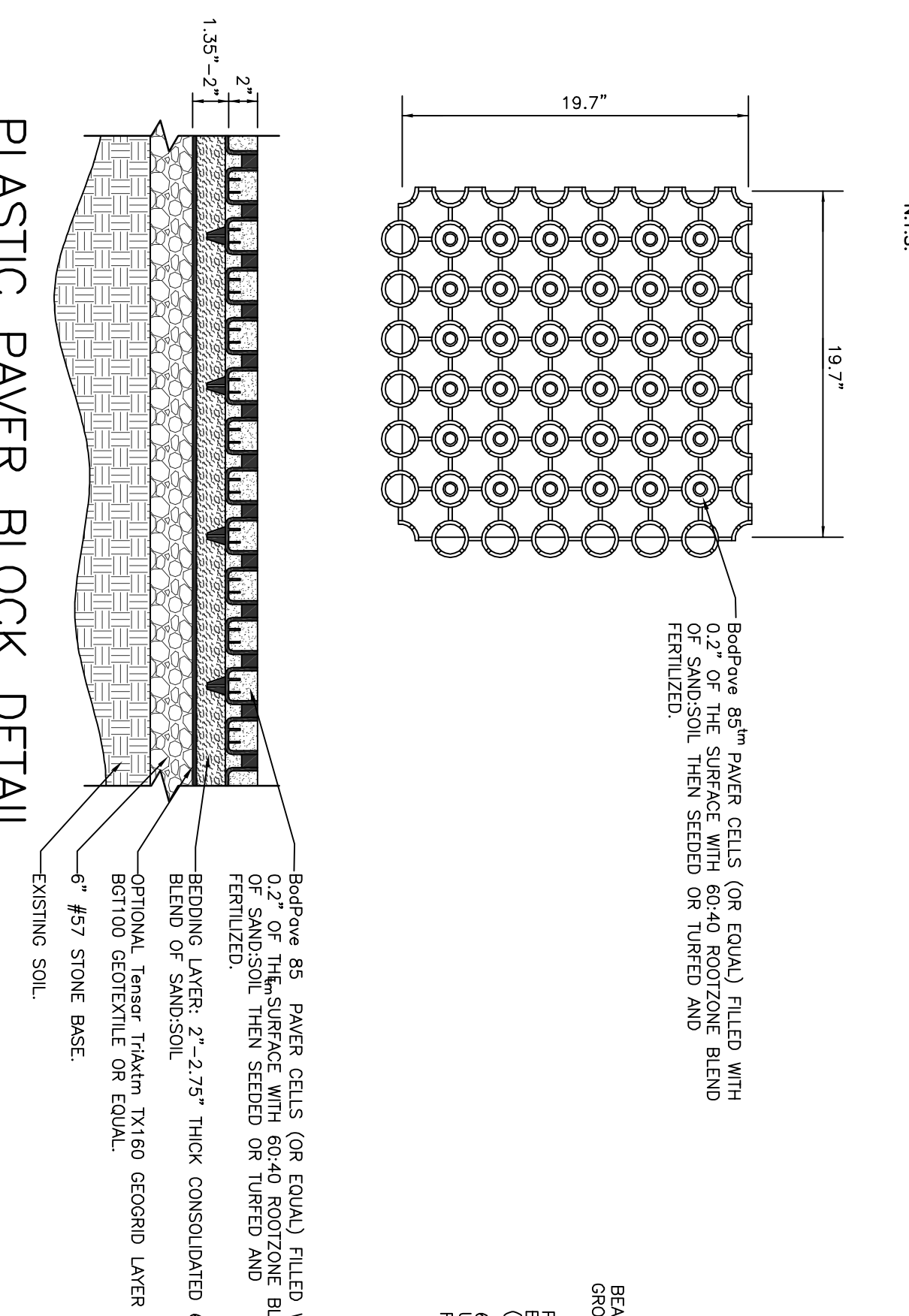
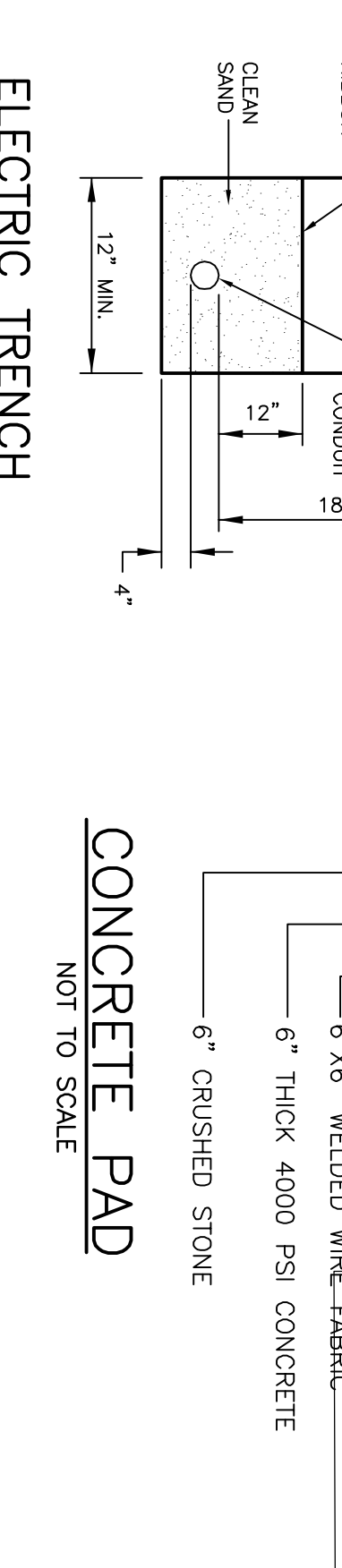
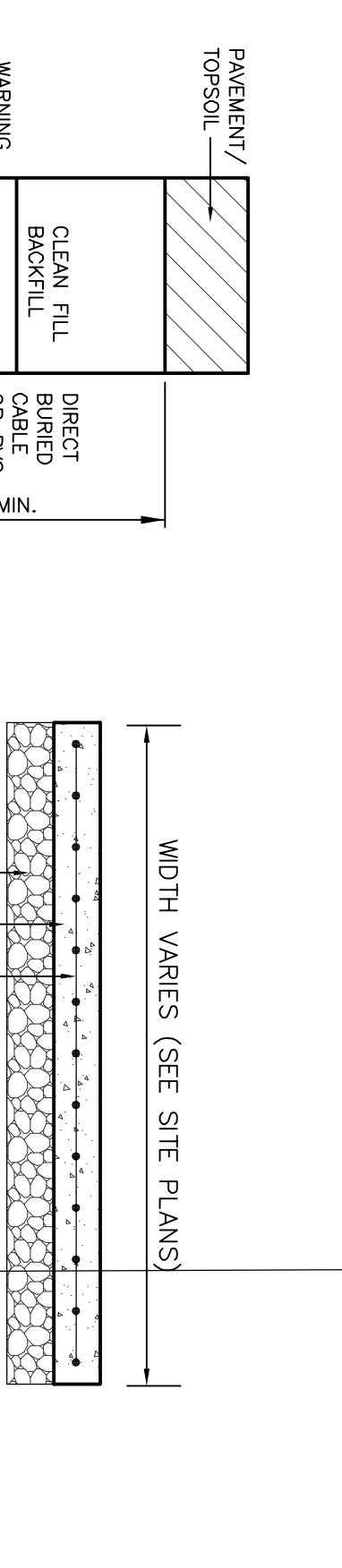
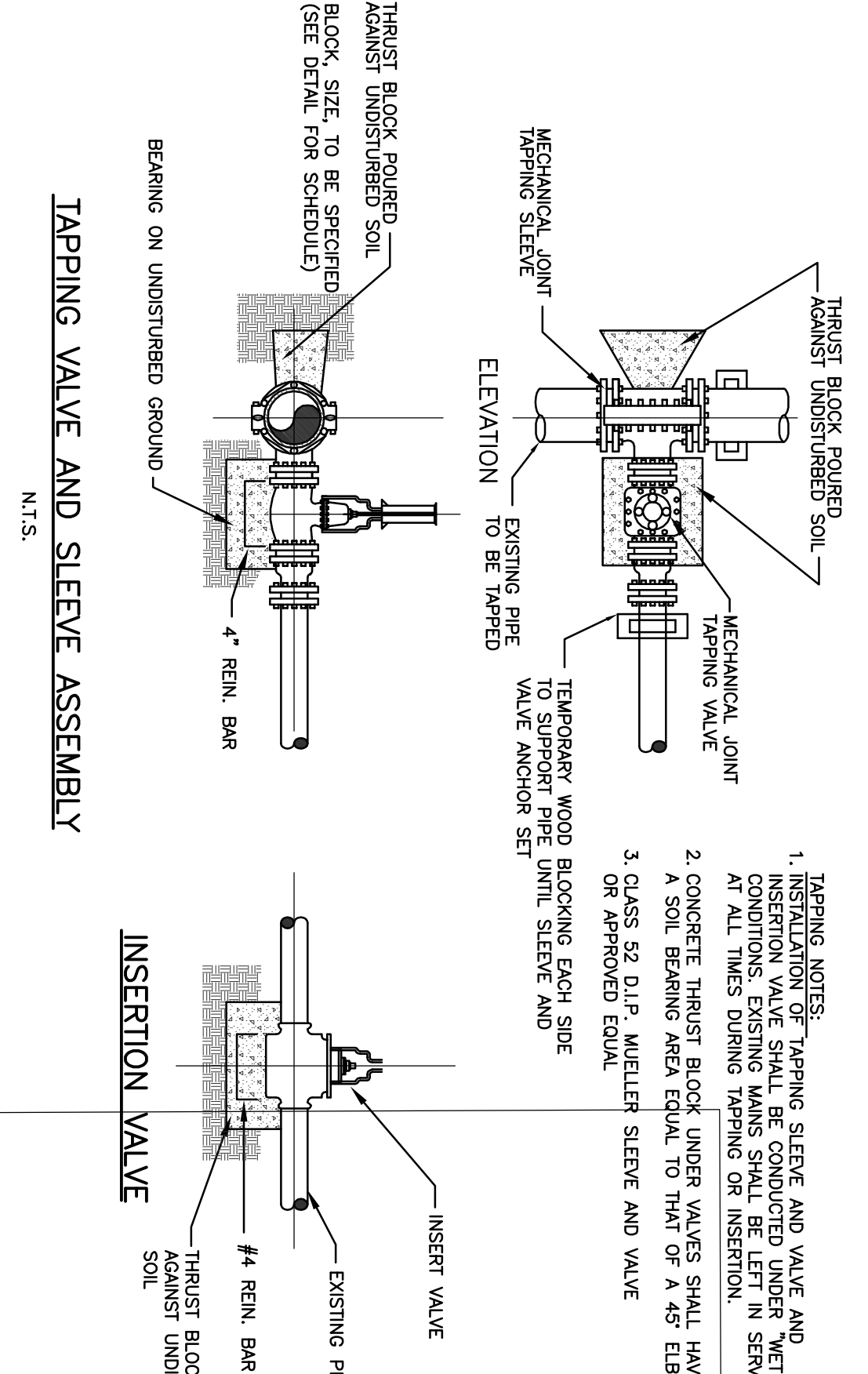
Length and shape as shown on plan; constructed the same as Item no. 6.

END OF SECTION 11400

EXHIBIT 2

(Drawings dated 11/21/2012)

SITE DRAWINGS



SUBMISSION	DATE
ADDENDUM #1	11-21-12
NJSDA REVISIONS	08-12-12
NJSDA COMMENTS	03-04-11
NJSDA COMMENTS	08-12-10
NJSDA COMMENTS	05-17-10
NJSDA COMMENTS	02-12-10
DATE:	OCTOBER 13, 2009
SCALE:	AS SHOWN

CONSTRUCTION DETAILS
DRAWING NO: SW-16
DRAWN BY: [Name]

100% NJDCA CONSTRUCTION DOCUMENTS SUBMISSION FOR:
NEW PHILLIPSBURG HIGH SCHOOL
DOE# 4100-N01-04-1000
SDA# NT-0003-C02
TOWN OF PHILLIPSBURG
UPPER BELVIDERE ROAD LOT 44 / BLOCK 2
PHILLIPSBURG, NEW JERSEY 08865

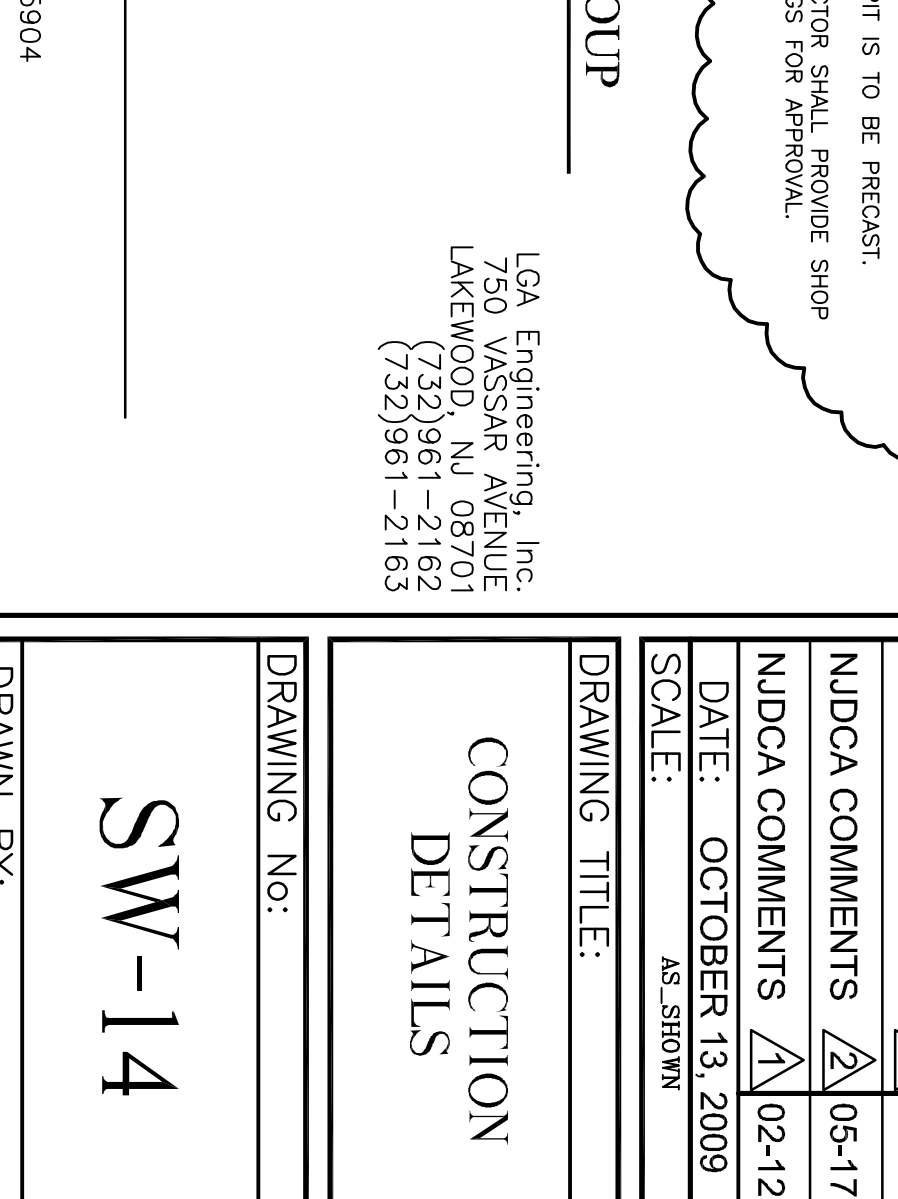
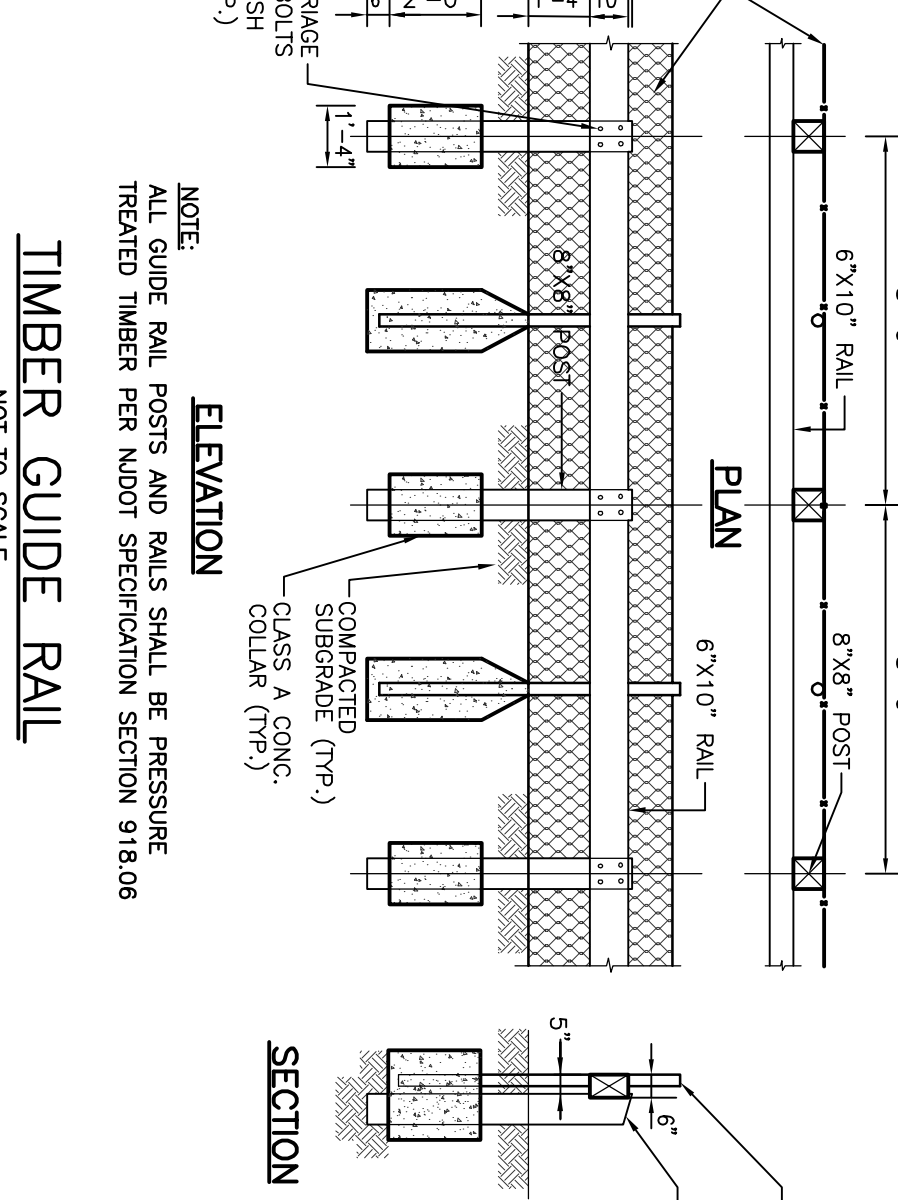
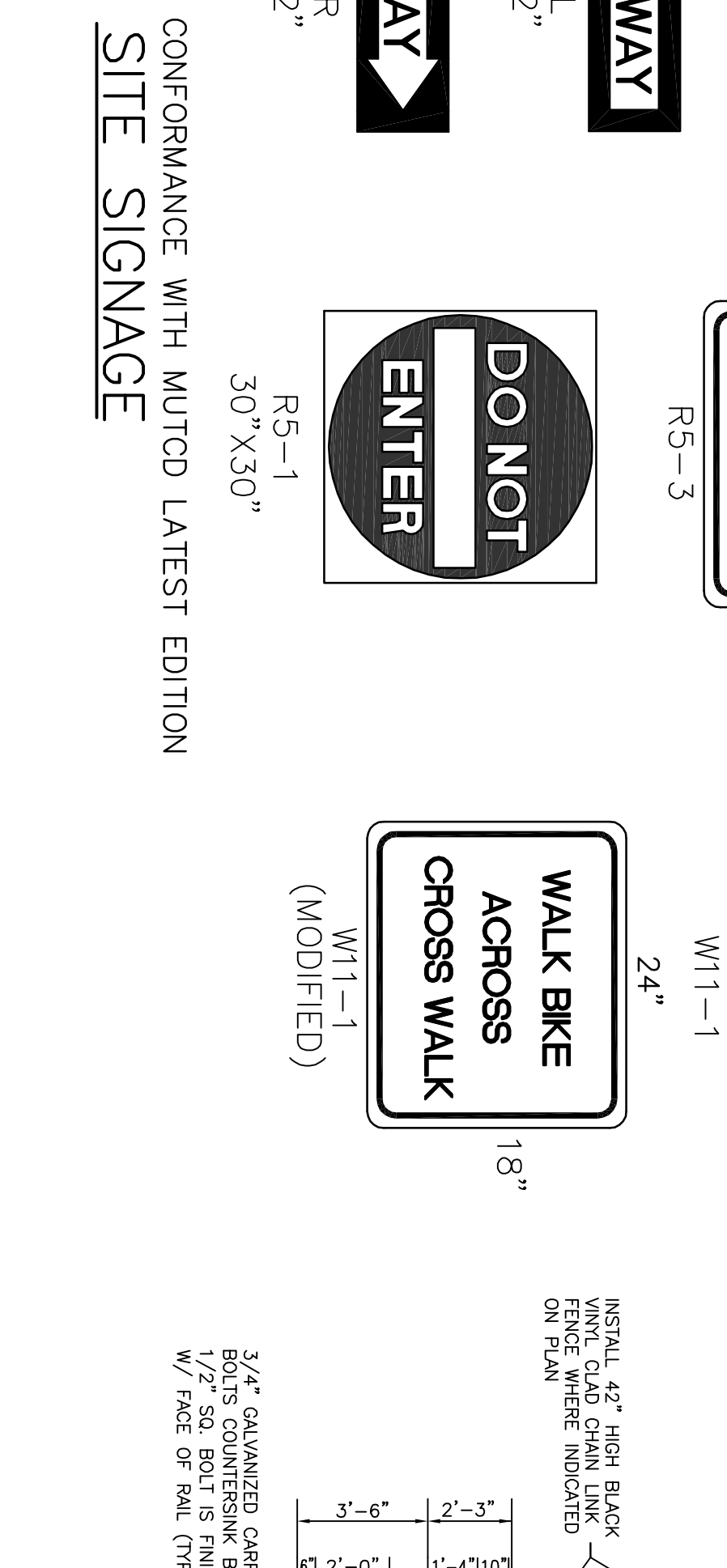
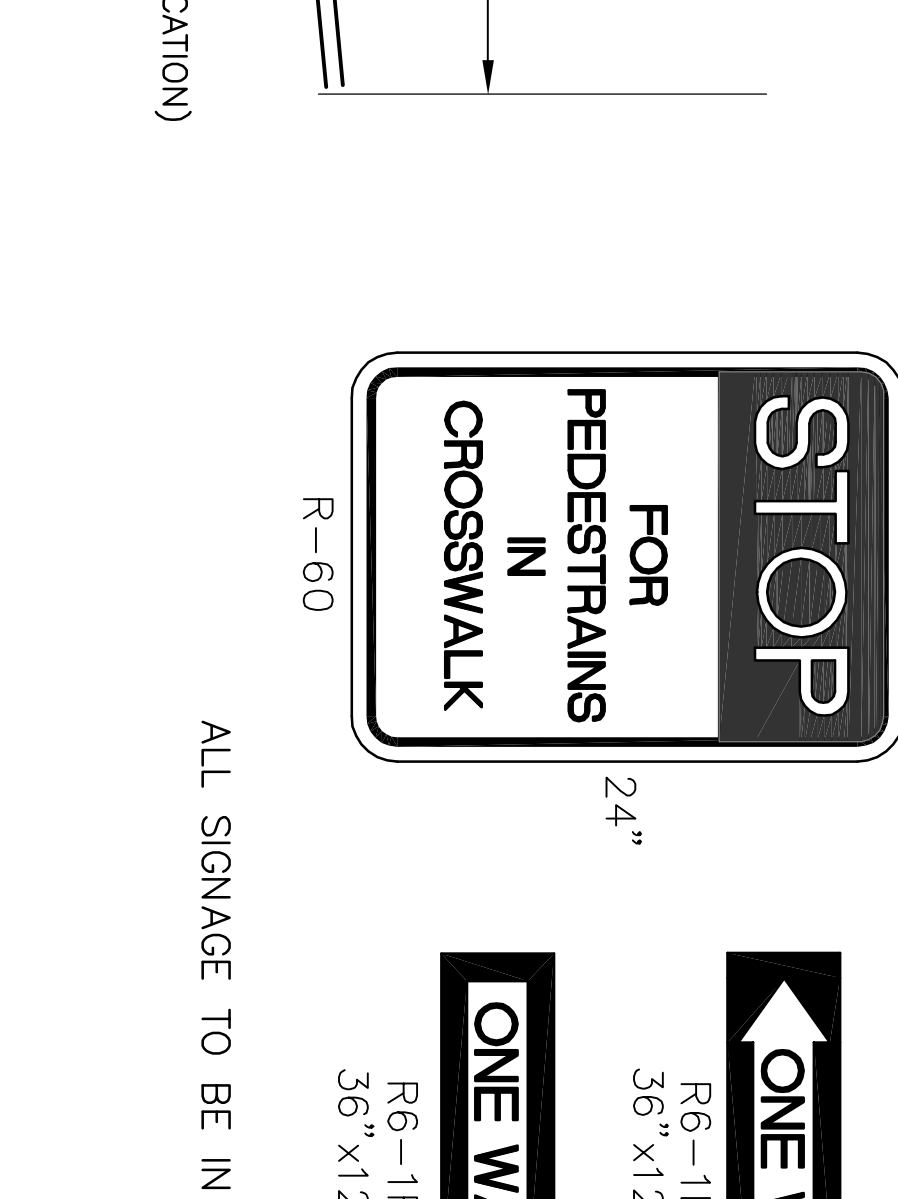
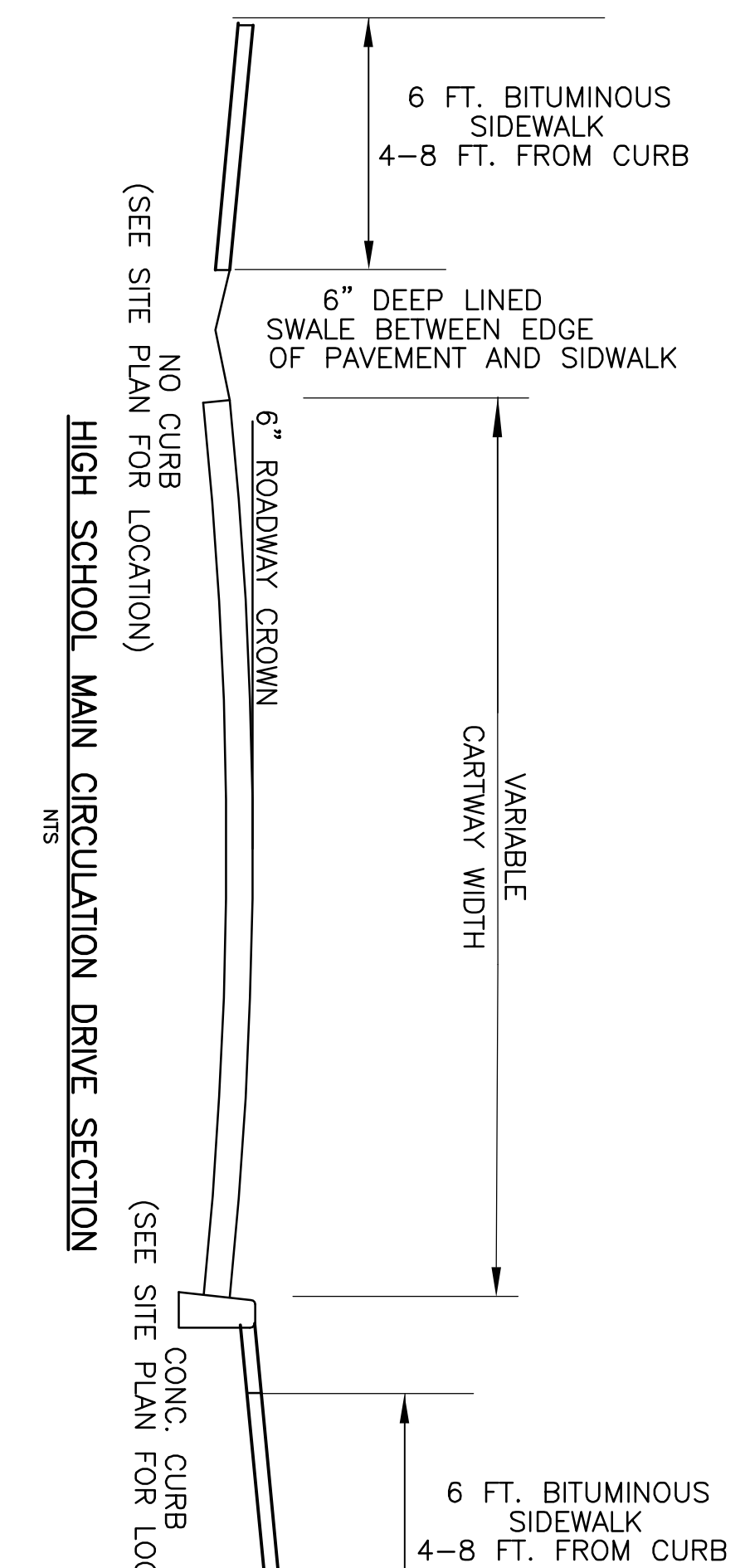
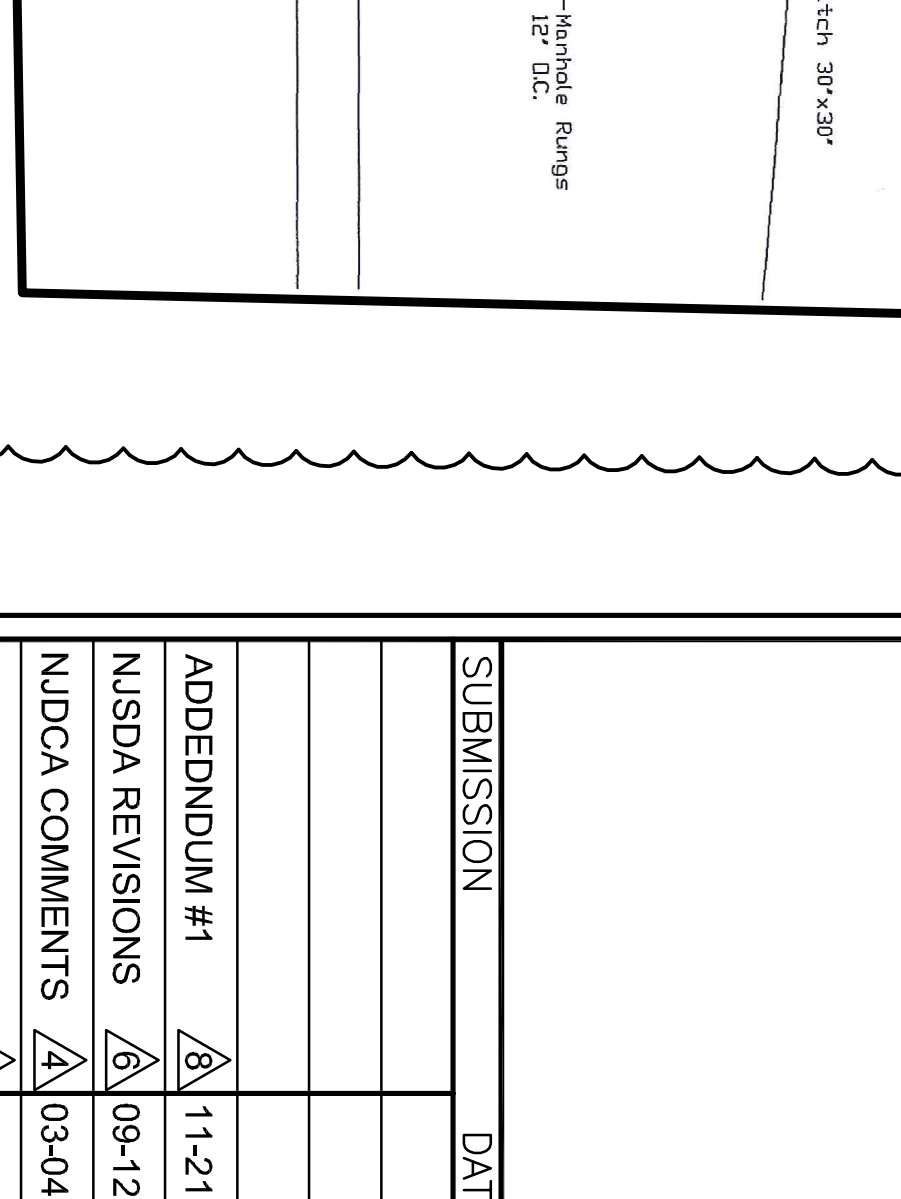
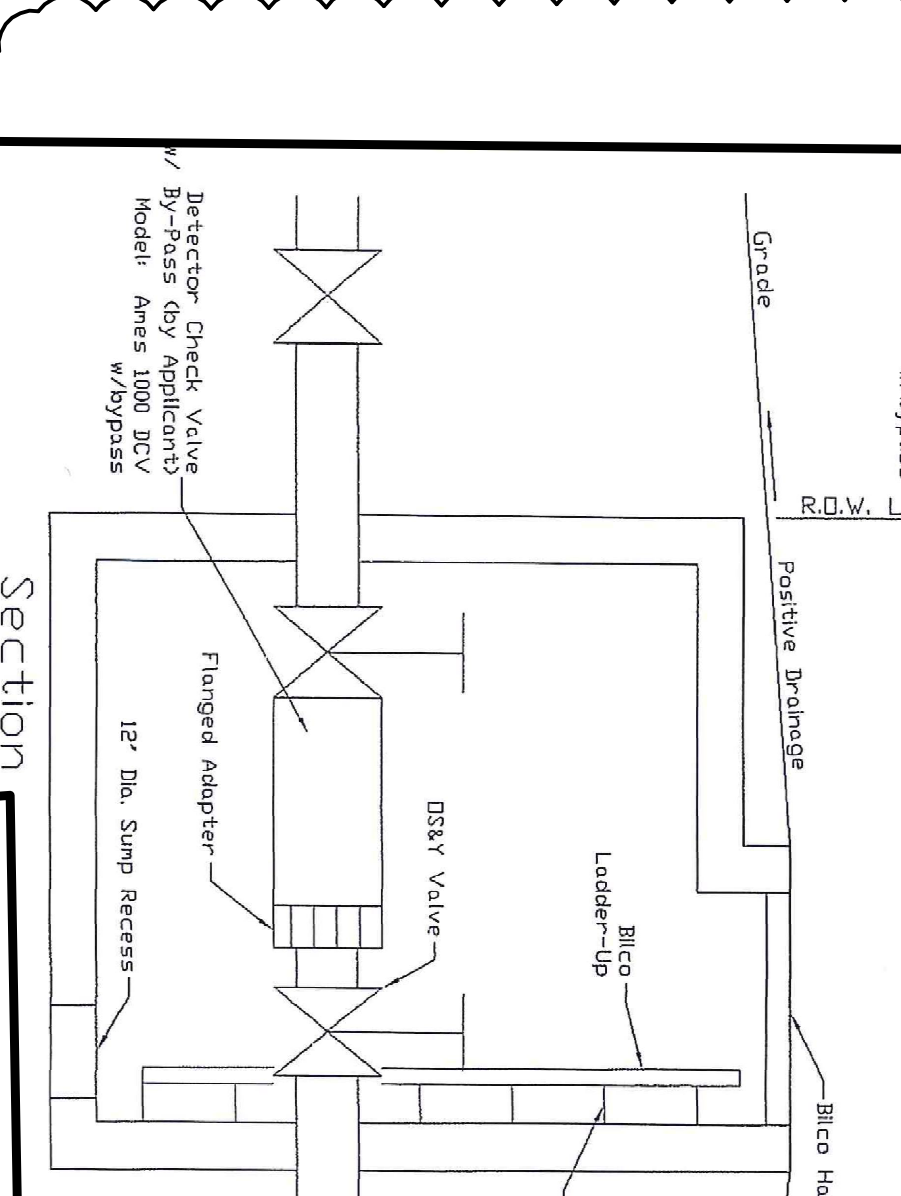
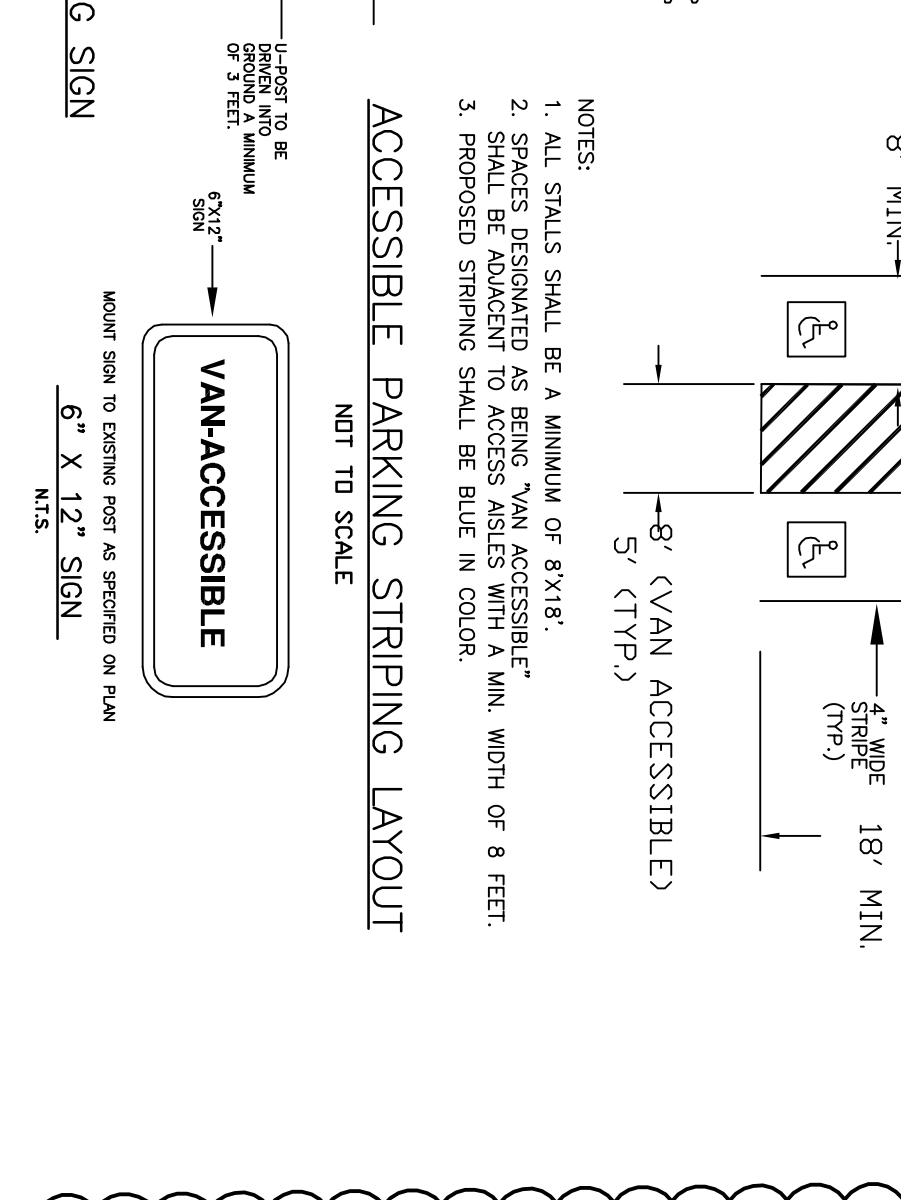
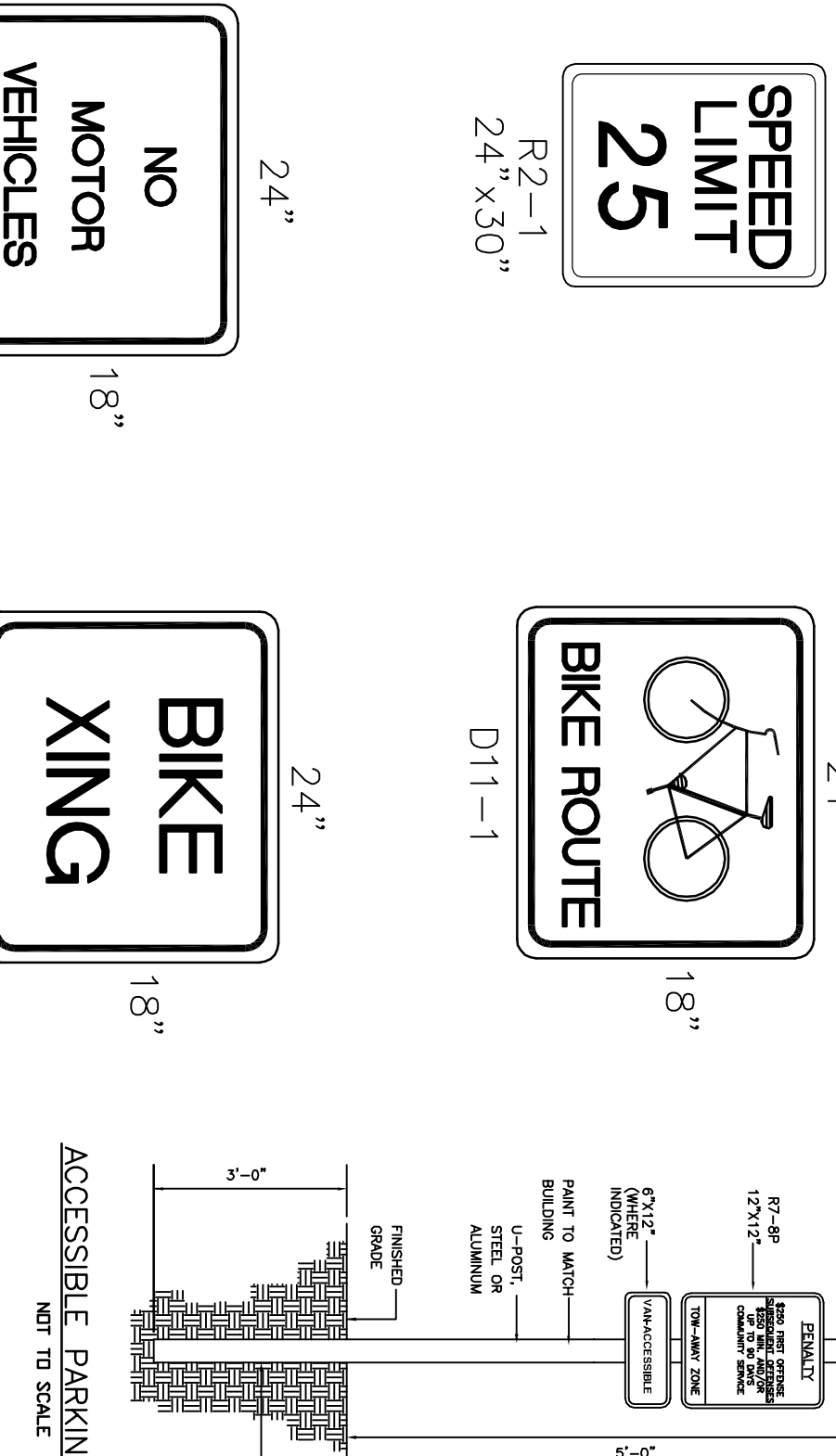
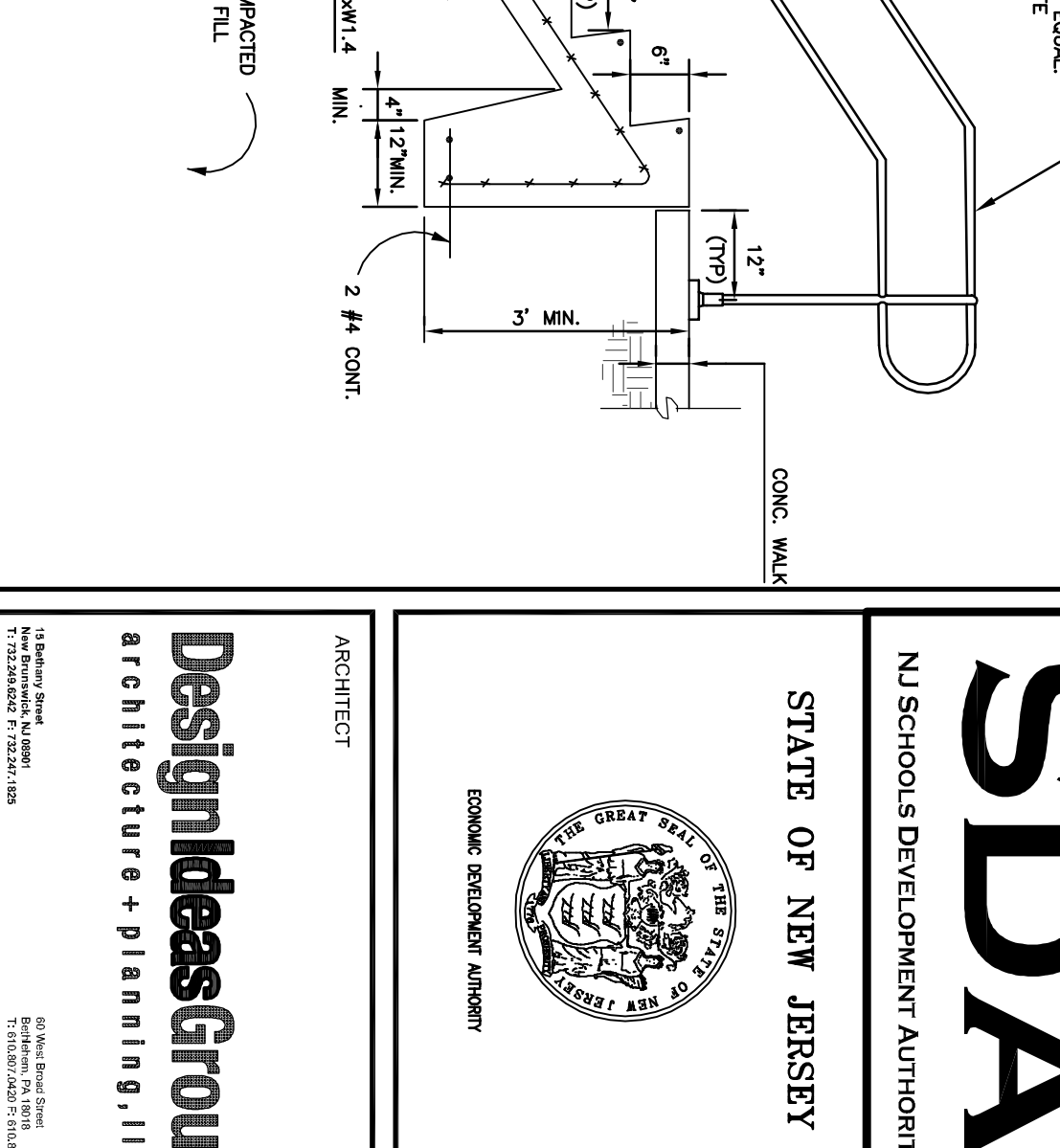
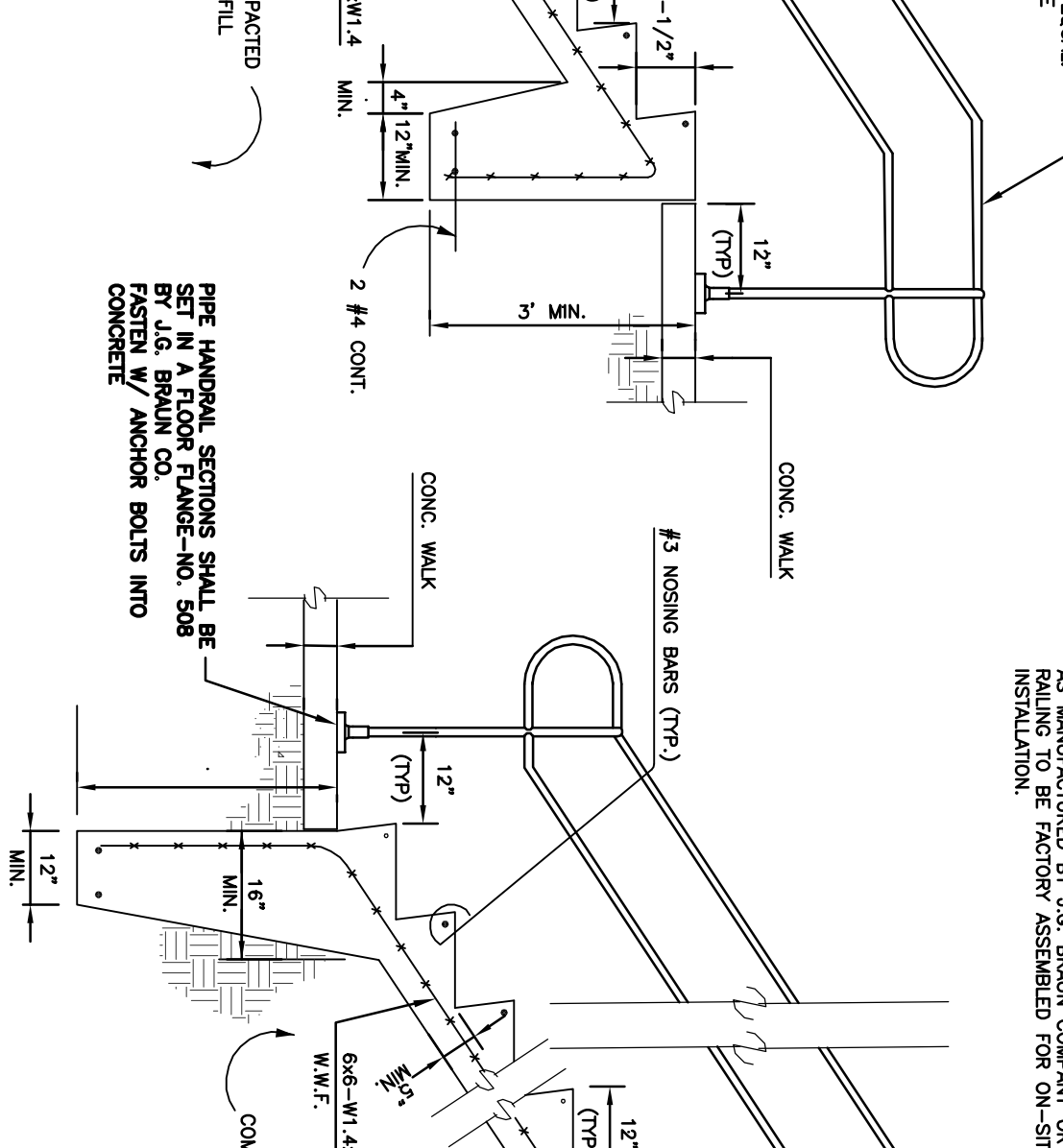
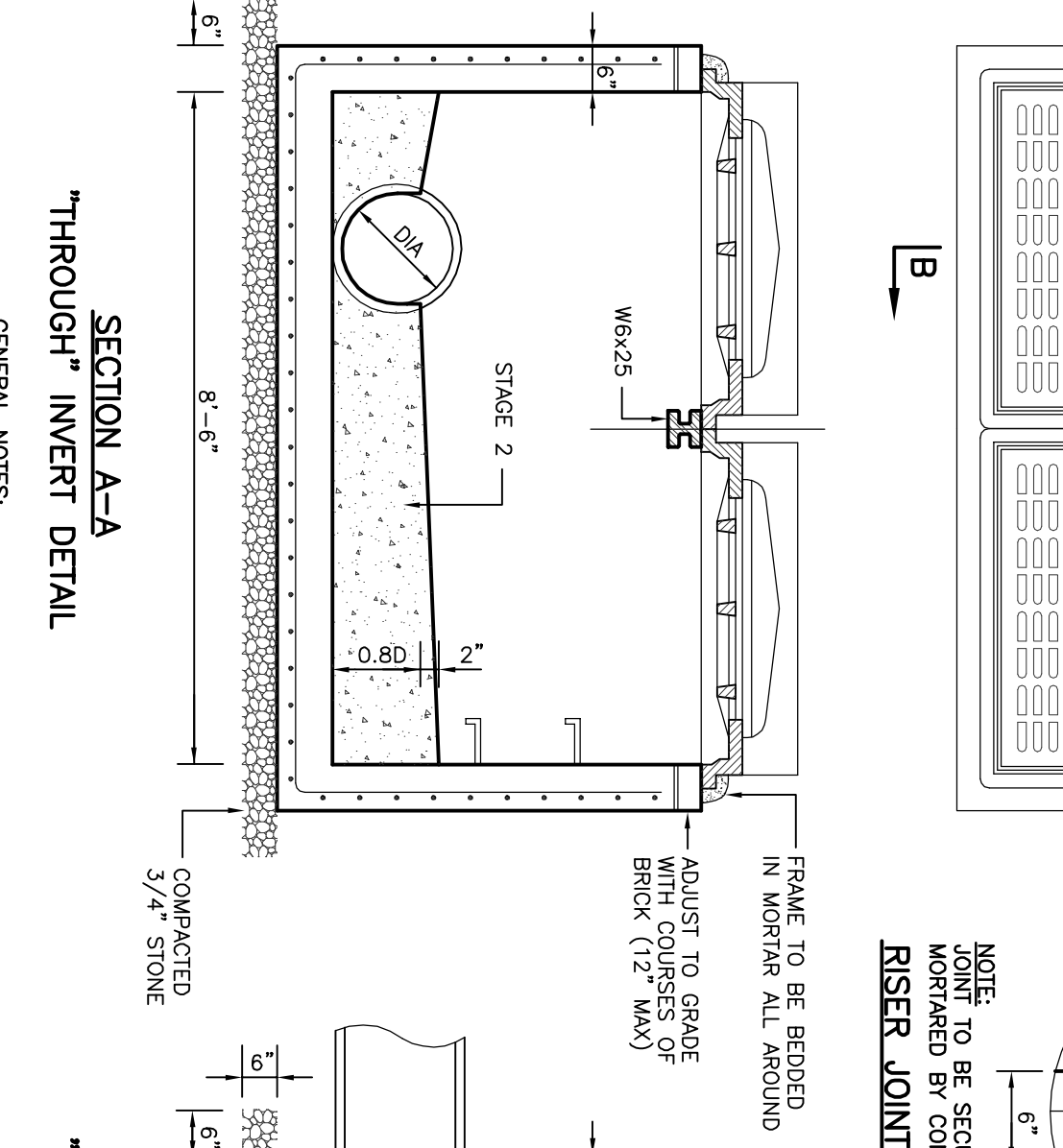
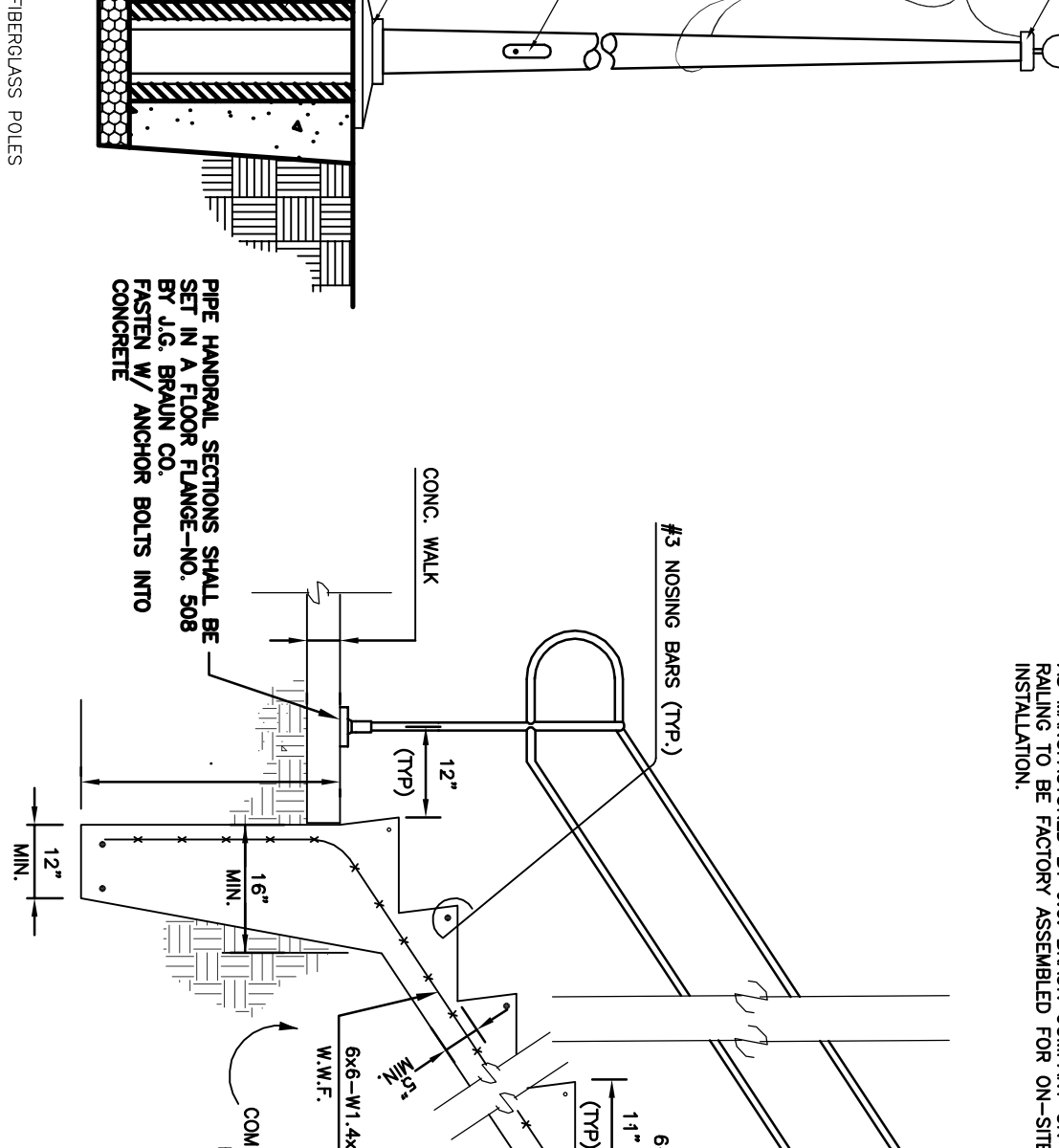
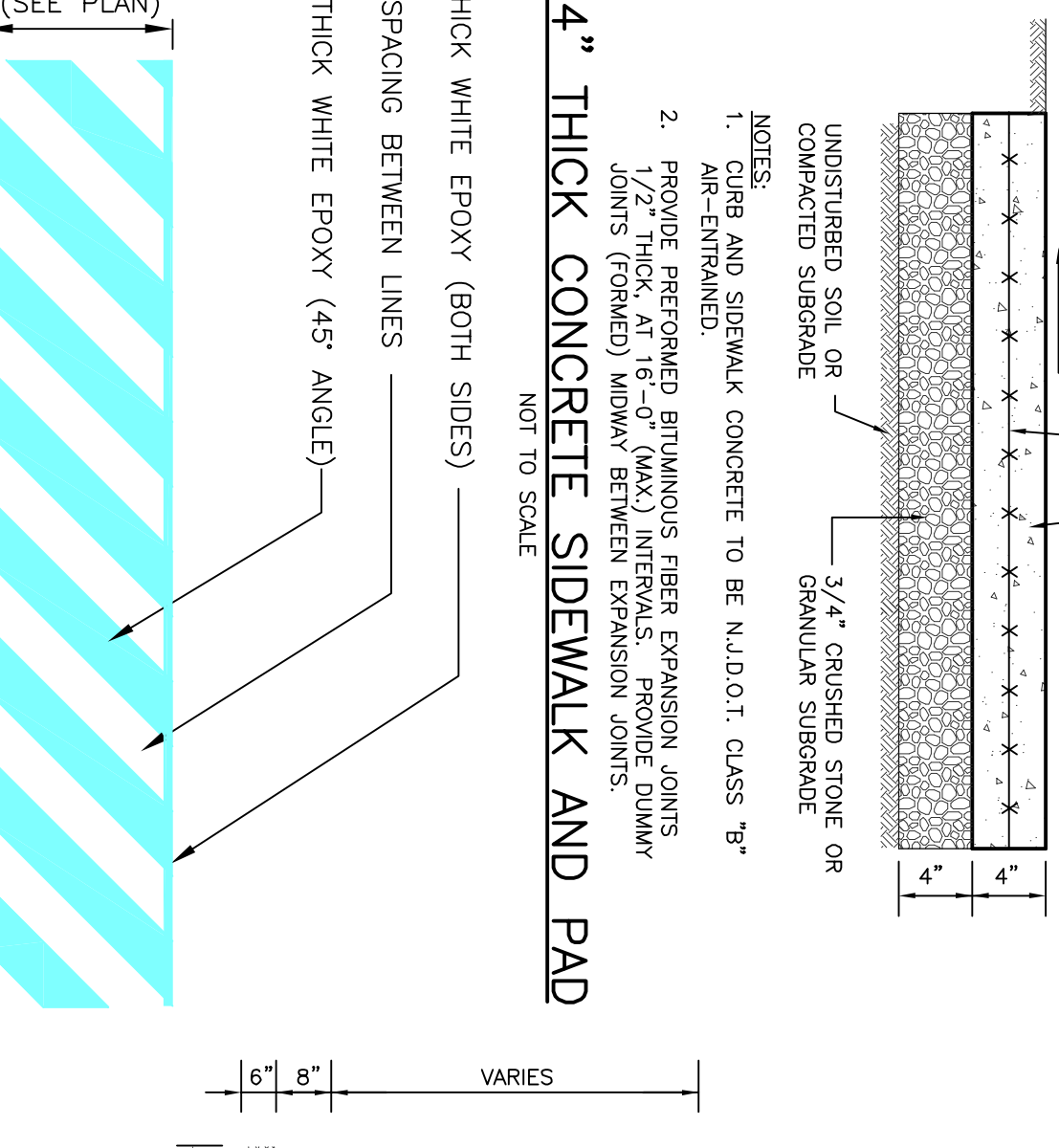
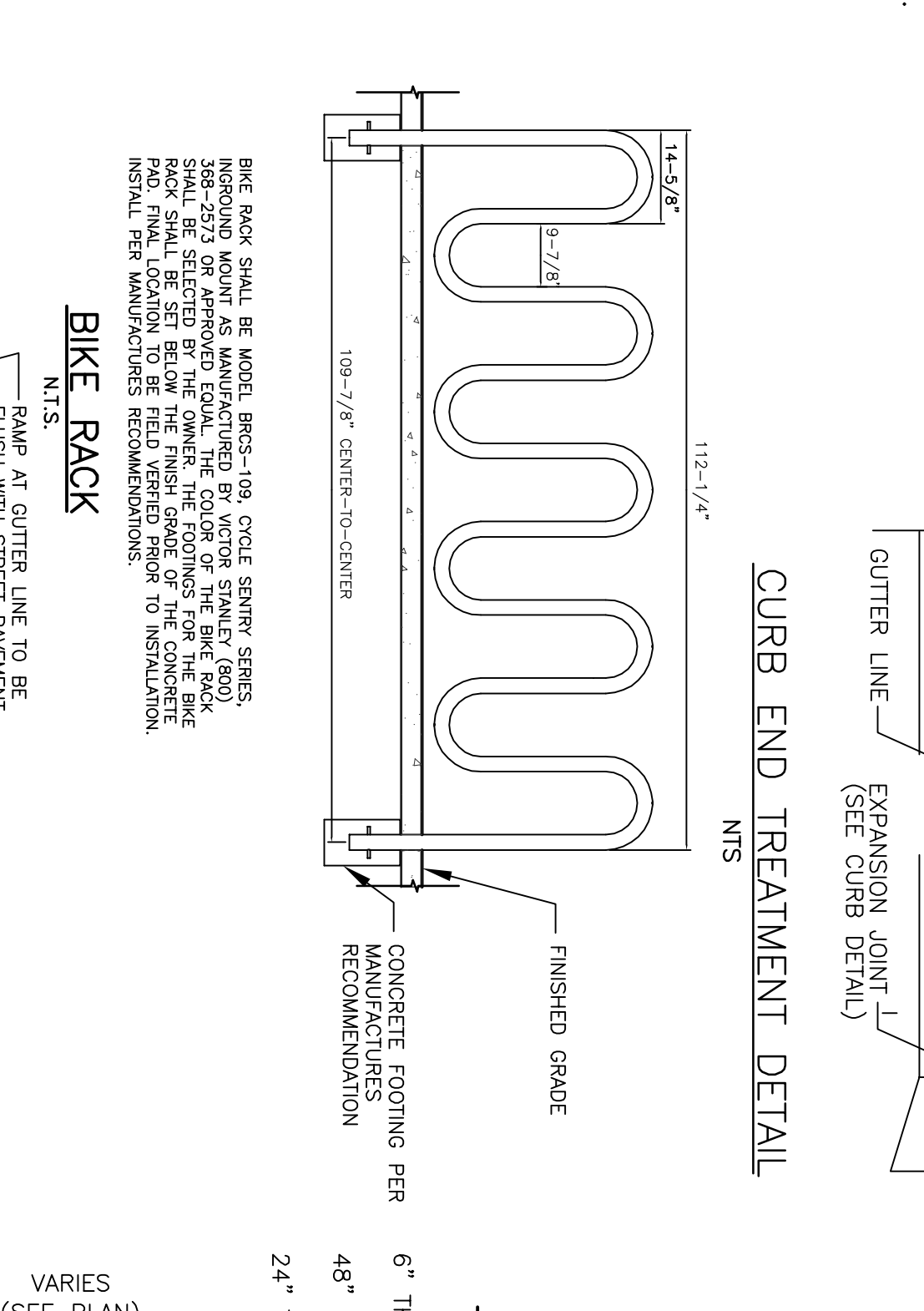
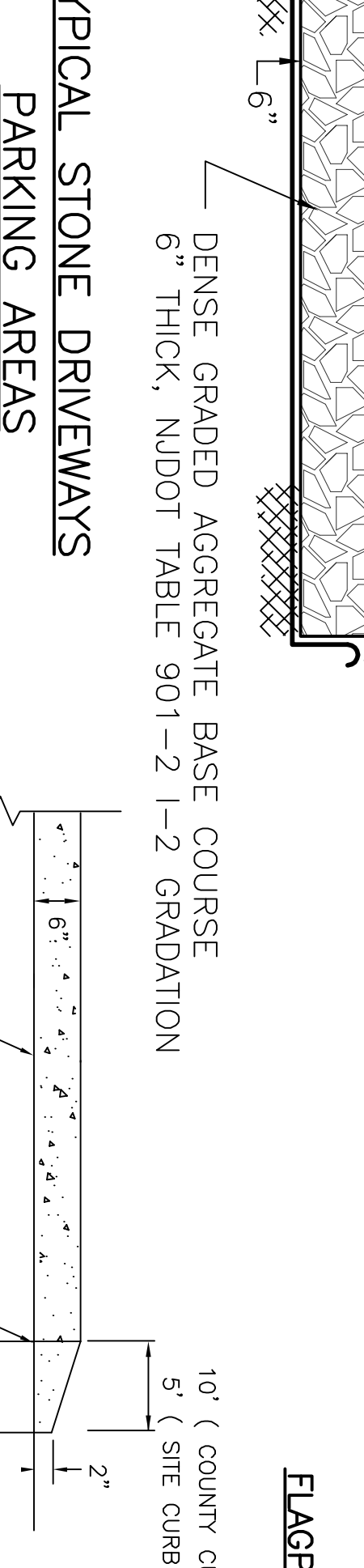
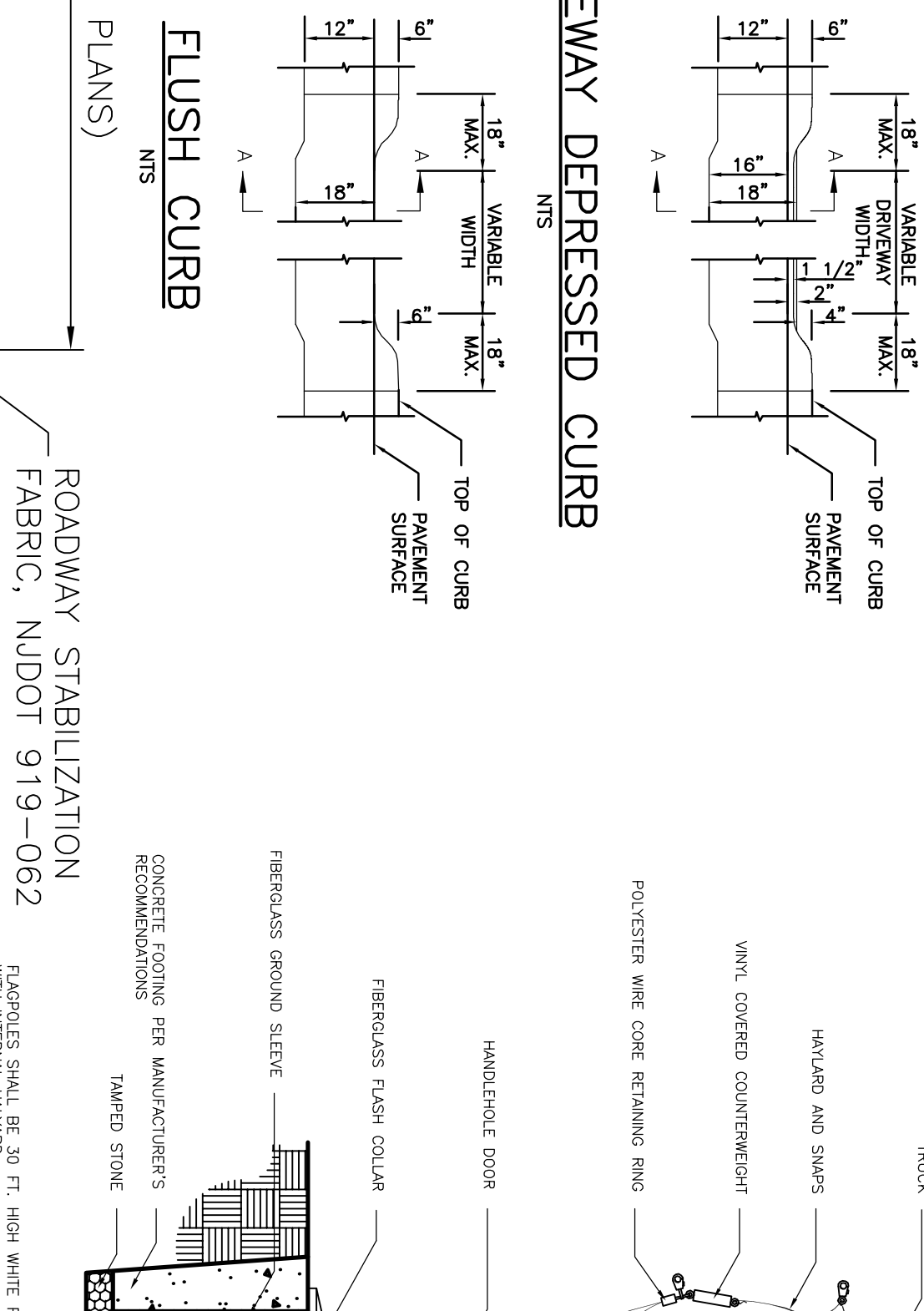
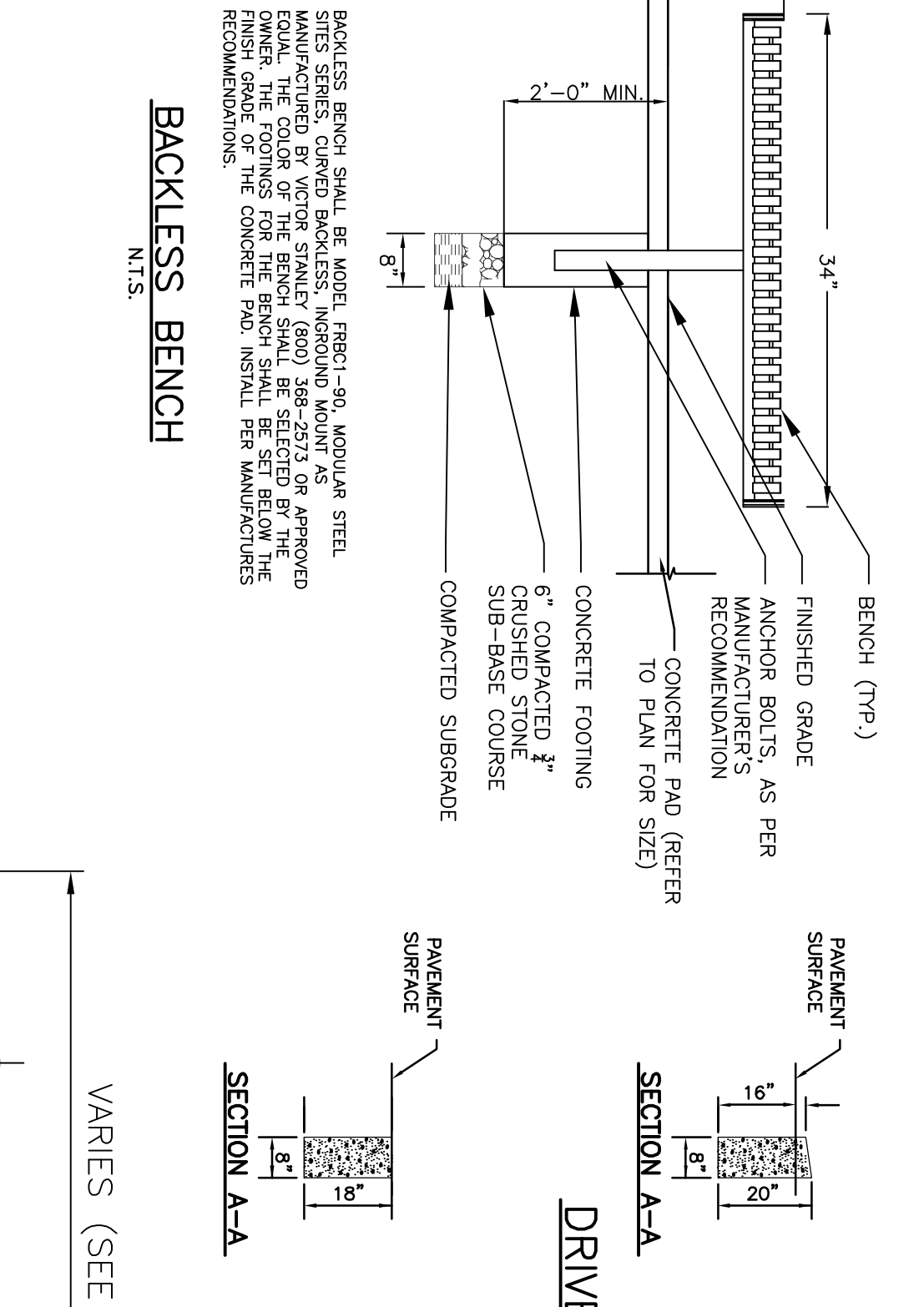
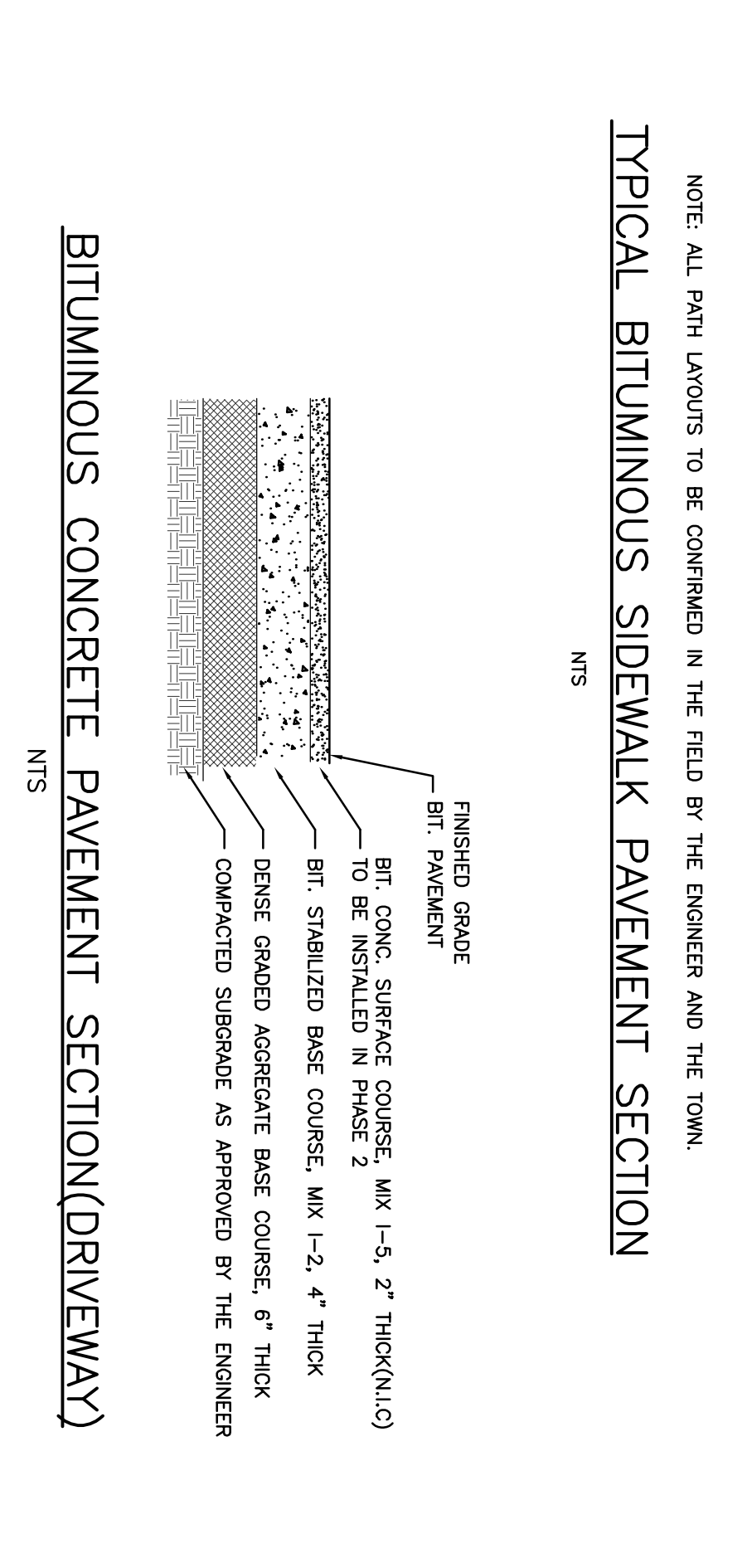
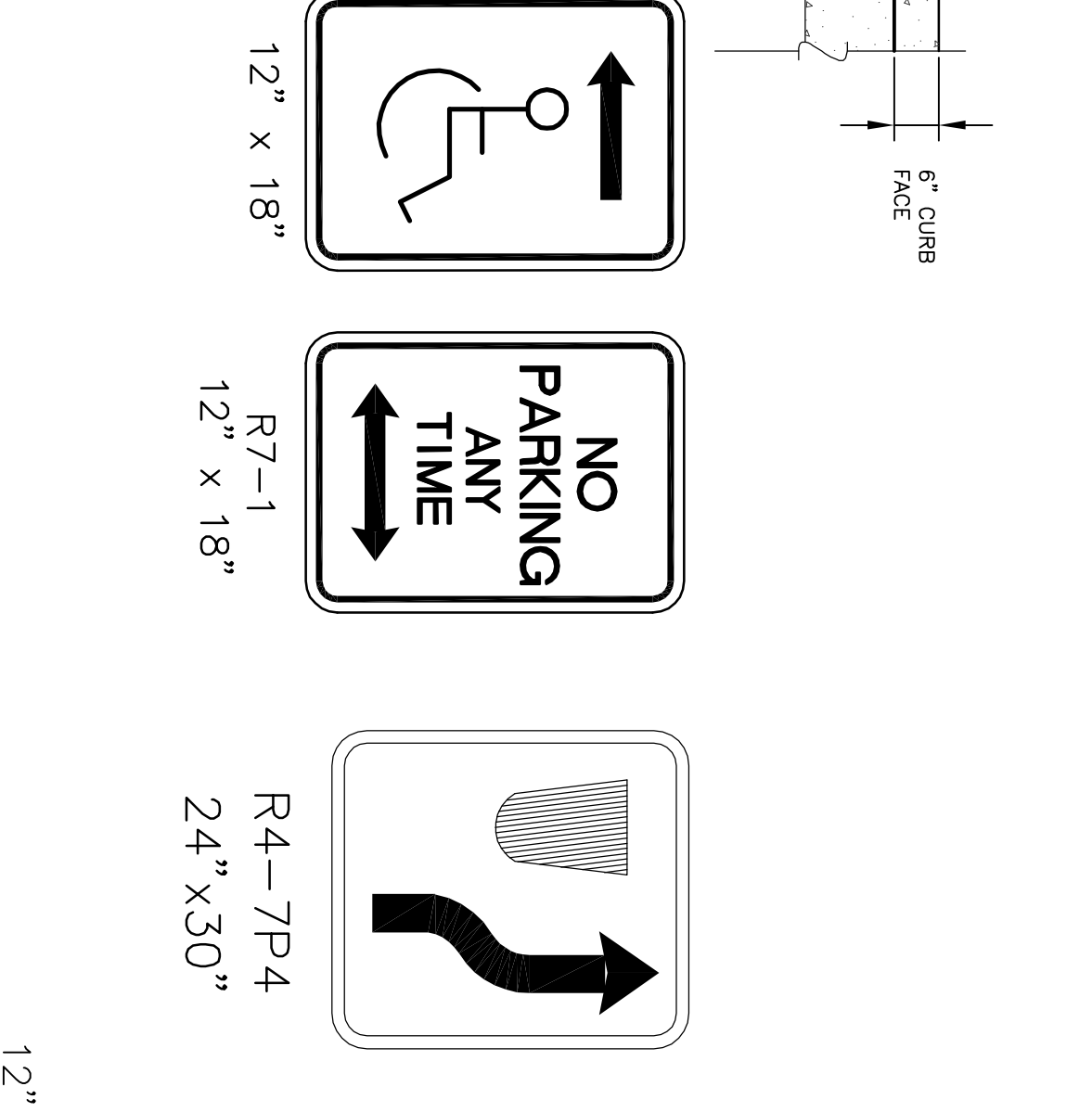
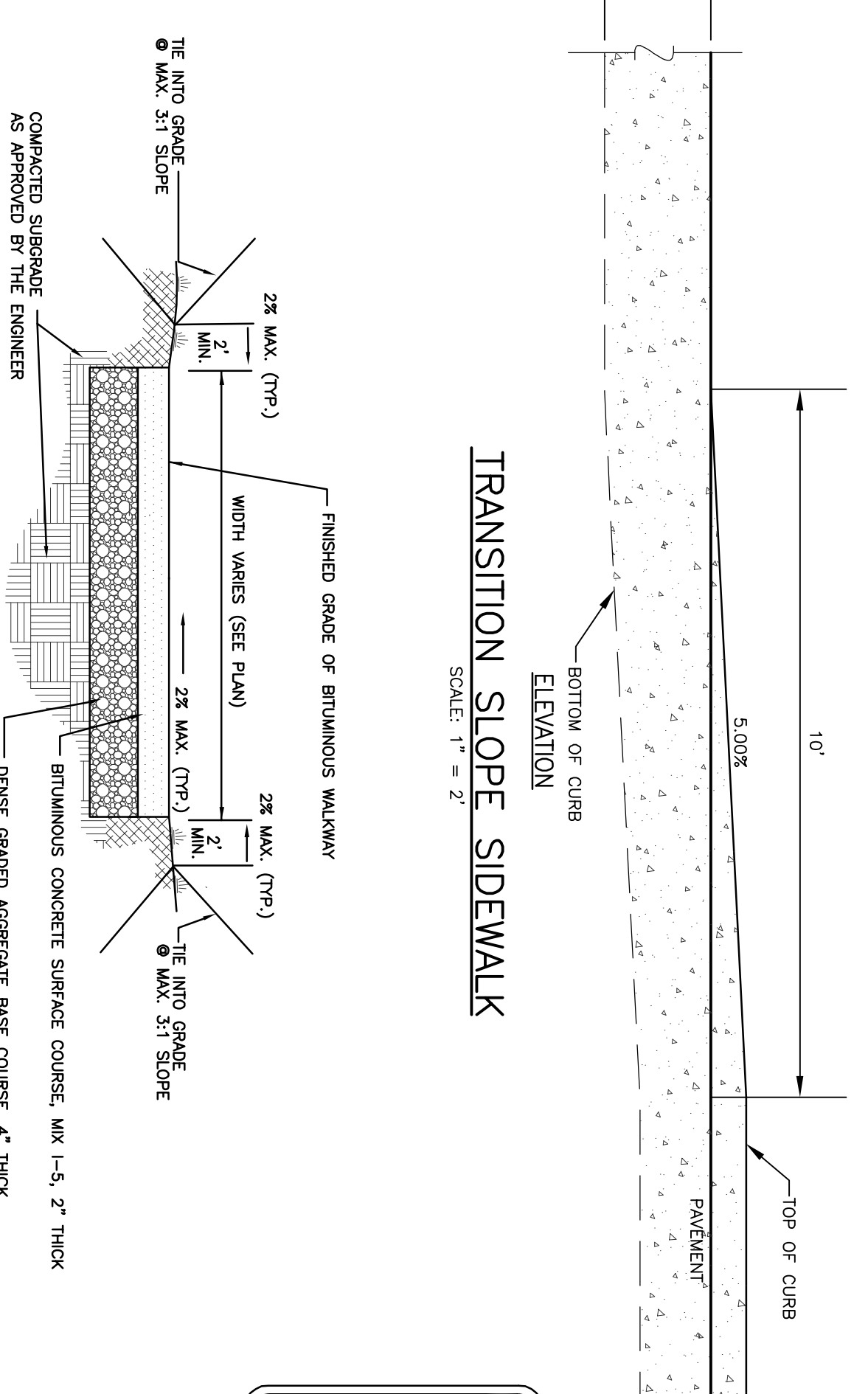
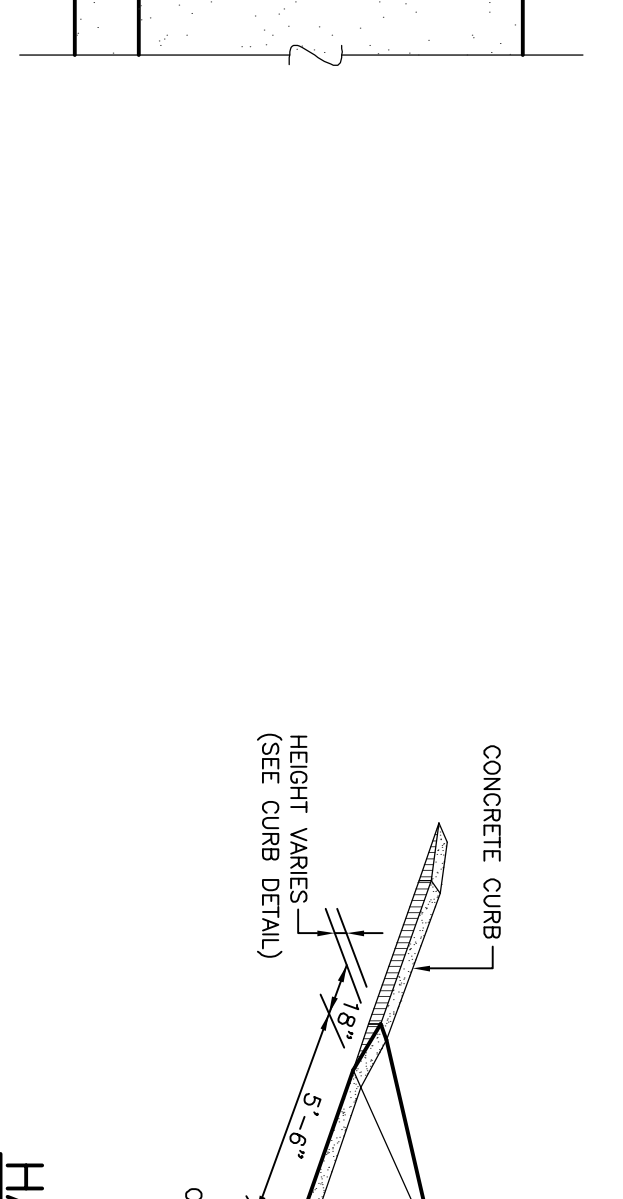
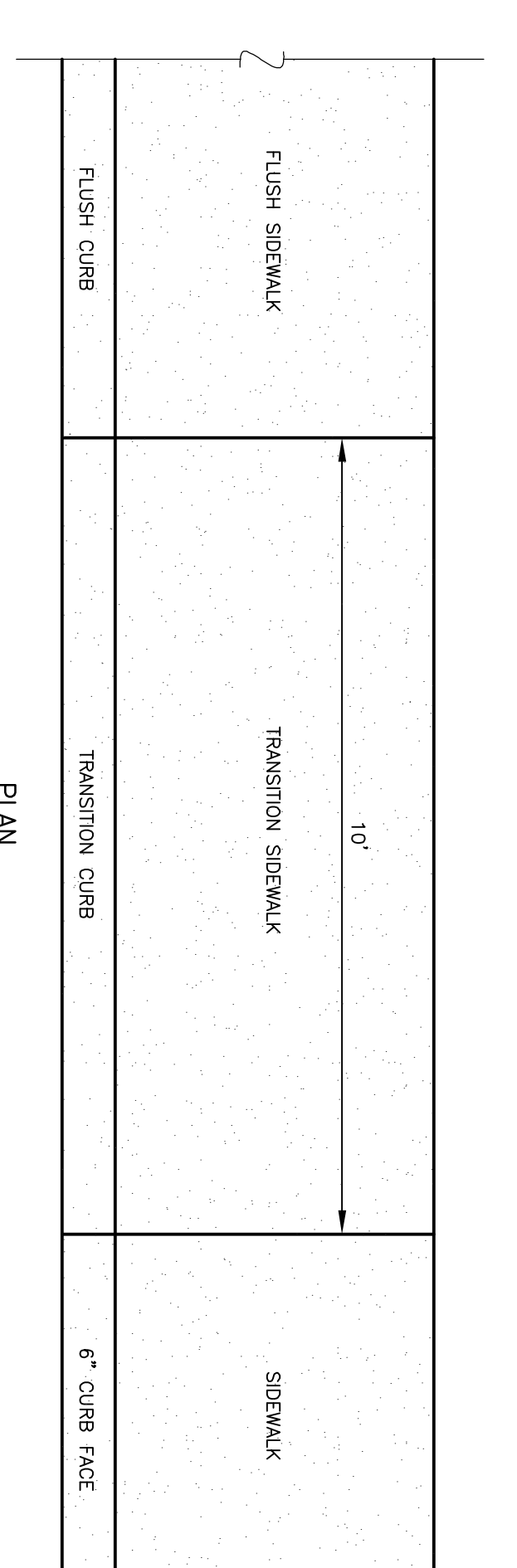
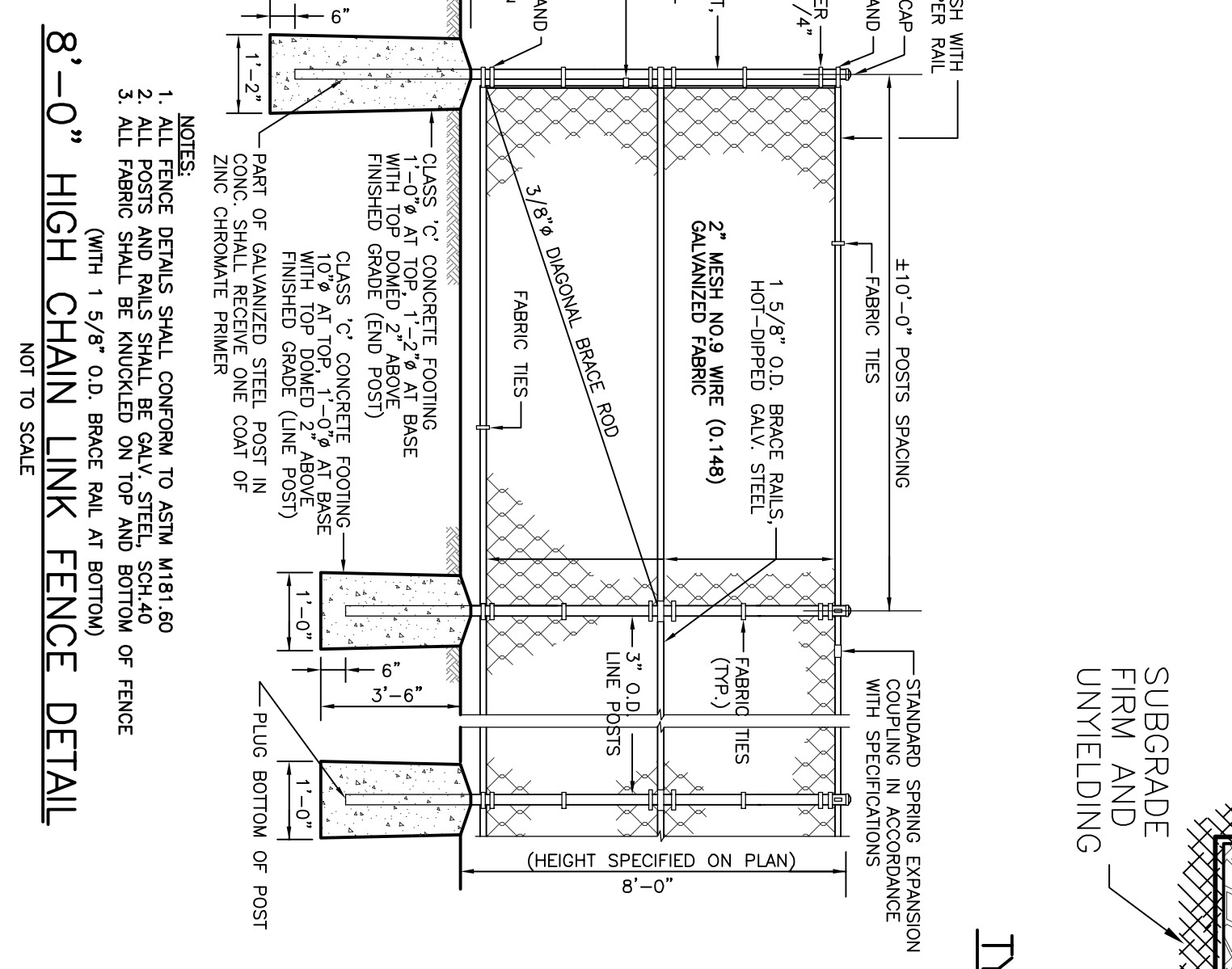
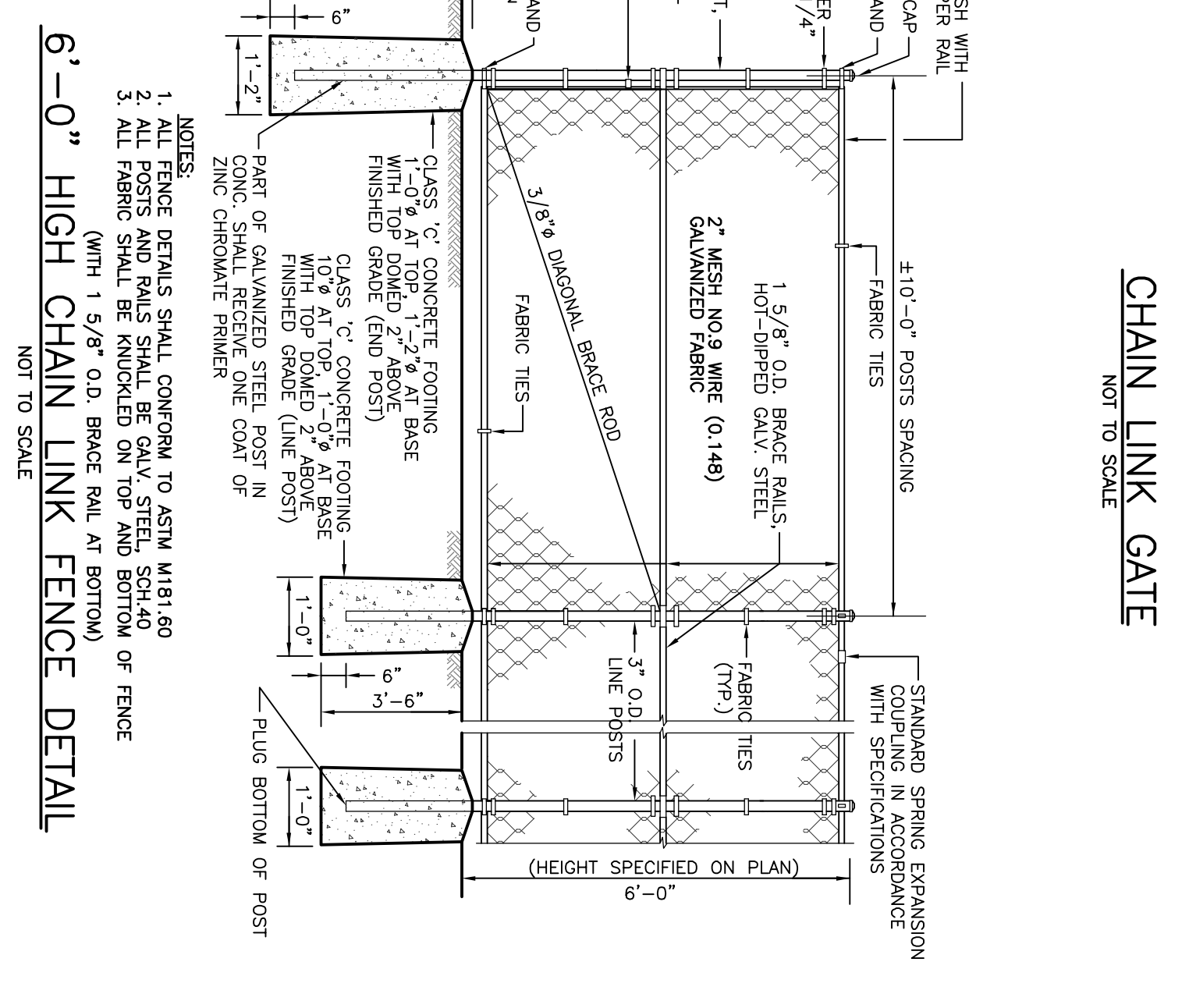
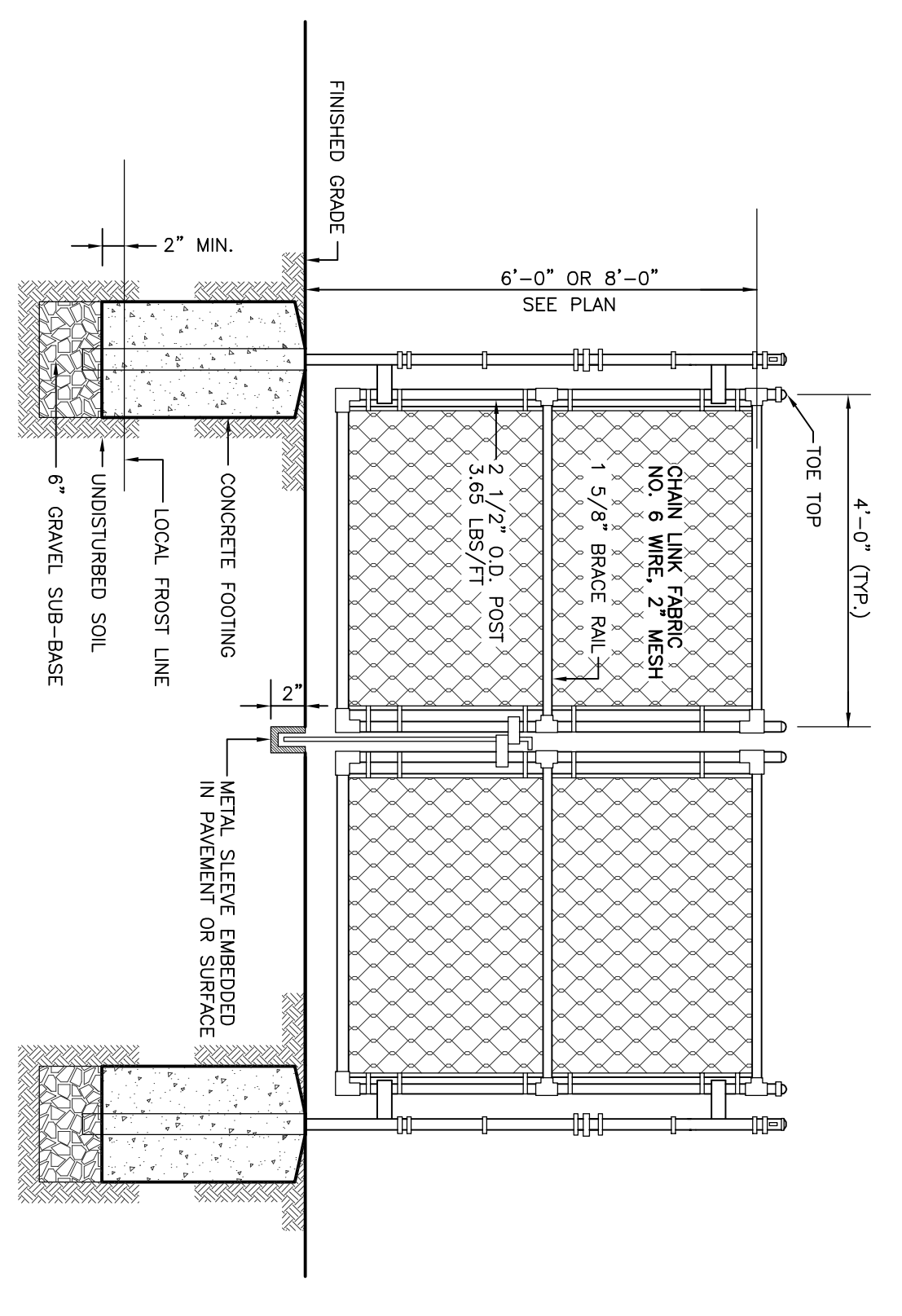
Birdsall Services Group
ENGINEERS & CONSULTANTS
150 VASSAR AVENUE
LAKEDALE, NJ 07036
WWW.BIRDSALL.COM
Tel: 908.229.9900
Fax: 908.229.9901

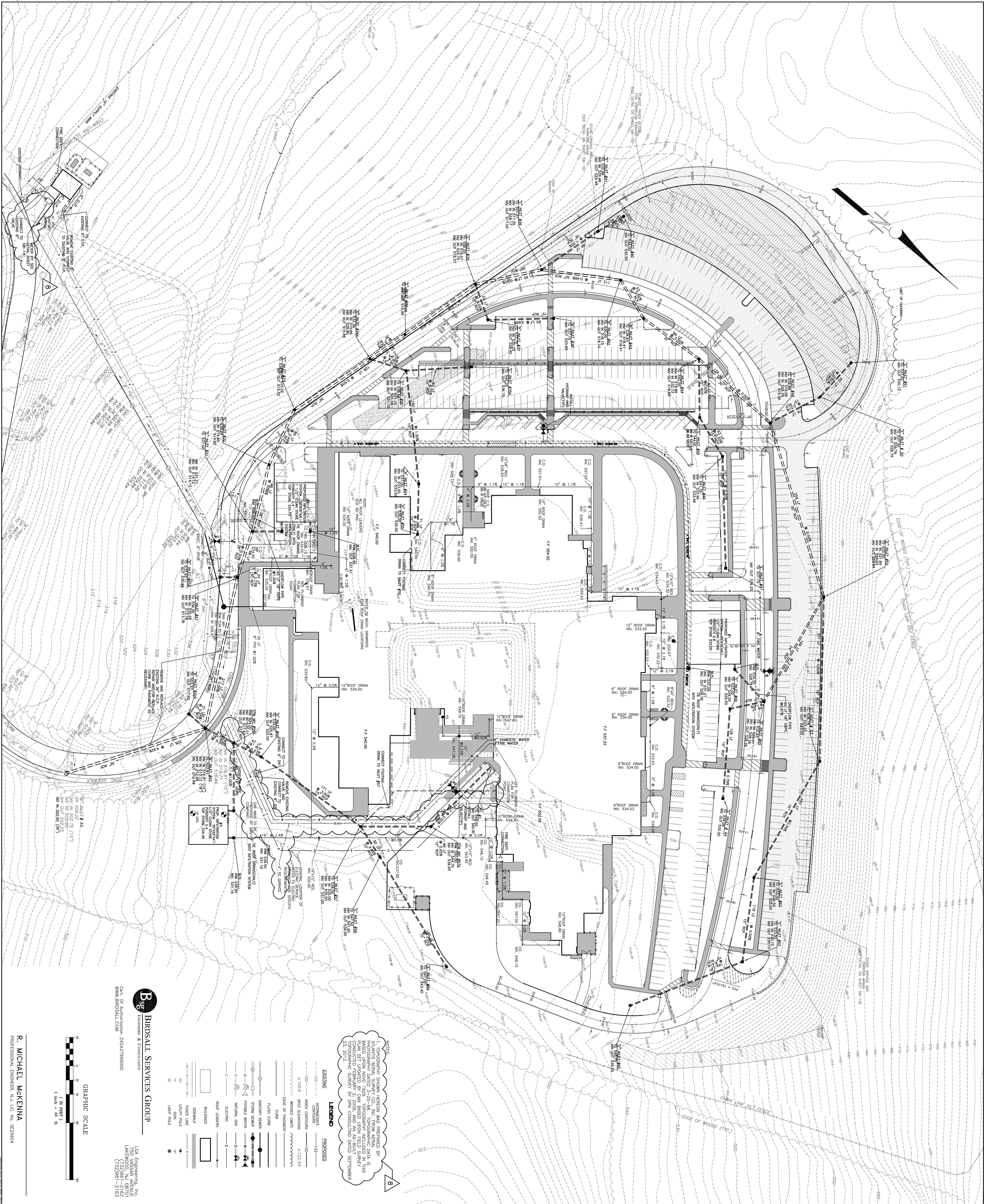
R. MICHAEL MCKENNA
PROFESSIONAL ENGINEER, N.J. LIC. NO. GE23964

PROJECT # 2009.0366.00
PHILLIPSBURG HIGH SCHOOL
PHILLIPSBURG, NJ 08865
DATE: 11/15/12
DRAWN BY: [Name]

DesignIdeasGroup
Architecture + Planning + Interiors
100 BELVIDERE ROAD, SUITE 400
PHILLIPSBURG, NJ 08865
TEL: 908.229.9900
WWW.DESIGNIDEASGROUP.COM

SDA
NJ SCHOOL DEVELOPMENT AUTHORITY
STATE OF NEW JERSEY
DOING BUSINESS AS
[Logo]





NOTES

1. TOPOGRAPHY SHOWN HEREON WAS PREPARED BY ATLANTIS AERIAL SURVEY CO., INC. FROM AERIAL PHOTOGRAPHY DATED 1992. TOPOGRAPHY INCLUDED IN THIS PLAN SET UPDATED BY CIVIL ENGINEER FIELD SURVEY TOPOGRAHIC SURVEY BY PER CONSULTING DATED SEPTEMBER 23, 2012.

LEGEND

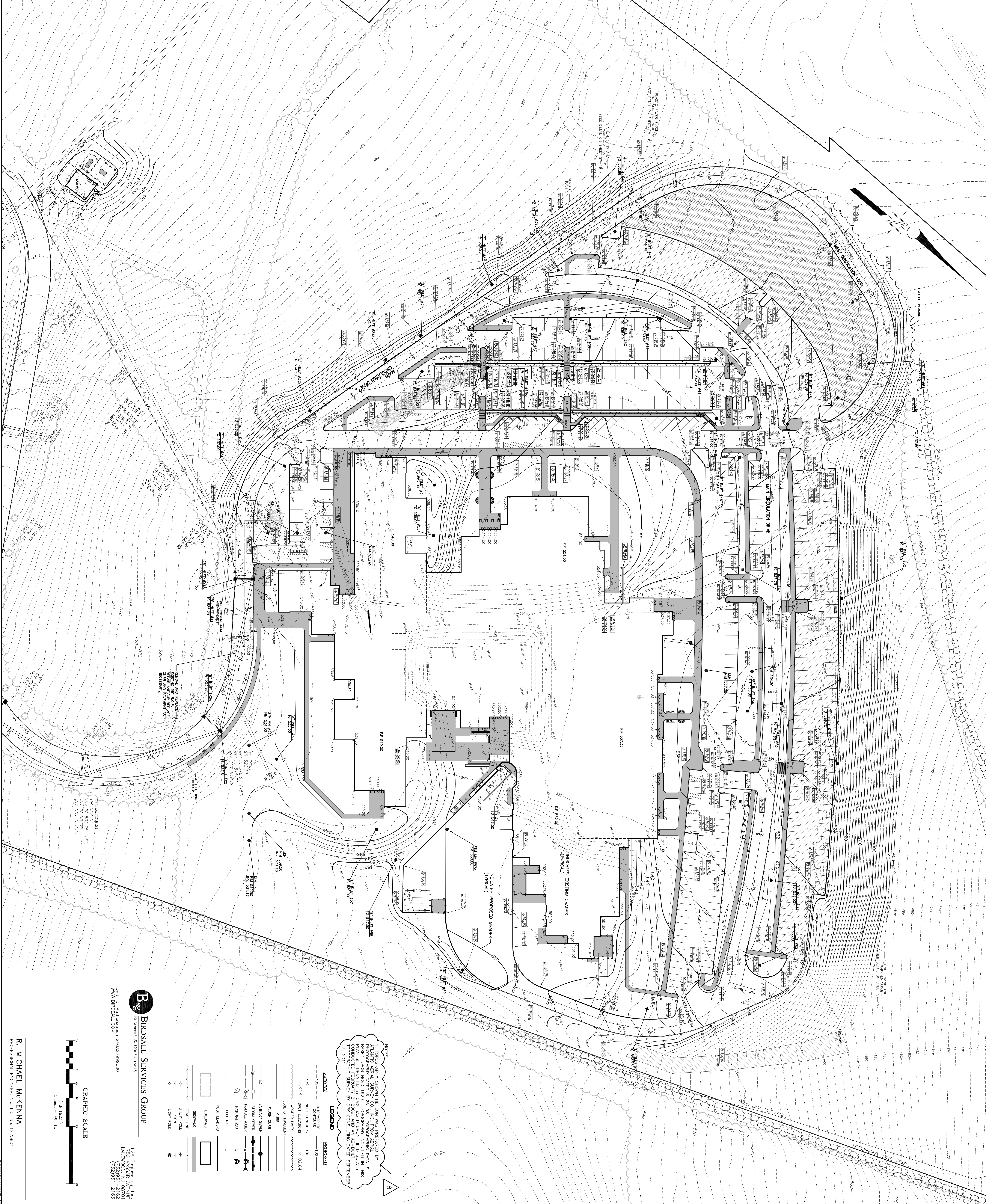
EXISTING	PROPOSED
INTERSECTING CONDUITS	102
ROOF ELEVATIONS	X/102.64
WOODEN LIMBS	X/102.64
EDGE OF PAVEMENT	
FLASH CURB	
SHOWER SINK	
STOVE SINK	
POTABLE WATER	
NATURAL GAS	
ELECTRIC	
ROOF LEAKERS	
BUILDINGS	
SEWER	
FINISH LINE	
UTILITY POLE	
LIGHT POLE	

BIRSSALL SERVICES GROUP
 ENGINEERS & CONSULTANTS

150 S. Main Street
 Phillipsburg, NJ 08865
 (908) 685-2100
 www.birssall.com

R. MICHAEL MCKENNA
 PROFESSIONAL ENGINEER, N.J. LIC. NO. CE25894

<p>100% NJDCA CONSTRUCTION DOCUMENTS SUBMISSION FOR: NEW PHILLIPSBURG HIGH SCHOOL DOE# 4100-N01-04-1000 SDA# NT-0003-C02</p> <p>TOWN OF PHILLIPSBURG UPPER BELVIDERE ROAD LOT 44 / BLOCK 2 PHILLIPSBURG, NEW JERSEY 08865</p>		<p>SDA NJ SCHOOL DEVELOPMENT AUTHORITY STATE OF NEW JERSEY</p>
<p>DesignIdeasGroup ARCHITECTURE + PLANNING LLC</p>	<p>PROJECT #: 2009.9366.00</p>	<p>ARCHITECT PROJECT MANAGER DESIGNER CHECKER DATE: 11/15/12</p>
<p>APPENDIX #1 11-21-12 NJSDA REVISIONS 08-12-12 NJSDA COMMENTS 03-04-11 NJSDA COMMENTS 08-12-10 NJSDA COMMENTS 05-17-10 NJSDA COMMENTS 02-12-10 DATE: OCTOBER 13, 2009 SCALE: 1"=40'</p>	<p>SUBMISSION DATE</p>	<p>DRAWING NO.: UTILITY PLAN DRAWN BY: SW-5</p>

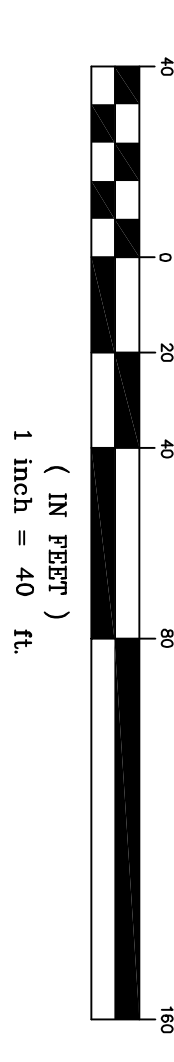


NOTES:
 1. TOPOGRAPHIC DATA FOR THIS PROJECT WAS PROVIDED BY ATLANTIS AERIAL SURVEY CO., INC. FROM AERIAL PHOTOGRAPHY DATED 3-25-06. TOPOGRAPHIC DATA IS PLAN SET UPDATED BY CIVIL BASED UPON FIELD SURVEY CONDUCTED BY BIRDSALL SERVICES GROUP, INC. ON SEPTEMBER 23, 2012.

LEGEND	
	INTERPOLATE
	UNDER CONTOURS
	SPOT ELEVATION
	SPOT GRADE
	EDGE OF BUILDING
	FLOOR LINE
	SEWER/STORM
	ELECTRIC
	NATURAL GAS
	WATER
	ROOF LEADERS
	BUILDINGS
	SIDEWALK
	FENCE LINE
	UTILITY POLE
	SPOT ELEVATION
	SPOT GRADE

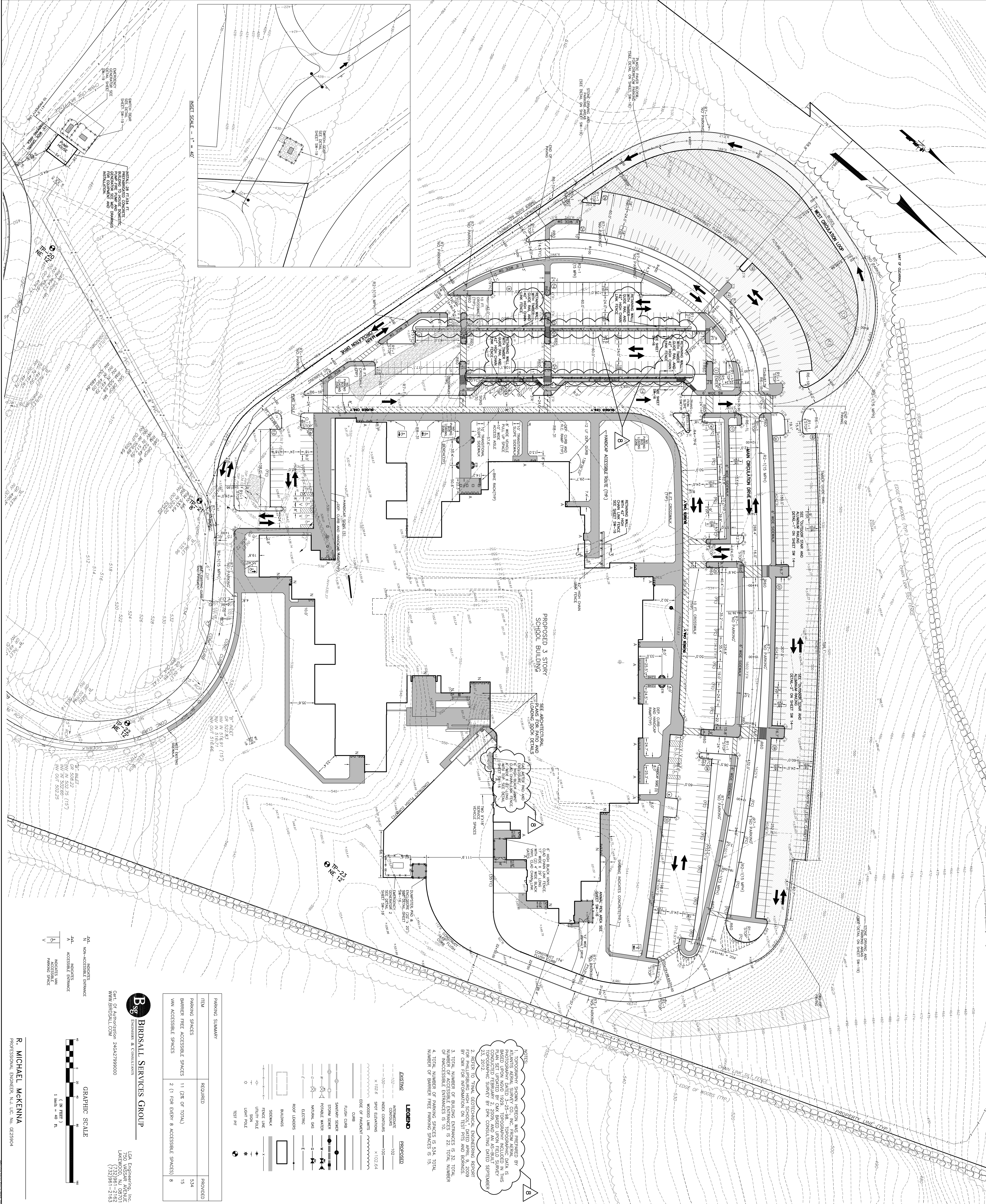
BIRDSALL SERVICES GROUP
 ENGINEERS & CONSULTANTS
 Cert. of Authorization: 26042799000
 WWW.BIRDSALL.COM

LEG
 LCA Engineering, Inc.
 150 WASSER AVENUE
 LANSING, MI 48203
 (734) 981-2182
 (734) 981-2163



R. MICHAEL MCKENNA
 PROFESSIONAL ENGINEER, N.J. LIC. NO. 0E22984

<p>100% NJDCA CONSTRUCTION DOCUMENTS SUBMISSION FOR: NEW PHILLIPSBURG HIGH SCHOOL DOE# 4100-N01-04-1000 SDA# NT-0003-C02</p> <p>TOWN OF PHILLIPSBURG UPPER BELVIDERE ROAD LOT 44 / BLOCK 2 PHILLIPSBURG, NEW JERSEY 08865</p>		<p>SDA NJ SCHOOL DEVELOPMENT AUTHORITY STATE OF NEW JERSEY</p>
<p>DesignIdeas Group architecture • planning • llc</p>		<p>PROJECT # 2008.359.00</p>
<p>DATE: OCTOBER 13, 2009</p>		<p>DATE: OCTOBER 13, 2009</p>
<p>SCALE: 1"=40'</p>		<p>SCALE: 1"=40'</p>
<p>DRAWING TITLE: GRADING AND DRAINAGE PLAN</p>		<p>DRAWING NO.:</p>
<p>DRAWING NO.:</p>		<p>DRAWING NO.:</p>
<p>SW-4</p>		<p>SW-4</p>
<p>DRAWN BY:</p>		<p>DRAWN BY:</p>
<p>SUBMISSION DATE:</p>		<p>SUBMISSION DATE:</p>
<p>ADDITIONAL #1: 11-21-12</p>		<p>ADDITIONAL #1: 11-21-12</p>
<p>NJSDA REVISIONS: 09-12-12</p>		<p>NJSDA REVISIONS: 09-12-12</p>
<p>NJSDA COMMENTS: 03-04-11</p>		<p>NJSDA COMMENTS: 03-04-11</p>
<p>NJSDA COMMENTS: 08-12-10</p>		<p>NJSDA COMMENTS: 08-12-10</p>
<p>NJSDA COMMENTS: 05-17-10</p>		<p>NJSDA COMMENTS: 05-17-10</p>
<p>NJSDA COMMENTS: 02-12-10</p>		<p>NJSDA COMMENTS: 02-12-10</p>



INSET SCALE - 1" = 40'

INSTALL 20 FT. DIA. FITTINGS TO PROTECT EXISTING UNDERGROUND UTILITY LINES AND PROVIDE PROTECTION FOR ALL UTILITIES. SEE SHEET 10-1 FOR DETAILS.

ITEM	REQUIRED	PROVIDED
PARKING SPACES	11 (2% OF TOTAL)	534
BARRIER FREE ACCESSIBLE SPACES	2 (1 FOR EVERY 8 ACCESSIBLE SPACES)	15
VAN ACCESSIBLE SPACES		8

LEGEND

EXISTING

- INTERSECTIONS
- CONTOURS
- NO. OF SPOTS
- WOOD LUMBS
- EDGE OF PROXIMITY
- CHAINS
- FLUSH CURB
- SWANNEY CURB
- STORM SEWER
- NATURAL GAS
- ELECTRIC
- ROOF LEAKS
- BUILDINGS
- FENCE LINE
- UTILITY POLE
- LOW WALL
- TEST PIT

EROSION

- 102
- 103
- X 102.6
- X 102.84

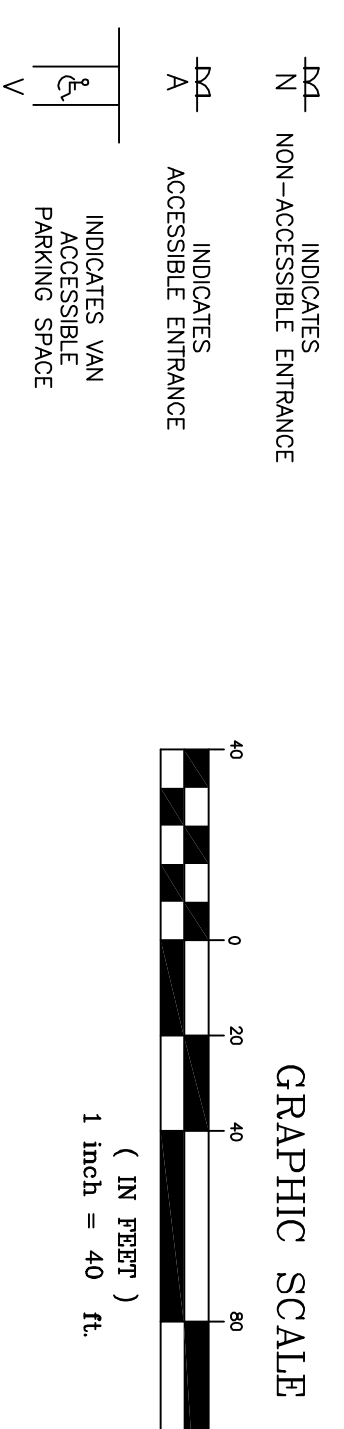
NOTES:

1. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE NOTED.
2. REFER TO FINAL GEOTECHNICAL ENGINEERING REPORT FOR PHILLIPSBURG HIGH SCHOOL, DATED APRIL 9, 2009 BY CAN FOR INFORMATION ON TEST PITS AND BORINGS.
3. TOTAL NUMBER OF BUILDING ENTRANCES IS 32. TOTAL NUMBER OF ACCESSIBLE ENTRANCES IS 10.
4. TOTAL NUMBER OF PARKING SPACES IS 534. TOTAL NUMBER OF BARRIER FREE PARKING SPACES IS 15.

BIRDSALL SERVICES GROUP
ENGINEERS & CONSULTANTS

154 Engineering, Inc.
750 VASSAR AVENUE
LAKENWOOD, NJ 08701
(732)981-2163

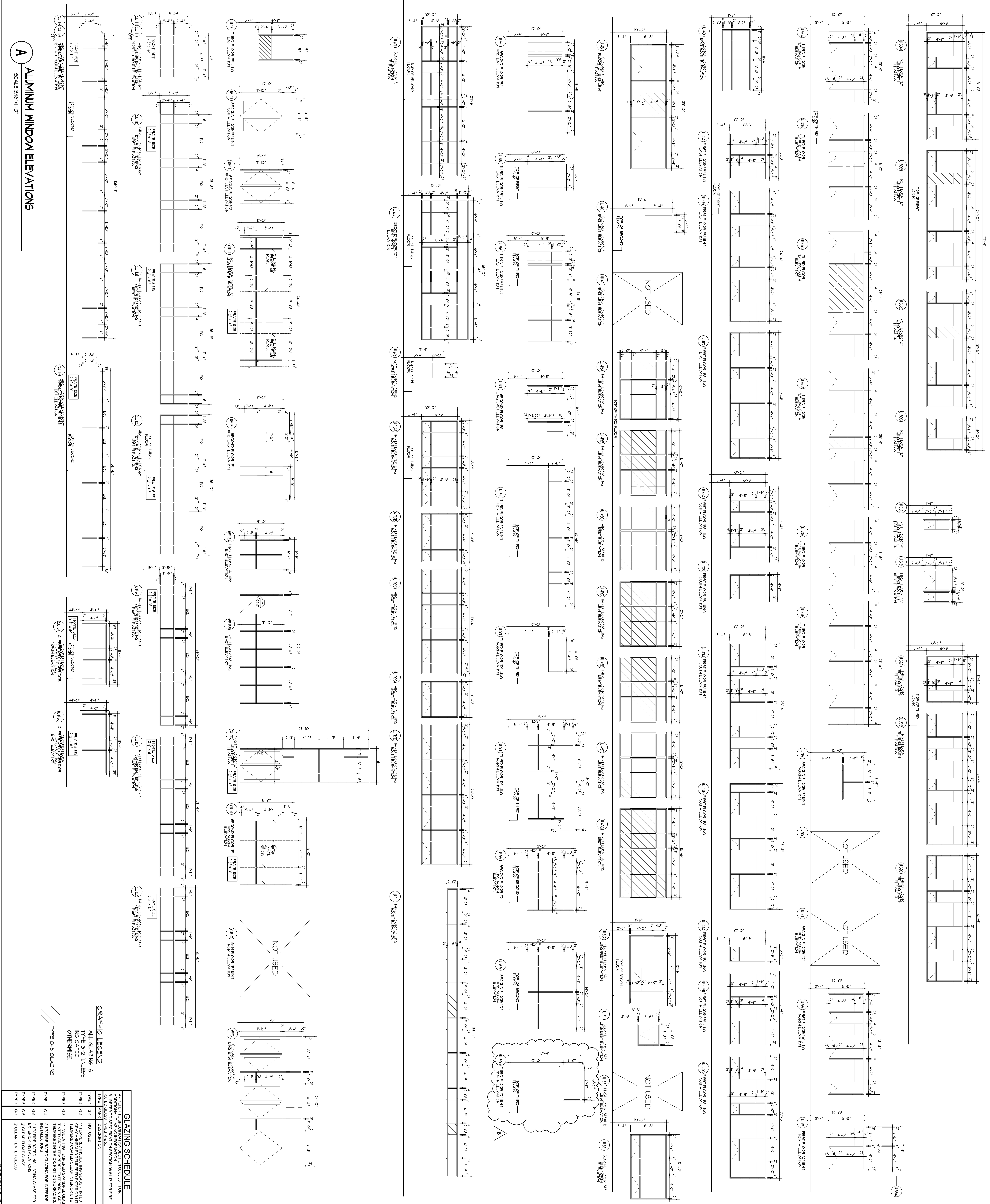
129 Engineering, Inc.
24642799000
WWW.BIRDSALL.COM



R. MICHAEL MCKENNA
PROFESSIONAL ENGINEER, N.J. LIC. NO. 0E22904

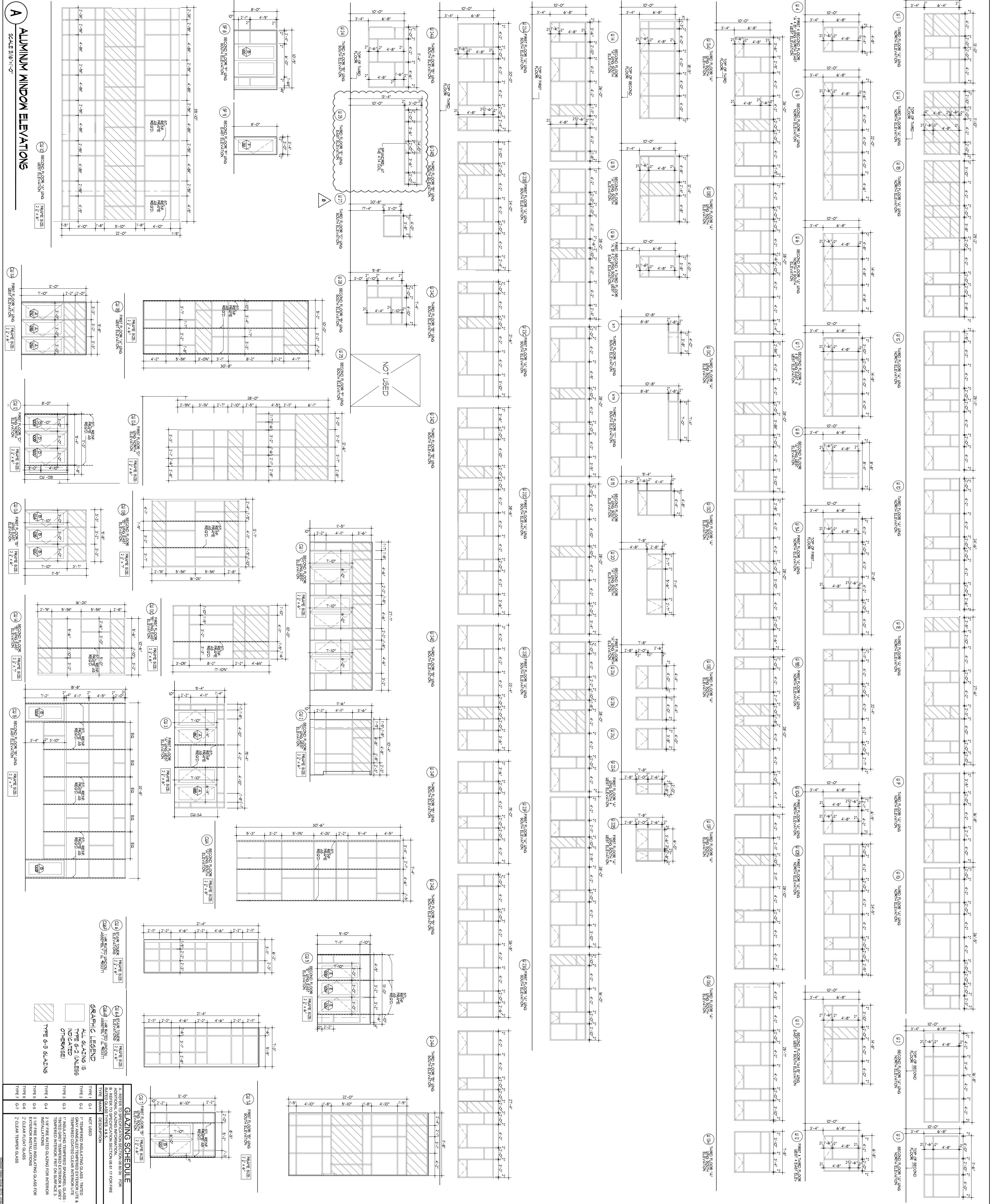
<p>100% NJDCA CONSTRUCTION DOCUMENTS SUBMISSION FOR: NEW PHILLIPSBURG HIGH SCHOOL DOE# 4100-N01-04-1000 SDA# NT-0003-C02</p> <p>TOWN OF PHILLIPSBURG UPPER BELVIDERE ROAD LOT 44 / BLOCK 2 PHILLIPSBURG, NEW JERSEY 08865</p>		<p>SDA NJ SCHOOL DEVELOPMENT AUTHORITY STATE OF NEW JERSEY</p>
<p>Design Ideas Group Architecture • Planning • Interiors</p>	<p>PROJECT # 2008.358.00</p>	<p>DATE: OCTOBER 13, 2009 SCALE: 1" = 40'</p>
<p>DRAWING NO.: SITE PLAN DRAWING BY: SW-2</p>	<p>DATE:</p>	<p>DATE:</p>

ARCHITECTURAL



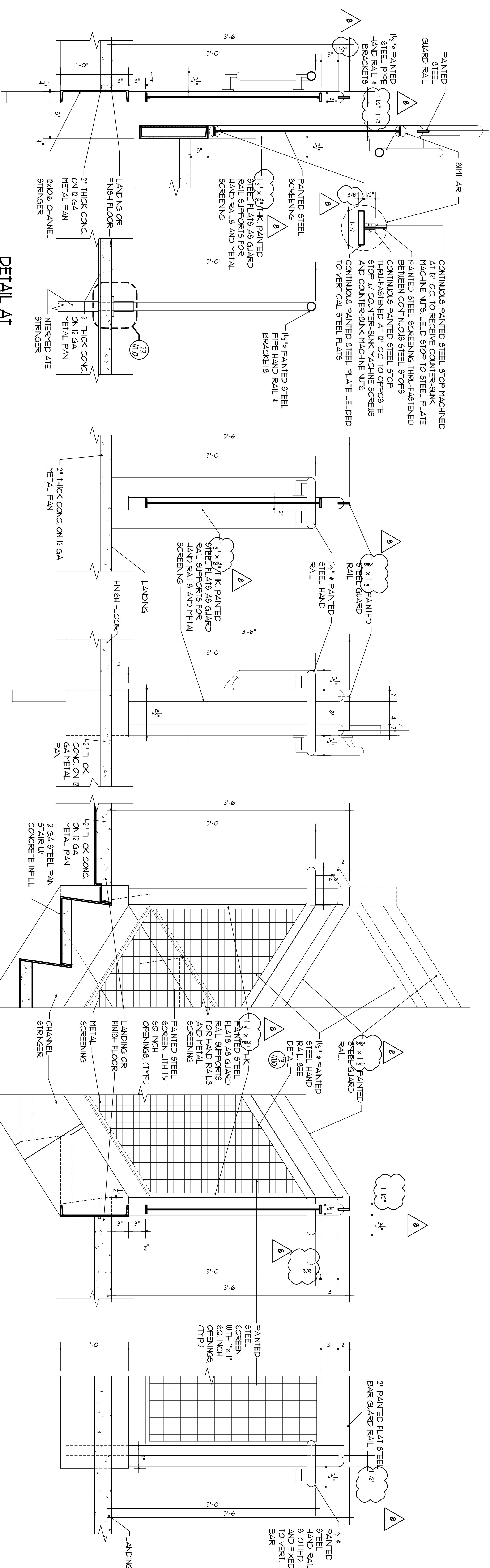
A ALUMINUM WINDOW ELEVATIONS
 SCALE 3/8" = 1'-0"

<p>SDA N.J. SCHOOL DEVELOPMENT AUTHORITY STATE OF NEW JERSEY</p>		<p>Design Ideas Group ARCHITECTURE + DESIGN + ILLUMINATION</p>		<p>PROJECT # 2008-356-00</p>	
<p>100% NJDCA CONSTRUCTION DOCUMENTS SUBMISSION FOR: NEW PHILLIPSBURG HIGH SCHOOL DOE# 4100-N01-04-1000 SDA# NT-0003-C02</p>		<p>TOWN OF PHILLIPSBURG UPPER BELVIDERE ROAD LOT 44 / BLOCK 2 PHILLIPSBURG, NEW JERSEY 08865</p>		<p>DATE: OCTOBER 13, 2009 DRAWING TITLE: ALUMINUM WINDOW FRAME ELEVATIONS DRAWING NO: A-8.2.2</p>	
<p>APPENDIX #1: 11-21-12 NJSDA REVISIONS: 6/09-12-12 NJDCA COMMENTS: 03-04-11 NJDCA COMMENTS: 03-08-12-10 NJDCA COMMENTS: 05-17-10</p>		<p>DATE: OCTOBER 13, 2009 DRAWING TITLE: ALUMINUM WINDOW FRAME ELEVATIONS DRAWING NO: A-8.2.2</p>		<p>DATE: OCTOBER 13, 2009 DRAWING TITLE: ALUMINUM WINDOW FRAME ELEVATIONS DRAWING NO: A-8.2.2</p>	



A ALUMINUM WINDOW ELEVATIONS
SCALE: 3/8"=1'-0"

<p>SDA NJ Schools Development Authority STATE OF NEW JERSEY LOCAL GOVERNMENT AGENCY</p>	<p>Design Ideas Group Architects & Planners Inc. 1000 BELLEVILLE ROAD PHILLIPSBURG, NJ 08865 TEL: 609.291.1111 WWW.DESIGNIDEASGROUP.COM</p>	<p>PROJECT # 2008.956.00 PHILLIPSBURG HIGH SCHOOL 1000 BELLEVILLE ROAD PHILLIPSBURG, NJ 08865 TEL: 609.291.1111 WWW.DESIGNIDEASGROUP.COM</p>	<p>100% NJDCA CONSTRUCTION DOCUMENTS SUBMISSION FOR: NEW PHILLIPSBURG HIGH SCHOOL DOE# 4100-N01-04-1000 SDA# NT-0003-C02 TOWN OF PHILLIPSBURG UPPER BELVIDERE ROAD LOT 44 / BLOCK 2 PHILLIPSBURG, NEW JERSEY 08865</p>	<p>APPENDIX #1 11-21-12 NJSDA REVISIONS 6/09-12-12 NJDCA COMMENTS 03-04-11 NJDCA COMMENTS 03-08-12-10 NJDCA COMMENTS 02-11-10 DATE: OCTOBER 13, 2009 SCALE: AS NOTED</p>	<p>SUBMISSION DATE DRAWING NO: A-8.2.1 DRAWN BY:</p>
--	--	--	--	--	---



1 DETAIL BETWEEN RUNS
SCALE: 1/2" = 1'-0"
SEE NOTE "A"

2 DETAIL AT INTERMEDIATE HAND RAIL
SCALE: 1/2" = 1'-0"
SEE NOTE "A"

3 DETAIL AT LANDING
SCALE: 1/2" = 1'-0"
SEE NOTE "A"

4 DETAIL AT FLOOR
SCALE: 1/2" = 1'-0"
SEE NOTE "A"

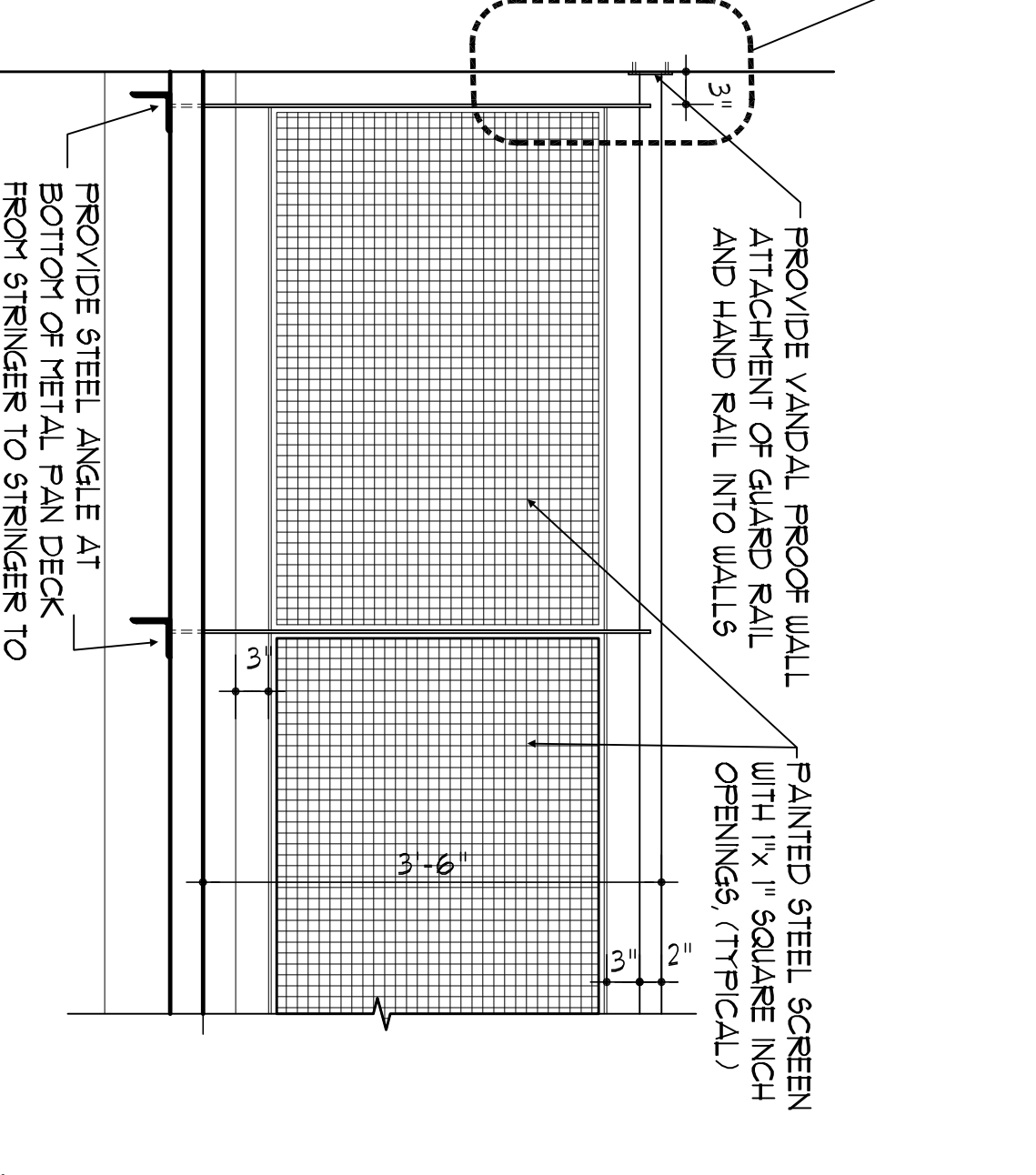
5 DETAIL AT LANDING
SCALE: 1/2" = 1'-0"
SEE NOTE "A"

6 DETAIL AT LANDING
SCALE: 1/2" = 1'-0"
SEE NOTE "A"

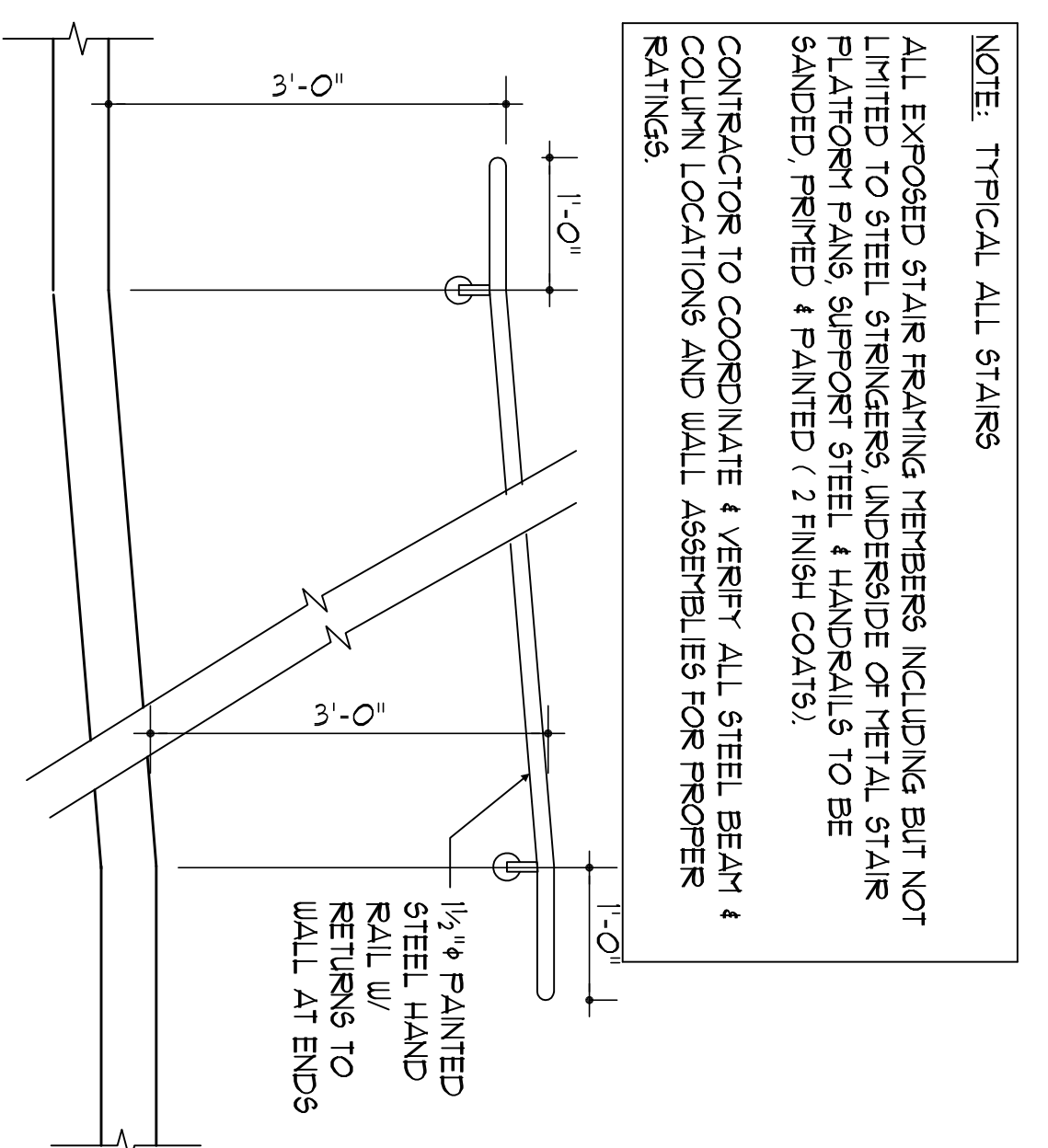
7 SECTION/ELEVATION @ LANDING
SCALE: 1/2" = 1'-0"
SEE NOTE "A"

8 PLAN DETAIL AT LANDING
SCALE: 1/2" = 1'-0"
SEE NOTE "A"

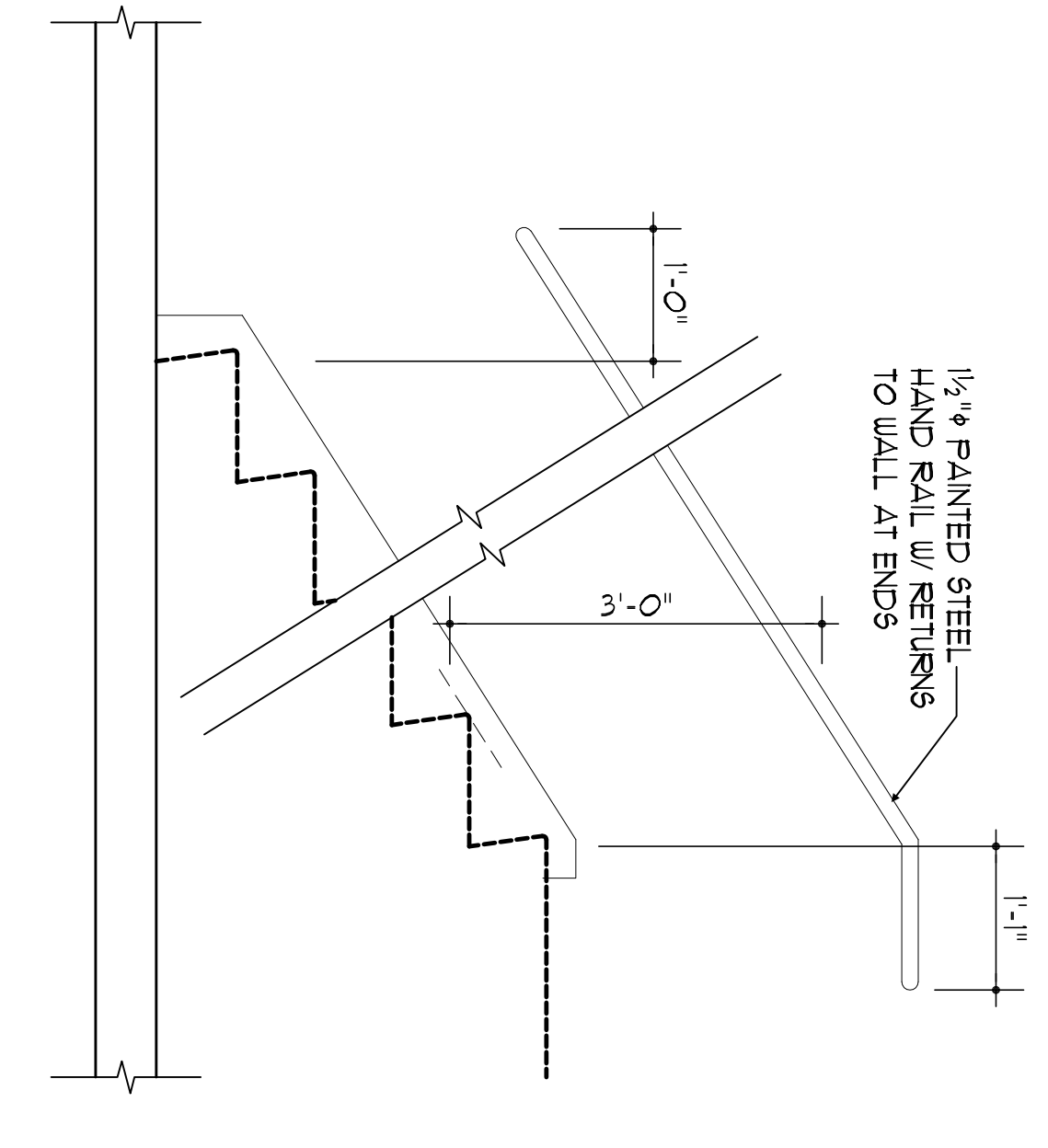
NOTE "A"
PROVIDE GROUND / BELIEVED OUTSIDE CORNER EDGES ON ALL STAIR GUARDRAIL AND RAILING COMPONENTS INCLUDE ALL FLAT STEEL, STOCK STAIR STRINGER ASSEMBLIES, STAIR RISER PLATES ETC.



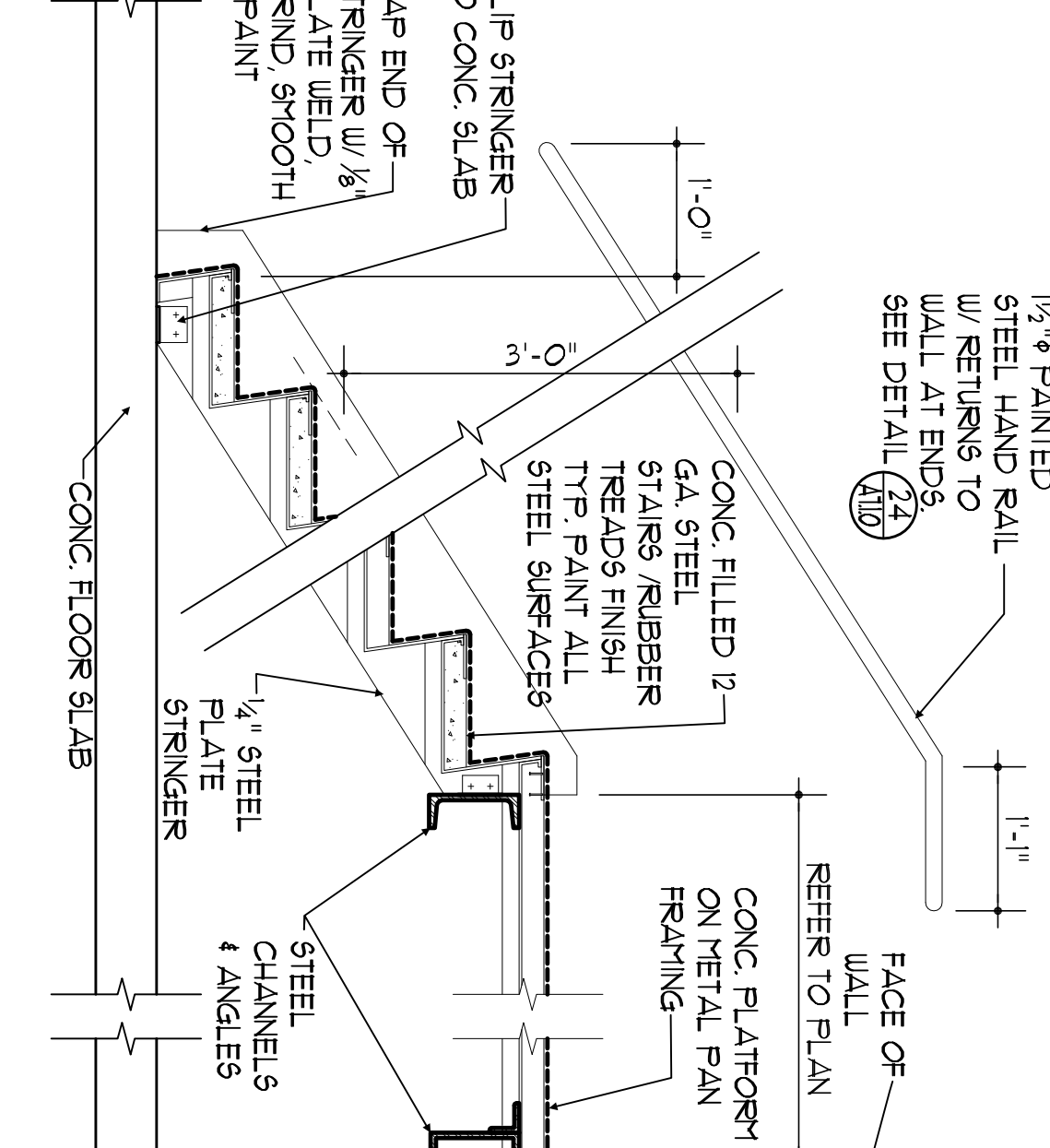
9 GUARDRAIL @ LANDING TYP. (SEE PLANS)
SCALE: 3/4" = 1'-0"
SEE NOTE "A"



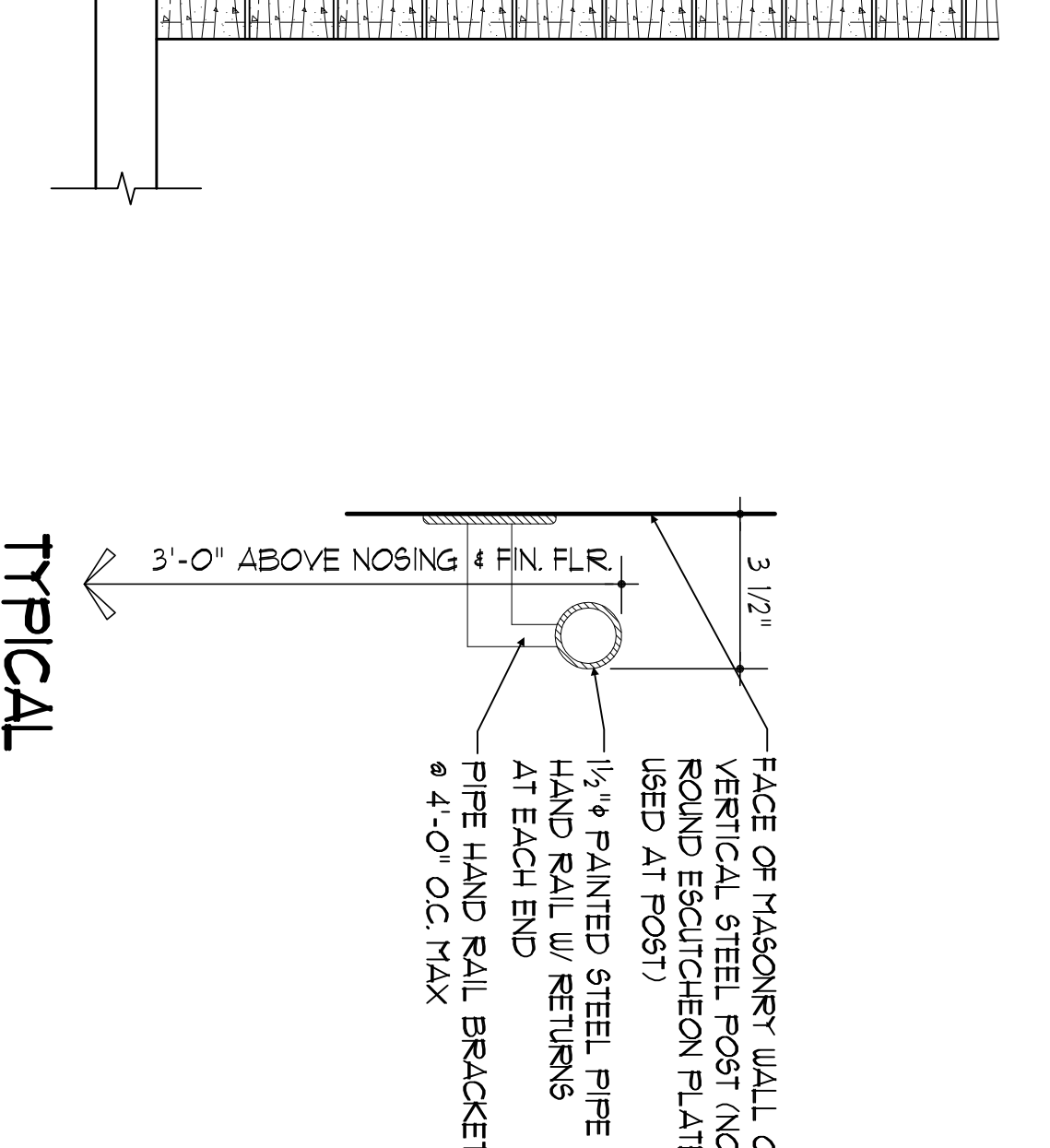
10 TYP. RAMP RAILING EXTENSIONS
SCALE: 3/4" = 1'-0"
SEE NOTE "A"



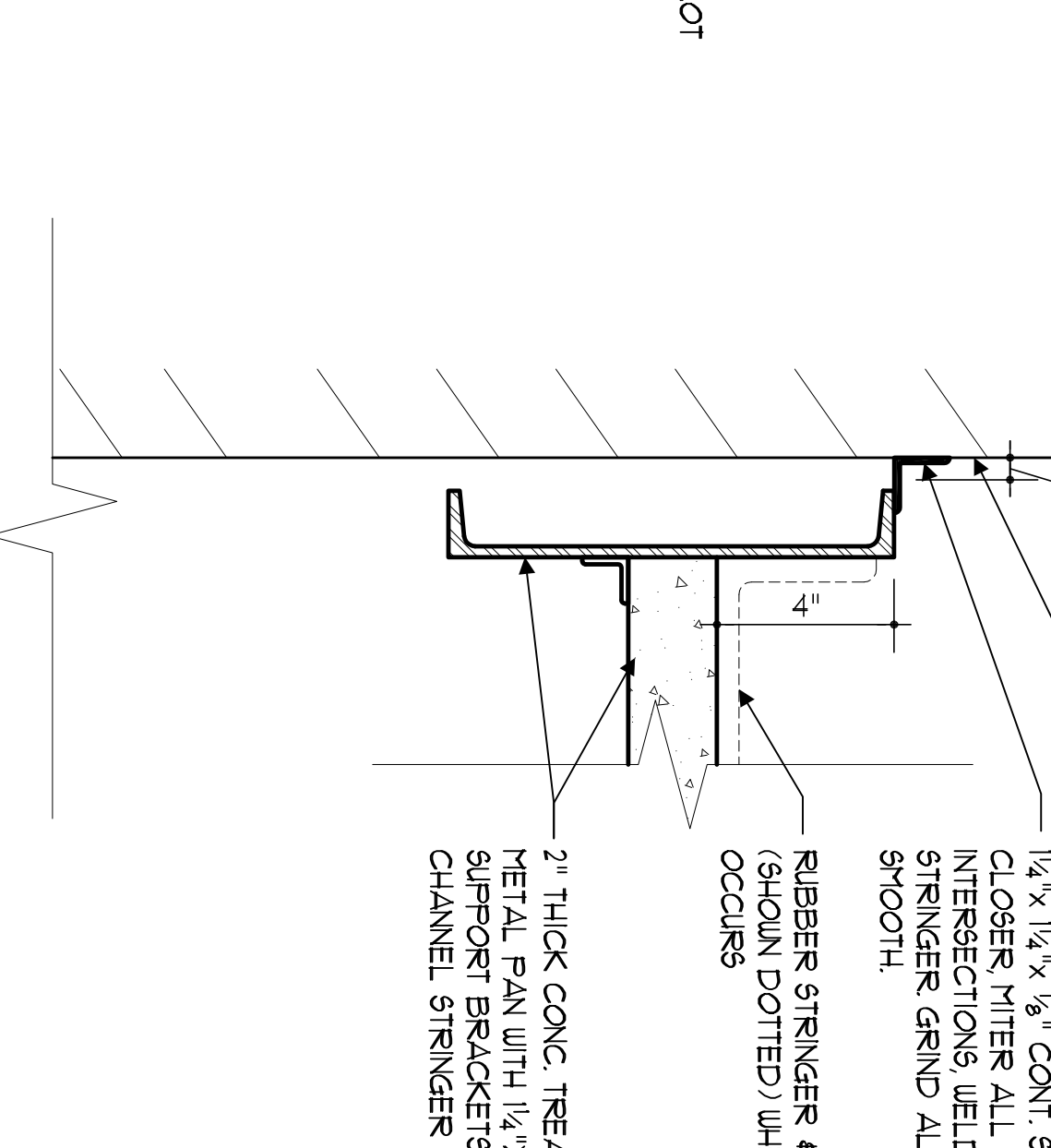
11 TYP. STAIR RAILING EXTENSIONS
SCALE: 3/4" = 1'-0"
SEE NOTE "A"



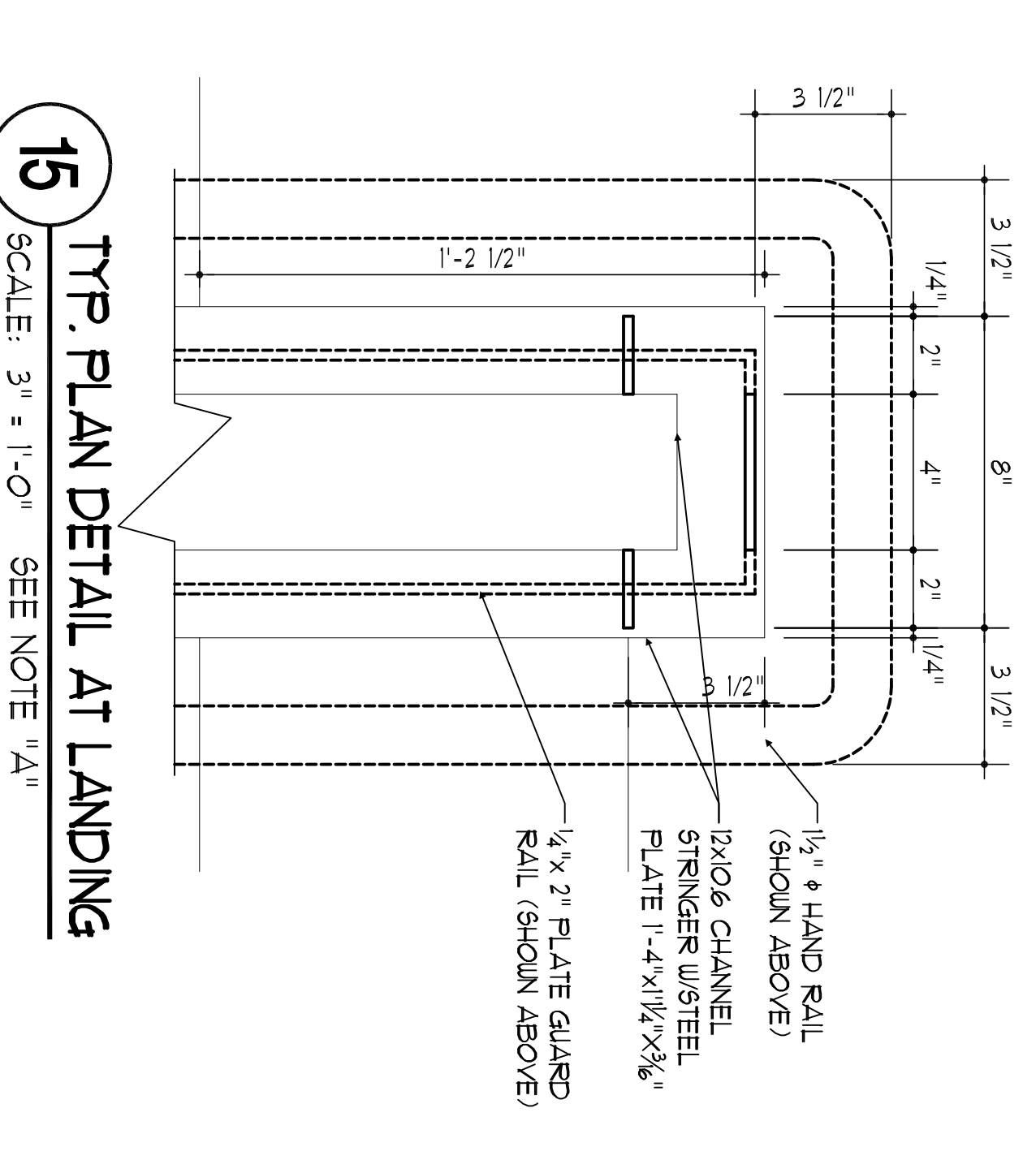
12 TYPICAL CONC. FILLED TREADS ON METAL PANS
SCALE: 3/4" = 1'-0"
SEE NOTE "A"



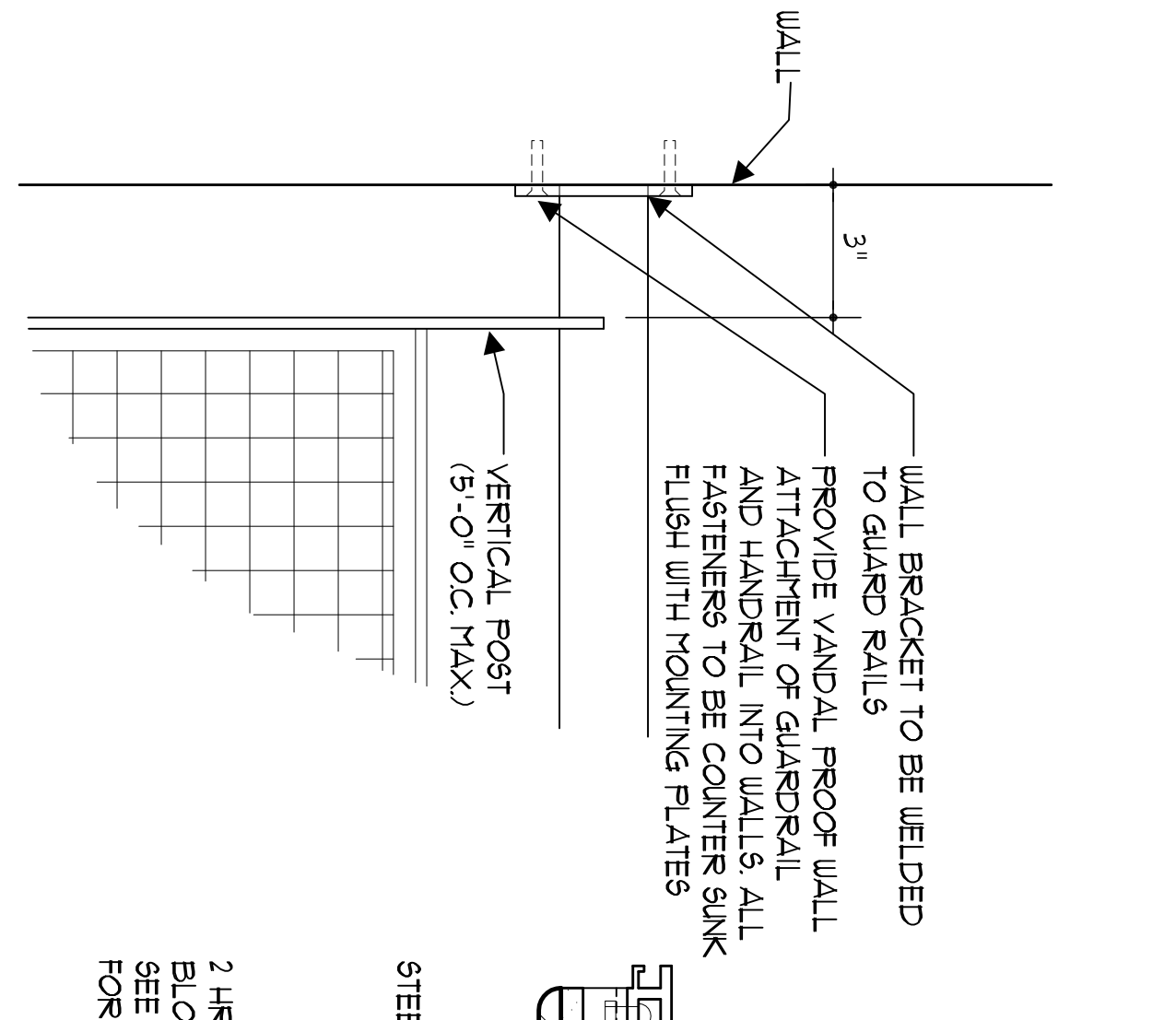
13 TYPICAL HANDRAIL DETAIL @ WALL HOULING
SCALE: 3" = 1'-0"
SEE NOTE "A"



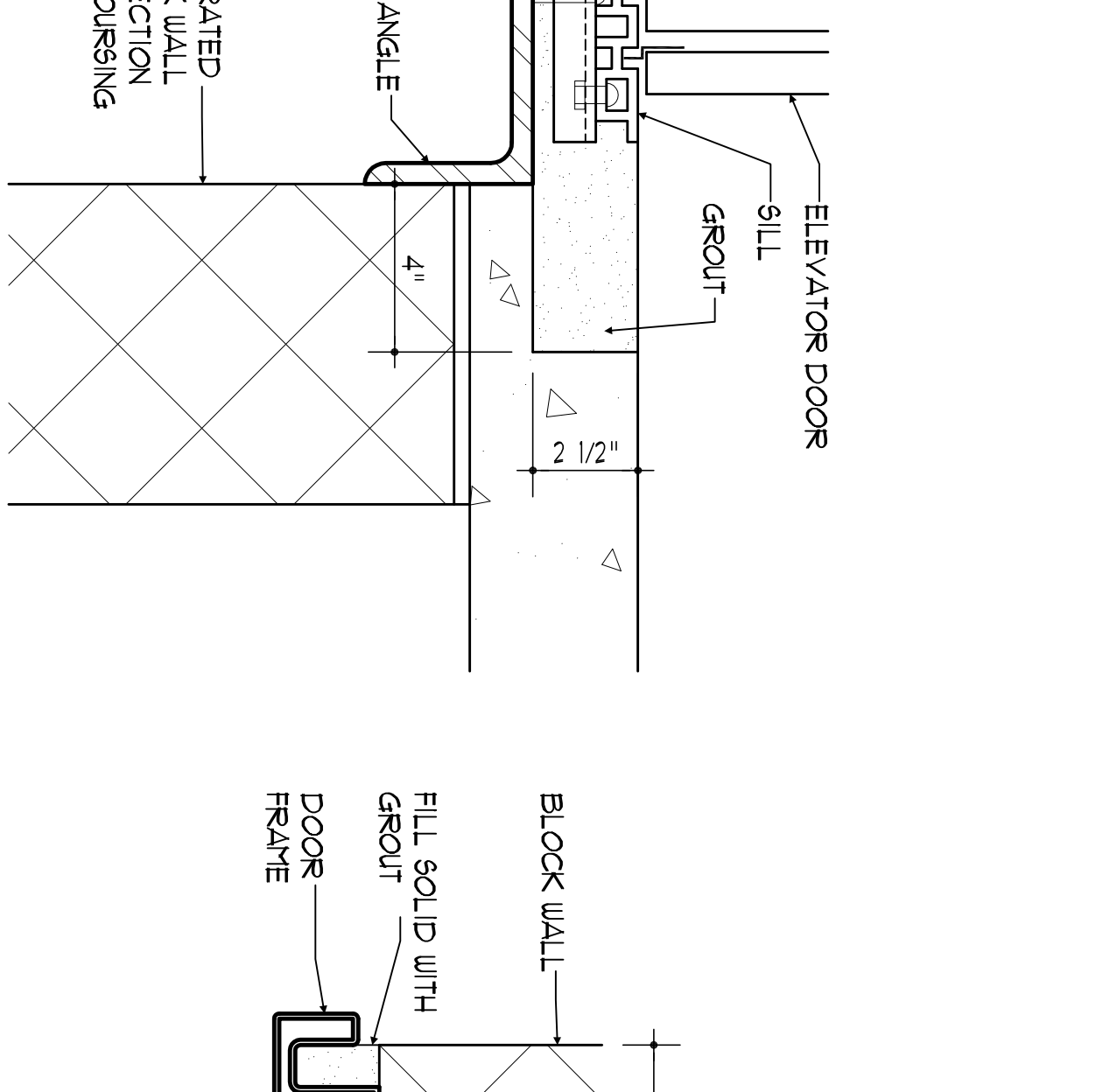
14 TYPICAL STRINGER @ WALL W/ CONC. FILLED METAL PAN
SCALE: 3" = 1'-0"
SEE NOTE "A"



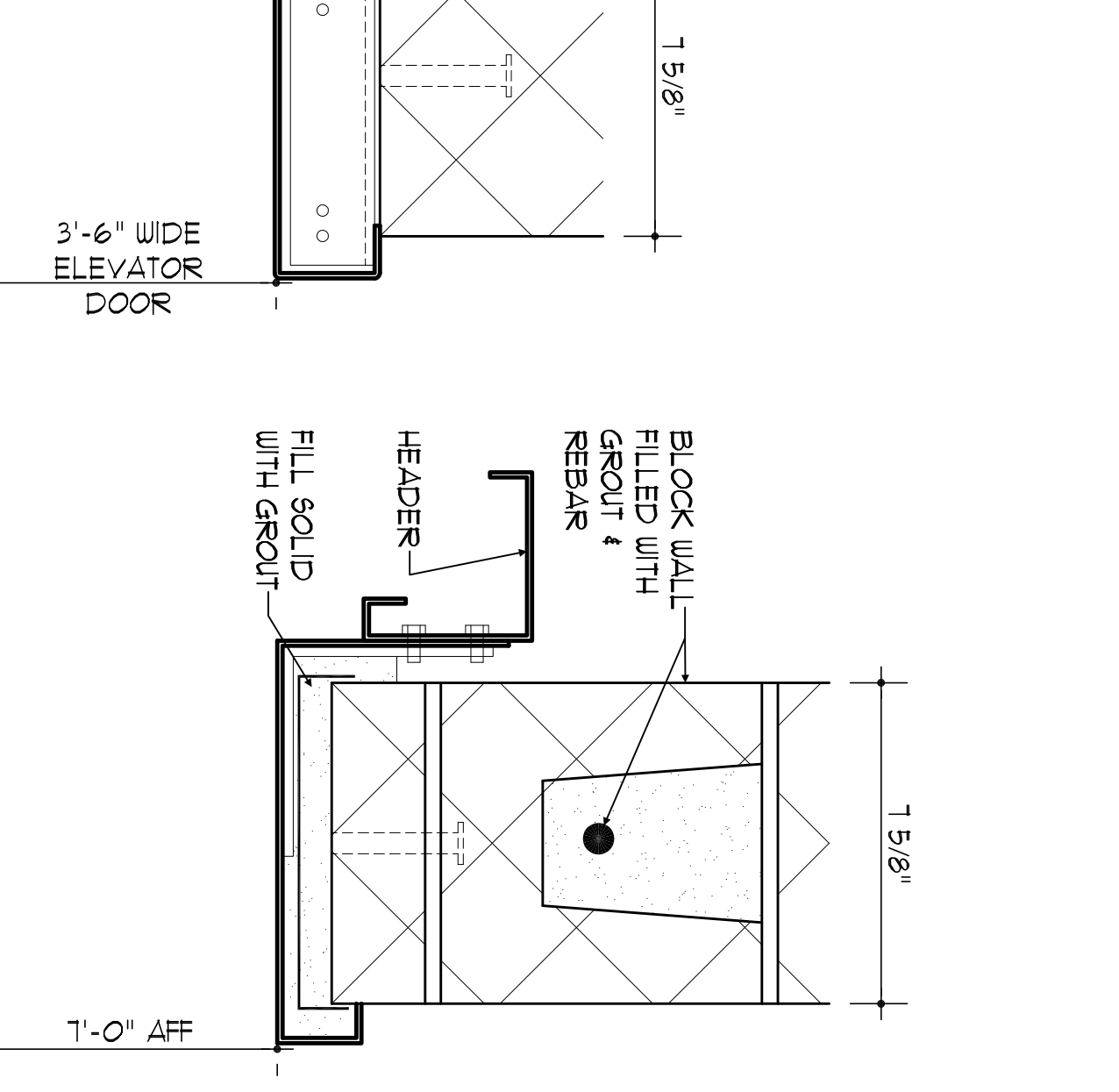
15 TYP. PLAN DETAIL AT LANDING
SCALE: 3" = 1'-0"
SEE NOTE "A"



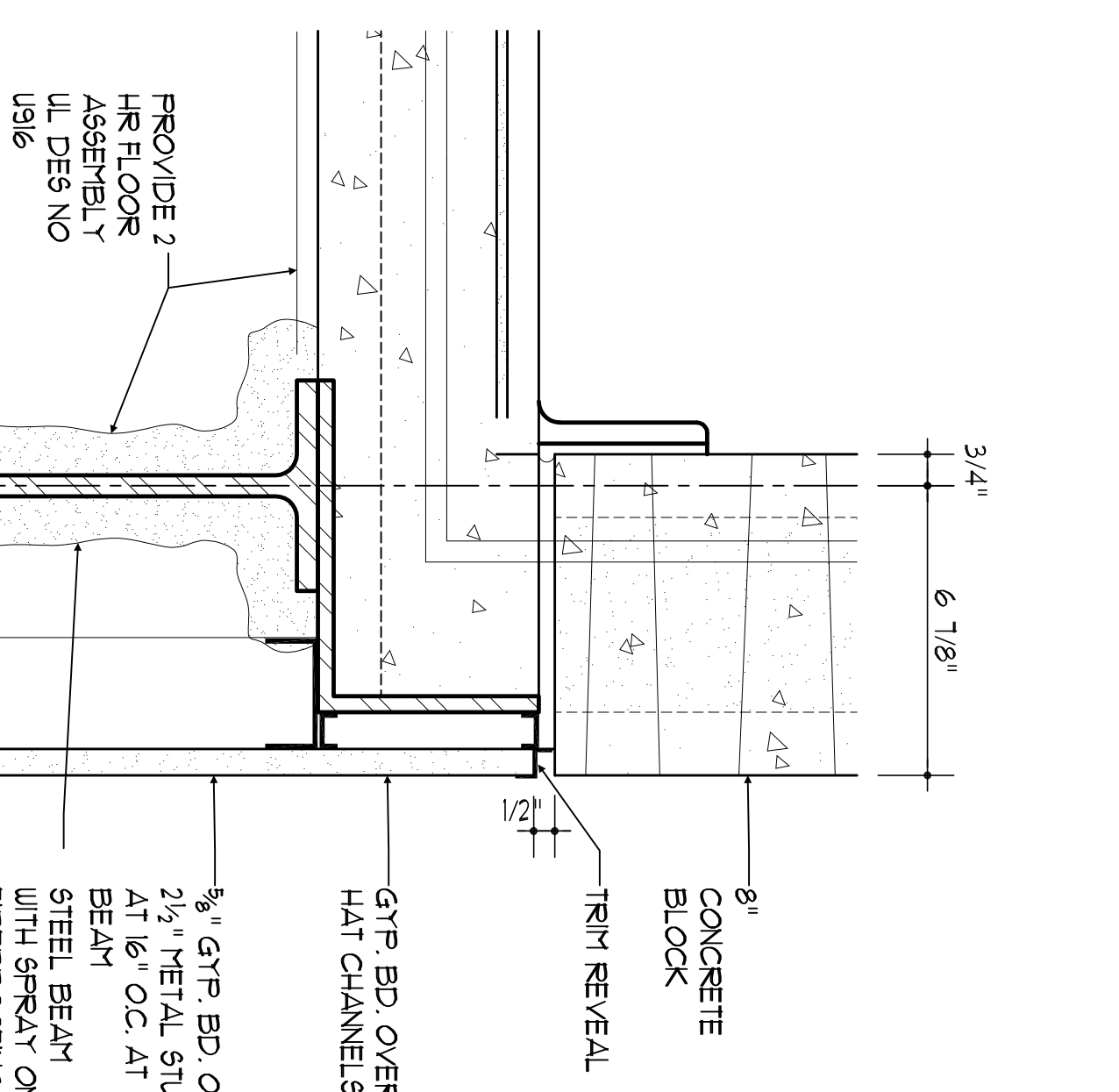
16 WALL BRACKET DETAIL
SCALE: 3" = 1'-0"
SEE NOTE "A"



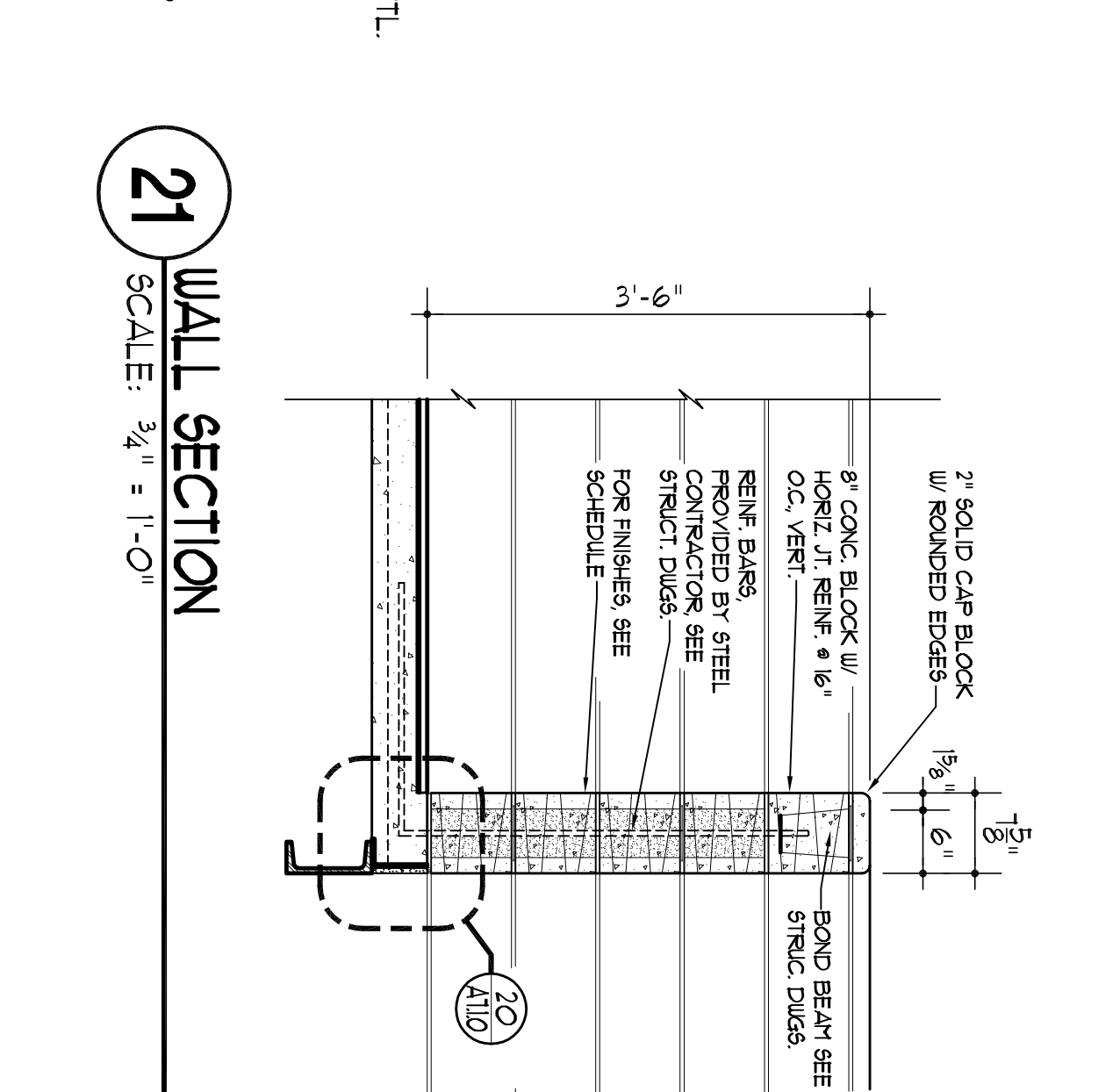
17 TYP. SILL DETAIL AT ELEVATOR
SCALE: 3" = 1'-0"
SEE NOTE "A"



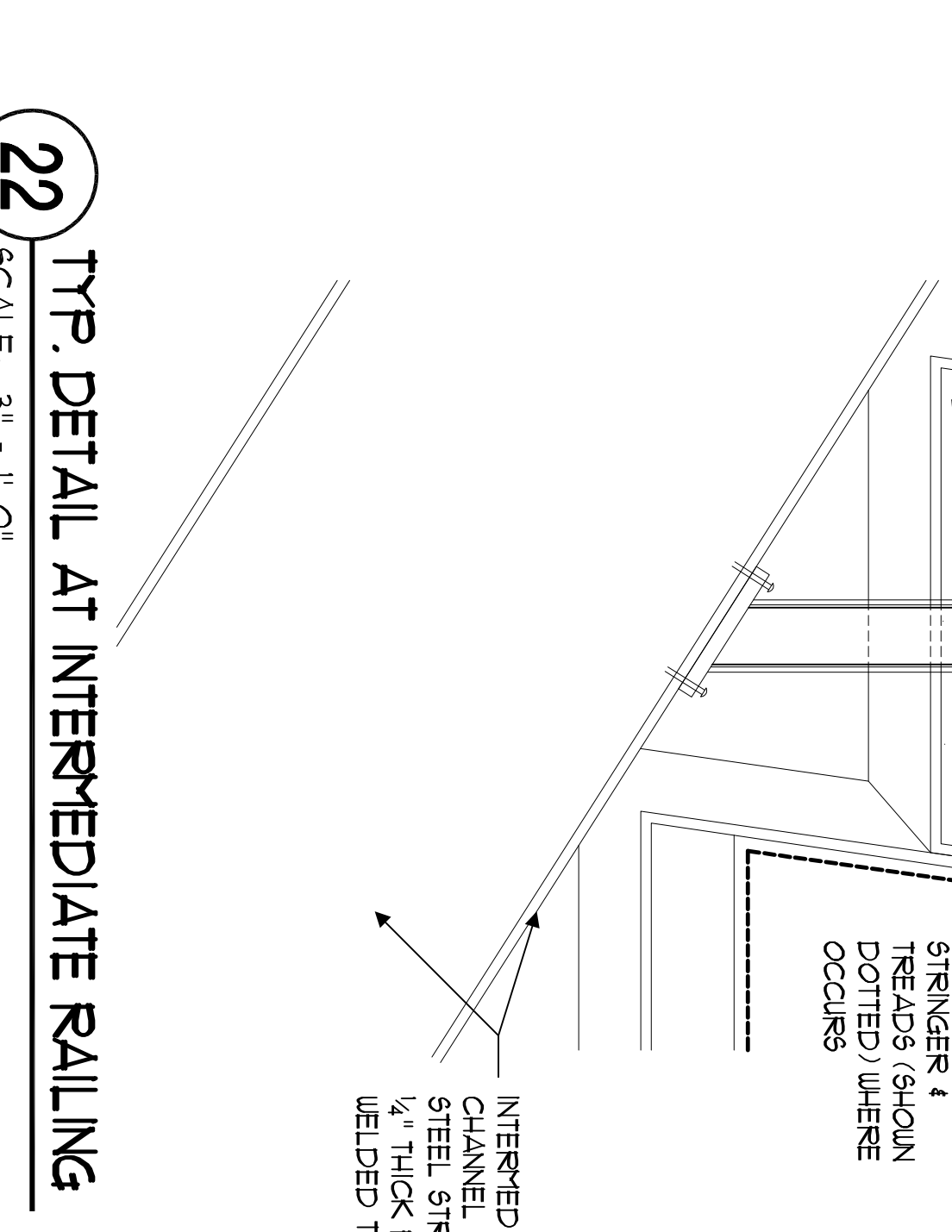
18 TYP. JAMB DETAIL AT ELEVATOR
SCALE: 3" = 1'-0"
SEE NOTE "A"



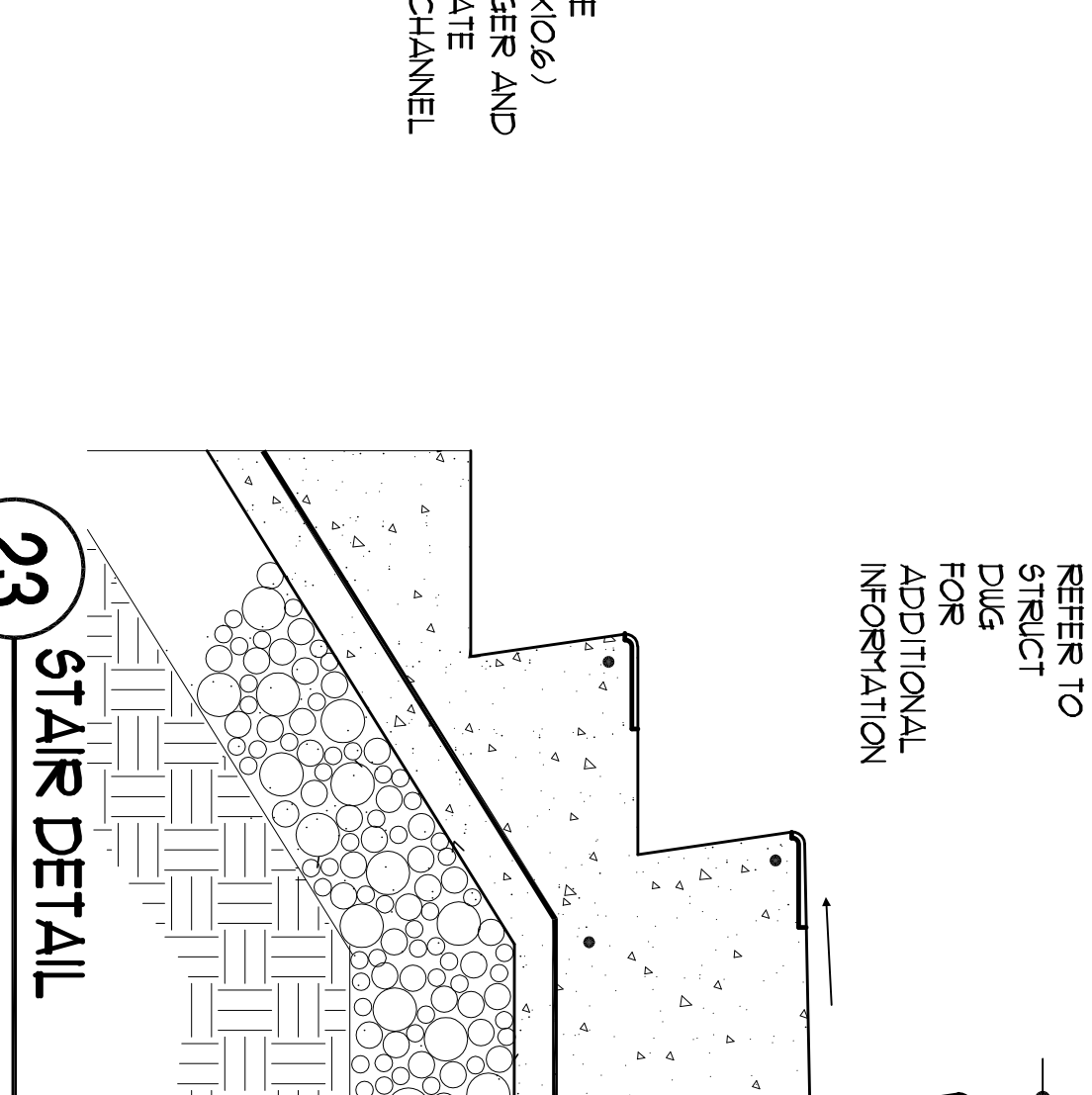
19 TYP. HEAD DETAIL AT ELEVATOR
SCALE: 3" = 1'-0"
SEE NOTE "A"



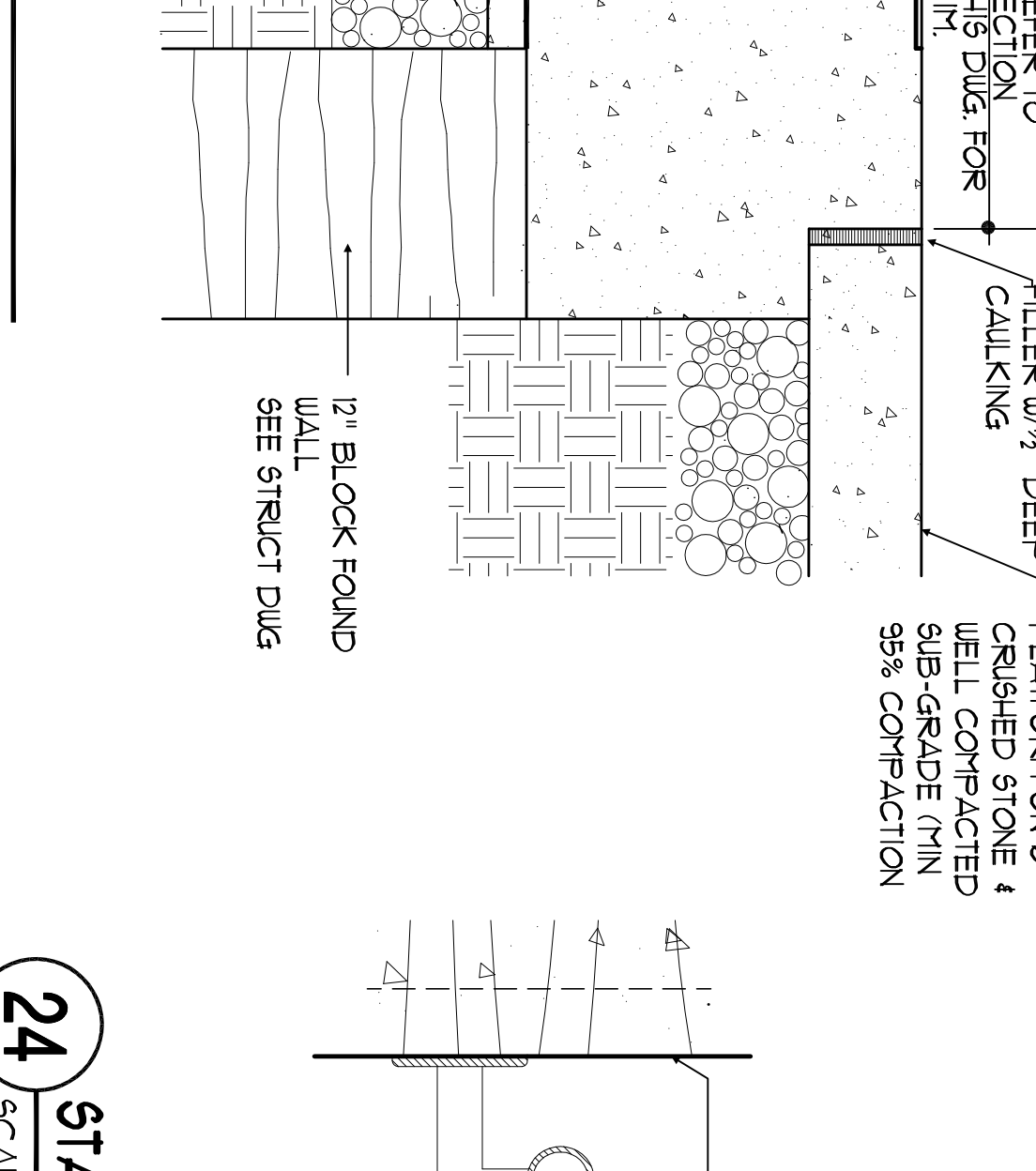
21 WALL SECTION
SCALE: 3/4" = 1'-0"
SEE NOTE "A"



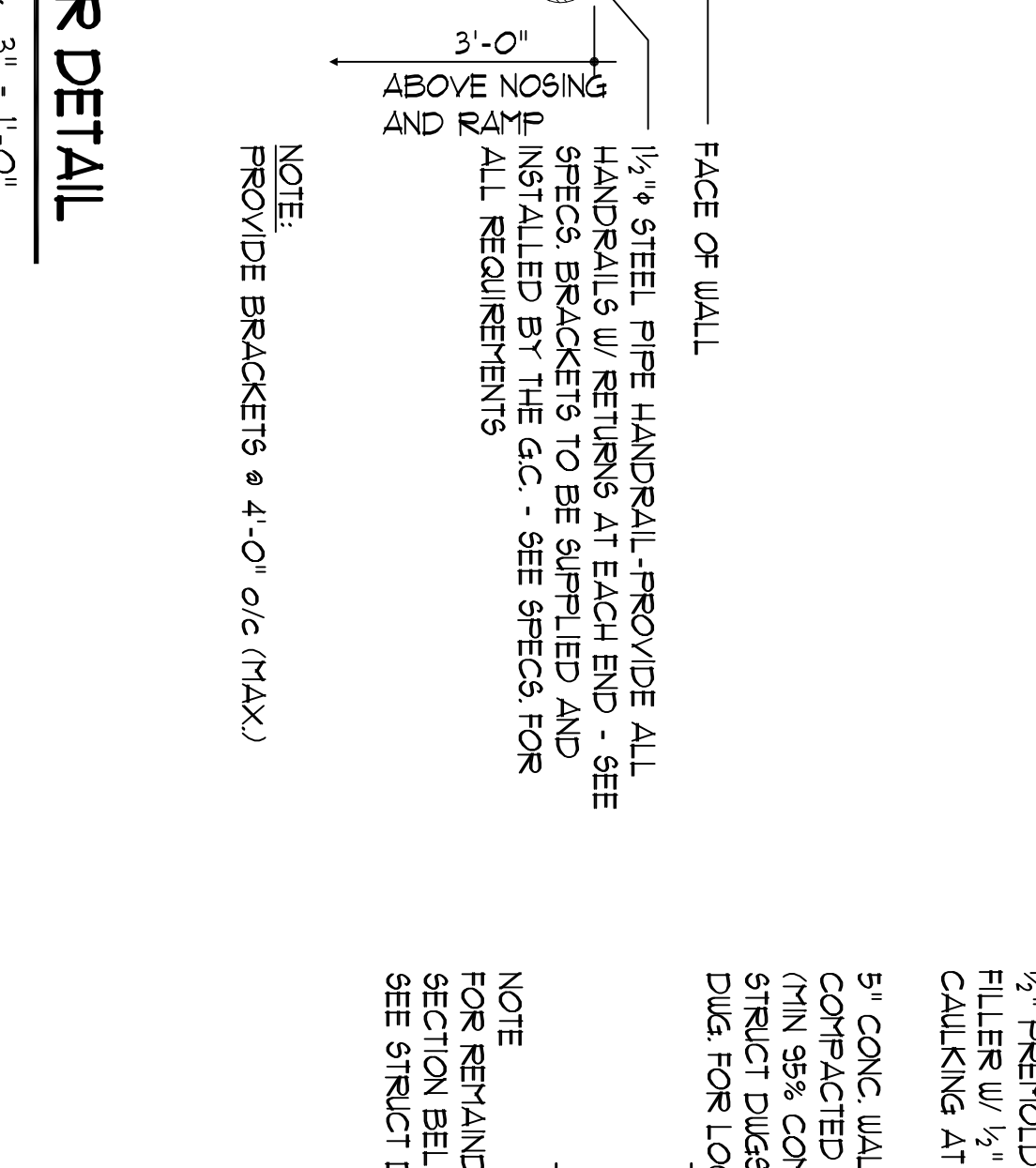
22 TYP. DETAIL AT INTERMEDIATE RAILING
SCALE: 3" = 1'-0"
SEE NOTE "A"



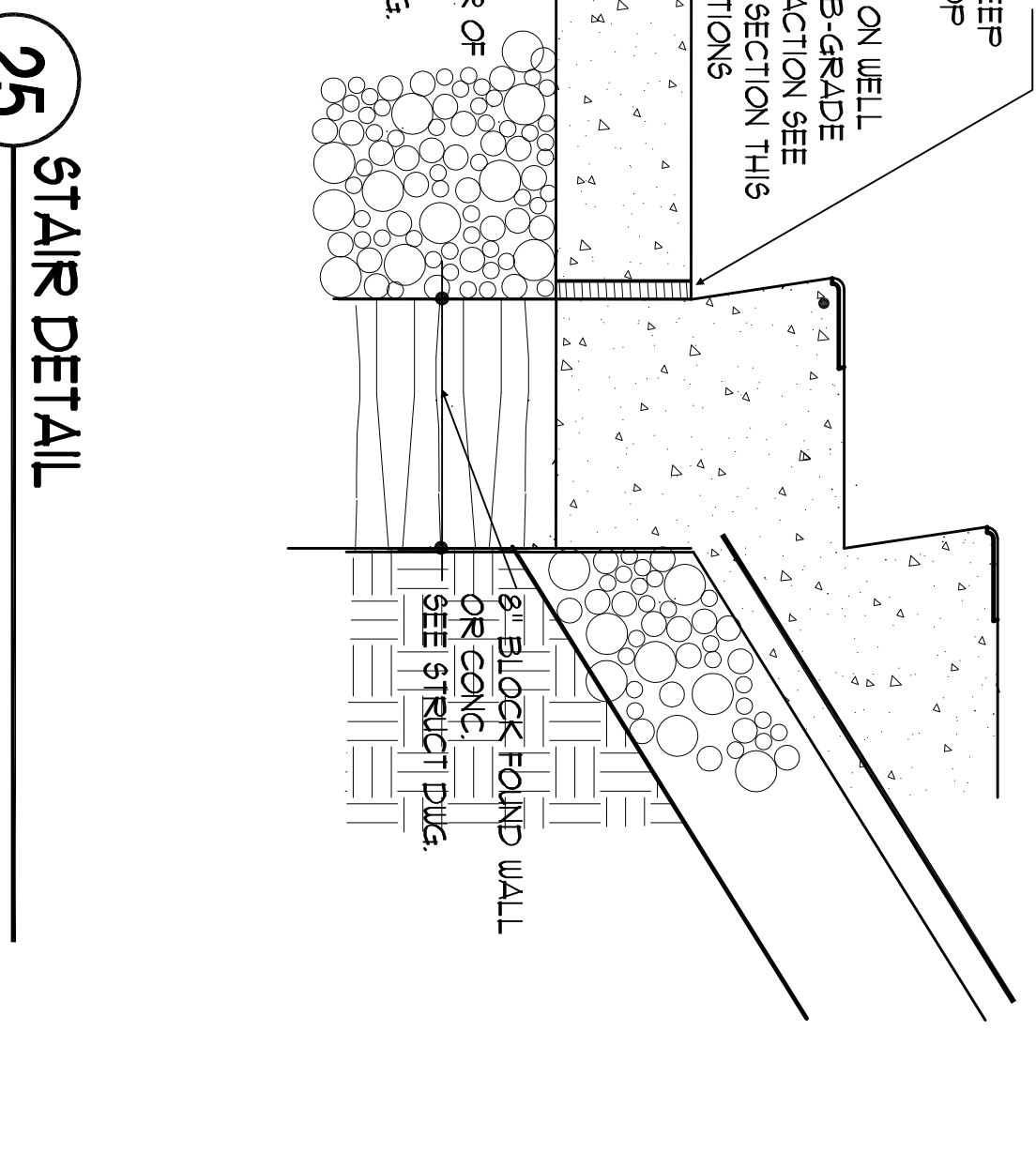
23 STAIR DETAIL
SCALE: 1/2" = 1'-0"
SEE NOTE "A"



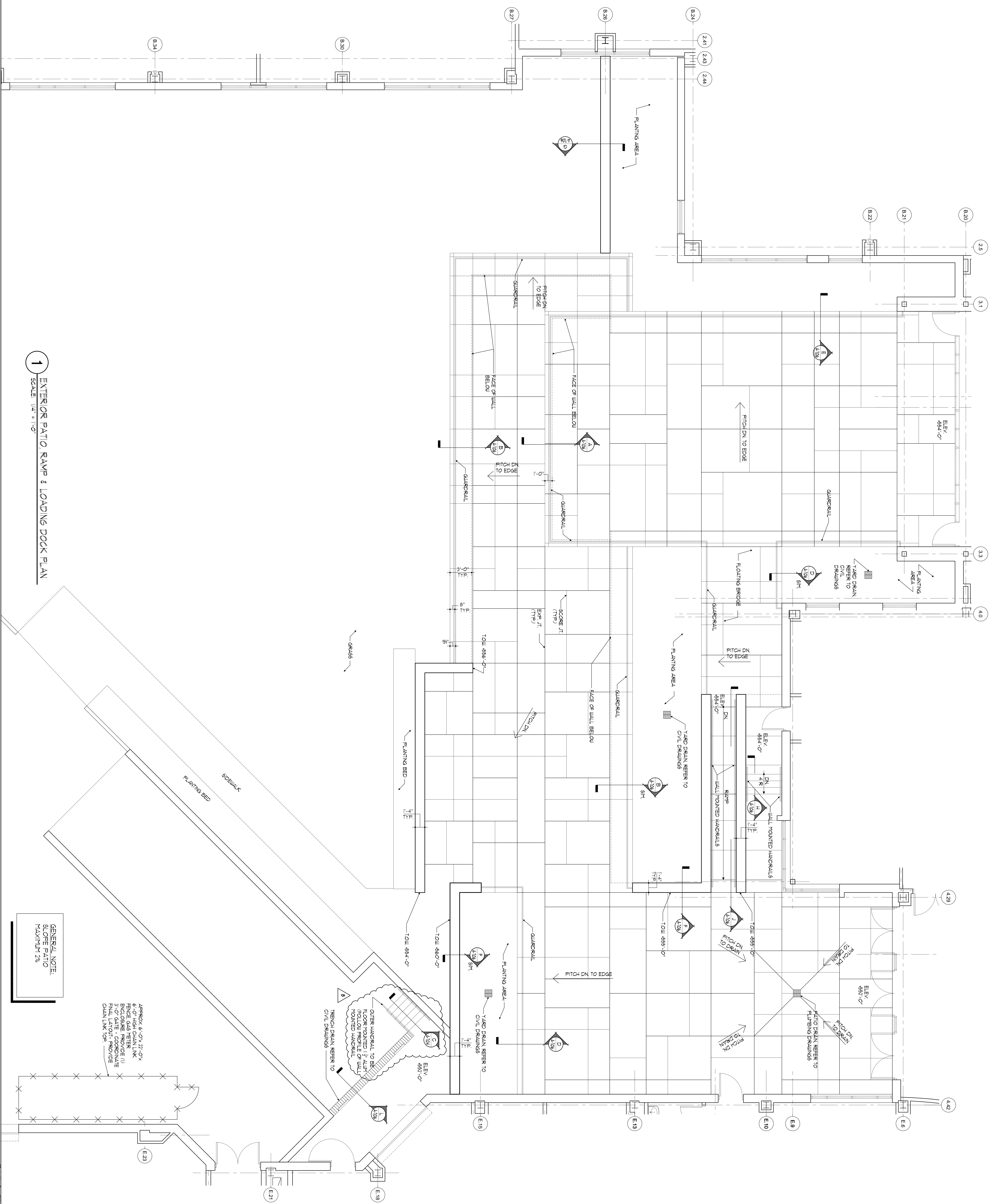
24 STAIR DETAIL
SCALE: 3" = 1'-0"
SEE NOTE "A"



25 STAIR DETAIL
SCALE: 1/2" = 1'-0"
SEE NOTE "A"



26 DETAIL AT STRINGER ADJACENT TO CHU WALL
SCALE: 3" = 1'-0"
SEE NOTE "A"

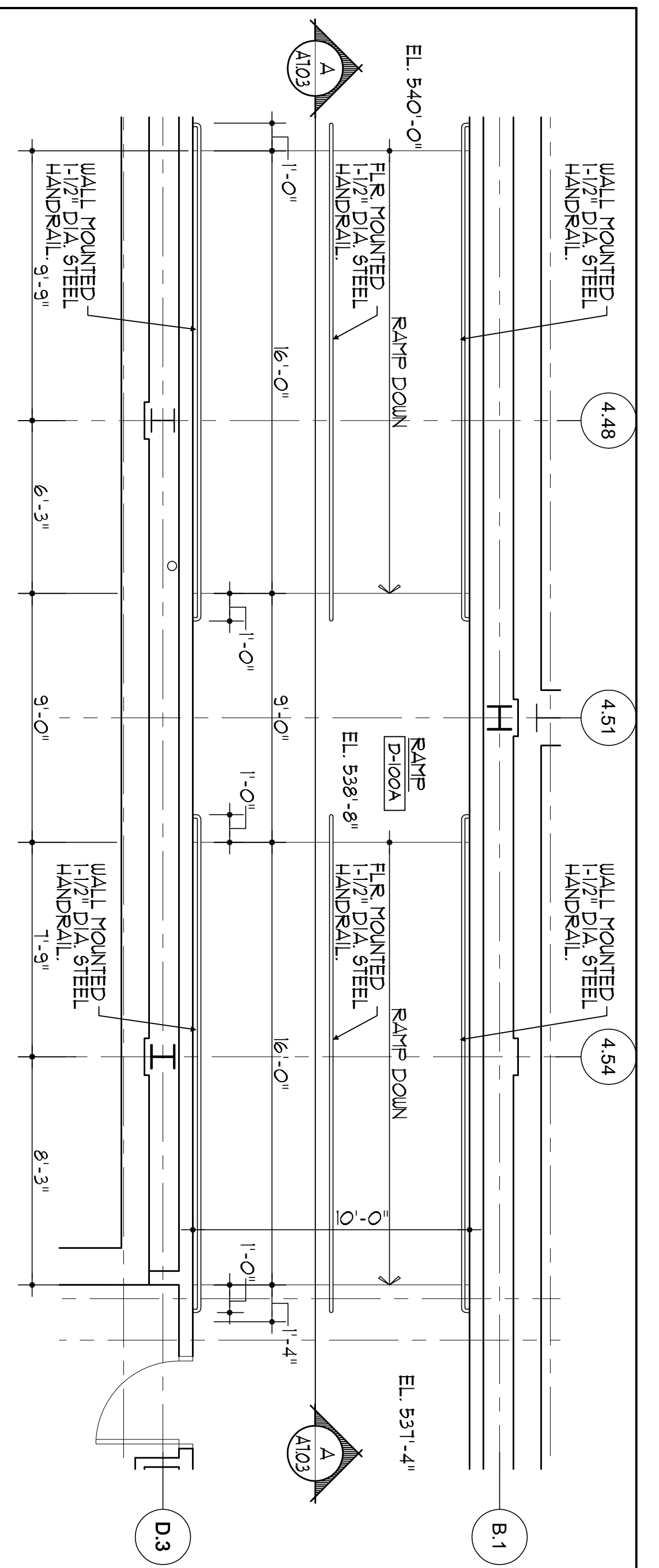


1 EXTERIOR PATIO, RAMP & LOADING DOCK PLAN
SCALE: 1/4" = 1'-0"

GENERAL NOTE:
SLOPE PATIO
MAXIMUM 2%

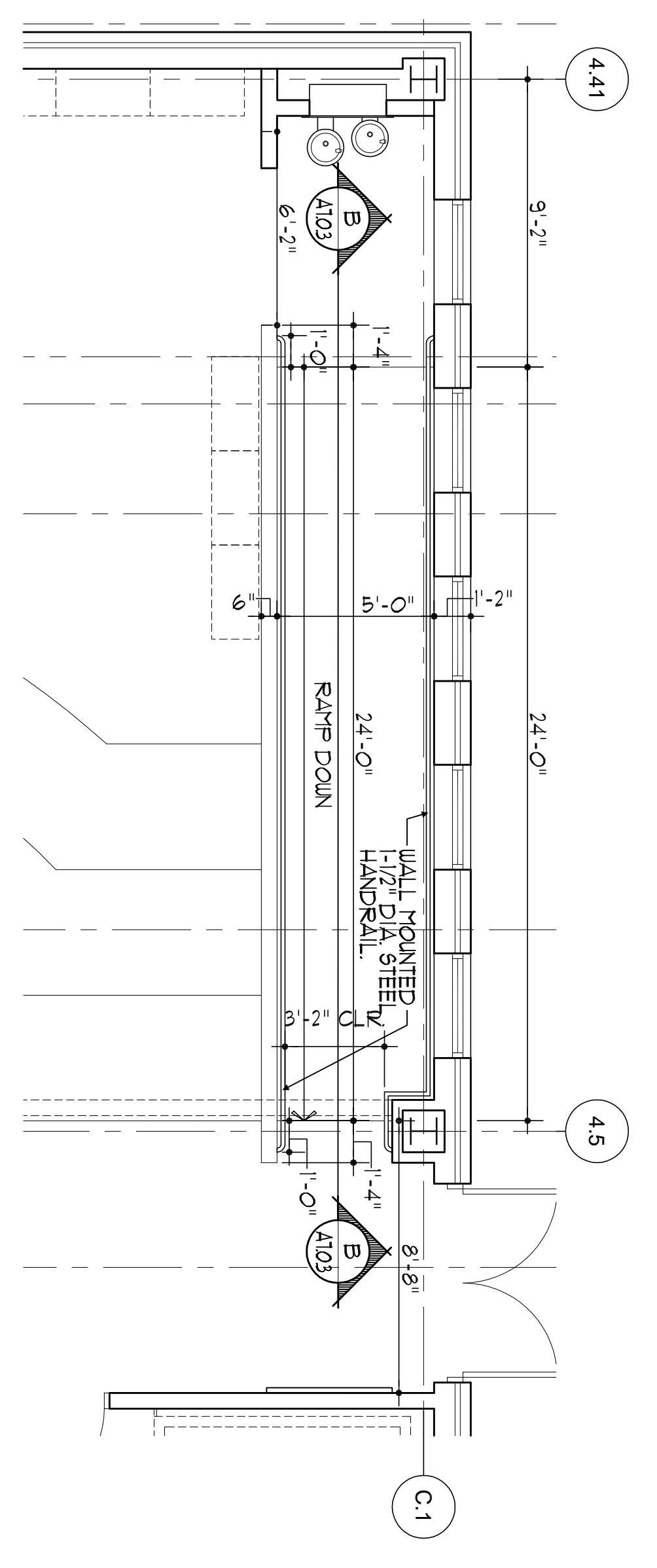
- A APPROX 6'-0" X 27'-0" 6'-0" HIGH CHAIN LINK FENCE GAS WATER ENCLOSURE PROVIDE (1) FINAL DATE: 10/13/2009 CHAIN LINK TOP
- B OTHER HANDRAIL TO BE SET FLOOR HORIZONTAL IF BEHIND HORIZONTAL HANDRAIL
- C YARD DRAIN REFER TO CIVIL DRAWINGS
- D PATIO DRAIN REFER TO PLUMBING DRAWINGS
- E PATIO DRAIN REFER TO PLUMBING DRAWINGS
- F PATIO DRAIN REFER TO PLUMBING DRAWINGS
- G PATIO DRAIN REFER TO PLUMBING DRAWINGS
- H PATIO DRAIN REFER TO PLUMBING DRAWINGS
- I PATIO DRAIN REFER TO PLUMBING DRAWINGS
- J PATIO DRAIN REFER TO PLUMBING DRAWINGS
- K PATIO DRAIN REFER TO PLUMBING DRAWINGS
- L PATIO DRAIN REFER TO PLUMBING DRAWINGS
- M PATIO DRAIN REFER TO PLUMBING DRAWINGS
- N PATIO DRAIN REFER TO PLUMBING DRAWINGS
- O PATIO DRAIN REFER TO PLUMBING DRAWINGS
- P PATIO DRAIN REFER TO PLUMBING DRAWINGS
- Q PATIO DRAIN REFER TO PLUMBING DRAWINGS
- R PATIO DRAIN REFER TO PLUMBING DRAWINGS
- S PATIO DRAIN REFER TO PLUMBING DRAWINGS
- T PATIO DRAIN REFER TO PLUMBING DRAWINGS
- U PATIO DRAIN REFER TO PLUMBING DRAWINGS
- V PATIO DRAIN REFER TO PLUMBING DRAWINGS
- W PATIO DRAIN REFER TO PLUMBING DRAWINGS
- X PATIO DRAIN REFER TO PLUMBING DRAWINGS
- Y PATIO DRAIN REFER TO PLUMBING DRAWINGS
- Z PATIO DRAIN REFER TO PLUMBING DRAWINGS

<p>DRAWING NO: A-7.0.5</p> <p>DRAWN BY: MJE</p>	<p>100% NJDCA CONSTRUCTION DOCUMENTS SUBMISSION FOR: NEW PHILLIPSBURG HIGH SCHOOL DOE# 4100-N01-04-1000 SDA# NT-0003-C02</p> <p>TOWN OF PHILLIPSBURG UPPER BELVIDERE ROAD LOT 44 / BLOCK 2 PHILLIPSBURG, NEW JERSEY 08865</p>	<p>PROJECT # 2008-356-00</p> <p>PHILLIPSBURG, NEW JERSEY 100 BELVIDERE ROAD PHILLIPSBURG, NJ 08865</p> <p>OWNER: TOWN OF PHILLIPSBURG DESIGNER: DESIGN IDEAS GROUP ARCHITECTURE + PLANNING, LLC 100 BELVIDERE ROAD PHILLIPSBURG, NJ 08865</p>	<p>STATE OF NEW JERSEY NJ SCHOOL DEVELOPMENT AUTHORITY</p> <p>SDA</p> <p>DESIGN IDEAS GROUP ARCHITECTURE + PLANNING, LLC</p>
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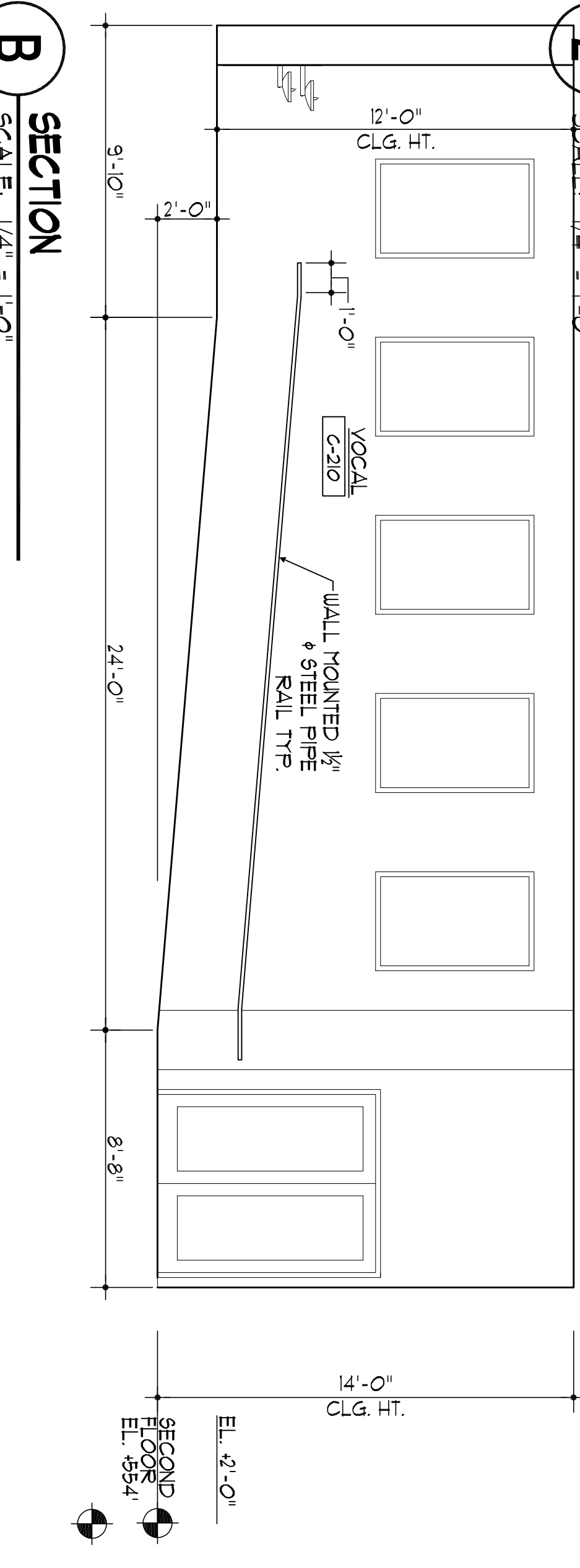


1 PLAN
SCALE: 1/4" = 1'-0"

A SECTION (FLOOR MOUNTED HANDRAIL)
SCALE: 1/4" = 1'-0"

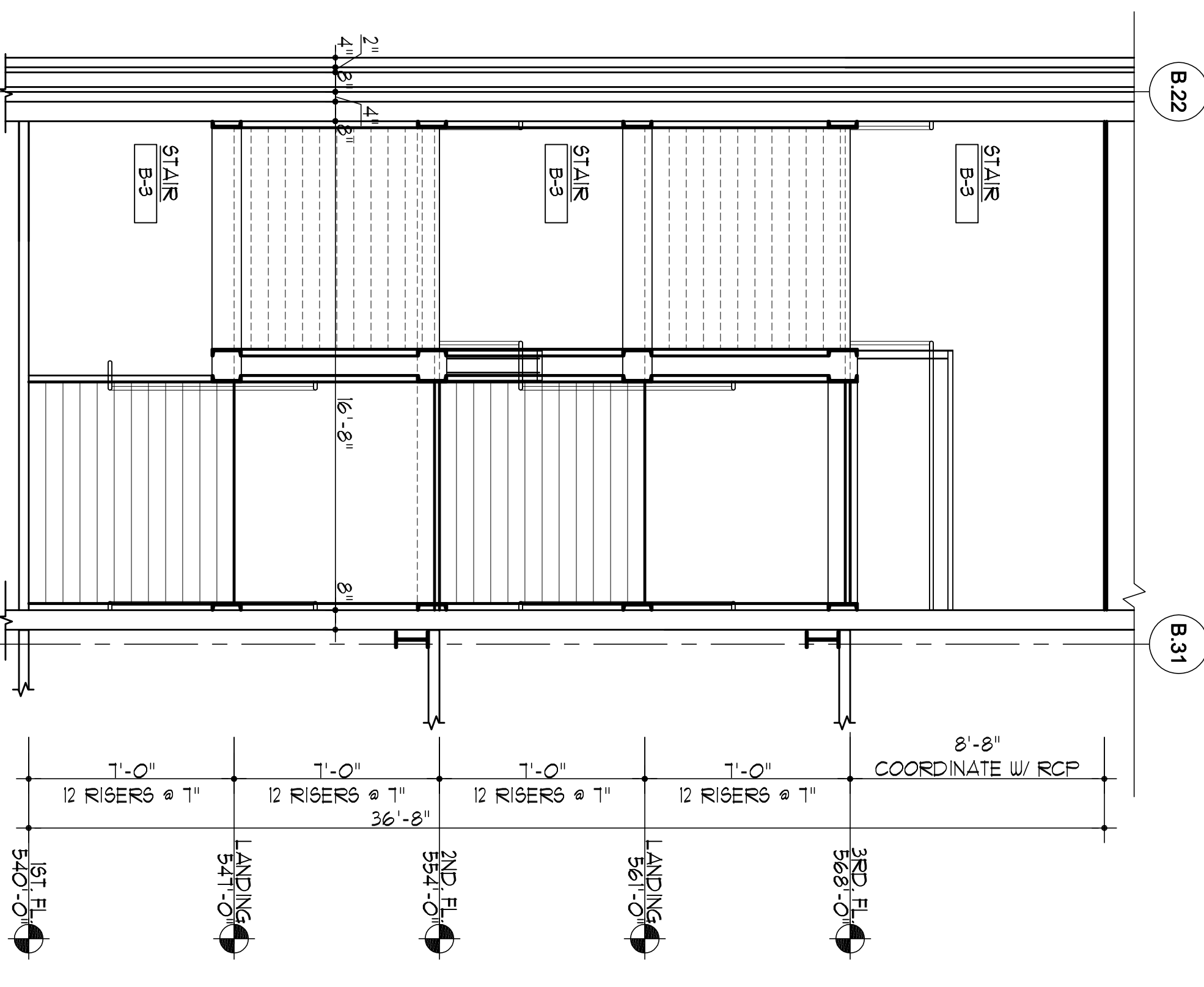


2 PLAN
SCALE: 1/4" = 1'-0"

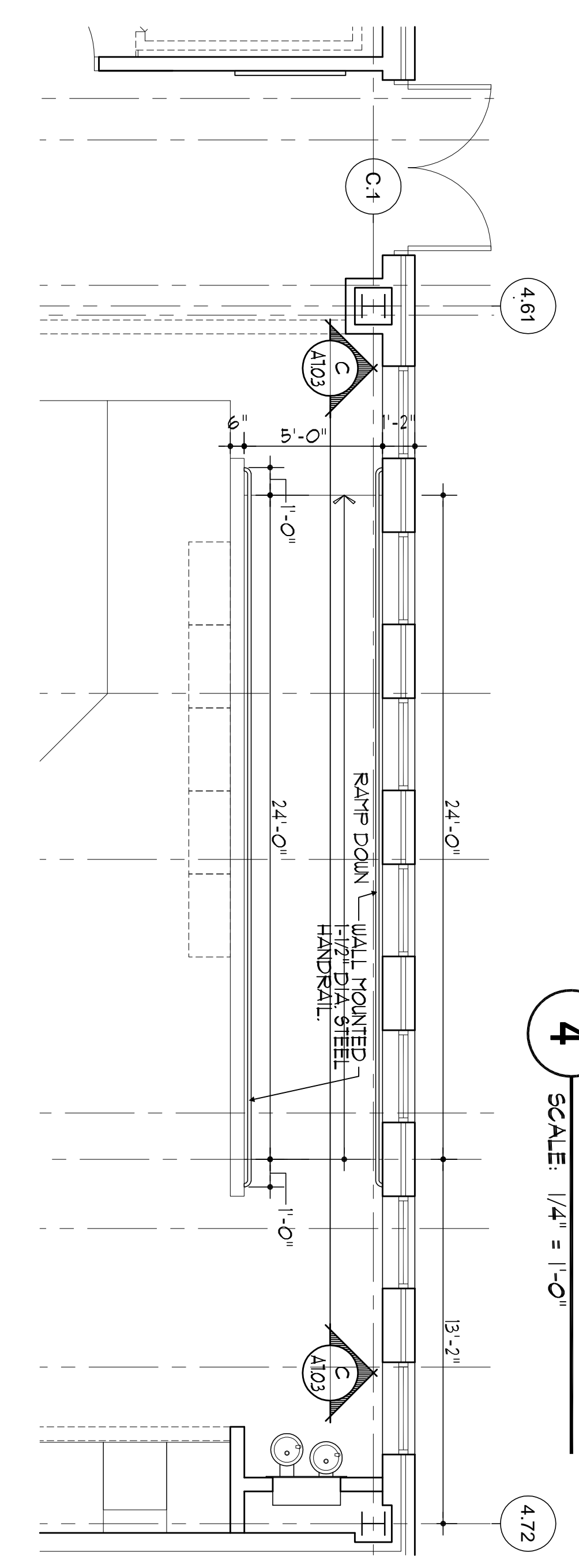


B SECTION
SCALE: 1/4" = 1'-0"

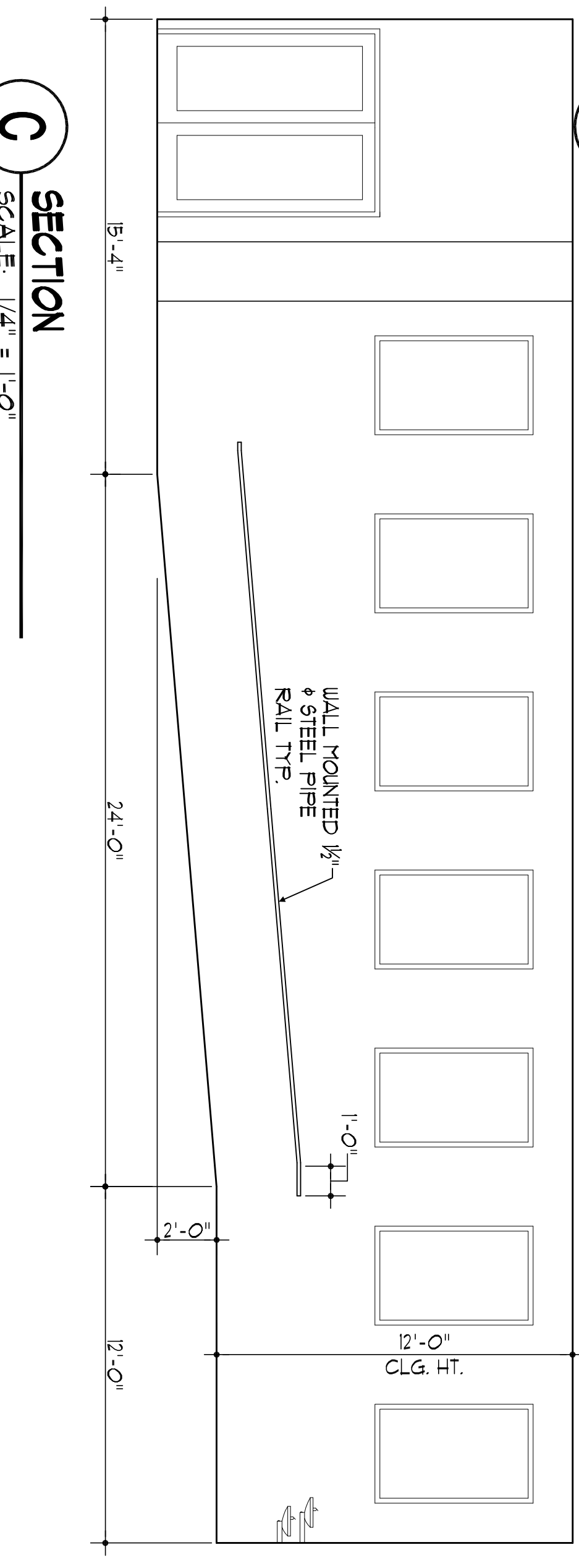
E STAIR B-3 SECTION
SCALE: 1/4" = 1'-0"



A1 SECTION (FLOOR MOUNTED HANDRAIL)
SCALE: 1/4" = 1'-0"

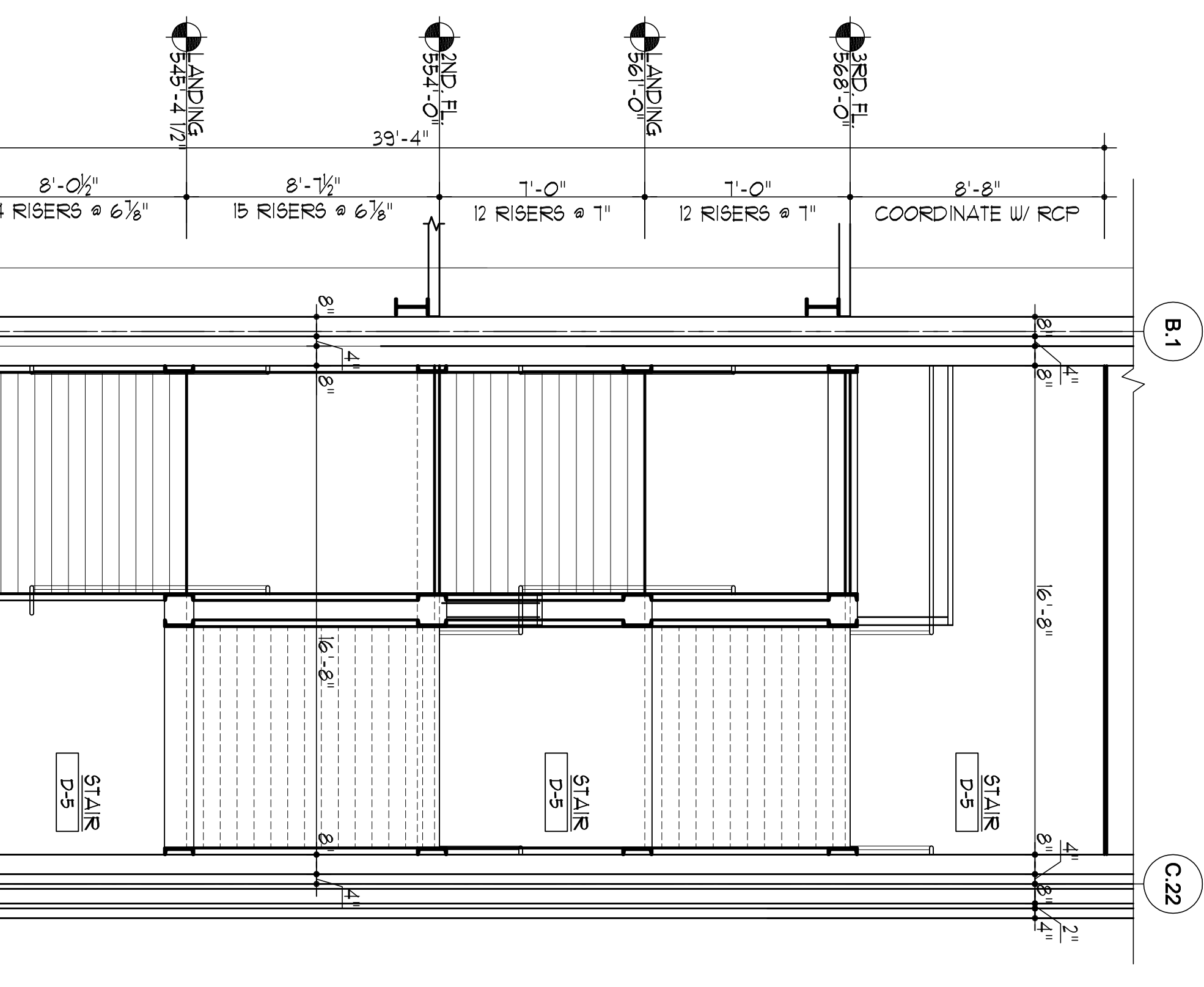


3 PLAN
SCALE: 1/4" = 1'-0"

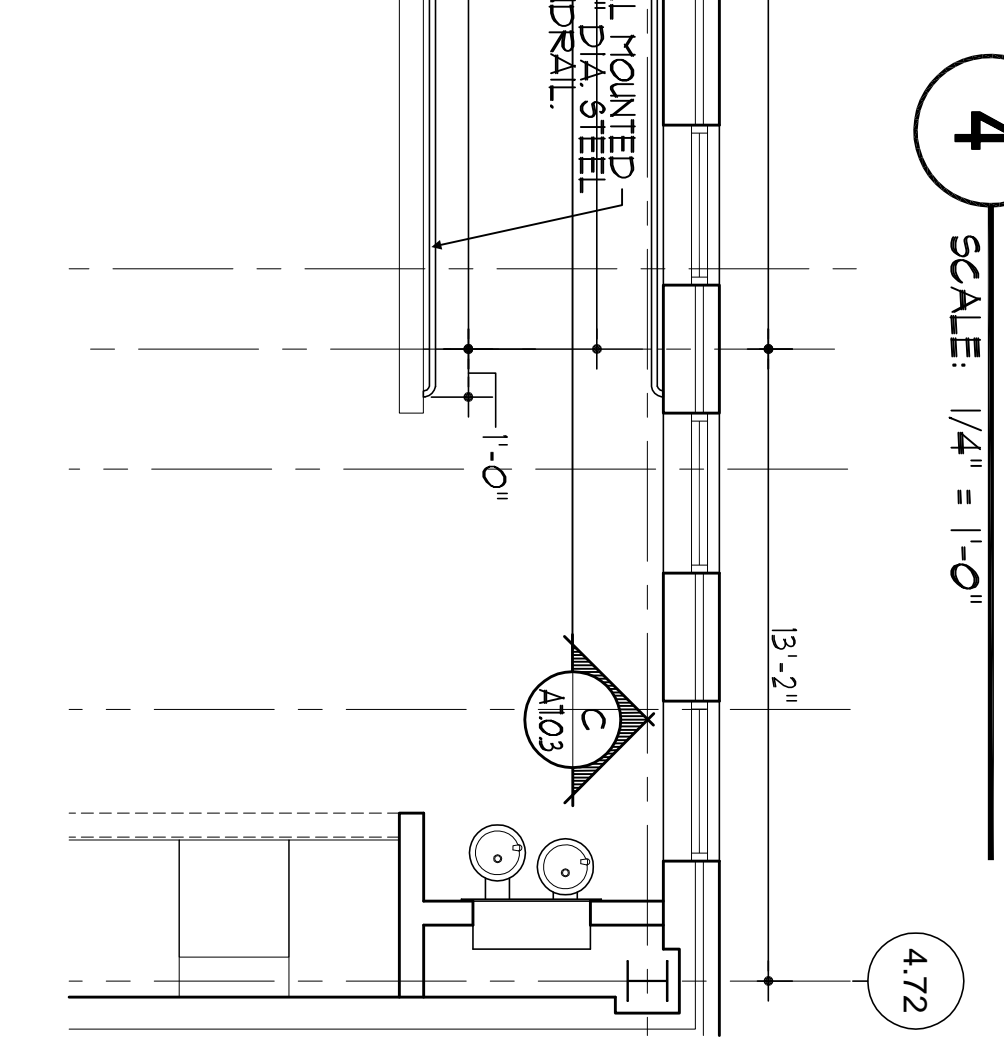


C SECTION
SCALE: 1/4" = 1'-0"

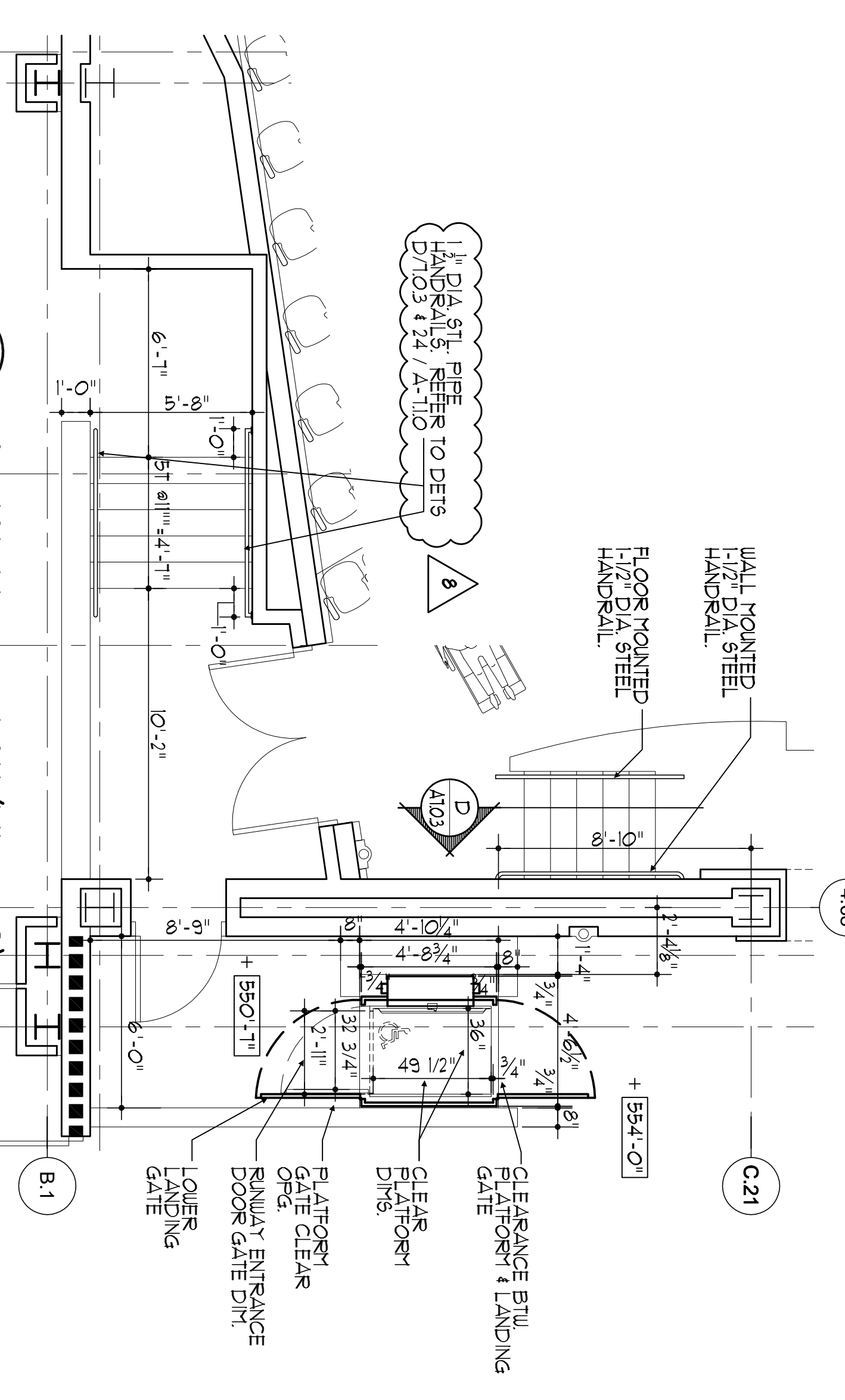
F STAIR D-5 SECTION
SCALE: 1/4" = 1'-0"



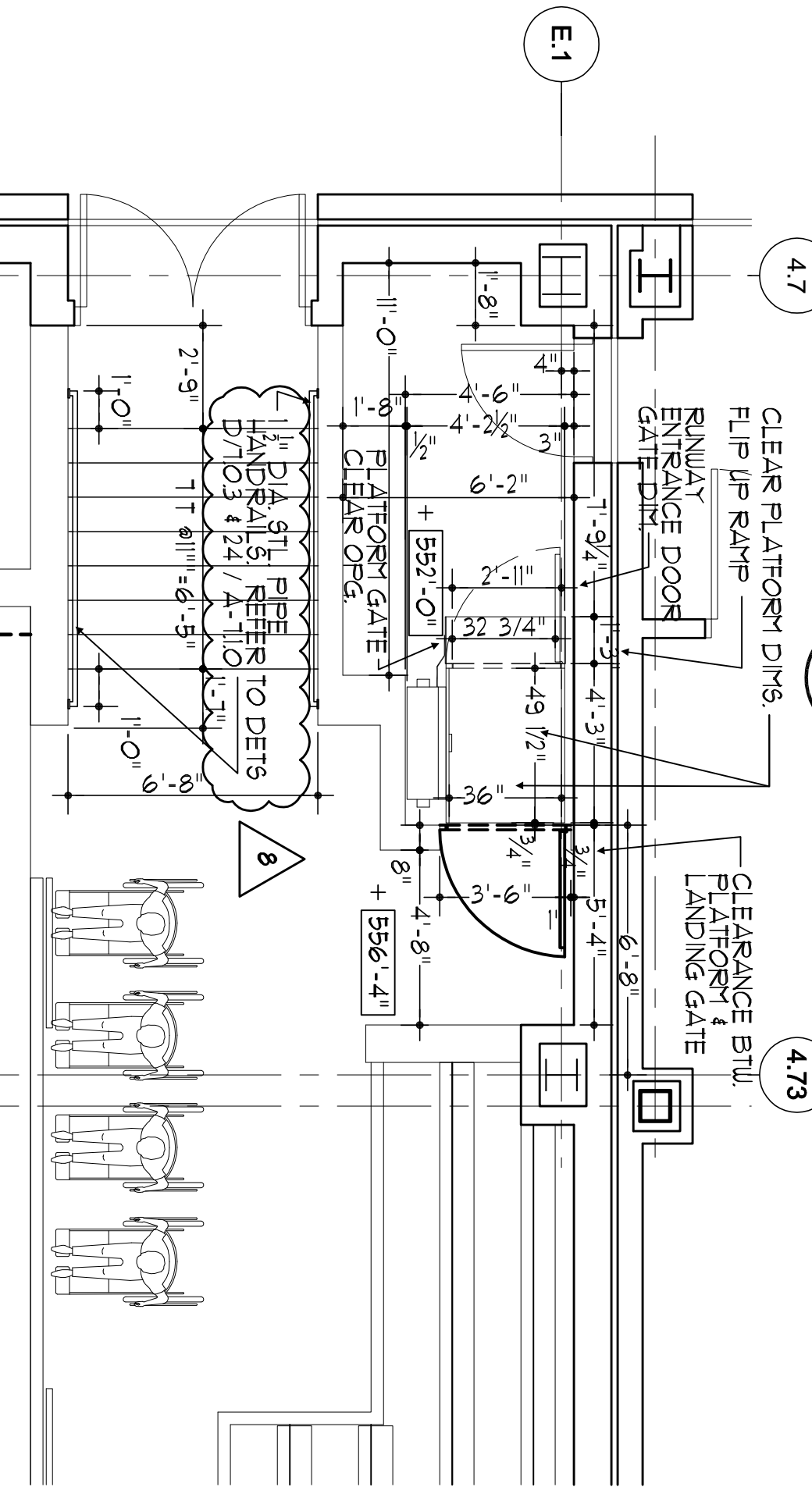
4 PARTIAL FLOOR PLAN
SCALE: 1/4" = 1'-0"



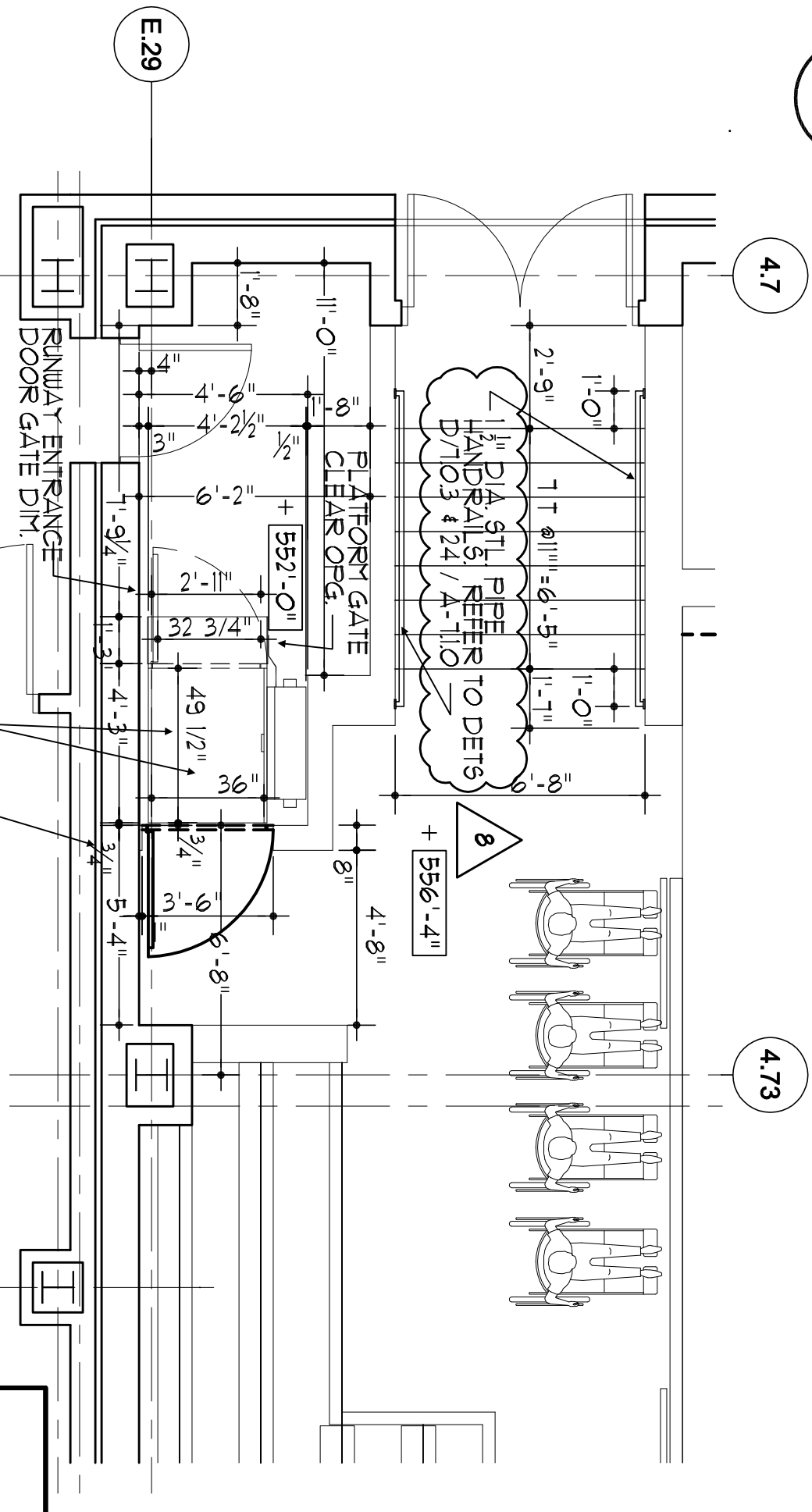
5 PARTIAL FLOOR PLAN
SCALE: 1/4" = 1'-0"



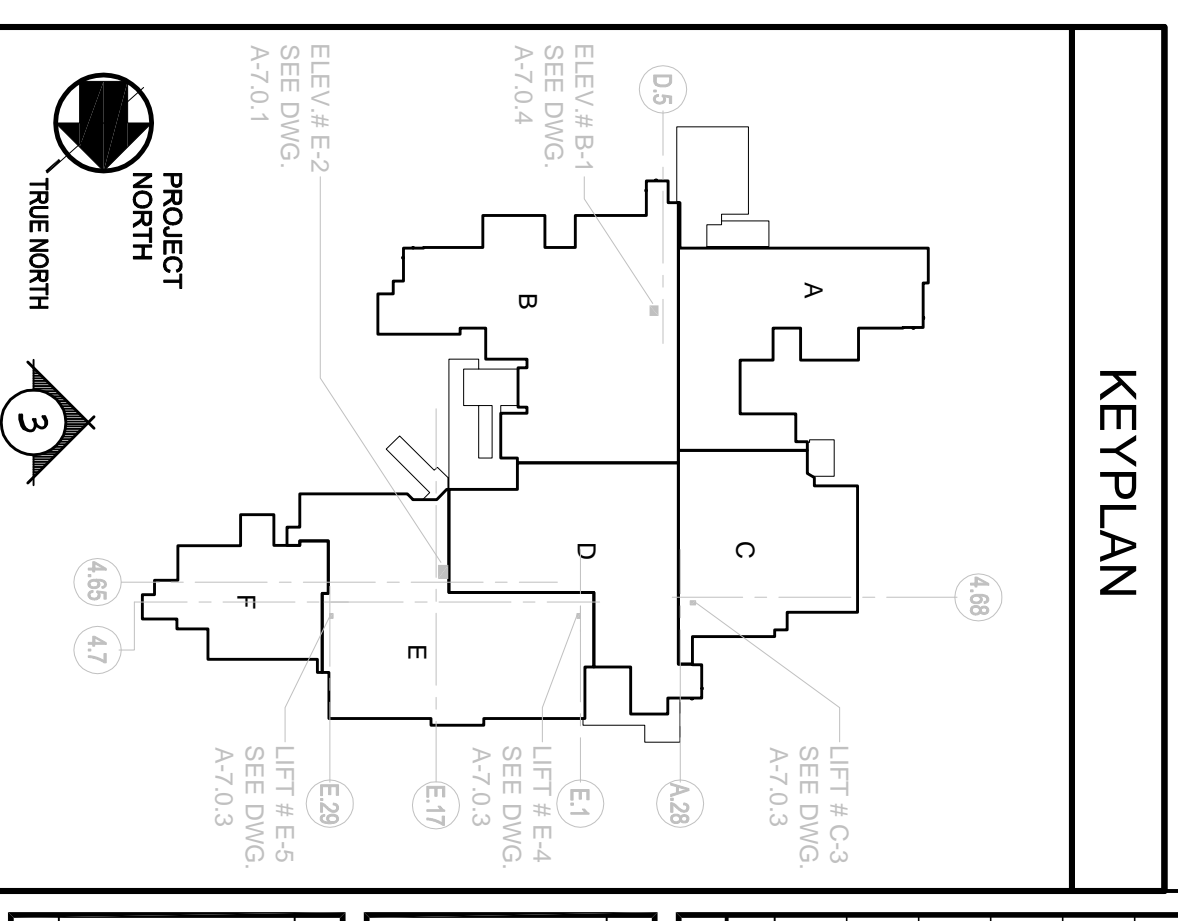
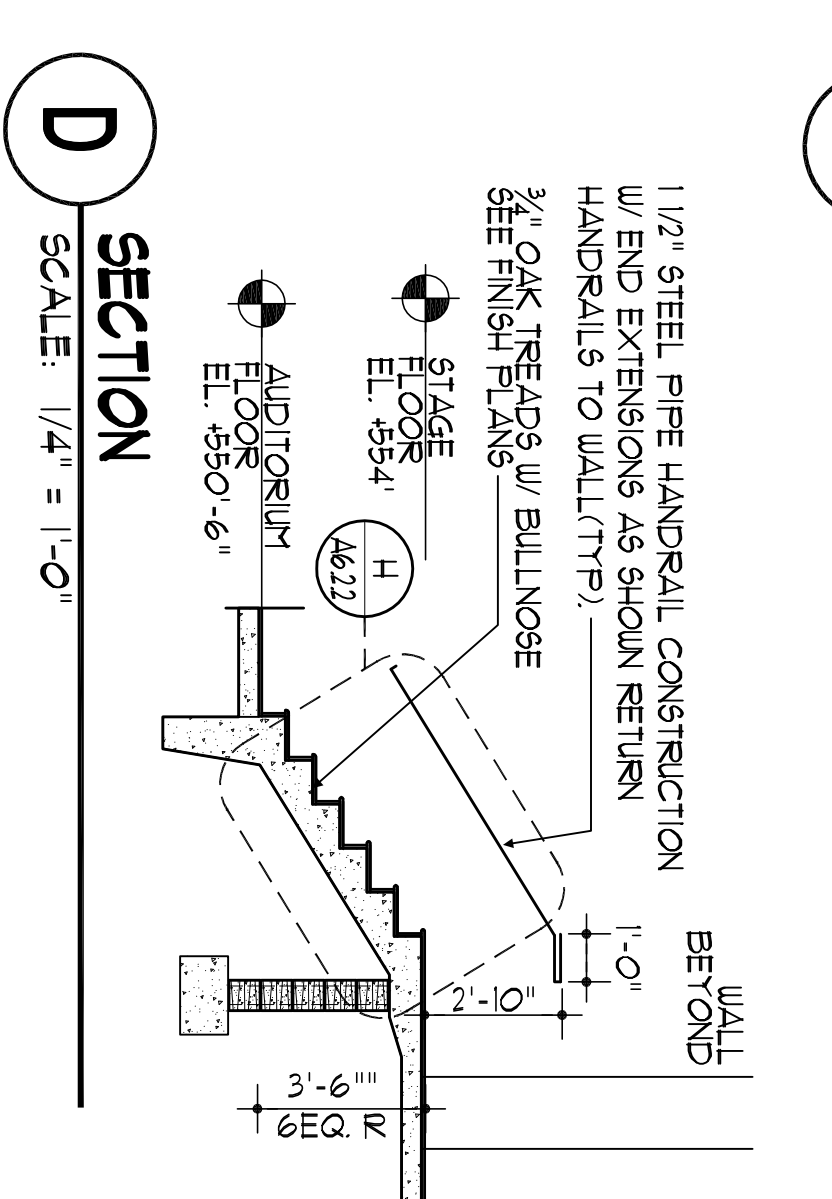
6 PARTIAL FLOOR PLAN (LIFT C-3)
SCALE: 1/4" = 1'-0"



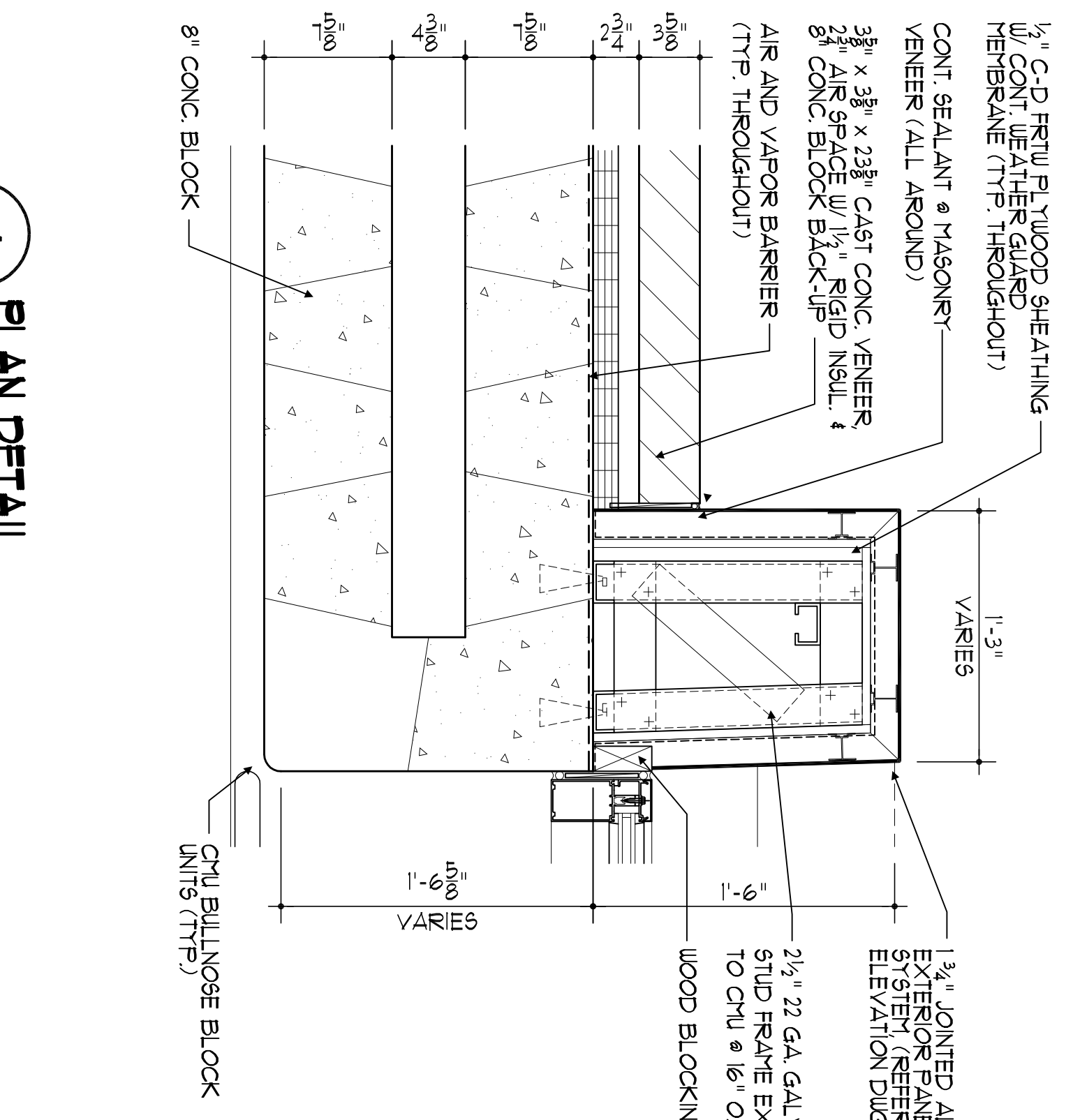
6a PARTIAL FLOOR PLAN (LIFT E-4)
SCALE: 1/4" = 1'-0"



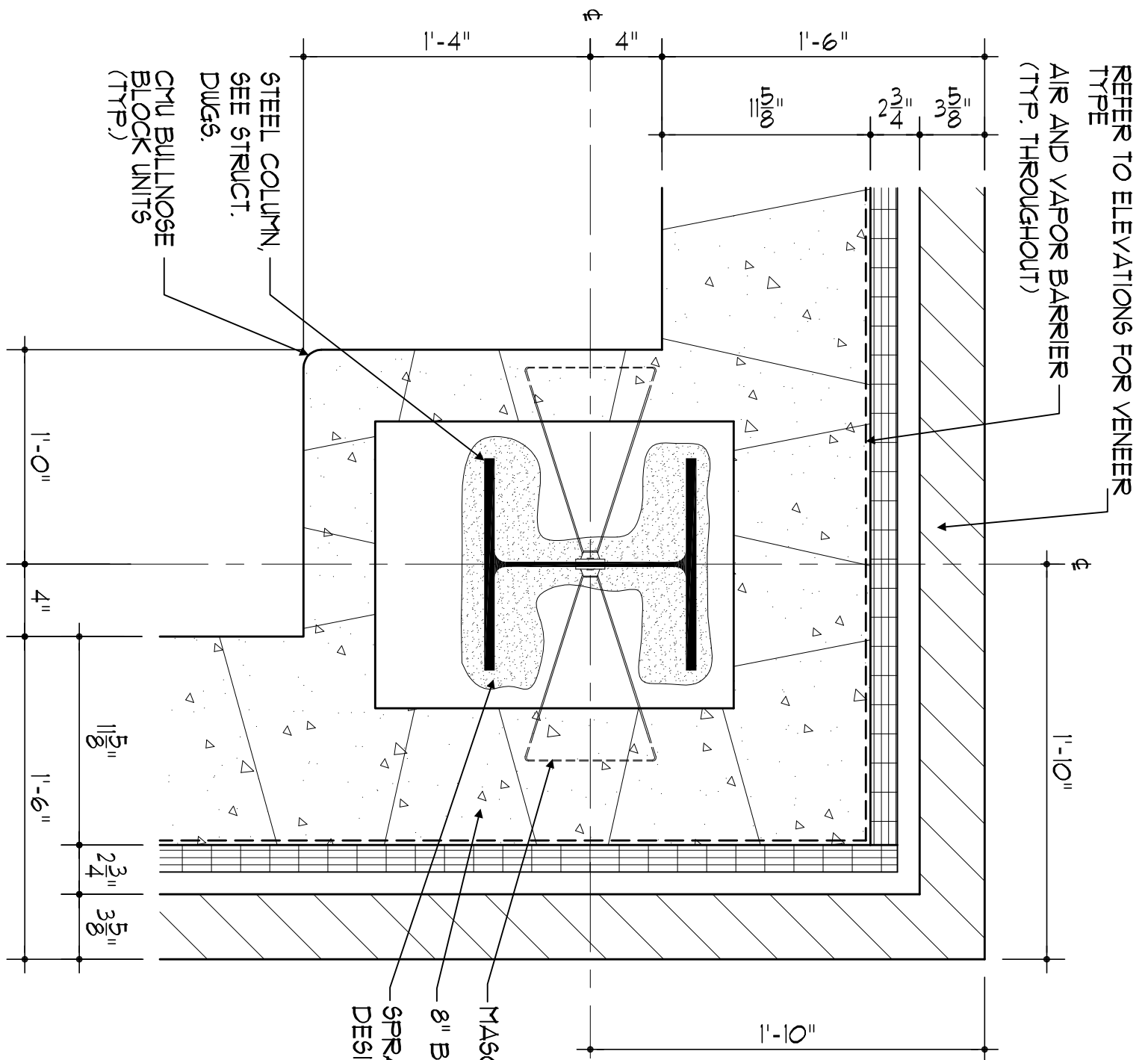
7 PARTIAL FLOOR PLAN (LIFT E-5)
SCALE: 1/4" = 1'-0"



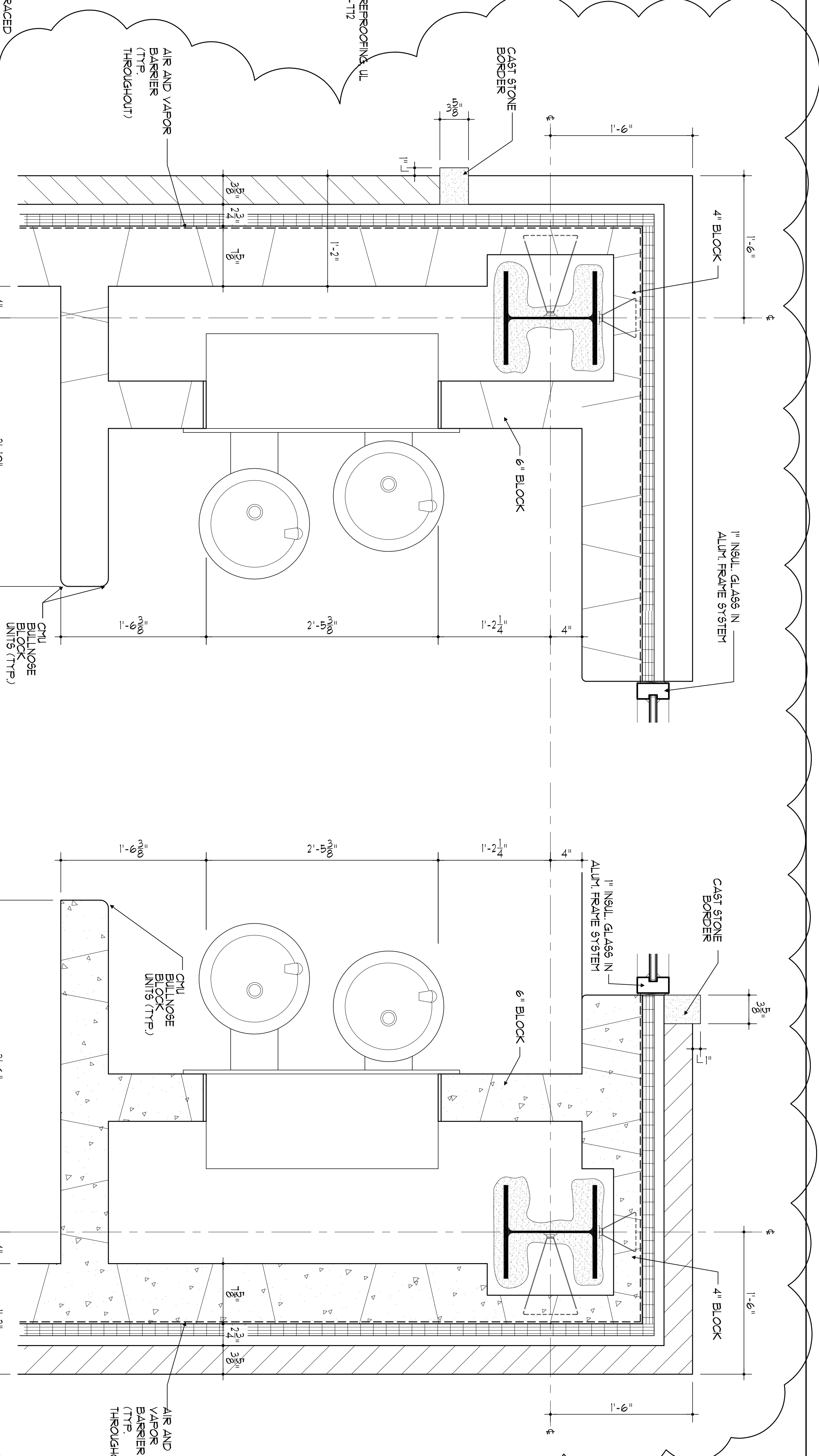
<p>SDA STATE OF NEW JERSEY NJ SCHOOL DEVELOPMENT AUTHORITY</p>		<p>DesignIdeasGroup ARCHITECTURE + PLANNING LLC</p>	
<p>PROJECT # - 2008-956-00</p>		<p>PHILLIPSBURG HIGH SCHOOL 1000 BELVIDERE ROAD PHILLIPSBURG, NJ 08865</p>	
<p>APPENDIX #1 11-21-12 NJSDA REVISIONS 6/08-12-12 NJSDA COMMENTS 03-04-11 NJSDA COMMENTS 08-12-10 NJSDA COMMENTS 05-17-10 NJSDA COMMENTS 02-12-10 DATE: OCTOBER 13, 2009 SCALE: 1/4" = 1'-0"</p>		<p>100% NJDCA CONSTRUCTION DOCUMENTS SUBMISSION FOR: NEW PHILLIPSBURG HIGH SCHOOL DOE# 4100-N01-04-1000 SDA# NT-0003-C02 TOWN OF PHILLIPSBURG UPPER BELVIDERE ROAD LOT 44 / BLOCK 2 PHILLIPSBURG, NEW JERSEY 08865</p>	
<p>DRAWING TITLE: STAR PLANS AND SECTIONS</p>		<p>DRAWING NO.: A-7.0.3</p>	



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

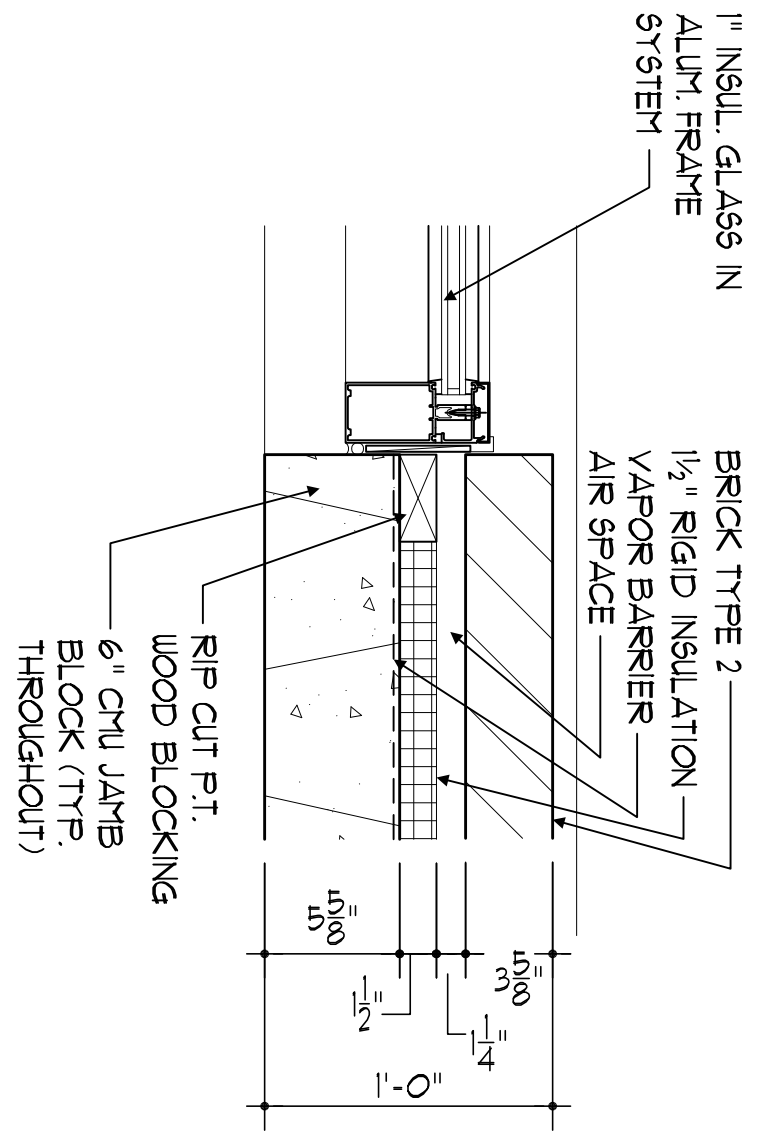


2 COLUMN DETAIL
SCALE: 1/2" = 1'-0"

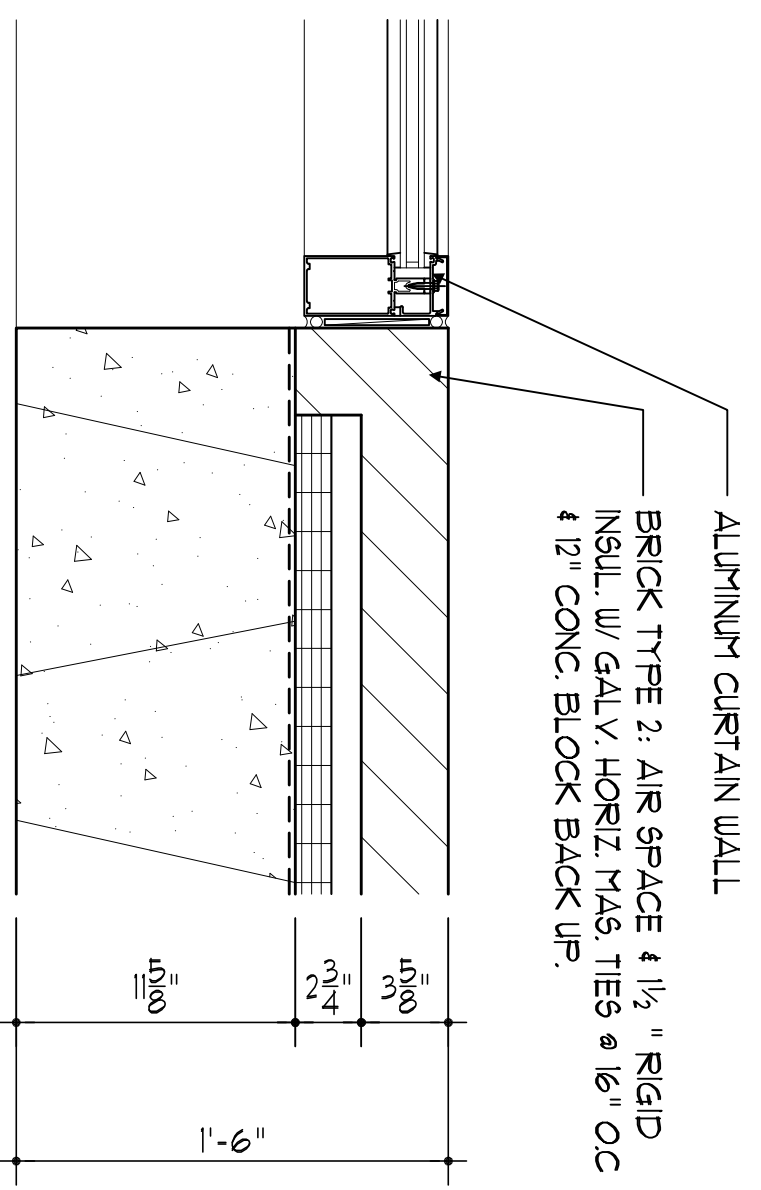


3 COLUMN DETAIL
SCALE: 1/2" = 1'-0"

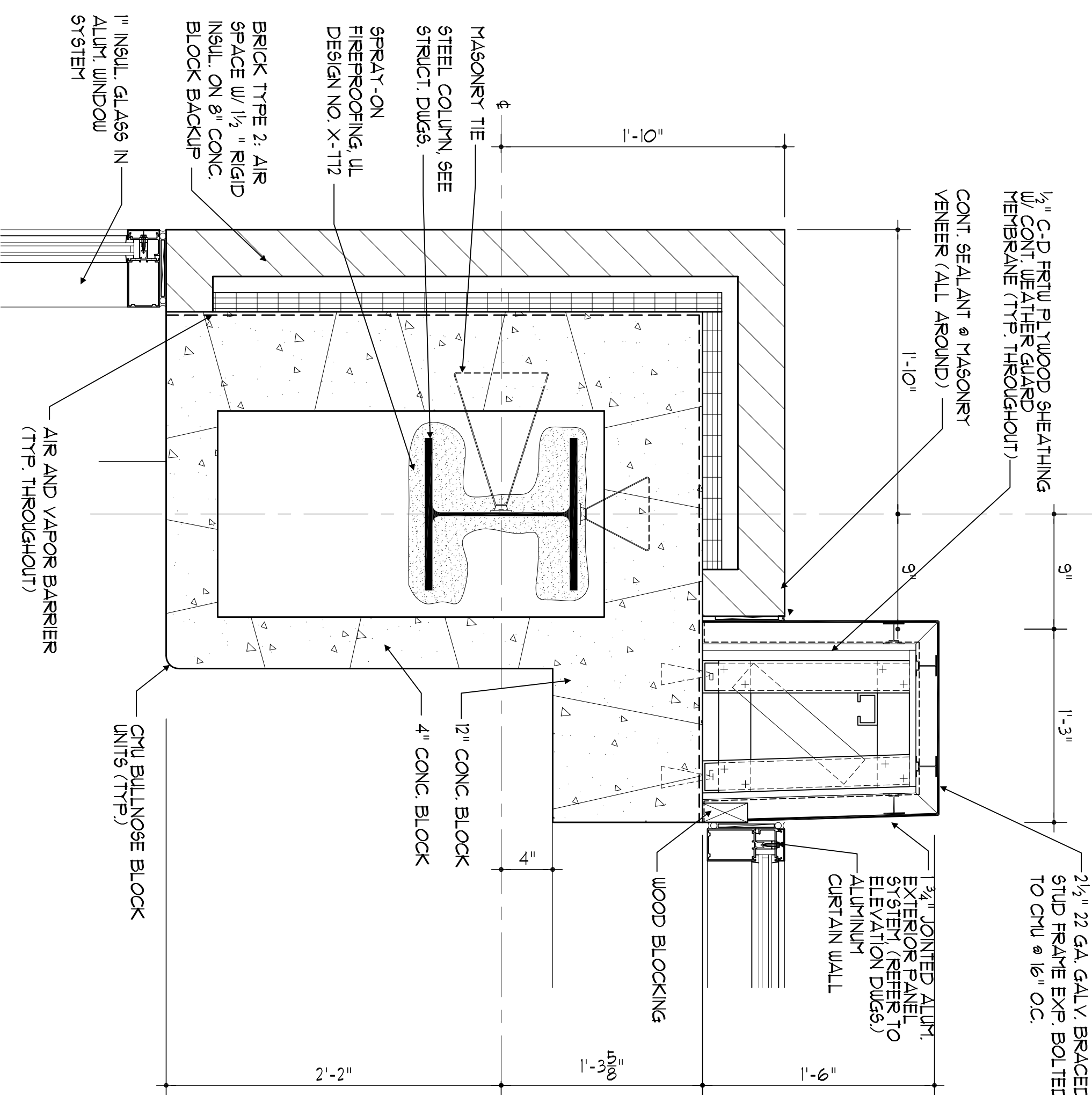
3a COLUMN DETAIL
SCALE: 1/2" = 1'-0"



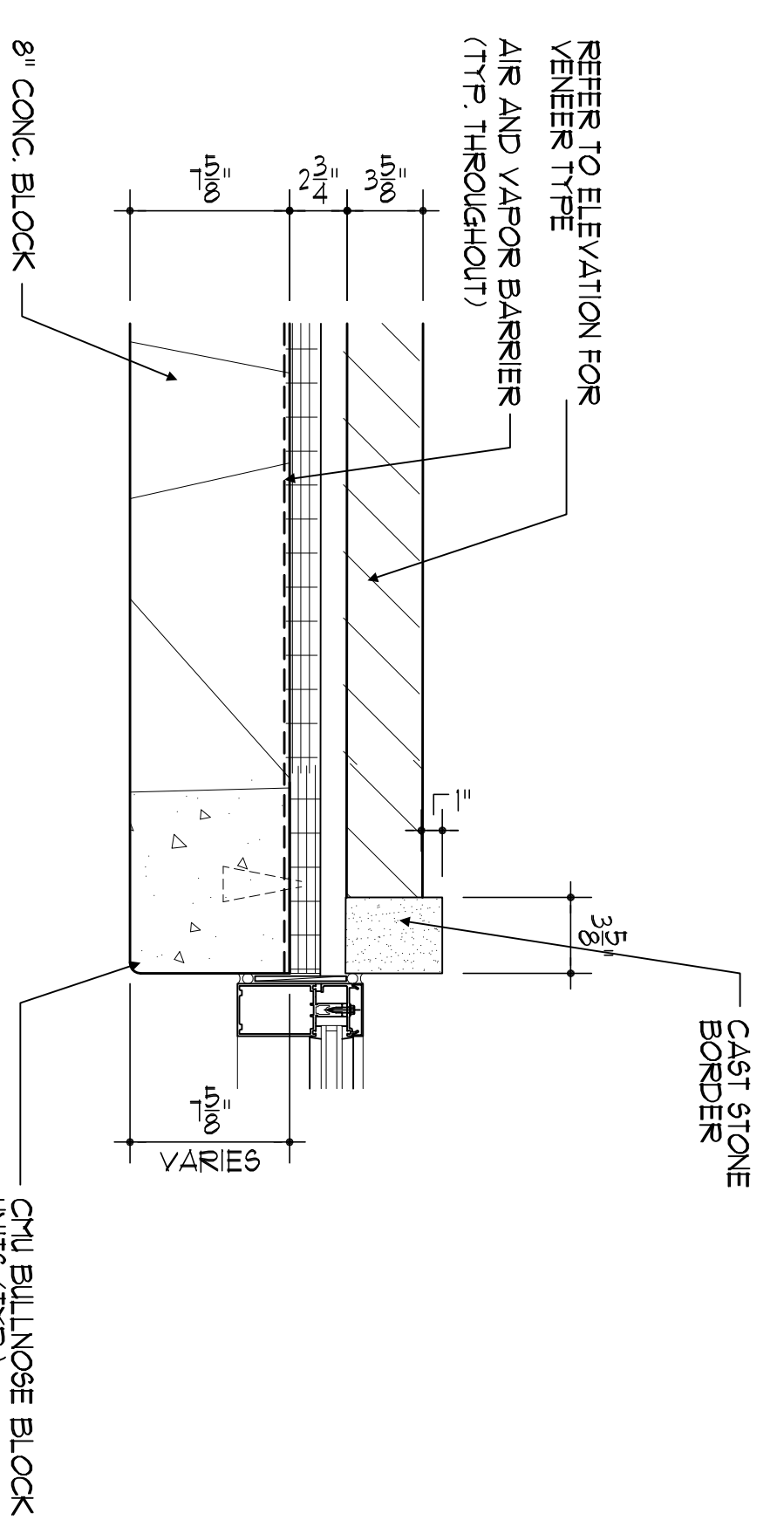
4 PLAN DETAIL
SCALE: 1/2" = 1'-0"



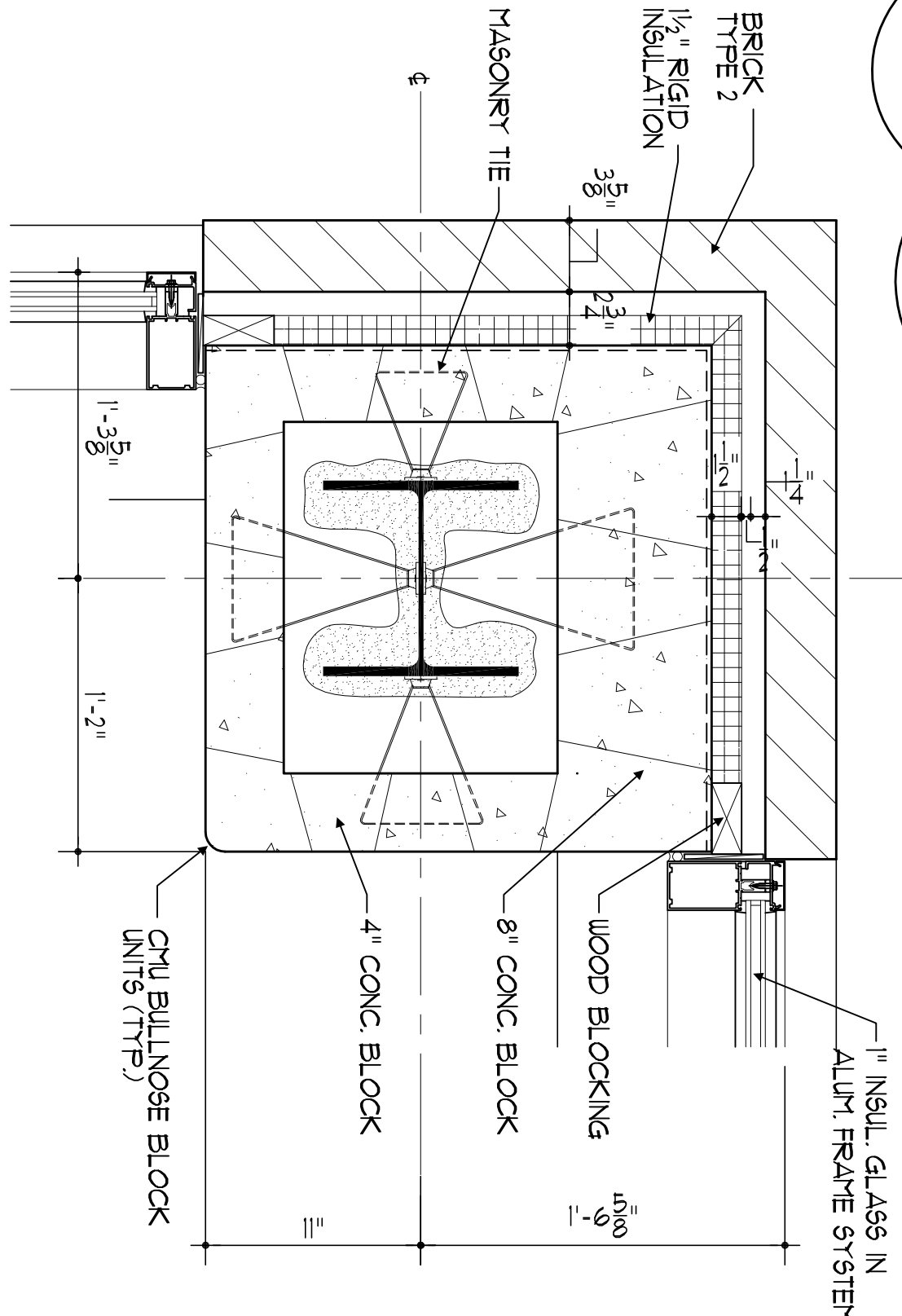
5 PLAN DETAIL
SCALE: 1/2" = 1'-0"



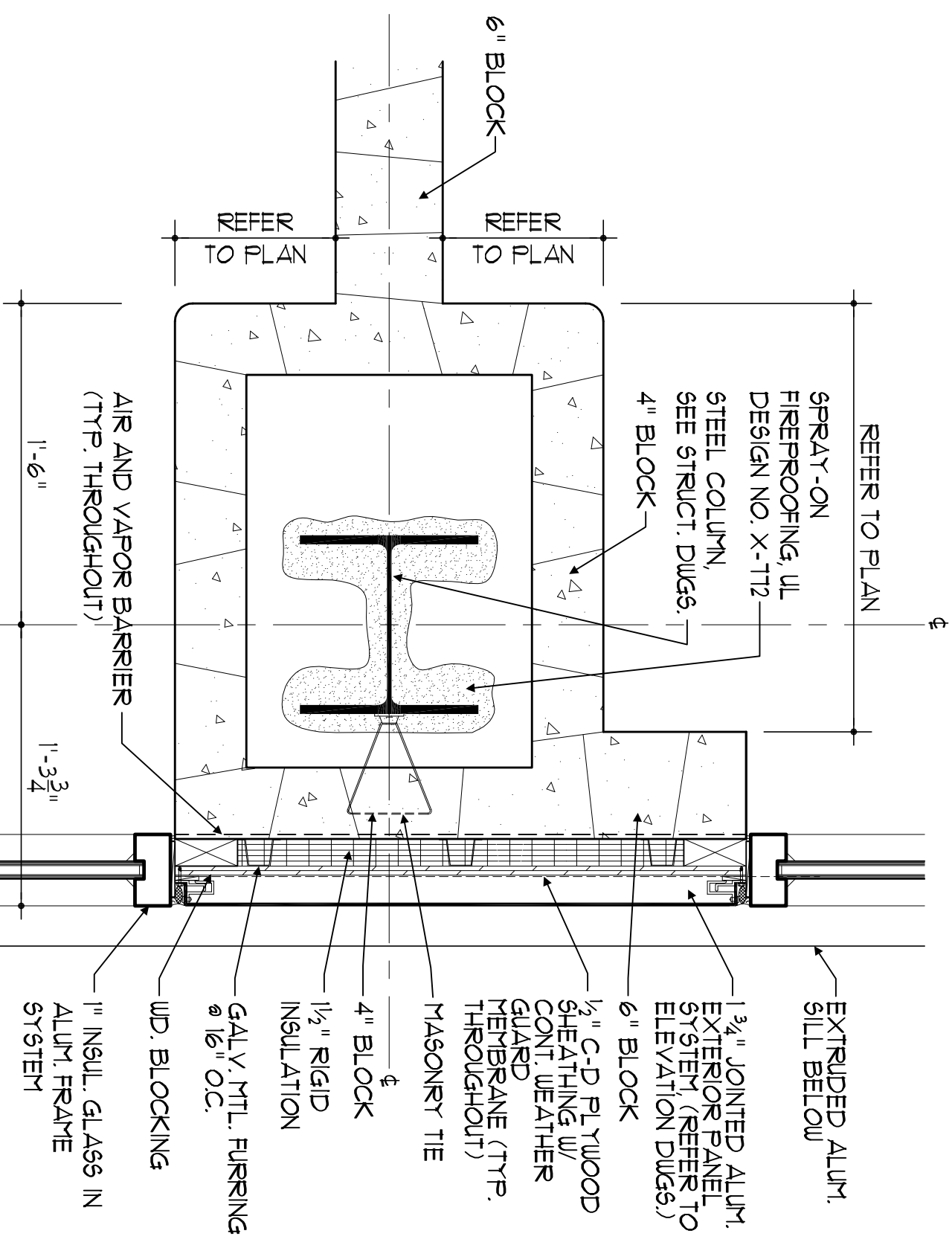
6 COLUMN DETAIL
SCALE: 1/2" = 1'-0"



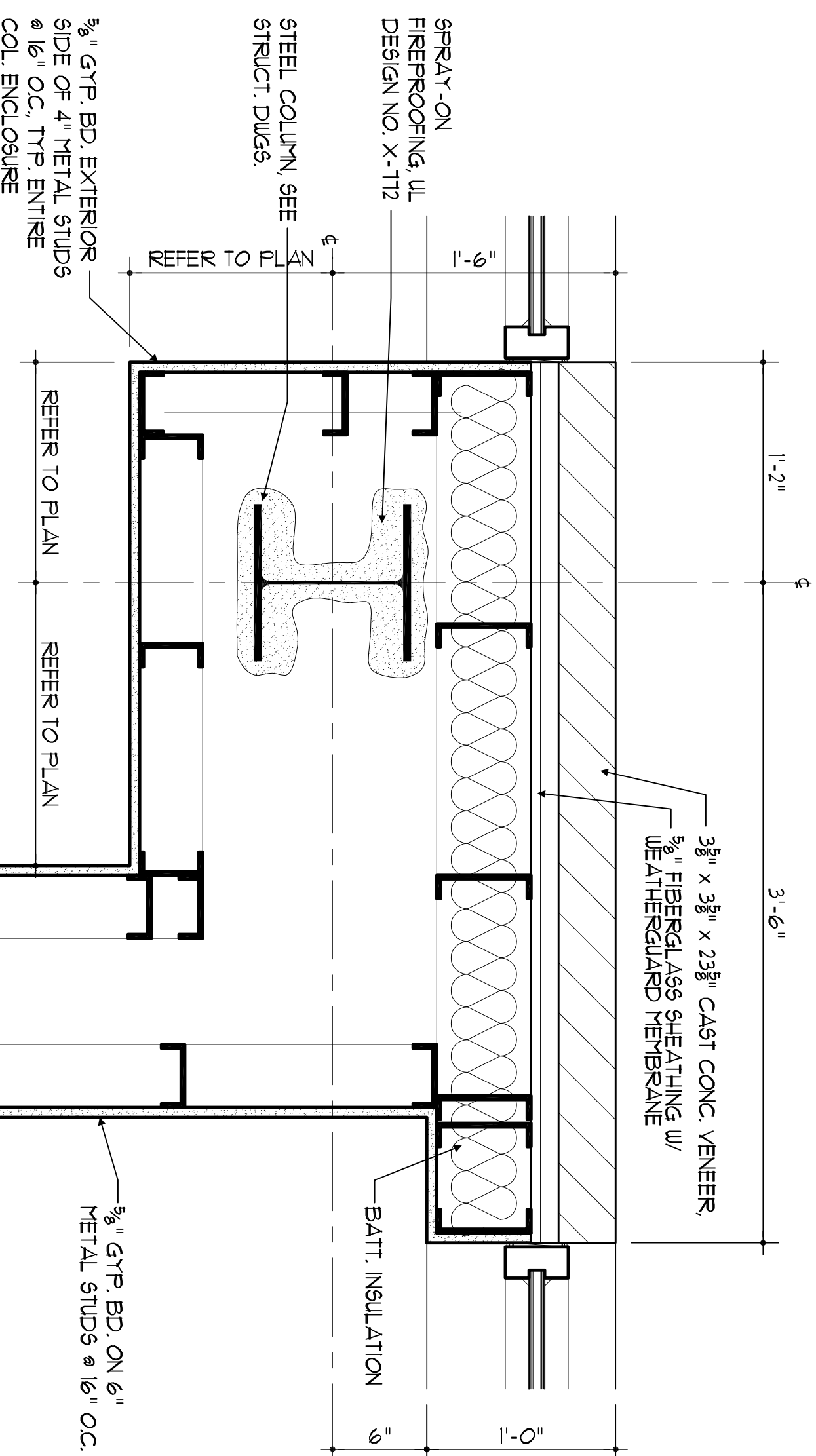
7 PLAN DETAIL
SCALE: 1/2" = 1'-0"



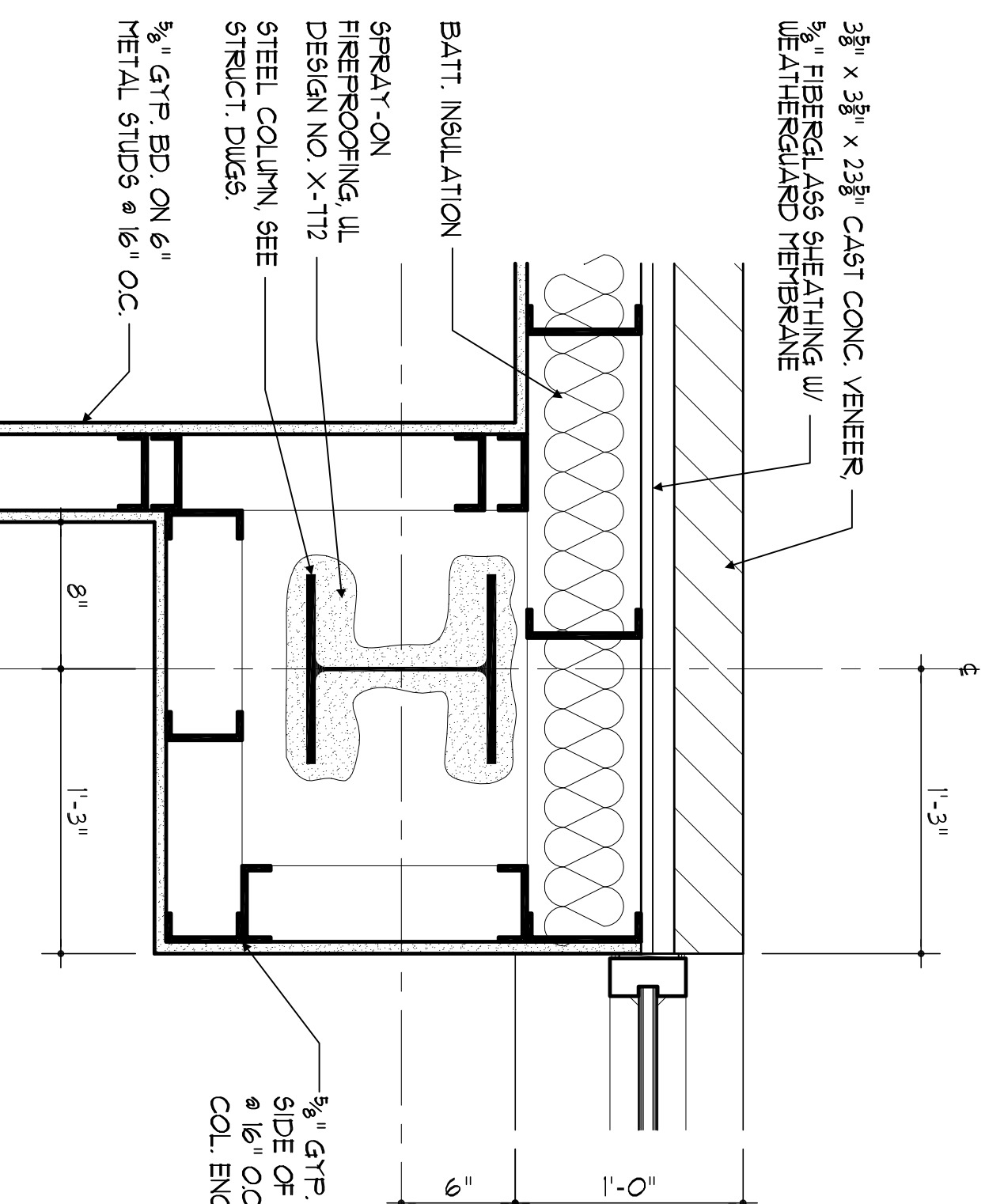
8 COLUMN DETAIL
SCALE: 1/2" = 1'-0"



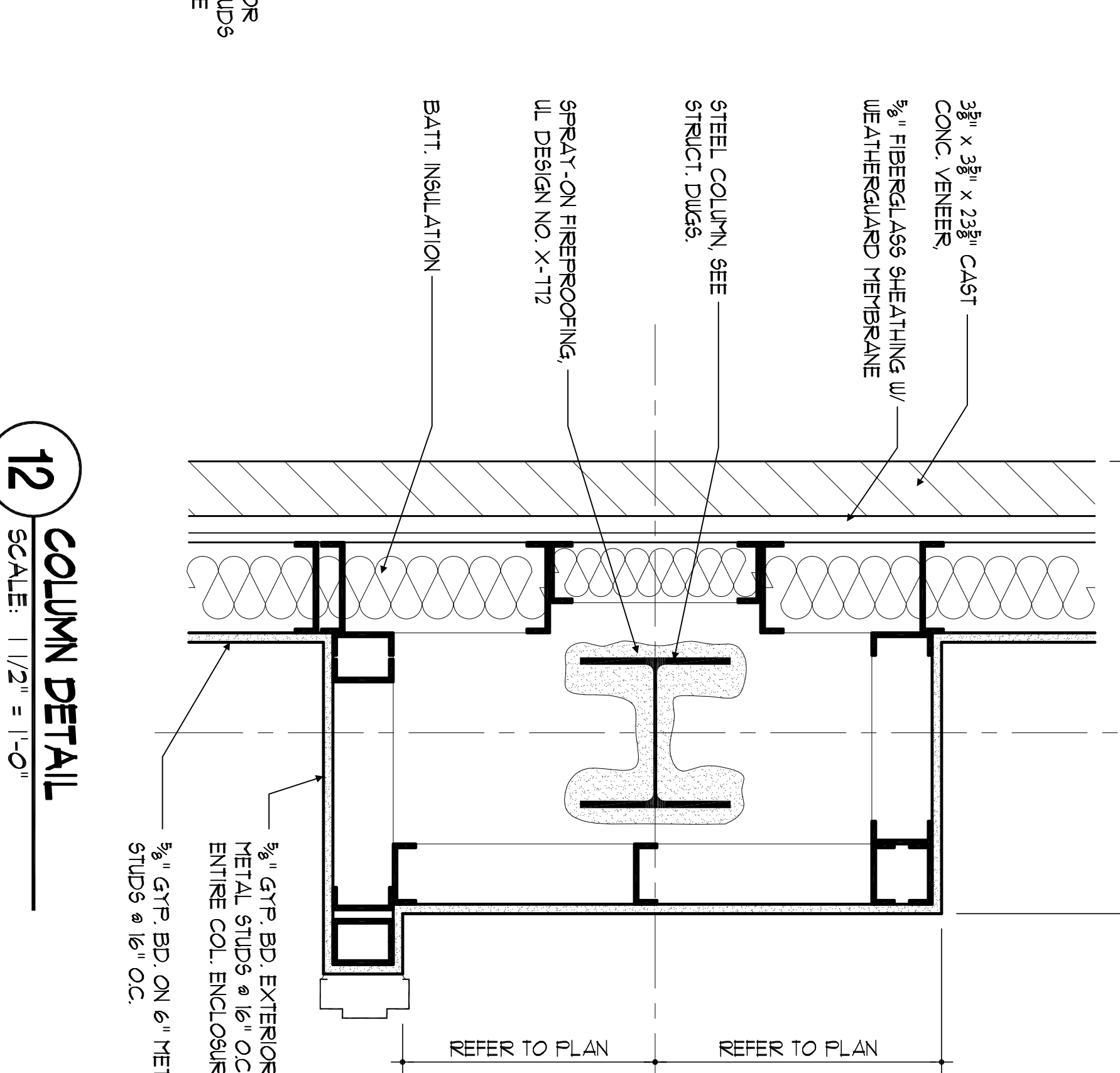
9 COLUMN DETAIL
SCALE: 1/2" = 1'-0"



10 COLUMN DETAIL
SCALE: 1/2" = 1'-0"



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

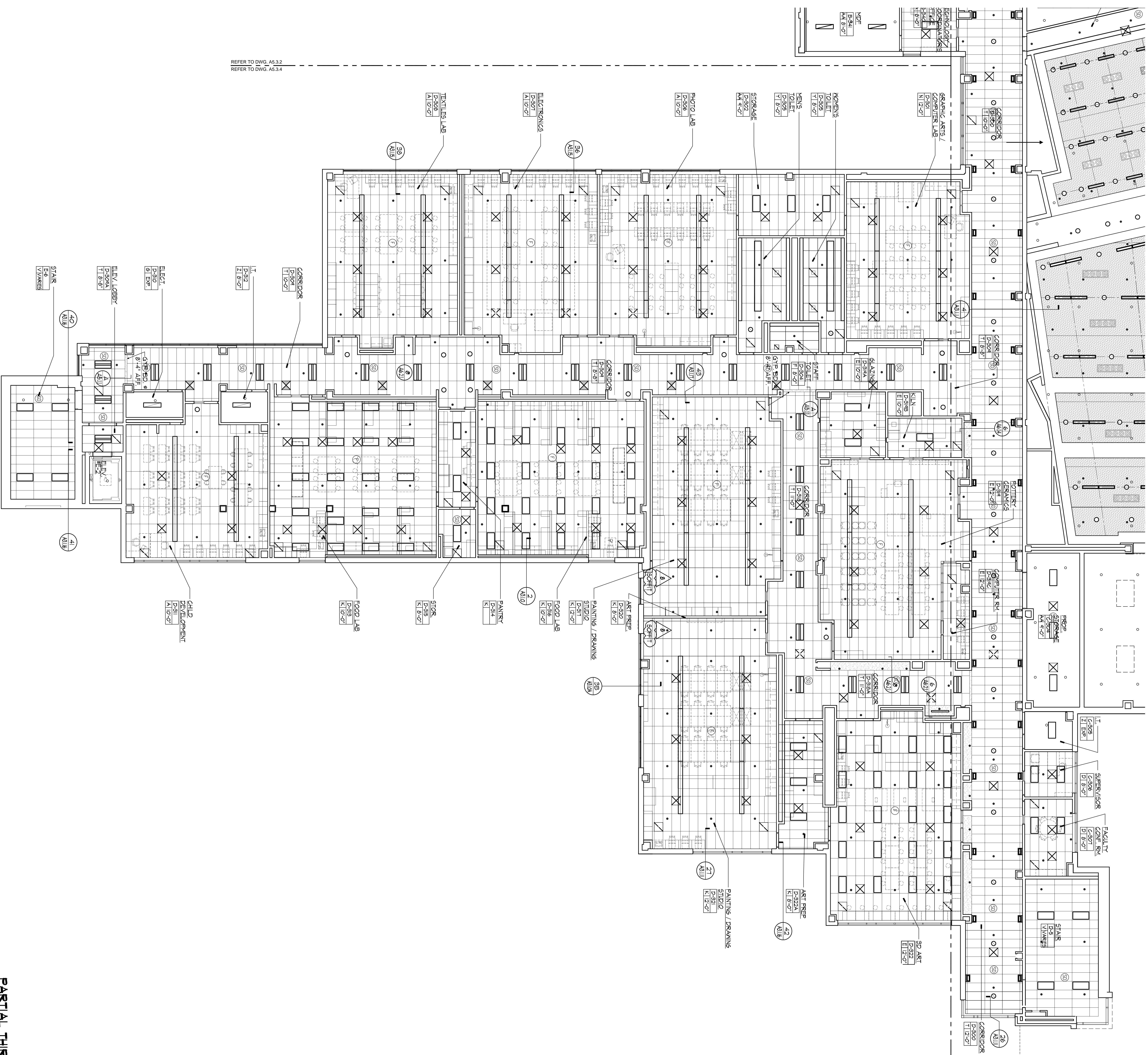


12 COLUMN DETAIL
SCALE: 1/2" = 1'-0"

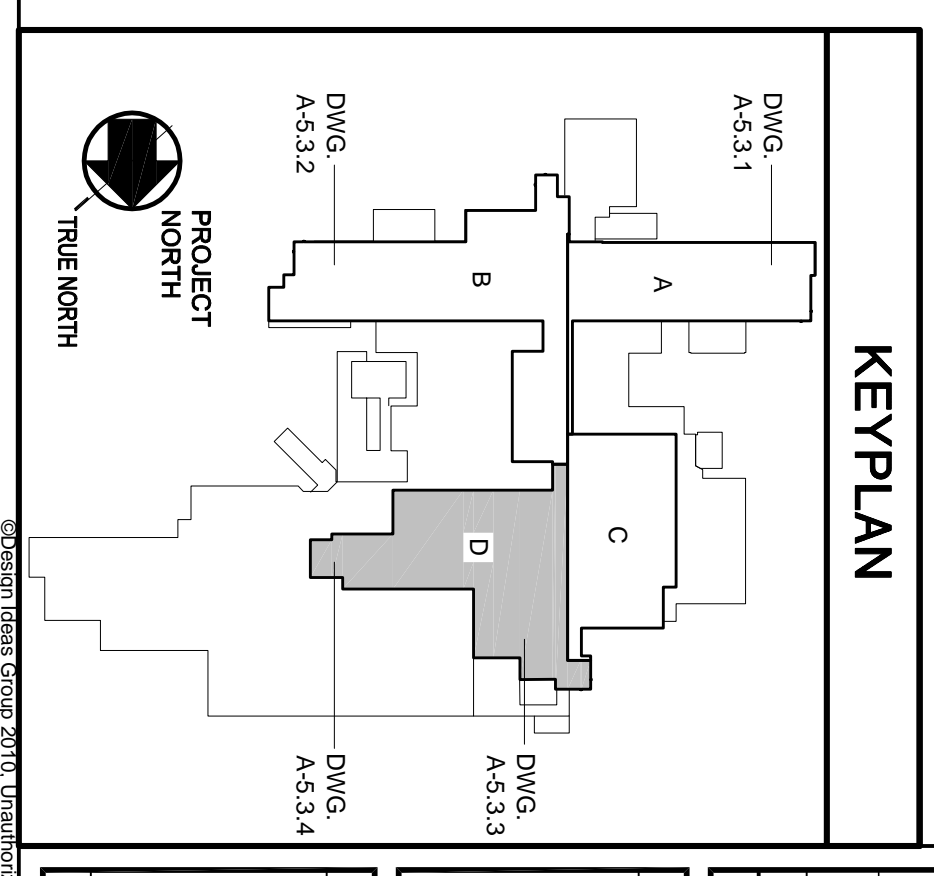
GENERAL NOTE:
NON-RATED COLUMN UPGRADES ARE PERMITTED TO TERMINATE 8" MIN. ABOVE FINISH CEILING (IN/OUT) OR UNDERSIDE OF DECK ABOVE IN ORDER PIPING, ETC. TO BEAD AROUND BEAMS.

<p>SDA NJ SCHOOL DEVELOPMENT AUTHORITY</p>	<p>STATE OF NEW JERSEY</p> <p>DOUGLAS G. CRAMER, GOVERNOR</p>	<p>DesignIdeas Group ARCHITECTURE + DESIGN + ILLUSTRATION</p> <p>PROJECT # - 2008.9560.00</p>	<p>PHILLIPSBURG HIGH SCHOOL 1000 BELVIDERE ROAD PHILLIPSBURG, NJ 08865</p>	<p>100% NJDCA CONSTRUCTION DOCUMENTS SUBMISSION FOR: NEW PHILLIPSBURG HIGH SCHOOL DOE# 4100-N01-04-1000 SDA# NT-0003-C02</p> <p>TOWN OF PHILLIPSBURG UPPER BELVIDERE ROAD LOT 44 / BLOCK 2 PHILLIPSBURG, NEW JERSEY 08865</p>	<p>APPENDIX #1 Δ 11-21-12 NJSDA REVISIONS Δ 09-12-12 NJSDA COMMENTS Δ 09-04-11 NJSDA COMMENTS Δ 08-12-10 NJSDA COMMENTS Δ 05-17-10 NJSDA COMMENTS Δ 02-12-10</p> <p>DATE: OCTOBER 13, 2009 SCALE: 1/2" = 1'-0"</p>	<p>DRAWING NO: A6.0.1</p> <p>DRAWN BY:</p>
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REFER TO DWG. A5.3.2
REFER TO DWG. A5.3.4



PARTIAL THIRD FLOOR REFLECTED CEILING PLAN - AREA 'D'
SCALE: 1/8" = 1'-0"



APPENDIX #1 11-21-12
ADDENDUM #1 11-21-12
NJSDA REVISIONS 09-12-12
NJDCIA COMMENTS 09-04-11
NJDCIA COMMENTS 08-12-10
NJDCIA COMMENTS 05-17-10
DATE: OCTOBER 13, 2009
SCALE: AS NOTED
DRAWING TITLE: PARTIAL THIRD FLOOR REFLECTIVE CEILING PLAN AREAS 'D' & 'E'
DRAWING NO.:
DRAWN BY:
A-5.3.4

ROP LEGEND

- REMANENT HANGLARGE SQUARE
- RETRACT FRONT
- EXTERIOR WALL MOUNTED FIXTURE
- INTERIOR WALL MOUNTED INDIRECT FIXTURE
- INDIRECT RECESSED SQUARE DOWN LIGHT
- SUSPENDED LAMPS INDIRECT FIXTURE
- PENDANT HANG DIRECT HIGH BAY FIXTURE
- LAY IN 2 X 4 DIRECT INDIRECT FIXTURE
- RECESSED ROUND DOWN LIGHT
- RECESSED LINEAR FIXTURE
- LAY IN ON CHAIN HANG 2 X 4 FIXTURE
- LAY IN LINEAR WALL WASH FIXTURE
- RECESSED SQUARE DOWN LIGHT
- PENDANT HANG OVER COUNTER FIXTURE
- CEILING MOUNTED CORNER HEATER
- CEILING MOUNTED RADIANT PANELS
- ANY FIXTURE W/A SLASH DENOTES THAT IT IS TIED INTO EMERGENCY POWER SOURCE
- RECESSED HVAC DIFFUSER

REFLECTED CEILING NOTES

NOTE: 1. ALL CALLS FOR SQUARE DOWN LIGHTS SHALL BE TO THE CONTRACT DOCUMENTS PROJECT STANDARD DETAILS ON DWG. AS 1.1.

NOTE: 2. INTENT OF REFLECTED CEILING PLANS ARE TO ILLUSTRATE ALL CEILING COMPONENTS IN ONE DRAWING. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE NOTED.

NOTE: 3. ALL REVISIONS AND CHANGES TO THE DRAWING SHALL BE NOTED IN THE REVISIONS AND COMMENTS TO THE DRAWING. ANY CHANGES TO THE DRAWING SHALL BE NOTED IN THE REVISIONS AND COMMENTS TO THE DRAWING.

NOTE: 4. CONTRACTORS ARE NOT TO SCALE DIMENSIONS. DIMENSIONS SHALL BE GOVERNED BY THE CONTRACT DOCUMENTS PROJECT STANDARD DETAILS ON DWG. AS 1.1.

NOTE: 5. SEE DWG. A5.0.0 FOR MILLWORK DETAILS.

NOTE: 6. PROVIDE SHELF & FOOT WALL COVERS BY ANOTHER TRADE.

NOTE: 7. PROVIDE SHELF & FOOT WALL COVERS BY ANOTHER TRADE. PROVIDE SHELF & FOOT WALL COVERS BY ANOTHER TRADE. PROVIDE SHELF & FOOT WALL COVERS BY ANOTHER TRADE.

NOTE: 8. PROVIDE SHELF & FOOT WALL COVERS BY ANOTHER TRADE. PROVIDE SHELF & FOOT WALL COVERS BY ANOTHER TRADE. PROVIDE SHELF & FOOT WALL COVERS BY ANOTHER TRADE.

ACUSTICAL CEILING TILE LEGEND

NOTE: 1. USE ASSEMBLY DESIGNATION (REGULAR)

ACT-1 24" SQUARE (SQUARE EDGE)

ACT-2 24" SQUARE (SQUARE EDGE)

ACT-3 24" SQUARE (SQUARE EDGE)

ACT-4 24" SQUARE (SQUARE EDGE)

ACT-5 24" SQUARE (SQUARE EDGE)

ACT-6 24" SQUARE (SQUARE EDGE)

ACT-7 24" SQUARE (SQUARE EDGE)

ACT-8 24" SQUARE (SQUARE EDGE)

ACT-9 24" SQUARE (SQUARE EDGE)

ACT-10 24" SQUARE (SQUARE EDGE)

ACT-11 24" SQUARE (SQUARE EDGE)

ACT-12 24" SQUARE (SQUARE EDGE)

ACT-13 24" SQUARE (SQUARE EDGE)

ACT-14 24" SQUARE (SQUARE EDGE)

ACT-15 24" SQUARE (SQUARE EDGE)

ACT-16 24" SQUARE (SQUARE EDGE)

ACT-17 24" SQUARE (SQUARE EDGE)

ACT-18 24" SQUARE (SQUARE EDGE)

ACT-19 24" SQUARE (SQUARE EDGE)

ACT-20 24" SQUARE (SQUARE EDGE)

ACT-21 24" SQUARE (SQUARE EDGE)

ACT-22 24" SQUARE (SQUARE EDGE)

ACT-23 24" SQUARE (SQUARE EDGE)

ACT-24 24" SQUARE (SQUARE EDGE)

ACT-25 24" SQUARE (SQUARE EDGE)

ACT-26 24" SQUARE (SQUARE EDGE)

ACT-27 24" SQUARE (SQUARE EDGE)

ACT-28 24" SQUARE (SQUARE EDGE)

ACT-29 24" SQUARE (SQUARE EDGE)

ACT-30 24" SQUARE (SQUARE EDGE)

ACT-31 24" SQUARE (SQUARE EDGE)

ACT-32 24" SQUARE (SQUARE EDGE)

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ACT-34 24" SQUARE (SQUARE EDGE)

ACT-35 24" SQUARE (SQUARE EDGE)

ACT-36 24" SQUARE (SQUARE EDGE)

ACT-37 24" SQUARE (SQUARE EDGE)

ACT-38 24" SQUARE (SQUARE EDGE)

ACT-39 24" SQUARE (SQUARE EDGE)

ACT-40 24" SQUARE (SQUARE EDGE)

ACT-41 24" SQUARE (SQUARE EDGE)

ACT-42 24" SQUARE (SQUARE EDGE)

ACT-43 24" SQUARE (SQUARE EDGE)

ACT-44 24" SQUARE (SQUARE EDGE)

ACT-45 24" SQUARE (SQUARE EDGE)

ACT-46 24" SQUARE (SQUARE EDGE)

ACT-47 24" SQUARE (SQUARE EDGE)

ACT-48 24" SQUARE (SQUARE EDGE)

ACT-49 24" SQUARE (SQUARE EDGE)

ACT-50 24" SQUARE (SQUARE EDGE)

ACT-51 24" SQUARE (SQUARE EDGE)

ACT-52 24" SQUARE (SQUARE EDGE)

ACT-53 24" SQUARE (SQUARE EDGE)

ACT-54 24" SQUARE (SQUARE EDGE)

ACT-55 24" SQUARE (SQUARE EDGE)

ACT-56 24" SQUARE (SQUARE EDGE)

ACT-57 24" SQUARE (SQUARE EDGE)

ACT-58 24" SQUARE (SQUARE EDGE)

ACT-59 24" SQUARE (SQUARE EDGE)

ACT-60 24" SQUARE (SQUARE EDGE)

TYPICAL NOTES:

NOTE: 1. USE ASSEMBLY DESIGNATION (REGULAR)

NOTE: 2. ALL REVISIONS AND CHANGES TO THE DRAWING SHALL BE NOTED IN THE REVISIONS AND COMMENTS TO THE DRAWING. ANY CHANGES TO THE DRAWING SHALL BE NOTED IN THE REVISIONS AND COMMENTS TO THE DRAWING.

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NOTE: 4. CONTRACTORS ARE NOT TO SCALE DIMENSIONS. DIMENSIONS SHALL BE GOVERNED BY THE CONTRACT DOCUMENTS PROJECT STANDARD DETAILS ON DWG. AS 1.1.

NOTE: 5. SEE DWG. A5.0.0 FOR MILLWORK DETAILS.

NOTE: 6. PROVIDE SHELF & FOOT WALL COVERS BY ANOTHER TRADE.

NOTE: 7. PROVIDE SHELF & FOOT WALL COVERS BY ANOTHER TRADE. PROVIDE SHELF & FOOT WALL COVERS BY ANOTHER TRADE. PROVIDE SHELF & FOOT WALL COVERS BY ANOTHER TRADE.

NOTE: 8. PROVIDE SHELF & FOOT WALL COVERS BY ANOTHER TRADE. PROVIDE SHELF & FOOT WALL COVERS BY ANOTHER TRADE. PROVIDE SHELF & FOOT WALL COVERS BY ANOTHER TRADE.

NOTE: 9. PROVIDE SHELF & FOOT WALL COVERS BY ANOTHER TRADE. PROVIDE SHELF & FOOT WALL COVERS BY ANOTHER TRADE. PROVIDE SHELF & FOOT WALL COVERS BY ANOTHER TRADE.

NOTE: 10. PROVIDE SHELF & FOOT WALL COVERS BY ANOTHER TRADE. PROVIDE SHELF & FOOT WALL COVERS BY ANOTHER TRADE. PROVIDE SHELF & FOOT WALL COVERS BY ANOTHER TRADE.

SCHEDULE OF INTERIOR FINISHES

FLOOR	WALLS	CEILING	ROOFINGS
1	CONCRETE	CONCRETE	CONCRETE
2	CONCRETE	CONCRETE	CONCRETE
3	CONCRETE	CONCRETE	CONCRETE
4	CONCRETE	CONCRETE	CONCRETE
5	CONCRETE	CONCRETE	CONCRETE
6	CONCRETE	CONCRETE	CONCRETE
7	CONCRETE	CONCRETE	CONCRETE
8	CONCRETE	CONCRETE	CONCRETE
9	CONCRETE	CONCRETE	CONCRETE
10	CONCRETE	CONCRETE	CONCRETE
11	CONCRETE	CONCRETE	CONCRETE
12	CONCRETE	CONCRETE	CONCRETE
13	CONCRETE	CONCRETE	CONCRETE
14	CONCRETE	CONCRETE	CONCRETE
15	CONCRETE	CONCRETE	CONCRETE
16	CONCRETE	CONCRETE	CONCRETE
17	CONCRETE	CONCRETE	CONCRETE
18	CONCRETE	CONCRETE	CONCRETE
19	CONCRETE	CONCRETE	CONCRETE
20	CONCRETE	CONCRETE	CONCRETE
21	CONCRETE	CONCRETE	CONCRETE
22	CONCRETE	CONCRETE	CONCRETE
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30	CONCRETE	CONCRETE	CONCRETE
31	CONCRETE	CONCRETE	CONCRETE
32	CONCRETE	CONCRETE	CONCRETE
33	CONCRETE	CONCRETE	CONCRETE
34	CONCRETE	CONCRETE	CONCRETE
35	CONCRETE	CONCRETE	CONCRETE
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48	CONCRETE	CONCRETE	CONCRETE
49	CONCRETE	CONCRETE	CONCRETE
50	CONCRETE	CONCRETE	CONCRETE

PROJECT INFORMATION

PROJECT # 2008-356-00

CLIENT: TOWN OF PHILLIPSBURG

DESIGNER: DESIGN IDEAS GROUP

DATE: OCTOBER 13, 2009

DRAWING NO. A-5.3.4

DRAWN BY: [Name]

SDA
 STATE OF NEW JERSEY
 N.J. SCHOOL DEVELOPMENT AUTHORITY

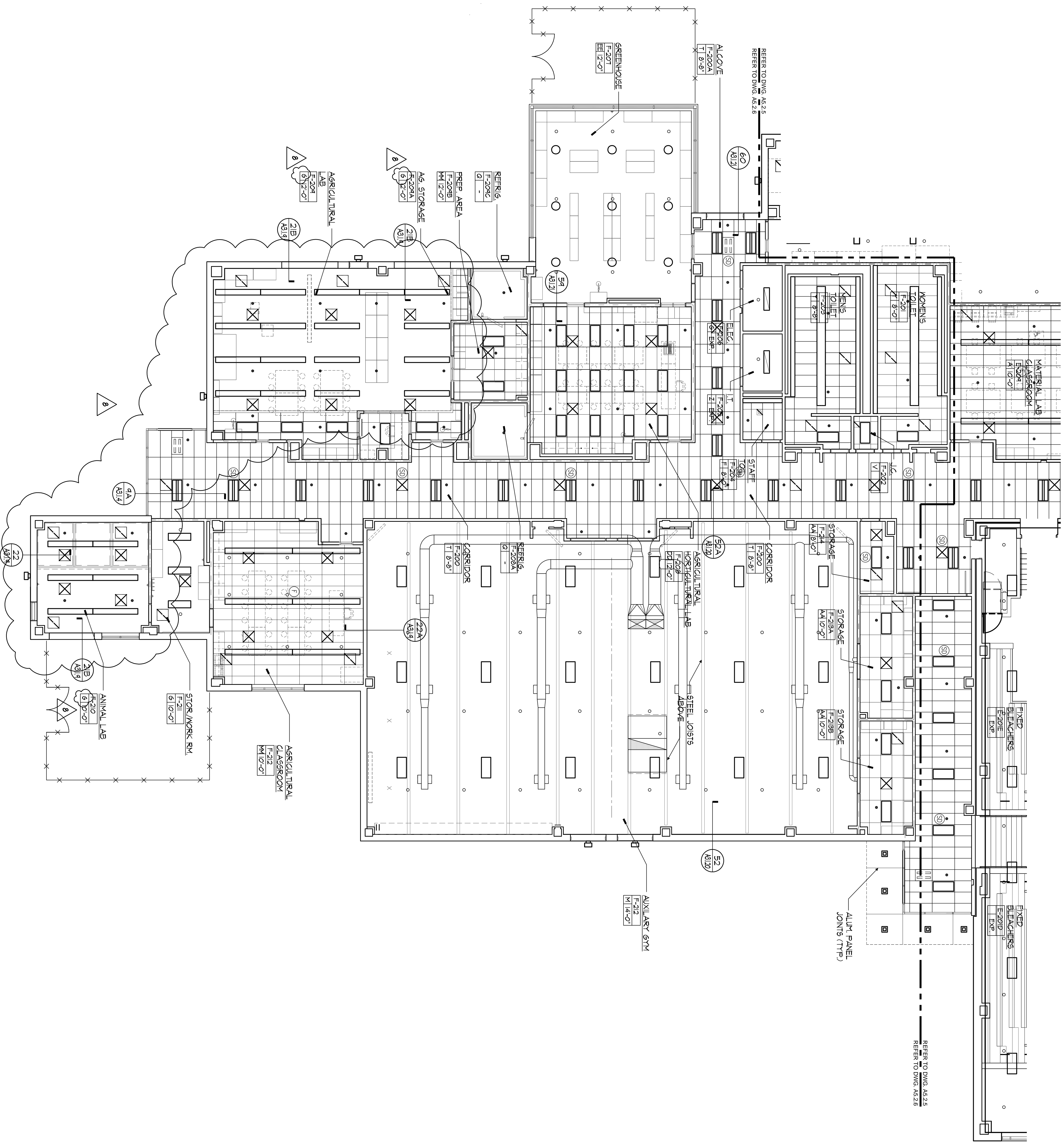
Design Ideas Group
 Architects + Planners + Interiors + Construction Management

PROJECT # 2008-356-00

PHILLIPSBURG HIGH SCHOOL
 UPPER BELVIDERE ROAD LOT 44 / BLOCK 2
 PHILLIPSBURG, NEW JERSEY 08865

100% NJDCIA CONSTRUCTION DOCUMENTS SUBMISSION FOR:
NEW PHILLIPSBURG HIGH SCHOOL
 DOE# 4100-N01-04-1000
 SDA# NT-0003-C02

TOWN OF PHILLIPSBURG
 UPPER BELVIDERE ROAD LOT 44 / BLOCK 2
 PHILLIPSBURG, NEW JERSEY 08865



PARTIAL SECOND FLOOR REFLECTED CEILING PLAN - AREA 1F
SCALE: 1/8" = 1'-0"

SCHEDULE OF INTERIOR FINISHES

FLOOR	WALLS	CEILING	ROOFING
1ST	WALL	CEILING	ROOFING
2ND	WALL	CEILING	ROOFING
3RD	WALL	CEILING	ROOFING
4TH	WALL	CEILING	ROOFING
5TH	WALL	CEILING	ROOFING
6TH	WALL	CEILING	ROOFING
7TH	WALL	CEILING	ROOFING
8TH	WALL	CEILING	ROOFING
9TH	WALL	CEILING	ROOFING
10TH	WALL	CEILING	ROOFING
11TH	WALL	CEILING	ROOFING
12TH	WALL	CEILING	ROOFING

ACoustical CEILING TILE LEGEND

NO.	DESCRIPTION	FINISH
1	24" SQUARE	AC1
2	24" SQUARE	AC2
3	24" SQUARE	AC3
4	24" SQUARE	AC4
5	24" SQUARE	AC5
6	24" SQUARE	AC6
7	24" SQUARE	AC7
8	24" SQUARE	AC8
9	24" SQUARE	AC9
10	24" SQUARE	AC10
11	24" SQUARE	AC11
12	24" SQUARE	AC12

REFLECTED CEILING NOTES

NOTE 1: ALL CEILING FINISHES SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITIONS OF THE NATIONAL BUILDING CODES AND ALL APPLICABLE REGULATIONS.

NOTE 2: INTENT OF REFLECTED CEILING PLANS ARE TO ILLUSTRATE ALL CEILING COMPONENTS IN ONE DRAWING. ALL DIMENSIONS SHALL BE SHOWN ON THIS DRAWING.

NOTE 3: ALL DIMENSIONS SHALL BE SHOWN ON THIS DRAWING.

NOTE 4: CONTRACTORS ARE NOT TO SCALE FINISHES UNLESS SPECIFICALLY NOTED OTHERWISE.

NOTE 5: SEE DWG. A-5.0.1 FOR MATERIAL DETAILS.

NOTE 6: CONTRACTORS SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL HEALTH DEPARTMENT AND ALL APPLICABLE REGULATIONS.

NOTE 7: CONTRACTORS SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL HEALTH DEPARTMENT AND ALL APPLICABLE REGULATIONS.

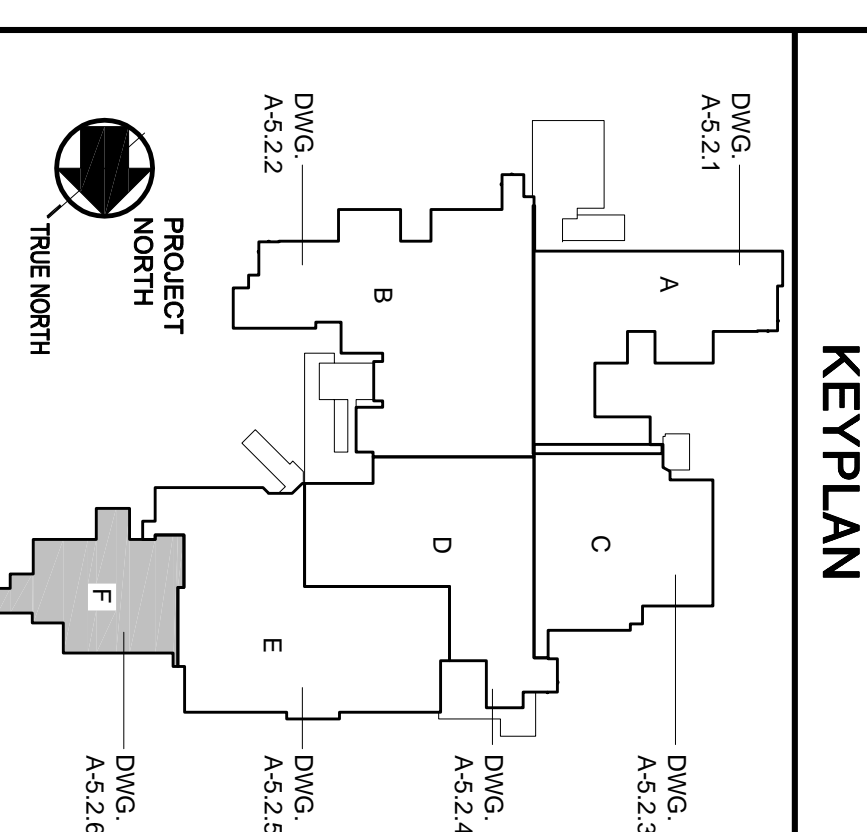
NOTE 8: CONTRACTORS SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL HEALTH DEPARTMENT AND ALL APPLICABLE REGULATIONS.

NOTE 9: CONTRACTORS SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL HEALTH DEPARTMENT AND ALL APPLICABLE REGULATIONS.

NOTE 10: CONTRACTORS SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL HEALTH DEPARTMENT AND ALL APPLICABLE REGULATIONS.

ROP LEGEND

NO.	DESCRIPTION
1	RECESSED SQUARE
2	RECESSED SQUARE
3	RECESSED SQUARE
4	RECESSED SQUARE
5	RECESSED SQUARE
6	RECESSED SQUARE
7	RECESSED SQUARE
8	RECESSED SQUARE
9	RECESSED SQUARE
10	RECESSED SQUARE
11	RECESSED SQUARE
12	RECESSED SQUARE



SDA
NJ Schools Development Authority
STATE OF NEW JERSEY

Design Ideas Group
Architects + Planners + Interiors

PROJECT # 2008-356-00

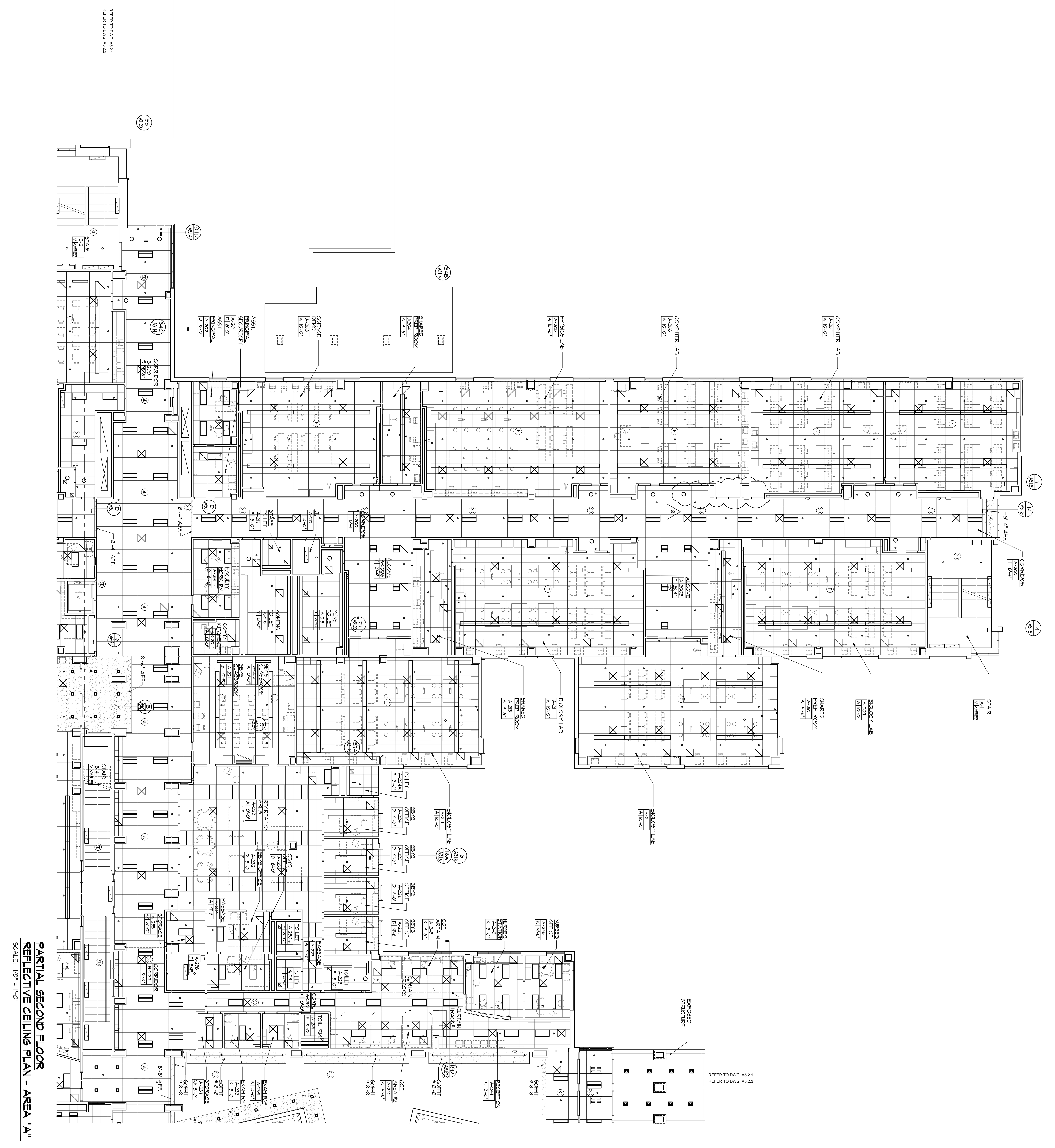
PHILLIPSBURG HIGH SCHOOL
UPPER BELVIDERE ROAD LOT 44 / BLOCK 2
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100% NJDCA CONSTRUCTION DOCUMENTS SUBMISSION FOR:
NEW PHILLIPSBURG HIGH SCHOOL
DOE# 4100-N01-04-1000
SDA# NT-0003-C02

TOWN OF PHILLIPSBURG
UPPER BELVIDERE ROAD LOT 44 / BLOCK 2
PHILLIPSBURG, NEW JERSEY 08865

APPENDIX #1	DATE
11-21-12	
09-12-12	
03-04-11	
08-12-10	
05-17-10	
10-21-09	
AS NOTED	

A-5.2.6
DRAWING NO. PARTIAL SECOND FLOOR REFLECTIVE CEILING PLAN AREA - 1F



PARTIAL SECOND FLOOR REFLECTIVE CEILING PLAN - AREA "A" SCALE 1/8" = 1'-0"

SCHEDULE OF INTERIOR FINISHES

FLOOR	ROOM	WALLS	CEILING	FLOORING	REMARKS
2	ACT 1	WNL	ACT1	SEE RCP	
2	ACT 2	WNL	ACT2	SEE RCP	
2	ACT 3	WNL	ACT3	SEE RCP	
2	ACT 4	WNL	ACT4	SEE RCP	
2	ACT 5	WNL	ACT5	SEE RCP	
2	ACT 6	WNL	ACT6	SEE RCP	
2	ACT 7	WNL	ACT7	SEE RCP	
2	ACT 8	WNL	ACT8	SEE RCP	
2	ACT 9	WNL	ACT9	SEE RCP	
2	ACT 10	WNL	ACT10	SEE RCP	
2	ACT 11	WNL	ACT11	SEE RCP	
2	ACT 12	WNL	ACT12	SEE RCP	
2	ACT 13	WNL	ACT13	SEE RCP	
2	ACT 14	WNL	ACT14	SEE RCP	
2	ACT 15	WNL	ACT15	SEE RCP	
2	ACT 16	WNL	ACT16	SEE RCP	
2	ACT 17	WNL	ACT17	SEE RCP	
2	ACT 18	WNL	ACT18	SEE RCP	
2	ACT 19	WNL	ACT19	SEE RCP	
2	ACT 20	WNL	ACT20	SEE RCP	

ACOUSTICAL CEILING TILE LEGEND

CODE	DESCRIPTION
ACT1	24" SQUARE (REGULAR)
ACT2	24" SQUARE (NON-REFLECTIVE)
ACT3	24" SQUARE (NON-REFLECTIVE)
ACT4	24" SQUARE (NON-REFLECTIVE)
ACT5	24" SQUARE (NON-REFLECTIVE)
ACT6	24" SQUARE (NON-REFLECTIVE)
ACT7	24" SQUARE (NON-REFLECTIVE)
ACT8	24" SQUARE (NON-REFLECTIVE)
ACT9	24" SQUARE (NON-REFLECTIVE)
ACT10	24" SQUARE (NON-REFLECTIVE)
ACT11	24" SQUARE (NON-REFLECTIVE)
ACT12	24" SQUARE (NON-REFLECTIVE)
ACT13	24" SQUARE (NON-REFLECTIVE)
ACT14	24" SQUARE (NON-REFLECTIVE)
ACT15	24" SQUARE (NON-REFLECTIVE)
ACT16	24" SQUARE (NON-REFLECTIVE)
ACT17	24" SQUARE (NON-REFLECTIVE)
ACT18	24" SQUARE (NON-REFLECTIVE)
ACT19	24" SQUARE (NON-REFLECTIVE)
ACT20	24" SQUARE (NON-REFLECTIVE)

TYPICAL NOTES:

NOTE 1: USE ANCHORS TO ATTACH CEILING TILES TO STRUCTURE. ALL WALLS AND PARTITIONS SHALL BE CONCRETE OR MASONRY. ALL CEILING TILES SHALL BE ATTACHED TO THE STRUCTURE.

NOTE 2: ALL CEILING TILES SHALL BE INSTALLED WITH THE LONG DIMENSION PARALLEL TO THE STRUCTURE.

NOTE 3: ALL CEILING TILES SHALL BE INSTALLED WITH THE LONG DIMENSION PARALLEL TO THE STRUCTURE.

NOTE 4: CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROVISION OF ALL CEILING TILES AND ACCESSORIES.

NOTE 5: CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROVISION OF ALL CEILING TILES AND ACCESSORIES.

NOTE 6: CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROVISION OF ALL CEILING TILES AND ACCESSORIES.

NOTE 7: CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROVISION OF ALL CEILING TILES AND ACCESSORIES.

NOTE 8: CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROVISION OF ALL CEILING TILES AND ACCESSORIES.

REFLECTED CEILING NOTES:

NOTE 1: ALL CEILING TILES SHALL BE INSTALLED WITH THE LONG DIMENSION PARALLEL TO THE STRUCTURE.

NOTE 2: ALL CEILING TILES SHALL BE INSTALLED WITH THE LONG DIMENSION PARALLEL TO THE STRUCTURE.

NOTE 3: ALL CEILING TILES SHALL BE INSTALLED WITH THE LONG DIMENSION PARALLEL TO THE STRUCTURE.

NOTE 4: CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROVISION OF ALL CEILING TILES AND ACCESSORIES.

NOTE 5: CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROVISION OF ALL CEILING TILES AND ACCESSORIES.

NOTE 6: CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROVISION OF ALL CEILING TILES AND ACCESSORIES.

NOTE 7: CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROVISION OF ALL CEILING TILES AND ACCESSORIES.

NOTE 8: CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROVISION OF ALL CEILING TILES AND ACCESSORIES.

ROP LEGEND

CODE	DESCRIPTION
R1	RECESSIBLE SQUARE
R2	RECESSIBLE SQUARE
R3	RECESSIBLE SQUARE
R4	RECESSIBLE SQUARE
R5	RECESSIBLE SQUARE
R6	RECESSIBLE SQUARE
R7	RECESSIBLE SQUARE
R8	RECESSIBLE SQUARE
R9	RECESSIBLE SQUARE
R10	RECESSIBLE SQUARE
R11	RECESSIBLE SQUARE
R12	RECESSIBLE SQUARE
R13	RECESSIBLE SQUARE
R14	RECESSIBLE SQUARE
R15	RECESSIBLE SQUARE
R16	RECESSIBLE SQUARE
R17	RECESSIBLE SQUARE
R18	RECESSIBLE SQUARE
R19	RECESSIBLE SQUARE
R20	RECESSIBLE SQUARE

KEYPLAN

DWG	AREA
A-5.2.1	A
A-5.2.2	B
A-5.2.3	C
A-5.2.4	D
A-5.2.5	E
A-5.2.6	F
A-5.2.7	G
A-5.2.8	H
A-5.2.9	I
A-5.2.10	J

APPENDIX

REVISION	DATE	DESCRIPTION
1	11-21-12	ISSUED FOR PERMITS
2	12-12-12	ISSUED FOR PERMITS
3	03-04-11	ISSUED FOR PERMITS
4	05-17-10	ISSUED FOR PERMITS
5	02-12-10	ISSUED FOR PERMITS

100% NJDCA CONSTRUCTION DOCUMENTS SUBMISSION FOR:

NEW PHILLIPSBURG HIGH SCHOOL
DOE# 4100-N01-04-1000
SDA# NT-0003-C02

TOWN OF PHILLIPSBURG
UPPER BELVIDERE ROAD LOT 44 / BLOCK 2
PHILLIPSBURG, NEW JERSEY 08865

STATE OF NEW JERSEY
N.J. SCHOOL DEVELOPMENT AUTHORITY

Design Ideas Group
Architects & Planners, LLC

PROJECT # - 2008-356-00

PHILLIPSBURG HIGH SCHOOL
100 BELVIDERE ROAD
PHILLIPSBURG, NJ 08865

DATE: OCTOBER 13, 2009

DRAWING TITLE: PARTIAL SECOND FLOOR REFLECTIVE CEILING PLAN AREA "A"

DRAWING NO.: A-5.2.1

DRAWN BY: [Name]

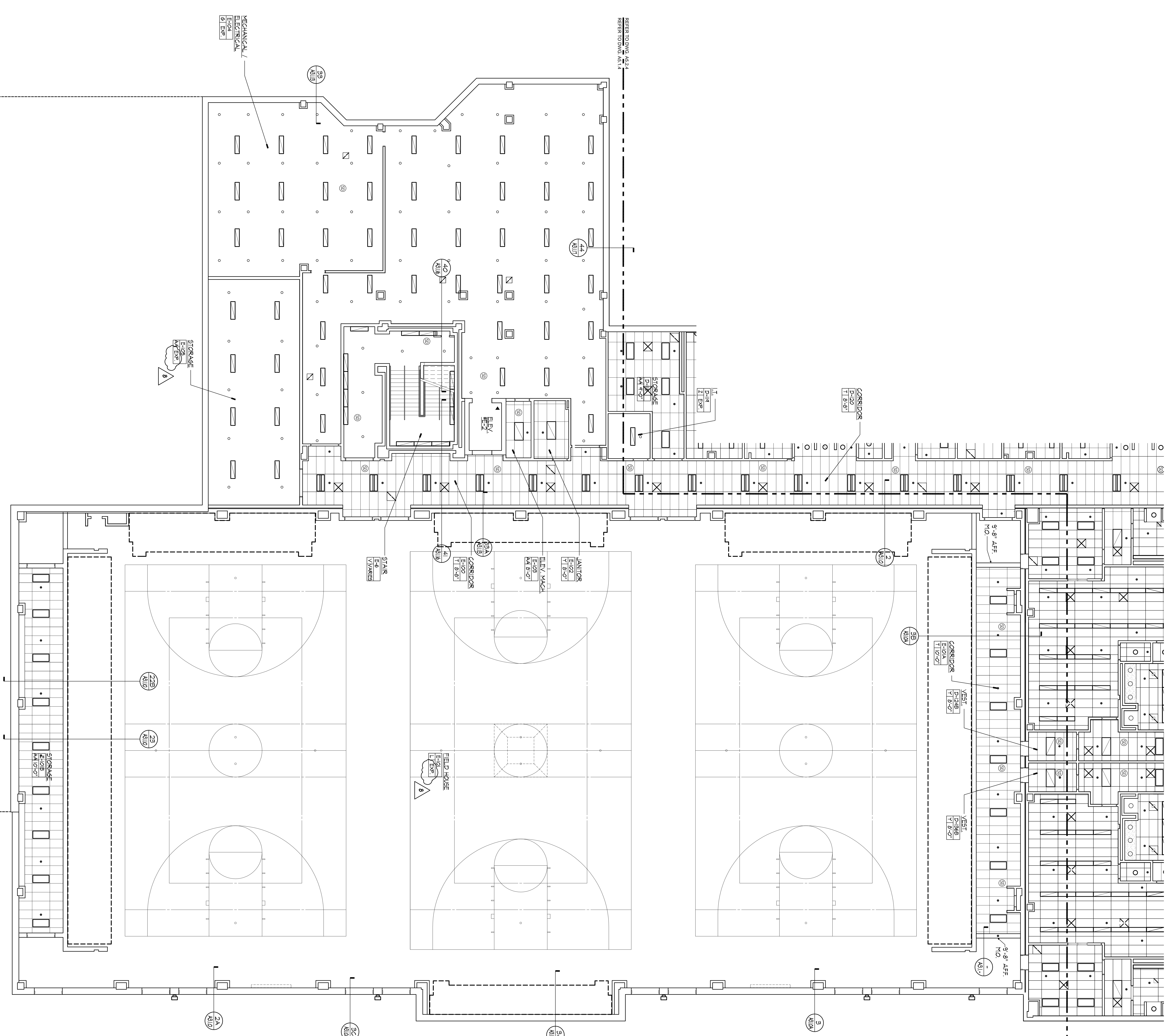
APPENDIX #1: 11-21-12

NJSDA REVISIONS: 6/09-12-12

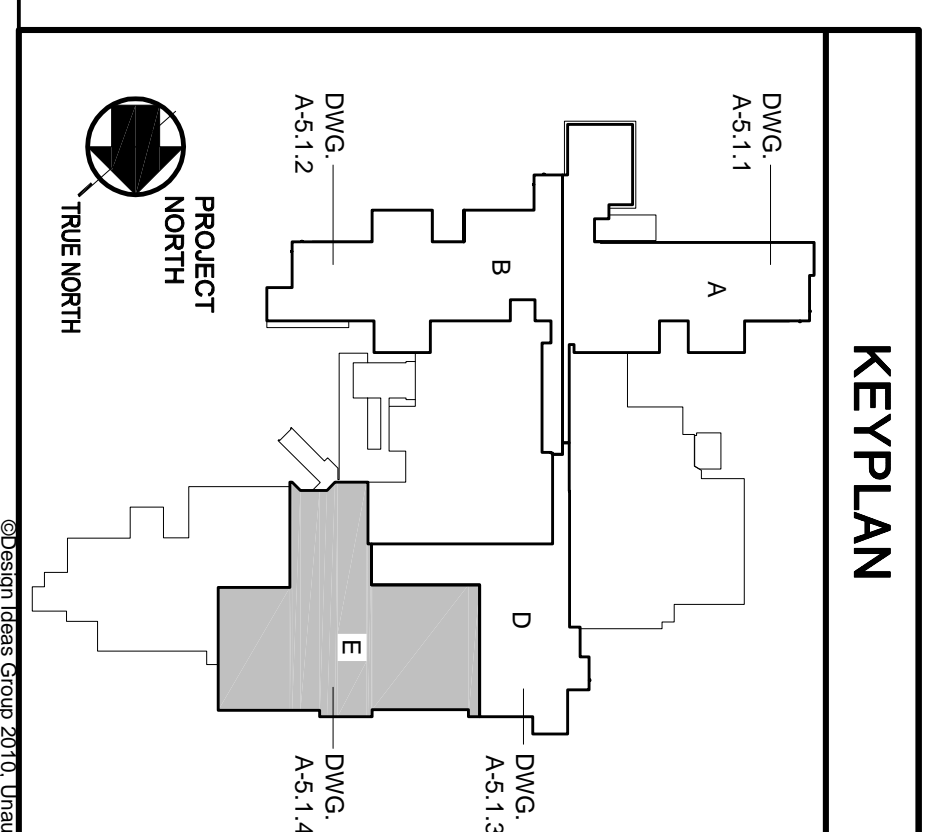
NJSDA COMMENTS: 03-04-11

NJSDA COMMENTS: 05-17-10

NJSDA COMMENTS: 02-12-10



PARTIAL FIRST FLOOR REFLECTED CEILING PLAN - AREA "E"
SCALE: 1/8" = 1'-0"



REVISIONS

NO.	DATE	DESCRIPTION
1	11-21-12	ADDENDUM #1
2	09-12-12	NJSDA REVISIONS
3	09-04-11	NJSDA COMMENTS
4	08-12-10	NJSDA COMMENTS
5	05-17-10	NJSDA COMMENTS

DATE: OCTOBER 13, 2009
SCALE: 1/8" = 1'-0"

ROP LEGEND

[Symbol]	REMANENT HANGLARE SQUARE
[Symbol]	REMANENT FUTURE
[Symbol]	EXTERIOR WALL MOUNTED FUTURE
[Symbol]	INTERIOR WALL MOUNTED FUTURE
[Symbol]	RECESSED SQUARE DOWN LIGHT
[Symbol]	SUSPENDED LINEAR INDIRECT FUTURE
[Symbol]	PENDANT HANG DIRECT HIGH BAY FUTURE
[Symbol]	LAY-IN 2' x 4' DIRECT INDIRECT FUTURE
[Symbol]	RECESSED ROUND DOWNLIGHT
[Symbol]	LAY-IN 2' x 2' DIRECT INDIRECT FUTURE
[Symbol]	RECESSED LINEAR FUTURE
[Symbol]	LAY-IN OR CHAIN HANG 2' x 4' FUTURE
[Symbol]	LAY-IN OR CHAIN HANG 2' x 2' FUTURE
[Symbol]	LAY-IN LINEAR WALL WASH FUTURE
[Symbol]	RECESSED SQUARE DOWN LIGHT
[Symbol]	PENDANT HANG OVER COUNTER FUTURE
[Symbol]	CEILING MOUNTED CABINET FUTURE
[Symbol]	CEILING MOUNTED RADIANT PANELS
[Symbol]	ANY FUTURE W/A SLASH DENOTES THAT IT IS TIED INTO EMERGENCY POWER SOURCE
[Symbol]	RECESSED HVAC DIFFUSER

REFLECTED CEILING NOTES

NOTE: 1. ALL CEILING FINISHES SHALL BE COMPLETED WITHIN THE 14-DAY WORK PERIOD. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS IN ADVANCE OF COMMENCEMENT OF WORK.

NOTE: 2. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS IN ADVANCE OF COMMENCEMENT OF WORK.

NOTE: 3. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS IN ADVANCE OF COMMENCEMENT OF WORK.

NOTE: 4. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS IN ADVANCE OF COMMENCEMENT OF WORK.

NOTE: 5. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS IN ADVANCE OF COMMENCEMENT OF WORK.

ACoustical CEILING TILE LEGEND

NO.	DESCRIPTION
ACT1	24" SQUARE 15/16" THICK (REGULAR)
ACT2	24" SQUARE 15/16" THICK (PERFORATED)
ACT3	24" SQUARE 15/16" THICK (NON-REPERFORATED)
ACT4	24" SQUARE 15/16" THICK (OPEN PLAN SQUARE EDGE)
ACT5	24" SQUARE 15/16" THICK (OPEN PLAN SQUARE EDGE)
ACT6	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT7	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT8	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT9	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT10	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT11	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT12	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT13	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT14	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT15	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT16	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT17	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT18	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT19	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT20	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT21	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT22	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT23	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT24	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT25	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT26	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT27	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT28	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT29	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT30	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT31	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT32	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT33	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT34	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT35	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT36	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT37	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT38	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT39	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT40	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT41	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT42	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT43	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT44	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT45	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT46	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT47	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT48	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT49	24" SQUARE 15/16" THICK (PERFORATED REGULAR)
ACT50	24" SQUARE 15/16" THICK (PERFORATED REGULAR)

SCHEDULE OF INTERIOR FINISHES

TYPE	FLOOR	WALLS	CEILING	REMARKS
1	CONCRETE	CONCRETE	CONCRETE	SEE RCP
2	CONCRETE	CONCRETE	CONCRETE	SEE RCP
3	CONCRETE	CONCRETE	CONCRETE	SEE RCP
4	CONCRETE	CONCRETE	CONCRETE	SEE RCP
5	CONCRETE	CONCRETE	CONCRETE	SEE RCP
6	CONCRETE	CONCRETE	CONCRETE	SEE RCP
7	CONCRETE	CONCRETE	CONCRETE	SEE RCP
8	CONCRETE	CONCRETE	CONCRETE	SEE RCP
9	CONCRETE	CONCRETE	CONCRETE	SEE RCP
10	CONCRETE	CONCRETE	CONCRETE	SEE RCP
11	CONCRETE	CONCRETE	CONCRETE	SEE RCP
12	CONCRETE	CONCRETE	CONCRETE	SEE RCP
13	CONCRETE	CONCRETE	CONCRETE	SEE RCP
14	CONCRETE	CONCRETE	CONCRETE	SEE RCP
15	CONCRETE	CONCRETE	CONCRETE	SEE RCP
16	CONCRETE	CONCRETE	CONCRETE	SEE RCP
17	CONCRETE	CONCRETE	CONCRETE	SEE RCP
18	CONCRETE	CONCRETE	CONCRETE	SEE RCP
19	CONCRETE	CONCRETE	CONCRETE	SEE RCP
20	CONCRETE	CONCRETE	CONCRETE	SEE RCP
21	CONCRETE	CONCRETE	CONCRETE	SEE RCP
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29	CONCRETE	CONCRETE	CONCRETE	SEE RCP
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33	CONCRETE	CONCRETE	CONCRETE	SEE RCP
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35	CONCRETE	CONCRETE	CONCRETE	SEE RCP
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37	CONCRETE	CONCRETE	CONCRETE	SEE RCP
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41	CONCRETE	CONCRETE	CONCRETE	SEE RCP
42	CONCRETE	CONCRETE	CONCRETE	SEE RCP
43	CONCRETE	CONCRETE	CONCRETE	SEE RCP
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46	CONCRETE	CONCRETE	CONCRETE	SEE RCP
47	CONCRETE	CONCRETE	CONCRETE	SEE RCP
48	CONCRETE	CONCRETE	CONCRETE	SEE RCP
49	CONCRETE	CONCRETE	CONCRETE	SEE RCP
50	CONCRETE	CONCRETE	CONCRETE	SEE RCP

Design Ideas Group
Architects & Planners
1000 BELVIDERE ROAD, SUITE 200
PHILLIPSBURG, NJ 08865
TEL: 609.682.1111
WWW.DESIGNIDEASGROUP.COM

PROJECT # 2008-356-00

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1000 BELVIDERE ROAD, SUITE 200
PHILLIPSBURG, NJ 08865
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SDA
NJ School Development Authority
STATE OF NEW JERSEY

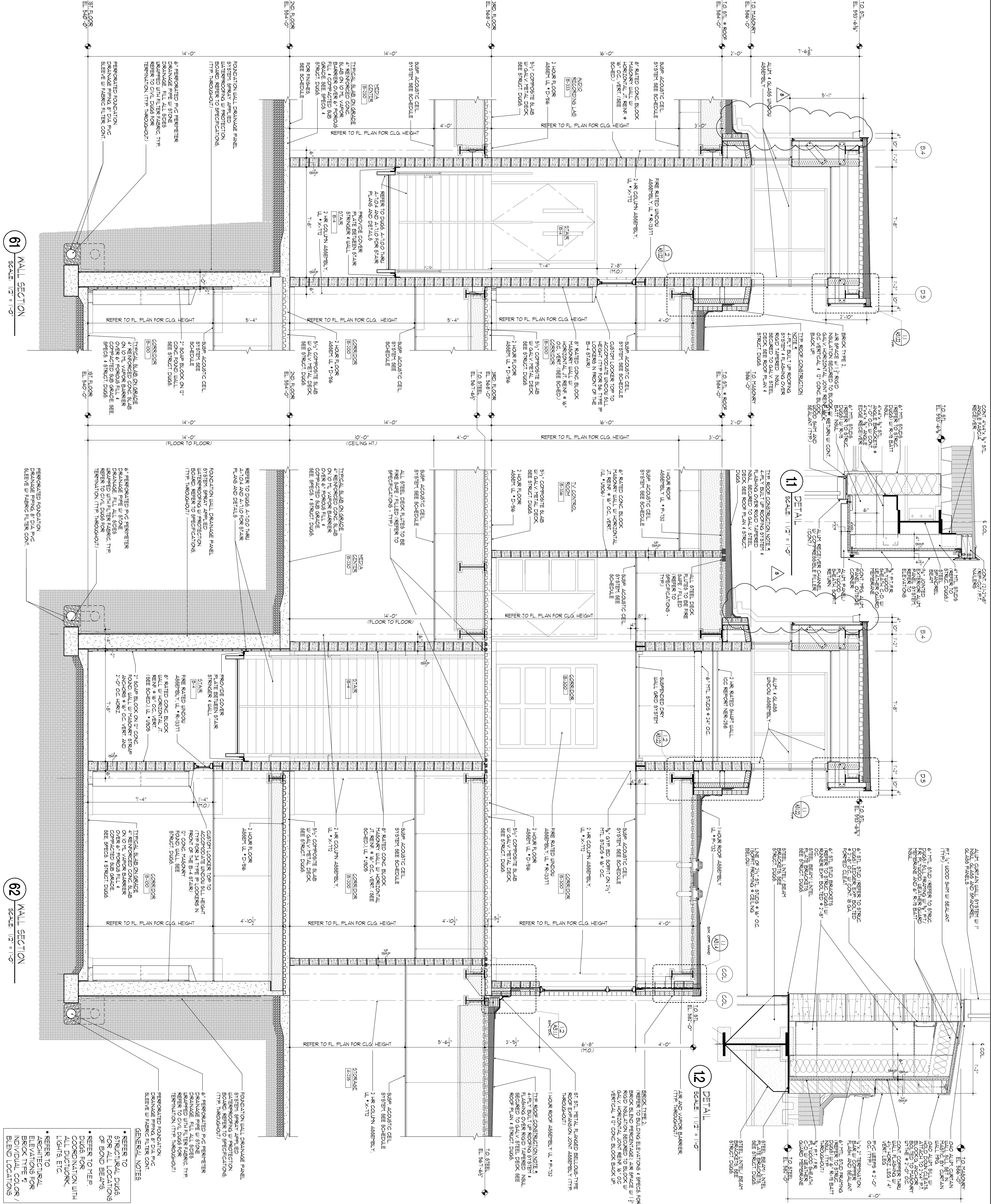
100% NJDCA CONSTRUCTION DOCUMENTS SUBMISSION FOR:
NEW PHILLIPSBURG HIGH SCHOOL
DOE# 4100-N01-04-1000
SDA# NT-0003-C02

TOWN OF PHILLIPSBURG
UPPER BELVIDERE ROAD LOT 44 / BLOCK 2
PHILLIPSBURG, NEW JERSEY 08865

ADDENDUM #1 11-21-12
NJSDA REVISIONS 09-12-12
NJSDA COMMENTS 09-04-11
NJSDA COMMENTS 08-12-10
NJSDA COMMENTS 05-17-10

DATE: OCTOBER 13, 2009
SCALE: 1/8" = 1'-0"

DRAWING NO.: A-5.1.4
DRAWN BY: [Name]



61 WALL SECTION
SCALE: 1/2" = 1'-0"

62 WALL SECTION
SCALE: 1/2" = 1'-0"

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

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

- REFER TO ARCHITECTURAL ELEVATIONS FOR BRICK TYPE & INDIVIDUAL COLOR / BLEND LOCATIONS
- REFER TO DGS FOR COORDINATION WITH ALL DUCTWORK, LIGHTS, ETC.
- REFER TO MEP FOR ALL LOCATIONS OF BOND BEAMS.

GENERAL NOTES

- REFER TO STRUCTURAL DWGS FOR ALL LOCATIONS OF BOND BEAMS.
- REFER TO MEP FOR ALL LOCATIONS OF BOND BEAMS.
- REFER TO ARCHITECTURAL ELEVATIONS FOR BRICK TYPE & INDIVIDUAL COLOR / BLEND LOCATIONS

SUBMISSION	DATE
APPENDIX #1	11-21-12
NJSDA REVISIONS	08-12-12
NJSDA COMMENTS	09-04-11
NJSDA COMMENTS	08-12-10
NJSDA COMMENTS	05-17-10
NJSDA COMMENTS	03-20-09

DRAWING TITLE: WALL SECTIONS
DRAWING NO: A-3.1.22
DRAWN BY: JMC

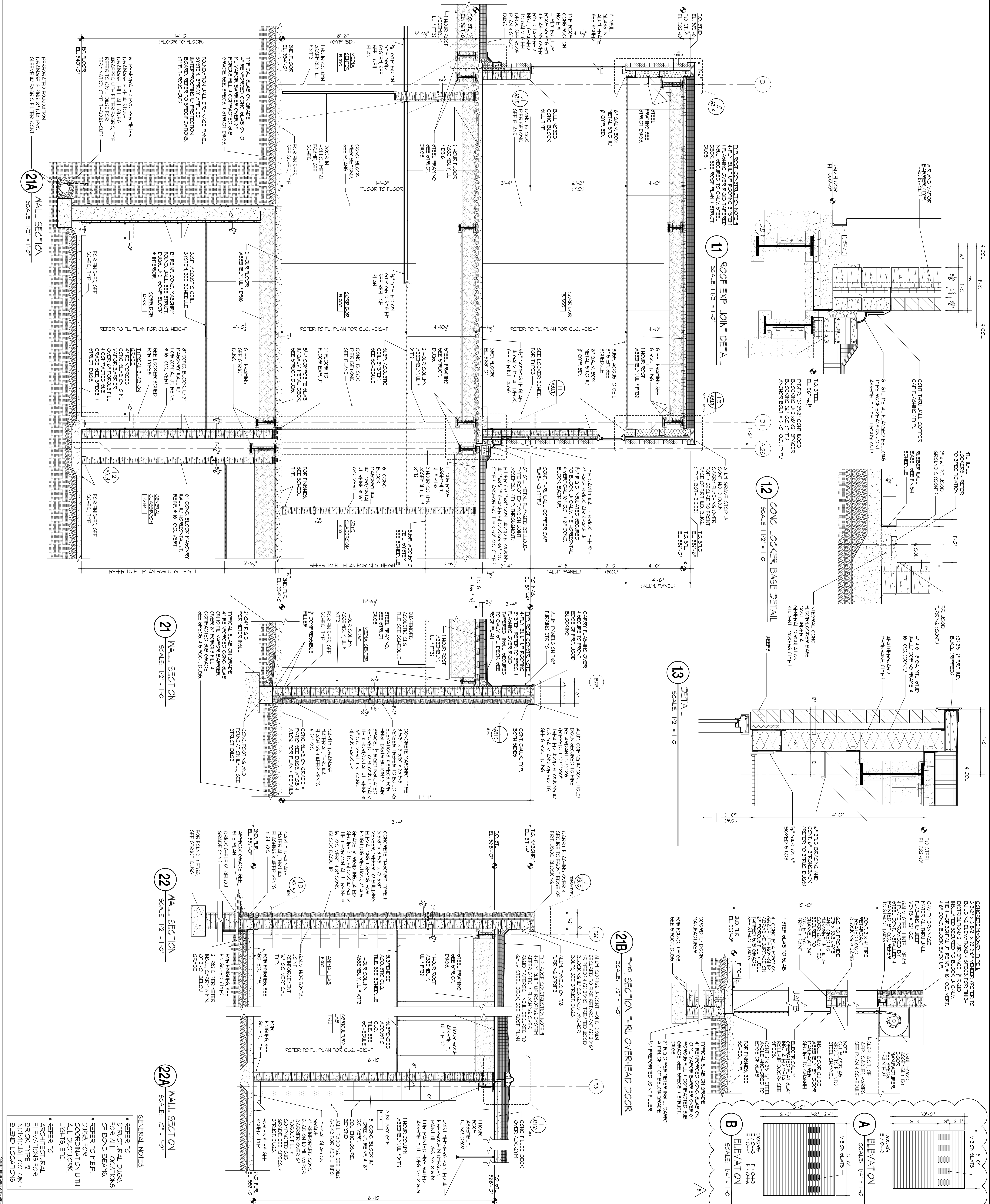
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NEW PHILLIPSBURG HIGH SCHOOL
 DOE# 4100-N01-04-1000
 SDA# NT-0003-C02
TOWN OF PHILLIPSBURG
 UPPER BELVIDERE ROAD LOT 44 / BLOCK 2
 PHILLIPSBURG, NEW JERSEY 08865

SDA
 N.J. SCHOOL DEVELOPMENT AUTHORITY
 STATE OF NEW JERSEY

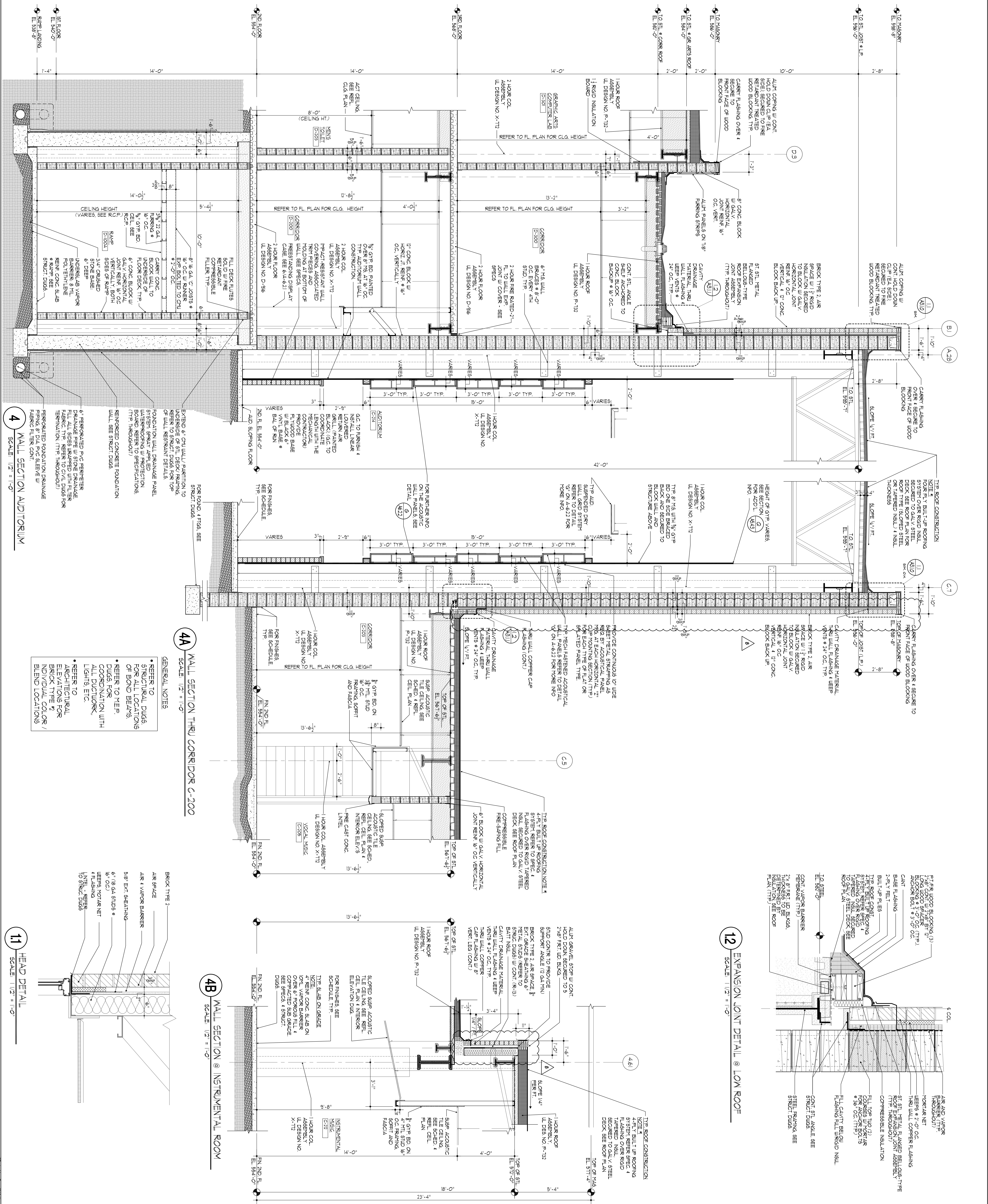
DesignIdeas Group
 Architects & Planners
 1111 BELVIDERE ROAD, SUITE 100
 PHILLIPSBURG, NJ 08865

PROJECT #: 2008.956.00

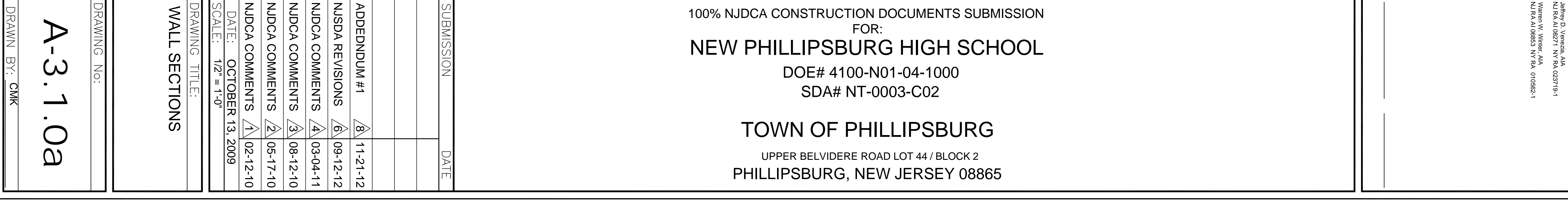
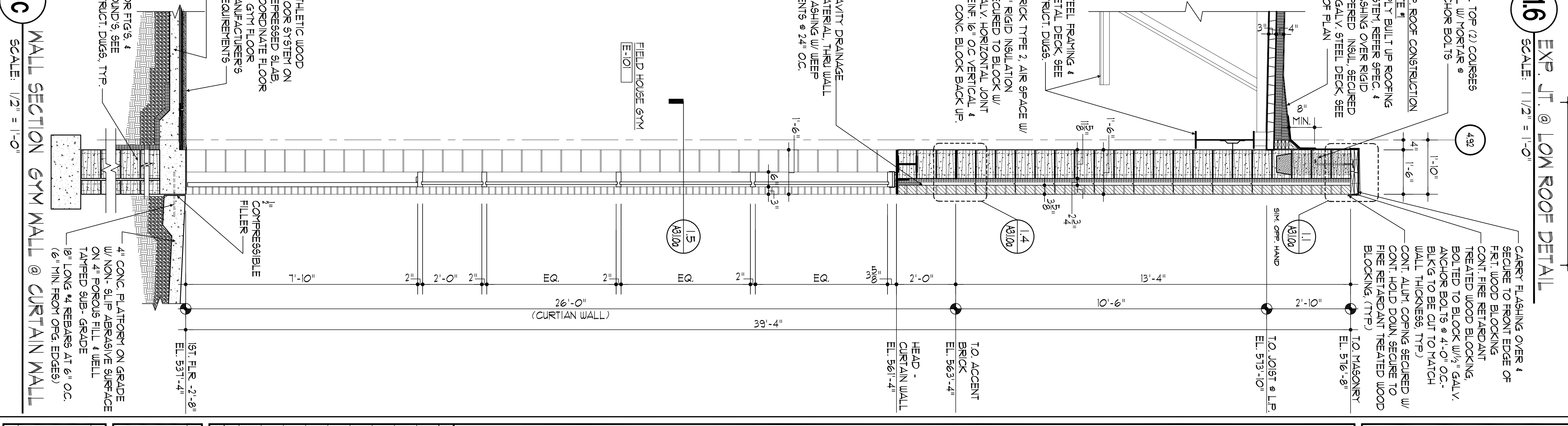
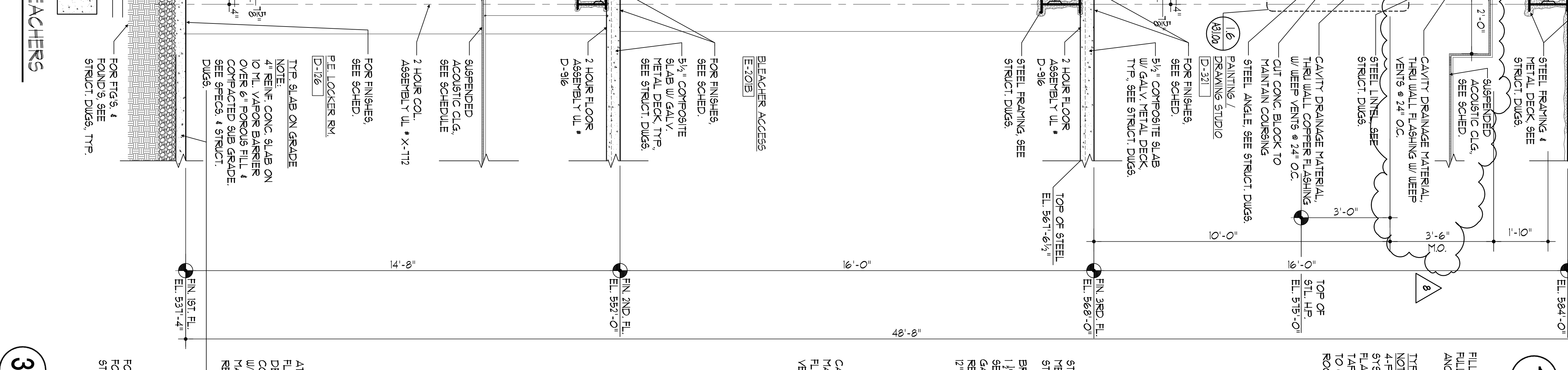
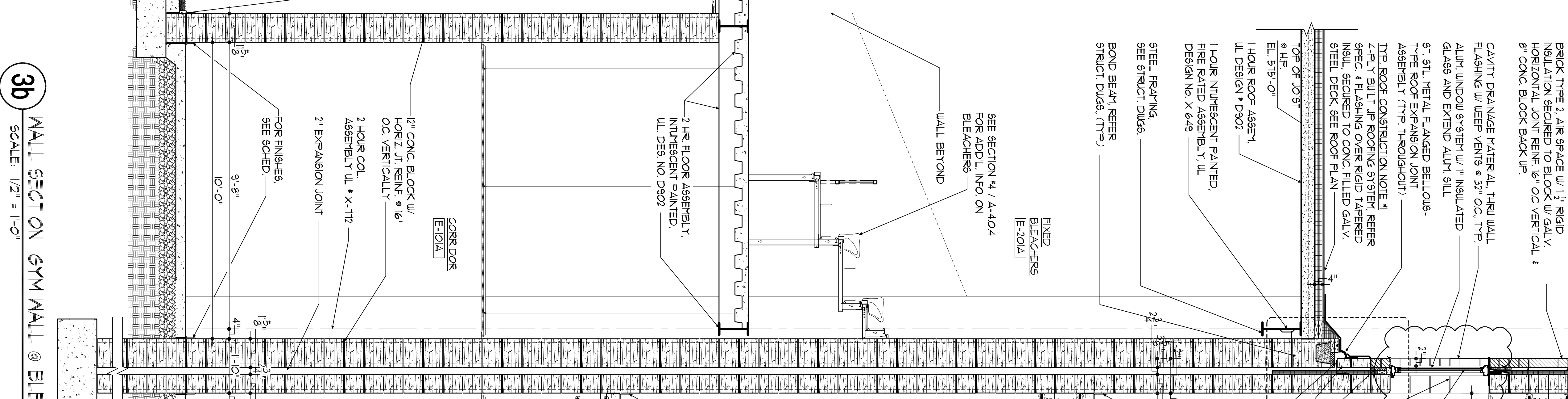
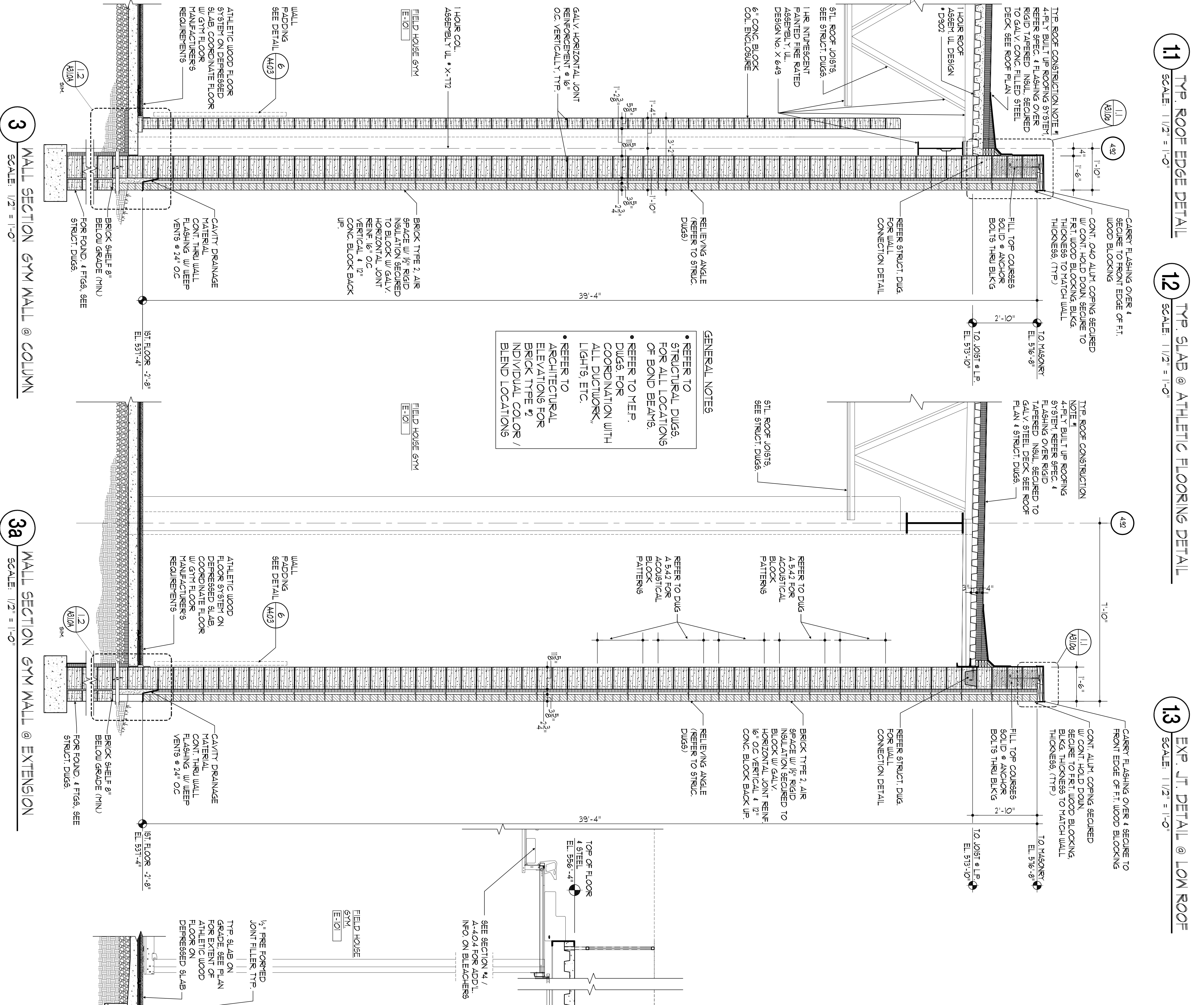
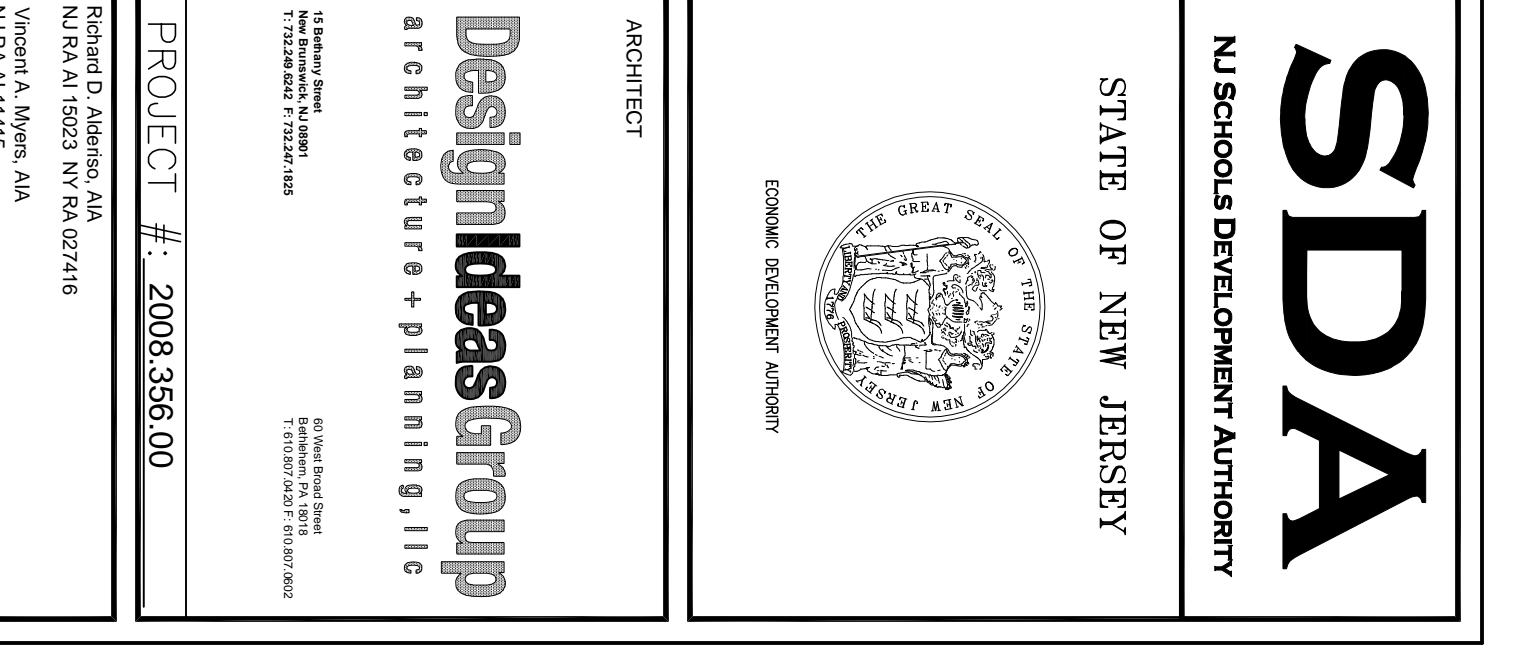
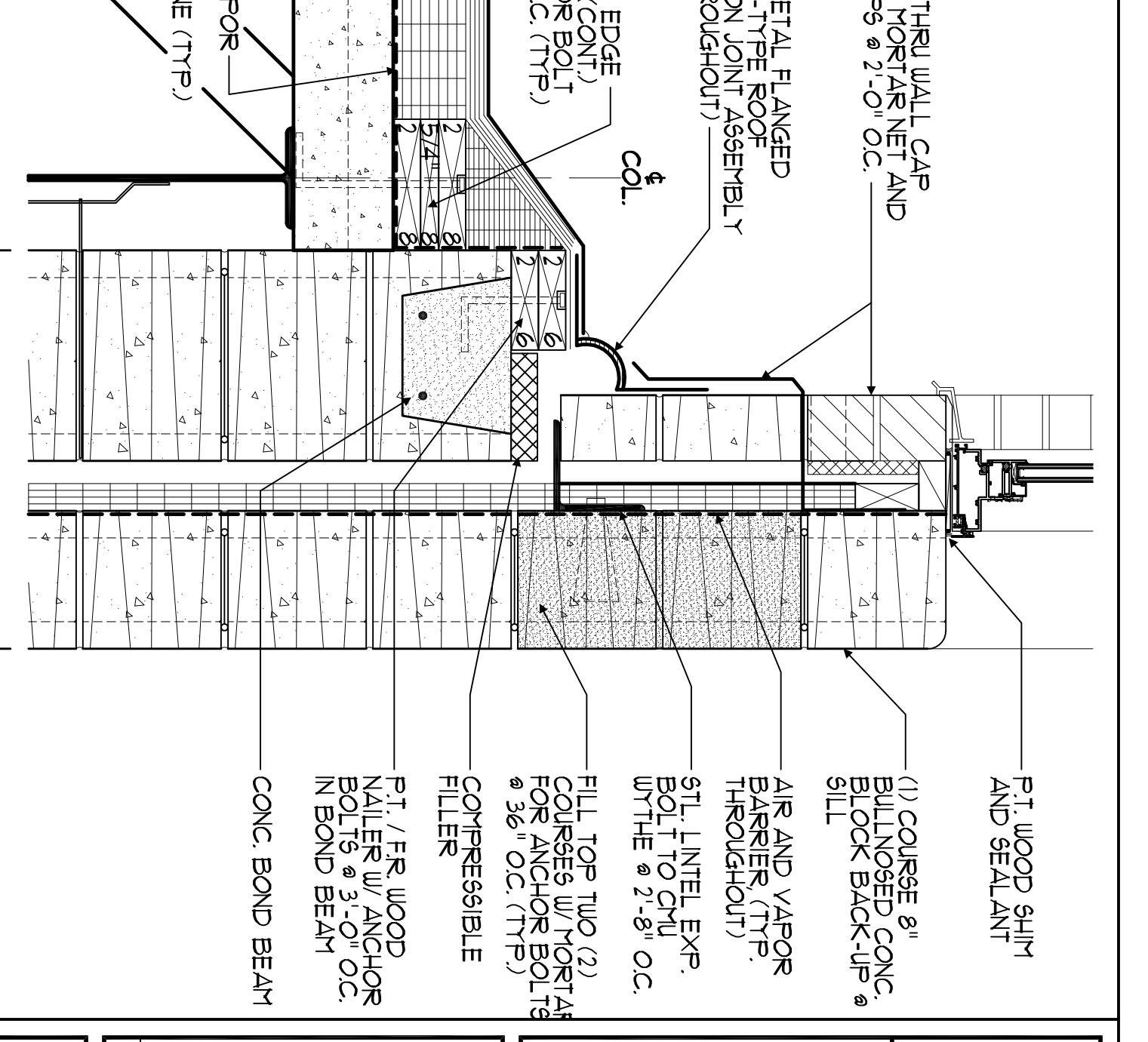
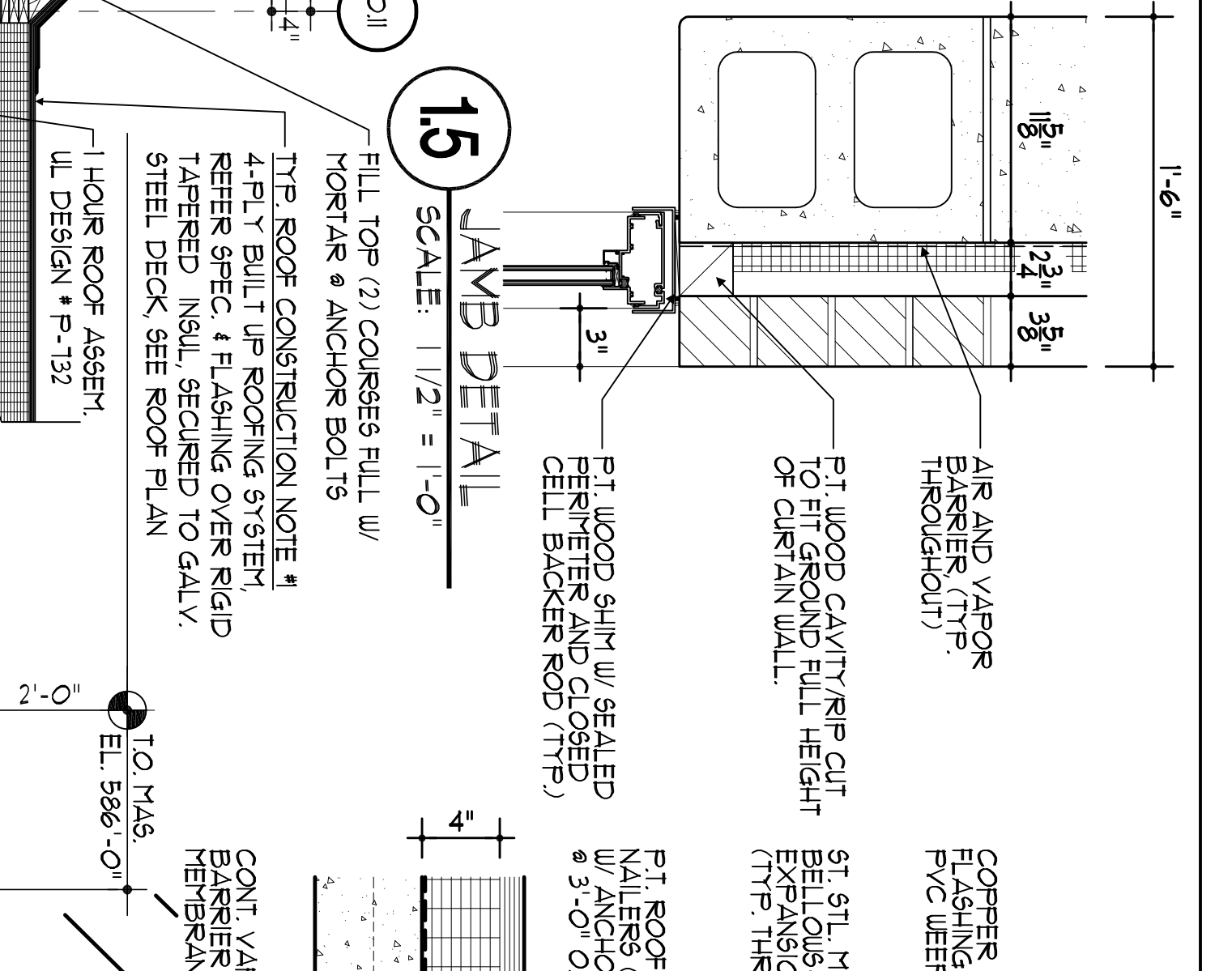
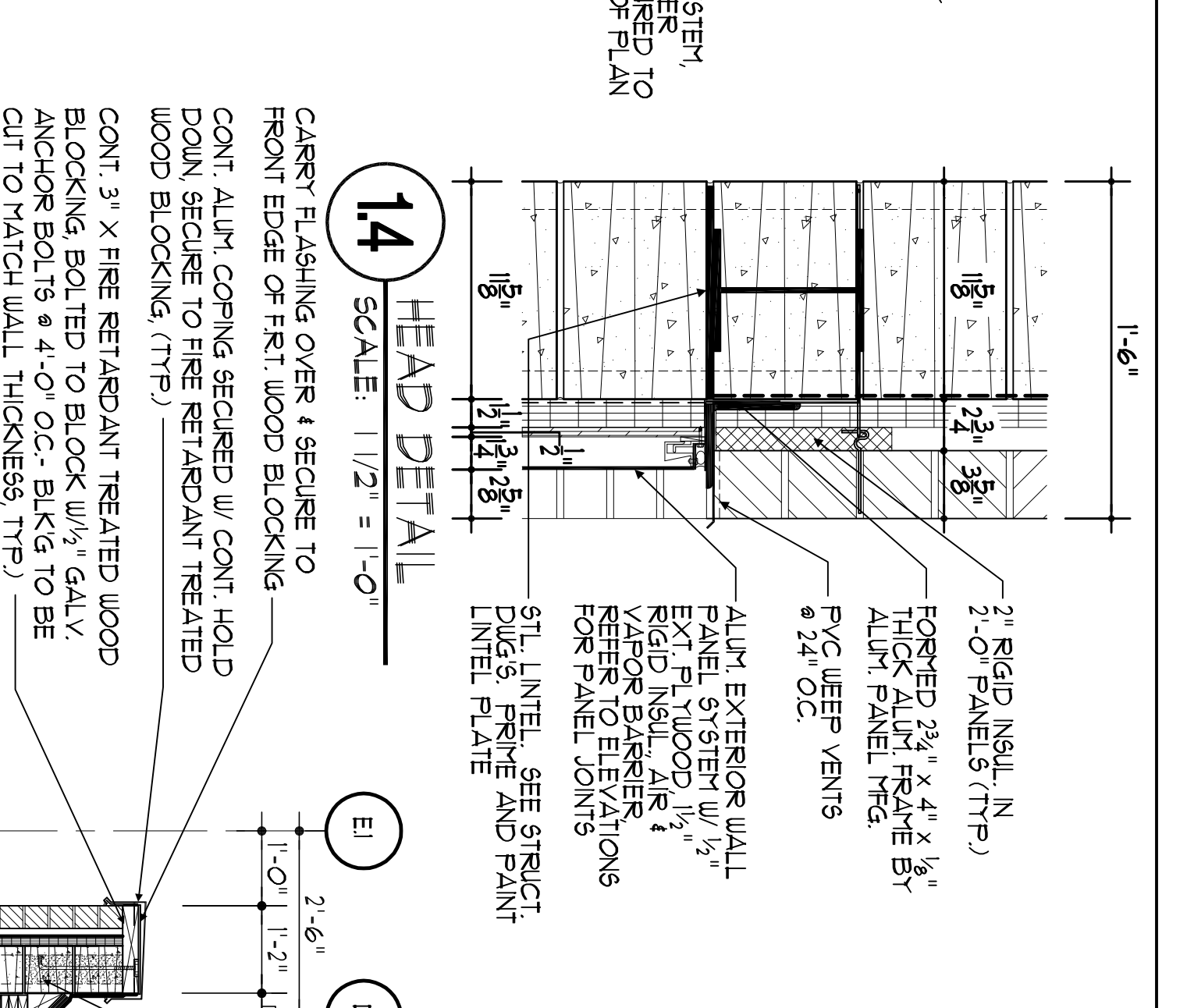
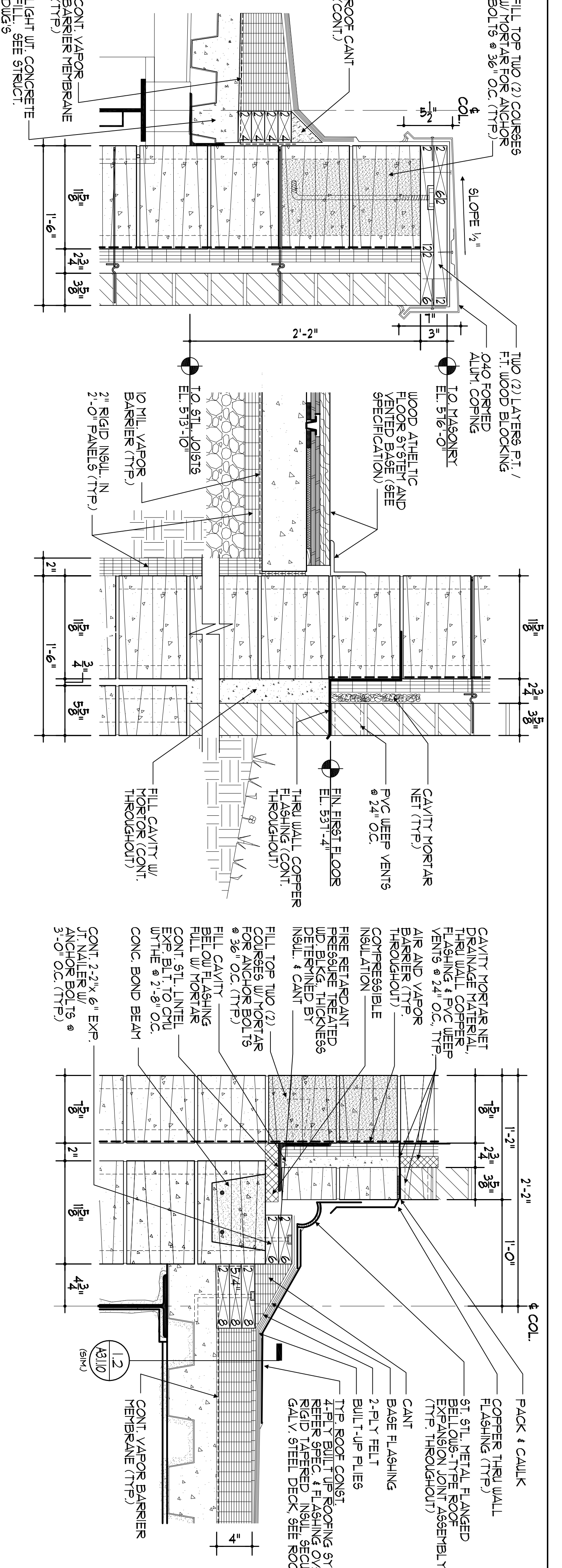
DATE: 11/21/12
 DRAWN BY: JMC



<p>100% NJDCA CONSTRUCTION DOCUMENTS SUBMISSION FOR:</p> <p>NEW PHILLIPSBURG HIGH SCHOOL DOE# 4100-N01-04-1000 SDA# NT-0003-C02</p> <p>TOWN OF PHILLIPSBURG UPPER BELVIDERE ROAD LOT 44 / BLOCK 2 PHILLIPSBURG, NEW JERSEY 08865</p>		<p>SDA STATE OF NEW JERSEY SCHOOL DEVELOPMENT AUTHORITY</p>	<p>DesignIdeas Group Architects & Planners</p>	<p>PROJECT # 2008.9366.00</p>
<p>ADDITIONAL #1 11-21-12</p> <p>NJSDA REVISIONS 09-12-12</p> <p>NJSDA COMMENTS 09-04-11</p> <p>NJSDA COMMENTS 08-12-10</p> <p>NJSDA COMMENTS 05-17-10</p> <p>NJSDA COMMENTS 02-12-10</p> <p>DATE: OCTOBER 13, 2009</p> <p>SCALE: 1/2" = 1'-0"</p>	<p>DRAWING TITLE: WALL SECTIONS</p>	<p>DRAWING NO.: A-3.1.9</p>	<p>DRAWN BY: MC</p>	<p>DATE: 11-21-12</p> <p>SCALE: 1/2" = 1'-0"</p>



<p>SDA N.J. SCHOOL DEVELOPMENT AUTHORITY STATE OF NEW JERSEY</p>	<p>Design Ideas Group ARCHITECTURE + DESIGN + INTERIOR 1000 BELLEVILLE AVENUE SPRINGFIELD, NJ 07081 908.261.1111</p>	<p>PROJECT # 2008-356-00 DATE: 10/13/2009 DRAWING TITLE: WALL SECTIONS</p>	<p>100% NJDCA CONSTRUCTION DOCUMENTS SUBMISSION FOR: NEW PHILLIPSBURG HIGH SCHOOL DOE# 4100-N01-04-1000 SDA# NT-0003-C02 TOWN OF PHILLIPSBURG UPPER BELVIDERE ROAD LOT 44 / BLOCK 2 PHILLIPSBURG, NEW JERSEY 08865</p>	<p>APPENDIX #1: 11-21-12 NJDCA REVISIONS: 6/09-12-12 NJDCA COMMENTS: 03-04-11 NJDCA COMMENTS: 03-08-12-10 NJDCA COMMENTS: 05-17-10 DATE: OCTOBER 13, 2009 SCALE: 1/2" = 1'-0"</p>	<p>DRAWING NO: A-3.1.1 DRAWN BY: MC</p>
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WALL SECTIONS

SUBMISSION	DATE
ADDDENDUM #1	11-21-12
NJSDA REVISIONS	09-12-12
NJSDA COMMENTS	09-04-11
NJSDA COMMENTS	08-12-10
NJSDA COMMENTS	05-17-10
NJSDA COMMENTS	02-12-10

DATE: OCTOBER 13, 2009
 SCALE: 1/2" = 1'-0"

100% NJCA CONSTRUCTION DOCUMENTS SUBMISSION FOR:

NEW PHILLIPSBURG HIGH SCHOOL
 DOE# 4100-N01-04-1000
 SDA# NT-0003-C02

TOWN OF PHILLIPSBURG
 UPPER BELVIDERE ROAD LOT 44 / BLOCK 2
 PHILLIPSBURG, NEW JERSEY 08865

SDA
 STATE OF NEW JERSEY
 NJ SCHOOL DEVELOPMENT AUTHORITY

Design Ideas Group
 Architects + Planners + Interiors + Design + Construction

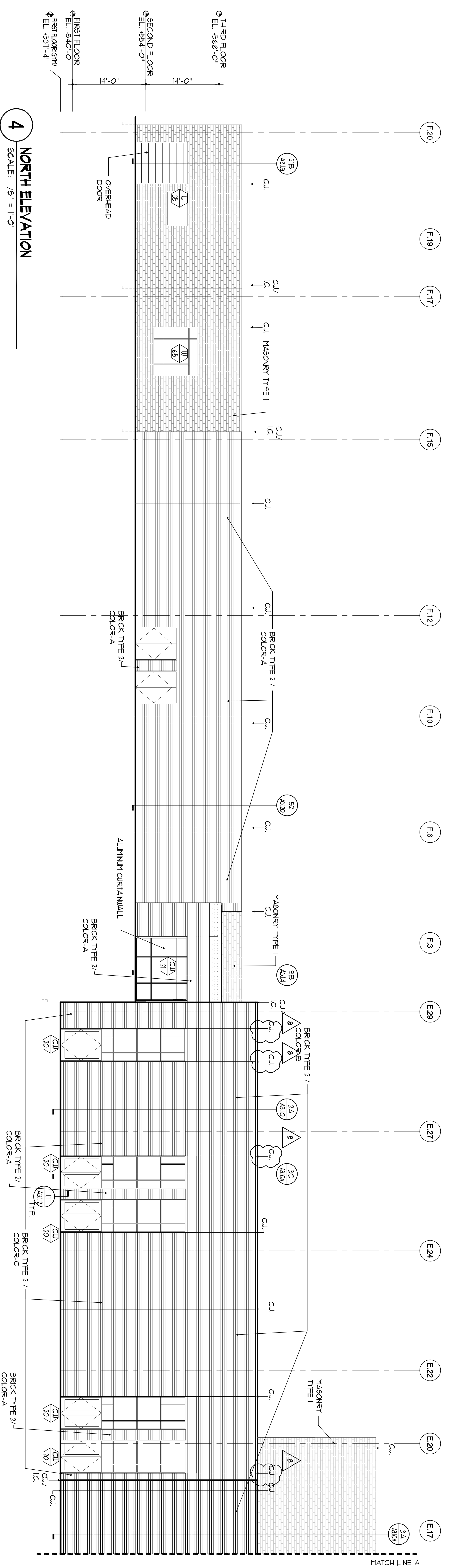
PROJECT #: 2008.956.00

DATE: 10/13/09

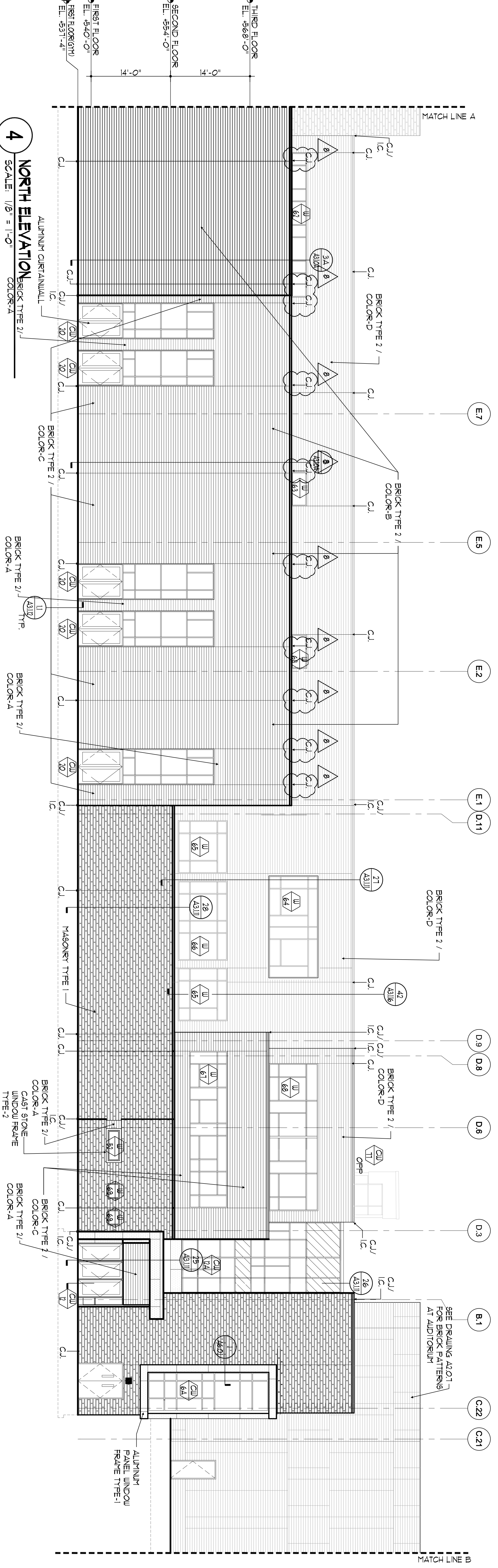
A-3.1.0a

DRAWING NO.: A-3.1.0a

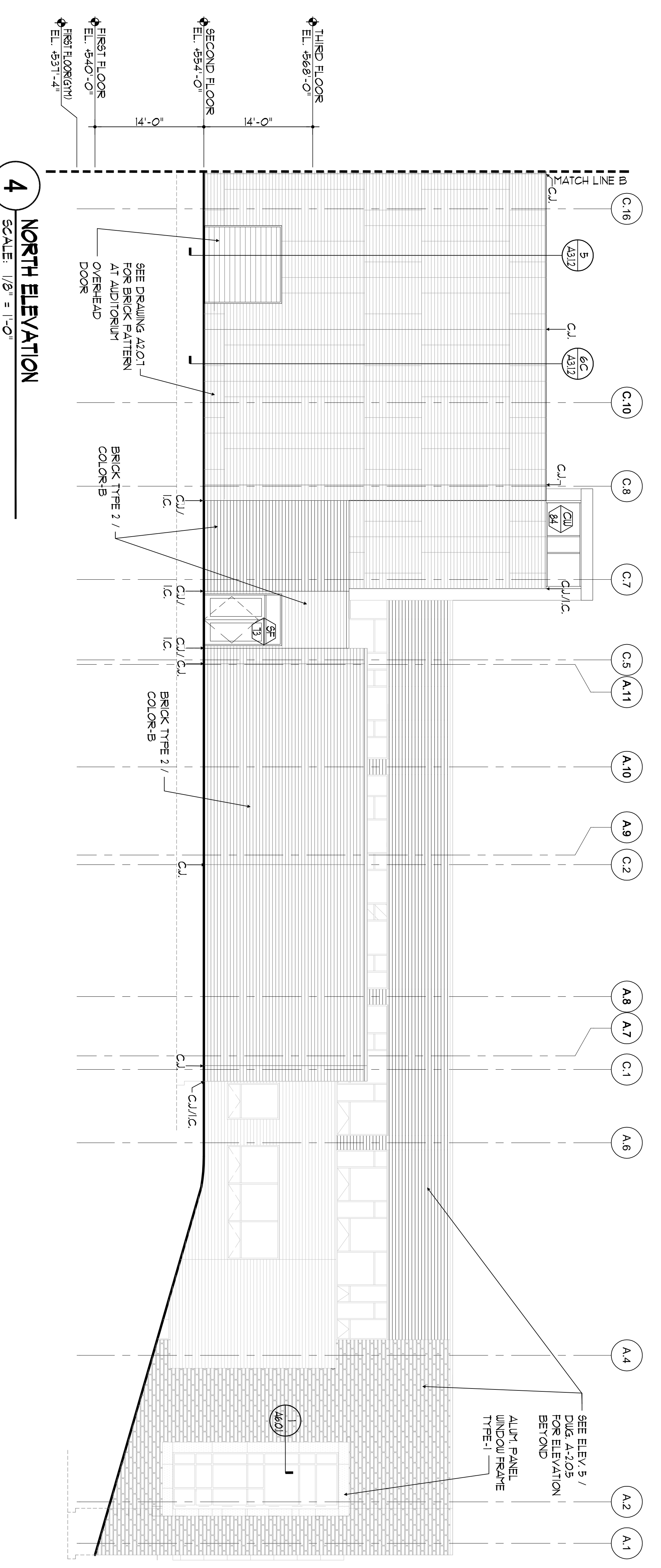
DRAWN BY: CMK



4 NORTH ELEVATION
SCALE: 1/8" = 1'-0"



4 NORTH ELEVATION
SCALE: 1/8" = 1'-0"



4 NORTH ELEVATION
SCALE: 1/8" = 1'-0"

MASONRY LEGEND:

SYMBOL	DESCRIPTION	SIZE	COLOR
[Pattern]	MASONRY TYPE 1	3 5/8" x 3 5/8" x 23 5/8"	SEE SPEC
[Pattern]	BRICK TYPE 2	3 5/8" x 3 5/8" x 9 5/8"	BLIND *
[Pattern]	BRICK TYPE 3	3 5/8" x 3 5/8" x 9 5/8"	COLOR 1 / COLOR 2 ***

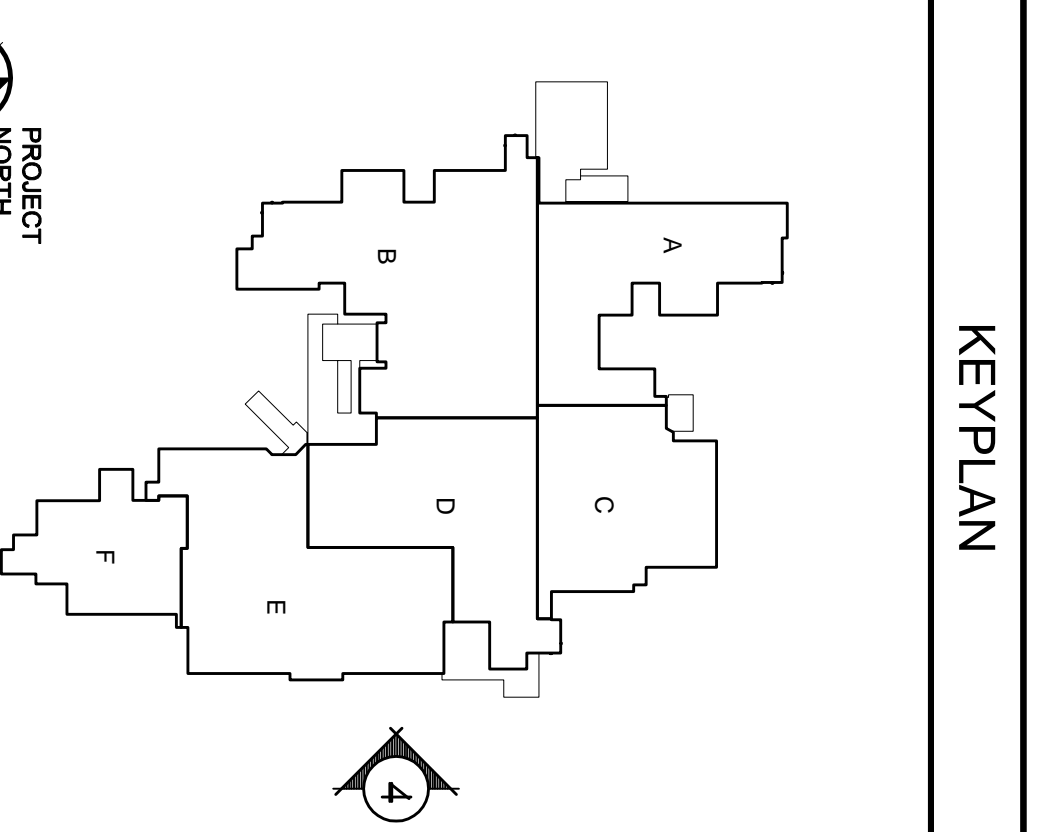
* BLIND - COMPARISON OF COLORS. A THRU E-SEE SPEC
 ** REFER TO ELEVATION SPEC FOR SPECIFIC COLOR
 *** AT ALL AREAS OF BRICK TYPE 2/COLOR A JOINTS TO BE FLUSH

JOINT LEGEND:

CJ CONTROL JOINT (MASONRY VENEER)
 CJ/IC CONTROL JOINT @ INSIDE CORNER (MASONRY VENEER)
 P-J PANEL JOINT (COMPOSITE ALUMINUM PANEL JOINTS REFER TO SPECIFICATIONS FOR MINIMUM AND MAXIMUM PANEL DIMENSIONS)

GENERAL NOTES:

BRICK & MASONRY PATTERNS USED ON BUILDING ELEVATIONS ARE NOT NECESSARILY TO SCALE AND ARE NOT TO BE USED FOR CONSTRUCTION INFORMATION. REFER TO WALL SECTIONS FOR CONSTRUCTION INFORMATION.



APPENDIX #1	Δ 11-21-12
NJSDA REVISIONS	Δ 09-12-12
NJSDA COMMENTS	Δ 09-04-11
NJSDA COMMENTS	Δ 08-12-10
NJSDA COMMENTS	Δ 05-17-10
NJSDA COMMENTS	Δ 02-12-10
DATE:	OCTOBER 13, 2009
SCALE:	1/8" = 1'-0"

DRAWING TITLE:
PARTIAL BUILDING ELEVATIONS

DRAWING NO.:
A-2.0.4

DRAWN BY: AKS

SUBMISSION	DATE

100% NJDCA CONSTRUCTION DOCUMENTS SUBMISSION FOR:
NEW PHILLIPSBURG HIGH SCHOOL
 DOE# 4100-N01-04-1000
 SDA# NT-0003-C02

TOWN OF PHILLIPSBURG
 UPPER BELVIDERE ROAD LOT 44 / BLOCK 2
 PHILLIPSBURG, NEW JERSEY 08865

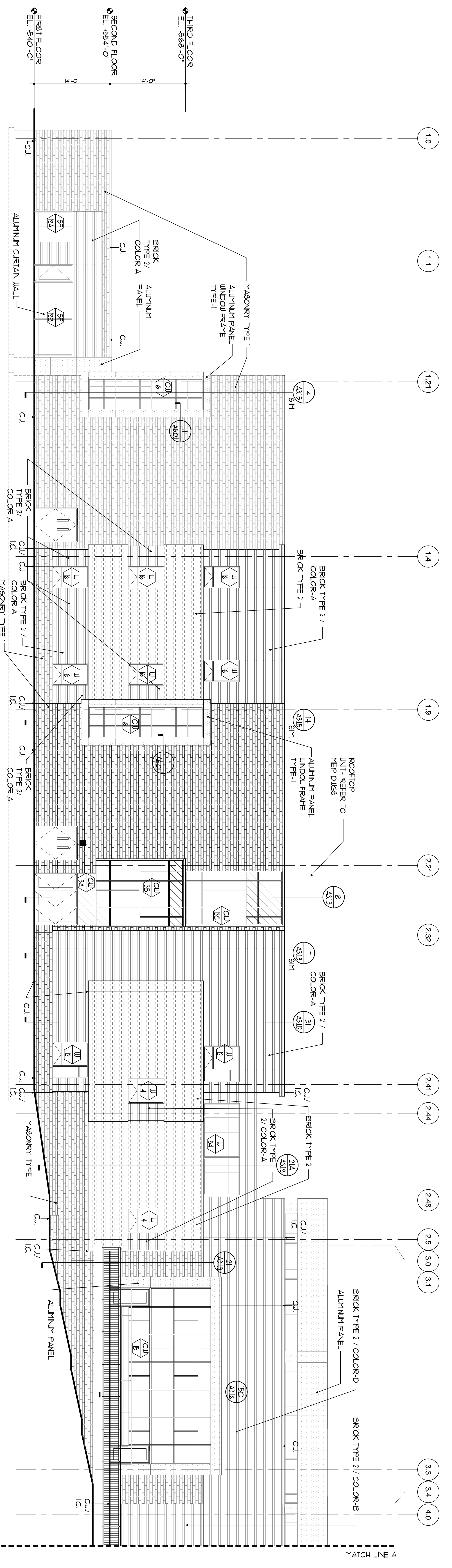
DesignIdeasGroup
 ARCHITECTURE + PLANNING + ILLUSTRATION

PROJECT # - 2008-356-00

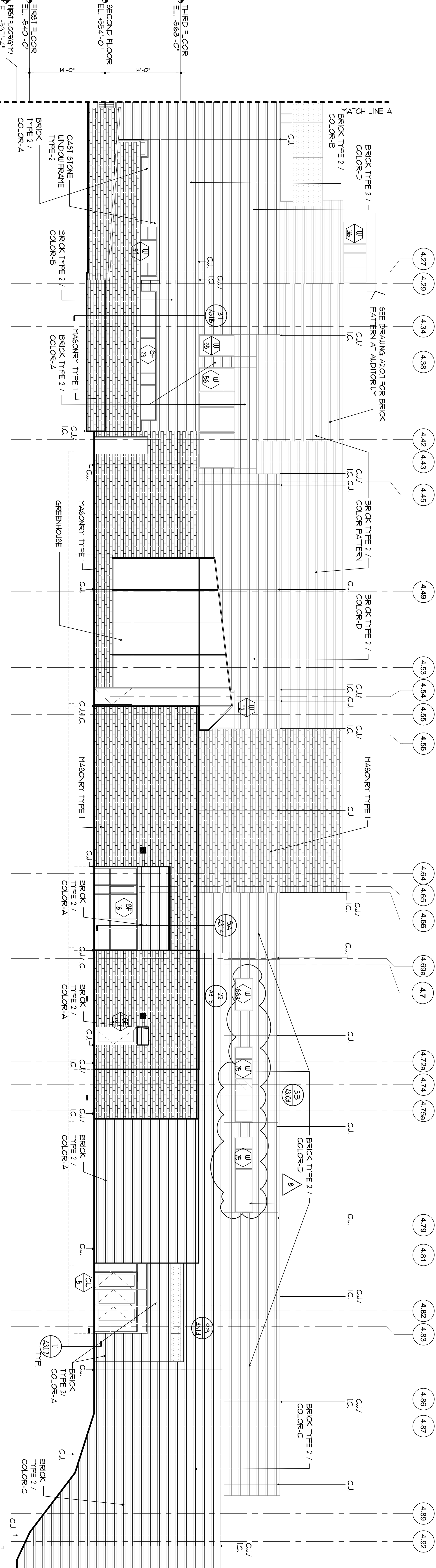
PHILLIPSBURG, NJ 08865
 100 BELVIDERE ROAD, SUITE 200
 PHILLIPSBURG, NJ 08865
 TEL: 908.859.1111
 FAX: 908.859.1112
 WWW.DESIGNIDEASGROUP.COM

SDA
 NJ SCHOOL DEVELOPMENT AUTHORITY
 STATE OF NEW JERSEY

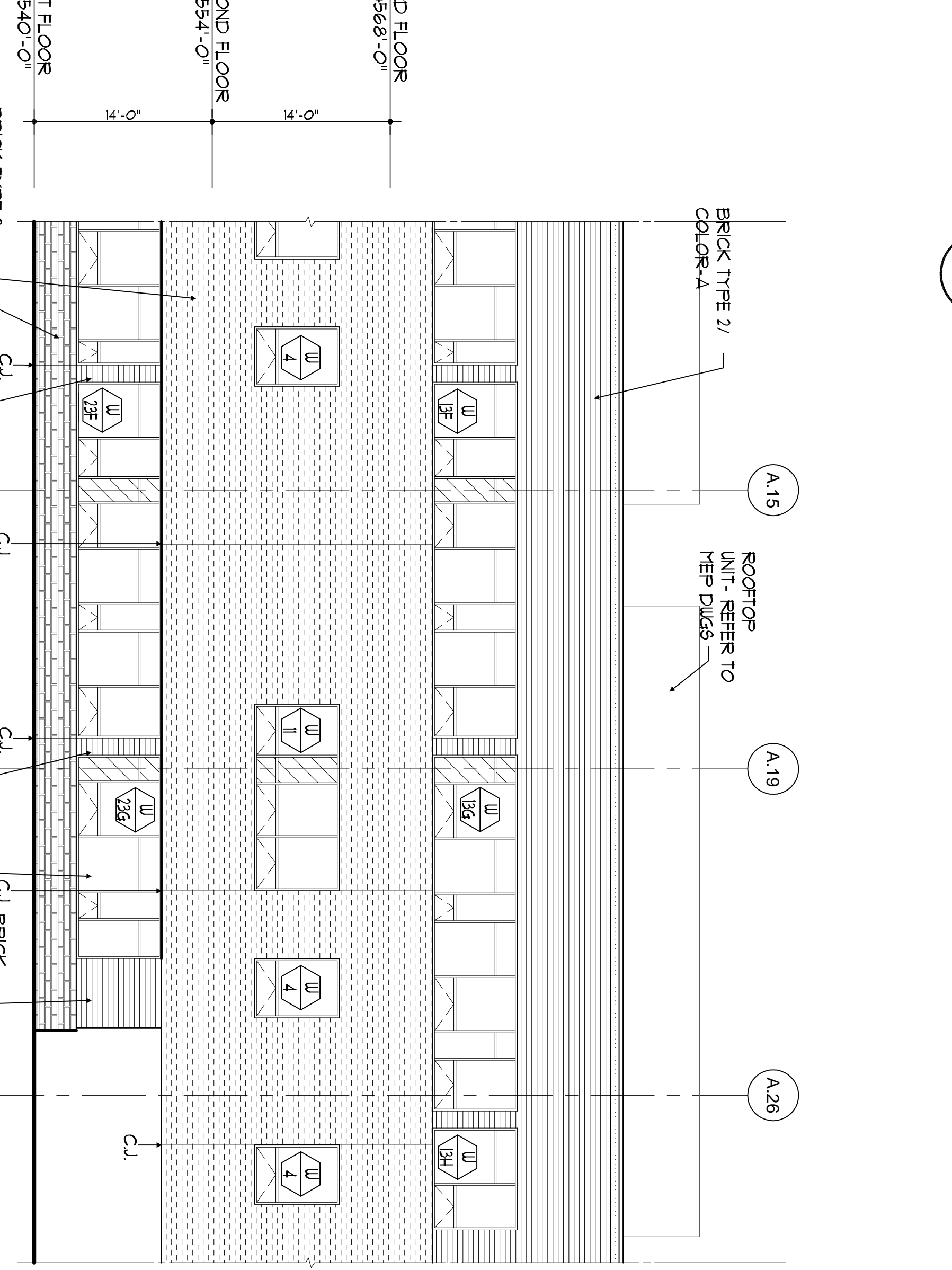
FORMER BELLEVILLE HIGH SCHOOL



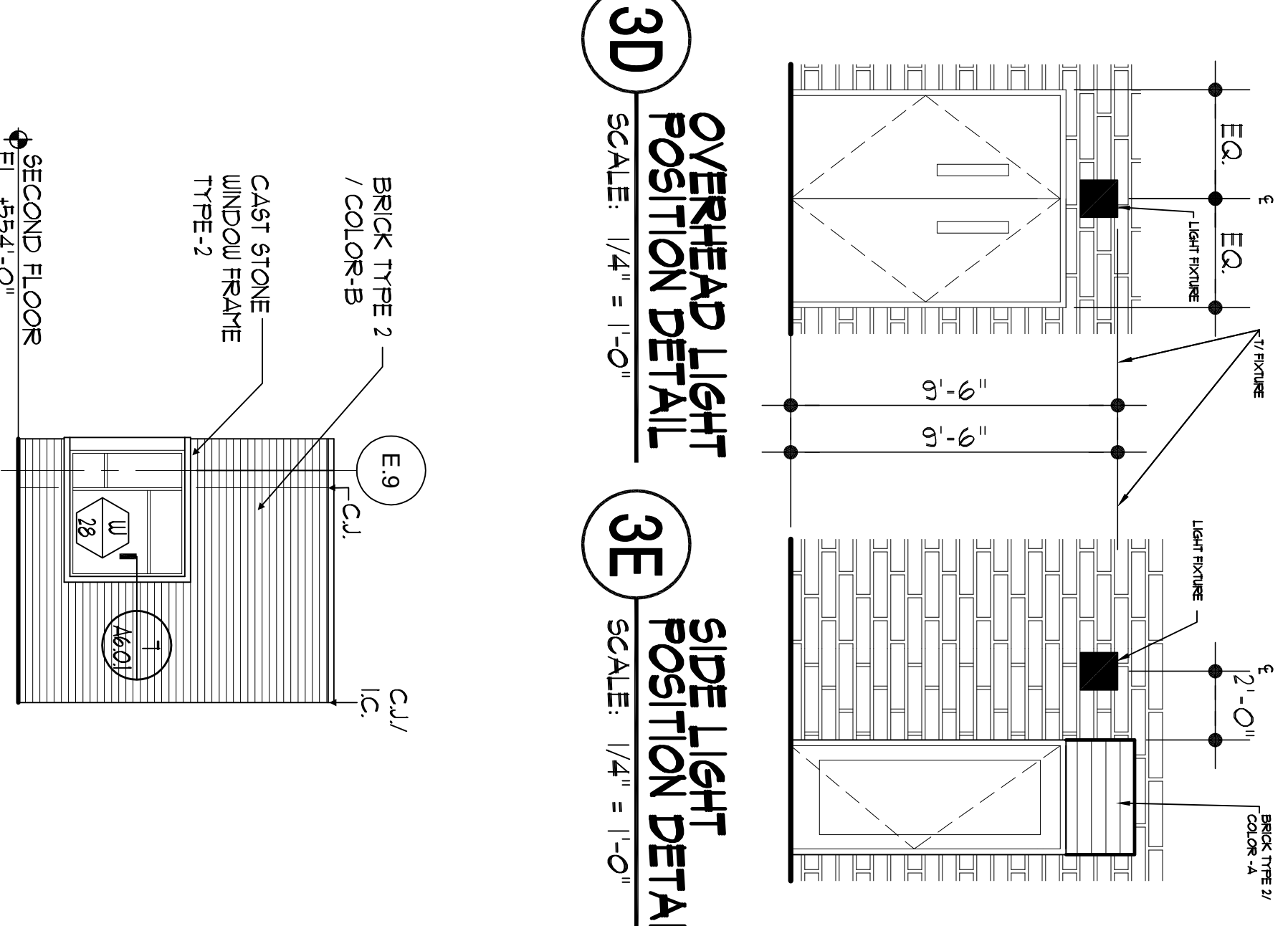
3 EAST ELEVATION
SCALE: 1/8" = 1'-0"



3 EAST ELEVATION
SCALE: 1/8" = 1'-0"

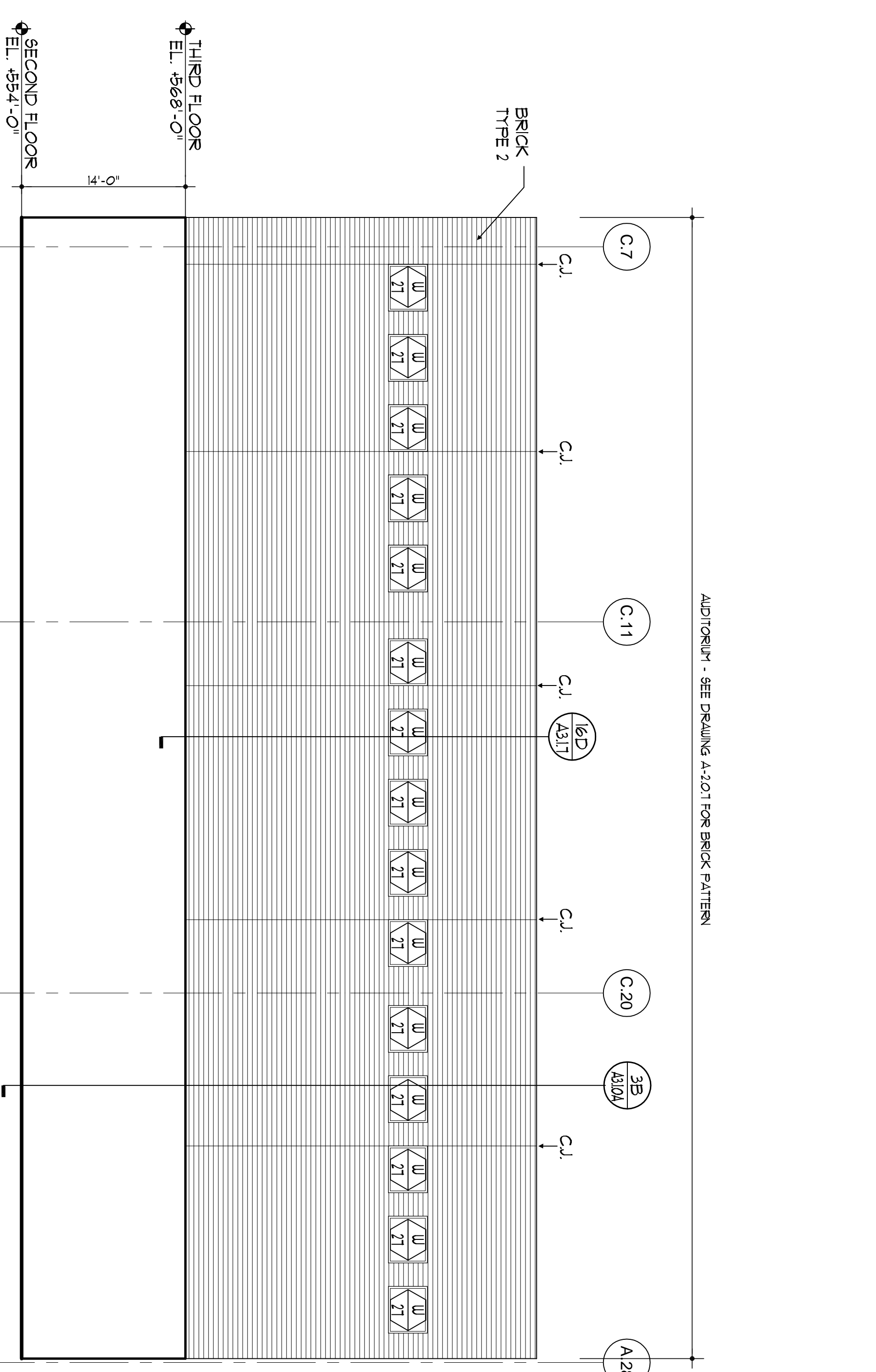


3A SOUTH ELEVATION - PARTIAL
SCALE: 1/8" = 1'-0"



3D OVERHEAD LIGHT POSITION DETAIL
SCALE: 1/4" = 1'-0"

3E SIDE LIGHT POSITION DETAIL
SCALE: 1/4" = 1'-0"



3B NORTH ELEVATION - PARTIAL
SCALE: 1/8" = 1'-0"

3C SOUTH ELEVATION - PARTIAL
SCALE: 1/8" = 1'-0"

MASONRY LEGEND:

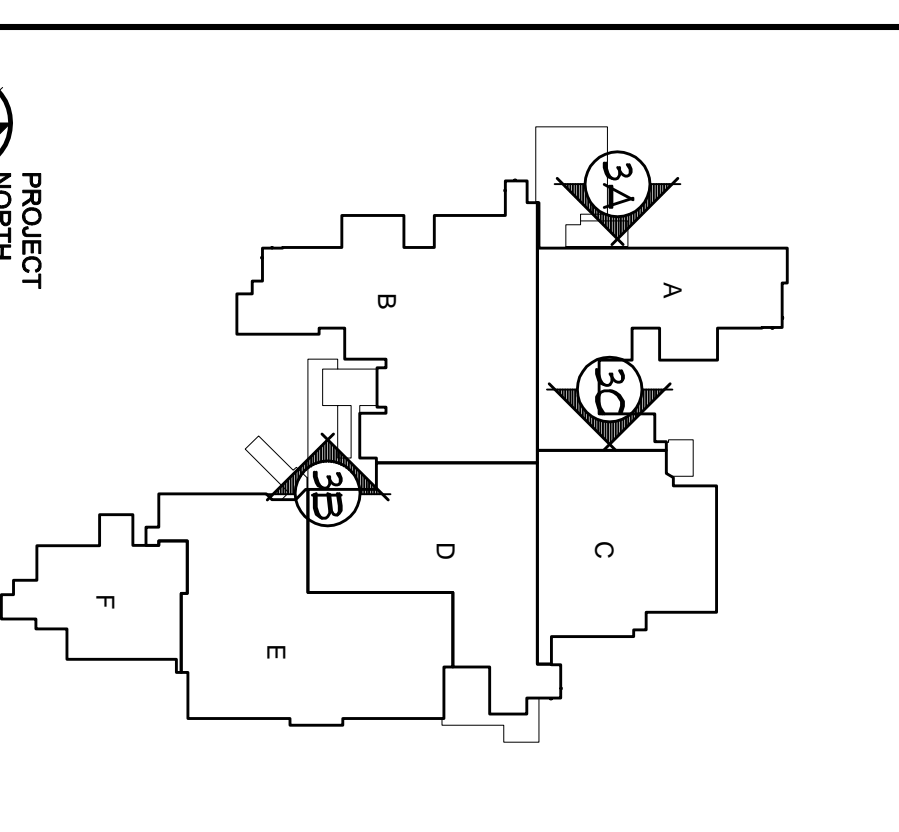
SYMBOL	DESCRIPTION	SIZE	COLOR
[Pattern]	MASONRY	3 5/8" x 3 5/8" x 23 5/8"	SEE SPEC
[Pattern]	BRICK TYPE 1	3 5/8" x 3 5/8" x 5 5/8"	BLEND 1
[Pattern]	BRICK TYPE 2	3 5/8" x 3 5/8" x 5 5/8"	BLEND 1
[Pattern]	BRICK TYPE 2 / COLOR A	3 5/8" x 3 5/8" x 5 5/8"	BLEND 1
[Pattern]	BRICK TYPE 2 / COLOR B	3 5/8" x 3 5/8" x 5 5/8"	BLEND 1
[Pattern]	BRICK TYPE 2 / COLOR C	3 5/8" x 3 5/8" x 5 5/8"	BLEND 1
[Pattern]	BRICK TYPE 2 / COLOR D	3 5/8" x 3 5/8" x 5 5/8"	BLEND 1

GENERAL NOTES:
 * BLEND - COMBINATION OF COLORS. A THIRD 5/8" SPEC REFERENCE TO SCALE AND ARE NOT TO BE USED FOR COORDINATING MATERIALS.
 *** AT ALL AREAS OF BRICK TYPE 2/COLOR A JOINTS TO BE FLUSH

JOINT LEGEND:
 C.J. CONTROL JOINT (MASONRY VENEER)
 P.J. PANEL JOINT (COMPOSITE ALUM. PANEL JOINTS REFER TO SPECIFICATIONS FOR MINIMUM AND MAXIMUM PANEL DIMENSIONS)

GENERAL NOTES:
 BRICK 1 MASONRY PATTERNS USED ON BUILDING ELEVATIONS ARE NOT NECESSARILY TO SCALE AND ARE NOT TO BE USED FOR COORDINATING MATERIALS. REFER TO DALL SECTIONS FOR COMMON INFORMATION.

KEYPLAN



SDA
 N.J. SCHOOL DEVELOPMENT AUTHORITY
 STATE OF NEW JERSEY
 DESIGNER: Phillipsburg High School

Design Ideas Group
 ARCHITECTURE + DESIGN + ILLUSTRATION
 PROJECT # 2008.956.00

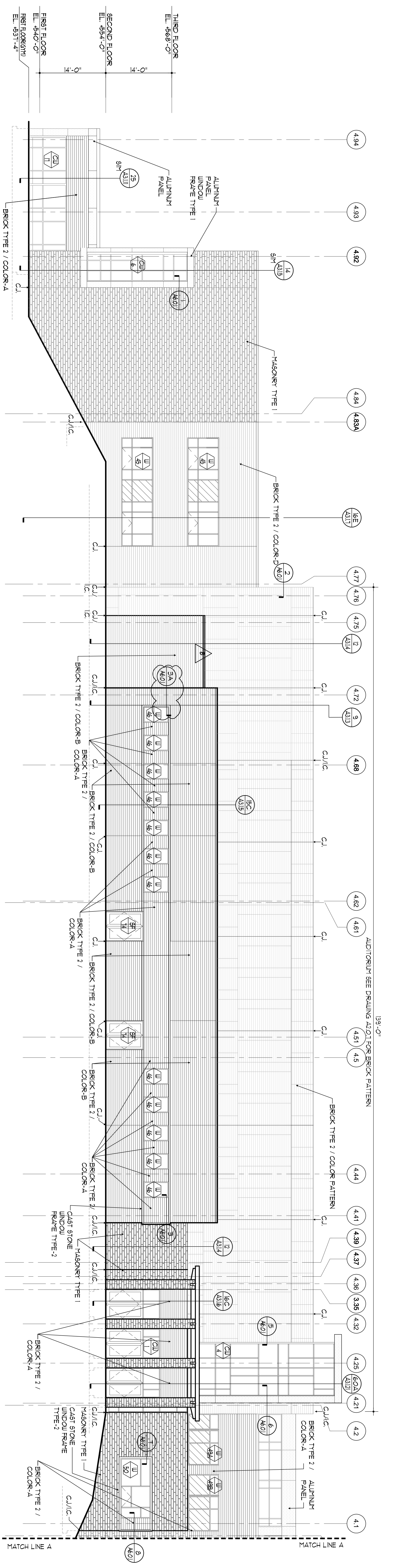
REVISIONS

NO.	DATE	DESCRIPTION
1	11-21-12	ADDITION #1
2	09-12-12	NJSDA REVISIONS
3	09-04-11	NJSDA COMMENTS
4	08-12-10	NJSDA COMMENTS
5	05-17-10	NJSDA COMMENTS
6	02-12-10	NJSDA COMMENTS

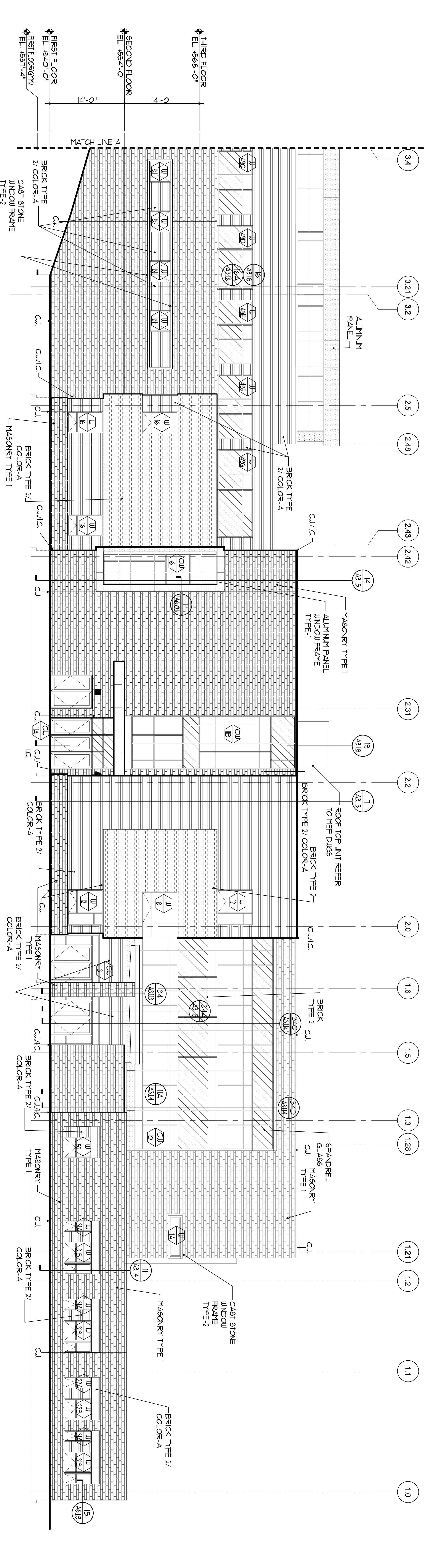
100% NJDCA CONSTRUCTION DOCUMENTS SUBMISSION FOR:
NEW PHILLIPSBURG HIGH SCHOOL
 DOE# 4100-N01-04-1000
 SDA# NT-0003-C02
TOWN OF PHILLIPSBURG
 UPPER BELVIDERE ROAD LOT 44 / BLOCK 2
 PHILLIPSBURG, NEW JERSEY 08865

APPENDIX #1 11-21-12
APPENDIX #2 09-12-12
APPENDIX #3 09-04-11
APPENDIX #4 08-12-10
APPENDIX #5 05-17-10
APPENDIX #6 02-12-10

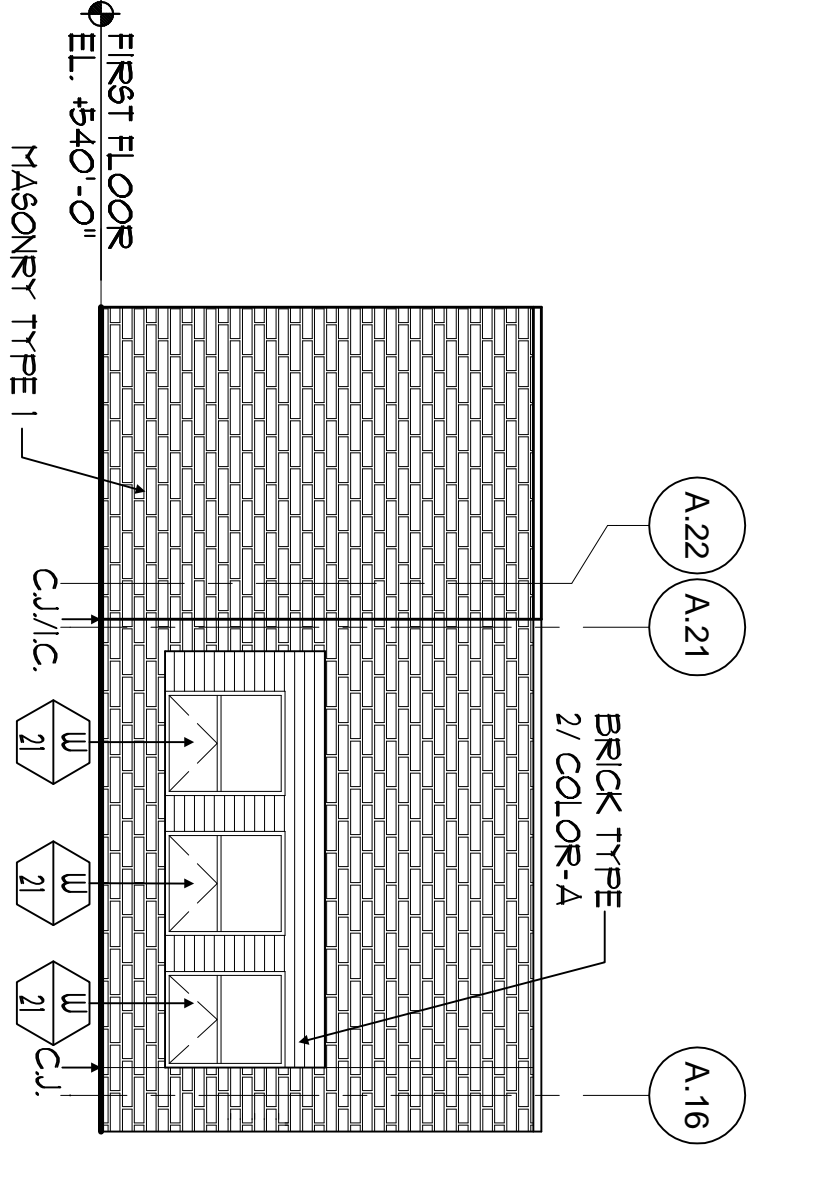
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DRAWING NO.: A-2.0.3
DRAWN BY: AKS



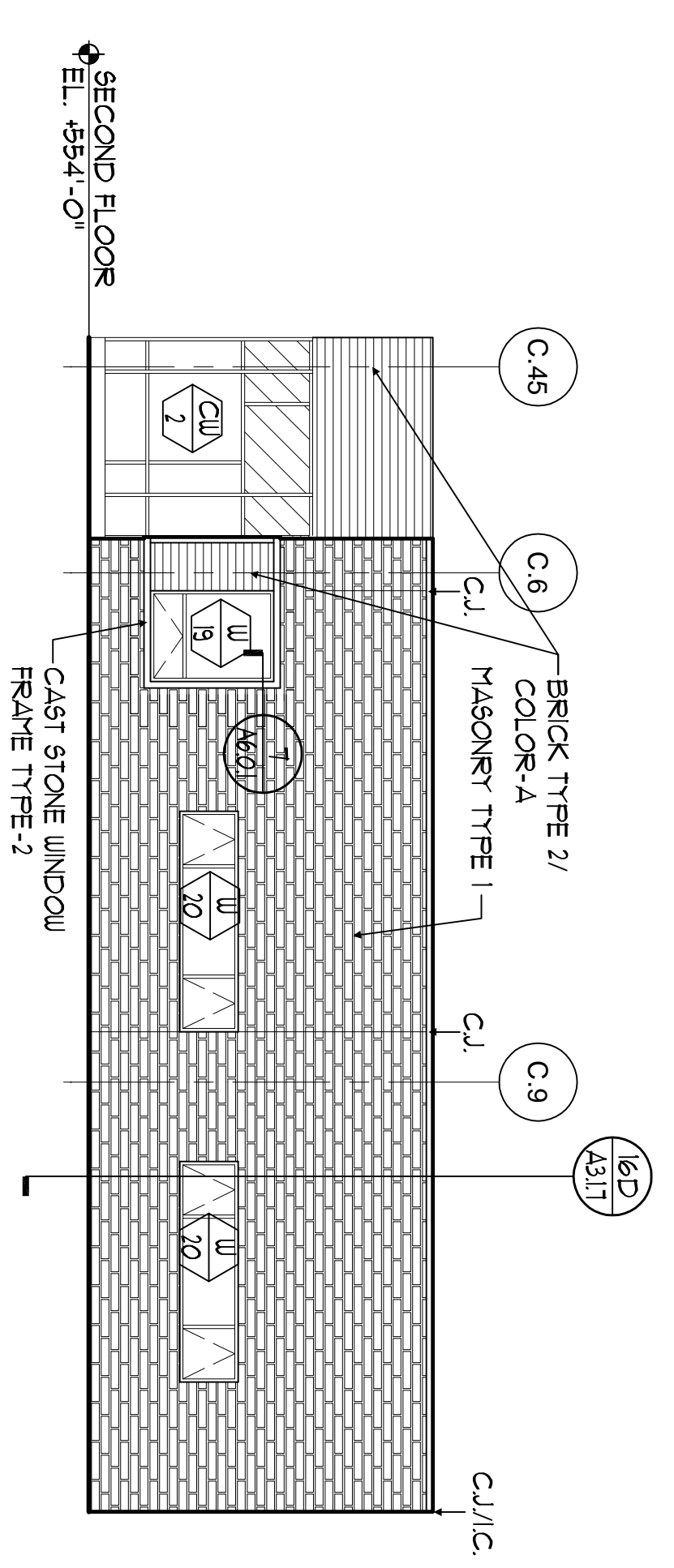
1 WEST ELEVATION
SCALE: 1/8" = 1'-0"



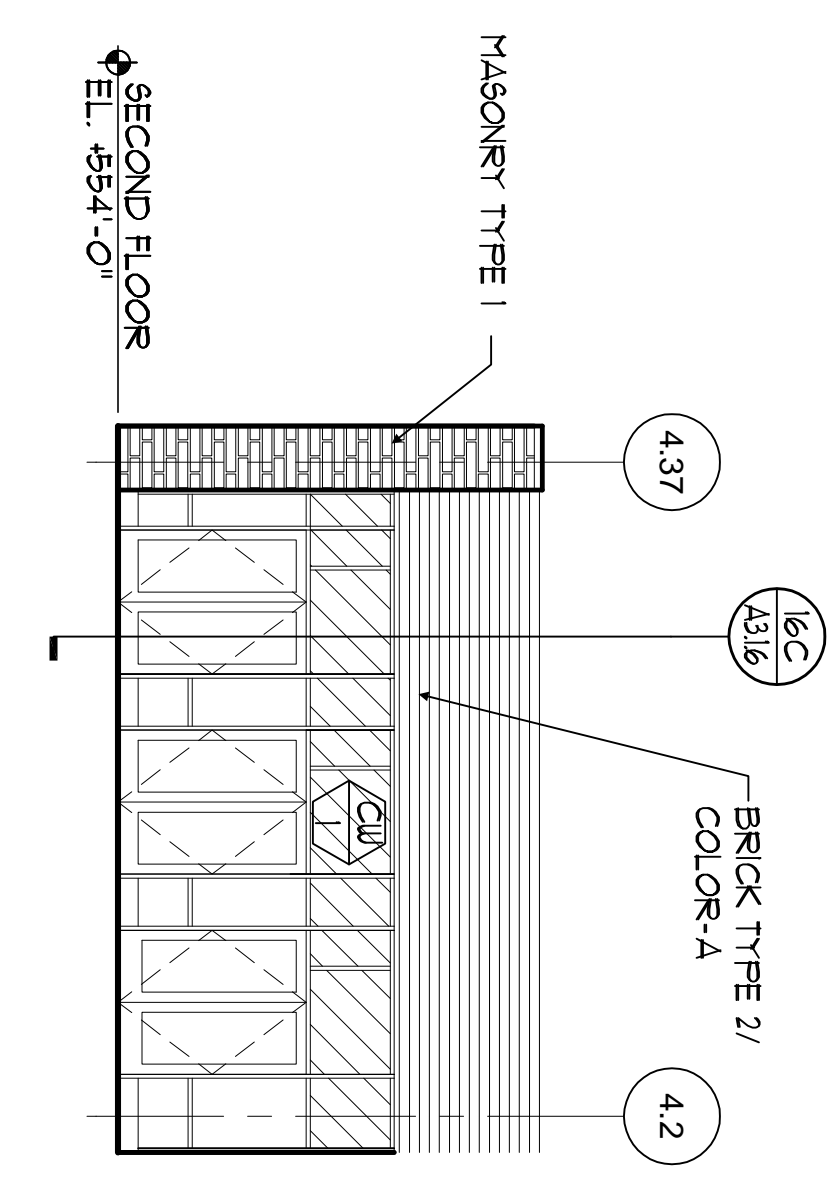
1 WEST ELEVATION
SCALE: 1/8" = 1'-0"



1A NORTH ELEVATION - PARTIAL
SCALE: 1/8" = 1'-0"



1B SOUTH ELEVATION - PARTIAL
SCALE: 1/8" = 1'-0"



1C WEST ELEVATION - PARTIAL
SCALE: 1/8" = 1'-0"

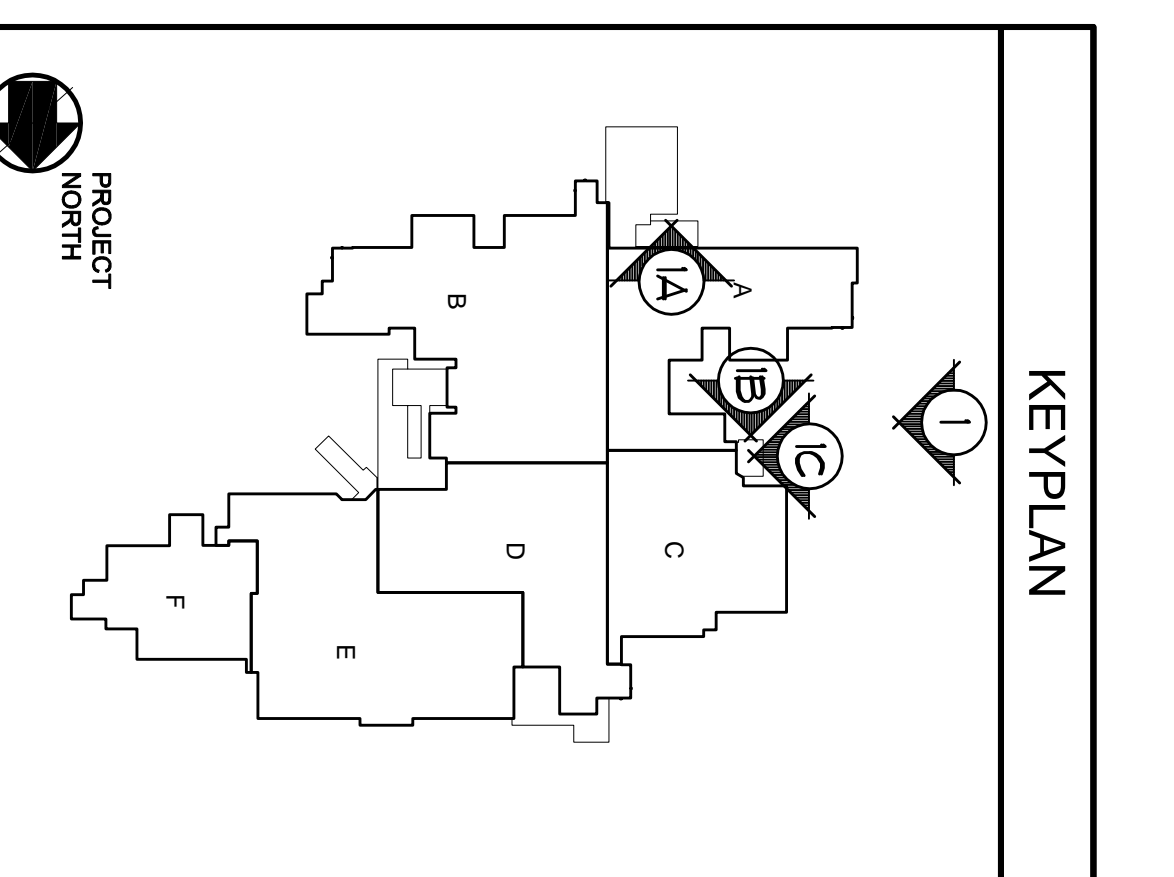
MASONRY LEGEND:

SYMBOL	DESCRIPTION	SIZE	COLOR
[Pattern]	MASONRY TYPE 1	3 5/8" x 3 5/8" x 12 5/8"	SEE SPEC
[Pattern]	BRICK TYPE 1 / COLOR A	3 5/8" x 3 5/8" x 12 5/8"	BLIND *
[Pattern]	BRICK TYPE 2 / COLOR B	3 5/8" x 3 5/8" x 12 5/8"	AB/C/D/E
[Pattern]	BRICK TYPE 2 / COLOR A	3 5/8" x 3 5/8" x 12 5/8"	AB/C/D/E

JOINT LEGEND:

C.J. CONTROL JOINT (MASONRY VENEER)
C.J./I.C. CONTROL JOINT @ INSIDE CORNER (MASONRY VENEER)
P.J. PANEL JOINT (CORNER ALUM. PANEL, JOINTS REFER TO SPECIFICATIONS FOR FINISH AND MASONRY PANEL DIMENSIONS)

GENERAL NOTES:
BRICK & MASONRY PATTERNS USED ON BUILDING ELEVATIONS ARE NOT NECESSARILY IDENTICAL TO THOSE SHOWN ON SECTIONS. CONSULT ARCHITECT FOR MATERIAL SPECIFICATIONS AND MASONRY PANEL DIMENSIONS.
** BLEND - COMBINATION OF COLORS A THRU E - SEE SPEC
*** REFER TO ELEVATION SPEC FOR SPECIFIC COLOR
*** AT ALL AREAS OF BRICK TYPE 2 / COLOR A, JOINTS TO BE FLUSH



ADDITIONAL INFORMATION:

SUBMISSION	DATE
ADDITIONUM #1	11-21-12
NJSDA REVISIONS	09-12-12
NJSDA COMMENTS	09-04-11
NJSDA COMMENTS	08-12-10
NJSDA COMMENTS	05-17-10
NJSDA COMMENTS	02-12-10
DATE:	OCTOBER 13, 2009
SCALE:	1/8" = 1'-0"

DRAWING TITLE:
PARTIAL BUILDING ELEVATIONS

DRAWING NO.:
A-2.0.1

DRAWN BY:
AKS

100% NJDCA CONSTRUCTION DOCUMENTS SUBMISSION FOR:
NEW PHILLIPSBURG HIGH SCHOOL
DOE# 4100-N01-04-1000
SDA# NT-0003-C02

TOWN OF PHILLIPSBURG
UPPER BELVIDERE ROAD LOT 44 / BLOCK 2
PHILLIPSBURG, NEW JERSEY 08865

SDA
NJ School Development Authority
STATE OF NEW JERSEY

Design Ideas Group
ARCHITECTURE + DESIGN + INTERIOR

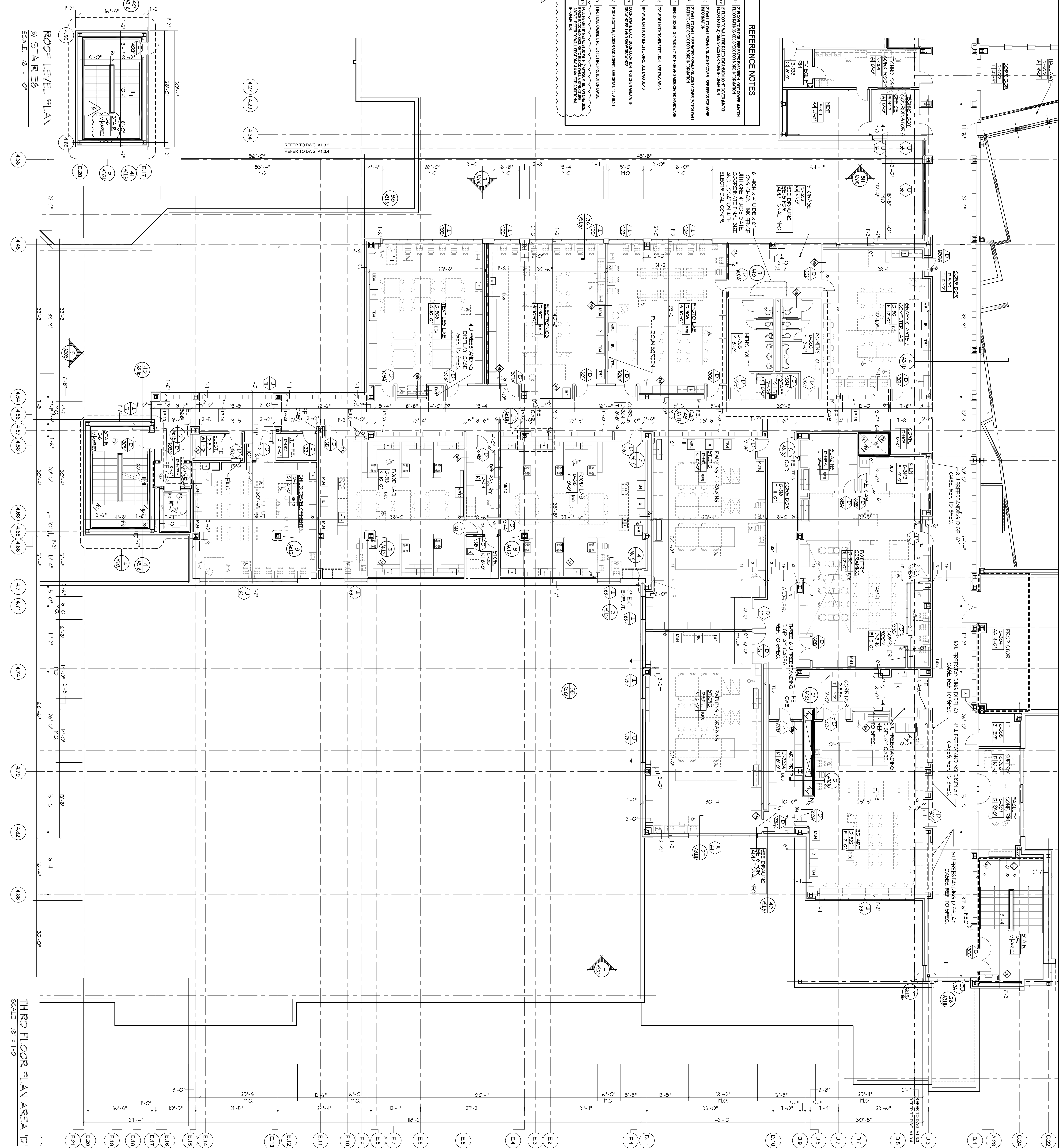
PROJECT #: 2008.956.00

ARCHITECT:
Design Ideas Group
1000 Park Avenue
Newark, NJ 07102
Tel: 973.992.1111
Fax: 973.992.1112
www.designideasgroup.com

DATE: OCTOBER 13, 2009

DRAWING NO.: A-2.0.1

DRAWN BY: AKS



- REFERENCE NOTES**
1. FLOOR TO FLOOR FINISHES SHALL BE AS SHOWN ON THE ARCHITECTURAL DRAWINGS.
 2. FLOOR FINISHES SHALL BE AS SHOWN ON THE ARCHITECTURAL DRAWINGS.
 3. FLOOR FINISHES SHALL BE AS SHOWN ON THE ARCHITECTURAL DRAWINGS.
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 9. FLOOR FINISHES SHALL BE AS SHOWN ON THE ARCHITECTURAL DRAWINGS.
 10. FLOOR FINISHES SHALL BE AS SHOWN ON THE ARCHITECTURAL DRAWINGS.

6" HIGH x 4" WIDE x 6" LONG CHAIN LINK FENCE WITH ONE 4" WIDE GATE AND ONE 4" WIDE GATE. SEE DRAWING FOR ADDITIONAL INFO.

PHOTO LAB
ELECTRONICS
TEXTILES LAB
4th FLOOR LAB
CHILD DEVELOPMENT
FOOD LAB
PAINTER
STORAGE
WOMEN'S TOILET
MEN'S TOILET
RESTROOM
CORRIDOR
CLASSROOM
OFFICE
RECEPTION

PAINTING / PREPARING
PAINTING / PREPARING
PAINTING / PREPARING
PAINTING / PREPARING
PAINTING / PREPARING
PAINTING / PREPARING
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PAINTING / PREPARING
PAINTING / PREPARING
PAINTING / PREPARING

THREE 6" WIDE RESTRAINING CABINETS
THREE 6" WIDE RESTRAINING CABINETS
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SEE DRAWING FOR ADDITIONAL INFO
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SEE DRAWING FOR ADDITIONAL INFO

SCHEDULE OF INTERIOR FINISHES

FLOOR	WALLS	CEILING	ROOFING
1	SEE SPEC	SEE SPEC	SEE SPEC
2	SEE SPEC	SEE SPEC	SEE SPEC
3	SEE SPEC	SEE SPEC	SEE SPEC
4	SEE SPEC	SEE SPEC	SEE SPEC
5	SEE SPEC	SEE SPEC	SEE SPEC
6	SEE SPEC	SEE SPEC	SEE SPEC
7	SEE SPEC	SEE SPEC	SEE SPEC
8	SEE SPEC	SEE SPEC	SEE SPEC
9	SEE SPEC	SEE SPEC	SEE SPEC
10	SEE SPEC	SEE SPEC	SEE SPEC
11	SEE SPEC	SEE SPEC	SEE SPEC
12	SEE SPEC	SEE SPEC	SEE SPEC
13	SEE SPEC	SEE SPEC	SEE SPEC
14	SEE SPEC	SEE SPEC	SEE SPEC
15	SEE SPEC	SEE SPEC	SEE SPEC
16	SEE SPEC	SEE SPEC	SEE SPEC
17	SEE SPEC	SEE SPEC	SEE SPEC
18	SEE SPEC	SEE SPEC	SEE SPEC
19	SEE SPEC	SEE SPEC	SEE SPEC
20	SEE SPEC	SEE SPEC	SEE SPEC
21	SEE SPEC	SEE SPEC	SEE SPEC
22	SEE SPEC	SEE SPEC	SEE SPEC

ACoustical CEILING TILE LEGEND

ACCT	DESCRIPTION
ACT1	24" SQUARE (SEE SPEC)
ACT2	24" SQUARE (SEE SPEC)
ACT3	24" SQUARE (SEE SPEC)
ACT4	24" SQUARE (SEE SPEC)
ACT5	24" SQUARE (SEE SPEC)
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ACT49	24" SQUARE (SEE SPEC)
ACT50	24" SQUARE (SEE SPEC)

KEY PLAN

100% NJDCA CONSTRUCTION DOCUMENTS SUBMISSION FOR:
NEW PHILLIPSBURG HIGH SCHOOL
 DOE# 4100-N01-04-1000
 SDA# NT-0003-C02

TOWN OF PHILLIPSBURG
 UPPER BELVIDERE ROAD LOT 44 / BLOCK 2
 PHILLIPSBURG, NEW JERSEY 08865

APPENDIX #1 11-21-12
NJSDA REVISIONS 6/09-12-12
NJSDA COMMENTS 03-04-11
NJSDA COMMENTS 03-08-12-10
NJSDA COMMENTS 02-12-10
DATE: OCTOBER 13, 2009

DRAWING TITLE:
 THIRD FLOOR PARTIAL PLAN AREA "D"

DRAWING NO.: A-1.3.4
DRAWN BY: [signature]

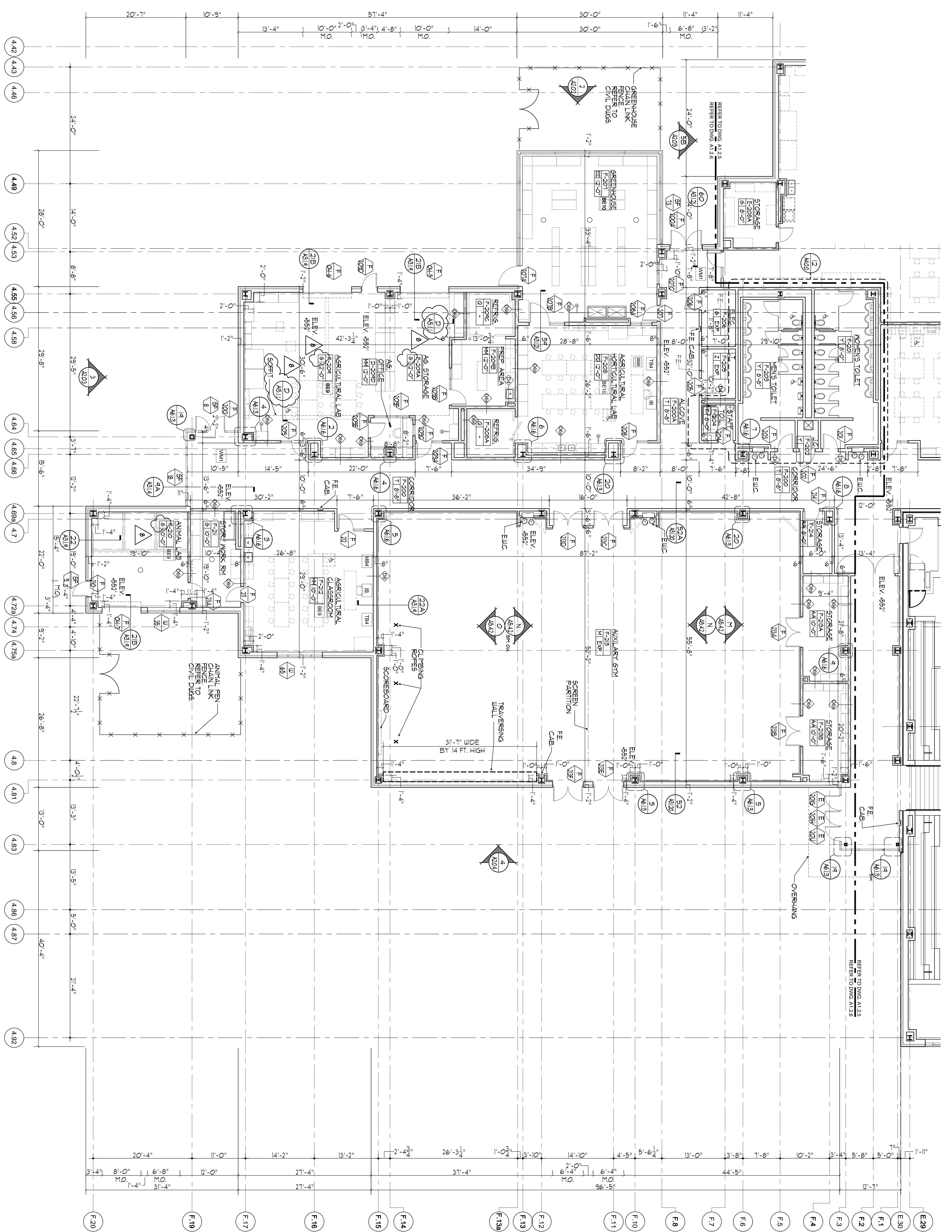
SDA
 STATE OF NEW JERSEY
 N.J. SCHOOL DEVELOPMENT AUTHORITY

Design Ideas Group
 Architects & Planners, Inc.
 100 BELVIDERE ROAD, SUITE 100
 PHILLIPSBURG, NJ 08865
 TEL: 609-683-1111
 FAX: 609-683-1112
 WWW.DESIGNIDEASGROUP.COM

PROJECT #: 2008.956.00

DATE: 10/13/09

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



SECOND FLOOR PLAN AREA F
SCALE: 1/8" = 1'-0"

REFERENCE NOTES

- 1) FLOOR TO FLOOR FINISH DIMENSION JOINT COVER MATCH
- 2) FLOOR FINISH TO BE PERFORMED AS SHOWN TO MATCH
- 3) FLOOR FINISH TO MATCH EXISTING JOINT COVER - SEE SPEC FOR MORE INFORMATION
- 4) WALL TO WALL FINISH DIMENSION JOINT COVER MATCH WALL
- 5) WALL TO WALL FINISH DIMENSION JOINT COVER MATCH WALL
- 6) FLOOR DOOR: 3'0" WIDE 7'0" HIGH AND ASSOCIATED HARDWARE
- 7) WALL FINISH TO MATCH J.L. - SEE DWG 8-11
- 8) FLOOR FINISH TO MATCH J.L. - SEE DWG 8-11
- 9) FLOOR FINISH TO MATCH J.L. - SEE DWG 8-11
- 10) FLOOR FINISH TO MATCH J.L. - SEE DWG 8-11
- 11) FLOOR FINISH TO MATCH J.L. - SEE DWG 8-11
- 12) FLOOR FINISH TO MATCH J.L. - SEE DWG 8-11
- 13) FLOOR FINISH TO MATCH J.L. - SEE DWG 8-11
- 14) FLOOR FINISH TO MATCH J.L. - SEE DWG 8-11
- 15) FLOOR FINISH TO MATCH J.L. - SEE DWG 8-11
- 16) FLOOR FINISH TO MATCH J.L. - SEE DWG 8-11
- 17) FLOOR FINISH TO MATCH J.L. - SEE DWG 8-11
- 18) FLOOR FINISH TO MATCH J.L. - SEE DWG 8-11
- 19) FLOOR FINISH TO MATCH J.L. - SEE DWG 8-11
- 20) FLOOR FINISH TO MATCH J.L. - SEE DWG 8-11

SCHEDULE OF INTERIOR FINISHES

FLOOR	ROOM	WALLS	CEILING	FLOORING
2	ACT 1	PAINT	ACT 1	ACT 1
2	ACT 2	PAINT	ACT 1	ACT 1
2	ACT 3	PAINT	ACT 1	ACT 1
2	ACT 4	PAINT	ACT 1	ACT 1
2	ACT 5	PAINT	ACT 1	ACT 1
2	ACT 6	PAINT	ACT 1	ACT 1
2	ACT 7	PAINT	ACT 1	ACT 1
2	ACT 8	PAINT	ACT 1	ACT 1
2	ACT 9	PAINT	ACT 1	ACT 1
2	ACT 10	PAINT	ACT 1	ACT 1
2	ACT 11	PAINT	ACT 1	ACT 1
2	ACT 12	PAINT	ACT 1	ACT 1
2	ACT 13	PAINT	ACT 1	ACT 1
2	ACT 14	PAINT	ACT 1	ACT 1
2	ACT 15	PAINT	ACT 1	ACT 1
2	ACT 16	PAINT	ACT 1	ACT 1
2	ACT 17	PAINT	ACT 1	ACT 1
2	ACT 18	PAINT	ACT 1	ACT 1
2	ACT 19	PAINT	ACT 1	ACT 1
2	ACT 20	PAINT	ACT 1	ACT 1
2	ACT 21	PAINT	ACT 1	ACT 1
2	ACT 22	PAINT	ACT 1	ACT 1
2	ACT 23	PAINT	ACT 1	ACT 1
2	ACT 24	PAINT	ACT 1	ACT 1
2	ACT 25	PAINT	ACT 1	ACT 1
2	ACT 26	PAINT	ACT 1	ACT 1
2	ACT 27	PAINT	ACT 1	ACT 1
2	ACT 28	PAINT	ACT 1	ACT 1
2	ACT 29	PAINT	ACT 1	ACT 1
2	ACT 30	PAINT	ACT 1	ACT 1
2	ACT 31	PAINT	ACT 1	ACT 1
2	ACT 32	PAINT	ACT 1	ACT 1
2	ACT 33	PAINT	ACT 1	ACT 1
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2	ACT 40	PAINT	ACT 1	ACT 1
2	ACT 41	PAINT	ACT 1	ACT 1
2	ACT 42	PAINT	ACT 1	ACT 1
2	ACT 43	PAINT	ACT 1	ACT 1
2	ACT 44	PAINT	ACT 1	ACT 1
2	ACT 45	PAINT	ACT 1	ACT 1
2	ACT 46	PAINT	ACT 1	ACT 1
2	ACT 47	PAINT	ACT 1	ACT 1
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2	ACT 51	PAINT	ACT 1	ACT 1
2	ACT 52	PAINT	ACT 1	ACT 1
2	ACT 53	PAINT	ACT 1	ACT 1
2	ACT 54	PAINT	ACT 1	ACT 1
2	ACT 55	PAINT	ACT 1	ACT 1
2	ACT 56	PAINT	ACT 1	ACT 1
2	ACT 57	PAINT	ACT 1	ACT 1
2	ACT 58	PAINT	ACT 1	ACT 1
2	ACT 59	PAINT	ACT 1	ACT 1
2	ACT 60	PAINT	ACT 1	ACT 1

ACUSTICAL CEILING TILE LEGEND

NO.	DESCRIPTION
1	3/8" PLASTER (REPLACEMENT)
2	3/4" Gypsum Board (Sound Attenuation)
3	5/8" Gypsum Board (Sound Attenuation)
4	1/2" Gypsum Board (Sound Attenuation)
5	1/4" Gypsum Board (Sound Attenuation)
6	1/8" Gypsum Board (Sound Attenuation)
7	3/16" Gypsum Board (Sound Attenuation)
8	1/16" Gypsum Board (Sound Attenuation)
9	1/32" Gypsum Board (Sound Attenuation)
10	1/64" Gypsum Board (Sound Attenuation)
11	1/128" Gypsum Board (Sound Attenuation)
12	1/256" Gypsum Board (Sound Attenuation)
13	1/512" Gypsum Board (Sound Attenuation)
14	1/1024" Gypsum Board (Sound Attenuation)
15	1/2048" Gypsum Board (Sound Attenuation)
16	1/4096" Gypsum Board (Sound Attenuation)
17	1/8192" Gypsum Board (Sound Attenuation)
18	1/16384" Gypsum Board (Sound Attenuation)
19	1/32768" Gypsum Board (Sound Attenuation)
20	1/65536" Gypsum Board (Sound Attenuation)
21	1/131072" Gypsum Board (Sound Attenuation)
22	1/262144" Gypsum Board (Sound Attenuation)
23	1/524288" Gypsum Board (Sound Attenuation)
24	1/1048576" Gypsum Board (Sound Attenuation)
25	1/2097152" Gypsum Board (Sound Attenuation)
26	1/4194304" Gypsum Board (Sound Attenuation)
27	1/8388608" Gypsum Board (Sound Attenuation)
28	1/16777216" Gypsum Board (Sound Attenuation)
29	1/33554432" Gypsum Board (Sound Attenuation)
30	1/67108864" Gypsum Board (Sound Attenuation)
31	1/134217728" Gypsum Board (Sound Attenuation)
32	1/268435456" Gypsum Board (Sound Attenuation)
33	1/536870912" Gypsum Board (Sound Attenuation)
34	1/1073741824" Gypsum Board (Sound Attenuation)
35	1/2147483648" Gypsum Board (Sound Attenuation)
36	1/4294967296" Gypsum Board (Sound Attenuation)
37	1/8589934592" Gypsum Board (Sound Attenuation)
38	1/17179869184" Gypsum Board (Sound Attenuation)
39	1/34359738368" Gypsum Board (Sound Attenuation)
40	1/68719476736" Gypsum Board (Sound Attenuation)
41	1/137438953472" Gypsum Board (Sound Attenuation)
42	1/274877906944" Gypsum Board (Sound Attenuation)
43	1/549755813888" Gypsum Board (Sound Attenuation)
44	1/1099511627776" Gypsum Board (Sound Attenuation)
45	1/2199023255552" Gypsum Board (Sound Attenuation)
46	1/4398046511104" Gypsum Board (Sound Attenuation)
47	1/8796093022208" Gypsum Board (Sound Attenuation)
48	1/17592186444416" Gypsum Board (Sound Attenuation)
49	1/35184372888832" Gypsum Board (Sound Attenuation)
50	1/70368745777664" Gypsum Board (Sound Attenuation)

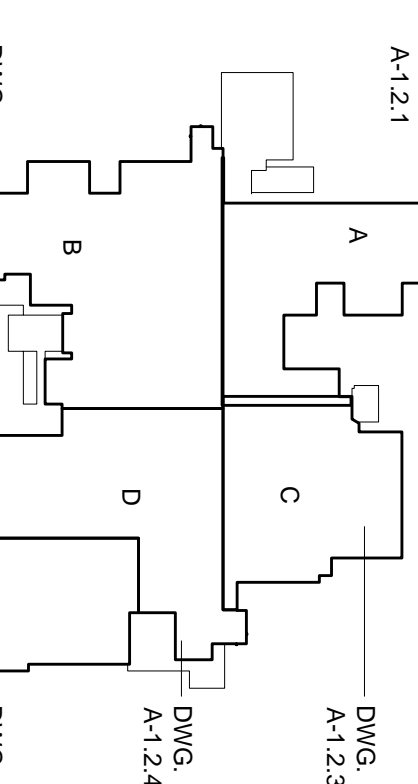
TYPICAL NOTES

NOTE: ALL WORK TO BE DONE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND THE SPECIFICATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING UTILITIES AND STRUCTURES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ACCESS TO ALL ADJACENT AREAS AT ALL TIMES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANING UP ALL DEBRIS AND WASTE MATERIAL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING FINISHES AND MATERIALS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE PROJECT SITE AT ALL TIMES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY INSURANCE COVERAGE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY BONDS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY LICENSES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY REGISTRATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY APPROVALS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY NOTICES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY CERTIFICATES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY ORDERS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY DECREES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY COURT ORDERS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY JUDICIAL DECISIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY LEGAL OPINIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY LEGAL COUNSEL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY LEGAL REPRESENTATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY LEGAL ASSISTANCE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY LEGAL SERVICES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY LEGAL FEES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY LEGAL COSTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY LEGAL EXPENSES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY LEGAL SCHEDULES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY LEGAL TIMELINES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY LEGAL DEADLINES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY LEGAL MILESTONES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY LEGAL MILEMARKERS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY LEGAL MILEPOSTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY LEGAL MILESTONES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY LEGAL MILEMARKERS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY LEGAL MILEPOSTS.

WALL TYPE SCHEDULE

NO.	DESCRIPTION
1	CONCRETE BLOCK
2	CERAMIC TILE
3	PAINT
4	PLASTER
5	GYPSON BOARD
6	BRICK
7	GLASS
8	METAL
9	WOOD
10	STONE
11	CEMENT
12	SAND
13	GRAVEL
14	ASPHALT
15	ROOFING
16	INSULATION
17	VAPOR BARRIER
18	UNDERLAYMENT
19	TERRAZZO
20	POLISHED CONCRETE
21	BUCKLE PLATE
22	WOOD JOIST
23	CONCRETE JOIST
24	STEEL JOIST
25	CORROSION PROTECTED
26	PAINT
27	INSULATION
28	CONCRETE
29	REINFORCED
30	FOUNDATION
31	CONCRETE
32	FOUNDATION
33	CONCRETE
34	FOUNDATION
35	CONCRETE
36	FOUNDATION
37	CONCRETE
38	FOUNDATION
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51	CONCRETE
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57	CONCRETE
58	FOUNDATION
59	CONCRETE
60	FOUNDATION

KEY PLAN



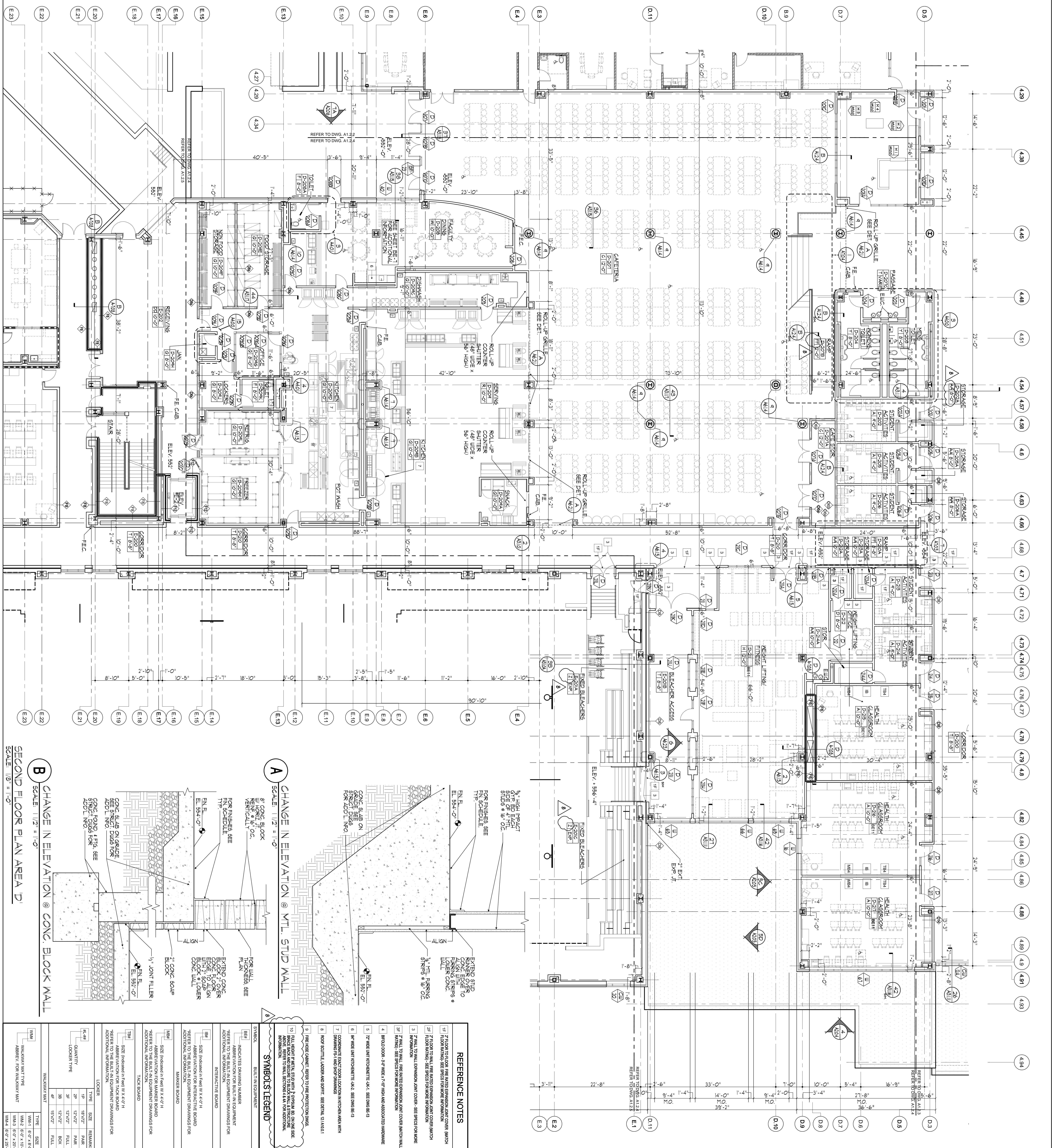
DWG. A-1.2.6
PROJECT: NEW PHILLIPSBURG HIGH SCHOOL
DRAWING NO.: A-1.2.6
SCALE: AS SHOWN

SDA
NJ SCHOOL DEVELOPMENT AUTHORITY
STATE OF NEW JERSEY

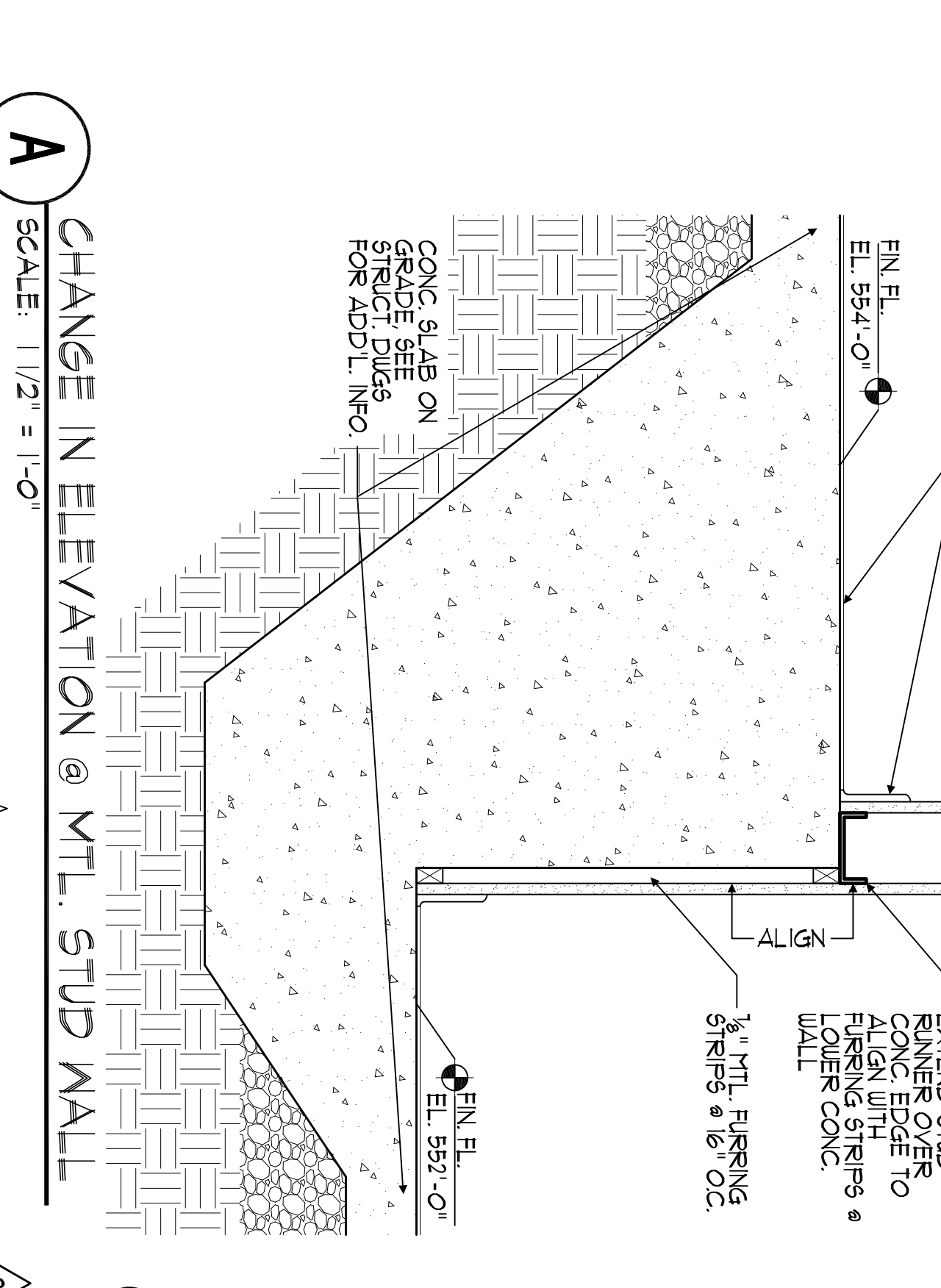
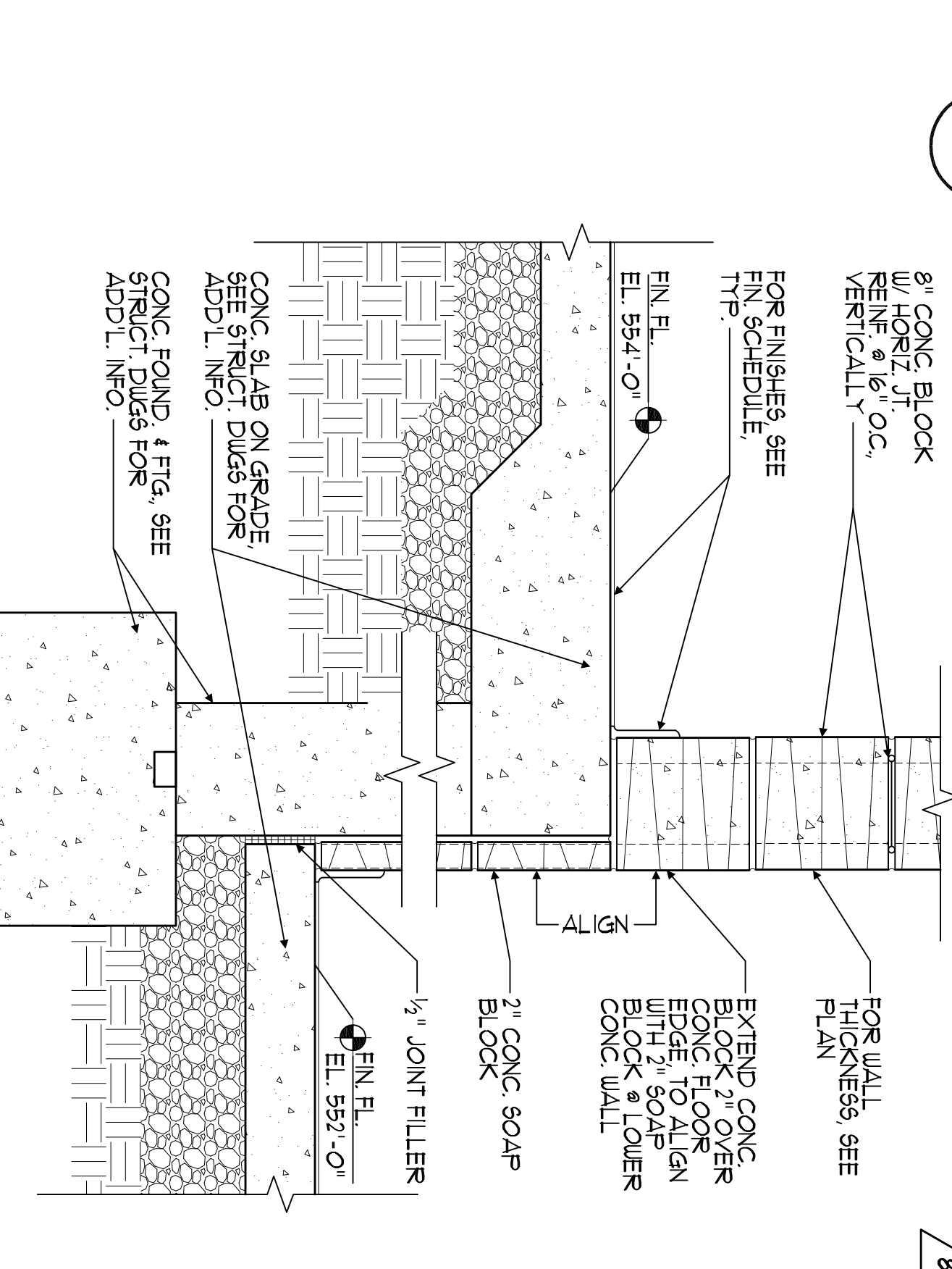
Design Ideas Group
ARCHITECTURE + DESIGN
PROJECT # 2008-2986-00

100% NJDCA CONSTRUCTION DOCUMENTS SUBMISSION FOR:
NEW PHILLIPSBURG HIGH SCHOOL
DOE# 4100-N01-04-1000
SDA# NT-0003-C02
TOWN OF PHILLIPSBURG
UPPER BELVIDERE ROAD LOT 44 / BLOCK 2
PHILLIPSBURG, NEW JERSEY 08865

SUBMISSION	DATE
ADDENDUM #1	11-21-12
ADDENDUM #2	06-09-12-12
ADDENDUM #3	03-04-11
ADDENDUM #4	05-17-10
ADDENDUM #5	02-12-10
ADDENDUM #6	10-13-09
ADDENDUM #7	05-11-09
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ADDENDUM #9	10-13-08
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ADDENDUM #97	05-11-79
ADDENDUM #98	09-12-78
ADDENDUM #99	10-13-78
ADDENDUM #100	05-11-78



B CHANGE IN ELEVATION @ CONC. BLOCK WALL
SCALE: 1/8" = 1'-0"



SYMBOLS LEGEND	
SYMBOL	BUILDING EQUIPMENT
1	INDICATES STANDING WATER
2	ABBREVIATION FOR BUILT-IN EQUIPMENT
3	ABBREVIATION FOR BUILT-IN EQUIPMENT DRAWINGS FOR ADDITIONAL INFORMATION
4	INTERACTIVE BOARD
5	SIZE INDICATED IN FEET BY 4'-0" H.
6	ABBREVIATION FOR MARKERS BOARD
7	ABBREVIATION FOR INTERACTIVE BOARD
8	SIZE INDICATED IN FEET BY 4'-0" H.
9	ABBREVIATION FOR MARKERS BOARD
10	ABBREVIATION FOR INTERACTIVE BOARD
11	SIZE INDICATED IN FEET BY 4'-0" H.
12	ABBREVIATION FOR MARKERS BOARD
13	ABBREVIATION FOR INTERACTIVE BOARD
14	SIZE INDICATED IN FEET BY 4'-0" H.
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17	SIZE INDICATED IN FEET BY 4'-0" H.
18	ABBREVIATION FOR MARKERS BOARD
19	ABBREVIATION FOR INTERACTIVE BOARD
20	SIZE INDICATED IN FEET BY 4'-0" H.
21	ABBREVIATION FOR MARKERS BOARD
22	ABBREVIATION FOR INTERACTIVE BOARD
23	SIZE INDICATED IN FEET BY 4'-0" H.
24	ABBREVIATION FOR MARKERS BOARD
25	ABBREVIATION FOR INTERACTIVE BOARD

REFERENCE NOTES	
1	FLOOR TO FLOOR FINISH DIMENSION SHOWN UNLESS OTHERWISE NOTED
2	FLOOR TO FINISH DIMENSION SHOWN UNLESS OTHERWISE NOTED
3	FLOOR TO FINISH DIMENSION SHOWN UNLESS OTHERWISE NOTED
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25	FLOOR TO FINISH DIMENSION SHOWN UNLESS OTHERWISE NOTED

WALL TYPE SCHEDULE	
W1	1/2\"/>
W2	1/2\"/>
W3	1/2\"/>
W4	1/2\"/>
W5	1/2\"/>
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ACUSTICAL CEILING TILE LEGEND	
ACT1	24\"/>
ACT2	24\"/>
ACT3	24\"/>
ACT4	24\"/>
ACT5	24\"/>
ACT6	24\"/>
ACT7	24\"/>
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ACT10	24\"/>
ACT11	24\"/>
ACT12	24\"/>
ACT13	24\"/>
ACT14	24\"/>
ACT15	24\"/>
ACT16	24\"/>
ACT17	24\"/>
ACT18	24\"/>
ACT19	24\"/>
ACT20	24\"/>
ACT21	24\"/>
ACT22	24\"/>
ACT23	24\"/>
ACT24	24\"/>
ACT25	24\"/>

SCHEDULE OF INTERIOR FINISHES			
FLOOR	WALLS	CEILING	ROOFINGS
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9
10	10	10	10
11	11	11	11
12	12	12	12
13	13	13	13
14	14	14	14
15	15	15	15
16	16	16	16
17	17	17	17
18	18	18	18
19	19	19	19
20	20	20	20
21	21	21	21
22	22	22	22
23	23	23	23
24	24	24	24
25	25	25	25

100% NJPCA CONSTRUCTION DOCUMENTS SUBMISSION FOR:
NEW PHILLIPSBURG HIGH SCHOOL
 DOE# 4100-N01-04-1000
 SDA# NT-0003-C02

TOWN OF PHILLIPSBURG
 UPPER BELVIDERE ROAD LOT 44 / BLOCK 2
 PHILLIPSBURG, NEW JERSEY 08865

SDA
 STATE OF NEW JERSEY
 NJ SCHOOL DEVELOPMENT AUTHORITY

Design Ideas Group
 ARCHITECTURE + DESIGN + ILLUMINATION

PROJECT #: 2008.956.00

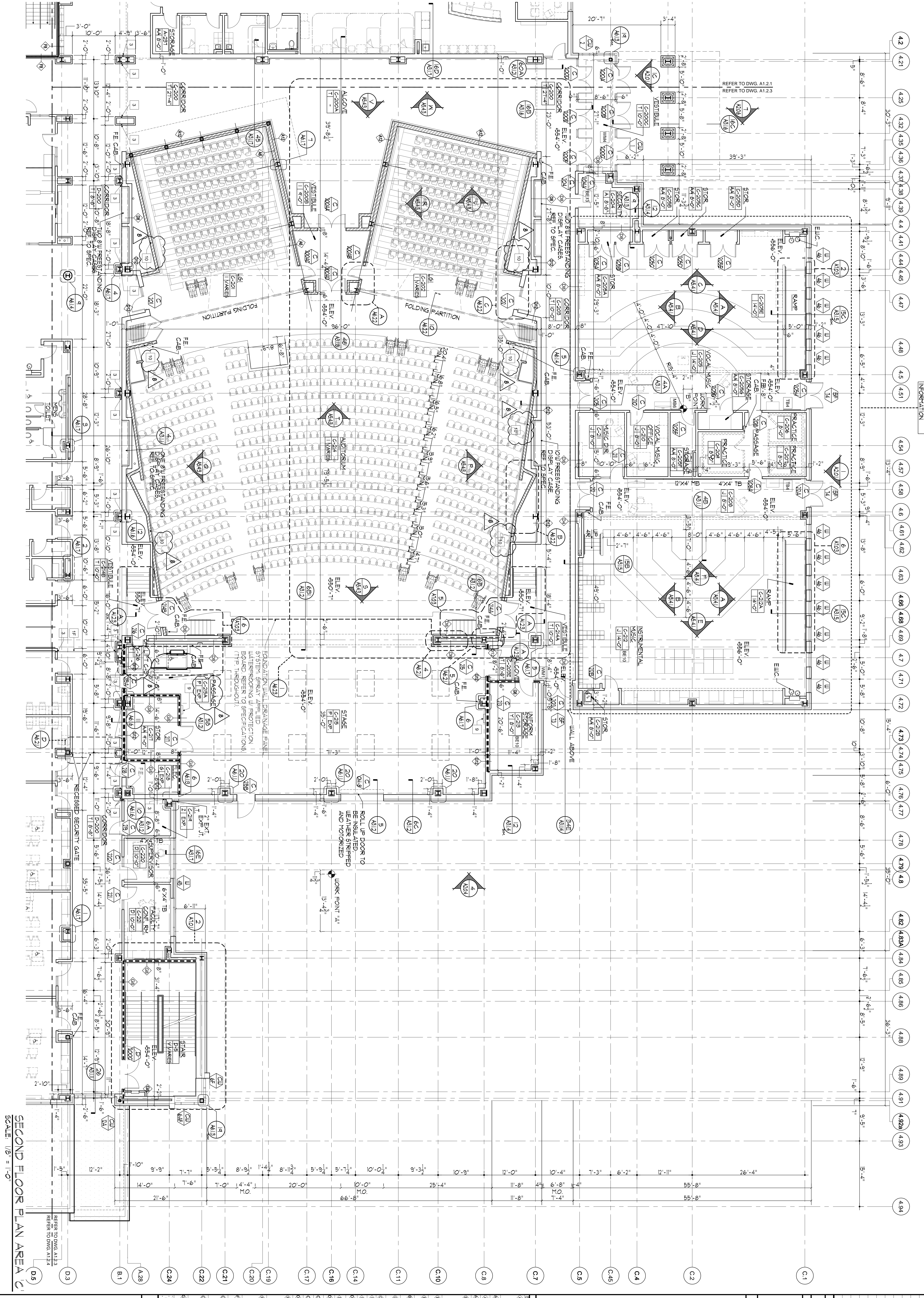
DATE: OCTOBER 13, 2009

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

DRAWING TITLE:
SECOND FLOOR PARTIAL PLAN AREA "D"

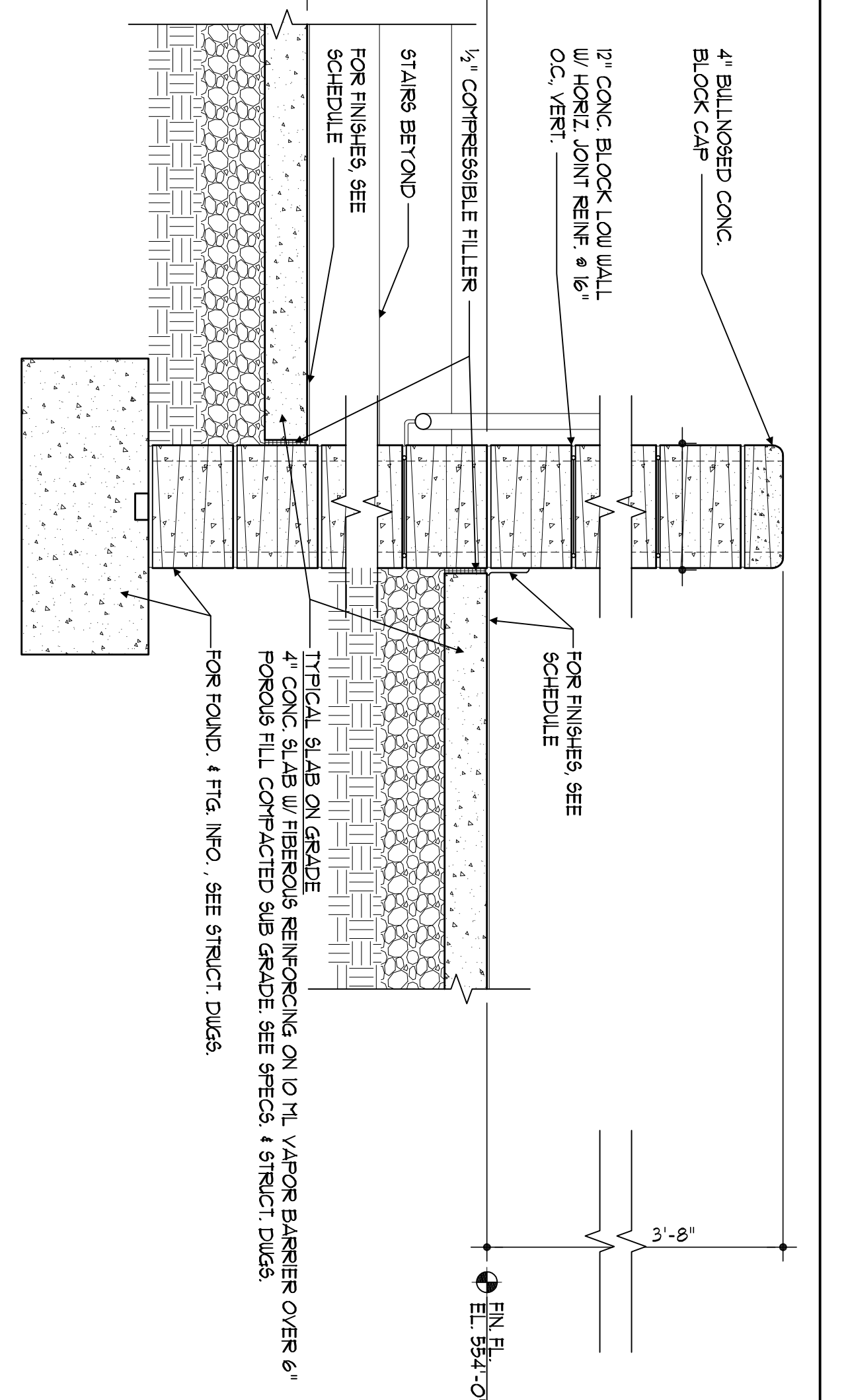
DRAWING NO.:
A-1.2.4

DRAWN BY:

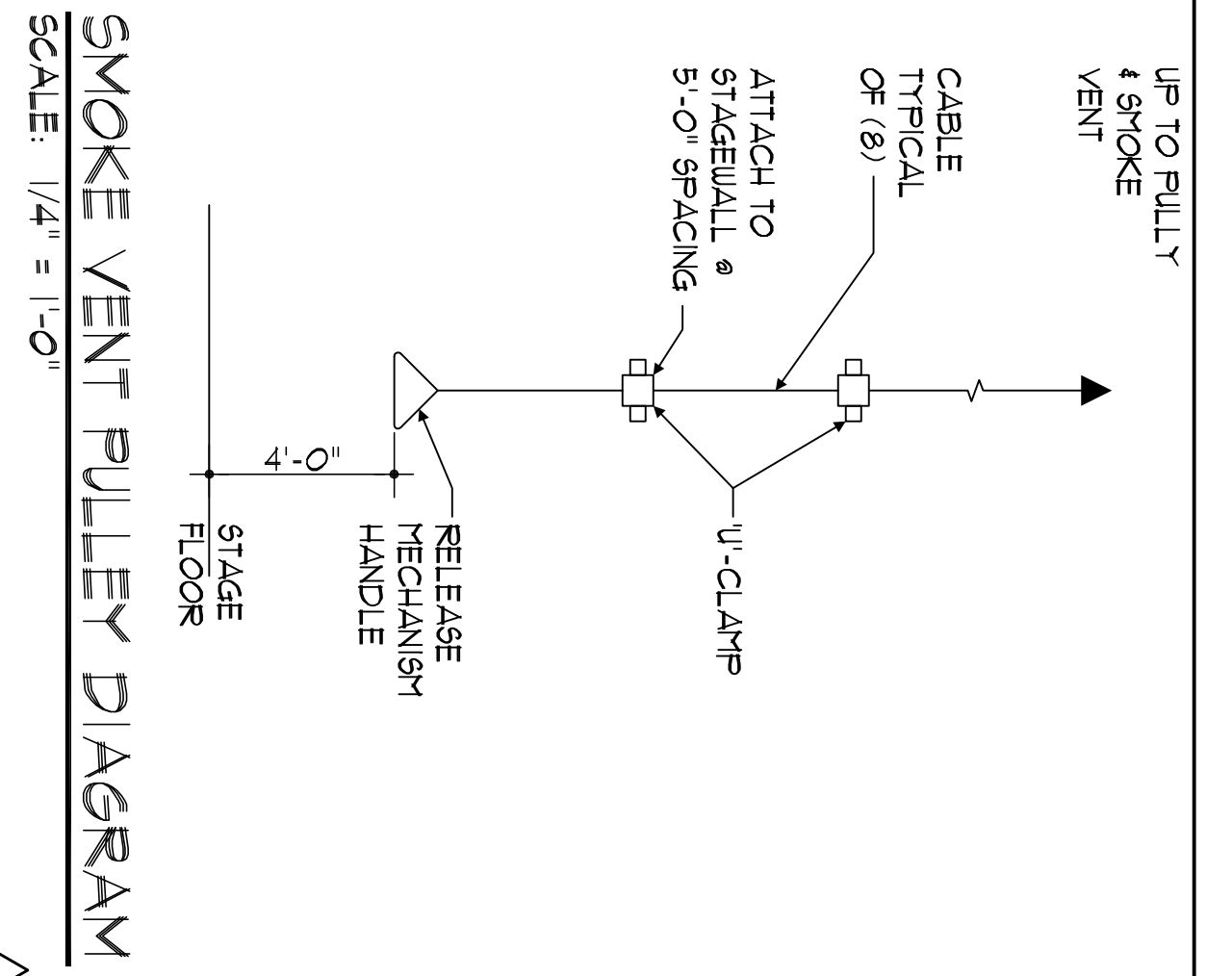


SECOND FLOOR PLAN AREA C
SCALE: 1/8" = 1'-0"

A B LOW WALL DETAIL
SCALE: 1" = 1'-0"



SMOKE VENT PULLEY DIAGRAM
SCALE: 1/4" = 1'-0"



- REFERENCE NOTES**
- 1) FLOOR TO FLOOR FINISHES DIMENSION FROM FINISH FLOOR TO FINISH FLOOR.
 - 2) FLOOR TO WALL FINISHES DIMENSION FROM FINISH FLOOR TO FINISH WALL.
 - 3) FINISHES DIMENSION FROM FINISH FLOOR TO FINISH WALL.
 - 4) FINISHES DIMENSION FROM FINISH FLOOR TO FINISH WALL.
 - 5) FINISHES DIMENSION FROM FINISH FLOOR TO FINISH WALL.
 - 6) FINISHES DIMENSION FROM FINISH FLOOR TO FINISH WALL.
 - 7) FINISHES DIMENSION FROM FINISH FLOOR TO FINISH WALL.
 - 8) FINISHES DIMENSION FROM FINISH FLOOR TO FINISH WALL.
 - 9) FINISHES DIMENSION FROM FINISH FLOOR TO FINISH WALL.
 - 10) FINISHES DIMENSION FROM FINISH FLOOR TO FINISH WALL.

FLOOR	WALLS	CEILING	ROOFINGS
1ST	WV1	WV1	WV1
2ND	WV2	WV2	WV2
3RD	WV3	WV3	WV3
4TH	WV4	WV4	WV4
5TH	WV5	WV5	WV5
6TH	WV6	WV6	WV6
7TH	WV7	WV7	WV7
8TH	WV8	WV8	WV8
9TH	WV9	WV9	WV9
10TH	WV10	WV10	WV10
11TH	WV11	WV11	WV11
12TH	WV12	WV12	WV12
13TH	WV13	WV13	WV13
14TH	WV14	WV14	WV14
15TH	WV15	WV15	WV15
16TH	WV16	WV16	WV16
17TH	WV17	WV17	WV17
18TH	WV18	WV18	WV18
19TH	WV19	WV19	WV19
20TH	WV20	WV20	WV20
21TH	WV21	WV21	WV21
22TH	WV22	WV22	WV22
23TH	WV23	WV23	WV23
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36TH	WV36	WV36	WV36
37TH	WV37	WV37	WV37
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97TH	WV97	WV97	WV97
98TH	WV98	WV98	WV98
99TH	WV99	WV99	WV99
100TH	WV100	WV100	WV100

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 DOE# 4100-N01-04-1000
 SDA# NT-0003-C02

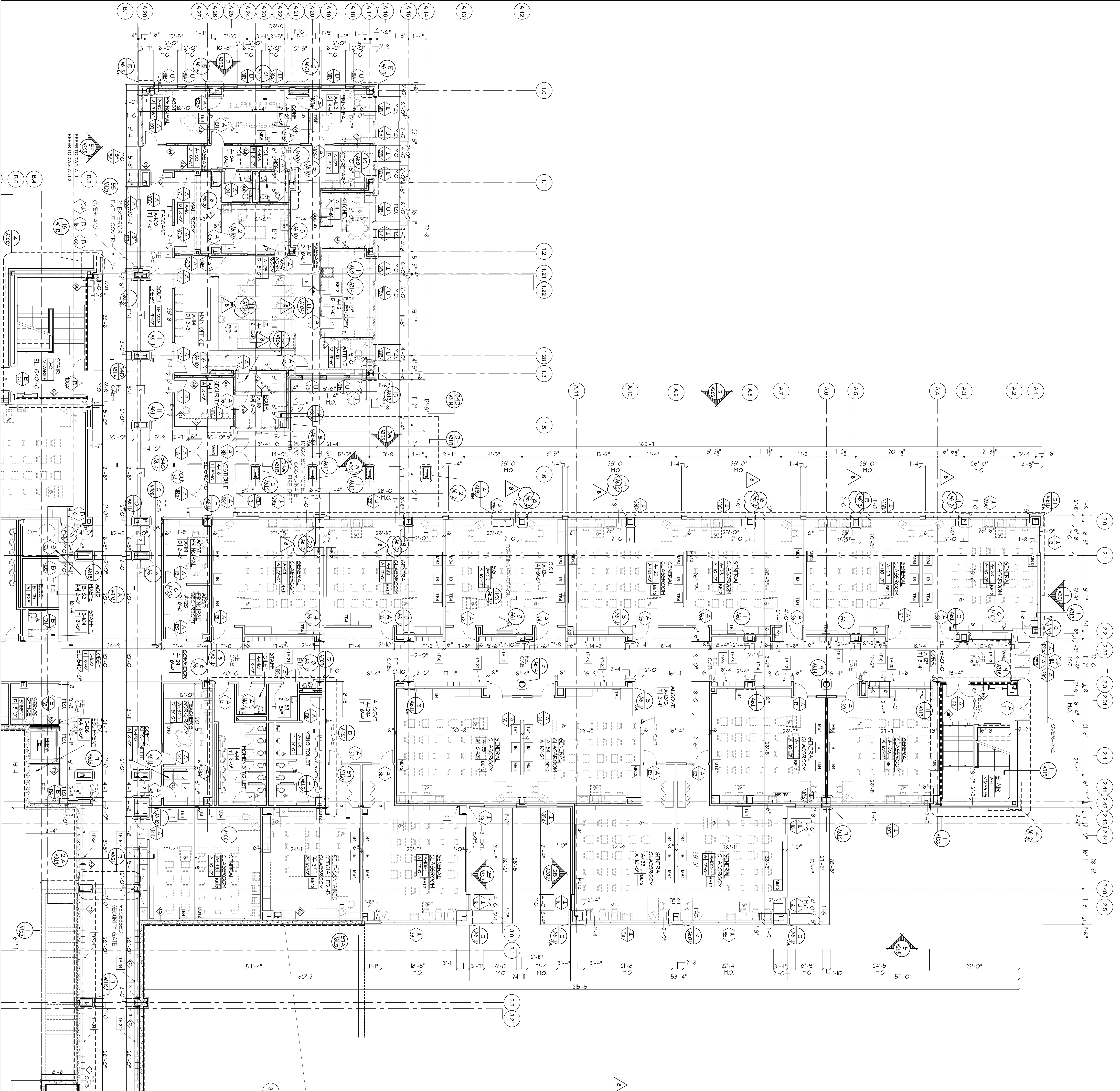
TOWN OF PHILLIPSBURG
 UPPER BELVIDERE ROAD LOT 44 / BLOCK 2
 PHILLIPSBURG, NEW JERSEY 08865

Design Ideas Group
 2008-2009

SDA
 STATE OF NEW JERSEY
 N.J. SCHOOL DEVELOPMENT AUTHORITY

ADDITIONAL #1 11-21-12
NJSDA REVISIONS 6/09-12-12
NJSDA COMMENTS 03-04-11
NJSDA COMMENTS 05-08-12-10
NJSDA COMMENTS 02-12-10
DATE: OCTOBER 13, 2009

DRAWING TITLE: SECOND FLOOR PARTIAL PLAN AREA "C"
DRAWING NO.: A-1.2.3
DWG. NO.: A-1.23
DWG. NO.: A-1.24
DRAWN BY:



SYMBOLS LEGEND

SYMBOL	BUILDING EQUIPMENT
(Symbol)	INDICATE FINISHING MATERIAL
(Symbol)	ABBREVIATION FOR BUILT-IN EQUIPMENT REFER TO THE BUILT-IN EQUIPMENT DRAWINGS FOR ADDITIONAL INFORMATION
(Symbol)	INTERACTIVE BOARD
(Symbol)	SIZE Indicated in Feet by X 4'0" H REFER TO THE BUILT-IN EQUIPMENT DRAWINGS FOR ADDITIONAL INFORMATION
(Symbol)	MARKER BOARD
(Symbol)	ABBREVIATION FOR MARKER BOARD REFER TO THE BUILT-IN EQUIPMENT DRAWINGS FOR ADDITIONAL INFORMATION
(Symbol)	SIZE Indicated in Feet by X 4'0" H REFER TO THE BUILT-IN EQUIPMENT DRAWINGS FOR ADDITIONAL INFORMATION
(Symbol)	MARKER BOARD
(Symbol)	SIZE Indicated in Feet by X 4'0" H REFER TO THE BUILT-IN EQUIPMENT DRAWINGS FOR ADDITIONAL INFORMATION
(Symbol)	MARKER BOARD
(Symbol)	SIZE Indicated in Feet by X 4'0" H REFER TO THE BUILT-IN EQUIPMENT DRAWINGS FOR ADDITIONAL INFORMATION
(Symbol)	MARKER BOARD

REFERENCE NOTES

1. FLOOR TO FLOOR FINISH TO DIMENSION CENTER OF WALL
2. FLOOR FINISH TO DIMENSION CENTER OF WALL
3. FLOOR FINISH TO DIMENSION CENTER OF WALL
4. FLOOR FINISH TO DIMENSION CENTER OF WALL
5. FLOOR FINISH TO DIMENSION CENTER OF WALL
6. FLOOR FINISH TO DIMENSION CENTER OF WALL
7. FLOOR FINISH TO DIMENSION CENTER OF WALL
8. FLOOR FINISH TO DIMENSION CENTER OF WALL
9. FLOOR FINISH TO DIMENSION CENTER OF WALL
10. FLOOR FINISH TO DIMENSION CENTER OF WALL

KEYPLAN

ACoustical Ceiling Tile Legend

TYPE	FLOOR	WALLS	CEILING	REMARKS
ACT 1	1	1	1	24 RAYON (SEE SCHEDULE)
ACT 2	1	1	1	24 RAYON (SEE SCHEDULE)
ACT 3	1	1	1	24 RAYON (SEE SCHEDULE)
ACT 4	1	1	1	24 RAYON (SEE SCHEDULE)
ACT 5	1	1	1	24 RAYON (SEE SCHEDULE)
ACT 6	1	1	1	24 RAYON (SEE SCHEDULE)
ACT 7	1	1	1	24 RAYON (SEE SCHEDULE)
ACT 8	1	1	1	24 RAYON (SEE SCHEDULE)
ACT 9	1	1	1	24 RAYON (SEE SCHEDULE)
ACT 10	1	1	1	24 RAYON (SEE SCHEDULE)

ADDITIONAL COMMENTS

ADDITIONUM #1 11-21-12

ADDITIONUM REVISIONS 6/09-12-12

ADDITIONUM COMMENTS 03-04-11

ADDITIONUM COMMENTS 05-12-10

ADDITIONUM COMMENTS 02-12-10

DATE: OCTOBER 13, 2009

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

100% NJDCA CONSTRUCTION DOCUMENTS SUBMISSION FOR:

NEW PHILLIPSBURG HIGH SCHOOL

DOE# 4100-N01-04-1000
SDA# NT-0003-C02

TOWN OF PHILLIPSBURG

UPPER BELVIDERE ROAD LOT 44 / BLOCK 2
PHILLIPSBURG, NEW JERSEY 08865

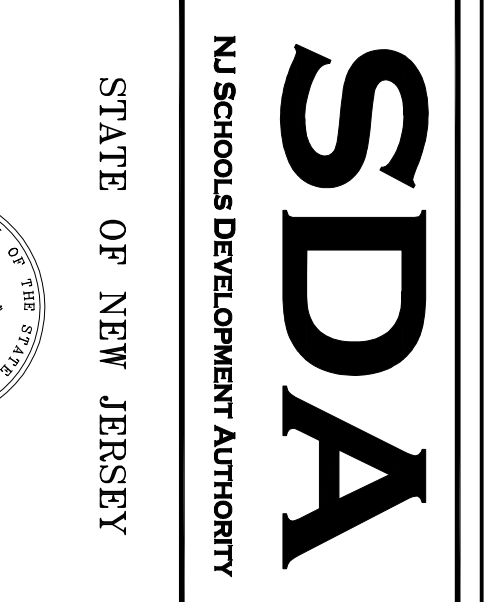
Design Ideas Group
Architects & Planners

PROJECT # 2008-2586-00

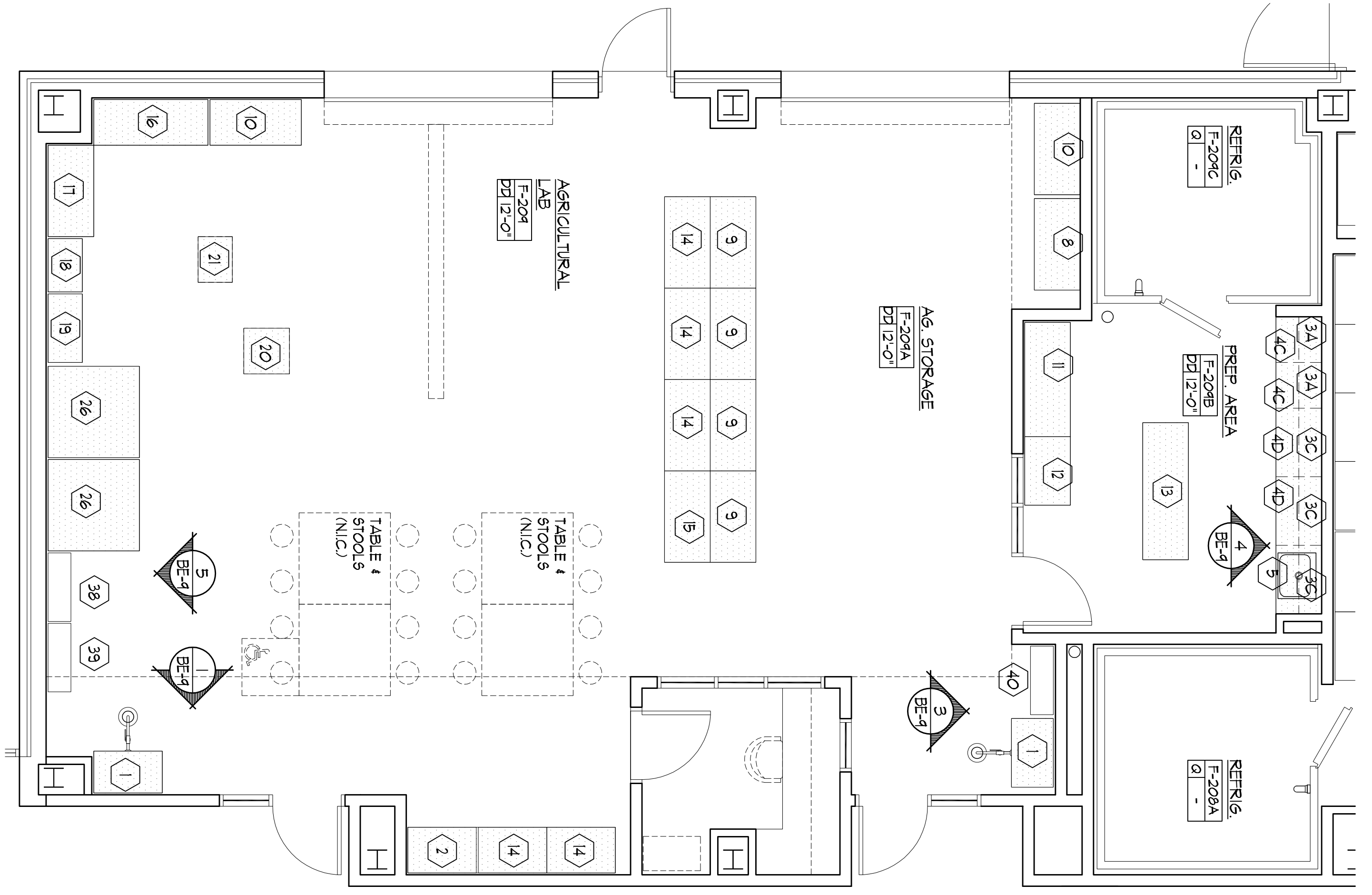
PHILLIPSBURG, NJ 08865

ACoustical Ceiling Tile Legend

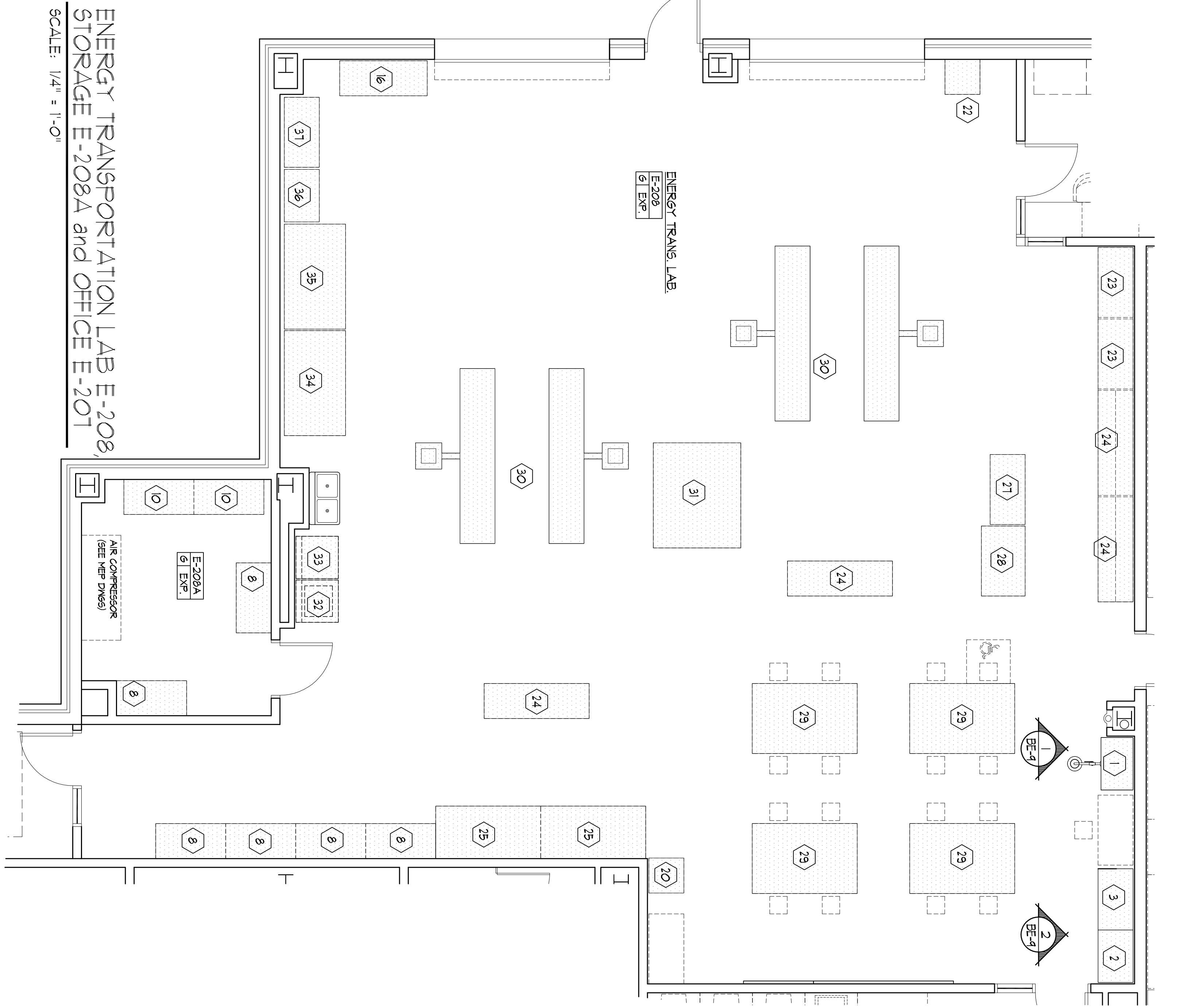
TYPE	FLOOR	WALLS	CEILING	REMARKS
ACT 1	1	1	1	24 RAYON (SEE SCHEDULE)
ACT 2	1	1	1	24 RAYON (SEE SCHEDULE)
ACT 3	1	1	1	24 RAYON (SEE SCHEDULE)
ACT 4	1	1	1	24 RAYON (SEE SCHEDULE)
ACT 5	1	1	1	24 RAYON (SEE SCHEDULE)
ACT 6	1	1	1	24 RAYON (SEE SCHEDULE)
ACT 7	1	1	1	24 RAYON (SEE SCHEDULE)
ACT 8	1	1	1	24 RAYON (SEE SCHEDULE)
ACT 9	1	1	1	24 RAYON (SEE SCHEDULE)
ACT 10	1	1	1	24 RAYON (SEE SCHEDULE)



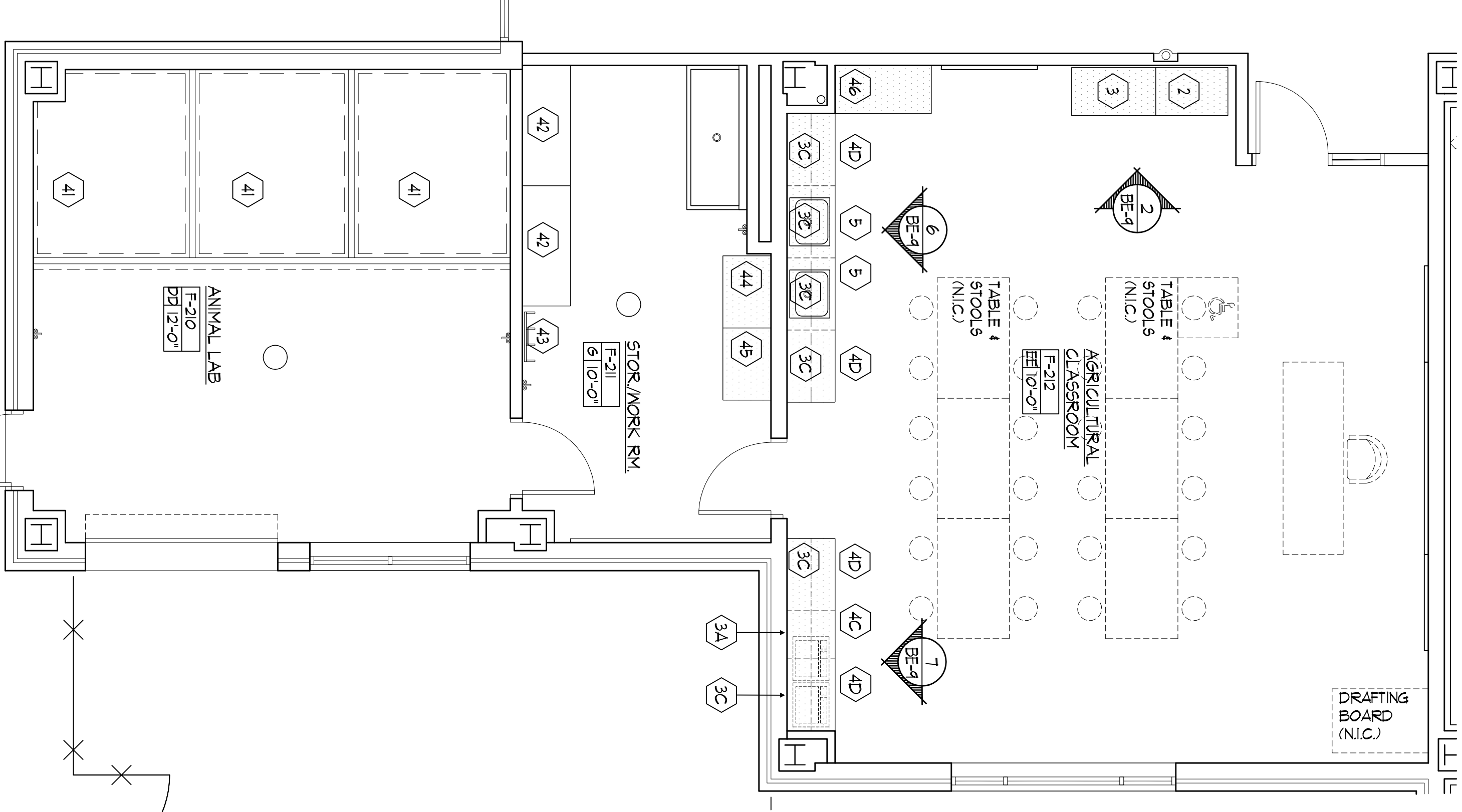
BUILT-IN EQUIPMENT



AGRICULTURAL LAB F-2095, AG. STORAGE F-2094
and PREP AREA F-2096
SCALE: 1/4" = 1'-0"

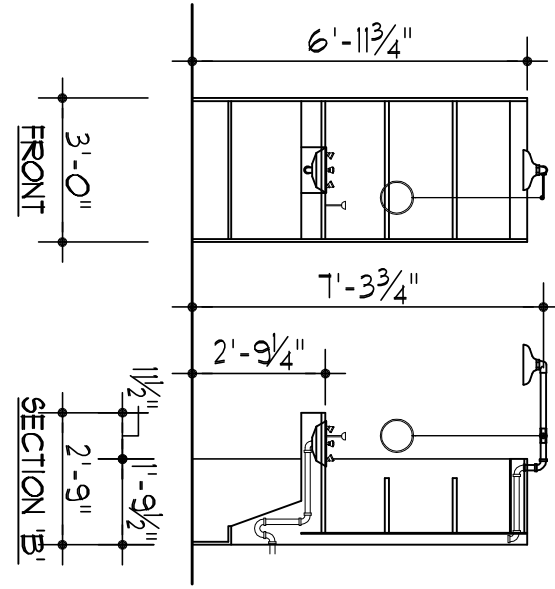


ENERGY TRANSPORTATION LAB E-208
and OFFICE E-207
SCALE: 1/4" = 1'-0"

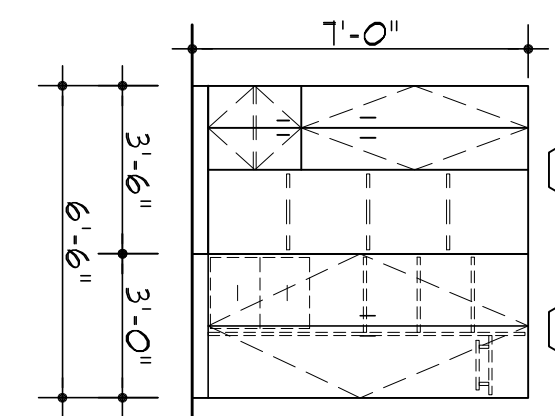


AGRICULTURAL CLASSROOM F-212, ANIMAL LAB
F-210 and STOR. WORK Rm F-211
SCALE: 1/4" = 1'-0"

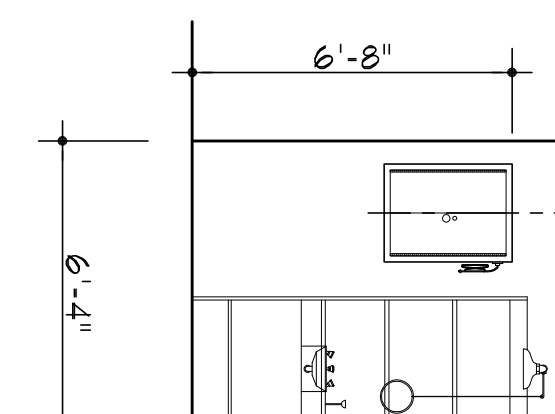
1 SAFETY CABINET
SCALE: 1/4" = 1'-0"



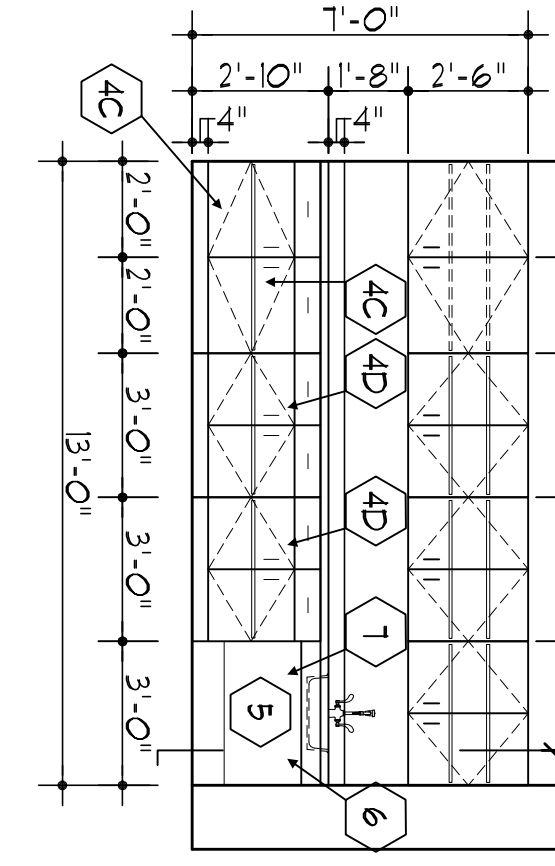
2 ELEVATION
SCALE: 1/4" = 1'-0"



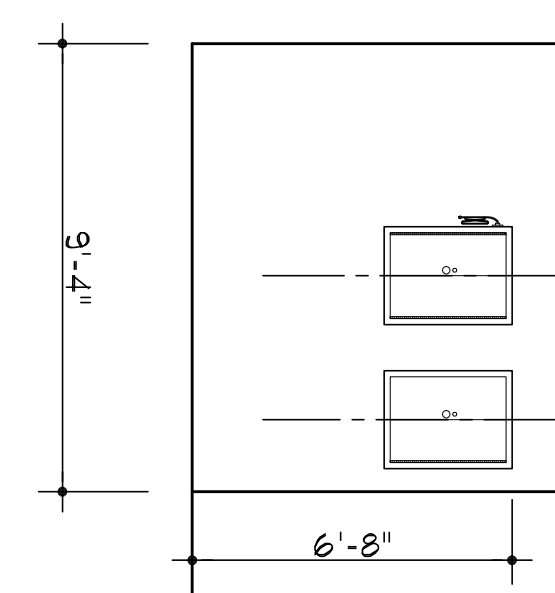
3 SAFETY CABINET
SCALE: 1/4" = 1'-0"



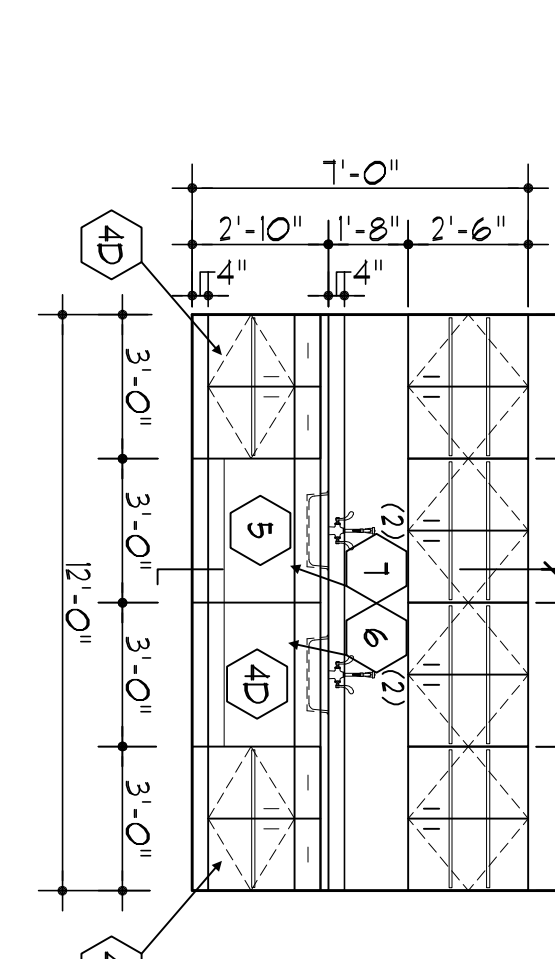
4 ELEVATION
SCALE: 1/4" = 1'-0"



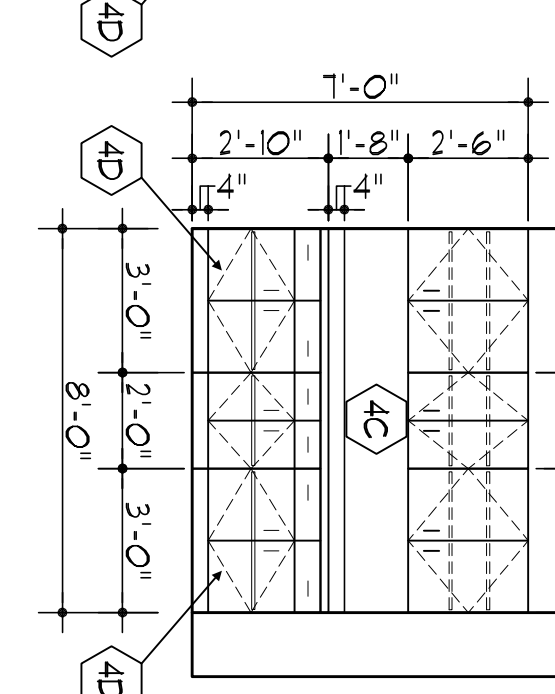
5 SAFETY WALL HUNG CABINET
SCALE: 1/4" = 1'-0"



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



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



* EXIST - EXISTING EQUIPMENT - SEE NOTE #1

NO.	TYPE	DESCRIPTION	DIMENSIONS 1/2" DIA. H	PROVIDED BY	FLOOR	TABLE	WALL	120V	208V	220V	DED	ETHER	LATERE	DRN	FLOOR DRAIN	DESCRIPTION	
1	1	FLOOR DRAIN	36" x 36" x 84"	•	•	•	•	•	•	•	•	•	•	•	•	•	
2	1	SAFETY CABINET	36" x 24" x 84"	•	•	•	•	•	•	•	•	•	•	•	•	•	
3	1	TEACHER WASHBORE	36" x 24" x 84"	•	•	•	•	•	•	•	•	•	•	•	•	•	
4	1	TEACHER STORAGE	47" x 24" x 84"	•	•	•	•	•	•	•	•	•	•	•	•	•	
5	1	WALL CASE	24" x 21" x 30"	•	•	•	•	•	•	•	•	•	•	•	•	•	
6	1	WALL CASE	50" x 21" x 30"	•	•	•	•	•	•	•	•	•	•	•	•	•	
7	1	WALL CASE	36" x 21" x 30"	•	•	•	•	•	•	•	•	•	•	•	•	•	
8	1	BASE CABINET	67" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
9	1	BASE CABINET	87" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
10	1	BASE CABINET	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
11	1	BASE CABINET	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
12	1	BASE CABINET	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
13	1	BASE CABINET	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
14	1	BASE CABINET	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
15	1	BASE CABINET	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
16	1	BASE CABINET	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
17	1	BASE CABINET	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
18	1	BASE CABINET	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
19	1	BASE CABINET	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
20	1	BASE CABINET	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
21	1	BASE CABINET	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
22	1	BASE CABINET	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
23	1	BASE CABINET	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
24	1	BASE CABINET	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
25	1	BASE CABINET	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
26	1	BASE CABINET	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
27	1	BASE CABINET	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
28	1	BASE CABINET	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
29	1	BASE CABINET	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
30	1	BASE CABINET	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
31	1	BASE CABINET	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
32	1	BASE CABINET	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
33	1	BASE CABINET	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
34	1	BASE CABINET	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
35	1	BASE CABINET	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
36	1	BASE CABINET	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
37	1	BASE CABINET	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
38	1	BASE CABINET	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
39	1	BASE CABINET	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
40	1	BASE CABINET	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
41	1	BASE CABINET	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
42	1	BASE CABINET	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
43	1	BASE CABINET	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
44	1	BASE CABINET	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
45	1	BASE CABINET	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	
46	1	BASE CABINET	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	

GENERAL NOTES:
 1. SEE ELECTRICAL, HVAC, PLUMBING & SINKER DRAWINGS FOR ADDITIONAL INFORMATION.
 2. CONTRACTOR TO VERIFY ALL DIMENSIONS IN THE FIELD AND COORDINATE INSTALLATION OF ALL EQUIPMENT AND UTILITIES.
 3. CONTRACTOR TO VERIFY ALL DIMENSIONS IN THE FIELD AND COORDINATE INSTALLATION OF ALL EQUIPMENT AND UTILITIES.
 4. CONTRACTOR TO VERIFY ALL DIMENSIONS IN THE FIELD AND COORDINATE INSTALLATION OF ALL EQUIPMENT AND UTILITIES.
 5. ALL HAZARDOUS EQUIPMENT SHALL BE ON ADOPTED/DEPENDENT SHUT-OFFS.
 6. ALL EQUIPMENT SPECIFIED AS PROVIDED BY OWNER AND REQUIRING UTILITY CONNECTIONS OR SUPPORT CHAINS SHALL BE INSTALLED BY GC.
 7. ALL EQUIPMENT / FINISHES PROVIDED BY OWNER AND REQUIRING UTILITY CONNECTIONS OR SUPPORT CHAINS SHALL BE INSTALLED BY GC.
 8. ALL OWNER-SUPPLIED EQUIPMENT AND FINISHES SHALL BE INSTALLED BY GC.
 9. ALL OWNER-SUPPLIED EQUIPMENT AND FINISHES SHALL BE INSTALLED BY GC.
 10. OWNER SHALL VERIFY ALL DIMENSIONS AND SPECIFICATIONS WITH THE OWNER PRIOR TO INSTALLATION.
 11. OWNER SHALL VERIFY ALL DIMENSIONS AND SPECIFICATIONS WITH THE OWNER PRIOR TO INSTALLATION.
 12. GC TO PROVIDE ALL NECESSARY CONCEALED BLOCKING FOR ALL WALL-SUPPORTED CABINETRY IN ALL METAL STUD / GYPSUM BOARD TYPE PARTITIONS.

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NJ SCHOOL DEVELOPMENT AUTHORITY

100% NJDCA CONSTRUCTION DOCUMENTS SUBMISSION
FOR:
NEW PHILLIPSBURG HIGH SCHOOL
DOE# 4100-N01-04-1000
SDA# NT-0003-C02

TOWN OF PHILLIPSBURG
UPPER BELVIDERE ROAD LOT 44 / BLOCK 2
PHILLIPSBURG, NEW JERSEY 08865

Design Ideas Group
Architects + Planners + Interiors

PROJECT # - 2008-356-00

PHILLIPSBURG HIGH SCHOOL
100% NJDCA CONSTRUCTION DOCUMENTS SUBMISSION

DATE: OCTOBER 13, 2009

DRAWING NO: **BE-9**

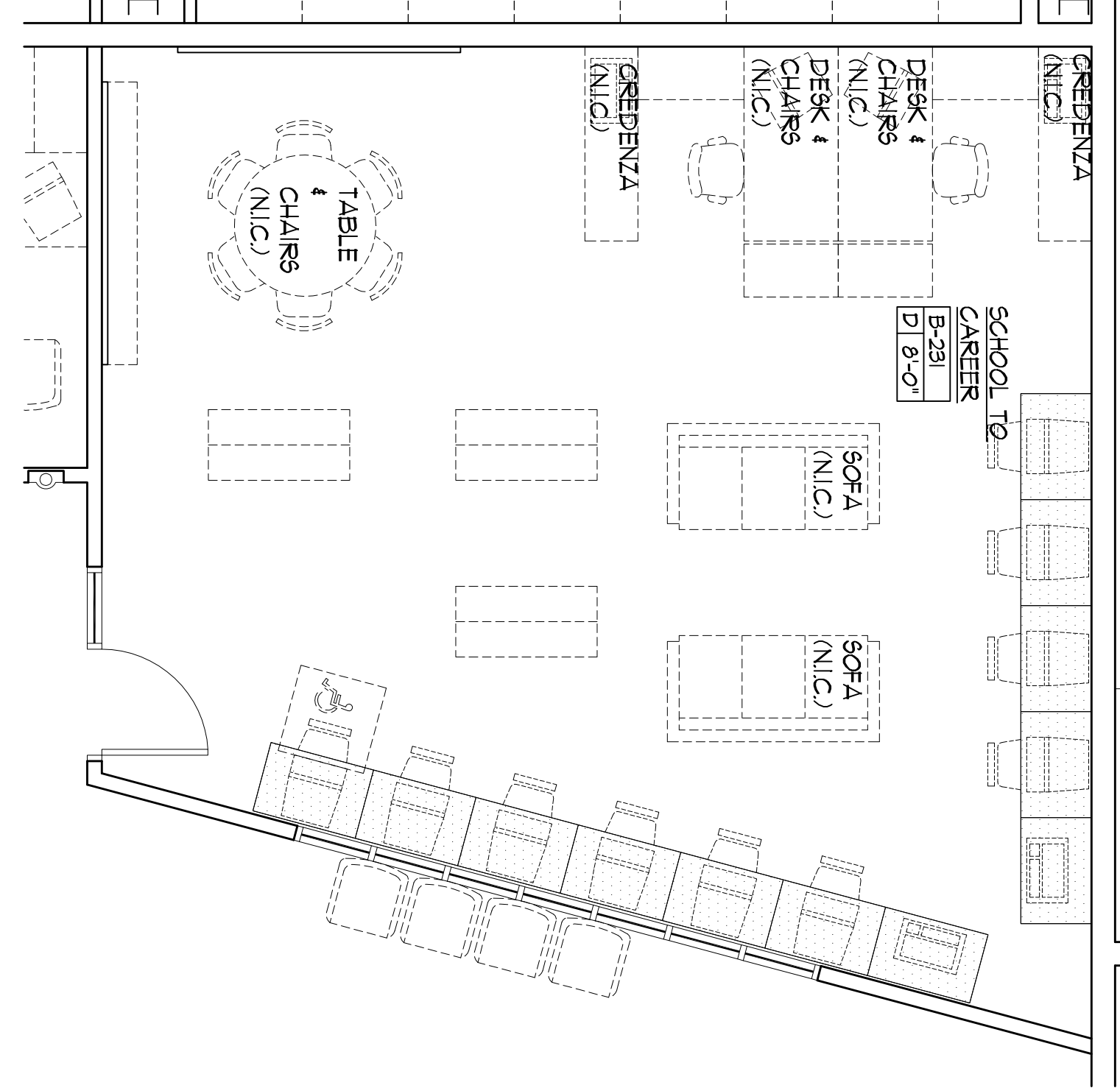
APPENDIX #1: 11-21-12
 NJSDA REVISIONS: 03-09-11, 08-12-10, 05-17-10, 02-12-10
 NJDCA COMMENTS: 03-09-11, 05-17-10, 02-12-10
 DATE: OCTOBER 13, 2009

DRAWING TITLE:
BUILT-IN EQUIPMENT PLANS & SECTIONS & SCHEDULE

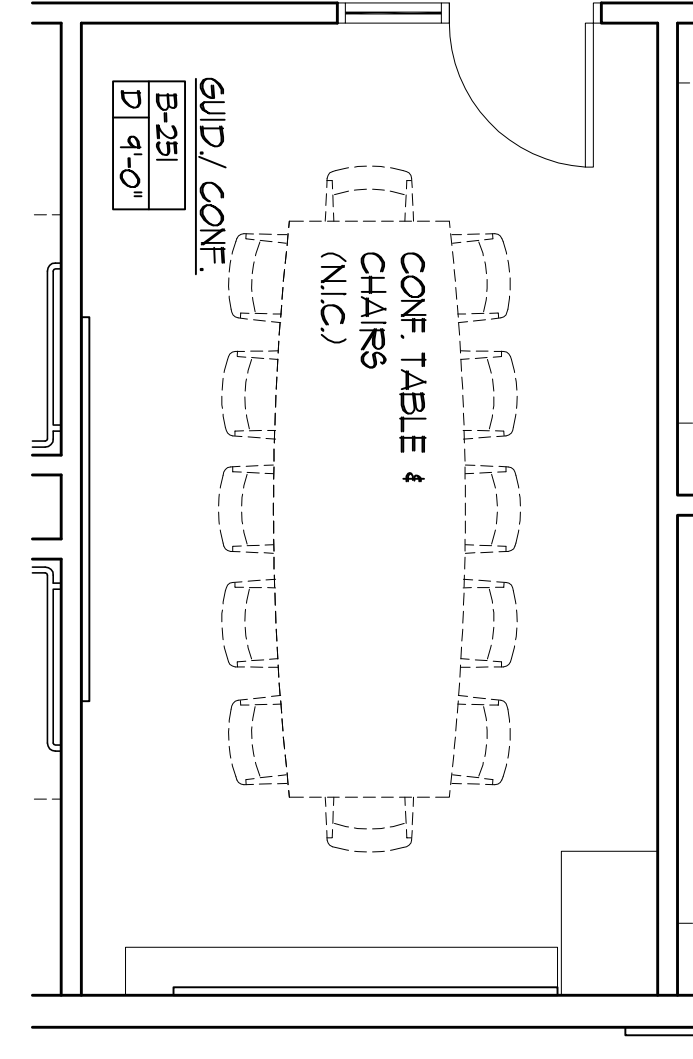
DRAWN BY:

DATE:

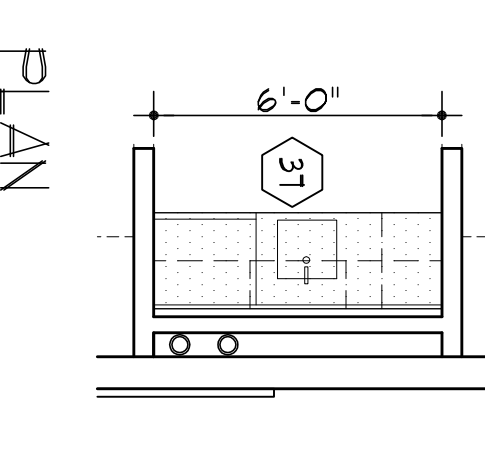
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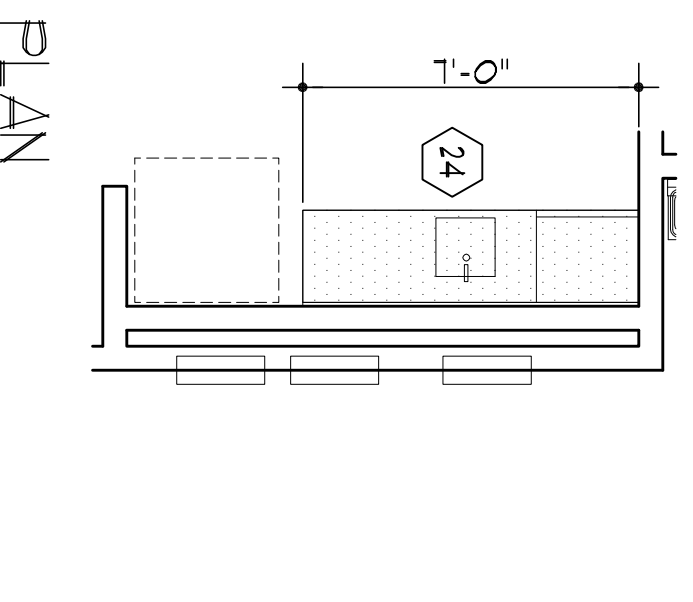
PLAN - SCHOOL TO CAREER
SCALE: 1/4" = 1'-0"



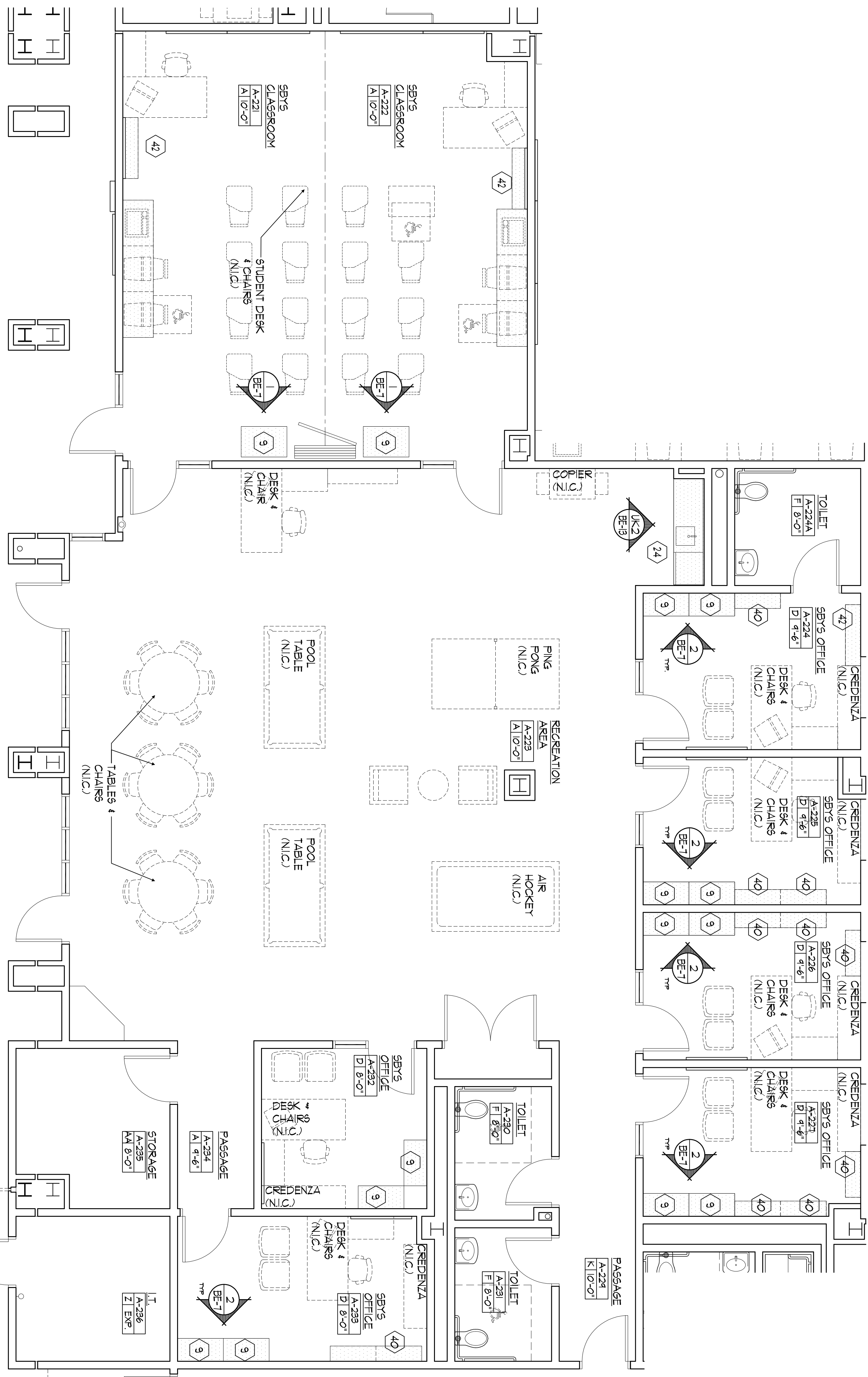
PLAN - GUIDANCE CONFERENCE
SCALE: 1/4" = 1'-0"



PLAN GUIDANCE PASSAGE
SCALE: 1/4" = 1'-0"



PLAN FACULTY DINING
SCALE: 1/4" = 1'-0"

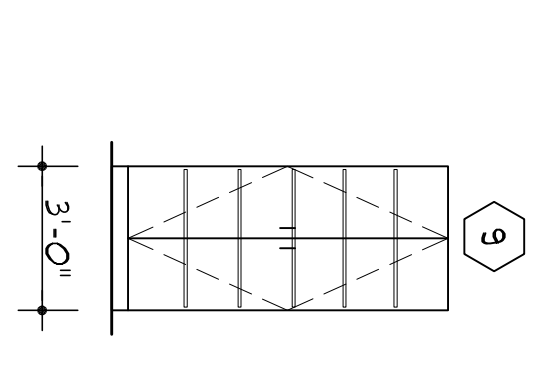


PLAN - SCHOOL BASED YOUTH SERVICES
SCALE: 1/4" = 1'-0"

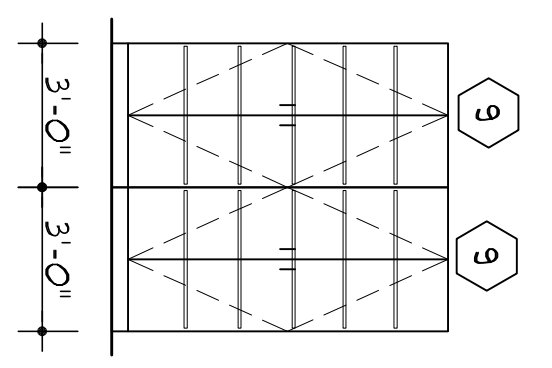
NO.	TYPE	DESCRIPTION	DIMENSIONS 1/4" = 1'-0"	EQUIPMENT SCHEDULE					DESCRIPTION									
				EXIST	PROVIDED BY:	FLOOR	TABLE	WALL		120V	200V	200V	DEP	ETHER	LATER	DRAIN	ETS	SERVICE
1A	WALL CASE	WALL CASE	24" x 21" x 30"	•														
1B	WALL CASE	WALL CASE	30" x 21" x 30"	•														
2	WALL CASE	WALL CASE	36" x 21" x 30"	•														
3	WALL CASE	WALL CASE	36" x 21" x 30"	•														
4	WALL CASE	WALL CASE	36" x 21" x 30"	•														
5	WALL CASE	WALL CASE	36" x 21" x 30"	•														
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7	WALL CASE	WALL CASE	36" x 21" x 30"	•														
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11	WALL CASE	WALL CASE	36" x 21" x 30"	•														
12	WALL CASE	WALL CASE	36" x 21" x 30"	•														
13	WALL CASE	WALL CASE	36" x 21" x 30"	•														
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16	WALL CASE	WALL CASE	36" x 21" x 30"	•														
17	WALL CASE	WALL CASE	36" x 21" x 30"	•														
18	WALL CASE	WALL CASE	36" x 21" x 30"	•														
19	WALL CASE	WALL CASE	36" x 21" x 30"	•														
20	WALL CASE	WALL CASE	36" x 21" x 30"	•														
21	WALL CASE	WALL CASE	36" x 21" x 30"	•														
22	WALL CASE	WALL CASE	36" x 21" x 30"	•														
23	WALL CASE	WALL CASE	36" x 21" x 30"	•														
24	WALL CASE	WALL CASE	36" x 21" x 30"	•														
25	WALL CASE	WALL CASE	36" x 21" x 30"	•														
26	WALL CASE	WALL CASE	36" x 21" x 30"	•														
27	WALL CASE	WALL CASE	36" x 21" x 30"	•														
28	WALL CASE	WALL CASE	36" x 21" x 30"	•														
29	WALL CASE	WALL CASE	36" x 21" x 30"	•														
30	WALL CASE	WALL CASE	36" x 21" x 30"	•														
31	WALL CASE	WALL CASE	36" x 21" x 30"	•														
32	WALL CASE	WALL CASE	36" x 21" x 30"	•														
33	WALL CASE	WALL CASE	36" x 21" x 30"	•														
34	WALL CASE	WALL CASE	36" x 21" x 30"	•														
35	WALL CASE	WALL CASE	36" x 21" x 30"	•														
36	WALL CASE	WALL CASE	36" x 21" x 30"	•														
37	WALL CASE	WALL CASE	36" x 21" x 30"	•														
38	WALL CASE	WALL CASE	36" x 21" x 30"	•														
39	WALL CASE	WALL CASE	36" x 21" x 30"	•														
40	WALL CASE	WALL CASE	36" x 21" x 30"	•														
41	WALL CASE	WALL CASE	36" x 21" x 30"	•														
42	WALL CASE	WALL CASE	36" x 21" x 30"	•														

GENERAL NOTES:

- SEE ELECTRICAL, HVAC, PLUMBING & SPRINKLER DRAWINGS FOR ADDITIONAL INFORMATION.
- CONTRACTOR TO VERIFY ALL DIMENSIONS IN THE FIELD AND CORRECTIVE INSTALLATION OF ALL EQUIPMENT AND UTILITIES.
- SEE STRUCTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
- ALL HAZARDOUS EQUIPMENT SHALL BE ON AS-OPERATED BUT-OFFS.
- ALL EQUIPMENT SPECIFIED AS PROVIDED BY OWNER AND REQUIRING UTILTY CONNECTIONS OR SUPPORT CURBS SHALL BE INSTALLED BY GC.
- CONTRACTOR TO VERIFY ALL CODE EQUIPMENT AND FINISHES. THESE, SIZES, LOCATIONS, AND SPECIFICATIONS WITH THE OWNER PRIOR TO INSTALLATION.
- ALL OWNER-SUPPLIED EQUIPMENT AND FINISHES REQUIRING UTILTY CONNECTIONS BY GC IS SHOWN SOLID ON BUILT-IN EQUIPMENT DRAWINGS.
- OWNER SHALL VERIFY ALL DIMENSIONS AND LOCATIONS OF ALL EQUIPMENT AND FINISHES. THESE, SIZES, LOCATIONS, AND SPECIFICATIONS WITH THE OWNER PRIOR TO INSTALLATION.
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1 ELEVATION
SCALE: 1/4" = 1'-0"



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

SDA
STATE OF NEW JERSEY
NJ SCHOOL DEVELOPMENT AUTHORITY

PROJECT #: 2008-0360-00

Design Ideas Group
Architects & Planners LLC

100% NJDCA CONSTRUCTION DOCUMENTS SUBMISSION
FOR:
NEW PHILLIPSBURG HIGH SCHOOL
DOE# 4100-N01-04-1000
SDA# NT-0003-C02

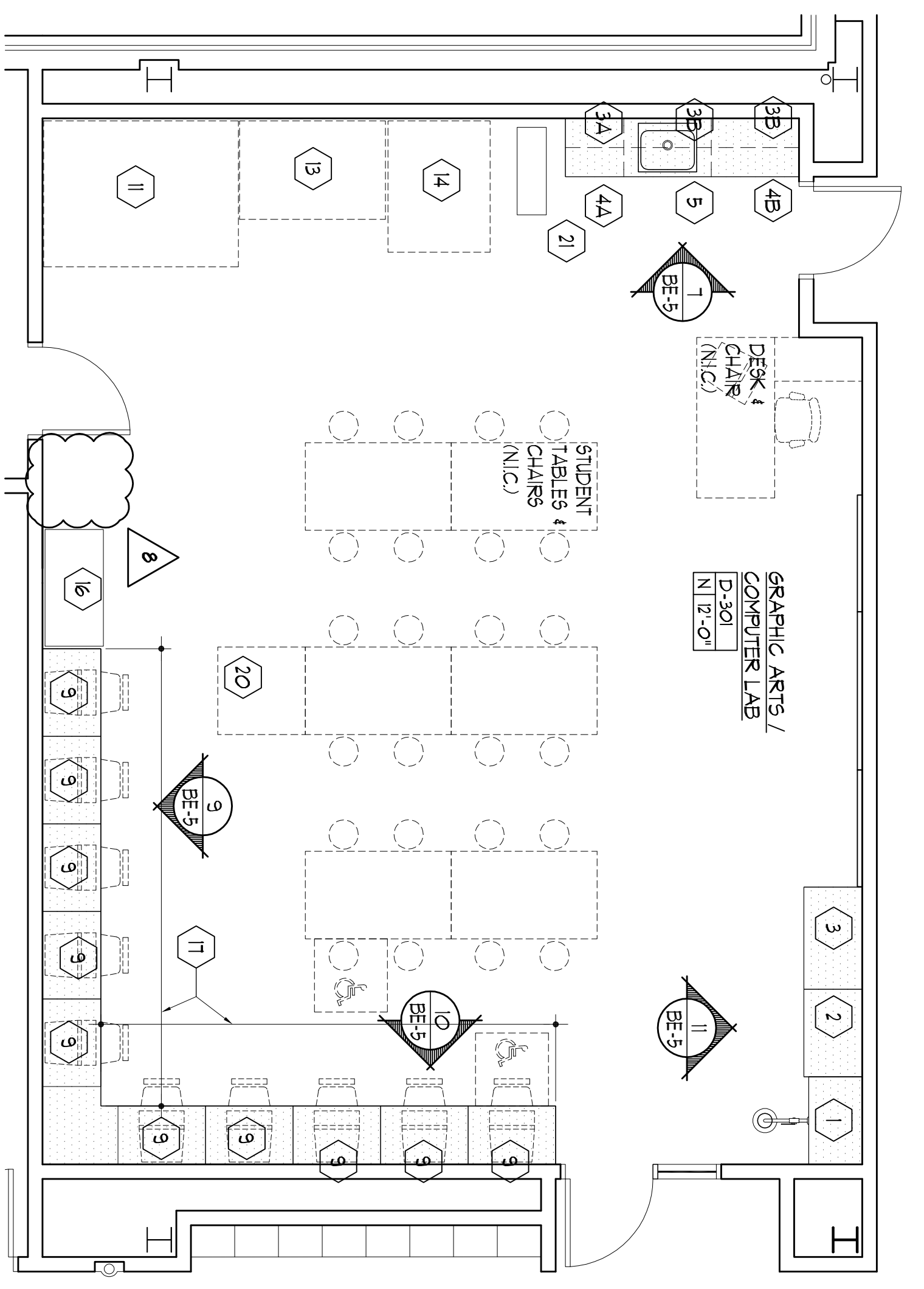
TOWN OF PHILLIPSBURG
UPPER BELVIDERE ROAD LOT 44 / BLOCK 2
PHILLIPSBURG, NEW JERSEY 08865

APPENDIX #1 11-21-12
NJSDA REVISIONS 6/03-12-12
NJDCA COMMENTS 03-04-11
NJDCA COMMENTS 03-08-12-10
NJDCA COMMENTS 03-05-17-10
DATE: OCTOBER 13, 2009
SCALE: AS NOTED

DRAWING TITLE:
BUILT-IN EQUIPMENT
PLANS, SECTIONS
& SCHEDULE

DRAWING NO.:
BE-7

DRAWN BY:



GRAPHIC ARTS / COMPUTER LAB D-301
SCALE: 1/4" = 1'-0"

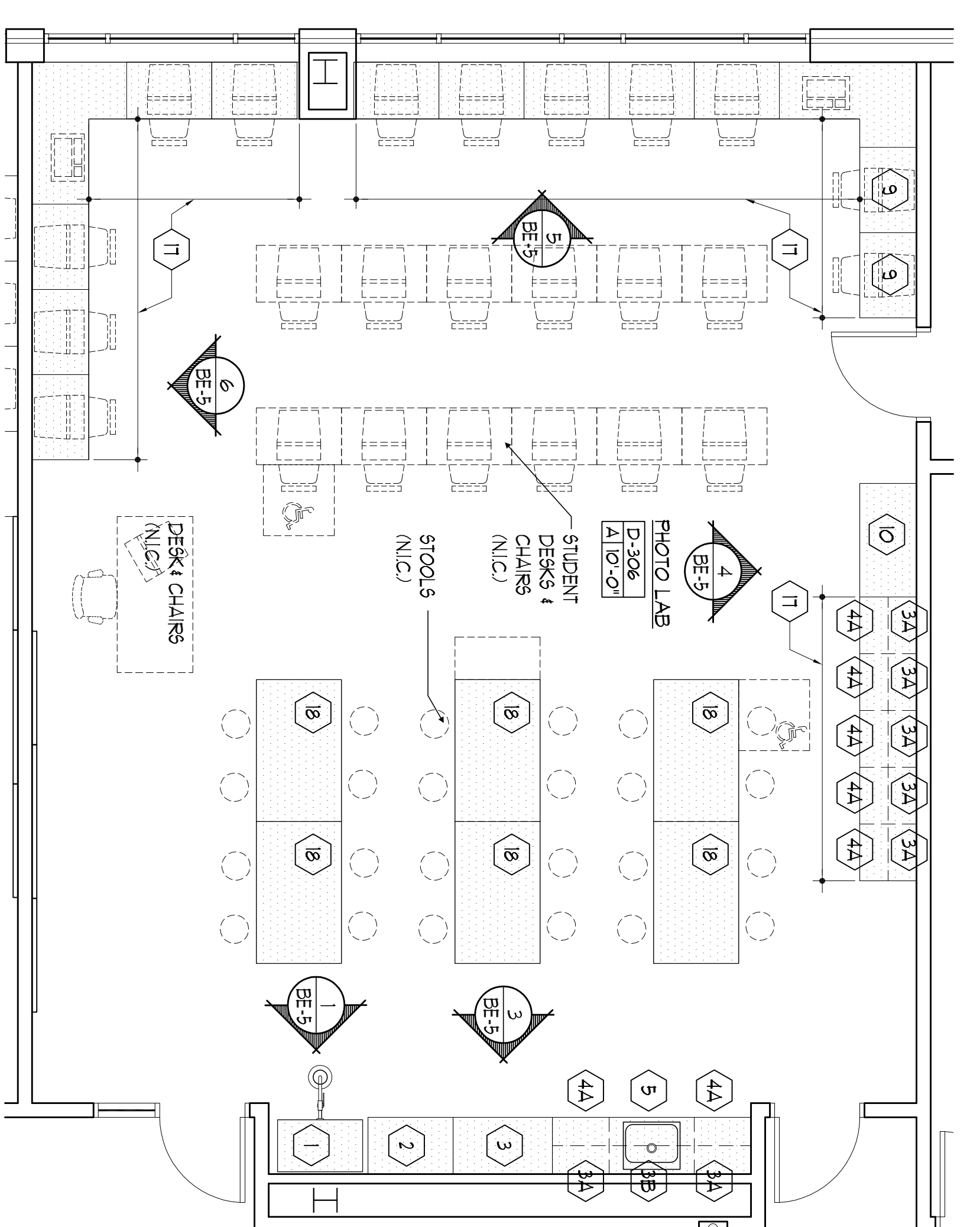
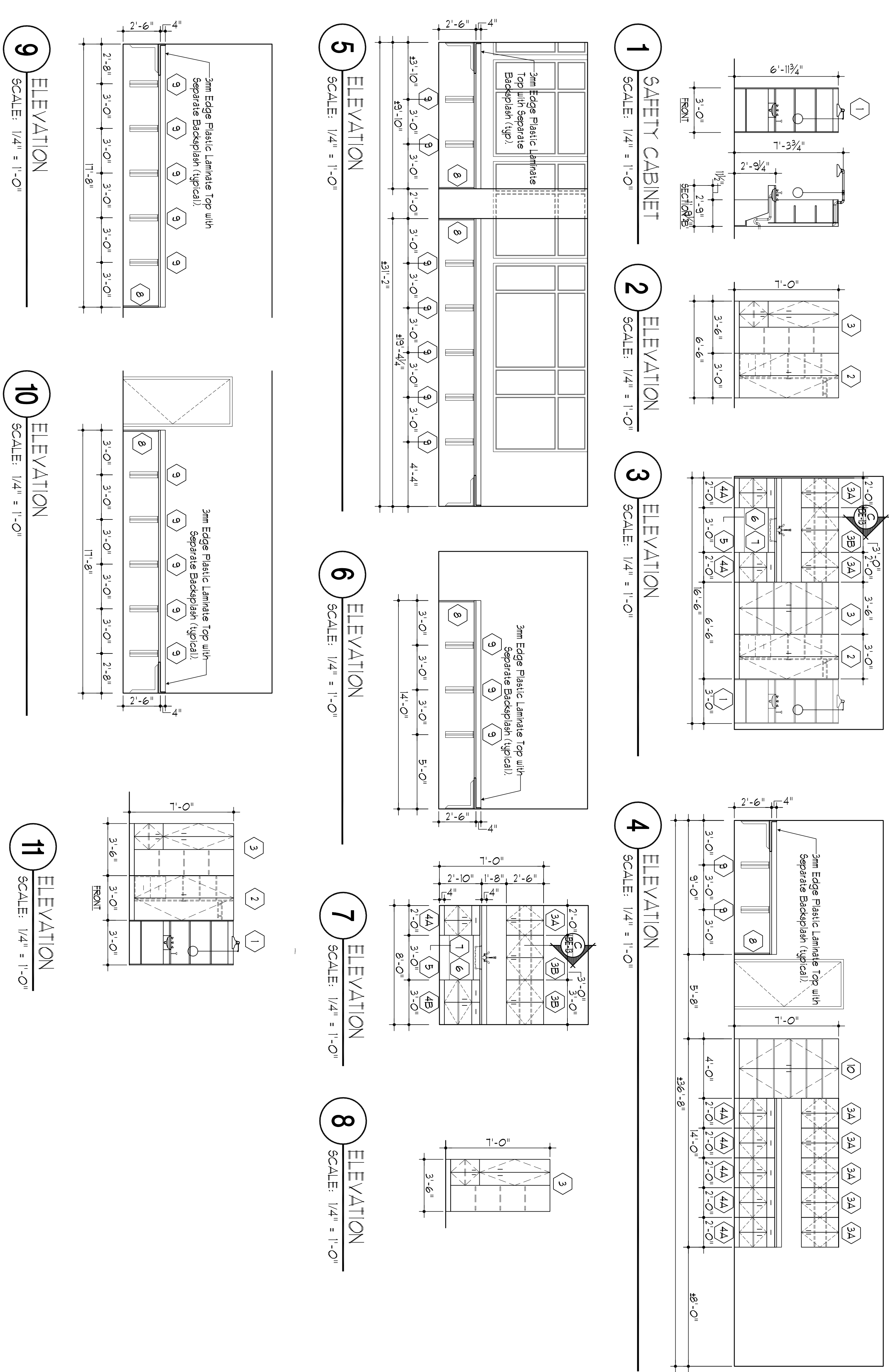


PHOTO LAB D-306
SCALE: 1/4" = 1'-0"



1 ELEVATION SCALE: 1/4" = 1'-0"
2 ELEVATION SCALE: 1/4" = 1'-0"
3 ELEVATION SCALE: 1/4" = 1'-0"
4 ELEVATION SCALE: 1/4" = 1'-0"
5 ELEVATION SCALE: 1/4" = 1'-0"
6 ELEVATION SCALE: 1/4" = 1'-0"
7 ELEVATION SCALE: 1/4" = 1'-0"
8 ELEVATION SCALE: 1/4" = 1'-0"
9 ELEVATION SCALE: 1/4" = 1'-0"
10 ELEVATION SCALE: 1/4" = 1'-0"
11 ELEVATION SCALE: 1/4" = 1'-0"

BE-5 EQUIPMENT SCHEDULE
* EXIST. - EXISTING EQUIPMENT - SEE NOTE #1
* SEE ELEVATIONS & PLAN FOR ADDITIONAL INFORMATION

NO.	TYPE	DESCRIPTION	DIMENSIONS W/D/H	PROPOSED					DESCRIPTION									
				OWNER	EXIST	FLOOR	TABLE	WALL		120V	208V	220V	DED	ENTER	LATER	DRAIN	ES/IS	SEWER
1	STAINLESS STEEL	STAINLESS STEEL SAFETY CABINET	36" x 21 1/2" x 84"	•	•	•	•	•	•	•	•	•	•	•	•	•	•	FLOOR DRAIN
2	TEACHER	TEACHER WARD	36" x 24" x 84"	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
3	TEACHER	TEACHER STORAGE	47" x 24" x 84"	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
4A	WALL	WALL CASE	24" x 27" x 30"	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
4B	WALL	WALL CASE	36" x 27" x 30"	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
4C	WALL	WALL CASE	24" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
4D	BASE	BASE CABINET	36" x 24" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
5	SINK	SINK BASE	36" x 27" x 34 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	•	PROVIDE SINK
6	BUILDING	BUILDING SINK	18" x 18" x 5"	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
7	FRONT	FRONT PANEL	18" x 8"	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
8	COMPUTER	COMPUTER STATION	36" x 24" x 34"	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
9	COMPUTER	COMPUTER STATION	36" x 24" x 34"	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
10	TALL	TALL STORAGE	36" x 24" x 84"	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
11	SCREEN	SCREEN FRONTIER		•	•	•	•	•	•	•	•	•	•	•	•	•	•	PROVIDE WALL BRACKETS
12	WASH	WASHOUT SINK	60" x 40 1/2"	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
13	NOT	NOT USED																
14	NOT	NOT USED																
15	NOT	NOT USED																
16	DIRECT	DIRECT TO FRONT	48" x 24"	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
17	TOP	TOP SHELF	60" x 36"	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
18	NOT	NOT USED																
19	NOT	NOT USED																
20	DRINK	DRINK SINK	48" x 24" x 24"	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
21	NOT	NOT USED																

- GENERAL NOTES:
1. SEE ELECTRICAL, PLUMBING & SPRINKLER DRAWINGS FOR ADDITIONAL INFORMATION.
2. CONTRACTOR TO VERIFY ALL DIMENSIONS IN THE FIELD AND COORDINATE INSTALLATION OF ALL EQUIPMENT AND UTILITIES.
3. CONTRACTOR TO VERIFY ALL DIMENSIONS IN THE FIELD AND COORDINATE INSTALLATION OF ALL EQUIPMENT AND UTILITIES.
4. SEE INSTRUCTIONS FOR ADDITIONAL INFORMATION.
5. SEE INSTRUCTIONS FOR ADDITIONAL INFORMATION.
6. ALL EQUIPMENT SPECIFIED AS PROVIDED BY OWNER AND REQUIRING UTILITY CONNECTIONS OR SUPPORT CIRCLES SHALL BE INSTALLED BY GC.
7. LOCKER EQUIPMENT / FURNITURE PROVIDED BY OWNER.
8. CONTRACTOR TO VERIFY ALL LOCKER EQUIPMENT AND FURNITURE TYPES, SIZES, LOCATIONS, AND SPECIFICATIONS WITH THE OWNER PRIOR TO INSTALLATION.
9. ALL OWNER-SUPPLIED EQUIPMENT AND FURNITURE SHALL BE INSTALLED BY GC.
10. THE OWNER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE BUILDING DEPARTMENT AND/OR APPROVED EQUAL.
11. THE OWNER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE BUILDING DEPARTMENT AND/OR APPROVED EQUAL.
12. GC TO PROVIDE ALL NECESSARY CONCEALED BLOCKING FOR ALL WALL SUPPORTED CABINETWORK IN ALL METAL STUD / GYPSUM BOARD TYPE PARTITIONS.

SDA
STATE OF NEW JERSEY
NJ SCHOOL DEVELOPMENT AUTHORITY

Design Ideas Group
Architects + Planners + Interiors

PROJECT # - 2008-2560-00

100% NJDCA CONSTRUCTION DOCUMENTS SUBMISSION
FOR:
NEW PHILLIPSBURG HIGH SCHOOL
DOE# 4100-N01-04-1000
SDA# NT-0003-C02

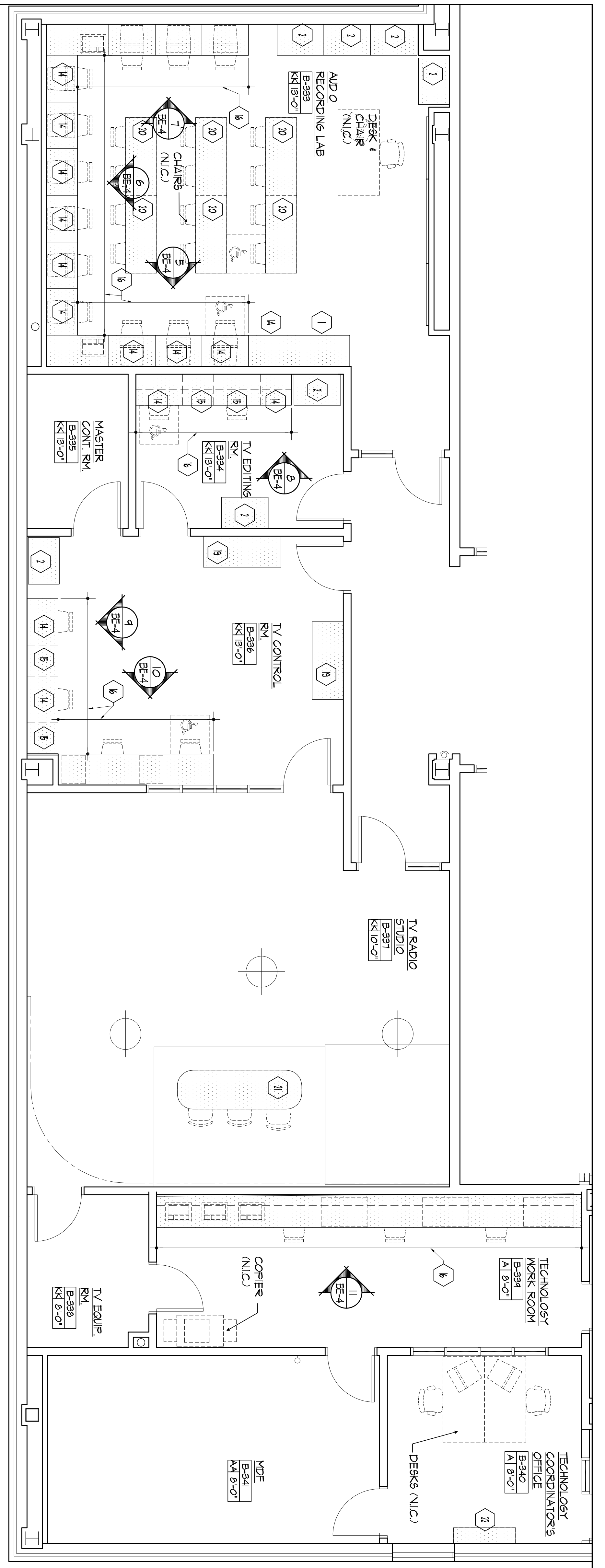
TOWN OF PHILLIPSBURG
UPPER BELVIDERE ROAD LOT 44 / BLOCK 2
PHILLIPSBURG, NEW JERSEY 08865

APPENDIX #1 11-21-12
NJDCA REVISIONS 03-12-12
NJDCA COMMENTS 03-04-11
NJDCA COMMENTS 03-08-12-10
NJDCA COMMENTS 05-17-10
NJDCA COMMENTS 02-12-10
DATE: OCTOBER 13, 2009
SCALE: AS NOTED

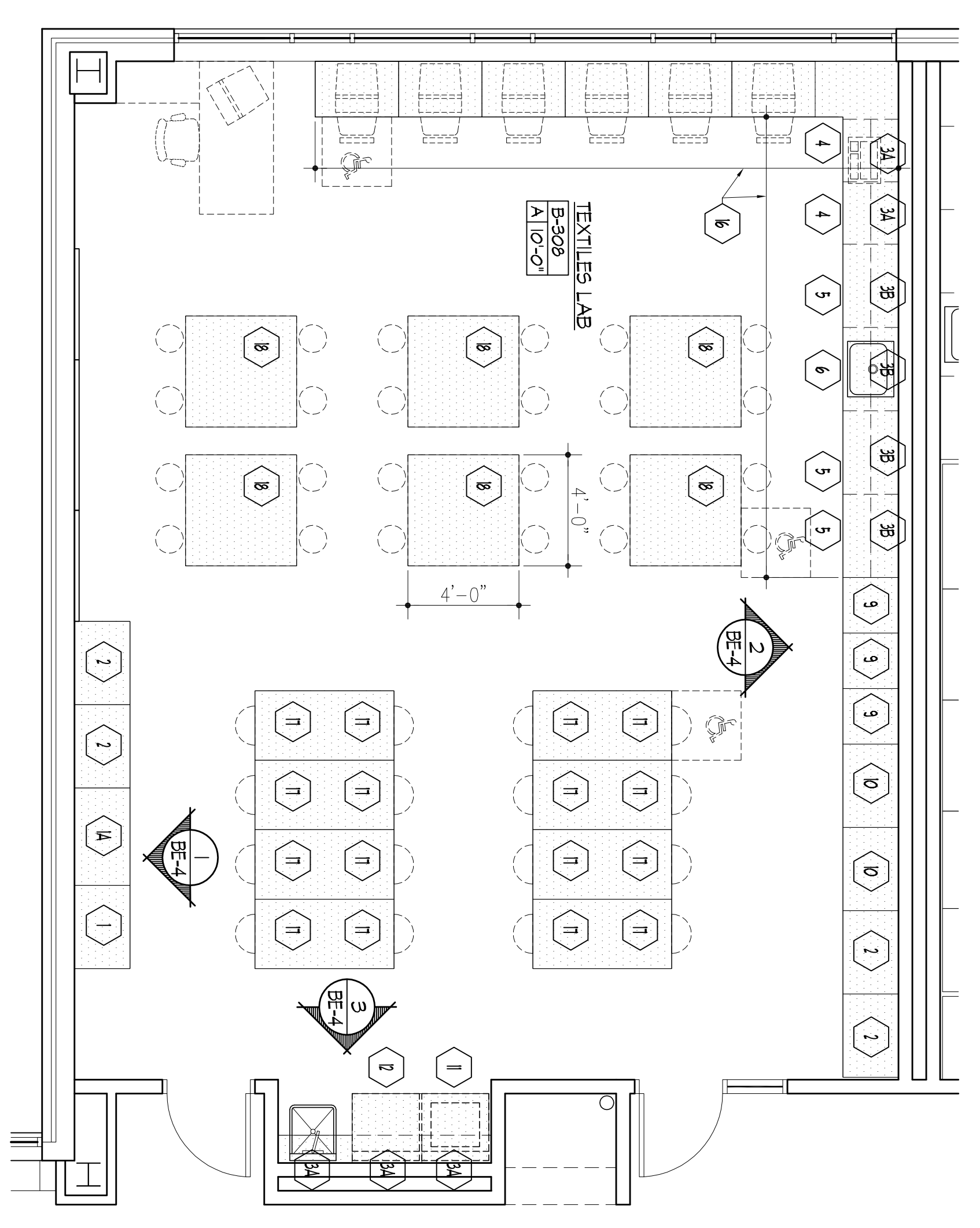
DRAWING TITLE:
**BUILT-IN EQUIPMENT
PLANS, SECTIONS
& SCHEDULE**

DRAWING NO.:
BE-5

DRAWN BY:

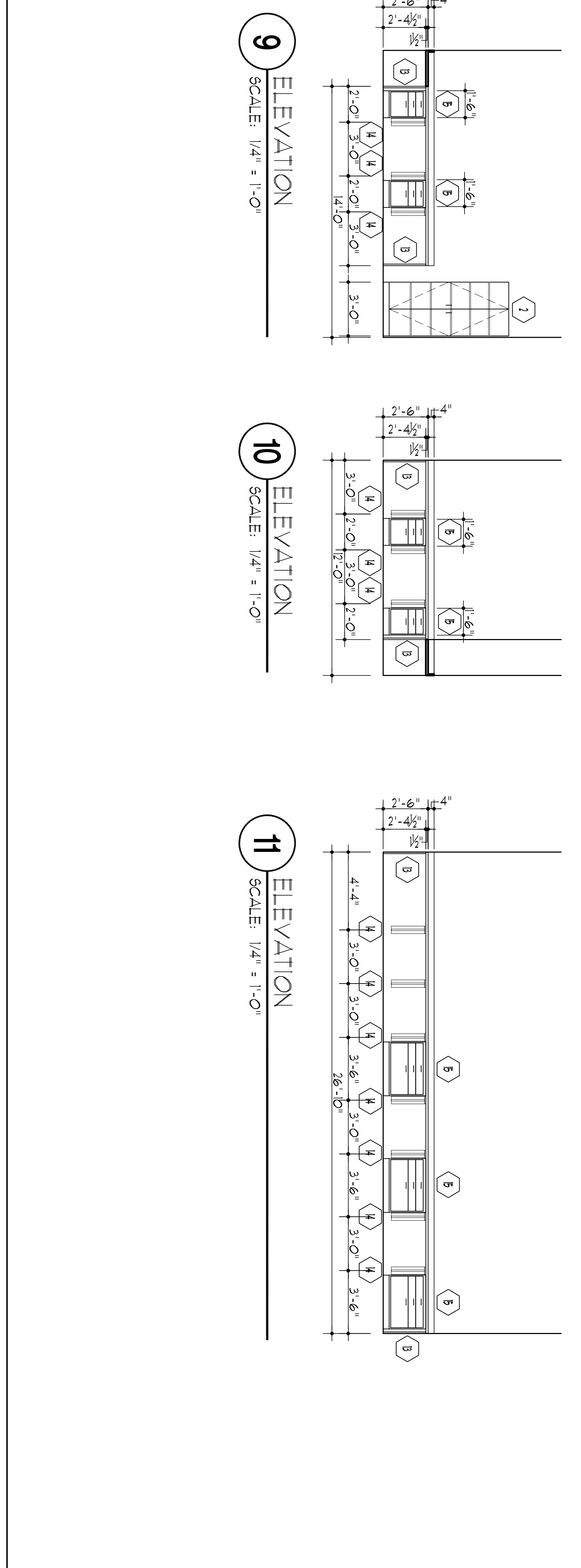
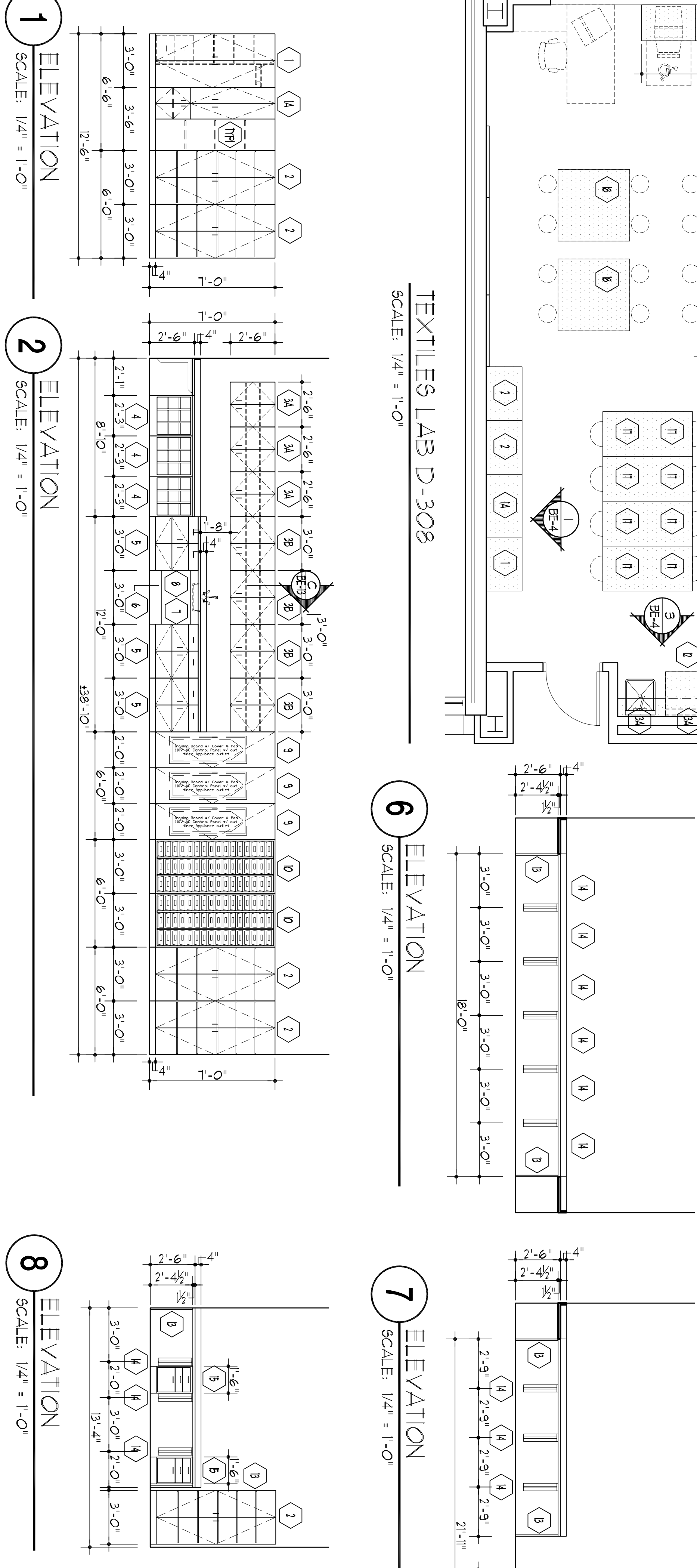
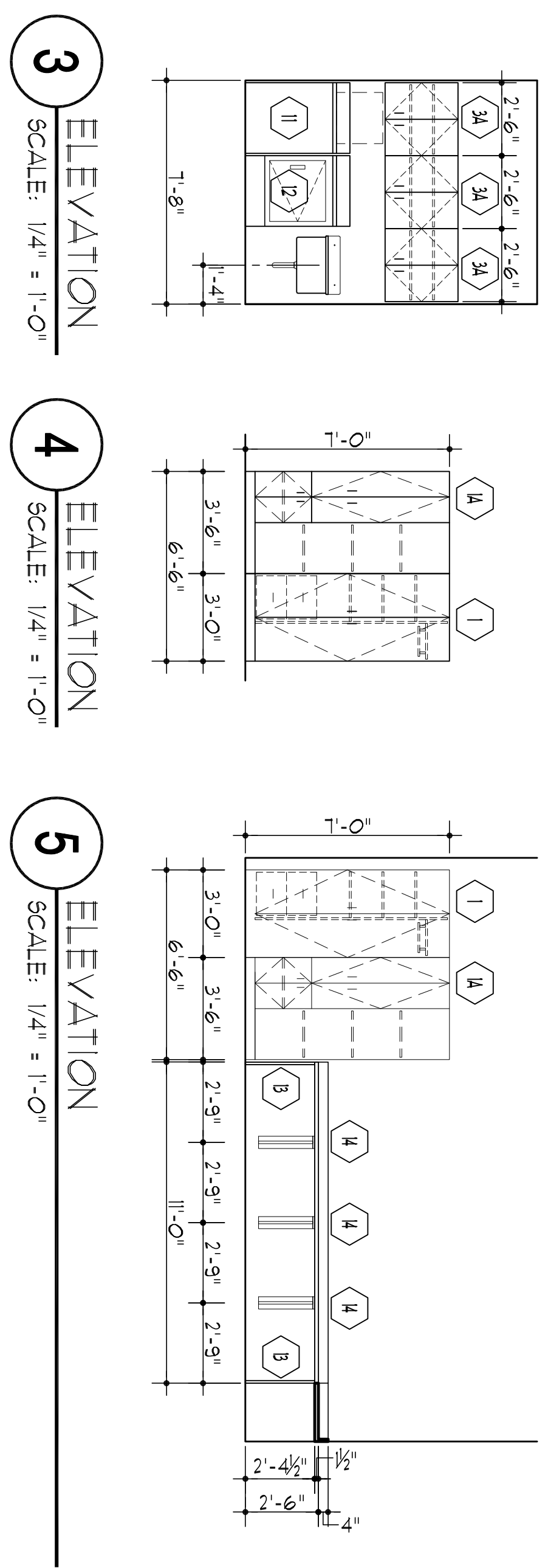


TV RADIO STUDIO AREA and TECH WORKROOM
SCALE: 1/4" = 1'-0"



TEXTILES LAB D-308
SCALE: 1/4" = 1'-0"

* EXIST - EXISTING EQUIPMENT - SEE NOTE #1		BE-4 EQUIPMENT SCHEDULE		EQUIPMENT SCHEDULE					DESCRIPTION							
NO.	TYPE	DESCRIPTION	DIMENSIONS 1/2" = 1'-0"	PROVIDED BY	FLOOR	TABLE	WALL	120V	200V	220V	DEP	ENTER	LATER	DRAIN	ES. / SERVICE	CON. / LEFT
1	TECHNOLOGY COORDINATOR'S OFFICE	TECHNOLOGY COORDINATOR'S OFFICE	12'0" x 12'0"	•	•	•	•	•	•	•	•	•	•	•	•	•
2	TECHNOLOGY OFFICE	TECHNOLOGY OFFICE	12'0" x 12'0"	•	•	•	•	•	•	•	•	•	•	•	•	•
3	DECKS	DECKS	12'0" x 12'0"	•	•	•	•	•	•	•	•	•	•	•	•	•
4	DECK	DECK	12'0" x 12'0"	•	•	•	•	•	•	•	•	•	•	•	•	•
5	DECK	DECK	12'0" x 12'0"	•	•	•	•	•	•	•	•	•	•	•	•	•
6	DECK	DECK	12'0" x 12'0"	•	•	•	•	•	•	•	•	•	•	•	•	•
7	DECK	DECK	12'0" x 12'0"	•	•	•	•	•	•	•	•	•	•	•	•	•
8	DECK	DECK	12'0" x 12'0"	•	•	•	•	•	•	•	•	•	•	•	•	•
9	DECK	DECK	12'0" x 12'0"	•	•	•	•	•	•	•	•	•	•	•	•	•
10	DECK	DECK	12'0" x 12'0"	•	•	•	•	•	•	•	•	•	•	•	•	•
11	DECK	DECK	12'0" x 12'0"	•	•	•	•	•	•	•	•	•	•	•	•	•
12	DECK	DECK	12'0" x 12'0"	•	•	•	•	•	•	•	•	•	•	•	•	•
13	DECK	DECK	12'0" x 12'0"	•	•	•	•	•	•	•	•	•	•	•	•	•
14	DECK	DECK	12'0" x 12'0"	•	•	•	•	•	•	•	•	•	•	•	•	•
15	DECK	DECK	12'0" x 12'0"	•	•	•	•	•	•	•	•	•	•	•	•	•
16	DECK	DECK	12'0" x 12'0"	•	•	•	•	•	•	•	•	•	•	•	•	•
17	DECK	DECK	12'0" x 12'0"	•	•	•	•	•	•	•	•	•	•	•	•	•
18	DECK	DECK	12'0" x 12'0"	•	•	•	•	•	•	•	•	•	•	•	•	•
19	DECK	DECK	12'0" x 12'0"	•	•	•	•	•	•	•	•	•	•	•	•	•
20	DECK	DECK	12'0" x 12'0"	•	•	•	•	•	•	•	•	•	•	•	•	•
21	DECK	DECK	12'0" x 12'0"	•	•	•	•	•	•	•	•	•	•	•	•	•
22	DECK	DECK	12'0" x 12'0"	•	•	•	•	•	•	•	•	•	•	•	•	•



- GENERAL NOTES:
- SEE ELECTRICAL, HVAC, PLUMBING & BRONNER DRAWINGS FOR ADDITIONAL INFORMATION.
 - CONTRACTOR TO VERIFY ALL UTILITIES ARE CORRECTLY LOCATED AND DEPTH.
 - SEE STRUCTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
 - ALL HAZARDOUS EQUIPMENT SHALL BE ON 140KVA ENERGY SHUT-OFFS.
 - ALL EQUIPMENT SPECIFIED AS PROVIDED BY OWNER AND REQUIRING UTILTY CONNECTIONS OR SUPPORT CREWS SHALL BE INSTALLED BY GC.
 - CONTRACTOR TO VERIFY ALL LOOSE EQUIPMENT AND FURNITURE TYPES, SIZES, LOCATIONS, AND SPECIFICATIONS WITH THE OWNER PRIOR TO INSTALLATION AND LOCK UP OF RELATED UTILITIES.
 - ALL OWNER-SUPPLIED EQUIPMENT AND FURNITURE REQUIRING UTILTY CONNECTIONS BY GC IS SHOWN SOLID ON BUILT-IN EQUIPMENT DRAWINGS.
 - CONTRACTOR TO VERIFY ALL UTILITIES ARE CORRECTLY LOCATED AND DEPTH.
 - THE OWNER SHALL BE RESPONSIBLE TO DELIVER ALL EXISTING EQUIPMENT TO THE BUILDING SITE TO ANY CASSED UPON STAGING AREA (IE PARKING BUILDING AND NEARBY) LOCATED ON THE CONSTRUCTION DOCUMENTS, INCLUDING ALL REQUIRED MECHANICAL, ELECTRICAL, ETC. HOOK UPS.
 - GC TO PROVIDE ALL NECESSARY CONCEALED BLOCKING FOR ALL WALL-SUPPORTED CABINETS IN ALL THE ALL BUILD / GRANT BOARD THE PARTITIONS.

SDA
STATE OF NEW JERSEY
NJ SCHOOL DEVELOPMENT AUTHORITY

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FOR:
NEW PHILLIPSBURG HIGH SCHOOL
DOE# 4100-N01-04-1000
SDA# NT-0003-C02

TOWN OF PHILLIPSBURG
UPPER BELVIDERE ROAD LOT 44 / BLOCK 2
PHILLIPSBURG, NEW JERSEY 08865

PROJECT # 2008-956-00

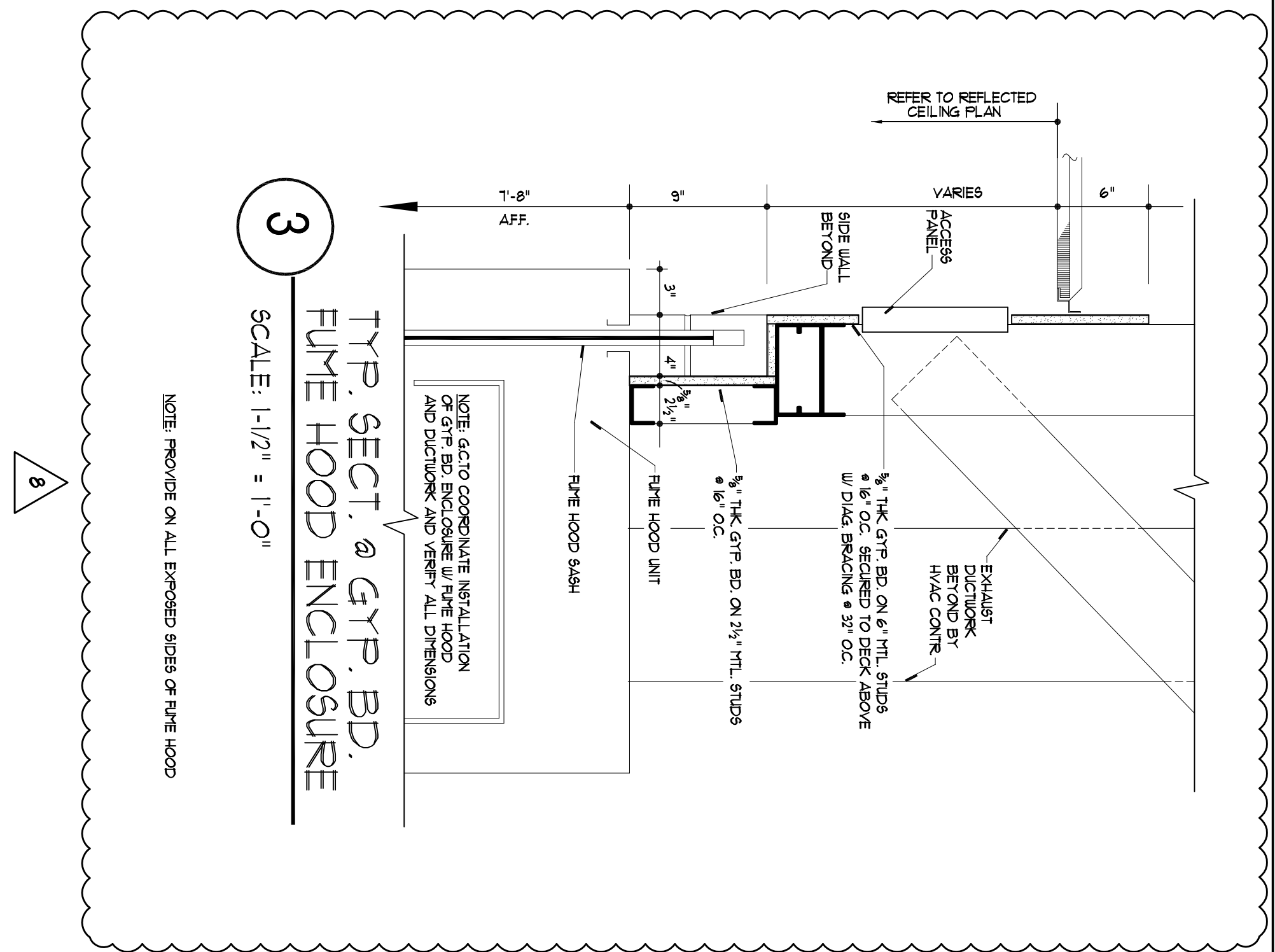
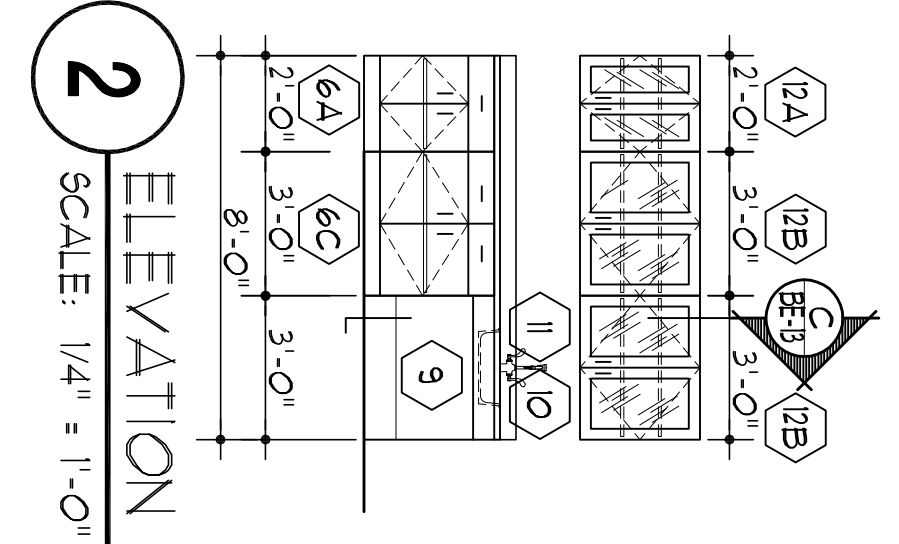
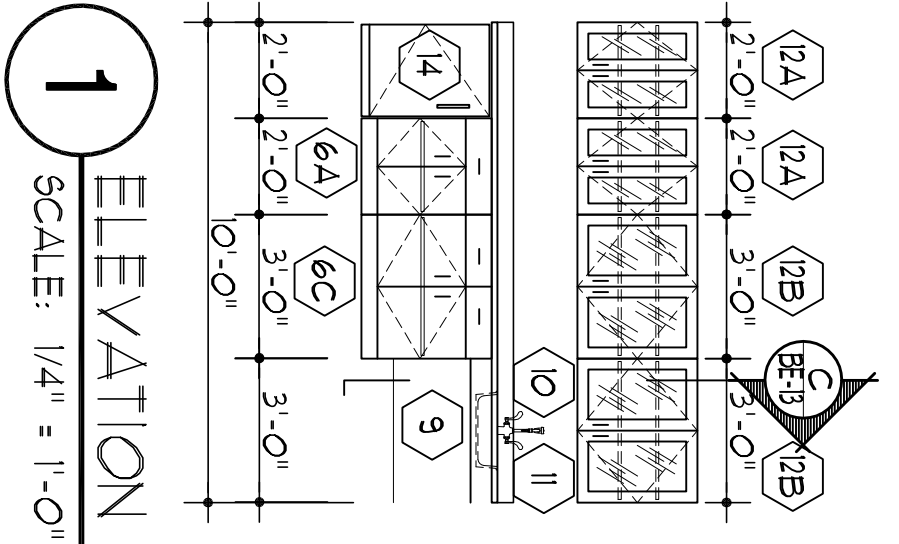
DESIGNER: **Design Ideas Group**
ARCHITECTS & PLANNERS, LLC

APPENDIX #1 11-21-12
NJSDA REVISIONS 08-12-12
NJDCA COMMENTS 03-04-11
NJDCA COMMENTS 03-08-12-10
NJDCA COMMENTS 05-17-10
DATE: OCTOBER 13, 2009
SCALE: AS NOTED

SUBMISSION DATE

DRAWING TITLE:
**BUILT-IN EQUIPMENT
PLANS SECTIONS
& SCHEDULE**

DRAWING NO.:
BE-4



SCIENCE LABS - BE-1 - EQUIPMENT SCHEDULE

NO.	FIGHER HAMILTON NO.	DESCRIPTION	DIMENSIONS H x D x W	EQUIPMENT SCHEDULE											DESCRIPTION			
				PROVIDED	EXIST	FLOOR TABLE	WALL	120V	208V	220V	DEP	EMER	WATER	DRAIN		ES & S/S	STAIR/E	
1	980C370	SAFETY CABINET	36" x 21 1/2" x 64"	•														FLOOR DRAIN
2A	806C642	TALL STORAGE	36" x 24" x 84"	•														
2B	806C752	TEACHER STORAGE	47" x 24" x 84"	•														
2C	806C291	TALL STORAGE	48" x 24" x 84"	•														
3	980C372	TEACHER WAREHOUSE	36" x 24" x 84"	•														
4	980C371	FUME HOOD	60" x 31" x 85"	•														60" CUL. WALL AIR VAC
5A	100C316	WALL CASE	12" x 22" x 30"	•														
5B	100C331	WALL CASE	30" x 22" x 30"	•														
5C	100C431	WALL CASE	36" x 22" x 30"	•														
6A	137C412	BASE CABINET	24" x 24" x 42"	•														
6B	148C512	BASE CABINET	30" x 24" x 42"	•														
6C	148C412	BASE CABINET	36" x 24" x 42"	•														
7	980C370	SIDE PANEL	24" x 28"	•														
8	100B300BL	HEAVY DUTY BRACKETS	36" x 24" x 24"	•														PROVIDE MTL. BRACKETS
9	980C027	PROVIDE SINK BRACKETS	36" x 22" x 25"	•														PROVIDE SINK
10	980C027	BRACKETS	18" x 18" x 5"	•														
11	34L0000	FLUORESCENT FITTING	15 #	•														
12A	100C431	WALL CASE	24" x 12" x 31"	•														QUANTITIES VARY
12B	100C631	WALL CASE	36" x 12" x 31"	•														QUANTITIES VARY
13	198C412	BASE CABINET	24" x 12" x 31"	•														
14	110C-16	COMPACT LAUNCH COIN	18" x 5 1/2" x 31 1/2"	•														
15	944C5140	4 STUDENT UNITS	17" x 42" x 31 1/2"	•														
16	980C230	60" BASE CABINET	17" x 42" x 31 1/2"	•														
17	980C230	TEACHER LAB ASSEMBLY	60" x 30" x 35"	•														
18	940C0210	TEACHER DEMO DESK	60" x 30" x 35"	•														VARIABLE DESK DRAWER SERV.
19	180C310	DESK ATTACHMENT	48" x 30" x 30"	•														
20	180C310	DESK ATTACHMENT	48" x 27" x 35"	•														
21	100L446C	24" DEEP IN THICK	36" x 8" x 80"	•														PROVIDE IN THICKNESS FOR LOCATION ON A-01
22	980C370	EXHAUST FAN	24" x 24" x 24"	•														
23	980C370	EXHAUST FAN	24" x 24" x 24"	•														
24	980C370	EXHAUST FAN	24" x 24" x 24"	•														WITH 10 DIVIDERS

- GENERAL NOTES:
- SEE ELECTRICAL W/AC PLUMBING & BRONCE FOR ADDITIONAL INFORMATION.
 - CONTRACTOR TO VERIFY ALL DIMENSIONS IN THE FIELD AND CORRECTIVE INSTALLATION OF ALL EQUIPMENT AND UTILITIES.
 - CONTRACTOR TO VERIFY ALL DIMENSIONS IN THE FIELD AND CORRECTIVE INSTALLATION OF ALL EQUIPMENT AND UTILITIES.
 - SEE STRUCTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
 - SEE MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION.
 - ALL EQUIPMENT SPECIFIED AS PROVIDED BY OWNER AND REQUIRING UTILITY CONNECTIONS OR SUPPORT CHAINS SHALL BE INSTALLED BY GC.
 - LOOSE EQUIPMENT / FURNITURE PROVIDED BY OWNER.
 - CONTRACTOR TO VERIFY ALL LOOSE EQUIPMENT AND FURNITURE TYPES, LOCATIONS, AND SPECIFICATIONS WITH THE OWNER PRIOR TO INSTALLATION.
 - AND CHECK FOR ALL FIELD UTILITIES AND REQUIRING UTILITY CONNECTIONS BY GC. IS SHOWN SOLID ON BUILT IN EQUIPMENT DRAWINGS.
 - MADE SURE ARE BASIS OF DESIGN SEE SPECIFICATION FOR ADDITIONAL INFO LISTING ADDITIONAL VAPOR AND/OR APPROVED EQUAL.
 - LOT NEAR BUILDING ENTRANCE THE CONTRACTOR SHALL BE RESPONSIBLE TO TAKE EXISTING EQUIPMENT FROM THE STANDING AREA AND INTO THE NEW.
 - CONTRACTOR TO VERIFY ALL DIMENSIONS AND SPECIFICATIONS WITH THE OWNER PRIOR TO INSTALLATION.
 - GC TO PROVIDE ALL NECESSARY CONCEALED BLOCKING FOR ALL WALL SUPPORTED CABINETWORK IN ALL VERTICAL STUD / GYPSUM BOARD TYPE PARTITIONS.

SDA
STATE OF NEW JERSEY
NJ SCHOOL DEVELOPMENT AUTHORITY

PROJECT # - 2008-0360-00

DESIGNER: **Design Ideas Group**
ARCHITECTURE + DESIGN LLC

100% NJDCA CONSTRUCTION DOCUMENTS SUBMISSION FOR:
NEW PHILLIPSBURG HIGH SCHOOL
DOE# 4100-N01-04-1000
SDA# NT-0003-C02

TOWN OF PHILLIPSBURG
UPPER BELVIDERE ROAD LOT 44 / BLOCK 2
PHILLIPSBURG, NEW JERSEY 08865

APPENDIX #1 / 11-21-12
NJDCA REVISIONS / 09-12-12
NJDCA COMMENTS / 03-04-11
NJDCA COMMENTS / 08-12-10
NJDCA COMMENTS / 05-17-10
NJDCA COMMENTS / 02-12-10
DATE: OCTOBER 13, 2009
SCALE: NONE

DRAWING TITLE:
BUILT-IN EQUIPMENT SECTIONS & SCHEDULES

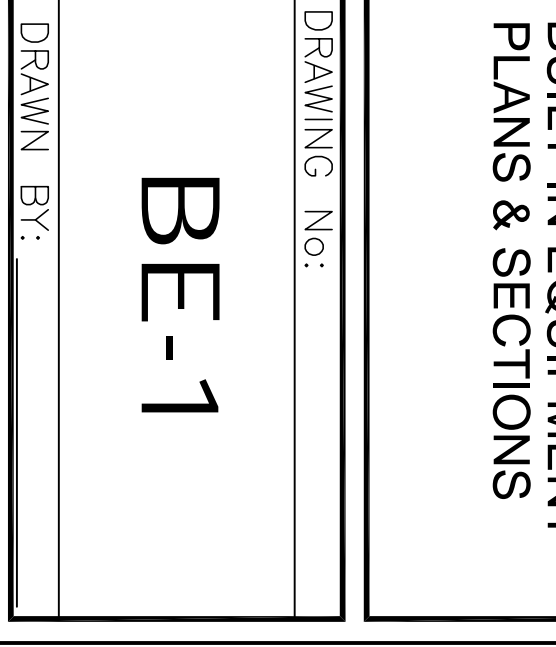
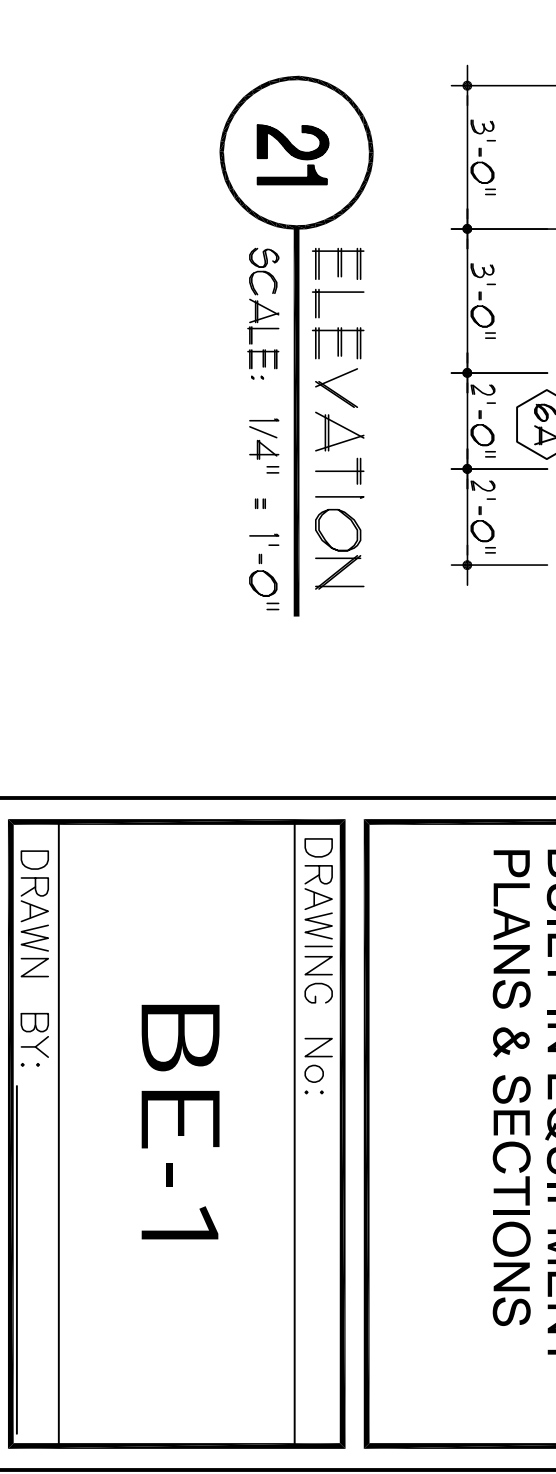
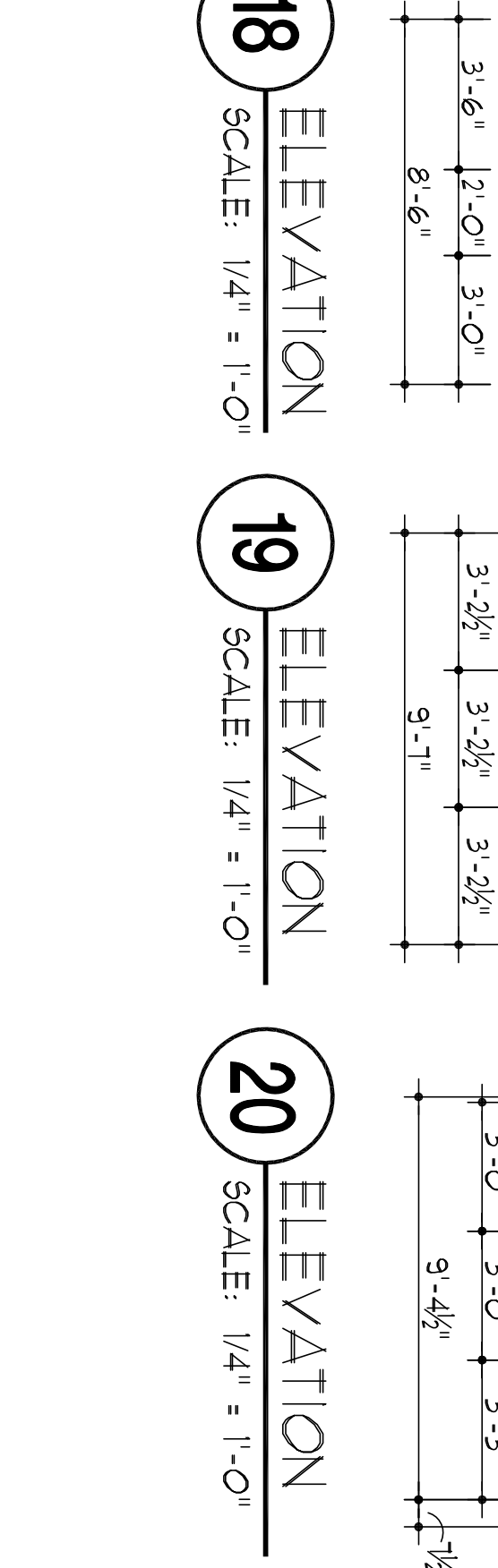
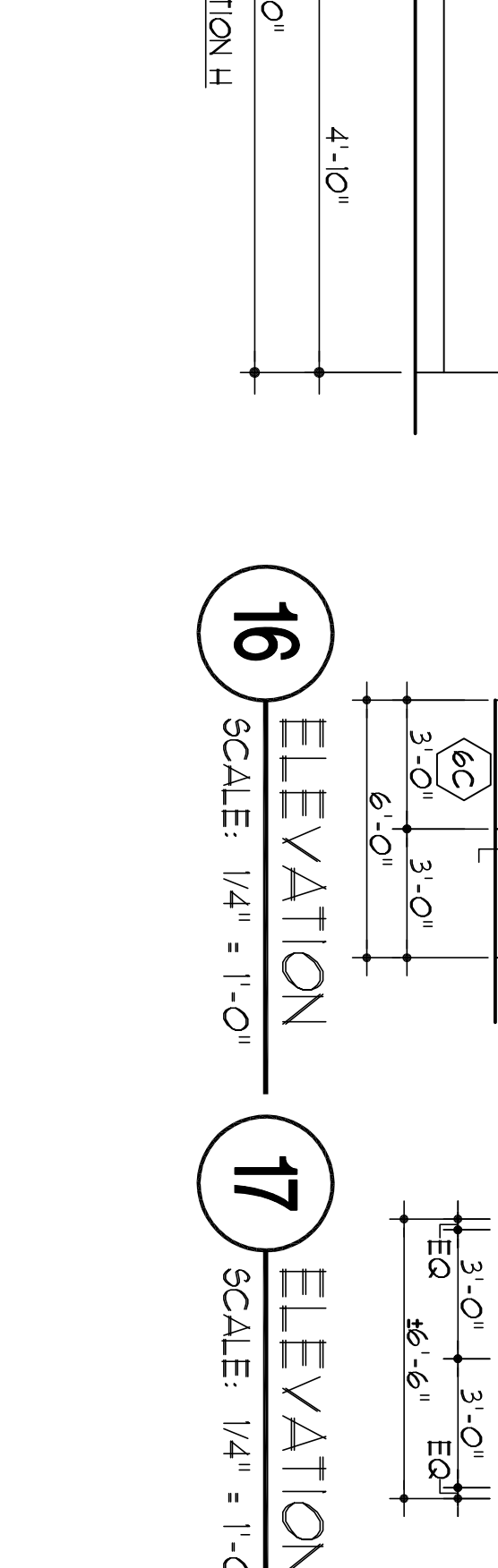
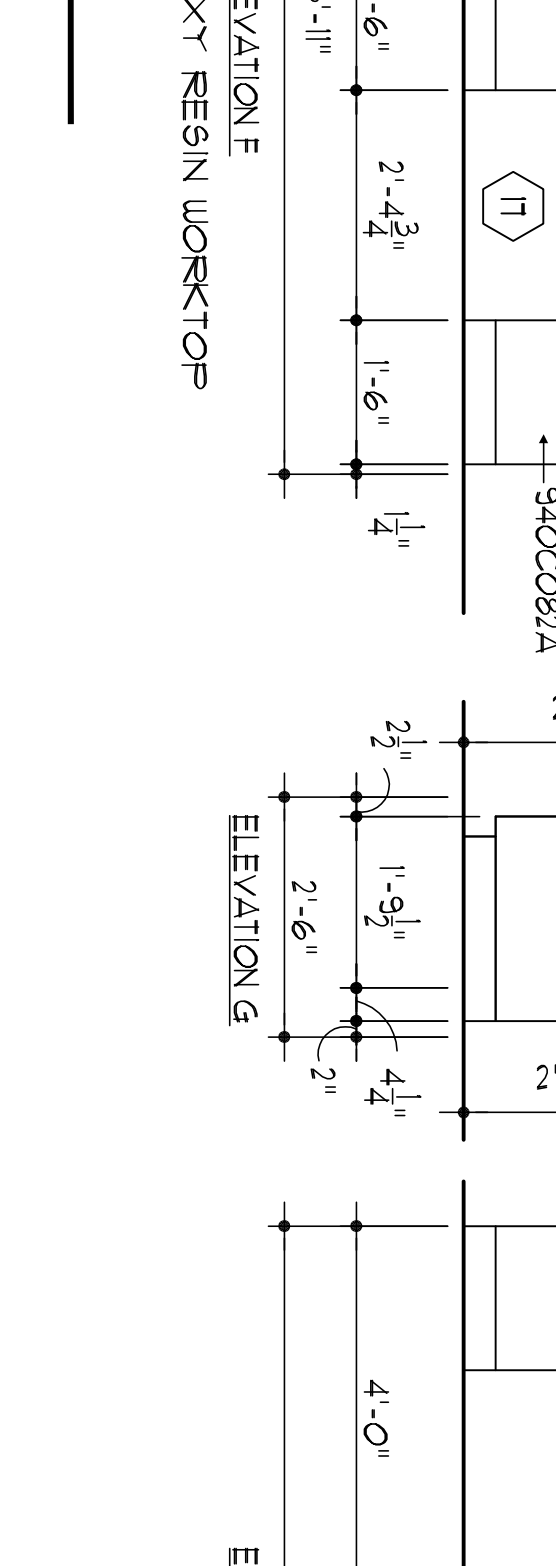
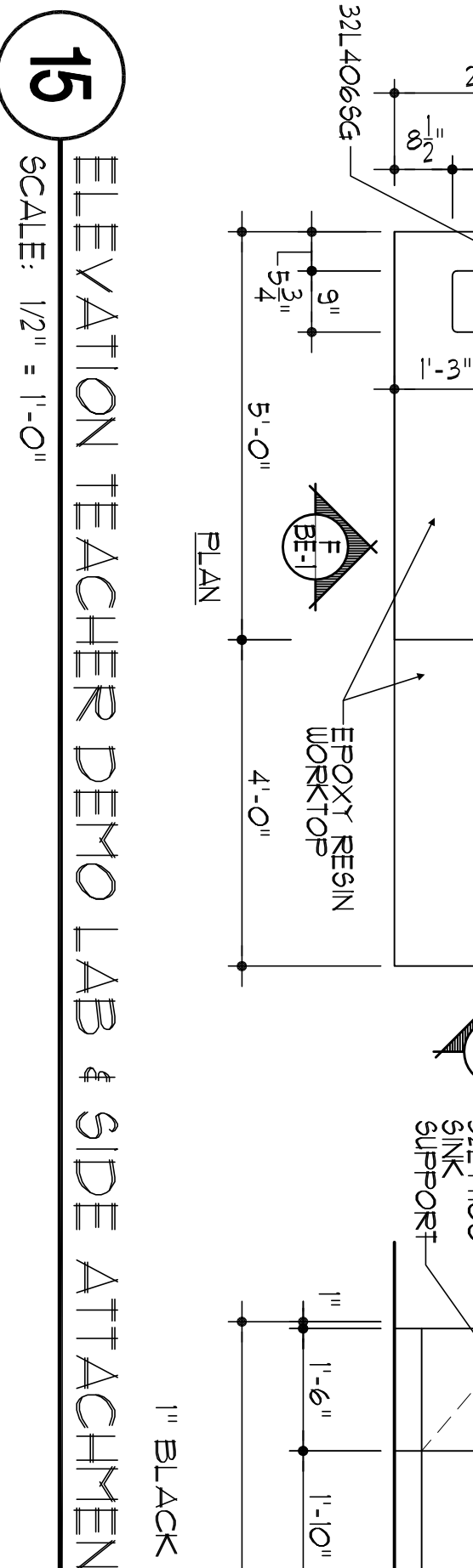
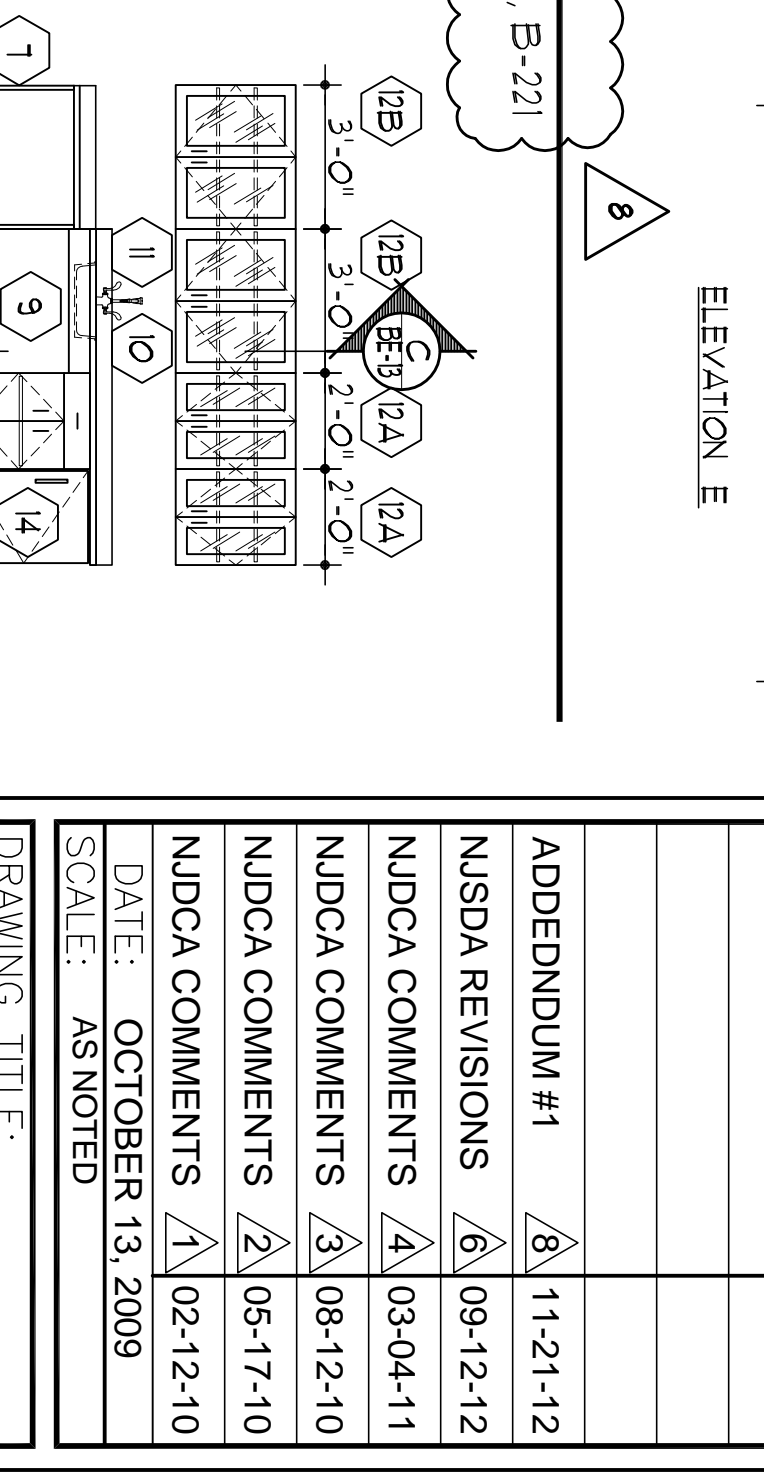
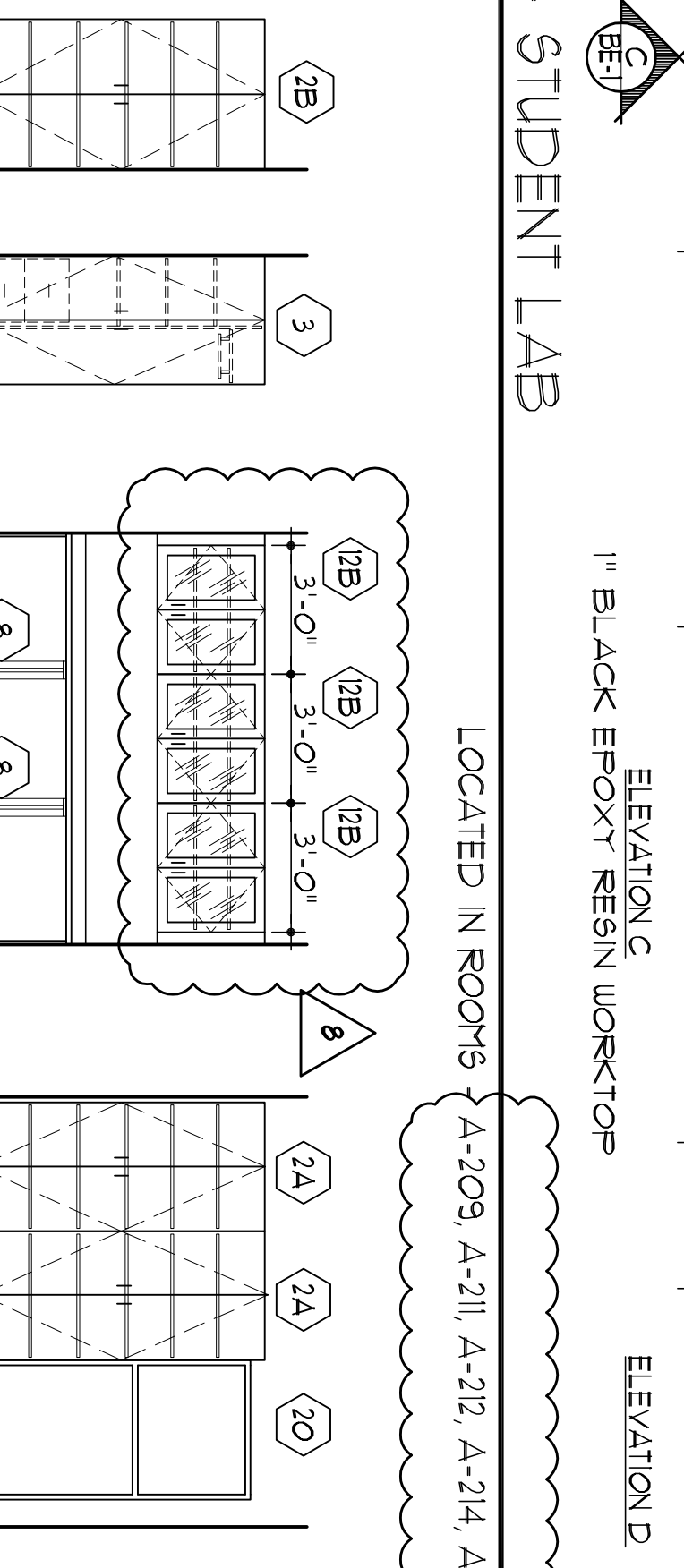
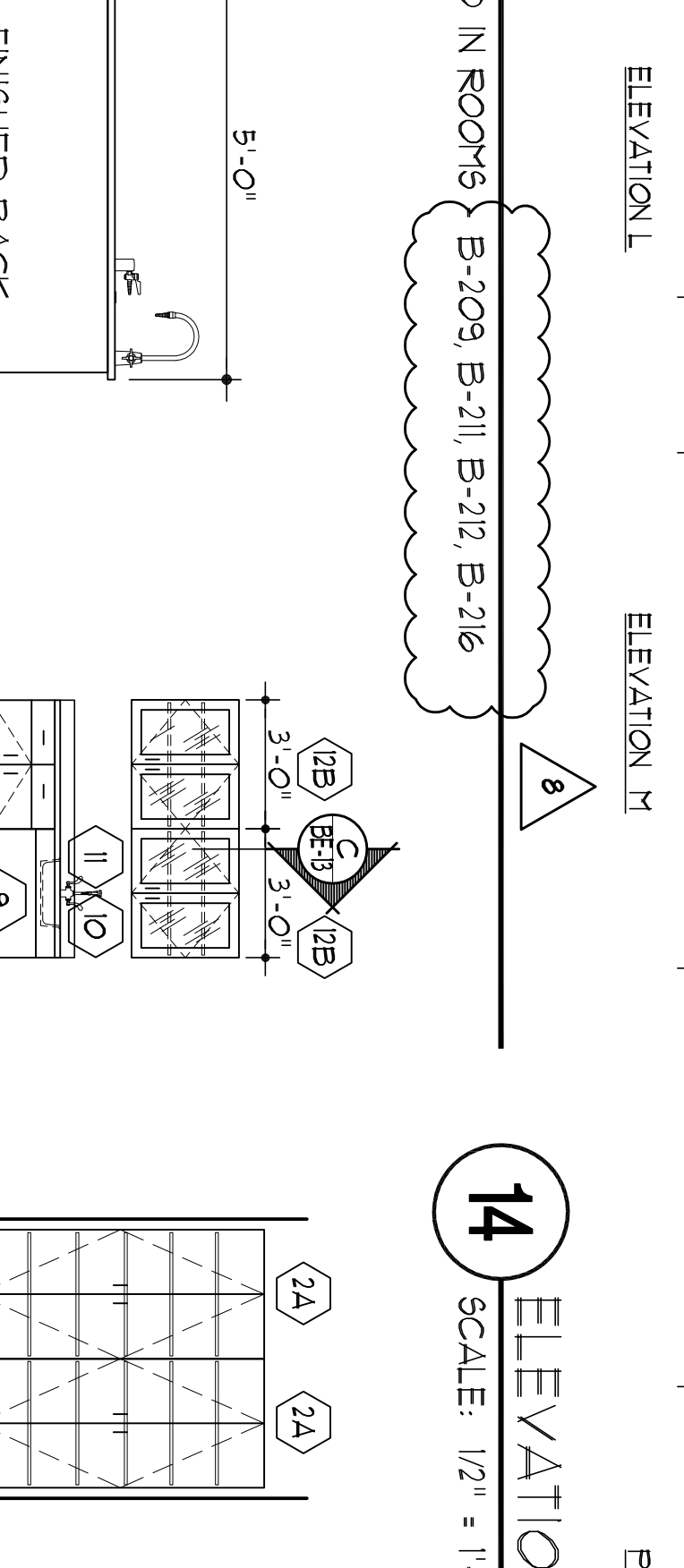
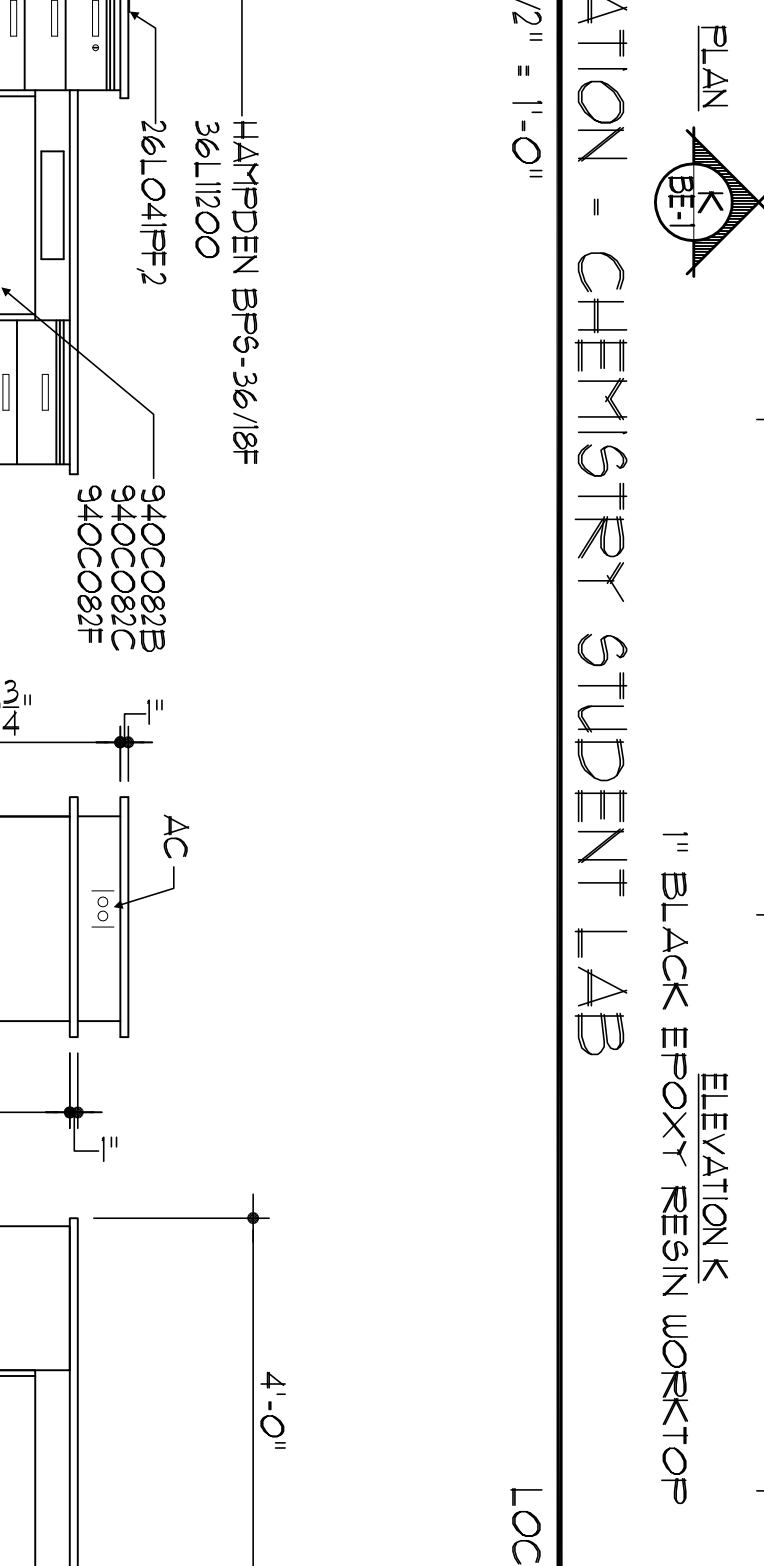
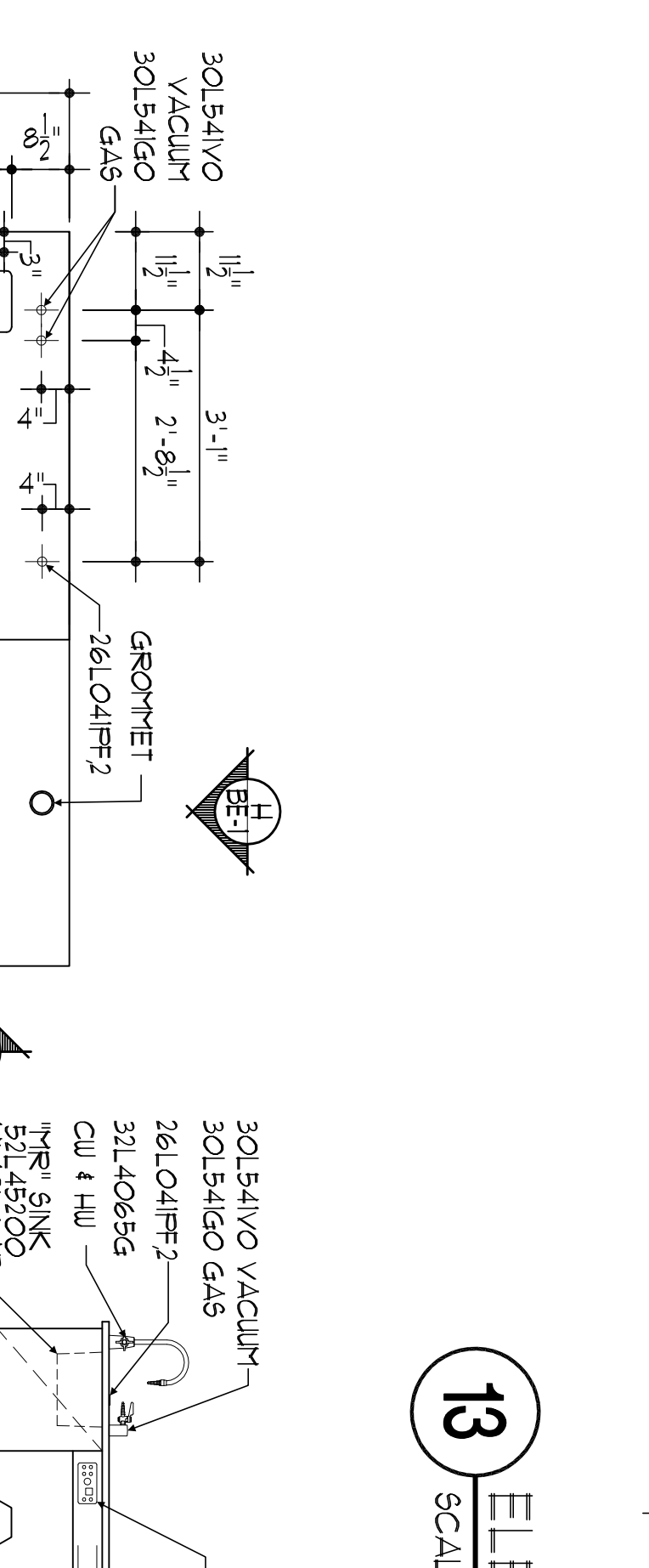
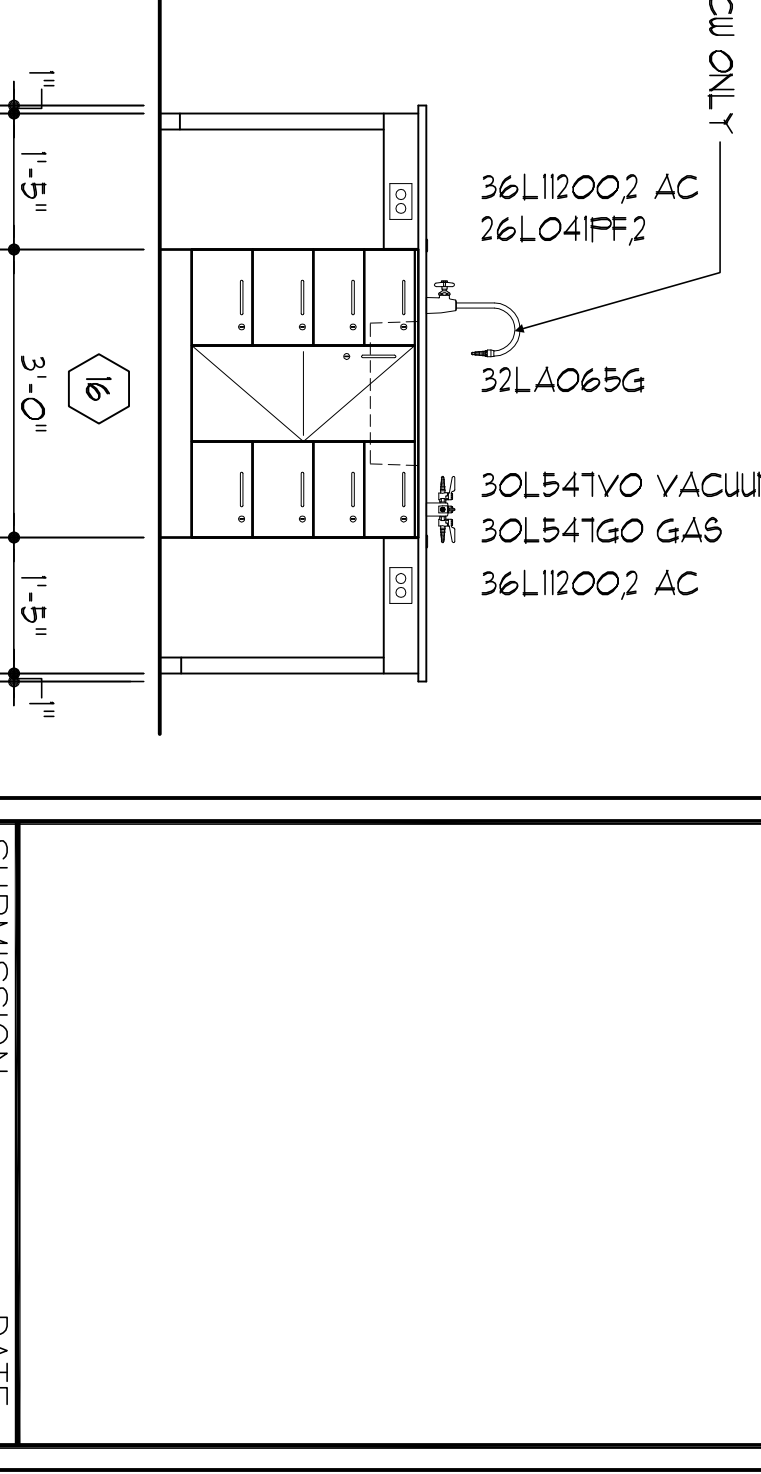
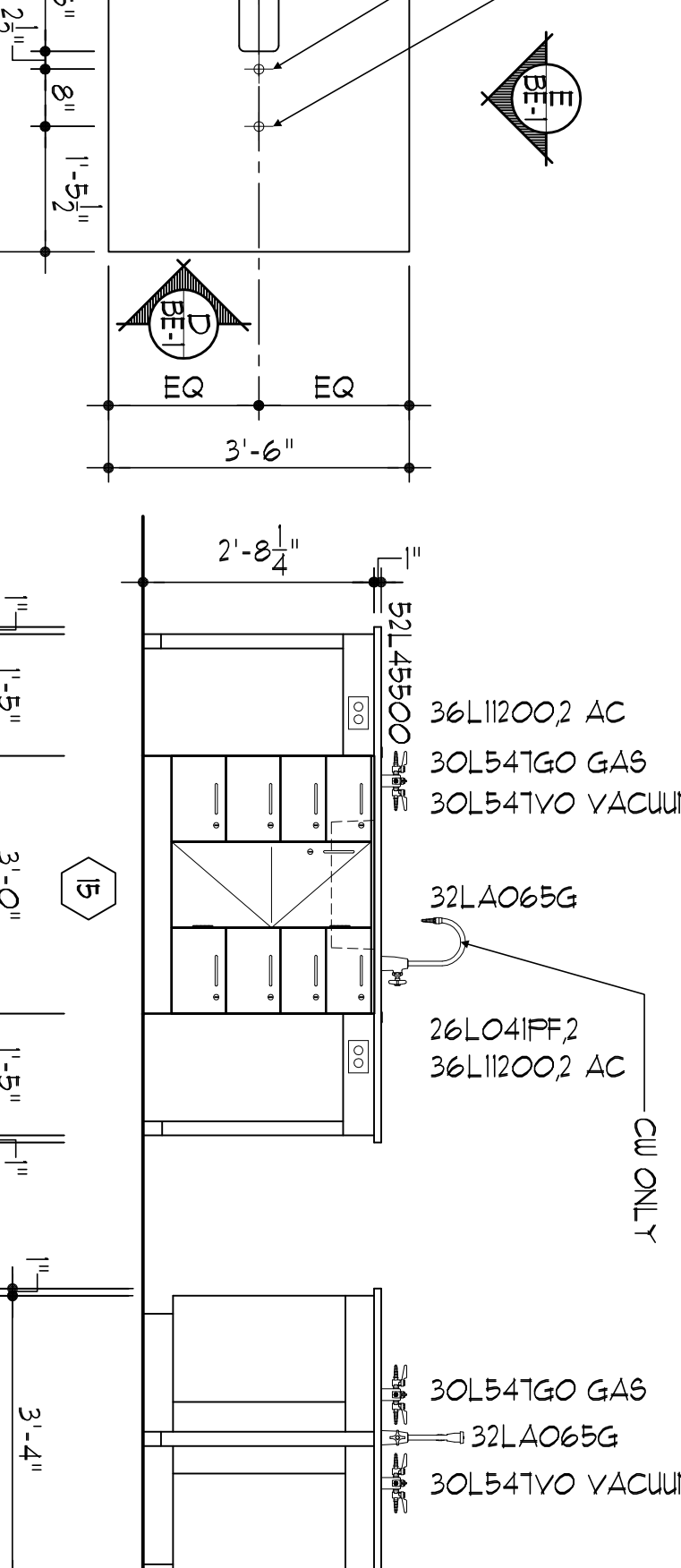
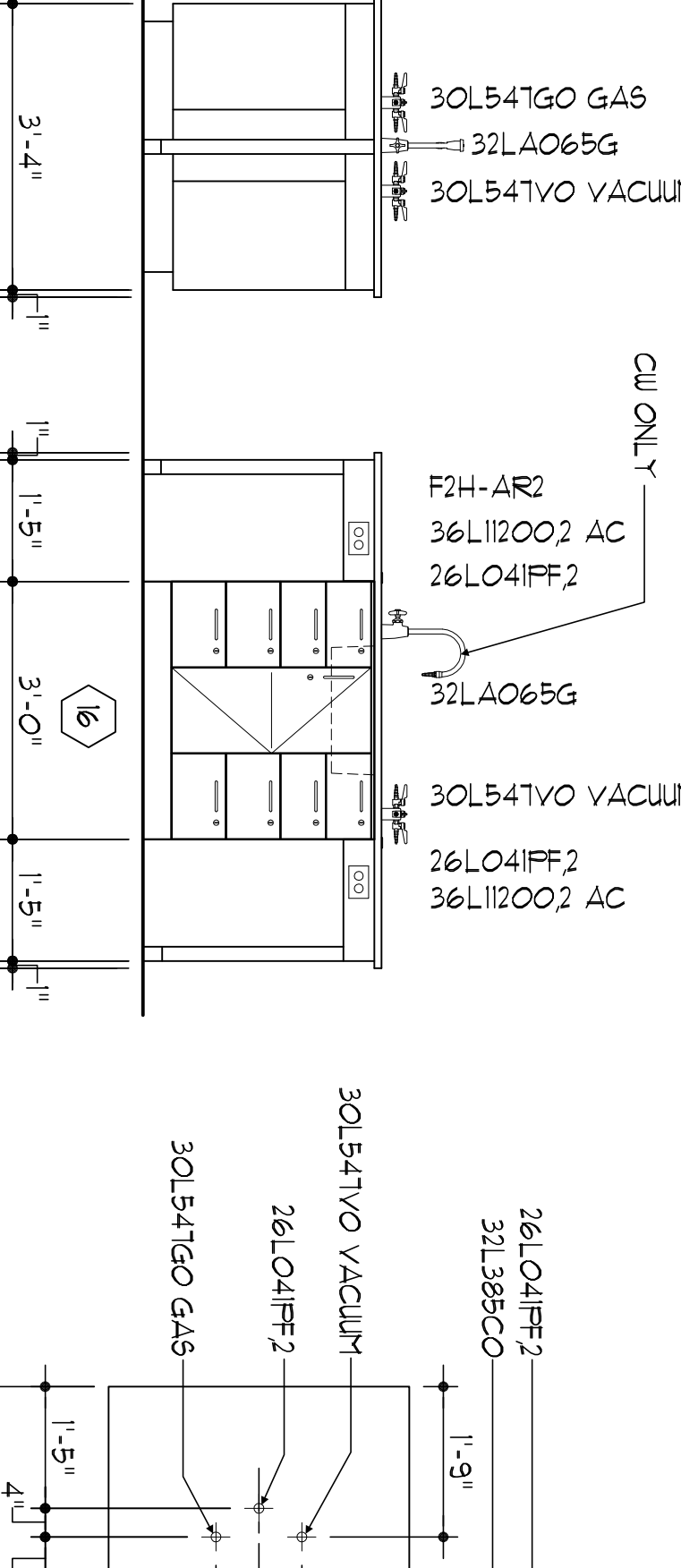
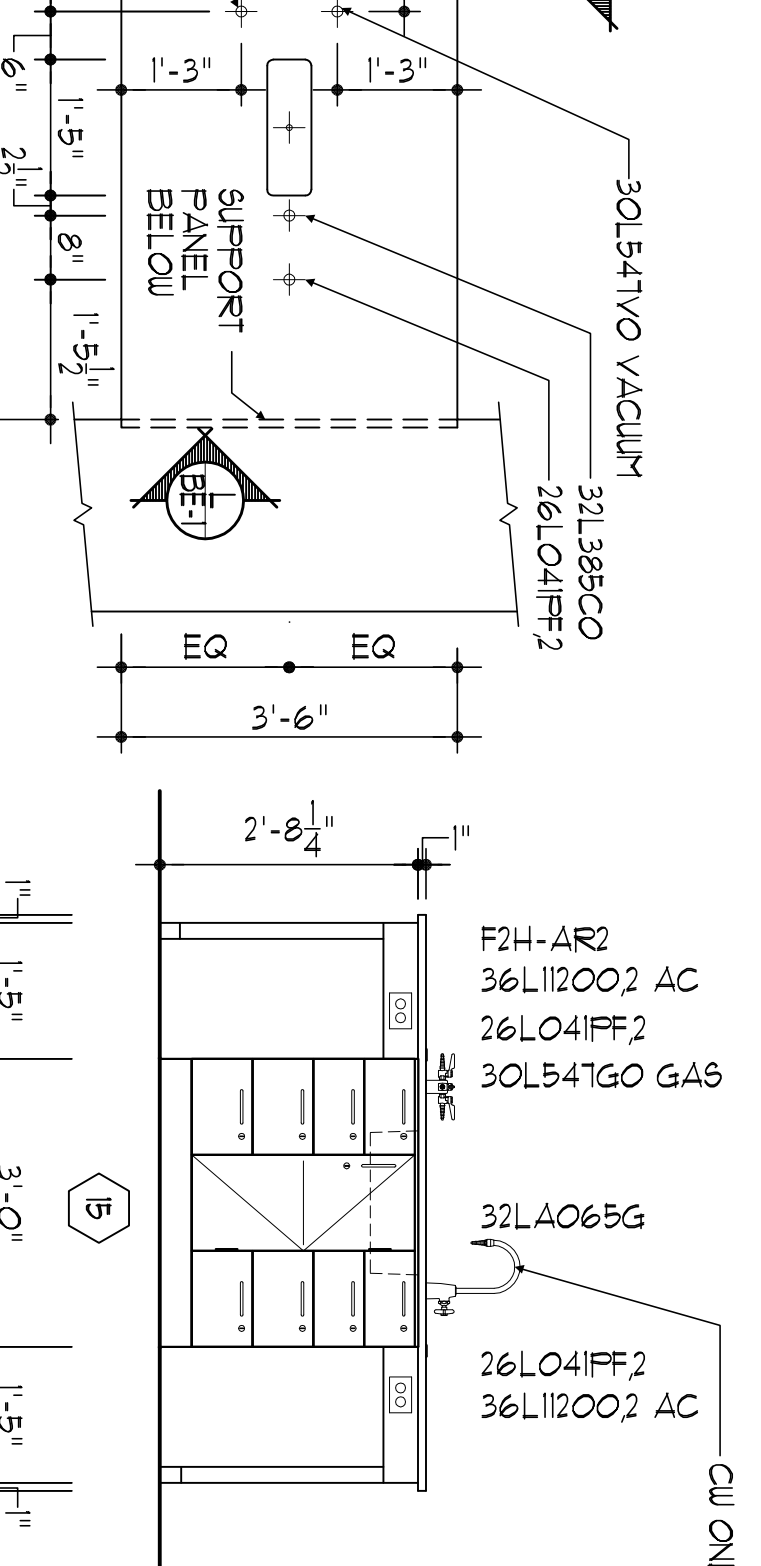
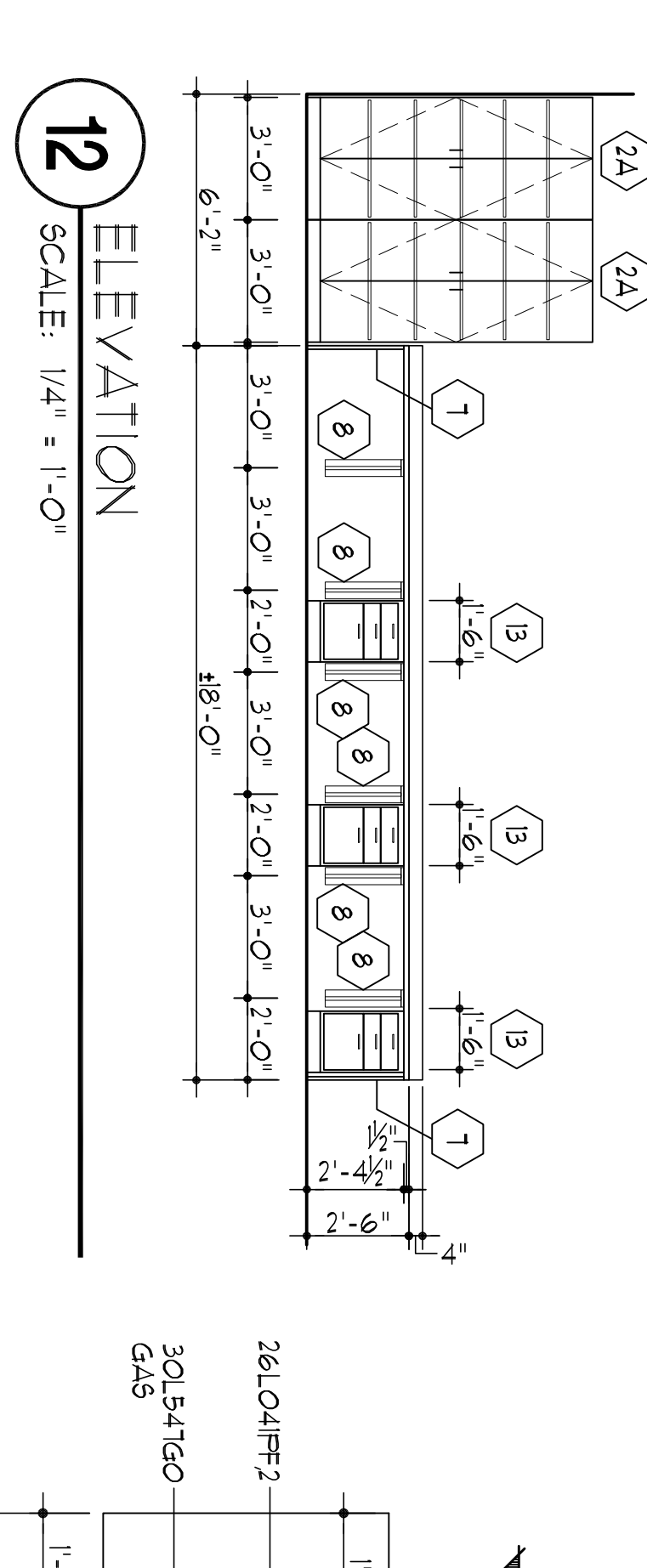
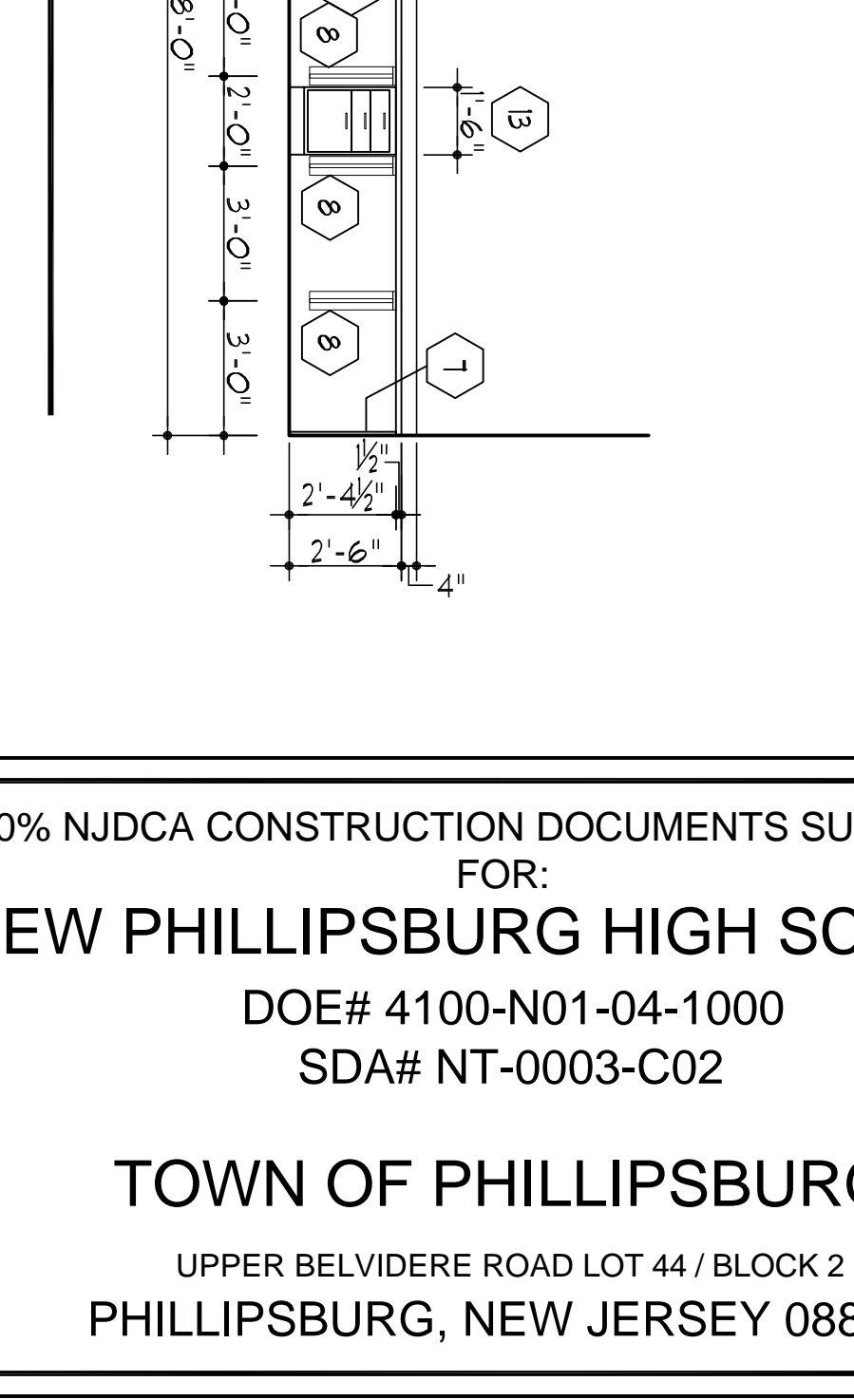
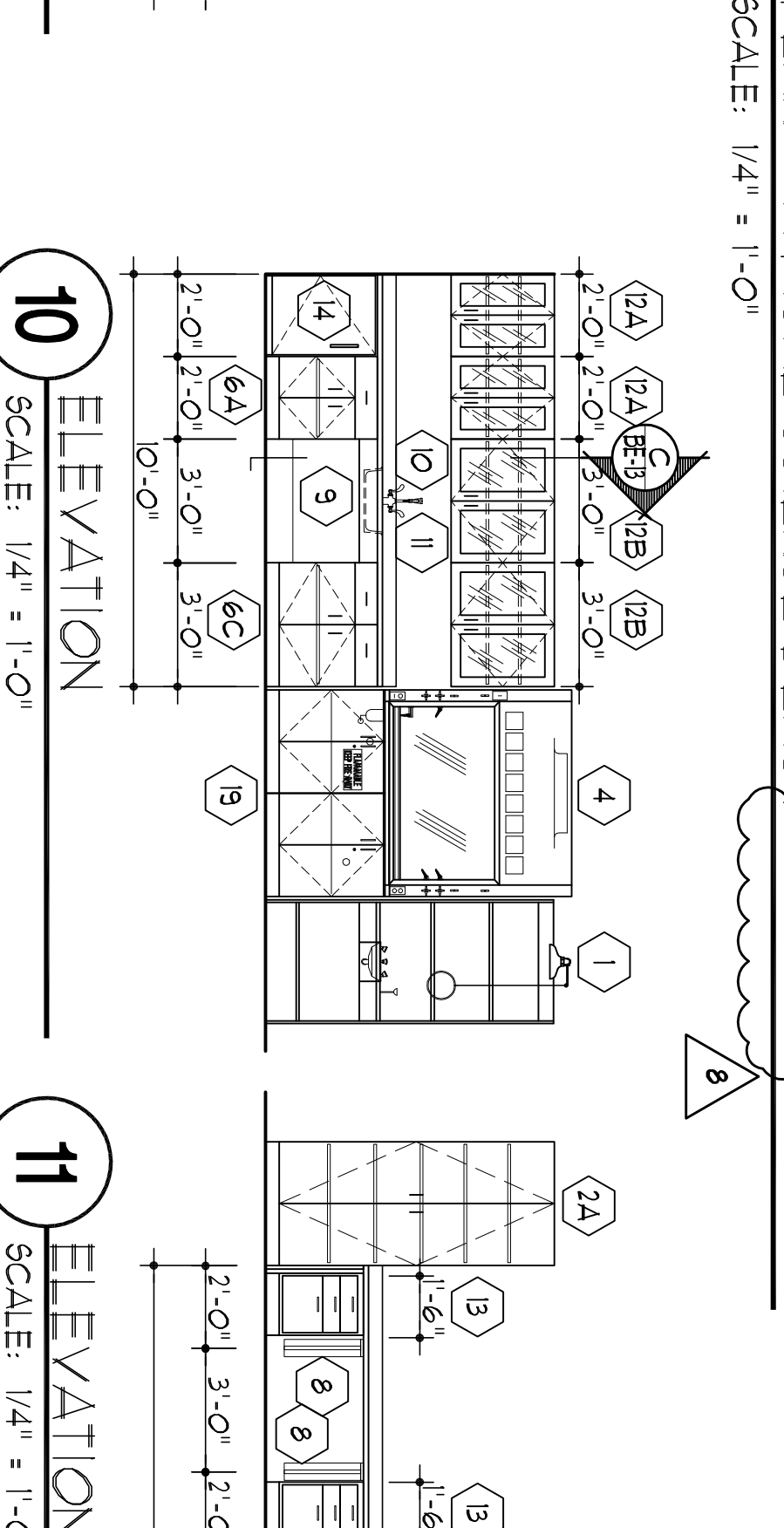
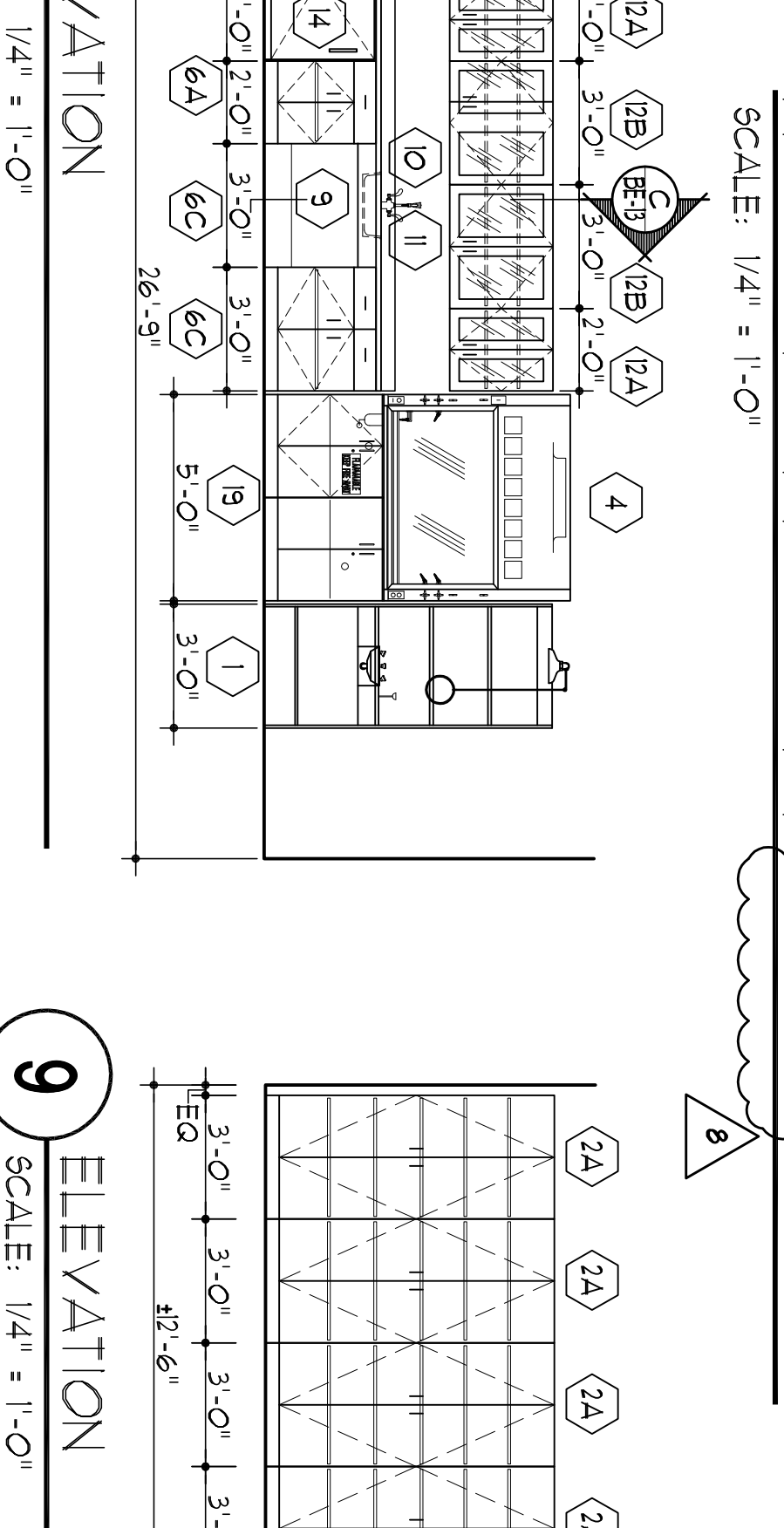
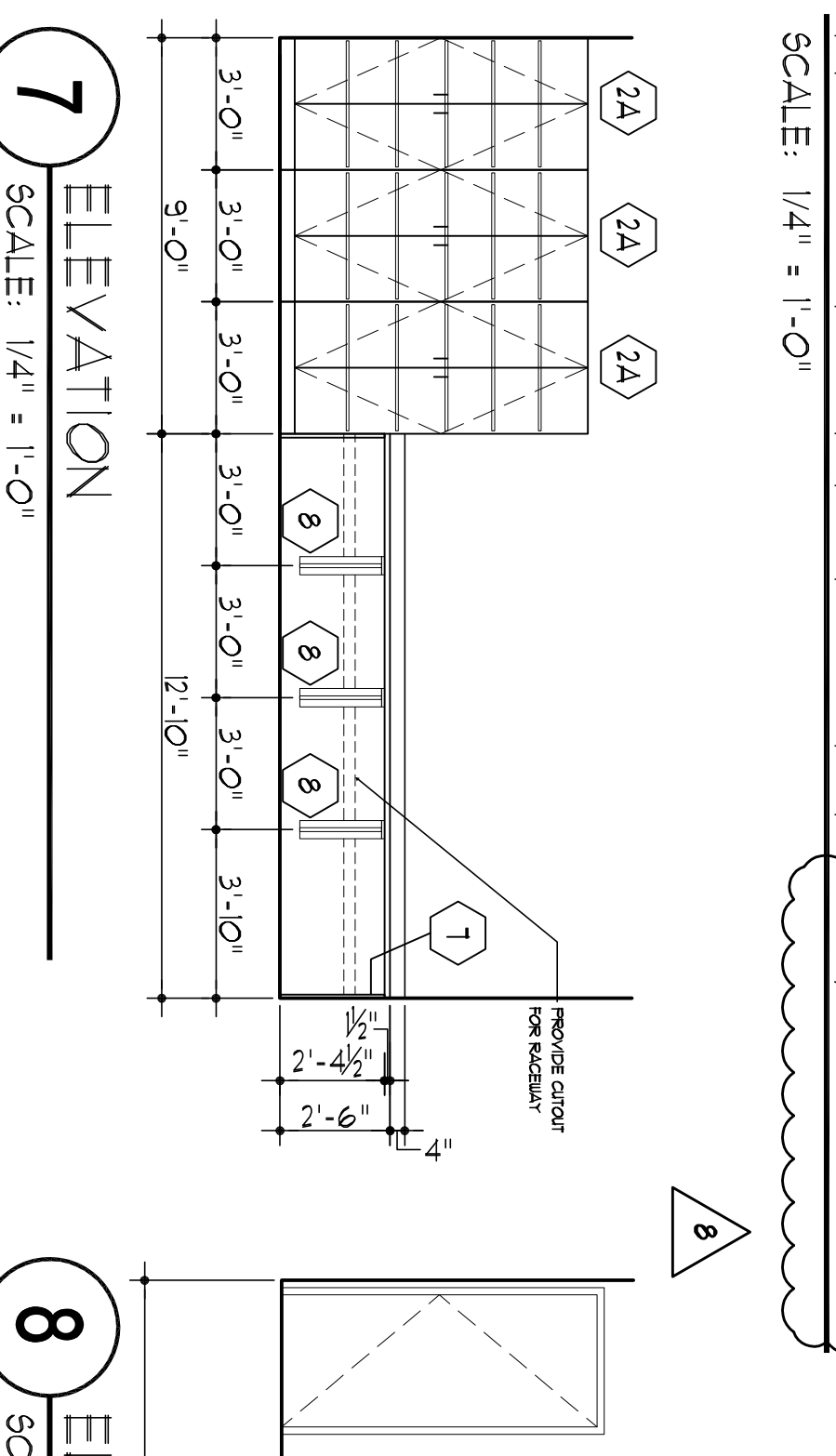
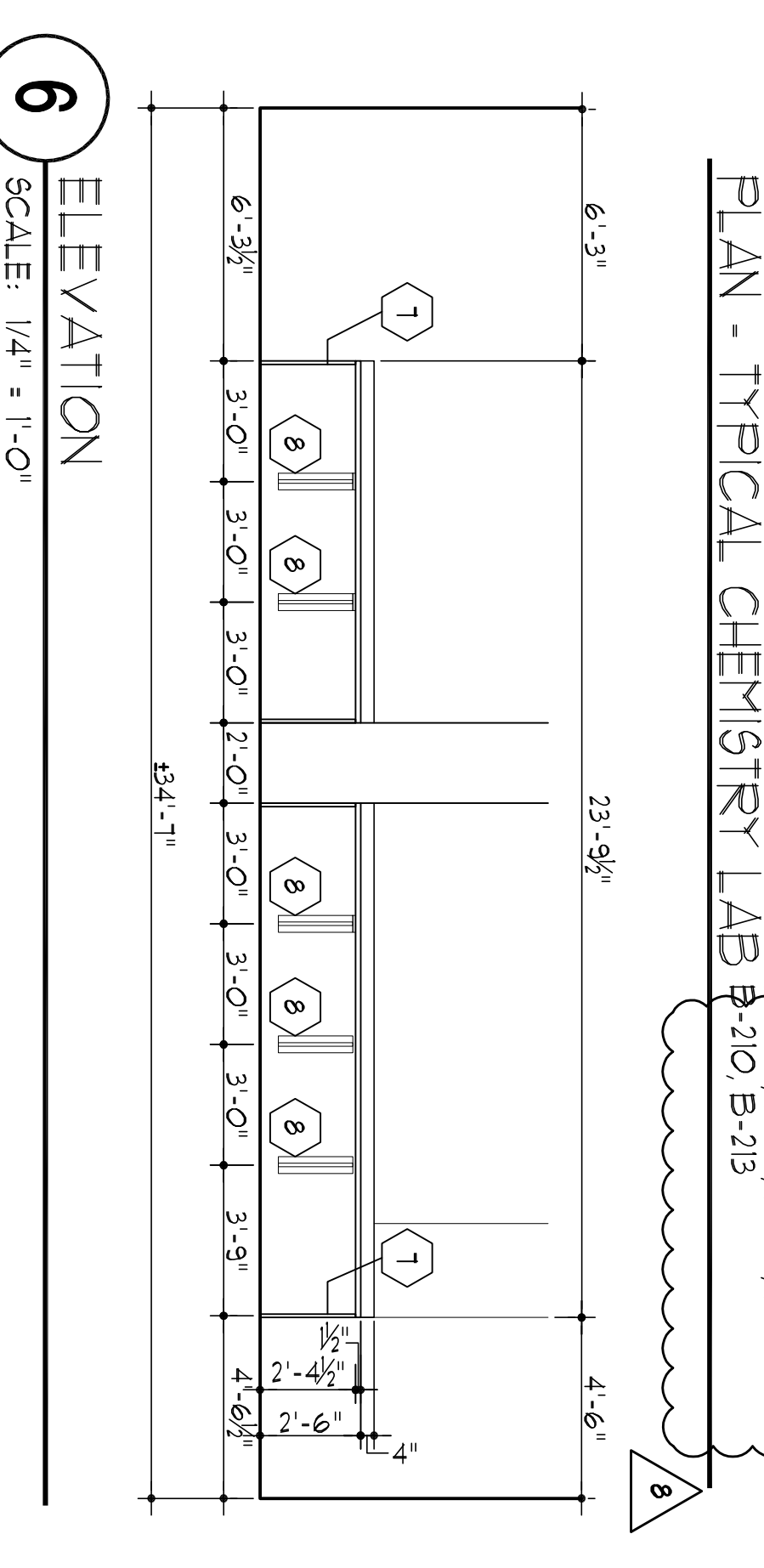
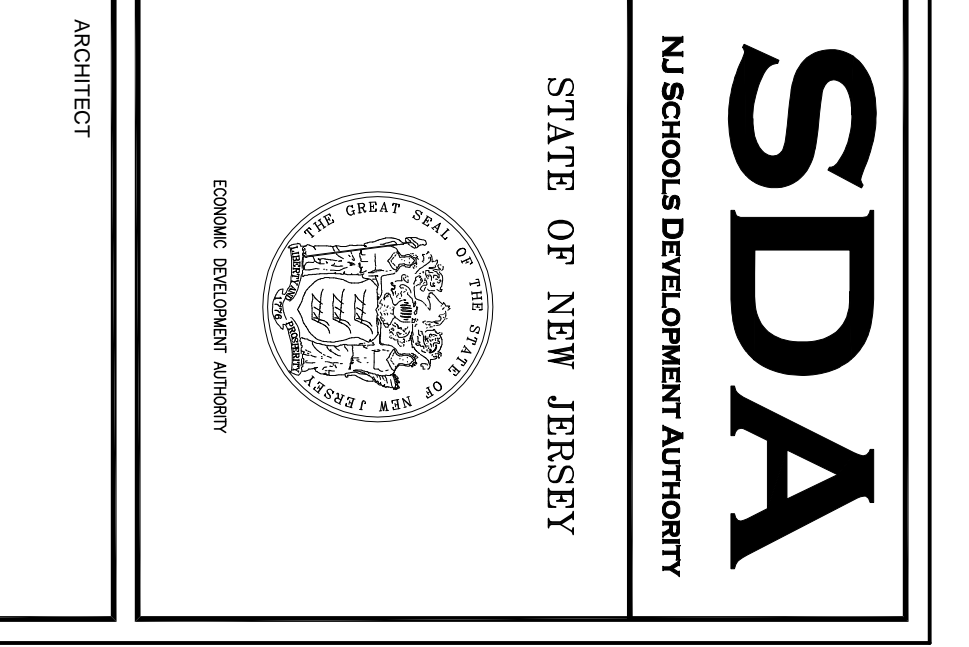
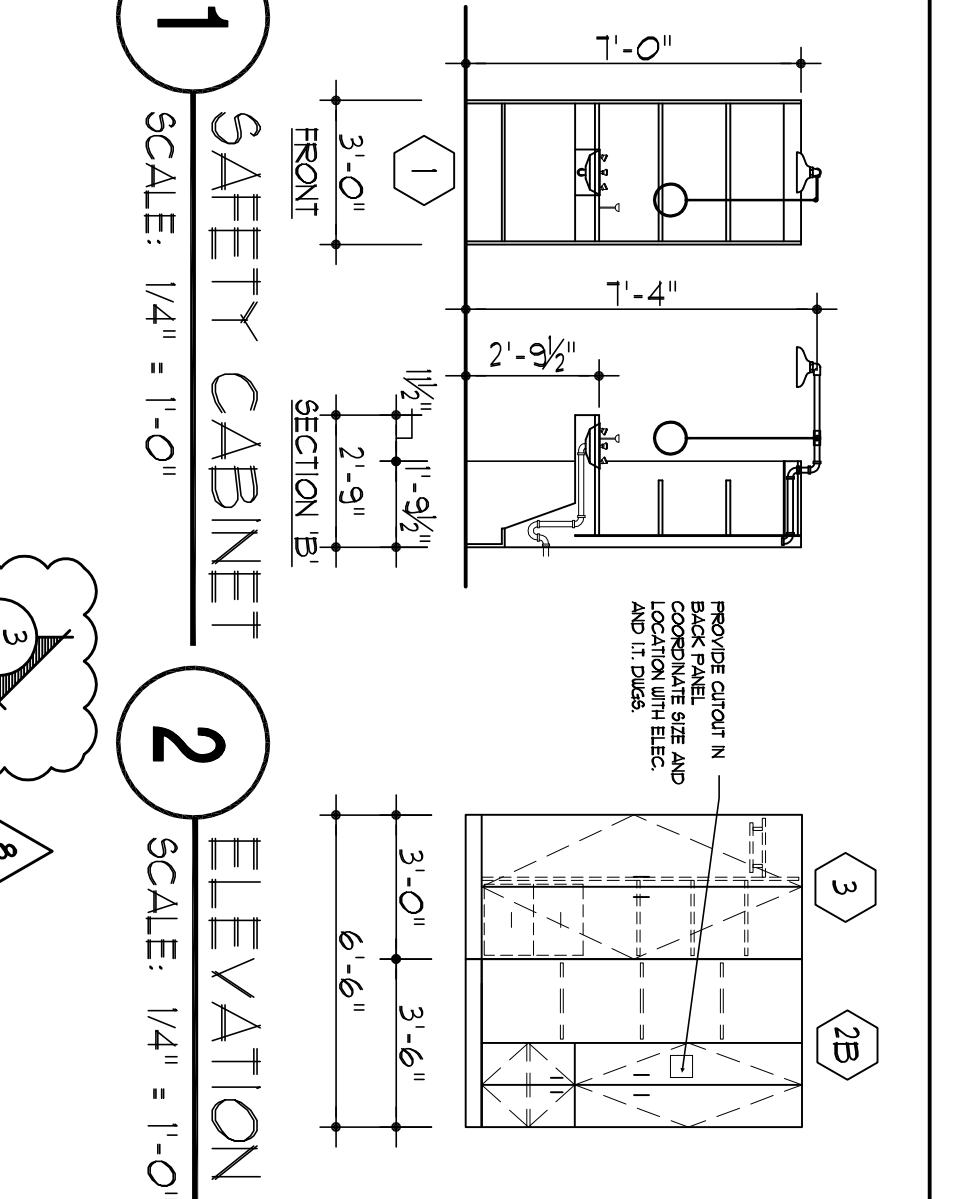
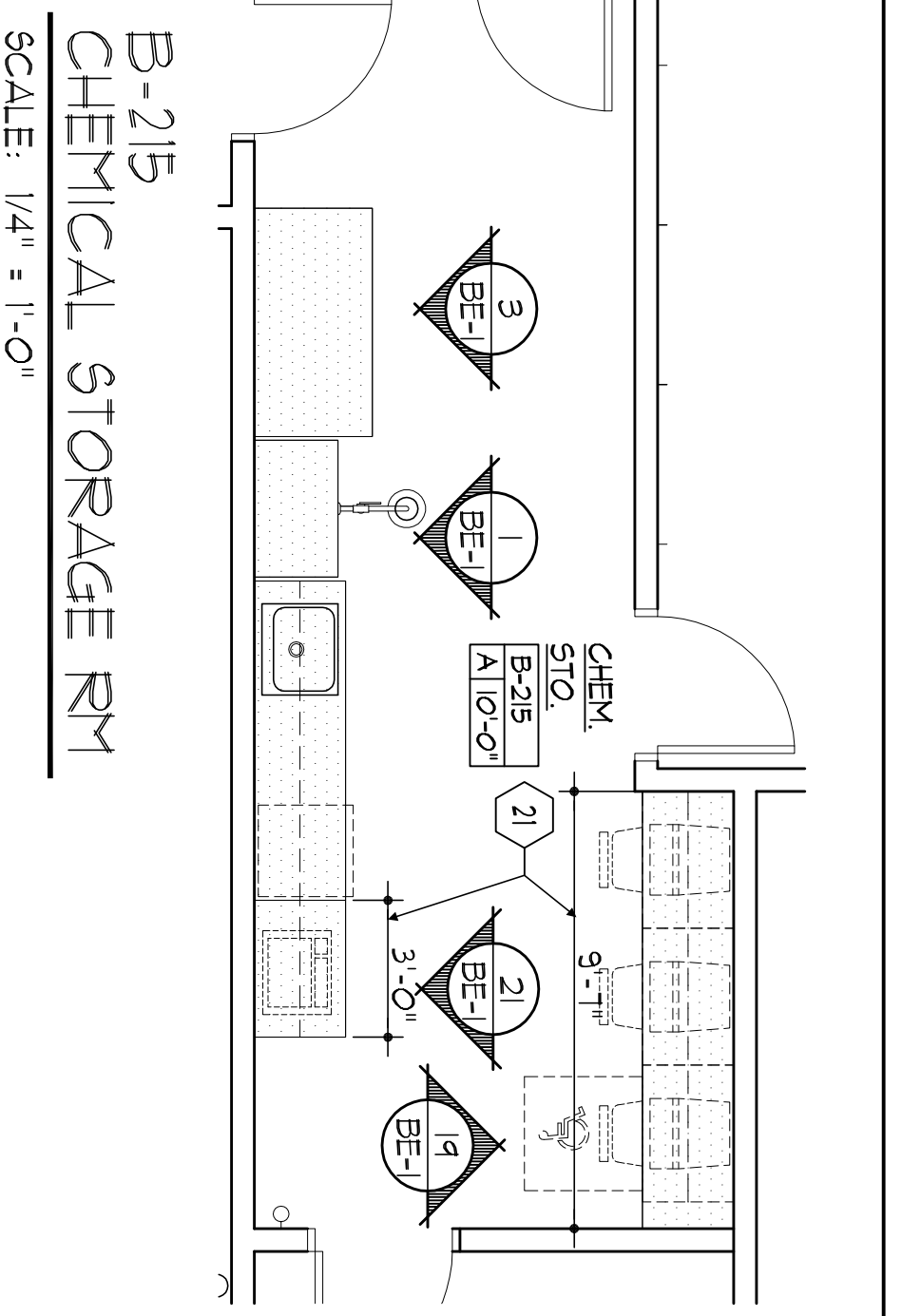
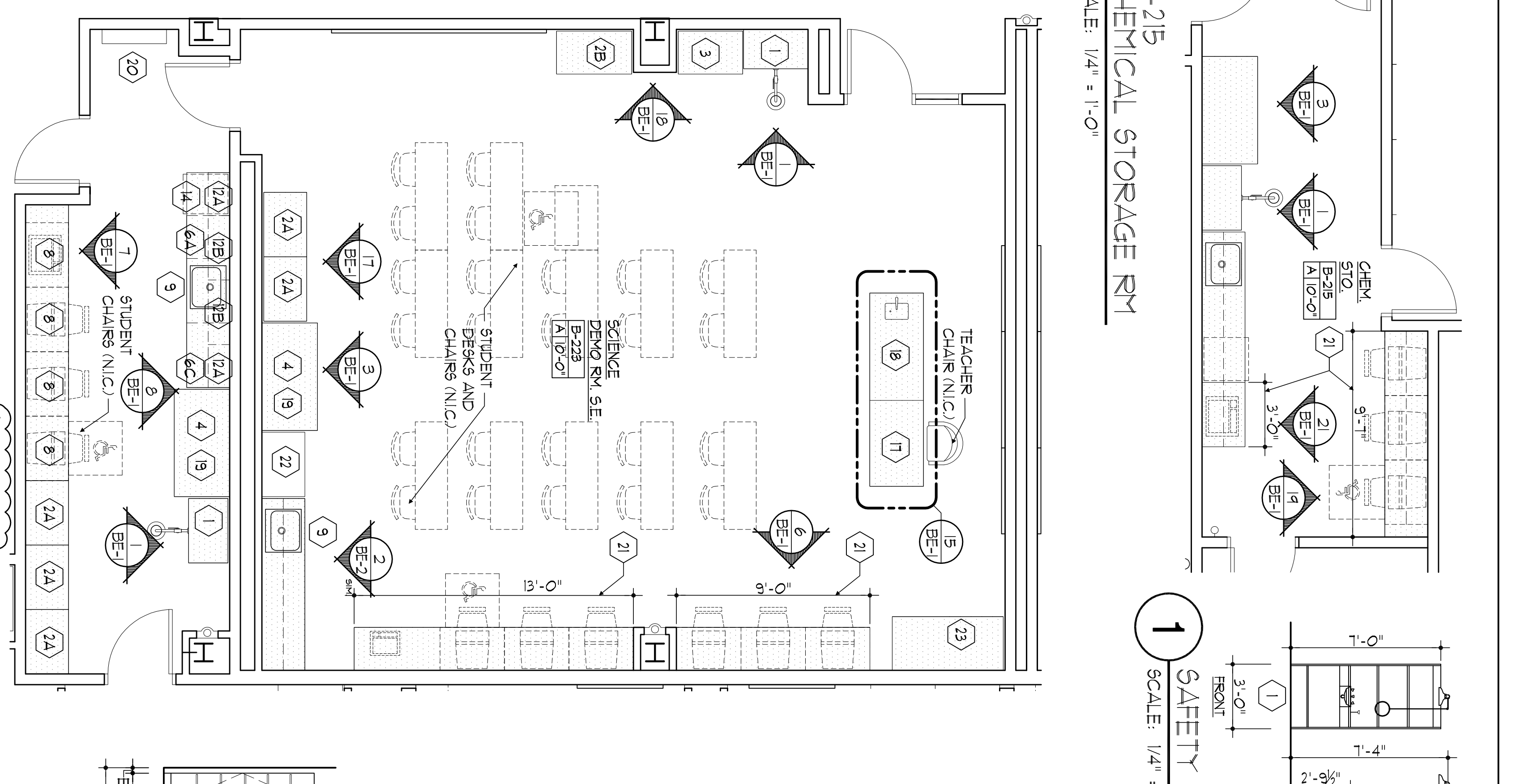
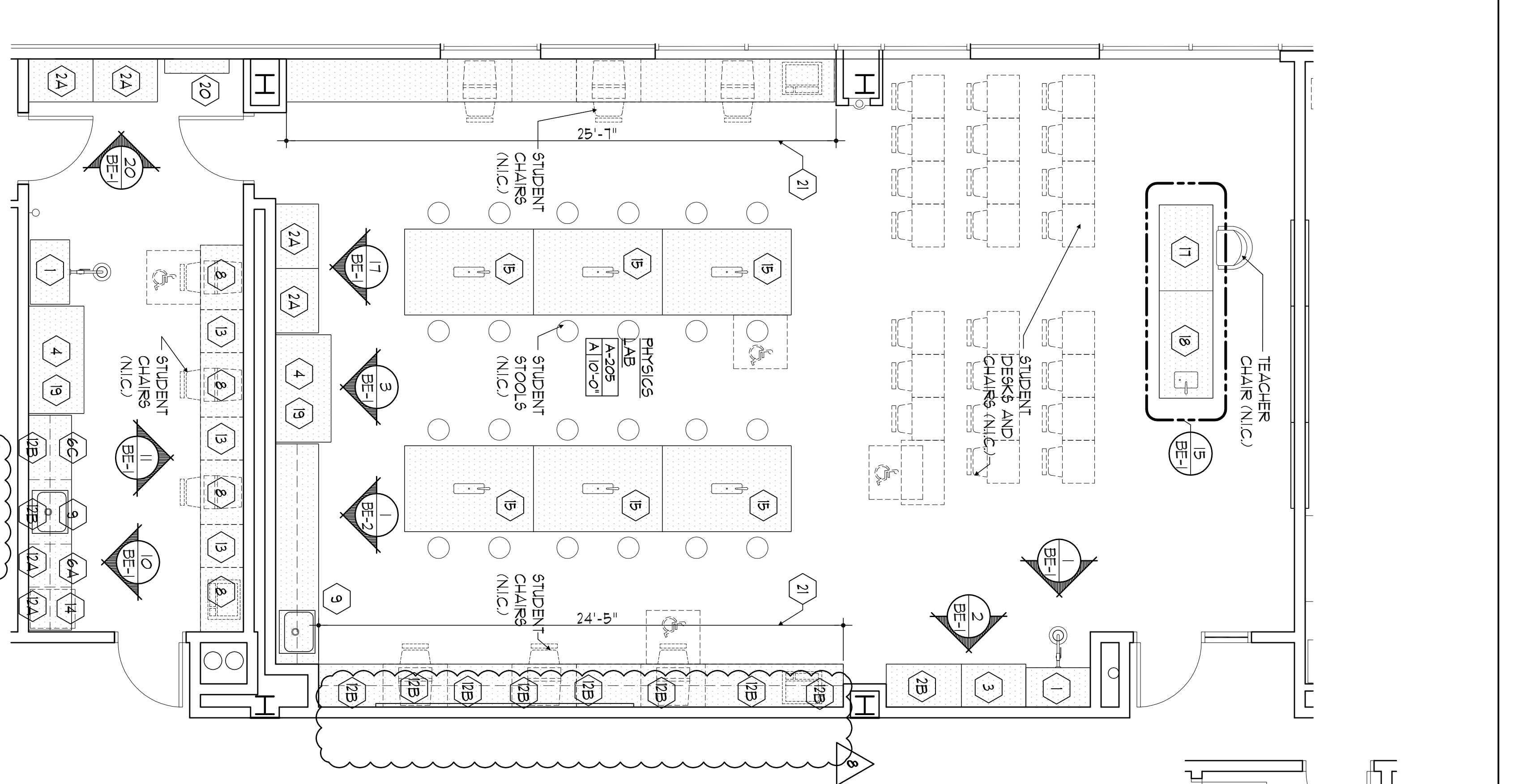
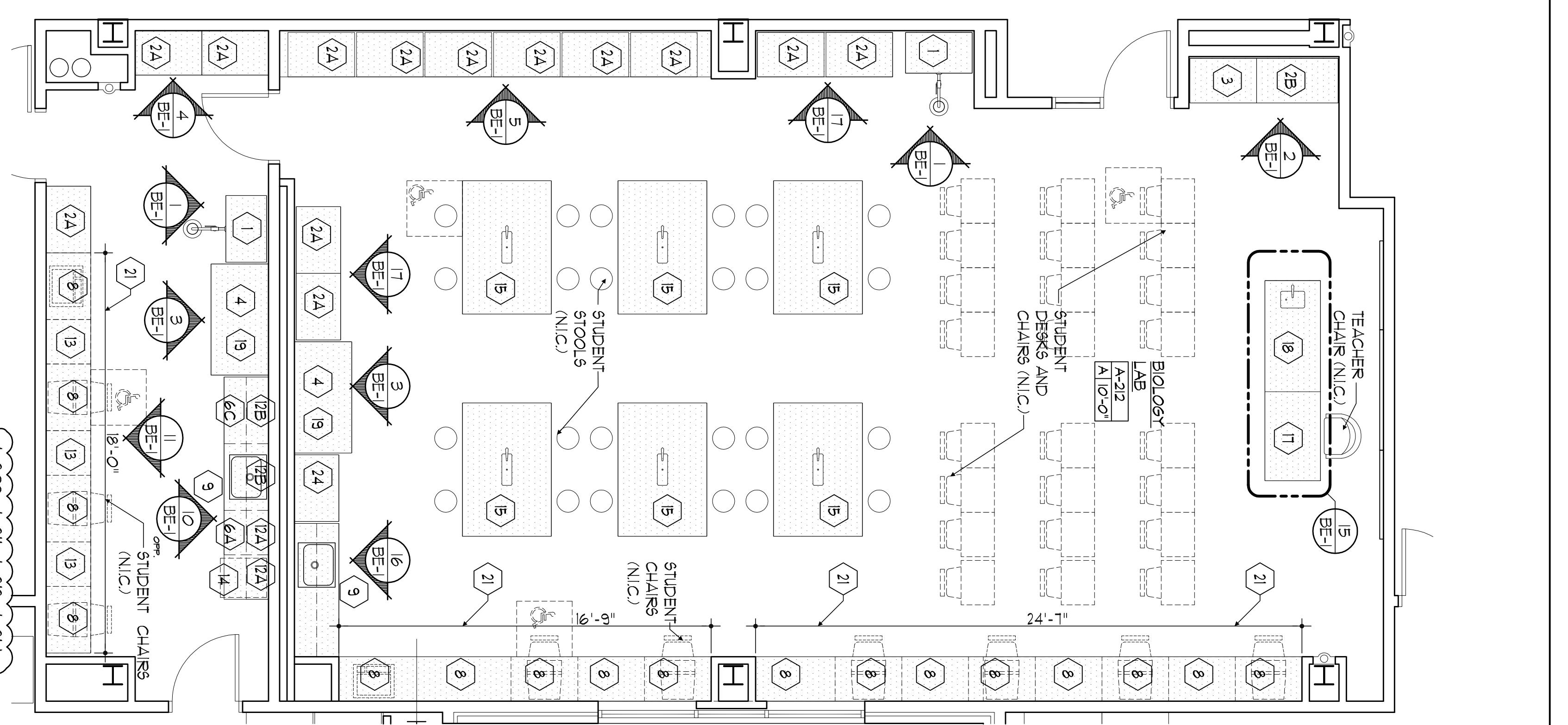
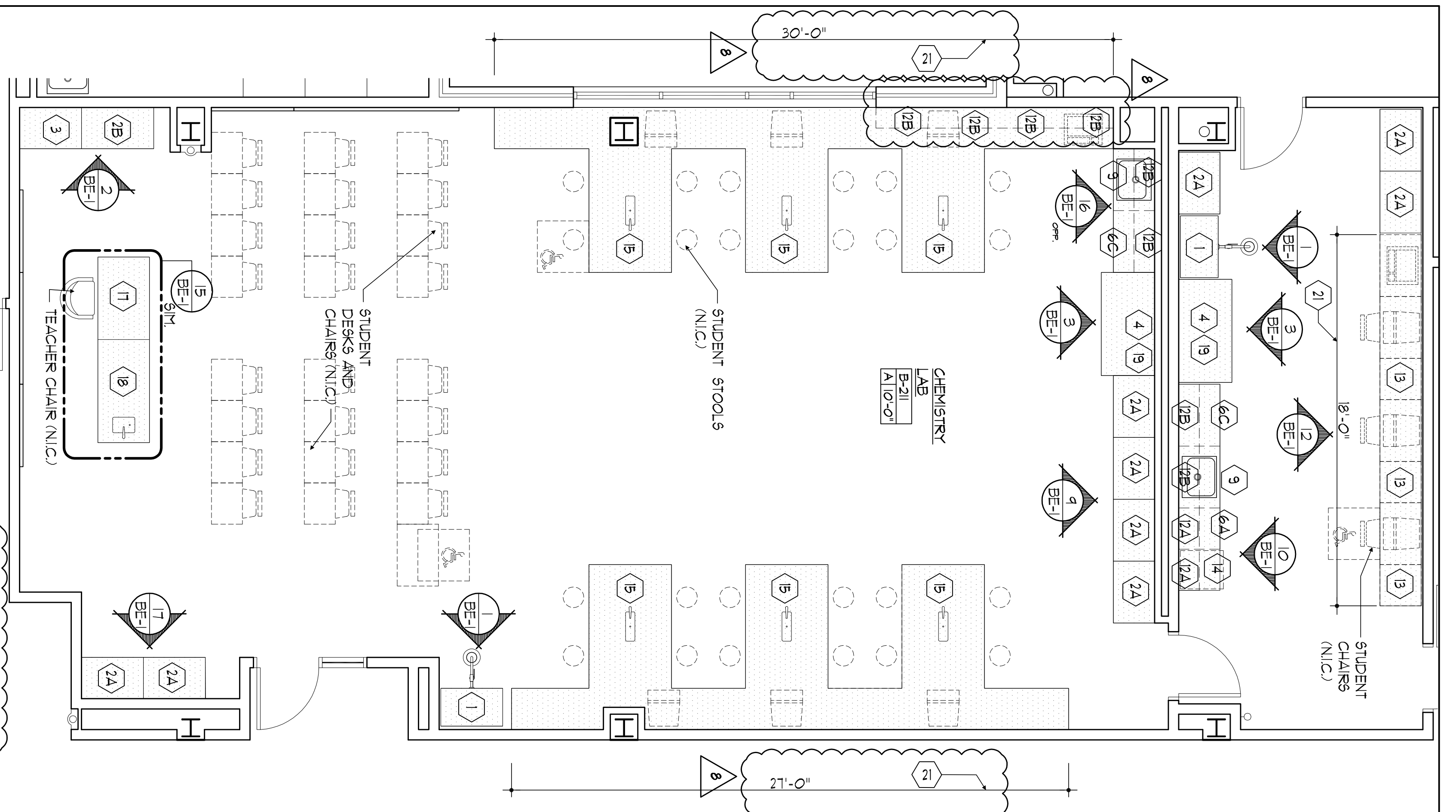
DRAWING NO.:
BE-2

DRAWN BY:

PROJECT # - 2008-0360-00

100% NJDCA CONSTRUCTION DOCUMENTS SUBMISSION FOR:
NEW PHILLIPSBURG HIGH SCHOOL
DOE# 4100-N01-04-1000
SDA# NT-0003-C02

TOWN OF PHILLIPSBURG
UPPER BELVIDERE ROAD LOT 44 / BLOCK 2
PHILLIPSBURG, NEW JERSEY 08865



100% NJDCA CONSTRUCTION DOCUMENTS SUBMISSION FOR:
NEW PHILLIPSBURG HIGH SCHOOL
DOE# 4100-N01-04-1000
SDA# NT-0003-C02

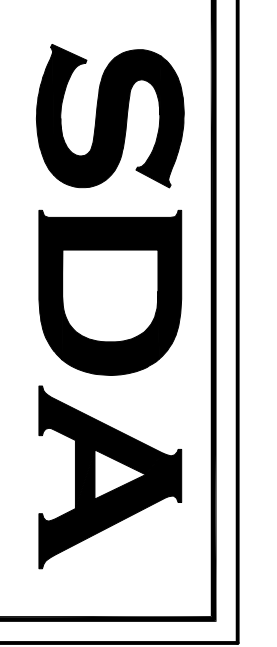
TOWN OF PHILLIPSBURG
UPPER BELVIDERE ROAD LOT 44 / BLOCK 2
PHILLIPSBURG, NEW JERSEY 08865

APPENDIX #1	DATE
NJSDA REVISIONS	11-21-12
NJSDA COMMENTS	09-12-12
NJSDA COMMENTS	03-04-11
NJSDA COMMENTS	08-12-10
NJSDA COMMENTS	05-17-10
NJSDA COMMENTS	02-12-10
DATE	OCTOBER 13, 2009
SCALE	AS NOTED

DRAWING TITLE: **BUILT-IN EQUIPMENT PLANS & SECTIONS**

DRAWING NO.: **BE-1**

DRAWN BY:



STATE OF NEW JERSEY
NJ Schools Development Authority

Design Ideas Group
Architects + Planners + Interiors

PROJECT # 2008.956.00

PHILLIPSBURG HIGH SCHOOL
UPPER BELVIDERE ROAD LOT 44 / BLOCK 2
PHILLIPSBURG, NEW JERSEY 08865

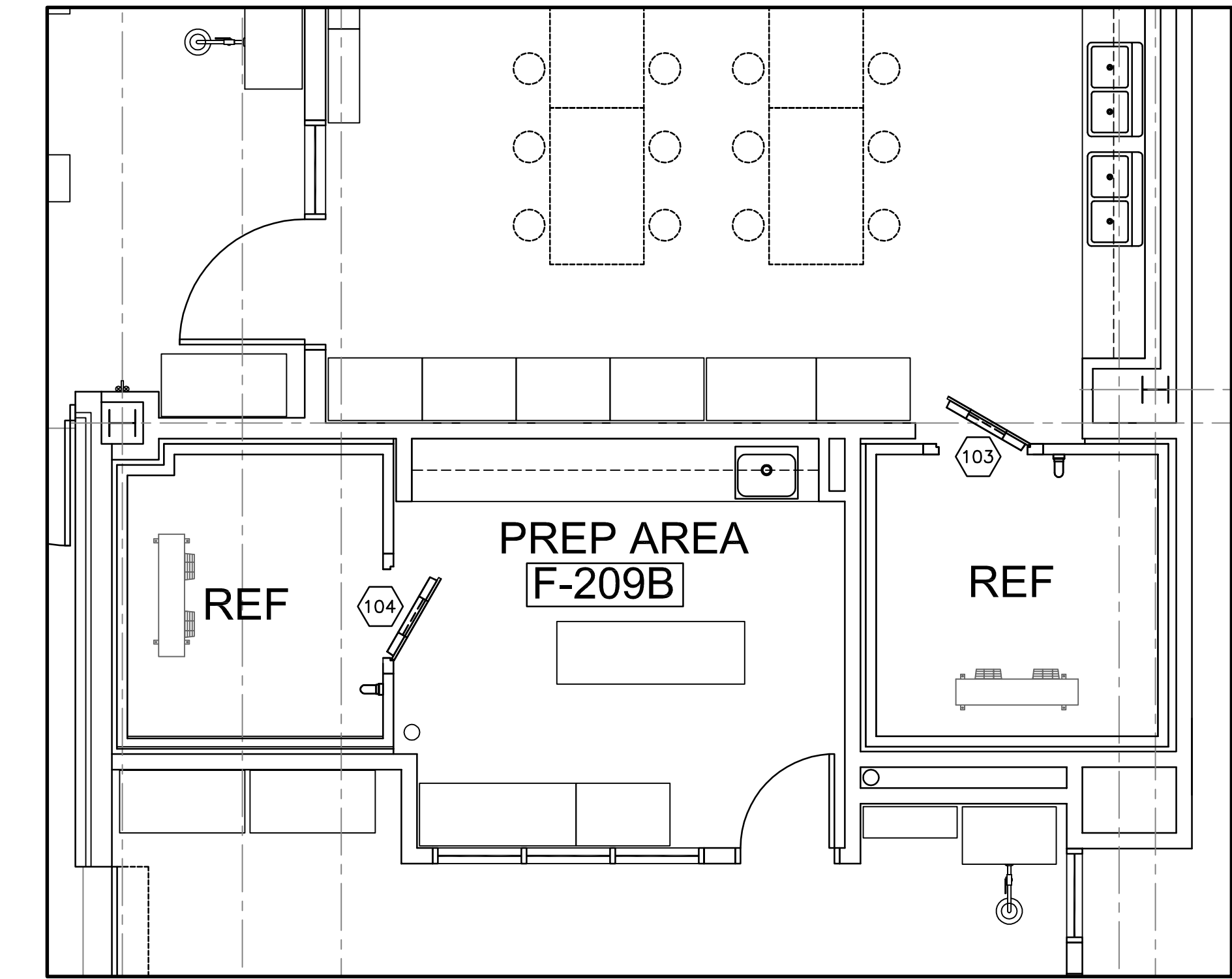
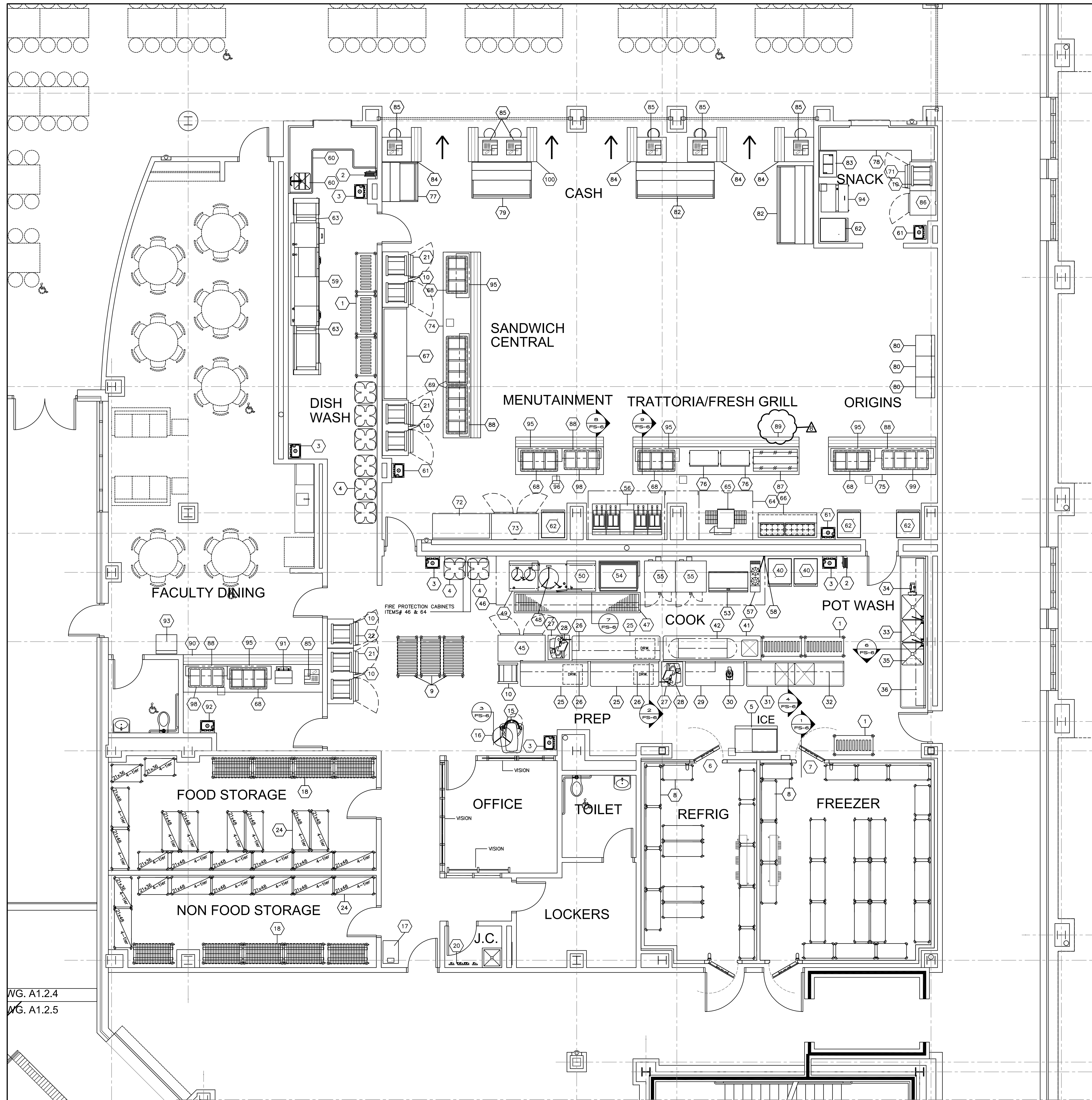
FOOD SERVICE

SYMBOL & ABBREVIATION SCHEDULE	
C	● COLD WATER
H	● HOT WATER
G	○ GAS
S	● STEAM SUPPLY
R	● STEAM RETURN
W	● WASTE
WT	○ INDIRECT WASTE
F.D.	□ FLOOR DRAIN
F.S.	□ FLOOR SINK
F.F.S.	□ PANEL FLOOR DRAIN
E.U.	□ BRITISH THERMAL UNIT

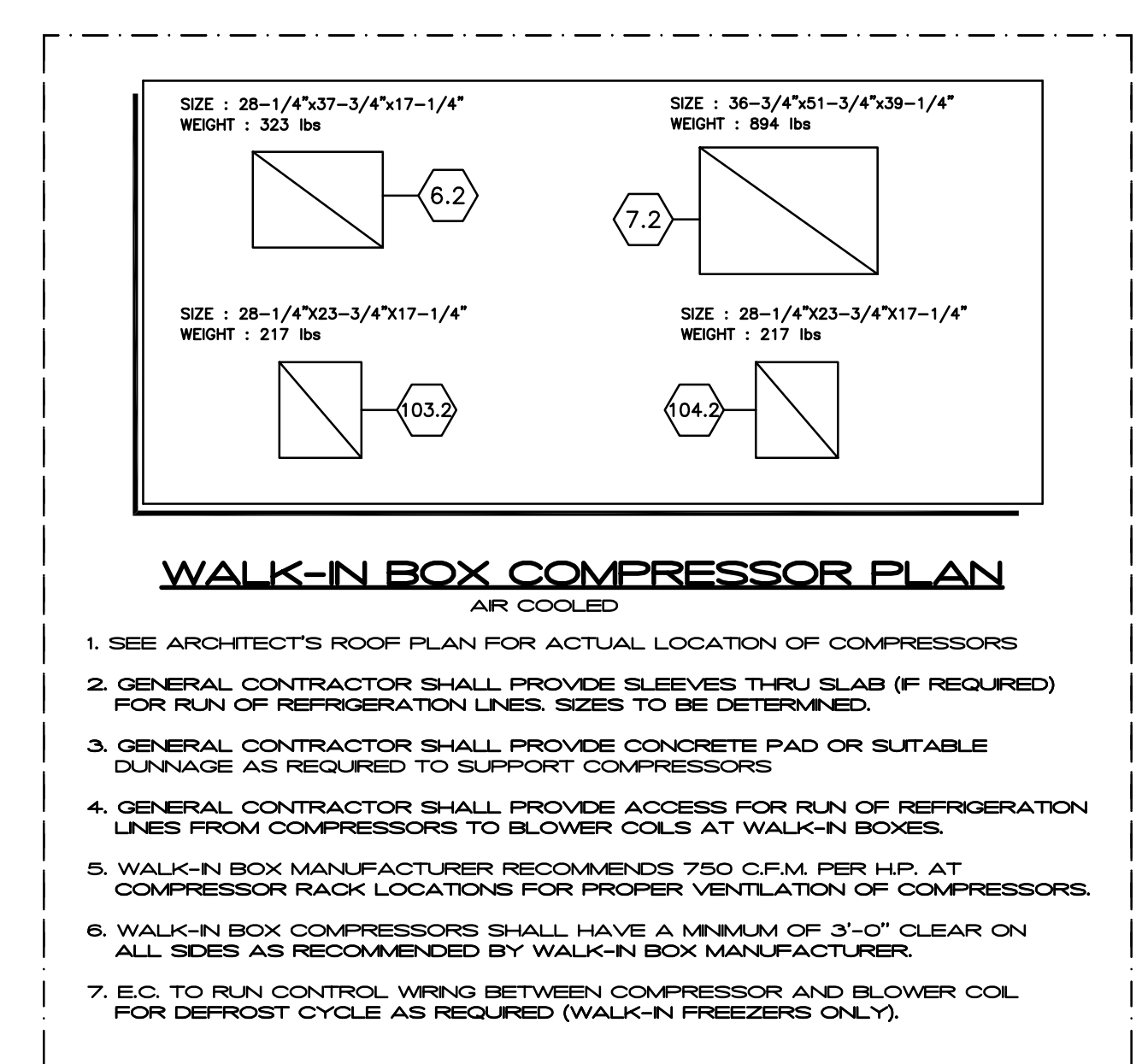
GENERAL NOTES	
E.O.	■ ELECTRICAL CONNECTION
J.B.	■ JUNCTION BOX
S.R.	■ SINGLE REEF/TABLE
D.R.	■ DRAIN REEF/TABLE
C.O.	■ CONVENIENCE OUTLET
S.M.	■ SWITCH
M.F.P.	■ MANUAL FIRE PULL
E.L.	○ ELECTRIC LIGHT
M.	■ MOTOR
S.H.P.	■ SOLIDER HORSEPOWER

EQUIPMENT SCHEDULE																	
ITEM NO	QTY	EQUIPMENT CATEGORY	HOT WATER SIZE (IN)	COLD WATER SIZE (IN)	DIRECT DRAIN SIZE (IN)	INDIRECT DRAIN SIZE (IN)	STEAM INLET SIZE (IN)	STEAM RETURN SIZE (IN)	GAS SIZE (IN)	MBTUH	HP	KW	AMPS	DIRECT PLUG	VOLTS	PHASE	EQUIPMENT REMARKS
1	3	MOBILE POT/PAN RACKS		1/2"	1/2"												
2	2	HOSE REEL	EA.	1/2"	1/2"	1-1/2"											
3	5	HAND SINKS		1/2"	1/2"	1-1/2"											
4	8	DISH CARTS															
5	1	ICE MACHINE W/ BIN		1/2"	3/4"							11.9	X		120	1	I.W. TO F.D.
6	1	WALK-IN REFRIGERATOR										10.0	2		120	1	E.O. FOR L.T.S., VISION PORT & TEMP. HUM.
6.1	1	BLOWER COIL				3/4"						5.4	X		120	1	I.W. TO F.D.
6.2	1	COMPRESSOR									2		X		208	3	
7	1	WALK-IN FREEZER										10.0	2		120	1	E.O. FOR L.T.S., VISION PORT & TEMP. HUM.
7.1	1	BLOWER COIL				3/4"						23.5	X		208	1	E.O. FOR F.D.; E.O. FOR DRAIN LINE HEATER
7.2	1	COMPRESSOR									4		X		208	3	
8	LOT	WALK-IN SHELVING															
9	3	TRAY DRYING RACKS															
10	10	MOBILE PAN RACKS															
11	-	SPARE NUMBER															
12	-	SPARE NUMBER															
13	-	SPARE NUMBER															
14	-	SPARE NUMBER															
15	1	30 QT. MIXER										9.5	X		120	1	
16	1	MIXER PARTS RACK															
17	1	RECEIVING SCALE															
18	9	MOBILE DUNNAGE RACKS															
19	-	SPARE NUMBER															
20	1	MOP RACK															
21	3	ROLL-IN REFRIGERATORS										11.4	X		120	1	
22	1	ROLL-IN REFRIGERATOR										10.6	X		120	1	
23	-	SPARE NUMBER															
23	-	SPARE NUMBER															
24	1 LOT	MOBILE STORAGE SHELVING															
25	3	PREP TABLE										15.0	X		120	1	C.O.
26	3	OVERSHELVES															
27	2	MOBILE STAND															
28	2	SLICER									1/2	3.0	X		120	1	
29	1	WORK TABLE W/ OVERSHELF									1/2	15.0	X		120	1	C.O.
30	1	FOOD PROCESSOR										7.0	X		120	1	
31	1	PREP TABLE W/ SINKS		1/2"	1/2"	2 1/2"											I.W. TO F.S.
32	1	OVERSHELF															
33	1	3-COMPARTMENT POT/UTENSIL SINK		2 1/2"	2 1/2"	3 1/2"											I.W. TO F.S.
34	1	RECIRCULATING POT WASHER										5.6	X		120	1	
35	1	SINK HEATER				3/4"						9.0	X		208	3	I.W. TO F.S.
36	1	WALL SHELF															
37	-	SPARE NUMBER															
38	-	SPARE NUMBER															
39	-	SPARE NUMBER															
40	2	MOBILE HEATED CABINETS	EA.									16.6	X		120	1	
41	1	COOKS TABLE W/ SINK		1/2"	1/2"	2"											
42	1	UTENSIL RACK															
43	-	SPARE NUMBER															
44	-	SPARE NUMBER															
45	1	REACH-IN REFRIGERATORS										10.4	X		120	1	
46	1	VENTILATOR W/ FIRE PROTECTION										20.0	2		120	1	E.O. FOR L.T.S. & FIRE PROT. SYS. 107, D.H., 2544 CFM; 1. TOT. SUP. 6092 CFM
47	1	FLOOR TROUGH W/ GRATE															WASTE IN DEPRESSION
48	1	40 GALLON TILTING KETTLE		3/8"	3/8"	1-1/2"	3/4"	1/2"				5.0	X		120	1	I.W. TO F.S., STEAM FROM IT# 50
49	1	TRUNION KETTLES		1/4"	2 1/4"	1-1/2"	3/4"	220		0.03			X		120	1	(1)CW FROM FILTER; I.W. TO F.S.
50	1	STEAMER			2 1/4"	1-1/2"	3/4"	200		0.1			X		208	1	(1)CW FROM FILTER; I.W. TO F.S.
51	-	SPARE NUMBER															
52	-	SPARE NUMBER															
53	1	GRIDDLE										3/4"	120				
54	1	FLIPPING SKILLET		1/2"	1/2"							10.0	X		120	1	
55	2	CONNECTION OVENS	EA.									9.4	2		120	1	
56	4	FRYERS W/ SPREADER										8.0	X		120	1	GAS MANFOLD
57	1	TWO BURNER RANGE										3/4"	48				
58	1	POT FILLER		1/2"													
59	1	WARE WASH		3/4"		2"						80.0	X		480	3	I.W. TO F.S.
59.1	1	BOOSTER										25.0	X		480	3	
60	1	SOILED DISH TABLE W/SINK		1/2"	1/2"	2"											I.W. TO F.S.
61	3	HAND SINKS		1/2"	1/2"	1-1/2"											
62	4	MOBILE HEATED CABINETS										16.6	X		120	1	
63	2	VENT DUCTS															
64	1	VENTILATOR W/ FIRE PROTECTION										20.0	2		120	1	E.O. FOR L.T.S. & FIRE PROT. SYS. 107, D.H., 2544 CFM; 1. TOT. SUP. 6092 CFM
65	1	IMPINGER OVEN					3/4"	40				15.0	X		120	1	

EQUIPMENT SCHEDULE																	
ITEM NO	QTY	EQUIPMENT CATEGORY	HOT WATER SIZE (IN)	COLD WATER SIZE (IN)	DIRECT DRAIN SIZE (IN)	INDIRECT DRAIN SIZE (IN)	STEAM INLET SIZE (IN)	STEAM RETURN SIZE (IN)	GAS SIZE (IN)	MBTUH	HP	KW	AMPS	DIRECT PLUG	VOLTS	PHASE	EQUIPMENT REMARKS
66	1	PIZZA PREP TABLE										14.0	X		120	1	
67	1	BACK COUNTER															
68	5	DROP-IN COLD PANS					3/4"					6.0	X		120	1	I.W. TO F.D.
69	2	DROP-IN COLD PANS					3/4"					7.8	X		120	1	I.W. TO F.D.
70	-	SPARE NUMBER															
71	1	ROLL-IN REFRIGERATOR										10.6	X		120	1	
72	1	BACK COUNTER															
73	1	REACH-IN REFRIGERATOR										10.4	X		120	1	
74	1	SERVING COUNTER W/ TRAYSLIDE															
75	1	SERVING COUNTER W/ TRAYSLIDE															
76	2	HOT FOOD SLIDE										9.8	X		120	1	
77	1	AIR SCREEN MERCHANDISER										15.0	X		120	1	
78	1	BACK COUNTER															
79	1	AIR SCREEN MERCHANDISER										15.0	X		120	1	
80	3	TRAY DISPENSERS															
81	-	SPARE NUMBER															
82	2	AIR SCREEN MERCHANDISER										12.0	X		208	1	
83	1	MOBILE ICE CREAM FREEZER					3/4"					15.0	X		120	1	I.W. TO F.D.
84	4	CASHER STATIONS															
85	7	CASH REGISTERS										15.0	X		120	1	N.I.C. BY OWNER
86	1	REACH-IN FREEZER										11.5	X		120	1	
87	1	HEATED SHELF										2.29	X		120/208	1	
88	4	PROTECTOR CASE										10.0	X		120	1	E.O. FOR LIGHTS
89	1	SERVING COUNTER W/ TRAYSLIDE															
90	1	SERVING COUNTER W/ TRAYSLIDE					3/4"										I.W. TO F.D.
91	1	COFFEE BREWER					3/8"					6.1	X		120/208	1	N.I.C. BY VENDOR
92	1	HAND SINKS		1/2"	1/2"	1-1/2"											
93	1	TRAY DISPENSERS															
94	1	MILK COOLER										8.3	X		120	1	
95	5	DISPLAY CASE										10.0	X		120	1	E.O. FOR LIGHTS
96	1	SERVING COUNTER WITH TRAYSLIDE															
97	LOT	CORNER GUARDS															NOT SHOWN ON PLAN
98	2	DROP-IN HOT FOOD SECTION					3/4"					12.3	X		208	1	I.W. TO F.D.
99	1	DROP-IN HOT FOOD SECTION					3/4"					16.4	X		208	1	I.W. TO F.D.
100	1	CASHER STATION															
101	-	SPARE NUMBER															
102	-	SPARE NUMBER															
103	1	WALK-IN REFRIGERATOR										10.0	X		120	1	E.O. FOR L.T.S., VISION PORT & TEMP. HUM.
103.1	1	BLOWER COIL					3/4"					TBD	X		120	1	I.W. TO F.D.
103.2	1	COMPRESSOR															



AGRICULTURE & HORTICULTURE LABS



WG. A1.2.4
WG. A1.2.5

MAIN KITCHEN & SERVERY

100% NJDCA CONSTRUCTION DOCUMENTS SUBMISSION
FOR:
NEW PHILLIPSBURG HIGH SCHOOL
DOEF 4100-N01-04-1000
SDAF NT-0003-C02
TOWN OF PHILLIPSBURG
UPPER BELVIDERE ROAD LOT 44 / BLOCK 2
PHILLIPSBURG, NEW JERSEY 08865

SUBMISSION	DATE
ADDEDNDUM #1	11-21-12
NJSDA REVISIONS	09-12-12
NJDCA COMMENTS	03-04-11
NJDCA COMMENTS	08-12-10
NJDCA COMMENTS	05-17-10
NJDCA COMMENTS	02-12-10
DATE:	OCTOBER 13, 2009
SCALE:	1/4" = 1'-0"

DRAWING TITLE:
SECOND FLOOR
FOOD SERVICE
ARRANGEMENT PLAN

DRAWING No:
FS-1
DRAWN BY:

STRUCTURAL

Printing: name: Z:\P001\PHILLIPS\CAD\Civil\13-5.1.3.dwg Plotter: \$I:\MKTE\New 31, 2012 - 10:18am

FLOOR LOADING SCHEDULE

CLASSROOM	CORRIDORS	TOILET	LOBBY
3 1/2" CONC. SLAB ON 2" DECK = 45.0 PSF.	= 45.0 PSF.	= 45.0 PSF.	= 45.0 PSF.
SPRINKLER = 2.5 PSF.	= 2.5 PSF.	= 2.5 PSF.	= 2.5 PSF.
HUNG CEILING = 2.5 PSF.	= 2.5 PSF.	= 2.5 PSF.	= 2.5 PSF.
MECH./MISC. = 5.0 PSF.	= 5.0 PSF.	= 5.0 PSF.	= 5.0 PSF.
FRAMING = 8.0 PSF.	= 8.0 PSF.	= 8.0 PSF.	= 8.0 PSF.
PARTITIONS = 20.0 PSF.	= 20.0 PSF.	= 20.0 PSF.	= 20.0 PSF.
TOTAL DEAD LOAD = 83.0 PSF.	= 83.0 PSF.	= 83.0 PSF.	= 83.0 PSF.
LIVE LOAD = 50.0 PSF.	= 50.0 PSF.	= 50.0 PSF.	= 50.0 PSF.
TOTAL LOAD = 133.0 PSF.	= 143.0 PSF.	= 148.0 PSF.	= 163.0 PSF.

ROOF LOADING SCHEDULE

U.N.O.	AT 2 1/2" LWT. CONC. TOPPING
ROOFING & METAL DECK = 6.0 PSF.	31.0 PSF.
INSULATION = 2.0 PSF.	2.0 PSF.
SPRINKLER = 3.0 PSF.	3.0 PSF.
HUNG CEILING = 4.0 PSF.	4.0 PSF.
MECH./MISC. = 5.0 PSF.	5.0 PSF.
TOTAL DEAD LOAD = 20.0 PSF.	45.0 PSF.
LIVE LOAD = 30.0 PSF.	30.0 PSF.
TOTAL = 50.0 PSF.	75.0 PSF.

NOTES

GENERAL

- DO NOT SCALE STRUCTURAL DRAWINGS.
- COORDINATE ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS. ANY DISCREPANCY WHATSOEVER SHALL BE BROUGHT TO ARCHITECT/ENGINEERS ATTENTION IMMEDIATELY FOR RESOLUTION.
- GENERAL CONTRACTOR SHALL VERIFY ALL CONDITIONS AND CHECK ALL MEASUREMENTS ON JOB AND SHALL BE RESPONSIBLE FOR SAME.
- ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE CURRENT BUILDING CODE.
- THE STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH SPECIFICATIONS, ARCHITECTURAL AND MECHANICAL DRAWINGS.
- ALL OPENINGS IN WALLS, FLOORS, ROOF, ETC. TO BE LOCATED, SIZED, FURNISHED AND INSTALLED AS PER MECHANICAL AND ARCHITECTURAL REQUIREMENTS EVEN IF NOT SHOWN AS SUCH ON STRUCTURAL AND ARCHITECTURAL DRAWINGS.
- APPROVAL OF SHOP DRAWINGS SHALL NOT RELIEVE CONTRACTOR OF ANY CONTRACT REQUIREMENTS, EVEN IF SUCH ITEMS ARE NOT SHOWN ON SHOP DRAWINGS.
- ALL REVISIONS TO SHOP DRAWINGS AFTER FIRST SUBMISSION MUST BE SO IDENTIFIED ON SUBSEQUENT SUBMISSIONS.
- REPRODUCTION OF STRUCTURAL CONTRACT DRAWINGS ARE NOT TO BE SUBMITTED AS SHOP DRAWINGS.
- CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE AND LOCAL REGULATORY REQUIREMENTS AS WELL AS SAFETY PLANS ISSUED BY THE NJSCC, PROJECT MANAGEMENT FIRM, AND GENERAL CONTRACTOR. PARTICULAR ATTENTION IS CALLED TO THE PROVISIONS OF 29 CFR 1926 SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION.

FOUNDATIONS

- ALL FOOTINGS SHALL REST ON UNDISTURBED SOIL OF 4000 LBS PER SQUARE FOOT MINIMUM BEARING CAPACITY. A SOILS ENGINEER, PAID FOR BY THE OWNER, MUST VERIFY ALL FOOTING BOTTOMS PRIOR TO POURING ANY CONCRETE FOOTINGS.
- ALL FILLED AREAS SHALL BE COMPACTED LAYER BY LAYER TO NOT LESS THAN 95% OF THE MAXIMUM DRY DENSITY WHEN TESTED IN ACCORDANCE WITH ASTM D1557.
- PROVIDE STEPPED FOOTINGS AS PER DETAIL WHERE NECESSARY.
- BACKFILLING AGAINST FOUNDATION WALLS SHALL NOT BE PERMITTED UNTIL FLOORS THEY SUPPORT HAVE BEEN COMPLETELY INSTALLED, UNLESS OTHERWISE APPROVED BY THE ENGINEER.
- PROVIDE 10 MIL THICK VAPOR BARRIER OR POREOUS FILL UNDER ALL CONCRETE SLABS ON GRADE.
- ALL COLUMN FOOTINGS SHALL BE CENTERED UNDER COLUMN CENTER LINES, UNLESS OTHERWISE NOTED ON PLAN OR SECTIONS.
- ALL EXTERIOR MASONRY WALLS BELOW GRADE TO BE STONE CONCRETE BLOCK AND FILLED SOLID WITH CONCRETE.
- ALL FOOTING DOWELS TO BE THE SAME SIZE, NUMBER AND GRADE AS VERTICAL REINFORCEMENT IN COLUMNS, PIERS OR WALLS WHICH THE FOOTINGS SUPPORT.
- FOUNDATION ELEVATIONS SHOWN ARE ESTIMATED AND ARE FOR BIDDING PURPOSES ONLY, AND MAY VARY TO SUIT SUBSURFACE SOIL CONDITIONS.

CONCRETE

- ALL CONCRETE SHALL BE CONTROLLED CONCRETE COMPLYING WITH ALL ACI BUILDING CODE REQUIREMENTS OF A MINIMUM ULTIMATE COMPRESSIVE STRENGTH BUILDING CODE REQUIREMENTS AT 28 DAYS AS FOLLOWS:
 (a) FLOORS, CONCRETE WALLS, AND WALLS - 3000 PSI.
 (b) SLAB ON GRADE AND ON METAL DECK - 3500 PSI
- WHEN CONSTRUCTION JOINTS ARE USED IN SLABS OR WALLS, THEY SHALL BE LOCATED AT POINTS OF MINIMUM SHEAR AND SHALL BE KEPT.
- SLABS ON GRADE TO BE POURED IN ALTERNATE BAYS OF NOT MORE THAN 400 SQ. FT. AND 20 FT. IN ANY DIRECTION (OR SAWCUT TO THE SAME AREA REQUIREMENTS) AND CONTRACTOR TO SUBMIT A PLAN SHOWING POURING SEQUENCE AND TYPE AND LOCATION OF PROPOSED JOINTS IN ALL SLABS TO ENGINEER FOR APPROVAL. NO HORIZONTAL POUR STOPS ARE PERMITTED IN CONCRETE WALLS. PROVIDE VERTICAL FOUR STOPS IN WALLS AT 50'-0" MAXIMUM SPACING.
- PROVIDE 3/8" CHAMFER AT CORNERS OF ALL CONCRETE BEAMS AND COLUMNS, EXCEPT AS DIRECTED BY THE ARCHITECT.
- ALL CONCRETE SLABS ON COMPOSITE METAL DECK TO BE REINFORCED WITH WELDED WIRE MESH PLACED ONE (1) INCH FROM TOP OF SLAB.
- ALL REINFORCING BARS SHALL BE NEW BILLET STEEL, DEFORMED TYPE, ASTM A-615 GRADE 60 AND SHALL COMPLY WITH ALL BUILDING CODE REQUIREMENTS. LENGTH OF REINFORCING SPLICES SHALL CONFORM TO ACI BUILDING CODE REQUIREMENTS, BUT IN NO CASE SHALL BE LESS THAN 30 BAR DIAMETERS, OR AS OTHERWISE APPROVED BY THE ENGINEER.
- ALL SLABS ON EARTH SHALL BE REINFORCED WITH FIBROUS REINFORCING, WHICH SHALL BE A MINIMUM OF 1 3/4" LONG, 100% VIRGIN POLYPROPYLENE (NOT RECLAIMED MATERIAL) OR APPROVED EQUAL, AND SHALL BE ADDED AT A RATE OF 1 1/2 LBS. PER EACH CUBIC YARD OF CONCRETE. FIBROUS REINFORCING MUST BE ADDED AND MIXED INTO THE CONCRETE AS PER MANUFACTURER'S RECOMMENDATIONS. THE MANUFACTURER MUST FURNISH WRITTEN PRODUCT CERTIFICATION FOR COMPLIANCE WITH APPLICABLE MATERIAL STANDARDS OF ASTM C-1116 AND UNIFORM DISTRIBUTION OF FIBERS THROUGHOUT THE CONCRETE.
- ALL SLABS, CONCRETE PLATFORMS, PADS, ETC., NOT POURED INTEGRALLY WITH STRUCTURAL SLABS, SHALL BE REINFORCED WITH 6 x 6 - W2.9 x W2.9 WELDED WIRE MESH AT MID-DEPTH OF SLAB, UNLESS NOTED OTHERWISE.
- PROVIDE #4 MOSING BAR IN EACH CONCRETE STEP.
- PROVIDE VERTICAL METAL SLOTS AT 24" o/c FOR BRICK ANCHORS WHERE CONCRETE IS FACED WITH BRICK.
- CONCRETE PROTECTION FOR REINFORCING BARS SHALL BE AS FOLLOWS:
 (a) WALLS, INSIDE FACE --- 1"
 (b) WALLS, EXTERIOR FACE (AGAINST EARTH) --- 2"
 (c) CONCRETE PLACED ON EARTH --- 3"
- CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE AND LOCAL REGULATORY REQUIREMENTS AS WELL AS SAFETY PLANS ISSUED BY THE NJSCC, PROJECT MANAGEMENT FIRM, AND GENERAL CONTRACTOR. PARTICULAR ATTENTION IS CALLED TO THE PROVISIONS OF 29 CFR 1926 SUBPART C - CONCRETE AND MASONRY CONSTRUCTION.

MASONRY WALLS

- ALL MASONRY WALL UNITS SHALL CONFORM TO THE LATEST EDITION OF ASTM C-90 REQUIREMENTS. THE MINIMUM 28 DAY COMPRESSIVE STRENGTH OF THE CONCRETE (FM) SHALL BE 1500 PSI ACROSS THE ENTIRE AREA (UNLESS NOTED OTHERWISE ON PLANS). AGGREGATE FOR CONCRETE SHALL BE PRODUCED BY THE ROTARY KILN PROCESS, SOLITE OR APPROVED EQUAL. MASONRY IN CONTACT WITH EARTH SHALL BE CONVENTIONAL, STONE CONCRETE.
- USE TYPE "S" MORTAR, ASTM C-270, FOR NON-REINFORCED MASONRY WALLS.
- PROVIDE TRUSS TYPE DURO-WALL AT 16" o/c VERTICAL SPACING IN ALL MASONRY UNLESS SHOWN OTHERWISE.
- USE TYPE "M" MORTAR, ASTM C-270, FOR REINFORCED MASONRY WALLS.
- VOIDS IN REINFORCED MASONRY WALLS SHALL BE FILLED WITH PEA GRAVEL CONCRETE OF A MINIMUM ULTIMATE STRENGTH 3000 PSI, AT REINFORCING BARS AND ELSEWHERE AS SHOWN ON DRAWINGS.
- CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE AND LOCAL REGULATORY REQUIREMENTS AS WELL AS SAFETY PLANS ISSUED BY THE NJSCC, PROJECT MANAGEMENT FIRM, AND GENERAL CONTRACTOR. PARTICULAR ATTENTION IS CALLED TO THE PROVISIONS OF 29 CFR 1926 SUBPART L-SCAFFOLDS, SUBPART M-FALL PROTECTION, SUBPART O-CONCRETE AND MASONRY CONSTRUCTION, SUBPART W-ROLL-OVER PROTECTIVE STRUCTURES, OVERHEAD PROTECTION.

STRUCTURAL STEEL

- THE STRUCTURAL STEEL CONTRACTOR SHALL VERIFY THE FOUNDATION CONSTRUCTION FOR ANCHOR BOLT LOCATION, ELEVATION OF TOP OF CONCRETE AND BEARING PLATES, ALIGNMENT, ETC., PRIOR TO START OF ERECTION.
- ALL STRUCTURAL STEEL FRAMING SHALL CONFORM WITH THE LATEST STANDARD OF AISI IN CONNECTION WITH THE MANUFACTURE, DETAILING, FABRICATION, DELIVERY AND ERECTION OF ALL STRUCTURAL STEEL SHAKES. SAID FRAMING ASSEMBLY AND ERECTION SHALL ALSO COMPLY WITH THE REQUIREMENTS FOR WELDED OR BOLTED CONNECTIONS FOR BUILDINGS, AS OUTLINED BY AISI.
- MATERIALS:
 - STRUCTURAL STEEL SHAPES, PLATES AND BARS AS FOLLOWS:
 - CARBON STEEL FOR STRUCTURAL SHAPES OF W-, S-, HP SHAPES, ANGLES AND CHANNEL C10 AND SMALLER --- ASTM A-36.
 - HIGH-STRENGTH, LOW ALLOY COLUMBIUM-VANADIUM STEEL FOR W SHAPES AND CHANNEL C12 AND LARGER --- ASTM A-502, GRADE 50.
 - COLD FORMED STRUCTURAL STEEL "HSS":
 - ASTM A-500, GRADE B, Fy=46 KSI FOR RECTANGULAR HSS
 - ASTM A-500, GRADE B, Fy=42 KSI FOR ROUND HSS
 - STEEL PIPE: ASTM A-53, TYPE E OR S, GRADE B, Fy=35 KSI
 - ALL STRUCTURAL STEEL SHOP WORK TO BE WELDED OR BOLTED WITH 3/4" HIGH STRENGTH BOLTS. FIELD WORK CONNECTIONS TO BE BOLTED WITH 3/4" HIGH STRENGTH BOLTS.
 - ALL COLUMNS SHALL BE FURNISHED WITH CAP PLATES AND BASE PLATES OF SIZES CALLED FOR AND SHALL BE SHOP WELDED. BASE PLATES SHALL BEAR ON LEVELING NUTS SIZED ON 1 1/2" APPROVED NON-SHRINK GROUT AND ANCHORED WITH FOUR 3/4" DIAMETER x 18" BOLTS PLUS 4" HOOK. SHIM UNDER BASE PLATES AS REQUIRED.
 - GENERAL CONTRACTOR SHALL FURNISH ALL COLUMN BASE PLATES WITH AN "APPROVED" NON-SHRINK GROUT AFTER COLUMNS ARE SET AND PLUMBED AND PRIOR TO INSTALLATION OF SUPPORTED DECKING.
 - PROVIDE ADJUSTABLE MASONRY ANCHOR STRAPS WELDED TO WIDE FLANGE AND TUBULAR COLUMNS AT 2'-0" o/c EACH FACE IN CONTACT WITH MASONRY.
 - ALL STEEL BEAMS SHALL BE ANCHORED TO MASONRY WALLS WITH ADJUSTABLE MASONRY ANCHORS AT 2'-0" o/c MAXIMUM.
 - WHERE BEAMS CANTILEVER OVER COLUMNS, PROVIDE TWO 5/16" STEELER PLATES ON EACH SIDE OF BEAM.
 - TRUE SHEAR CONNECTIONS SHALL BE PROVIDED AT ALL POINTS OF CANTILEVER SUSPENSION.
 - BEAMS BEARING ON WALLS SHALL BE PROVIDED WITH BEARING PLATES AND ANCHORED WITH BOLTS AS APPROVED BY THE ENGINEER.
 - STEEL CONTRACTOR SHALL FURNISH LOOSE STEEL LINTELS FOR THE MASON TO INSTALL.
 - BEARING FOR STEEL LINTELS SHALL BE 8" MINIMUM UNLESS OTHERWISE NOTED ON PLAN.
 - ALL DOUBLE ANGLE LINTELS BACK-TO-BACK SHALL BE BOLTED AT 2'-0" o/c MAXIMUM, 2 BOLTS MINIMUM.
 - PUNCH HOLES IN STEEL MEMBERS AT 2'-0" o/c FOR FASTENING, BLOCKING, ETC. REFER TO ALL ARCHITECTURAL DRAWINGS.
 - PROVIDE TEMPORARY BRACING AS REQUIRED TO RESIST WIND, CONSTRUCTION LOADS, ETC. DURING CONSTRUCTION.
 - THE STEEL CONTRACTOR SHALL BE RESPONSIBLE FOR EXACT LOCATION, ELEVATION AND ALIGNMENT OF ALL HUNG LINTELS, AS INDICATED ON DRAWINGS AND SHALL PROVIDE ALL NECESSARY ADJUSTABLE CONNECTIONS PROPOSED, SUBMITTED AND APPROVED BY THE ARCHITECT.
 - ALL BEAM TO WIDE FLANGE COLUMN CONNECTIONS SHALL CONSIST OF TWO SIDED CLIP ANGLES WITH BOLTS AT 3" o/c AND A MAXIMUM NUMBER OF ROWS PERMISSIBLE FOR THE BEAM DEPTH. UNLESS OTHERWISE APPROVED BY THE ENGINEER, SEATED CONNECTIONS SHALL NOT BE PERMITTED.
 - ALL CONNECTIONS BETWEEN BEAM WEBS AND TUBE OR PIPE COLUMNS MUST BE MADE WITH A MINIMUM OF 4 3/8" THICK THROUGH PLATE. SHEAR TAB CONNECTIONS WELDED TO THE FACE OF THE COLUMNS ARE NOT PERMITTED.
 - STRUCTURAL STEEL CONTRACTOR MUST COORDINATE THE FINAL SIZE AND LOCATION OF MECHANICAL UNITS WITH MECHANICAL AND ARCHITECTURAL DRAWINGS.
 - STRUCTURAL STEEL CONTRACTOR SHALL FURNISH AND INSTALL ANGLE FRAMING UNDER OPENINGS AND UNDER CURBS OF ALL EQUIPMENT AS PER MECHANICAL DRAWINGS, EVEN IF NOT SHOWN ON STRUCTURAL DRAWINGS.

- FOR ROOF AND FLOOR FRAMING, THE CONNECTIONS USED SHALL BE ADEQUATE TO PROVIDE FOR THE REACTION DUE TO THE MAXIMUM UNIFORMLY DISTRIBUTED LOAD THAT THE BEAM IS CAPABLE OF CARRYING FOR ITS SPAN BASED ON THE ALLOWABLE UNIT STRESSES.
- FOR COMPOSITE FLOOR FRAMING, THE CONNECTIONS USED SHALL BE ADEQUATE TO PROVIDE FOR THE REACTION DUE TO THE 150% OF THE MAXIMUM UNIFORMLY DISTRIBUTED LOAD THAT THE BEAM IS CAPABLE OF CARRYING FOR ITS SPAN OR HIGHER REACTION SPECIFIED.
- CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE AND LOCAL REGULATORY REQUIREMENTS AS WELL AS SAFETY PLANS ISSUED BY THE NJSCC, PROJECT MANAGEMENT FIRM, AND GENERAL CONTRACTOR. PARTICULAR ATTENTION IS CALLED TO THE PROVISIONS OF 29 CFR 1926 SUBPART J-WELDING AND CUTTING, SUBPART M-FALL PROTECTION, SUBPART N-CRANES, DERRICKS, HOSTS, ELEVATORS, AND CONVEYORS, SUBPART O-MOTOR DRIVEN MECHANIZED EQUIPMENT AND MARINE OPERATIONS, SUBPART R-STEEL ERECTION, AND SUBPART W-ROLL-OVER PROTECTIVE STRUCTURES, OVERHEAD PROTECTION.

STEEL JOISTS

- ALL OPEN-WEB STEEL JOISTS SHALL CONFORM WITH LATEST SPECIFICATIONS FOR OPEN-WEB STEEL JOISTS PREPARED BY THE STEEL JOIST INSTITUTE.
- ALL OPEN-WEB STEEL JOISTS BEARING ON MASONRY WALLS TO BE ANCHORED TO WALL WITH BOLTS OR WELDED TO BEARING PLATE AS REQUIRED BY THE SA.
- EXTEND BOTTOM CHORDS OF ALL OPEN-WEB STEEL JOISTS AT COLUMN LINES AND TO THE COLUMNS OR BEAMS.
- PROVIDE BOTTOM CHORD EXTENSIONS ON ALL OPEN-WEB JOISTS SUPPORTING HUNG CEILING.
- BRIDGING SHALL BE ANGLE TYPE AS SPECIFIED IN STEEL JOIST INSTITUTE SPECIFICATIONS AND SHALL EXTEND AND BE ANCHORED TO PERIMETER STEEL BEAMS OR MASONRY WALLS. SPACING AND SIZE SHALL BE AS PER SAJ SPECIFICATIONS.
- TOP AND BOTTOM CHORDS OF OPEN-WEB JOISTS TO CONSIST OF ANGLES, STRUCTURAL TEES, OR COLD FORMED SECTIONS.
- JOIST MANUFACTURER SHALL SUBMIT WRITTEN CERTIFICATION THAT ALL JOISTS HAVE BEEN CAREFULLY INSPECTED PRIOR TO ERECTION AND THAT ALL JOISTS CONFORM TO THE REQUIREMENTS OF THE JOIST SPECIFICATIONS OF THE STEEL JOIST INSTITUTE. PARTICULARLY REGARDING WELDED CONNECTIONS. THE CERTIFICATION SHALL BEAR THE SEAL OF A PROFESSIONAL ENGINEER. IN THE EVENT THAT LIGHT GAUGE COLD FORMED MEMBERS ARE USED, COMPLIANCE WITH APPLICABLE AISI FORMULAS SHALL BE STIPULATED.
- DO NOT SUSPEND OR SUPPORT CONCENTRATED LOADS FROM OR ON JOISTS WITHOUT ARCHITECT'S APPROVAL. HOWEVER, WHEN SO APPROVED, LOADS SHALL BE SUSPENDED FROM OR SUPPORTED ON TOP CHORDS AT PANEL POINTS AND DISTRIBUTED TO A MINIMUM OF TWO JOISTS. PROVIDE REINFORCING ANGLES FROM THE SUPPORT POINT TO A BOTTOM CHORD PANEL POINT. USE ANGLE 1 x 1 x 1/4" MINOR VEES. MECHANIZED EQUIPMENT AND MARINE OPERATIONS, SUBPART R-STEEL ERECTION, AND SUBPART W-ROLL-OVER PROTECTIVE STRUCTURES, OVERHEAD PROTECTION.
- CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE AND LOCAL REGULATORY REQUIREMENTS AS WELL AS SAFETY PLANS ISSUED BY THE NJSCC, PROJECT MANAGEMENT FIRM, AND GENERAL CONTRACTOR. PARTICULAR ATTENTION IS CALLED TO THE PROVISIONS OF 29 CFR 1926 SUBPART M-FALL PROTECTION, SUBPART N-CRANES, DERRICKS, HOSTS, ELEVATORS, AND CONVEYORS, SUBPART O-MOTOR VEHICLES, MECHANIZED EQUIPMENT, AND MARINE OPERATIONS, SUBPART R-STEEL ERECTION, AND SUBPART W-ROLL-OVER PROTECTIVE STRUCTURES, OVERHEAD PROTECTION.

STRUCTURAL STEEL STUD FRAMING

- ALL STUDS TO BE DESIGNED FOR ALL STRUCTURAL LOADS AS SPECIFIED IN IBC 2000.
- ALL STUDS TO BE DESIGNED IN ACCORDANCE WITH THE AISI "SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS" LATEST EDITION.
- ALL STUDS SUPPORTING MASONRY OR PRECAST COPING TO BE 14 GA. MINIMUM.
- ALL STUDS TO BE DESIGNED FOR AN ALLOWABLE DEFLECTION OF 1/600.
- STRUCTURAL STUD WALL PANEL CONTRACTOR MUST SUBMIT CALCULATIONS AND DRAWINGS, SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW JERSEY, TO ARCHITECT / ENGINEER FOR REVIEW.
- STRUCTURAL STUD WALL PANEL CONTRACTOR ALSO MUST SUBMIT CERTIFICATE, SIGNED AND SEALED BY THE SAME PROFESSIONAL ENGINEER, THAT ERECTION OF ALL STUDS, INCLUDING CONNECTIONS, WAS AS PER DRAWINGS AND CALCULATIONS.

METAL DECK

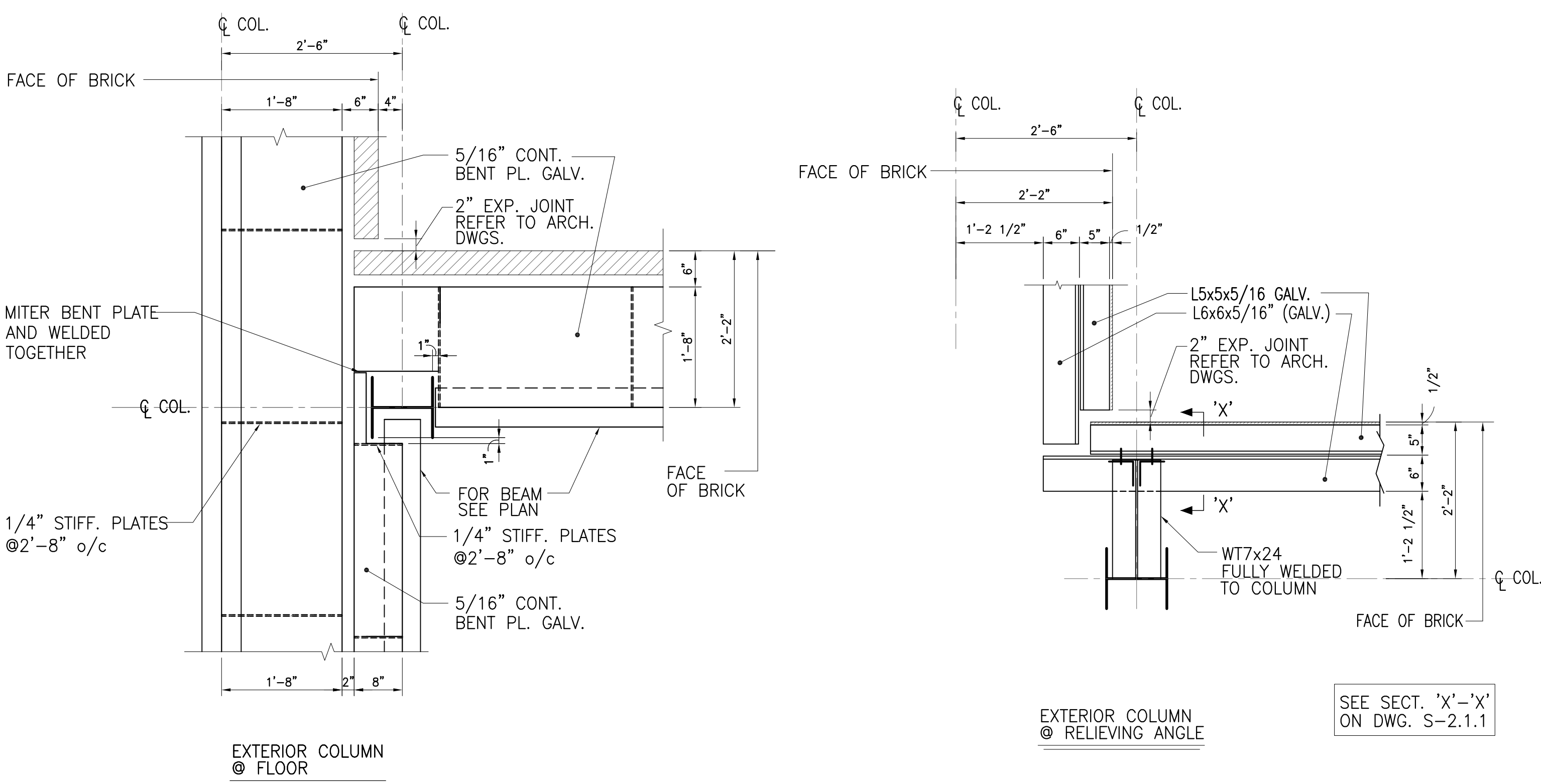
- METAL DECK FOR ALL ROOF AND FLOOR CONSTRUCTION SHALL BE AS NOTED ON PLANS OR APPROVED EQUAL, AND SHALL BE WELDED AT 12" o/c MAXIMUM TO SUPPORTING MEMBERS. USE MANUFACTURER'S STANDARD APPROVED WELDING WASHERS FOR 20 GA. DECK OR LIGHTER. SIDE LAPS TO BE WELDED AT 3" o/c MAX.
- METAL DECK CONTRACTOR, AFTER WELDING STUDS TO STRUCTURAL STEEL, SHALL BREAK AND REMOVE ALL FERRULES FROM DECK AREA PRIOR TO PLACEMENT OF ANY CONCRETE ON DECK.
- ALL HANGERS REQUIRED FOR CEILING, MECHANICAL EQUIPMENT, ETC., SHALL BE INSTALLED PRIOR TO PLACEMENT OF CONCRETE TOPPING.

QUALITY CONTROL SERVICES

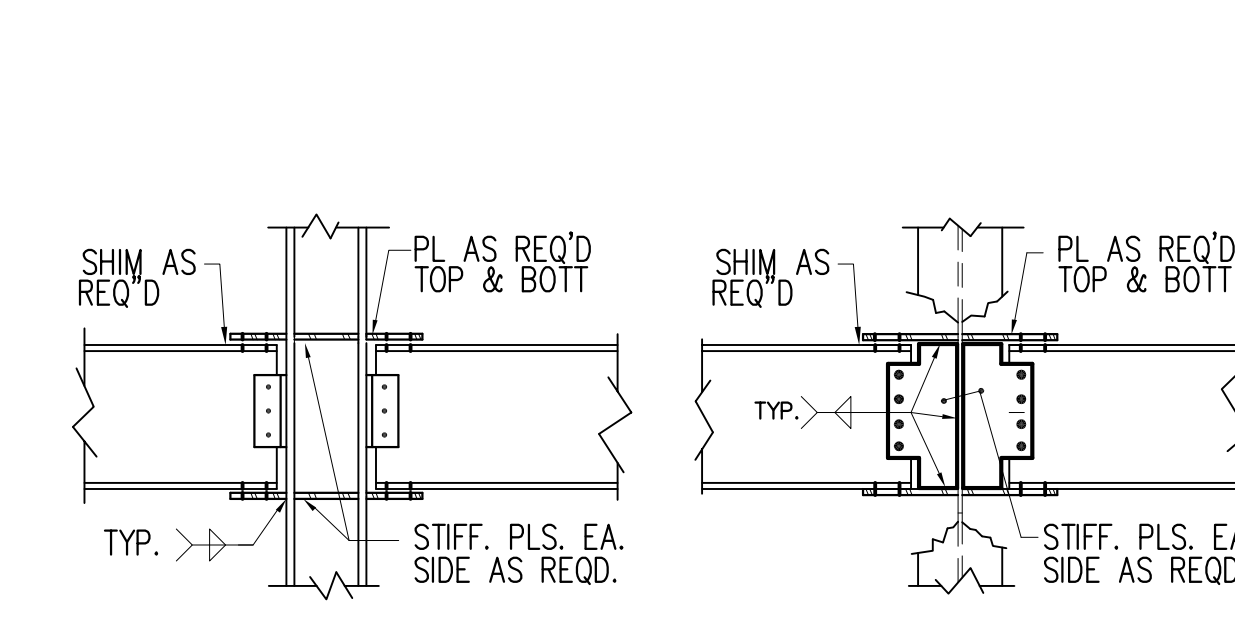
- CONTROLLED INSPECTIONS AS REQUIRED BY SPECIFICATIONS AND THE IBC 2000 SHALL BE PERFORMED BY A TESTING AGENCY PROVIDED BY THE OWNER FOR THE FOLLOWING ITEMS:
 - STRUCTURAL STEEL (AS PER IBC 2000 SECTION 1704.2 AND SECTION AND TABLE 1704.3)
 - WELDING
 - HIGH STRENGTH BOLTING
 - FABRICATED STRUCTURAL STEEL
 - STUDS
 - SUBGRADE FOR FOUNDATIONS THAT INCLUDES SOIL BEARING CAPACITY AND PLACEMENT OF ALL CONTROLLED COMPACTED FILL (SECTION 1704.7)
 - STABILITY OF BUILDING CONSTRUCTION
 - QUALITY CONTROL OF CONCRETE MATERIALS, BATCHING, STRENGTH, SLUMP, AIR CONTENT, UNIT WEIGHT, TEMPERATURE, FORMS, SIZE AND PLACEMENT OF REINFORCEMENT (SECTION 1704.4 - TABLE 1704.4)
 - PLACEMENT AND BEDDING OF MASONRY UNITS INCLUDING SIZES AND SIZES OF MASONRY, SECTION AND PLACEMENT OF REINFORCING, PROVISIONS FOR CURING, TEMPERATURE. (SECTION AND TABLE 1704.5)

PRECAST CONCRETE LINTEL SCHEDULE (FOR INTERIOR CMU WALLS)			
EACH 4" WALL THICKNESS		6" WALL THICKNESS	
MAX. CL. SPAN	REFIN.	MAX. CL. SPAN	REFIN.
4'-0"	4" x 8" --- 2-#4 T & B	4'-0"	4" x 8" --- 2-#3 T & B
6'-0"	4" x 16" --- 1-#4 T & B	6'-0"	6" x 16" --- 2-#4 T & B
8'-0"	4" x 16" --- 1-#5 T & B	8'-0"	6" x 16" --- 2-#5 T & B

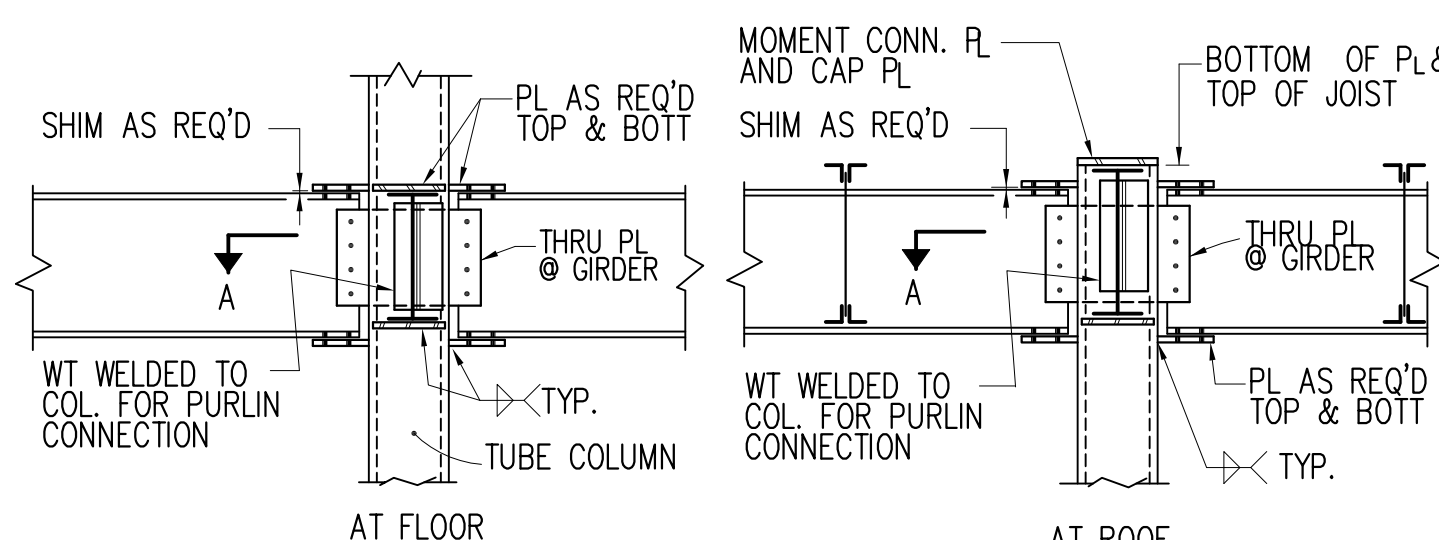
IBC CODE 2006		EARTHQUAKE DESIGN DATA	
ROOF LIVE LOAD = 20 psf		OCCUPANCY CATEGORY = III	
ROOF SNOW LOAD = 30 psf		SEISMIC IMPORTANCE FACTOR "I" = 1.25	
GROUND SNOW LOAD (Pg) = 30 psf		MAPPED SPECTRAL RESPONSE ACCELERATION	
FLAT ROOF SNOW LOAD (Ps) = 23.1 psf		Ss = 0.27	
SNOW EXPOSURE FACTOR (Ce) = 1.0		si = 0.083	
SNOW LOAD IMPORTANCE FACTOR (I) = 1.1		Thermal Factor (Ct) = 1.0	
Thermal Factor (Ct) = 1.0		SITE CLASS = D	
		SPECTRAL RESPONSE COEFFICIENT AT SHORT PERIOD Ss = 0.285	
		AT 1 SECOND PERIOD Sd1 = 0.1	
		SEISMIC DESIGN CATEGORY = D	
		AREA "A", AREA "B", AREA "C", AREA "D"	
		BASIC SEISMIC FORCE RESISTING SYSTEM: ORDINARY MOMENT FRAME (NOT SPECIFICALLY DETAILED FOR SEISMIC RESISTANCE)	
		RESPONSE MODIFICATION FACTOR (R) = 3	
		DEFLECTION AMPLIFICATION FACTOR (Cd) = 4	
		BASIC SEISMIC FORCE RESISTING SYSTEM: INTERMEDIATE REINFORCED MASONRY SHEAR WALL	
		RESPONSE MODIFICATION FACTOR (R) = 4	
		DEFLECTION AMPLIFICATION FACTOR (Cd) = 4	
		ANALYSIS PROCEDURE USED: EQUIVALENT LATERAL FORCE PROCEDURE	



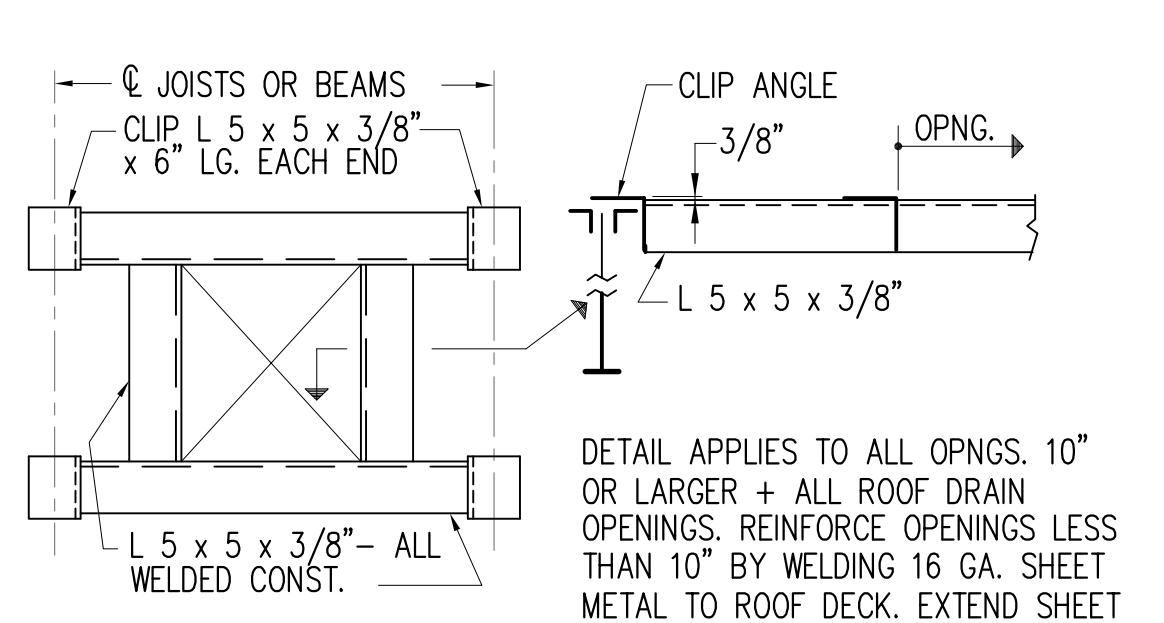
PLAN 105



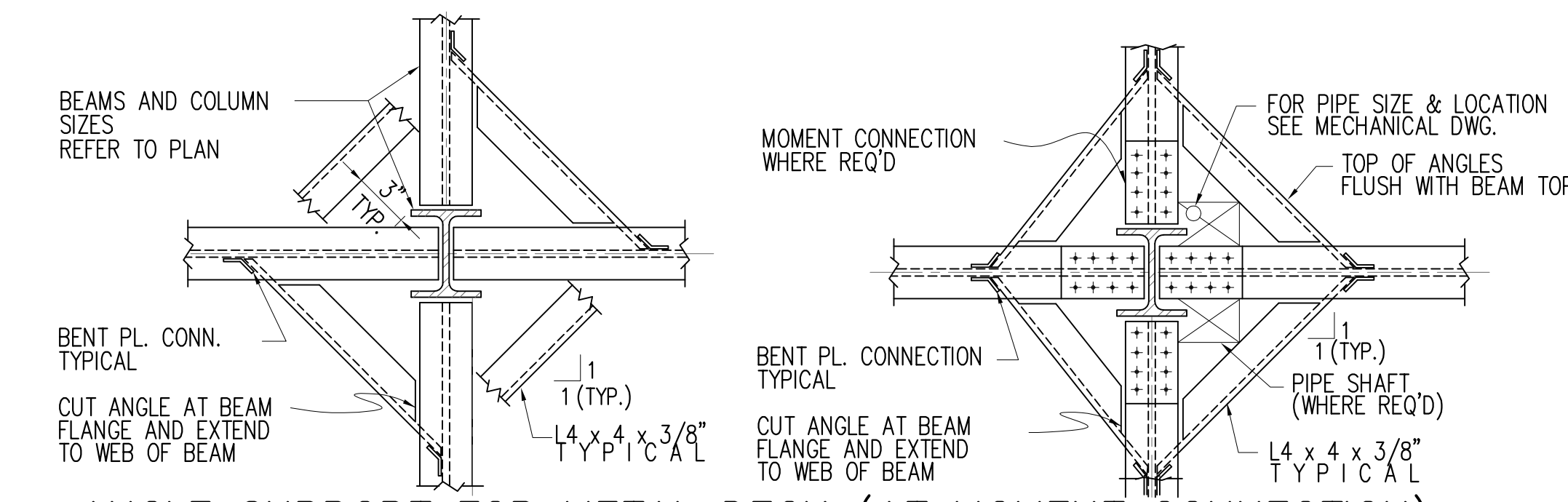
TYPICAL WIDE FLANGE COLUMN MOMENT CONNECTION DETAILS



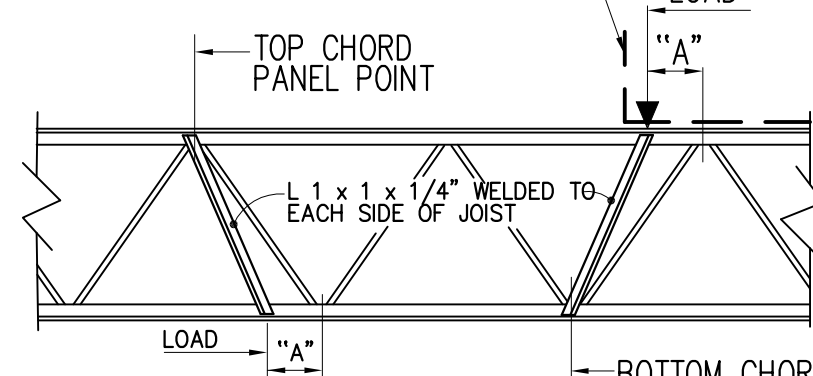
TYPICAL TUBE COLUMN MOMENT CONNECTION DETAILS



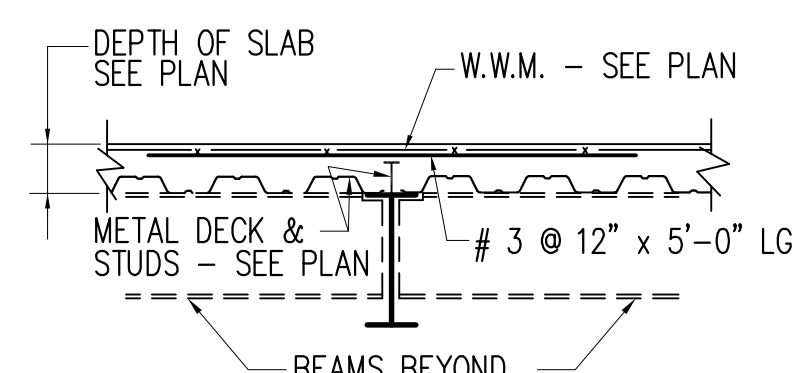
TYPICAL ROOF OPENING DETAIL



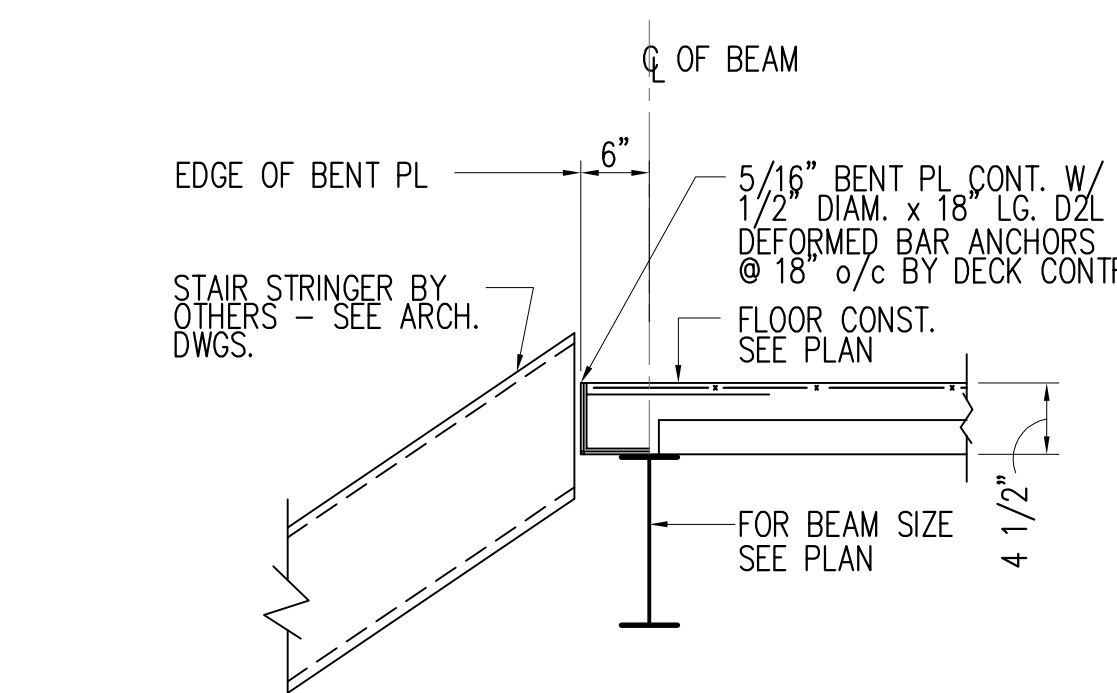
ANGLE SUPPORT FOR METAL DECK (AT MOMENT CONNECTION)



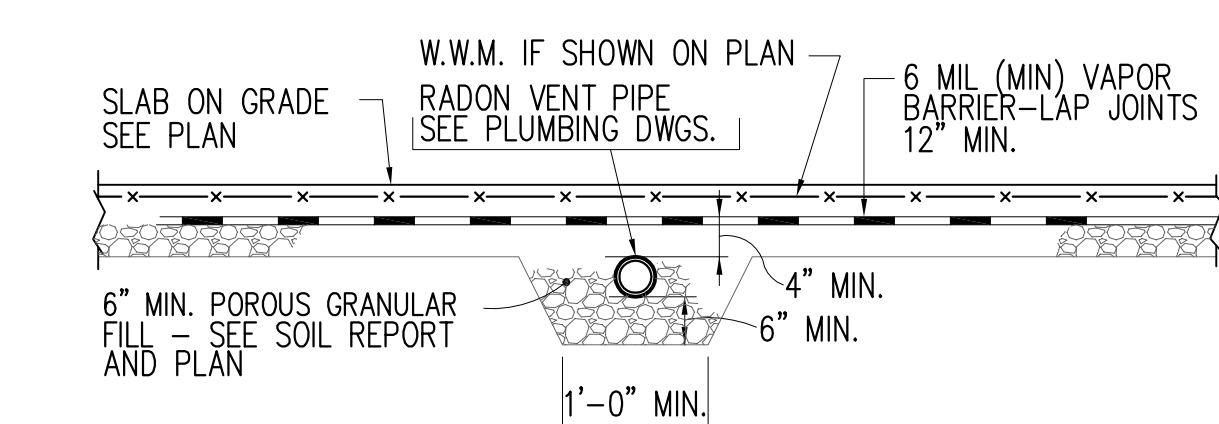
TYPICAL JOIST WEB REINFORCING DETAIL



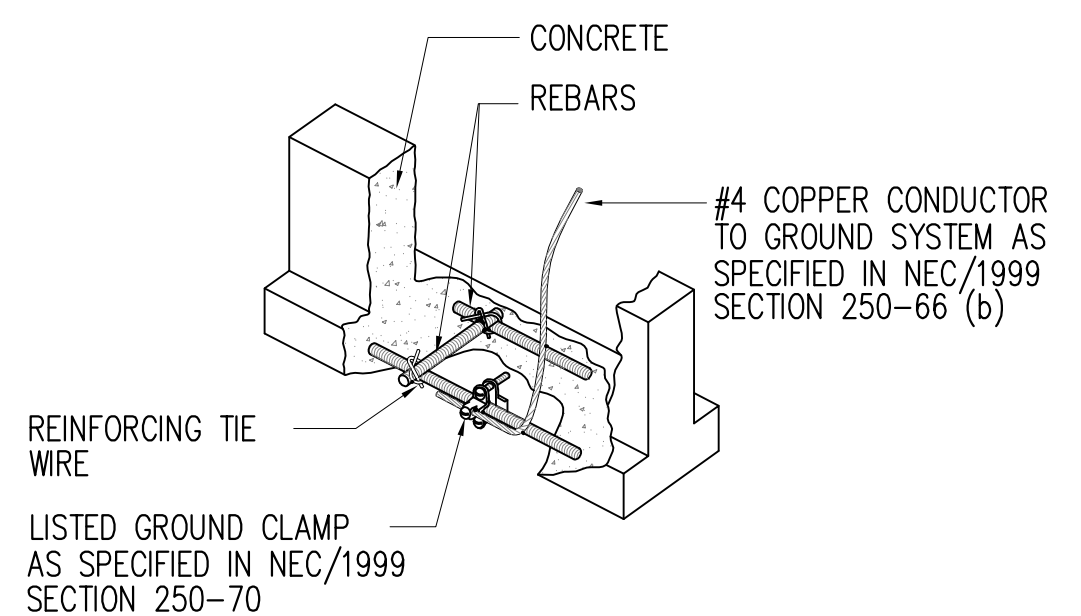
TYPICAL SLAB REINF. AT ALL GIRDERS



TYPICAL STAIR DETAIL



TYPICAL UNDER SLAB RADON VENT PIPE DETAIL



TYPICAL FOOTING GROUNDING DETAIL

SDA

NJ SCHOOLS DEVELOPMENT AUTHORITY

STATE OF NEW JERSEY



EDUCATION AUTHORITY

ARCHITECT

Design Ideas Group
architects + planning, llc

Project # : 2008.356.00

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CEC INC.
CONSULTING ENGINEERS COLLABORATIVE, INC.
REG. PROFESSIONAL ENGINEER, PE 120033

100% NJDCA CONSTRUCTION DOCUMENTS SUBMISSION
FOR:
NEW PHILLIPSBURG HIGH SCHOOL
DOE# 4100-NO1-04-1000
SDAF NT-0003-C02
TOWN OF PHILLIPSBURG
UPPER BELVIDERE ROAD LOT 44 / BLOCK 2
PHILLIPSBURG, NEW JERSEY 08865

SUBMISSION	DATE
ADDEDNDUM #1	11-21-12
NJSDA REVISIONS	09-12-12
NJDCA COMMENTS	03-04-11
NJDCA COMMENTS	08-12-10
NJDCA COMMENTS	05-17-10
NJDCA COMMENTS	02-12-10
DATE:	OCTOBER 13, 2009

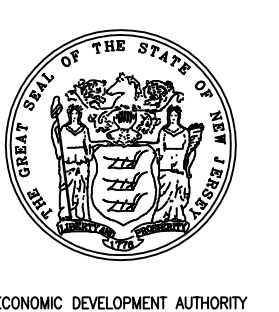
DRAWING TITLE:

TYPICAL NOTES & DETAILS

DRAWING No.:

S-5.1.3

DRAWN BY:



100% NJDCA CONSTRUCTION DOCUMENTS SUBMISSION
FOR:
NEW PHILLIPSBURG HIGH SCHOOL
DOEF 4100-N01-04-1000
SDAF NT-0003-C02
TOWN OF PHILLIPSBURG
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PHILLIPSBURG, NEW JERSEY 08865

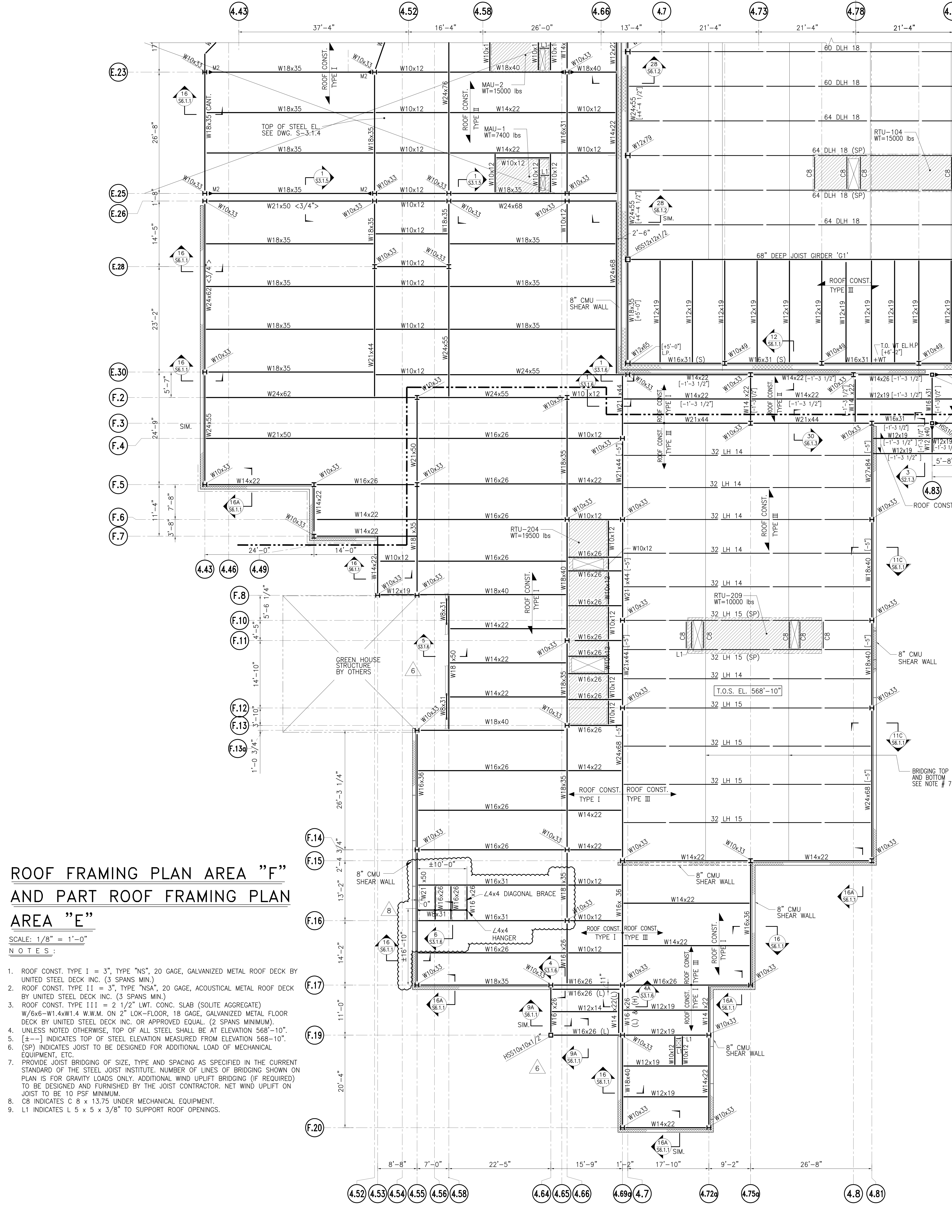
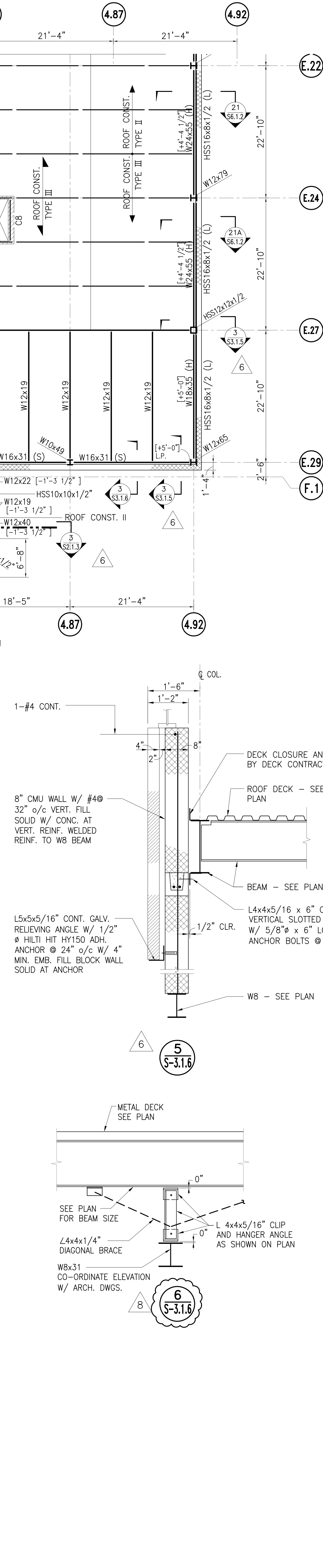
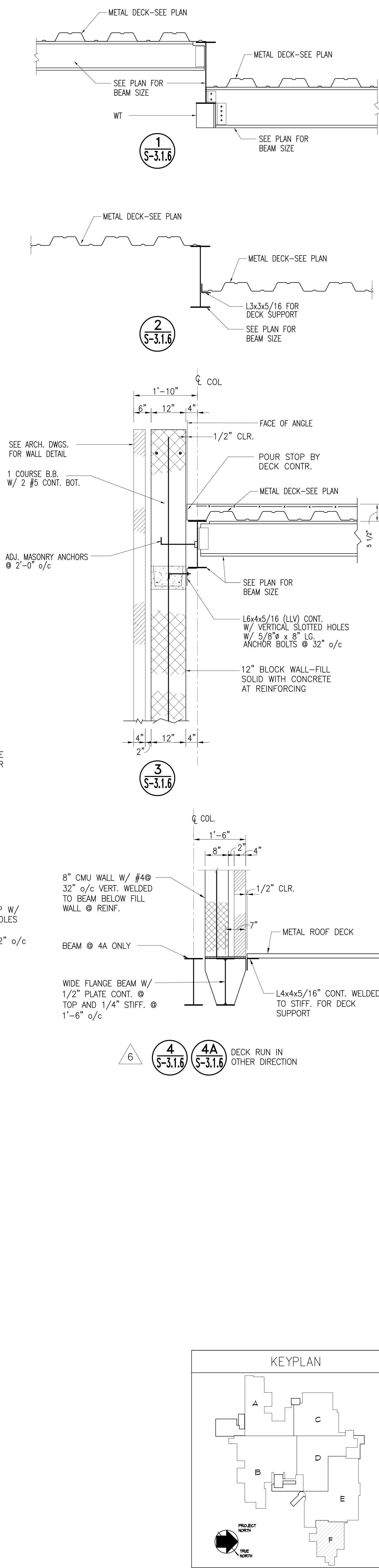
SUBMISSION	DATE
ADDEDNDUM #1	11-21-12
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NJDC COMMENTS	03-04-11
NJDC COMMENTS	08-12-10
NJDC COMMENTS	05-17-10
NJDC COMMENTS	02-12-10
DATE:	OCTOBER 13, 2009
SCALE:	

DRAWING TITLE:
ROOF FRAMING PLAN AREA "F" AND PART ROOF FRAMING PLAN AREA "E"

DRAWING No:

S-3.1.6

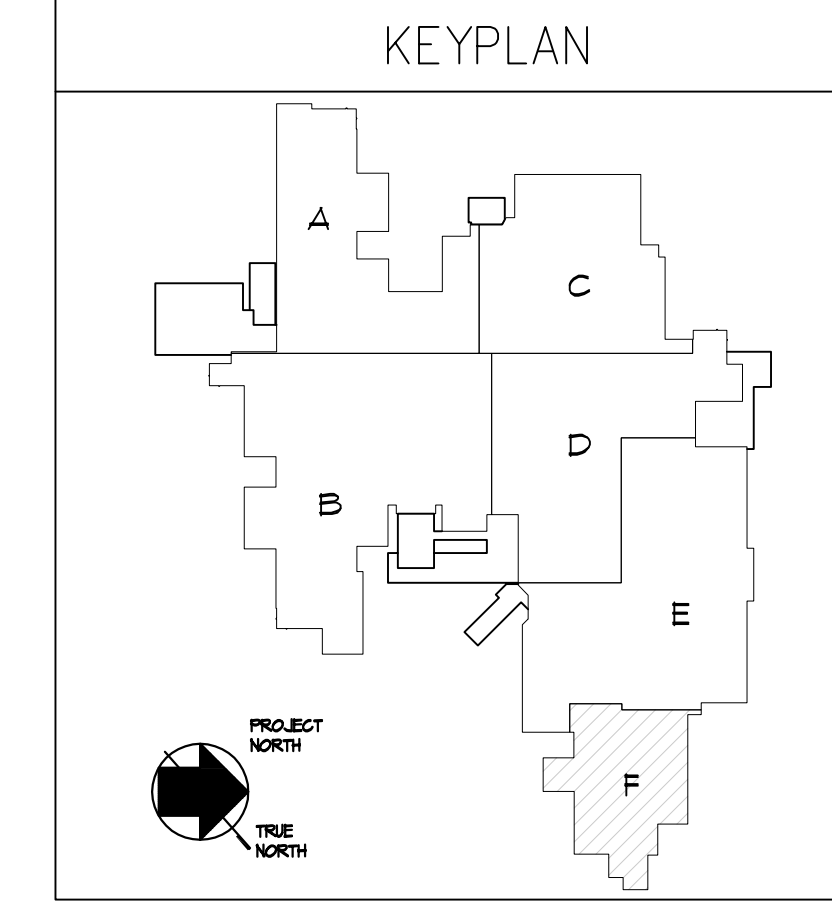
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ROOF FRAMING PLAN AREA "F" AND PART ROOF FRAMING PLAN AREA "E"

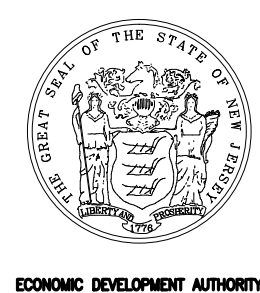
SCALE: 1/8" = 1'-0"
NOTES:

- ROOF CONST. TYPE I = 3", TYPE "NS", 20 GAGE, GALVANIZED METAL ROOF DECK BY UNITED STEEL DECK INC. (3 SPANS MIN.)
- ROOF CONST. TYPE II = 3", TYPE "NSA", 20 GAGE, ACOUSTICAL METAL ROOF DECK BY UNITED STEEL DECK INC. (3 SPANS MIN.)
- ROOF CONST. TYPE III = 2 1/2" LWT. CONC. SLAB (SOLITE AGGREGATE) W/6x6-W1.4xW1.4 W.W.M. ON 2" LOK-FLOOR, 18 GAGE, GALVANIZED METAL FLOOR DECK BY UNITED STEEL DECK INC. OR APPROVED EQUAL. (2 SPANS MINIMUM).
- UNLESS NOTED OTHERWISE, TOP OF ALL STEEL SHALL BE AT ELEVATION 568'-10".
- [±-] INDICATES TOP OF STEEL ELEVATION MEASURED FROM ELEVATION 568'-10".
- (SP) INDICATES JOIST TO BE DESIGNED FOR ADDITIONAL LOAD OF MECHANICAL EQUIPMENT, ETC.
- PROVIDE JOIST BRIDGING OF SIZE, TYPE AND SPACING AS SPECIFIED IN THE CURRENT STANDARD OF THE STEEL JOIST INSTITUTE. NUMBER OF LINES OF BRIDGING SHOWN ON PLAN IS FOR GRAVITY LOADS ONLY. ADDITIONAL WIND UPLIFT BRIDGING (IF REQUIRED) TO BE DESIGNED AND FURNISHED BY THE JOIST CONTRACTOR. NET WIND UPLIFT ON JOIST TO BE 10 PSF MINIMUM.
- CB INDICATES C 8 x 13.75 UNDER MECHANICAL EQUIPMENT.
- L1 INDICATES L 5 x 5 x 3/8" TO SUPPORT ROOF OPENINGS.

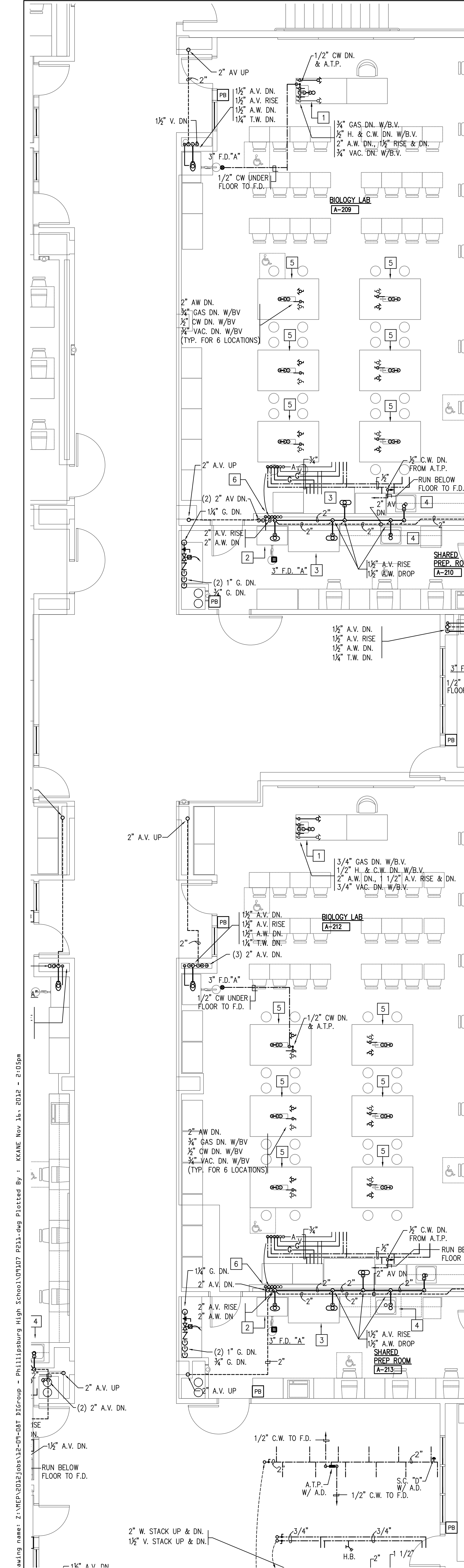
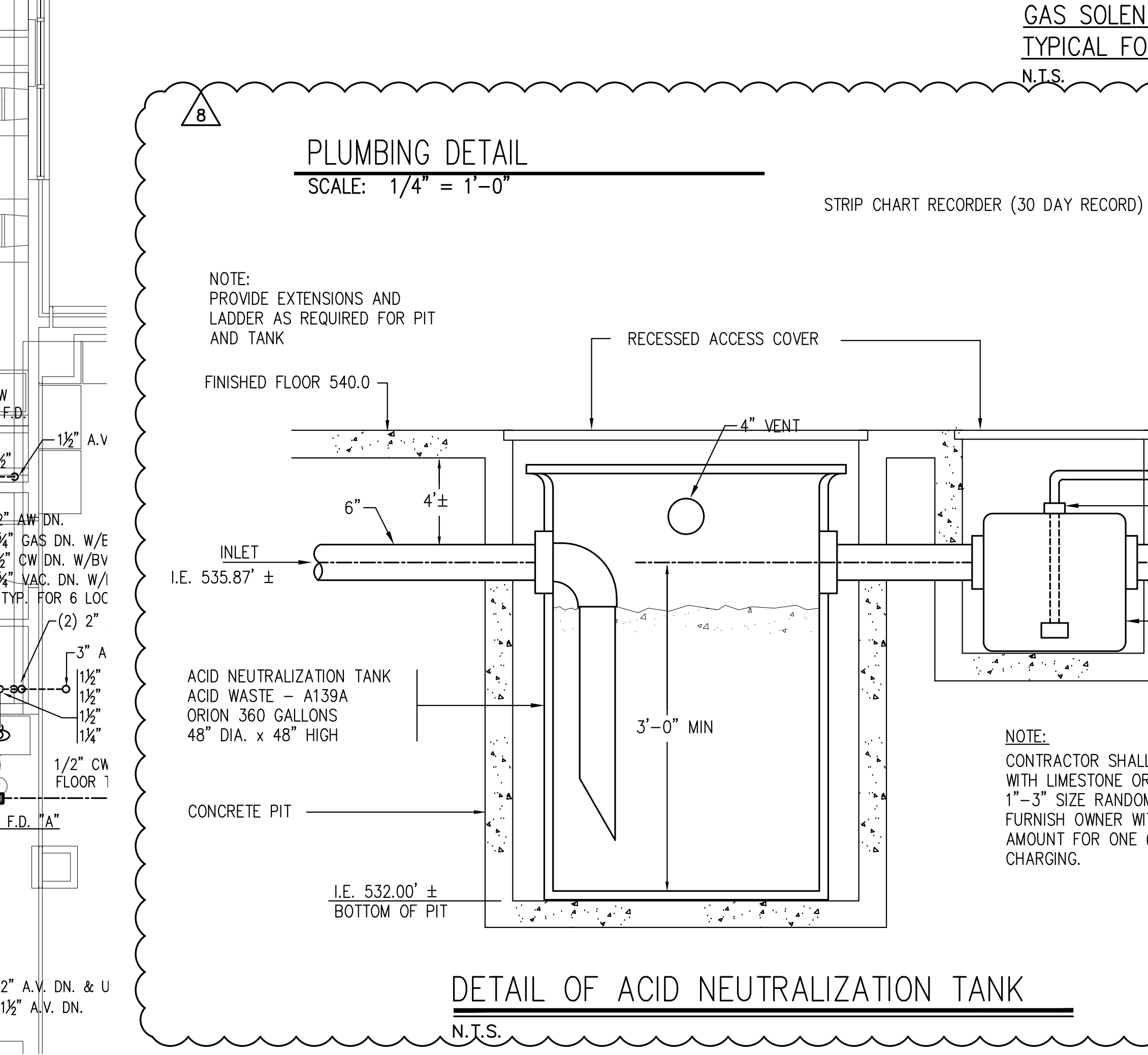
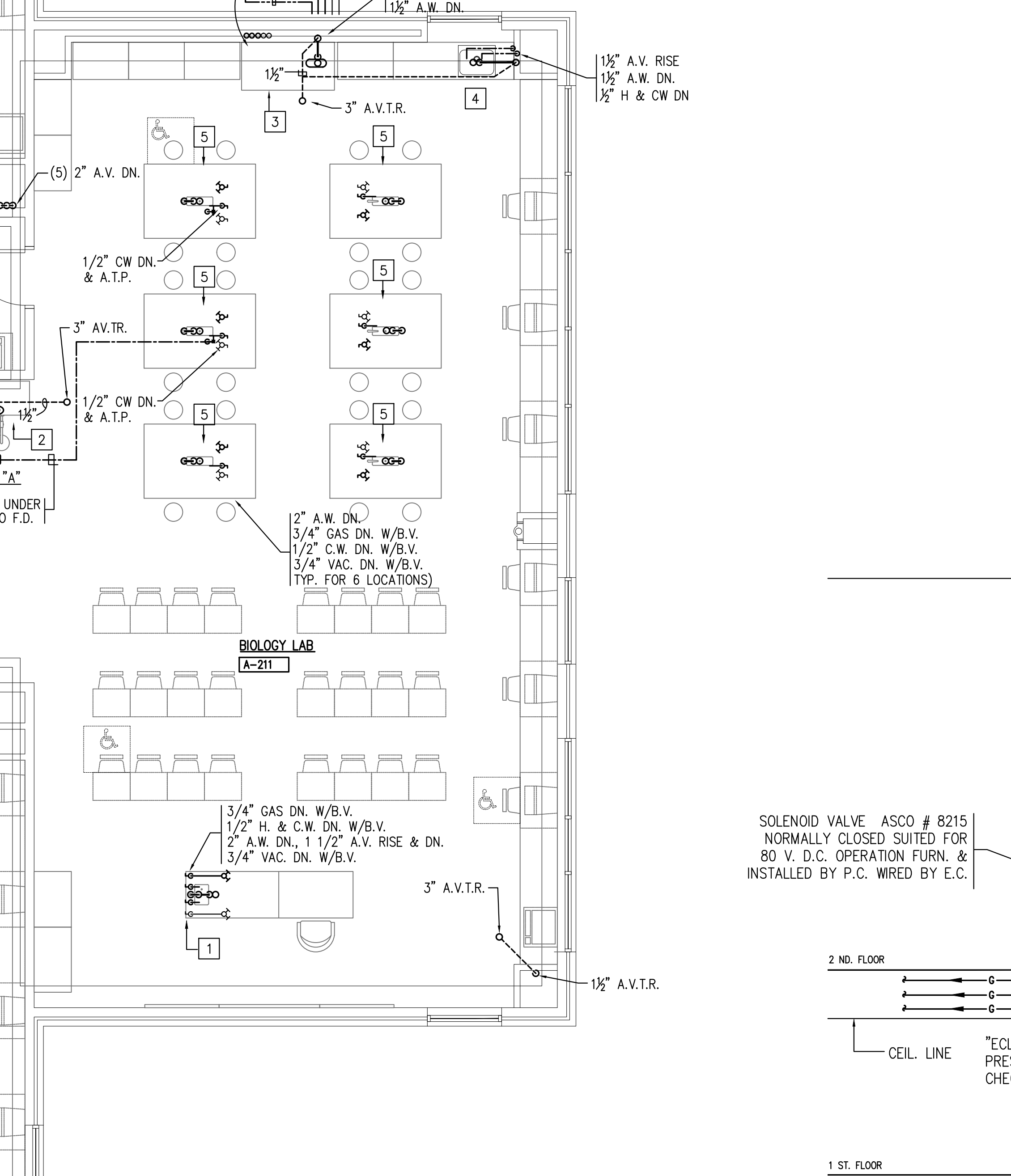
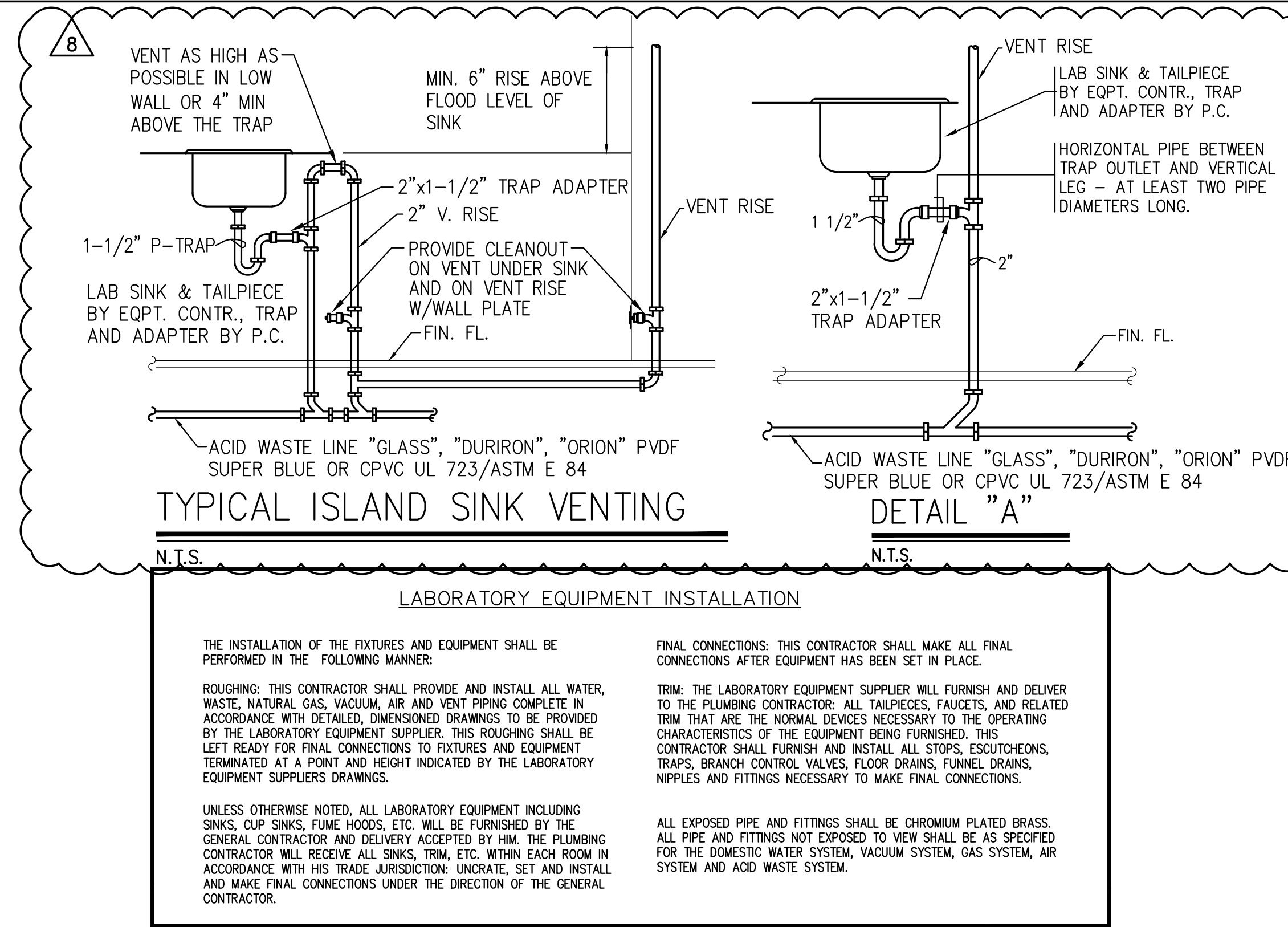
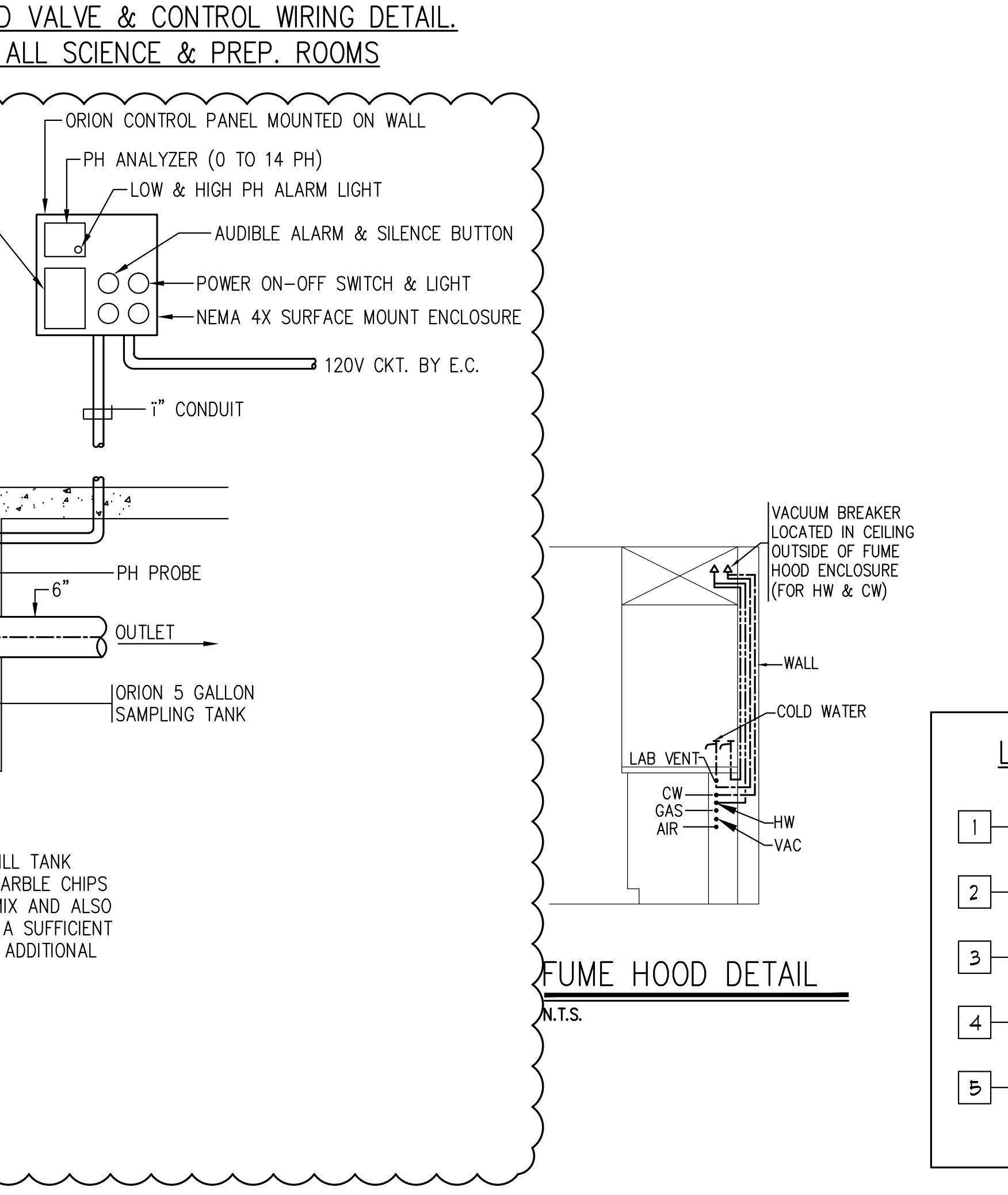
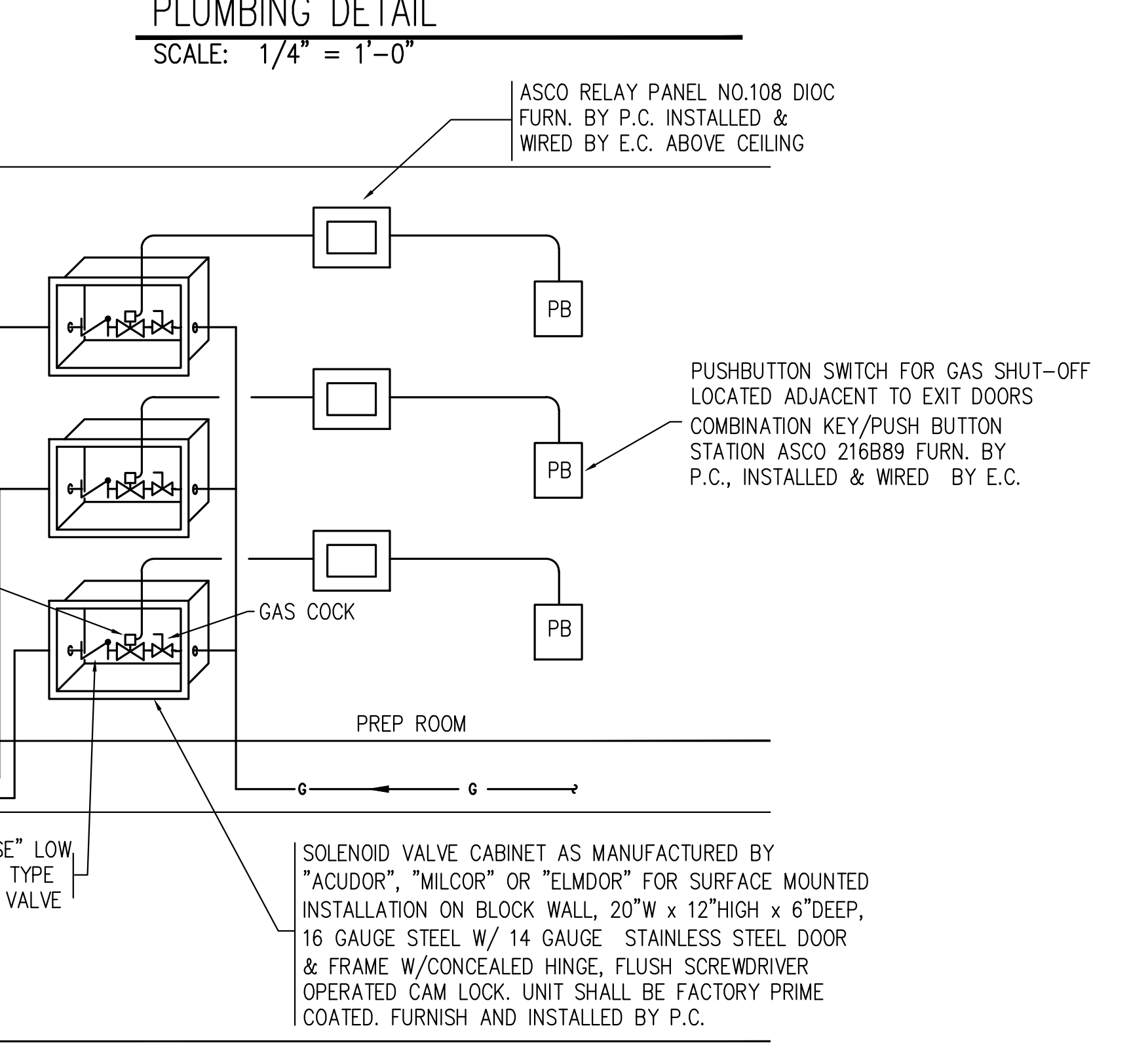
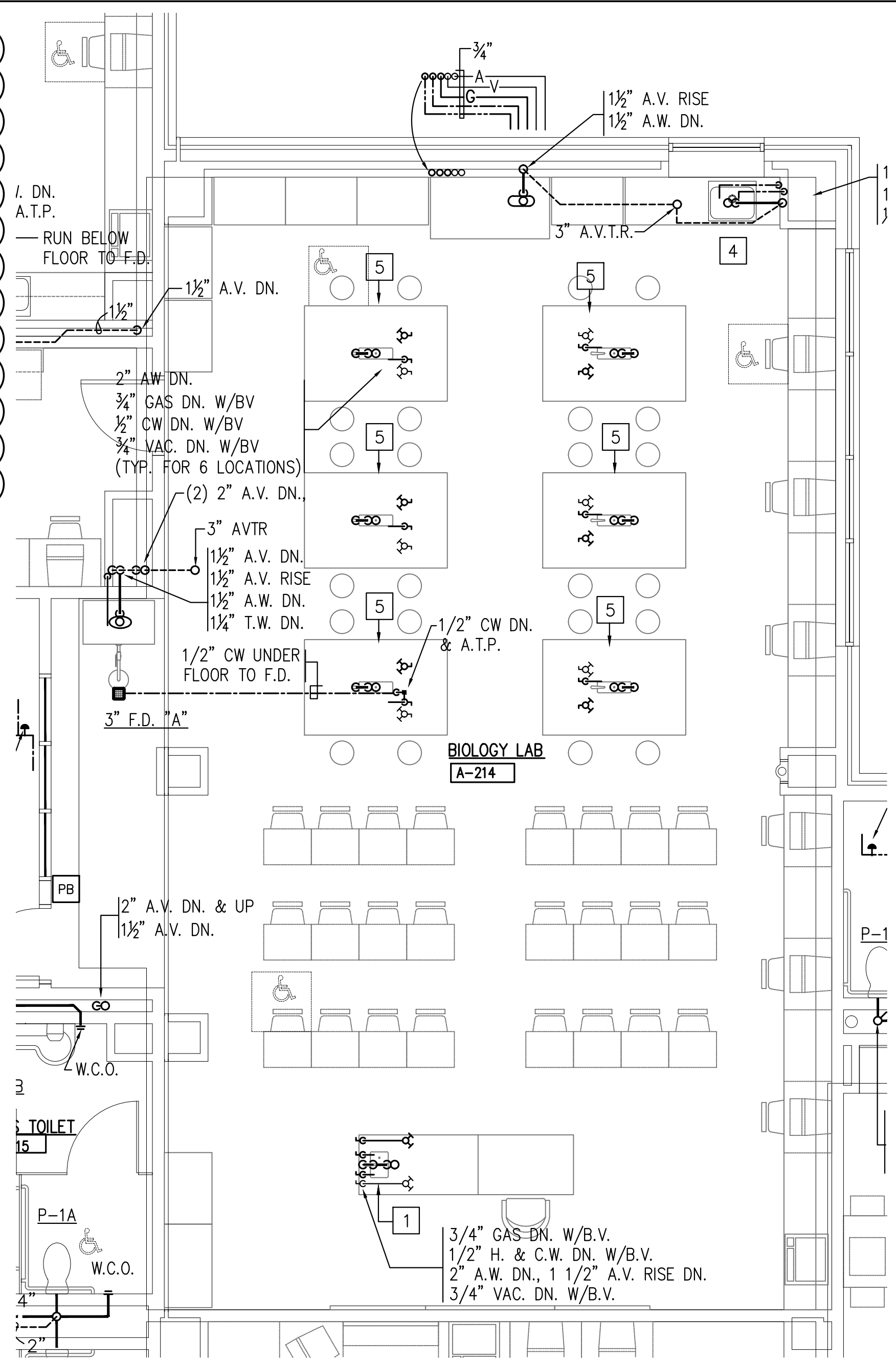
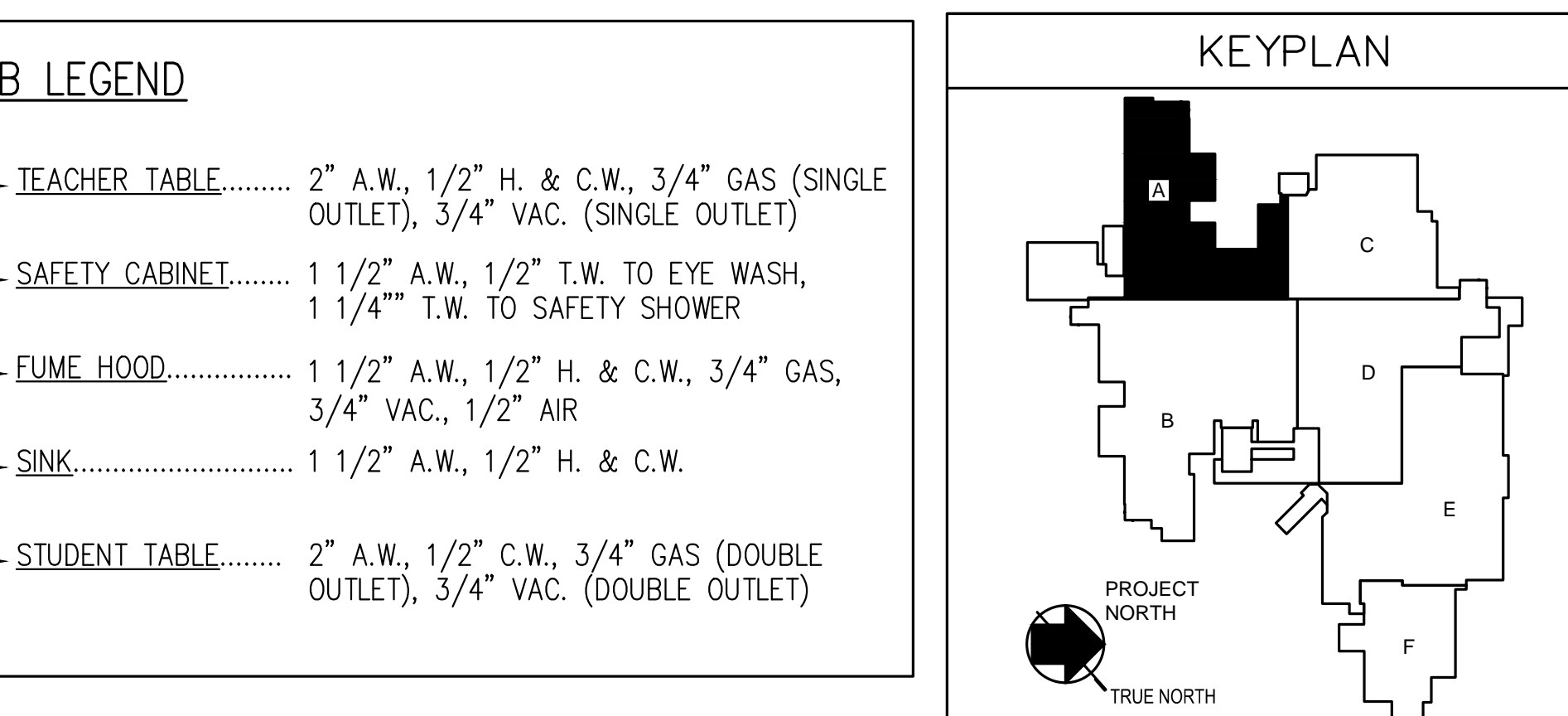
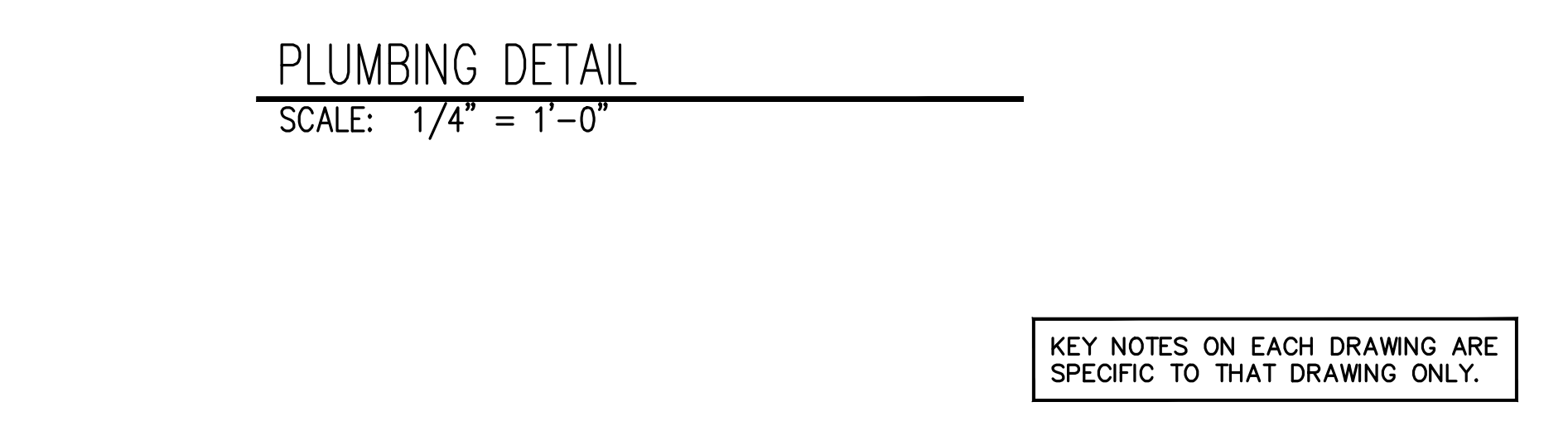
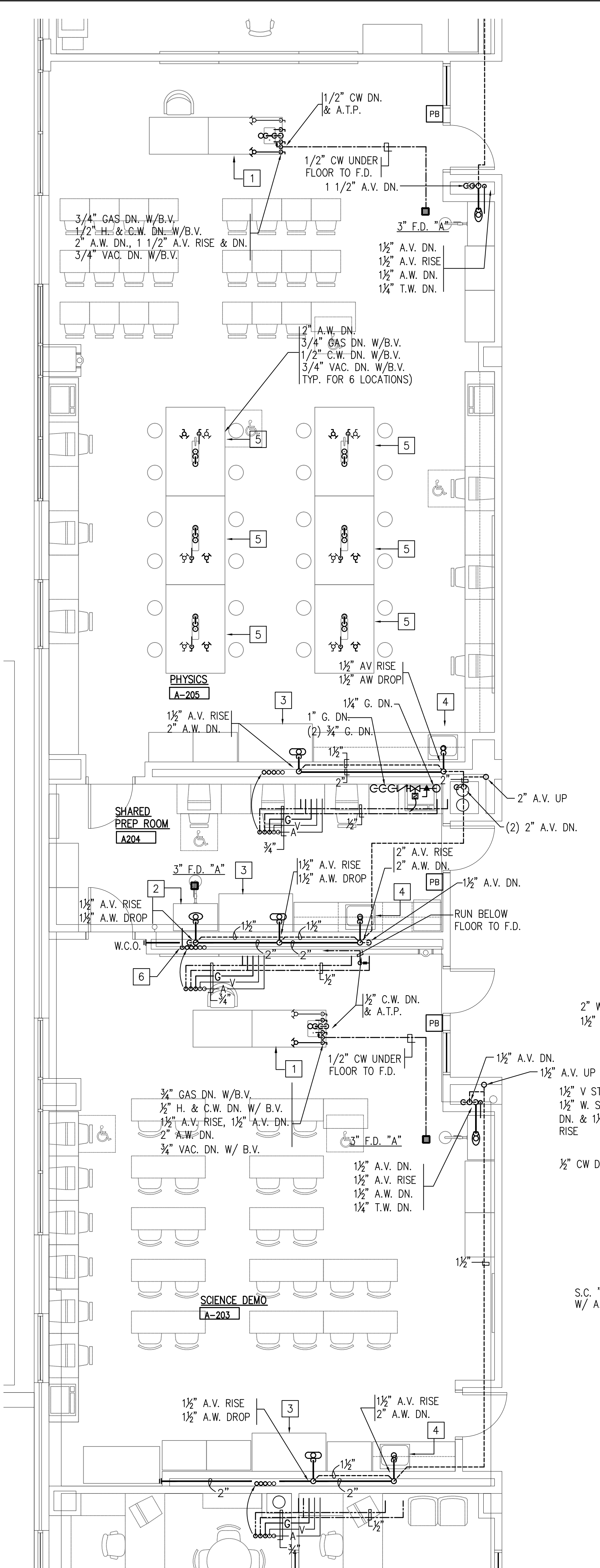


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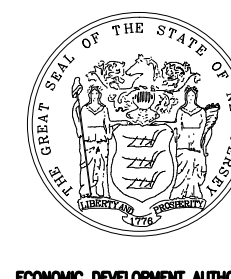
PLUMBING



SUBMISSION	DATE
ADDEDNDUM #1	11-21-12
NJSDA REVISIONS	09-12-12
NJICA COMMENTS	03-04-11
NJICA COMMENTS	08-12-10
NJICA COMMENTS	05-17-10
NJICA COMMENTS	02-12-10
DATE:	OCTOBER 13, 2009
SCALE:	1/8" = 1'-0"
DRAWING TITLE:	PLUMBING SECOND FLOOR PARTIAL PLAN AREA "A" - SCIENCE
DRAWING No:	P2.1.1
DRAWN BY:	RC



ELECTRICAL



ARCHITECT

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PROJECT #: 2008.356.00

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TOWNER: ALPHEA, P.L.L.C.
NEW JERSEY PROFESSIONAL ENGINEER
LIC. NO. 24628279400 PRG. NO. 1200981

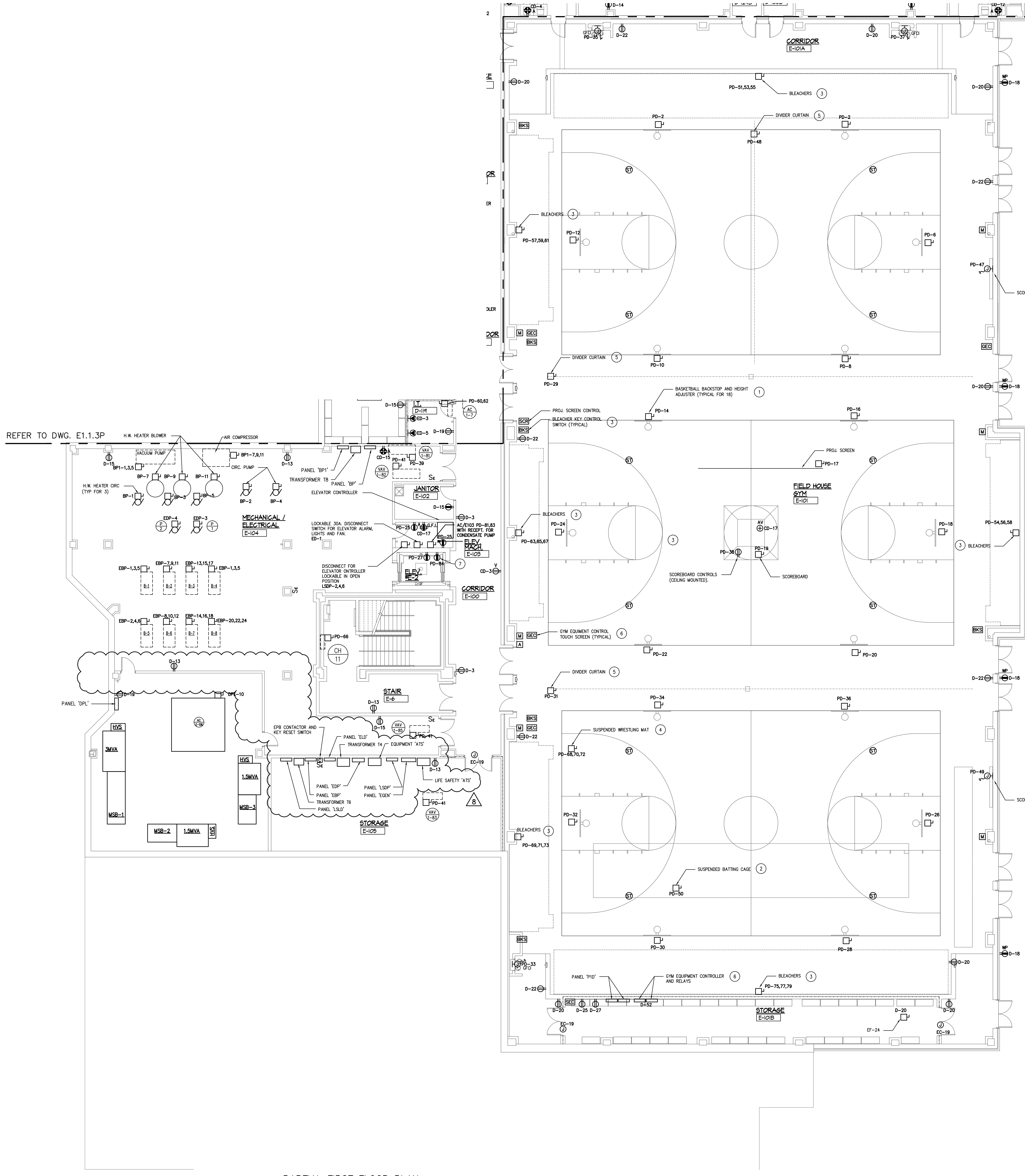
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100% NJDCA CONSTRUCTION DOCUMENTS SUBMISSION
FOR:
NEW PHILLIPSBURG HIGH SCHOOL
DOE# 41100-N07-04-1000
SDA# NT-003-C02
TOWN OF PHILLIPSBURG
UPPER BELVIDERE ROAD, LOT 44, BLOCK 2
PHILLIPSBURG, NEW JERSEY 08865

Submission tracking table with columns for ADDENDUM #1, NJSDA REVISIONS, NJDCA COMMENTS, and dates.

DRAWING TITLE:
POWER FIRST FLOOR PARTIAL PLAN AREA "E"
DRAWING No:
E-1.1.4P
DRAWN BY: RC

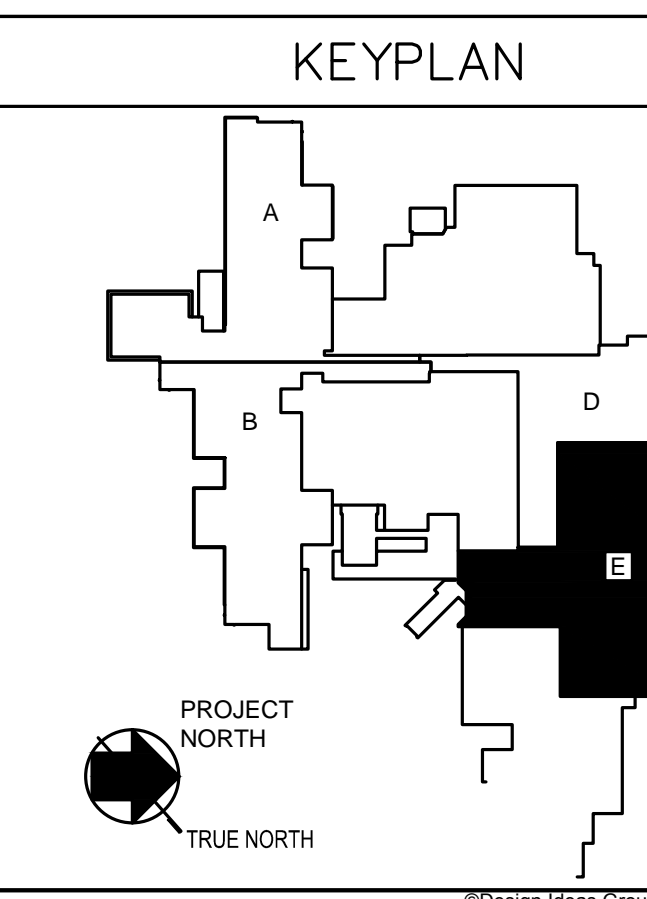
REFER TO DWG. E.1.1.3P



- GENERAL POWER NOTES: 1. REFER TO HVAC AND PLUMBING PLANS FOR EXACT LOCATION OF ELECTRICALLY OPERATED EQUIPMENT. 2. COORDINATE EXACT LOCATION OF ALL DEVICES WITH ARCHITECT'S FINAL FURNITURE LAYOUTS. 3. ALL SINGLE OR DUPLEX 125 VOLT RECEPTACLES THAT ARE WITHIN A SIX FOOT RADIUS OF ANY SINK, WET AREA, OR OUTDOOR AT ANY ELEVATION SHALL HAVE GROUND FAULT PROTECTION FOR PERSONNEL. THIS INCLUDES BUT IS NOT LIMITED TO LOCKER ROOMS, FOOD SERVICE AREAS, LABS AND PREP ROOMS, REGARDLESS OF WHO SUPPLIES THE EQUIPMENT. 4. ALL 15 AND 20 AMP., 120 VOLT RECEPTACLES IN KITCHENS SHALL HAVE GFI PROTECTION. 5. ALL CIRCUITS OVER 100 FEET SHALL USE NO. 10 CONDUCTORS U.O.N. 6. ALL CIRCUITS OVER 150 FEET SHALL USE NO. 8 CONDUCTORS U.O.N. 7. ALL CIRCUITS OVER 200 FEET SHALL USE NO. 6 CONDUCTORS U.O.N. 8. ELECTRICAL CONTRACTOR SHALL MOUNT ALL ELECTRICAL EQUIPMENT SUPPLIED BY THE CASEWORK MANUFACTURER AND PROVIDE ALL WIRING AS SPECIFIED. 9. ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL THE EMPTY CONDUIT OUTLET BOXES, OVERHEAD RACKING, CONDUIT RIGGERS WITH FIRE STOP FITTINGS AND CABLE TRAY FOR ALL THE DATA, TELEPHONE, INTERCOM SECURITY, ACCESS CONTROL, CCTV AND AV SYSTEMS AS INDICATED ON THE TECHNOLOGY DRAWINGS. THE LOCATION OF THE ELECTRICAL OUTLETS (RECEPTACLES) SHALL BE COORDINATED WITH THE TECHNOLOGY DRAWINGS. 10. ALL BRANCH CIRCUIT (POWER AND LIGHTING) SHALL HAVE SEPARATE NEUTRALS FOR EACH CIRCUIT. 11. ALL CIRCUIT NUMBERS INDICATED WITH THE LETTER "A" SHALL BE RUN TO PANEL "A1A". 12. ALL CIRCUIT NUMBERS INDICATED WITH THE LETTER "B" SHALL BE RUN TO PANEL "B1B". 13. ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "D" SHALL BE RUN TO PANEL "D1D". 14. ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "PA" SHALL BE RUN TO PANEL "PA". 15. ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "PB" SHALL BE RUN TO PANEL "PB". 16. ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "PC" SHALL BE RUN TO PANEL "PC". 17. ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "PD" SHALL BE RUN TO PANEL "PD". 18. ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "PE" SHALL BE RUN TO EMERGENCY PANEL "PE1A". 19. ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "EA" SHALL BE RUN TO EMERGENCY PANEL "PE1A". 20. ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "ED" SHALL BE RUN TO EMERGENCY PANEL "PE1D". 21. SEE DRAWING E-001 FOR FOR ELECTRICAL SYMBOLS, ABBREVIATIONS AND GENERAL NOTES. 22. SEE DRAWINGS E-300 THROUGH E-306 FOR THE PANEL SCHEDULES. 23. SEE DRAWINGS E-205 AND E-206 FOR THE SINGLE LINE DIAGRAM. 24. THESE DRAWINGS ARE REPRESENTATIVE OF THE SCOPE AND NATURE OF WORK. IT IS NOT GUARANTEED TO REPRESENT EXACT FIELD CONDITIONS AND DIMENSIONS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY FIELD DIMENSIONS AND TO COORDINATE THE WORK WITH THAT OF THE CONSTRUCTION MANAGER. 25. CONTRACTOR SHALL COORDINATE EXACT LOCATIONS OF ALL ELECTRICAL EQUIPMENT WITH THE CONSTRUCTION MANAGER AND ARCHITECT IN WRITING. IF EQUIPMENT HAS TO BE RELOCATED AND THE CONTRACTOR SHALL RELOCATE OR REPLACE AT THEIR OWN EXPENSE. 26. CONTRACTOR SHALL FURNISH AND INSTALL PRITALS FROM OVERSIZED CONDUCTORS DUE TO VOLTAGE DROP FOR FINAL CONNECTION TO DEVICES.

- KEY NOTES: 1. POWER AND CONTROL WIRING FOR BASKETBALL BACKSTOPS AND HEIGHT ADJUSTERS SHALL BE RUN VIA THE SMART CHASSIS/CONTROL SYSTEM. ALL POWER AND CONTROL WIRING BY E.C. TO CONFORM WITH MANUFACTURERS REQUIREMENTS. 2. POWER AND CONTROL WIRING FOR SUSPENDED BATTING CAGE SHALL BE RUN VIA THE SMART CHASSIS/CONTROL SYSTEM. ALL POWER AND CONTROL WIRING BY E.C. TO CONFORM WITH MANUFACTURERS REQUIREMENTS. 3. POWER AND CONTROL WIRING FOR BLEACHERS SHALL BE AS PER MANUFACTURERS REQUIREMENTS. ALL POWER AND CONTROL WIRING BY E.C. CONTROL OF BLEACHERS SHALL BE VIA KEY CONTROL SWITCH. 4. POWER AND CONTROL WIRING FOR WRESTLING MAT MOVER SHALL BE RUN VIA THE SMART CHASSIS/CONTROL SYSTEM. ALL POWER AND CONTROL WIRING BY E.C. TO CONFORM WITH MANUFACTURERS REQUIREMENTS. 5. POWER AND CONTROL WIRING FOR DIVIDER CURTAINS SHALL BE VIA THE SMART CHASSIS/CONTROL SYSTEM. ALL POWER AND CONTROL WIRING BY E.C. FOR MANUFACTURERS REQUIREMENTS. 6. SMART CHASSIS/CONTROL SYSTEM (CONTROLLERS, RELAY PANELS AND TOUCH SCREEN CONTROLS) SHALL BE WIRED AS PER MANUFACTURERS REQUIREMENTS BY ELECTRICAL CONTRACTORS. 7. ELEVATOR HOSTWAY OF RECEPTACLE SHALL BE INSTALLED AT THE IMPONENT OF THE HOSTWAY SHAFT. ELECTRICAL CONTRACTOR SHALL PROVIDE CONTROL WIRING AS REQUIRED.

KEY NOTES ON EACH DRAWING ARE SPECIFIC TO THAT DRAWING ONLY.



PARTIAL FIRST FLOOR PLAN
SCALE: 1/8" = 1'-0"



100% NJDCA CONSTRUCTION DOCUMENTS SUBMISSION
FOR:
NEW PHILLIPSBURG HIGH SCHOOL
DOE# 4100-N01-04-1000
SDA# NT-0003-C02
TOWN OF PHILLIPSBURG
UPPER BELVIDERE ROAD LOT 44/BLOCK 2
PHILLIPSBURG, NEW JERSEY 08865

SUBMISSION	DATE
ADDEDNDUM #1	11-21-12
NJSDA REVISIONS	09-12-12
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NJSDA COMMENTS	08-12-10
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NJSDA COMMENTS	02-12-10
DATE:	OCTOBER 13, 2009
SCALE:	1/8" = 1'-0"

DRAWING TITLE:
LIGHTING SECOND FLOOR PARTIAL PLAN AREA "A"

DRAWING No:
E-1.2.1L
DRAWN BY: RC

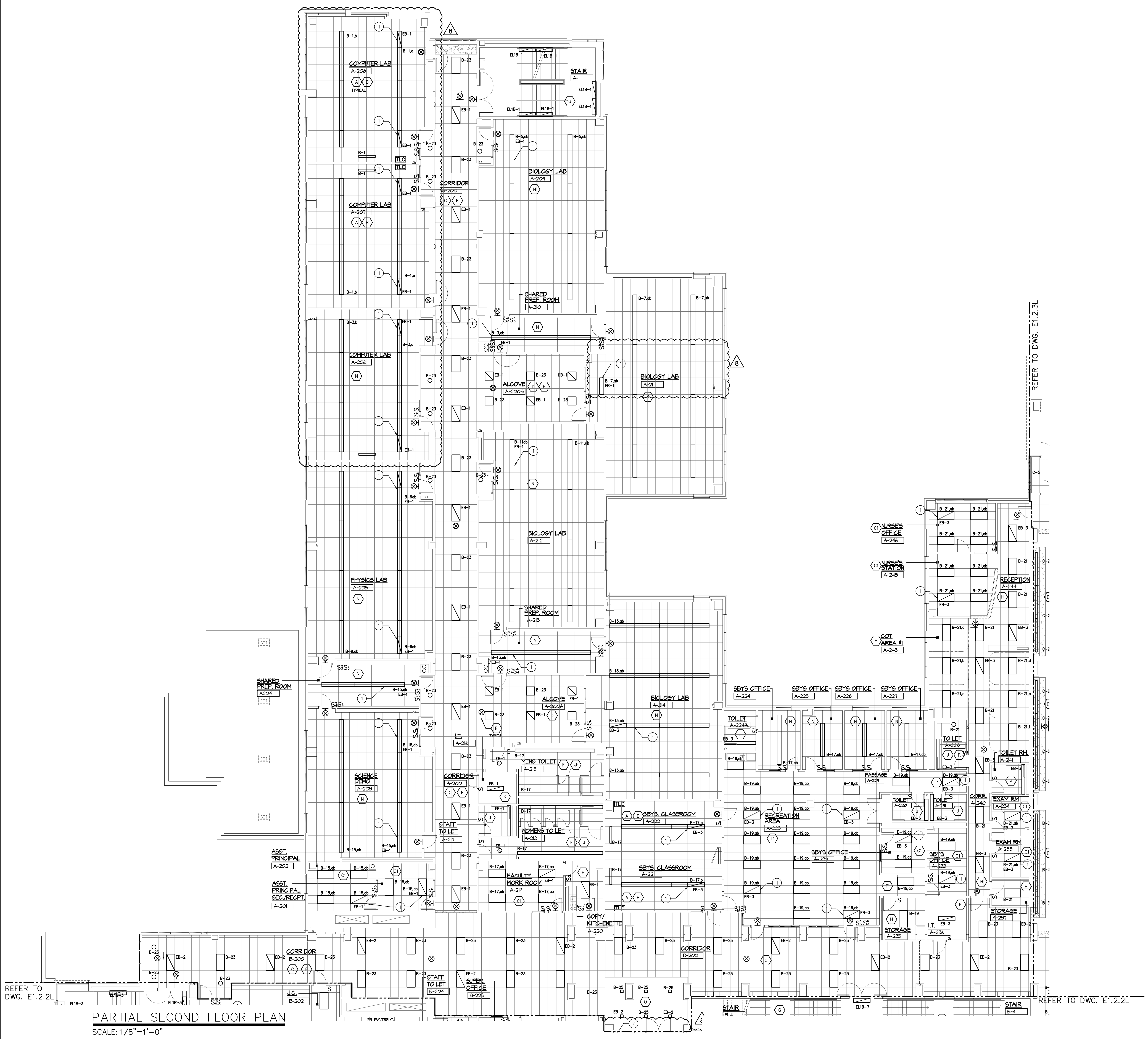
LIGHTING INTENSITY TABLE

ROOM NAME	AVERAGE MAINTAINED FOOT-CANDELES
CLASSROOM AND INSTRUCTIONAL AREAS - STUDY HALLS, LECTURE ROOMS, ART ROOMS, MUSIC ROOMS, OFFICES, LIBRARIES, CONFERENCE ROOMS, WORK ROOMS, SHOPS, LABORATORIES, S.C.I., COMPUTER ROOMS AND SECONDARY SCHOOL CAFETERIAS	50
DRAFTING, TYPING AND SEWING ROOMS	70
CLASSROOMS FOR THE PARTIALLY SIGHTED	70
RECEPTION ROOMS, GYMNASIUM, AUDITORIUM, PRIMARY SCHOOL CAFETERIAS, ALL-PURPOSE ROOMS AND DINING ROOMS	30
LOCKER ROOMS, WASHROOMS, TOILET ROOMS, CORRIDORS CONTAINING LOCKERS AND STAIRWAYS	10
CORRIDORS WITHOUT LOCKERS AND STORAGE ROOMS	5

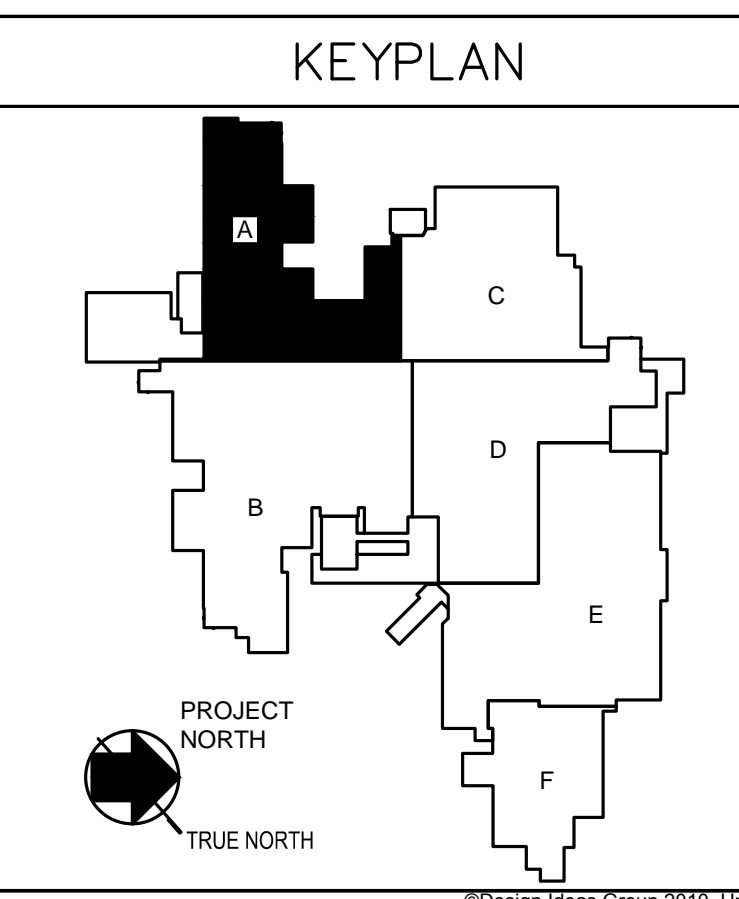
OCCUPANCY SENSORS
A COMPLETE OCCUPANCY SENSING SYSTEM IS REQUIRED IN ALL AREAS THAT ARE SHOWN WITH NEW LIGHTING. OCCUPANCY SENSORS ARE SPECIFIED IN SECTION 26022 OF THE SPECIFICATION BOOK. IT SHALL BE THE ELECTRICAL CONTRACTORS RESPONSIBILITY TO OBTAIN A LAYOUT FROM AN ACCEPTABLE MANUFACTURER WHICH SHALL INCLUDE THE EMERGENCY SHUNT RELAYS AND NORMAL CIRCUIT THEY ARE MONITORING. THIS SHALL BE SUBMITTED AS SHOP DRAWING.
WHERE LIGHT SWITCHES ARE SHOWN, THEY SHALL BE IN ADDITION TO OCCUPANCY SENSORS REFER TO WIRING DETAILS.

- ### GENERAL LIGHTING NOTES:
- EXIT LIGHTS TO BE CONNECTED TO UNSWITCHED HOT WIRE OF EMERGENCY LIGHTING CIRCUIT SERVING AREA.
 - SEE DRAWING E-203 FOR CLASSROOM LIGHTING AND EMERGENCY LIGHTING WIRING DETAILS.
 - ALL BRANCH CIRCUIT (POWER AND LIGHTING) SHALL HAVE SEPARATE NEUTRALS FOR EACH CIRCUIT.
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTER "B" SHALL BE RUN TO PANEL "L2B".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTER "C" SHALL BE RUN TO PANEL "L2C".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTER "T" SHALL BE RUN TO PANEL "L2T".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "EB" SHALL BE RUN TO EMERGENCY PANEL "L2EB".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "EC" SHALL BE RUN TO EMERGENCY PANEL "L2EC".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "ET" SHALL BE RUN TO EMERGENCY PANEL "L2ET".

- ### KEY NOTES:
- CONTRACTOR SHALL PROVIDE GENERATOR TRANSFER DEVICE FOR INDICATED FEATURES.



KEY NOTES ON EACH DRAWING ARE SPECIFIC TO THAT DRAWING ONLY.



REFER TO DWG. E1.2.2L
PARTIAL SECOND FLOOR PLAN
SCALE: 1/8" = 1'-0"

REFER TO DWG. E1.2.3L



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THOMAS ALPHONSO, P.E.
NEW JERSEY PROFESSIONAL ENGINEER
LIC. NO. 24628379400

DATE: 10/13/09
PROJ. NO.: 120981

IF THE DRAWING DOES NOT CONTAIN THE PROJECT DATA OR THE PROFESSIONAL ENGINEER'S SIGNATURE AND SEAL, THE CONTRACTOR SHALL VERIFY THE INFORMATION SHOWN.

100% NJDCA CONSTRUCTION DOCUMENTS SUBMISSION
FOR:
NEW PHILLIPSBURG HIGH SCHOOL
DOE# 4100-N01-04-1000
SDA# NT-0003-C02
TOWN OF PHILLIPSBURG
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NJSDA COMMENTS	02-12-10
DATE:	OCTOBER 13, 2009
SCALE:	1/8" = 1'-0"

DRAWING TITLE:
**POWER
SECOND FLOOR
PARTIAL PLAN
AREA "A"**

DRAWING No:
E-1.2.1P

DRAWN BY: RC

GENERAL POWER NOTES:

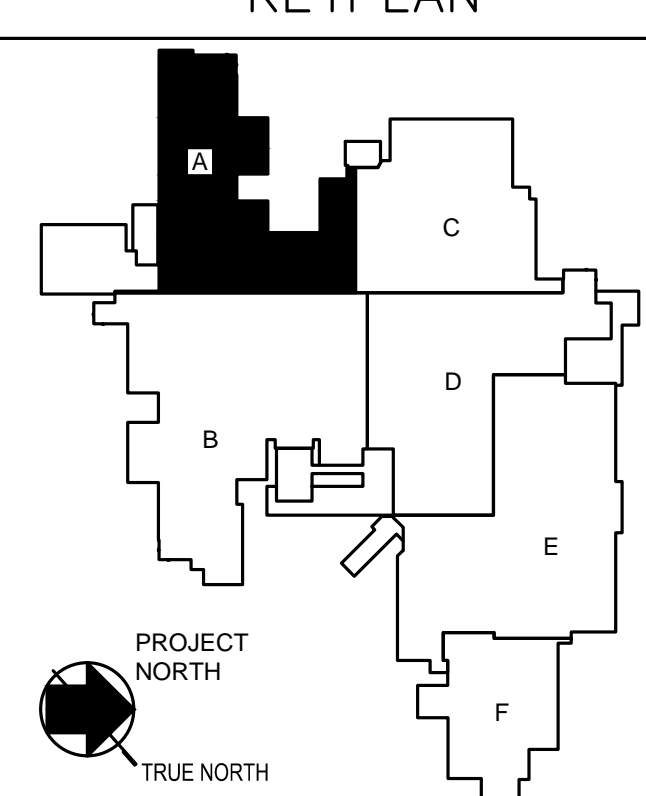
- REFER TO HVAC AND PLUMBING PLANS FOR EXACT LOCATION OF ELECTRICALLY OPERATED EQUIPMENT.
- COORDINATE EXACT LOCATION OF ALL DEVICES WITH ARCHITECT'S FINAL FURNITURE LAYOUT.
- ALL SINGLE OR DUPLEX 125 VOLT RECEPTACLES THAT ARE WITHIN A SIX FOOT RADIUS OF ANY SINK, WET AREA, OR OUTDOOR AT ANY ELEVATION SHALL HAVE GROUND FAULT PROTECTION FOR PERSONNEL. THIS INCLUDES BUT IS NOT LIMITED TO LOCKER ROOMS, FOOD SERVICE AREAS, LABS AND PREP ROOMS REGARDLESS OF WHO SUPPLIES THE EQUIPMENT.
- ALL 15 AND 20 AMP., 120 VOLT RECEPTACLES IN KITCHENS SHALL HAVE GFI PROTECTION.
- ALL CIRCUITS OVER 100 FEET SHALL USE No. 10 CONDUCTORS U.O.N.
- ALL CIRCUITS OVER 200 FEET SHALL USE No. 8 CONDUCTORS U.O.N.
- ALL CIRCUITS OVER 200 FEET SHALL USE No. 6 CONDUCTORS U.O.N.
- ELECTRICAL CONTRACTOR SHALL MOUNT ALL ELECTRICAL EQUIPMENT SUPPLIED BY THE OMBROSK MANUFACTURER AND PROVIDE ALL WIRING AS SPECIFIED.
- ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL THE EMPTY CONDUIT OUTLET BOXES, SURFACE RACEWAYS, CONDUIT SLEEVES WITH FIRE STOP FITTINGS AND CABLE TRAY FOR ALL DATA, TELEPHONE, NETWORK SECURITY, ACCESS CONTROL, CCTV AND AV SYSTEMS AS INDICATED ON THE TECHNOLOGY DRAWINGS. THE LOCATION OF THE ELECTRICAL OUTLETS (RECEPTACLES) SHALL BE COORDINATED WITH THE TECHNOLOGY DRAWINGS.
- ALL BRANCH CIRCUIT (POWER AND LIGHTING) SHALL HAVE SEPARATE NEUTRALS FOR EACH CIRCUIT.
- ALL CIRCUIT NUMBERS INDICATED WITH THE LETTER "A" SHALL BE RUN TO PANEL "A211".
- ALL CIRCUIT NUMBERS INDICATED WITH THE LETTER "B" SHALL BE RUN TO PANEL "B22".
- ALL CIRCUIT NUMBERS INDICATED WITH THE LETTER "C" SHALL BE RUN TO PANEL "C23".
- ALL CIRCUIT NUMBERS INDICATED WITH THE LETTER "D" SHALL BE RUN TO PANEL "D24".
- ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "PA" SHALL BE RUN TO PANEL "PA25".
- ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "PB" SHALL BE RUN TO PANEL "PB26".
- ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "PC" SHALL BE RUN TO PANEL "PC27".
- ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "PD" SHALL BE RUN TO PANEL "PD28".
- ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "CA" SHALL BE RUN TO PANEL "CA29".
- ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "CB" SHALL BE RUN TO PANEL "CB30".
- ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "CC" SHALL BE RUN TO PANEL "CC31".
- ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "CD" SHALL BE RUN TO PANEL "CD32".
- ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "CE" SHALL BE RUN TO PANEL "CE33".
- ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "EA" SHALL BE RUN TO EMERGENCY PANEL "EPA".
- SEE DRAWING E-001 FOR ELECTRICAL SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.
- SEE DRAWINGS E-300 THROUGH E-306 FOR THE PANEL SCHEDULES.
- SEE DRAWINGS E-300 AND E-306 FOR THE SINGLE LINE DIAGRAM.
- THESE DRAWINGS ARE REPRESENTATIVE OF THE SCOPE AND NATURE OF WORK. IT IS NOT GUARANTEED TO REPRESENT EXACT FIELD CONDITIONS AND DIMENSIONS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY FIELD DIMENSIONS AND TO COORDINATE THE WORK WITH THAT OF THE CONSTRUCTION MANAGER.
- CONTRACTOR SHALL COORDINATE EXACT LOCATIONS OF ALL ELECTRICAL EQUIPMENT WITH THE CONSTRUCTION MANAGER AND ARCHITECT IN WRITING. IF EQUIPMENT HAS TO BE RELOCATED AND THE EQUIPMENT WAS INSTALLED WITHOUT PROOF APPROVAL, THE CONTRACTOR SHALL ELUCIDATE OR REPLACE AT THEIR OWN EXPENSE.
- CONTRACTOR SHALL FURNISH AND INSTALL PIGTAILS FROM OVERSEAS CONDUCTORS DUE TO VOLTAGE DROP FOR FINAL CONNECTION TO DEVICES.

KEY NOTES:

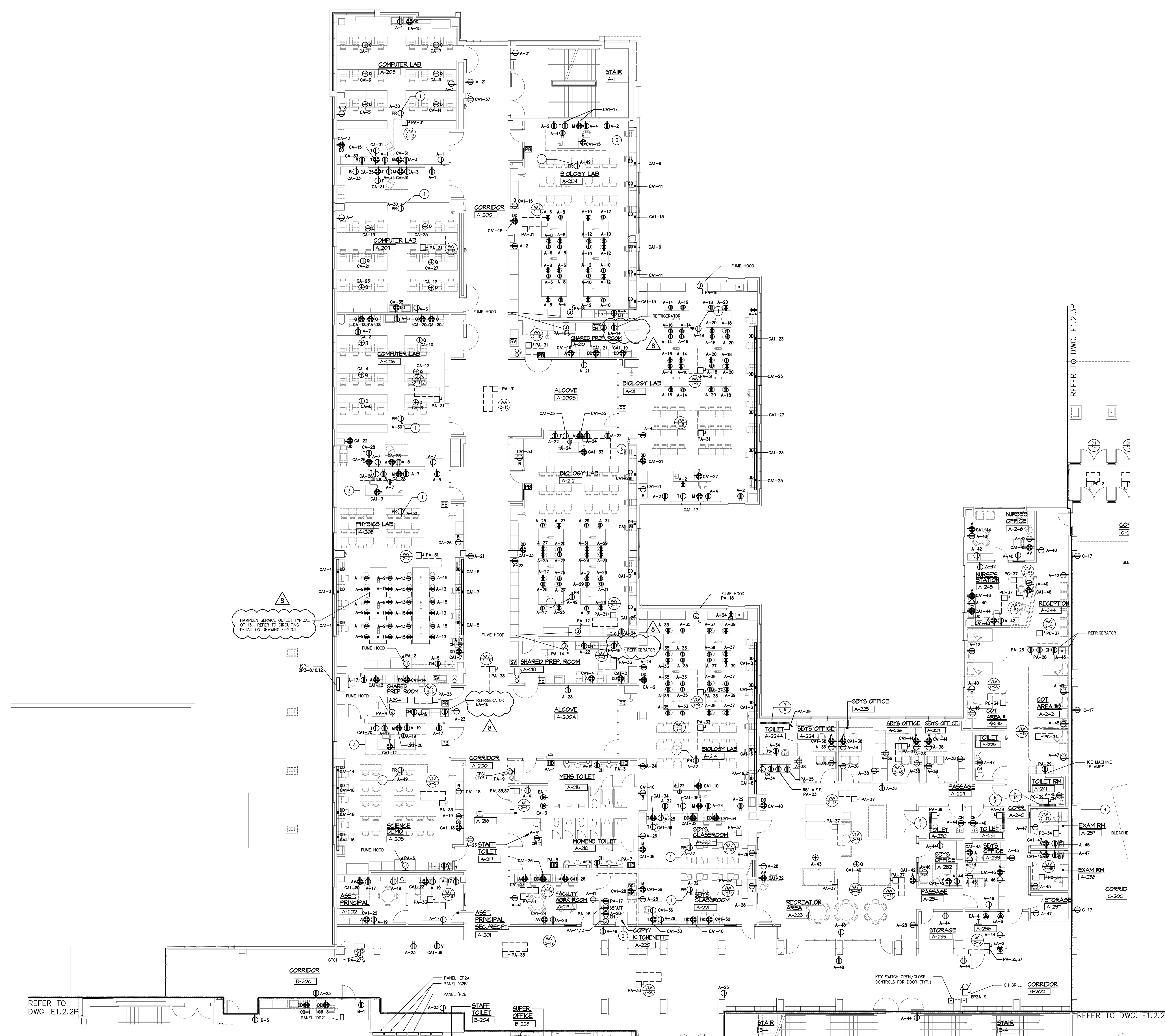
- REFER TO TECHNOLOGY DRAWINGS E-1.1 FOR RECEPTACLE MOUNTING DETAILS.
- RECEPTACLES IN KITCHENETTE AREA SHALL BE GFI PROTECTED.
- RECEPTACLES AT LAB TEACHERS WORK STATIONS SHALL BE GFI PROTECTED.
- RECEPTACLES IN EXAM ROOMS SHALL BE GFI PROTECTED.

KEY NOTES ON EACH DRAWING ARE SPECIFIC TO THAT DRAWING ONLY.

KEYPLAN



PROJECT NORTH
TRUE NORTH



REFER TO DWG. E1.2.2P

PARTIAL SECOND FLOOR PLAN
SCALE: 1/8" = 1'-0"

REFER TO DWG. E1.2.2P

Drawing name: Z:\NET\2008\2008356\356-000-000-E01.dwg Plotted by: J. KEANE Rev. 11. 2012 - 1P131P*

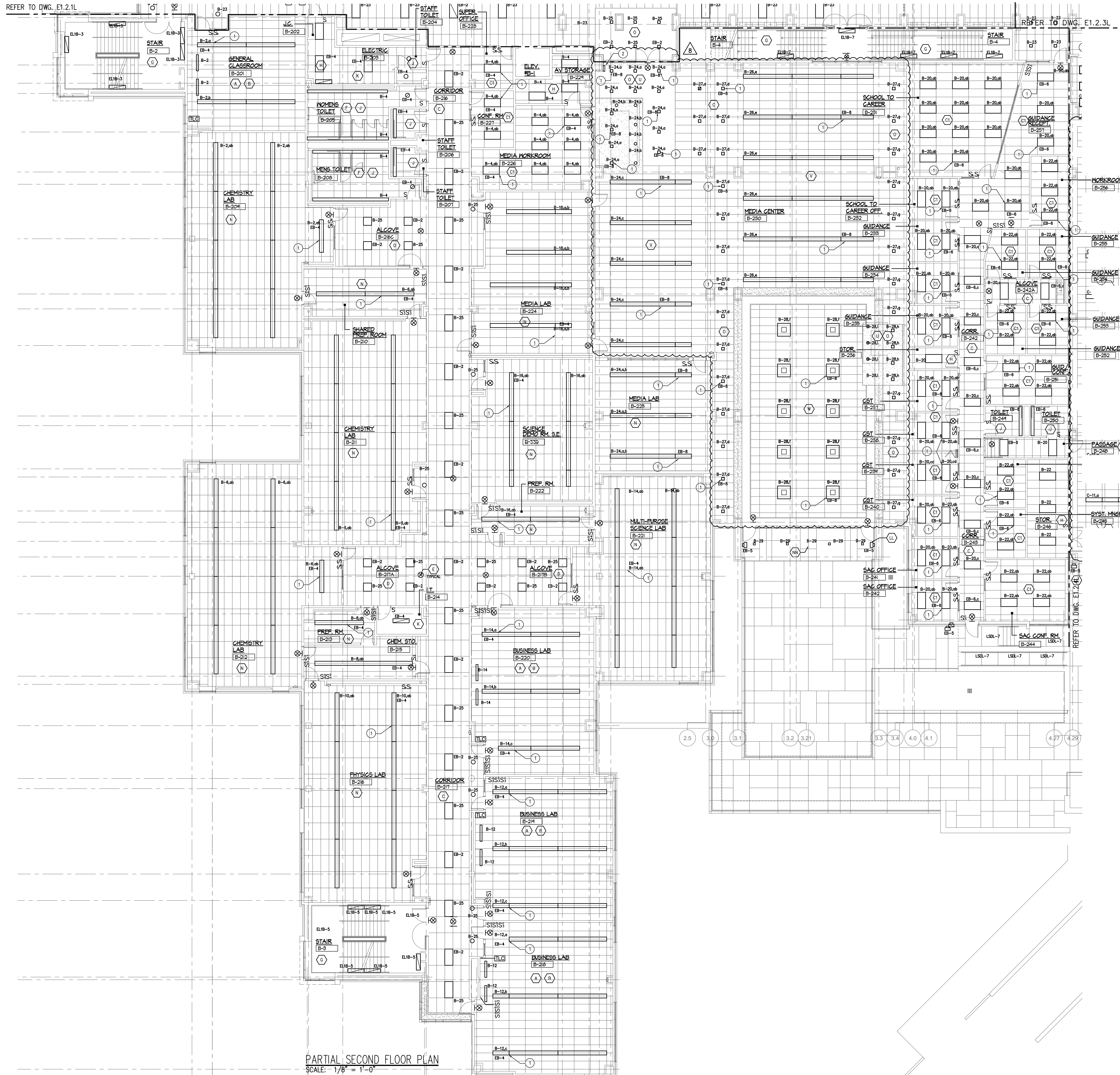
REFER TO DWG. E1.2.1L

REFER TO DWG. E1.2.3L

LIGHTING INTENSITY TABLE	
ROOM NAME	AVERAGE MAINTAINED FOOTCANDLES
CLASSROOM AND INSTRUCTIONAL AREAS - STUDY HALLS, LECTURE ROOMS, ART ROOMS, MUSIC ROOMS, OFFICES, LIBRARIES, CONFERENCE ROOMS, WORK ROOMS, SHOPS, LABORATORIES, SCL, COMPUTER ROOMS AND SECONDARY SCHOOL CAFETERIAS	50
CLASSROOMS FOR THE PARTIALLY SIGHTED	70
DRAWING, TYPING AND SEWING ROOMS	70
RECEPTION ROOMS, GYMNASIUMS, ALTERNATING PRIMARY SCHOOL CAFETERIAS, ALL-PURPOSE ROOMS AND SWIMMING POOLS	30
LOCKER ROOMS, WASHROOMS, TOILET ROOMS, CORRIDORS CONTAINING LOCKERS AND STAIRWAYS	10
CORRIDORS WITHOUT LOCKERS AND STORAGE ROOMS	5

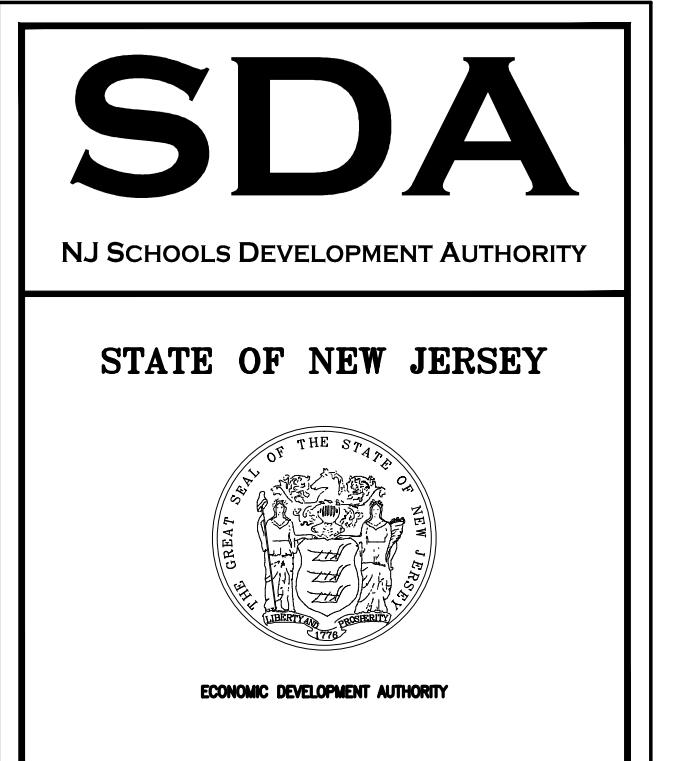
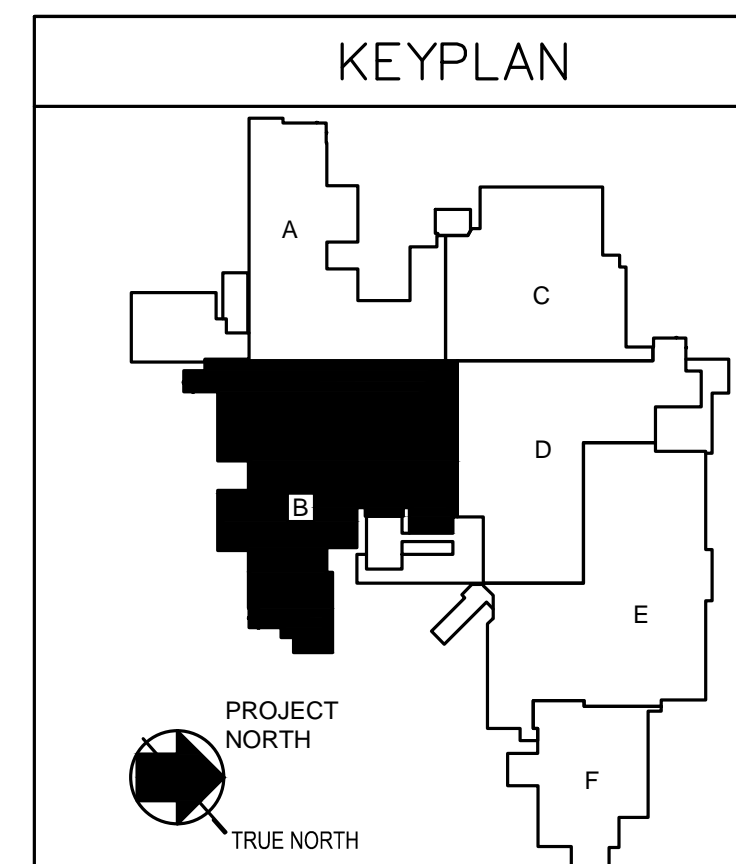
- GENERAL LIGHTING NOTES:**
- EXIT LIGHTS TO BE CONNECTED TO UNSWITCHED HOT WIRE OF EMERGENCY LIGHTING CIRCUIT SERVING AREA.
 - SEE DRAWING E-203 FOR CLASSROOM LIGHTING AND EMERGENCY LIGHTING WIRING DETAILS.
 - ALL BRANCH CIRCUIT (POWER AND LIGHTING) SHALL HAVE SEPARATE NEUTRALS FOR EACH CIRCUIT.
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTER "B" SHALL BE RUN TO PANEL "L25".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTER "C" SHALL BE RUN TO EMERGENCY PANEL "L25".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTER "T" SHALL BE RUN TO PANEL "L25".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "EB" SHALL BE RUN TO EMERGENCY PANEL "L25".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "EC" SHALL BE RUN TO EMERGENCY PANEL "L25".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "ET" SHALL BE RUN TO EMERGENCY PANEL "L25".

- KEY NOTES:**
- CONTRACTOR SHALL PROVIDE GENERATOR TRANSFER DEVICE FOR INDICATED ZONES.
 - CONTRACTOR SHALL PROVIDE A LIGHTING CONTROL SYSTEM FOR MEDIA CENTER. LETTER INDICATED AFTER EACH LIGHTING CIRCUIT NUMBER IN THE MEDIA CENTER REPRESENTS A LIGHTING ZONE. REFER TO DRAWING E-20.2.



PARTIAL SECOND FLOOR PLAN
SCALE: 1/8" = 1'-0"

KEY NOTES ON EACH DRAWING ARE SPECIFIC TO THAT DRAWING ONLY.



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PROJECT #: 2008.356.00

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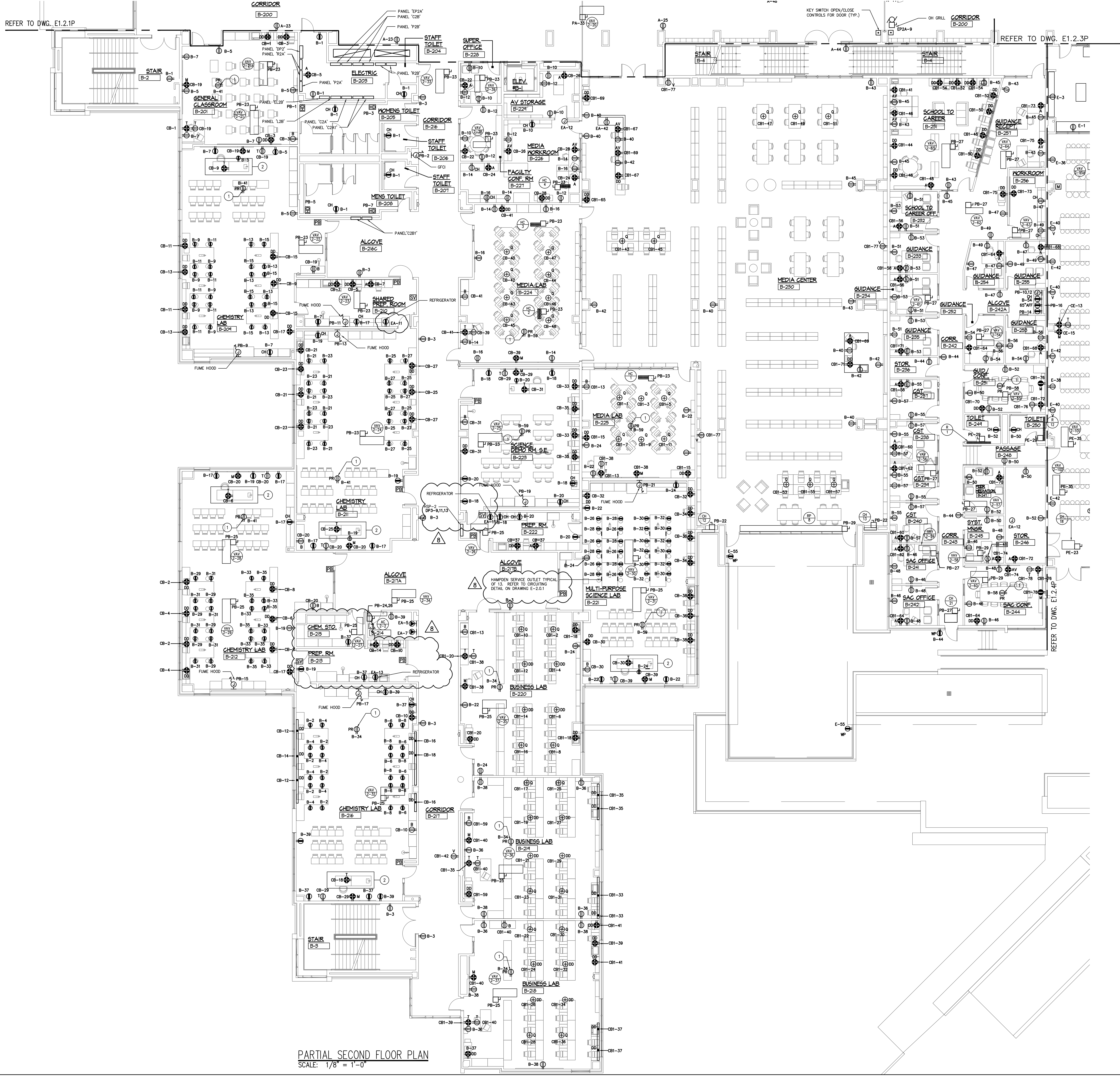
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LIC. NO. 24682479400 PRD. NO. 1209981

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FOR:
NEW PHILLIPSBURG HIGH SCHOOL
DOE# 4100-N01-04-1000
SDA# NT-0003-C02
TOWN OF PHILLIPSBURG
UPPER BELVIDERE ROAD, LOT 44, BLOCK 2
PHILLIPSBURG, NEW JERSEY 08865

SUBMISSION	DATE
ADDEDNDUM #1	11-21-12
NJSDA REVISIONS	09-12-12
NJSDA COMMENTS	03-04-11
NJSDA COMMENTS	08-12-10
NJSDA COMMENTS	05-17-10
NJSDA COMMENTS	02-12-10
DATE:	OCTOBER 13, 2009
SCALE:	1/8" = 1'-0"
DRAWING TITLE:	LIGHTING SECOND FLOOR PARTIAL PLAN AREA "B"
DRAWING No:	E-1.2.2L
DRAWN BY:	RC

Drawing name: Z:\NET\2012\08\13\2-09-08\13-08-08.dwg Design: philippsburg high school\131017 E1.2L.dwg Plotted By: J. KEANE Nov 14, 2012 4:14:38 PM

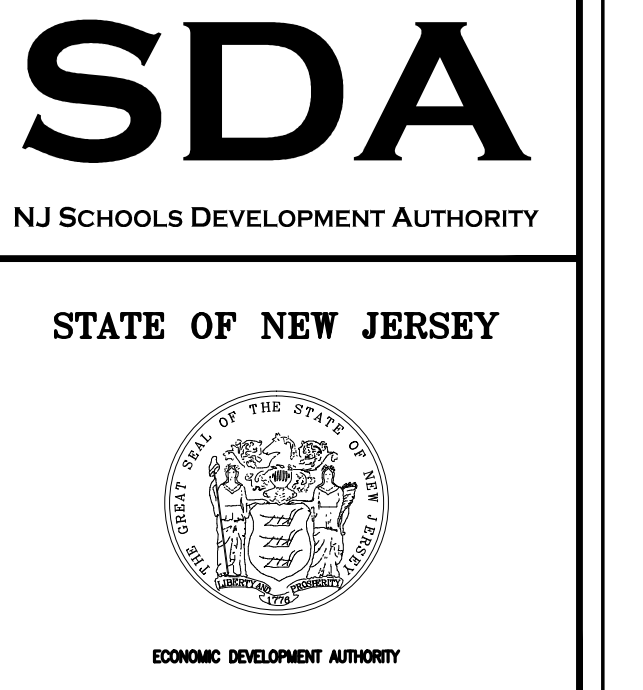
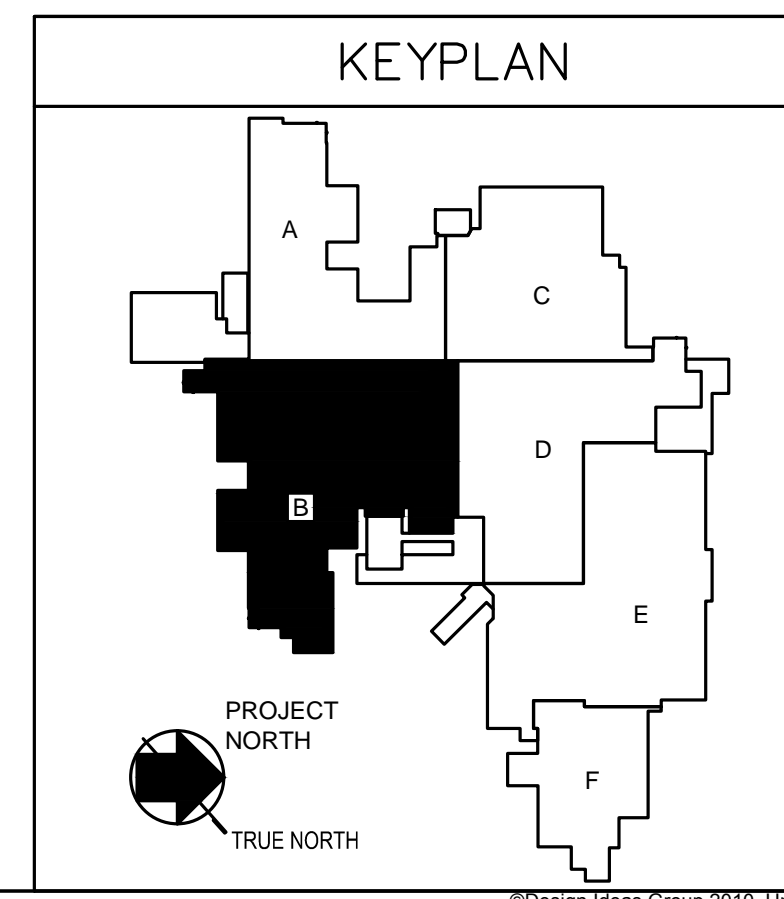


PARTIAL SECOND FLOOR PLAN
SCALE: 1/8" = 1'-0"

- GENERAL POWER NOTES:**
- REFER TO HVAC AND PLUMBING PLANS FOR EXACT LOCATION OF ELECTRICALLY OPERATED EQUIPMENT.
 - COORDINATE EXACT LOCATION OF ALL DEVICES WITH ARCHITECT'S FINAL FURNITURE LAYOUT.
 - ALL SINGLE OR DUPLEX 125 VOLT RECEPTACLES THAT ARE WITHIN A SIX FOOT RADIUS OF ANY SWIM BATH AREA OR OUTDOOR AT ANY ELEVATION SHALL HAVE GROUND FAULT PROTECTION FOR PERSONNEL. THIS INCLUDES BUT IS NOT LIMITED TO LOCKER ROOMS, FOOD SERVICE AREAS, LABS AND PREP ROOMS, REGARDLESS OF WHO SUPPLIES THE EQUIPMENT.
 - ALL 15 AND 20 AMP, 120 VOLT RECEPTACLES IN KITCHENS SHALL HAVE GFCI PROTECTION.
 - ALL CIRCUITS OVER 100 FEET SHALL USE NO. 10 CONDUCTORS U.O.C.
 - ALL CIRCUITS OVER 200 FEET SHALL USE NO. 8 CONDUCTORS U.O.C.
 - ALL CIRCUITS OVER 300 FEET SHALL USE NO. 6 CONDUCTORS U.O.C.
 - ELECTRICAL CONTRACTOR SHALL VERIFY ALL ELECTRICAL EQUIPMENT SUPPLIED BY THE CASEWORK MANUFACTURER AND PROVIDE ALL WIRING AS SPECIFIED.
 - ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL THE EMPTY CONDUIT OUTLET BOXES, SURFACE RACEWAY, CONDUIT SLEEVES WITH FIRE STOP FITTINGS AND CABLE TRAY FOR ALL DATA, TELEPHONE, INTERCOM, SECURITY, ACCESS CONTROL, CCTV AND A/V SYSTEMS AS INDICATED ON THE TECHNOLOGY DRAWINGS. THE LOCATION OF THE ELECTRICAL OUTLETS (RECEPTACLES) SHALL BE COORDINATED WITH THE TECHNOLOGY DRAWINGS.
 - ALL BRANCH CIRCUIT (POWER AND LIGHTING) SHALL HAVE SEPARATE NEUTRALS FOR EACH CIRCUIT.
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTER "A" SHALL BE RUN TO PANEL "A2A".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTER "B" SHALL BE RUN TO PANEL "B2A".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTER "C" SHALL BE RUN TO PANEL "C2C".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTER "T" SHALL BE RUN TO PANEL "T2E".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "PA" SHALL BE RUN TO PANEL "PA2A".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "PB" SHALL BE RUN TO PANEL "PB2A".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "PC" SHALL BE RUN TO PANEL "PC2A".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "CA" SHALL BE RUN TO PANEL "CA2A".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "CB" SHALL BE RUN TO PANEL "CB2A".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "CC" SHALL BE RUN TO PANEL "CC2B".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "CD" SHALL BE RUN TO PANEL "CD2A".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "CE" SHALL BE RUN TO PANEL "CE2A".
 - SEE DRAWING E-401 FOR ELECTRICAL SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.
 - SEE DRAWINGS E-300 THROUGH E-306 FOR THE SINGLE LINE DIAGRAM.
 - SEE DRAWINGS E-205 AND E-206 FOR THE PANEL SCHEDULES.
 - THESE DRAWINGS ARE REPRESENTATIVE OF THE SCOPE AND NATURE OF WORK. IT IS NOT GUARANTEED TO REPRESENT EXACT FIELD CONDITIONS AND DIMENSIONS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY FIELD DIMENSIONS AND TO COORDINATE THE WORK WITH THAT OF THE CONSTRUCTION MANAGER.
 - CONTRACTOR SHALL COORDINATE EXACT LOCATIONS OF ALL ELECTRICAL EQUIPMENT WITH THE CONSTRUCTION MANAGER AND ARCHITECT IN WRITING. IF EQUIPMENT HAS TO BE RELOCATED AND THE EQUIPMENT WAS RETIRED WITHOUT PRIOR APPROVAL, THE CONTRACTOR SHALL RELOCATE OR REPLACE AT THEIR OWN EXPENSE.
 - CONTRACTOR SHALL FURNISH AND INSTALL PIGTAILS FROM OVERSIZED CONDUCTORS DUE TO VOLTAGE DROP FOR FINAL CONNECTION TO DEVICES.

- KEY NOTES:**
- REFER TO TECHNOLOGY DRAWING T2.1.1 FOR RECEPTACLE MOUNTING DETAILS.
 - RECEPTACLES AT TEACHER'S LAB WORK STATION SHALL BE GFCI PROTECTED.

KEY NOTES ON EACH DRAWING ARE SPECIFIC TO THAT DRAWING ONLY.



Design Ideas Group
architecture + planning, llc

PROJECT #: 2008.356.00
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LIC. NO. 24682479400 PRG. NO. 1209081

100% NJICA CONSTRUCTION DOCUMENTS SUBMISSION
FOR:
NEW PHILLIPSBURG HIGH SCHOOL
DOE# 4100-N01-04-1000
SDA# NT-0003-C02
TOWN OF PHILLIPSBURG
UPPER BELVIDERE ROAD LOT 44/BLOCK 2
PHILLIPSBURG, NEW JERSEY 08865

SUBMISSION	DATE
ADDEDNDUM #1	11-21-12
NJSDA REVISIONS	09-12-12
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NJICA COMMENTS	08-12-10
NJICA COMMENTS	05-17-10
NJICA COMMENTS	02-12-10
DATE:	OCTOBER 13, 2009
SCALE:	1/8" = 1'-0"
DRAWING TITLE:	POWER SECOND FLOOR PARTIAL PLAN AREA "B"
DRAWING No:	E-1.2.2P
DRAWN BY:	RC

Drawing name: Z:\NET\2012\08\13\2-09-C02.dgn - Phillipsburg High School\12107 E12P.dgn Plotted By: J. KEANE Nov 14, 2012 4:14:38PM

SUBMISSION	DATE
ADDEDNDUM #1	11-21-12
NJSDA REVISIONS	09-12-12
NJDC COMMENTS	03-04-11
NJDC COMMENTS	08-12-10
NJDC COMMENTS	05-17-10
NJDC COMMENTS	02-12-10
DATE:	OCTOBER 13, 2009
SCALE:	1/8" = 1'-0"
DRAWING TITLE:	LIGHTING SECOND FLOOR PARTIAL PLAN AREA "D"
DRAWING No:	E-1.2.4L
DRAWN BY:	RC

LIGHTING INTENSITY TABLE

ROOM NAME	AVERAGE MAINTAINED FOOTCANDLES
CLASSROOM AND INSTRUCTIONAL AREAS - STUDY HALLS, LECTURE ROOMS, ART ROOMS, MUSIC ROOMS, OFFICES, LIBRARIES, CONFERENCE ROOMS, WORK ROOMS, SHOPS, LABORATORIES, S.G.I., COMPUTER ROOMS AND SECONDARY SCHOOL CAFETERIAS	50
DRAFTING, TYPING AND SEMINAR ROOMS	70
CLASSROOMS FOR THE PARTIALLY SIGHTED	70
RECEPTION ROOMS, GYMNASIUMS, AUDITORIUMS, PRIMARY SCHOOL CAFETERIAS, ALL-PURPOSE ROOMS AND SWIMMING POOLS	30
LOCKER ROOMS, WASHROOMS, TOILET ROOMS, CORRIDORS CONTAINING LOCKERS AND STAIRWAYS	10
CORRIDORS WITHOUT LOCKERS AND STORAGE ROOMS	5

OCCUPANCY SENSORS

A COMPLETE OCCUPANCY SENSING SYSTEM IS REQUIRED IN ALL AREAS THAT ARE SHOWN WITH NEW LIGHTING. OCCUPANCY SENSORS ARE SPECIFIED IN SECTION 280523 OF THE SPECIFICATION BOOK. IT SHALL BE THE ELECTRICAL CONTRACTORS RESPONSIBILITY TO OBTAIN A LAYOUT FROM AN ACCEPTABLE MANUFACTURER, WHICH SHALL INCLUDE THE EMERGENCY SHUNT RELAYS AND NORMAL CIRCUIT THEY ARE MONITORING. THIS SHALL BE SUBMITTED AS SHOP DRAWING.

WHERE LIGHT SWITCHES ARE SHOWN, THEY SHALL BE IN ADDITION TO OCCUPANCY SENSORS REFER TO WIRING DETAILS

GENERAL LIGHTING NOTES:

- EXIT LIGHTS TO BE CONNECTED TO UNSWITCHED HOT WIRE OF EMERGENCY LIGHTING CIRCUIT SERVING AREA.
- SEE DRAWING E-203 FOR CLASSROOM LIGHTING AND EMERGENCY LIGHTING WIRING DETAILS.
- ALL BRANCH CIRCUIT (POWER AND LIGHTING) SHALL HAVE SEPARATE NEUTRALS FOR EACH CIRCUIT.
- ALL CIRCUIT NUMBERS INDICATED WITH THE LETTER "B" SHALL BE RUN TO PANEL "L2B".
- ALL CIRCUIT NUMBERS INDICATED WITH THE LETTER "C" SHALL BE RUN TO PANEL "L2C".
- ALL CIRCUIT NUMBERS INDICATED WITH THE LETTER "T" SHALL BE RUN TO PANEL "L2T".
- ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "EB" SHALL BE RUN TO EMERGENCY PANEL "L2EB".
- ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "EC" SHALL BE RUN TO EMERGENCY PANEL "L2EC".
- ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "ET" SHALL BE RUN TO EMERGENCY PANEL "L2ET".

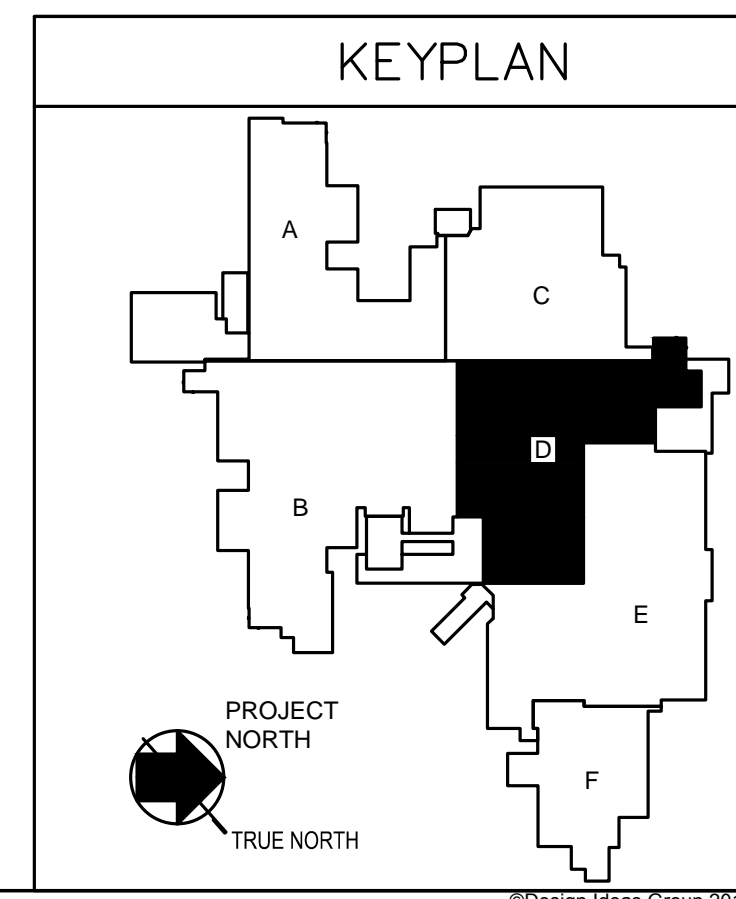
KEY NOTES:

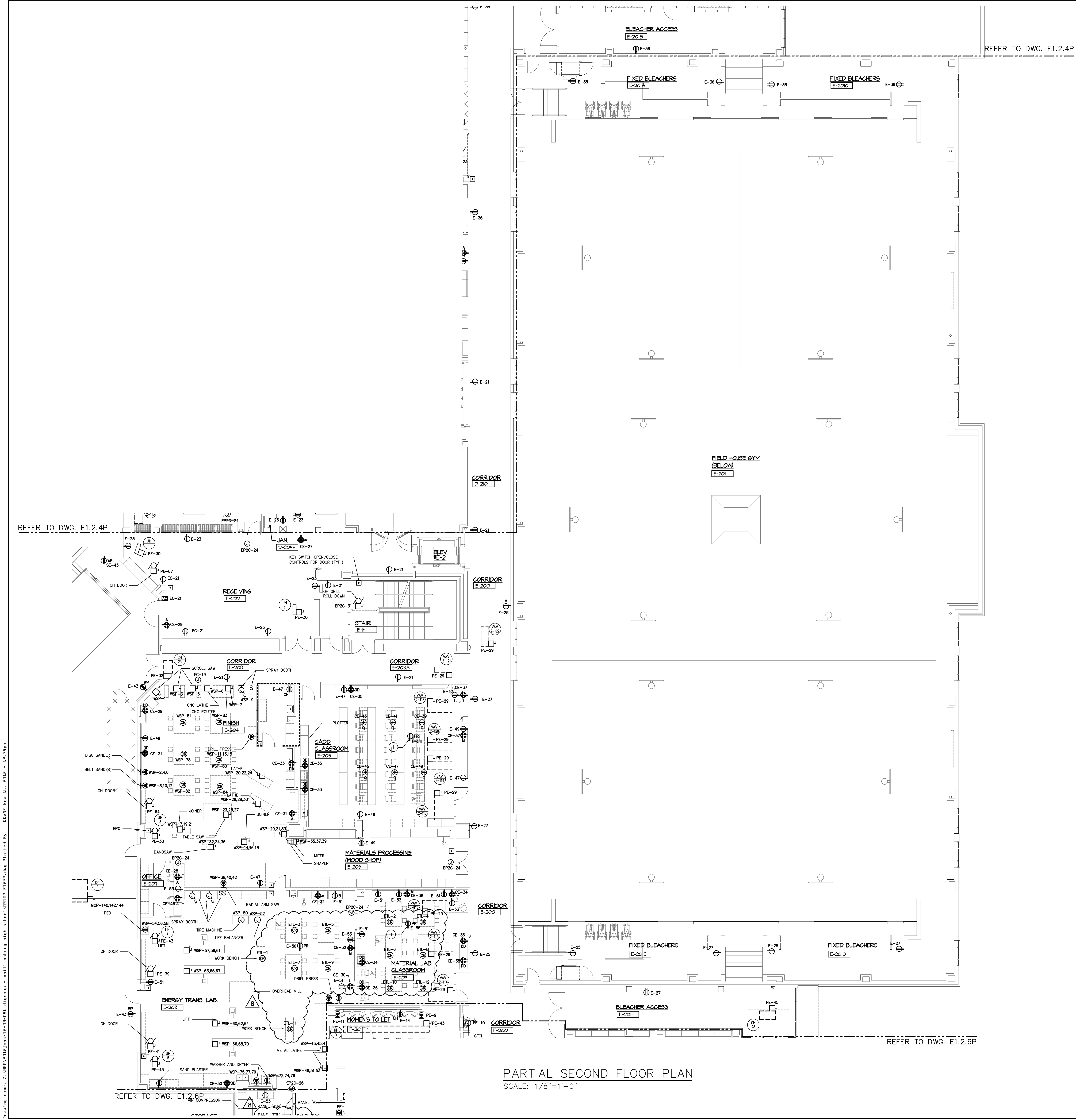
- CONTRACTOR SHALL PROVIDE GENERATOR TRANSFER DEVICE FOR INDICATED AREAS.
- CONTRACTOR SHALL PROVIDE A LIGHTING CONTROL SYSTEM FOR THE CAFETERIA REPRESENTED A LIGHTING ZONE REFER TO DRAWING E-1.2.3.



PARTIAL SECOND FLOOR PLAN
SCALE: 1/8" = 1'-0"

KEY NOTES ON EACH DRAWING ARE SPECIFIC TO THAT DRAWING ONLY.



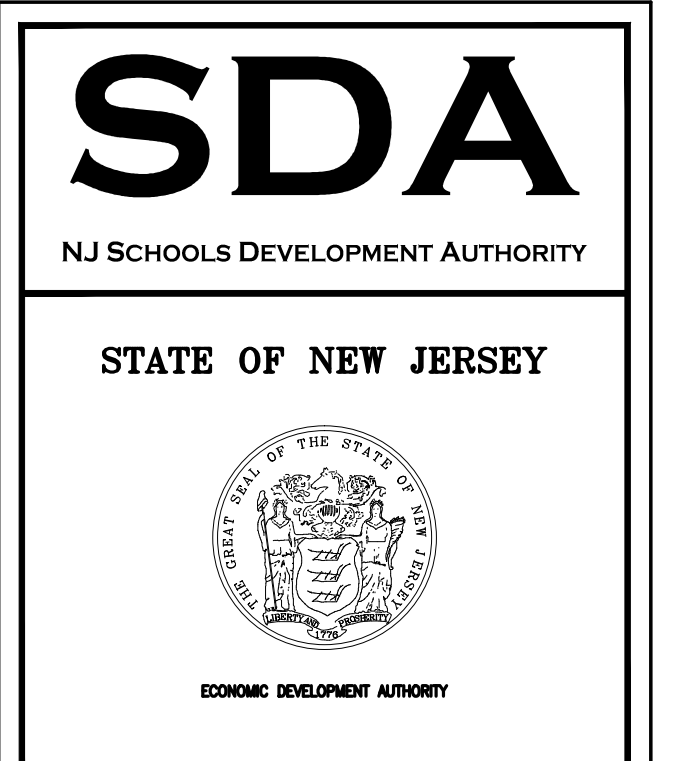
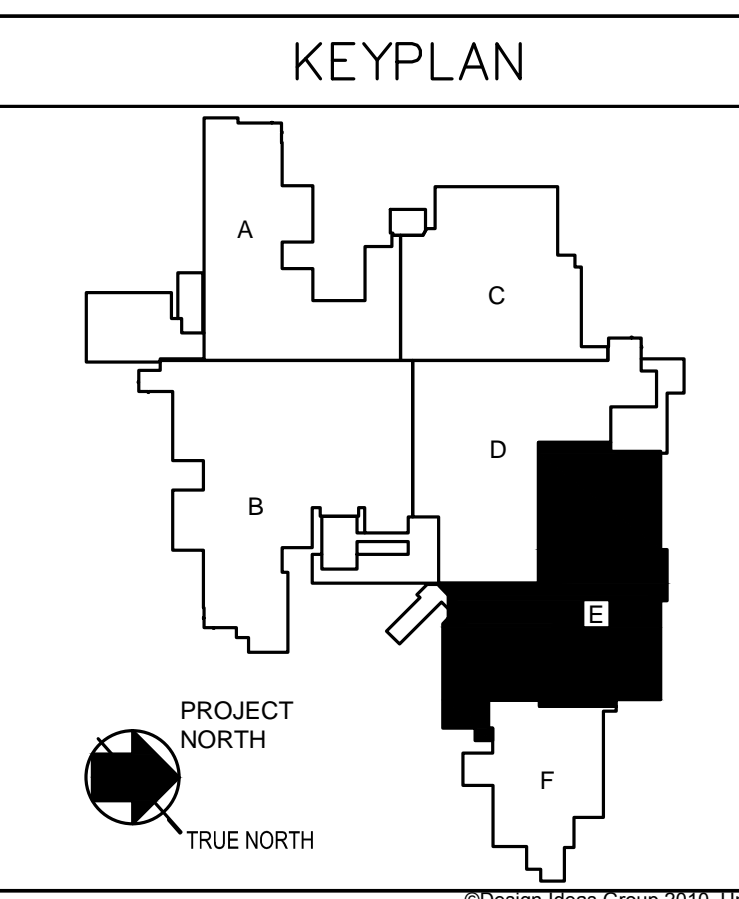


- GENERAL POWER NOTES:**
- REFER TO HVAC AND PLUMBING PLANS FOR EXACT LOCATION OF ELECTRICALLY OPERATED EQUIPMENT.
 - COORDINATE EXACT LOCATION OF ALL DEVICES WITH ARCHITECT'S FINAL FURNITURE LAYOUT.
 - ALL SINGLE OR DUPLEX 125 VOLT RECEPTACLES THAT ARE WITHIN A SIX FOOT RADIUS OF ANY SHARP CORNER OR OUTDOOR AT ANY ELEVATION SHALL HAVE GROUND FAULT PROTECTION FOR PERSONNEL. THIS INCLUDES BUT IS NOT LIMITED TO LOCKERS, FOOD SERVICE, AND LABS AND PREP ROOMS, REGARDLESS OF WHO SUPPLIES THE EQUIPMENT.
 - ALL 15 AND 20 AMP., 120 VOLT RECEPTACLES IN KITCHENS SHALL HAVE GFCI PROTECTION.
 - ALL CIRCUITS OVER 100 FEET SHALL USE No. 10 CONDUCTORS U.O.G.
 - ALL CIRCUITS OVER 200 FEET SHALL USE No. 8 CONDUCTORS U.O.G.
 - ALL CIRCUITS OVER 200 FEET SHALL USE No. 8 CONDUCTORS U.O.G.
 - ELECTRICAL CONTRACTOR SHALL MOUNT ALL ELECTRICAL EQUIPMENT SUPPLIED BY THE CASEWORK MANUFACTURER AND PROVIDE ALL WIRING AS SPECIFIED.
 - ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL THE EMPTY CONDUIT OUTLET BOXES, SURFACE RACEWAY, CONDUIT SLEEVES WITH FIRE STOP FITTINGS AND CABLE TRAY FOR ALL THE DATA, TELEPHONE, INTERCOM, SECURITY, ACCESS CONTROL, CCTV AND A/V SYSTEMS AS INDICATED ON THE TECHNOLOGY DRAWINGS. THE LOCATION OF THE ELECTRICAL OUTLETS (RECEPTACLES) SHALL BE COORDINATED WITH THE TECHNOLOGY DRAWINGS.
 - ALL BRANCH CIRCUIT (POWER AND LIGHTING) SHALL HAVE SEPARATE NEUTRALS FOR EACH CIRCUIT.
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTER "A" SHALL BE RUN TO PANEL "A2A".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTER "B" SHALL BE RUN TO PANEL "B2B".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTER "C" SHALL BE RUN TO PANEL "C2C".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTER "D" SHALL BE RUN TO PANEL "D2D".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "PA" SHALL BE RUN TO PANEL "PA2".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "PB" SHALL BE RUN TO PANEL "PB2".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "PC" SHALL BE RUN TO PANEL "PC2".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "PD" SHALL BE RUN TO PANEL "PD2".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "CA" SHALL BE RUN TO PANEL "CA2".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "CB" SHALL BE RUN TO PANEL "CB2".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "CC" SHALL BE RUN TO PANEL "CC2".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "CD" SHALL BE RUN TO PANEL "CD2".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "CE" SHALL BE RUN TO EMERGENCY PANEL "EP2A".
 - SEE DRAWING E-201 FOR ELECTRICAL SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.
 - SEE DRAWINGS E-300 THROUGH E-306 FOR THE PANEL SCHEDULES.
 - SEE DRAWINGS E-205 AND E-206 FOR THE SINGLE LINE DIAGRAM.
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 - CONTRACTOR SHALL FURNISH AND INSTALL PICTALS FROM OVERSIZED CONDUCTORS DUE TO VOLTAGE DROP FOR FINAL CONNECTION TO DEVICES.

KEY NOTES:

- REFER TO TECHNOLOGY DRAWING T2.1.1 FOR RECEPTACLE MOUNTING DETAILS.

KEY NOTES ON EACH DRAWING ARE SPECIFIC TO THAT DRAWING ONLY.



Design Ideas Group
architecture + planning, llc

PROJECT #: 2008.356.00

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LIC. NO. 24624379400 PRG. NO. 1209981

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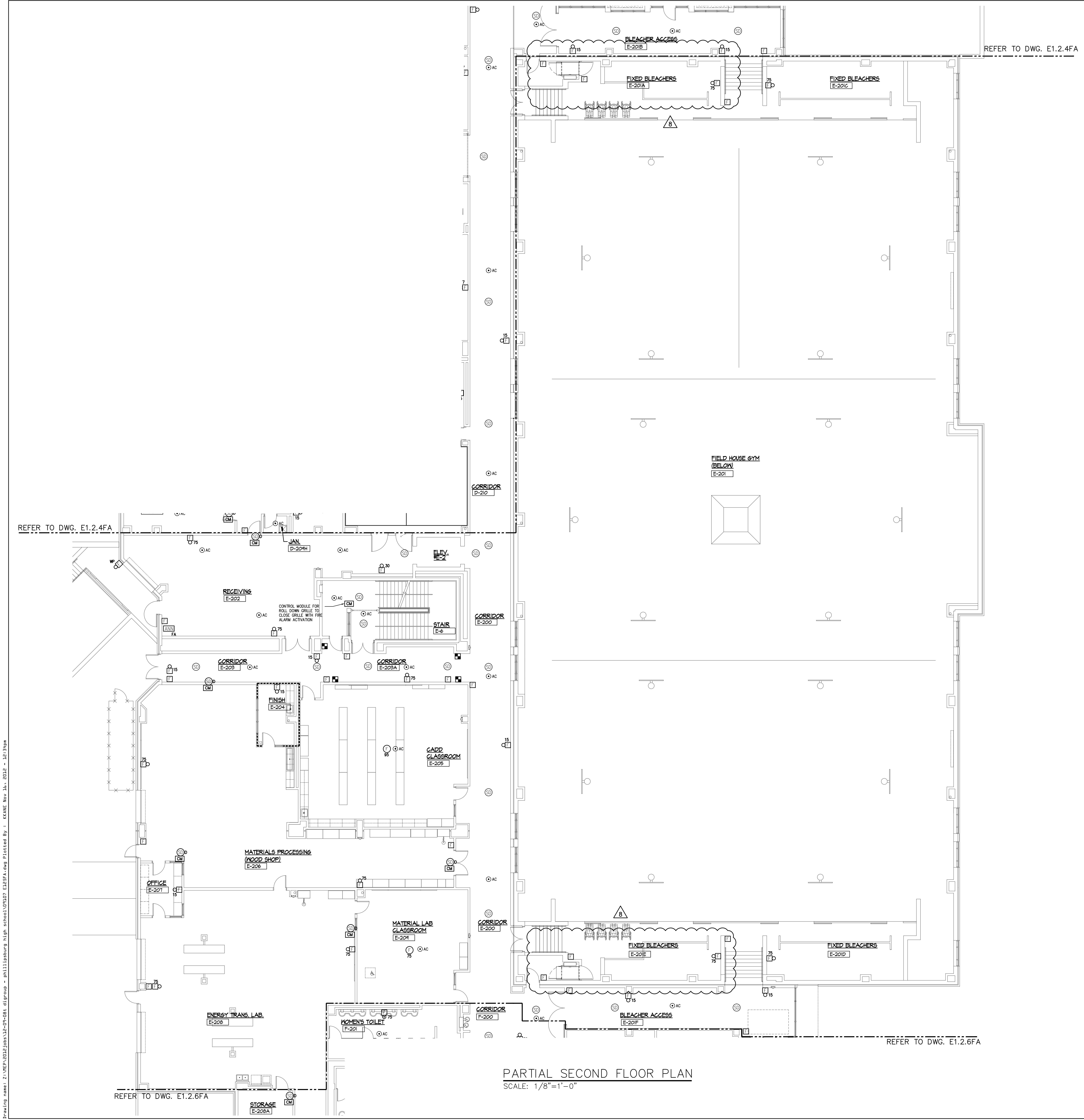
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FOR:
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DOE# 4100-N01-04-1000
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DRAWING TITLE:	POWER SECOND FLOOR PARTIAL PLAN AREA "E"
DRAWING No:	E-1.2.5P
DRAWN BY:	RC

Drawing name: Z:\NEA\2012\08\13\2-01-081.dgn - PHILLIPSBURG HIGH SCHOOL\T2012 E1.2.5P.dgn Plotted By: J. KEANE Nov 14, 2012 4:15:38PM



FIRE ALARM NOTES:

ALL FIRE ALARMS, SUPERVISORY SIGNALS AND TROUBLE SIGNALS SHALL BE DISTINCTLY AND DESCRIPTIVELY ANNOUNCED. THE LOCATION OF AN OPERATING DEVICE SHALL BE VISIBLY INDICATED BY BUILDING, FLOOR, FIRE ZONE OR OTHER APPROVED SUBVISION BY ANNUNCIATION, PRINTOUT, OR OTHER APPROVED MEANS. ALL REQUIRED ANNUNCIATION SHALL BE READILY ACCESSIBLE TO RESPONDING PERSONNEL AND SHALL BE LOCATED AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION TO FACILITATE AN EFFICIENT RESPONSE TO A FIRE SITUATION.

ADDRESS FOR ADDRESSABLE DEVICES SHALL BE DELINEATED IN THE PROGRAMMING TO CLEARLY IDENTIFY THE LOCATION OF THE OPERATED DEVICE. GENERIC ADDRESSES SHALL NOT BE ACCEPTABLE.

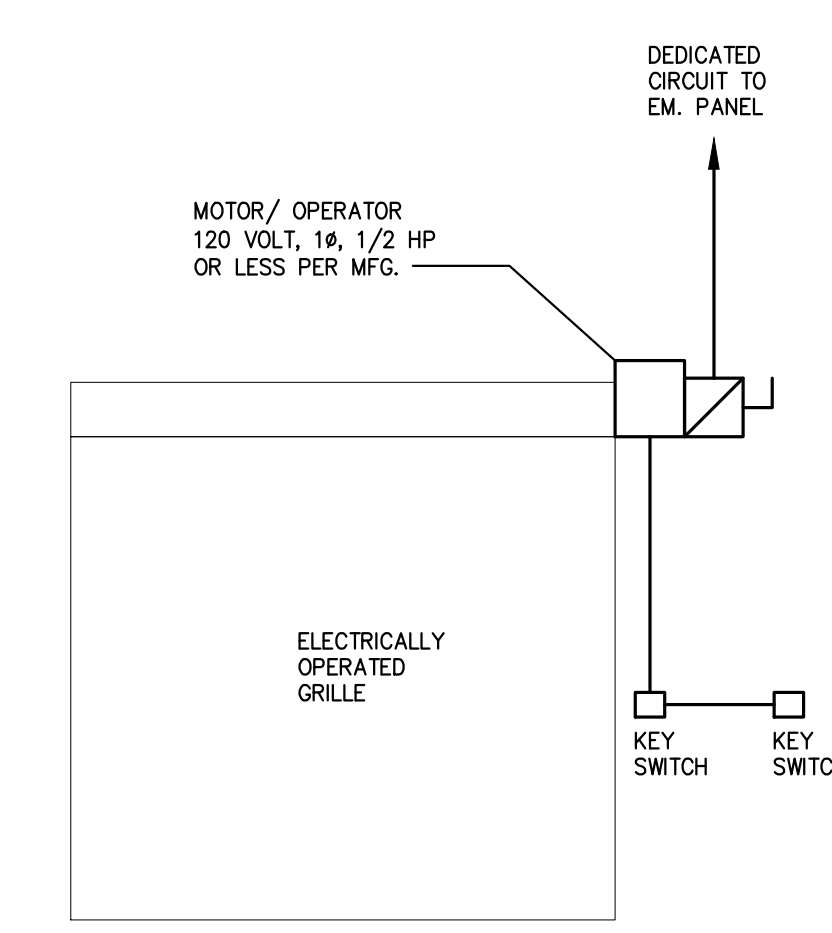
SMOKE DETECTORS SHALL NOT BE INSTALLED UNTIL AFTER THE CONSTRUCTION CLEAN UP OF ALL TRADES IS COMPLETE AND FINAL USE OF SHIPPING COVERS SHALL ONLY BE PERMITTED IF LISTED BY MANUFACTURER AS DUST COVERS FOR USE DURING CONSTRUCTION.

MORE THAN TWO (2) VISIBLE NOTIFICATION APPLIANCES IN THE SAME ROOM OR ADJACENT SPACE WITHIN THE FIELD OF VIEW, THEY SHALL FLASH IN SYNCHRONIZATION.

EQUIPMENT AND CONDUIT ARE SHOWN DIAGRAMMATICALLY. FINAL LOCATION OF CONDUIT AND EQUIPMENT SHALL BE DETERMINED IN THE FIELD AND SHALL BE SUBMITTED TO ENGINEER FOR APPROVAL BEFORE WORK IS COMMENCED.

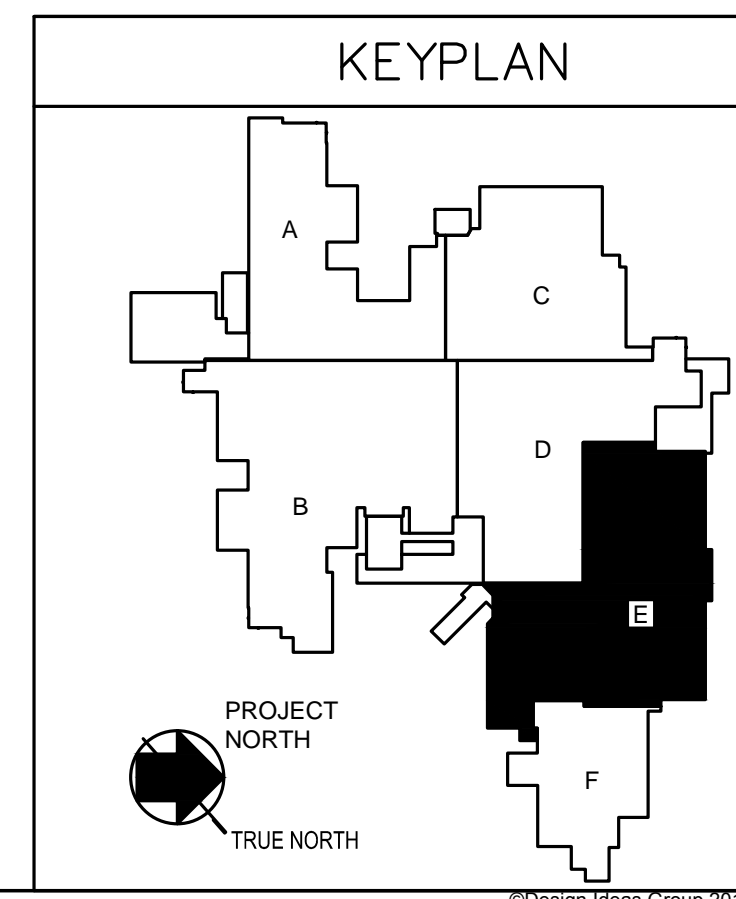
THESE DRAWINGS ARE REPRESENTATIVE OF THE SCOPE AND NATURE OF WORK. IT IS NOT GUARANTEED TO REPRESENT EXACT FIELD CONDITIONS AND DIMENSIONS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY FIELD DIMENSIONS AND TO COORDINATE THE WORK WITH THE ARCHITECT.

REFER TO DRAWINGS E206 AND E207 FOR THE FIRE ALARM SYSTEM RISER DIAGRAM.



GRILLE WIRING DETAIL
SCALE: NONE

KEY NOTES ON EACH DRAWING ARE SPECIFIC TO THAT DRAWING ONLY.



SDA
NJ SCHOOLS DEVELOPMENT AUTHORITY

STATE OF NEW JERSEY

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DATE: 10/13/2009

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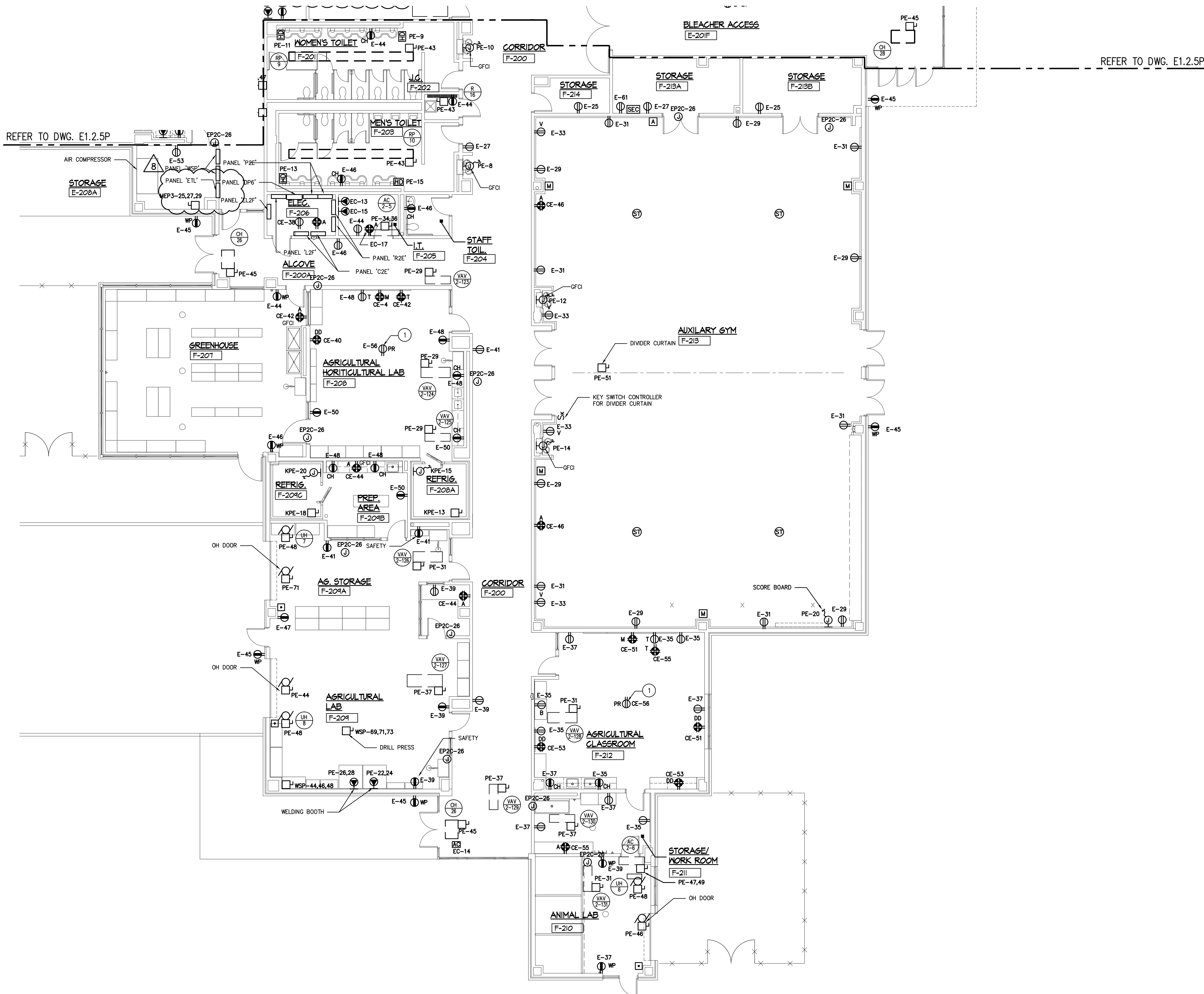
FOR:
NEW PHILLIPSBURG HIGH SCHOOL
DOE# 4100-N01-04-1000
SDA# NT-0003-C02

TOWN OF PHILLIPSBURG
UPPER BELVIDERE ROAD LOT 4J, BLOCK 2
PHILLIPSBURG, NEW JERSEY 08865

SUBMISSION	DATE
ADDEDNDUM #1	11-21-12
NJSDA REVISIONS	09-12-12
NJSDA COMMENTS	03-04-11
NJSDA COMMENTS	08-12-10
NJSDA COMMENTS	05-17-10
NJSDA COMMENTS	02-12-10
DATE:	OCTOBER 13, 2009
SCALE:	1/8" = 1'-0"
DRAWING TITLE:	FIRE ALARM SECOND FLOOR PARTIAL PLAN AREA "E"
DRAWING No:	E-1.2.5FA
DRAWN BY:	RC

Drawing name: Z:\NEFA\2012\08\13\2-01-081.dwg - phillipsburg high school\101007 E1.2.5FA.dwg Plotted By: I. KRANE Nov. 14, 2012 - 10:31pm

Drawing name: Z:\NEW\2008\200812\200812-07-2081.dwg - philippsburg high school\151107 E1.2.6P.dwg Printed By: J. KEANE Nov 11, 2012 1:10:38PM

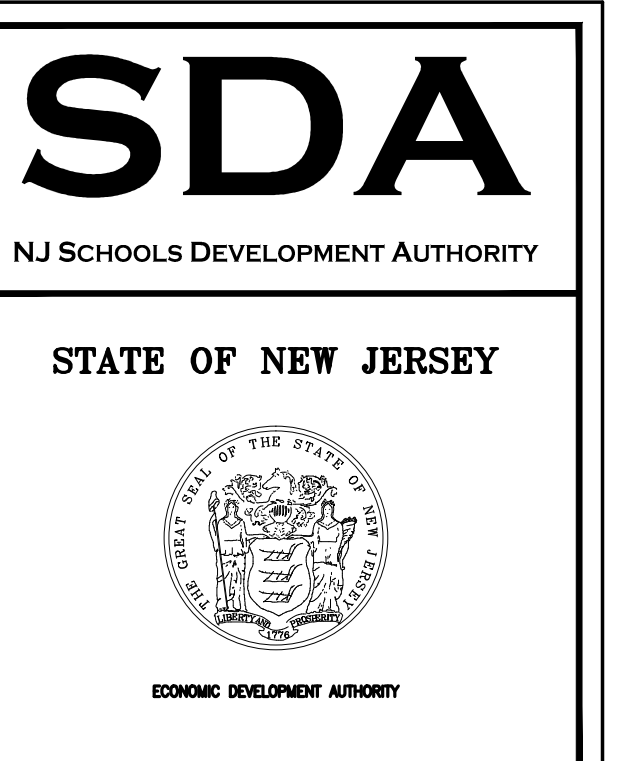
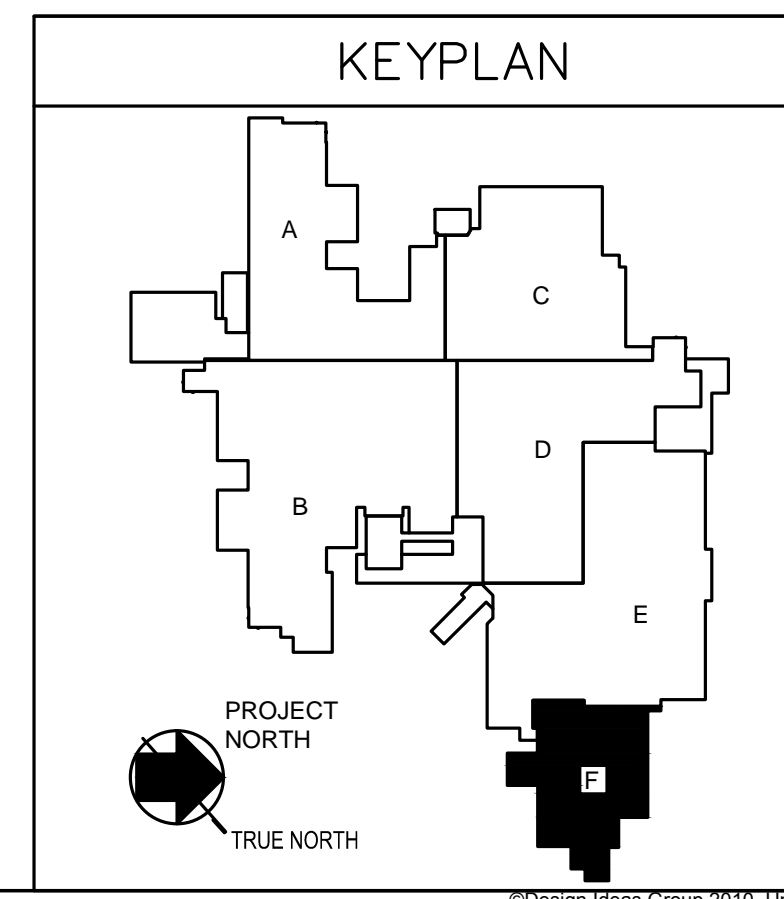


PARTIAL SECOND FLOOR PLAN
SCALE: 1/8" = 1'-0"

- GENERAL POWER NOTES:**
- REFER TO RISE AND FLOORING PLANS FOR EXACT LOCATION OF ELECTRICALLY OPERATED EQUIPMENT.
 - COORDINATE EXACT LOCATION OF ALL DEVICES WITH ARCHITECT'S FINAL FURNITURE LAYOUT.
 - ALL SINGLE OR BUNDLE 120 VOLT RECEPTACLES THAT ARE WITHIN A SIX FOOT RADIUS OF ANY SHAW, WET AREA, OR OUTDOOR AT ANY ELEVATION SHALL HAVE GROUND FAULT PROTECTION FOR PERSONNEL. THIS INCLUDES BUT IS NOT LIMITED TO LOCKER ROOMS, FOOD SERVICE AREAS, LABS AND PREP ROOMS, REGARDLESS OF WHO SUPPLIES THE EQUIPMENT.
 - ALL 15 AND 20 AMP, 120 VOLT RECEPTACLES IN KITCHENS SHALL HAVE GFCI PROTECTION.
 - ALL CIRCUITS OVER 100 FEET SHALL USE NO. 10 CONDUCTORS U.O.A.
 - ALL CIRCUITS OVER 200 FEET SHALL USE NO. 8 CONDUCTORS U.O.A.
 - ALL CIRCUITS OVER 200 FEET SHALL USE NO. 6 CONDUCTORS U.O.A.
 - ELECTRICAL CONTRACTOR SHALL MOUNT ALL ELECTRICAL EQUIPMENT SUPPLIED BY THE CASEWORK MANUFACTURER AND PROVIDE ALL WIRING AS SPECIFIED.
 - ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL THE EMPTY CONDUIT OUTLET BOXES, SURFACE RACEWAY, CONDUIT SLEEVES WITH FIRE STOP FITTINGS AND CABLE TRAY FOR ALL THE DATA, TELEPHONE, INTERCOM, SECURITY, ACCESS CONTROL, CATV AND A/V SYSTEMS AS INDICATED ON THE TECHNOLOGY DRAWINGS. THE LOCATION OF THE ELECTRICAL OUTLETS (RECEPTACLES) SHALL BE COORDINATED WITH THE TECHNOLOGY DRAWINGS.
 - ALL BRANCH CIRCUIT (POWER AND LIGHTING) SHALL HAVE SEPARATE NEUTRALS FOR EACH CIRCUIT.
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTER "A" SHALL BE RUN TO PANEL "72A".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTER "B" SHALL BE RUN TO PANEL "72B".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTER "C" SHALL BE RUN TO PANEL "72C".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTER "D" SHALL BE RUN TO PANEL "72D".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "TA" SHALL BE RUN TO PANEL "72A".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "TB" SHALL BE RUN TO PANEL "72B".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "TC" SHALL BE RUN TO PANEL "72C".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "TD" SHALL BE RUN TO PANEL "72D".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "CA" SHALL BE RUN TO PANEL "72A".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "CB" SHALL BE RUN TO PANEL "72B".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "CC" SHALL BE RUN TO PANEL "72C".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "CD" SHALL BE RUN TO PANEL "72D".
 - SEE DRAWING E-201 FOR ELECTRICAL SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.
 - SEE DRAWINGS E-200 THROUGH E-206 FOR THE PANEL SCHEDULES.
 - SEE DRAWINGS E-205 AND E-206 FOR THE SINGLE LINE DIAGRAM.
 - THESE DRAWINGS ARE REPRESENTATIVE OF THE SCOPE AND NATURE OF WORK. IT IS NOT GUARANTEED TO REPRESENT EXACT FIELD CONDITIONS AND DIMENSIONS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY FIELD DIMENSIONS AND TO COORDINATE THE WORK WITH THAT OF THE CONSTRUCTION MANAGER.
 - CONTRACTOR SHALL COORDINATE EXACT LOCATIONS OF ALL ELECTRICAL EQUIPMENT WITH THE CONSTRUCTION MANAGER AND ARCHITECT IN WRITING. IF EQUIPMENT HAS TO BE RELOCATED AND THE EQUIPMENT WAS INSTALLED WITHOUT PRIOR APPROVAL, THE CONTRACTOR SHALL RELOCATE OR REPLACE AT THEIR OWN EXPENSE.
 - CONTRACTOR SHALL FURNISH AND INSTALL FITTINGS FROM OVERSIZED CONDUCTORS DUE TO VOLTAGE DROP FOR FINAL CONNECTION TO DEVICES.

- KEY NOTES:** ①
- REFER TO TECHNOLOGY DRAWING T2.1.1 FOR RECEPTACLE MOUNTING DETAILS.

KEY NOTES ON EACH DRAWING ARE SPECIFIC TO THAT DRAWING ONLY.

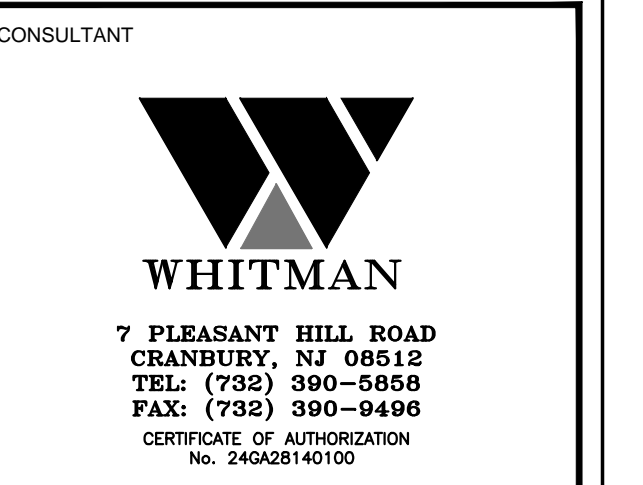


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FOR:
NEW PHILIPPSBURG HIGH SCHOOL
DOE# 41100-N01-04-1000
SDA# NT-0003-C02
TOWN OF PHILIPPSBURG
UPPER BELVIDERE ROAD, LOT 44, BLOCK 2
PHILIPPSBURG, NEW JERSEY 08865

SUBMISSION	DATE
ADDEDNDUM #1	11-21-12
NJSDA REVISIONS	09-12-12
NJSDA COMMENTS	03-04-11
NJSDA COMMENTS	08-12-10
NJSDA COMMENTS	05-17-10
NJSDA COMMENTS	02-12-10
DATE:	OCTOBER 13, 2009
SCALE:	1/8" = 1'-0"

DRAWING TITLE:
POWER
SECOND FLOOR
PARTIAL PLAN
AREA "F"

DRAWING No:

E-1.2.6P

DRAWN BY: RC

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FOR:
NEW PHILLIPSBURG HIGH SCHOOL
DOE# 4100-N01-04-1000
SDA# NT-0003-C02
TOWN OF PHILLIPSBURG
UPPER BELVIDERE ROAD, LOT 41, BLOCK 2
PHILLIPSBURG, NEW JERSEY 08865

LIGHTING INTENSITY TABLE

ROOM NAME	AVERAGE MAINTAINED FOOT-CANDELES
CLASSROOM AND INSTRUCTIONAL AREAS - STUDY HALLS, LECTURE ROOMS, ART ROOMS, MUSIC ROOMS, OFFICES, LIBRARIES, CONFERENCE ROOMS, WORK ROOMS, SHOPS, LABORATORIES, S.C.I., COMPUTER ROOMS AND SECONDARY SCHOOL CAFETERIAS	50
DRAFTING, TYPING AND SEWING ROOMS	70
CLASSROOMS FOR THE PARTIALLY SIGHTED	70
RECEPTION ROOMS, COMMISSARIES, AUDITORIUMS, PRIMARY SCHOOL CAFETERIAS, ALL-PURPOSE ROOMS AND SWIMMING POOLS	30
LOCKER ROOMS, WASHROOMS, TOILET ROOMS, CORRIDORS CONTAINING LOCKERS AND STAIRWAYS	10
CORRIDORS WITHOUT LOCKERS AND STORAGE ROOMS	5

OCCUPANCY SENSORS
A COMPLETE OCCUPANCY SENSING SYSTEM IS REQUIRED IN ALL AREAS THAT ARE SHOWN WITH NEW LIGHTING. OCCUPANCY SENSORS ARE SPECIFIED IN SECTION 260923 OF THE SPECIFICATION BOOK. IT SHALL BE THE ELECTRICAL CONTRACTOR'S RESPONSIBILITY TO OBTAIN A LAYOUT FROM AN ACCEPTABLE MANUFACTURER WHICH SHALL INCLUDE THE EMERGENCY SHUNT RELAYS AND NORMAL CIRCUIT THEY ARE MONITORING. THIS SHALL BE SUBMITTED AS SHOP DRAWING.

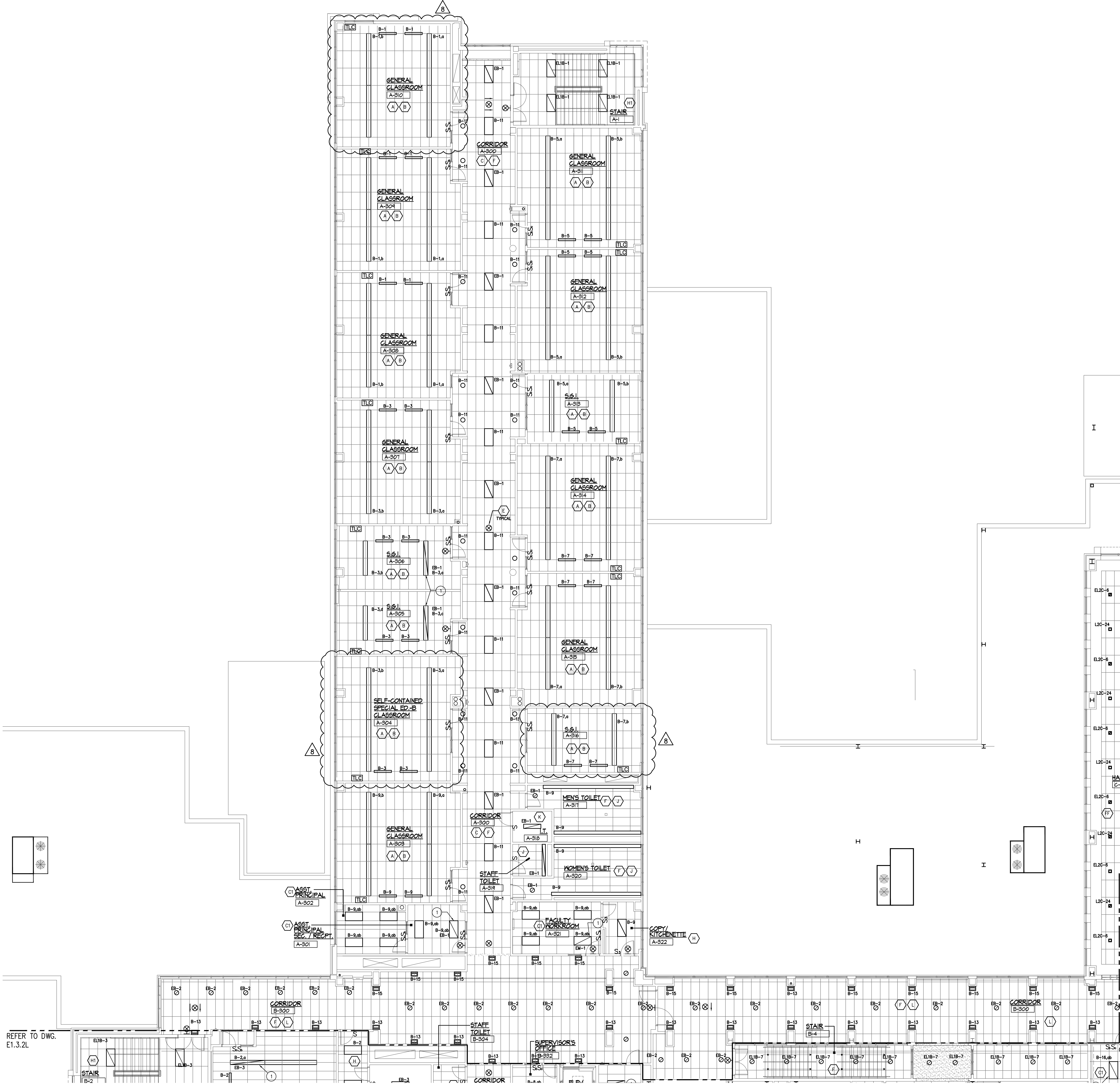
WHERE LIGHT SWITCHES ARE SHOWN, THEY SHALL BE IN ADDITION TO OCCUPANCY SENSORS REFER TO WIRING DETAILS.

GENERAL LIGHTING NOTES:

- EXIT LIGHTS TO BE CONNECTED TO UNWITNESSED HOT WIRE OF EMERGENCY LIGHTING CIRCUIT SERVING AREA.
- SEE DRAWING E-203 FOR CLASSROOM LIGHTING AND EMERGENCY LIGHTING WIRING DETAILS.
- ALL BRANCH CIRCUIT (POWER AND LIGHTING) SHALL HAVE SEPARATE NEUTRALES FOR EACH CIRCUIT.
- ALL CIRCUIT NUMBERS INDICATED WITH THE LETTER "B" SHALL BE RUN TO PANEL "L30".
- ALL CIRCUIT NUMBERS INDICATED WITH THE LETTER "D" SHALL BE RUN TO PANEL "L31".
- ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "D" SHALL BE RUN TO EMERGENCY PANEL "L30".
- ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "D" SHALL BE RUN TO EMERGENCY PANEL "L30".

KEY NOTES (①,②,③)

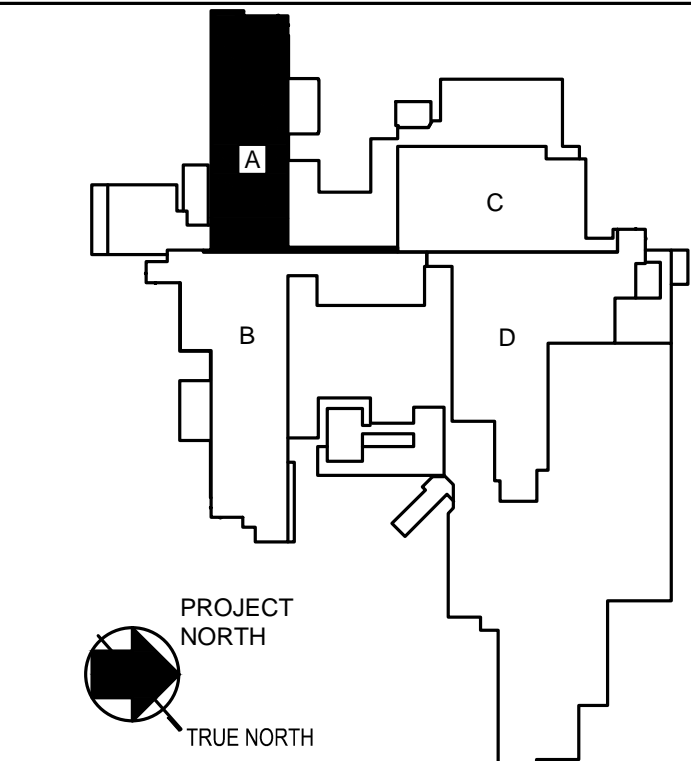
- CONTRACTOR SHALL PROVIDE A GENERATOR TRANSFER DEVICE ON FIXTURES INDICATED.



PARTIAL THIRD FLOOR PLAN
SCALE: 1/8" = 1'-0"

KEY NOTES ON EACH DRAWING ARE SPECIFIC TO THAT DRAWING ONLY.

KEYPLAN



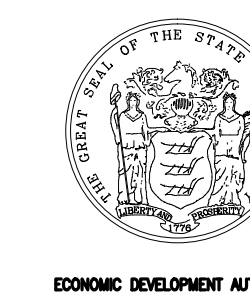
SUBMISSION	DATE
ADDEDNDUM #1	11-21-12
NJSDA REVISIONS	09-12-12
NJDC COMMENTS	03-04-11
NJDC COMMENTS	08-12-10
NJDC COMMENTS	05-17-10
NJDC COMMENTS	02-12-10
DATE:	OCTOBER 13, 2009
SCALE:	1/8" = 1'-0"
DRAWING TITLE:	LIGHTING THIRD FLOOR PARTIAL PLAN AREA "A"
DRAWING No:	E-1.3.1L
DRAWN BY:	RC

Drawing name: Z:\NEW\2012\08\13\00-000-000-000.dwg Design: phillipsburg high school\10107 E1.3P.dwg Plotted By: J. KEANE Nov 14, 2012 4:15:38 PM

SDA

NJ SCHOOLS DEVELOPMENT AUTHORITY

STATE OF NEW JERSEY



GOVERNMENT PRINTING OFFICE: 2009-12-01

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DATE: 10/13/2009

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FOR:
NEW PHILLIPSBURG HIGH SCHOOL
DOE# 4100-N01-04-1000
SDA# NT-0003-C02
TOWN OF PHILLIPSBURG
UPPER BELVIDERE ROAD, LOT 41, BLOCK 2
PHILLIPSBURG, NEW JERSEY 08865

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NJSDA COMMENTS	02-12-10

DATE: OCTOBER 13, 2009
SCALE: 1/8" = 1'-0"

DRAWING TITLE:
POWER THIRD FLOOR PARTIAL PLAN AREA "A"

DRAWING No:
E-1.3.1P
DRAWN BY: RC

- GENERAL POWER NOTES:**
- REFER TO HVAC AND PLUMBING PLANS FOR EXACT LOCATION OF ELECTRICALLY OPERATED EQUIPMENT.
 - COORDINATE EXACT LOCATION OF ALL DEVICES WITH ARCHITECT'S FINAL FURNITURE LAYOUTS.
 - ALL SINGLE OR DUPLEX 125 VOLT RECEPTACLES THAT ARE WITHIN A SIX FOOT RADIUS OF ANY SINK, WET AREA, OR OUTDOOR AT ANY ELEVATION SHALL HAVE GROUND FAULT PROTECTION FOR PERSONNEL. THIS INCLUDES BUT IS NOT LIMITED TO LOOZER ROOMS, FOOD SERVICE AREAS, LABS AND PREP ROOMS, REGARDLESS OF WHO SUPPLIES THE EQUIPMENT.
 - ALL 15 AND 20 AMP, 120 VOLT RECEPTACLES IN KITCHENS SHALL HAVE GFI PROTECTION.
 - ALL CIRCUITS OVER 100 FEET SHALL USE NO. 10 CONDUCTORS U.O.N.
 - ALL CIRCUITS OVER 150 FEET SHALL USE NO. 8 CONDUCTORS U.O.N.
 - ALL CIRCUITS OVER 200 FEET SHALL USE NO. 6 CONDUCTORS U.O.N.
 - ELECTRICAL CONTRACTOR SHALL MOUNT ALL ELECTRICAL EQUIPMENT SUPPLIED BY THE CASEWORK MANUFACTURER AND PROVIDE ALL WIRING AS SPECIFIED.
 - ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL THE EMPTY CONDUIT OUTLET BOXES, SURFACE FINCHING, CONDUIT SLEEVES WITH FIRE STOP FITTINGS AND CABLE TRAY FOR ALL DATA, TELEPHONE, INTERCOM SECURITY, ACCESS CONTROL, CCTV AND A/V SYSTEMS AS INDICATED ON THE TECHNOLOGY DRAWINGS. THE LOCATION OF THE ELECTRICAL OUTLETS (RECEPTACLES) SHALL BE COORDINATED WITH THE TECHNOLOGY DRAWINGS.
 - ALL BRANCH CIRCUIT (POWER AND LIGHTING) SHALL HAVE SEPARATE NEUTRALS FOR EACH CIRCUIT.
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTER "A" SHALL BE RUN TO PANEL "2A1".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTER "B" SHALL BE RUN TO PANEL "2B1".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "C" SHALL BE RUN TO PANEL "3A".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "PA" SHALL BE RUN TO PANEL "3A".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "PB" SHALL BE RUN TO PANEL "3B".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "PC" SHALL BE RUN TO PANEL "3C".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "PD" SHALL BE RUN TO PANEL "3D".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "CA" SHALL BE RUN TO PANEL "2CA".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "CB" SHALL BE RUN TO PANEL "2CB".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "CC" SHALL BE RUN TO PANEL "2CC".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "CD" SHALL BE RUN TO EMERGENCY PANEL "3CDA".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "ED" SHALL BE RUN TO EMERGENCY PANEL "3CDA".
 - SEE DRAWING E-200 FOR ELECTRICAL SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.
 - SEE DRAWINGS E-300 THROUGH E-306 FOR THE PANEL SCHEDULES.
 - SEE DRAWINGS E-205 AND E-206 FOR THE SINGLE LINE DIAGRAM.
 - THESE DRAWINGS ARE REPRESENTATIVE OF THE SCOPE AND NATURE OF WORK. IT IS NOT GUARANTEED TO REPRESENT EXACT FIELD CONDITIONS AND DIMENSIONS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY FIELD DIMENSIONS AND TO COORDINATE THE WORK WITH THAT OF THE CONSTRUCTION MANAGER.
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 - CONTRACTOR SHALL FURNISH AND INSTALL PIGTAILS FROM OVERSIZED CONDUCTORS DUE TO VOLTAGE DROP FOR FINAL CONNECTION TO DEVICES.

KEY NOTES (1,2,3)

- REFER TO TECHNOLOGY DRAWING E2.1.1 FOR RECEPTACLE MOUNTING DETAIL.

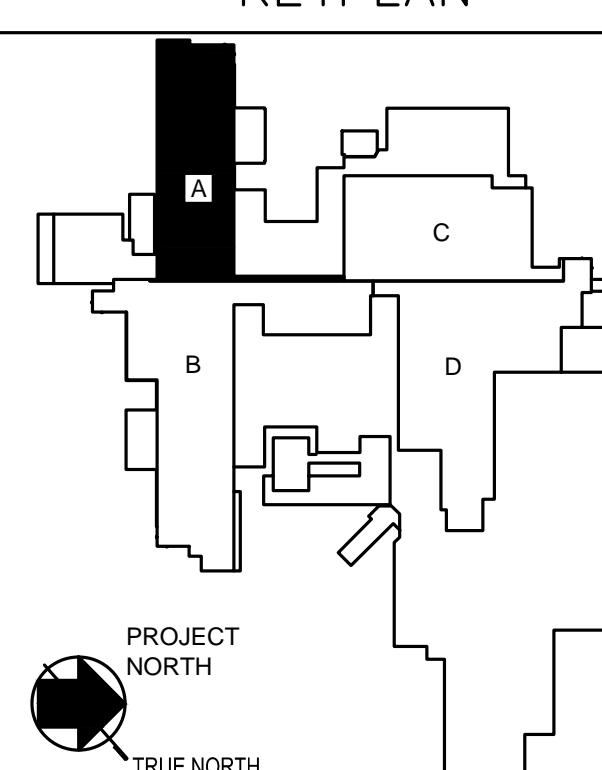


REFER TO DWG. E1.3.2P

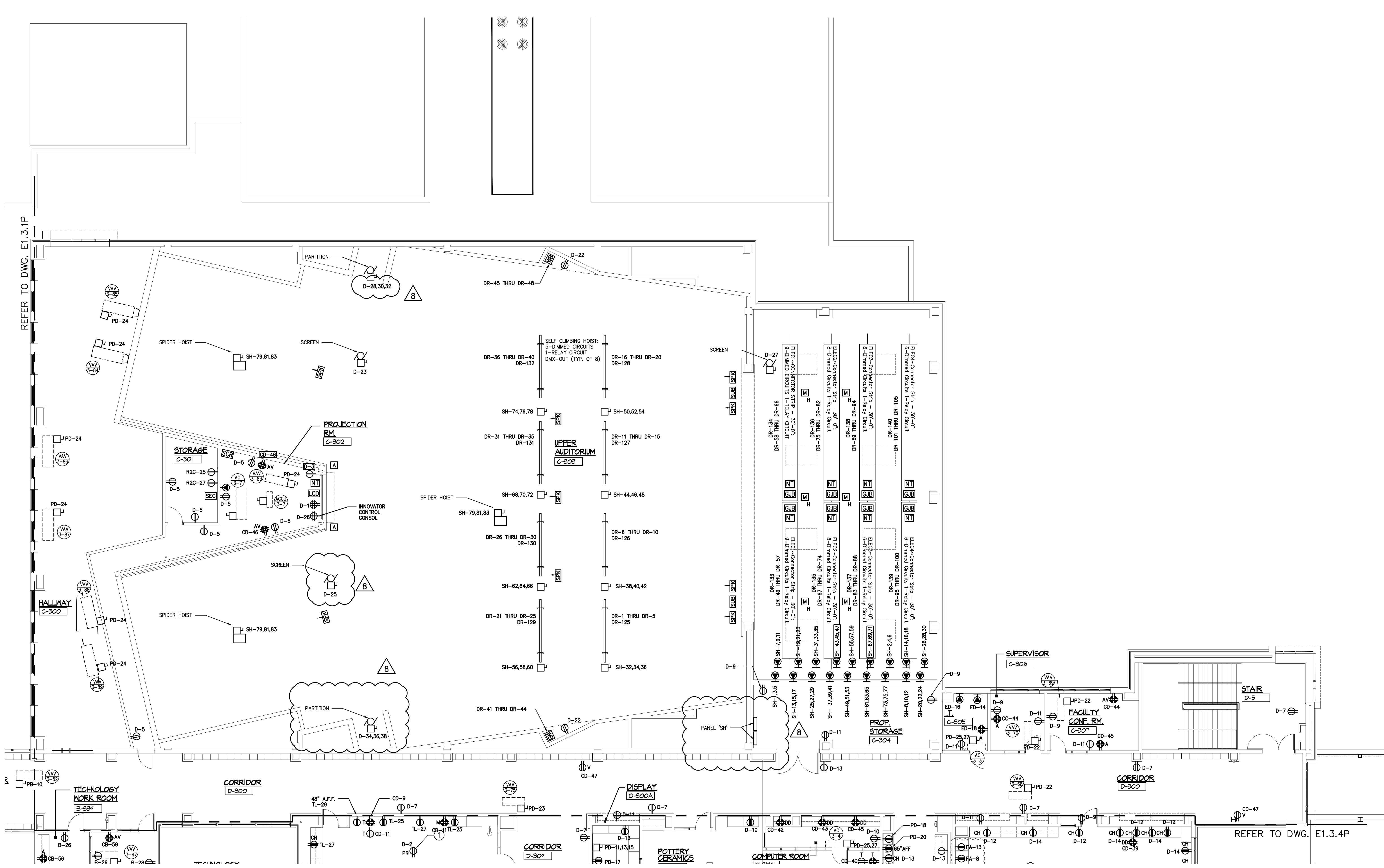
REFER TO DWG. E1.3.3P

KEY NOTES ON EACH DRAWING ARE SPECIFIC TO THAT DRAWING ONLY.

KEYPLAN



PARTIAL THIRD FLOOR PLAN
SCALE: 1/8" = 1'-0"



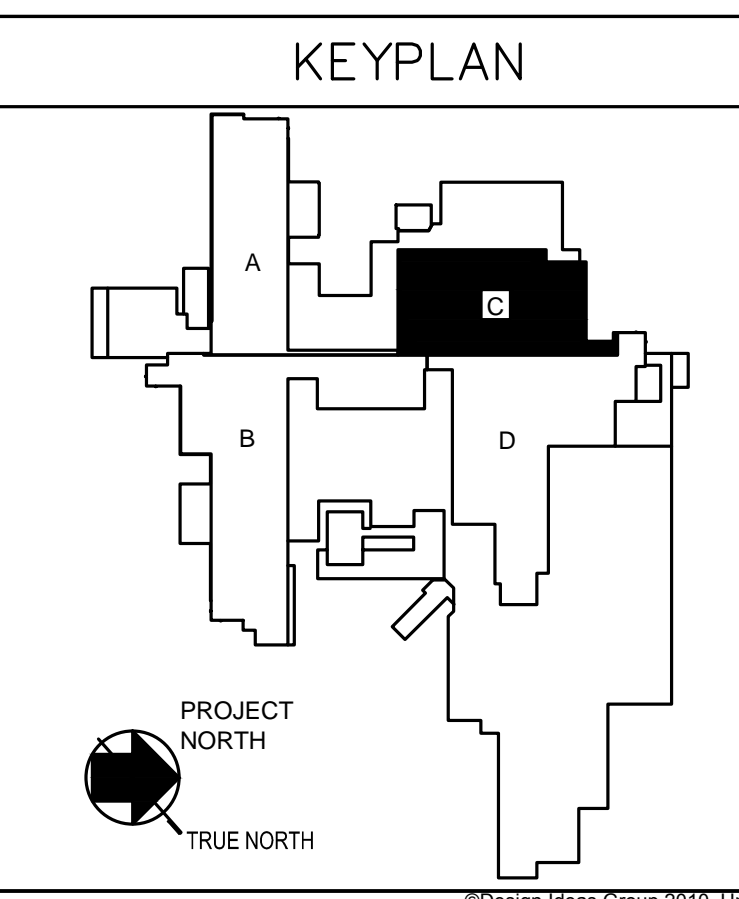
PARTIAL THIRD FLOOR PLAN
SCALE: 1/8" = 1'-0"

- GENERAL POWER NOTES:**
- REFER TO HVAC AND PLUMBING PLANS FOR EXACT LOCATION OF ELECTRICALLY OPERATED EQUIPMENT.
 - COORDINATE EXACT LOCATION OF ALL DEVICES WITH ARCHITECT'S FINAL FURNITURE LAYOUT.
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 - ALL 15 AND 20 AMP., 120 VOLT RECEPTACLES IN KITCHENS SHALL HAVE GFCI PROTECTION.
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 - ALL BRANCH CIRCUIT (POWER AND LIGHTING) SHALL HAVE SEPARATE NEUTRALS FOR EACH CIRCUIT.
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTER "A" SHALL BE RUN TO PANEL "A3A".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTER "B" SHALL BE RUN TO PANEL "B3A".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "D" SHALL BE RUN TO PANEL "D3A".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "F" SHALL BE RUN TO PANEL "F3A".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "H" SHALL BE RUN TO PANEL "H3A".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "J" SHALL BE RUN TO PANEL "J3A".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "L" SHALL BE RUN TO PANEL "L3A".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "N" SHALL BE RUN TO PANEL "N3A".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "P" SHALL BE RUN TO PANEL "P3A".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "R" SHALL BE RUN TO PANEL "R3A".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "T" SHALL BE RUN TO EMERGENCY PANEL "E3A".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "V" SHALL BE RUN TO EMERGENCY PANEL "E3A".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "X" SHALL BE RUN TO EMERGENCY PANEL "E3A".
 - SEE DRAWING E-200 FOR FOR ELECTRICAL SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.
 - SEE DRAWINGS E-200 THROUGH E-208 FOR THE PANEL SCHEDULES.
 - SEE DRAWINGS E-205 AND E-206 FOR THE SINGLE LINE DIAGRAM.
 - THESE DRAWINGS ARE REPRESENTATIVE OF THE SCOPE AND NATURE OF WORK. IT IS NOT GUARANTEED TO REPRESENT EXACT FIELD CONDITIONS AND DIMENSIONS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY FIELD DIMENSIONS AND TO COORDINATE THE WORK WITH THAT OF THE CONSTRUCTION MANAGER.
 - CONTRACTOR SHALL COORDINATE EXACT LOCATIONS OF ALL ELECTRICAL EQUIPMENT WITH THE CONSTRUCTION MANAGER AND ARCHITECT IN WRITING. IF EQUIPMENT HAS TO BE RELOCATED AND THE EQUIPMENT WAS INSTALLED WITHOUT PRIOR APPROVAL, THE CONTRACTOR SHALL RELOCATE OR REPLACE AT THEIR OWN EXPENSE.
 - CONTRACTOR SHALL FURNISH AND INSTALL PASTELS FROM GERRISD CONDUCTORS DUE TO VOLTAGE DROP FOR FINAL CONNECTION TO DEVICES.

KEY NOTES (0,2,3)

- REFER TO TECHNOLOGY DRAWING E2.1.1 FOR RECEPTACLE MOUNTING DETAIL.

KEY NOTES ON EACH DRAWING ARE SPECIFIC TO THAT DRAWING ONLY.

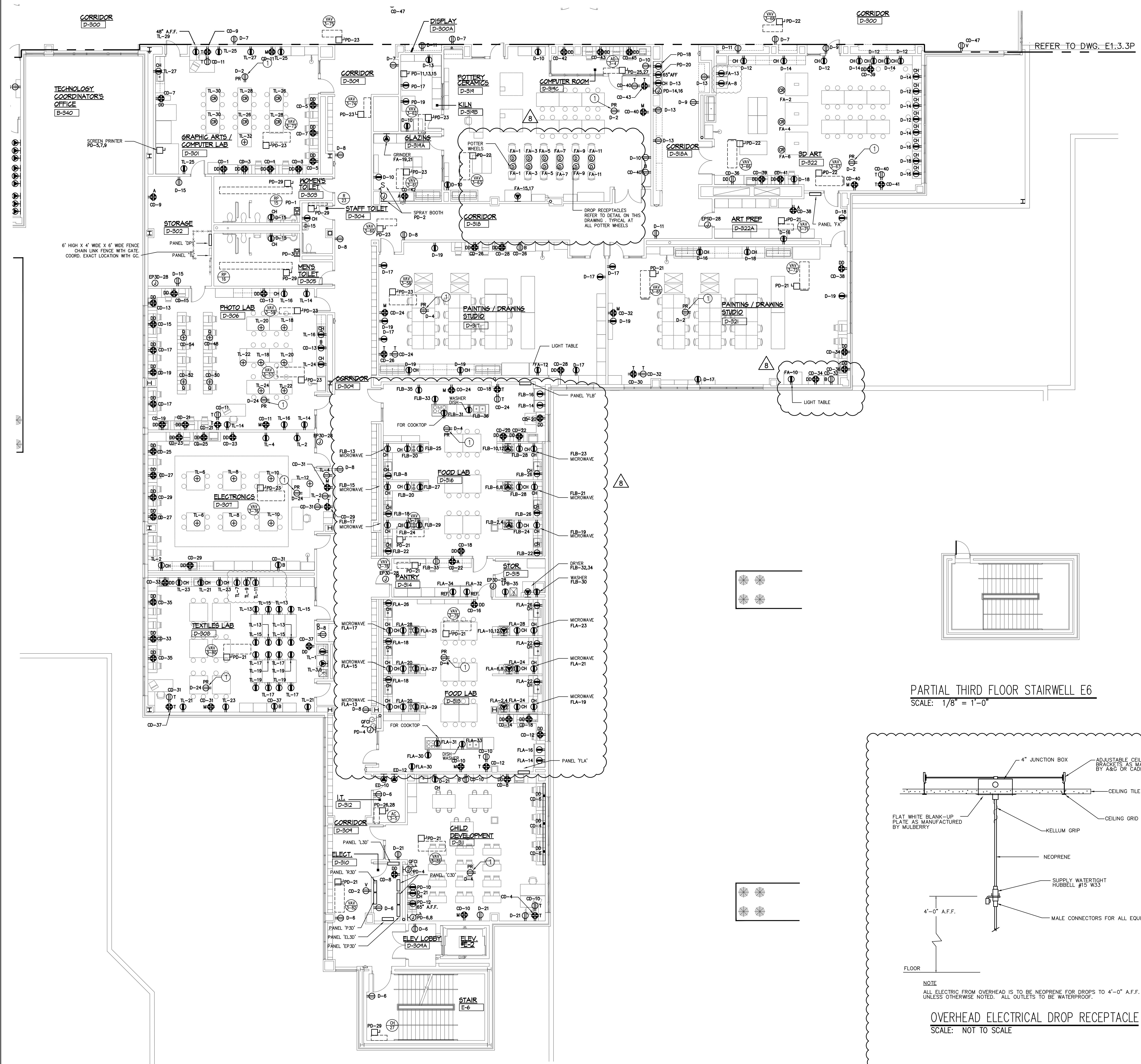


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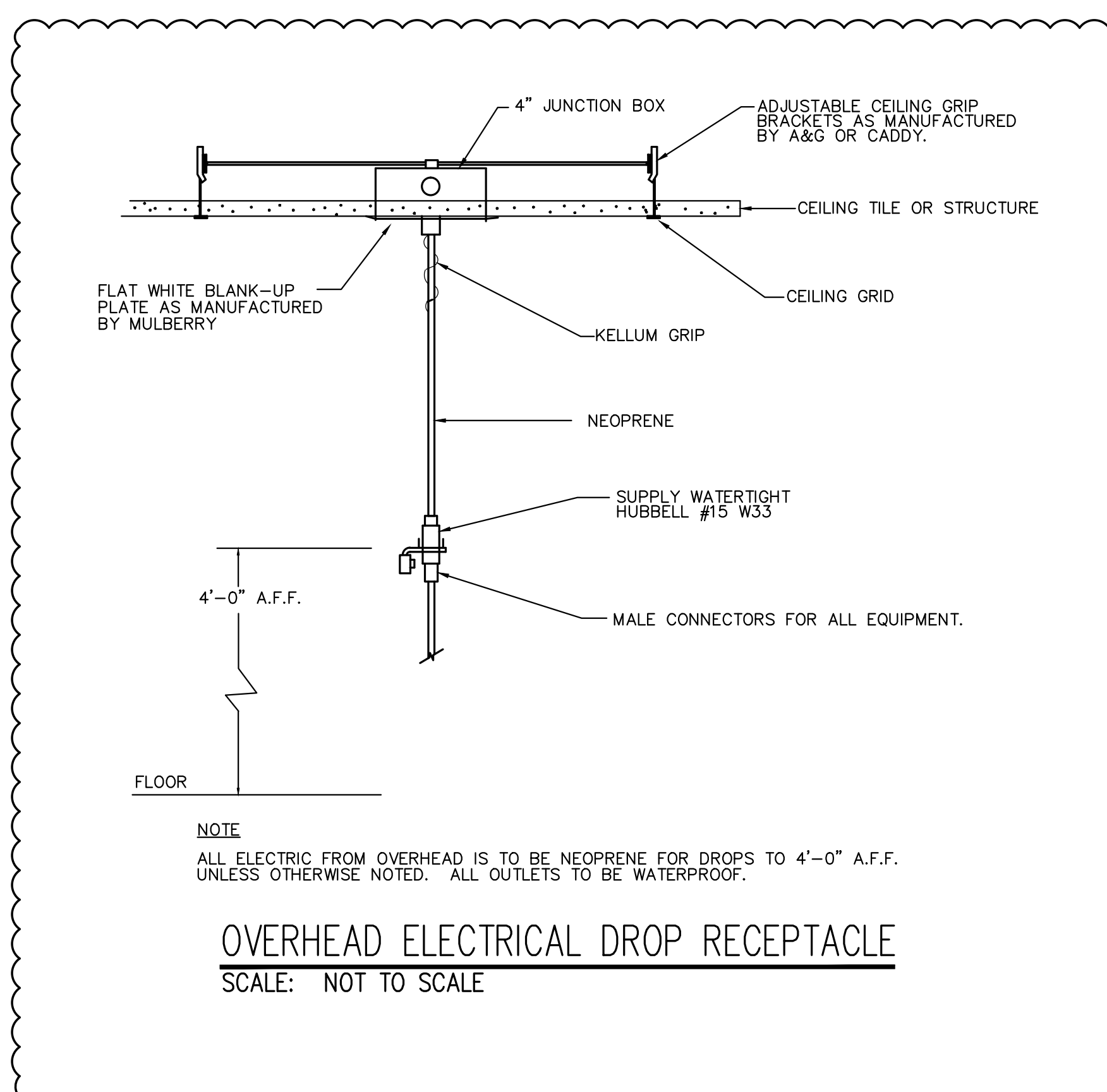
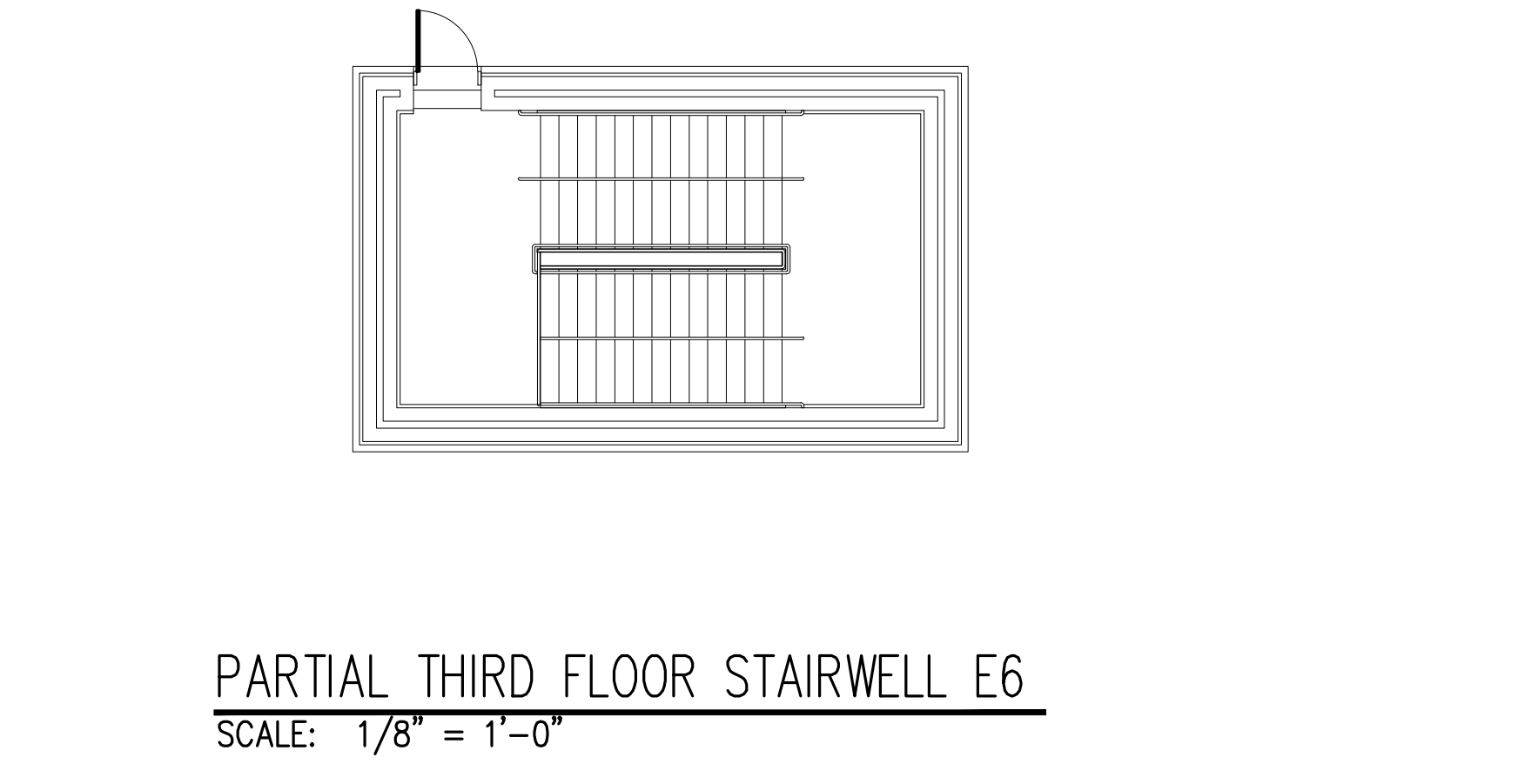
FOR:
NEW PHILLIPSBURG HIGH SCHOOL
DOE# 4100-N01-04-1000
SDA# NT-003-CO2

TOWN OF PHILLIPSBURG
UPPER BELVIDERE ROAD LOT 41, BLOCK 2
PHILLIPSBURG, NEW JERSEY 08865

SUBMISSION	DATE
ADDEDNDUM #1	11-21-12
NJSDA REVISIONS	09-12-12
NJDC COMMENTS	03-04-11
NJDC COMMENTS	08-12-10
NJDC COMMENTS	05-17-10
NJDC COMMENTS	02-12-10
DATE:	OCTOBER 13, 2009
SCALE:	1/8" = 1'-0"
DRAWING TITLE:	POWER THIRD FLOOR PARTIAL PLAN AREA "C"
DRAWING No:	E-1.3.3P
DRAWN BY:	RC



PARTIAL THIRD FLOOR PLAN
SCALE: 1/8" = 1'-0"



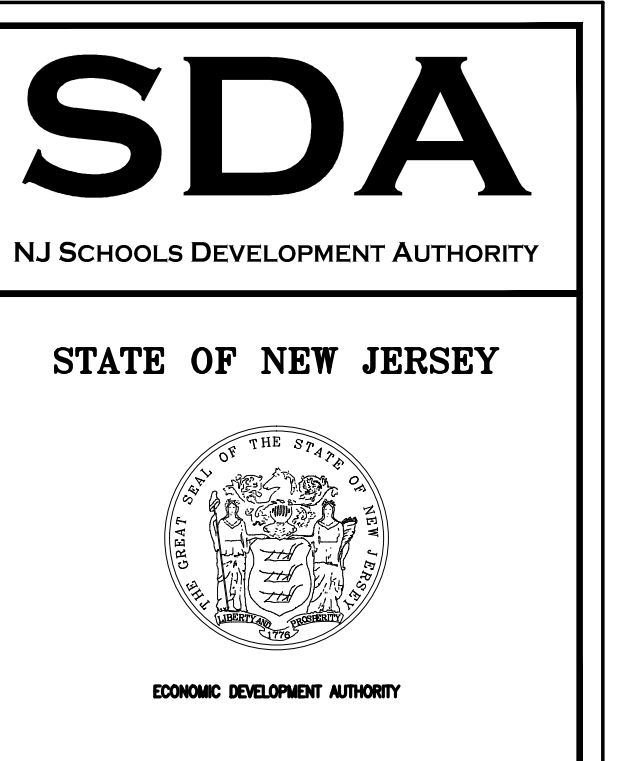
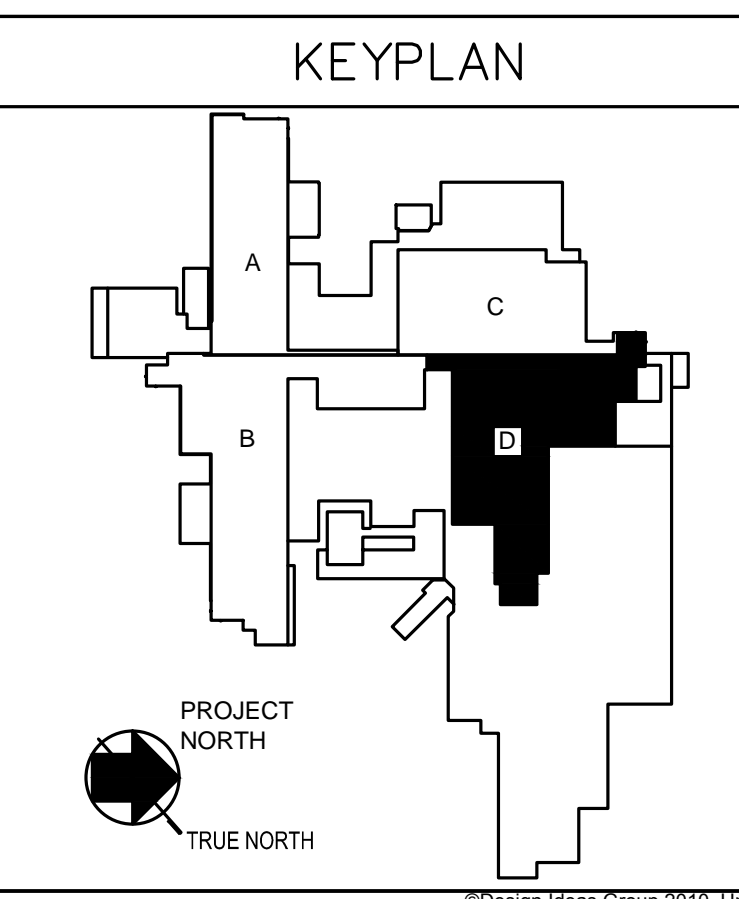
NOTE
ALL ELECTRIC FROM OVERHEAD IS TO BE NEOPRENE FOR DROPS TO 4'-0" A.F.F. UNLESS OTHERWISE NOTED. ALL OUTLETS TO BE WATERPROOF.

- GENERAL POWER NOTES:**
- REFER TO HVAC AND PLUMBING PLANS FOR EXACT LOCATION OF ELECTRICALLY OPERATED EQUIPMENT.
 - COORDINATE EXACT LOCATION OF ALL DEVICES WITH ARCHITECT'S FINAL FURNITURE LAYOUT.
 - ALL SINGLE OR DUPLEX 125 VOLT RECEPTACLES THAT ARE WITHIN A SIX FOOT RADIUS OF ANY SHAW NET AREA OR OUTDOOR AT ANY ELEVATION SHALL HAVE GROUND FAULT PROTECTION FOR PERSONNEL. THIS INCLUDES BUT IS NOT LIMITED TO LOCKER ROOMS, FOOD SERVICE, KITCHEN, LABS AND PREP ROOMS, REGARDLESS OF WHO SUPPLIES THE EQUIPMENT.
 - ALL 15 AND 20 AMP, 120 VOLT RECEPTACLES IN KITCHENS SHALL HAVE GFCI PROTECTION.
 - ALL CIRCUITS OVER 100 FEET SHALL USE NO. 10 CONDUCTORS U.G.O.
 - ALL CIRCUITS OVER 150 FEET SHALL USE NO. 8 CONDUCTORS U.G.O.
 - ALL CIRCUITS OVER 200 FEET SHALL USE NO. 6 CONDUCTORS U.G.O.
 - ELECTRICAL CONTRACTOR SHALL MOUNT ALL ELECTRICAL EQUIPMENT SUPPLIED BY THE CASEWORK MANUFACTURER AND PROVIDE ALL WIRING AS SPECIFIED.
 - ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL THE EMPTY CONDUIT OUTLET BOXES, SURFACE RACEWAY, CONDUIT SLEEVES WITH FIRE STOP FITTINGS AND CABLE TRAY FOR ALL THE DATA, TELEPHONE, INTERCOM, SECURITY, ACCESS CONTROL, CATV AND A/V SYSTEMS AS INDICATED ON THE TECHNOLOGY DRAWINGS. THE LOCATION OF THE ELECTRICAL OUTLETS (RECEPTACLES) SHALL BE COORDINATED WITH THE TECHNOLOGY DRAWINGS.
 - ALL BRANCH CIRCUIT (POWER AND LIGHTING) SHALL HAVE SEPARATE NEUTRALS FOR EACH CIRCUIT.
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTER "A" SHALL BE RUN TO PANEL "A".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTER "B" SHALL BE RUN TO PANEL "B".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "D" SHALL BE RUN TO PANEL "D".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "E" SHALL BE RUN TO PANEL "E".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "F" SHALL BE RUN TO PANEL "F".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "G" SHALL BE RUN TO PANEL "G".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "H" SHALL BE RUN TO PANEL "H".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "I" SHALL BE RUN TO PANEL "I".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "J" SHALL BE RUN TO PANEL "J".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "K" SHALL BE RUN TO PANEL "K".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "L" SHALL BE RUN TO PANEL "L".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "M" SHALL BE RUN TO PANEL "M".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "N" SHALL BE RUN TO PANEL "N".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "O" SHALL BE RUN TO PANEL "O".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "P" SHALL BE RUN TO PANEL "P".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "Q" SHALL BE RUN TO PANEL "Q".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "R" SHALL BE RUN TO PANEL "R".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "S" SHALL BE RUN TO PANEL "S".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "T" SHALL BE RUN TO PANEL "T".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "U" SHALL BE RUN TO PANEL "U".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "V" SHALL BE RUN TO PANEL "V".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "W" SHALL BE RUN TO PANEL "W".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "X" SHALL BE RUN TO PANEL "X".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "Y" SHALL BE RUN TO PANEL "Y".
 - ALL CIRCUIT NUMBERS INDICATED WITH THE LETTERS "Z" SHALL BE RUN TO PANEL "Z".

KEY NOTES (1,2,3)

- REFER TO TECHNOLOGY DRAWING E2.1.1 FOR RECEPTACLE MOUNTING DETAIL.

KEY NOTES ON EACH DRAWING ARE SPECIFIC TO THAT DRAWING ONLY.



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NEW JERSEY PROFESSIONAL ENGINEER
LIC. NO. 2462479400 PRD. NO. 1209081

IF THE DRAWING DOES NOT CONTAIN THE NEEDED SEAL OF THE PROFESSIONAL ENGINEER, IT IS NOT A VALID DOCUMENT AND NO LIABILITY IS ASSUMED FOR THE INFORMATION SHOWN.

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FOR:
NEW PHILLIPSBURG HIGH SCHOOL
DOE# 4100-N01-04-1000
SDA# NT-003-C02
TOWN OF PHILLIPSBURG
UPPER BELVIDERE ROAD LOT 41/BLOCK 2
PHILLIPSBURG, NEW JERSEY 08865

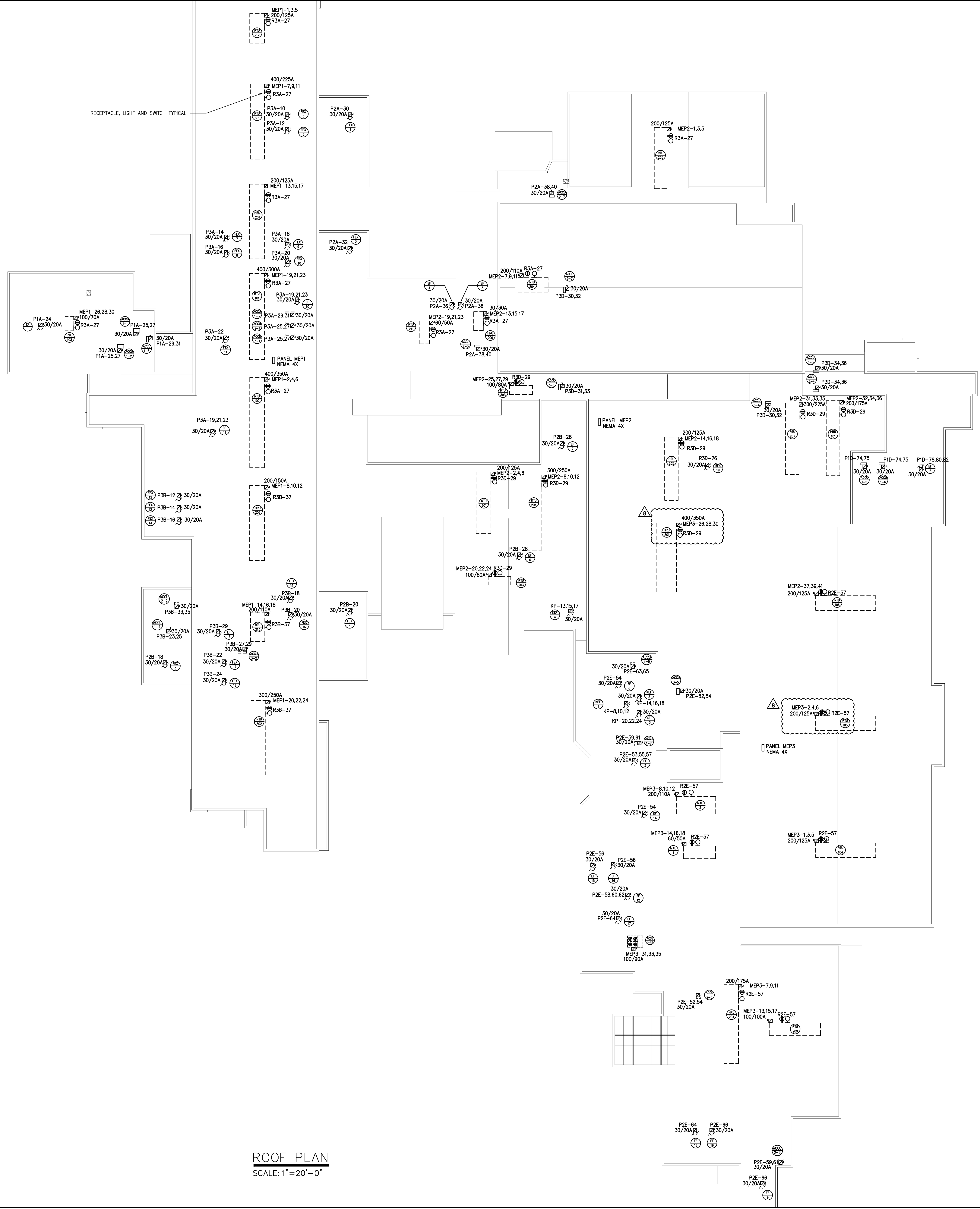
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NJICA COMMENTS	03-04-11
NJICA COMMENTS	08-12-10
NJICA COMMENTS	05-17-10
NJICA COMMENTS	02-12-10
DATE:	OCTOBER 13, 2009
SCALE:	1/8" = 1'-0"
DRAWING TITLE:	POWER THIRD FLOOR PARTIAL PLAN AREA "D"
DRAWING No:	E-1.3.4P
DRAWN BY:	RC

Drawing name: Z:\MEP\2012\08\13\01-081.dwg Design: philippsburg high school\12107 END.dwg Printed by: KANE, New J., 2012 - 12:37PM

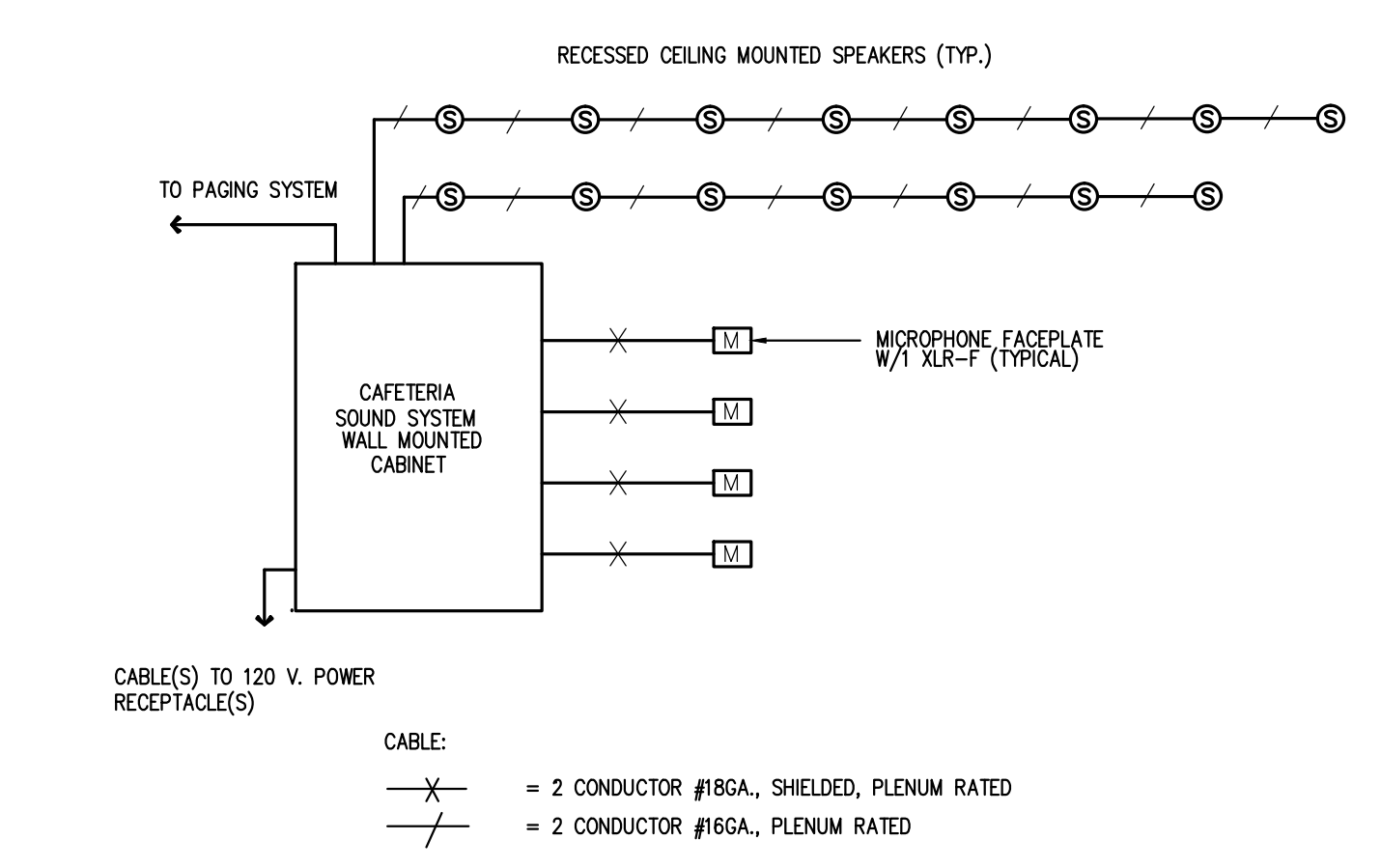
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NJSDA COMMENTS	02-12-10
DATE:	OCTOBER 13, 2009
SCALE:	AS NOTED

- GENERAL NOTES:**
- REFER TO HVAC AND PLUMBING PLANS FOR EXACT LOCATION OF ELECTRICALLY OPERATED EQUIPMENT.
 - ALL SINGLE OR DUPLEX 125 VOLT RECEPTACLES THAT ARE WITHIN A SIX FOOT RADIUS OF ANY SIGN, MEI AREA, OR OUTDOOR AT ANY ELEVATION SHALL HAVE GROUND FAULT PROTECTION FOR PERSONNEL. THIS INCLUDES BUT IS NOT LIMITED TO LOCKER ROOMS, KITCHEN AREAS, FOOD SERVICE AREAS, LABS AND PREP ROOMS, REGARDLESS OF WHO SUPPLIES THE EQUIPMENT.
 - NO CONDUITS SHALL BE ROUTED ON THE ROOF. ALL CONDUITS SHALL PENETRATE AT THE LOCATION OF THE DEVICES SERVED AND THEN RUN HORIZONTAL, BELOW THE ROOF.
 - SEE DRAWING E-001 FOR ELECTRICAL SYMBOLS, ABBREVIATIONS AND GENERAL NOTES.
 - SEE DRAWINGS E-205 AND E-206 FOR THE PANEL SCHEDULES.
 - SEE DRAWINGS E-205 AND E-206 FOR THE SINGLE LINE DIAGRAM.
 - THESE DRAWINGS ARE REPRESENTATIVE OF THE SCOPE AND NATURE OF WORK. IT IS NOT GUARANTEED TO REPRESENT EXACT FIELD CONDITIONS AND DIMENSIONS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY FIELD DIMENSIONS AND TO COORDINATE THE WORK WITH THAT OF THE CONSTRUCTION MANAGER.
 - CONTRACTOR SHALL COORDINATE EXACT LOCATIONS OF ALL ELECTRICAL EQUIPMENT WITH THE CONSTRUCTION MANAGER AND ARCHITECT IN WRITING. IF EQUIPMENT HAS TO BE RELOCATED AND THE EQUIPMENT WAS INSTALLED WITHOUT PRIOR APPROVAL, THE CONTRACTOR SHALL RELOCATE OR REPLACE AT THEIR OWN EXPENSE.

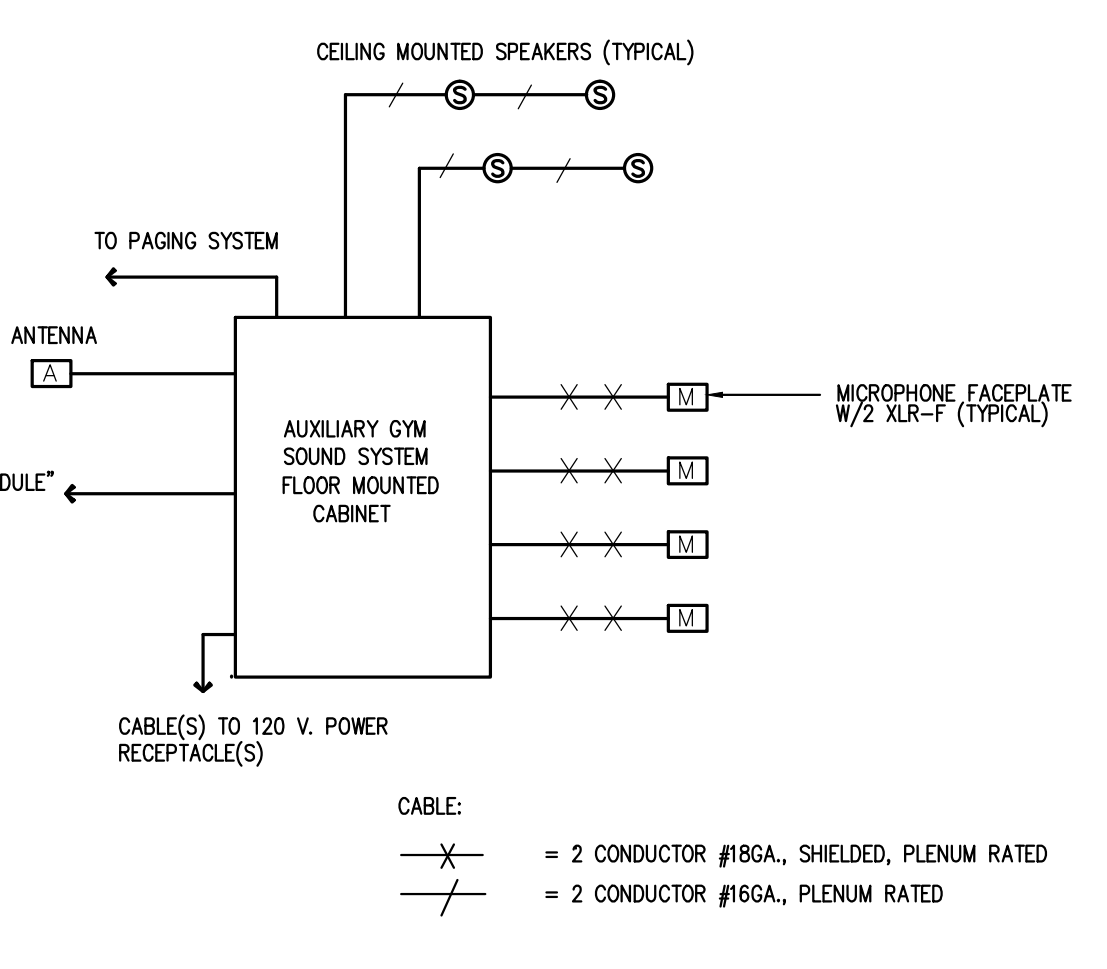
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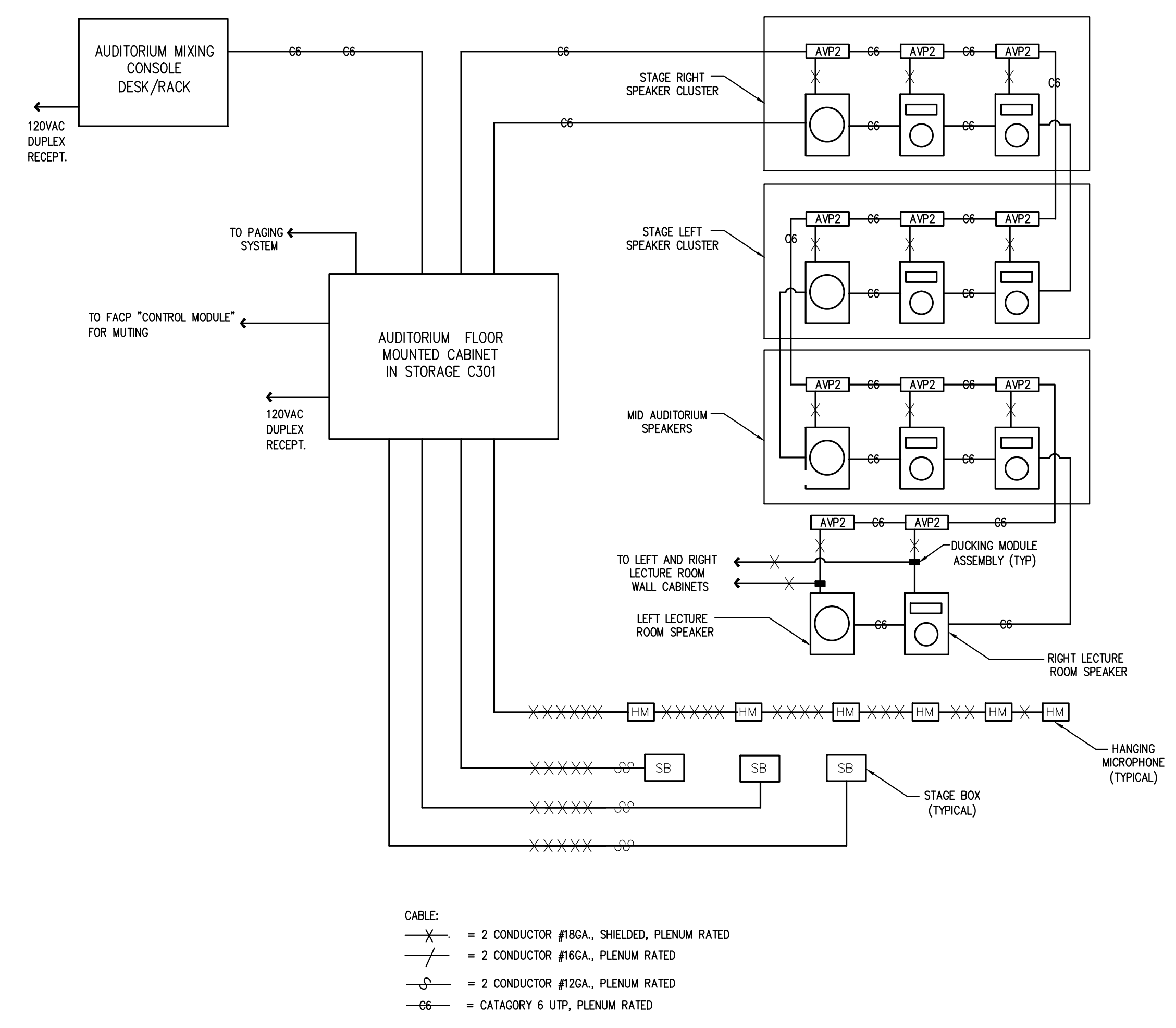
ROOF PLAN
SCALE: 1" = 20'-0"



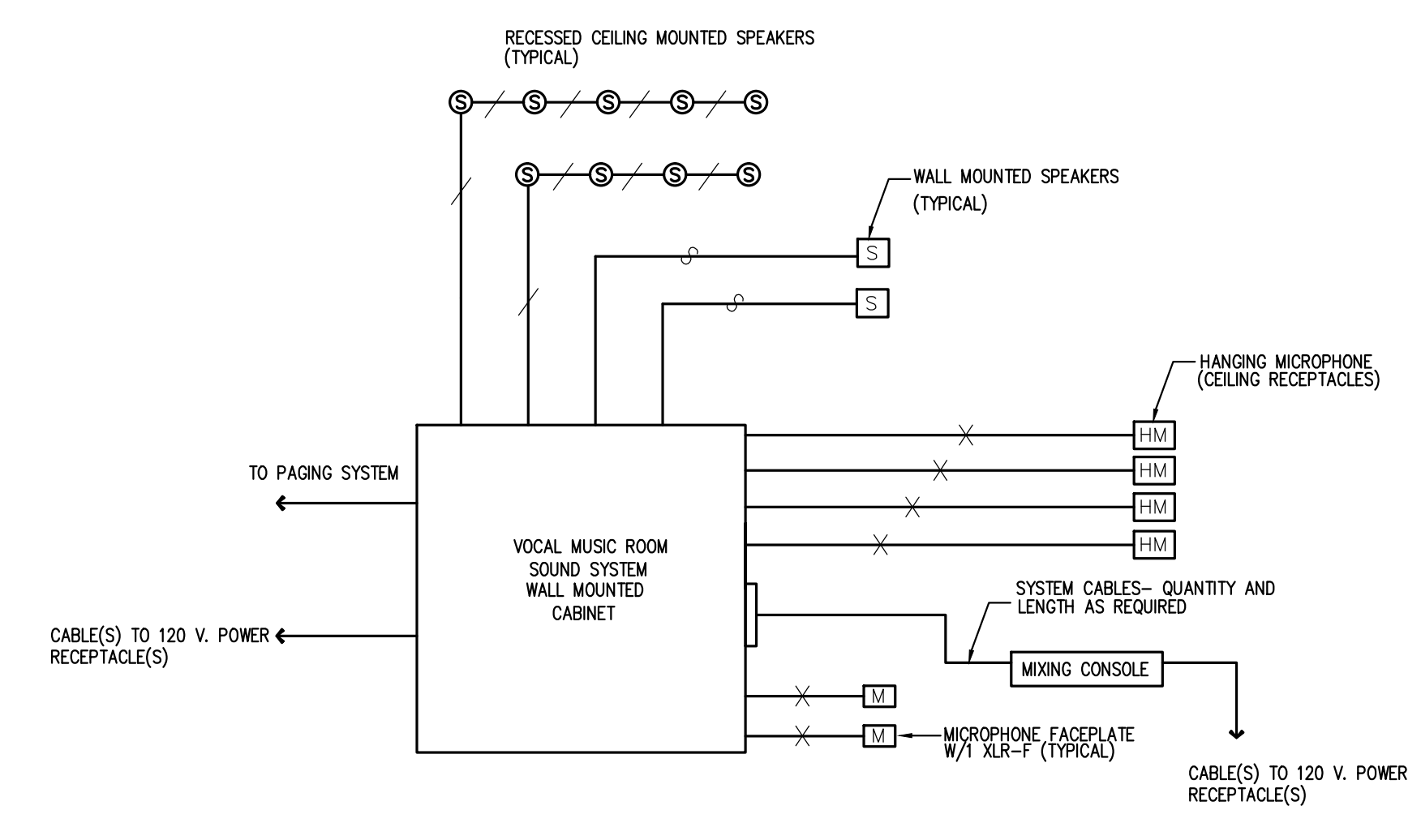
CAFETERIA D207 SOUND SYSTEM RISER DIA.
NOT TO SCALE



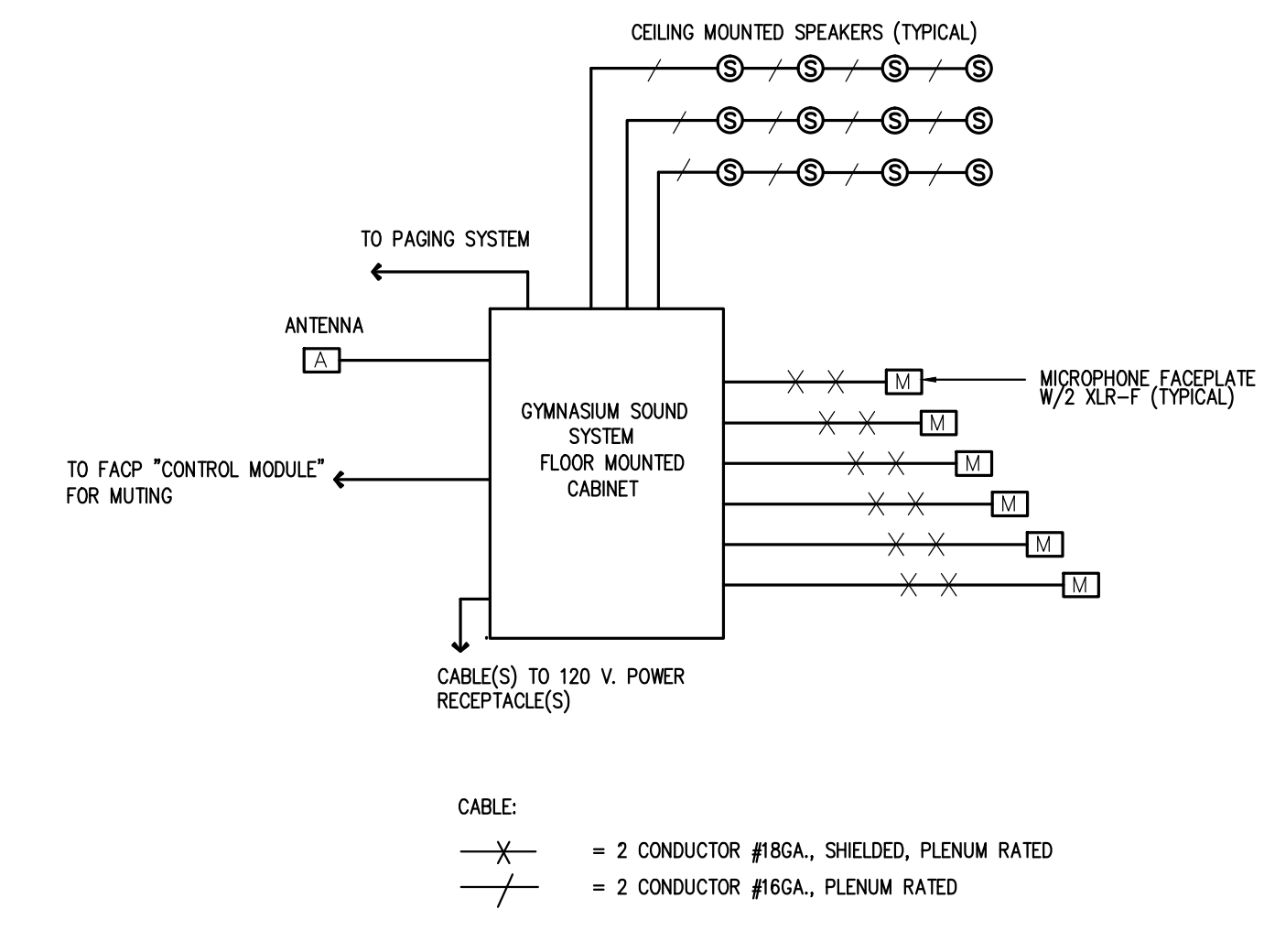
AUXILIARY GYM F213 SOUND SYSTEM RISER DIAGRAM
NOT TO SCALE



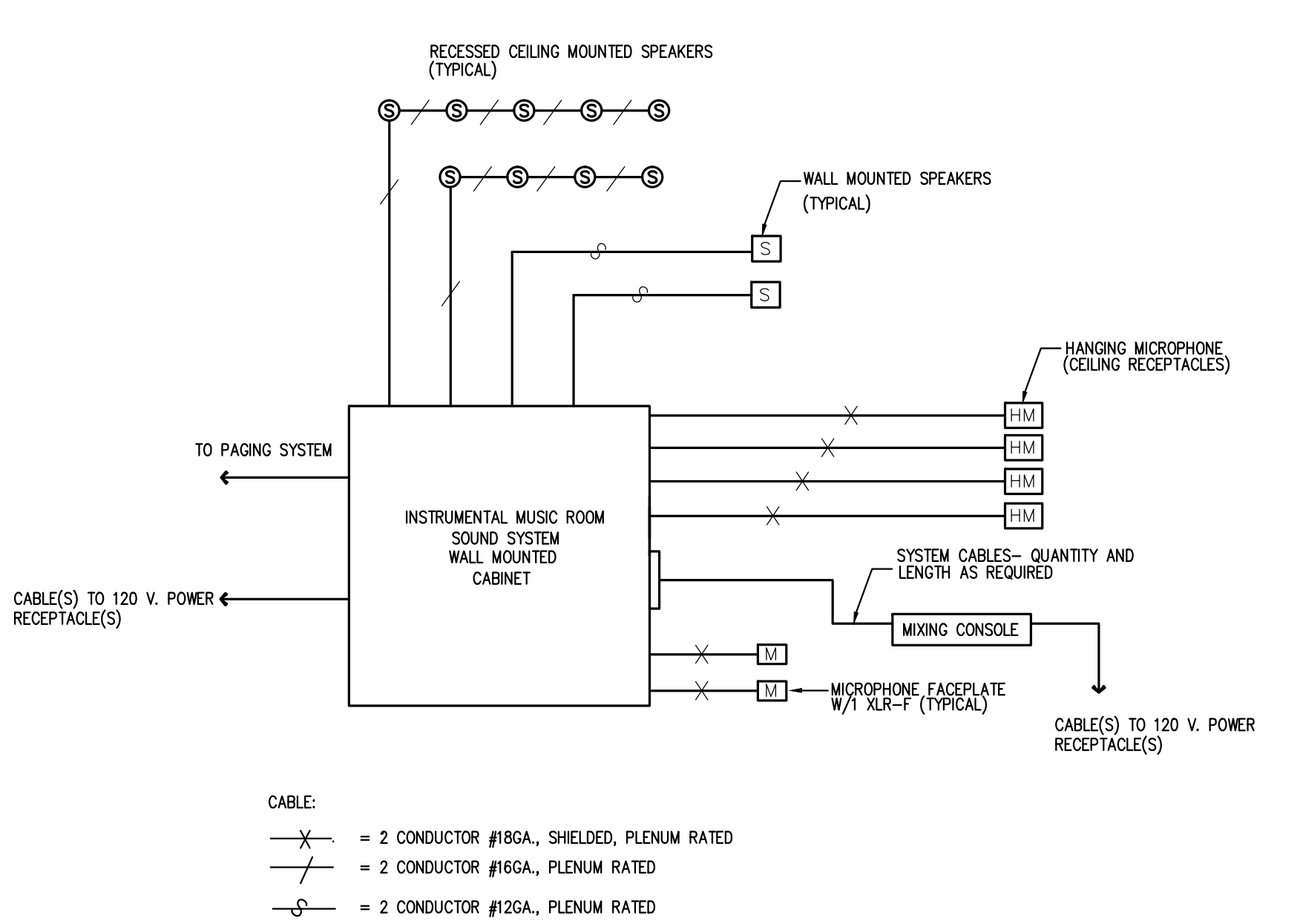
AUDITORIUM C214 SOUND RISER DIAGRAM
NOT TO SCALE



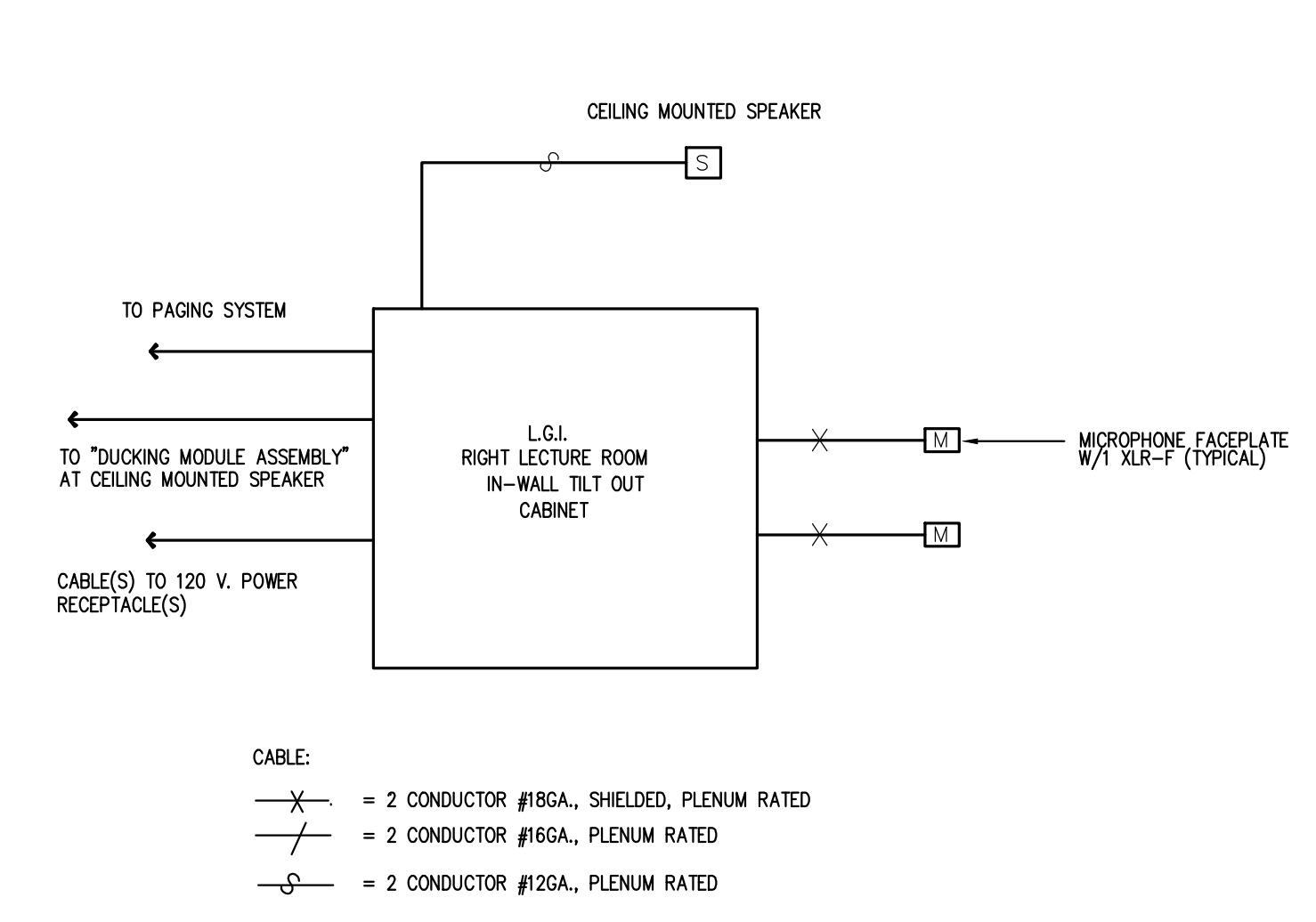
VOCAL MUSIC C205 SOUND SYSTEM
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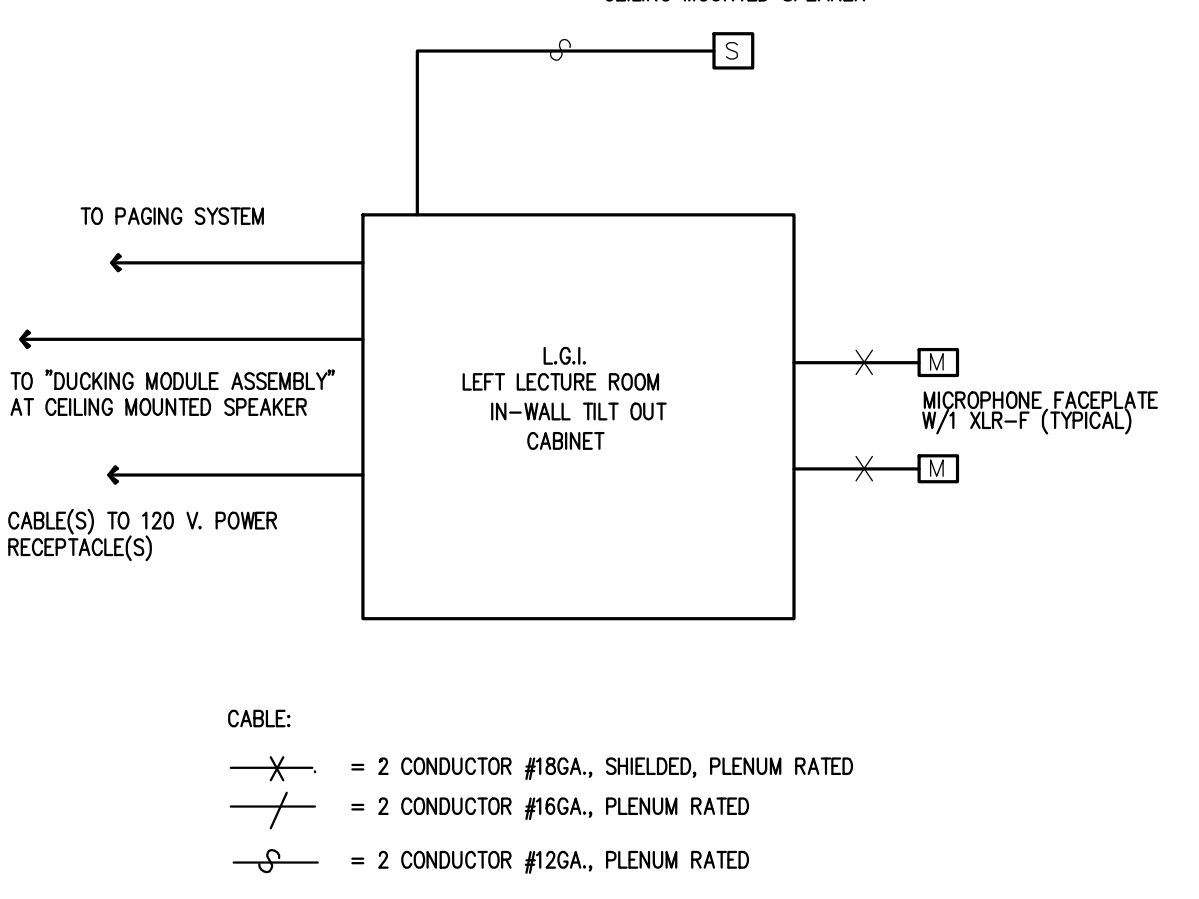
GYM E101 SOUND SYSTEM RISER DIAGRAM
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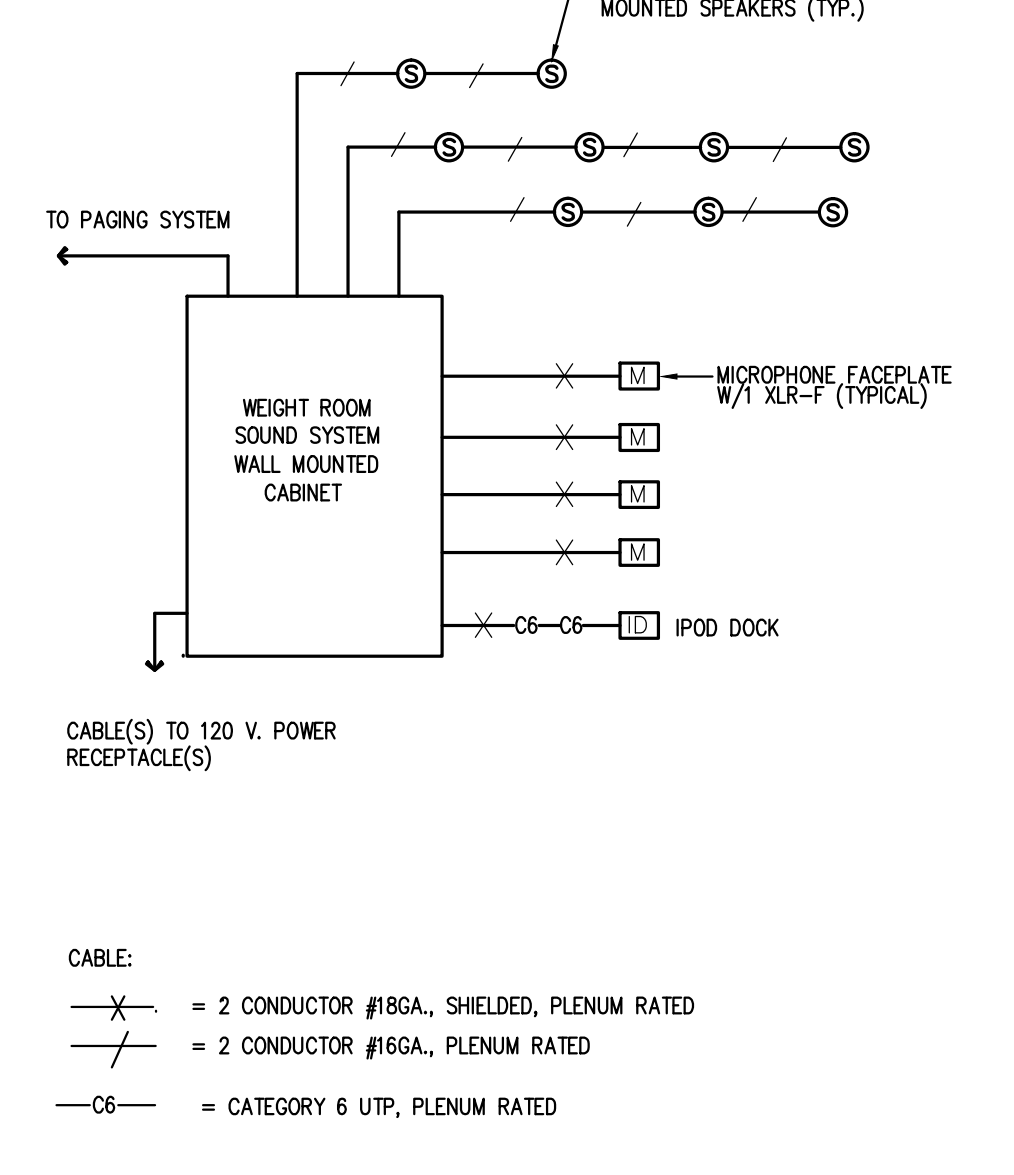
INSTRUMENTAL MUSIC ROOM C212 SOUND SYSTEM
NOT TO SCALE



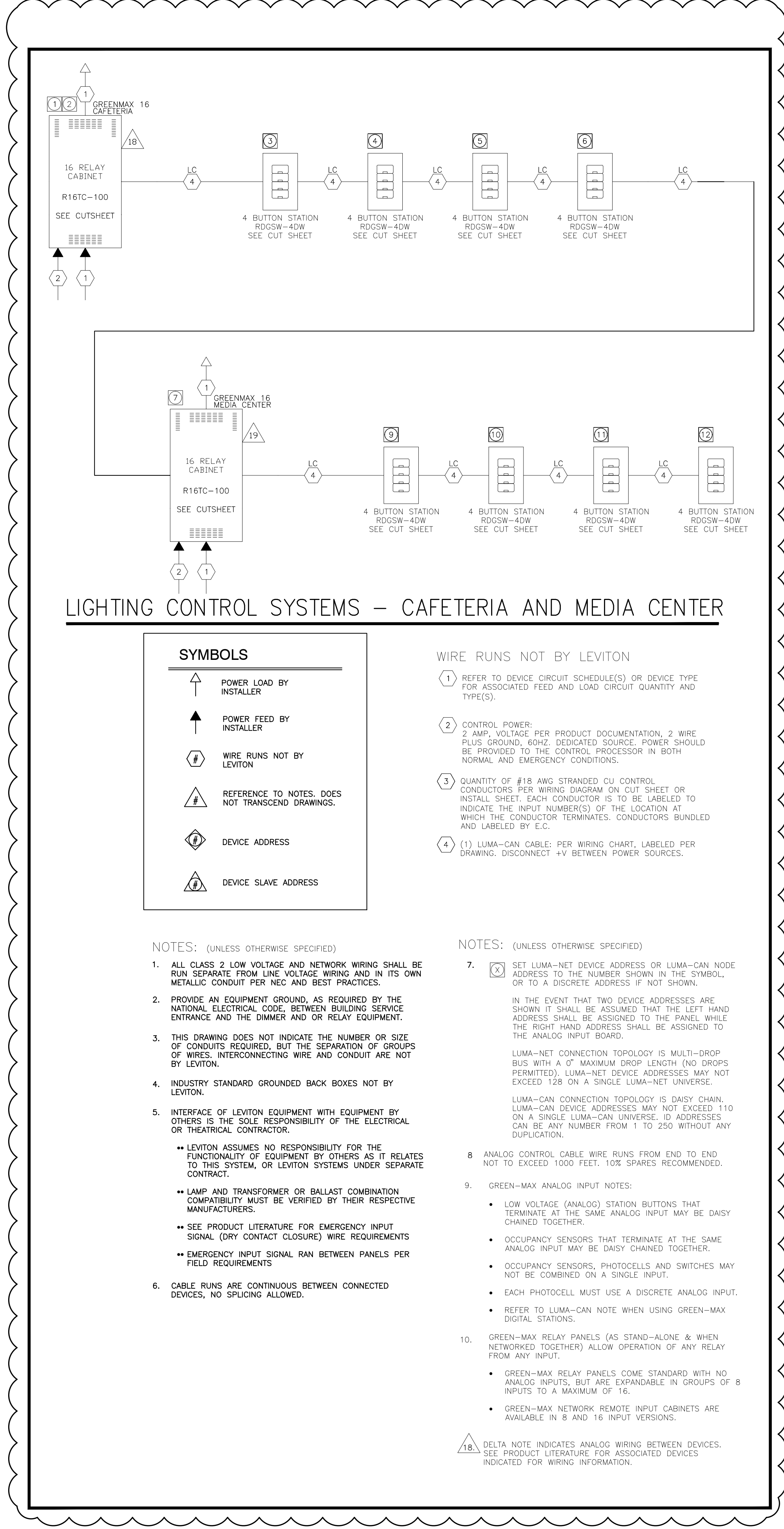
L.G.I. C201 SOUND SYSTEM RISER DIAGRAM
NOT TO SCALE



L.G.I. C202 SOUND SYSTEM RISER DIAGRAM
NOT TO SCALE



WEIGHT LIFTING FITNESS ROOM D211 SOUND SYSTEM
NOT TO SCALE



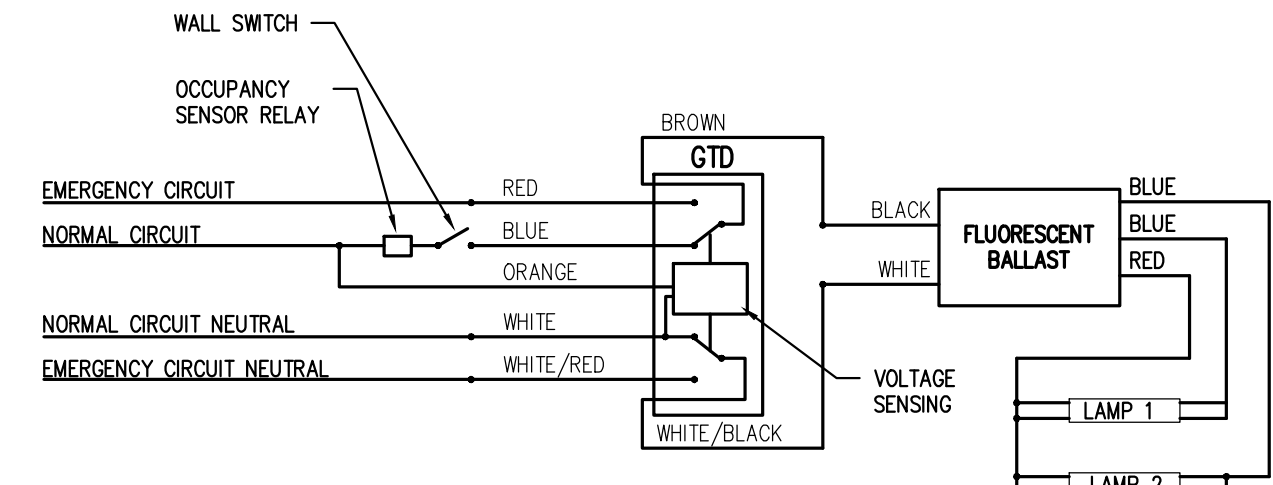
LIGHTING CONTROL SYSTEMS - CAFETERIA AND MEDIA CENTER

SYMBOLS

- ▲ POWER LOAD BY INSTALLER
- ▲ POWER FEED BY INSTALLER
- Ⓢ WIRE RUNS NOT BY LEVITON
- ⚠ REFERENCE TO NOTES, DOES NOT TRANSCEND DRAWINGS.
- Ⓜ DEVICE ADDRESS
- Ⓜ DEVICE SLAVE ADDRESS

- WIRE RUNS NOT BY LEVITON**
- REFER TO DEVICE CIRCUIT SCHEDULE(S) OR DEVICE TYPE FOR ASSOCIATED FEED AND LOAD CIRCUIT QUANTITY AND TYPE(S).
 - CONTROL POWER: 2 AMP, VOLTAGE PER PRODUCT DOCUMENTATION, 2 WIRE PAIR, GROUND, 60HZ, DEDICATED SOURCE, POWER SHOULD BE PROVIDED TO THE CONTROL PROCESSOR IN BOTH NORMAL AND EMERGENCY CONDITIONS.
 - QUANTITY OF #18 AWG STRANDED CU CONTROL CONDUCTORS PER WIRING DIAGRAM ON CUT SHEET OR INSTALL SHEET. EACH CONDUCTOR IS TO BE LABELED TO INDICATE THE INPUT NUMBER(S) OF THE LOCATION AT WHICH THE CONDUCTOR TERMINATES, CONDUCTORS BUNDLED AND LABELED BY E.C.
 - (1) LUMA-CAN CABLE: PER WIRING CHART, LABELED PER DRAWING, DISCONNECT +V BETWEEN POWER SOURCES.

- NOTES: (UNLESS OTHERWISE SPECIFIED)**
- ALL CLASS 2 LOW VOLTAGE AND NETWORK WIRING SHALL BE RUN SEPARATE FROM LINE VOLTAGE WIRING AND IN ITS OWN METALLIC CONDUIT PER NEC AND BEST PRACTICES.
 - PROVIDE AN EQUIPMENT GROUND, AS REQUIRED BY THE NATIONAL ELECTRICAL CODE, BETWEEN BUILDING SERVICE ENTRANCE AND THE DIMMER AND/OR RELAY EQUIPMENT.
 - THIS DRAWING DOES NOT INDICATE THE NUMBER OR SIZE OF CONDUITS REQUIRED, BUT THE SEPARATION OF GROUPS OF WIRES, INTERCONNECTING WIRE AND CONDUIT ARE NOT BY LEVITON.
 - INDUSTRY STANDARD GROUNDED BACK BOXES NOT BY LEVITON.
 - INTERFACE OF LEVITON EQUIPMENT WITH EQUIPMENT BY OTHERS IS THE SOLE RESPONSIBILITY OF THE ELECTRICAL OR THEATRICAL CONTRACTOR.
 - LEVITON ASSUMES NO RESPONSIBILITY FOR THE FUNCTIONALITY OF EQUIPMENT BY OTHERS AS IT RELATES TO THIS SYSTEM, OR LEVITON SYSTEMS UNDER SEPARATE CONTRACT.
 - LAMP AND TRANSFORMER OR BALLAST COMBINATION COMPATIBILITY MUST BE VERIFIED BY THEIR RESPECTIVE MANUFACTURERS.
 - SEE PRODUCT LITERATURE FOR EMERGENCY INPUT SIGNAL (DRY CONTACT CLOSURE) WIRE REQUIREMENTS.
 - EMERGENCY INPUT SIGNAL RAN BETWEEN PANELS PER FIELD REQUIREMENTS.
 - CABLE RUNS ARE CONTINUOUS BETWEEN CONNECTED DEVICES, NO SPLICING ALLOWED.
 - SET LUMA-NET DEVICE ADDRESS OR LUMA-CAN NODE ADDRESS TO THE NUMBER SHOWN IN THE SYMBOL, OR TO A DISCRETE ADDRESS IF NOT SHOWN.
 - IN THE EVENT THAT TWO DEVICE ADDRESSES ARE SHOWN IT SHALL BE ASSUMED THAT THE LEFT HAND ADDRESS SHALL BE ASSIGNED TO THE PANEL, WHILE THE RIGHT HAND ADDRESS SHALL BE ASSIGNED TO THE ANALOG INPUT BOARD.
 - LUMA-NET CONNECTION TOPOLOGY IS MULTI-DROPS BUS WITH A 0' MAXIMUM DROP LENGTH (NO GROUPS PERMITTED). LUMA-NET DEVICE ADDRESSES MAY NOT EXCEED 128 ON A SINGLE LUMA-NET UNIVERSE.
 - LUMA-CAN CONNECTION TOPOLOGY IS DANDY CHAIN. LUMA-CAN DEVICE ADDRESSES MAY NOT EXCEED 110 ON A SINGLE LUMA-CAN UNIVERSE. ID ADDRESSES CAN BE ANY NUMBER FROM 1 TO 250 WITHOUT ANY DUPLICATION.
 - ANALOG CONTROL CABLE WIRE RUNS FROM END TO END NOT TO EXCEED 1000 FEET, 10% SPARES RECOMMENDED.
 - GREEN-MAX ANALOG INPUT NOTES:
 - LOW VOLTAGE (ANALOG) STATION BUTTONS THAT TERMINATE AT THE SAME ANALOG INPUT MAY BE BAISSY CHAINED TOGETHER.
 - OCCUPANCY SENSORS THAT TERMINATE AT THE SAME ANALOG INPUT MAY BE BAISSY CHAINED TOGETHER.
 - OCCUPANCY SENSORS, PHOTOCELLS AND SWITCHES MAY NOT BE COMBINED ON A SINGLE INPUT.
 - EACH PHOTOCELL MUST USE A DISCRETE ANALOG INPUT.
 - REFER TO LUMA-CAN NOTE WHEN USING GREEN-MAX DIGITAL STATIONS.
 - GREEN-MAX RELAY PANELS (AS STAND-ALONE & WHEN NETWORKED TOGETHER) ALLOW OPERATION OF ANY RELAY FROM ANY INPUT.
 - GREEN-MAX RELAY PANELS COME STANDARD WITH NO ANALOG INPUTS, BUT ARE EXPANDABLE IN GROUPS OF 8 INPUTS TO A MAXIMUM OF 16.
 - GREEN-MAX NETWORK REMOTE INPUT CABINETS ARE AVAILABLE IN 8 AND 16 INPUT VERSIONS.
 - DELTA NOTE INDICATES ANALOG WIRING BETWEEN DEVICES. SEE PRODUCT LITERATURE FOR ASSOCIATED DEVICES INDICATED FOR WIRING INFORMATION.



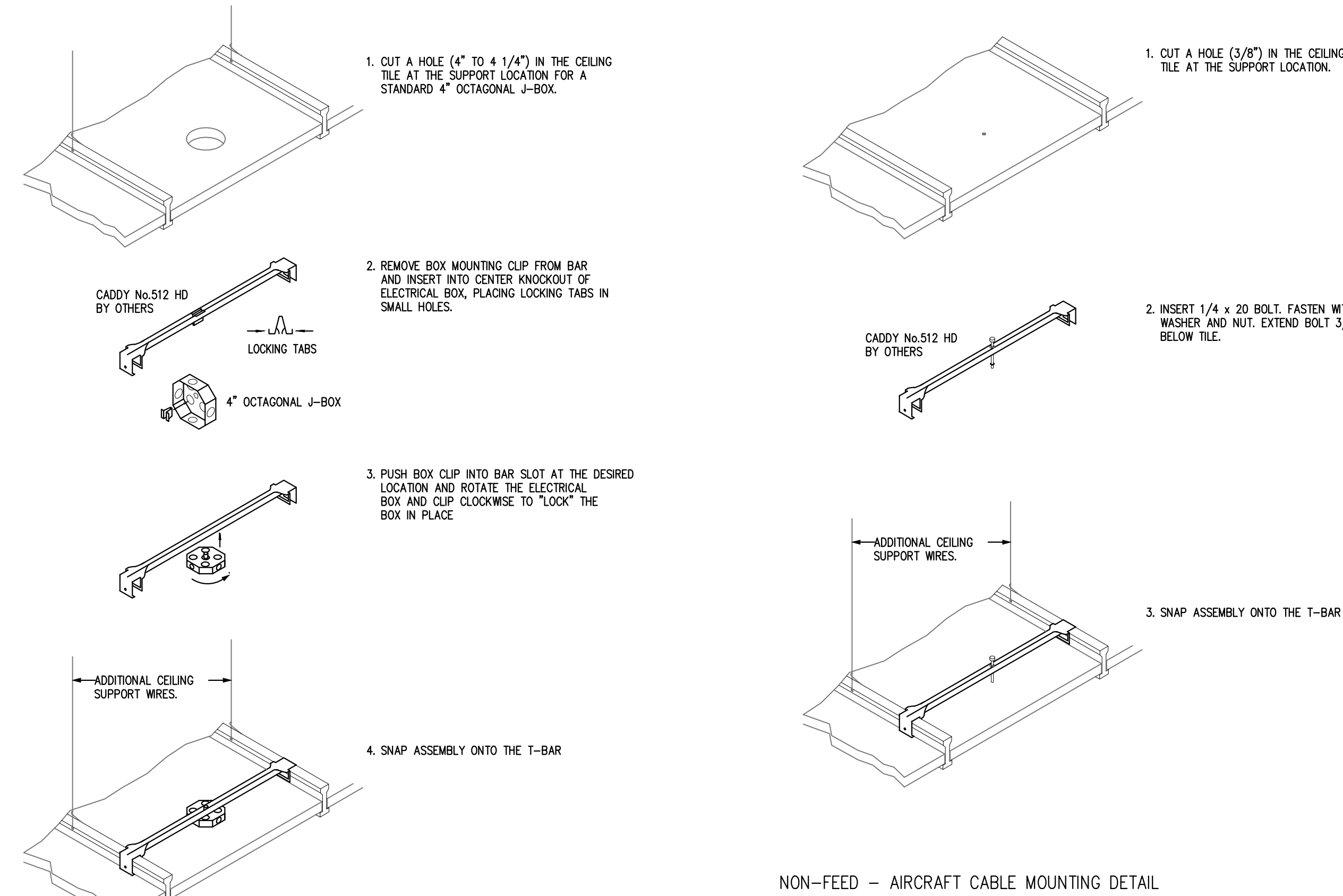
TYPICAL FOR EMERGENCY LIGHTS INDICATED AS =

EMERGENCY LIGHTING WIRING DETAIL

NOT TO SCALE

NOTE:

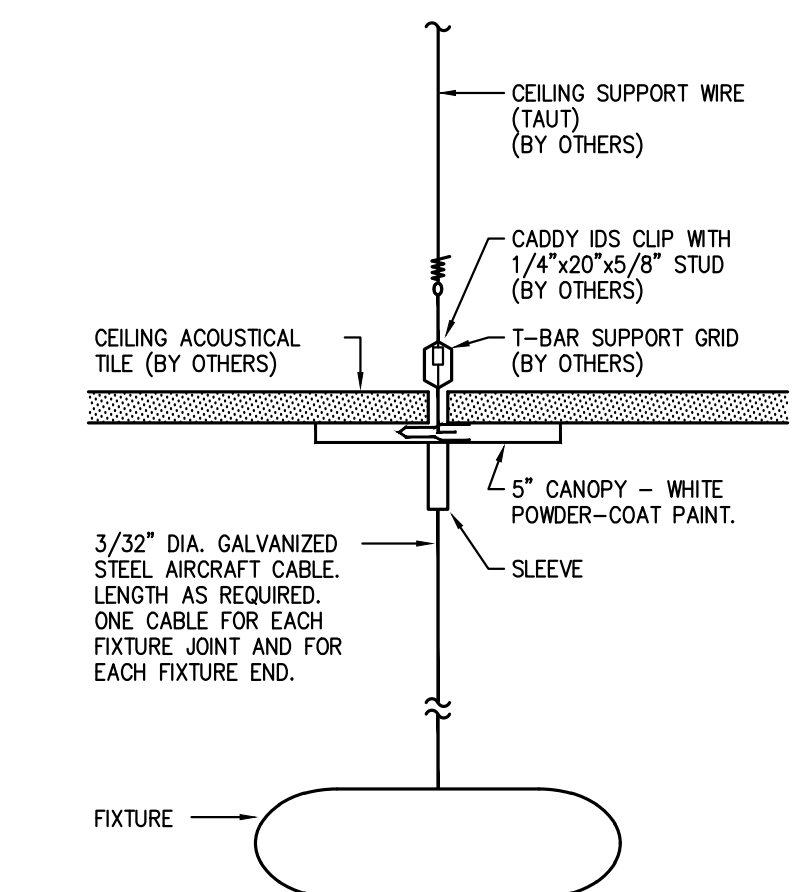
1. FURNISH AND INSTALL A BOONE GENERATOR TRANSFER DEVICE (GTD) IN EMERGENCY LIGHTS AS DEPICED ABOVE.
2. IN THREE LAMP FIXTURES WITH INNER/OUTER SWITCHING THE GTD SHALL BE CONNECTED TO THE CENTER LAMP BALLAST.



FEED - AIRCRAFT CABLE MOUNTING DETAIL

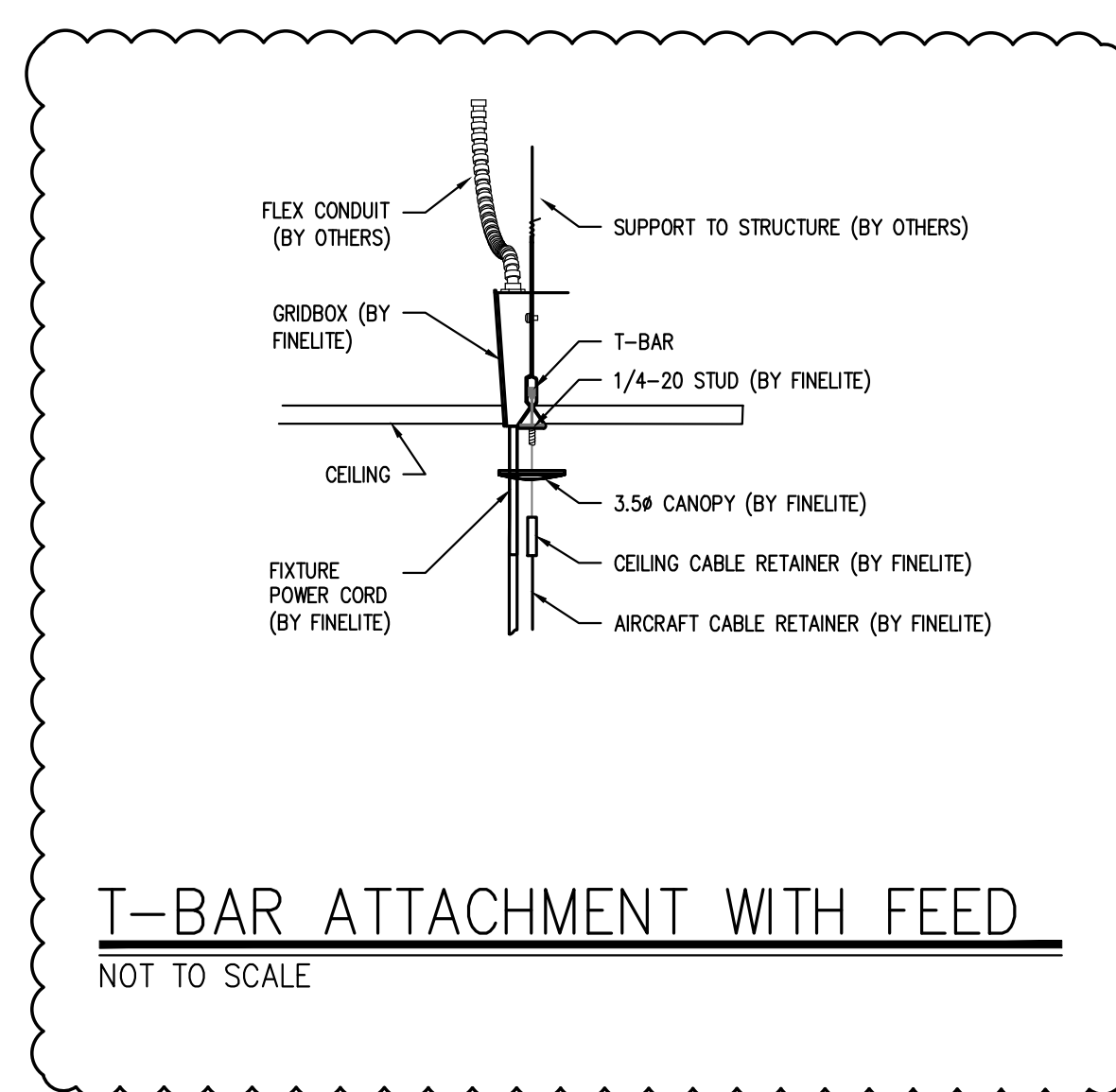
SUGGESTED DETAIL FOR AIRCRAFT CABLE SUSPENDED FIXTURES

NOT TO SCALE



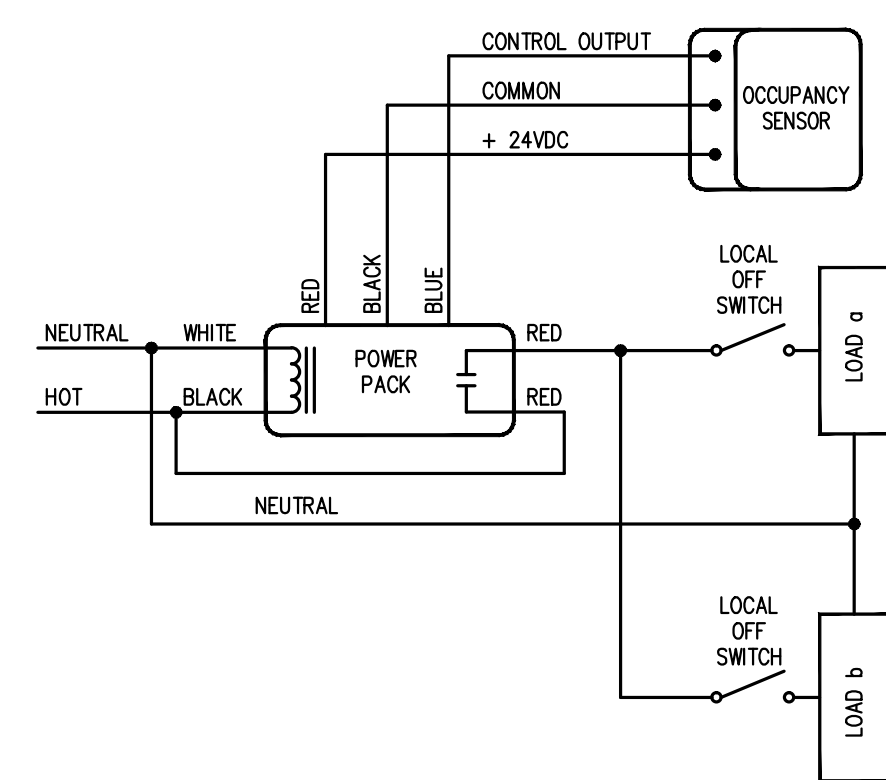
T-BAR ATTACHMENT WITHOUT FEED

NOT TO SCALE



T-BAR ATTACHMENT WITH FEED

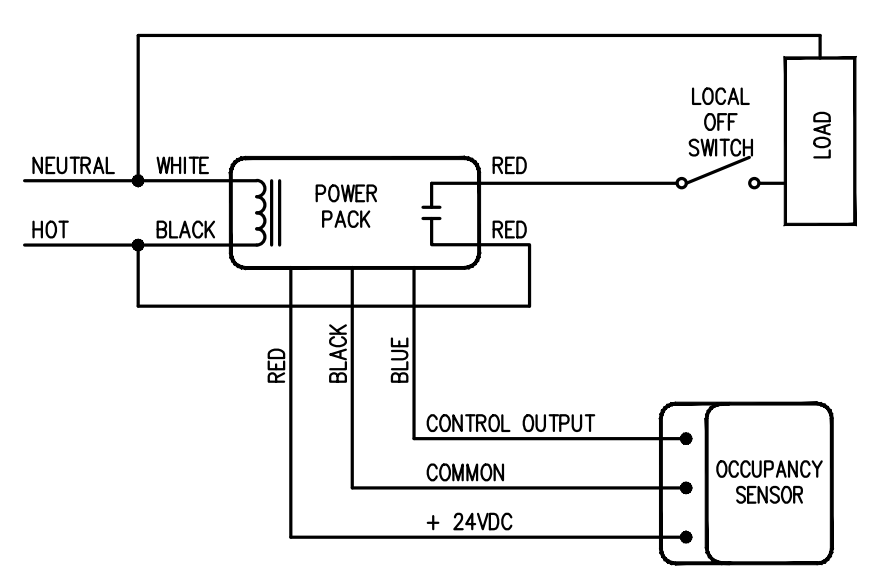
NOT TO SCALE



CEILING/CORNER MOUNTED OCCUPANCY SENSOR WIRING DIAGRAM

NOT TO SCALE

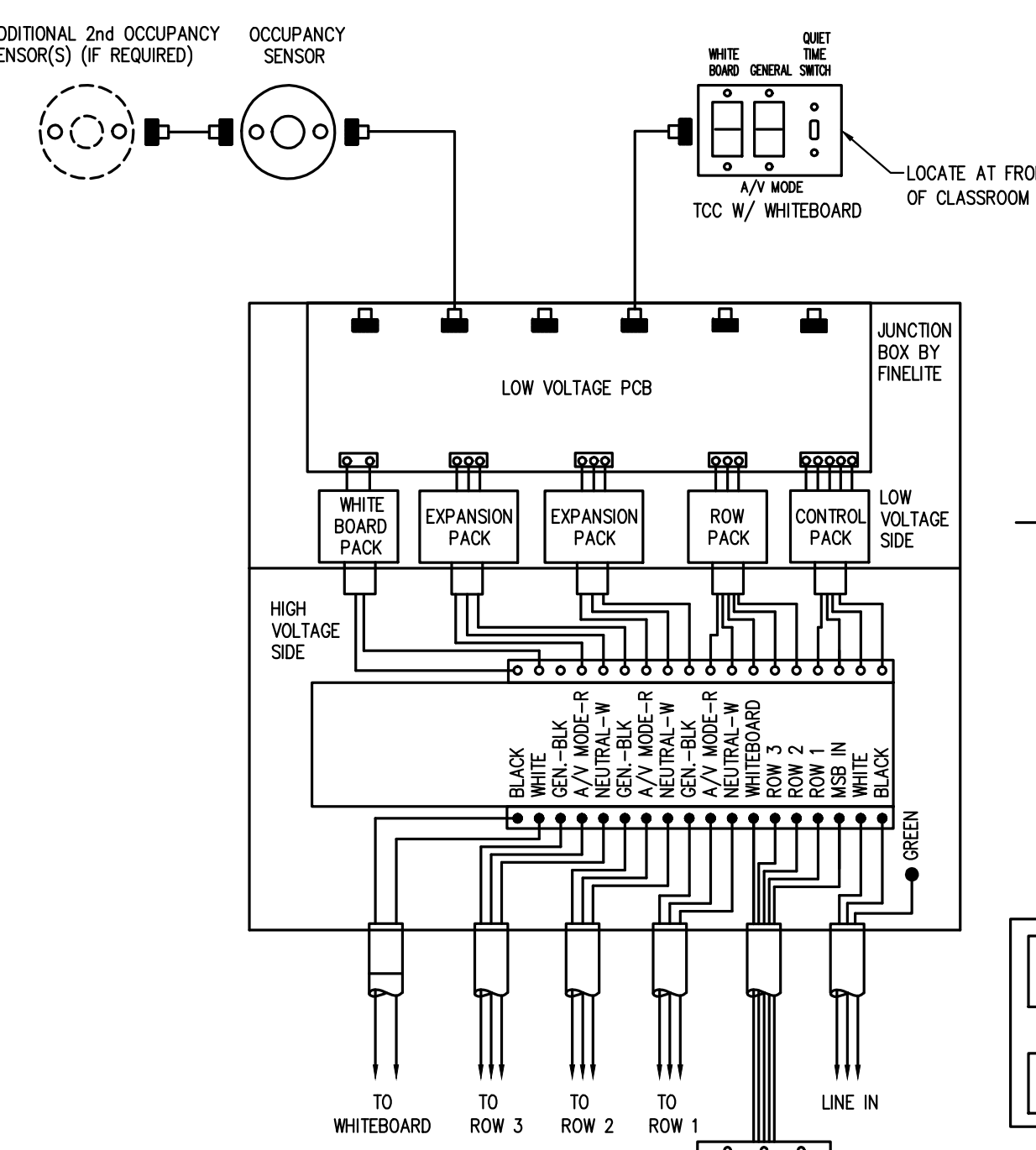
DUAL SWITCHING



CEILING/CORNER MOUNTED OCCUPANCY SENSOR WIRING DIAGRAM

NOT TO SCALE

MULTIPLE SENSORS PER ROOM



STANDARD 2 OR 3 ROW ICLS WIRING DETAIL

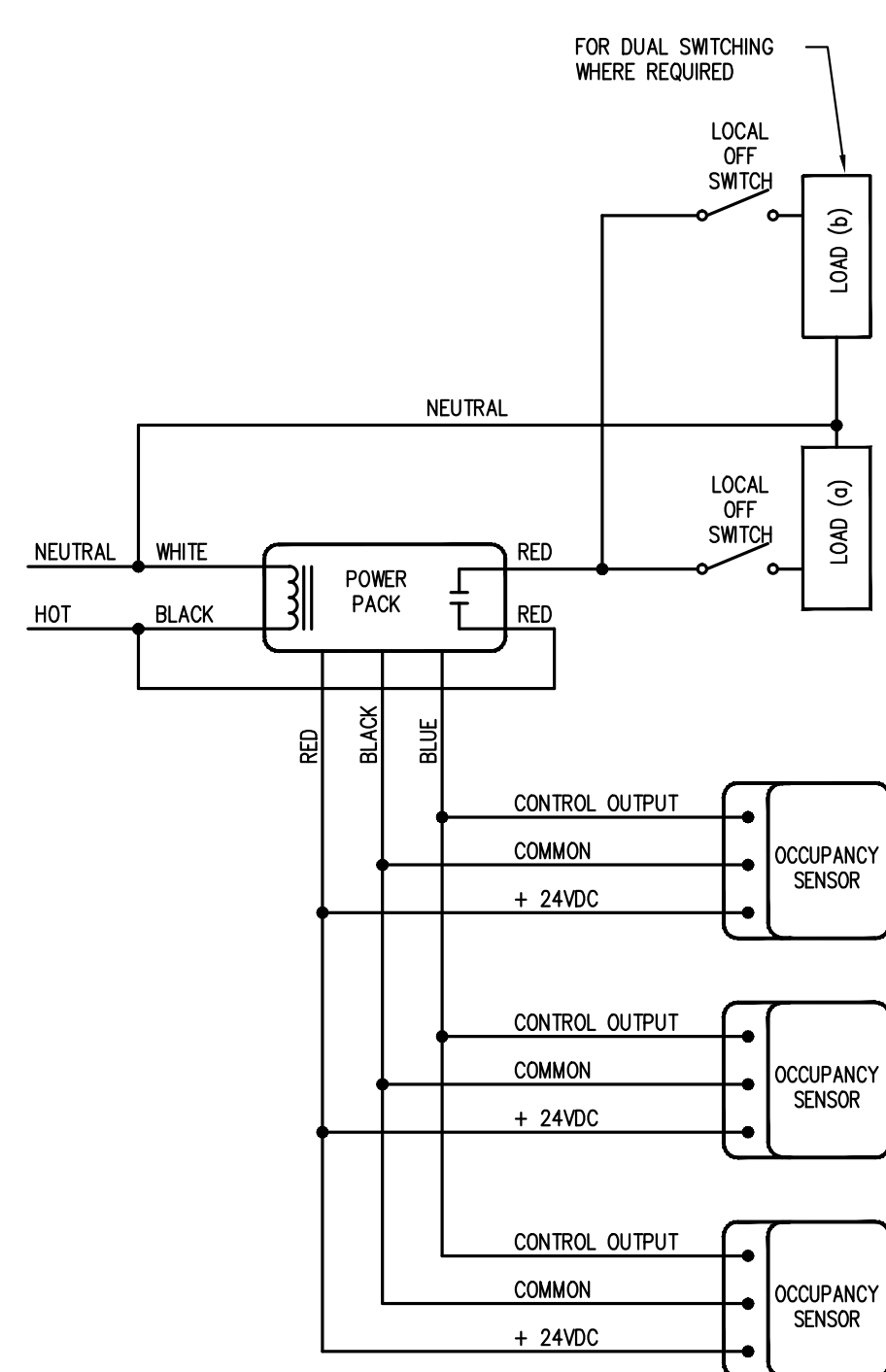
NOT TO SCALE

1. TYPICAL FOR ALL INSTRUCTIONAL SPACES WITH TYPE 'A' AND 'B' LIGHT FIXTURES
2. FURNISH AND INSTALL BOONE GENERATOR TRANSFER DEVICES (GTD) IN LIGHT FIXTURE LOCATION AND ROTATE THE ELECTRICAL BOX AND CLIP CLOCKWISE TO "LOCK" THE BOX IN PLACE.
3. IN ROOMS WHERE THERE ARE THREE ROWS OF LIGHTS THERE ARE THREE SWITCHES IN THE MASTER SWITCH BANK, IN ROOMS WHERE THERE ARE TWO ROWS OF LIGHTS THERE ARE TWO SWITCHES IN THE MASTER SWITCH BANK.

8

AUTOMATIC WALL SWITCH WIRING DIAGRAM

NOT TO SCALE

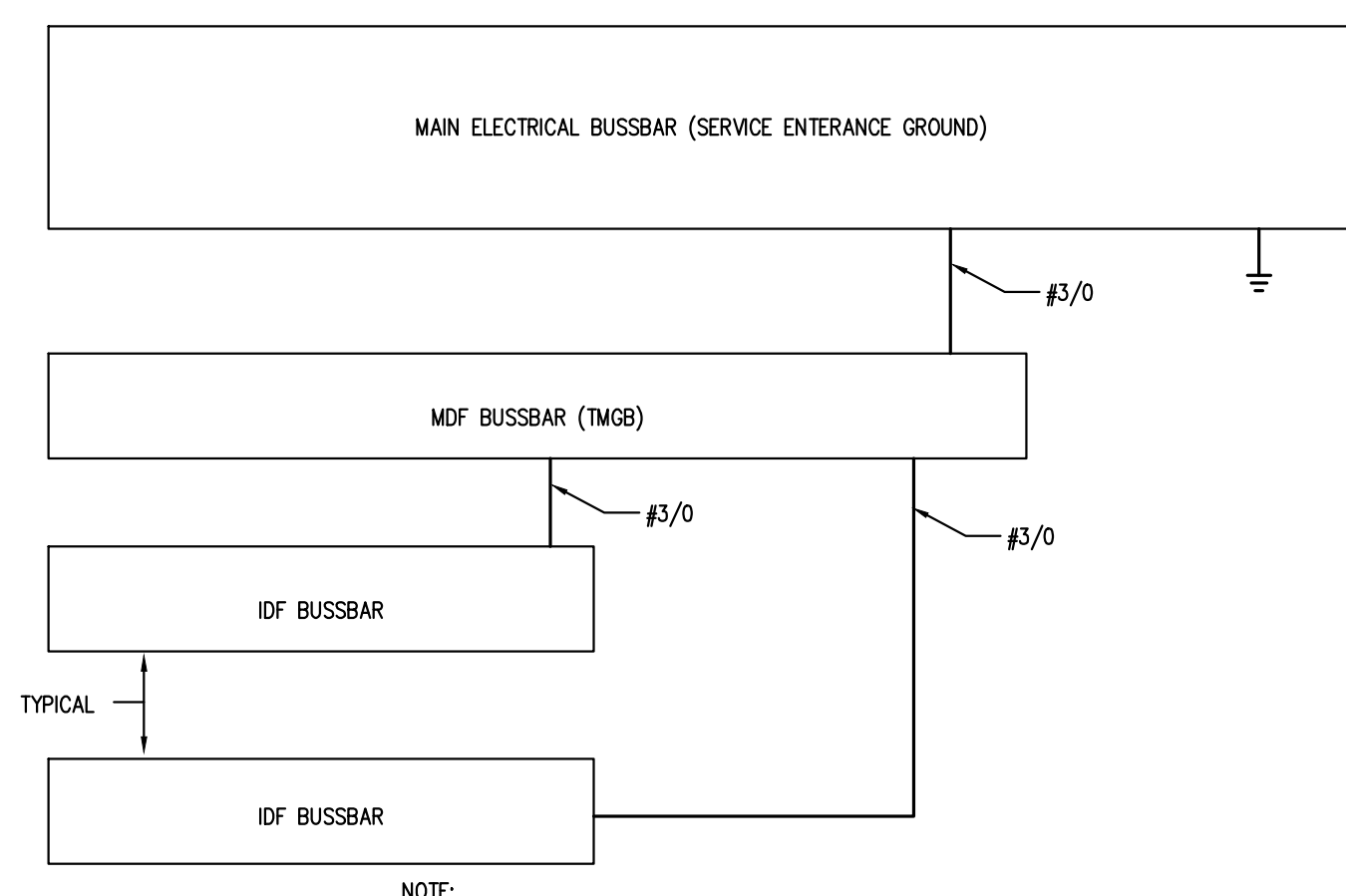


CEILING/CORNER MOUNTED OCCUPANCY SENSOR WIRING DIAGRAM

NOT TO SCALE

MULTIPLE SENSORS PER ROOM

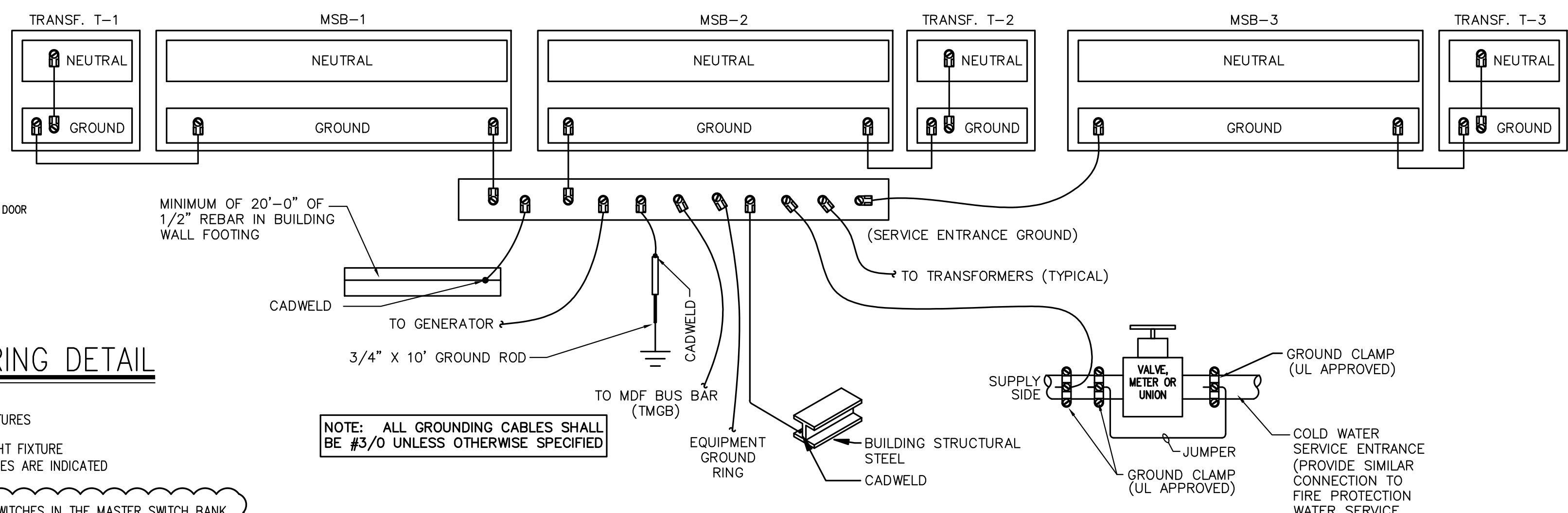
NOTE:
1. MAXIMUM NUMBER OF SENSORS PER POWER PACK DEPEND ON THE MODEL OF SENSOR. REFER TO MANUFACTURERS RECOMMENDATIONS.



GROUNDING AND BONDING DETAIL - MDF AND IDF ROOMS

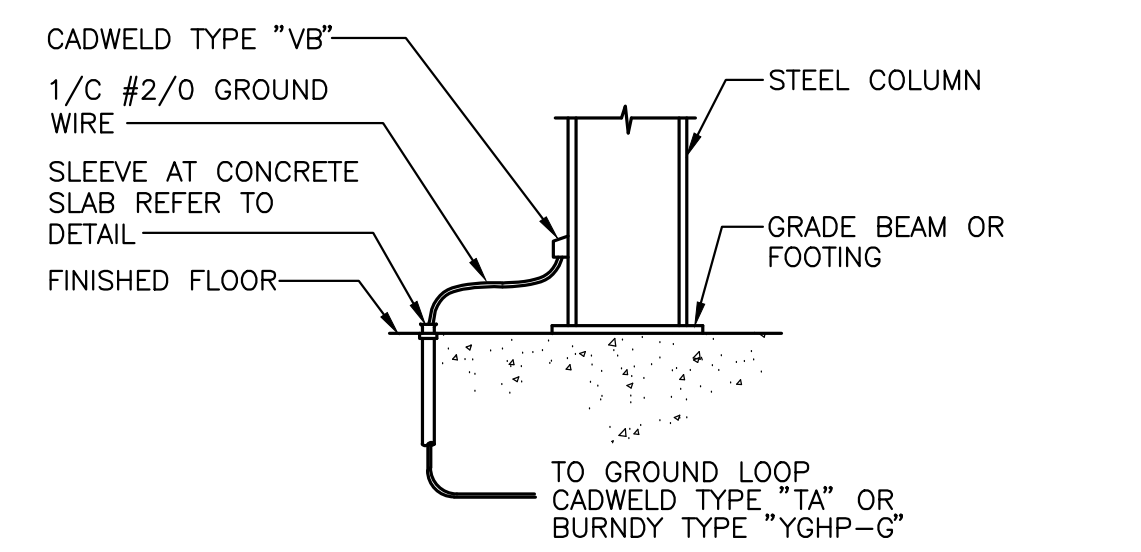
NOT TO SCALE

- LEGEND
- PLUG AND PLAY WIRING
 - WIRE NUT CONNECTION
 - THREE ROW CLASSROOMS ONLY



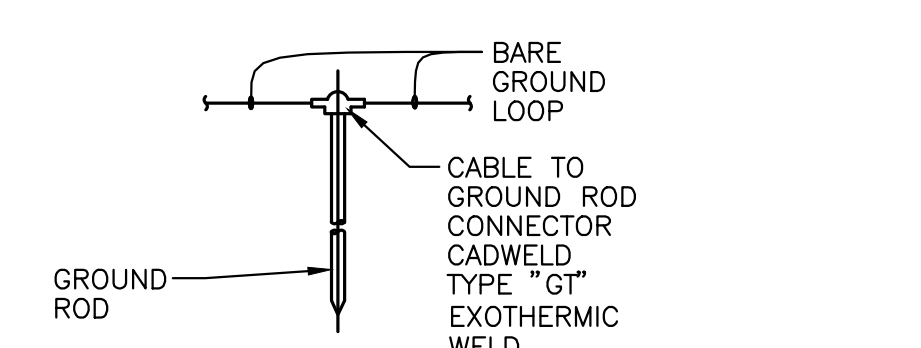
SCHOOL GROUNDING ELECTRODE SYSTEM

NOT TO SCALE



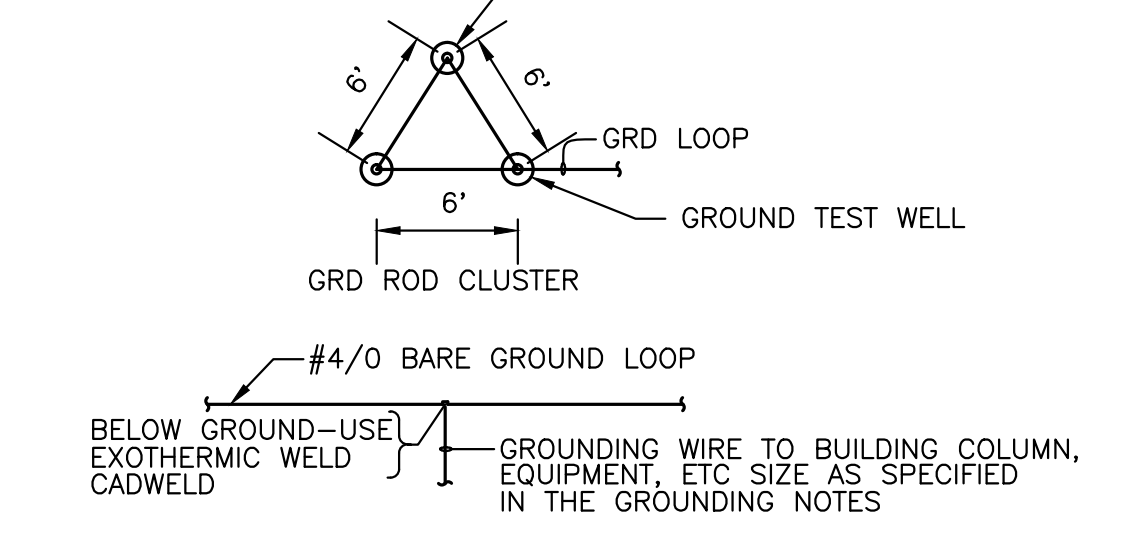
GROUNDING OF BUILDING STEEL COLUMN

NOT TO SCALE



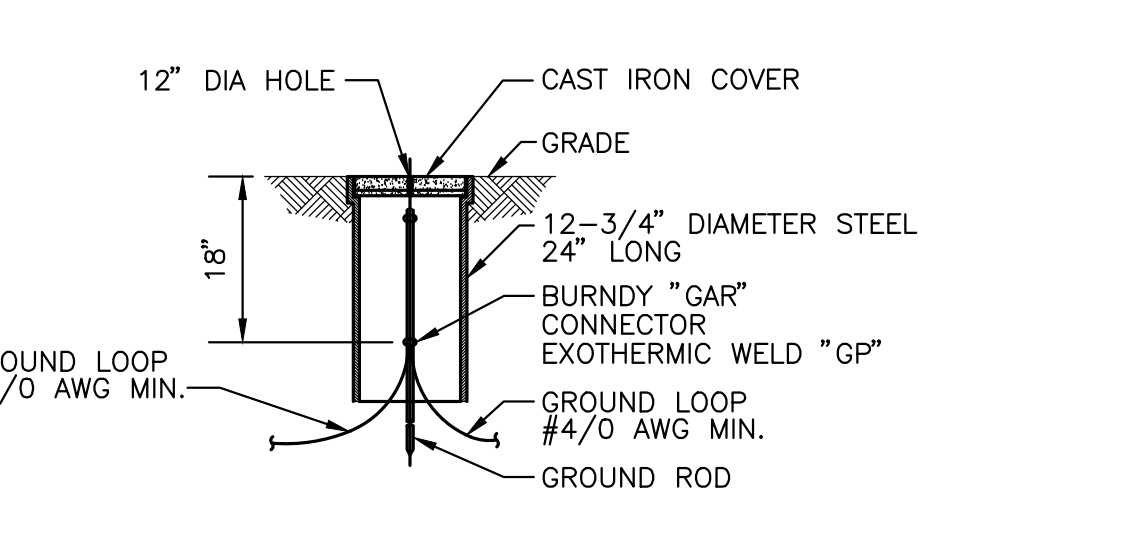
CABLE TO GROUND ROD CONNECTION

NOT TO SCALE



GROUND LOOP

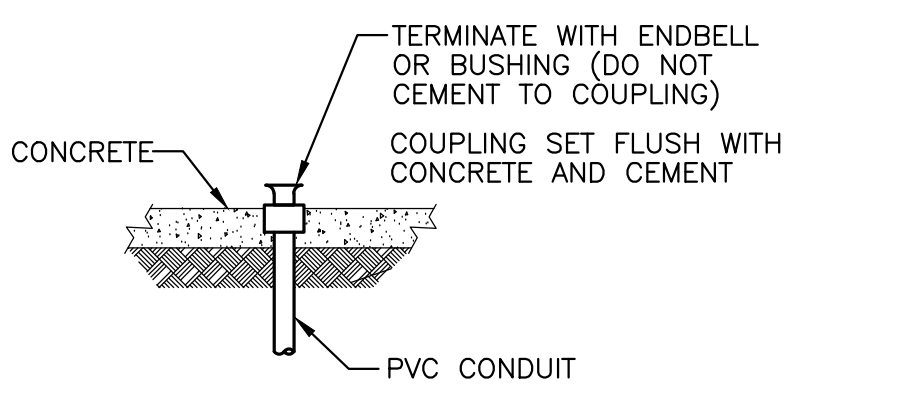
NOT TO SCALE



GROUND TEST WELL

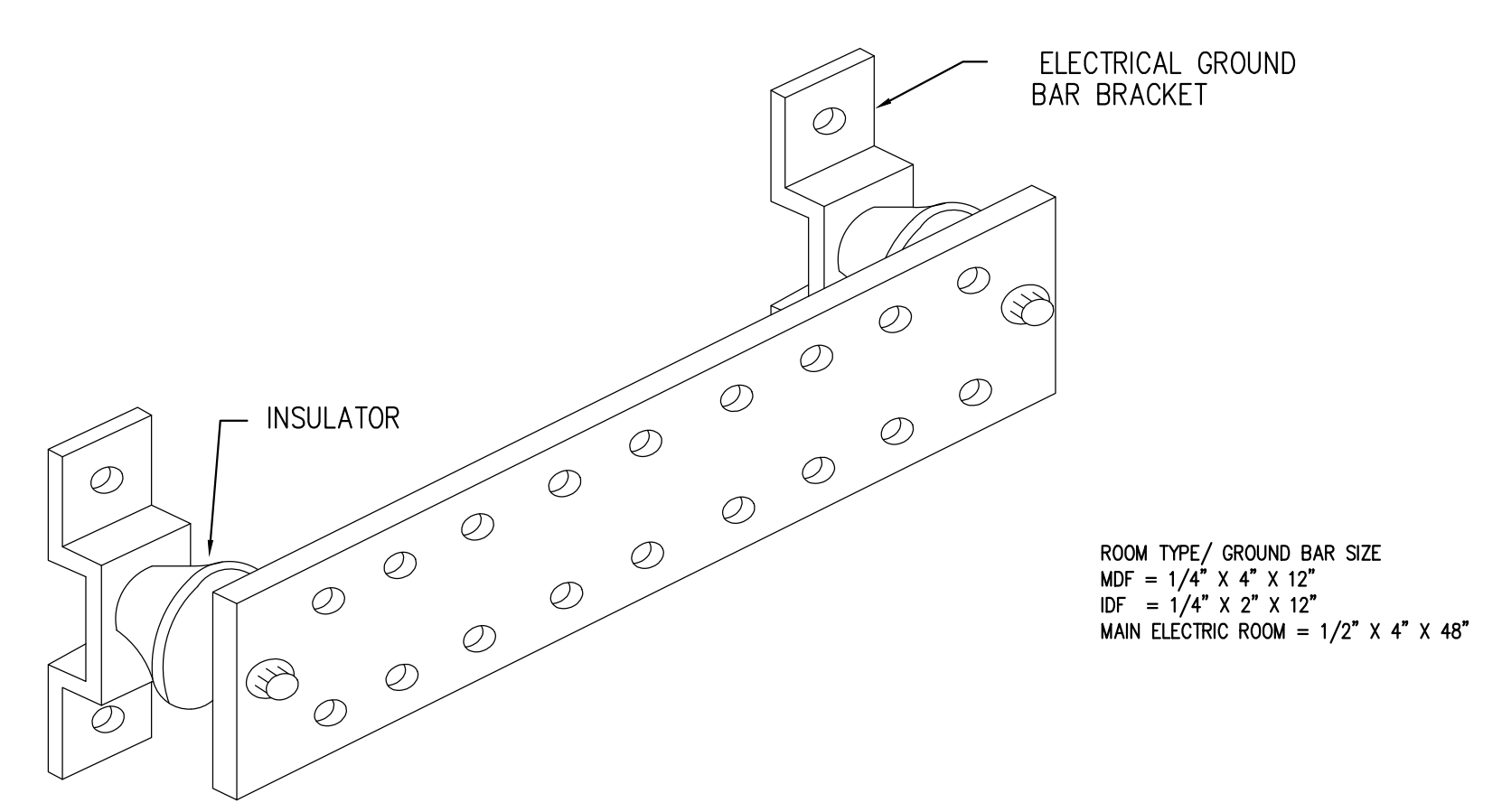
NOT TO SCALE

NOTE:
1. LOCATE GROUND WELL CLEAR OF VEHICLE TRAFFIC



SLEEVE AT SLAB

NOT TO SCALE



GROUND BAR DETAIL FOR IDF AND MDF ROOMS

NOT TO SCALE

SDA

NJ SCHOOLS DEVELOPMENT AUTHORITY

STATE OF NEW JERSEY



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Design Ideas Group
architecture + planning, llc

PROJECT #: 2008.356.00

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NEW JERSEY PROFESSIONAL ENGINEER
LIC. NO. 2462479400

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100% NJDCA CONSTRUCTION DOCUMENTS SUBMISSION
FOR:
NEW PHILLIPSBURG HIGH SCHOOL
DOE# 4100-N01-04-1000
SDA# NT-003-C02
TOWN OF PHILLIPSBURG
UPPER BELVIDERE ROAD, LOT 44, BLOCK 2
PHILLIPSBURG, NEW JERSEY 08865

SUBMISSION DATE

ADDEDNDUM #1	11-21-12
NJSDA REVISIONS	09-12-12
NJSDA COMMENTS	03-04-11
NJSDA COMMENTS	08-12-10
NJSDA COMMENTS	05-17-10
NJSDA COMMENTS	02-12-10
DATE:	OCTOBER 13, 2009
SCALE:	1/8" = 1'-0"

DRAWING TITLE:
ELECTRICAL DETAILS

DRAWING No:

E-2.0.3

DRAWN BY: RC

PANEL	DR2	208 /120 VOLTS, 3 PHASE	4 WIRE	MAN BUS	225 AMPS						
LOCATION	B-203	MOUNTING SURFACE	FLUSH	MAN BRK 0 AMPS 3 P							
BUILDING	SCHOOL	BUS COVER	ALUMINUM	NEUTRAL 100% AC 22000							
FED FROM	DR2	GROUND BUS	THRU FEED LUGS	MAN LUGS ONLY							
FEDDER SIZE	SEE SINGLE LINE DIAGRAM	SOLO GND BUS	SHUNT TRIP BRKR	FEED TOP	BTM						
CRK	TRF	NO	AMPS	DESCRIPTION OF LOAD	LOAD	PER PHASE (VA)	LOAD	DESCRIPTION OF LOAD	TRF	CRK	
1	2503P			PANEL "RA"	17793	17793	17793	SPARE	1603P	2	
3	1003P			SPARE	0	0	0	SPARE	1603P	4	
4	1503P			PANEL PSA	31598	19060	19060	28880	1603P	6	
7	1003P			PANEL CSA	42360	38900	38900	37230	1603P	8	
8	1003P			PANEL CSA1	64720	21973	21973	0	1603P	10	
11	1503P			SPARE	0	36580	36580	109740	4003P	12	
12				SPARE	0	0	0	SPARE	4003P	14	
MULTI FACTOR											
TOTAL LTO	0	1.00	0	TOTAL BY PHASE	14493	14493	14493	TOTAL DEMAND	28642	X	1.25
TOTAL MISC	4908	Ph NEC	4908	TOTAL LOAD	32553	VA			92	AMPS	
TOTAL REC	4260	Ph NEC	2932								
TOTAL HVAC	506	Ph NEC	3912								
TOTAL HIG	7078	Ph NEC	7878								

PANEL	DR2	208 /120 VOLTS, 3 PHASE	4 WIRE	MAN BUS	225 AMPS						
LOCATION	B-203	MOUNTING SURFACE	FLUSH	MAN BRK 0 AMPS 3 P							
BUILDING	SCHOOL	BUS COVER	ALUMINUM	NEUTRAL 100% AC 22000							
FED FROM	DR2	GROUND BUS	THRU FEED LUGS	MAN LUGS ONLY							
FEDDER SIZE	SEE SINGLE LINE DIAGRAM	SOLO GND BUS	SHUNT TRIP BRKR	FEED TOP	BTM						
CRK	TRF	NO	AMPS	DESCRIPTION OF LOAD	LOAD	PER PHASE (VA)	LOAD	DESCRIPTION OF LOAD	TRF	CRK	
1	2011			RECEPTACLES B201	1400	3000	3000	RECEPTACLES B210	2011	2	
3	2011			RECEPTACLES B201	1380	2980	1600	RECEPTACLES B212	2011	4	
6	2011			RECEPTACLES B201	1200	2920	1720	RECEPTACLES B216	2011	6	
7	2011			RECEPTACLES B210	1600	3200	1600	RECEPTACLES B218	2011	8	
9	2011			RECEPTACLES B209	1400	2200	800	RECEPTACLES B212, B213	2011	10	
11	2011			RECEPTACLES B209	1600	3200	1600	RECEPTACLES B216	2011	12	
13	2011			RECEPTACLES B209	1600	3000	1400	RECEPTACLES B213, B216	2011	14	
15	2011			RECEPTACLES B209	1600	3200	1600	RECEPTACLES B216	2011	16	
17	2011			RECEPTACLES B209, B212	1600	3000	1400	RECEPTACLES B216	2011	18	
19	2011			RECEPTACLES B211, B209	1720	3440	1720	RECEPTACLES B211, B212	2011	20	
21	2011			RECEPTACLES B211	1600	3200	1600	RECEPTACLES B217, B228	2011	22	
23	2011			RECEPTACLES B211	1400	3000	3200	RECEPTACLES B221	2011	24	
25	2011			RECEPTACLES B211	1400	3000	1600	RECEPTACLES B226, B229	2011	26	
27	2011			RECEPTACLES B211	1600	3200	1600	RECEPTACLES B221	2011	28	
29	2011			RECEPTACLES B216, B220	1720	3100	1380	RECEPTACLES B221	2011	30	
31	2011			RECEPTACLES B223	1380	2580	1000	RECEPTACLES B221	2011	32	
33	2011			RECEPTACLES B223	1600	3200	1600	RECEPTACLES B221	2011	34	
35	2011			RECEPTACLES B223	1600	3200	1600	RECEPTACLES B221	2011	36	
37	2011			RECEPTACLES B222	1600	3200	1600	RECEPTACLES B221	2011	38	
39	2011			RECEPTACLES B221, B224	1720	3320	1600	RECEPTACLES B224	2011	40	
41	2011			RECEPTACLES B224	1380	2780	1600	RECEPTACLES B224	2011	42	
MULTI FACTOR											
TOTAL LTO	0	1.00	0	TOTAL BY PHASE	21420	21300	21400	TOTAL DEMAND	37060	X	1.25
TOTAL MISC	6120	Ph NEC	37060	TOTAL LOAD	48580	VA			108	AMPS	
TOTAL REC	0	Ph NEC	0								
TOTAL HVAC	0	Ph NEC	0								
TOTAL HIG	0	Ph NEC	0								

PANEL	DR2	208 /120 VOLTS, 3 PHASE	4 WIRE	MAN BUS	225 AMPS						
LOCATION	B-203	MOUNTING SURFACE	FLUSH	MAN BRK 0 AMPS 3 P							
BUILDING	SCHOOL	BUS COVER	ALUMINUM	NEUTRAL 100% AC 22000							
FED FROM	DR2	GROUND BUS	THRU FEED LUGS	MAN LUGS ONLY							
FEDDER SIZE	SEE SINGLE LINE DIAGRAM	SOLO GND BUS	SHUNT TRIP BRKR	FEED TOP	BTM						
CRK	TRF	NO	AMPS	DESCRIPTION OF LOAD	LOAD	PER PHASE (VA)	LOAD	DESCRIPTION OF LOAD	TRF	CRK	
1	2011			HAND DRIVER - 2 #10, 1 #10G	2000	3200	1200	COOKTOP	2002P	2	
3	2011			HAND DRIVER - 2 #10, 1 #10G	2000	3200	3200	1000	2002P	4	
6	2011			HAND DRIVER - 2 #10, 1 #10G	2000	2000	3000	1200	MICROWAVE	6	
7	2011			HAND DRIVER - 2 #10, 1 #10G	2000	2000	1000	1500	REFRIGERATOR	8	
9	2011			VAV BOXES	350	1626	1176	FEX-5	2011	10	
11	2011			VAV BOXES	350	1626	1176	FEX-6	2011	12	
13	2011			VAV BOXES	350	1626	1176	FEX-7	2011	14	
15	202P			ACU-3-1	20	1196	1176	FEX-9	2011	16	
17	2011			SPARE	0	0	0	SPARE	2011	18	
19	203P			EF-10, EF-11	840	2016	1176	FEX-10	2011	20	
21	2011			SPARE	0	0	0	SPARE	2011	22	
23	2011			SPARE	0	0	0	SPARE	2011	24	
25	202P			ACCU-3-1, 2-1	1400	1400	840	SPARE	2011	26	
27	2011			SPARE	0	0	0	SPARE	2011	28	
29	202P			ACCU-1-3	720	720	720	SPARE	2011	30	
31	2011			SPARE	0	0	0	SPARE	2011	32	
33	2011			SPARE	0	0	0	SPARE	2011	34	
35	2011			SPARE	0	0	0	SPARE	2011	36	
37	2011			SPARE	0	0	0	SPARE	2011	38	
39	2011			SPARE	0	0	0	SPARE	2011	40	
41	2011			SPARE	0	0	0	SPARE	2011	42	
MULTI FACTOR											
TOTAL LTO	0	1.00	0	TOTAL BY PHASE	11862	8338	7262	TOTAL DEMAND	24728.4	X	1.25
TOTAL MISC	1600	Ph NEC	1600	TOTAL LOAD	33811	VA			88	AMPS	
TOTAL REC	0	Ph NEC	0								
TOTAL HVAC	1517	Ph NEC	0								
TOTAL HIG	1050	Ph NEC	1050								

PANEL	DR2	208 /120 VOLTS, 3 PHASE	4 WIRE	MAN BUS	225 AMPS						
LOCATION	B-203	MOUNTING SURFACE	FLUSH	MAN BRK 0 AMPS 3 P							
BUILDING	SCHOOL	BUS COVER	ALUMINUM	NEUTRAL 100% AC 22000							
FED FROM	DR2	GROUND BUS	THRU FEED LUGS	MAN LUGS ONLY							
FEDDER SIZE	SEE SINGLE LINE DIAGRAM	SOLO GND BUS	SHUNT TRIP BRKR	FEED TOP	BTM						
CRK	TRF	NO	AMPS	DESCRIPTION OF LOAD	LOAD	PER PHASE (VA)	LOAD	DESCRIPTION OF LOAD	TRF	CRK	
1	2011			RECEPTACLES B2, B202, B208	1260	2340	1080	RECEPTACLES B216	2011	2	
3	2011			RECEPTACLES B216	1260	2340	1080	RECEPTACLES B216	2011	4	
6	2011			RECEPTACLES B201, B209	1260	2340	1080	RECEPTACLES B216	2011	6	
7	2011			RECEPTACLES B201, B209, B210	1080	2340	1080	RECEPTACLES B216	2011	8	
9	2011			RECEPTACLES B209	1080	2160	1080	RECEPTACLES B216	2011	10	
11	2011			RECEPTACLES B209	1080	2160	1080	RECEPTACLES B216, B209	2011	12	
13	2011			RECEPTACLES B209	1080	2160	1080	RECEPTACLES B216, B209	2011	14	
15	2011			RECEPTACLES B209	1080	1980	1080	RECEPTACLES B216, B209	2011	16	
17	2011			RECEPTACLES B210, B212	900	1800	900	RECEPTACLES B216, B209	2011	18	
19	2011			RECEPTACLES B211, B212, B213	1080	1980	900	RECEPTACLES B216, B209	2011	20	
21	2011			RECEPTACLES B211	1080	2160	1080	RECEPTACLES B216, B209	2011	22	
23	2011			RECEPTACLES B211	1080	2160	1080	RECEPTACLES B216, B209	2011	24	
25	2011			RECEPTACLES B211	1080	2160	1080	RECEPTACLES B216, B209	2011	26	
27	2011			RECEPTACLES B211	1080	2160	1080	RECEPTACLES B216, B209	2011	28	
29	2011			RECEPTACLES B212	1080	2160	1080	RECEPTACLES B216, B209	2011	30	
31	2011			RECEPTACLES B212	1080	2160	1080	RECEPTACLES B216, B209	2011	32	
33	2011			RECEPTACLES B212	1080	2640	1600	CLG CONVENIENCE REC B21, B18, B19, B20, B21	2011	34	
35	2011			RECEPTACLES B212	1080	1980	900	RECEPTACLES B216, B219	2011	36	
37	2011			RECEPTACLES B218, B219, B216	900	1800	900	RECEPTACLES B216, B219	2011	38	
39	2011			RECEPTACLES B218, B219	720	1800	1000	RECEPTACLES B216, B219	2011	40	
41	2011			CLG CONVENIENCE REC B21, B20, B21, B21	2350	720	2350	RECEPTACLES B216, B219	2011	42	
MULTI FACTOR											
TOTAL LTO	0	1.00	0	TOTAL BY PHASE	14940	15280	14820	TOTAL DEMAND	27970	X	1.25
TOTAL MISC	0	Ph NEC	0	TOTAL LOAD	34843	VA			88	AMPS	
TOTAL REC	4540	Ph NEC	2760								
TOTAL HVAC	0	Ph NEC	0								
TOTAL HIG	0	Ph NEC	0								

PANEL	DR2	208 /120 VOLTS, 3 PHASE	4 WIRE	MAN BUS	225 AMPS					
LOCATION	B-203	MOUNTING SURFACE	FLUSH	MAN BRK 0 AMPS 3 P						
BUILDING	SCHOOL	BUS COVER	ALUMINUM	NEUTRAL 100% AC 22000						
FED FROM	DR2	GROUND BUS	THRU FEED LUGS	MAN LUGS ONLY						
FEDDER SIZE	SEE SINGLE LINE DIAGRAM	SOLO GND BUS	SHUNT TRIP BRKR	FEED TOP	BTM					
CRK	TRF	NO	AMPS	DESCRIPTION OF LOAD	LOAD	PER PHASE (VA)	LOAD	DESCRIPTION OF LOAD	TRF	CRK
1	2011			RECEPTACLES A207, A208	1080	2160	1080	RECEPTACLES A209 - A211	2011	2
3	2011			RECEPTACLES A207, A208	1080	2160	1080	RECEPTACLES A209 - A211	2011	4
5	2011			RECEPTACLES A206, A206	1080	2160	1080	RECEPTACLES A209	2011	6
7	2011			RECEPTACLES A206, A206	1080	2160	1080	RECEPTACLES A209	2011	8
9	2011			RECEPTACLES A206	1080	2160	1080	RECEPTACLES A209	2011	10

Panel EL2P 480/277 VOLTS 3 PHASE 4 WIRE. LOCATION: MAN ELECTRIC ROOM. BUILDING: SCHOOL. Description of load table with columns for CT, TRIP, NO, AMPS, DESCRIPTION OF LOAD, LOAD (VA), PER PHASE (VA), and DESCRIPTION OF LOAD.

MULTI FACTOR table for Panel EL2P. TOTAL LTG: 12160, TOTAL MSC: 6190, TOTAL REC: 0, TOTAL HVAC: 0, TOTAL HTG: 0. TOTAL DEMAND: 19340, TOTAL LOAD: 22350 VA.

Panel EL2B 480/277 VOLTS 3 PHASE 4 WIRE. LOCATION: D-102. BUILDING: SCHOOL. Description of load table.

MULTI FACTOR table for Panel EL2B. TOTAL LTG: 30742, TOTAL MSC: 100, TOTAL REC: 0, TOTAL HVAC: 0, TOTAL HTG: 0. TOTAL DEMAND: 30742, TOTAL LOAD: 38428 VA.

Panel EL2D 480/277 VOLTS 3 PHASE 4 WIRE. LOCATION: D-102. BUILDING: SCHOOL. Description of load table.

MULTI FACTOR table for Panel EL2D. TOTAL LTG: 3800, TOTAL MSC: 100, TOTAL REC: 0, TOTAL HVAC: 0, TOTAL HTG: 0. TOTAL DEMAND: 3800, TOTAL LOAD: 4750 VA.

Panel EL2B 480/277 VOLTS 3 PHASE 4 WIRE. LOCATION: C-203. BUILDING: SCHOOL. Description of load table.

MULTI FACTOR table for Panel EL2B. TOTAL LTG: 15486, TOTAL MSC: 100, TOTAL REC: 0, TOTAL HVAC: 0, TOTAL HTG: 0. TOTAL DEMAND: 15486, TOTAL LOAD: 19358 VA.

Panel EL2C 480/277 VOLTS 3 PHASE 4 WIRE. LOCATION: D-102. BUILDING: SCHOOL. Description of load table.

MULTI FACTOR table for Panel EL2C. TOTAL LTG: 16819, TOTAL MSC: 100, TOTAL REC: 0, TOTAL HVAC: 0, TOTAL HTG: 0. TOTAL DEMAND: 16819, TOTAL LOAD: 21024 VA.

Panel EL2P 480/277 VOLTS 3 PHASE 4 WIRE. LOCATION: MAN ELECTRIC ROOM. BUILDING: SCHOOL. Description of load table.

MULTI FACTOR table for Panel EL2P. TOTAL LTG: 7800, TOTAL MSC: 100, TOTAL REC: 0, TOTAL HVAC: 0, TOTAL HTG: 0. TOTAL DEMAND: 7800, TOTAL LOAD: 9750 VA.

Panel EL2B 480/277 VOLTS 3 PHASE 4 WIRE. LOCATION: D-102. BUILDING: SCHOOL. Description of load table.

MULTI FACTOR table for Panel EL2B. TOTAL LTG: 8145, TOTAL MSC: 100, TOTAL REC: 0, TOTAL HVAC: 0, TOTAL HTG: 0. TOTAL DEMAND: 8145, TOTAL LOAD: 7881 VA.

Panel EL2D 480/277 VOLTS 3 PHASE 4 WIRE. LOCATION: D-102. BUILDING: SCHOOL. Description of load table.

MULTI FACTOR table for Panel EL2D. TOTAL LTG: 6885, TOTAL MSC: 100, TOTAL REC: 0, TOTAL HVAC: 0, TOTAL HTG: 0. TOTAL DEMAND: 6885, TOTAL LOAD: 7828 VA.

Panel EL2D 208/120 VOLTS 3 PHASE 4 WIRE. LOCATION: MAN ELECTRIC ROOM. BUILDING: SCHOOL. Description of load table.

MULTI FACTOR table for Panel EL2D. TOTAL LTG: 600, TOTAL MSC: 4280, TOTAL REC: 0, TOTAL HVAC: 0, TOTAL HTG: 0. TOTAL DEMAND: 4880, TOTAL LOAD: 6100 VA.

Panel EL2P 480/277 VOLTS 3 PHASE 4 WIRE. LOCATION: MAN ELECTRIC ROOM. BUILDING: SCHOOL. Description of load table.

MULTI FACTOR table for Panel EL2P. TOTAL LTG: 79776, TOTAL MSC: 121981, TOTAL REC: 93302, TOTAL HVAC: 4320, TOTAL HTG: 4320. TOTAL DEMAND: 269251, TOTAL LOAD: 328178 VA.

Panel EL2D 208/120 VOLTS 3 PHASE 4 WIRE. LOCATION: MAN ELECTRIC ROOM. BUILDING: SCHOOL. Description of load table.

MULTI FACTOR table for Panel EL2D. TOTAL LTG: 43350, TOTAL MSC: 97700, TOTAL REC: 0, TOTAL HVAC: 0, TOTAL HTG: 0. TOTAL DEMAND: 56500, TOTAL LOAD: 119000 VA.

Panel EL2P 480/277 VOLTS 3 PHASE 4 WIRE. LOCATION: MAN ELECTRIC ROOM. BUILDING: SCHOOL. Description of load table.

MULTI FACTOR table for Panel EL2P. TOTAL LTG: 0, TOTAL MSC: 43350, TOTAL REC: 97700, TOTAL HVAC: 0, TOTAL HTG: 0. TOTAL DEMAND: 45883, TOTAL LOAD: 56500 VA.

Panel RUMPH 208/120 VOLTS 3 PHASE 4 WIRE. LOCATION: PUMP HOUSE. BUILDING: PUMP HOUSE. Description of load table.

MULTI FACTOR table for Panel RUMPH. TOTAL LTG: 0, TOTAL MSC: 20880, TOTAL REC: 0, TOTAL HVAC: 0, TOTAL HTG: 12000. TOTAL DEMAND: 10820, TOTAL LOAD: 13800 VA.

Panel WSP-1 208/120 VOLTS 3 PHASE 4 WIRE. LOCATION: S-208. BUILDING: SCHOOL. Description of load table.

MULTI FACTOR table for Panel WSP-1. TOTAL LTG: 0, TOTAL MSC: 36350, TOTAL REC: 0, TOTAL HVAC: 0, TOTAL HTG: 0. TOTAL DEMAND: 12240, TOTAL LOAD: 12120 VA.

Panel WSP-2 208/120 VOLTS 3 PHASE 4 WIRE. LOCATION: S-208. BUILDING: SCHOOL. Description of load table.

MULTI FACTOR table for Panel WSP-2. TOTAL LTG: 0, TOTAL MSC: 43200, TOTAL REC: 0, TOTAL HVAC: 0, TOTAL HTG: 0. TOTAL DEMAND: 16800, TOTAL LOAD: 16200 VA.

Panel EL2D 208/120 VOLTS 3 PHASE 4 WIRE. LOCATION: C-203. BUILDING: SCHOOL. Description of load table.

MULTI FACTOR table for Panel EL2D. TOTAL LTG: 0, TOTAL MSC: 43200, TOTAL REC: 0, TOTAL HVAC: 0, TOTAL HTG: 0. TOTAL DEMAND: 7344, TOTAL LOAD: 8760 VA.

Panel EL2D 208/120 VOLTS 3 PHASE 4 WIRE. LOCATION: C-203. BUILDING: SCHOOL. Description of load table.

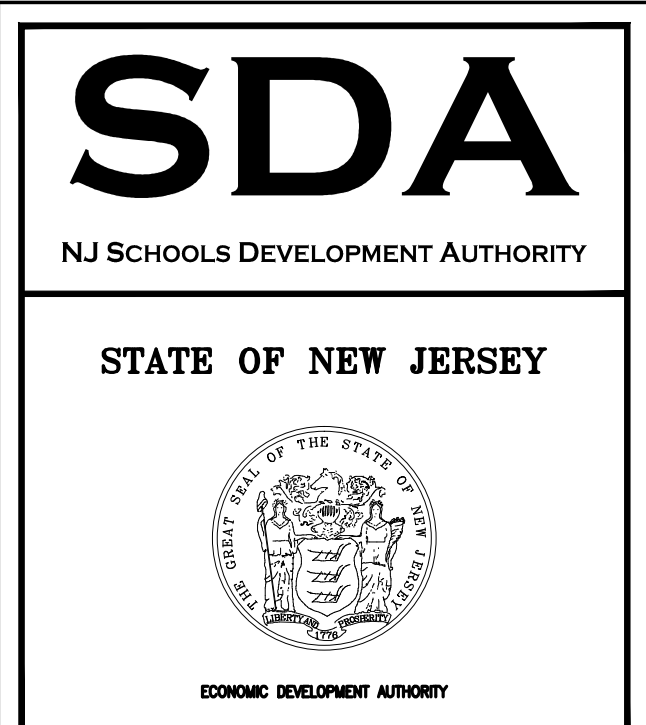
MULTI FACTOR table for Panel EL2D. TOTAL LTG: 0, TOTAL MSC: 43200, TOTAL REC: 0, TOTAL HVAC: 0, TOTAL HTG: 0. TOTAL DEMAND: 4000, TOTAL LOAD: 4000 VA.

Panel RHP 480/277 VOLTS 3 PHASE 4 WIRE. LOCATION: PUMP HOUSE. BUILDING: PUMP HOUSE. Description of load table.

MULTI FACTOR table for Panel RHP. TOTAL LTG: 1634, TOTAL MSC: 7000, TOTAL REC: 0, TOTAL HVAC: 0, TOTAL HTG: 5400. TOTAL DEMAND: 17354, TOTAL LOAD: 22218 VA.

Panel EL2D 208/120 VOLTS 3 PHASE 4 WIRE. LOCATION: C-203. BUILDING: SCHOOL. Description of load table.

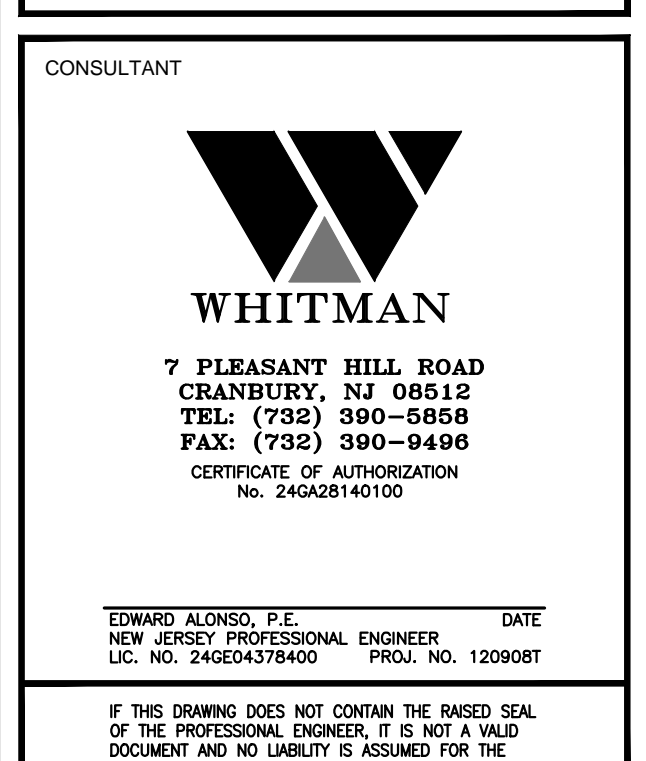
MULTI FACTOR table for Panel EL2D. TOTAL LTG: 0, TOTAL MSC: 1000, TOTAL REC: 0, TOTAL HVAC: 0, TOTAL HTG: 0. TOTAL DEMAND: 11000, TOTAL LOAD: 13750 VA.



STATE OF NEW JERSEY ARCHITECT Design Ideas Group architecture + planning, llc

PROJECT #: 2008.356.00

Richard D. Attinger, AIA N.J. RA 10023 NY RA 027416 Andrew A. Myers, AIA N.J. RA 11445 Jeffrey D. Veneris, AIA N.J. RA 10077 NY RA 02737-11 William W. Veneris, AIA N.J. RA 10683 NY RA 10562-1



7 PLEASANT HILL ROAD CHANDLER, NJ 08815 FAX: (732) 390-9848 OFFICE OF ARCHITECTURE NJ RA 240281000

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Submission schedule table with columns for ADDENDUM #1, NJSDA REVISIONS, NJDCA COMMENTS, NJDCA COMMENTS, NJDCA COMMENTS, and DATE.

DRAWING TITLE: ELECTRICAL PANEL SCHEDULES DRAWING No: E-3.0.5 DRAWN BY: RC

Electrical panel schedule for MSB-1 (480/277V). Includes location (MAN ELECTRIC ROOM), building (SCHOOL), and a table of loads with columns for description, load, and trip. Total demand is 36590 VA.

Electrical panel schedule for EPSC (208/120V). Includes location (SCHOOL), building (SCHOOL), and a table of loads. Total demand is 45742 VA.

Electrical panel schedule for MSB-3 (480/277V). Includes location (MAN ELECTRIC ROOM), building (SCHOOL), and a table of loads. Total demand is 4235 AMPS.

Electrical panel schedule for MSB-3 (208/120V). Includes location (D-102), building (SCHOOL), and a table of loads. Total demand is 2525 AMPS.

Electrical panel schedule for EPSC (208/120V). Includes location (SCHOOL), building (SCHOOL), and a table of loads. Total demand is 22342 VA.

Electrical panel schedule for EPSC (208/120V). Includes location (SCHOOL), building (SCHOOL), and a table of loads. Total demand is 22188 VA.

Electrical panel schedule for MSB-1 (480/277V). Includes location (MAN ELECTRIC ROOM), building (SCHOOL), and a table of loads. Total demand is 167798 VA.

Electrical panel schedule for EPSC (208/120V). Includes location (D-102), building (SCHOOL), and a table of loads. Total demand is 69908 VA.

Electrical panel schedule for EPSC (208/120V). Includes location (SCHOOL), building (SCHOOL), and a table of loads. Total demand is 23242 VA.

Electrical panel schedule for EPSC (208/120V). Includes location (SCHOOL), building (SCHOOL), and a table of loads. Total demand is 22188 VA.

Electrical panel schedule for EPSC (208/120V). Includes location (SCHOOL), building (SCHOOL), and a table of loads. Total demand is 167798 VA.

Electrical panel schedule for EPSC (208/120V). Includes location (D-102), building (SCHOOL), and a table of loads. Total demand is 69908 VA.

Electrical panel schedule for EPSC (208/120V). Includes location (SCHOOL), building (SCHOOL), and a table of loads. Total demand is 23242 VA.

Electrical panel schedule for EPSC (208/120V). Includes location (SCHOOL), building (SCHOOL), and a table of loads. Total demand is 22188 VA.

Electrical panel schedule for EPSC (208/120V). Includes location (SCHOOL), building (SCHOOL), and a table of loads. Total demand is 167798 VA.

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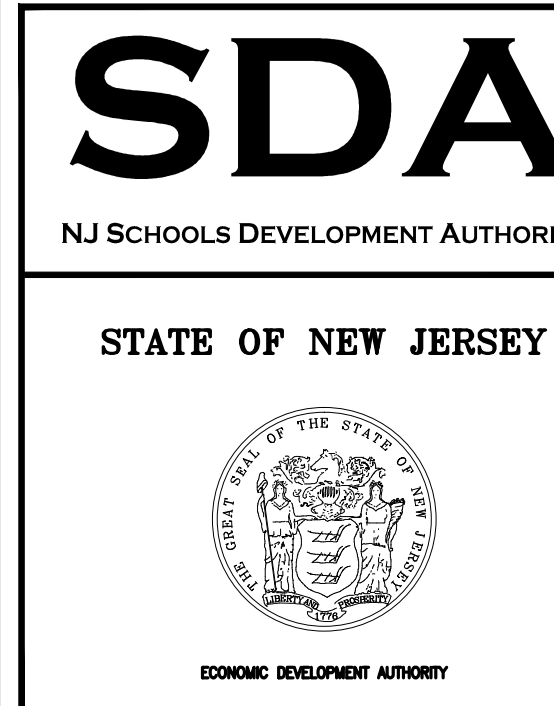
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STATE OF NEW JERSEY
ARCHITECT
Design Ideas Group
architecture + planning, llc

PROJECT #: 2008.356.00
PHASE 1: 1000-01-001-110-01

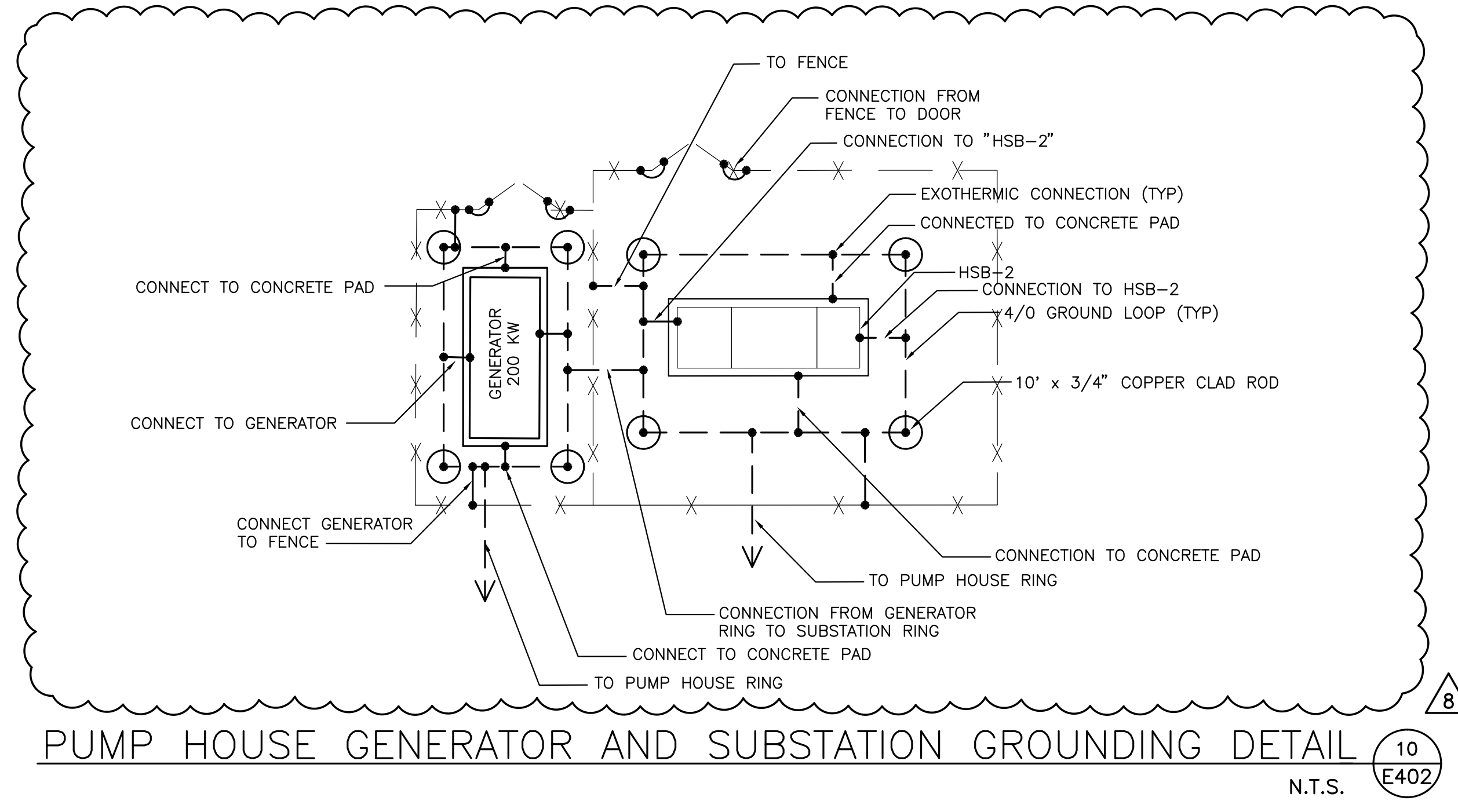
CONSULTANT
WHITMAN
7 PEARSON HILL ROAD
PHILIPSBURG, NJ 08854
TEL: (781) 390-8888
FAX: (781) 390-8886
CONTRACT NO. 2008-0100

100% NJDCA CONSTRUCTION DOCUMENTS SUBMISSION
FOR:
NEW PHILIPSBURG HIGH SCHOOL
DOE#4100-N01-04-1000
SDA# NT-0003-C02
TOWN OF PHILIPSBURG
UPPER BELVIDERE ROAD LOT 44, BLOCK 2
PHILIPSBURG, NEW JERSEY 08865

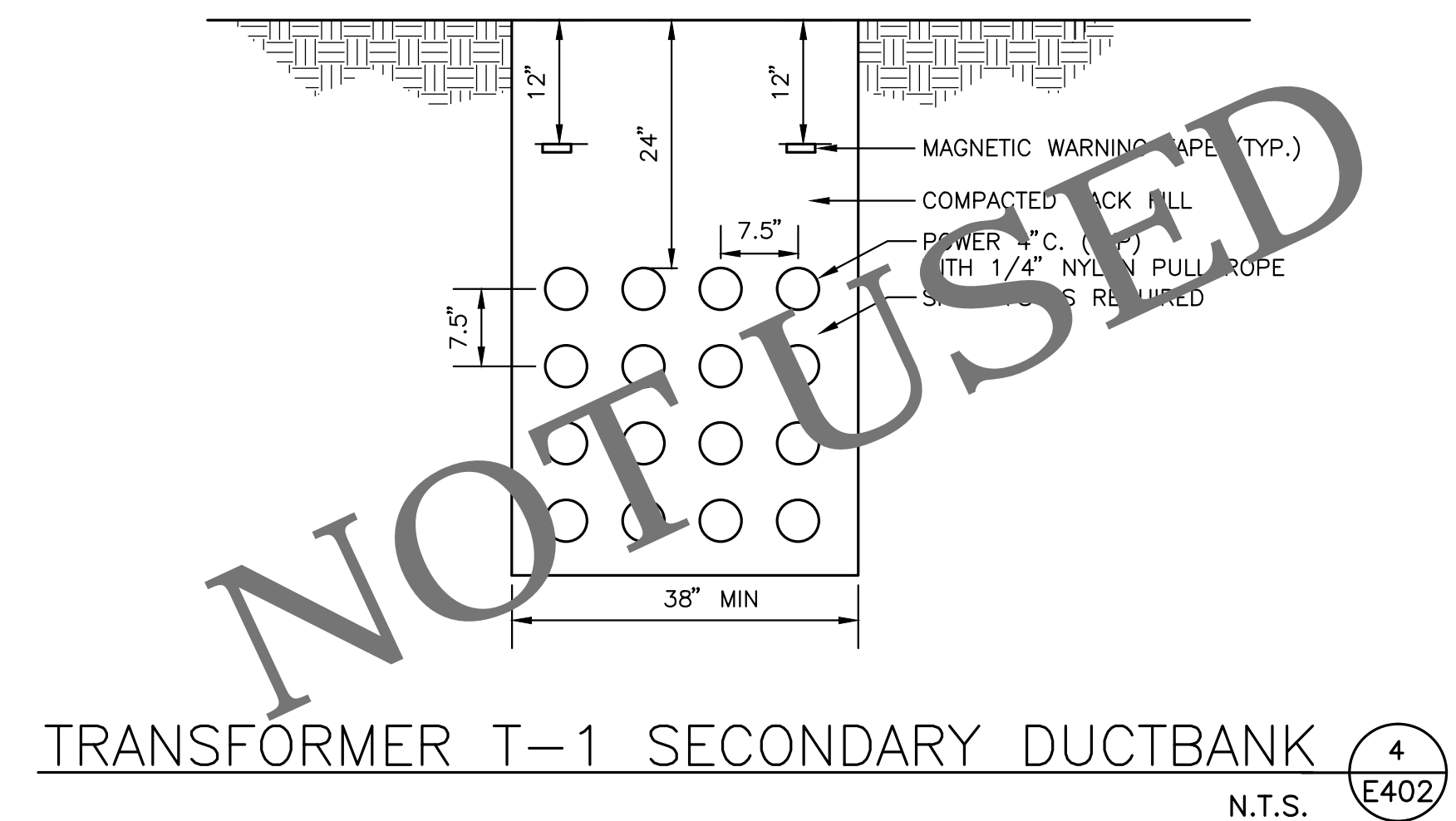
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NJSDA REVISIONS 09-12-12
NJSDA COMMENTS 03-04-11
NJSDA COMMENTS 08-12-10
NJSDA COMMENTS 05-17-10
NJSDA COMMENTS 02-12-10
DATE: OCTOBER 13, 2009
SCALE: 1/8" = 1'-0"

DRAWING TITLE:
ELECTRICAL
PANEL SCHEDULES

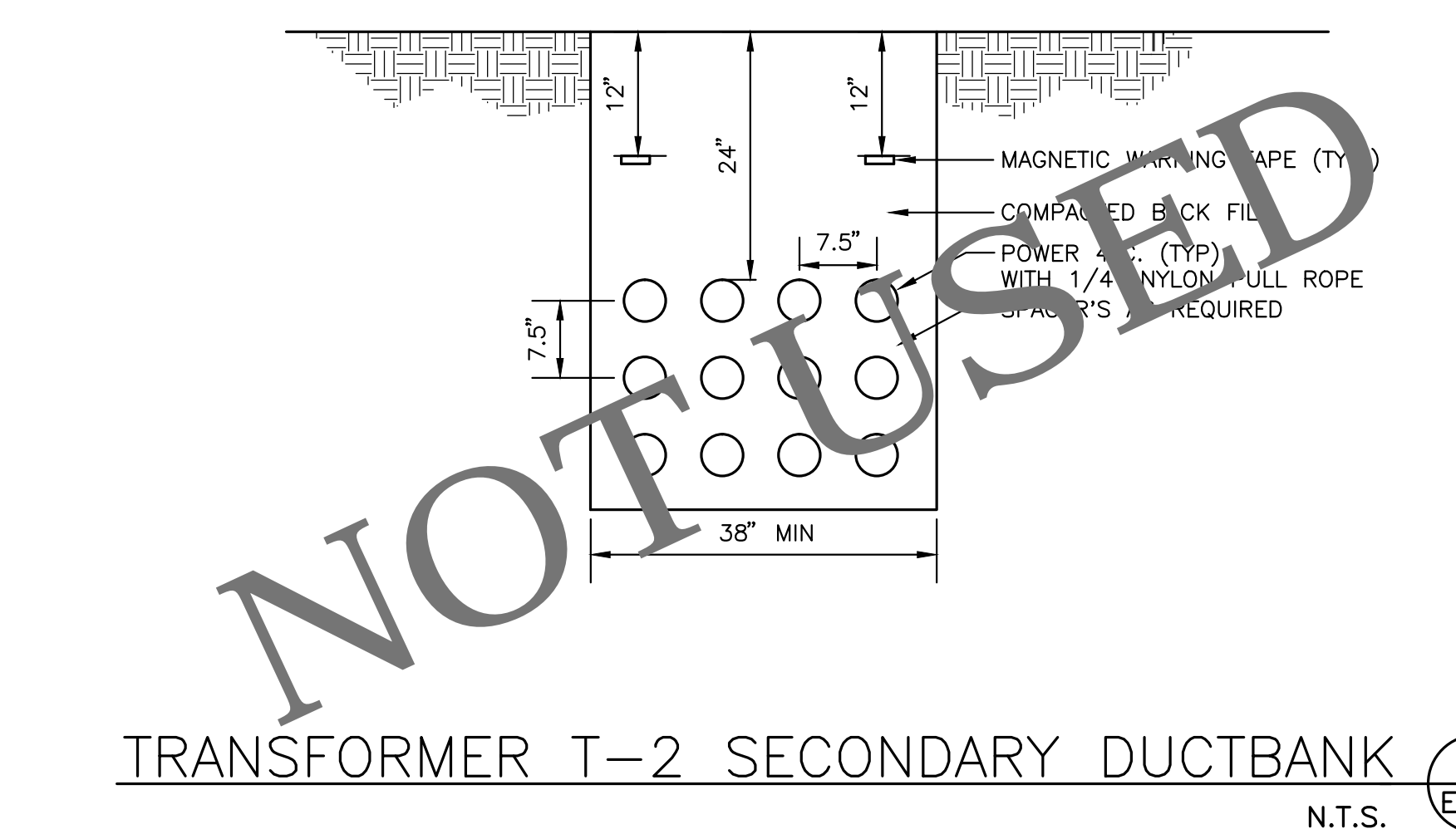
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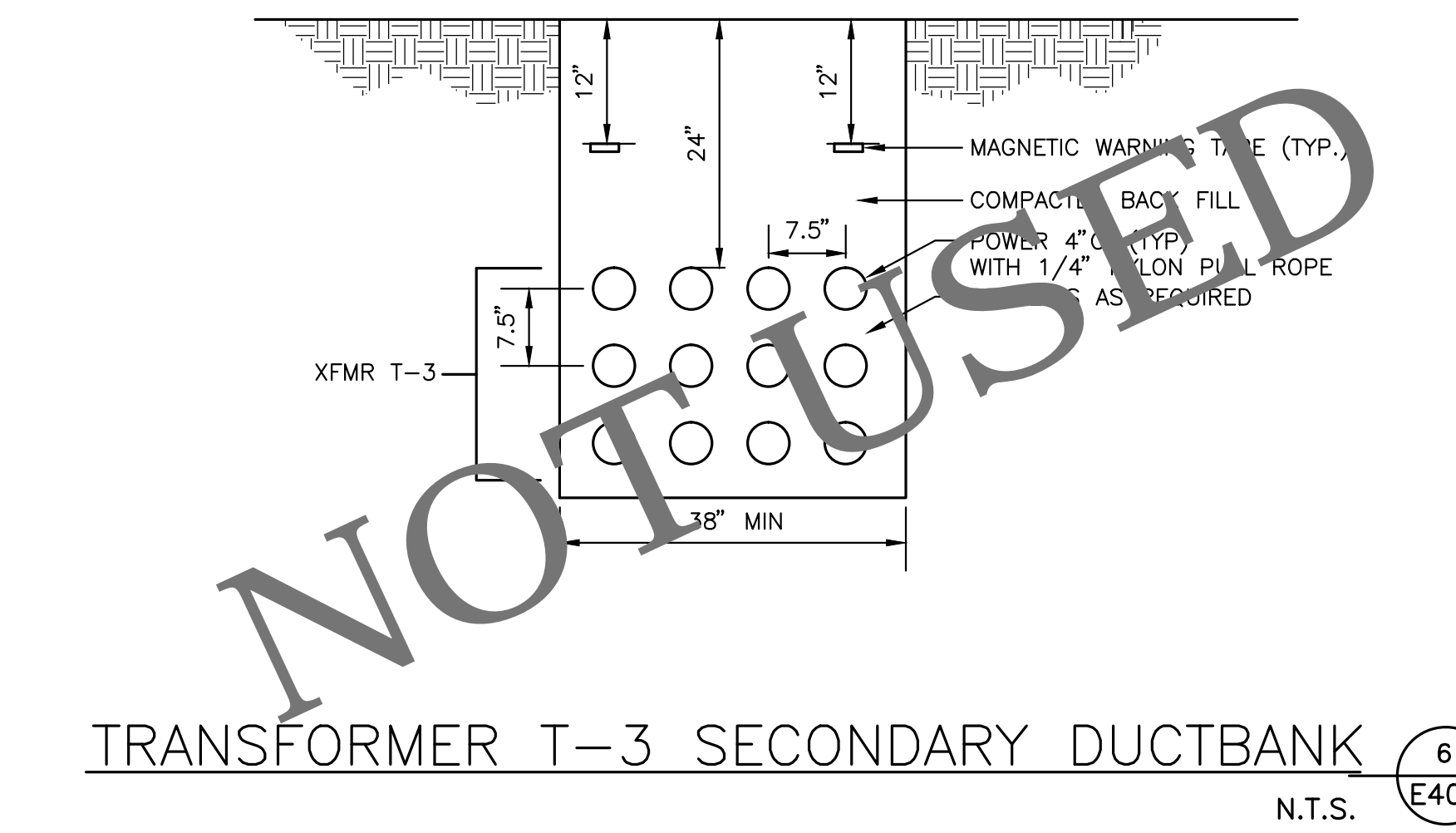
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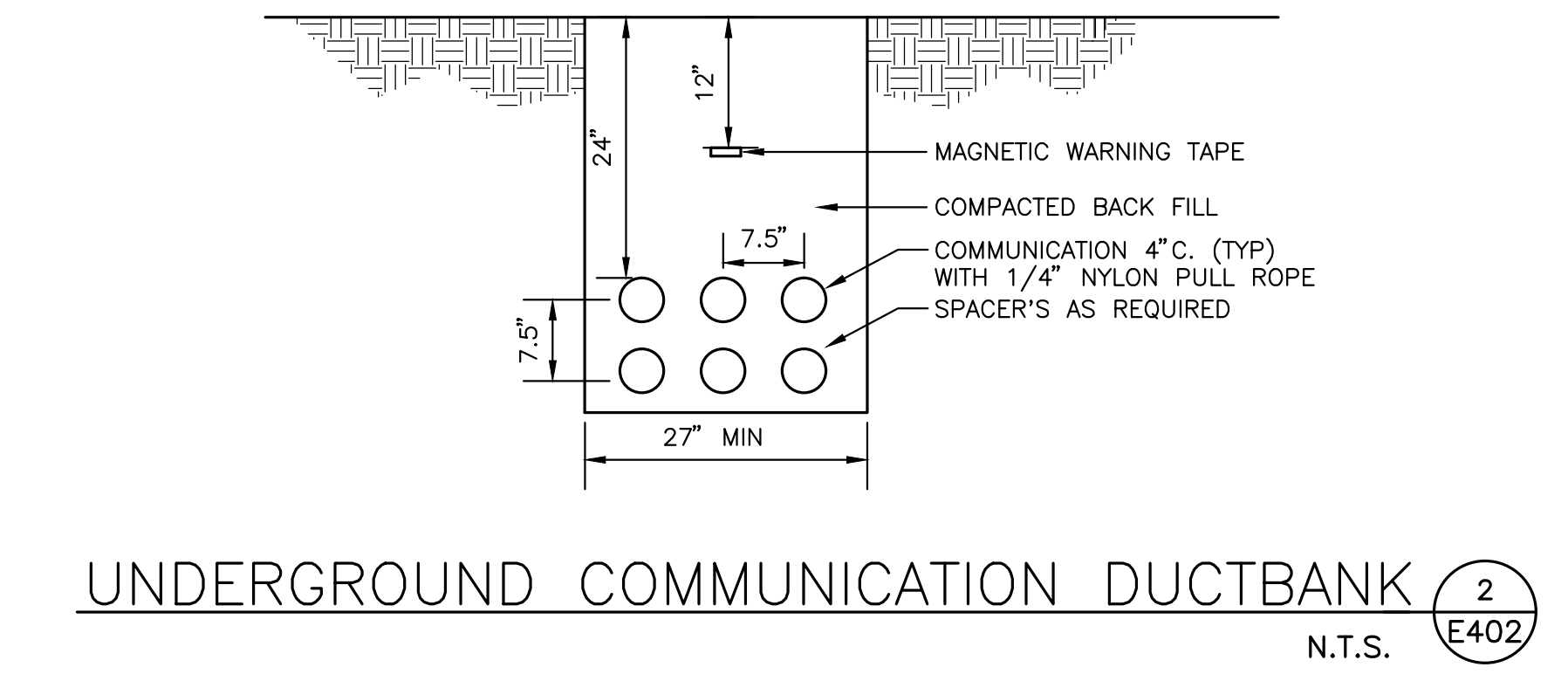
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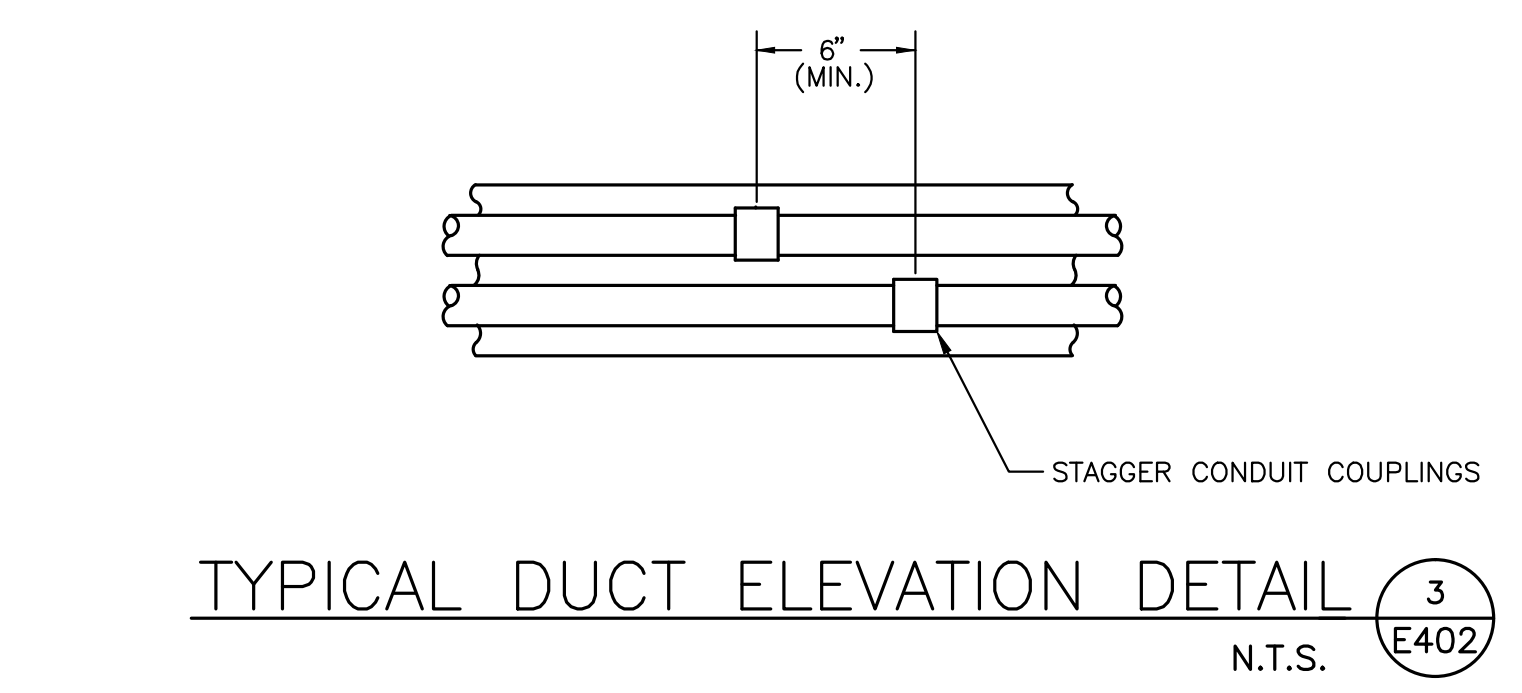
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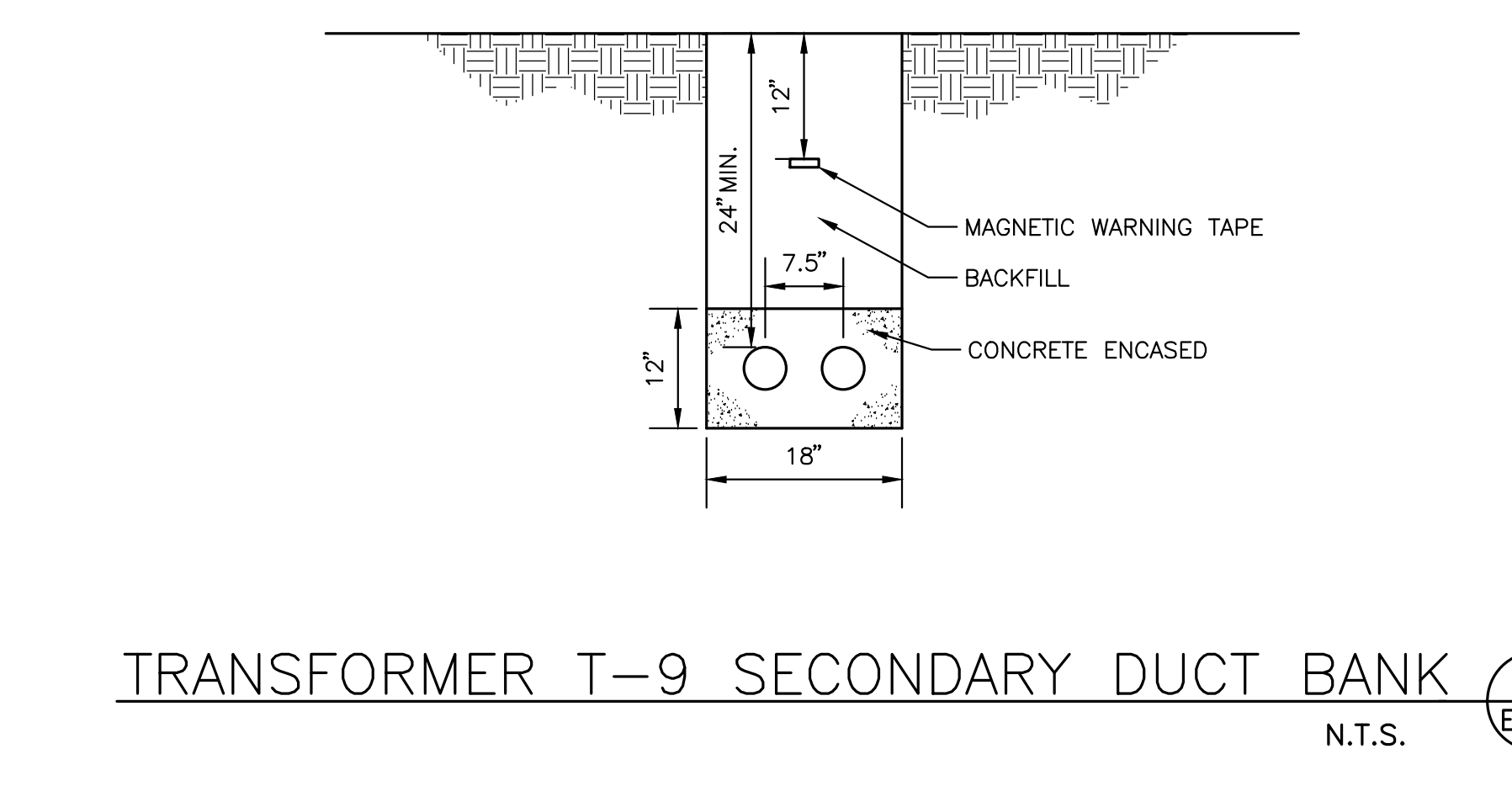
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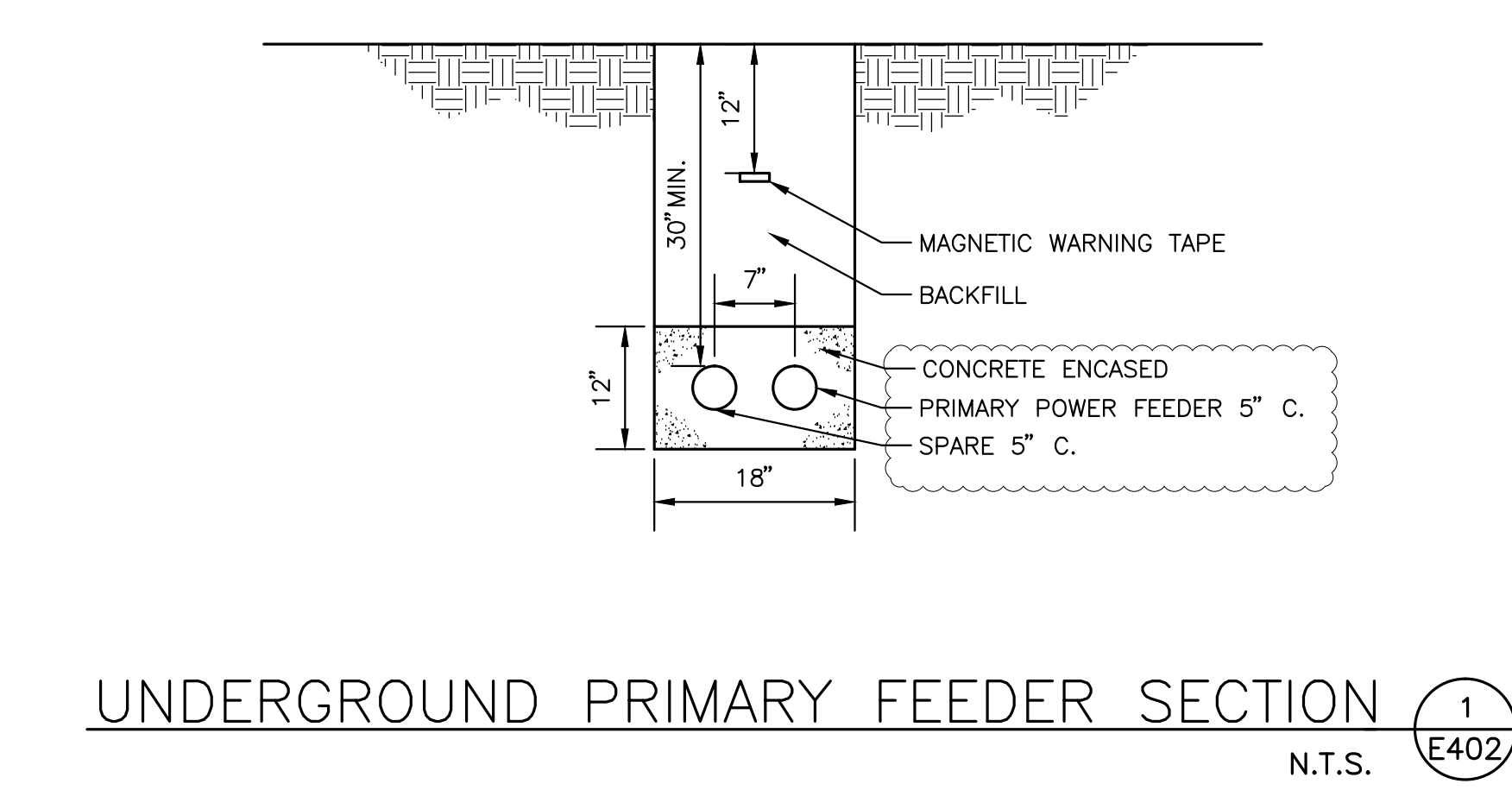
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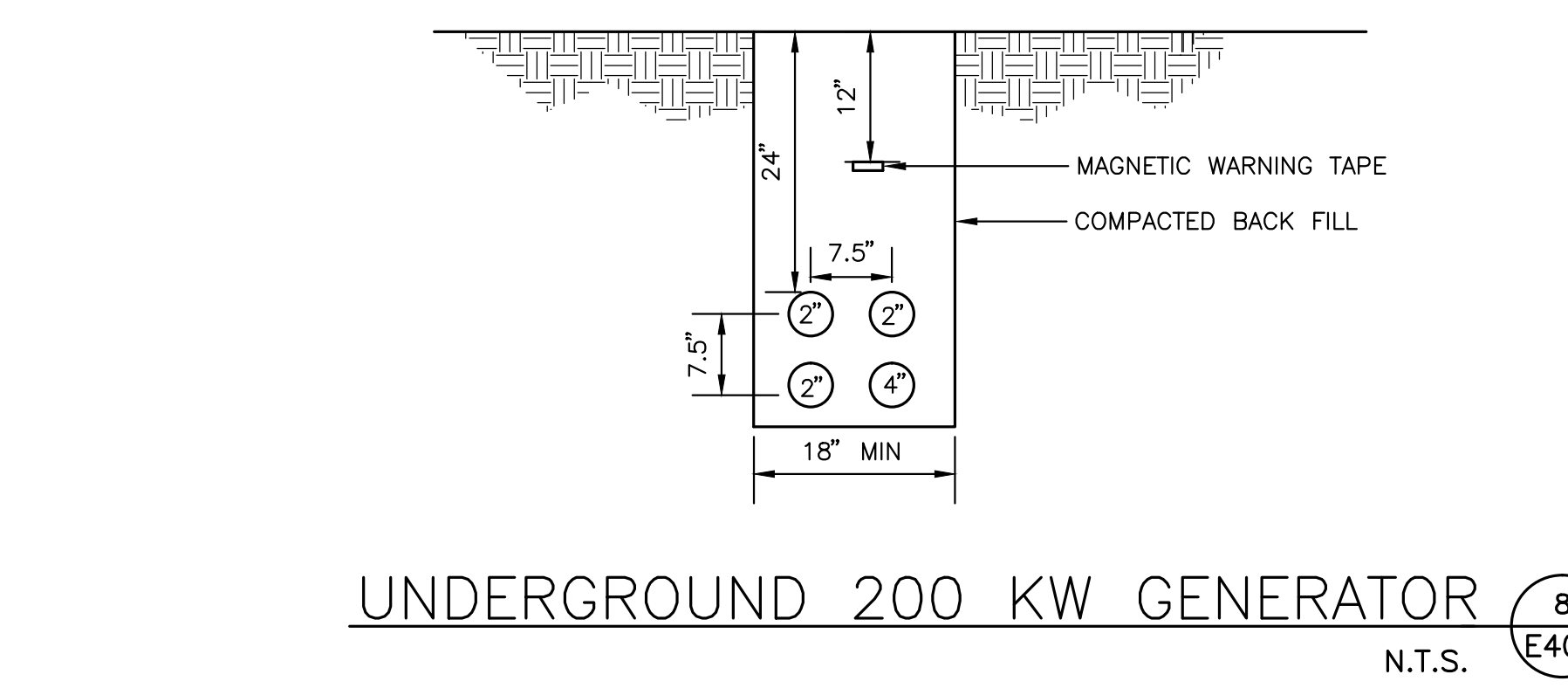
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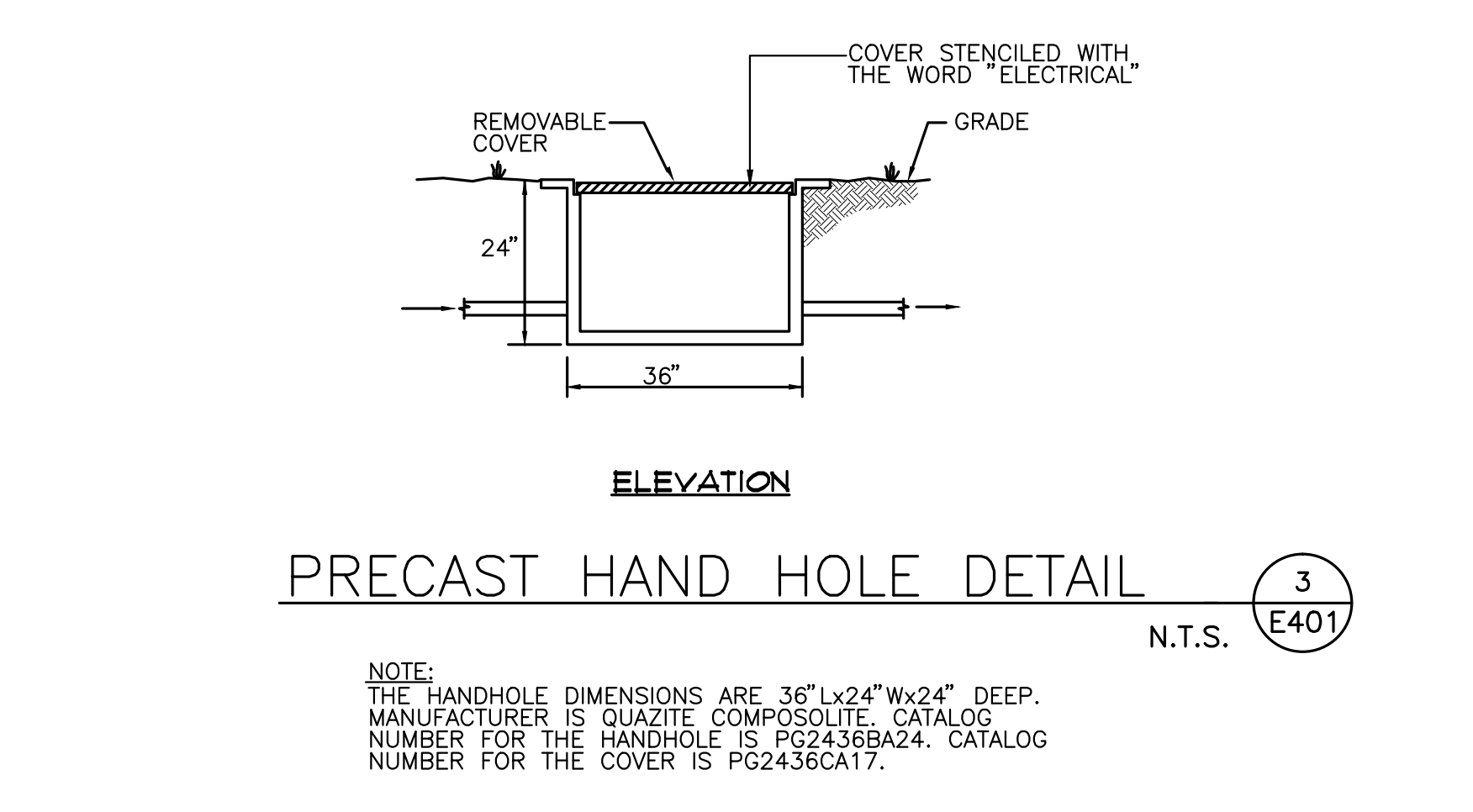
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UNDERGROUND PRIMARY FEEDER SECTION 1
N.T.S. E402

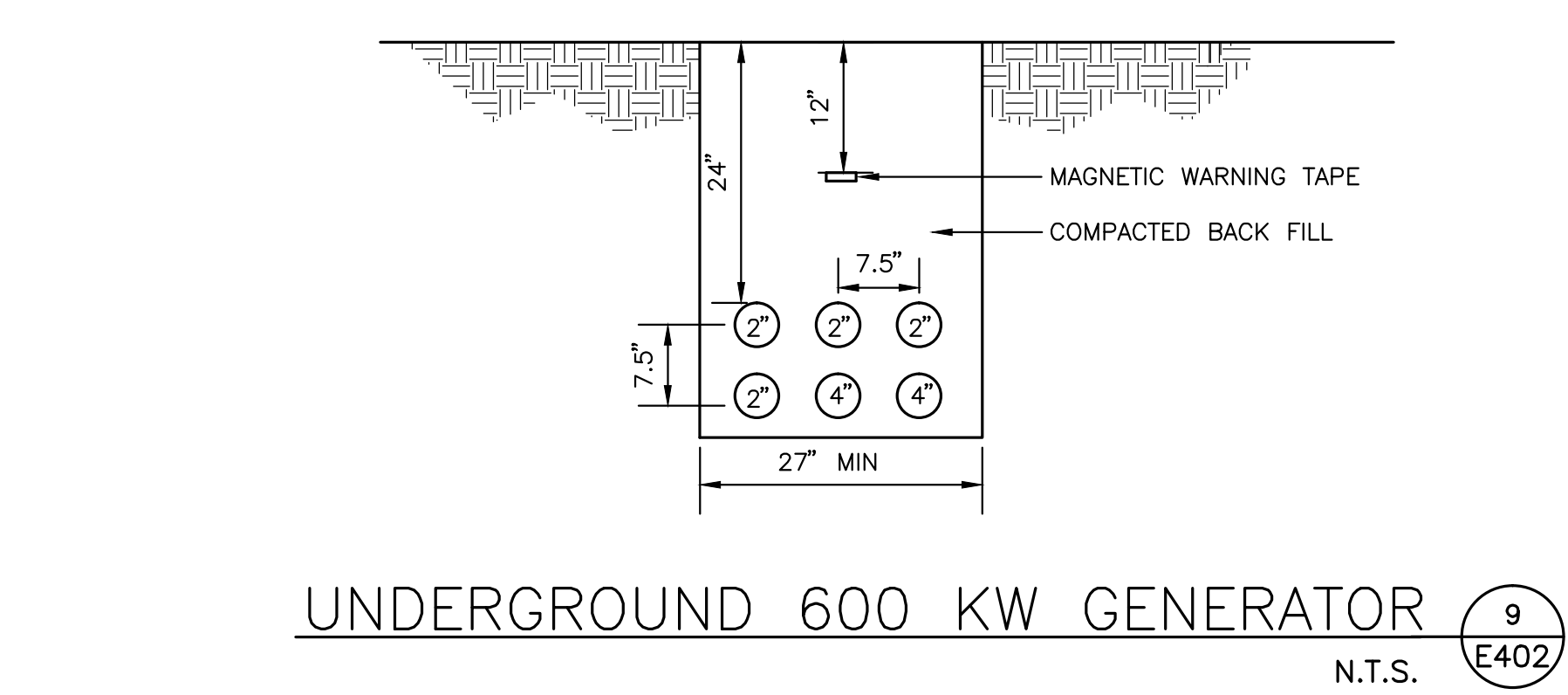


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N.T.S. E402

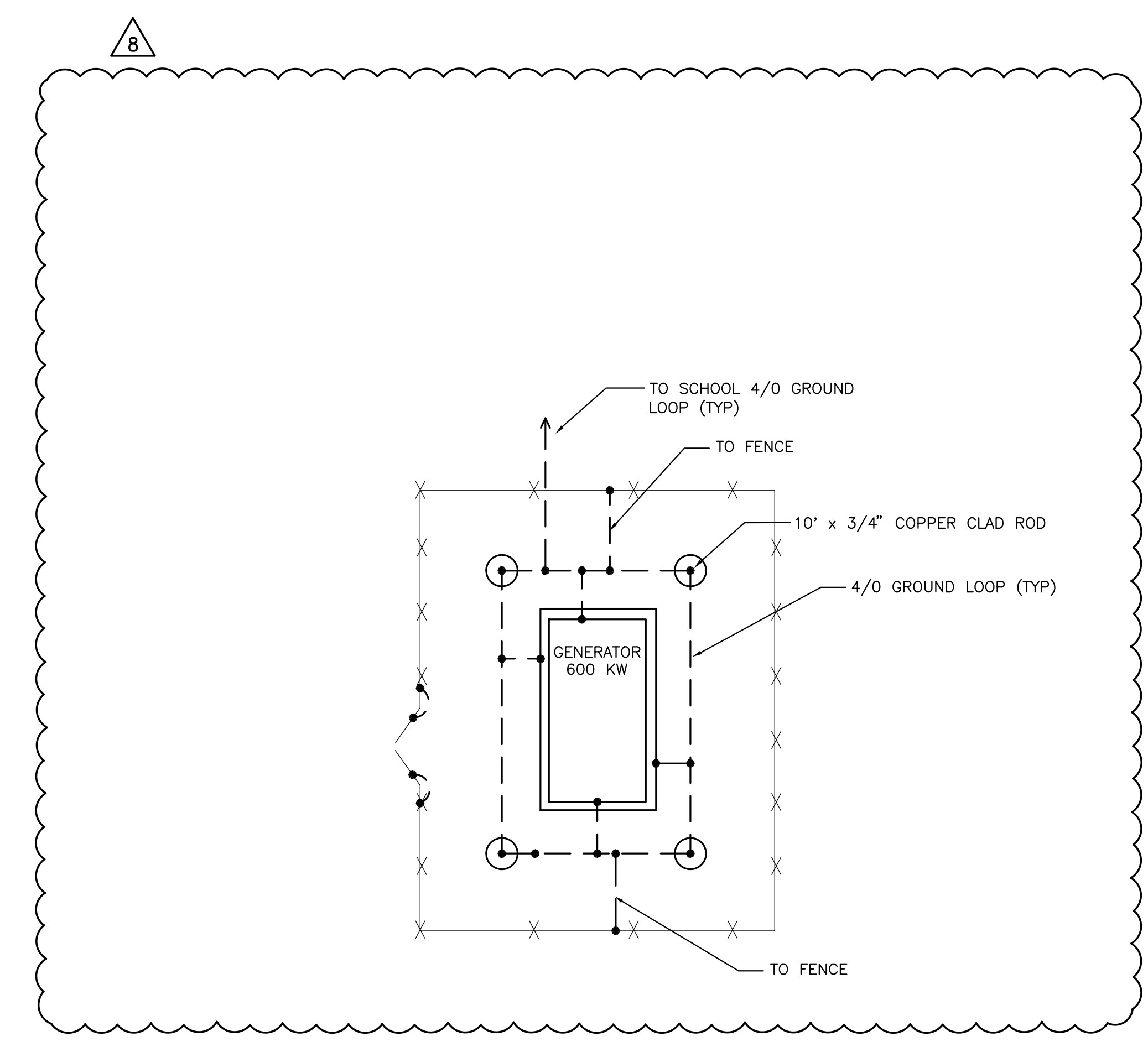


PRECAST HAND HOLE DETAIL 3
N.T.S. E401

NOTE:
THE HANDHOLE DIMENSIONS ARE 36\"/>



UNDERGROUND 600 KW GENERATOR 9
N.T.S. E402



SCHOOL OUTDOOR ELECTRIC GROUNDING DETAIL 12
N.T.S. E402

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SUBMISSION	DATE
ADDEDNDUM #1	11-21-12
NJSDA REVISIONS	09-12-12
NJSDA COMMENTS	03-04-11
NJSDA COMMENTS	08-12-10
NJSDA COMMENTS	05-17-10
NJSDA COMMENTS	02-12-10
DATE:	OCTOBER 13, 2009
SCALE:	1/8" = 1'-0"
DRAWING TITLE:	ELECTRICAL DETAILS
DRAWING No:	E-4.0.2
DRAWN BY:	RC

EXHIBIT 3



Version 2.1 Registered Project Checklist

New Phillipsburg High School
Phillipsburg, New Jersey

Yes ? No

5 9 Sustainable Sites 14 Points

Y			Prereq 1	Erosion & Sedimentation Control	Required
		N	Credit 1	Site Selection	1
		N	Credit 2	Development Density	1
		N	Credit 3	Brownfield Redevelopment	1
		N	Credit 4.1	Alternative Transportation, Public Transportation Access	1
Y			Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
		N	Credit 4.3	Alternative Transportation, Alternative Fuel Vehicles	1
		N	Credit 4.4	Alternative Transportation, Parking Capacity and Carpooling	1
		N	Credit 5.1	Reduced Site Disturbance, Protect or Restore Open Space	1
Y			Credit 5.2	Reduced Site Disturbance, Development Footprint	1
Y			Credit 6.1	Stormwater Management, Rate and Quantity	1
Y			Credit 6.2	Stormwater Management, Treatment	1
		N	Credit 7.1	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof	1
		N	Credit 7.2	Landscape & Exterior Design to Reduce Heat Islands, Roof	1
Y			Credit 8	Light Pollution Reduction	1

Yes ? No

2 3 Water Efficiency 5 Points

Y			Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
Y			Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
		N	Credit 2	Innovative Wastewater Technologies	1
		N	Credit 3.1	Water Use Reduction, 20% Reduction	1
		N	Credit 3.2	Water Use Reduction, 30% Reduction	1

Yes ? No

3 2 12 Energy & Atmosphere 17 Points

Y			Prereq 1	Fundamental Building Systems Commissioning	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	CFC Reduction in HVAC&R Equipment	Required
1	2	7	Credit 1	Optimize Energy Performance	1 to 10
		N	Credit 2.1	Renewable Energy, 5%	1
		N	Credit 2.2	Renewable Energy, 10%	1
		N	Credit 2.3	Renewable Energy, 20%	1
Y			Credit 3	Additional Commissioning	1
Y			Credit 4	Ozone Depletion	1
		N	Credit 5	Measurement & Verification	1
		N	Credit 6	Green Power	1

Yes ? No

4 **9** **Materials & Resources** **13 Points**

Y			Prereq 1	Storage & Collection of Recyclables	Required
		N	Credit 1.1	Building Reuse , Maintain 75% of Existing Shell	1
		N	Credit 1.2	Building Reuse , Maintain 100% of Shell	1
		N	Credit 1.3	Building Reuse , Maintain 100% Shell & 50% Non-Shell	1
Y			Credit 2.1	Construction Waste Management , Divert 50%	1
		N	Credit 2.2	Construction Waste Management , Divert 75%	1
		N	Credit 3.1	Resource Reuse , Specify 5%	1
		N	Credit 3.2	Resource Reuse , Specify 10%	1
Y			Credit 4.1	Recycled Content , Specify 5% (post-consumer + ½ post-industrial)	1
		N	Credit 4.2	Recycled Content , Specify 10% (post-consumer + ½ post-industrial)	1
Y			Credit 5.1	Local/Regional Materials , 20% Manufactured Locally	1
		N	Credit 5.2	Local/Regional Materials , of 20% Above, 50% Harvested Locally	1
		N	Credit 6	Rapidly Renewable Materials	1
Y			Credit 7	Certified Wood	1

Yes ? No

11 **4** **Indoor Environmental Quality** **15 Points**

Y			Prereq 1	Minimum IAQ Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
Y			Credit 1	Carbon Dioxide (CO₂) Monitoring	1
		N	Credit 2	Ventilation Effectiveness	1
Y			Credit 3.1	Construction IAQ Management Plan , During Construction	1
Y			Credit 3.2	Construction IAQ Management Plan , Before Occupancy	1
Y			Credit 4.1	Low-Emitting Materials , Adhesives & Sealants	1
Y			Credit 4.2	Low-Emitting Materials , Paints	1
Y			Credit 4.3	Low-Emitting Materials , Carpet	1
Y			Credit 4.4	Low-Emitting Materials , Composite Wood & Agrifiber	1
Y			Credit 5	Indoor Chemical & Pollutant Source Control	1
		N	Credit 6.1	Controllability of Systems , Perimeter	1
Y			Credit 6.2	Controllability of Systems , Non-Perimeter	1
Y			Credit 7.1	Thermal Comfort , Comply with ASHRAE 55-1992	1
Y			Credit 7.2	Thermal Comfort , Permanent Monitoring System	1
		N	Credit 8.1	Daylight & Views , Daylight 75% of Spaces	1
		N	Credit 8.2	Daylight & Views , Views for 90% of Spaces	1

Yes ? No

1 **4** **Innovation & Design Process** **5 Points**

		N	Credit 1.1	Innovation in Design : Provide Specific Title	1
		N	Credit 1.2	Innovation in Design : Provide Specific Title	1
		N	Credit 1.3	Innovation in Design : Provide Specific Title	1
		N	Credit 1.4	Innovation in Design : Provide Specific Title	1
Y			Credit 2	LEED™ Accredited Professional	1

Yes ? No

26 **2** **41** **Project Totals (pre-certification estimates)** **69 Points**

Certified 26-32 points Silver 33-38 points Gold 39-51 points Platinum 52-69 points