

Addendum #003

January 31, 2020

Project: BYU-Idaho – Spori Annex 2019
A Sculpture and Ceramics Facility for University Academics **Project No:** 11513

To: Contractors bidding on the Spori Annex project

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Attached: 38 Drawing Sheets.

Page(s): 87 including this cover page. Pages within set classified as Other include 2 Radiant Guard cut sheet pages and 2 bidder questions notes pages from Structural.

This Addendum forms a part of the Contract Documents and modifies the original Bid Documents dated 27 November 2019 as noted below. **Acknowledge receipt of this Addendum in the space provided in the lower part of page 2 of the Form of Proposal.** Failure to do so may subject the Bidder to disqualification.

I. CHANGES TO PRIOR ADDENDA:

A N/A

II. CHANGES TO BIDDING REQUIREMENTS:

A Project Dates – clarification is given that construction at the project site cannot start until January 29, 2020. Equipment and materials submittals can proceed prior to that as it is anticipated a contract will be awarded shortly after the bid date. The project completion date is still October 31, 2020.

III. CHANGES TO SPECIFICATIONS:

- A INDEX, 3 pages.
- B 03 3000 Cast-in-place Concrete, 1 page.
- C 03 3100 Exterior Concrete Specification, 19 pages.
- D 04 4860 Stone Veneer Assemblies, 8 pages.
- E 06 0573 Preservative Wood Treatment, 2 pages.
- F 06 1100 Wood Framing, 2 pages.
- G 06 2001 Common Finish Carpentry Requirements, 3 pages.
- H 06 2023 Interior Finish Carpentry, 1 page.
- I 06 4001 Common Architectural Woodwork Requirements, 3 pages.

- J 07 5419 Polyvinyl-Chloride Roofing PVC, 14 pages.
- K 07 7180 Water Repellents, 3 pages.
- L 07 7200 Roof Accessories, 1 page.
- M 12 2413 Roller Window Shades, 5 pages.
- N 12 3661 Simulated Stone Countertops, 1 page.

IV. CHANGES TO DRAWINGS:

- A Civil, 4 sheets: C100, C101, C102, C103. See Bidder Questions for changes noted.
- B Landscape, 3 sheets: L101, L102, L103. See Bidder Questions for changes noted.
- C Structural, 8 sheets: SE-001, SE-002, SE-004, SE-101, SE-121, SE-521, SE-522, SS-503. See Bidder Questions for changes noted.
- D Architectural, 16 sheets: AE100, AE101, AE151, AE161, AE201, AE202, AE301, AE310, AE311, AE401, AE404, AE501, AE502, AE503, AE504, AE601. See Bidder Questions for changes noted.
- E Electrical, 7 sheets: E0.1, E2.0, E3.0, E4.0, E5.0, E5.1, E6.0. See Bidder Questions for changes noted.

V. BIDDING QUESTIONS:

1. Steed Stud Framing and Delegated Design

Question: 054000 Spec is calling for delegated design/stamped shop drawings. Looking through the structural drawings, it appears that they are calling out everything w/great detail and have been engineered. Please confirm if required.

Answer: **Steel stud framing delegated design is not required.**

2. Site Concrete Specifications

Question: There is not a specification for site concrete in Division 32. Section 033000 refers to Section 321313 in Division 033000. Please provide specification. Additionally, in a previous version of the specs, there was a no-numbered specification prepared by Dyer that was titled "Specifications for Civil Site Work" that was specific to this project. Please confirm that any requirements included therein have been incorporated into the project manual elsewhere.

Answer: **See the attached site concrete specification, nineteen (19) pages. Addendum 003. The Dyer Group has not been a part of this project in any of its phases.**

3. Storm Drain Piping Size Clarification

Question: On C103, there is a note just East of the island that states "Install 100' of 12" ADS..." piping and it points to piping in that is labeled as 18" SD. Please advise if this is to be 12" or 18".

Answer: **The note is correct it is a 12" line.**

4. Storm Drain on 2nd East

Question: Civil drawing C103 doesn't have any callout numbers for the Storm Line that is running up 2nd south and into the parking lot. There are notes along the storm line that says install 12" but there is also a #1

bubble (retain and protect) on 2nd south at the existing manhole and then on the storm line. Please clarify if this line is all new or if some of the storm is already installed. Is all the storm highlighted in orange on sheet C103 new and needs to be installed?

Answer: That entire line in 2nd will be a new storm line. There is no existing line. That #1 bubble should not be there. See the updated Civil drawings, Addendum 003.

5. 24" Storm Drain Pipe Type Clarification

Question: Also just for clarification, some of the suppliers are thinking the 24" pipe at the North end of the parking lot is perforated, Please advise if this is the case or if it is solid pipe and all the water is being retained in the 24" and then being regulated back into the city storm with the storm water vault that is to be installed. Or, is this perforated pipe with rock and fabric around it? If so, please provide a detail and advise how much rock is required, what size/type of rock, how deep under the asphalt, etc. Please advise. Additionally, the 24" pipe is laid very close to each other. 24" ADS has an outside diameter of 28". Based on how it is drawn, the 24" pipes will be all but touching. The fittings on the end probably won't fit that close together. Also, if it is a drain field with rock, rock would not be able to be installed between the pipe. Please advise.

Answer: It is solid pipe as we are only detaining the water on site and then releasing it into the city system. The 24" pipe will need to be spaced 36" O.C. this will allow room for the tees and pipe spacing. The south pipe will stay in the same location and then space off of that. This will result in moving the vault about 2.5' north. See the updated Civil drawings, Addendum 003.

6. Cleanout Ports

Question: Are the 4" cleanout ports on the end of the 24" storm lines just to be basically a 24" cap with a 4" cleanout coming out the end of it? Please clarify what is required.

Answer: Plan on using a 24"x4" reducing tee and then capping the end. The 4" will come up for the cleanout. See the updated Civil drawings, Addendum 003.

7. 12x24 Tees

Question: Just a note: the 12x24" tees are not possible to be made. The way it would have to be done is have a 12x24 reducer with a 12" tee. These tees are also quite large and probably won't fit in the area shown. Please advise.

Answer: I forgot that the 12"x24" tee are 24" through with 12" teeing off and not 12" through with a 24" teeing off. Yes, please plan on a 12"x12" tee and then a 12"x24" reducer. The 24" pipe will need to be spaced 36" O.C. this will allow room for the tees and pipe spacing. This will result in moving the vault about 2.5' north. See the updated Civil drawings, Addendum 003.

8. Water Line / Fire Line Clarifications

Question: With respect to the water line, the civil drawings show a 2" service line connecting close to the fire hydrant and running into the new building. The mechanical drawings M1.0 actually shows a 2" service line and then a 4" fire line. Can you please clarify which one is correct?

Answer: We will need both a fire line and a service line. We verified with mechanical that it is ok to come off that 8" line in the drive aisle on the south side of the building. We will do a 6" hot tap with valve then tee off the 2" service just before the building. See the updated Civil drawings, Addendum 003.

9. Soils Report References

Question: Several notes on SE-501 say "see soils report". Additionally, several details on SE501 state to refer

to the soils report. The structural notes page also says no soils report has been done. Some of the notes on SE-501 have a minimum. Should we follow those minimums? Please clarify what the requirements are and what is to be used in absence of a soils report.

Answer: There is no soils report for the project. Meet or exceed the known minimums. The Owner will contract with a special inspector to observe the soils process. If concerns are brought up the Owner will invite Connect Engineering, the Civil Engineer on the project, to the site to determine a solution for mitigating the concerns with the soil.

10. Soils Engineer

Question: Note 5 under Site Preparation on SE-001 states that "if no soils report provided, the contractor shall retain a soils engineer to observe the excavations and verify that the assumed soil bearing pressures can be safely obtained." Typically, the soils engineer any report is owner provided. Please advise if the owner will retain a soils engineer for these services.

Answer: The Owner will contract with a special inspector to observe the soils process. If concerns are brought up the Owner will invite Connect Engineering, the Civil Engineer on the project, to the site to determine a solution for mitigating the concerns with the soil.

11. Curb & Gutter New vs Existing to Remain

Question: Sheet C103 - In the middle of the new road between the new Spori Annex and the Clarke, there the old curb and gutter is shown (I think that's what it is) with note #11 stating to install curb and gutter. Down the page a little, there is a new valley gutter also shown right in the middle of the new road. Are all these notes incorrect and from old plans? Or are we doing something here? It isn't clear what is to be demo'd and what is new in comparing C103 and C100. Please clarify what is to be new C&G, what is existing to remain, etc.

Answer: The most recent revised plans should show this better. All the existing curb in the drive aisle will be removed and replaced with new curb. The valley gutter will be removed and replaced in a new location. See the updated Civil drawings, Addendum 003.

12. SD CB # 2 Elevations

Question: The grate and invert elevations are incorrect. Please provide correct elevations.

Answer: Grate: 4886.67, N Inv out: 4881.00.

13. C100 -Existing Steam and Condensate

Question: Note 3 shows the existing steam and condensate and it stops and does not go to a vault. Please show where this line is to be removed from (which vault).

Answer: I apologize for that. We were going to have that being removed in the previous demo plan so that layer was frozen. There is a note on sheet C100 that calls out the existing steam vault and then can be seen on sheets C102-C103. That line runs from that vault up to about the east side of the new proposed Spori Annex building. It runs close to that gas line that is shown. There is approximately 280' of line. The attached revised plans show the existing line. Addendum 003.

14. Road Base Clarifications

Question: Spec 31 1123-4 - 2.1.A.3 - All road base under interior and exterior concrete is spec'd for ¾" minus state spec road base. In this paragraph it shows 1.5" road base to be used under all asphalt. This is not typical and is not cost effective unless it is specifically wanted by the owner. Is this spec correct or should we stick to

the civil plans which show ¾ road base under all asphalt?

Answer: **Yes, the 3/4" road base is correct, NOT the 1.5".**

15. Rigid Insulation under snowmelt

Question: Typically, rigid insulation is installed under concrete stairs/sidewalks that receive snowmelt. There are not any details showing insulation at these locations. Please advise.

Answer: **Install RadiantGUARD, Reflex-Air, White Poly/Double Bubble/Reflective insulation beneath all exterior concrete stair and sidewalk areas to receive a hydronic heat snowmelt system. See the two (2) attached cut sheets. Addendum 003.**

16. Existing Steam and Condensate Line Demo

Question: C100 does not show the existing steam and condensate line (Note 3) going to the vault. Please show the line running all the way to the vault so the earthwork bidders will estimate the correct quantity of demo.

Answer: **I apologize for that. We were going to have that being removed in the previous demo plan so that layer was frozen. There is a note on sheet C100 that calls out the existing steam vault and then can be seen on sheets C102-C103. That line runs from that vault up to about the east side of the new proposed Spori Annex building. It runs close to that gas line that is shown. There is approximately 280' of line. The attached revised plans show the existing line, Addendum 003.**

17. Change to Sub Base Course in C102

Question: Addendum 01 reissued Sheet C102 and the paving section was changed for the sub base course from 10" to 24". However, in the language on the cover sheet, this change was not mentioned. Please confirm we are to bid using the new 24" section.

Answer: **The sub-base course beneath asphalt has been changed from 10" to 24". Bid using the new 24" section. See the updated Civil drawings, Addendum 003.**

18. Roller Shade Clarifications

Question: Note 65 on sheets AE402, 403, 404 state that the roller shades are to be powered by an electric motor - the spec calls for manually operated. The electrical drawings do not appear to call for power for roller shades. Please advise.

Answer: **Roller shades will be electronically controlled. Electric roller shade locations can be seen on sheet AE151. Please install the shades as close to windows as possible without interference with the window and per manufacturer's recommendation. Install recessed within acoustic ceilings and recessed within gypsum board window head at ribbon windows. Match color to ceiling, soffit, or window system as appropriate per location. See details 3 & 4, Sheet AE151, Addendum 003.**

19. Whiteboards

Question: Note #70 on sheets AE141, 402, 403, 404 state that the Whiteboards are Owner provided and Owner installed - the spec calls for the Contractor. Please advise if these are to be owner provided/installed or contractor provided/installed.

Answer: **Whiteboards will be Owner provided and installed.**

20. Roofing Questions / Clarifications

Question: 1. Is a 3-Coat Painting System on the metal roofing, flashing, trim, wall panels, etc.. desired by the Owner? A 2-coat is standard and does cover the 20 yr warranties - also a 2 coat system does include primer, paint and clear coat - a 3-coat would double up on either the paint or clear coat - the 3-coat system is available but at a much higher cost and a longer lead time on the schedule. 2. The spec calls for Roof Panels, Wall Panels, and Soffit Panels all with different manufacturers but with matching colors. Can this be changed to all the manufactures to do all items that way the color would match and a possible cost savings? Otherwise, we can't guarantee the colors will be an exact match. 3. The standing seam roof panels are called out to be 0.040 in thick, which equates to be 20 ga. 24ga is standard with a possibility of 22ga but 20ga is not available. Please advise. 4. Please show any walkway mats to be installed on the membrane roof on the roof plan. 5. The PVC Roofing spec shows the Dens Deck at 1/2" and the drawings show it as 5/8". The 1/2" is what is typically used and 5/8" is considerably more expensive with minimal benefit.

Answer: 1. A 2-coat painting system for the metal roofing, flashing, trim, wall panels is acceptable. 2. The roof, wall, and soffit panels can be from the same manufacturer. A primary concern is to have the color (XL 9967 Pewter (Valspar# 439ZZ203 is the current choice) match throughout the facility along with the quality of the material and finish. The desire is to have the curtainwall or and/or curtainwall and storefront system, spandrel color, paint on hollow metal door frames, the mechanical enclosure wall cap, parapet wall cap, chimney cap, standing seam metal roofing, fascia, soffit, wall metal, the metal above the entry's and Office, Foundry, and Clay Storage areas ribbon windows, as well as the metal ceiling in the Entry Vestibules and the broken system in the foyer to all match in color. Manufacturer is less of a concern. 3. The standing seam metal roof thickness can be 22 gauge. 4. The area for the walkway mats to be installed on the roof membrane are shown on sheet AE161 and called out with keyed note 112. The walkway mats come out a minimum of 3'-0" from the east and west clearstory walls and fill the entire area bounded by the dashed lines between the clearstories. In addition, install a minimum size 3'-0" by 3'-0" pad at each roof mounted exhaust fan. The pad should be located at the side of the fan curb nearest the north/south center line of the building, a minimum of three feet deep and as wide as the width of the fan curb, but not less than 3'-0" wide. 5. The 1/2" Dens Deck is acceptable.

21. Coordination Between Civil and Mechanical Site Plan

Question: M1.0 shows roof drain lines coming out the North side of the building. However, the civil drawings do have any provisions for these to connect to. Please incorporate any connections from the plumbing contractor to the earthwork contractor into the civil drawings.

Answer: Roof drain lines will go out of the North side of the building and tie into the new stormwater retention system. The attached plans in Addendum 003 will show this change.

22. Gas Line at Clarke

Question: Note 12/C103 states to install gas meter per Intermountain Gas guidelines. It is our understanding there is a meter installed and that we are to tee off after the meter and run the gas line to the Spori Annex. This is how it is shown on C103. Please advise.

Answer: That is correct. We need to come off the gas line after the meter. There is no need to add a new meter, as it will be provided and installed by the gas company in the Spring prior to the gas for the building being run from the meter to the building.

23. Site Signage

Question: Sheet C103 does not show any signage such as stop signs, handicap parking etc. Is any required? If so, please identify and locate on drawings.

Answer: Exterior signage for the building, including one (1) stop sign at the parking lot exit driveway, one (1)

parking designation sign at the parking lot entry driveway, and four (4) ADA parking signs at the ADA parking stalls, will be Owner provided and installed in the appropriate locations within the landscape planter beds during rough grading prior to the final grading and landscape plantings being installed. Please notify Owners sign shop representative Darrell Holm (208) 709-7558 when the appropriate time to install has arrived.

24. Roof Openings

Question: D1/SE-521 shows structure supports for roof penetrations. These are not dimensioned and are not shown on the roof framing plan so we are unsure what the size and quantities are needed to be bid.

Answer: See the Mechanical Roof Plan, Sheet M1.3, and Waste and Vent Riser Diagram, Sheet P1.0, to help determine the location and quantities of roof penetrations pertaining to Detail D1, Sheet SE-521. See updated Sheet AE161, Addendum 003.

25. Slab-on-Deck Concrete

Question: There are details on SS-503 that show slab-on-deck concrete. Where does this occur? Is this supposed to be light-weight concrete? Is there a mix design?

Answer: There is no slab-on-deck concrete in the project.

26. Acoustical Plank Panels

Question: Section 09 5113 2.4 for an NRC of 0.95. USG does not make a panel with an NRC of 0.95. The highest rating is 0.90. We can use USG Mars # 89137 2'x4'x1" square edge with an NRC of 0.90, CAC of 30, LR of 0.90. Please provide a specific tile number because there are a lot of options and they price can vary greatly.

Answer: In short, the NRC of 0.90 is acceptable. The long of it is that I am not sure if or where the Acoustical Plank Panels product under 2.4 is located. I think that it should have been removed from the specification. Under Acoustic Panel Ceilings, 09 5113, 2.3 it calls for USG Corporation "Radar Basic, 2110" with an NRC or 0.55 minimum. That ceiling system is intended for Office 100, Office 105, and the locker alcoves east and west off of Hallway 1-D. The Acoustic Metal Pan Ceilings, 09 5133, 2.3, Armstrong World Industries, "Metalworks Torsion Spring, 7210M16" system, in 2.3 K, has a BioAcoustic Infill Panel with an NRC or 0.70 that is for the Foyer 1-B area. I don't see a place in the plans where that product is referenced.

27. T-Grid for Mars Panel Ceilings

Question: Is the intent for us to hang grid throughout all the spaces that receive the Mars panels? It is unclear what is wanted here.

Answer: It is intended that the USG Corporation "Radar Basic, 2110" ceiling system be installed in Office 100, Office 105, and the locker alcoves east and west off of Hallway 1-D and have grid and panels wall to wall. It is intended that the ceiling system within Vestibule 1-A and Vestibule 1-C be wall to wall and of the same material as that on the exterior of the building entry's. We thought that was an Armstrong product, but were wrong unless it becomes Armstrong, Metalworks Vector. The look that we want from the outside is linear with vertical lines that run down the face of the entry from the roof down and rolling under the canopy and into the building. Those lines will align with the ceiling lines inside the building. The look that we imagined was of an upside down standing seam metal roof with seams at 12" on center, but the product that we currently have in the drawings calls for a 1" insulated metal panel. We don't know what the most reasonable option is. The ceiling in the Foyer was planned to be Armstrong, Metalworks Torsion Spring, 7210M16, but we were told that it would have to be another system such as Metalworks Vector in order to be sloped. Vector is interior and exterior rated, so the thought of running it outdoors has occurred. The vertical side walls of the entry canopy would have to be a different product like the 1" insulated panel. The most likely

system right now seems to be Centria, Formawall. Centria Formawall gives clean architectural lines like we want and I believe can be installed horizontally on a ceiling or vertically on a wall. The look that we want for the metal above the ribbon windows is with vertical joints aligned with the center of window mullions below, so the metal is divided into three panels above the ribbon of three window panes. The insulated metal panels on the sides of the north alcove between the curtain wall windows is insulated metal panels as well. The skylight is mostly break metal, but it could be insulated panels as well if it made sense. The bottom of the exterior entry ceiling would be the same Armstrong, Vector material only solid painted metal rather than grained laminate panels in Natural Maple with MicroPerforated M17 or M19 holes with acoustic panel above as planned for the Foyer. If we did the same standing seam metal as at the Raku Kiln Area roof only inverted, we would have to make sure that it wouldn't be problematic at keeping the elements out. The side walls of the entry roof protrusions would not be standing seam, the joints would be oriented vertically. It is intended that the grid system in Foyer 1-B be wall to wall at the locations near entry Vestibule 1-A and Vestibule 1-C but break up as indicated on AE151 as it flows up and toward the buildings center. The darkened areas indicate Acoustic Metal Pan Ceiling. It is intended that the dark areas where there is ceiling panel against ceiling panel be continuous grid and grained laminate panels in Natural Maple with MicroPerforated M17 or M19 holes, with acoustic panel above and all of the open areas in white or any other perimeter of the dark areas be Armstrong World Industries, 2-inch Axiom Classic Straight Trim Channel to hide the acoustic panel above as well as give some perceived thickness to the ceiling system and a clean, attractive perimeter edge. The color is intended to match the exterior metal soffit color. The BYUI Shops prefer the USG grid as it is readily available to them for repairs and has some use characteristics that they like as well. If the USG grid can be used with the Armstrong panels and edge that would be great or if USG has a similar edge, perforated metal pan, and acoustic panel system, that may be approved as well.

28. Metal Soffits Material

Question: AE151 calls for Armstrong soffits and the specs in 07 4213 call for Firestone or approved equal. Are supposed to bid Armstrong or Firestone or any product? It would be nice if we could provide all metal from the same manufacturer so the colors are identical and we only have to manage one supplier.

Answer: The Armstrong reference on AE151 in Keynote #132 is in reference to the broken ceiling plane within the foyer. The Firestone reference in Section 07 4213 of the specification is regarding the soffit metal at the exterior of the building. It will be fine to get all the metal from the same manufacturer if that is helpful to you. Currently it is all a custom color XL 9967 Pewter, Valspar# 439ZZ203.

29. Lumber at Roofs

Question: Does the 2x6 shown on the roof details on AE161 need to be pressure treated or is standard lumber acceptable?

Answer: Pressure treated lumber is acceptable. See specification Section 06 0573, Preservative Wood Treatment, 2 Pages, and Sheet AE311. Addendum 003.

30. Framing at Soffits

Question: 2/AE301 is the only detail I can find of the soffits at the entrances on the east and west sides. Nothing is labeled and there is no close-up detail showing how this is built. Is it supposed to be steel studs? If so, what gauge and spacing?

Answer: Steel studs, see updated Detail 10, Sheet SS503, Addendum 003.

31. Travertine Attachment

Question: How are we to adhere the travertine shown on AE310? I have not been able to find in the specs anything about this. Normally, there is an attachment detail that has been engineered for the application.

Answer: Travertine connection details, hardware, etc. to be provided by travertine supplier. Supplier to be responsible for erection of travertine.

32. Locations of Tyvek

Question: AE101 shows Tyvek on some of the wall types. The wall sections on AE311 do not show any. Is the intent for all exterior walls to have Tyvek?

Answer: The intent is for all the exterior walls of the building to have Tyvek building wrap.

33. Roofing Note Clarification

Question: Note 80 on AE301 indicates metal soffit panel and references AE141. It appears this reference is incorrect. Please provide correct reference.

Answer: The reference to AE141 is incorrect. Detail 6, Sheet AE311 is the proper reference. The updated drawing is within Addendum 003.

34. Metal Panel Clarification

Question: Please clarify - are Note 80 (metal panel soffit) and note 77 (2" insulated metal wall panel) on pages AE 201 and AE202 respectively the same product? There don't appear to be different panels in the specifications.

Answer: They are both insulated metal panels from the same manufacturer, the only difference being the thickness.

35. Panel Material Clarification

Question: On AE101, wall types A-4 & A-5 call for an aluminum veneer panel. We haven't been able to locate an aluminum veneer panel. Please provide the applicable specification.

Answer: Centria, Formawall Dimension Series.

36. Metal Panel Clarifications

Question: Is 22g steel base material acceptable in lieu of the .040 aluminum base material for the soffit panels (Section 074213.53) and the standing seam roofing (Section 074113.16)?

Answer: Aluminum only.

37. Roofing Insulation Questions

Question: Section 075419 calls out fiberglass matt insulation while the plan notes call out paperback insulation 6" thick. Which product is desired? Please also provide what R-Value needs to be achieved with this 6" insulation.

Answer: See the attached specification Section 07 5419, Polyvinyl-Chloride Roofing PVC, 14 Pages, to replace the previous. FM Global requirements as applicable to the revised specification still apply. Addendum 003. Per IECC 2015, Table C402.1.3, Climate Zone 6, for insulation entirely above the roof deck, we are required to have a continuous insulation R-value of R-30. If intended use is longer than 10 years Polyiso rigid insulation is valued at R-5.5 per inch, which gives this application a minimum R-value of R-33 and significantly more in the built-up areas.

38. Roof Hatch Spec Clarification

Question: Spec Section 077200 2.4 G for the roof hatch hardware calls for a remote control (this is not a common item). Please advise if a remote control for the roof access hatch is desired?

Answer: **Remote-control operation is not desired. Removed from specification section 07 7200, 2.4 G, page 5. See the attached revised replacement to specification Section 07 7200, Page 5. Addendum 003.**

39. Site Concrete Clarifications

Question: The plans call for 4" sidewalk and provide no reinforcing requirements. At BYU-I, the sidewalk has always been 6" for standard sidewalk and 8" for fire lanes. Please advise if all sidewalk is to in fact be 4". Also, provide any reinforcing requirements.

Answer: **Standard sidewalks shall be 6" thick and have #4 rebar centered in thickness and located at 2'-0" on center both directions. Support rebar on concrete dobies not more than 6'-0" on center. Dowel into existing concrete. See the attached exterior concrete specification, nineteen (19) pages. Addendum 003.**

40. Slab-on-Grade Fiber

Question: Section 03 3000 2.11 call for micro-fiber in the slab on grade concrete. Is this in lieu of rebar? Please clarify the reinforcing requirements for the slab on grade concrete.

Answer: **The micro-fiber is not in lieu of rebar. Standard sidewalks shall have #4 rebar centered in the slabs thickness and located at 2'-0" on center both directions. Support rebar on concrete dobies not more than 6'-0" on center. Dowel into existing concrete. See that attached revised specification Section 03 3000, Page 8 for micro-fiber revision. Addendum 003.**

41. Roofing

Question: The spec is asking for an FM Global Class 1 internal fire, UL class A external fire, 90 psf tested assembly (FM 1A-90). The vapor barrier that is specified (Sarnafil SA 31) is not class 1 compliant. The compliant vapor barrier in this system would be the Sarnafil 5000 E SA FR. Spec language is below (pg 6, section 2.3): Sarnafil 5000 E SA FR: 15 mil reinforced composite aluminium foil with a self-adhesive SBS modified bitumen backing and removable plastic release liner designed for FM Class 1 compliance when applied directly over a steel deck. Question: The specification asks for a 20 year warranty. Past recent work at the university has been specified with 30 year warranties. Please confirm desired warranty term of 20 or 30 years. If 30 years, spec will need to be revised to 80 mil thick membrane. Question: The warranty does not call out a wind speed. Recent work at the university was specified with a 74 mph wind speed warranty. Question: the details are calling out standard iso facer but the spec is asking for a coated glass facer on the insulation. Difference in cost is roughly 20% (add for the coated glass) and both would be approved for either 20 or 30 year warranties. Please clarify standard facer or coated glass. Question: the spec is asking for a solvent based adhesive for cold weather and water based for warm weather. Would the university approve using the Sarnafil self adhered G410 sheet? It has FM Global testing, is VOC free, installs very quickly, and can be installed in temps down to 20 F (no primer or adhesive required).

Answer: **See the attached specification Section 07 5419, Polyvinyl-Chloride Roofing PVC, 14 Pages, to replace the previous. FM Global requirements as applicable to the revised specification still apply. Addendum 003.**

42. Electrical

Question: Have a question regarding the Automatic Transfer Switch called out on drawing E6.0 One-Line Detail. Assuming we as the electrician are to provide this, but there is no info offered for what manufacture or

size? Didn't see anything in the drawing notes or in the specs, so is there any way we can get some additional detail for this equipment so we know what to quote out?

Answer: See revised drawing E6.0 for transfer switch information. Addendum 003.

43. Woodwork

Question: We can't find anything specifying hardware for the display cabinets. Can we ask for you to specify the hardware for those.

Answer: The display cabinet hardware will be PPHO151CH CRL Polished Chrome Prima #1 Pin 01 Series top or bottom mount hinge, PPHO152CH CRL Polished Chrome Prima #2 Pin 01 Series top or bottom mount hinge, and LK342KA CRL Chrome Lock for 3/8 inch Glass Door - Keyed Alike. The finish on the lock vs the hinges are not written the same and that causes some concern that they may not appear the same. Please provide samples of the Polish Chrome, Satin Chrome, Brushed Satin Chrome, Polished Nickel, and Brushed Nickel. The desire is to not only have the hinges and locks match, but to have their finish match that of the adjacent classroom door hardware. I could not find a lock that had as many finish options as the hinges though. If one can be found, that would be great. Also, there is a change to the tempered glass door thickness from 1/4 inch to 3/8 inch. It is still 1/2 inch tempered glass at the side walls. See the revised details 2, Sheet AE501, Addendum 003.

44. Metal Drop Ceiling

Question: Question for you in regards to the RCP for the BYU-Idaho project. On the North end of the building where the keynote 132 is indicated for the perforated metal drop in ceilings it appears not be fully drawn in since this system requires the acoustical grid ceiling installed to put in these ceiling tiles. This is just an unusual way to be drawn for a ceiling tile, so just trying to understand the intent here. Thanks for your help sir.

Answer: The ceiling system for Keynote 132 is fully drawn in. It is intended that the grid system in Foyer 1-B be wall to wall at the locations near entry Vestibule 1-A and Vestibule 1-C but break up as indicated on Sheet AE151 as it flows up from the vestibule door head toward the skylights at the buildings north/south center line. The 24"x48" shaded areas indicate areas to receive Armstrong World Industries, "Metalworks Torsion Spring, 7210M16" Acoustic Metal Pan Ceiling, as indicated within specification section 09 5133, 2.3. The white areas surrounded by and around the perimeter of the shaded areas are open to the painted steel b-deck above. The transition between the shaded and white areas are bordered by Armstrong World Industries, 2-inch Axiom Classic Straight Trim Channel. The trim channel is there to hide the acoustic panel above the metal pan as well as give some perceived thickness to the ceiling system and a clean and attractive perimeter edge. The color (XL 9967 Pewter, Valspar# 439ZZ203 is the current choice) is intended to match the exterior metal soffit color and curtain wall system. The grid between shaded areas will be standard grid. The BYUI Shops prefer to use USG grid as it is readily available to them for repairs and has some use characteristics that they like as well. If the USG grid can be used with the Armstrong panels and trim channel that would be great or if USG has a similar trim channel, perforated metal pan, and acoustic panel system, that may be approved as well.

45. Missing Detail References on SE-121

Question: SE-121 has a number of detail cuts but there are no reference detail/sheet numbers given in the detail reference. Please provide.

Answer: See updated Sheet SE-121, Addendum 003.

46. Steel

Question: 1. No top of steel elevations anywhere. These are critical when detailing steel.

Answer: See updated Sheet SE-121, Addendum 003.

47. Steel

Question: 2. Base plates don't make sense. BP11 seems to be a canned detail and you have interior columns which will have square base plates and at the corners of building they will be a square with a cutout probably about 10 and 1/2" square. Are 55 Grade anchor bolts really needed?

Answer: BP-11, Base plates at exterior foundation wall piers of building shall be type C plates and interior BP-11 base plates shall be type B plates. 55 grade bolts are required.

48. Steel

Question: 3. Top of piers need clarified so columns can be accurately located on top of concrete.

Answer: The concrete piers shall be centered below steel columns and footings shall be centered below columns unless noted otherwise. See the details for elevations where the columns bear on piers and the plan where columns bear on footings. Addendum 003.

49. Steel

Question: 4. No sections cut through the W21 x 57 beams on the wings. Figure we need a bent plate of some type but not sure what the legs will be.

Answer: See updated Sheet SE-121, Addendum 003.

50. Steel

Question: 5. Perimeter deck angles will be needed along grids 1 and 6. Will figure a bent plate of some type, correct?

Answer: See updated Sheet SE-121, Addendum 003.

51. Steel

Question: 6. Bottom of roof framing drawing has a MW-10A masonry wall and shear walls. Will probably need an angle bolted to the wall and along top of shear wall to support deck correct?

Answer: See note 8 on the roof framing plan SE-121, Addendum 003.

52. Steel

Question: 7. A4 & A5/SE-521 the 1/4" bent plate with stiffeners seems to be called out wrong. This will be a 2 1/2" x 2 1/2" x 1/4" angle which is the same height as joist bearing seat height and per note 5 above will need a bent plate. Correct?

Answer: See updated Sheet SE-521, Addendum 003.

53. Steel

Question: 8. The Clear-story has sections missing. Per discussions with engineer we can make these into shop fabricated frames with full penetration welds from column to beams. Normally these connections need an

internal plate at the bottom of tube to constitute moment but engineer says that is not needed. There is no bent plate at top of these clear-story tubes per architectural section so the roof is directly above and he does not show any roof deck between the tube and the roof, unusual but probably works.

Answer: **See updated Sheet SE-121, Addendum 003.**

54. Roofing

Question: Is there any way of getting either GAF or Versico PVC Membrane's approved for this project as we are not Sarnafil Applicators. Let me know, we would be interested in bidding this project. Thanks,

Answer: **No, Sarnafil is the only approved PVC membrane.**

55. Tectum Panel Questions

Question: Please provide a specification for the Tectum panels that identifies the specific product and color.

Answer: **The Armstrong representative said that there is not an item number for the specified product and that it should describe it as follows. The product is "Armstrong, TECTUM Direct-Attach Ceiling and Wall Panels. The panels will be 24" wide by 48" long by 2" thick with the exposed Long Edges Beveled/Short Edges Beveled." The panels can be ordered in Natural (TNA), White (TWH) or a custom color, per Contractors direction and discretion. The finished product shall have the exposed face and side edges of the panels painted gray (XL 9967 Pewter (Valspar# 439ZZ203 is the current choice, verify color with Architect prior to painting) to match the exposed metal on the building. The Contractor shall decide whether the gray color is painted at the factory as a custom color or in the field by their paint subcontractor. The panels shall be directly attached to the bottom side of the painted steel roof b-deck above. The panel fasteners shall be evenly and consistently spaced in from each of the four panel corners, midway down the long side, and consistently throughout all panels. The panel fasteners shall be per the manufacturers recommendation and painted to match the panels.**

56. Location of Existing Steam and Condensate Lines vs New

Question: The new steam and condensate lines from the Spori Vault to the new building follow a different path than the existing lines that used to service the Kirkham that will be removed. Can the new lines be placed in the same trench as the old lines once they are removed up to the point that they need to turn into the new building? Doing so would likely dramatically reduce the amount of rock excavation needed.

Answer: **Yes, the new steam and condensate lines from the Spori Vault to the new building can be installed following the same path/trench that the old steam and condensate lines are removed from up to the point that they need to turn into the new building.**

57. Site Lighting to be Removed

Question: Note 13/E.01 calls for the EC to "rework existing circuit to the three existing lights on the east side of the Clarke Building and make all required connections". There is no information on the plans showing how this is currently circuited so we know what will be required. Please provide the circuiting.

Answer: **This has been clarified see revised sheet E0.1, Addendum 003.**

58. Water Repellant for Masonry

Question: There does not appear to be any water repellant called for in the specifications for the brick veneer. Please confirm if this is required. If so, please provide a specification.

Answer: Yes, water repellent for the brick veneer is required. See the attached specification Section 07 7180, Water Repellents, Pages 3, Addendum 003.

59. Metal Pan Ceiling Questions

Question: 1. Keynote 132 on AE151 is confusing. It notes areas w/ continuous grid to have exposed grid but if area is left open to have trim. If it gets trim then no grid would be exposed. If grid was to be exposed then it would require 360 degree painted grid which is quite expensive. Is there any way they could mark up the ceiling to show where they want mains/tees and trim? This way everyone is apples to apples. 2. Metal panel ceiling spec 2.3H notes to provide from manufacturers full range but also notes to match exterior metal windows, door frames, soffit, and fascia Interior choices are Satin Anodized, Lacquer Mill and Brushalume. If these colors are not acceptable then there are custom colors available which are significantly higher. With a color not chosen then that leaves us pricing the custom colors to cover ourselves. Is it possible for the spec to be changed to "Standard Colors"? 3. Metal Pan Ceiling Spec 2.6 calls for 2" axiom. The metal pan torsion spring is 1 1/2' tall and the suspension system is 1 1/2-1 15/16" tall, Torson Spring sits below suspension. This is a minimum of 3" now. Please advise if #7147 Standard Torsion Spring Bulkhead is to be used vs. 2" axiom.

Answer: 1. Refer to the answer to question #44 for general understanding of the design intent. Trim is at the perimeter between shaded areas and white areas. Mains and tees are between the 24"x48" shaded areas, with the mains running east/west or from the entry doors, up toward the midline of the building or skylight. 2. It is not possible to change the specification to standard colors at this time. The exterior metal color is unknown at this time (XL 9967 Pewter (Valspar# 439ZZ203 is the current choice) and samples of the proposed standard colors listed have not been submitted to verify if they would be acceptable. Custom colors are the safest bet for the time being. 3. I do not know enough about the proper application of the systems to know if using the 2" Axiom or changing to the Standard Torsion Spring Bulkhead #7147 will be the best thing to do. From the general details, it looks like either of them will work. We are looking for a thin profile for the face of the trim and thus the 2" was selected, but if we have to go to 4" that will be okay. It did not appear from the Axiom installation details that there would be a portion of the system protruding above the 2" Axiom. If it does, that would likely not be desirable. After speaking with an Armstrong representative, I was informed that Metalworks Torsion Spring, 7210M16" Acoustic Metal Pan Ceiling is not rated for installation at an incline and using the Metalworks Vector was recommended. I have not had a chance to research that system yet, but prior to receiving that information we had decided to use a wood grained panel, likely the Laminates Natural Maple with MicroPerforated M17, or M19 holes.

60. Keynote 126 AE401 - Urinal Screen?

Question: What is Keynote 126 / AE401 referring to? Is this the urinal screen? I don't understand what they are talking about routing for a notch, and not stopping and restarting, routing etc. Can they give us a detail to show the intent?

Answer: Keynote 126 on Sheet AE401 refers to the 'U' shaped aluminum wall track that the bathroom stall partition uses to attach the partition to the bathroom wall. The bathroom wall tile has an accent trim band that the 'U' shaped aluminum wall track will pass over. The accent trim band tile is thicker than the general wall tile, so the finished face of the accent trim band will stand proud of the finished face of the general wall tile. We do NOT want the 'U' shaped aluminum wall track to stop at the bottom of the accent tile trim band and restart at the top of it. We want the 'U' shaped aluminum wall track to be continuous. So, at the location of the accent trim band tile the bottom side of the 'U' shaped aluminum wall track should be routed out to notch around the face of the tile and accommodate clearing the accent trim band tile by 1/8" to 1/4", but consistent at the tile face, and top, and bottom edges without breaking the continuity of the 'U' shaped aluminum wall track. The routed notch should have rounded inside corners and eased edges so they are not sharp, and a clean (factory milled) finished look. Basically, route out an elongated flat bottom 'U' shape into the wall track to accommodate its passing over the accent trim band tile.

61. Ladder Access to Roof

Question: Note 64 references a 20" ladder access to roof. Is the intent of this note to provide a ladder to access the roof or an access panel? If it is a ladder, we need a drawing showing what the ladder is, size, distance between rungs, materials etc.

Answer: See updated Details 7 & 8 on Sheet AE504, Addendum 003.

62. Monument Sign Questions

Question: There are no dimensions or sizes and associated reinforcing for the footings / stem walls / masonry on the monument sign. Please advise.

Answer: Footing width minimum 5'-0". Footing thickness 12" minimum. Reinforce with #5 at 12"o.c. each way in bottom of footing. 8" walls shall be reinforced with #5 at 12"o.c. each way. Masonry walls shall be grouted solid and reinforced with #5 at 24"o.c. vertically and (2) #4 at 48"o.c. horizontally. Grout between masonry walls.

63. Monument Signage

Question: 2/AE100 shows a BYU-I sign on the travertine veneer. Will this BYU-I sign be owner provided and installed?

Answer: The BYUI sign will be Contractor provided and installed. It will be 3/8" 6061 aluminum with 1/4" rounded corners, 1/16" eased edges, 7/16" holes centered at each corner four and one half inches (4.5") in from each side to accommodate a Gyford Standoff System. Sign plate shall be anodized aluminum with BYUI logo etched into the surface. Polish and otherwise prepare the surfaces of the sign to accept smooth, clean, and consistent anodizing color prior to anodizing. Verify anodization color with Owner prior to ordering as well as request a high resolution logo image from Owner prior to and for use in etching. All exposed Gyford Standoff System parts shall have an anodized finish and color to match the signs finish and color. Gyford standoff assembly has SO-202R Barrels with SO-CAP22R Standard Caps and 1-1/4" long threaded studs. Other hardware as necessary. Rather than using the combination screw and nylon anchor or 5/16"-18 all thread by Gyford, use 1/2"-20 all thread installed through the one inch (1") travertine, one inch (1") air space, and three inches (3") into the concrete behind and Hilti anchored into place for a secure attachment. Tap and thread one inch (1") into one end of each SO-202R Barrel to accept the 1/2"-20 all thread.

64. Monument Sign Concrete Planter Wall

Question: Please clarify what type of concrete finish is desired for the concrete planter wall. What type of formwork is to be used and how is the surface area intended to be finished?

Answer: The concrete to be exposed when finished shall be formed using new, smooth forms, vibrate concrete during pour to evacuate air bubble voids, sac rub finish any remaining voids, one inch (1") deep tapered recessed snap tie holes, evenly spaced within field and equal distance from the edges. Ease all horizontal and vertical concrete edges to remain exposed with 3/4" chamfer. Three, four inch (4") minimum weep holes at the bottom of the long side of the planter wall, just above the footing, equally spaced, one near each end by the short side walls and one mid-way along the long wall. Two, six inch (6") holes, one at each of the short side planter walls, located midway horizontally in the short wall. Place the middle of hole twelve inches (12") below the finished grade. See updated attached sheet AE504 in Addendum 003.

65. Walk-Off Carpet

Question: Sheet AE141 shows a walk-off carpet in the entrance vestibules. The only Carpet spec is Section 09 6813 and it does not appear this is the product for the entrance vestibules. Will the walk-off carpet be Owner

Provided / Installed? Does it require a recessed slab? If it is to be provided by the contractor please provide a specification.

Answer: The walk off carpet within Vestibule 1-A and Vestibule 1-C will be Owner provided and Owner installed. The concrete slab does not need to be recessed to accommodate the walk-off carpet tile. A transition strip will be used to transition from the walk-off carpet tile to concrete at the interior vestibule doors. Contractor will still provide and install the vinyl base within the vestibules.

66. Note 57 / AE502

Question: Note 57 as shown on 4/AE502 appears to be the incorrect note. Please advise.

Answer: I do not see a Keynote 57 on Sheet AE502 and no reference to one at Detail 4/AE502 or on Sheets AE501 through AE504. Please clarify the note and location.

67. Shelving Question

Question: Note 98/AE404 calls for adjustable shelving but does not note if this is to be Owner Provided/Installed or Contractor Provided/Installed. Please advise.

Answer: The adjustable wall mounted shelving in Keynote 98, Sheet AE404 will be Owner provided and Owner installed. All of the wall mounted shelving will be Owner provided and Owner installed.

68. Keynote 90 on 4/AE404

Question: Please see elevation B on 4/AE404. The note appears to be incorrect. Please advise.

Answer: Note has been revised, see the attached revised Detail 4B, Sheet AE404.

69. Snowmelt Piping Conflict

Question: M1.0 (Keynote 2) shows snowmelt piping running under the slab of the ice banks. We will either need an alternate location or we will need to remove a portion of the slab. Removing and replacing the slab would be a good way to go that will also simplify the process of excavating and placing the footings that go slightly under the slab so we don't undermine the slab. Please advise.

Answer: Removing and replacing all or a portion of the ice banks concrete slab is acceptable. If only a portion of the existing concrete slab is removed, place dowels at 2'-0" on center from the new to the existing, provide a #4 rebar grid centered in slab thickness and located at 2'-0" on center each way, and match the depth of the new portion of slab with the old. If an entirely new slab is installed, it shall have #4 rebar centered within the slabs 6" thickness and located at 2'-0" on center both directions. Support rebar on concrete dobies not more than 6'-0" on center.

70. Woodwork

Question: 1. In Spec Section 123661 under Related Requirements (1.2B) there is a reference to another spec section: 123640 "Stone Countertop". This referenced spec section is not found in the spec book.

Answer: There are no "Stone Countertops" in the project. See the attached revised specification Section 123661, Page 1.

71. Woodwork

Question: 2. Spec Section 062032 - Window Sills calls for ¾" solid surface material. Solid surface material does

not come in 3/4" thickness. Typically, Johnson Brothers will provide 1/2" window sills with a 1/2" build down. Another option would be to use quartz instead of solid surface because you can get quartz in 3/4" thickness.

Answer: 1/2-inch (13-mm) thick, solid surface material with a 1/2-inch (13-mm) thick build down at the outside edge for the appearance of an overall 1-inch (25 mm) thick window sill. Solid Surface, Wilsonart, Midnight Melange 9091ML (3). See the attached revised specification Section 06 2023, Page 2.

72. woodwork

Question: 1. Please provide a material callout for the restroom countertops.

Answer: See Detail 5, Sheet AE501. Solid Surface, Wilsonart, Flint Rock 9207CS. The same solid surface material will be installed on the counter top for the Clay Bench between the pottery wheels, see Detail 1, Sheet AE501, and on the Cubby System, see Detail 7, Sheet AE503.

73. Woodwork

Question: 2. Sheet AE402, Keynote 115 calls for "Coat hangers mounted @ 5'6" A.F.F. - CPCI". Please provide more information on these coat hangers. Material, basis for design, etc.

Answer: See Details 8A & 8B, Sheet AE503 and attached specification Section 06 2001, Common Finish Carpentry Requirements. Coat racks will be Owner provided and Owner installed.

74. Woodwork

Question: 3. Sheet AE501, elevation 3A calls for 3/4" plastic laminate edge banding. This type of edge banding can become damaged quite easily and is impossible to fix once damaged. We would recommend a more durable PVC banding. (This same recommendation applies to all instances where this 3/4" plastic laminate edge banding is called out).

Answer: Provide PVC edge banding at all instances where 3/4 inch plastic laminate edge banding is called out. PVC edge banding to be selected from manufacturers full range of colors.

Additional Clarification

A. Civil

I have another point of clarification that was asked by a contractor regarding the storm line in the drive isle south of the Spori Annex. The 12" STM line shown on the plans is the existing storm line. This line will be protected from the EX SD MH1 that the valley gutter runs to all the way north to EX SD MH #2. The line that tees off and goes north to the catch basin in the existing curb will be removed and capped. That existing catch basin that shows up right in the middle of the sidewalk will be removed as well. The attached revised plans show this change.

End of Addendum #003

Issued by: Chad Alldredge

Facility Construction Subgroup**DIVISION 02 – EXISTING CONDITIONS****02 0000 EXISTING CONDITIONS**

02 4119 SELECTIVE DEMOLITION

DIVISION 03 – CONCRETE**03 0000 CONCRETE**

03 3000 CAST-IN-PLACE CONCRETE
 03 3100 EXTERIOR CONCRETE
 03 4800 PRECAST CONCRETE SPECIALTIES

DIVISION 04 – MASONRY**04 0000 MASONRY**

04 2000 UNIT MASONRY
 04 2113 BRICK MASONRY
 04 4860 STONE VENEER ASSEMBLIES

DIVISION 05 – METALS**05 0000 METALS**

05 1200 STRUCTURAL STEEL FRAMING
 05 2100 STEEL JOIST FRAMING
 05 3100 STEEL DECKING
 05 4000 COLD-FORMED METAL FRAMING
 05 5000 METAL FABRICATIONS
 05 5213 PIPE AND TUBE RAILINGS

END VOLUME 1**VOLUME 2****Facility Construction Subgroup Continued****DIVISION 06 – WOOD, PLASTICS, AND COMPOSITES****06 0000 WOOD, PLASTICS, AND COMPOSITES**

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 06 1053 MISCELLANEOUS ROUGH CARPENTRY
 06 1100 WOOD FRAMING
 06 1600 SHEATHING
 06 2001 COMMON FINISH CARPENTRY REQUIREMENTS
 06 2023 INTERIOR FINISH CARPENTRY
 06 4001 COMMON ARCHITECTURAL WOODWORK REQUIREMENTS
 06 4116 PLASTIC-LAMINATE-FACED ARCHITECTURAL CABINETS
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07 2100	THERMAL INSULATION
07 2719	PLASTIC SHEET AIR-BARRIERS
07 4113.16	STANDING-SEAM METAL ROOF PANELS
07 4213.53	METAL SOFFIT PANELS
07 5419	POLYVINYL-CHLORIDE (PVC) ROOFING, FM Global Form X2688 – Checklist for Roofing System
07 6200	SHEET METAL FLASHING AND TRIM
07 7180	WATER REPELLENTS
07 7200	ROOF ACCESSORIES
07 7253	SNOW GUARDS
07 8413	PENETRATION FIRESTOPPING
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08 3113	ACCESS DOORS AND FRAMES
08 4113	ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS
08 4413	GLAZED ALUMINUM CURTAIN WALLS
08 7100	DOOR HARWARE
08 8000	GLAZING

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09 2216	NON-STRUCTURAL METAL FRAMING
09 2900	GYPSUM BOARD
09 3000	TILING
09 5113	ACOUSTICAL PANEL CEILINGS
09 5133	ACOUSTICAL METAL PAN CEILINGS
09 6513	RESILIENT BASE AND ACCESSORIES
09 6813	TILE CARPETING
09 9113	EXTERIOR PAINTING
09 9123	INTERIOR PAINTING

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10 2113	TOILET COMPARTMENTS
10 2600	WALL AND DOOR PROTECTION
10 2800	TOILET, BATH, AND LAUNDRY ACCESSORIES
10 4413	FIRE PROTECTION CABINETS
10 4416	FIRE EXTINGUISHERS
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12 2413 ROLLER WINDOW SHADES
 12 3661 SIMULATED STONE COUNTERTOPS
 12 9300 SITE FURNISHINGS

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21 0500 COMMON REQUIREMENTS FOR FIRE SUPPRESSION
 21 0548 VIBRATION AND SEISMIC CONTROLS FOR FIRE SUPPRESSION PIPING AND EQUIPMENT
 21 0553 IDENTIFICATION FOR FIRE SUPPRESSION PIPING AND EQUIPMENT
 21 1300 WET PIPE FIRE SUPPRESSION SPRINKLERS

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22 0501 COMMON PLUMBING REQUIREMENTS
 22 0503 PIPE, PIPE FITTINGS, PIPE HANGERS & VALVES
 22 0548 VIBRATION AND SEISMIC CONTROL FOR PLUMBING AND EQUIPMENT
 22 0553 IDENTIFICATION FOR PLUMBING PIPES AND EQUIPMENT
 22 0703 MECHANICAL INSULATION AND FIRE STOPPING
 22 0705 UNDERGROUND PIPING INSULATION
 22 0710 POTABLE WATER PIPE INSULATION
 22 0711 HANDICAPPED FIXTURES INSULATION
 22 0720 RAIN DRAIN INSULATION
 22 0800 FIRE STOPPING

22 1000 PLUMBING PIPING AND VALVES

22 1007 PRESS TYPE PIPE FITTINGS
 22 1114 NATURAL GAS SYSTEMS
 22 1116 DOMESTIC WATER PIPING SYSTEMS (COPPER)
 22 1118 BACKFLOW PREVENTER VALVE
 22 1313 SOIL, WASTE, & VENT PIPING SYSTEMS
 22 1316 SANITARY, WASTE, & VENT PIPING SYSTEMS
 22 1400 STORM DRAINAGE PIPING

22 2000 CONDENSATE DRAIN PIPING

22 2600 CONDENSATE DRAIN PIPING

2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.
4. Use corrosion-inhibiting admixture in concrete mixtures where indicated.

2.11 CONCRETE MIXTURES FOR BUILDING ELEMENTS

A. Footings: Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength: 4000 psi (27.6 MPa) at 28 days.
2. Maximum Water-Cementitious Materials Ratio: 0.45.
3. Slump Limit: 4 inches (100 mm), Maximum.
4. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 3/4-inch (19-mm) nominal maximum aggregate size.

B. Foundation Walls: Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength: 4000 psi (27.6 MPa) at 28 days.
2. Maximum Water-Cementitious Materials Ratio: 0.40.
3. Slump Limit: 4 inches (100 mm) Maximum, or 8 inches (200 mm) for concrete with verified slump of 2 to 4 inches (50 to 100 mm) before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch (25 mm).
4. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 3/4-inch (19-mm) nominal maximum aggregate size.

C. Slabs-on-Grade: Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength: 4500 psi (31 MPa) at 28 days.
2. Minimum Cementitious Materials Content: 611 lb/cu. yd. (363 kg/cu. m)
3. Retain slump limit from two options in first subparagraph below or revise to suit Project.
4. Slump Limit: 4 inches (100 mm) Maximum.
5. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 3/4-inch (19-mm) nominal maximum aggregate size.
6. Air Content: Do not allow air content of trowel-finished floors to exceed 3 percent.
7. Synthetic Micro-Fiber: Uniformly disperse in concrete mixture **at not less than the manufacturer's recommended application rate., but not less than 3 lb/cu. yd. (1.80 kg/cu. m).**

2.12 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.13 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116/C 1116M, and furnish batch ticket information.

1. When air temperature is between 85 and 90 deg F (30 and 32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

CAST-IN-PLACE CONCRETE
FOR EXTERIOR FLATWORK, CURBS AND GUTTERS,
STAIRS, RETAINING WALLS, AND RAMPS

1. GENERAL

1.1 SUMMARY

- A. This Section specifies exterior cast-in place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes for the following:
1. Flatwork
 2. Curbs and gutters
 3. Stairs
 4. Retaining walls and retaining wall foundations
 5. Ramps

1.2 REFERENCES

- A. American Concrete Institute (ACI)
1. ACI 117, Specifications for Tolerance for Concrete Construction and Materials
 2. ACI 301, Specification for Structural Concrete
 3. ACI 302.1R, Guide for Concrete Floor and Slab Construction
 4. ACI 305.1, Specification for Hot Weather Concreting
 5. ACI 306.1, Standard Specification for Cold Weather Concreting
 6. ACI 347R, Guide to Formwork for Concrete
- B. American Society for Testing and Materials (ASTM); current standard or specification or version approved or re-approved not more than 10 years prior to date Work performed.
1. ASTM A82, Standard Specification for Steel Wire, Plain, for Concrete Reinforcement
 2. ASTM A184, Standard Specification for Welded Deformed Steel Bar Mats for Concrete Reinforcement
 3. ASTM A185, Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete
 4. ASTM A497, Standard Specification for Steel Welded Wire Reinforcement, Deformed, for Concrete
 5. ASTM A615, Standard Specification for Deformed and Carbon-Steel Bars for Concrete Reinforcement
 6. ASTM A706, Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement
 7. ASTM C31, Standard Specification for Making and Curing Concrete Test Specimens in the Field
 8. ASTM C33, Standard Specification for Concrete Aggregates
 9. ASTM C39, Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
 10. ASTM C42, Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
 11. ASTM C94, Standard Specification for Ready-Mixed Concrete
 12. ASTM C143, Standard Test Method for Slump of Hydraulic-Cement Concrete
 13. ASTM C150, Standard Specification for Portland Cement
 14. ASTM C171, Standard Specification for Sheet Materials for Curing Concrete
 15. ASTM C172, Standard Practice for Sampling Freshly Mixed Concrete

16. ASTM C173, Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method
 17. ASTM C231, Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
 18. ASTM C260, Standard Specification for Air-Entraining Admixtures for Concrete
 19. ASTM C309, Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
 20. ASTM C494, Standard Specification for Chemical Admixtures for Concrete
 21. ASTM C618, Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
 22. ASTM C989, Standard Specification for Ground Granulated Plant-Furnace Slag for Use in Concrete and Mortars
 23. ASTM C1064, Standard Test Methods for Temperature of Freshly Mixed Hydraulic-Cement Concrete
 24. ASTM C1077, Standard Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation
 25. ASTM C1240, Standard Specification for Silica Fume Used in Cementitious Mixtures
 26. ASTM C1315, Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete
 27. ASTM C1602, Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete
 28. ASTM D448, Standard Classification for Sizes of Aggregate for Roads and Bridge Construction.
 29. ASTM D994, Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type)
 30. ASTM D1557, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort
 31. ASTM D1751, Standard Specification for Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types)
 32. ASTM D1752, Standard Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction
 33. ASTM E329, Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction
- C. Other Referenced Standards
1. Concrete Reinforcing Steel Institute (CRSI), Manual of Standard Practice
 2. AASHTO M 182 Standard Specification for Burlap Cloth Made from Jute or Kenaf and Cotton Mats

1.3 DEFINITIONS

acceptable or accepted – determined to be satisfactory by the Owner’s Representative.

ACI Concrete Field Testing Technician Grade I – a person who has demonstrated knowledge and ability to perform and record the results of ASTM standard tests on freshly mixed concrete and to make and cure test specimens. Such knowledge and ability shall be demonstrated by passing prescribed written and performance examinations and having credentials that are current with the American Concrete Institute.

cementitious materials – Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.

cold joint – a joint or discontinuity resulting from a delay in placement of sufficient duration to preclude intermingling and bonding of the material, or where mortar or plaster rejoin or meet.

construction joint – the interface between concrete placements intentionally created to facilitate construction.

contraction joint – also called a “control joint”, a formed, sawed, or tooled groove in a concrete slab to create a weakened plane to regulate the location of cracking resulting from the dimensional change of different parts of the structure.

Contract Documents – a set of documents supplied by Owner to Contractor as the basis for construction; these documents contain contract forms, contract conditions, specifications, drawings, addenda, and contract changes.

Contractor – the person, firm, or entity under contract for construction of the Work.

curing – actions taken to maintain moisture and temperature conditions in a freshly placed cementitious mixture to allow hydraulic-cement hydration and, if applicable, pozzolanic reactions to occur so that the potential properties of the mixture may develop.

expansion joint - a separation provided between adjacent sections to allow movement due to dimensional increases and reductions of the adjacent sections and through which some or all of the bonded reinforcement is interrupted. In pavements and slabs on ground, it is a separation between slabs filled with a compressible filler material.

isolation joint - a separation between adjacent sections of a concrete structure to allow relative movement in three directions and through which all of the bonded reinforcement is interrupted.

Owner – Brigham Young University - Idaho

Owner’s Representative – The representative (construction manager, architect, engineer, etc.) of the Owner overseeing the Work.

permitted – accepted by or acceptable to the Owner’s Representative; usually pertains to a request by Contractor, or when specified in Contract Documents.

Project Drawings – graphic presentation of project requirements.

Project Specifications – the written document that details requirements for Work in accordance with service parameters and other specific criteria.

quality assurance – actions taken by Owner’s Representative to provide confidence that Work done and materials provided are in accordance with Contract Documents

quality control – actions taken by Contractor to ensure the Work meets the requirements of Contract Documents.

reference specification – a standardized mandatory-language document prescribing materials, dimensions, and workmanship, incorporated by reference in Contract Documents.

referenced standards – standardized mandatory-language document prescribing materials, dimensions, and workmanship, incorporated by reference in Contract Documents.

strength test – standard test conducted for evaluation and acceptance of concrete determined as the average of the compressive strengths of at least two 6 by 12 in. cylinders or at least three 4 by 8 in. cylinders made from the same sample of concrete, transported, and standard cured in accordance with ASTM C31 and tested in accordance with ASTM C39 at 28 days or at test age otherwise specified.

submit – provide to Owner’s Representative for review.

submittal – documents or materials provided to Owner’s Representative for review and acceptance

surface defects – imperfections in concrete surfaces defined in Contract Documents that must be repaired.

Work – the entire construction or separately identifiable parts thereof required to be furnished under Contract Documents.

1.4 COMPLIANCE WITH SPECIFICATIONS

- A. Work shall conform to all requirements of ACI 301-10 Specifications for Structural Concrete, Sections 1 through 5, published by the American Concrete Institute, Farmington Hills, Michigan, except as modified by these Contract Documents.
- B. Work shall conform to the tolerance limits of ACI 117-10 Specifications for Tolerances for Concrete Construction and Materials, published by the American Concrete Institute, Farmington Hills, Michigan, except as modified by these Contract Documents.

1.5 SUBMITTALS

- A. General: Contractor shall provide to Owner's Representative submittals required by this Specification in accordance with Contract Documents.

1.6 QUALITY ASSURANCE AND QUALITY CONTROL

- A. General: Concrete materials and operations may be tested and inspected by Owner as Work progresses. Failure to detect defective Work or material will not prevent rejection if a defect is discovered later nor shall it obligate the Owner's Representative for final acceptance.
- B. Installer Qualifications: Contractor's personnel performing concrete finishing work and supervisors shall be ACI certified Concrete Flatwork Finishers and Technicians
- C. Manufacturer Qualifications: Ready-mixed concrete shall be provided by a concrete producer that complies with ASTM C94 requirements for production facilities and equipment.
 - 1. The production facility supplying hydraulic cement concrete shall have a current Certification of Ready Mixed Concrete Production Facilities from the National Ready Mixed Concrete Association (NRMCA), or equivalent.
 - 2. The production facility's ready mixed concrete delivery vehicles supplying hydraulic cement concrete shall be certified by the National Ready Mixed Concrete Association (NRMCA).
- D. Testing Agency Qualifications: An independent agency shall be qualified according to ASTM C1077 and ASTM E329 for testing indicated.
- E. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from one source, and obtain admixtures from one source from a single manufacturer.
- F. Pre-installation Meeting: Conduct pre-installation meeting at project site prior to beginning of work with Owner's Representative.
 - 1. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following (as applicable):
 - a. Contractor's superintendent
 - b. Independent testing agency
 - c. Ready-mix concrete supplier
 - d. Concrete subcontractor
 - 2. Review testing and inspection agency procedures for field quality control, concrete finishes and finishing, cold- and hot-weather concrete procedures, curing procedures, construction, contraction and isolation joints, joint fillers, forms and form removal limitations, dowels and steel reinforcement installation, slab flatness and levelness measurement, concrete repair procedures and concrete protection.

2. FORMWORK AND FORMWORK ACCESSORIES

2.1 GENERAL

- A. Description: The section covers design, construction and treatment of formwork to confine and shape concrete to required dimensions.
- B. Submittals
 - 1. Submit manufacturer's technical data sheet for formwork release agent or form liner proposed for use with each formed surface.
 - 2. Submit manufacturer's technical data sheet for form ties.

2.2 PRODUCTS

- C. Form Facing Materials
 - 1. Smooth-Formed Finished Concrete: Form-facing panels shall provide continuous, true, and smooth concrete surfaces. Largest practical sizes shall be furnished to minimize number of joints.
 - a. Plywood, metal, or other approved panel materials shall be used.
 - 2. Rough-Formed Finished Concrete: Form-facing material shall be plywood, lumber, or metal or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.
- D. Formwork Release Agents: Formwork release agents shall be commercially formulated product that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
- E. Chamfer Strips: Wood, metal, PVC, or rubber $\frac{3}{4}$ in. x $\frac{3}{4}$ in. chamfer strips shall be used unless otherwise specified.
- F. Rustication Strips: Wood, metal, PVC or rubber strips kerfed for ease of form removal shall be used where specified.
- G. Form Ties: Commercially fabricated, removable or snap-off metal or glass-fiber reinforced plastic form ties shall be used. Form ties shall be designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
 - 1. Furnish ties that will leave no corrodible metal closer than 1 in. to the plane of exposed concrete surface.
 - 2. Furnish ties that, when removed, will leave holes no larger than 1 in. in diameter in concrete surface.

2.3 EXECUTION

- H. Formwork Construction
 - 1. Contractor shall design, erect, shore, brace and maintain formwork to support vertical, lateral, static and dynamic loads, including construction loads, until concrete structure can support such loads.
 - 2. Formwork shall be constructed so that concrete members and structures are of size, shape, alignment, elevation, and position indicated in Contract Drawings within tolerance limits of ACI 117.
 - 3. Concrete surface irregularities, designated by ACI 347R as abrupt or gradual, shall be limited as follows:
 - a. Class A, 1/8 in. for exposed walls.
 - b. Class B, 1/4 in. for concealed walls.
 - c. Class C, 1/2 in. for completely concealed structure.
 - 4. Joints in formwork shall be tight enough to prevent loss of mortar.
 - 5. Forms shall be fabricated for easy removal without hammering or prying against concrete surfaces. Top forms shall be provided for inclined surfaces steeper than 1.5 horizontal to 1 vertical. Kerf wood inserts for forming keyways, reglets, recesses, etc. for easy removal.
 - 6. Rust-stained steel, damaged or dirty forms may not be used as form-facing material.

7. Edge forms, bulkheads, and intermediate screed strips for slabs to shall be set to achieve required elevation and slopes in finished concrete surfaces.
 8. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
 9. Exterior corners and edges of permanently exposed concrete shall be chamfered.
 10. Forms and adjacent surfaces shall be cleaned prior to concrete placing operations. Wood, sawdust, dirt and other debris shall be removed just before placing concrete.
 11. Forms and bracing shall be retightened just before concrete is place to prevent mortar leaks and maintain proper alignment.
 12. Formwork surfaces in contact with concrete shall be coated with form-release agent according to manufacturer's instructions and before placing reinforcement.
 13. Contractor shall place and secure dowels and embedded items required for adjoining work that is attached to it or supported by cast-in-place concrete.
- I. Removing and Reusing Formwork
 1. Formwork that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete provided concrete is sufficient strong so that it is not damaged by form removal operations and provided curing and protection operations are maintained.
 2. Forms to be reused in Work shall be cleaned and repaired. Split, frayed, delaminated, or otherwise damaged from-facing material shall not be acceptable for exposed surfaces. Form-release agent shall be reapplied to reused forms.
 3. When forms are reused, Contractor shall clean form surfaces to remove fins and laitance. Patched forms shall not be used for exposed concrete surfaces unless approved by Owner's Representative.
 - J. Field Quality Control: Before concrete is placed, inspect formwork for conformance to Contract Documents and then schedule Owner's quality assurance inspection, if specified.

3. REINFORCEMENT AND REINFORCEMENT SUPPORTS

3.1 GENERAL

- A. Description: This section covers materials, fabrication, placement, and tolerances of steel reinforcement and reinforcement supports.
- B. Submittals
 1. Reinforcement: Submit manufacturer's certified test report.
 2. Where applicable, Contractor shall submit steel reinforcement shop drawings that detail fabrication, bending and placement. Submittal shall include bar sizes, material, grade, bar schedules, bent bar diagrams, bar arrangement, splices and laps, and supports for concrete reinforcement.
 3. Submit materials and methods for providing load transfer and settlement control at locations where new work abuts existing concrete.
 4. Reinforcement supports: Submit materials used as steel reinforcement supports, bolsters, chairs, dobies, etc., that will remain permanently embedded in concrete.
 5. Dowels: Dowel systems for load transfer across isolation, expansion and cold joints.
- C. Material Storage and Handling – Prevent bending and protect reinforcement surface from contact with soil, oil, or other materials that decrease bond with concrete.

3.2 PRODUCTS

- A. Reinforcing bars: Reinforcing bars shall be deformed, except for load transfer dowels and welded wire reinforcement, which may be plain. Reinforcing bars shall be Grade 60 and size

No. 3 or No. 4, unless otherwise specified. Reinforcing bars shall conform to one of the following:

1. ASTM A615, carbon steel reinforcing bars;
 2. ASTM A706, low alloy steel reinforcing bars;
 3. ASTM A970, welded or forged headed reinforcing bars;
 4. ASTM A996, rail steel and axle steel, rail-steel bars shall be Type R; or
 5. ASTM A1035, low carbon, chromium steel bars.
- B. Bar Mats: When specified, use bar mat conforming to ASTM A184.
- C. Welded Wire Reinforcement – Plain welded wire reinforcement shall conform to ASTM A185, with welded intersection spaced no greater than 18 in. apart. Deformed steel welded wire reinforcement shall conform to ASTM A497.
- D. Plain Steel Wire: Plain steel wire reinforcement shall conform to ASTM A82.
- E. Deformed Steel Wire – Deformed steel wire reinforcement shall conform to ASTM A496.
- F. Joint Dowel Bars: Joint Dowel bars shall conform to ASTM A615, Grade 60, plain steel bars, cut true to length with ends square and free of burrs. Dowels shall have sufficient length to develop the strength of the bars.
- G. Bending reinforcement: Bend reinforcement cold unless otherwise specified. Fabricate reinforcement in accordance with tolerances of ACI 117 and according to CRSI’s “Manual of Standard Practice”.
- H. Reinforcement supports: Provide adequate bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Bar supports shall be manufactured from steel wire, plastic or precast concrete according to CRSI’s “Manual of Concrete Practice,” of greater compressive strength than the concrete.
1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire of CRSI Class 2 stainless-steel bar supports.

3.3 EXECUTION

- A. General: Comply with CRSI’s “Manual of Standard practice” for placing reinforcement.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover as defined in Table 3.3.C.1. Do not tack weld crossing reinforcing bars.

Table 3.3.C.1 – Concrete cover for reinforcement

	Concrete cover, in.
Concrete cast against and permanently in contact with ground	3
Concrete in contact with ground or weather:	
No. 6 through No. 18 bars	2
No. 5 bar, W31 or D31 wire, and smaller	1-1/2
Concrete not exposed to weather or in contact with ground	
Slabs and walls	
No. 14 and No. 18 bars	1/1/2
No. 11 bars and smaller	3/4

- D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- E. Install welded wire fabric in longest practicable lengths on bar supports spaced to minimize sagging. Lab edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

- F. Do not continue reinforcement or other embedded metal items bonded to concrete through expansion joints, except dowels, where specified, are bonded on only one side of a joint.
- G. Provide dowels at locations specified by Owner's Representative. Dowels shall be securely set in forms prior to placing concrete.
- H. For crack control of concrete slabs-on-ground, steel shrinkage and temperature reinforcement should be located in the upper third of the slab (per ACI 302.1R), while maintaining specified cover.
- I. Shrinkage and temperature steel shall be spaced not farther apart than five times the slab thickness, nor farther apart than 18 in.

4. CONCRETE MIXTURES

4.1 GENERAL

- A. Description: This section covers the requirements for materials, proportioning, production, and delivery of concrete.
- B. Submittals
 - 1. Mixture proportions: Submit concrete mix proportions and properties.
 - a. Include information on correction of batching for varying moisture contents of fine and coarse aggregates.
 - b. Submit adjustments made to mixture proportions or changes in materials and supporting documentation made during the course of the Work.
 - 2. Cement mill certificate: Submit mill certificate, which shall include alkali content, representative of cement used in Work.
 - 3. Submit copies of commercial laboratory tests of concrete aggregates. Tests should not be more than 90 days old and include:
 - a. Sieve analyses of fine and coarse aggregate of proposed mix aggregates and at any time there is a significant change in grading of materials.
 - b. Fine aggregates: reactivity, shale and chert, clay lumps, soundness, decantation.
 - c. Coarse aggregates: clay lumps and friable particles, reactivity, shale and chert, soundness, materials finer than 200 sieve.
 - 4. Pozzolans: Submit documentation of pozzolan compliance with requirements of ASTM C618 and pozzolan source.

4.2 PRODUCTS

- A. Materials
 - 1. Cementitious materials: Use the following cementitious materials, of the same type, brand, and source throughout the Work.
 - a. Portland cement: ASTM C150, Type I/II or V, low alkali (alkali content shall not exceed 0.60%, equivalent sodium oxide)
 - b. Fly ash: ASTM C618, Class F, less than 15% calcium oxide
 - c. Ground granulated blast furnace slag: ASTM C989, Grade 100 or 120
 - d. Silica fume: ASTM C1240
 - 2. Normal weight aggregates: Coarse and fine aggregate shall conform to ASTM C33, Class 4S or better. Provide aggregates from a single source with documented service record data. Use the largest coarse aggregate size in accordance with ACI 318.
 - 3. Admixtures: Admixtures certified by manufacturer to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material and to be compatible with other admixtures and cementitious materials. Do not use admixtures containing calcium chloride.
 - a. Air entraining admixture: conform to ASTM C260

- b. Water reducing admixture: conform to ASTM C494, Type A
- c. High-range water reducing admixture: conform to ASTM C494, Type F or G
- d. Water-reducing and accelerating admixture: conform to ASTM C494, Type E
- e. Water-reducing and retarding admixture: conform to ASTM C494, Type D
- 4. Mixing water: Mixing water shall be potable water and conform to ASTM C94.
- B. Performance and design requirements
 - 1. Cementitious materials content: Cementitious materials shall be proportioned to achieve the specified strength and durability requirements and minimize shrinkage. For concrete slabs, cementitious materials shall not be less than indicated in Table 4.2.B.1

Table 4.2.B.1 Minimum requirement of cementitious materials for concrete used in flatwork

Nominal maximum size of aggregate, in.	Cementitious materials, lb/yd ³
1-1/2	470
1	520
3/4	540
1/2	590
3/8	610

- 2. Slump: Unless otherwise specified in the Contract Documents, concrete slump shall be 4 ± 1 in. at the point of delivery. When Type F or G high-range water-reducing admixtures are permitted by Owner’s representative, concrete shall have been proportioned to a slump of 2 to 4 in. before the admixture is added and a maximum slump of 8 in. at point of delivery after the admixture is added, unless otherwise specified.
- 3. Size of coarse aggregate: Coarse aggregate maximum size - Unless otherwise specified, nominal maximum size of coarse aggregate shall not exceed three-fourths of the minimum clear spacing between reinforcing bars, one-fifth of the narrowest dimension between sides of forms, or one-third of the thickness of slabs or toppings.
- 4. Air content: All concrete subjected to exterior exposure shall be air entrained. Air content shall conform to Table 4.2.B.3. Measure air content at point of delivery in accordance with ASTM C173 or ASTM C231.

Table 4.2.B.3 Total air content for concrete

Nominal maximum aggregate size, in.	Air content, %*
1-1/2	5.5
1	6
3/4	6
1/2	7
3/8	7.5

* Tolerance on air content as delivered shall be ±1.5%

- 5. Admixtures: Use admixtures according to manufacturer’s written instructions.
 - a. Use water-reducing or high-range water-reducing admixture in concrete, as required, for placement and workability.
 - b. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
 - c. The use of calcium chloride is not permitted.
- 6. Concrete temperature

- a. When the average of the highest and lowest ambient temperature from midnight to midnight is expected to be less than 40°F for more than three successive days, deliver concrete to meet the following minimum temperatures immediately after placement:
- 55°F for sections less than 12 in. in the least dimension;
 - 50°F for sections 12 to 36 in. in the least dimension;
 - 45°F for sections 36 to 72 in. in the least dimension; and
 - 40°F for sections greater than 72 in. in the least dimension.

The temperature of concrete as placed shall not exceed these values by more than 20°F. These minimum requirements may be terminated when temperatures above 50°F occur during more than half of any 24-hour duration.

- b. Unless otherwise specified or permitted, the temperature of concrete as delivered shall not exceed 95°F.

7. Durability

- a. Freezing and thawing durability – All concrete subjected to exterior exposure shall be considered exposure class F3 for freezing and thawing and shall conform to Tables 4.2.B.7a.

Table 4.2.B.7a Concrete mix design requirements for exposure category F3

Mix design requirement	Value
Maximum water to cementitious materials ratio	0.40
Minimum 28-day compressive strength	5000 psi
Air content	Table 4.2.B.3

- b. Alkali aggregate reaction – Owner’s representative shall be notified of potential reactivity of coarse and fine aggregates through the submittal of laboratory test data. Alkali silica reactivity shall be evaluated using ASTM C1567, C1260, C 1293 or other industry standard method approved by the owner’s representative. Mixes with aggregates determined to be other than innocuous shall not be permitted or shall include ASR mitigation consisting of the use of supplementary cementitious materials and/or lithium salt-based admixtures. Laboratory test data demonstrating the effectiveness of mitigation on the proposed aggregate shall be provided.
- c. Concrete strength and water-cementitious materials ratio – The compressive strength and water-cementitious materials ratio for each portion of the Work shall be as specified in Table 4.2.B.7a or as otherwise specified in Contract Documents.
- d. Unless otherwise specified, concrete strength shall be determined based on strength testing as described in Section 1.3

4.3 EXECUTION

- A. Ready-mixed concrete: Concrete shall be batched, mixed and delivered in conformance with ASTM C94.
- B. Slump adjustment: When concrete slump test results are below the required slump, the slump may be adjusted by adding water up to the amount allowed in the accepted mixture proportions. Addition of water shall be in conformance with ASTM C94. The specified water-cementitious materials ratio shall not be exceeded. Do not add water to concrete delivered in

equipment not acceptable for mixing. Slump may be modified by the addition of water-reducing admixtures. The specified slump shall not be exceeded.

- C. Time of discharge
 - 1. Discharge of concrete shall be completed within 90 min. or before the drum has revolved 300 revolutions, whichever comes first after the introduction of the mixing water to the cement and aggregates or the introduction of the cement to the aggregates. If discharge is permitted by Owner's Representative after more than 90 minutes have elapsed since batching or after the drum has revolved 300 revolutions, verify that air content of air-entrained concrete, slump, and temperature of concrete are as specified.
 - 2. When ambient air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 90 min. to 75 min. When ambient air temperature is above 90 deg F, reduce mixing and delivery time to 60 min.
- D. Batch tickets: Batch tickets from every concrete batch delivered to the site shall be provided to the Owner's Representative or the Owner's testing agency. Copies of batch tickets shall be provided to the Contractor if requested. Batch tickets shall contain all information described in ASTM C94 – Batch Ticket Information.

5. HANDLING, PLACING AND CONSTRUCTING

5.1 GENERAL

- A. Description: This section covers the production of cast-in-place concrete including methods and procedures for handling, placing, finishing, curing, and repair of surface defects.
- B. Submittals
 - 1. Field control test reports – Maintain and submit records of quality control test and inspection reports.
 - 2. Temperature measurement – Submit proposed method for complying with requirements for measuring concrete temperatures.
 - 3. Qualification of finishers – Submit qualifications, consistent with Section 5.3.D.2, of the flatwork finishers who will perform the Work.
 - 4. Placement notification – Submit notification of concrete placement at least 24 hours before placement.
 - 5. Construction joint – Submit information for acceptance of proposed location and treatment of construction joint not indicated in Contract Documents.
 - 6. Cold-weather placement – Submit information for acceptance of proposed cold weather protection activities.
 - 7. Hot-weather placement – Submit information for acceptance of proposed precautions for hot weather concrete placement.
 - 8. Fresh concrete protection – Prior to placing concrete, submit corrective measures proposed for use for conditions that promote rapid drying of freshly placed concrete such as low humidity, high temperature, and/or wind.
- C. Delivery – Place concrete within time limits specified in 4.3.C.

5.2 PRODUCTS

- A. Granular fill: Granular fill used as base material shall be a clean mixture of crushed stone or crushed or uncrushed gravel conforming to ASTM D448 Size 57, with 100 percent passing a 1-1/2 in. sieve and 0 to 5 percent passing a No. 8 sieve.
- B. The base shall be mechanically compacted to 95% of maximum density as established by ASTM D1557.
- C. Curing Materials

1. Evaporation retarder: Waterborne, monomolecular film forming evaporation retarder manufactured for application to fresh concrete. The following products or equivalent may be used.
 - a. Spray Film; ChemMasters
 - b. AquaFilm; Dayton Superior
 - c. Eucobar; Euclid Chemical
 - d. VaporAid; Kaufman Products, Inc.
 - e. Lambco Skin; Lambert Corporation
 - f. E-CON; L&M Construction Chemicals
 - g. MasterKure ER 50; BASF
 - h. Waterhold; Metalcrete Industries
 - i. SikaFilm; Sika Corporation
 - j. Monofilm; Nox-Crete Products Group
 - k. EVAPRE; W.R. Meadows, Inc.
2. Absorptive cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd.
3. Moisture retaining cover: ASTM C171, polyethylene film or white burlap-polyethylene sheet.
4. Water: Potable and conforms to ASTM C1602
5. Curing compound: Clear, waterborne, membrane-forming curing compound that conforms to ASTM C309, Type 1, Class B. The following products or equivalent may be used:
 - a. Safe-Cure Clear; ChemMasters
 - b. Clear Resin Cure, a Dayton Superior Company
 - c. Kurez DR VOX; Euclid Chemical Company
 - d. Cure & Seal 309; Kaufman Products, Inc.
 - e. Aqua Kure Clear; Lambert Corporation
 - f. L&M Cure R; Laticrete International, Inc.
 - g. 1100 Clear; W.R. Meadows, Inc.
 - h. Resi-Chem Clear; Symons Corporation, a Dayton Superior Company
 - i. Maxcure Resin Clear; US Mix Company
 - j. Certi-Vex Envio Cure; Vexcon Chemicals, Inc.
 - k. Seal N Kure; MetalCrete Industries
6. Sealing compound: Clear, membrane-forming sealing compound that conforms to ASTM C1315, Type 1, Class A or B. The following products or equivalent may be used:
 - a. Polyseal WB, ChemMasters
 - b. Cure & Seal 1315 J22WB, Dayton Superior Company
 - c. Super Diamond Clear VOX, Euclid Chemical Company
 - d. UV Safe Seal, Lambert Corporation
 - e. L&M Lumiseal WB, Laticrete International Inc.
 - f. Vocomp-30, Meadows, W. R., Inc.
 - g. Metcure 30, Metalcrete Industries
 - h. LusterSeal WB 300, Euclid Chemical Company
 - i. Radiance UV-25, US Spec.
 - j. Vexcon Starseal 1315, Vexcon Chemicals, Inc.
- D. Joint-Filler Strips: ASTM D1751, asphalt-saturated cellulosic fiber or ASTM D1752, cork or self-expanding cork.
- E. Nonslip abrasive: Factory-graded, packaged, rustproof, nonglazing, abrasive, crushed emery aggregate containing not less than 50 percent aluminum oxide and not less than 20 percent

ferric oxide; unaffected by freezing, moisture, and cleaning materials with 100 percent passing No. 8 (2.36-mm) sieve.

1. The following materials or equivalent may be used:
 - a. Emery Non-Slip, Dayton Superior
 - b. A-H Emery, Anti-Hydro International, Inc.
 - c. LAMBCO EMAG 20, Lambert Corporation
 - d. L&M Grip It, Laticrete International
 - e. Metco Anti-Skid, Metalcrete Industries
- F. Repair Materials: Use site-mixed portland-cement repair mortar, consisting of one part cement to two and one-half parts sand by damp loose volume. A proprietary repair material may be submitted per the approval of the Owner's Representative.

5.3 EXECUTION

A. Concrete Placement

1. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
2. Concrete shall be delivered by way of the nearest driveway or street and then by wheelbarrow, if necessary. Walks will only be driven on by equipment if previously approved by the Owner's Representative. Concrete shall be conveyed from the ready mix truck to the place of final deposit by methods which will prevent the separation or loss of materials.
3. Do not add water to concrete during delivery, at delivery site, or during placement unless approved by Owner's Representative.
4. Before test sampling and placing concrete, water may be added at on site, but the water-cementitious materials ratio specified in Section 4.2.B.7a may not be exceeded.
 - a. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.
5. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as approved by Owner's Representative. Deposit concrete to avoid segregation.
 - a. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
 - b. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
 - c. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches (150 mm) into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.
6. All walks, ramps, and steps shall have a minimum thickness of 6 inches.
7. Deposit and consolidate concrete for slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
 - a. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
 - b. Maintain reinforcement in position on chairs during concrete placement.
 - c. Screed slab surfaces with a straightedge and strike off to correct elevations.

- d. Slope surfaces uniformly to drains where required.
 - e. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.
8. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
- a. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by Section 4.2.B.6.
 - b. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 - c. Do not use salt, other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
9. Hot-Weather Placement: Comply with ACI 305.1 and as follows:
- a. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 - b. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

B. Joints

1. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
2. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Owner's Representative.
 - a. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of strip placements of slabs.
 - b. Form keyed joints if required. Embed keys at least 1-1/2 inches (38 mm) into concrete.
 - c. Space vertical joints in walls as approved by Owner's Representative. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
3. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas with aspect ratios less than 2:1 and as close to 1:1 as possible. Install contraction joints at re-entrant corners. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:
 - a. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
 - b. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch-wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.
4. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

- a. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface, unless otherwise indicated.
 - b. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface where joint sealants are required.
 - c. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.
5. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate one-half of dowel length to prevent concrete bonding to one side of joint.
- C. Finishing Formed Surfaces
1. As-Cast Finish: Finishes shall be as-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
 2. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.
- D. Finishing Slabs
1. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
 2. Flatwork finisher's qualifications: Use qualified flatwork finishers acceptable to the Owner's Representative. A minimum of one finisher or finishing supervisor shall be a certified ACI Flatwork Concrete Finisher/Technician or a certified ACI Flatwork Technician or equivalent.
 3. Broom finish: Apply a broom finish to concrete walks and drives.
 - a. Float finishing: Place, consolidate, strikeoff, and level concrete; cut high spots and fill low spots. Do not work concrete further until it is ready for floating. Begin floating with a hand float, a bladed power float equipped with float shoes, or a powered disk float when the bleed water sheen has disappeared and the surface has stiffened sufficiently to permit operation of the specific float apparatus. Unless otherwise specified, produce a finish that will meet tolerance requirements of ACI 117 for a conventional surface. Refloat the slab immediately to a uniform texture.
 - b. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Owner's Representative before application.
 4. Nonslip finish: Before final floating, apply nonslip abrasive to concrete stair treads and ramps. Apply according to manufacturer's written instructions and at a rate of application not less than 25 lb/100 ft².
 5. Trowel finish: No air-entrained concrete shall receive a troweled finish.
- E. Concrete Protection and Curing
1. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.
 2. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq.ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

3. Formed Surfaces: Cure formed concrete surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.
4. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including slabs, stairs, ramps and other surfaces.
5. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
 - a. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 1. Water.
 2. Continuous water-fog spray.
 3. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
 - b. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
 - c. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. The application rate shall not be less than 1 gal./200 ft² for each coat. For broom-finished surfaces, apply curing compound in two applications at right angles to each other. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
 - d. Curing and Sealing Compound: Apply uniformly to slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. The application rate shall not be less than 1 gal./200 ft² for each coat. For broom-finished surfaces, apply curing and sealing compound in two applications at right angles to each other. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

F. Joint Filling

1. Prepare, clean, and install joint filler according to manufacturer's written instructions.
 - a. Defer joint filling until concrete has aged at least one month. Do not fill joints until construction traffic has permanently ceased.
2. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.

G. Concrete Surface Repairs

1. Tie holes: Plug tie holes immediately after formwork removal, unless otherwise permitted. When portland-cement patching mortar is used for plugging, clean and dampen tie holes prior to applying mortar. When other materials are used, apply them in accordance with manufacturer's recommendations.
2. Defective Concrete: Repair and patch defective areas when approved by the Owner's Representative. Remove and replace concrete that cannot be repaired and patched to approval by Owner's Representative.
3. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

- a. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension in solid concrete, but not less than 1 inch in depth. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
 - b. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Owner's Representative.
 4. Repairing Unformed Surfaces: Test unformed surfaces, such as slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
 - a. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
 - b. After concrete has cured at least 14 days, correct high areas by grinding.
 - c. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
 - d. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
 - e. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.
 5. Repair materials and installation not specified above may be used, subject to approval by Owner's Representative.
- H. Clean up: During the progress and upon completion of the Work, unused equipment, surplus and waste material, etc. shall be removed from the premises. The Work shall be left in a neat, clean, and safe condition.
- I. Field Quality Control
 1. Testing and Inspecting: Owner will engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.
 2. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C172 shall be performed according to the following requirements or as directed by Owner's Representative:
 - a. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd. (19 cu. m), plus one set for each additional 50 cu. yd. (38 cu. m) or fraction thereof.
 - b. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mixture placed each day.

1. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
3. Slump: ASTM C143, one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
4. Air Content: ASTM C231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
5. Concrete Temperature: ASTM C1064, one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
6. Compression Test Specimens: ASTM C31.
 - a. Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.
 - b. Cast and field cure two sets of two 6 in. x 12 in. or three 4 in. x 8 in. cylinder specimens for each composite sample.
7. Compressive-Strength Tests: ASTM C39; test one set of two 6 in. x 12 in. or three 4 in. x 8 in. laboratory-cured specimens at 28 days.
 - a. A compressive-strength test shall be the average compressive strength from a set of two 6 in. x 12 in. or three 4 in. x 8 in. specimens obtained from same composite sample and tested at age indicated.
8. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
9. Test results shall be reported in writing to Owner's Representative, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break.
10. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Owner's Representative. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42 or by other methods as directed by Owner's Representative.
11. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
12. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

END OF SPECIFICATION

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SECTION 04 4860 – STONE VENEER ASSEMBLIES

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: This Section includes stone veneer in the following applications.
 - 1. Anchored to concrete walls or unit masonry backup.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. For stone varieties proposed for use on Project, include data on physical properties specified or required by referenced ASTM standards.
- B. Stone Samples for Verification: For each color, grade, finish, and variety of stone required.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: An installer who employs experienced stone masons and stone fitters who are skilled in installing stone veneer assemblies similar in material, design, and extent to those indicated for this Project and whose projects have a record of successful in-service performance.
- B. Source Limitations for Stone: Obtain each variety of stone, regardless of finish, from a single quarry with resources to provide materials of consistent quality in appearance and physical properties.
 - 1. Obtain each variety of stone from a single quarry, whether specified in this Section or in another Section of the Specifications.
- C. Source Limitations for Mortar Materials: Obtain ingredients of a uniform quality for each mortar component from a single manufacturer and each aggregate from one source or producer.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- B. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- C. Deliver preblended, dry mortar mix in moisture-resistant containers designed for use with dispensing silos. Store preblended, dry mortar mix in delivery containers on elevated platforms, under cover, and in a dry location or in covered weatherproof dispensing silos.

- D. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.6 PROJECT CONDITIONS

- A. Protection of Stone Veneer Assemblies: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed stone veneer assemblies when construction is not in progress.
 - 1. Extend cover a minimum of 24 inches (600 mm) down both sides of walls and hold cover securely in place.
 - 2. Where one wythe of multiwythe masonry walls is completed in advance of other wythes, secure cover a minimum of 24 inches (600 mm) down face next to unconstructed wythe and hold cover in place.
- B. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.
 - 1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
 - 2. Protect sills, ledges, and projections from mortar droppings.
 - 3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
 - 4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed stone veneer assemblies.
- C. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.
 - 1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F (4 deg C) and higher and will remain so until masonry has dried, but not less than seven days after completing cleaning.
- D. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

PART 2 - PRODUCTS

2.1 STONE SOURCES

- A. Varieties and Sources: Subject to compliance with requirements, provide stone of the following variety and from the following source:
 - 1. Stone Type 1: Idaho Travertine Corporation, 1" thick Continental Buff, honed finish for use on all wall panels where indicated on drawings.

2.2 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
 - 1. Low-Alkali Cement: Not more than 0.60 percent total alkali when tested according to ASTM C 114.
- B. Hydrated Lime: ASTM C 207 UBC Standard 21-13, Type S.

- C. Portland Cement-Lime Mix: Packaged blend of portland cement complying with ASTM C 150, Type I or III, and hydrated lime complying with ASTM C 207.
- D. Mortar Cement: ASTM C 1329 UBC Standard 21-14.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Blue Circle Cement; Magnolia Superbond Mortar Cement.
 - b. Lafarge Corporation; Lafarge Mortar Cement.
- E. Masonry Cement: ASTM C 91 UBC Standard 21-11.
- F. Aggregate: ASTM C 144 and as follows:
 - 1. For pointing mortar, use aggregate graded with 100 percent passing No. 16 (1.18-mm) sieve.
 - 2. White Aggregates: Natural white sand or ground white stone.
- G. Latex additive (water emulsion) described below, serving as replacement for part of or all gaging water, of type specifically recommended by latex-additive manufacturer for use with job-mixed portland cement mortar and not containing a retarder.
 - 1. Latex Additive: Styrene-butadiene rubber or acrylic resin.
- H. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C 494/C 494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Euclid Chemical Company (The); Accelguard 80.
 - b. Grace Construction Products, W. R. Grace & Co. - Conn.; Morset.
 - c. Sonneborn Products, BASF Aktiengesellschaft; Trimix-NCA.

I. Water: Potable.

2.3 MISCELLANEOUS MASONRY ACCESSORIES

- A. Compressible Filler: Premolded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene, urethane or PVC.
- B. Asphalt Dampproofing for Concrete Backup: Cut-back asphalt complying with ASTM D 4479, Type I, or asphalt emulsion complying with ASTM D 1227, Type III or IV.

2.4 MASONRY CLEANERS

- A. Job-Mixed Detergent Solution: Solution of 1/2-cup (0.14-L) dry-measure tetrasodium polyphosphate and 1/2-cup (0.14-L) dry-measure laundry detergent dissolved in 1 gal. (4 L) of water.
- B. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from stone masonry surfaces without discoloring or damaging masonry surfaces; expressly approved for intended use by stone producer.
 - 1. Available Products:
 - a. Diedrich Technologies, Inc.; IOIG Granite, Terra Cotta, and Brick Cleaner.
 - b. Diedrich Technologies, Inc.; 202 New Masonry Detergent.

- c. Dominion Restoration, Inc.; DR-60 Stone and Masonry Cleaner.
- d. Hydrochemical Techniques, Inc.; Hydroclean Brick, Granite, Sandstone and Terra Cotta Cleaner (HT-626).
- e. ProSoCo, Inc.; Sure Klean No. 600 Detergent.
- f. ProSoCo, Inc.; Sure Klean Restoration Cleaner.

2.5 STONE FABRICATION

- A. General: Fabricate stone in sizes and shapes necessary to comply with requirements indicated, including details on Drawings.
 - 1. For granite, comply with recommendations in NBGQA's "Specifications for Architectural Granite."
 - 2. For limestone, comply with recommendations in ILI's "Indiana Limestone Handbook."
- B. Select stone to produce pieces of thickness, size, and shape indicated and to comply with fabrication and construction tolerances recommended by applicable stone association or, if none, by stone source, for faces, edges, beds, and backs.
 - 1. Clean sawed backs of stone to remove rust stains and iron particles.
- C. Gage backs of stones for adhered veneer if more than 81 sq. in. (522 sq. cm) in area.
- D. Thickness of Stone Veneer: Provide thickness indicated, but not less than the following.
 - 1. Thickness: 1 inch (25 mm) plus or minus 1/8 inch (3 mm).
- E. Dress joints (bed and vertical) straight and at right angle to face, unless otherwise indicated.
- F. Shape stone for type of masonry (pattern) as follows:
 - 1. Sawed-bed range ashlar with uniform course heights as indicated on Drawings and with random lengths.
 - 2. Sawed-bed, broken-range ashlar with uniform course heights as indicated on Drawings and with random lengths.
- G. Finish exposed faces and edges of stone to comply with requirements indicated for finish and to match approved samples and mockups.
- H. Carefully inspect stone at quarry or fabrication plant for compliance with requirements for appearance, material, and fabrication. Replace defective units before shipment.

2.6 MORTAR MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.
 - 1. Do not use calcium chloride.
 - 2. Add cold-weather admixture (if used) at same rate for all mortar, regardless of weather conditions, to ensure that mortar color is consistent.
 - 3. Mixing Pointing Mortar: Thoroughly mix cementitious and aggregate materials together before adding water. Then mix again, adding only enough water to produce a damp, unworkable mix that will retain its form when pressed into a ball. Maintain mortar in this dampened condition for one to two hours. Add remaining water in small portions until mortar reaches desired consistency. Use mortar within 30 minutes of final mixing; do not retemper
 - 4.

or use partially hardened material.

- B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in the form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
- C. Mortar for Stone Masonry: Comply with ASTM C 270, UBC Standard 21-15, Proportion Specification.
- D. Latex-Modified Portland Cement Setting Mortar: Proportion and mix portland cement, aggregate, and latex additive to comply with latex-additive manufacturer's written instructions.
- E. Cement-Paste Bond Coat: Mix either neat cement and water or cement, sand, and water to a consistency similar to that of thick cream.
 - 1. For latex-modified portland cement setting-bed mortar, substitute latex admixture for part or all of water, according to latex-additive manufacturer's written instructions.
- F. Mortar for Scratch Coat over Unit Masonry: 1 part portland cement, 1 part lime, 7 parts loose damp sand, and enough water to produce a workable consistency.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine surfaces indicated to receive stone veneer assemblies, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.
 - 1. Examine substrate to verify that dovetail slots, inserts, reinforcement, veneer anchors, flashing, and other items installed in unit masonry or concrete and required for or extending into stone veneer assemblies are correctly installed.
 - 2. Examine wall framing, sheathing, and building paper or building wrap to verify that stud locations are suitable for spacing of veneer anchors and that installation will result in a weatherproof covering.
 - 3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Advise installers of other work about specific requirements for placement of reinforcement, veneer anchors, flashing, and similar items to be built into stone veneer assemblies.
- B. Accurately mark stud centerlines on face of building paper or building wrap before beginning stone installation.
- C. Coat concrete backup with asphalt dampproofing.
- D. Clean dirty or stained stone surfaces by removing soil, stains, and foreign materials before setting. Clean stone by thoroughly scrubbing with fiber brushes and then drenching with clear water. Use only mild cleaning compounds that contain no caustic or harsh materials or abrasives.

3.3 SETTING OF STONE VENEER, GENERAL

- A. Perform necessary field cutting as stone is set. Use power saws to cut stone. Cut lines straight and

true, with edges eased slightly to prevent snipping.

- B. Sort stone before it is placed in wall to remove stone that does not comply with requirements relating to aesthetic effects, physical properties, or fabrication, or that is otherwise unsuitable for intended use.
- C. Arrange and trim stones for accurate fit in broken-range ashlar pattern with uniform course heights, random lengths, and uniform joint widths.
- D. Arrange stones with color and size variations uniformly dispersed for an evenly blended appearance.
- E. Set stone to comply with requirements indicated on Drawings. Install veneer anchors, supports, fasteners, and other attachments indicated or necessary to secure stone veneer assemblies in place. Set stone accurately in locations indicated with edges and faces aligned according to established relationships and indicated tolerances.
- F. Maintain uniform joint widths except for variations due to different stone sizes and where minor variations are required to maintain bond alignment, if any. Lay walls with joints not less than 1/4 inch (6 mm) at narrowest points nor more than 3/8 inch (10 mm) at widest points.
- G. Provide expansion, control, and pressure-relieving joints of widths and at locations indicated.
 - 1. Keep expansion and pressure-relieving joints free of mortar and other rigid materials.
 - 2. Sealing expansion, control, and pressure relieving joints in specified in Division 7, Section "Joint Sealants."

3.4 CONSTRUCTION TOLERANCES

- A. Variation from Plumb: For vertical lines and surfaces, do not exceed 1/4 inch in 10 feet (6 mm in 3 m), 3/8 inch in 20 feet (10 mm in 6 m), or 1/2 inch in 40 feet (13 mm in 12 m) or more. For external comers, expansion joints, control joints, and other conspicuous lines, do not exceed 1/4 inch in 20 feet (6 mm in 6 m) or 1/2 inch in 40 feet (13 mm in 12 m) or more.
- B. Variation from Level: For bed joints and lines of exposed lintels, sills, parapets, horizontal grooves, and other conspicuous lines, do not exceed 1/4 inch in 20 feet (6 mm in 6 m) or 1/2 inch in 40 feet (13 mm in 12 m) or more.
- C. Variation of Linear Building Line: For position shown in plan, do not exceed 1/2 inch in 20 feet (13 mm in 6 m) or 1/4 inch in 40 feet (19 mm in 12 m) or more.
- D. Measure variation from level, plumb, and position shown in plan as variation of the average plane of the face of eachstone from level, plumb, or dimensioned plane.
- E. Variation in Mortar-Joint Thickness: Do not vary from joint size range indicated.
- F. Variation in Plane between Adjacent Stones: Do not exceed one-half of tolerance specified for thickness of stone.
- G. Variation in Plane on Face of Individual Stone: Do not exceed one-half of tolerance specified for thickness of stone.

3.5 INSTALLATION OF ADHERED STONE VENEER ASSEMBLIES

- A. Install flashing over sheathing and behind building paper or building wrap by fastening through sheathing into framing.

- B. Install lath over building paper or building wrap by fastening through sheathing into framing to comply with ASTM C 1063.
- C. Install lath over unit masonry and concrete to comply with ASTM C 1063.
- D. Install scratch coat over metal lath 3/8 inch (10 mm) thick to comply with ASTM C 926.
- E. Coat backs of stone units and face of scratch coat with cement-paste bond coat, then butter both surfaces with setting mortar. Use sufficient setting mortar so a slight excess will be forced out the edges of stone units as they are set. Tap units into place, completely filling space between units and scratch coat.
- F. Rake out joints for pointing with mortar to depth of not less than 1/2 inch before setting mortar has hardened. Rake joints to uniform depths with square bottoms and clean sides.

3.6 POINTING

- A. Prepare stone-joint surfaces for pointing with mortar by removing dust and mortar particles. Where setting mortar was removed to depths greater than surrounding areas, apply pointing mortar in layers not more than 3/8 inch (10 mm) deep until a uniform depth is formed.
- B. Point stone joints by placing and compacting pointing mortar in layers not more than 3/8 inch (10 mm) deep. Compact each layer thoroughly and allow to become thumbprint hard before applying next layer.
- C. Tool joints, when pointing mortar is thumbprint hard, with a smooth jointing tool to produce the following joint profile:
 - 1. Joint Profile: Smooth, concave

3.7 ADJUSTING AND CLEANING

- A. Remove and replace stone veneer assemblies of the following description:
 - 1. Broken, chipped, stained, or otherwise damaged stone. Stone may be repaired if methods and results are approved by Architect.
 - 2. Defective joints.
 - 3. Stone veneer assemblies not matching approved samples and mockups.
 - 4. Stone veneer assemblies not complying with other requirements indicated.
- B. Replace in a manner that results in stone veneer assemblies' matching approved samples and mockups, complying with other requirements, and showing no evidence of replacement.
- C. In-Progress Cleaning: Clean stone veneer assemblies as work progresses. Remove mortar fins and smears before tooling joints.
- D. Final Cleaning: After mortar is thoroughly set and cured, clean stone veneer assemblies as follows:
 - 1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
 - 2. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent, polyethylene film, or waterproof masking tape.
 - 3. Wet wall surfaces with water before applying cleaner; remove cleaner promptly by rinsing thoroughly with clear water.
 - 4. Clean stone veneer assemblies by bucket and brush hand-cleaning method described in BIA Technical Note No. 20 Revised II, using job-mixed detergent solution.
 - 5. Clean stone veneer assemblies with proprietary acidic cleaner applied according to

manufacturer's written instructions

3.8 EXCESS MATERIALS AND WASTE

- A. Excess Stone: Stack excess stone where directed by Owner for Owner's use.
- B. Disposal as Fill Material: Dispose of clean masonry waste, including mortar and excess or soil-contaminated sand, by crushing and mixing with fill material as fill is placed.
 - 1. Crush masonry waste to less than 4 inches (100 mm) in greatest dimension.
 - 2. Mix masonry waste with at least two parts of specified fill material for each part of masonry waste. Fill material is specified in Division 2 Section "Earthwork."
 - 3. Do not dispose of masonry waste as fill within 18 inches (450 mm) of finished grade.
- C. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above, and other waste, and legally dispose of off Owner's property.

END OF SECTION 04 4860

SECTION 06 0573**PRESERVATIVE WOOD TREATMENT****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
 - 1. Quality of wood preservative treatment where specified.
- B. Related Requirements:
 - 1. Section 06 1100:
 - a. Characteristics of wood to be pressure-treated.
 - b. Furnishing and installing of pressure-treated wood.

1.2 REFERENCES

- A. Definitions:
 - 1. Preservative-Treated Wood: Wood exposed to high levels of moisture or heat susceptible to decay by fungus and other organisms, and to insect attack. The damage caused by decay or insects can jeopardize the performance of the wood members so as to reduce the performance below that required. Preservative treatment requires pressure-treatment process to achieve depth of penetration of preservative into wood to verify that the wood will be resistant to decay and insects over time.
 - 2. Treated Wood: Wood impregnated under pressure with compounds that reduce its susceptibility to flame spread or to deterioration caused by fungi, insects, or marine bores.
- B. Reference Standards:
 - 1. American Wood Protection Association:
 - a. AWPA P5-10. 'Standard For Waterborne Preservatives'.
 - b. AWPA P22-10. 'Standard For Ammoniacal Copper Zinc Arsenate (ACZA)'.
 - c. AWPA P51-10, 'Standard for Zinc Borate (ZB)'.
 - d. AWPA T1-12, 'Use Category System: Processing and Treatment Standard For Treated Wood'.
 - e. AWPA U1-12, 'Use Category System: User Specification For Treated Wood'.
 - 2. International Building Code (IBC) (2018 or most recent edition adopted by AHJ):
 - a. Chapter 23, 'Wood':
 - 1) Section 2300, 'Minimum Standards and Quality':
 - a) 2303.1, 'General':
 - (1) 2303.1.8, 'Preservative-Treated Wood'.
 - 2) Section 2400, 'General Construction Requirements':
 - a) 2304.11, 'Protection Against Decay and Termites':
 - (1) 2311.2, 'Wood Used Above Ground'.
 - (2) 2311.4, 'Wood In Contact With The Ground'.

1.3 SUBMITTALS

- A. Informational Submittals:
 - 1. Certificate: Certificate of pressure treatment showing compliance with specification requirements and including information required under IBC Section 2303.1.8.1, 'Identification'.

PART 2 - PRODUCTS**2.1 SYSTEMS**

A. Manufacturers:

1. Type One Acceptable Manufacturers:
 - a. Arch Wood Protection Inc, Atlanta, GA www.wolmanizedwood.com.
 - b. Hoover Treated Wood Products, Thomson, GA www.frtw.com.
 - c. Osmose Inc, Griffin, GA www.osmose.com.
 - d. U S Borax Inc, Valencia, CA www.borax.com/wood.
 - e. Viance LLC, Charlotte, NC www.treatedwood.com.
 - f. Equal as approved by Architect before bidding. See Section 01 6200.

B. Performance:

1. Framing lumber grade and species shall be as specified in Section 06 1100 for particular use.
2. Interior Wood In Contact With Concrete or Masonry:
 - a. Preservatives:
 - 1) Disodium octoborate tetrahydrate (DOT / SBX) meeting requirements of AWPA U1 and with retention of **0.25 lbs per cu ft (4 kg per cu meter)**.
 - 2) Zinc borate meeting requirements of AWPA U1 and with retention of **0.17 lbs per cu ft (2.7 kg per cu meter)**.
 - 3) CCA-C (47.5 percent chromium trioxide, 18.5 percent copper oxide and 34 percent arsenic pentoxide) by Koppers Performance Chemicals, Griffin, Georgia, <http://www.koppersperformancechemicals.com/> (0.25 lb/cu ft minimum retention).
 - 4) DURA-GUARD by Hoover Treated Wood Products, Thomson, GA www.frtw.com (.40 lb/cu ft minimum retention).
 - b. Lumber: Treat in accordance with AWPA U1.
3. Exterior Wood Continuously Exposed To Weather:
 - a. Preservatives: Waterborne preservatives meeting requirements of AWPA U1 with retention levels as required by AWPA U1 for specific application.
 - b. Lumber: Treat in accordance with AWPA U1.

PART 3 - EXECUTION: Not Used**END OF SECTION**

SECTION 06 1100**WOOD FRAMING****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
 - 1. Furnish and install wood framing and blocking as described in Contract Documents.
- B. Products Installed But Not Furnished Under This Section:
 - 1. Miscellaneous structural steel elements.
- C. Related Requirements:
 - 1. Section 05 1200: 'Structural Steel For Buildings' for furnishing of miscellaneous structural steel.
 - 2. Sections under 06 0500 Heading: Wood Treatment.
 - 3. Sections under 06 4000 Heading: 'Architectural Woodwork' for wall blocking requirements.

1.2 REFERENCES

- A. Reference Standards:
 - 1. American Lumber Standard Committee (ALSC) (Maintains NIST standard):
 - a. Voluntary Product Standard:
 - 1) PS 20-15, 'American Softwood Lumber Standard'.
 - 2. National Institute of Standards and Technology (NIST), U. S. Department of Commerce:
 - a. Voluntary Product Standard DOC PS 20-15, 'American Softwood Lumber Standard'.

1.3 DELIVERY, STORAGE, AND HANDLING

- A. Delivery And Acceptance Requirements:
 - 1. Protect lumber and plywood and keep under cover in transit and at job site.
 - 2. Do not deliver material unduly long before it is required.
- B. Storage And Handling Requirements:
 - 1. Store lumber and plywood on level racks and keep free of ground to avoid warping.
 - 2. Stack to insure proper ventilation and drainage.

PART 2 - PRODUCTS**2.1 MATERIAL**

- A. Dimension Lumber:
 - 1. Meet requirements of PS 20 and National Grading Rules for softwood dimension lumber.
 - 2. Bear grade stamp of WWPA, SPIB, or other association recognized by American Lumber Standards Committee identifying species of lumber by grade mark or by Certificate of Inspection.
 - 3. Lumber **2 inches (50 mm)** or less in nominal thickness shall not exceed 19 percent in moisture content at time of fabrication and installation and be stamped 'S-DRY', 'K-D', or 'MC15'.
 - 4. Preservative Treated Plates / Sills:
 - a. **2x4 (38 mm by 64 mm)**: Standard and better Douglas Fir, Southern Pine, or HemFir, or StrandGuard by iLevel by Weyerhaeuser Boise, ID www.ilevel.com. (LSL 1.3 E)

- b. **2x6 (38 mm by 140 mm)** And Wider: No. 2 or or MSR 1650f - 1.5e Douglas Fir, Southern Pine, HemFir, or StrandGuard by iLevel by Weyerhaeuser, Boise, ID www.ilevel.com. (LSL 1.3 E).
- B. Lumber Ledgers:
 - 1. No. 1 Douglas Fir, Larch, or Southern Pine.
- C. Blocking:
 - 1. Sound lumber without splits, warps, wane, loose knots, or knots larger than **1/2 inch (13 mm)**.
- D. Furring Strips:
 - 1. Utility or better.

PART 3 - EXECUTION

3.1 ERECTION

- A. General:
 - 1. Use preservative treated wood for wood members in contact with concrete or masonry.
- B. Masonry Wall Plates:
 - 1. Anchor **2x6 (50 mm by 150 mm)** and **2x8 (50 mm by 200 mm)** wall plates to top of block walls with **5/8 inch (16 mm)** diameter anchor bolts at **32 inches (800 mm)** on center unless noted otherwise.
 - 2. Set plates on masonry bearing walls true and level to provide full bearing. Use mortar as specified in Division 04 for leveling if leveling is required.
- C. Accessory / Equipment Mounting And Standing & Running Trim Blocking (nailers):
 - 1. Furnish and install blocking in wood framing required for hardware, specialties, equipment, accessories, and mechanical and electrical items, etc.
 - 2. Attach blocking not installed with clips with two fasteners in each end of each piece of blocking.
- D. Furring Strips
 - 1. On Wood or Steel: Nail or screw as required to secure firmly.
 - 2. On Concrete or Masonry:
 - a. Back up furring strips on exterior walls or walls in contact with earth with **15 lb (6.8 kg)** felt strip.
 - b. Nail at **12 inches (300 mm)** on center maximum.

END OF SECTION

SECTION 06 2001**COMMON FINISH CARPENTRY REQUIREMENTS****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
 - 1. Coat Racks.
 - 2. Display Cases.
 - 3. Display Boxes.
 - 4. Furnish and install sealants required for items installed under this Section, as described in Contract Documents.

- B. Products Installed But Not Furnished Under This Section:
 - 1. Architectural Woodwork.
 - 2. Selected Building Specialties.
 - 3. Selected Equipment.
 - 4. Window Stools.
 - 5. Miscellaneous as specified elsewhere.

- C. Related Requirements:
 - 1. Section 06 1100: 'Wood Framing' for furring and blocking.
 - 2. Section 06 2023: 'Interior Finish Carpentry'.
 - 3. Sections under 06 4000 Heading: Furnishing of Architectural Woodwork.
 - a. Section 06 4001: 'Common Architectural Woodwork Requirements':
 - 1) Approved Fabricators.
 - 2) Quality of wood materials to be used in Finish Carpentry.
 - b. Section 06 4116: 'Plastic Laminated-Faced Architectural Cabinets'.

1.2 REFERENCES

- A. Association Publications:
 - 1. Architectural Woodwork Institute / Architectural Woodwork Manufacturers Association of Canada / Woodwork Institute, 46179 Westlake Drive, Suite 120, Potomac Falls, VA www.awinet.org.
 - a. Architectural Woodwork Standards (AWS), 2nd Edition, 2014.

- B. Definitions:
 - 1. Grade: Unless otherwise noted, this term means Grade rules for Economy, Custom, and/or Premium Grade:
 - a. Economy Grade: The lowest acceptable grade in both material and workmanship requirements, and is for work where price outweighs quality considerations.
 - b. Custom Grade: Typically specified for and adequately covers most high-quality architectural woodwork, providing a well-defined degree of control over a project's quality of materials, workmanship, or installation.
 - c. Premium Grade: The highest Grade available in both material and workmanship where the highest level of quality, materials, workmanship, and installation is required.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Manufacturers:
 - 1. Manufacturer Contact List:
 - a. Bommer Industries, Landrum, SC www.bommer.com.
 - b. Ives, Indianapolis, IN www.iveshardware.com.
 - c. Stanley, New Britain, CT www.stanleyhardware.com or Oakville, ON (800) 441-1759.
- B. Glue: Waterproof and of best quality.
- C. Coat Hook:
 - 1. Type Two Acceptable Products:
 - a. No. 405, A92 finish, by Ives.
 - b. Equal as approved by Architect before installation. See Section 01 6200.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification Of Conditions:
 - 1. Verify walls, ceilings, floors, and openings are plumb, straight, in-line, and square before installing Architectural Woodwork.
 - 2. Report conditions that are not in compliance to Architect before starting installation.

3.2 PREPARATION

- A. Surface Preparation:
 - 1. Install Architectural Woodwork after wall and ceiling painting is completed in areas where Architectural Woodwork is to be installed.

3.3 INSTALLATION

- A. Special Techniques:
 - 1. AWS Custom Grade is minimum acceptable standard, except where explicitly specified otherwise, for installation of architectural woodwork.
- B. General Architectural Woodwork Installation:
 - 1. Fabricate work in accordance with measurements taken on Project site.
 - 2. Scribe, miter, and join accurately and neatly to conform to details.
 - 3. Exposed surfaces shall be machine sanded, ready for finishing.
 - 4. Allow for free movement of panels.
 - 5. Countersink nails. Countersink screws and plug those exposed to view.
 - 6. Attach custom casework as specified in Sections under 06 4000 Heading: 'Furnishing of Architectural Woodwork' to wall blocking with #10 x 3 inch (76 mm) minimum Cabinet Screws. Attach wall cabinets with screws equally spaced horizontally not to exceed 12 inches (305 mm) O.C. with 3 inch (76 mm) maximum spacing at cabinet edges.
- C. Installation for Accessories:
 - 1. Coat Hook:
 - a. Mount coat hooks on 4 inch (101 mm) x 24 inch (609 mm) maple board with 1/8" eased edges and corners, finished to match classroom doors, space hooks 8 inches apart,

centered on the board. Mount coat rack, 66 inches (1,676 mm) from finish floor to top of coat rack board.

- D. Items Installed But Not Furnished Under This Section: Install in accordance with requirements specified in Section furnishing item.
 - 1. Display Case Glass and Hardware:
 - a. Install glass and hardware per manufacturers recommendations.

END OF SECTION

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver interior finish carpentry materials only when environmental conditions meet requirements specified for installation areas. If interior finish carpentry materials must be stored in other than installation areas, store only where environmental conditions meet requirements specified for installation areas.

1.7 FIELD CONDITIONS

- A. Environmental Limitations: Do not deliver or install interior finish carpentry materials until building is enclosed and weatherproof, wet work in space is completed and nominally dry, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

PART 2 - PRODUCTS

2.1 WINDOW SILLS

- A. Configuration: Provide window sills of profile shown on drawings
- B. Window Sills: 1/2-inch (13-mm) thick, solid surface material with a 1/2-inch (13-mm) thick build down at the outside edge for the appearance of an overall 1-inch (25 mm) thick window sill.
- C. Fabrication: Fabricate in one piece with shop-applied edges unless otherwise indicated. Comply with solid-surface-material manufacturer's written instructions for adhesives, sealers, fabrication, and finishing.
- D. Solid Surface Material: Homogeneous solid sheets of filled plastic resin complying with ANSI SS1.
 - 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. Wilsonart.
 - 2. Type: Provide Standard Type unless Special Purpose Type is indicated.
 - 3. Colors and Patterns: As indicated on the Drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.
- B. Examine finish carpentry materials before installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrates of projections and substances detrimental to application.

SECTION 06 4001**COMMON ARCHITECTURAL WOODWORK REQUIREMENTS****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
 - 1. General standards for materials and fabrication of Architectural Woodwork and for hardware associated with Architectural Woodwork.
- B. Related Requirements:
 - 1. Section 06 1100: 'Wood Framing' for furring and blocking.
 - 2. Section 06 2001: 'Common Finish Carpentry Requirements' for Installation.
 - 3. Section 06 2023: 'Interior Finish Carpentry'.
 - 4. Section 06 4116: 'Plastic-Laminate-Faced Architectural Cabinets'.

1.2 REFERENCES

- A. Association Publications:
 - 1. Architectural Woodwork Institute / Architectural Woodwork Manufacturers Association of Canada / Woodwork Institute, 46179 Westlake Drive, Suite 120, Potomac Falls, VA www.awinet.org.
 - a. Architectural Woodwork Standards (AWS), 2nd Edition, 2014.
- B. Definitions:
 - 1. Grade: Unless otherwise noted, this term means Grade rules for Economy, Custom, and/or Premium Grade:
 - a. Custom Grade: Typically specified for and adequately covers most high-quality architectural woodwork, providing a well-defined degree of control over a project's quality of materials, workmanship, or installation.

1.3 SUBMITTALS

- A. Action Submittals:
 - 1. Product Data:
 - a. Manufacturer's literature for specialty items and hardware not manufactured by Architectural Woodwork fabricator.
 - 2. Shop Drawings:
 - a. Fabricator:
 - 1) Provide shop drawings for cabinet and casework that are included for project showing details, casework locations and layout in compliance with Contract Drawings.
- B. Informational Submittals:
 - 1. Qualification Statement:
 - a. Fabricator:
 - 1) Provide Qualification documentations as requested.

1.4 QUALITY ASSURANCE

- A. Qualifications: Requirements of Section 01 4301 applies, but not limited to following:
 - 1. Fabricator:
 - a. Fabricator Firm specializing in performing work of this section.

- 1) Firm experience in supplying products indicated for this Project.
 - 2) Firm with sufficient production capacity to produce required units.
 - 3) Firm will comply with specifications and Contract Documents for this Project.
 - 4) Minimum five (5) years experience in Woodwork installations.
 - 5) Minimum five (5) satisfactorily completed installations in past three (3) years of projects similar in size, scope, and installation procedures required for this project before bidding.
- b. Upon request by Architect or Owner, submit documentation.

1.5 DELIVERY, HANDLING, AND STORAGE

A. Delivery And Acceptance Requirements:

1. Assemble architectural woodwork at Architectural Woodwork Fabricator's plant and deliver ready for erection insofar as possible.
2. Protect architectural woodwork from moisture and damage while in transit to job site.
3. Report damaged materials received within two (2) days from delivery at project site.

B. Storage And Handling Requirements:

1. Unload and store in place where it will be protected from moisture and damage and convenient to use.

PART 2 - PRODUCTS

2.1 FABRICATORS

A. Approved Fabricators. See Section 01 4301:

1. Meet Quality Assurance Fabricator Qualifications as specified in Part 1 of this specification.

B. Approved Fabricators. See Section 01 4301:

1. Meet Quality Assurance Fabricator Qualifications as specified in Part 1 of this specification.

2.2 ASSEMBLIES

A. Design Criteria:

1. General:
 - a. AWS Custom Grade is minimum acceptable standard, except where explicitly specified otherwise, for materials, construction, and installation of architectural woodwork.
2. Materials:
 - a. Lumber:
 - 1) Grade:
 - a) No defects in boards smaller than 600 sq in (3 871 sq cm).
 - b) One defect per additional 150 sq inches (968 sq cm) in larger boards.
 - c) Select pieces for uniformity of grain and color on exposed faces and edges.
 - d) No mineral grains accepted.
 - 2) Allowable Defects:
 - a) Tight knots not exceeding 1/8 inch (3 mm) in diameter. No loose knots permitted.
 - b) Patches (dutchmen) not apparent after finishing when viewed beyond 18 inches (450 mm).
 - c) Checks or splits not exceeding 1/32 inch by 3 inches (1 mm by 75 mm) and not visible after finishing when viewed beyond 18 inches (450 mm).
 - d) Stains, pitch pockets, streaks, worm holes, and other defects not mentioned are not permitted.
 - e) Normal grain variations, such as cats eye, bird's eye, burl, curl, and cross grain are not considered defects.

- 3) Use maximum lengths possible, but not required to exceed **10 feet (3 meters)** without joints. No joints shall occur closer than **72 inches (1 800 mm)** in straight runs exceeding **18 feet (3 600 mm)**. Runs between **18 feet (3 600 mm)** and **10 feet (3 meters)** may have no more than one joint. No joints shall occur within **72 inches (1 800 mm)** of outside corners nor within **18 inches (450 mm)** of inside corners.
- 4) Moisture content shall be six (6) percent maximum at fabrication. No opening of joints due to shrinkage is acceptable.

B. Fabrication:

1. Follow Architectural Woodwork Standards (AWS) for fabrication of Architectural Woodwork.
2. Tolerances:
 - a. No planer marks (KCPI) allowed. Sand wood members and surfaces with 100 grit or finer.
 - b. Maximum Gap: None allowed.
 - c. Flushness Variation: **0.015 inch (0.4 mm)** maximum.
 - d. Sanding Cross Scratches: **1/4 inch (6 mm)** maximum.
 - e. Plug screw holes. Screw locations not to be visible beyond **18 inches (450 mm)**.
3. Fabricate work in accordance with measurements taken on job site.
4. 'Ease' sharp corners and edges of exposed members to promote finishing and protect users from splinters. Radius of 'easing' shall be uniform throughout Project and between **1/32 and 1/16 of an inch (0.8 and 1.6 of a millimeter)**.
5. Fabricate so veneer grain is vertical.
6. Joints:
 - a. Use lumber pieces with similar grain pattern when joining end to end.
 - b. Compatibility of grain and color from lumber to panel products is required.
7. Install hardware in accordance with Manufacturer's directions. Leave operating hardware operating smoothly and quietly.
8. Remove or repair damaged surface of or defects in exposed finished surfaces of architectural woodwork to match adjacent similar undamaged surface.

PART 3 - EXECUTION: Not Used

END OF SECTION

SECTION 07 5419**POLYVINYL-CHLORIDE ROOFING: PVC****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
 - 1. Furnish and install roofing membrane with flashings and other components to comprise total roofing system as described in Contract Documents including:
 - a. Single-ply membrane.
- B. Related Requirements:
 - 1. Section 05 3100: 'Steel Roof Decking'.
 - 2. Section 06 0573: 'Preservative Wood Treatment' for roof related blocking and roof nailers.
 - 3. Section 06 1100: 'Wood Framing' for roof related blocking, nailing and sheathing.
 - 4. Section 06 2001: 'Common Finish Carpentry Requirements' for wood nailers, curbs and blocking.
- C. Products Installed But Not Furnished Under This Section:
 - 1. Sheet metal work including caps, sleeves, umbrella hoods, pipe enclosures boxes, strapping, and scuppers.
- D. Related Requirements:
 - 1. Division 07 for sheet metal work specialties and accessories.

1.2 REFERENCES

- A. Association Publications:
 - 1. American National Standards Institute / Single Ply Roofing Industry:
 - a. ANSI/SPRI/FM 4435/ES-1 2003, 'Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems'.
 - b. ANSI/SPRI WD-1 'Wind Design Standard for Roofing Assemblies'.
 - 2. FM Global Resource Catalogue by FM Global, Norwood, MA www.fmglobal.com.
 - a. Approval Guide:
 - 1) Factory Mutual Standard 4470 - Approval Standard for Class 1 Roof Covers.
 - b. Property Loss Prevention Data Sheet 1-28, 'Wind Design' (latest edition).
 - c. Property Loss Prevention Data Sheet 1-29, 'Roof Deck Securement and Above-Deck Components' (latest edition).
 - d. Property Loss Prevention Data Sheet 1-49, 'Perimeter Flashing' (latest edition).
- B. Definitions:
 - 1. Flame Spread Classification: Categories as per ASTM E84/UL 723 or ULC 102:
 - a. Class A: Highest fire-resistance rating for roofing as per ASTM E108. Indicated roofing is able to withstand severe exposure to fire exposure to fire originating from sources outside building.
 - b. Class B: Fire-resistance rating indicating roofing materials are able to withstand moderate exposure to fire originating from sources outside of building.
 - c. Class C: Fire-resistance rating indicating roofing materials are able to withstand light exposure to fire originating from sources outside of building.
- C. Reference Standards:
 - 1. ASTM International:
 - a. ASTM C1289-18a, 'Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board'.

- b. ASTM C1303/C1303M-15, 'Standard Test Method for Predicting Long-Term Thermal Resistance of Closed-Cell Foam Insulation'.
- c. ASTM D4434/D4434M-15, 'Standard Specification for Polyvinyl Chloride Sheet Roofing'.
- d. ASTM E84-18b, 'Standard Test Method for Surface Burning Characteristics of Building Materials'.
- e. ASTM E108-17, 'Standard Test Methods for Fire Tests of Roof Coverings'.
- 2. International Building Code (IBC) (2018 Edition or latest edition adopted by AHJ):
 - a. Chapter 15, 'Roof Assemblies And Rooftop Structures':
 - 1) Section 1507, 'Requirements for Roof Coverings':
 - a) 1507.13, 'Thermoplastic single-ply Roofing'.
- 3. National Fire Protection Association:
 - a. NFPA 101: 'Life Safety Code' (2018 or most recent edition adopted by AHJ).
- 4. Underwriters Laboratories (UL):
 - a. UL 580: 'Tests for Uplift Resistance of Roof Assemblies' (5th Edition).
 - b. UL 723, 'Tests for Safety Test for Surface Burning Characteristics of Building Materials' (11th Edition).
 - c. UL 790, 'Standard Test Methods for Fire Tests of Roof Coverings' (8th Edition).
 - d. UL 1897-04, 'Uplift Tests for Roof Covering Systems' (7th Edition).
 - e. UL 2218, 'Standard for Impact Resistance of Prepared Roof Coverings Materials' (2nd Edition).

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Pre-Installation Conferences:
 - 1. Participate in MANDATORY pre-installation conference.
 - a. Roofing Installer's Foreman and those responsible for installation of roofing to be in attendance. Include Roofing Manufacturer's Representative if available.
 - 2. Schedule pre-installation conference at project site after installation of roof deck including pipe and flue penetrations, but before application of any roofing system component.
 - 3. In addition to agenda items specified in Section 01 3100, review following:
 - a. Review Manufacturer's written instructions.
 - b. Review delivery, storage, and handling requirements.
 - c. Review ambient conditions requirements.
 - d. Review roofing installation requirements including flashing and penetrations.
 - e. Review membrane safety stripe required to be located around perimeter of roof.
 - f. Review roofing drainage requirements.
 - g. Review temporary protections for roofing system.
 - h. Review cleaning and disposal requirements.
 - i. Review Special Procedure Submittal for Warranty Information to be given to Manufacturer before Manufacture will issue Roof Warranty by Installer.
 - j. Review safety issues, including managing vapors entering the building during adhesive work.
 - k. Review field inspections and non-conforming work requirements.
 - l. Review protection of membrane by other trades after installation of membrane.

1.4 SUBMITTALS

- A. Action Submittals:
 - 1. Product Data:
 - a. Manufacturer's literature or cut sheet for each element of system.
 - b. Manufacturer's preparation and installation instructions and recommendations.
 - c. RoofNav Contractors Package (This is an FM Global insured building).
 - d. FM Form X2688 – Must be submitted to owner and approved by owner's representative/ FM Engineer prior to ordering materials.
 - 2. Shop Drawings:
 - a. Prepared by Roofing Installer and approved by Roofing Membrane Manufacturer and include following:
 - 1) Base flashings.

- 2) Location and type of penetrations.
 - 3) Membrane terminations.
 - 4) Outline of roof and roof size.
 - 5) Perimeter and penetration details.
 - 6) Roof insulation:
 - a) Insulation fastening patterns for corner, perimeter, and field-of-roof locations.
 - b) Taper insulation, including slopes.
 - 7) Special details and materials.
- b. Confirm that specified FM Class and UL Class assembly is appropriate for Project location.
 - c. Include approved copy of Manufacturer's Notice of Award or Assembly Letter.
3. Samples:
 - a. Manufacturer's 4 inch (100 mm) square minimum sample representing actual color, membrane and thickness.
- B. Informational Submittals:
1. Certificates:
 - a. Installer's signed certificate stating roofing system complies with Contract Documents performance requirements and work only performed by trained and authorized personnel in those procedures.
 - b. Manufacturer's signed certificate that roof system has been inspected by Technical Service Representative and stating no deviation from system specified or approved shop drawings without written approval by Owner Representative and Manufacturer.
 2. Test And Evaluation Reports: Submit evidence that roof system has been tested and approved or listed as follows:
 - a. Submit evidence that roof system has been tested and approved or listed to meet Factory Mutual Research Corporation (FM) Classification required for this Project.
 - b. Submit evidence that roof system has been tested to meet UL Class requirement required for fire-resistance rating for this Project.
 3. Manufacturer Instructions:
 - a. Two (2) copies of Roofing Manufacturer's published instructions for Architect and maintain one (1) at job-site.
 4. Special Procedure Submittals:
 - a. Installer to fill out 'Roof Manufacturer' Installer Workmanship Warranty' and 'Manufacturer System Warranty' from information provided in the Attachment 'Roofing Manufacturer's Information For Architect' from Manufacturer and from Architect. Warranties are to be included in Closeout Submittals.
 5. Qualification Statement:
 - a. Roofing Manufacturer's certification of Installer.
- C. Closeout Submittals:
1. Include following in Operations And Maintenance Manual specified in Section 01 7800:
 - a. Warranty Documentation:
 - 1) Final, executed copy of 'Roofing Manufacturer System Warranty' including wind speed coverage and required Owner mandatory information.
 - 2) Final, executed copy of 'Roof Installer Workmanship Warranty' including required Owner mandatory information.
 - 3) Verify mandatory information as specified in Special Procedure Submittal has been included in Final Warranty.
 - b. Record Documentation:
 - 1) Manufacturers Documentation:
 - a) Record Shop Drawings if requested. Record shop drawings shall be given shop drawing number by Roofing Manufacturer.
 - b) Certificate: Manufacturer Inspection report by Technical Service Representative.
 - c) Certificate: Installer statement of compliance for performance requirements.
 - d) Test And Evaluation Report: UL fire-resistance rating test report.
 - e) Test And Evaluation Report: Factory Mutual Research Classification approval.

1.5 QUALITY ASSURANCE

- A. Regulatory Agency Sustainability Requirements:
 - 1. Roof system will meet requirements of all federal, state, and local codes having jurisdiction (AHJ).
 - 2. Fire Characteristics Performance Requirement:
 - a. Roof system will achieve UL Class A rating when tested in accordance with ASTM E108 or UL 790:
 - 1) Materials shall be identified with appropriate markings of applicable testing agency.
 - 3. Thermal Performance Requirement:
 - a. Roof system will achieve minimum R value not less than 30.
 - 4. Wind Criteria as per ASCE 7-10:
 - a. Basic wind speed (V): 90 mph _____
 - b. Wind exposure and importance factor (Iw): B, 1.15 _____
 - c. Wind Design Pressure (p): Wind Zone 1, pressures of 10 to 20 psf. _____

- B. Qualifications:
 - 1. Requirements of Section 01 4301 applies but not limited to the following:
 - a. Installers Qualifications:
 - 1) Provide documentation if requested by Architect:
 - a) Roofing Installer shall be approved and authorized by Roofing System Manufacturer to install Manufacturer’s product and eligible to receive Manufacturer’s special warranty before bid.
 - b) Roofing Installer shall be able to document roofing membrane installation for five (5) year minimum.
 - c) Roofing Installer must have current license for the city, county, and state where project is located.
 - d) Roofing Installer must have license for specific type of roofing work to be preformed.
 - e) Roofing Installer’s foreman shall be skilled in his trade and qualified to lay out and supervise the Work.
 - f) Membrane and flashing installation shall be performed by personnel trained and authorized by Roofing Manufacturer.
 - g) Welding equipment shall be provided by or approved by Roofing Manufacturer. Mechanics intending to use equipment shall have successfully completed training course provided by Manufacturer's Technical Representative before welding.
 - b. Manufacturer Qualifications:
 - 1) Manufacturer shall manufacture membrane material for five (5) consecutive years.
 - a) No product with documented failure will be allowed.
 - 2) Manufacturer that is UL listed for membrane roofing system used for this Project.
 - 3) Source Limitations:
 - a) Provide roof components including roof insulation and fasteners for roofing system from same Manufacturer as membrane roofing or approved by Roofing Membrane Manufacturer.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Delivery And Acceptance Requirements:
 - 1. Make no deliveries to Project until installation is about to commence, or until approved storage area is provided.
 - 2. Deliver products job site in original unopened containers or wrappings bearing all seals and approvals.
 - 3. Deliver materials in sufficient quantities to allow continuity of work.
 - 4. Remove any material not approved from job site.

- B. Storage And Handling Requirements:
 - 1. General:
 - a. Follow Manufacturer’s instructions and precautions for storage of materials.
 - b. Handle and store roofing materials and place equipment in manner to avoid permanent deflection of roof decking.

- c. Material Safety Data Sheets (MSDS) must be on location always during transportation, storage and application of materials.
- 2. Storage Requirements:
 - a. Protection:
 - 1) Protect roof materials from physical damage, moisture, soiling, and other sources in a clean, dry, protected location and with temperature range required by Manufacturer. Protect from direct sunlight.
 - 2) Provide continuous protection of materials against moisture absorption (Manufacturer's/Supplier's shrink wrap is not accepted waterproofing).
 - 3) Store membrane rolls lying down on pallets fully protected from weather with clean canvas tarpaulins.
 - b. Roof Insulation:
 - 1) Comply with insulation Manufacturer's written instructions for handling, storing, and protection during installation.
 - c. Safety:
 - 1) Store flammable materials in cool, dry area away from sparks, open flames, or excessive heat. Follow precautions outlined on containers or supplied by material manufacturer/supplier.
 - 2) Liquid materials such as solvents and adhesives shall be stored off site and installed away from open flames, sparks, and excessive heat.
 - 3) Site storage is acceptable if liquid materials are placed in a locked, sealed storage container.
 - 4) Situate equipment and materials so as to preclude danger, disturbance, or interference to public safety and traffic, and to not constitute fire hazard.
 - d. Temperature:
 - 1) Store adhesives at temperatures above 40 deg F (4 deg C), and below 180 deg F (82 deg C).
 - e. Unacceptable Material:
 - 1) Remove from job site materials that are determined to be damaged by Architect or by Roofing Manufacturer and replace at no additional cost to Owner.
 - 2) Remove all wet and damaged materials from site.
 - 3) Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
- 3. Handling Requirements:
 - a. Select and Handle operating equipment so as not to damage existing construction or new roofing system, or to overload structural system.
 - b. Handle rolled goods so as to prevent damage to edge or ends.

1.7 FIELD CONDITIONS

- A. Ambient Conditions:
 - 1. Temperature ranges shall be within tolerances allowed for material being used.
 - a. Roof surface shall be free of ponding water, ice, and snow.
 - b. Cold temperature:
 - 1) Follow Manufacturer's written instructions for cold temperature requirements before applying membrane adhesive:
 - a) Follow specified precautions.
 - b) Expose only enough adhesive to be used as directed by membrane manufacturer:
 - c) Low VOC restrictions (if required by local AHJ): Temperatures to be 40 deg F (4 deg C) and rising before applying.
 - c. Hot temperature:
 - 1) Do not expose membrane and accessories to constant temperature in excess of 180 deg F (82 deg C).
 - 2. Proceed with roofing work when existing and forecasted weather conditions permit.

1.8 WARRANTY

- A. Manufacturer Warranty:

1. Roofing Membrane Manufacturer's Special Warranty for:
 - a. Thirty (30) year no dollar limit (NDL) material and labor warranty covering roofing system, including insulation, components of membrane roofing system and flashing degradation and workmanship.
 - b. Accidental Puncture Warranty:
 - 1) Membrane Manufacturer's written Accidental Puncture Warranty for up to sixteen (16) hours of Labor to repair punctures after final inspection.
 - c. Warranty shall include wind speed coverage to 90 mph (145 kph).
- B. Roof Installer Workmanship Warranty:
 1. Written five (5) year guarantee covering workmanship and repairs or replacement of work without cost to Owner, counter-signed by Installer and General Contractor from date of installation:
 - a. Roof Installer Workmanship Warranty must include information required in Attachment 'Warranty Information'.

PART 2 - PRODUCTS

2.1 SYSTEM

- A. Manufacturer:
 1. Category Three Approved Manufacturers. See Section 01 6200 for definitions of Categories:
 - a. Sika Sarnafil, Canton, MA (800) 576-2358 or (781) 828-5400. www.sikacorp.com.
 - 1) Contact Information (USA, Canada and Global):
 - a) Primary Contact: Steve Moosman, District Manager, office (801) 575-8648 x7551 cell (801) 201-6269 moosman.steve@us.sika.com.
 - b) Secondary Contact: Jim Greenwell, Mountain Region Manager: office (801) 575-8648 x7558 cell (801) 455-3838 greenwell.jim@us.sika.com.
 - c) Local Representative: Ryan Sackville, Pivot Building Envelope Products, cell (801) 633-3045, ryan@pivotbep.com
- B. Design Criteria:
 1. General:
 - a. Installed membrane roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction.
 - b. Membrane roofing and base flashings shall remain watertight.
 2. Drainage Requirement:
 - a. Roof system to provide positive drainage where all standing water dissipates within forty eight (48) hours after precipitation ends.
 3. Material Compatibility:
 - a. Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by membrane Roofing Membrane Manufacturer based on testing and field experience.
 4. Metal details, fabrication practices, and installation methods shall conform to applicable requirements of following:
 - a. Factory Mutual Loss Prevention Data Sheet 1-49, 'Perimeter Flashing' (latest issue).
 - b. Sheet Metal and Air Conditioning Contractors National Association Inc, 5th edition.
- C. Components:
 1. Membrane:
 - a. Description:
 - 1) 'Mechanically Attached':
 - a) Meet requirements of ASTM D4434/D4434M, Type III:
 - b) Category Four Approved Products. See Section 01 6200 for definitions of Categories:
 - (1) Sika Sarnafil: S327 polyester reinforced membrane:
 - (a) Rhinobond attached system.
 - b. Thickness:

- 1) Field membrane: Thickness: **80 mil (2.03 mm)** by optimum width and length determined by job conditions.
- 2) Flashing membrane: Thickness: **0.60 mil (1.52 mm)** by optimum width and length determined by job conditions.
- c. Safety Stripe:
 - 1) Provide continuous **4 inch (100 mm)** wide yellow membrane safety stripe.
- d. Surface Color: To be determined by Architect.
 - 1) Grey.
 - 2) Tan.
 - 3) White.
2. Insulation:
 - a. FM and UL approved.
 - b. If required by Manufacturer for warranty, provide approved facer.
 - c. Polyisocyanurate Foam Insulation Board:
 - 1) Meet requirements of ASTM C1289.
 - 2) Insulation boards shall be Factory Mutual approved for classification selected for project.
 - 3) Facer:
 - a) Fiber reinforced paper facer or coated-glass fiber mat facer.
 - 4) Insulation panels directly under roofing membrane and roof system cover board shall not exceed **48 inches by 96 inches (1 200 mm by 2 400 mm)**.
 - 5) Insulation panels to be **2 inches (50 mm)** maximum thickness for each layer. Insulation shall be multiple layers and achieve minimum 'R' value of 30. Tapered layer shall slope at **1/4 in per ft (20 mm per meter)**.
3. Roof System Cover Board (Recovery/Hard Board) Over Insulation:
 - a. Non-Fire Rated:
 - 1) 'Mechanically Attached' application:
 - a) Minimum thickness to be determined by roofing system Manufacturer based upon Warranty term and Wind Warranty requirements.
 - b) Category Four Approved Products. See Section 01 6200 for definitions of Categories:
 - (1) **1/2 inch (12.7 mm)** thick minimum Dens-Deck Prime Roof Board by G-P Gypsum.
 - (2) **1/2 inch 1/2 inch (12.7 mm)** thick minimum Securock by USG.
4. Vapor Retarder / Air Barrier:
 - a. Temporary Roof Membrane (if required to protect interior building):
 - 1) Self Adhered retarder:
 - 2) May be used as temporary roof membrane up to ninety (90) day exposure.
 - 3) Category Four Approved Products. See Section 01 6200 for definitions of Categories:
 - a) Sika Sarnafil:
 - (1) Sarnavap air and vapor barrier with primers and sealants as required.
 - b. Steel Roof Deck:
 - 1) Category Four Approved Products. See Section 01 6200 for definitions of Categories:
 - a) Sika Sarnafil:
 - (1) As recommended by Manufacturer. Assumed to be as listed in (2) below, but shall be verified with Manufacturer.
 - (2) Sarnavap 5000 SA FR
 - a. Reinforced composite aluminum foil with a self-adhesive SBS modified bitumen backing and removable release liner. 42.5 inches (1.08 m) x 131 feet (40 m), 38 lbs (17.2 kg) per roll.
 - b. Sarnavap accessories not limited to but include: Sheet metal support strip to prevent Sarnavap 5000 SA FR from sagging into the metal flutes of a steel roof deck. Fasteners and adhesives as required by manufacturer.
 - c. Do not leave Sarnavap 5000 SA FR exposed for long periods of time. Sarnavap 5000 SA FR cannot be used as a temporary roof.

2.2 ACCESSORIES

- A. Adhesives, Sealants and Sealer:
 1. General:

- a. Supplied by Roofing Membrane Manufacture Meet uplift and VOC requirements required for Project for specific application method and in compliance with all local codes and restrictions provided by Roofing Membrane Manufacture.
 - b. As accepted by Roofing Manufacturer under specified warranty.
 - 2. Pourable Sealer:
 - a. Pitch pockets are not approved by Owner's facility management group.
 - 3. Membrane:
 - a. Category Four Approved Products. See Section 01 6200 for definitions of Categories:
 - 1) Sika Sarnafil:
 - a) Sarnacol 2170: Solvent based membrane adhesive.
 - 4. Insulation:
 - a. Category Four Approved Products. See Section 01 6200 for definitions of Categories:
 - 1) Sika Sarnafil:
 - a) Sarnacol 2163/AD/OM: Low rise polyurethane foam adhesive.
- B. Coated Metal:
 - 1. Colors:
 - a. Not Seen From Ground: Color to match selected roof membrane unless stated on drawings or as directed by Architect.
 - b. Seen From Ground: Manufacturer's standard color as selected by Architect to match membrane surface color chosen for project.
 - 2. Category Four Approved Products. See Section 01 6200 for definitions of Categories:
 - a. Sika Sarnafil:
 - 1) 25 ga (0.56 mm) G90 galvanized sheet metal laminated with 0.020 inch (0.55 mm) thick membrane:
 - 2) Sarnclad membrane cover strips:
 - a) 0.060 inch (1.5 mm) thick.
 - b) Color to match selected Sarnaclad.
- C. Counterflashing:
 - 1. Formed to meet design requirements and match existing metals and aesthetics, furnished by Membrane Manufacturer.
- D. Mechanical Attachment Accessories:
 - 1. Rhinobond Plates:
 - a. Category Four Approved Products. See Section 01 6200 for definitions of Categories:
 - 1) Sika Sarnafil:
 - a) Plates engineered as companion assembly with Sarnafasteners.
 - b) Used to secure insulation, hardboard, and membrane as required by Membrane Manufacturer.
 - 2. Bars And Plates:
 - a. Category Four Approved Products. See Section 01 6200 for definitions of Categories:
 - 1) Sika Sarnafil:
 - a) Bars and plates engineered as companion assembly with Sarnafasteners. Used to secure membrane and/or flashing as required by Membrane Manufacturer.
- E. Miscellaneous Fasteners and Anchors:
 - 1. Fasteners, anchors, nails, straps, bars, etc. shall be of post-galvanized zinc or cadmium-plated steel, aluminum, or stainless steel. Mixing metal types and methods of contact shall be in such manner as to avoid galvanic corrosion.
 - 2. Compatible with substrates and flashings to be anchored:
 - a. Fasteners for attachment of metal to masonry shall be expansion type fasteners with stainless steel pins.
 - b. Wood fasteners and anchors shall have embedment of one inch (25 mm) minimum and be approved for such use by Fastener Manufacturer.
- F. Prefabricated Flashing Accessories: Membrane corners and pipe stacks as supplied by Membrane manufacturer.
- G. Traffic Surface:

1. Standard Walkway:
 - a. Description:
 - 1) Traffic surface used to protect roof membrane with limited slip surface.
 - 2) Approved for all wind load areas.
 - 3) Heat weldable walk roll.
 - b. Category Four Approved Products. See Section 01 6200 for definitions of Categories:
 - 1) Sika Sarnafil:
 - a) SarnaTred Walkway Roll.

H. Wood Nailers:

1. Treat wood nailers as per Section 06 0573.13 for preservative wood treatment and Section 06 0573.33 for fire-retardant wood treatment. Creosote or asphaltic-treated wood is not acceptable.
2. Wood nailers shall conform to Factory Mutual's Loss Prevention Data Sheet 1-49.
3. Wood shall have maximum moisture content of 19 percent by weight on dry weight basis.

PART 3 - EXECUTION

3.1 INSTALLERS

- A. Category Three Approved Manufacturer's Roofing Installers: See Section 01 4301:
1. Sika Sarnafil:
 - a. Robison Roofing, 536 S. Broadway St., Blackfoot, ID 83221, 208-785-4626.
 - b. Tom Miller Roofing, 10204 Baldy Mountain Road, Sandpoint, ID 83864, 208-610-3018.

3.2 EXAMINATION

- A. Verification Of Conditions:
1. Examine deck to determine if it is satisfactory for installation of roofing system:
 - a. Inspect for defects such as excessive surface roughness, contamination, structural inadequacy, or any other condition that will adversely affect quality of work.
 - b. Verify that roof drain lines are functioning correctly before starting work of this Section. Report such blockages in writing to Architect, with copy to Roofing Manufacturer, for corrective action before beginning work of this Section.
 - c. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and nailers match thicknesses of insulation to be installed.
 - d. Verify that surface plane flatness and fastening of steel roof deck complies with requirements in 05 3100 'Steel Roof Decking'.
 - e. Verify that substrate is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D4263.
 - f. Verify that compounds that will impair adhesion of roofing components to roof deck have been removed.
 2. Notify Architect of unsuitable conditions in writing:
 - a. Commencement of Work by installer is considered acceptance of substrate.
 - b. Stop work immediately if any unusual or concealed condition is discovered and immediately notify Architect in writing, with letter copy to Roofing Manufacturer.
 - c. Proceed with installation only after unsatisfactory conditions have been corrected.
- B. Examination And Assessment:
1. Examine decks for adequacy before commencing work. Requirements shall include but not limited to the following:
 - a. Designed slope required for proper drainage.
 - b. Location of roof drains.
 - c. Moisture conditions that will adversely affect quality of work.
 - d. Other condition incompatible with good roofing practice.
 2. Notify Architect in writing of conditions with letter copy to Roofing Membrane Manufacturer that would limit guarantee on part of Manufacturer or applicator.

3.3 PREPARATION

A. Surface Preparation:

1. General:
 - a. Substrate shall be clean, smooth, dry, and free of flaws, sharp edges, loose and foreign material, oil and grease. Roofing shall not start until defects have been corrected.
 - b. Provide temporary walkways and work platforms as necessary to complete work under this section with no damage to surfaces exposed during work.
 - c. Coordinate application of membrane to provide protection of underlying materials from wetting or other damage by the elements on a continuous basis.
 - d. Sheet metal sleeves, caps, and enclosures shall be completely installed on daily basis.
 - e. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.
 - f. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast.
 - g. Remove and discard temporary seals before beginning work on adjoining roofing.

B. Wood Nailers:

1. Install continuous treated wood nailers at perimeter of entire roof and around roof projections and penetrations as described on Contract Drawings by Section 06 1100 'Wood Framing'.

3.4 INSTALLATION

A. Interface With Other Work:

1. Coordinate with Installers whose work penetrates roof deck or requires men and equipment to traverse roof deck.

B. General:

1. Installation shall be in conformance with latest edition of manufacturer's specification except where Contract Documents are more restrictive.
2. Roof surfaces shall be free of water, ice and snow. Surfaces to receive insulation, membrane, or flashings shall be dry. Should surface moisture occur, provide equipment necessary to dry surface before application.
3. Secure new and temporary construction, including equipment and accessories, so as to preclude wind blow-off and subsequent roof or equipment damage.
4. Install only as much roofing as can be made weathertight each day, including flashing and detail work. Clean seams and heat-weld before leaving jobsite.
5. Schedule and execute work without exposing interior building areas to effects of inclement weather. Protect existing building and its contents against all risks.
6. Before and during application, remove dirt, debris, and dust from surfaces either by vacuuming, sweeping, blowing with compressed air, or similar methods.
7. Report rooftop contamination that is anticipated or that is occurring to Roofing Manufacturer to determine corrective steps to be taken.

C. Vapor Retarder / Air Barrier Installation:

1. Steel Roof Deck:
 - a. PE film retarder: Loose laid PE film retarder directly over deck with side and end joints sealed in accordance with Manufacturer's instructions or as listed below, whichever is stricter.
 - 1) All surfaces shall be in plane, even and clean, sound, dry, free of loose surface material or contaminants such as moisture, frost, ice, oil and grease that would interfere with proper adhesion and compromise the performance of the retarder.
 - 2) Install the retarder in the direction of the metal deck profiles so that the side laps are fully supported on the top of the deck flange.
 - 3) Unroll the retarder so that it lays flat without wrinkles or creases. Once the roll is aligned, peel back a portion of the release liner and press the retarder onto the deck

- substrate. Once securely adhered, continue to remove the release liner leaving 12 inches or the release liner on retarder.
- 4) Install a 6 inch width of sheet metal perpendicular to the metal deck profiles to support the end of the retarder from sagging between the open flutes in the metal deck.
 - 5) Ensure the end of the retarder terminates onto the center of the sheet metal support strip.
 - 6) Install adjacent retarder sheets with a minimum 2 inch side lap and 4 inch end laps. Roll the entire sheet to ensure contact with the steel deck.
2. Conduct moisture and adhesion tests.
- D. Insulation:
1. Install insulation as recovery layer over substrate and to obtain desired thermal value. Roof assembly shall be dry.
 2. Neatly cut insulation cut to fit around penetrations and projections.
 3. Install tapered insulation in accordance with insulation manufacturer's shop drawings.
 4. Install tapered insulation around drains creating a drain sump.
 5. Do not install more insulation board than can be covered with roofing membrane by end of day's work or onset of inclement weather.
 6. 'Mechanically Attached' Attachment:
 - a. Fasten to deck with approved fasteners and plates in accordance with Insulation Manufacturer, Factory Mutual, and Roofing Manufacturer recommendations for fastening rates and patterns.
 - b. Quantity and locations of fasteners and plates shall also result in insulation boards resting evenly on roof deck/substrate so there are no large cavities or air spaces between boards and substrate.
 - c. Install fasteners in accordance with fastener manufacturer's recommendations:
 - 1) Fasteners are to have minimum penetration into structural deck as recommended by Fastener Manufacturer and Roofing Manufacturer.
 - 2) Install additional fastening at perimeters and corners per *Data Sheet 1-29, Roof Deck Securement for Above-Deck Roof Components*.
- E. Roof System Cover Board:
1. Offset roof system cover board joints **24 inches (600 mm)** minimum from joints in underlying substrate or insulation.
 2. Steel Roof Deck:
 - a. Non-visible installation:
 - 1) Secure roof system cover board using insulation plates and fasteners spaced as required by Membrane Manufacturer's warranty requirements.
 - 2) Install additional fastening at perimeters and corners per *Data Sheet 1-29, Roof Deck Securement for Above-Deck Roof Components*.
 - b. Visible (from ground/surrounding buildings) installation.
 - 1) Secure roof system cover board using low profile attachment plates and fasteners spaced as required by Membrane Manufacturer's warranty requirements.
 - 2) Install additional fastening at perimeters and corners per *Data Sheet 1-29, Roof Deck Securement for Above-Deck Roof Components*.
 - c. Rhinobond roof assembly attachment plates and fasteners.
 - 1) Secure roof system cover board using insulation plates and fasteners spaced as required by Membrane Manufacturer's warranty requirements.
- F. Membrane:
1. Inspection:
 - a. Inspect surface of insulation or substrate before installation of roof membrane.
 - b. Substrate shall be clean, dry and smooth with no excessive surface roughness, contaminated surfaces or unsound surfaces such as broken, delaminated, or damaged insulation boards.
 - c. All sharp projections shall be removed by sweeping, blowing or vacuum cleaning.
 2. 'Mechanically Attached':
 - a. In Seam Option:

- 1) Unroll and position membrane without stretching. Provide and secure both perimeter and field membrane sheets in accordance with manufacturer's most current specifications and details.
- 2) Install adjoining membrane sheets in same manner in accordance with manufacturer's specifications.
- b. Rhinobond Option:
 - 1) Preparation: Using test strip of membrane and loose Rhinobond plates, provide at least four (4) varied heat settings to calibrate Rhinobond welder for operation during each work period.
 - 2) Roll out and set membrane. Follow Manufacturer's written instructions:
 - a) Provide 3 inches (75 mm) shingled lap seaming area in all membrane overlaps.
 - b) Weld random perimeter Rhinobond plates to secure field membrane from shifting during seam and field welds.
 - c) Identify remaining Rhinobond plates and weld membrane using repeated leap frog method of welding followed by placement of cooling magnets.
3. Hot-Air Welding Of Lap Areas:
 - a. General:
 - 1) Seams shall be hot air welded. Seam overlaps shall be 3 inches (75 mm) wide minimum when automatic machine welding, and 4 inches (100 mm) wide when hand welding.
 - 2) Membrane to be welded shall be clean and dry. No adhesive shall be in seam.
 - 3) Hand Welding:
 - a) Hand welded seams shall be completed in three stages. Allow hot-air welding equipment to warm up for one (1) minute minimum before welding.
 - 4) Seam shall be tack-welded every 36 inches (900 mm) to hold membrane in place.
 - 5) Weld back edge of seam with narrow but continuous weld to prevent loss of hot air during final welding.
 - 6) Insert nozzle into seam at 45 degree angle. Once proper welding temperature has been reached and membrane begins to 'flow', position hand roller perpendicular to nozzle and press lightly. For straight seams, use 1-1/2 inch (38 mm) wide nozzle. Use 3/4 inch (19 mm) wide nozzle for corners and compound connections.
 - b. Machine Welding: Follow Roofing Manufacturer's instructions and use recommended equipment.
 - c. Quality Control of Welded Seams:
 - 1) Check welded seams for continuity using rounded screwdriver. Make on-site evaluation of welded seams daily at locations directed by Owner's Representative or representative of Roofing Manufacturer.
 - 2) Take one inch (25 mm) wide cross-section samples of welded seams at least three times a day. Patch each test cut at no additional cost to Owner.
 - d. Safety Stripe:
 - 1) Install continuous yellow membrane safety stripe 6 feet (1.80 m) typical from perimeter edge of roof.
- G. Flashings:
 1. General:
 - a. Install flashings concurrently with roof membrane. No temporary flashings will be allowed without prior written approval of Owner's Representative and Roofing Manufacturer. Approval shall only be for specific locations on specific dates.
 - b. If water is allowed to enter under newly completed roofing, remove and replace affected area no additional cost to Owner.
 - c. Adhere flashings to compatible, dry, smooth, and solvent-resistant surfaces.
 2. Membrane Flashings:
 - a. Adhesive Application for Flashings:
 - 1) Adhere flashing membranes to solvent resistant substrates. Cut interior and exterior corners and miters and hot-air weld into place. No bitumen shall be in contact with membrane.
 - 2) Apply adhesive using solvent-resistant 3/4 inch (19 mm) nap paint rollers. Apply adhesive in smooth, even coatings with no holidays, globs, or similar irregularities. Coat only area that can be completely covered in same day's operations. Allow surface with adhesive coating to dry completely prior to installing flashing membrane.

- 3) When surface is dry, cut flashing membrane to workable length and evenly coat underside with adhesive apply at Manufacturer's adhesive coverage rate requirements.
- 4) When adhesive has dried sufficiently to produce strings when touched with a dry finger, roll coated membrane onto previously coated substrate being careful to avoid wrinkles. Do not allow adhesive on underside of membrane to completely dry. Overlap adjacent sheets **3 inches (75 mm)**. Flashings shall extend **4 inches (100 mm)** onto roofing membrane. Press bonded sheet firmly in place with hand roller.
- 5) Apply no adhesive in seam areas that are to be welded.
- b. Install fasteners and membrane fastenings plates at **12 inches (300 mm)** on center with acceptable fasteners into structural deck at the base of parapets, walls, and curbs. Also install Sarnastop at the base of tapered edge strips and at transitions, peaks, and valleys according to Roofing Manufacturer's details:
 - 1) Hurricane Bar:
 - a) Provide inside **4 ft (1.20 m)** perimeter peel stop (Hurricane Bar) required by Owner for all projects in all wind speed coverage areas.
 - c. Extend flashings **8 inches (200 mm)** minimum above roofing level unless otherwise accepted in writing by Owner's representative and Roofing Manufacturer.
 - d. Terminate flashings according to Roofing Manufacturer's recommended details.
 - e. Mechanically fasten flashing membranes along top edge through tin discs or pre-drilled, galvanized metal strip washers spaced at of **12 inches (300 mm)** maximum on center.
3. Metal Flashings:
 - a. Complete metal work in conjunction with roofing and flashings so that watertight condition exists daily.
 - b. Install metal to provide adequate resistance to bending and allow for normal thermal expansion and contraction.
 - c. Metal joints shall be watertight.
 - d. Securely fasten metal flashings into solid wood blocking. Fasteners shall penetrate wood nailer **one inch (25 mm)** minimum.
 - e. Airtight and continuous metal hook strips are required behind metal fascias. Fasten hook strips **12 inches (300 mm)** on center into wood nailer or masonry wall.
 - f. Counterflashings shall overlap base flashings **4 inches (100 mm)** minimum.
 - g. Metal Base Flashings:
 - 1) Space adjacent sheets **1/4 inch (6 mm)** apart.
 - 2) Fasten ends of metal **6 inches (150 mm)** on center.
 - 3) Cover joint with **2 inch (50 mm)** wide aluminum tape.
 - 4) Hot-air weld **4 inch (100 mm)** wide strip of flashing membrane over joint.
 - h. Metal Edge Flashing:
 - 1) Install as per requirements of ANSI/SPRI/FM 4435/ES-1, 'Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems'.
 - 2) Fasten metal edge flashings with two rows of post-galvanized flat head annular ring nails, **4 inches (100 mm)** on center staggered.
 - 3) Space adjacent sheets of metal **1/4 inch (6 mm)** apart.
 - 4) Cover joint with **2 inch (50 mm)** wide aluminum tape.
 - 5) Sika Sarnafil Sarnaclad:
 - a) Hot-air weld **4 inch (100 mm)** wide strip of flashing membrane over joint.
- H. Temporary Cut-Off:
 1. Construct temporary waterstops to provide one hundred (100) percent watertight seal:
 - a. Make stagger of insulation joints even by installing partial panels of insulation.
 - b. Carry new membrane into waterstop.
 - c. Seal waterstop to deck or substrate so water will not travel under new or existing roofing.
 - d. Seal edge of membrane in continuous heavy application of sealant as described above.
 - e. When work resumes, cut-out contaminated membrane and dispose of off-site.
 2. If inclement weather occurs while temporary waterstop is in place, provide labor necessary to monitor situation to maintain watertight condition.
 3. If water is allowed to enter under newly completed roofing, remove affected area and replace at no additional cost to Owner.
- I. Walkway Rolls:

1. Mark lines on membrane to determine location and direction(s) of walkway network. Membrane surface shall be clean.
2. Follow Manufacturer's written application instructions including adhesive coverage rate requirements.

3.5 FIELD QUALITY CONTROL

- A. Field Inspection:
1. Before Manufacturer's inspection for warranty, Installer must perform pre-inspection to review work and to verify flashing has been completed as well as application of caulking.
 2. Final Roof Inspection:
 - a. Arrange for Roofing Membrane Manufacturer's technical personnel to inspect roofing installation on completion.
 3. Upon completion of roof inspection, provide certification that installation has been performed in accordance with Contract Document and Roofing Manufacturer requirements.
- B. Non-Conforming Work:
1. Correct all work not in compliance to Contract Documents at no additional cost to Owner.
 - a. Repair or remove and replace components of membrane roofing system where inspections indicate that they do not comply with specified requirements.
 - b. Replace contaminated membrane.
 2. Additional inspections will be performed to determine compliance of replaced or additional work with specified requirements at no additional cost to Owner.
 3. Repair landscaped areas damaged by construction activities at no additional cost to Owner.

3.6 CLEANING

- A. Waste Management:
1. Perform daily clean-up to collect wrappings, empty container, paper, and other roofing waste debris from project site.
 2. Upon completion, roofing waste materials must be disposed from site to dumping area legally authorized to receive such materials.
 3. Complete site cleanup, including both interior and exterior building areas that have been affected by construction, to Owner's satisfaction.

3.7 PROTECTION

- A. General Contractor Responsibility:
1. Protection of roofing membrane from damage and wear from other trades from damage after completion of roof membrane.
 2. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by Manufacturer of affected construction.
- B. Other:
1. It is expected that representatives of the roofing contractor will be abiding in a manner respectful to students, faculty, and employees of Brigham Young University-Idaho while on campus.

END OF SECTION

SECTION 07 7180 – WATER REPELLENTS

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: Surface preparation and application of clear water repellent coating to the following vertical and nontraffic horizontal exposed surfaces.
 - 1. Exterior face brick masonry.
 - 2. Exterior travertine stone veneer panels.
- B. Related Sections:
 - 1. Division 7 Section "Joint Sealants" for joint fillers and sealants.
 - 2. Division 9 Section "Painting" for paints and coatings.

1.3 SUBMITTALS

- A. General: Submit the following according to the Conditions of Contract and Division 1 Specification Sections.
- B. Product data including manufacturer's specifications, surface preparation and application instructions, recommendations for water repellents for each surface specified, and protection and cleaning instructions. Include data substantiating that materials are recommended by manufacturer for applications indicated and comply with requirements.
- C. Certification by water repellent manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOC).
- D. Material test reports from qualified independent testing agency indicating and interpreting test results relative to compliance of water repellents with Performance Requirements specified in the "Quality Assurance" article.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who employs only persons trained and approved by water repellent manufacturer for installation of manufacturer's products.
- B. Manufacturer Qualifications: Finn experienced in manufacturing products similar to those indicated for this Project and that has a record of successful in-service performance.
- C. Regulatory Requirements: Comply with applicable rules of the pollution-control regulatory agency having jurisdiction in the Project locale regarding volatile organic compounds (VOC) and use of hydrocarbon solvents.

D. Performance Requirements: Indicate test results for water repellents on substrate simulating Project conditions, as close as possible. Use same materials and methods of application to be used on the Project.

1. Water Vapor Transmission: ASTM E 96. Comparison of treated and untreated specimens.
2. Water Penetration and Leakage Through Masonry: ASTM E 514.

1.5 PROJECT CONDITIONS

A. Weather and Substrate Conditions: Do not proceed with application of water repellent (except with written recommendation of manufacturer) under any of the following conditions:

1. Ambient temperature is less than 40 deg F (4 deg C).
2. Substrate surfaces have cured for less than one month.
3. Rain or temperatures below 40 deg F (4 deg C) are predicted for a period of 24 hours.
4. Earlier than 24 hours after surfaces became wet.
5. Substrate is frozen or surface temperature is less than 40 deg F (4 deg C).
6. Windy condition such that repellent may be blown to vegetation or substrates not intended.

1.6 WARRANTY

A. Warranty: Submit a written warranty, executed by the Applicator and water repellent manufacturer covering materials and labor, agreeing to repair or replace materials that fail to provide water repellency within the specified warranty period. This warranty shall be in addition to, and not a limitation of, other rights the Owner may have against the contractor under the contract documents.

1. Warranty Period: 5 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following.

1. VOC Complying Water Repellents (Type):
 - a. Aquatrete, Huls America (water-based silane, 100 percent solids, site mix 1:9 with water).
 - b. Hydrozo Enviroseal 20, Hydrozo Inc. (water-based silane, 20 percent solids).
 - c. Baracade M.E., Tamms Industries (water-based siloxane, 100 percent solids, site mix 1:9 with water).

2.2 WATER REPELLENTS

A. VOC-Complying Water Repellents: Products certified by the manufacturer that they comply with local regulations controlling use of volatile organic compounds.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Clean substrate of substances that might interfere with penetration or performance of water repellents. Test for moisture content, according to repellent manufacturer's instructions to ensure that surface is sufficiently dry.
- B. Test for pH level, according to repellent manufacturer 's instructions to ensure chemical bond to silicates minerals.
- C. Protect adjoining work, including sealant bond surfaces, from spillage or blow-over of water repellent. Cover adjoining and nearby surfaces of aluminum and glass where there is the possibility of the water repellent being deposited on surfaces. Cover live plants and grass. Immediately clean water repellent from adjoining surfaces, complying with manufacturer's cleaning recommendations.
- D. Coordination with Sealants: Do not apply water repellent until the sealants for joints adjacent to surfaces receiving water repellent treatment have been installed and cured.
- E. Test Application: Prior to performing water repellent work, including bulk purchase or delivery of products, apply to the masonry mock-up in a manner acceptable to the Architect to demonstrate the final effect (visual, physical, and chemical) of planned installation. Proceed with work only after Architect accepts test application or as otherwise directed.

3.2 INSTALLATION

- A. Apply a heavy-saturation spray coating of water repellent on surfaces indicated for treatment using low-pressure spray equipment. Comply with manufacturer's instructions and recommendations using airless spraying procedure unless otherwise indicated.
- B. Apply a second saturation spray coating, repeating first application. Comply with manufacturer's instructions for limitations on drying time between coats and after rainstorm wetting of surfaces between coats. Consult manufacturer's technical representative if printed recommendations are not applicable to Project conditions.
- C. Remove protective coverings from adjacent surfaces.

END OF SECTION 07 7180

- F. Ladder-Assist Post: Roof-hatch manufacturer's standard device for attachment to roof-access ladder.
1. Operation: Post locks in place on full extension; release mechanism returns post to closed position.
 2. Height: 42 inches (1060 mm) above finished roof deck.
 3. Material: Steel tube.
 4. Post: 1-5/8-inch- (41-mm-) diameter pipe.
 5. Finish: Manufacturer's standard baked enamel or powder coat.
 - a. Color: As selected by Architect from manufacturer's full range.
- G. Hardware: Galvanized-steel spring latch with turn handles, butt- or pintle-type hinge system, and padlock hasps inside and outside.
1. Provide two-point latch on lids larger than 84 inches (2130 mm).
 - ~~2. Provide remote control operation.~~

2.5 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of the Work.
- B. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
- C. Verify dimensions of roof openings for roof accessories.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Install roof accessories according to manufacturer's written instructions.
1. Install roof accessories level, plumb, true to line and elevation, and without warping, jogs in alignment, excessive oil canning, buckling, or tool marks.
 2. Anchor roof accessories securely in place so they are capable of resisting indicated loads.
 3. Use fasteners, separators, sealants, and other miscellaneous items as required to complete installation of roof accessories and fit them to substrates.
 4. Install roof accessories to resist exposure to weather without failing, rattling, leaking, or loosening of fasteners and seals.
- B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.

SECTION 12 2413 - ROLLER WINDOW SHADES

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. Manually operated roller shades with single rollers.

B. Related Requirements:

- 1. Section 06 1053 "Miscellaneous Rough Carpentry" for wood blocking and grounds for mounting roller shades and accessories.
- 2. Section 07 9200 "Joint Sealants" for sealing the perimeters of installation accessories for light-blocking shades with a sealant.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

- 1. Include styles, material descriptions, construction details, dimensions of individual components and profiles, features, finishes, and operating instructions for roller shades.

B. Shop Drawings: Show fabrication and installation details for roller shades, including shadeband materials, their orientation to rollers, and their seam and batten locations.

C. Samples: For each exposed product and for each color and texture specified, 10 inches (250 mm) long.

D. Samples for Initial Selection: For each type and color of shadeband material.

- 1. Include Samples of accessories involving color selection.

E. Samples for Verification: For each type of roller shade.

- 1. Shadeband Material: Not less than 10 inches (250 mm) square. Mark inside face of material if applicable.
- 2. Roller Shade: Full-size operating unit, not less than 16 inches (400 mm) wide by 36 inches (900 mm) long for each type of roller shade indicated.
- 3. Installation Accessories: Full-size unit, not less than 10 inches (250 mm) long.

F. Roller-Shade Schedule: Use same designations indicated on Drawings.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

- B. Product Certificates: For each type of shadeband material, signed by product manufacturer.
 - C. Product Test Reports: For each type of shadeband material, for tests performed by manufacturer and witnessed by a qualified testing agency.
- 1.5 CLOSEOUT SUBMITTALS
- A. Maintenance Data: For roller shades to include in maintenance manuals.
- 1.6 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. Roller Shades: Full-size units equal to 5 percent of quantity installed for each size, color, and shadeband material indicated, but no fewer than two units.
- 1.7 QUALITY ASSURANCE
- A. Installer Qualifications: Fabricator of products.
 - B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
 - 1. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- 1.8 DELIVERY, STORAGE, AND HANDLING
- A. Deliver roller shades in factory packages, marked with manufacturer, product name, and location of installation using same designations indicated on Drawings.
- 1.9 FIELD CONDITIONS
- A. Environmental Limitations: Do not install roller shades until construction and finish work in spaces, including painting, is complete and dry and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.
 - B. Field Measurements: Where roller shades are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Allow clearances for operating hardware of operable glazed units through entire operating range. Notify Architect of installation conditions that vary from Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide MechoShade Systems, Inc. "Mecho /5" or comparable product by one of the following:
1. Hunter Douglas Contract.
- B. Source Limitations: Obtain roller shades from single source from single manufacturer.

2.2 MANUALLY OPERATED SHADES WITH SINGLE ROLLERS

- A. Chain-and-Clutch Operating Mechanisms: With continuous-loop bead chain and clutch that stops shade movement when bead chain is released; permanently adjusted and lubricated.
1. Bead Chains: Manufacturer's standard.
 - a. Loop Length: Full length of roller shade.
 - b. Limit Stops: Provide upper and lower ball stops.
 - c. Chain-Retainer Type: Clip, jamb mount.
 2. Spring Lift-Assist Mechanisms: Manufacturer's standard for balancing roller-shade weight and lifting heavy roller shades.
 - a. Provide for shadebands that weigh more than 10 lb (4.5 kg) or for shades as recommended by manufacturer, whichever criteria are more stringent.
- B. Rollers: Corrosion-resistant steel or extruded-aluminum tubes of diameters and wall thicknesses required to accommodate operating mechanisms and weights and widths of shadebands indicated without deflection. Provide with permanently lubricated drive-end assemblies and idle-end assemblies designed to facilitate removal of shadebands for service.
1. Roller Drive-End Location: As indicated on Drawings.
 2. Direction of Shadeband Roll: Regular, from back of roller.
 3. Shadeband-to-Roller Attachment: Manufacturer's standard method.
- C. Mounting Hardware: Brackets or endcaps, corrosion resistant and compatible with roller assembly, operating mechanism, installation accessories, and mounting location and conditions indicated.
- D. Roller-Coupling Assemblies: Coordinated with operating mechanism and designed to join up to three inline rollers into a multiband shade that is operated by one roller drive-end assembly.
- E. Shadebands:
1. Shadeband Material: As per schedule.
 2. Shadeband Bottom (Hem) Bar: Steel or extruded aluminum.
 - a. Type: Exposed with endcaps and integral light seal where bottom (sill) channels are indicated.
 - b. Color and Finish: As selected by Architect from manufacturer's full range.
- F. Installation Accessories:
1. Front Fascia: Aluminum extrusion that conceals front and underside of roller and operating mechanism and attaches to roller endcaps without exposed fasteners.

- a. Shape: L-shaped.
 - b. Height: Manufacturer's standard height required to conceal roller and shadeband when shade is fully open, but not less than 3-3/4 inches.
2. Endcap Covers: To cover exposed endcaps.
 3. Recessed Shade Pocket: Rectangular, extruded-aluminum enclosure designed for recessed ceiling installation; with front, top, and back formed as one piece, end plates, and removable bottom closure panel.
 - a. Height: Manufacturer's standard height required to enclose roller and shadeband when shade is fully open, but not less than height indicated on Drawings.
 - b. Provide pocket with lip at lower edge to support acoustical ceiling panel.
 4. Closure Panel and Wall Clip: Removable aluminum panel designed for installation at bottom of site-constructed ceiling recess or pocket and for snap-in attachment to wall clip without fasteners.
 - a. Closure-Panel Width: As indicated on Drawings.
 5. Side Channels: With light seals and designed to eliminate light gaps at sides of shades as shades are drawn down. Provide side channels with shadeband guides or other means of aligning shadebands with channels at tops.
 6. Bottom (Sill) Channel or Angle: With light seals and designed to eliminate light gaps at bottoms of shades when shades are closed.
 7. Installation Accessories Color and Finish: As selected from manufacturer's full range.

2.3 SHADEBAND MATERIALS

- A. Shadeband Material Flame-Resistance Rating: Comply with NFPA 701. Testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- B. Light-Filtering Fabric: Woven fabric, stain and fade resistant.
 1. Source: Roller-shade manufacturer; EcoVeil 1350 Shadecloth Collection or Architect approved equivalent.
 2. Type: Thermoplastic Olefin (TPO).
 3. Weave: Basketweave.
 4. Roll Width: Up to 100 inches.
 5. Orientation on Shadeband: Up the bolt.
 6. Openness Factor: 5 percent at offices, 3 percent at classrooms.
 7. Color: As selected by Architect from manufacturer's full range.

2.4 ROLLER-SHADE FABRICATION

- A. Product Safety Standard: Fabricate roller shades to comply with WCMA A 100.1, including requirements for flexible, chain-loop devices; lead content of components; and warning labels.
- B. Unit Sizes: Fabricate units in sizes to fill window and other openings as follows, measured at 74 deg F (23 deg C):
 1. Between (Inside) Jamb Installation: Width equal to jamb-to-jamb dimension of opening in which shade is installed less 1/4 inch (6 mm) per side or 1/2-inch (13-mm) total, plus or minus 1/8 inch (3.1 mm). Length equal to head-to-sill or -floor dimension of opening in which shade is installed less 1/4 inch (6 mm), plus or minus 1/8 inch (3.1 mm).
- C. Shadeband Fabrication: Fabricate shadebands without battens or seams to extent possible except as follows:

1. Vertical Shades: Where width-to-length ratio of shadeband is equal to or greater than 1:4, provide battens and seams at uniform spacings along shadeband length to ensure shadeband tracking and alignment through its full range of movement without distortion of the material.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 ROLLER-SHADE INSTALLATION

- A. Install roller shades level, plumb, and aligned with adjacent units according to manufacturer's written instructions.
 1. Opaque Shadebands: Located so shadeband is not closer than 2 inches (51 mm) to interior face of glass. Allow clearances for window operation hardware.

3.3 ADJUSTING

- A. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.

3.4 CLEANING AND PROTECTION

- A. Clean roller-shade surfaces after installation, according to manufacturer's written instructions.
- B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that roller shades are without damage or deterioration at time of Substantial Completion.
- C. Replace damaged roller shades that cannot be repaired, in a manner approved by Architect, before time of Substantial Completion.

3.5 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain motor-operated roller shades.

END OF SECTION 12 2413

SECTION 12 3661 - SIMULATED STONE COUNTERTOPS

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. Quartz agglomerate countertops and backsplashes.

B. Related Requirements:

- ~~1. Section 12 3640 "Stone Countertops."~~

1.3 ACTION SUBMITTALS

A. Product Data: For countertop materials.

B. Shop Drawings: For countertops. Show materials, finishes, edge and backsplash profiles, methods of joining, and cutouts for plumbing fixtures.

C. Samples for Initial Selection: For each type of material exposed to view.

D. Samples for Verification: For the following products:

- 1. Countertop material, 6 inches (150 mm) square.
- 2. One full-size solid-surface-material countertop, with front edge and backsplash, 8 by 10 inches (200 by 250 mm), of construction and in configuration specified.
- 3. One full-size quartz agglomerate countertop, with front edge and backsplash, 8 by 10 inches (200 by 250 mm), of construction and in configuration specified.

1.4 PROJECT CONDITIONS

- A. Field Measurements: Verify dimensions of countertops by field measurements after base cabinets are installed but before countertop fabrication is complete.

1.5 COORDINATION

- A. Coordinate locations of utilities that will penetrate countertops or backsplashes.

Reflex-Air™ insulation addresses the two major problems in metal buildings: Heat Transfer and Condensation

HEAT TRANSFER

Reflex-Air™ reflective bubble insulation addresses all forms of heat gain and heat loss, radiant heat, conductive heat and convective heat, making them extremely effective at increasing the comfort level of the building and reducing energy cost. Of these methods of heat transfer, *radiant heat* is the cause of the majority of heat gain and loss in a building. Rather than absorb and slow down heat transfer like traditional insulations, Reflex-Air™ blocks, by reflecting, 94% of the radiant heat back to the heat source. In addition, Reflex-Air™ is not affected by humidity.

CONDENSATION

Reflex-Air™ is very effective at controlling condensation in metal buildings which typically occurs when moist warm air hits a cooler surface. By installing Reflex-Air™, you create a vapor barrier and a thermal break that virtually eliminates condensation.

RadiantGUARD® Reflex-Air™ Reflective Insulations

Reflex-Air™ reflective bubble insulation can provide R-Values as high as R-17 depending on the installation method.

Benefits

- Reflects or Blocks 94% of radiant heat
- Class A / Class 1 Fire Rating (ASTM E-84 2599)
 - Licensed under the sole patented technology that passes ASTM E-84 2599 fire testing
- Non-toxic / Non-carcinogenic
- Fiber free
- Durable and lightweight
- Vapor barrier
- Permanent and maintenance-free
- Not affected by moisture or humidity
- Lowers heating and cooling costs year round
- Does not provide a growth medium or nutritive value for fungus, insects, or rodents
- 5-year warranty
- Made in USA

Applications

- Metal & Steel Buildings
- Post Frame Construction
- Pole Barns
- Horse & Poultry Barns
- Airplane Hangers
- Cold Storage
- Transportation
- Aerospace
- Pharmaceutical
- Temperature Sensitive Storage Areas
- among many others...



Our Reflex-Air™ bubble products can be produced in single or double bubble and in 16", 24", 48", and 72" widths and of varying lengths. We offer straight edge and staple tab versions. Custom sizes available.

RadiantGUARD®
Protecting Your Energy Costs

www.RadiantGUARD.com
(866) 528-8412 toll free



RadiantGUARD® Reflex-Air™ Reflective Bubble Insulation Specifications

Multipurpose insulation for both residential and commercial applications. Polyethylene bubbles encapsulate air and serve as a conductive thermal break. Multiple layers of polyethylene serve as a vapor barrier and a convective thermal break. Metalized polyester reflective surfaces block 94% of the radiant heat from both sides.

	Reflective / SINGLE Bubble / Reflective	Reflective / DOUBLE Bubble / Reflective	White Poly / SINGLE Bubble / Reflective	White Poly / DOUBLE Bubble / Reflective
Product Details	One layer of polyethylene bubbles sandwiched between two layers of metalized polyester film.	Two layers of polyethylene bubbles sandwiched between two layers of metalized polyester film.	One layer of polyethylene bubbles sandwiched between one layer of white polyethylene and one layer of metalized polyester film.	Two layers of polyethylene bubbles sandwiched between one layer of white polyethylene and one layer of metalized polyester film.
Nominal Thickness	3/16"	5/16"	3/16"	5/16"
Flame Spread (ASTM E-84 mounting 2599)	<25	<25	<25	<25
Smoke Development (ASTM E-84 mounting 2599)	<50	<50	<50	<50
Fire Rating (NFPO / UBC)	Class A / Class 1	Class A / Class 1	Class A / Class 1	Class A / Class 1
Linear Shrinkage	None	None	None	none
Degradation	0	0	0	0
Puncture Resistance	8.09 average PSI	9.67 average PSI	9.67 average PSI	9.67 average PSI
Water Vapor Transmission (ASTM E-96)	0.00 perms	0.00 perms	0.00 perms	0.00 perms
Contact Temperature Range	-60 degrees F to +180 degrees F	-60 degrees F to +180 degrees F	-60 degrees F to +180 degrees F	-60 degrees F to +180 degrees F
Reflectivity / Emittance (ASTM C1371)	0.94 (94%) / 0.06 (6%)	0.94 (94%) / 0.06 (6%)	0.94 (94%) / 0.06 (6%)	0.94 (94%) / 0.06 (6%)

Manufacturing capabilities include:

- 16", 24", 48", and 72" widths
- Straight edge and staple tab edge
- Made in the U.S.A.

Reflex-Air reflective bubble insulation is an industrialized product that is manufactured to last and maintain the enclosed air space. The bubble layers are sealed with multiple layers of polyester creating closed air bubbles which prevent the loss of air.

Please refer to our website for specific application R-Values or ASHRAE 90.1 for assembly system calculations.

BYU Idaho - Spori Annex Addendum 3

Questions from Steel Fabricator:

Sheet SE-001:

General Notes:

Structural Steel

#5 Welded Connections

- F. Field welds may be welded in the shop at contractor's option. **Shop welds shall not be welded in the field.**

Sheet SE-002:

General Notes:

Masonry

#2. Materials

- a. Concrete Masonry Units shall have a minimum compressive strength of 2000 psi.
- b. Masonry Brick shall have a minimum compressive strength of 10,000 psi.
- c. No comment
- d. Grout for masonry shall have a minimum compressive strength of 3000 psi.

#3. Walls

- c. All walls shall conform to walls with joint reinforcing.

Sheet SE-004:

Base Plate Schedule:

BP-11, Base plates at exterior foundation wall piers of building shall be type C plates and interior BP-11 base plates shall be type B plates.

Sheet SE-101

1. Elevation 100'-0" on structural sheets shall be equal to Elevation 0'-0" on the architect's drawings. The finished floor elevation shall be 100'-0".
2. Steel Question 3: The concrete piers shall be centered below steel columns and footings shall be centered below columns unless noted otherwise. See the details for elevations where the columns bear on piers and the plan where columns bear on footings.
3. The footings at grid 2-F and 5-F shall be centered below the columns.
4. The detail cut near grid 01.2 and F shall be D2/SE-502.
5. The detail cut on grid 1 near grid F shall be D5/SE-502.
6. The detail cut above grid G and to the right of grid 1 shall be deleted.
7. Dimensions between grids 1-6 added.

Sheet SE-121

1. Deck Bearing Elevations shall be as follows:

Main Roof

Grid 1 and 6	DBE = 115'-0"
Grid 1.2 and 5.8	DBE = 115'-2 3/16"
Grid 2 and 5	DBE = 115'-9-3/16"
Grid 3 and 4	DBE = 115' - 11-3/8"

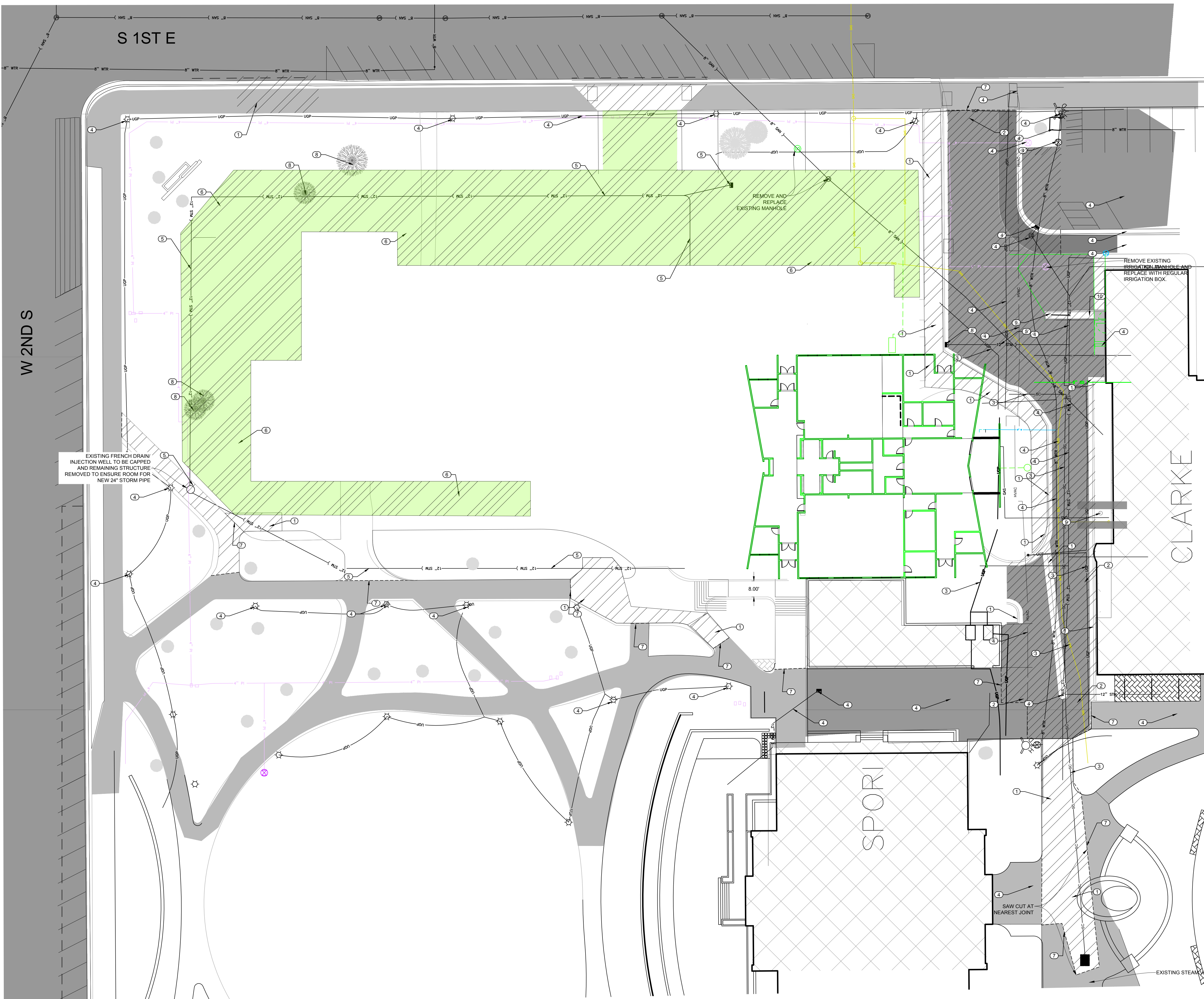
Clerestory Roof

Grid 3 and 4	DBE = 121' 6"
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2. Grid 6 shifted 1" towards grid 5.8 to match distance between grid 1 and 1.2.
3. Detail C1/SE-522 was cut along w21x57 beam at 4 locations at the north and south sides of the building.
4. Detail C2/SE-522 was cut at grid 1 between grids E & F and cut at grid 6 between grids C & D.
5. Detail 10/SS-503 was cut at entry for soffit framing.
6. Note 8 was added to address attachment of roof deck to masonry wall.

Sheet SS-503

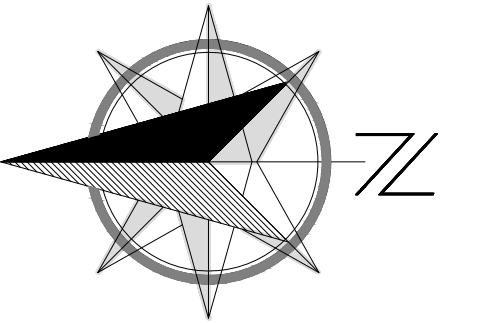
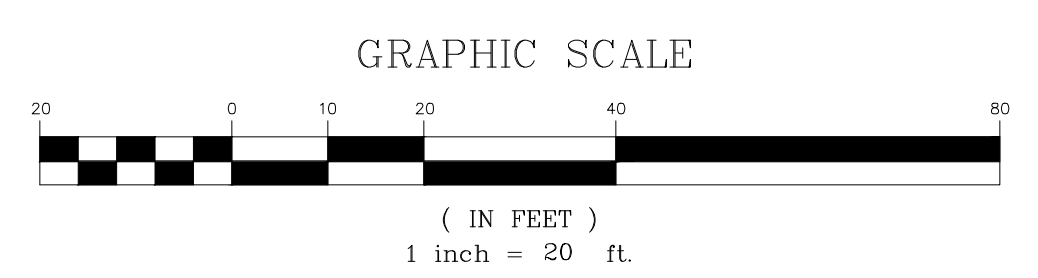
1. Detail 10 added.



- ① REMOVE EXISTING CURB AND CONCRETE
- ② REMOVE EXISTING ASPHALT IN CROSS HATCHED AREA
- ③ REMOVE AND REPLACE EXISTING STEAM LINE FROM CAP IN DEMOLITION PLAN TO EXISTING VAULT OUTSIDE OF SPORI SEE MECHANICAL PLAN FOR DETAILS
- ④ RETAIN AND PROTECT
- ⑤ REMOVE EXISTING STORM DRAIN SYSTEM
- ⑥ REMOVE EXISTING LANDSCAPING TO TOP OF SUB GRADE
- ⑦ SAW CUT AND REPAIR
- ⑧ TREE HAS BEEN CUT TO A STUMP. CONTRACTOR TO REMOVE STUMP AND AS MUCH OF THE ROOTS AS POSSIBLE.
- ⑨ REMOVE LIGHT
- ⑩ CUT RETAILING WALL AT AN ANGLE STARTING AT THE WALK AND ANGLING DOWN TO THE PROPOSED TBC. ALL RAILING TO BE RETAINED AND PROTECTED. SEE DETAIL ON SHEET C-101. ALL ASPHALT AND/OR PAVERS BEHIND WALL TO BE REMOVED.

EXISTING FRENCH DRAIN/INJECTION WELL TO BE CAPPED AND REMAINING STRUCTURE REMOVED TO ENSURE ROOM FOR NEW 24" STORM PIPE

REMOVE EXISTING IRRIGATION MANHOLE AND REPLACE WITH REGULAR IRRIGATION BOX



- NOTE:**
1. CONTRACTOR TO FIELD VERIFY EXISTING UTILITIES LOCATION PRIOR TO CONNECTION PROPOSED UTILITIES.
 2. CONTRACTOR TO VERIFY ALL EXISTING UTILITY LOCATIONS AND COORDINATE WITH EACH UTILITY COMPANY.
 3. ENSURE 10' MINIMUM HORIZONTAL CLEARANCE BETWEEN ALL POTABLE AND NON-POTABLE LINES ARE MET PER IDEQ.
 4. ENSURE 18" MINIMUM VERTICAL CLEARANCE BETWEEN ALL POTABLE AND NON-POTABLE LINES ARE MET PER IDEQ.
 5. CONTRACTOR TO VERIFY A MIN. OF 24" PIT RUN FOR ASPHALT AREA.
 6. ANY ASPHALT AND ROAD BASE AREA THAT IS REMOVED AND REPLACED WITH LANDSCAPE WILL NEED A MIN. OF 12" TOPSOIL FOR PLANTING.
 7. ALL LANDSCAPE TP BE DONE PER THE LANDSCAPE PLAN.

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PROFESSIONAL ENGINEER
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1/28/2020
STATE OF IDAHO
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DOCUMENT STATUS		DATE
STATUS	DESCRIPTION	DATE
BID DOCUMENT		11/27/19

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
		1/28/2020

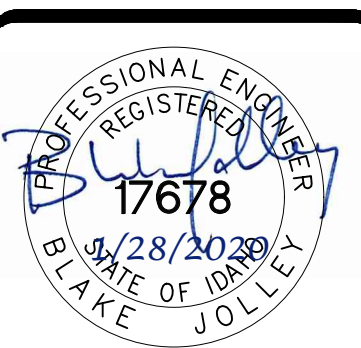
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BRIGHAM YOUNG UNIVERSITY - IDAHO SPORI ANNEX

PROJECT NO.: 10569

SHEET NAME:
CIVIL DEMO SHEET

SHEET NUMBER:
C100





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Blake Jolley

DOCUMENT STATUS	STATUS	DATE
BID DOCUMENT		11/27/19

REVISION SCHEDULE	NO.	DESCRIPTION	DATE
			1/28/2020

PROJECT NAME:

BRIGHAM YOUNG UNIVERSITY - IDAHO
SPORI ANNEX

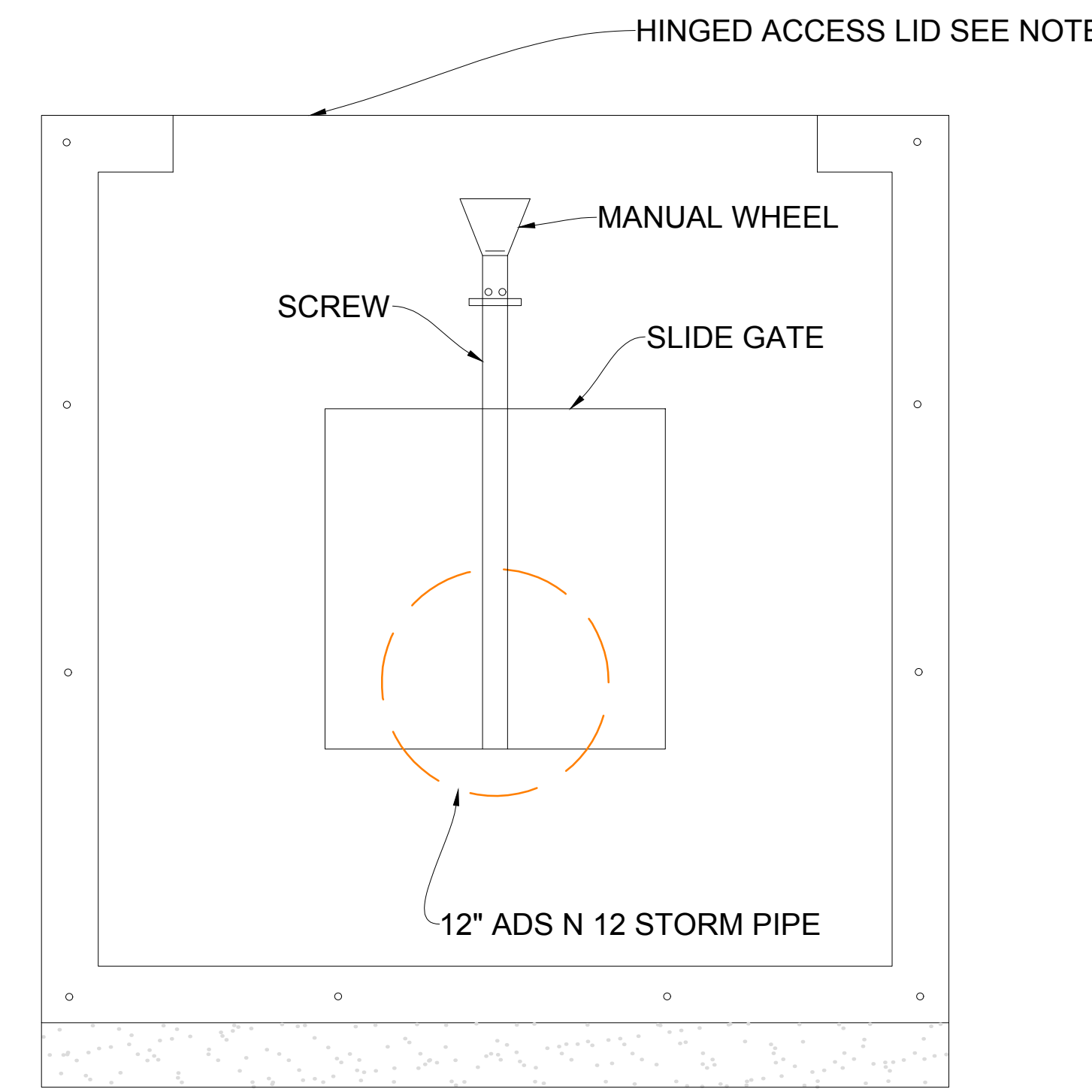
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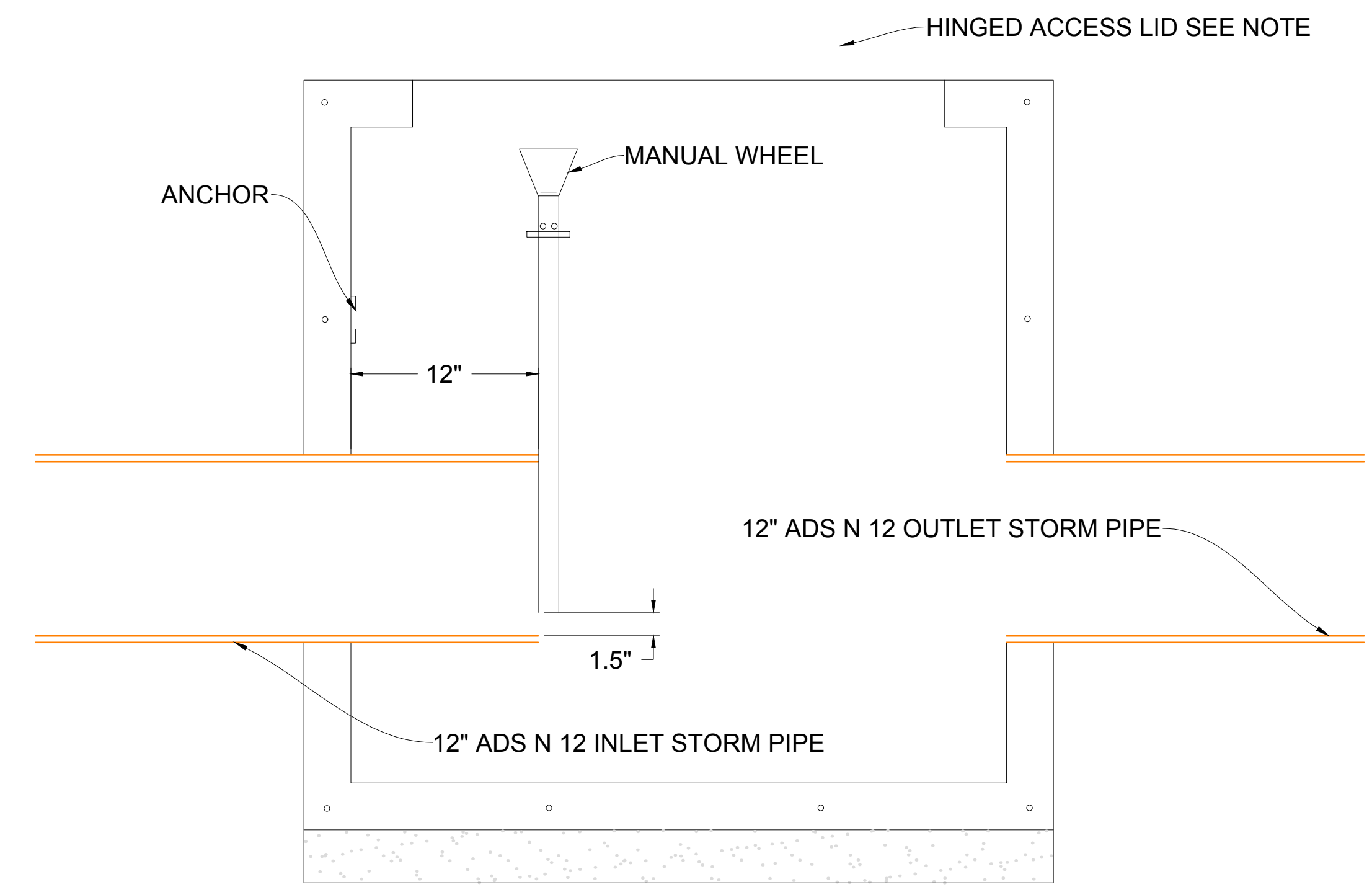
CIVIL UTILITY AND CONCRETE

SHEET NUMBER:
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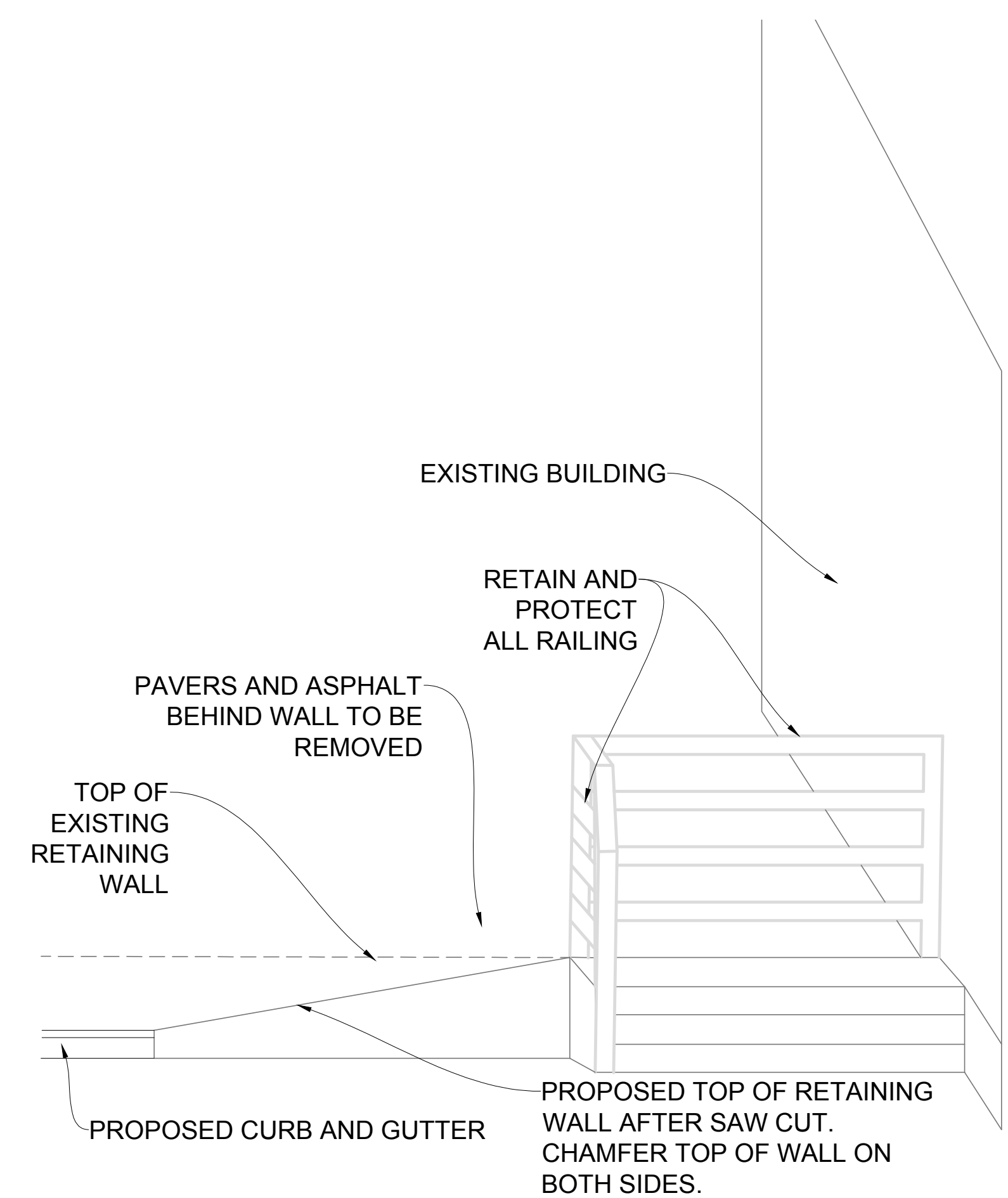
LID NOTE
PCM-4 BILCO LID. SEE STORM WATER VAULT LID 2 THE TAYLOR BUILDING FOR REFERENCE. LID MUST BE APPROVED BY BYU-I PRIOR TO INSTALLATION.



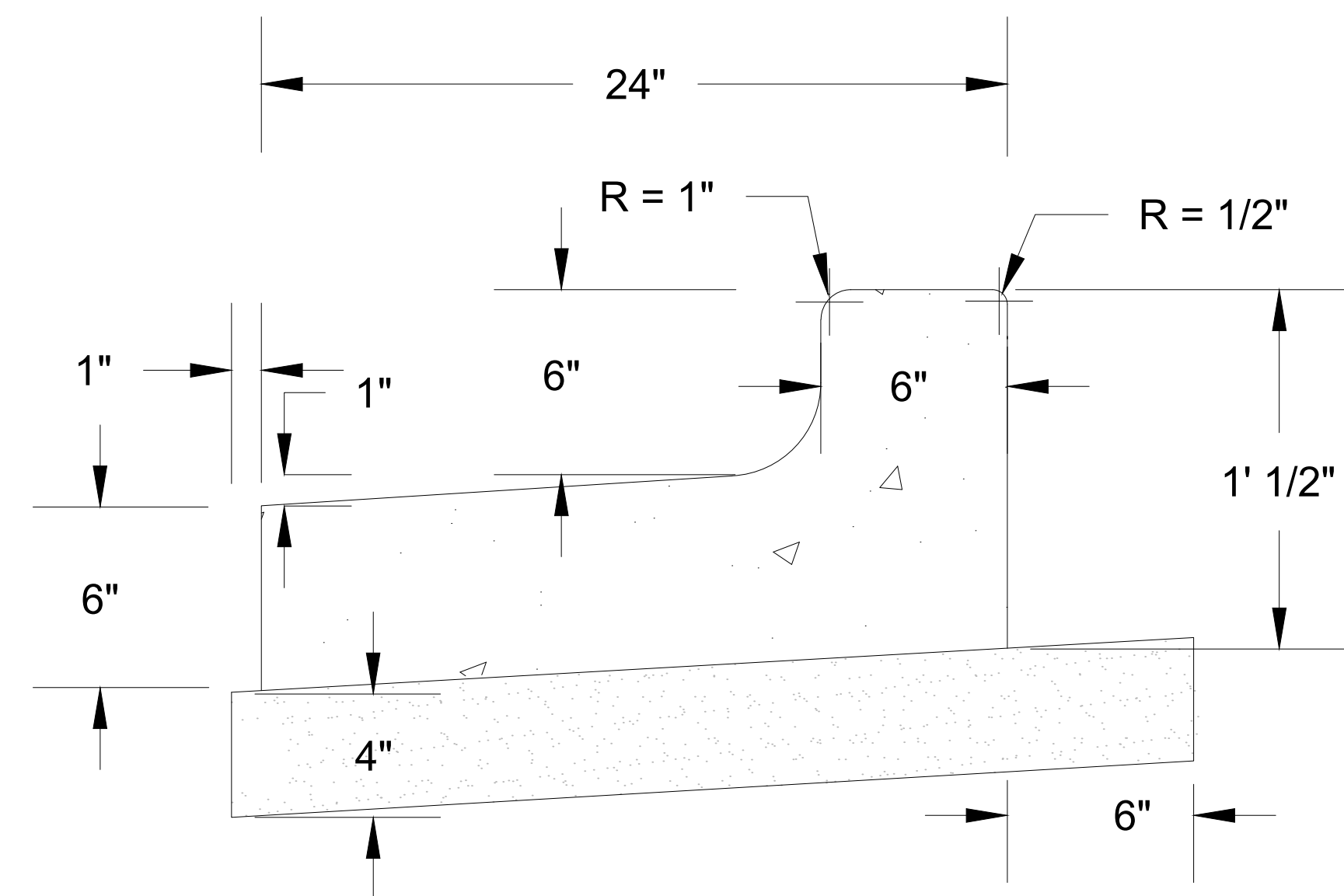
4'x4' CONCRETE STORM WATER VAULT
END VIEW
NTS



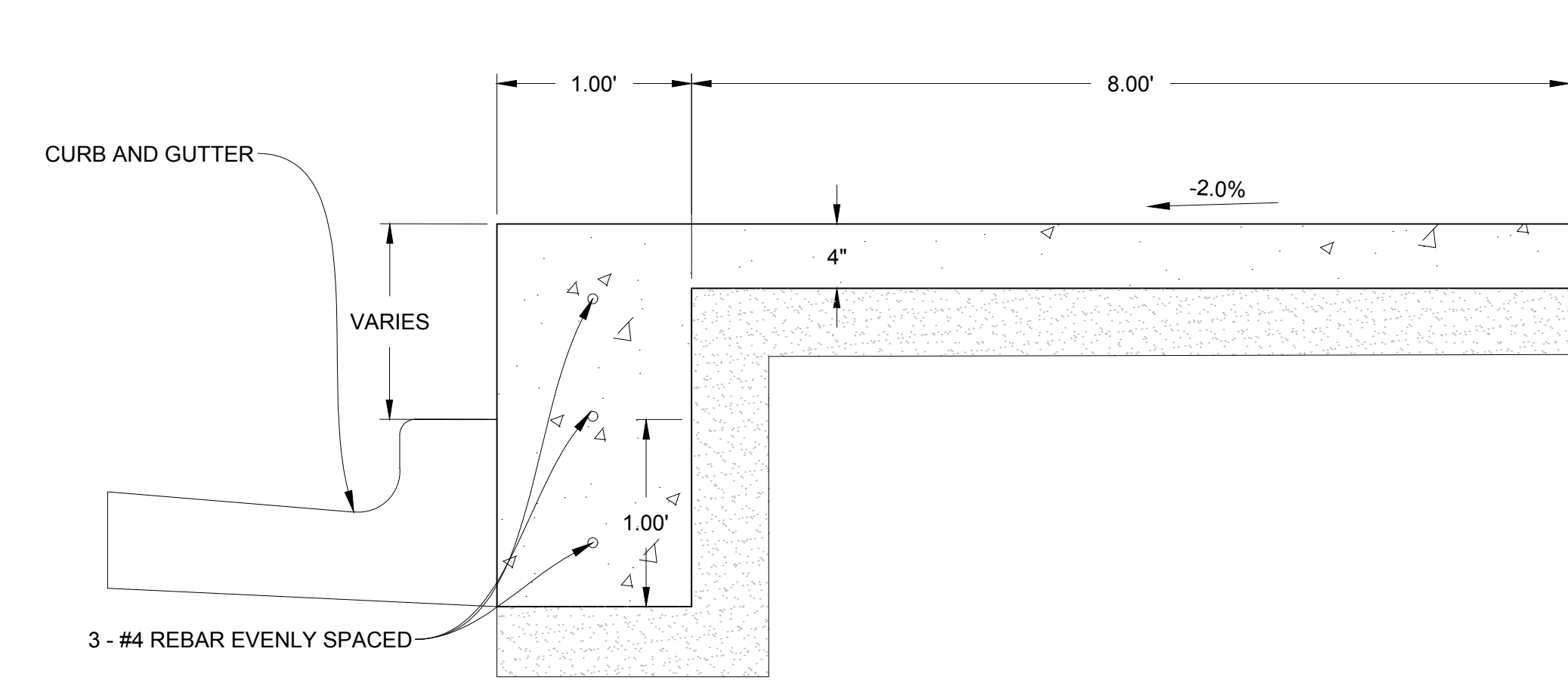
4'x4' CONCRETE STORM WATER VAULT
SECTION VIEW
NTS



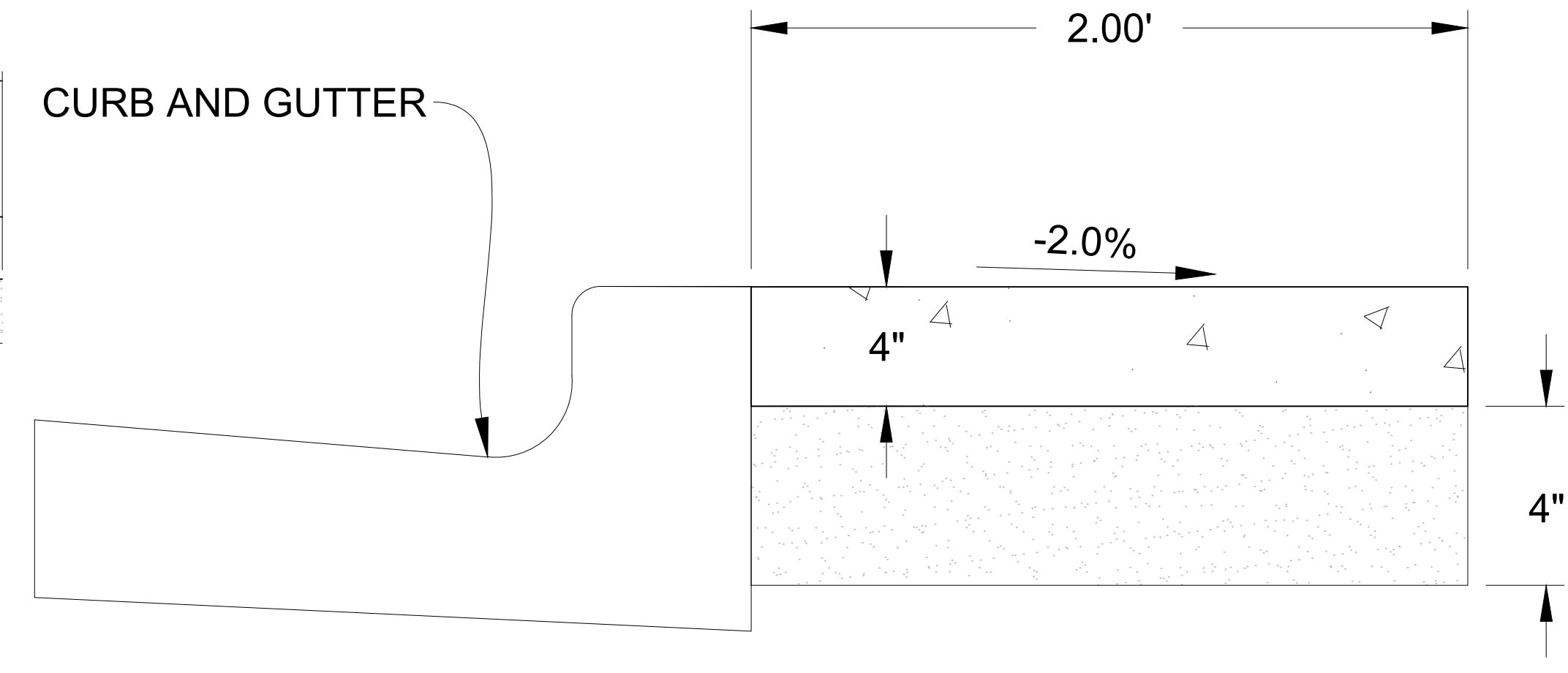
RETAINING WALL DEMO DETAIL
NTS



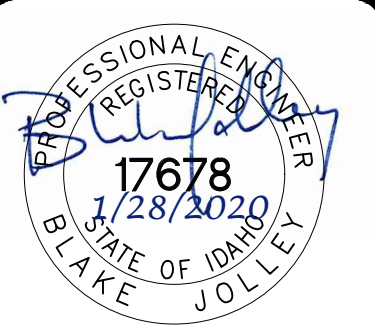
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THICKENED END SIDEWALK
NTS



2' CONCRETE APRON DETAIL
NTS



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NO.	REVISION	SCHEDULE	DATE

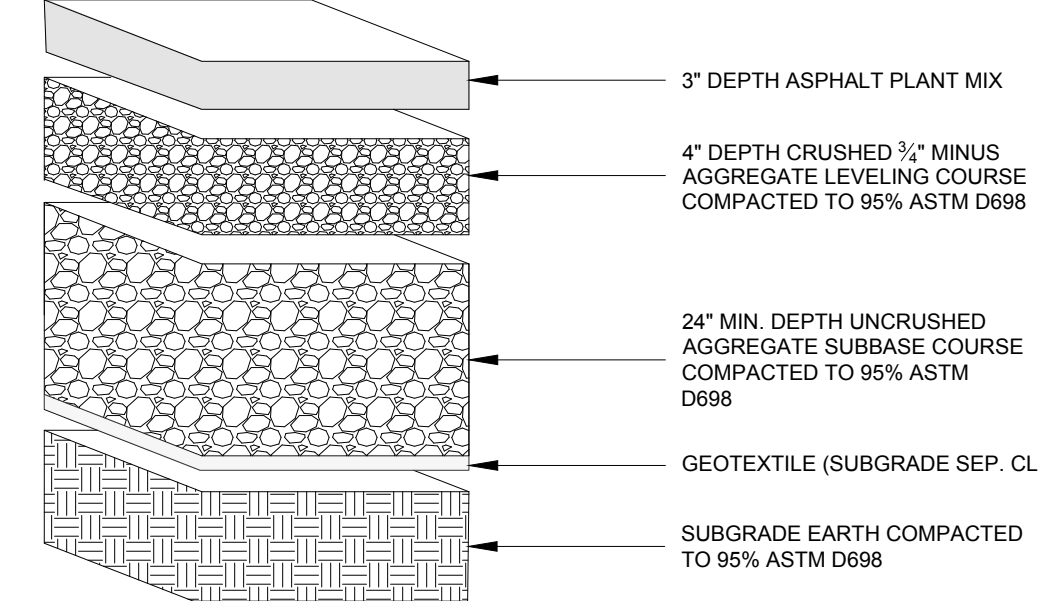
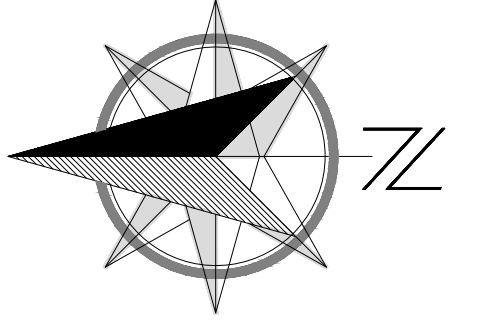
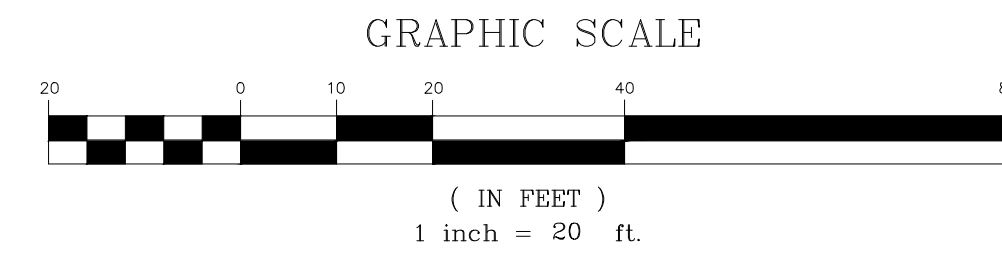
PROJECT NAME:
BRIGHAM YOUNG UNIVERSITY - IDAHO SPORI ANNEX

PROJECT NO.: 10569

SHEET NAME:
CIVIL GRADING SHEET

LEGEND

- PROPOSED CATCH BASIN
- EXISTING CATCH BASIN
- EXISTING FIRE HYDRANT
- EXISTING POWER POLE
- EXISTING LIGHT POLE
- EXISTING WATER VALVE
- EXISTING STORM DRAIN MANHOLE
- EXISTING SANITARY SEWER MANHOLE
- EXIST. CURB & GUTTER
- PROPERTY LINE
- GRADE BREAK
- SAW CUT
- STREET RIGHT-OF-WAY (ROW)
- EASEMENT LINE
- EXIST. FENCE LINE
- EXISTING UNDERGROUND POWER
- EXISTING STEAM CONDUIT
- EXISTING HVAC
- EXISTING IRRIGATION
- PROPOSED SANITARY SEWER LINE
- EXISTING SANITARY SEWER LINE
- PROPOSED WATER LINE
- EXISTING WATER LINE
- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- EXISTING GAS SERVICE
- PROPOSED GAS LINE
- EXISTING MAJOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED CONCRETE
- EXISTING CONCRETE RETAIN AND PROTECT
- EXISTING BUILDING RETAIN AND PROTECT
- LANDSCAPING
- EXISTING ASPHALT
- PROPOSED ASPHALT

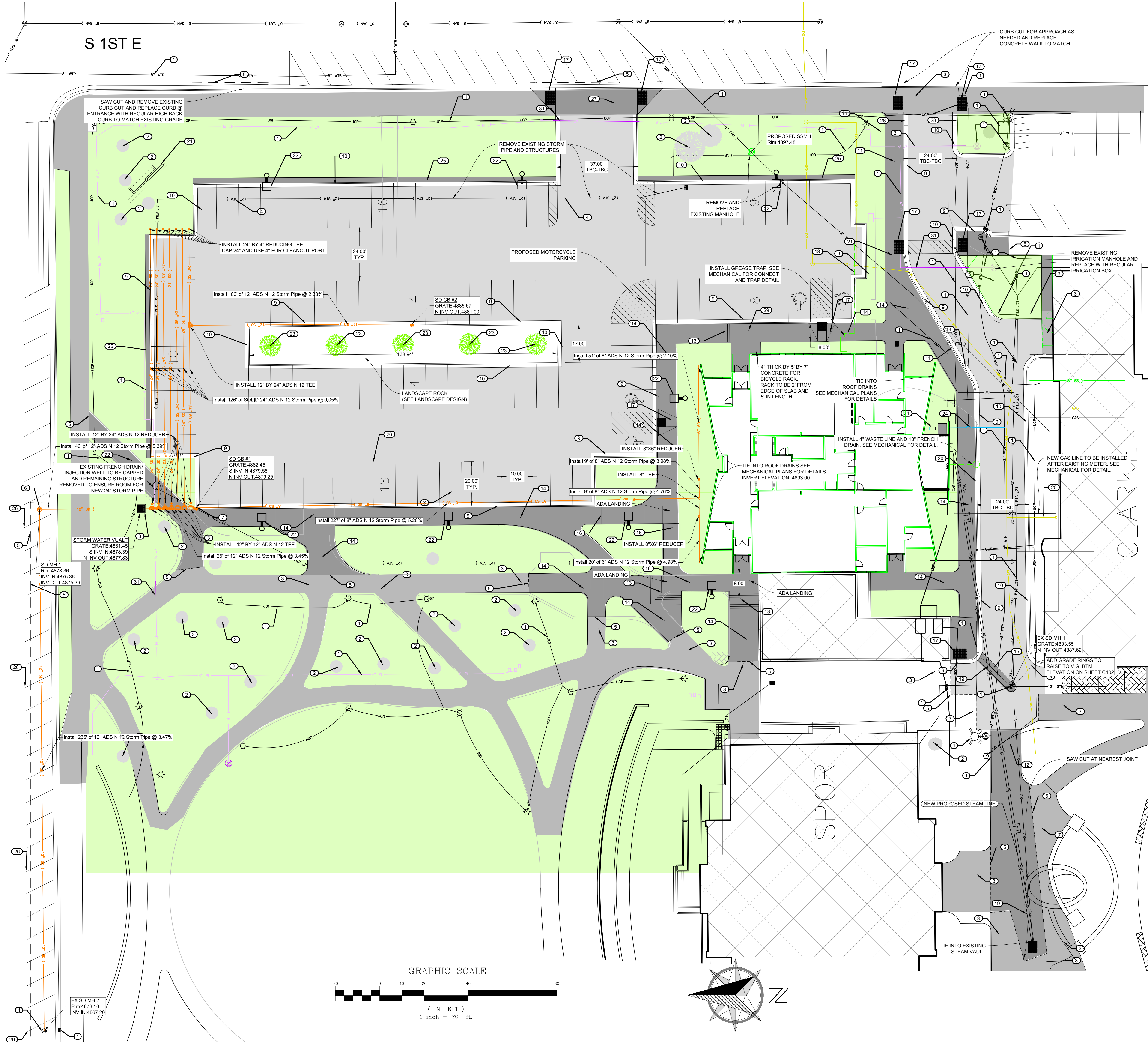


- NOTE:**
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 2. CONTRACTOR TO VERIFY ALL EXISTING UTILITY LOCATIONS AND COORDINATE WITH EACH UTILITY COMPANY.
 3. ENSURE 10" MINIMUM CLEARANCE BETWEEN ALL POTABLE AND NON-POTABLE LINES ARE MET PER IDEQ AND CITY OF REXBURG STANDARDS.
 4. ENSURE 18" MINIMUM VERTICAL CLEARANCE BETWEEN ALL POTABLE AND NON-POTABLE LINES ARE MET PER IDEQ AND CITY OF REXBURG STANDARDS.
 5. CONTRACTOR TO VERIFY EXISTING SERVICES AND INSTALL IF NOT EXISTING.
 6. CONTRACTOR TO VERIFY A MIN. OF 24" PIT RUN FOR ASPHALT AREA. ANY ASPHALT AND ROAD BASE AREA THAT IS REMOVED AND REPLACED WITH LANDSCAPE WILL NEED A MIN. OF 12" TOPSOIL FOR PLANTING.
 7. ALL LANDSCAPE TP BE DONE PER THE LANDSCAPE PLAN.

STORM WATER INFORMATION:
PRECIPITATION FACTOR: 0.90
INTENSITY: 1.0"
PARKING LOT AREA: 37,800 SQ. FT.
BUILDING AREA: 9,350 SQ. FT.
TOTAL AREA: 47,150 SQ. FT.

BUILDING VOLUME DIRECTED TO EXISTING BYU! STORM SYSTEM: 695 CU. FT.
PARKING LOT AREA DIRECTED TO THE CITY SYSTEM WITH SLOW RELEASE: 2,810 CU. FT.
TOTAL SITE VOLUME: 3,505 CU. FT.

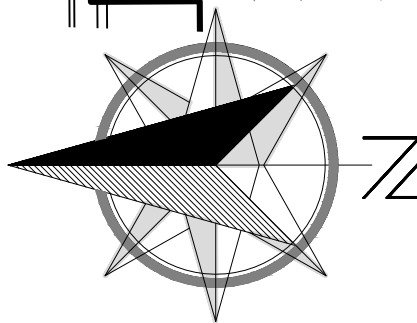
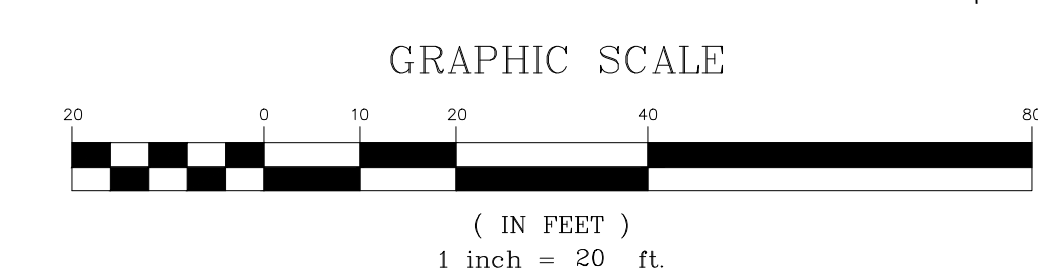




- 0101-01 RETAIN AND PROTECT EXISTING UTILITY
- 0101-02 RETAIN AND PROTECT EXISTING TREE
- 0101-03 RETAIN AND PROTECT EXISTING ASPHALT AND CONCRETE
- 0201.4.1.E.1-01 REMOVE EXISTING UTILITY
- 0201.4.1.F.1-01 SAW CUT, REMOVE AND REPAIR OF EXISTING CONCRETE OR ASPHALT
- 0602.4.1.A.1-01 INSTALL STORM DRAIN MANHOLE TYPE A PER ISPCW 612
- 0602.4.1.F.1-01 INSTALL CATCH BASIN TYPE I PER ISPCW SD 601
- 0602.4.1.B.1-02 INSTALL STORM VAULT WITH SLIDE GATE PER DETAIL ON SHEET C101
- 0706.4.1.A.5-01 INSTALL STANDARD 6" CATCH CURB AND GUTTER PER ISPCW-701
- 0706.4.1.A.5-02 INSTALL 6" LIP DOWN CURB AND GUTTER PER DETAIL ON SHEET C101
- 0706.4.1.A.5-03 INSTALL 2.5' CATCH CURB AND GUTTER PER ISPCW 701
- 0706.4.1.E.1-08 INSTALL 8" CONCRETE SIDEWALK FOR FIRE LANE PER BYU-I SPEC W/ HEAT MELT IN WALK SEE MECHANICAL PLANS FOR DETAILS
- 0706.4.1.D.1-01 INSTALL CONCRETE STEPS REFER TO AE 502 DETAILS 2, 3, AND 5
- 0706.4.1.E.1-06 INSTALL 6" CONCRETE SIDEWALK PER BYU-I SPEC W/ HEAT MELT IN WALK SEE MECHANICAL PLANS FOR DETAILS
- 0706.4.1.B.1-01 INSTALL 4" WIDE CONCRETE VALLEY GUTTER PER ISPCW SD 708
- 0706.4.1.H.1-01 INSTALL CONCRETE PEDESTRIAN RAMP INCLUDING RAILING PER ADA STANDARD
- 0706.4.1.H.1-02 INSTALL PEDESTRIAN RAMP WITH DETECTABLE WARNING DOMES PER ADA STANDARDS
- 0504.4.1.B.1-04 INSTALL 4" SDR 35 SANITARY SEWER SERVICE @ 2%
- 2030.4.1.D.1-01 INSTALL STEAM LINE. SEE MECHANICAL FOR DETAILS.
- 2030.4.1.D.1-02 INSTALL GAS SERVICE LINE
- 0706.4.1.A.6-01 INSTALL PRIVATE MONUMENT SIGN. SEE LANDSCAPE DESIGN.
- 1102.4.1.A.1-01 INSTALL STREET LIGHT PER BYU-I STANDARDS SEE ELECTRICAL PLANS FOR DETAILS
- 2050.4.1.A.1-01 INSTALL TREE SEE LANDSCAPE PLANS FOR DETAILS
- 0404.4.1.A.1-02 INSTALL 2" WATER SERVICE
- 0706.4.1.E.1-02 INSTALL 2' WIDE CONCRETE APRON PER DETAIL ON SHEET C101
- 1104.4.1.A.1-01 INSTALL PAVEMENT MARKINGS PER MUTCD STANDARDS
- 0706.4.1.F.1-01 INSTALL APPROACH PER ISPCW SD710-B
- 0706.4.1.A.5-05 INSTALL CURB TERMINUS PER ISPCW SD-707
- 0706.4.1.E.1-08 INSTALL THICKENED EDGE CONCRETE SIDEWALK PER DETAIL ON SHEET C101
- 0401.4.1.A.1-06-P INSTALL 6" WATER PIPE PVC C-900
- 0901.4.1.A.1-06 INSTALL 6" IRRIGATION SLEEVE. STAMP "IC" ABOVE ANY IRRIGATION CONDUITS WITHIN 6" OF BOTH EDGES OF WALK OR CENTERED IN CURB IF NO WALK. STAMP TO BE BORROWED FROM OWNER.

NOTE:

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- ALL LANDSCAPE TP BE DONE PER THE LANDSCAPE PLAN.
- ALL CONCRETE WITH HEAT MELT TO BE STAMPED WITH STAMP PROVIDED BY OWNER.



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Blake Jolley

NO.	REVISION	SCHEDULE	DESCRIPTION	DATE
				11/27/19
				1/28/2020

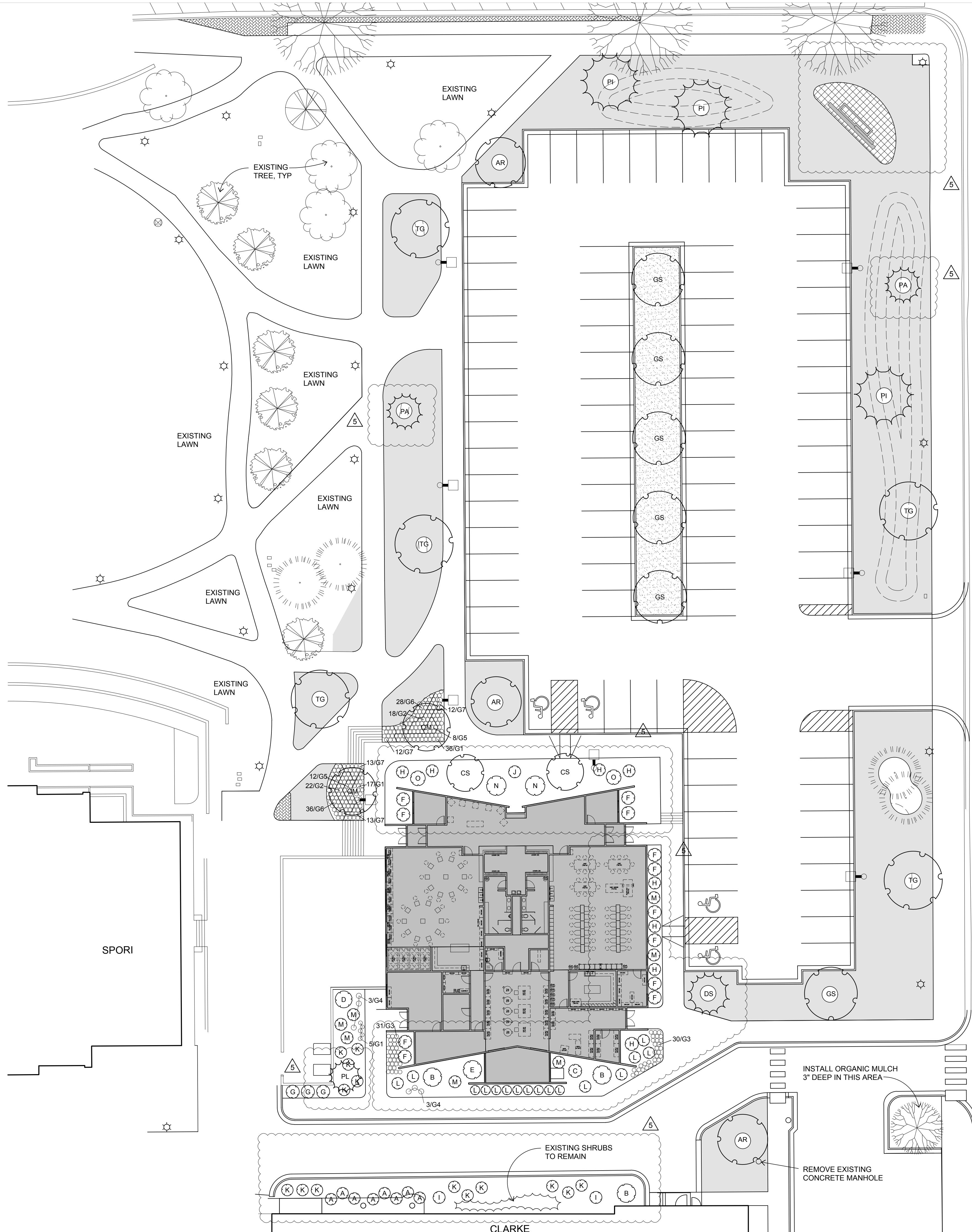
PROJECT NAME:
BRIGHAM YOUNG UNIVERSITY - IDAHO SPORI ANNEX

PROJECT NO.: 10569

SHEET NAME:
CIVIL UTILITY AND CONCRETE

SHEET NUMBER:
C103





NOTES:

- Annual plantings by owner; soil in planting area by contractor.
- Repair damage to existing lawns caused by construction. Use new topsoil and new bluegrass sodded lawn to repair damage. Use sod cutter to cut existing lawns and to form joint for patching with new sod.
- New sodded lawn shown shall be Kentucky Bluegrass sod.
- See site, mechanical, electrical and sprinkler plans for information about other work.
- Mineral mulch shall be equal to 1-1/4" - 1/12" Black and Tan available from Wolverine Mulch.
- Install organic mulch 3" deep throughout all areas where shrub and perennial plantings are shown.

LEGEND



PLANT LIST

Quant	Key	Botanical Name	Common Name	Size
TREES				
3	AR	Acer rubrum 'Autumn Spire'	Autumn Spire Red Maple	2" B&B
2	CS	Crataegus x mordensis 'Snowbird'	Snowbird Hawthorne	2" B&B
6	GS	Gleditsia triacanthos 'Skyline'	Skyline Honeylocust	2" B&B
2	PA	Picea pungens	Colorado Spruce	6'-8" B&B
3	PI	Pinus nigra	Austrian Pine	6'-8" B&B
1	PL	Pinus strobus 'Fastigiata'	Eastern White Pine	6'-8" B&B
1	DS	Pinus sylvestris	Scotch Pine	6'-8" B&B
2	QM	Quercus x macrocarpa 'Heritage'	Heritage Bur Oak	2" B&B
5	TG	Tilia cordata 'Greenspire'	Greenspire Linden	2" B&B
SHRUBS				
8	A	Berberis l. 'Royal Cloak'	Royal Cloak Barberry	5 gal. 12-18"
3	B	Cornus alba 'Ivory Halo'	Variegated Tatarian Dogwood	5 gal. 18-24"
1	C	Euonymus alata 'Compacta'	Dwarf Winged Euonymus	5 gal. 18-24"
1	D	Forsythia x intermedia 'Sunrise'	Sunrise Forsythia	5 gal. 18-24"
1	E	Physocarpus opulifolius 'Diablo'	Diablo Ninebark	5 gal. 18-24"
6	F	Rosa 'Knockout'	Knockout Bush Rose	5 gal. 12-18"
3	G	Rosa 'Rainbow Knockout'	Rainbow Knockout Rose	5 gal. 12-18"
1	H	Rosa 'Sunny Knockout'	Sunny Knockout Rose	5 gal. 12-18"
7	I	Rosa x 'Morden Fireglow'	Morden Red Bush Rose	2 gal. 12-18"
3	J	Rosa x 'Morden Blush'	Morden Pink Bush Rose	2 gal. 12-18"
18	K	Spiraea bumalda 'Anthony Waterer'	Anthony Waterer Spiraea	5 gal. 12-18"
7	L	Spiraea bumalda 'Gold Flame'	Gold Flame Spiraea	5 gal. 12-18"
7	M	Spiraea betulifolia 'Tor'	Tor Birchleaf Spiraea	5 gal. 12-18"
2	N	Syringa vulgaris 'Yankee Doodle'	Yankee Doodle Lilac	5 gal. 18-24"
2	O	Viburnum dentatum 'Blue Muffin'	Blue Muffin Viburnum	5 gal. 18-24"
GROUND COVER				
58	G1	Delphinium grandiflorum 'Summer Morning'	Summer Morning Delphinium	1 gal.
40	G2	Echinacea purpurea	Purple Coneflower	4" pot.
61	G3	Gaillardia x-grandiflora 'Arizona Sun'	Arizona Sun Blanket Flower	1 gal.
6	G4	Helictotrichon sempervirens 'Sapphire'	Sapphire Blue Oat Grass	1 gal.
20	G5	Penstemon 'Dark Towers'	Dark Towers Penstemon	1 gal.
64	G6	Salvia 'Fashionista Sweet Petite'	Sweet Petite Sage	1 gal.
50	G7	Veronica longifolia 'First Lady'	First Lady Speedwell	1 gal.

LANDSCAPE PLANTING PLAN 01-27-20
SCALE: 1" = 20'-0" - 24" x 36" sheet size
0 20 40 60 80 100



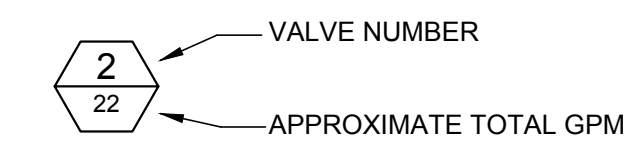
NOTES:

- Use only insert fittings for polyethylene pipe. Polyethylene pipe may be pulled.
- Install one pipe per sleeve, maximum. Install wiring in separate sleeve. Install three additional 4" sleeves at each new sleeve location.
- Mainline depth: 24", install 48" away from sidewalk. Notify landscape architect if obstructions are encountered.
- Install 14 gage green tracer wire taped to top of mainline 10'-0" o/c. Install 2' loop in tracer wire located inside each valve box.
- Install decoder cable in 1" steel conduit from controller to below grade, and from there in 1" poly pipe conduit to each valve box. Install 2'-3" loop in cable located inside each valve box.
- Install one pipe per sleeve, maximum. Install wiring in separate 1" poly pipe conduit. Install three additional 4" sleeves at each new sleeve location.
- Install sleeves under existing concrete or asphalt by either cutting and patching to match or by boring. Tunneling or other methods which cause erosion not allowed.
- Install one control valve per valve box.
- Repair damage to existing lawns caused by construction. Use new topsoil and new bluegrass sodded lawn to repair damage. Use sod cutter to cut existing lawns and to form joint for patching with new sod.
- Repair damage to plantings caused by construction.
- See site, mechanical, electrical and landscape plans for information about other work.
- Owner shall winterize system using compressed air at the end of the first watering season and start the system the following spring.

HEAD SYMBOL LEGEND

KEY	HEAD	90°	180°	270°	360°
▲	TORO 570Z-4P-15-PC	0.70	1.34	2.00	2.50
○	TORO 570Z-4P-FB-PC-200				2.00
○	HUNTER PROS-04-PRS40-MP CORNER	0.39			
◇	HUNTER PROS-04-PRS40-MP2000	0.44	0.83	1.23	1.64
△	HUNTER PROS-04-PRS40-MP3000	0.96	2.04	3.06	4.07
○	HUNTER PROS-04-PRS40-MP3500	1.28	2.86		
◻	HUNTER PROS-04-PRS40-04-MP SIDE OR END		0.25 END; 0.5 SIDE		

VALVE SYMBOL LEGEND

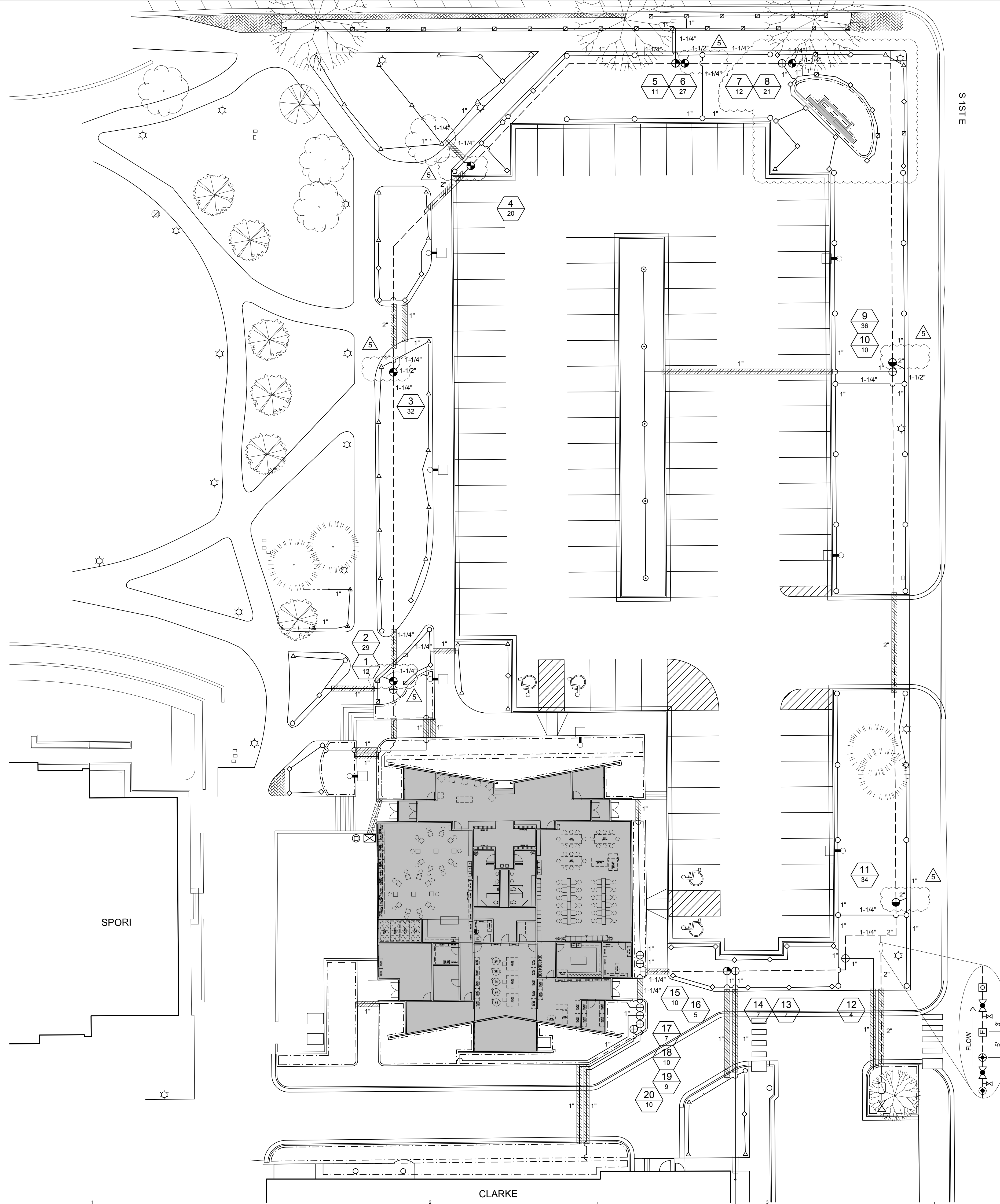
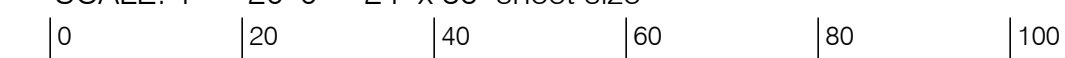


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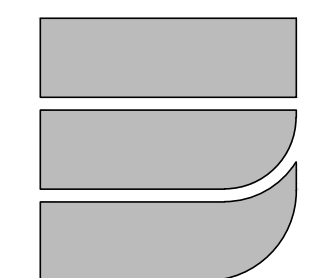
- ⊠ STOP VALVE EXISTING
- BACKFLOW PREVENTION DEVICE EXISTING
- ⊠ ISOLATION VALVE: BRASS GATE VALVE, SIZE TO MATCH MAINLINE.
- ⊕ NEW MASTER VALVE: TORO 220-26-68, 2" BRASS VALVE WITH IRRITROL SOLENOID
- ⊠ 3/4" BRASS MANUAL DRAIN ON MAINLINE
- ⊠ FLOW SENSOR: HUNTER HFS-FCT-150
- ⊠ BLOWOUT CONNECTION, SEE DETAIL VL103
- ⊕ 2" BRASS PRESSURE REDUCING VALVE
- ⊕ CONTROL VALVE: TORO 220-26-64, 1" BRASS PRESSURE REGULATED VALVE WITH IRRITROL SOLENOID AND HUNTER HFR-100-075-40 REGULATING FILTER
- ⊕ CONTROL VALVE: TORO 220-26-64, 1" BRASS PRESSURE REGULATED VALVE WITH IRRITROL SOLENOID
- ⊕ CONTROL VALVE: TORO 220-26-66, 1-1/2" BRASS PRESSURE REGULATED VALVE WITH IRRITROL SOLENOID
- ⊕ CONTROL VALVE: TORO 220-26-68, 2" BRASS PRESSURE REGULATED VALVE WITH IRRITROL SOLENOID
- ⊕ RAIN SENSOR: HUNTER WRC
- ⊠ CONTROLLER: HUNTER ACC2 METAL DECODER CONTROLLER
- NEW MAINLINE: 2" OR 1-1/4" AS SHOWN, SCHEDULE 40 PVC BURIED 24" DEEP. INSTALL DETECTABLE WARNING TAPE IN TRENCH 6" ABOVE PIPE.
- EXISTING MAINLINE: PVC SCHEDULE 40, SIZE 2", VERIFY LOCATION
- NEW LATERAL LINE: HDPE-3408, ASTM D2239, 100 PSI, SIDR 15 POLYETHYLENE CONTROLLED INSIDE DIAMETER PIPE.
- EXISTING LATERAL LINE AND HEAD (HEADS NOT ALL SHOWN)
- CONNECT NEW MAINLINE TO EXISTING MAINLINE
- CONNECT NEW LATERAL LINE TO EXISTING LATERAL LINE. MATCH EXISTING LINE SIZE.
- NEW SLEEVE OR SLEEVES FOR LINES AND/OR WIRING. SIZES SHOWN ARE PIPE SIZES. SLEEVE SIZE SHALL BE A MINIMUM OF TWO SIZES LARGER THAN PIPE SIZE. SEE NOTES.
- APPROXIMATE LOCATION OF EXISTING SLEEVE
- AREA OF NETAFIM TLDL9-12-0.9 GPH DRIPLINE. SPACE LINES 8" FROM EDGES, OR AS SHOWN, AND 18" O.C. INSTALL WITH NETAFIM TLS-6 SOIL STAPLES.
- ROUTE OF BURIED 1-1/4" CONDUIT FOR CONTROL WIRING FROM CONTROLLER TO MAINLINE

SPRINKLER IRRIGATION PLAN

SCALE: 1" = 20'-0" - 24" x 36" sheet size



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PROJECT NAME:
BRIGHAM YOUNG UNIVERSITY - IDAHO SPORI ANNEX

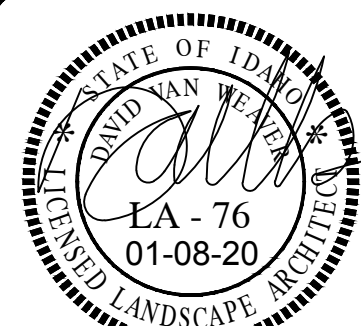
PROJECT NO.: 11513

SHEET NAME: Sprinkler Irrigation Plan

SHEET NUMBER: L102

10 of 99 Total Sheets

NO.	DESCRIPTION	DATE
1	REVISE NOTE TO L102	12-04-19
2	MIRROR BUILDING	12-10-19
3	CLARKE LANDSCAPING	01-08-20
4	CHANGES SHEET L103	01-15-20
5	ADDENDUM #003	01-27-20

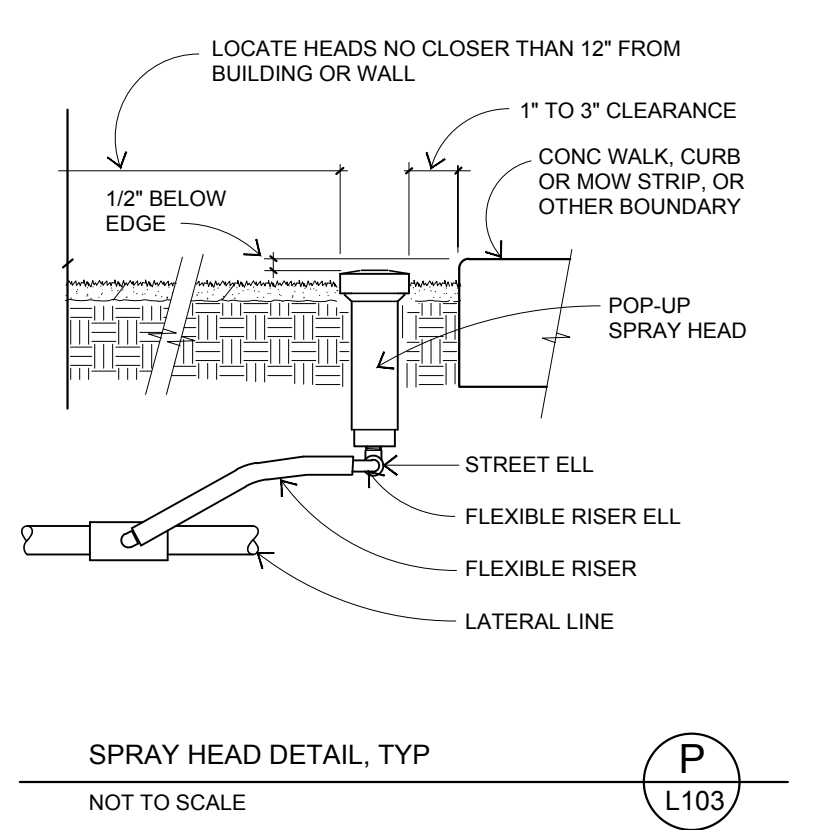
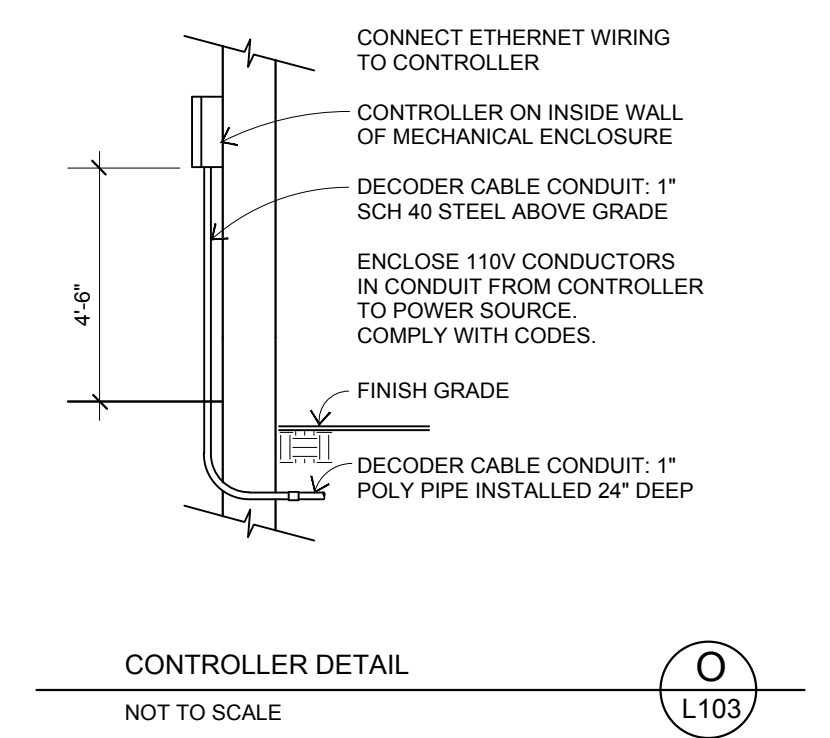
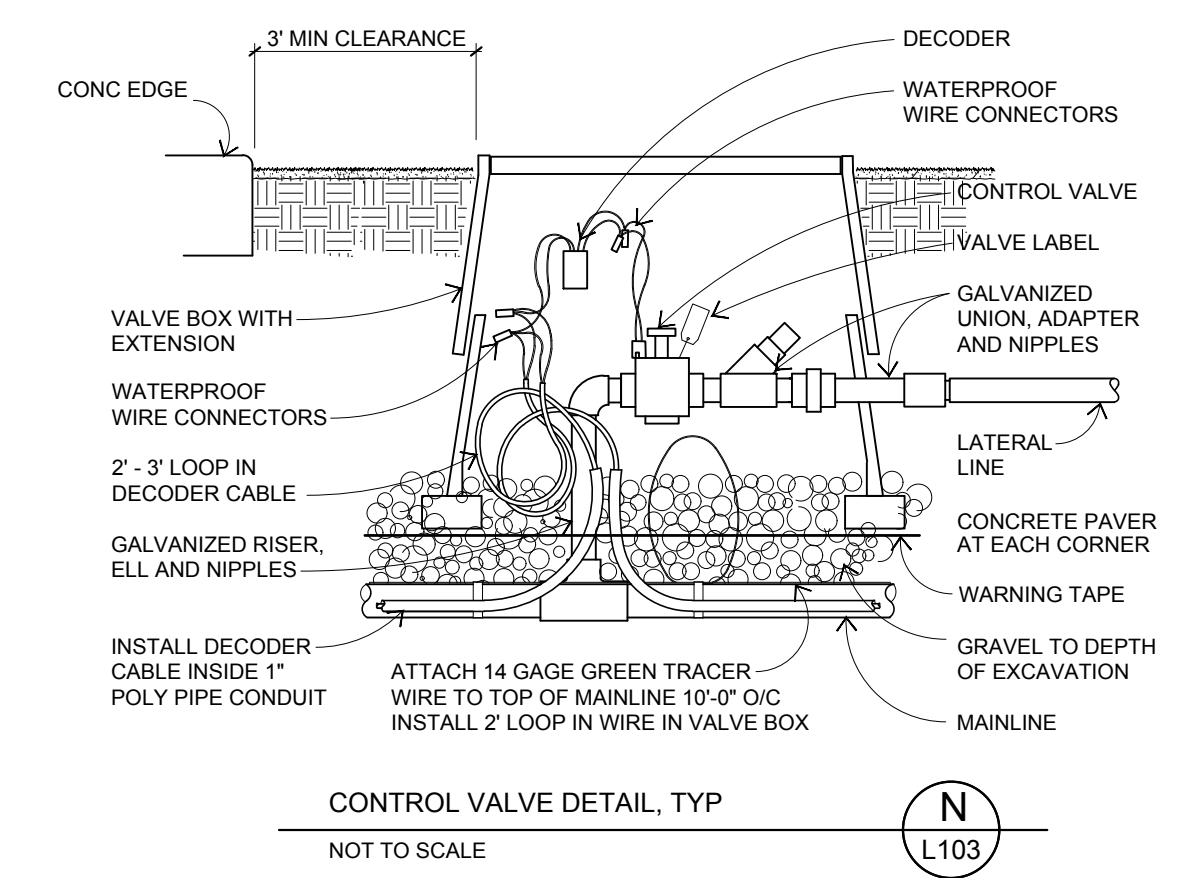
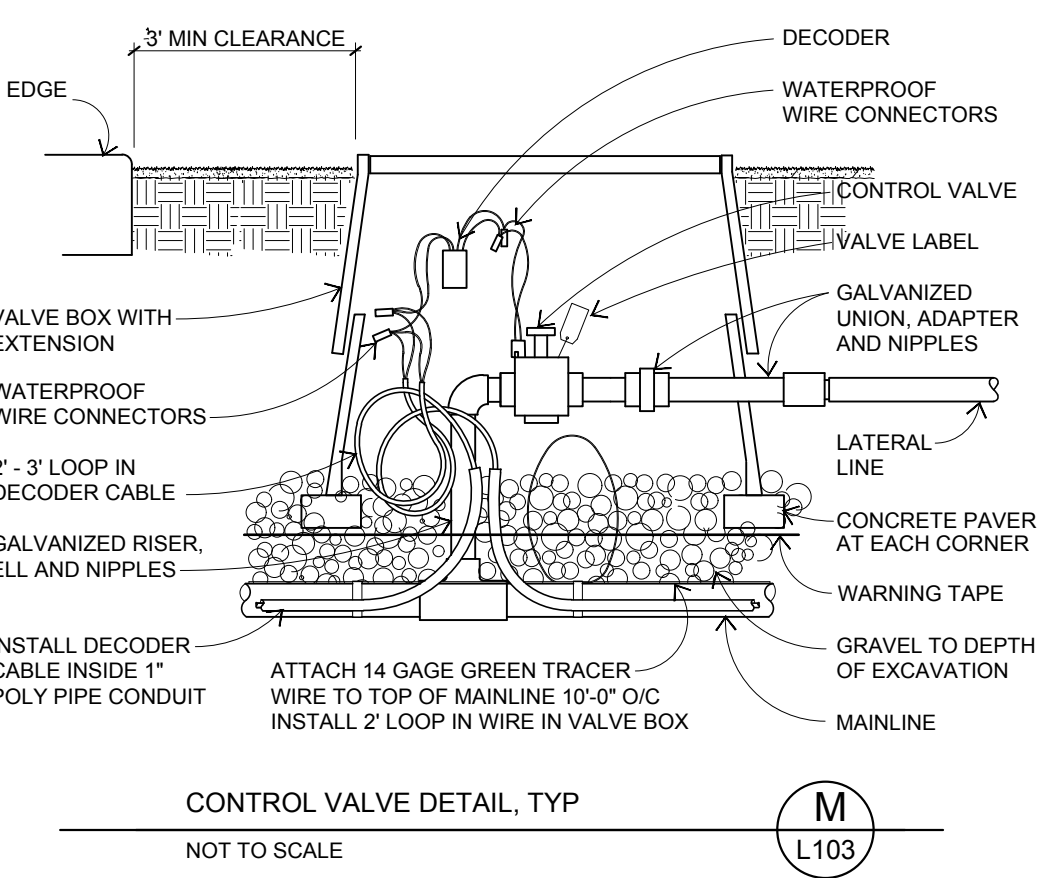
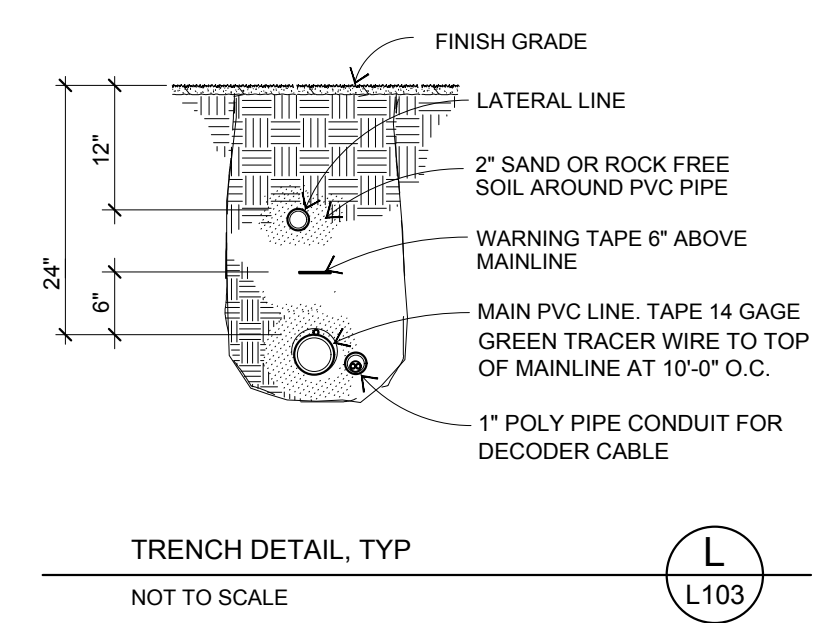
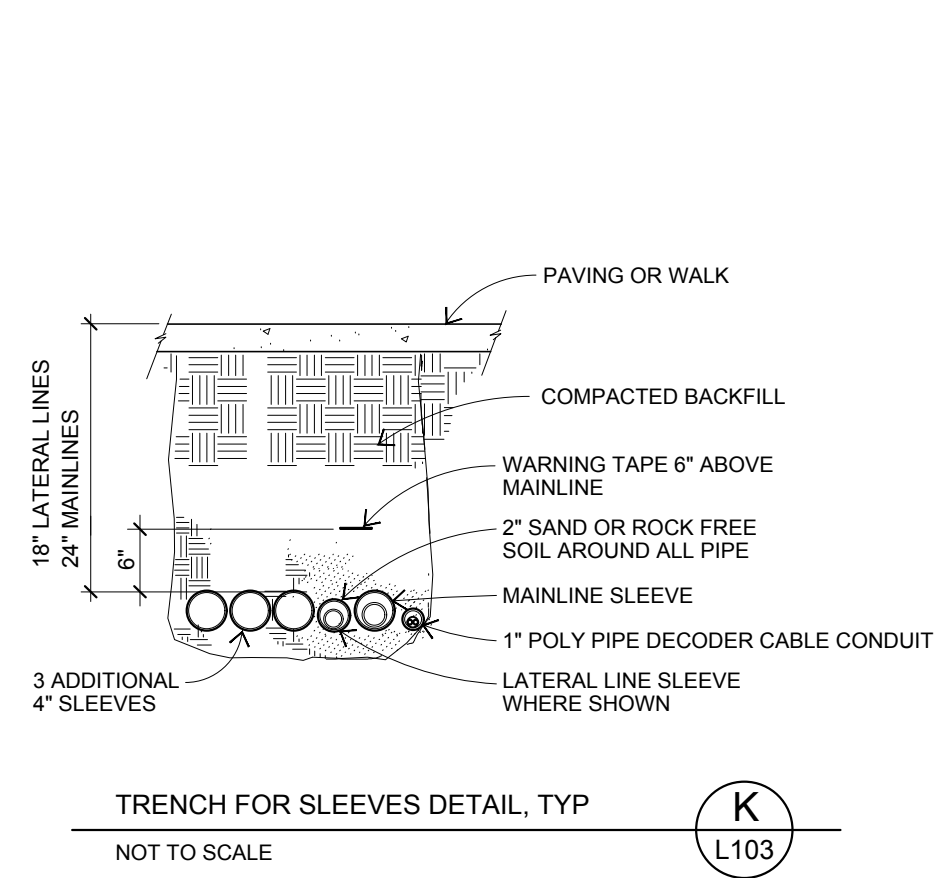
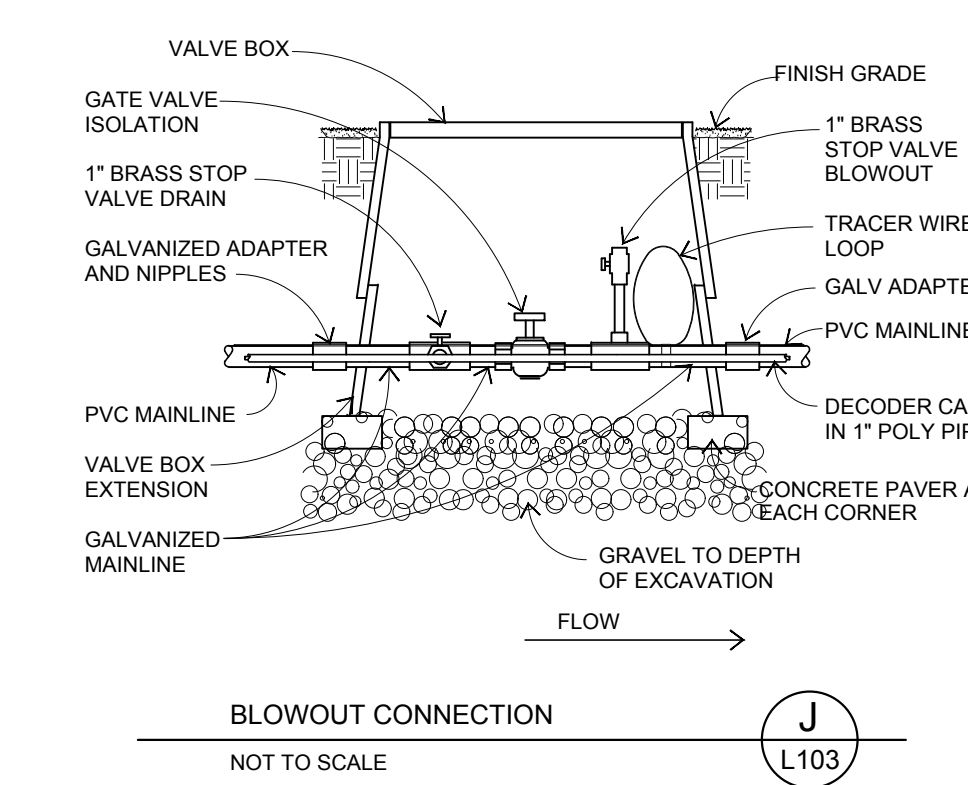
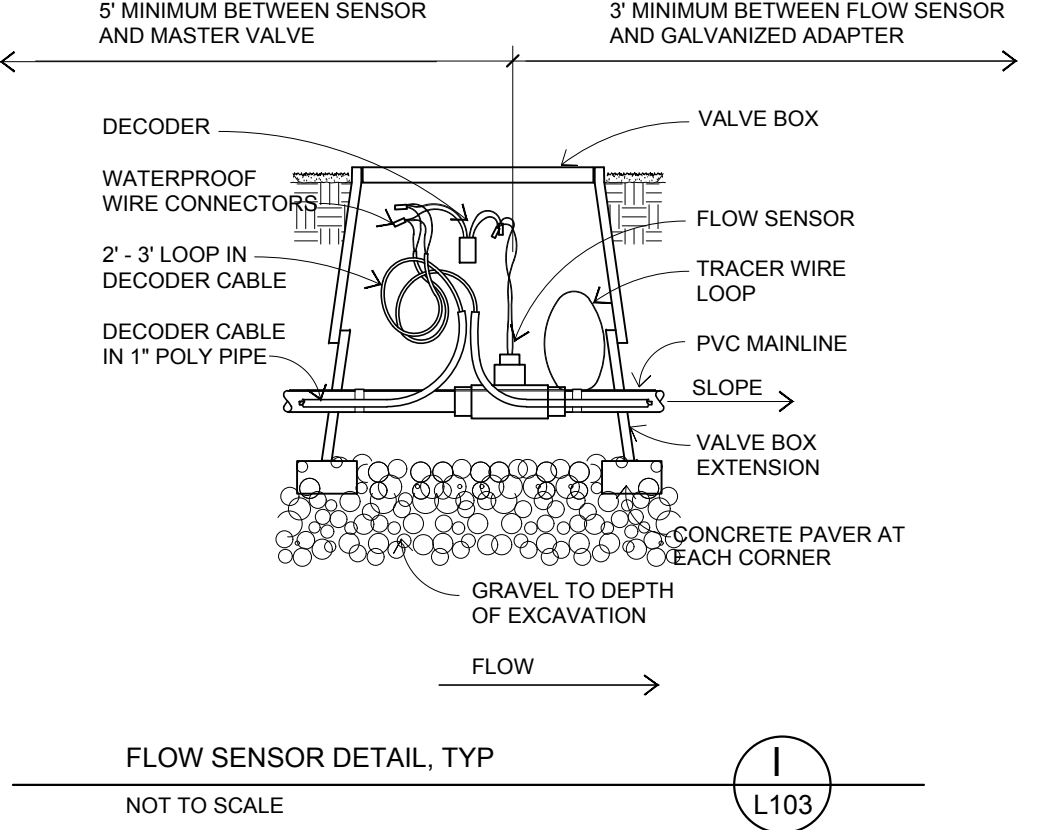
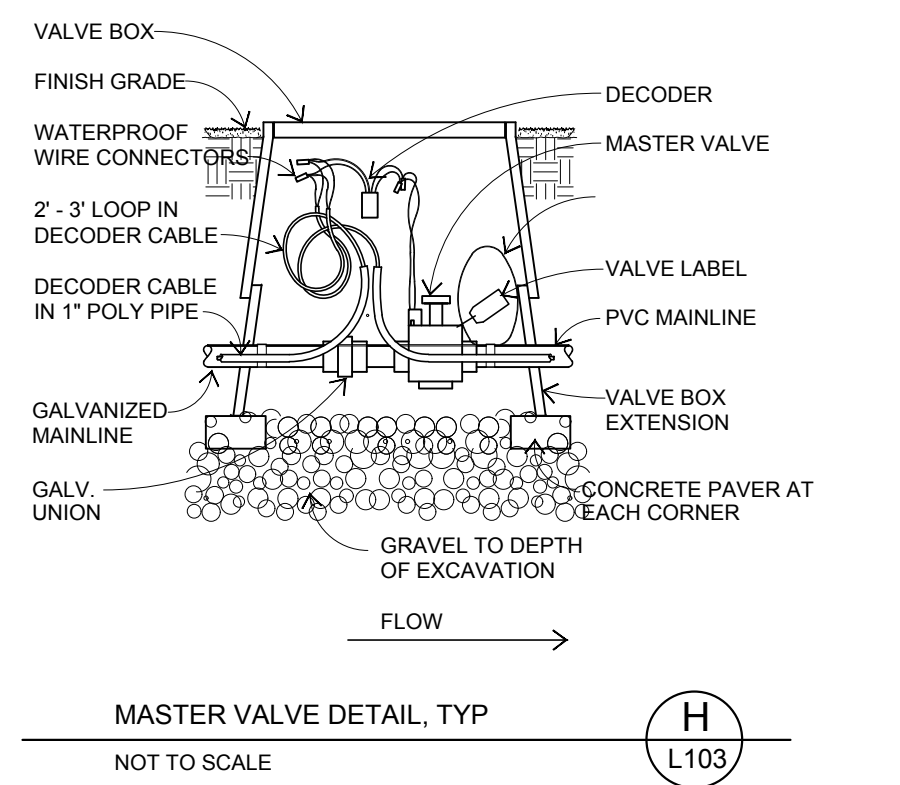
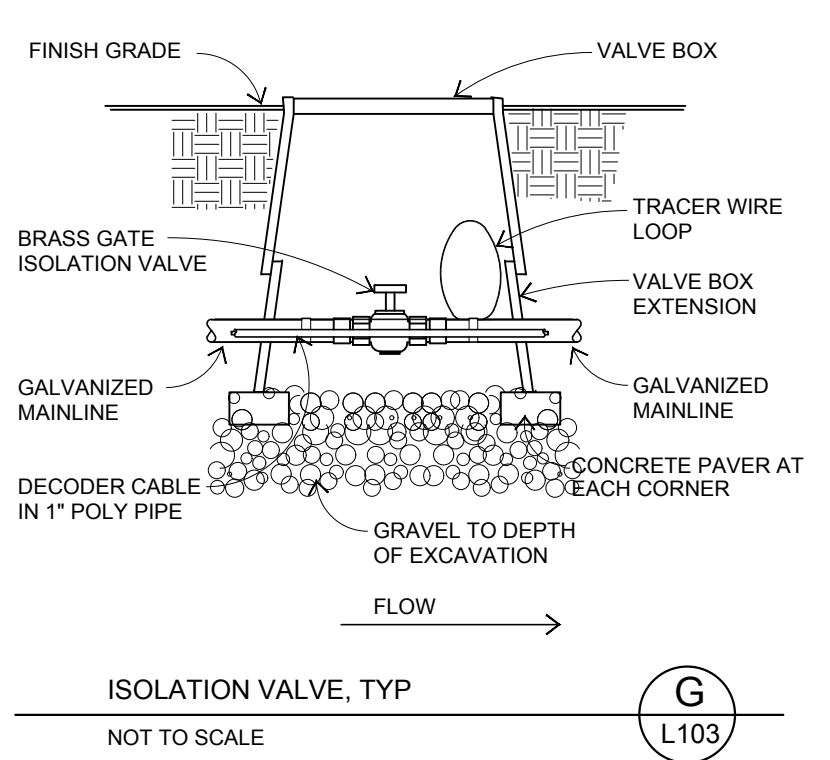
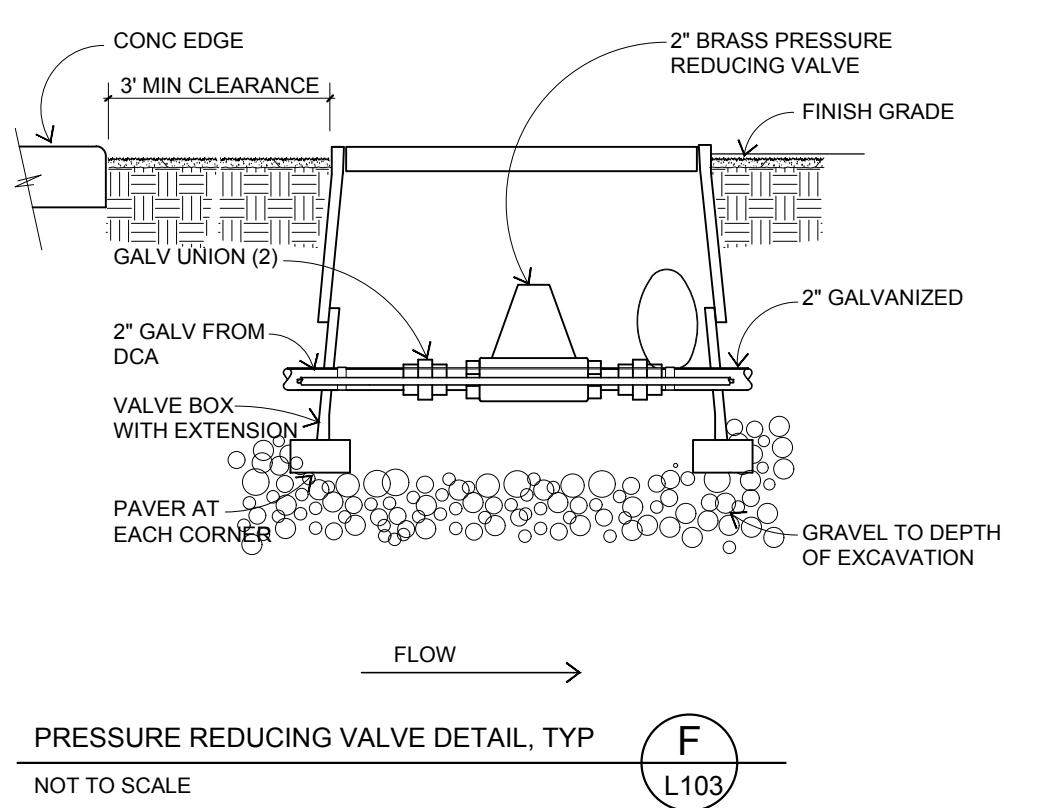
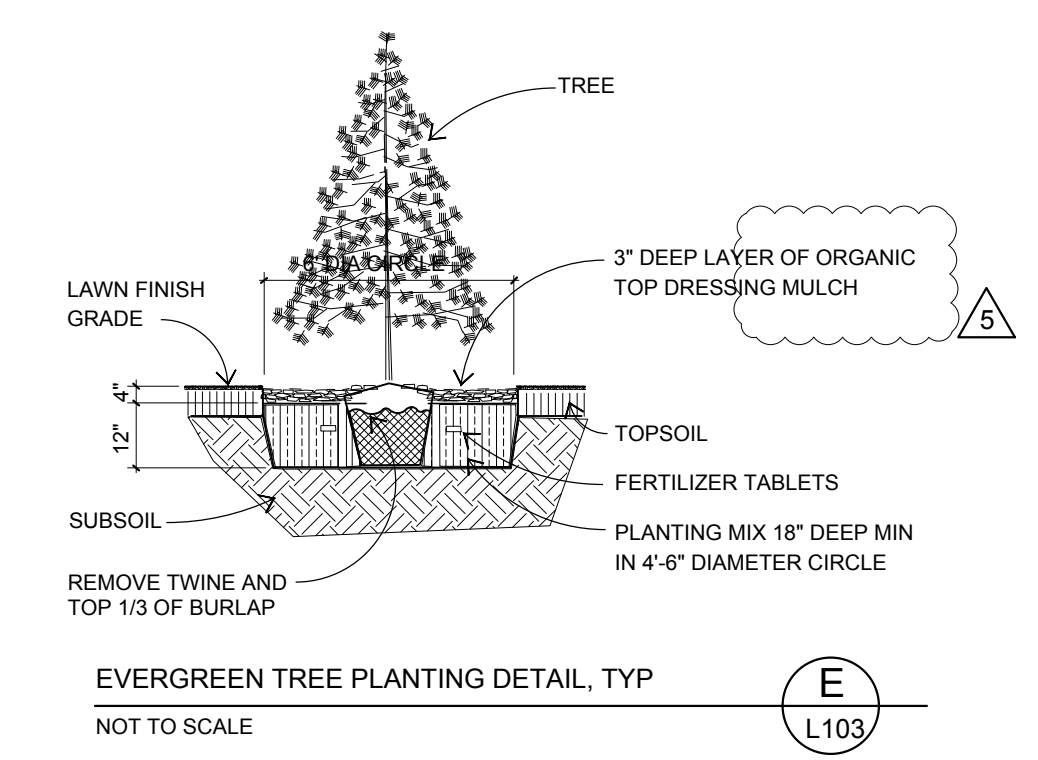
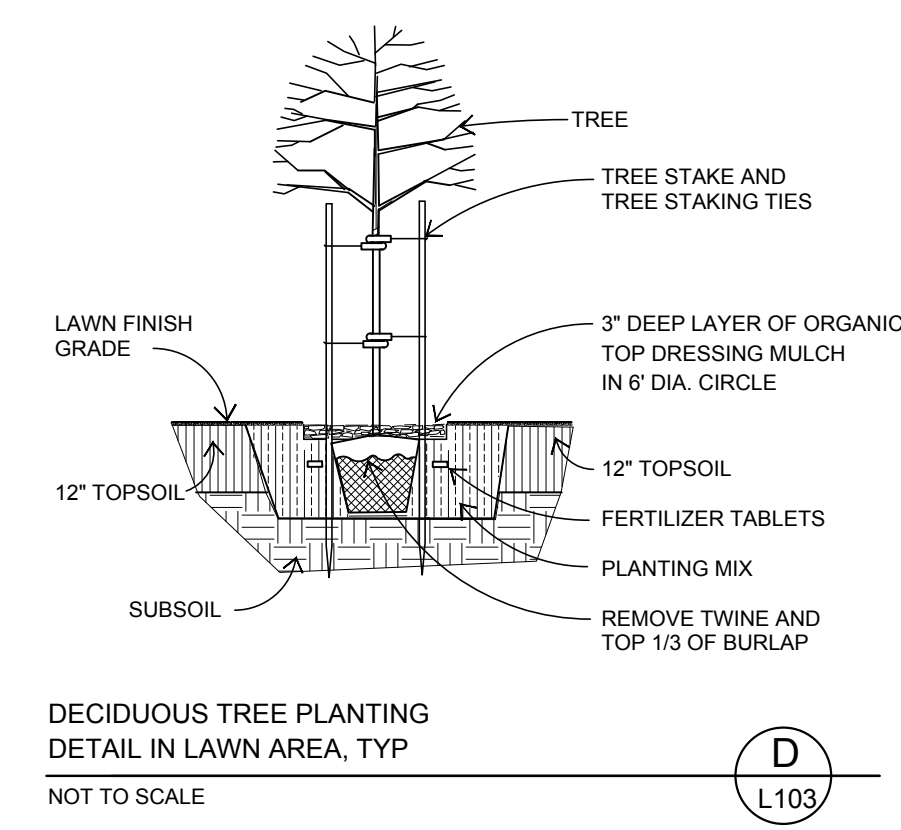
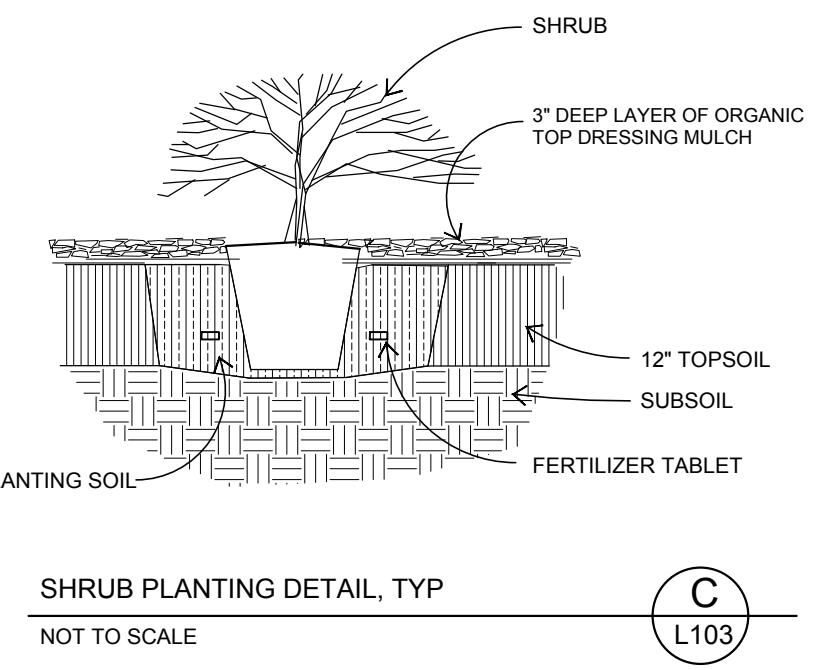
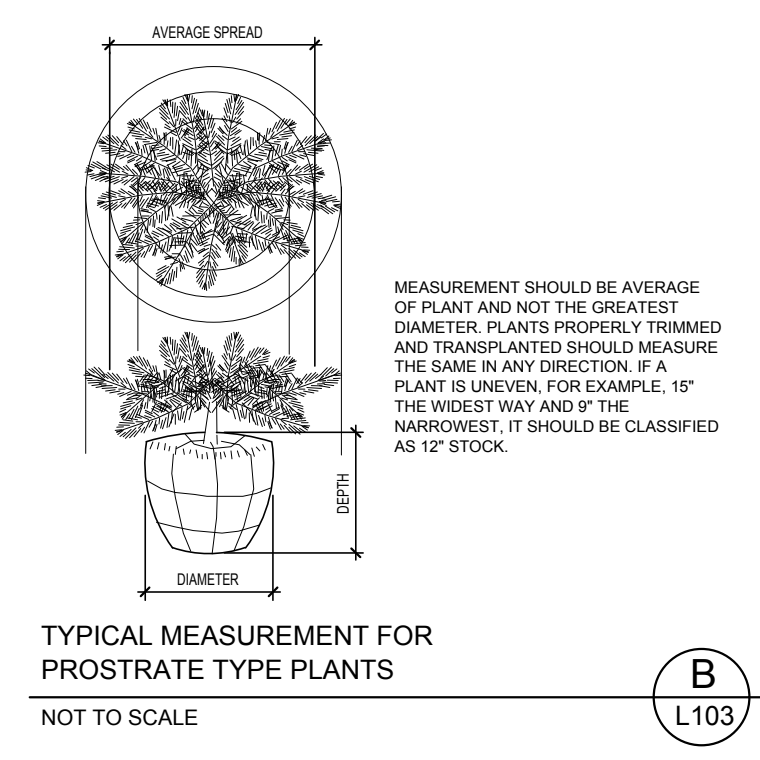
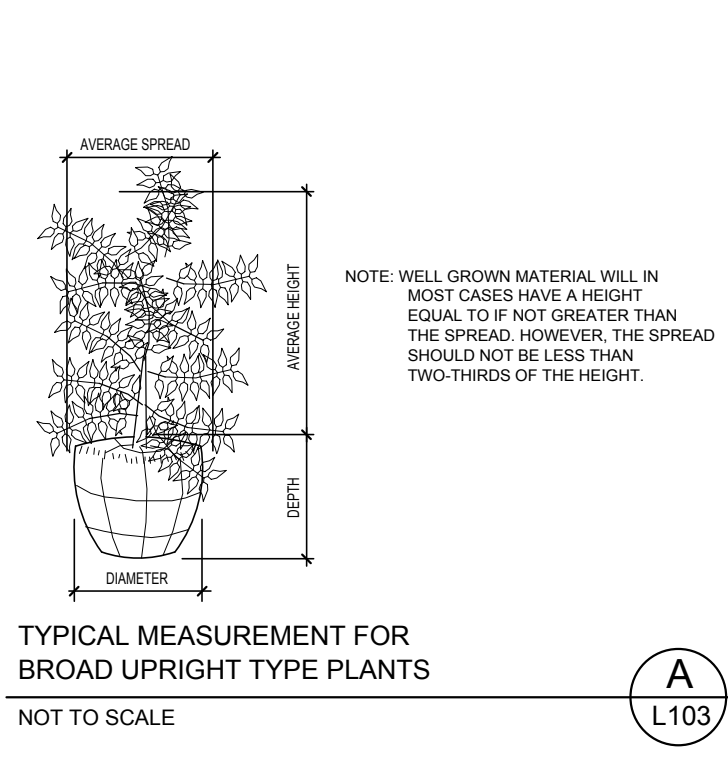


DOCUMENT STATUS		
STATUS	DATE	
BID DOCUMENTS	11-27-19	
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
1	REVISE NOTE TO L102	12-04-19
2	MIRROR BUILDING	12-10-19
3	CLARK LANDSCAPING	01-08-20
4	CHANGES SHEET L103	01-15-20
5	ADDENDUM #003	01-27-20

NOTES:

- Repair damage to existing sprinkler system caused by demolition or construction. Use new materials which match existing to repair damage.
- New sprinkler system shall operate together with existing sprinkler system to provide full coverage to landscape areas.
- Use waterproof wire connectors to splice control wiring. All splices shall be visible within a valve box.
- Install warning tape 6" above mainline along entire length of mainline, including above sleeves.
- Install 14 gage green tracer wire taped to top of mainline 10'-0" o.c. Install 2' loop in tracer wire located inside each valve box.
- Tape decoder cable to bottom side of mainline 10'-0" o.c. Install 2'-3' loop in decoder cable located inside each valve box.

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MASONRY

- 1. CODES AND STANDARDS: A. MASONRY CONSTRUCTION, WORKMANSHIP, AND MATERIALS SHALL COMPLY WITH THE AMERICAN CONCRETE INSTITUTE (ACI) 530.1, "SPECIFICATIONS FOR MASONRY STRUCTURES," AND SECTIONS 2103, 2104, AND 2105 OF THE IBC.

- 2. MATERIALS: A. MASONRY BLOCK SHALL BE LIGHTWEIGHT CONCRETE MASONRY UNITS AND SHALL CONFORM TO ASTM C90, GRADE N, TYPE 1, WITH A MINIMUM COMPRESSIVE STRENGTH OF 2800 PSI AT 28 DAYS FOR NET AREA. B. MASONRY BRICK SHALL BE CLAY MASONRY UNITS AND SHALL CONFORM TO ASTM C62, GRADE SW, WITH A MINIMUM COMPRESSIVE STRENGTH OF 10,000 PSI AT 28 DAYS. C. MORTAR SHALL BE TYPE "S" AS DEFINED BY THE IBC AND SHALL CONFORM TO ASTM C270, WITH A MINIMUM COMPRESSIVE STRENGTH OF 1800 PSI AT 28 DAYS. D. GROUT SHALL CONFORM TO ASTM C476 WITH A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS. E. POXY SHALL CONFORM TO ASTM C881, TYPES I, II, IV, AND V, GRADE 3, CLASSES B AND C.

- 3. CONSTRUCTION: A. ALL MASONRY BLOCK SHALL BE STORED UNDER COVER AT THE JOB SITE. B. FACE SHELLS SHALL BE FULLY BEDDED. C. ALL MORTAR JOINTS SHALL BE TOOLED CONCAVE UNLESS NOTED OTHERWISE. D. DO NOT USE MORTAR FOR GROUT. E. DO NOT USE ANY FROZEN MATERIAL. F. PRIOR TO PLACING MASONRY, CHECK WITH ALL TRADES TO INSURE PROPER PLACEMENT OF OPENINGS, BLOCK OUTS, SLEEVES, CURBS, CONDUITS, BOLTS, INSERTS, EMBEDS, DOWELS, ETC. G. GROUT SHALL BE POURED IN ACCORDANCE WITH LOW LIFT PROCEDURES PER ACI 530, TYPICAL, UNLESS NOTED OTHERWISE. H. GROUT SHALL BE CONSOLIDATED BY MECHANICAL VIBRATION DURING PLACING AND RECONSOLIDATED AFTER EXCESS MOISTURE HAS BEEN ABSORBED BUT BEFORE WORKABILITY IS LOST. I. ALL CELLS WHICH CONTAIN REINFORCING, BOLTS, ANCHORS, ETC., AND AS OTHERWISE SPECIFIED SHALL BE GROUTED SOLID. J. GROUT SOLID AROUND ALL JOIST AND BEAM ENDS. K. HOLES FOR BOLTS IN MASONRY FACE OR END SHELLS SHALL HAVE A DIAMETER TWO INCHES LARGER THAN THE BOLT DIAMETER AND THE HOLE SHALL BE FILLED WITH GROUT. L. NO PENETRATION SHALL BE ALLOWED THROUGH ANY MASONRY BEAM, COLUMN, PIER, OR JAMB WITHOUT THE ARCHITECT'S AND STRUCTURAL ENGINEER'S PRIOR WRITTEN APPROVAL. M. ALL BOLTS TO BE DRILLED AND EPOXIED SHALL BE INSTALLED IN SOLID MATERIAL. AT CAVITY LOCATIONS GROUT SOLID. ALL BOLT HOLES TO BE FILLED WITH EPOXY SHALL BE WIRE BRUSHED AND CLEANED WITH COMPRESSED AIR. FOLLOW MANUFACTURERS RECOMMENDATIONS.

- 4. WALLS: A. MASONRY WALLS SHALL BE CONSTRUCTED UTILIZING COMMON RUNNING BOND, TYPICAL, UNLESS NOTED OTHERWISE. B. MASONRY WALLS SHALL BE BUILT AS AN INTEGRAL UNIT AT CORNERS AND INTERSECTIONS. REINFORCING SHALL BE CONTINUOUS AND BACK TO BACK END SHELLS SHALL BE REMOVED IN EACH COURSE. C. MASONRY WALLS SHALL BE REINFORCED AS FOLLOWS, UNLESS NOTED OTHERWISE. D. PLACE VERTICAL REINFORCING IN THE CENTER OF THE WALL UNLESS EACH FACE IS SPECIFIED OR UNLESS NOTED OTHERWISE. E. VERTICAL REINFORCING SHALL BE DOWELED TO CONCRETE FOOTING OR FOUNDATION WALL BELOW AND TO STRUCTURE ABOVE WITH THE SAME SIZE BAR AND SPACING, TYPICAL, UNLESS NOTED OTHERWISE. F. PROVIDE VERTICAL REINFORCING IN GROUTED CELL AT ALL CORNERS AND INTERSECTIONS. G. PROVIDE CORNER BARS AT ALL INTERSECTIONS AND CORNERS. USE SAME SIZE BAR AND SPACING AS THE HORIZONTAL REINFORCING. H. HORIZONTAL REINFORCING SHALL TERMINATE AT THE ENDS OF WALLS AND AT OPENINGS WITH A STANDARD HOOK. I. HORIZONTAL REINFORCING SHALL OCCUR AT THE TOP AND BOTTOM COURSE OF ALL MASONRY WALLS EXCEPT THE BOTTOM COURSE HORIZONTAL REINFORCING MAY BE OMITTED WHEN THE WALL IS DOWELED TO A CONCRETE FOUNDATION WALL BELOW. J. OPENINGS IN WALLS WHICH EXCEED 24 INCHES IN EITHER DIRECTION SHALL BE REINFORCED WITH A MINIMUM OF 2-#5 BARS IN GROUTED SPACE ON ALL SIDES OF THE OPENING. K. PENETRATIONS THROUGH ANY MASONRY WALL SHALL BE BUILT INTO THE WALL AS THE WALL IS BEING CONSTRUCTED AND SHALL BE REVIEWED BY THE ARCHITECT AND STRUCTURAL ENGINEER PRIOR TO INSTALLATION. L. CONSTRUCTION JOINTS IN REINFORCED MASONRY WALLS SHALL NOT OCCUR AT THE EDGE OF BEAM SUPPORTS AND SHALL BE PROVIDED PER ARCHITECTURAL DRAWINGS. M. WHERE HORIZONTAL REINFORCING BARS JOIN CONCRETE WALLS, COLUMNS, OR PILLARS, REINFORCING SHALL BE CONTINUOUS. ALSO, A KEY SHALL BE PROVIDED BETWEEN THE MASONRY AND THE CONCRETE. FILL KEY WITH GROUT.

STRUCTURAL STEEL (IBC 1705.2.1, 1705.11.1, & 1705.12.2) Table with 4 columns: ITEM, CONTINUOUS, PERIODIC, DETAILED INSTRUCTION AND FREQUENCIES. Includes sections for Prior to Welding, During Welding, After Welding, Visual Inspection Tasks, and Bolting.

SFRS STEEL WELDING INSPECTION TASKS (AISC 341 J6-1,2,3) Table with 4 columns: VISUAL INSPECTION TASKS PRIOR TO WELDING, QC (TASK, DOC), QA (TASK, DOC). Includes rows for Material ID, Welder ID, Fit-up, and Configuration.

SFRS STEEL WELDING INSPECTION TASKS (AISC 341-10) Table with 4 columns: VISUAL INSPECTION TASKS DURING WELDING, QC (TASK, DOC), QA (TASK, DOC). Includes rows for WPS followed, Travel Speed, Selected Welding Materials, and Shielding Gas.

SFRS STEEL WELDING INSPECTION TASKS (AISC 341-10) Table with 4 columns: VISUAL INSPECTION TASKS AFTER WELDING, QC (TASK, DOC), QA (TASK, DOC). Includes rows for Welds Cleaned, Size, Length, and Location, and Welds Meet Visual Acceptance Criteria.

SFRS STEEL BOLTING INSPECTION TASKS (AISC 341 J7-1,2,3) Table with 4 columns: INSPECTION TASKS PRIOR TO BOLTING, QC (TASK, DOC), QA (TASK, DOC). Includes rows for Proper Fasteners, Snug-tight, and Pretensioning.

OPEN WEB STEEL JOISTS AND JOIST GIRDERS (IBC 2015 1705.2.3) Table with 4 columns: ITEM, CONTINUOUS, PERIODIC, DETAILED INSTRUCTION AND FREQUENCIES. Includes rows for End Connections, Bridging, and Bridding.

STRUCTURAL STEEL WELDING INSPECTIONS (AISC 360 N5.4-1,2,3) Table with 4 columns: INSPECTION TASKS PRIOR TO WELDING, QC, QA. Includes rows for WELDING PROCEDURE SPECIFICATIONS, MANUFACTURER CERTIFICATIONS, MATERIAL IDENTIFICATION, and FIT-UP.

STRUCTURAL STEEL WELDING INSPECTIONS (AISC 360 N5.4-2) Table with 4 columns: INSPECTION TASKS DURING WELDING, QC, QA. Includes rows for USE OF QUALIFIED WELDERS, CONTROL AND HANDLING OF WELDING CONSUMABLES, and NO WELDING OVER CRACKED TACK WELDS.

STRUCTURAL STEEL WELDING INSPECTIONS (AISC 360 N5.4-3) Table with 4 columns: INSPECTIONS TASKS AFTER WELDING, QC, QA. Includes rows for WELDS CLEANED, SIZE, LENGTH AND LOCATION OF WELDS, and WELDS MEET VISUAL ACCEPTANCE CRITERIA.

SOILS CONSTRUCTION (IBC 1705.6) Table with 4 columns: ITEM, CONTINUOUS, PERIODIC, DETAILED INSTRUCTION AND FREQUENCIES. Includes rows for Verify Subgrade, Verify Excavations, and Verify Proper Materials.

CONCRETE CONSTRUCTION (IBC 1705.3 AND 1705.12.1) Table with 4 columns: ITEM, CONTINUOUS, PERIODIC, DETAILED INSTRUCTION AND FREQUENCIES. Includes rows for Reinforcing Steel, Cast-in Bolts, Post-installed Anchors, and Concrete Sampling.



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DRAWN BY: TBSE INC. 801 298-8795 CHECKED BY:

DOCUMENT STATUS table with columns for ID, STATUS, and DATE. Includes entries for BID DOCUMENTS and REVISION SCHEDULE.


PROJECT NAME: BRIGHAM YOUNG UNIVERSITY - IDAHO SPORI ANNEX PROJECT NO: 11513

SHEET NAME: INSPECTIONS

SHEET NUMBER: SE-002

SHEET NOTES

1. INDICATES NOTES ARE KEYED ON PLAN.
2. 6" CONCRETE SLAB ON 4" FREE DRAINING GRAVEL REINFORCE WITH #4 AT 18" O.C. EACH WAY. CENTER OF SLAB. F.S.E. = 100'-0" UNO. ELEVATION 100'-0" ON STRUCTURAL SHEETS SHALL BE EQUAL TO ELEVATION 0'-0" ON THE ARCHITECTURAL SHEETS. THE FINISH FLOOR ELEVATION SHALL BE 100'-0".
3. SEE ARCHITECTURAL DRAWINGS FOR SLOPES AND RECESSES IN FLOOR SLABS.
4. DRILL AND EPOXY DOWELS TO MATCH HORIZONTAL REINFORCING IN NEW WALL AND FOOTING INTO EXISTING WALL AND FOOTING. SIX INCH MINIMUM EMBED.
5. FOR CONCRETE WALL REINFORCING, SEE CONCRETE WALL SCHEDULE ON SHEET SE-003.
6. FOR CONCRETE PIER/COLUMN REINFORCING, SEE CONCRETE PIER SCHEDULE ON SHEET SE-003.
7. FOR STEEL COLUMN BASEPLATE SIZES AND CONFIGURATIONS, SEE BASEPLATE SCHEDULE ON SHEET SE-004.
8. FOR CORNER, INTERSECTION, AND END BARS IN CONCRETE WALLS SEE DETAILS E4/SE501 AND E5/SE501.
9. FOR CONTROL JOINTS IN SLABS ON GRADE SEE DETAIL E3/SE501.
10. FOR UTILITY PIPES AND SLEEVES AT FOOTINGS AND WALLS SEE DETAILS E1 & E2/SE501 AND B4/SE501.
11. FOR BURIED UTILITY LINES LOCATED 24" OR LESS BELOW BOTTOM OF FOOTINGS, STEP FOOTINGS PER DETAIL A5/SE-01. SEE OWNER FOR STRUCTURAL FILL AROUND BURIED UTILITY LINES 24" OR GREATER BELOW FOOTINGS.
12. FRENCH DRAIN. COORDINATE WITH ARCHITECT AND MECHANICAL.
13. RECESS SLAB AT RESTROOMS. COORDINATE WITH ARCHITECT.
14. EXISTING COURTYARD. SEE ARCH.



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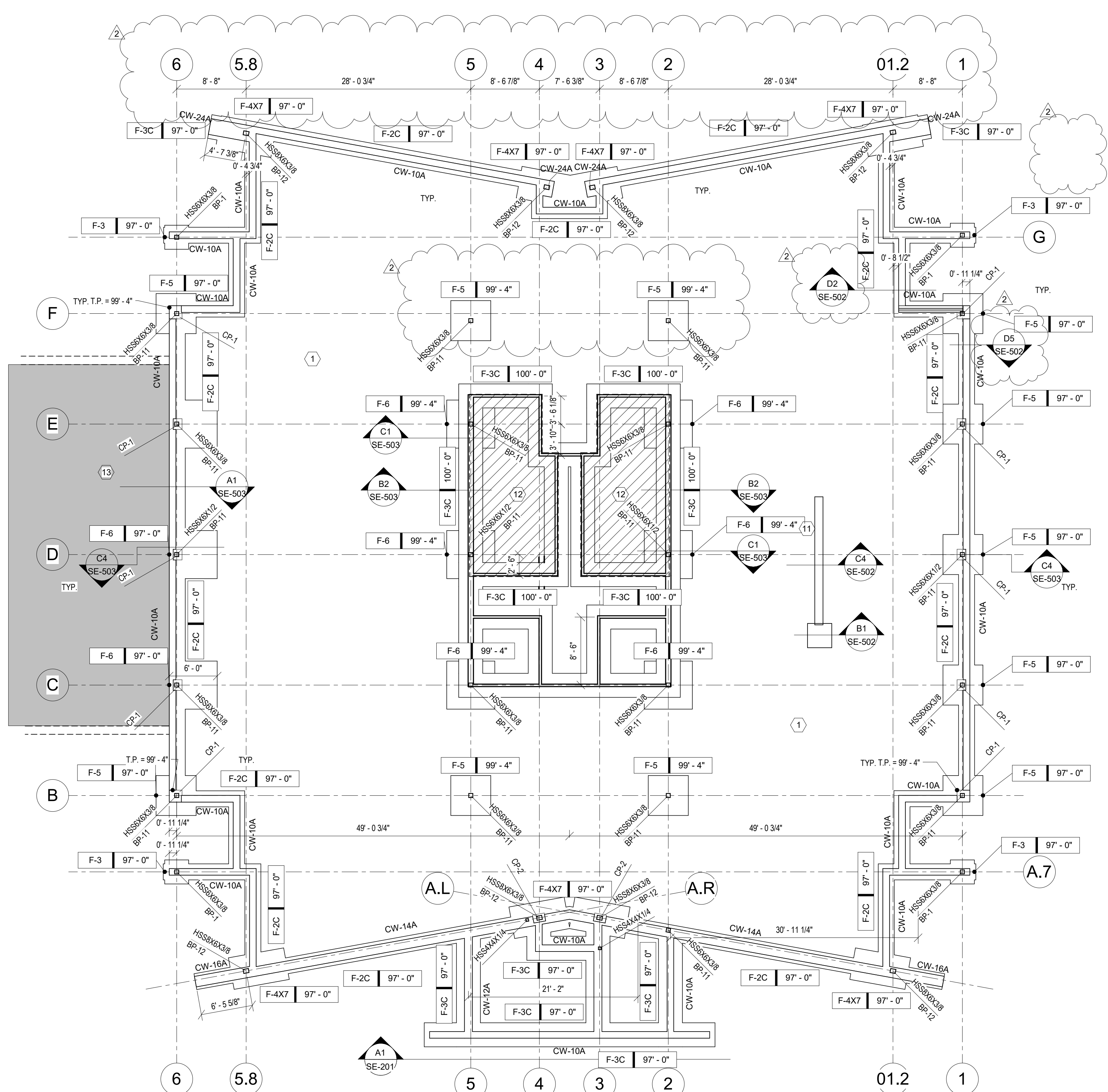
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LEGEND

- INDICATES CONCRETE SLAB ON GRADE. SHEET NOTES FOR THICKNESS AND REINFORCING
- INDICATES RECESSED SLAB. SEE ARCH.
- INDICATES CHANGE IN ELEVATION OR RECESSED SLAB
- F-?? ??-?? INDICATES CONCRETE FOOTING TYPE AND TOP OF FOOTING ELEVATION
- INDICATES CONCRETE FOOTING & FOUNDATION WALL. SEE SCHEDULES FOR SIZE AND REINFORCING
- CW-? INDICATES CONCRETE WALL. SEE SCHEDULES FOR SIZE AND REINFORCING
- INDICATES RECESS IN CONCRETE FOUNDATION WALL
- S-S INDICATES STEP IN WALL. SEE DETAIL D4 AND D5/SE501
- HSS?? BP-? INDICATES STEEL HSS COLUMN AND BASE PLATE. SEE SCHEDULE
- WFL?? BP-? INDICATES STEEL WIDE FLANGE COLUMN AND BASE PLATE. SEE SCHEDULE
- CP-? INDICATES CONCRETE PIER. SEE SCHEDULE FOR SIZE AND REINFORCING
- F.S.E. = INDICATES FLOOR SLAB ELEVATION
- T.F. = ??-?? INDICATES TOP OF FOOTING ELEVATION
- T.W. = ??-?? INDICATES TOP OF WALL ELEVATION
- T.P. = ??-?? INDICATES TOP OF PIER ELEVATION
- 1 Ref SE?-?? INDICATES FRAME ELEVATION VIEW
- ? SE?-?? INDICATES DETAIL SECTION VIEW.
- ? SE?-?? INDICATES DETAIL VIEW OR ENLARGED PLAN CALLOUT.

DOCUMENT STATUS		
NO.	DESCRIPTION	DATE
1	ISSUED FOR PERMIT	11/27/2019
2	ADDENDUM 3	1/29/2020

PROJECT NAME:
BRIGHAM YOUNG UNIVERSITY - IDAHO SPORI ANNEX

PROJECT NO.: 11513

SHEET NAME:
FOUNDATION PLAN

SHEET NUMBER:
SE-101

1 FOOTING AND FOUNDATION PLAN
1/8" = 1'-0"

1/29/2020 8:57:38 PM

SHEET NOTES

- INDICATES NOTES ARE KEYED ON PLAN.
- FOR ROOF DECK NOTES, SEE SCHEDULE.
- ALL ROOF JOISTS SHALL HAVE $2\frac{1}{2}$ " BEARING ENDS AND SHALL BEAR $2\frac{1}{2}$ " MIN. ON STEEL BEAMS. STAGGER JOIST AT STEEL BEAMS AS REQUIRED FOR MIN. BEARING. PROVIDE JOIST BRIDGING PER SJI STANDARDS.
- ALL EXTERIOR STUD SHALL BE 6" METAL STUDS AS CALLED OUT ON SHEET SS-502. FOLLOW DETAILS SHOWN IN SS-503.
- STEEL BEAM TO BE 1/2" OFF GRID FOR WALL SIDING TO RUN FULL HEIGHT. BEAMS ON GRID 2 ARE OFFSET TOWARDS GRID 1. BEAMS ON GRID 3 ARE OFFSET TOWARDS GRID 4.
- 3/4" TONGUE AND GROOVE FIRE RATED FLOOR SHEATHING.
- SEE DETAIL BS/SE-611 FOR GUARDRAIL SUPPORTS.
- DECK BEARING ELEVATIONS ARE SYMMETRICAL ABOUT CENTER OF BUILDING. DBE OF GRID 1 = DBE OF GRID 6, ETC.
- 3"x5" BY CONTINUOUS PLATE WITH 3/4"x3" BY 5" HEADED STUDS AT 24" O.C. ON TOP OF MASONRY WALL. PROVIDE 5/16" BY CONTINUOUS BENT PLATE TO SUPPORT ROOF DECK. WELD BENT PLATE TO FLAT PLATE WITH 3/16" FILLET WELD BY 2" LONG AT 12" O.C. EACH SIDE. WELDS MAY STAGGER.

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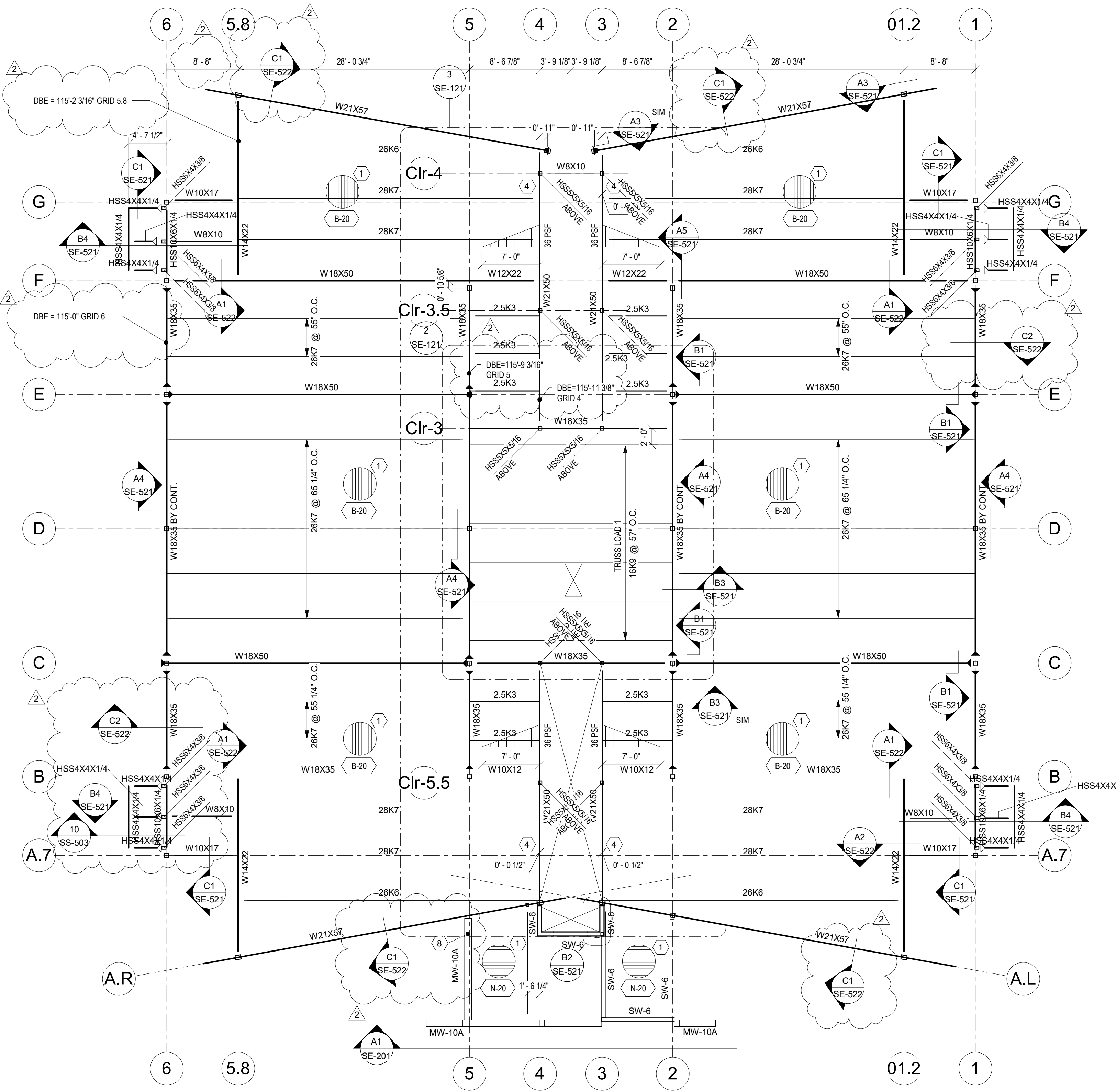
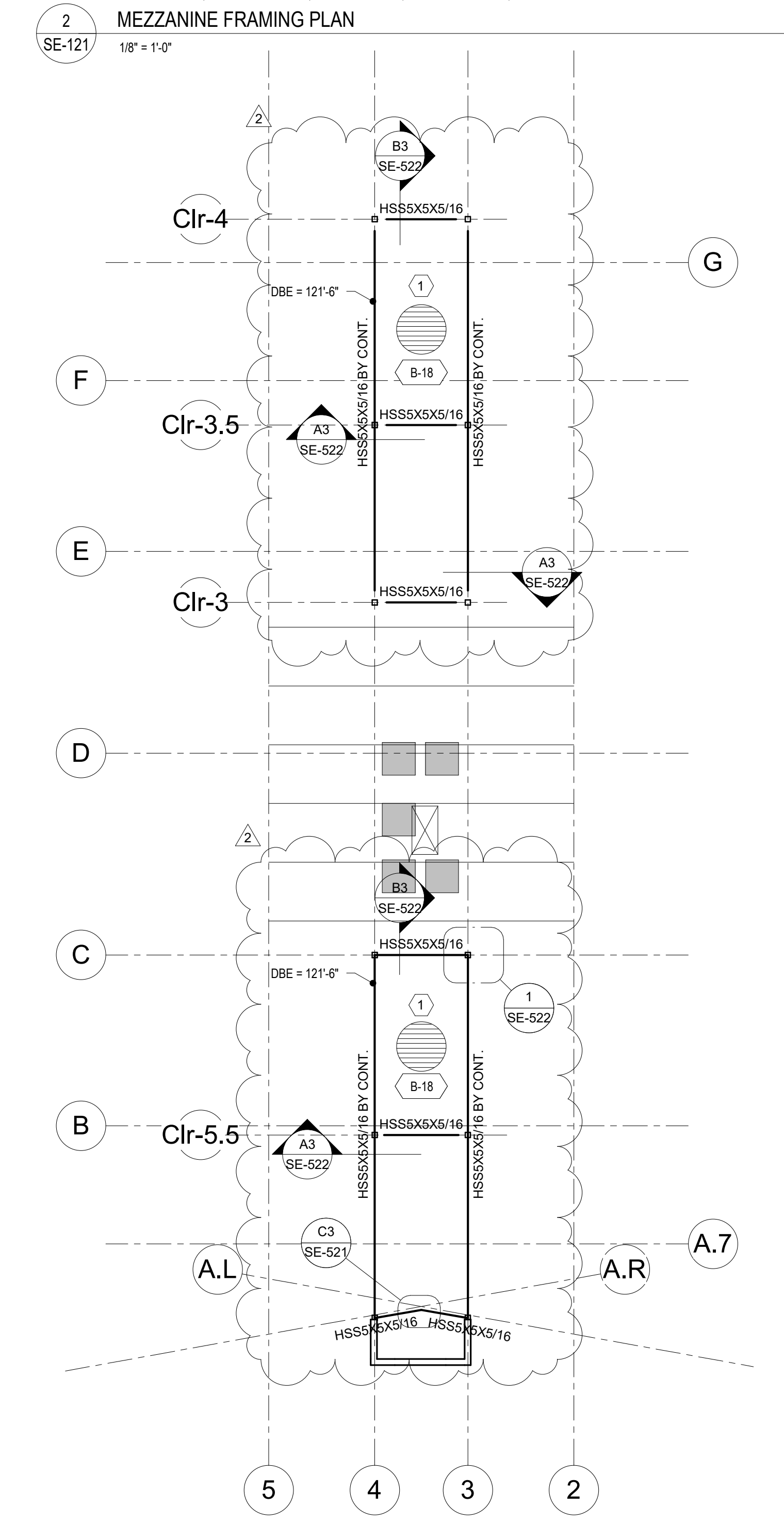
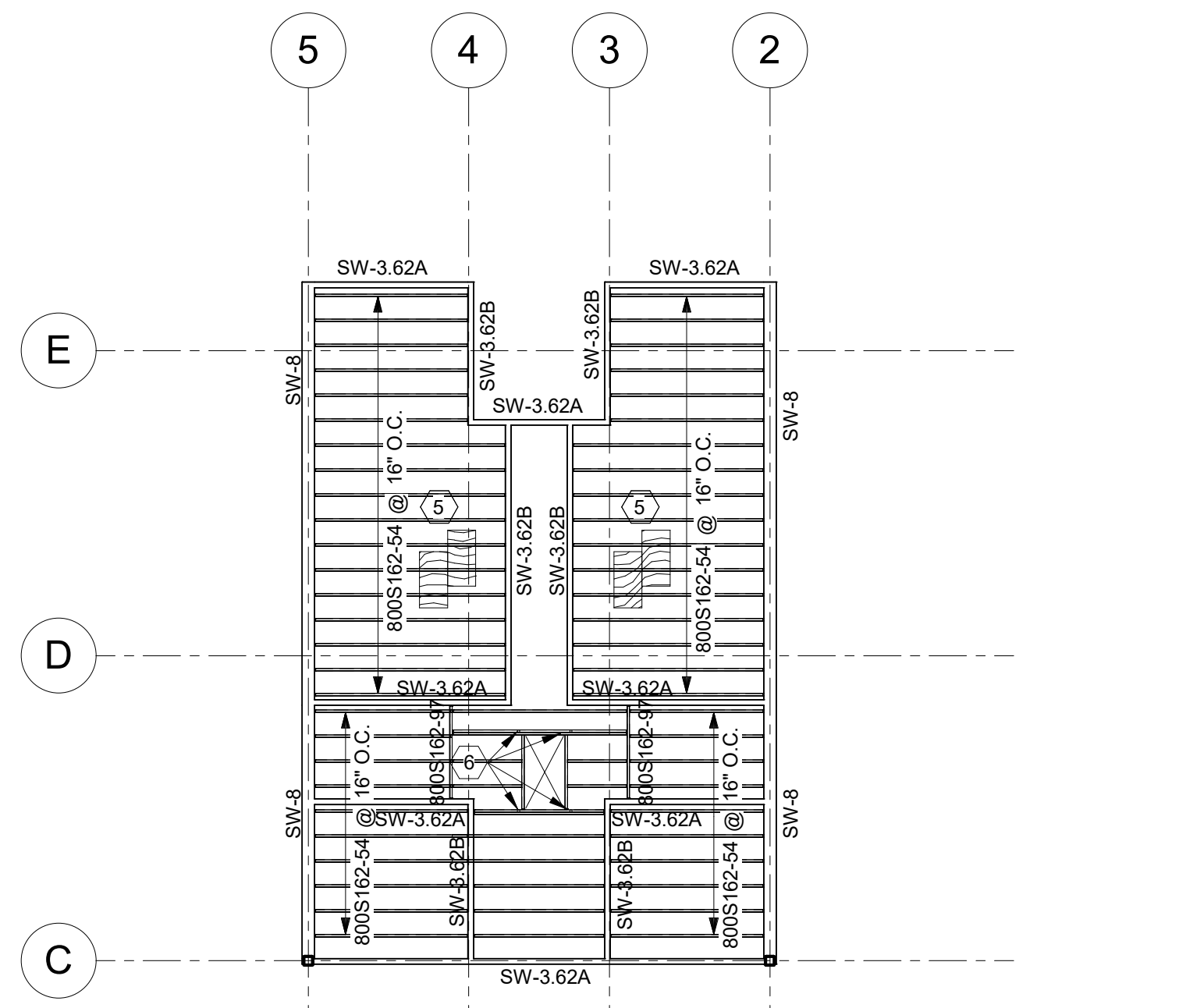
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LEGEND

- INDICATES STEEL ROOF DECK SPAN DIRECTION, SEE SHEET NOTES
- INDICATES CONCRETE SLAB ON GRADE, SEE SHEET NOTES
- INDICATES DIFFERENT FLOOR DECK
- INDICATES WOOD SHEATHING SPAN DIRECTION, SEE PLAN NOTES
- INDICATES OPENING IN DECK, SEE TYPICAL OPENING IN FLOOR DECK DETAILS
- INDICATES MOMENT FRAME BRACING
- INDICATES BRACE CONNECTION.
- INDICATES STEEL HSS (HSS) COLUMN AND BASE PLATE, SEE SCHEDULES
- INDICATES SNOW DRIFT LOADS TO BE APPLIED TO JOISTS, SEE DRIFT SCHEDULE
- T.W. = ?? - ?? INDICATES TOP OF WALL ELEVATION
- T.P. = ?? - ?? INDICATES TOP OF PIER ELEVATION
- T.S. = ?? - ?? INDICATES TOP OF STEEL ELEVATION
- 1 Ref SE?-?? INDICATES FRAME ELEVATION VIEW
- ? SE?-?? INDICATES DETAIL SECTION VIEW
- ? SE?-?? INDICATES DETAIL VIEW OR ENLARGED PLAN CALLOUT

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DOCUMENT STATUS		DATE
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BID DOCUMENTS		11/27/2019
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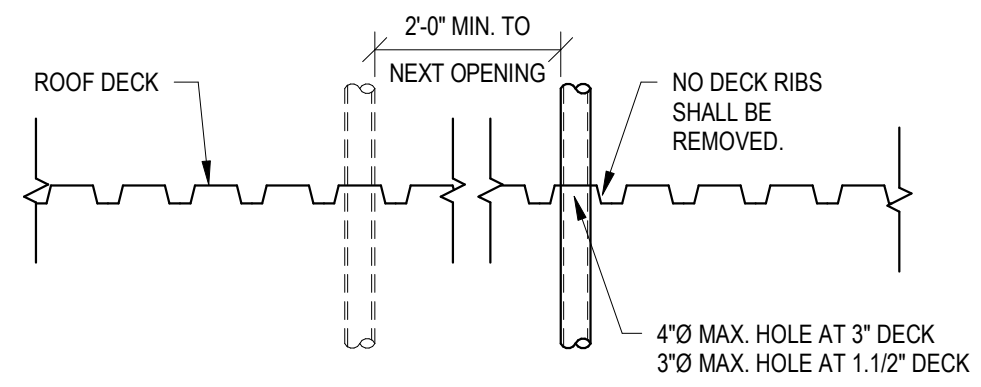
PROJECT NAME:
BRIGHAM YOUNG UNIVERSITY - IDAHO SPORI ANNEX

PROJECT NO.: 11513

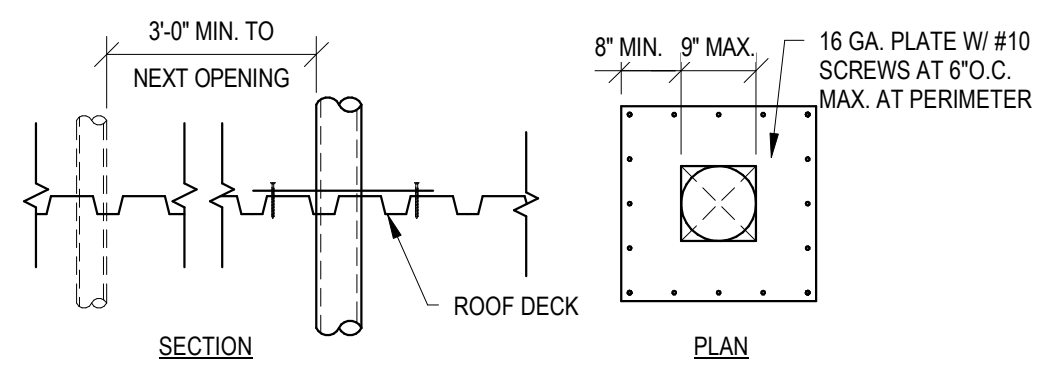
SHEET NAME:
ROOF FRAMING PLAN

SHEET NUMBER:
SE-121

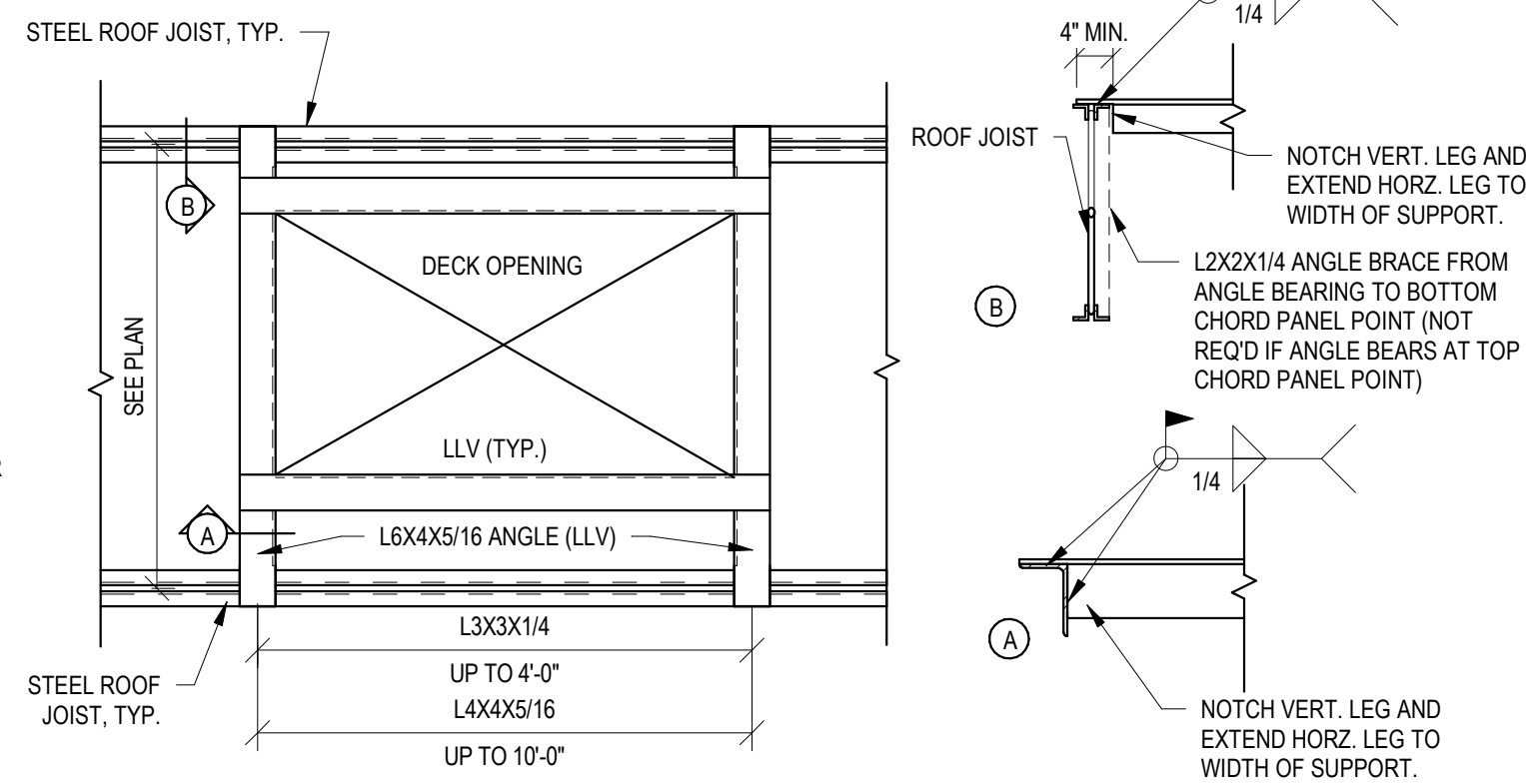
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MAXIMUM UNREINFORCED OPENING

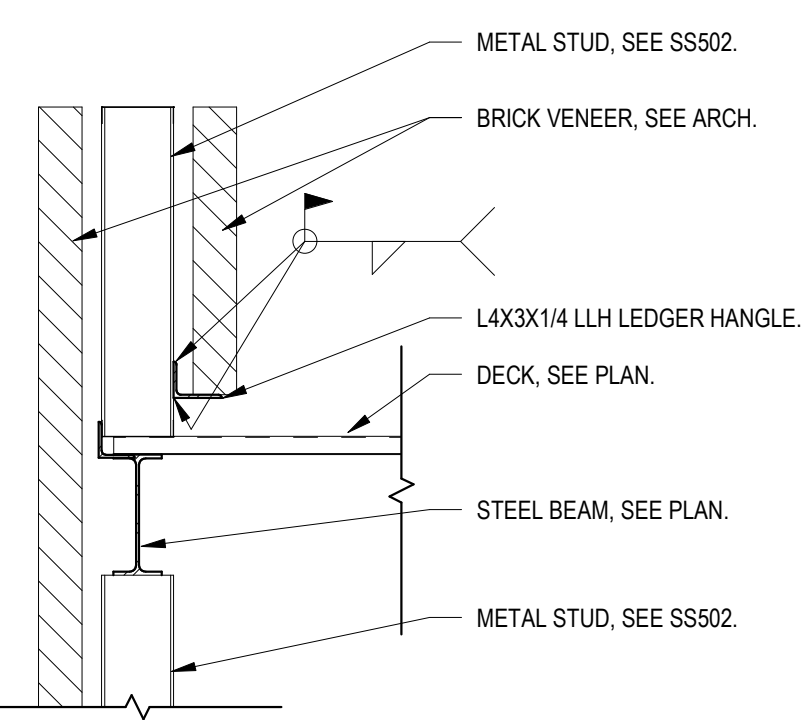


REINFORCED OPENINGS UP TO 9" MAX.

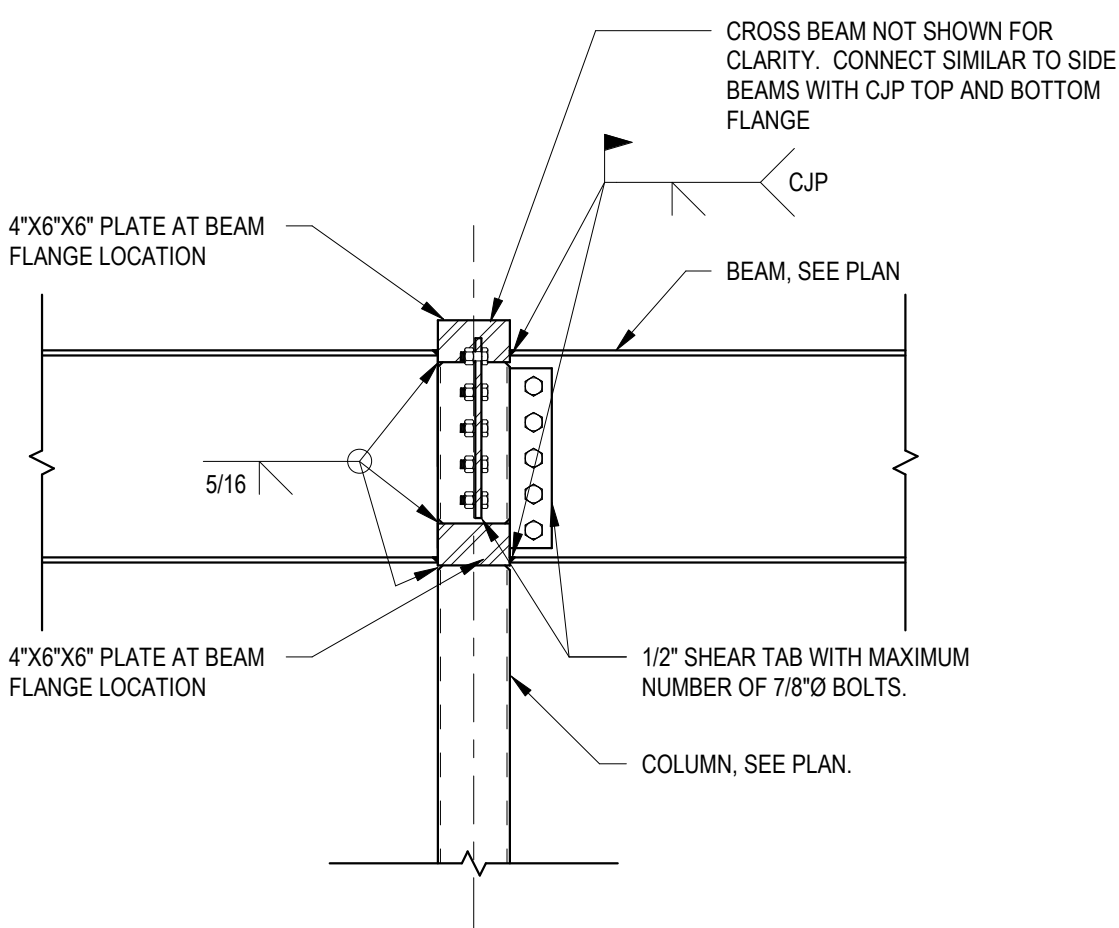


ROOF OPENINGS GREATER THAN 9" OR MECHANICAL UNIT LESS THAN 1000 LBS

D1 TYPICAL OPENINGS IN ROOF DECK DETAIL
SE-521 3/4" = 1'-0"

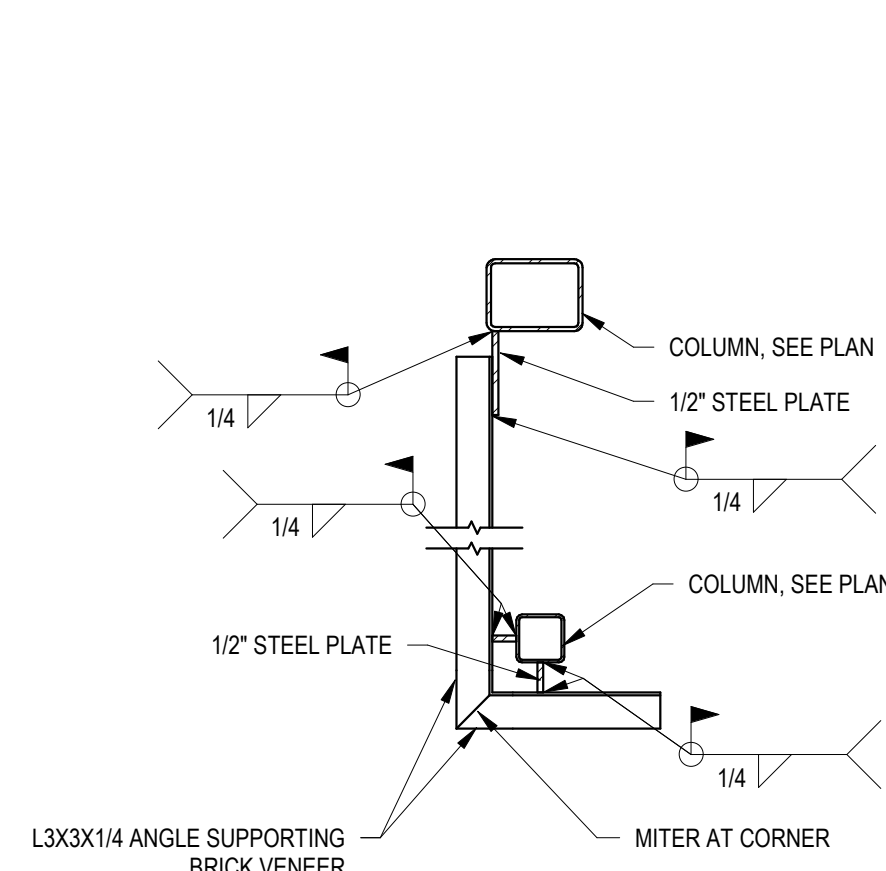


C1
SE-521 NO SCALE

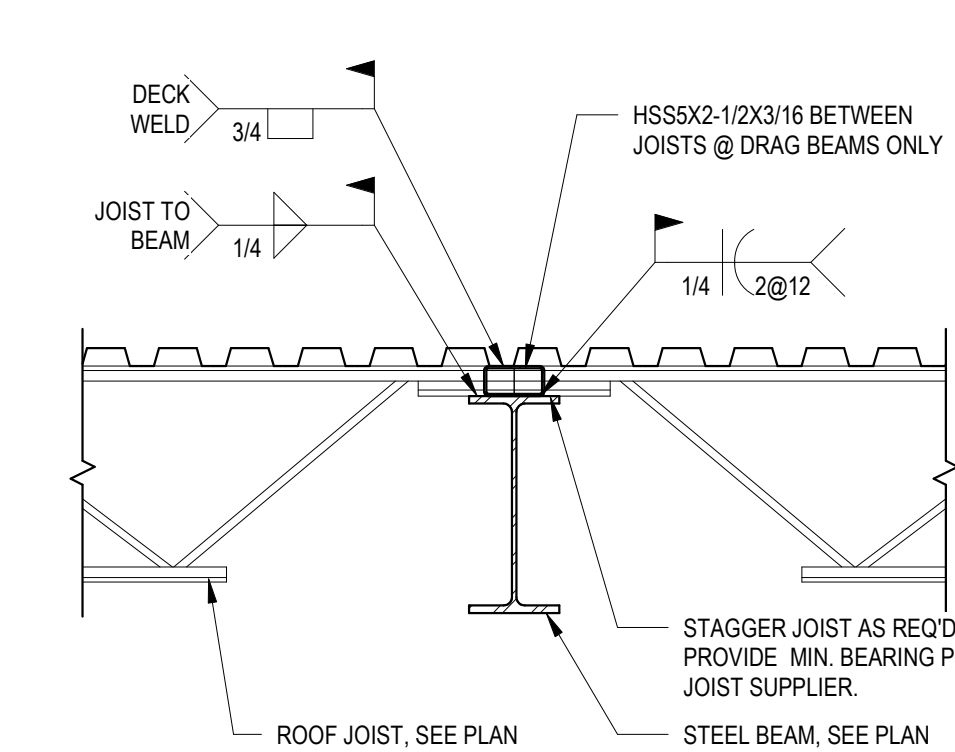


B1
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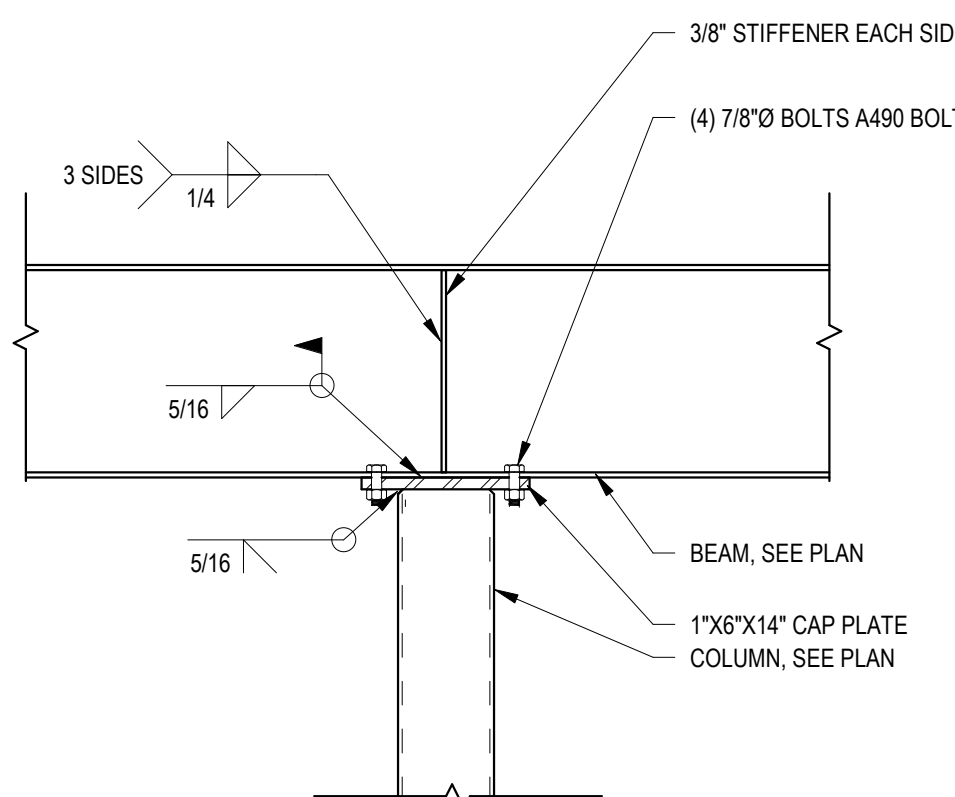
B2
SE-521 NO SCALE



C3
SE-521 NO SCALE

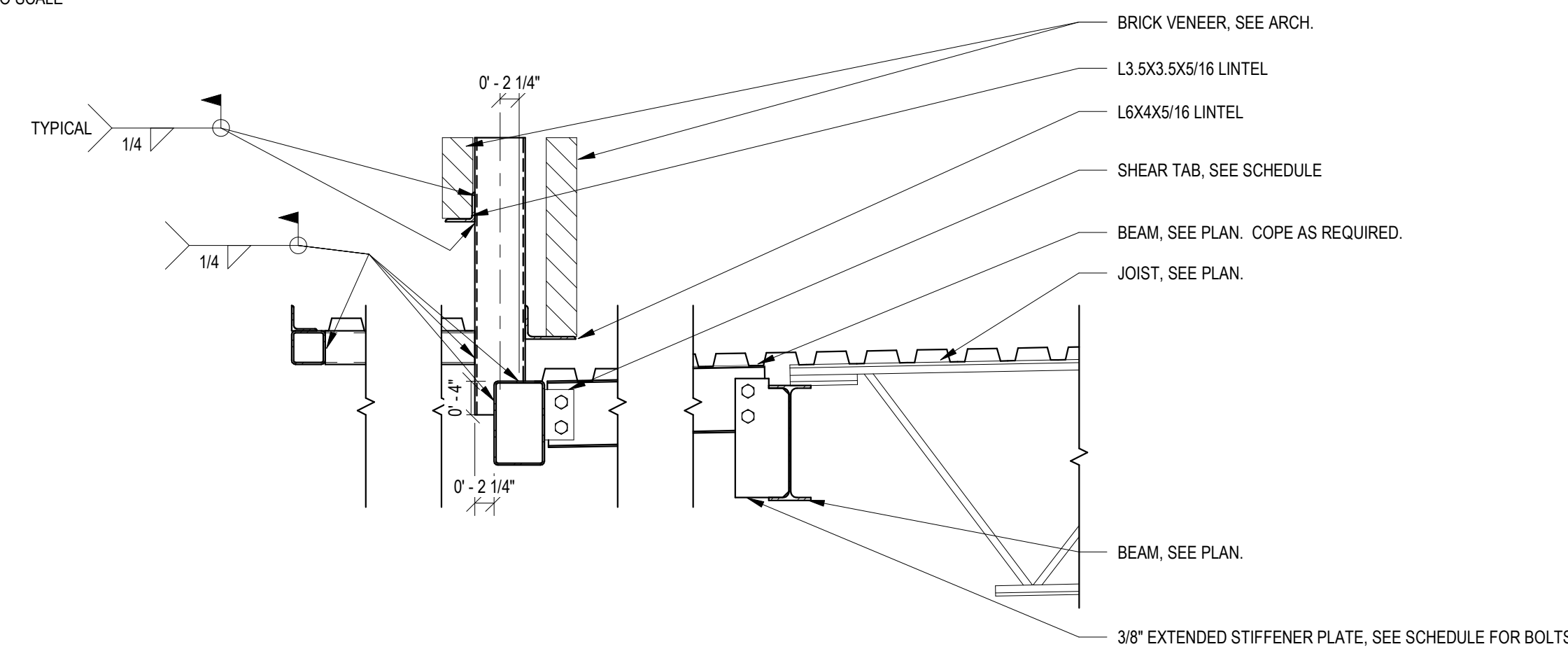


B3 SE522/E4
SE-521 NO SCALE

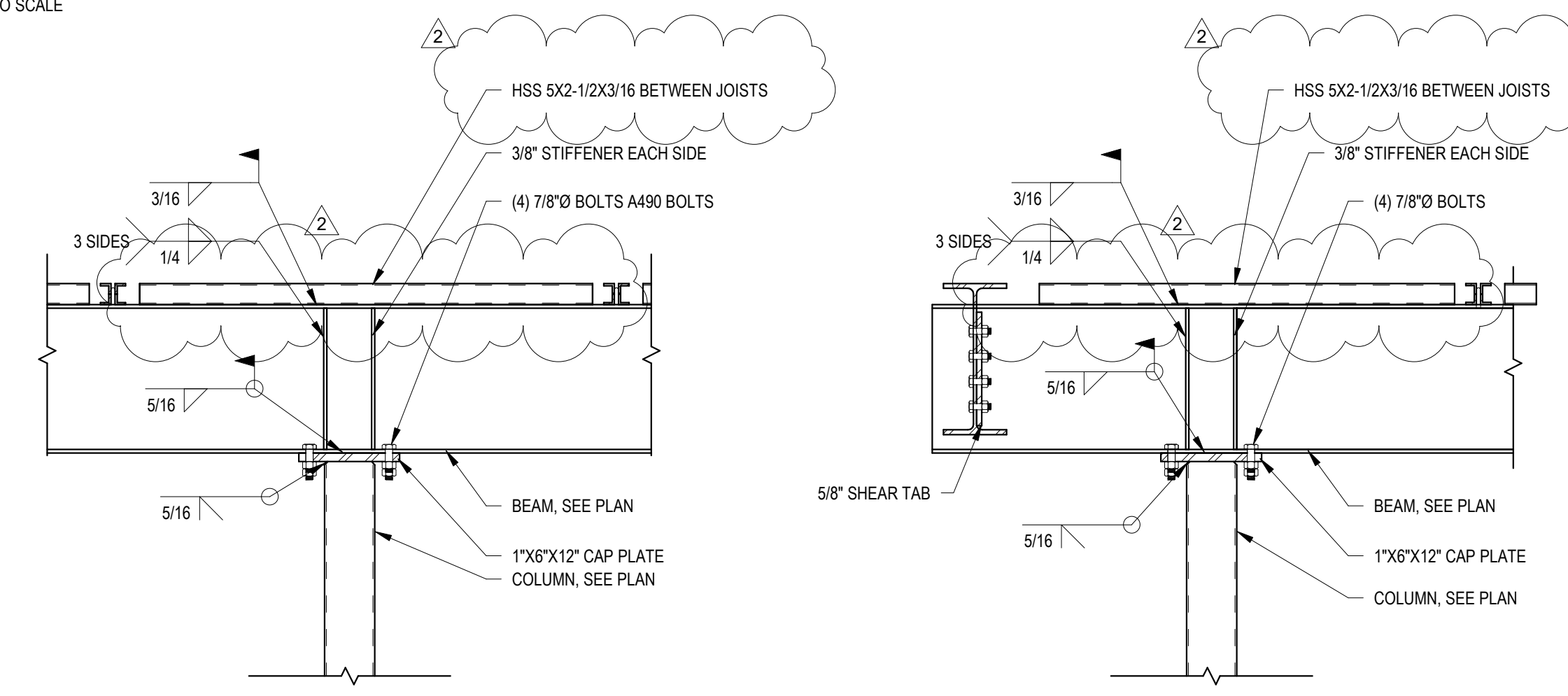


A3
SE-521 NO SCALE

C4
SE-521 NO SCALE



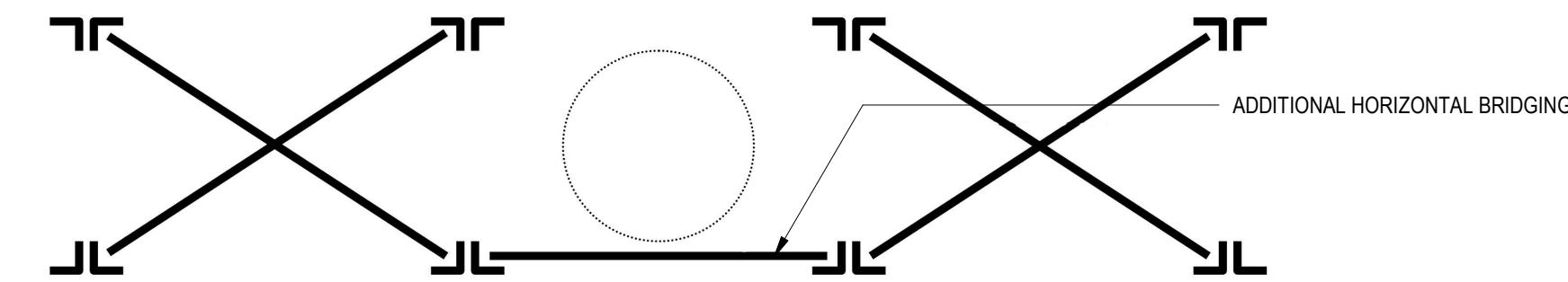
B4
SE-521 NO SCALE



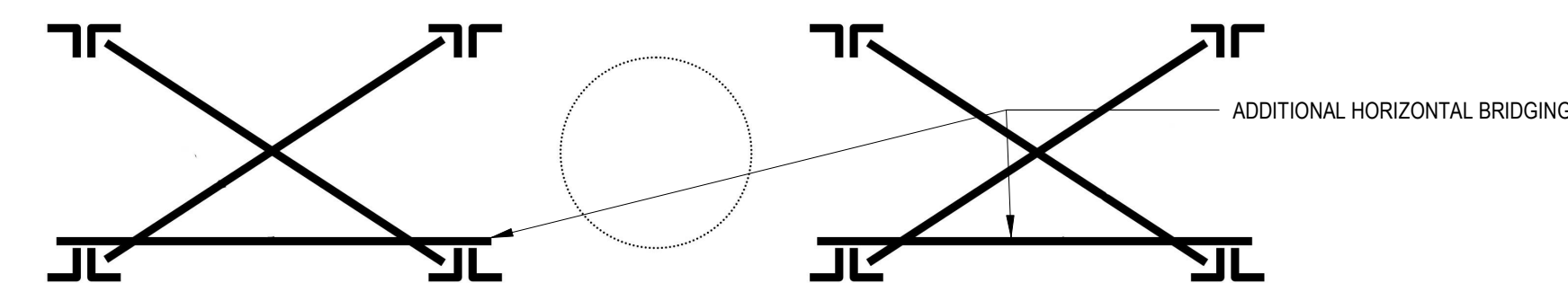
A4
SE-521 NO SCALE

A5
SE-521 NO SCALE

WHERE DIAGONAL BRIDGING IS BEING REMOVED FROM BETWEEN JOISTS, BOLTED HORIZONTAL BRIDGING AT THE BOTTOM CHORD SHALL BE SUBSTITUTED FOR THE BOLTED DIAGONAL BRIDGING AT THESE LOCATIONS

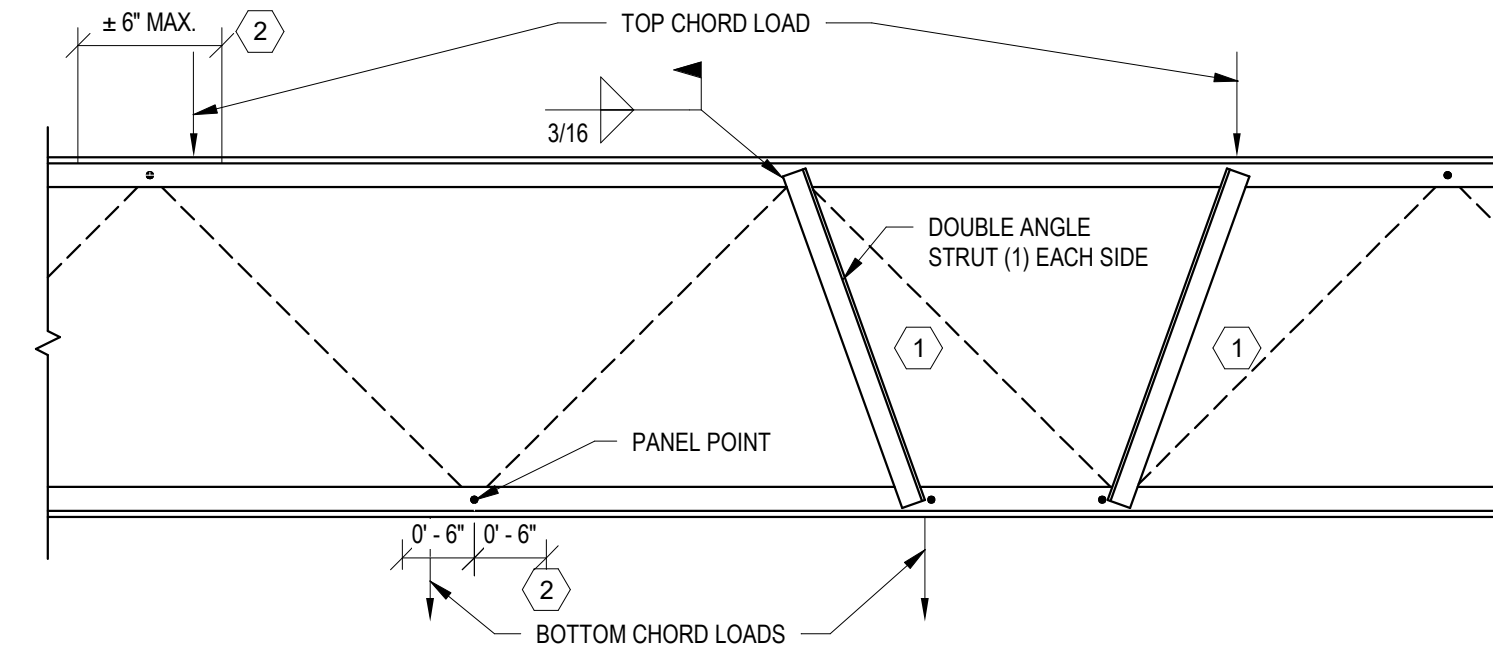


IF THIS SUBSTITUTED BRIDGING INTERFERES WITH THE DUCT PASSAGE, ADDITIONAL WELDED HORIZONTAL BRIDGING SHALL BE INSTALLED IN THE ADJACENT JOIST SPACES AS SHOWN BELOW:



THE ABOVE RECOMMENDATIONS SHALL BE TAKEN IMMEDIATELY AFTER THE REMOVAL OF THE INTERFERING BRIDGING. ANY INTERFERING BRIDGING IS NOT TO BE REMOVED PRIOR TO DECKING INSTALLATION. DECKING MUST BE IN PLACE AND ATTACHED IN ACCORDANCE WITH THE ERECTION DOCUMENTS AND THE STANDARD SPECIFICATIONS OF THE STEEL JOIST INSTITUTE.

D4 DIAGONAL BRIDGING REPLACEMENT
SE-521 NO SCALE



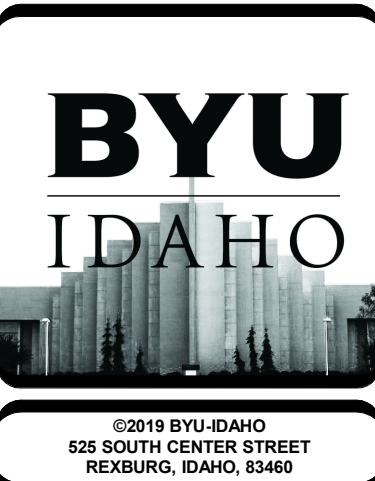
CONCENTRATED LOADS ON BOTTOM CHORD OF JOISTS

NOTES:

- PROVIDE DOUBLE ANGLE STRUTS BETWEEN CONCENTRATED LOAD AND PANEL. POINT ON OPPOSITE CHORD WHERE CONCENTRATED LOADS EXCEED 150#. ANGLE STRUTS SHALL BE AS FOLLOWS:

DEPTH OF JOIST	ANGLE SIZE
UP TO 30"	(2) L1 1/2 X 1 1/2 X 1/4
30" TO 48"	(2) L2X2X1/4
48" TO 60"	(2) L 2 1/2 X 2 1/2 X 1/4

- WHERE CONCENTRATED LOADS OCCUR WITHIN 6" OF PANEL POINT, NO STRUT IS REQUIRED.



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NO.	DESCRIPTION	DATE
2	ADDENDUM 3	1/29/2020

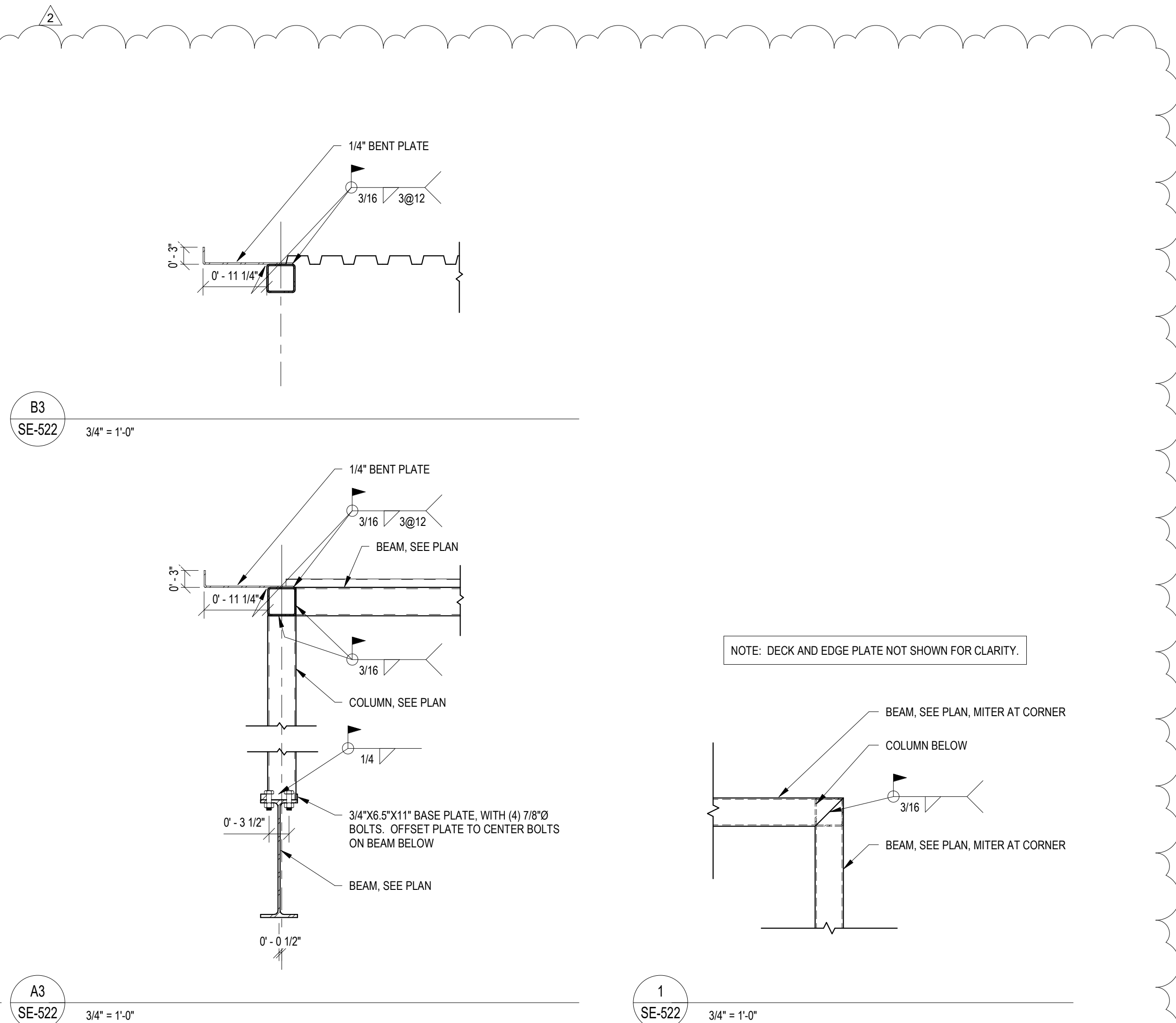
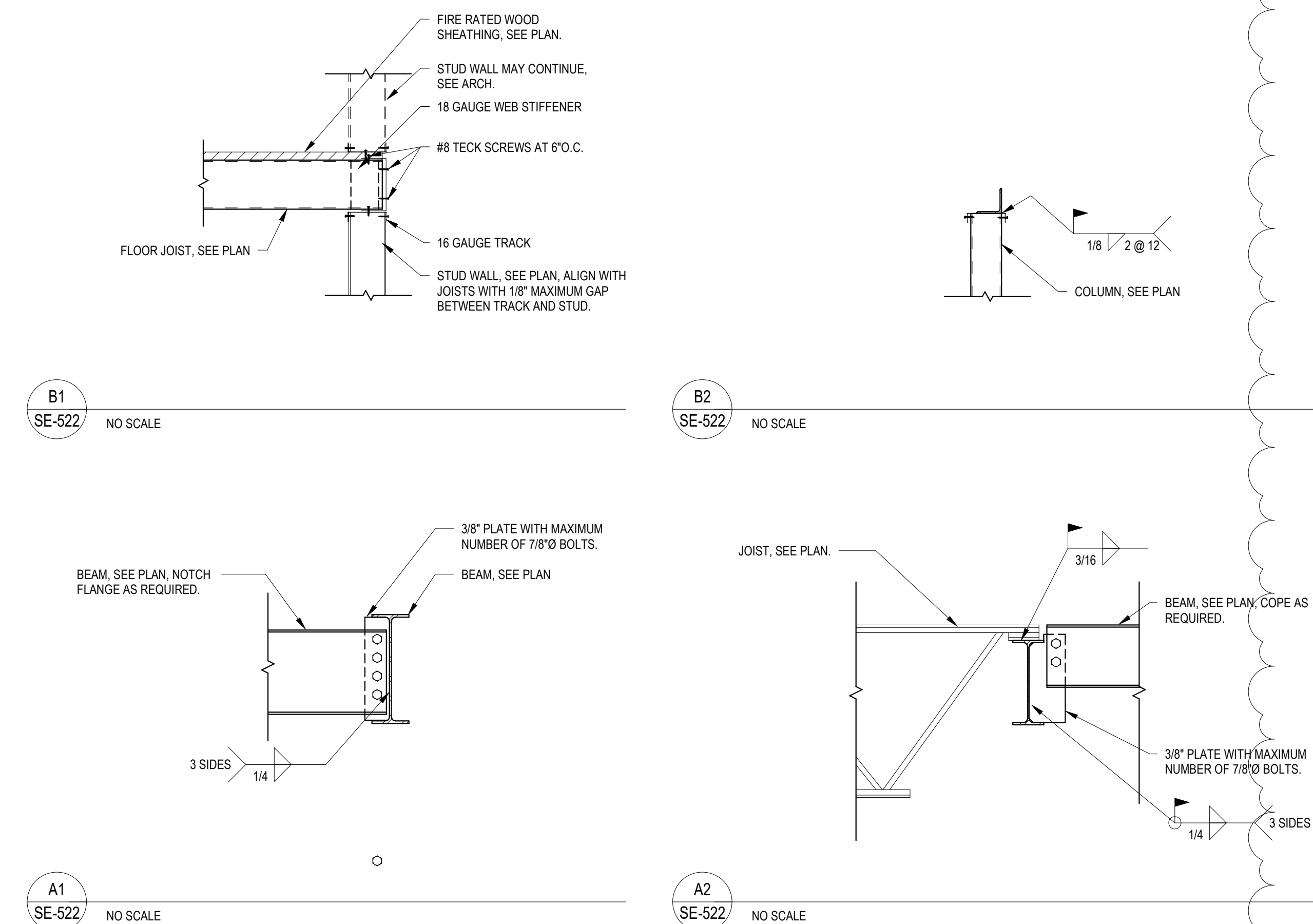
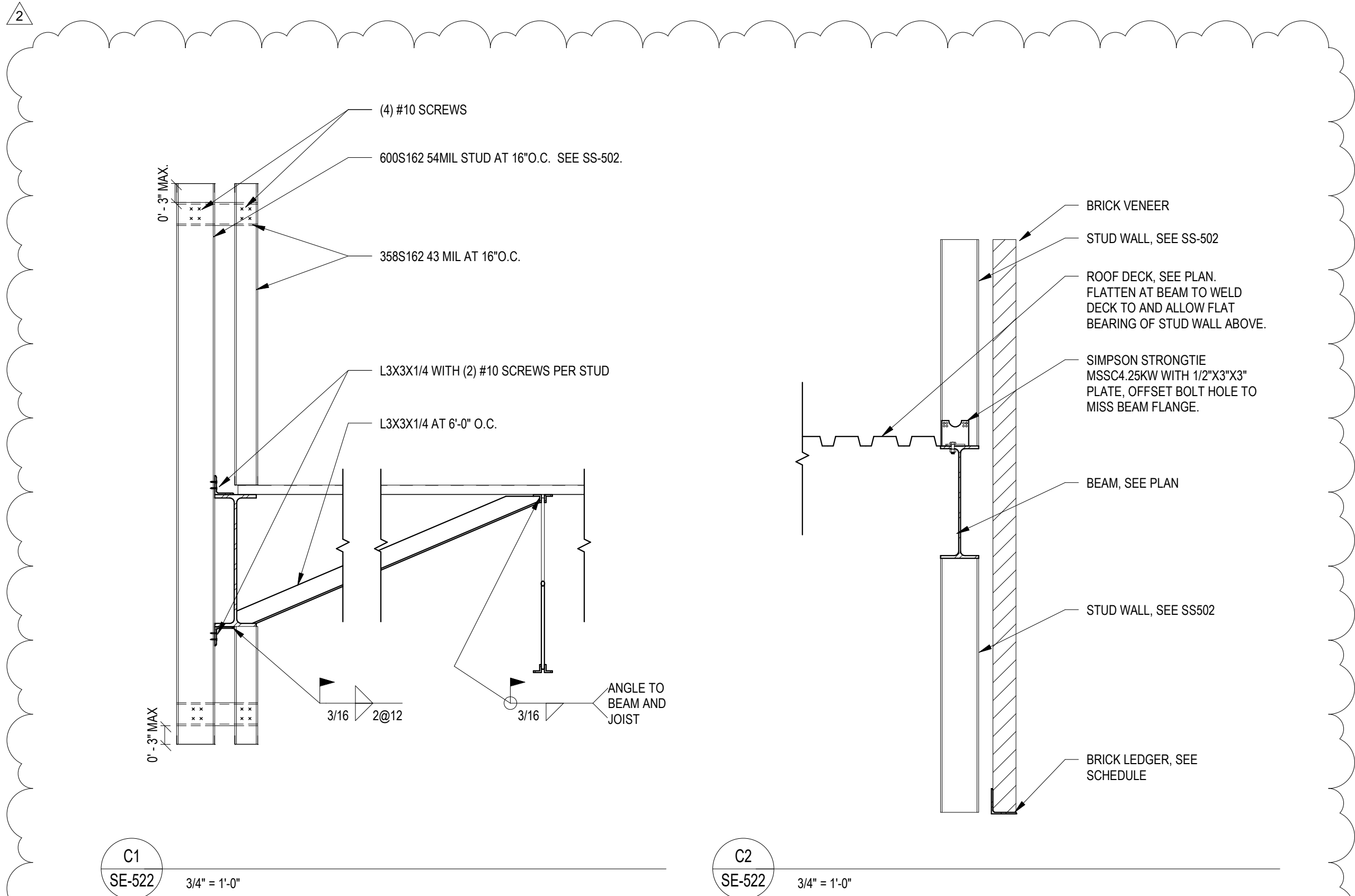
PROJECT NAME:
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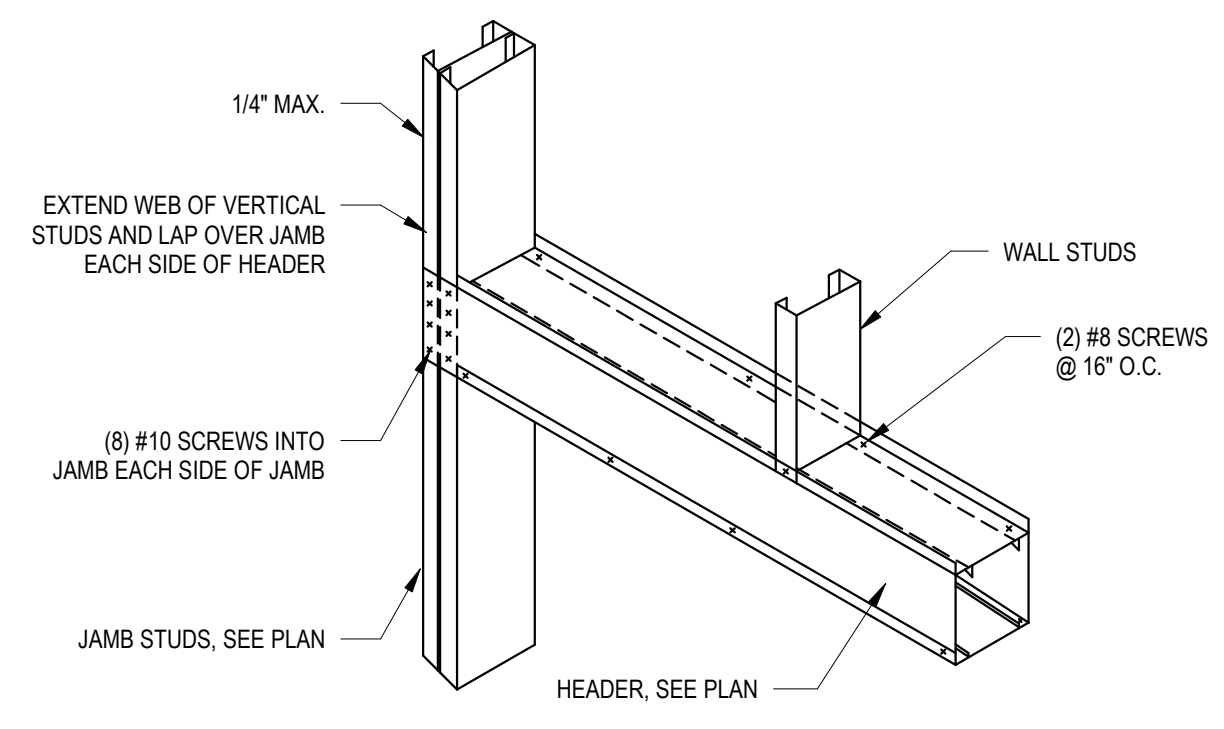
PROJECT NO: 11513

SHEET NAME:
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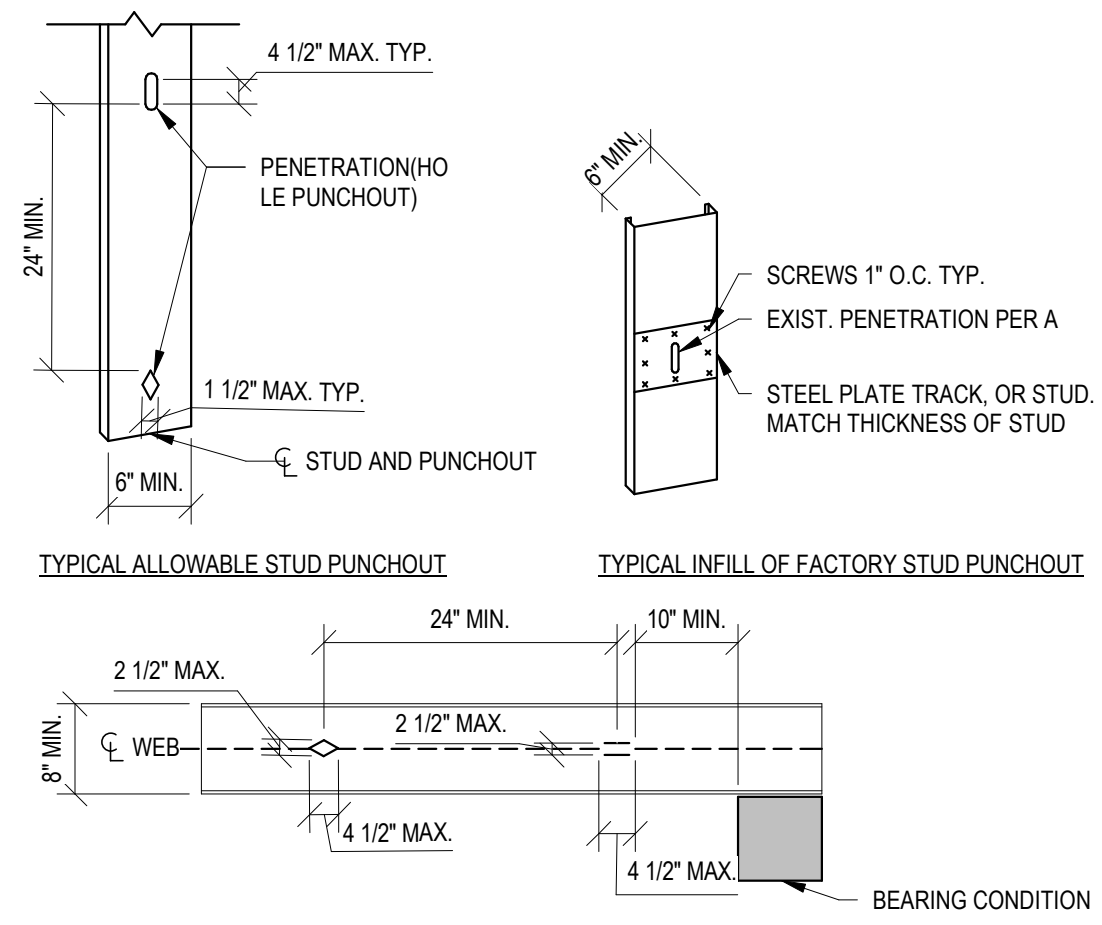
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REVISION SCHEDULE		
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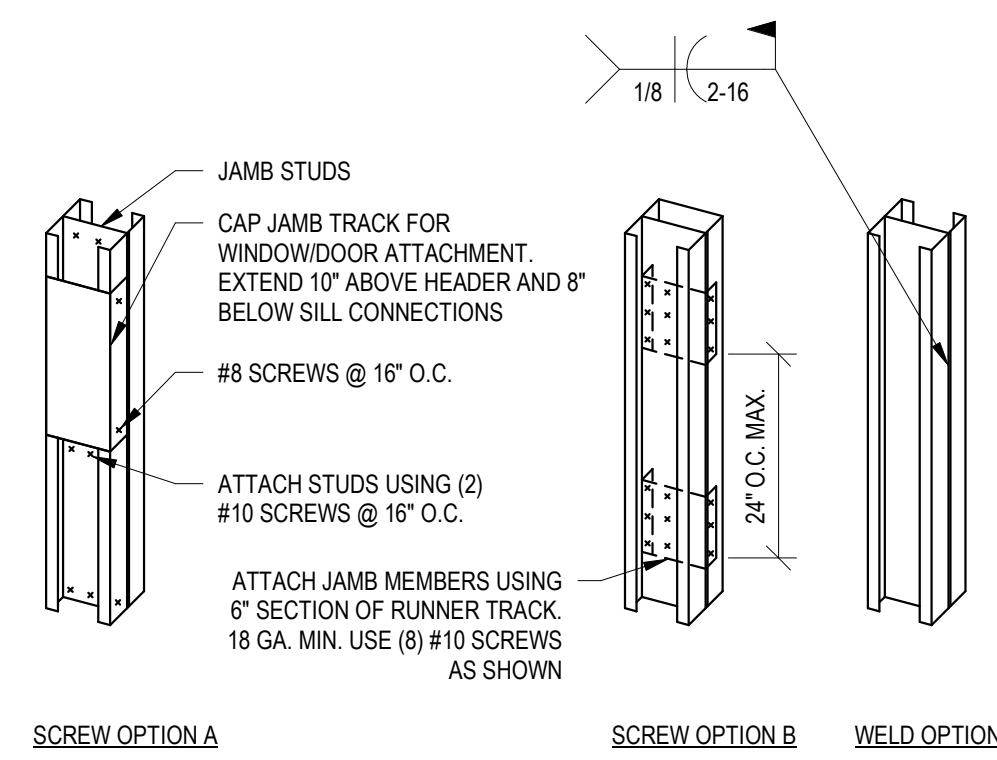




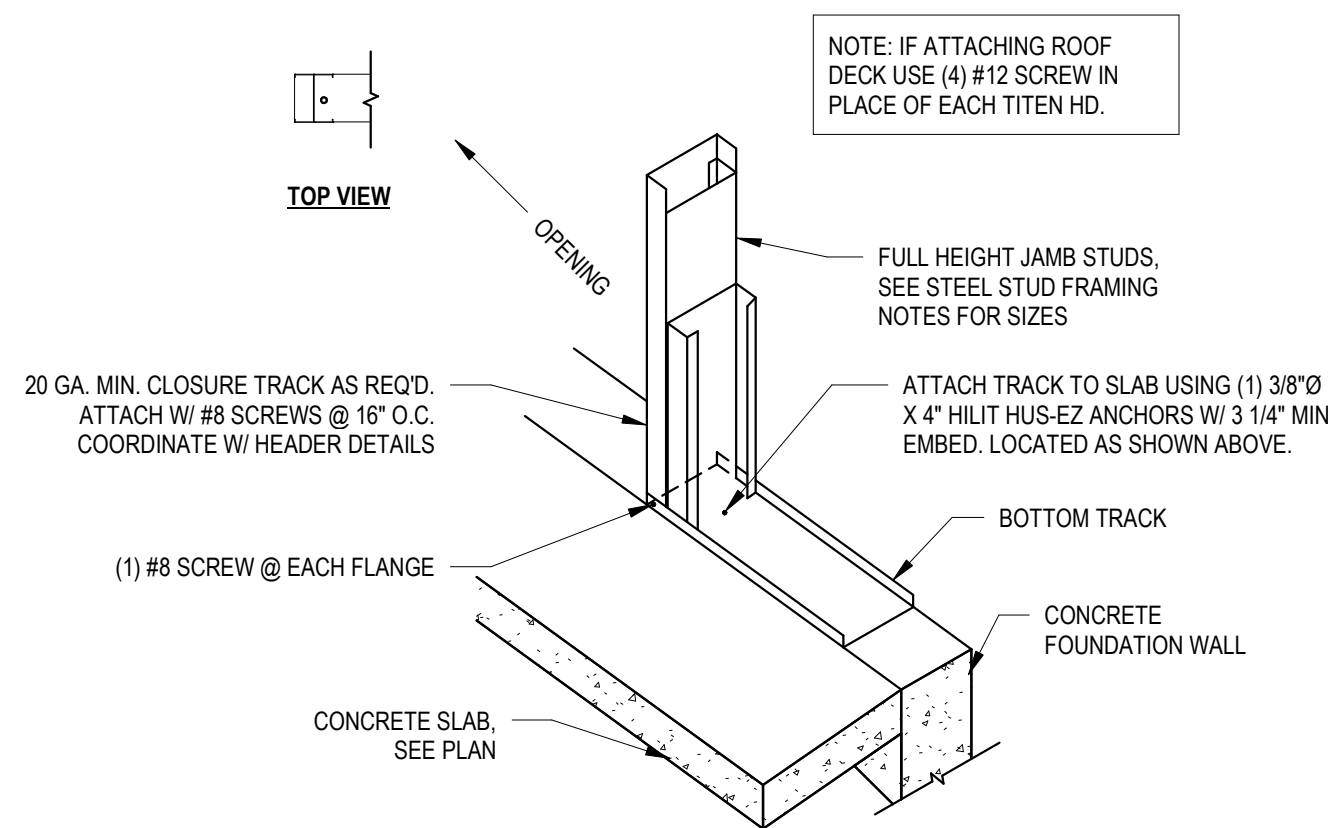
12 TYPICAL BOX HEADER CONNECTION DETAIL
SS-503 NO SCALE



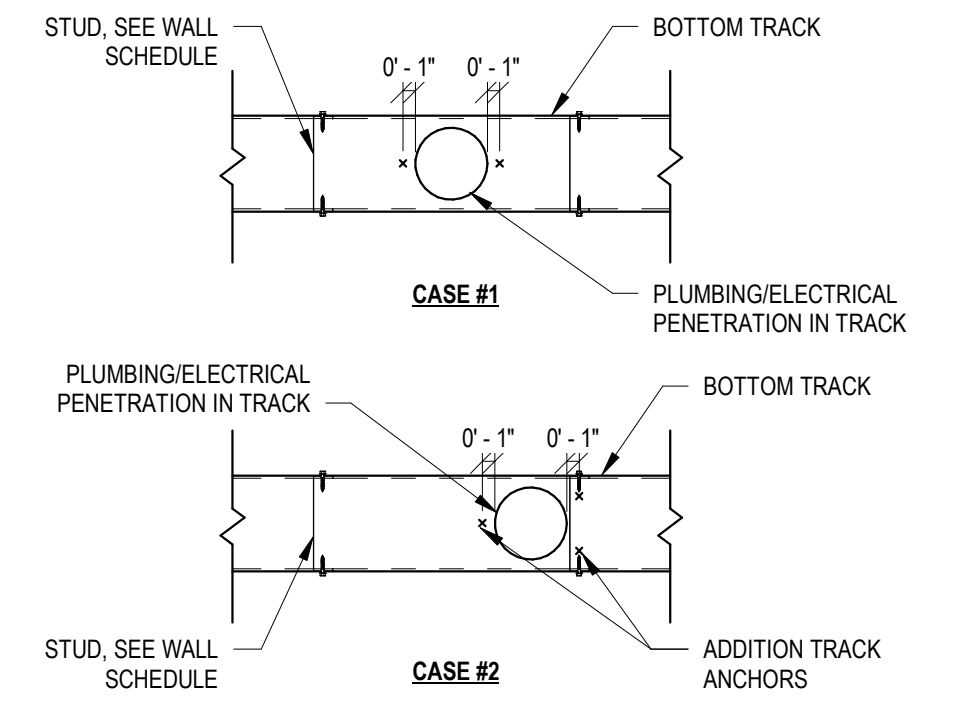
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SS-503



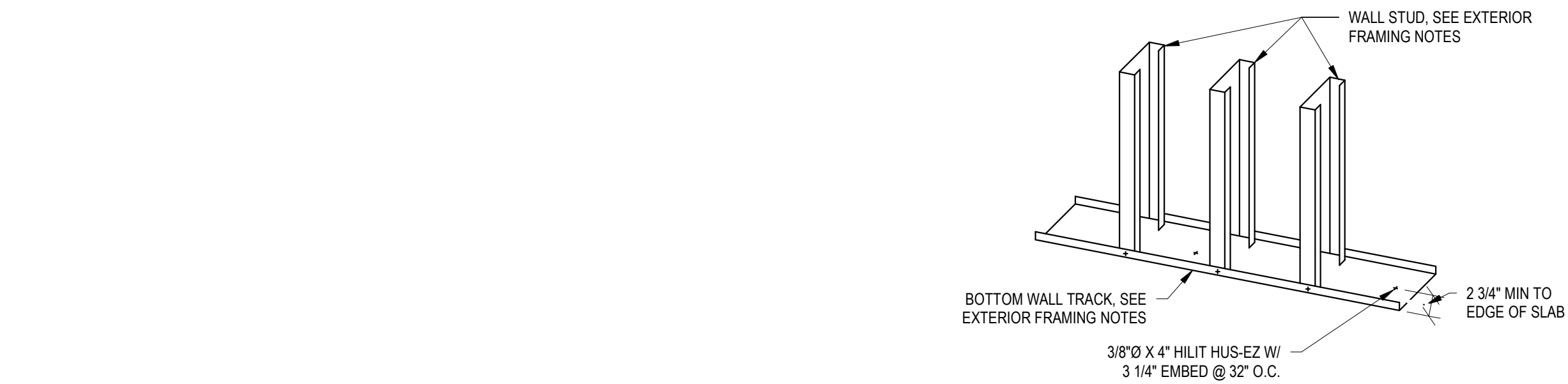
11 TYP. BUILT-UP STUDS STITCHING DETAIL
SS-503 NO SCALE



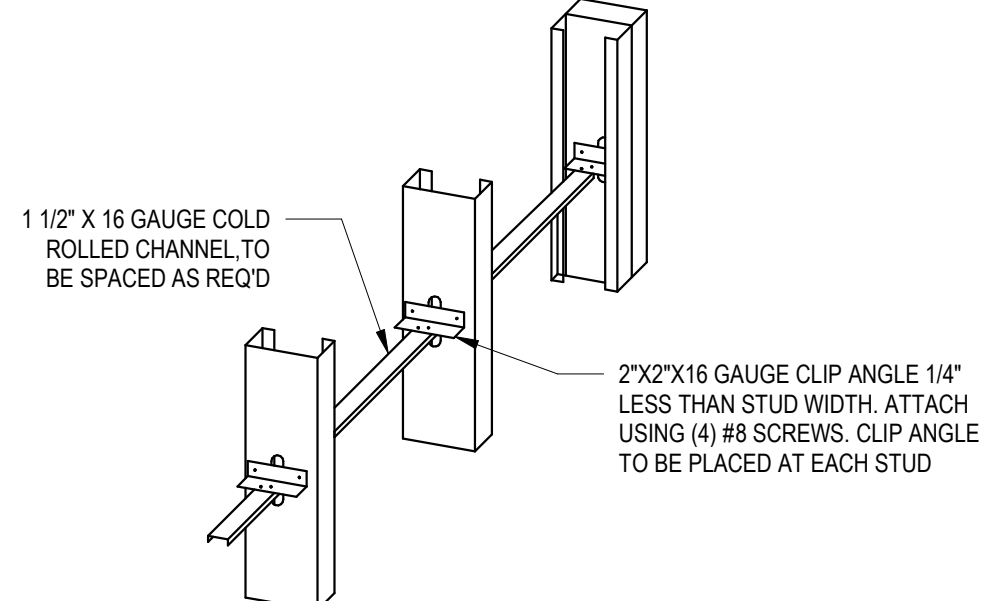
6 DOOR JAMB ANCHORAGE
SS-503 NO SCALE



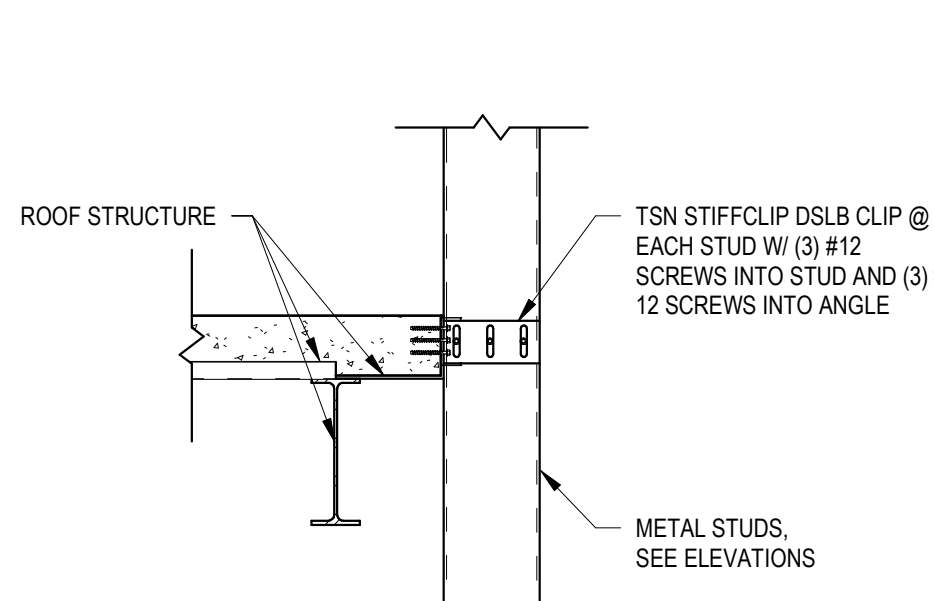
7 TYPICAL BOTTOM TRACK PENETRATION DETAIL
SS-503 NO SCALE



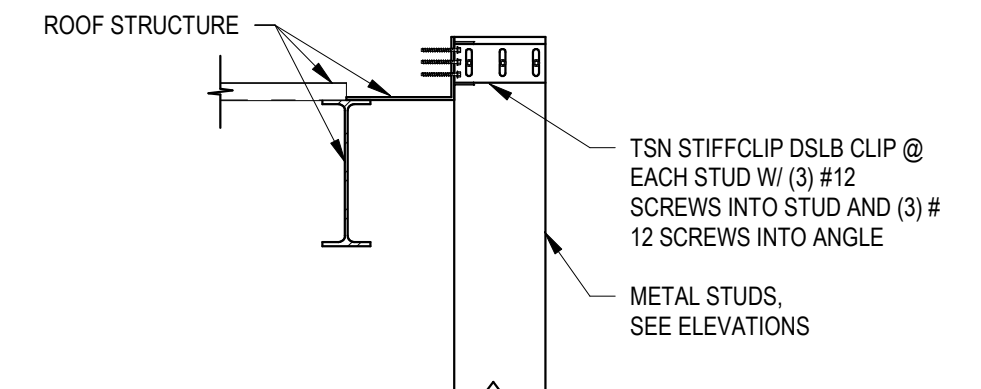
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SS-503



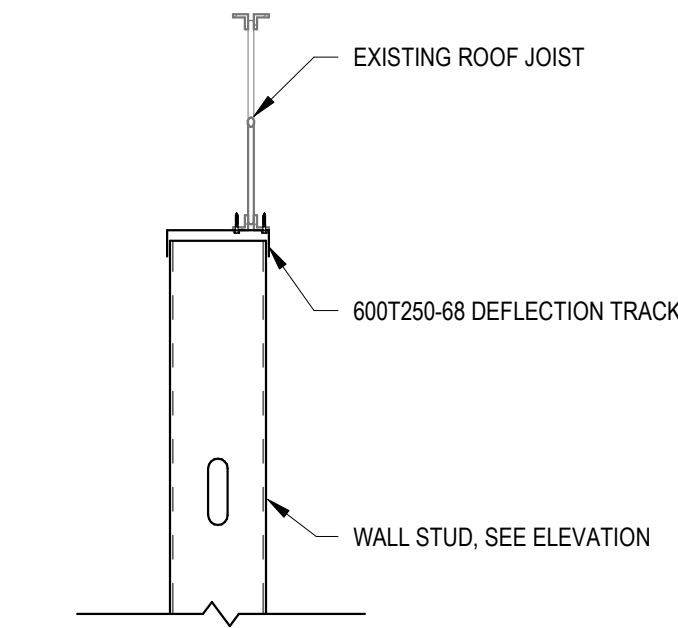
9 TYP. LATERAL BRACING/BRIDGING
SS-503 NO SCALE



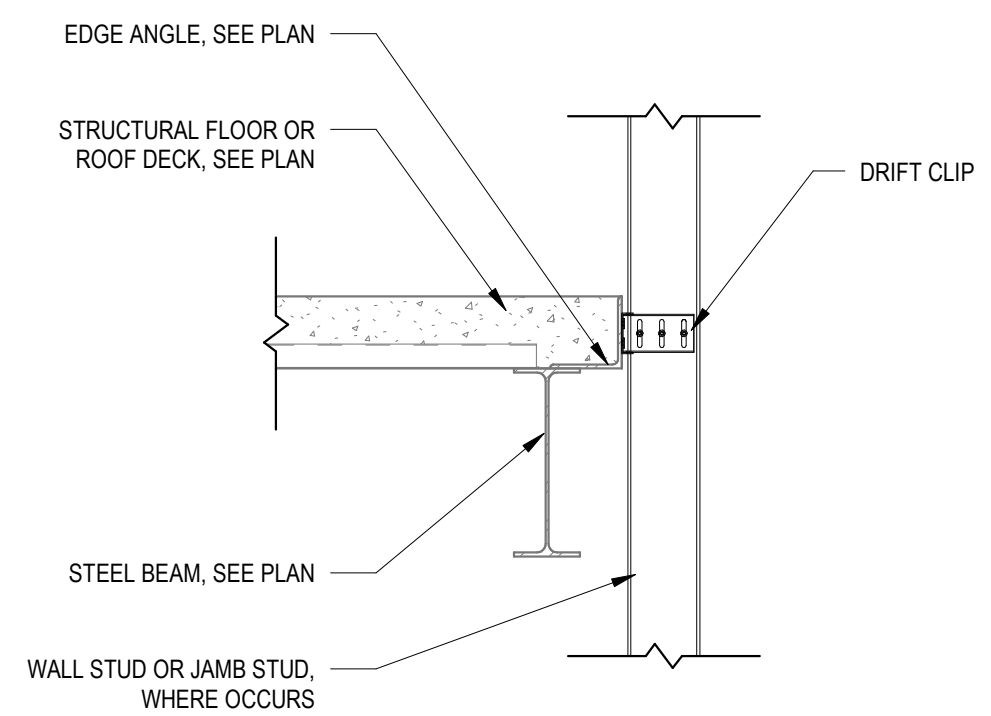
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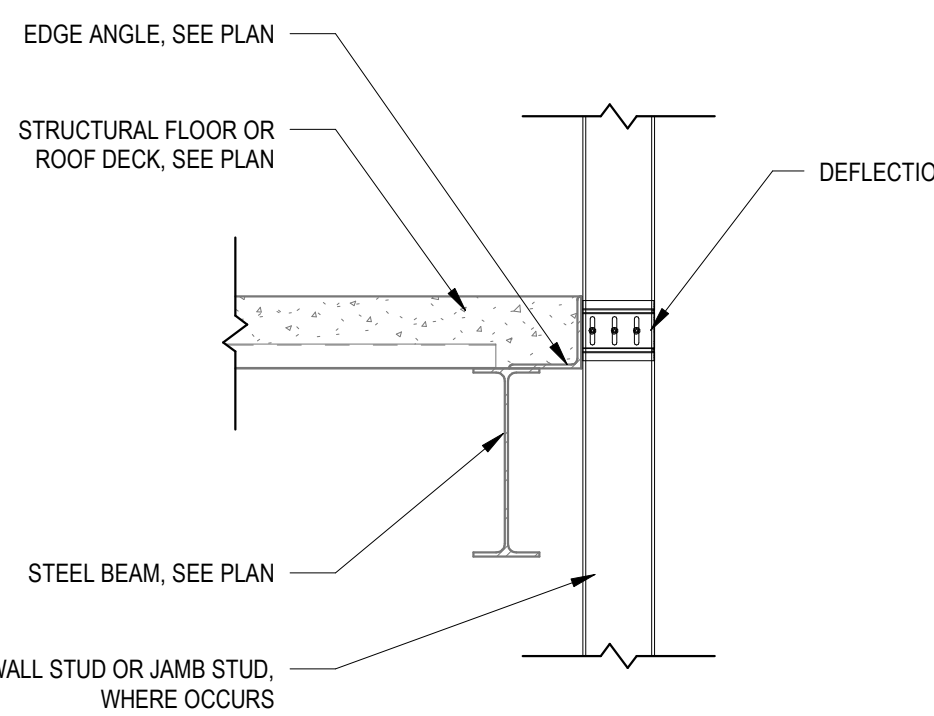
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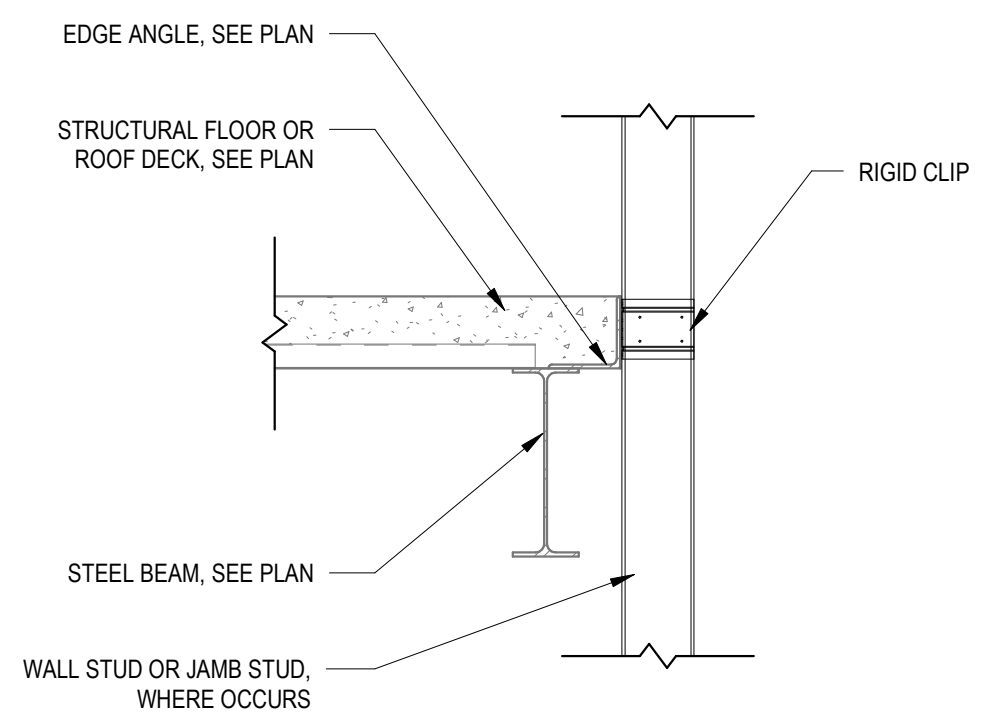
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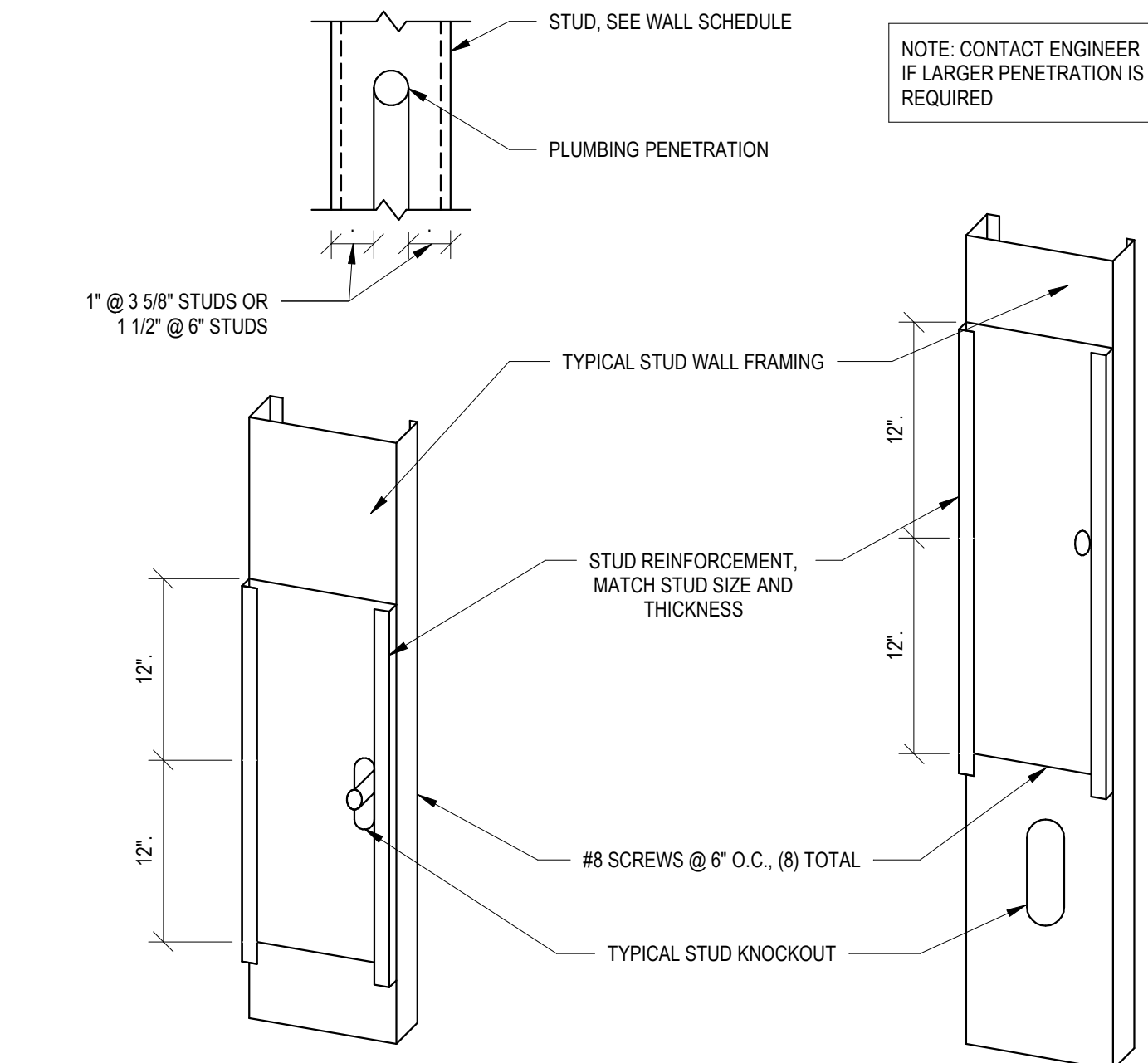
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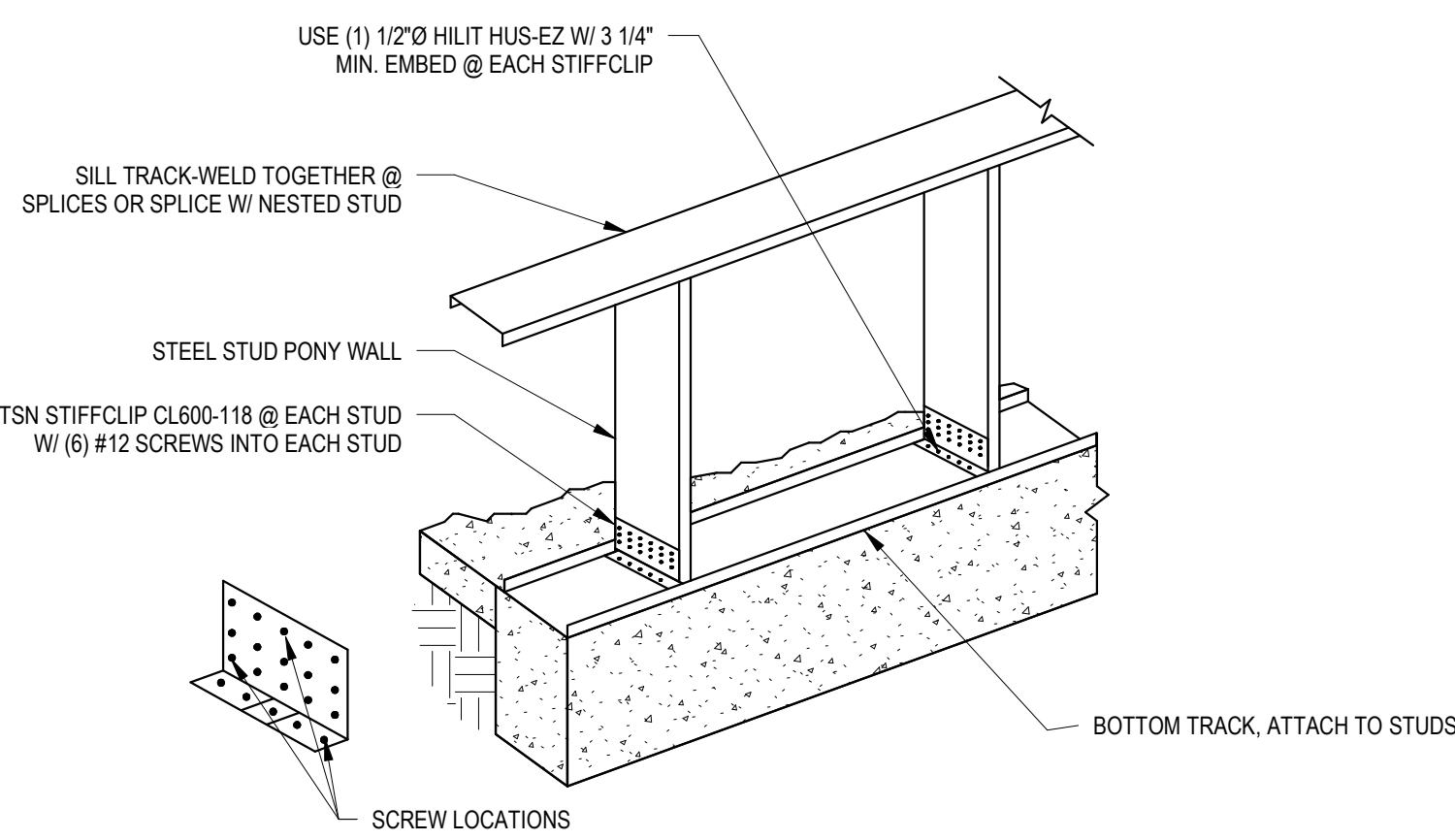
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VERTICAL DEFLECTION



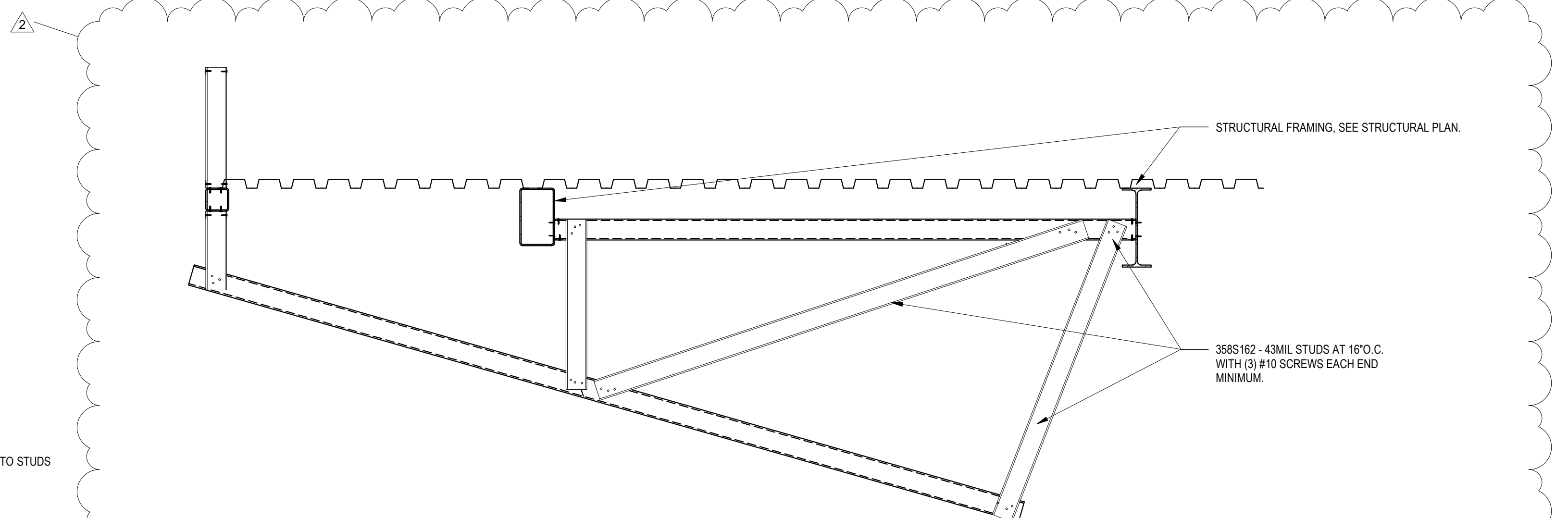
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VERTICAL DEFLECTION



4 NO SCALE
SS-503



8 NO SCALE
SS-503



10 SECTION AT ENTRY
SS-503 3/4\"/>

DOCUMENT STATUS		DATE
STATUS	NO.	DATE
BID DOCUMENTS		11/27/2019
REVISION SCHEDULE		DATE
NO.	DESCRIPTION	DATE
2	ADDENDUM 3	1/29/2020

GENERAL NOTES

1. ALL DIMENSIONS ARE FROM THE FACE OF FRAMING U.N.O.
2. HINGE SIDE OF DOORS ARE SIX INCHES (6") FROM ADJACENT WALL U.N.O.
3. WALLS EXTEND TO THE BOTTOM OF ROOF DECK ABOVE. FINISH AROUND ROOF JOISTS. MECHANICAL, ELECTRICAL, ETC. U.N.O.
4. VERIFY EXISTING CONDITIONS AND DIMENSIONS



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DOCUMENT STATUS	DATE
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BRIGHAM YOUNG UNIVERSITY - IDAHO
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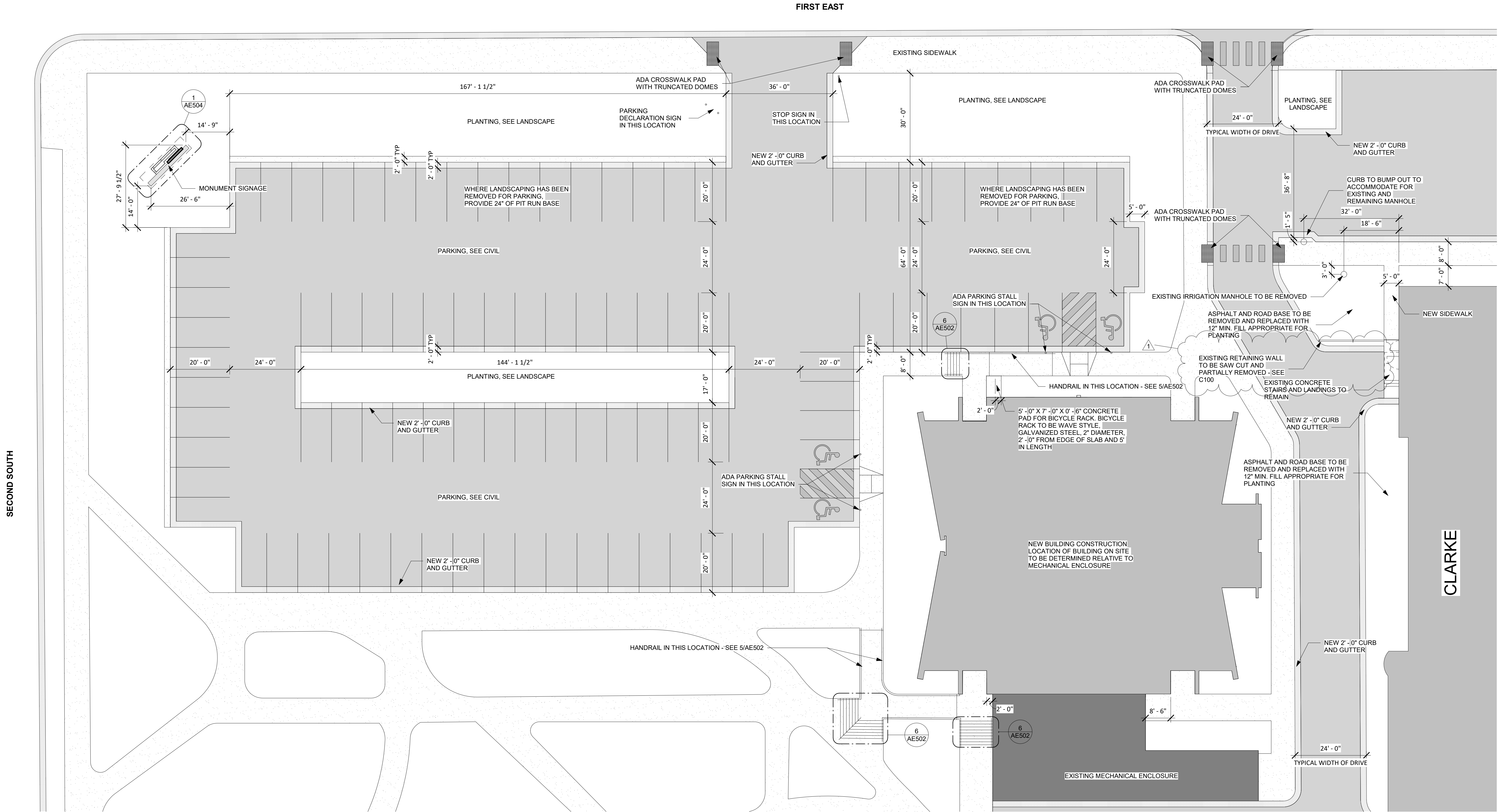
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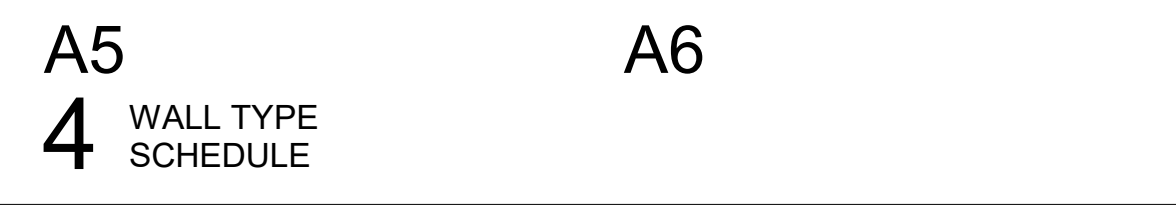
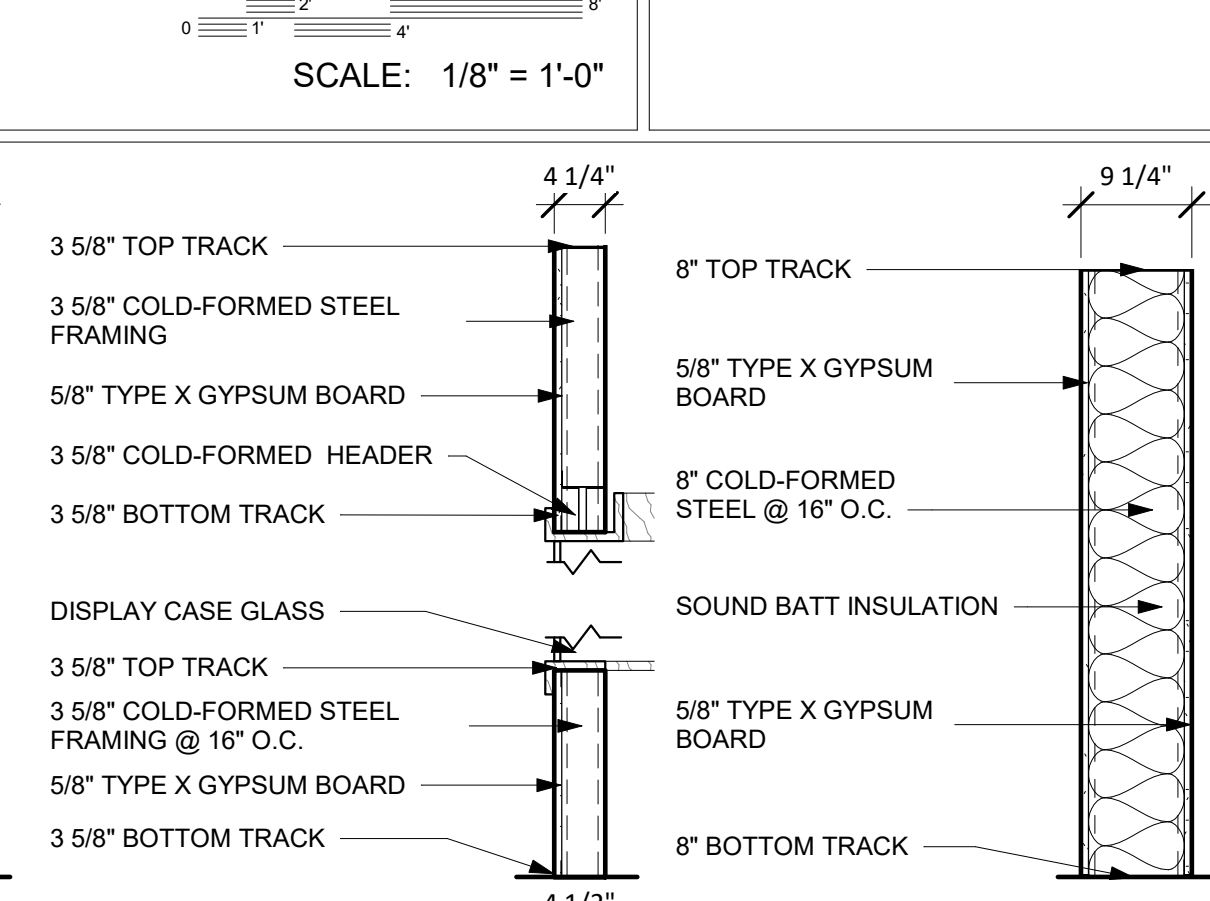
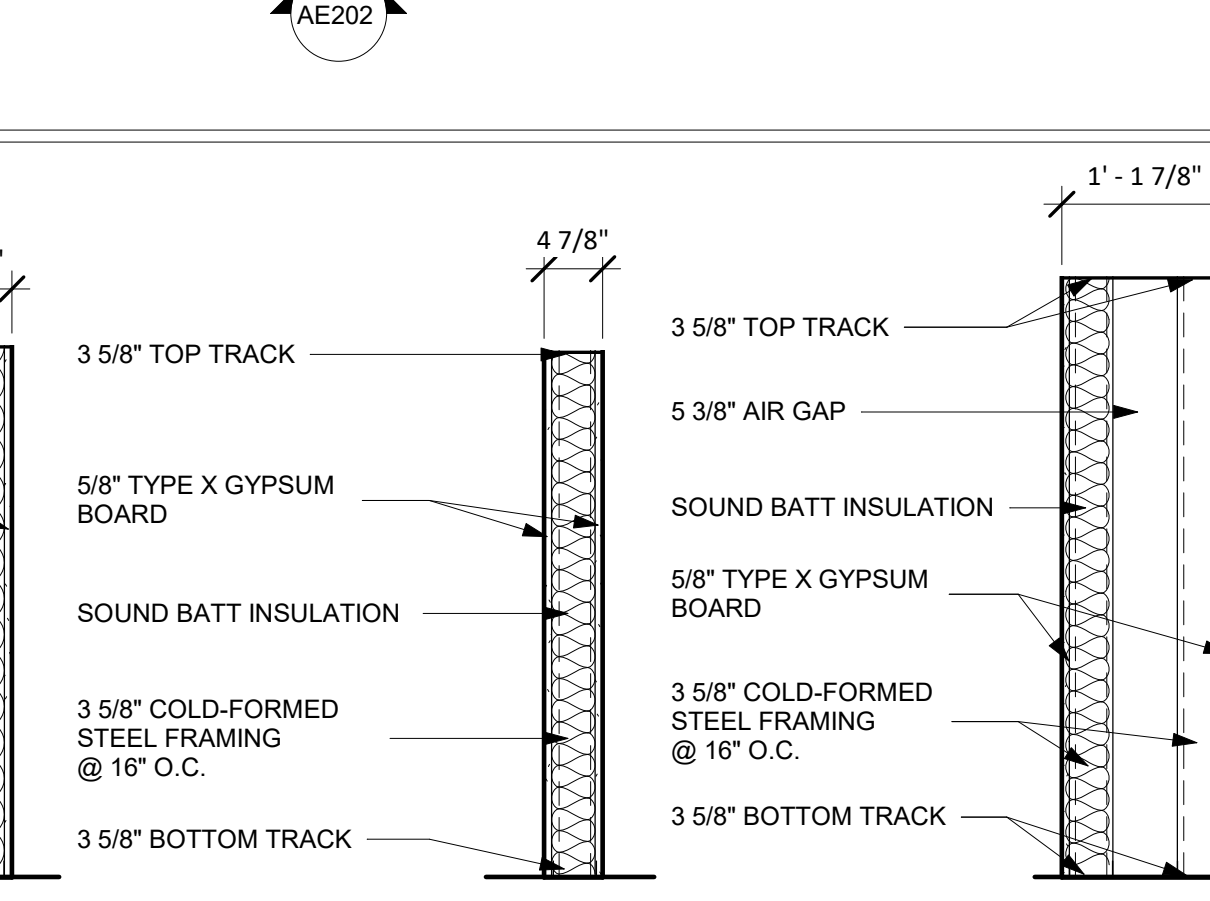
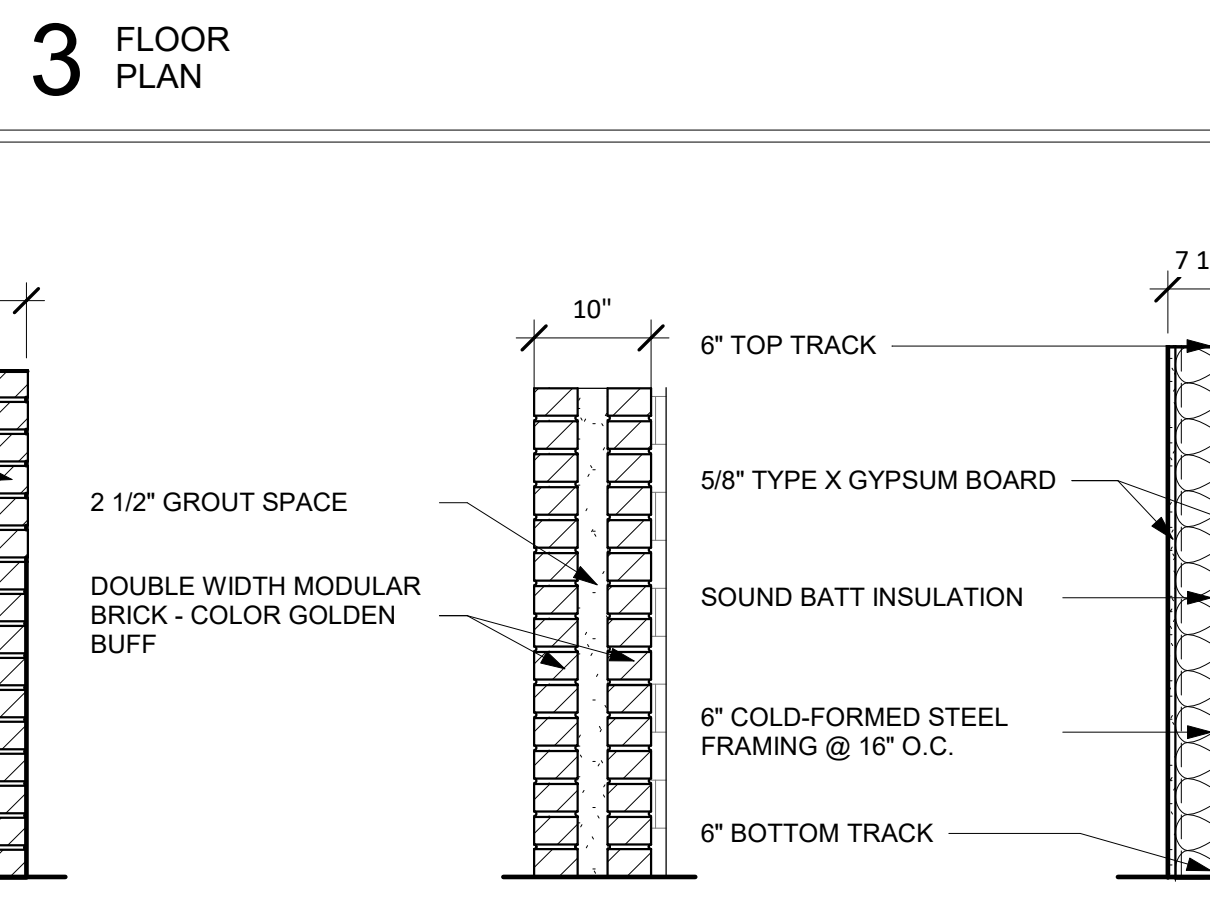
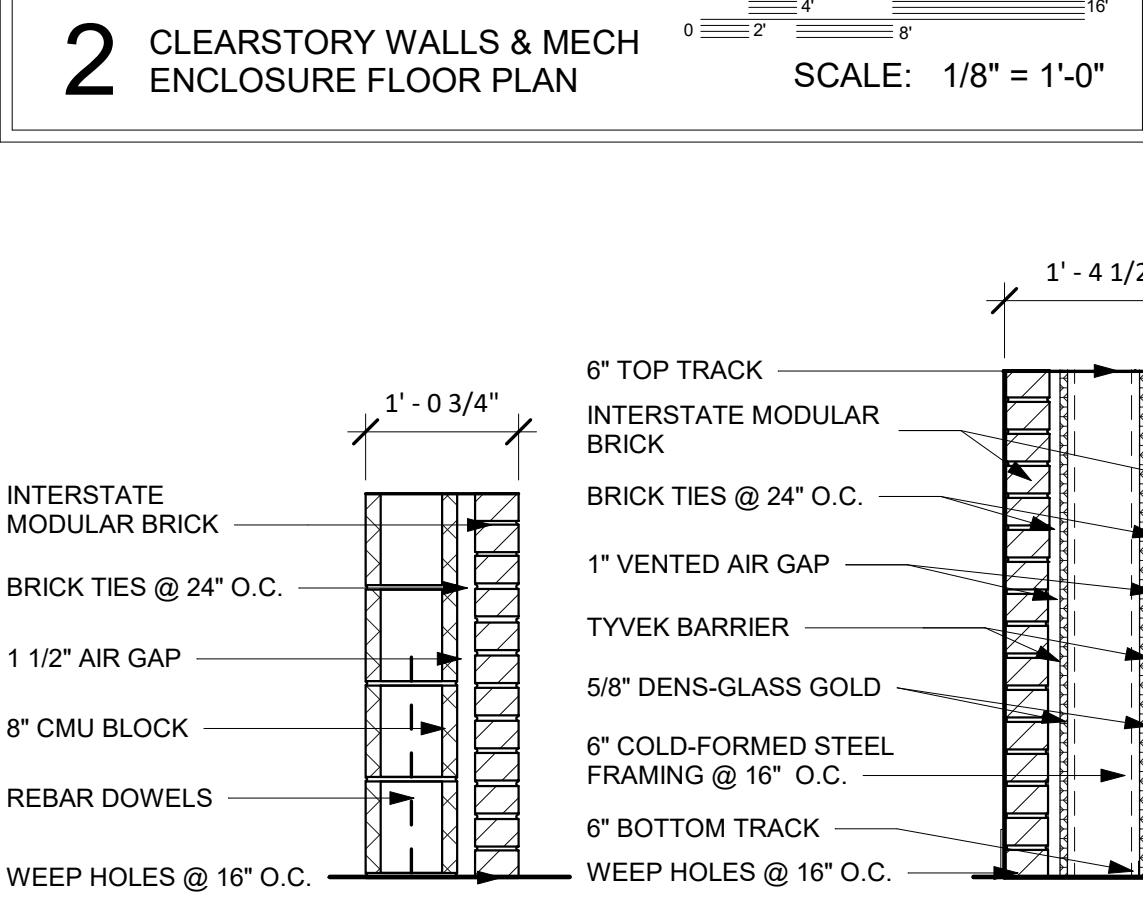
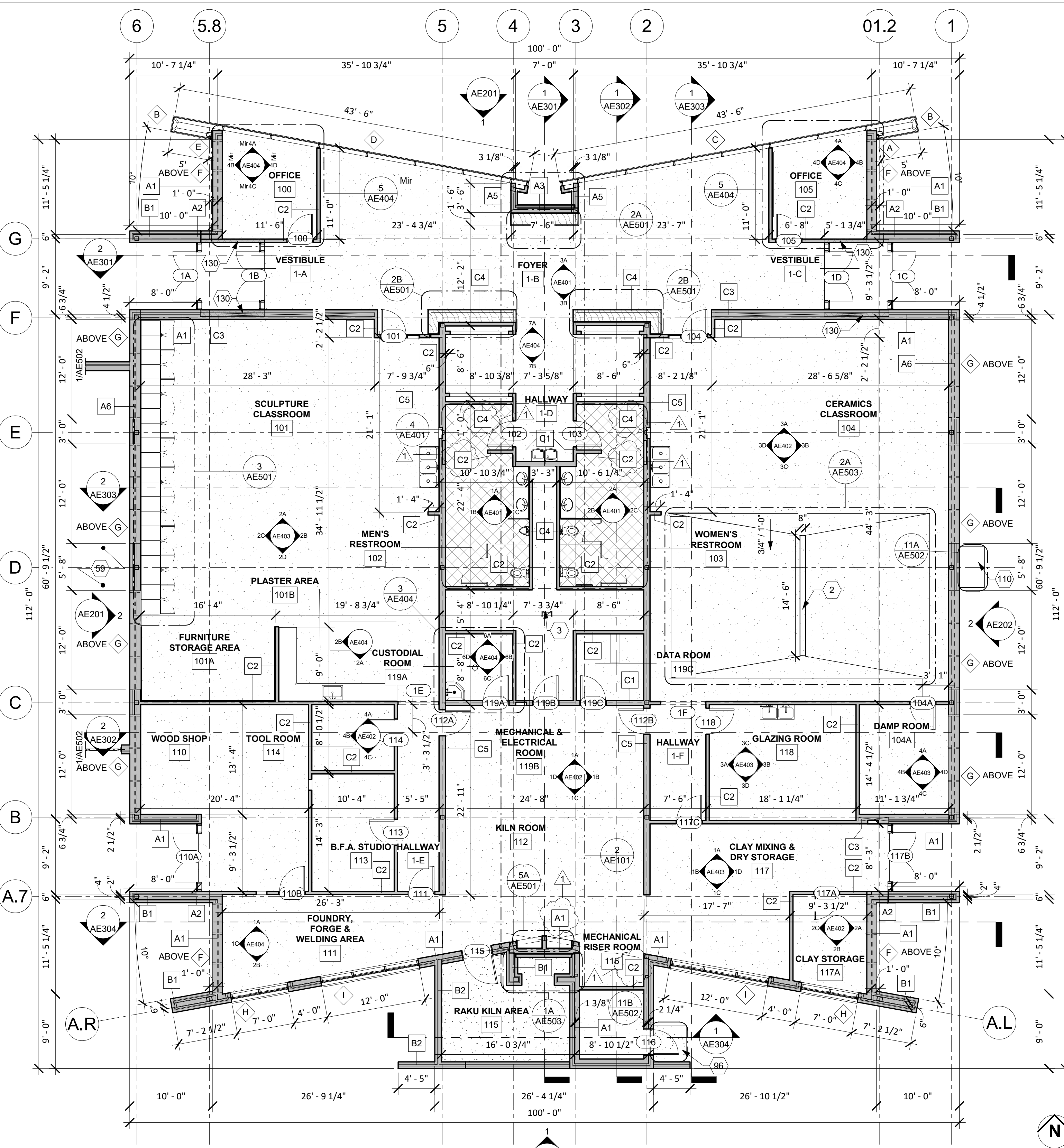
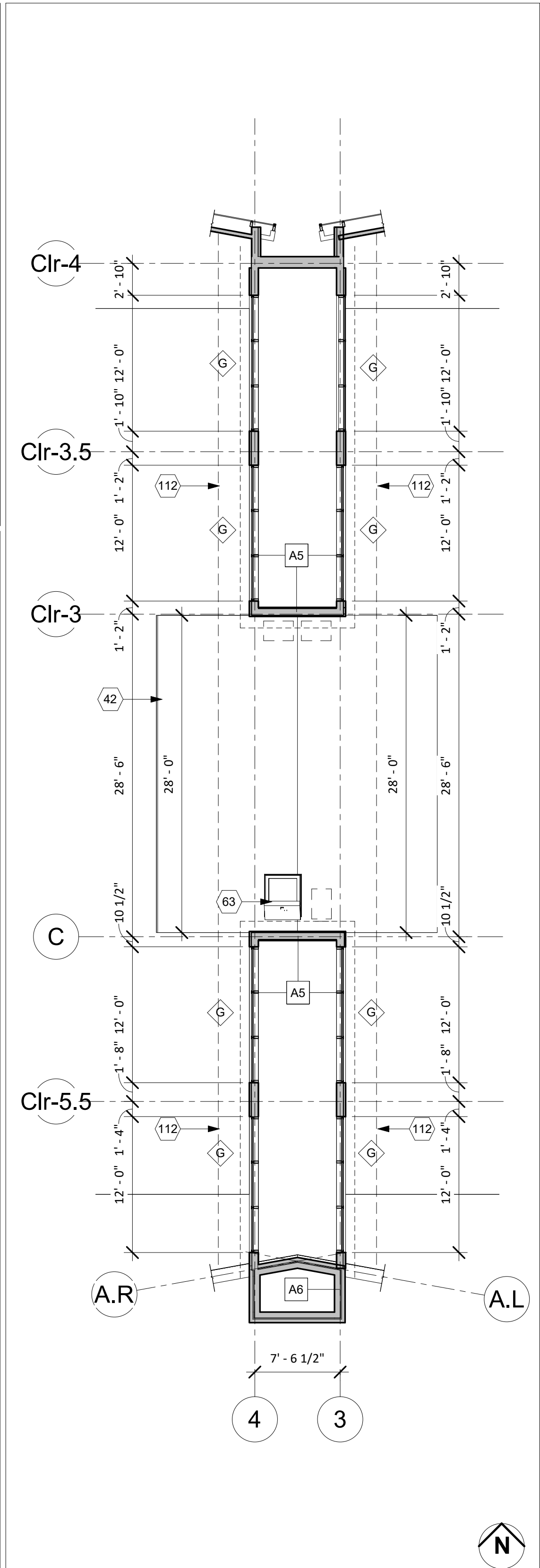
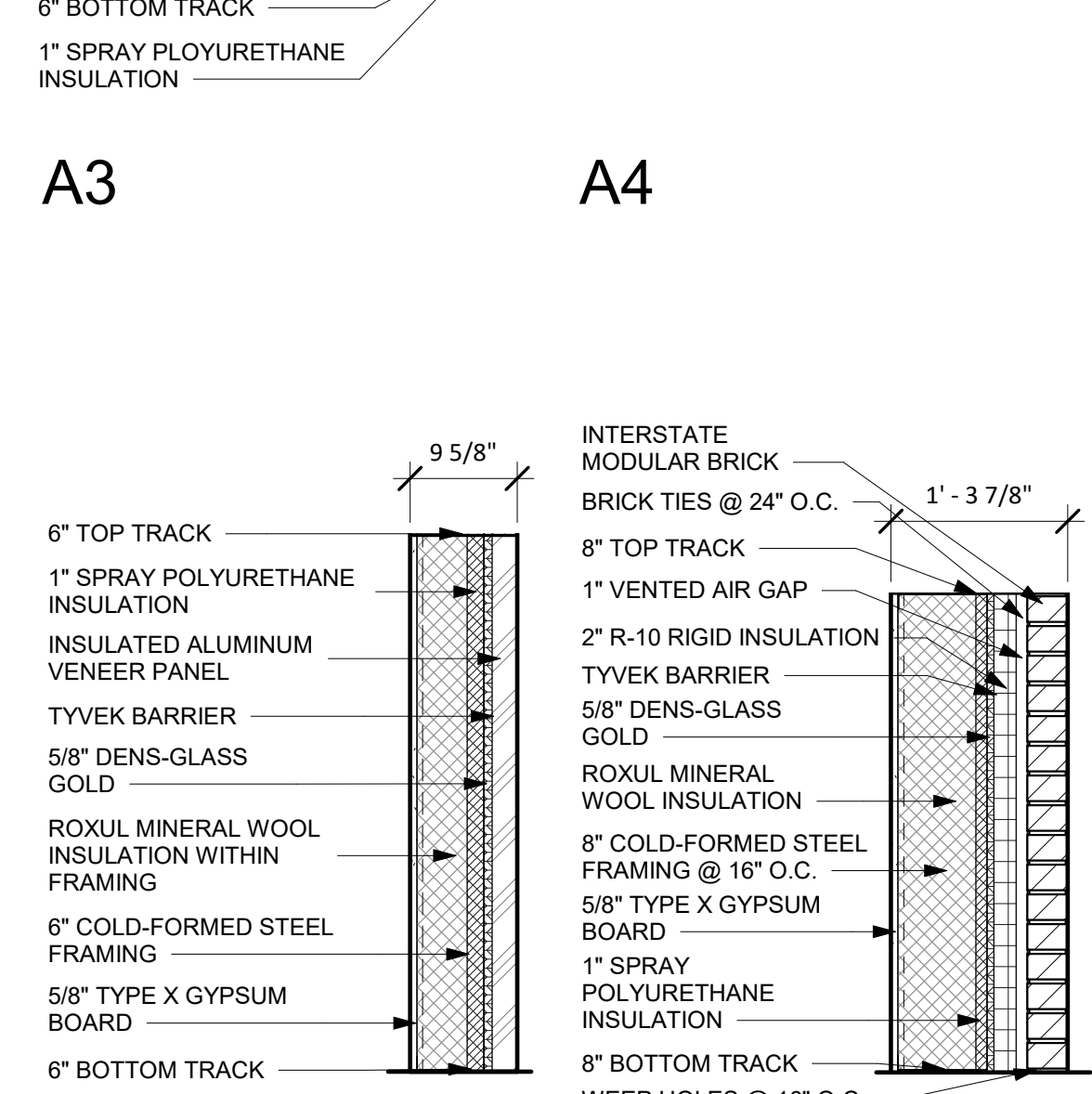
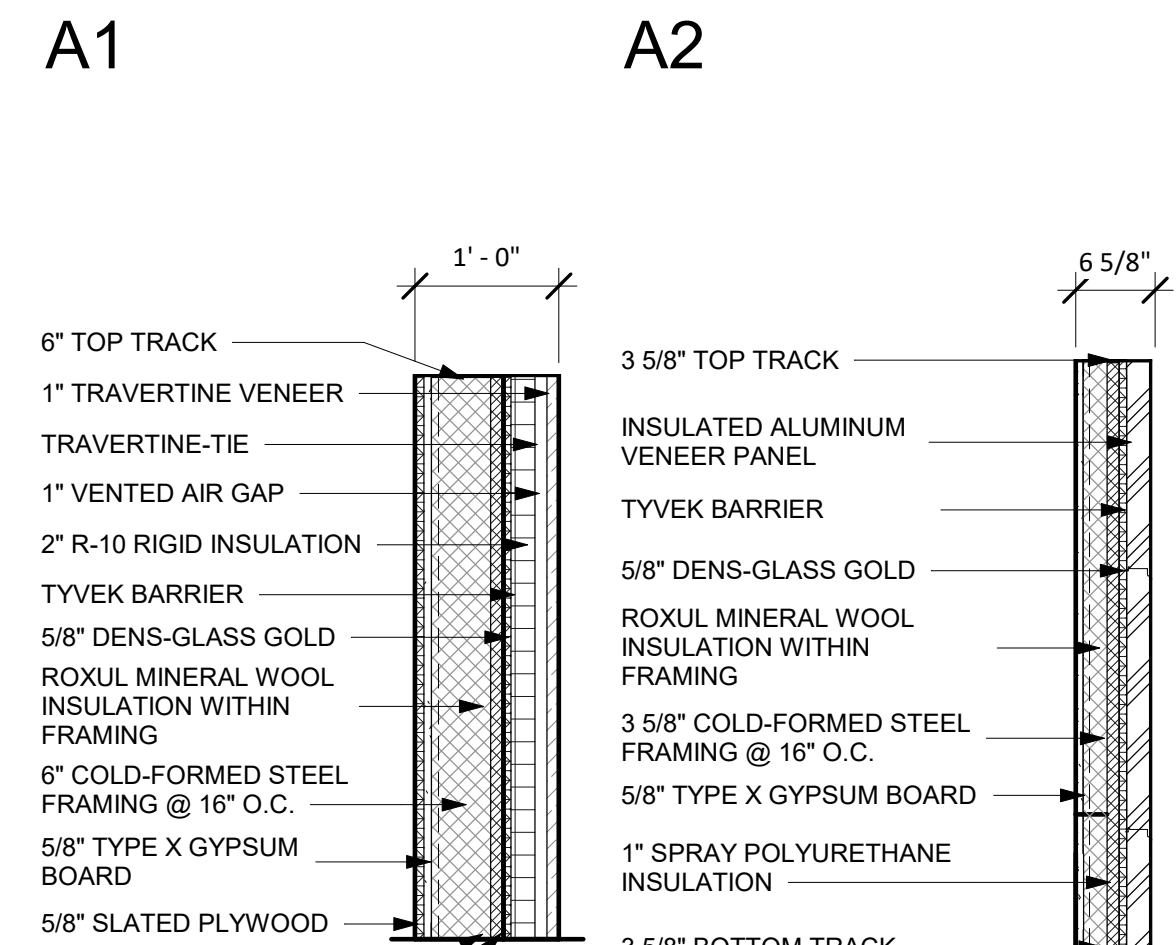
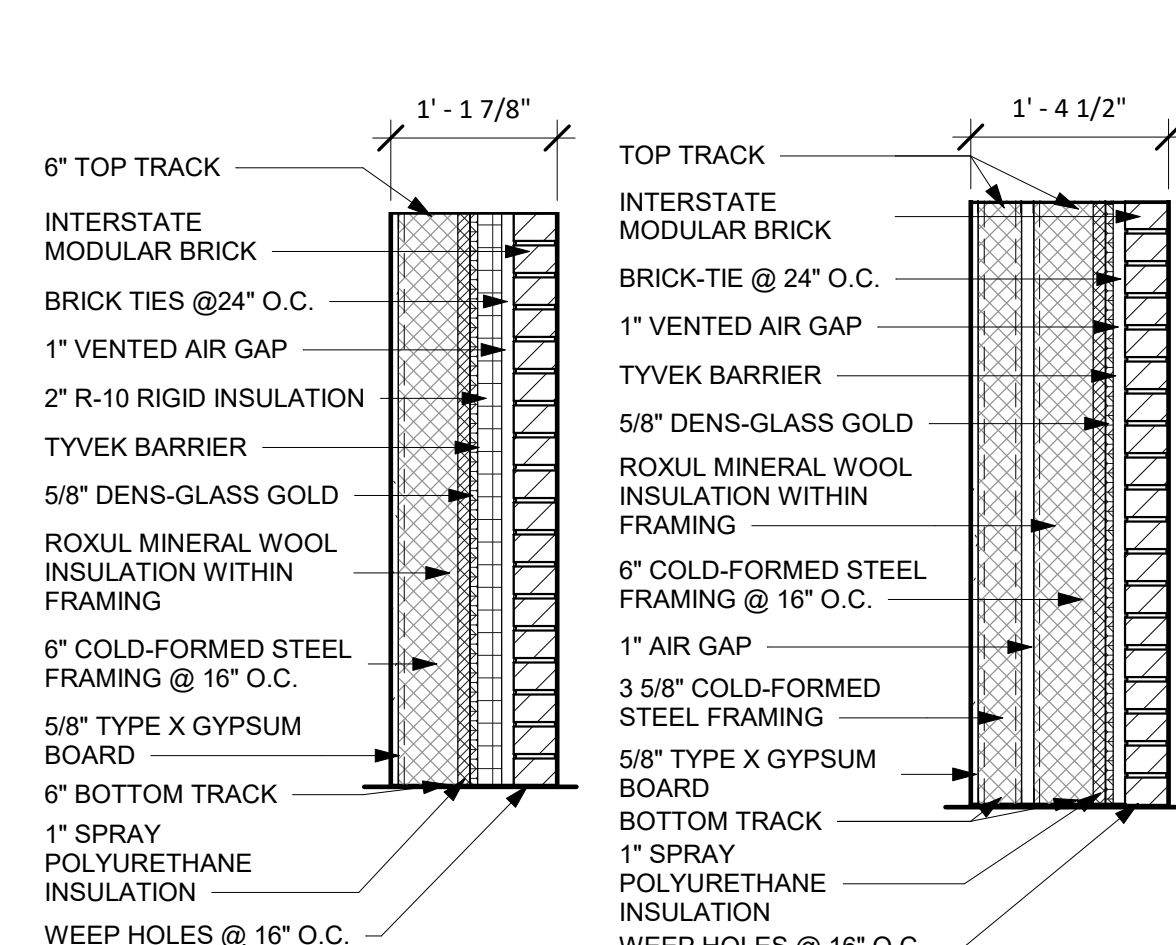
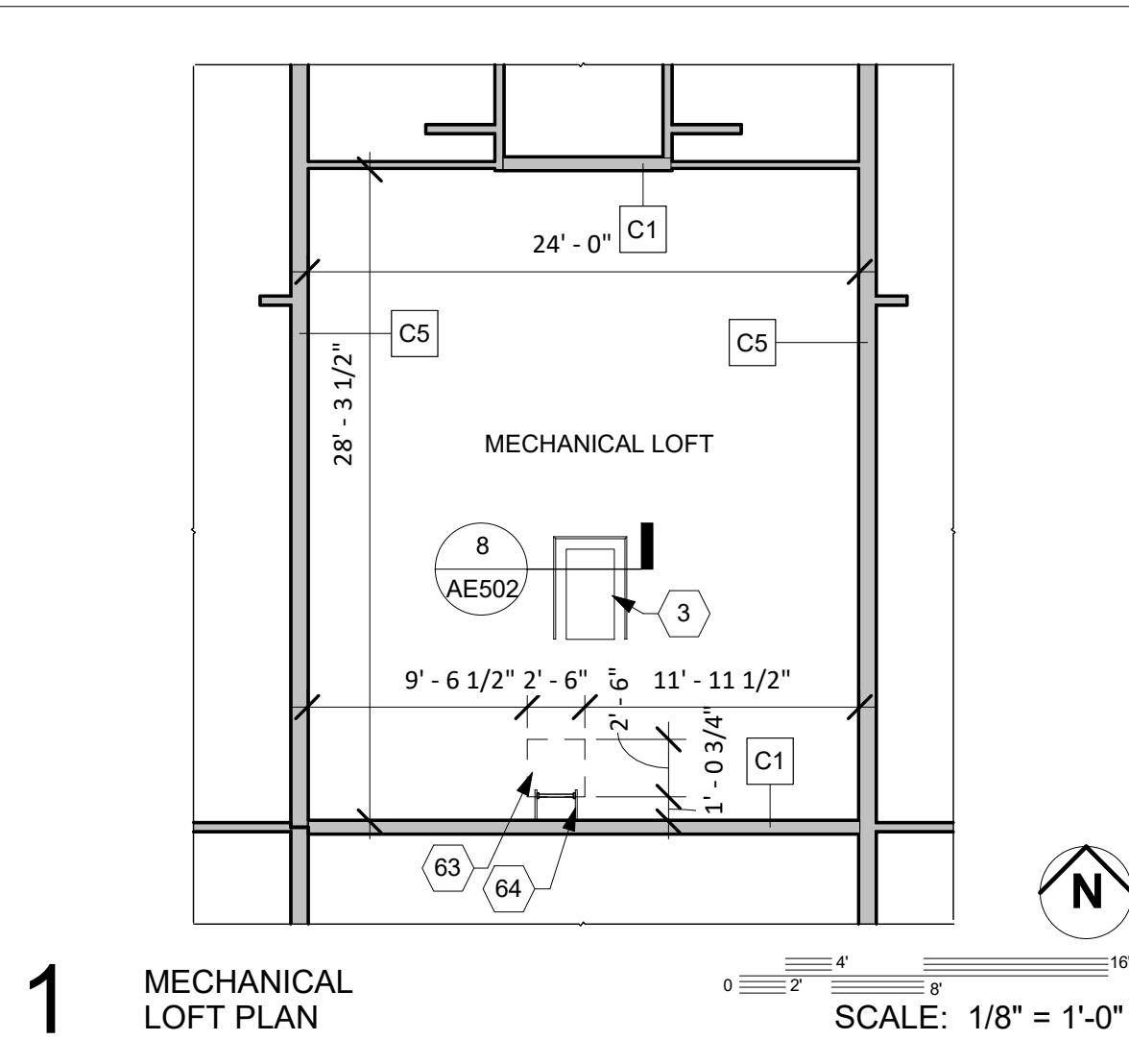
SHEET NAME:

SITE PLAN

SHEET NUMBER:

AE100





- GENERAL NOTES**
- ALL DIMENSIONS ARE FROM THE FACE OF FRAMING U.N.O.
 - HINGE SIDE OF DOORS ARE SIX INCHES (6") FROM ADJACENT IN WALL U.N.O.
 - WALLS EXTEND TO THE BOTTOM OF ROOF DECK ABOVE. FINISH AROUND ROOF JOISTS, MECHANICAL, ELECTRICAL, ETC. U.N.O.

- KEYNOTES INDICATED THUS: (X)**
- FLOOR DRAIN IN THIS LOCATION WITH 1/8"-1'-0" FLOOR SLOPE TO DRAIN
 - MECHANICAL LOFT FULL-DOWN ACCESS LADDER W/ GUARDRAIL AROUND THE THREE NON-ACCESS SIDES
 - ROOF MEMBRANE BUILT UP WITH INSULATION TO FORM CRICKETS
 - SEE DETAIL 1/AE502 FOR INFORMATION ON THE EXISTING MECHANICAL YARD AREA
 - BILCO 30" X 30" ROOF ACCESS HATCH W/ FIX LADDER LEADING TO MECHANICAL LOFT BELOW
 - 20" LADDER ACCESS TO ROOF ABOVE
 - 4' X 4' CONCRETE STOOP - SEE CIVIL
 - CONCRETE PAD CENTERED BENEATH SCUPPER
 - 3' ROOF WALK IN THIS LOCATION AND IN THE ROOFTOP MECHANICAL UNIT ENCLOSURE
 - METAL WOOL INSULATION ALONG VESTIBULE WALLS

AREA SCHEDULE

TAG	NAME	AREA
1-A	VESTIBULE	57 SF
1-B	FOYER	1114 SF
1-C	VESTIBULE	62 SF
1-D	HALLWAY	263 SF
1-E	HALLWAY	113 SF
1-F	HALLWAY	94 SF
100	OFFICE	144 SF
101	SCULPTURE CLASSROOM	1315 SF
101A	FURNITURE STORAGE AREA	145 SF
101B	PLASTER AREA	174 SF
102	MEN'S RESTROOM	205 SF
103	WOMEN'S RESTROOM	206 SF
104	CERAMICS CLASSROOM	1638 SF
104A	DAMP ROOM	142 SF
105	OFFICE	144 SF
110	WOOD SHOP	391 SF
111	FOUNDRY, FORGE & WELDING AREA	254 SF
112	KILN ROOM	726 SF
113	B.F.A. STUDIO	140 SF
114	TOOL ROOM	79 SF
115	RAKIL KILN AREA	193 SF
116	MECHANICAL RISER ROOM	65 SF
117	CLAY MIXING & DRY STORAGE	393 SF
117A	CLAY STORAGE	99 SF
118	GLAZING ROOM	247 SF
119A	CUSTODIAL ROOM	66 SF
119B	MECHANICAL & ELECTRICAL ROOM	220 SF
119C	DATA ROOM	66 SF
	TOTAL	8754 SF



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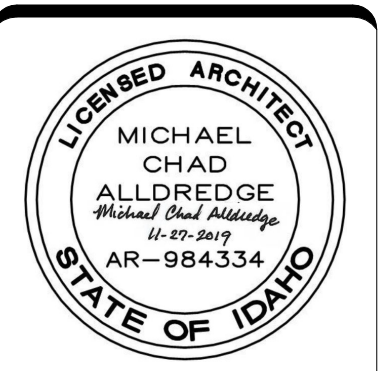
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DOCUMENT STATUS

NO.	DESCRIPTION	DATE
1	ADDITIONAL 3	12/01/2019

REVISION SCHEDULE

NO.	DESCRIPTION	DATE
1	ADDITIONAL 3	12/01/2019

PROJECT NAME:

BRIGHAM YOUNG UNIVERSITY - IDAHO
SPORI ANNEX

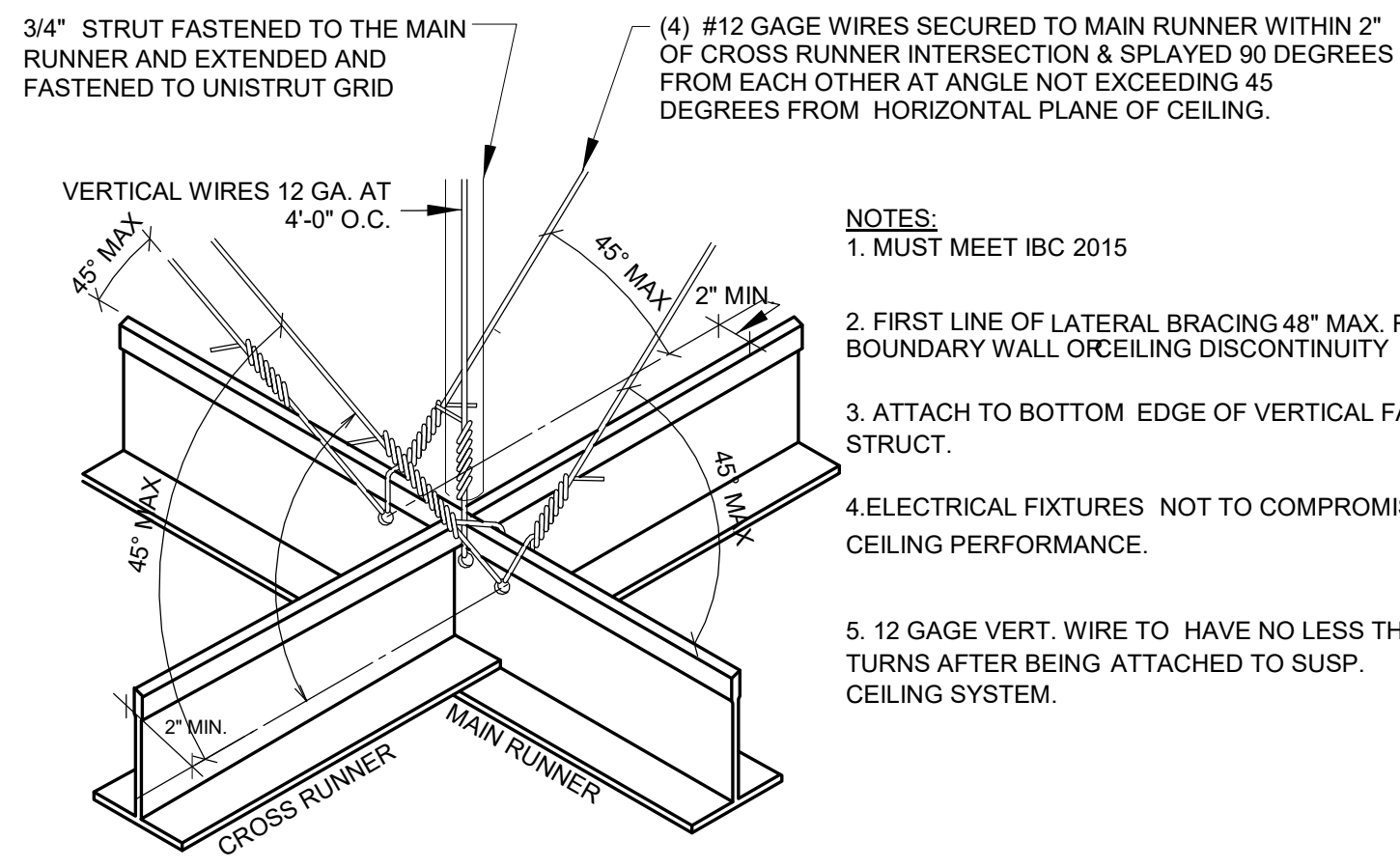
PROJECT NO: 11513

SHEET NAME:

FLOOR PLAN

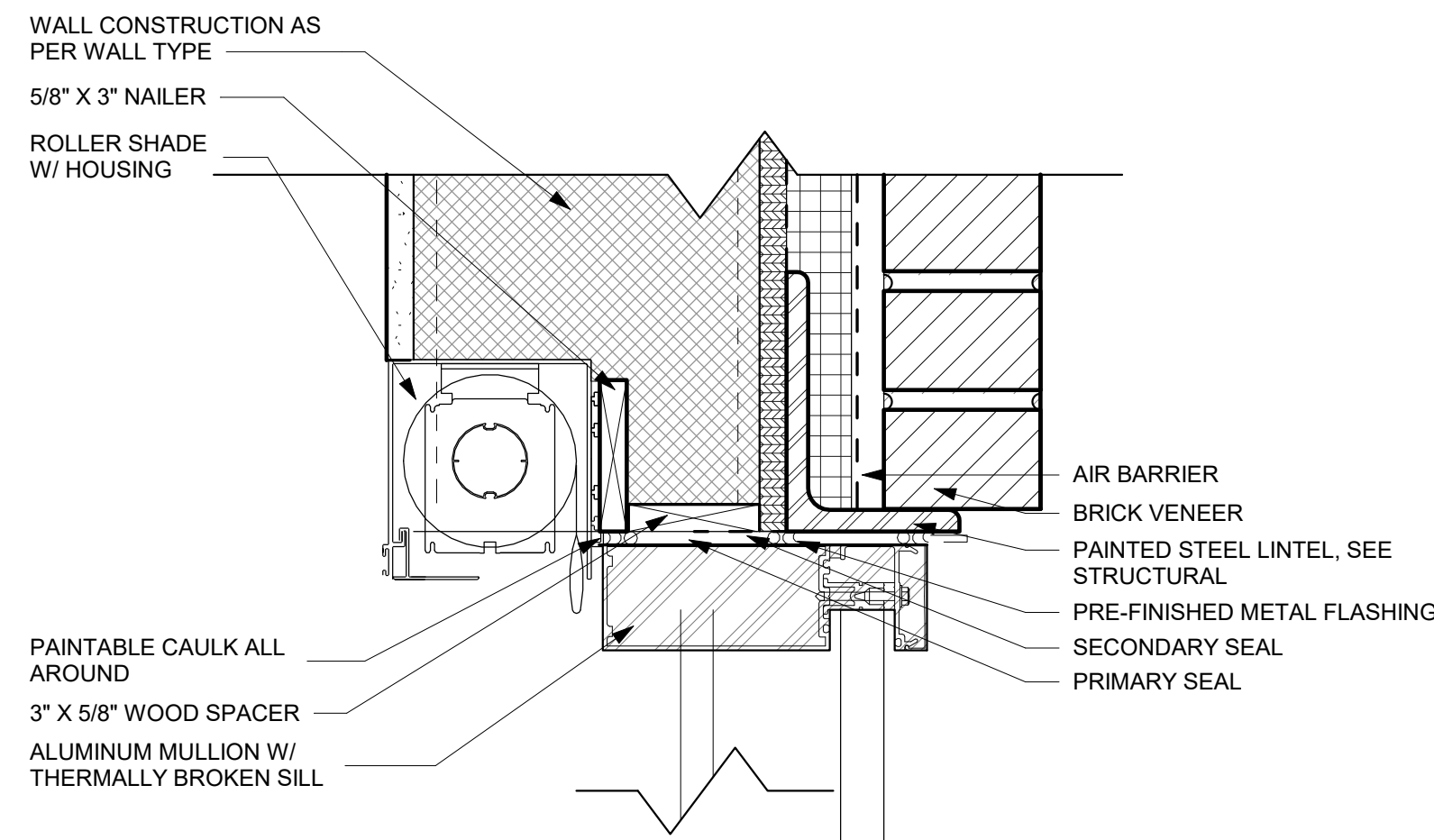
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AE101



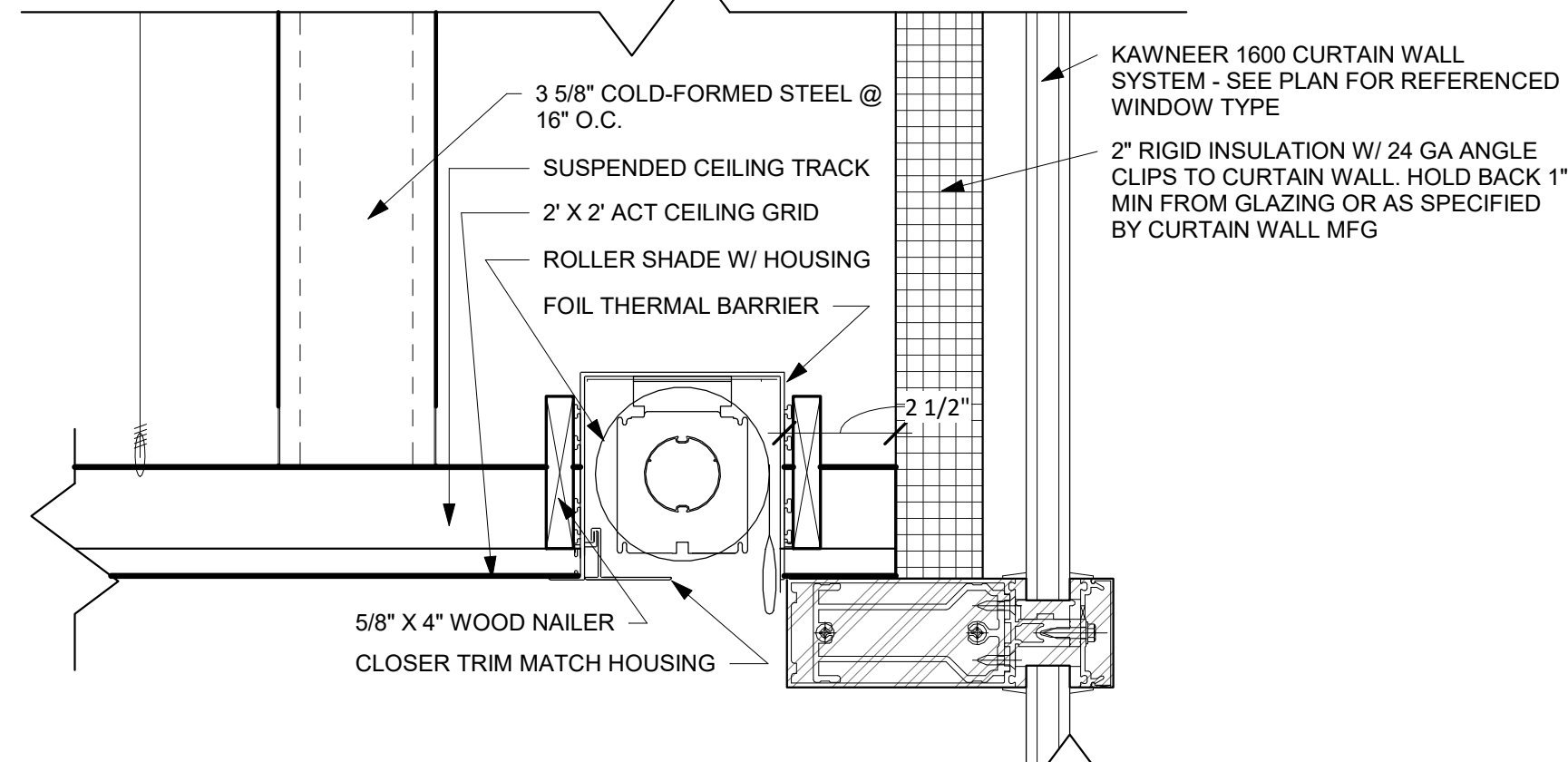
2 LAY-IN CEILING DETAIL

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



3 CURTAIN @ WINDOW DETAIL

SCALE: 3" = 1'-0"



4 CURTAIN @ CURTAIN WALL DETAIL

SCALE: 3" = 1'-0"

GENERAL NOTES

- ALL DIMENSIONS ARE FROM THE FACE OF FRAMING U.N.O.
- HINGE SIDE OF DOORS ARE SIX INCHES (6") FROM ADJACENT IN WALL U.N.O.
- WALLS EXTEND TO THE BOTTOM OF ROOF DECK ABOVE. FINISH AROUND ROOF JOISTS, MECHANICAL, ELECTRICAL, ETC. U.N.O.

KEYNOTES

INDICATED THUS: X

- MECHANICAL LOFT PULL-DOWN ACCESS LADDER ROLLER SHADE W/ HOUSING POWERED BY ELECTRIC MOTOR
- STRUCTURAL JOIST ABOVE - SEE STRUCTURAL (TYP)
- ARMSTRONG TECTUM DIRECT-ATTACH ACT. CEILING PANELS - 2' X 4' 2" THICK WITH BEVELED EDGES- ATTACHED TO ROOF DECKING AND CENTERED BETWEEN JOISTS (TYP) - SEE 1/AE151
- PAINT AND TEXTURE ON GYPSUM BOARD FOR SKYLIGHT CEILING
- ARMSTRONG 2' X 4' ACT. PERFORATED METAL DROP-IN CEILING. AREAS WITH CONTINUOUS GRIDS TO HAVE EXPOSED TEE GRID SYSTEM. WHERE THE PANELS ARE MISSING A CEILING PERIMETER TRIM IS TO BE USED. WHERE THE PANELS ARE COMPLETELY SEPERATED FROM THE MAIN BODY OF THE GRID SYSTEM, PANELS ARE TO BE SUSPENDED FROM STRUCTURE ABOVE - MAPLE COLOR



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DOCUMENT STATUS	DATE
BID DOCUMENTS	11/27/2019

NO.	DESCRIPTION	DATE
1	ADDENDUM 3	1/30/2020

PROJECT NAME:

BRIGHAM YOUNG UNIVERSITY - IDAHO SPORI ANNEX

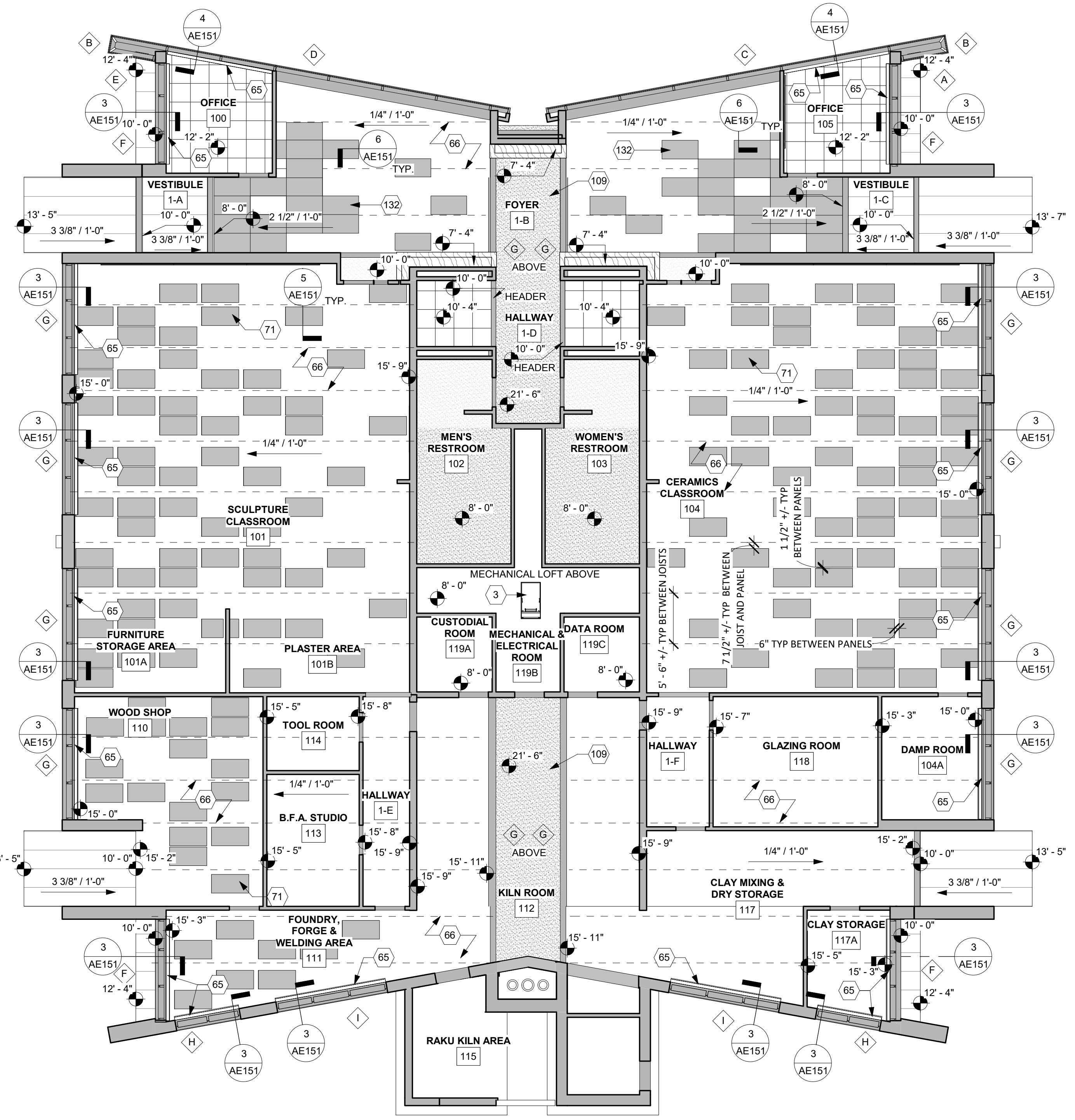
PROJECT NO: 11513

SHEET NAME:

REFLECTED CEILING PLAN

SHEET NUMBER:

AE151

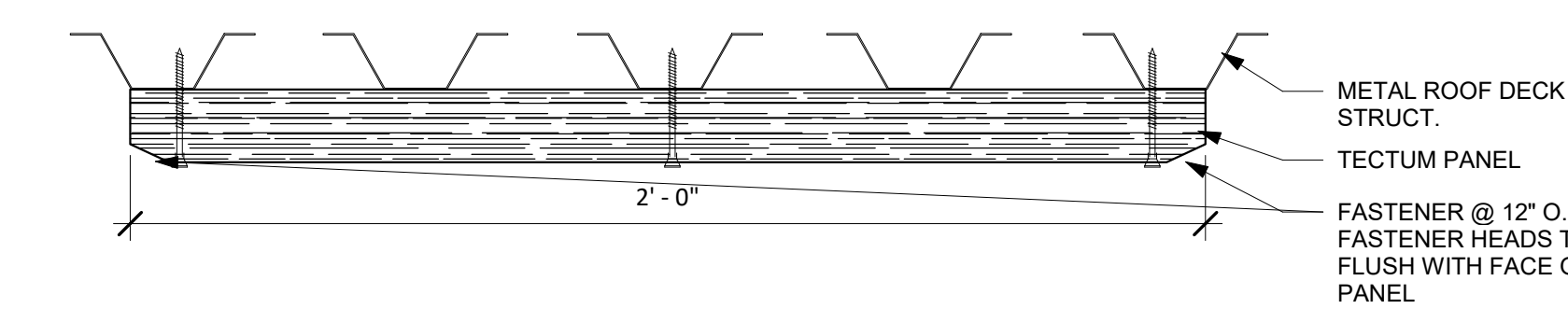


1 REFLECTED CEILING PLAN

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

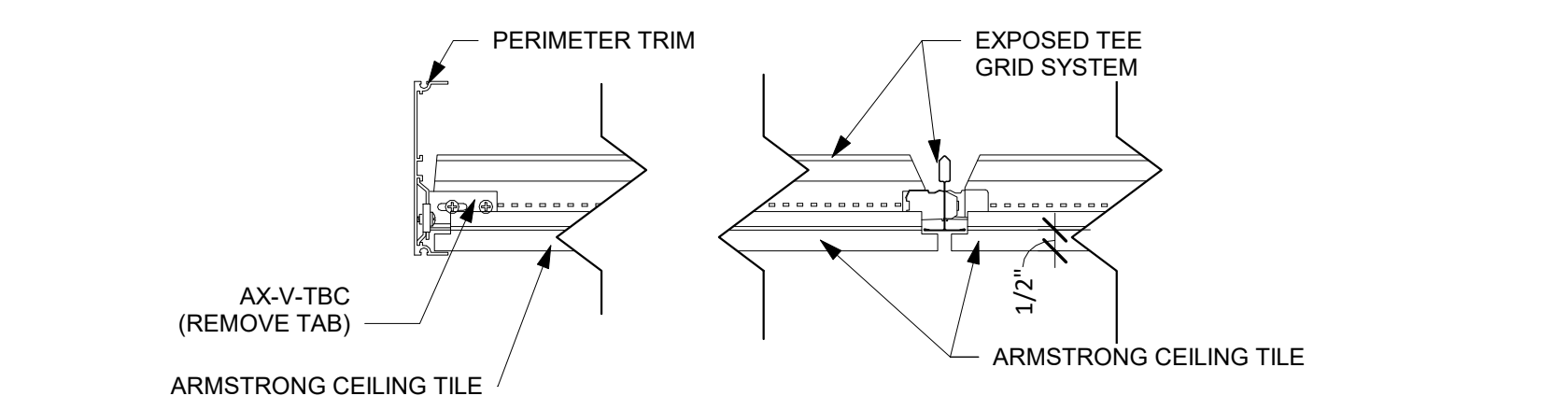
REFLECTED CEILING PLAN LEGEND

- 3/4" WOOD VENEER
- ARMSTRONG 2' x 8' METAL SOFFIT - SEE SPECS
- GYPSUM HARD-LID CEILING
- 2' x 2' ACT. DROP-IN CEILING
- ARMSTRONG 2' x 4' ACT. PERFORATED METAL DROP-IN CEILING - SEE SPECS
- OPEN TO PAINTED STRUCTURE ABOVE



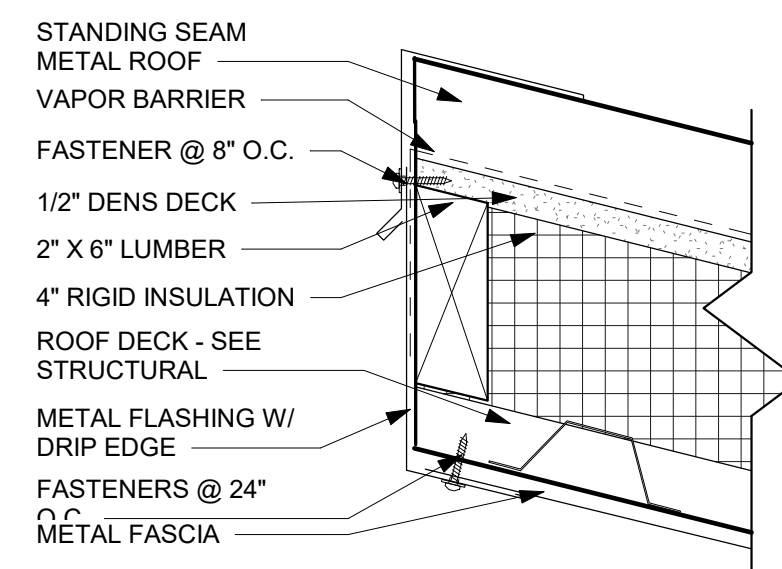
5 CEILING MOUNTING DETAIL

SCALE: 3" = 1'-0"

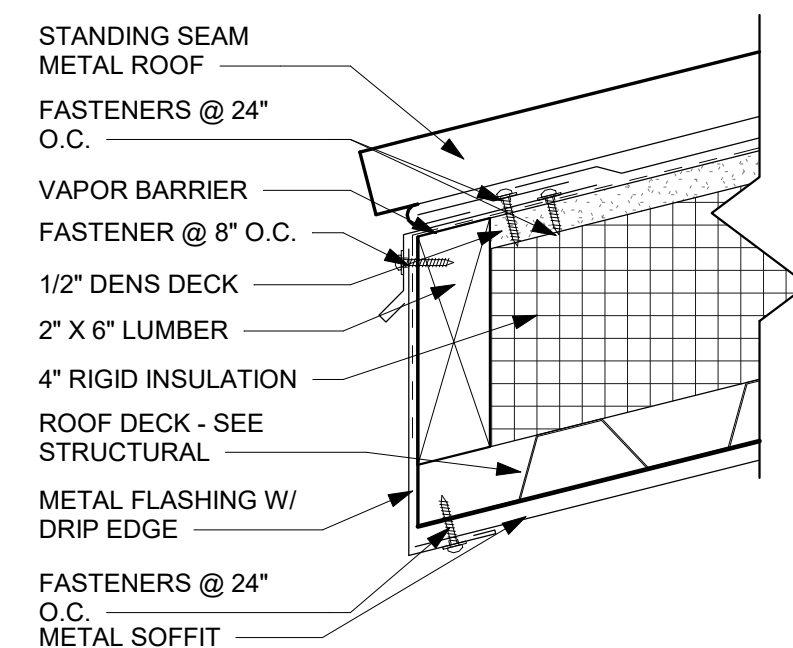


6 CEILING EDGE DETAIL

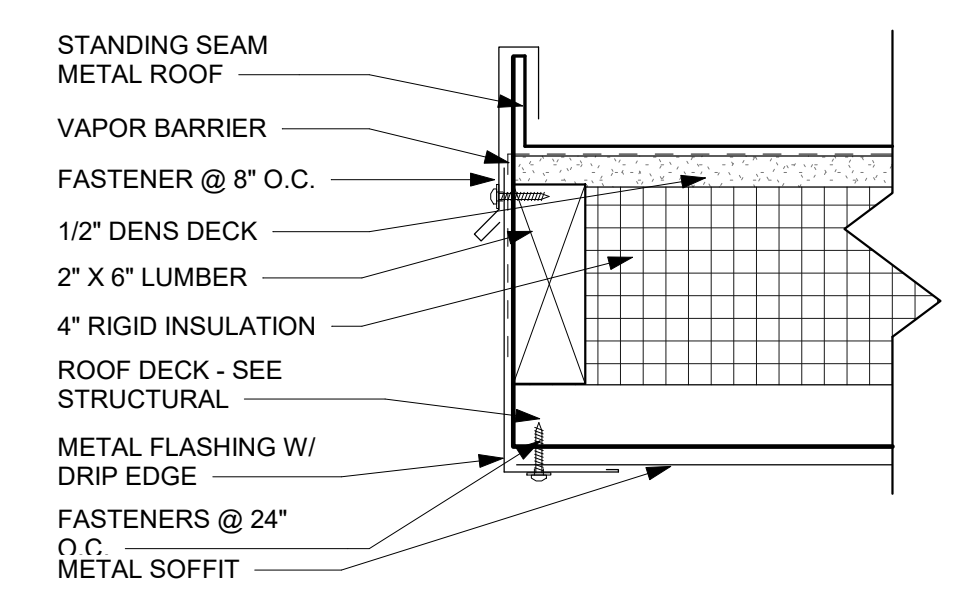
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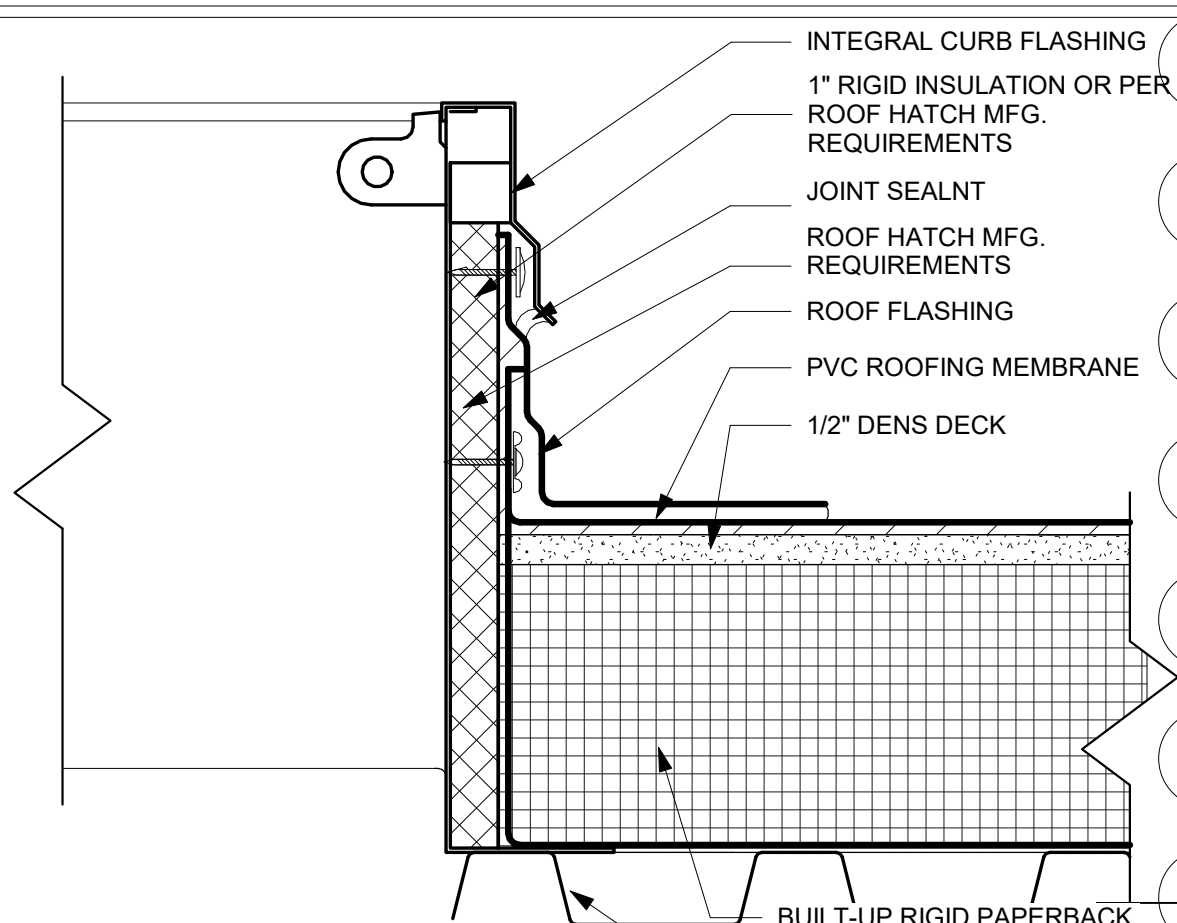
1 METAL ROOF @ TOP DETAIL
SCALE: 3" = 1'-0"



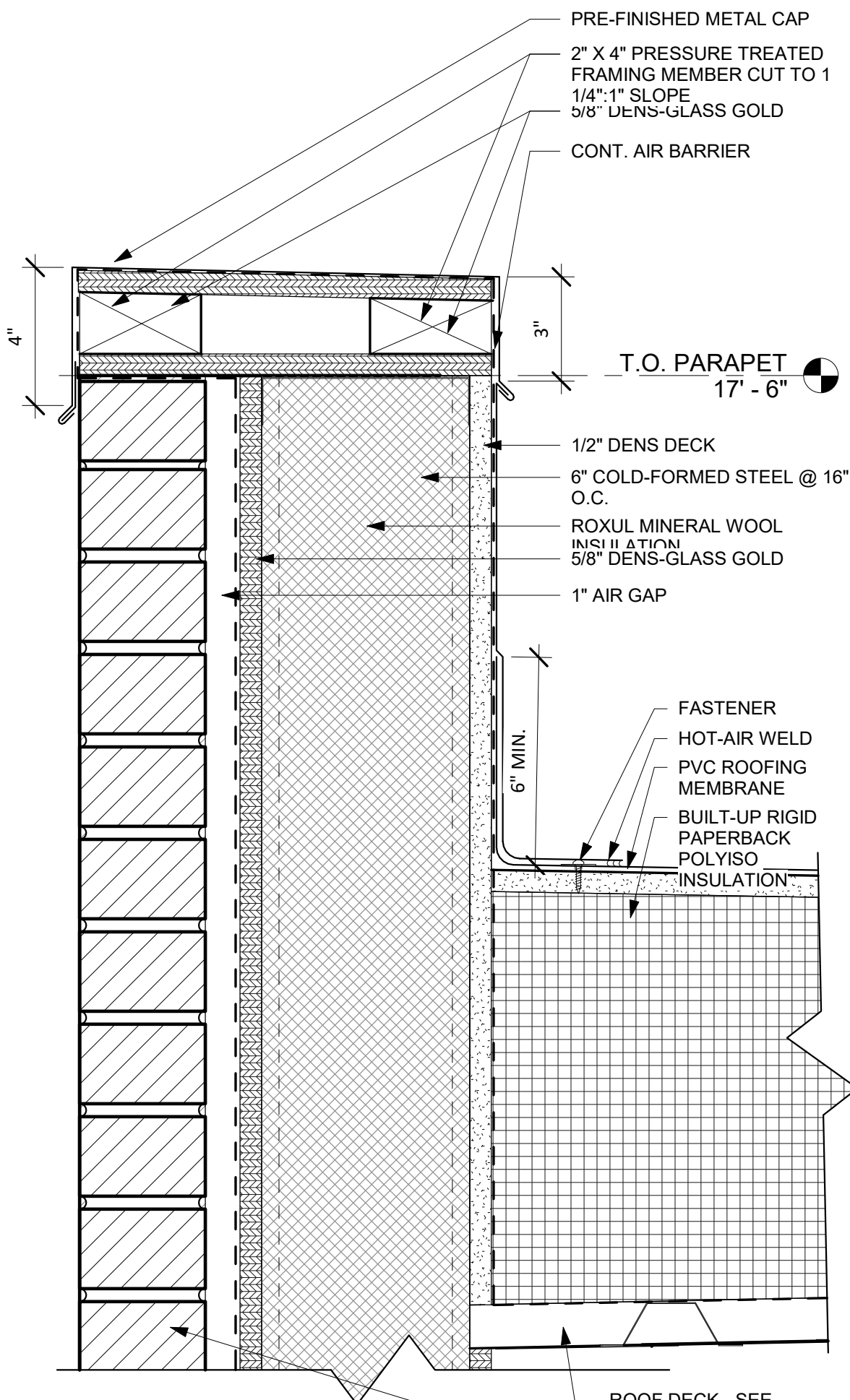
2 METAL ROOF FLASHING DETAIL
SCALE: 3" = 1'-0"



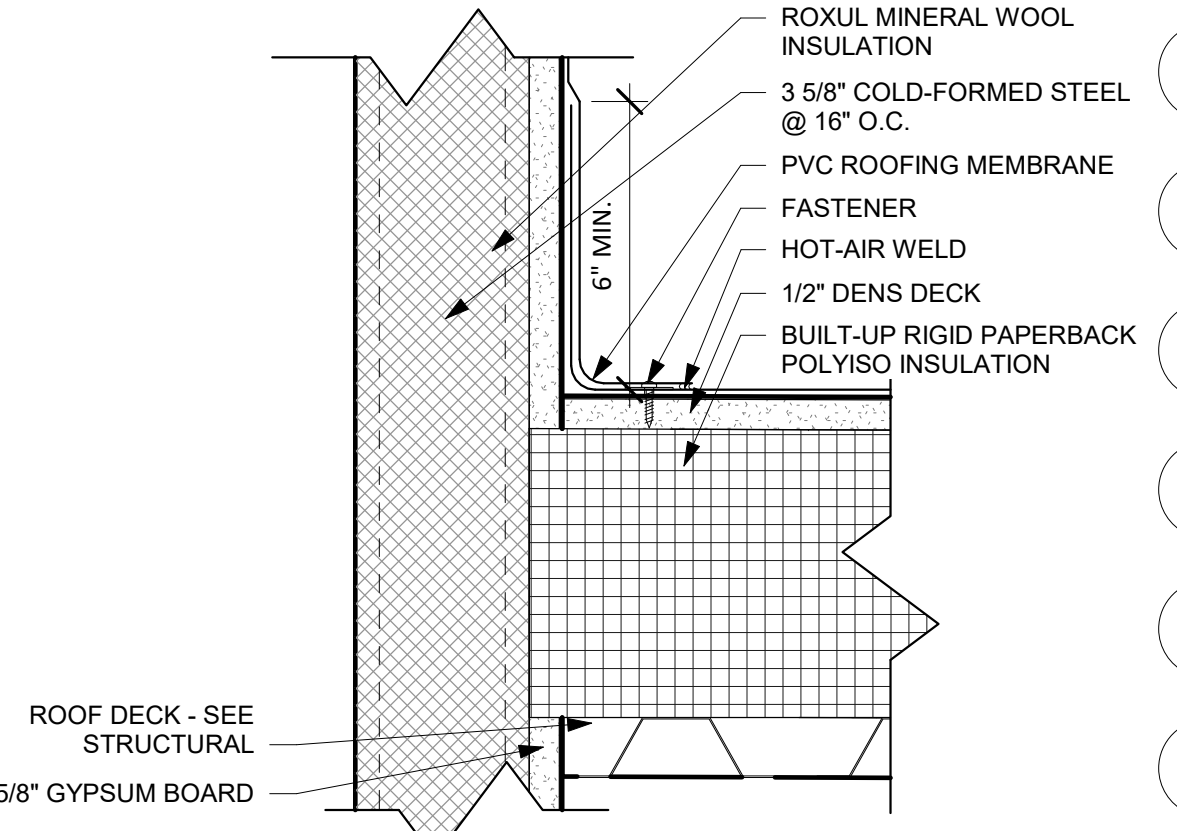
3 METAL ROOF @ SIDE DETAIL
SCALE: 3" = 1'-0"



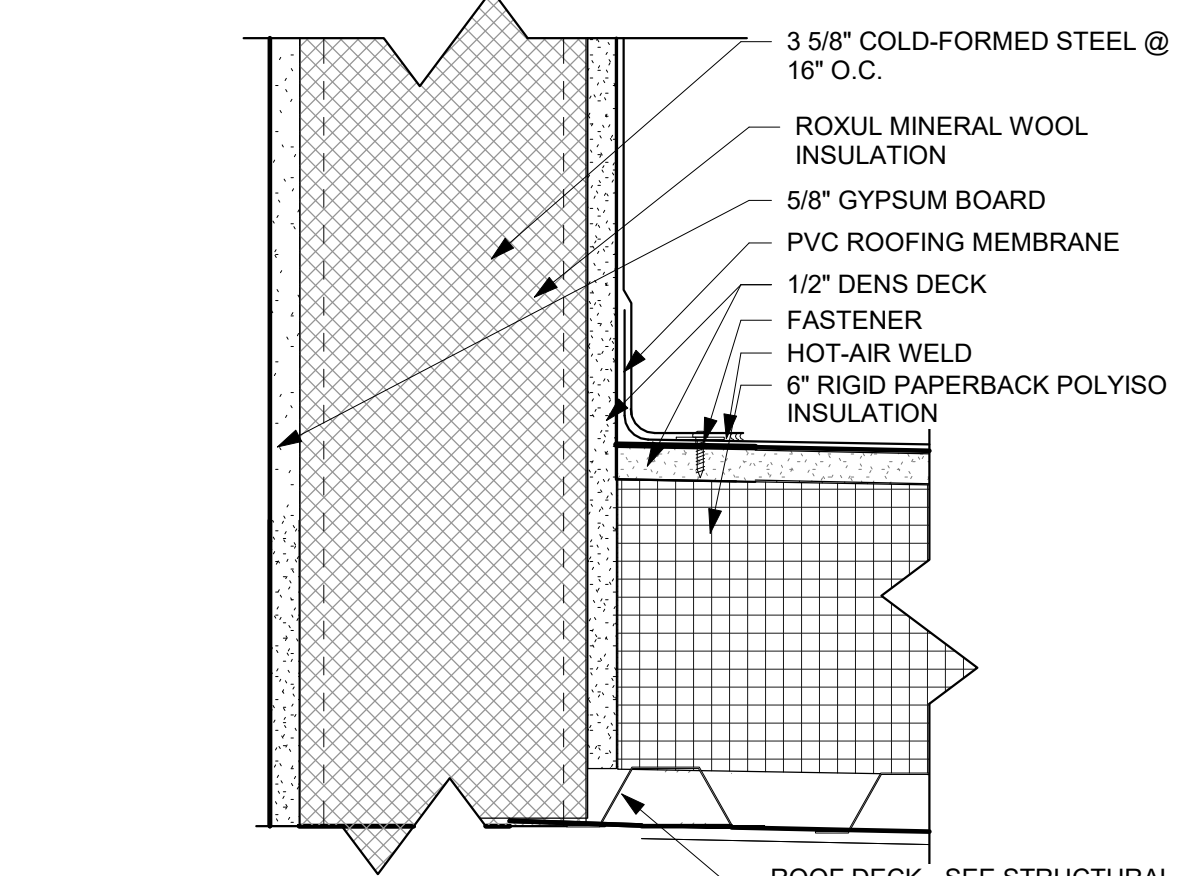
4 HATCH DETAIL
SCALE: 3" = 1'-0"



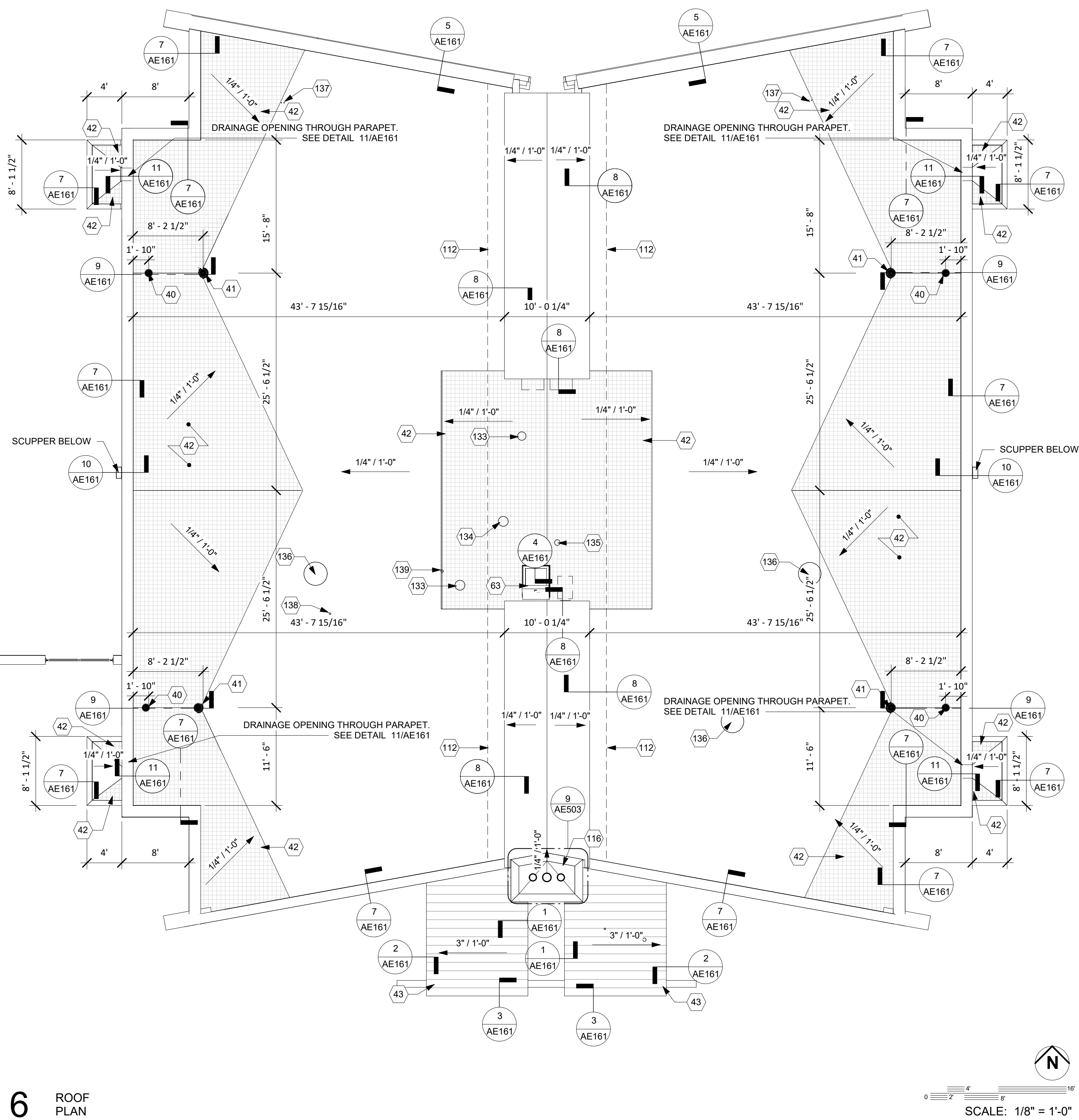
7 ROOF @ PARAPET DETAIL
SCALE: 3" = 1'-0"



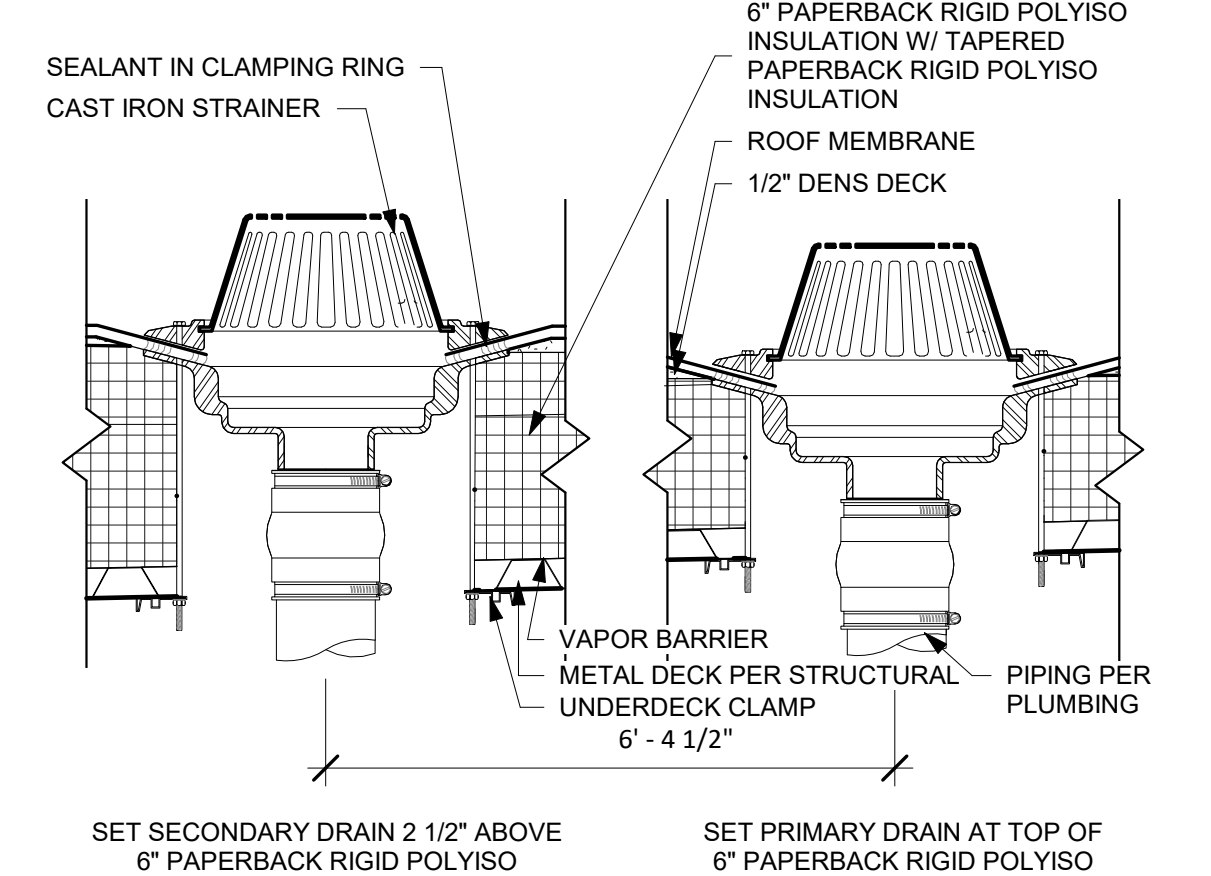
5 ROOF @ CURTAIN WALL DETAIL
SCALE: 3" = 1'-0"



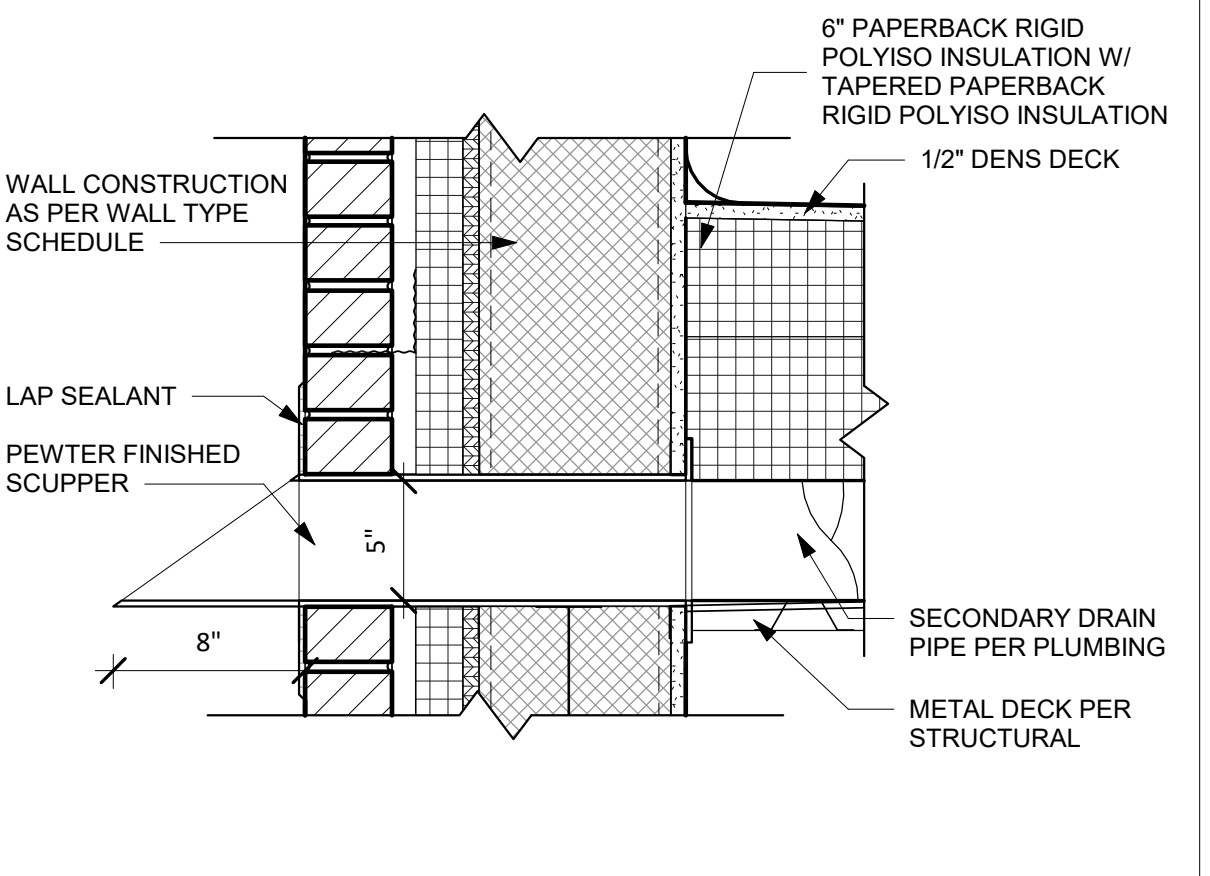
8 ROOF @ CLEARSTORY DETAIL
SCALE: 3" = 1'-0"



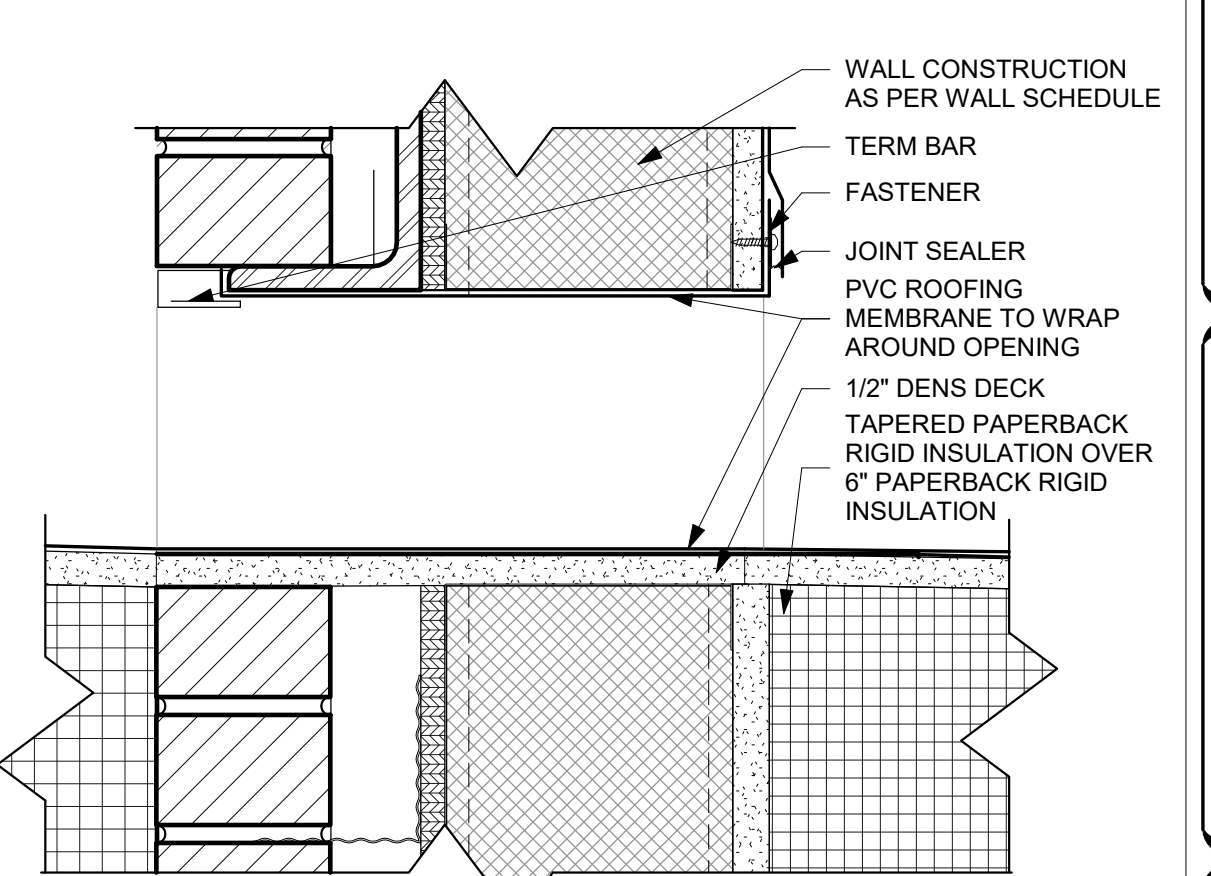
6 ROOF PLAN
SCALE: 1/8" = 1'-0"



9 ROOF DRAIN DETAIL
SCALE: 1 1/2" = 1'-0"



10 SCUPPER DETAIL
SCALE: 1 1/2" = 1'-0"



11 DRAINAGE OPENING THROUGH PARAPET
SCALE: 3" = 1'-0"

- GENERAL NOTES**
1. ALL DIMENSIONS ARE FROM THE FACE OF FRAMING U.N.O.
 2. HINGE SIDE OF DOORS ARE SIX INCHES (6") FROM ADJACENT IN WALL U.N.O.
 3. WALLS EXTEND TO THE BOTTOM OF ROOF DECK ABOVE. FINISH AROUND ROOF JOISTS, MECHANICAL, ELECTRICAL, ETC. U.N.O.

- KEYNOTES INDICATED THUS:** (X)
- 1 LOUVER WALL
 - 40 SECONDARY ROOF DRAIN, DRAINAGE LINE ROUTED TO SCUPPER
 - 41 PRIMARY 4" ROOF DRAIN
 - 42 ROOF MEMBRANE BUILT UP WITH INSULATION TO FORM CRICKETS
 - 43 STANDING SEAM METAL ROOF
 - 62 3' GATE WITHIN LOUVER WALL
 - 63 BILCO 30" X 30" ROOF ACCESS HATCH W/ FIX LADDER LEADING TO MECHANICAL LOFT BELOW
 - 112 3' ROOF WALK IN THIS LOCATION AND IN THE ROOFTOP MECHANICAL UNIT ENCLOSURE
 - 116 PREFINISHED METAL CHIMNEY CAP TO MATCH PARAPET WALL CAP - SLOPE TO DRAIN TOWARD SKYLIGHT ROOF.
 - 133 8" MECHANICAL ROOF PENETRATION - VERIFY WITH MECHANICAL
 - 134 16" MECHANICAL ROOF PENETRATION - VERIFY WITH MECHANICAL
 - 135 6" MECHANICAL ROOF PENETRATION - VERIFY WITH MECHANICAL
 - 136 MECHANICAL UNIT WITH PENETRATION - VERIFY WITH MECHANICAL FOR SIZE
 - 137 2" PLUMBING ROOF PENETRATION - VERIFY WITH PLUMBING
 - 138 2" PLUMBING ROOF PENETRATION - VERIFY WITH MECHANICAL
 - 139 4" PLUMBING ROOF PENETRATION - VERIFY WITH MECHANICAL

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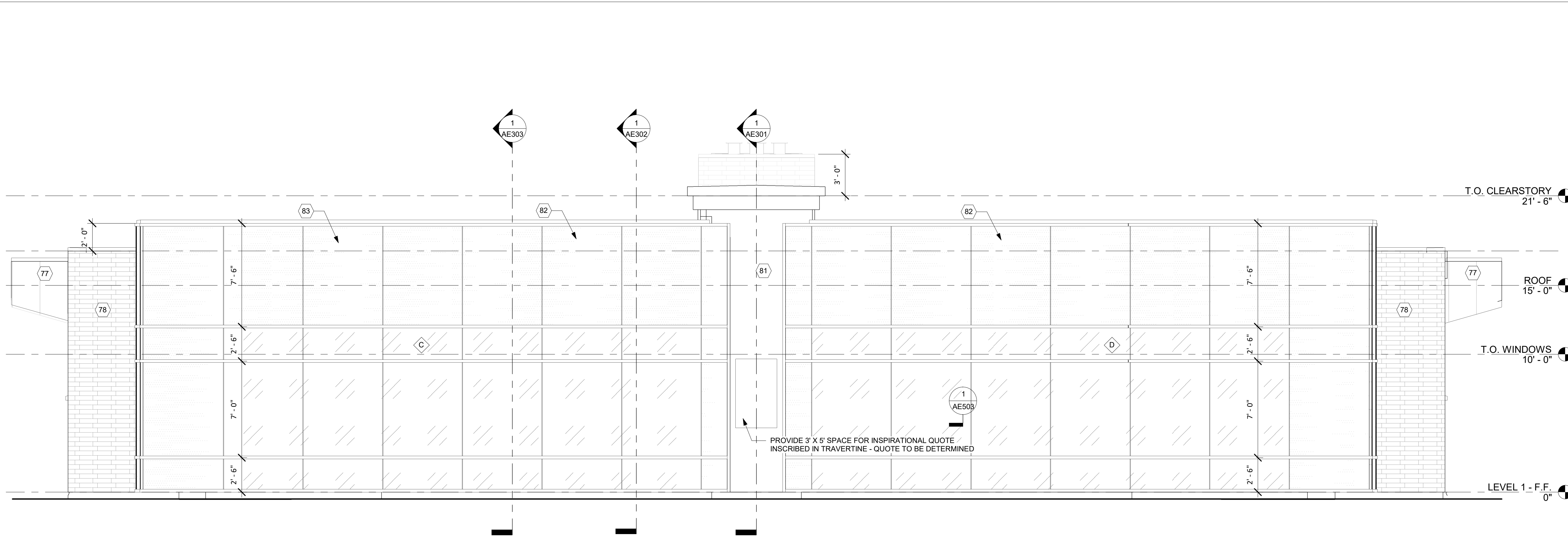
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NO.	DESCRIPTION	DATE
1	ADDENDUM 3	1/30/2020

PROJECT NAME:
BRIGHAM YOUNG UNIVERSITY - IDAHO SPORI ANNEX

PROJECT NO: 11513

SHEET NAME:
ROOF PLAN & DETAILS

SHEET NUMBER:
AE161



1 NORTH ELEVATION

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

- GENERAL NOTES**
1. ALL DIMENSIONS ARE FROM THE FACE OF FRAMING U.N.O.
 2. HINGE SIDE OF DOORS ARE SIX INCHES (6") FROM ADJACENT IN WALL U.N.O.
 3. WALLS EXTEND TO THE BOTTOM OF ROOF DECK ABOVE. FINISH AROUND ROOF JOISTS, MECHANICAL, ELECTRICAL, ETC. U.N.O.

- KEYNOTES INDICATED THUS: (X)**
- 43 STANDING SEAM METAL ROOF
 - 72 EXPANSION JOINT IN THIS LOCATION - SEE DETAIL S/AE503
 - 73 STANDARD GOLDEN BUFF BRICK W/ 3/4" INSET
 - 74 PRECAST CONCRETE SILL W/ GROUT JOINTS CENTERED UNDER VERTICAL MULLIONS OF RESPECTIVE WINDOW
 - 77 2" INSULATED METAL WALL PANEL
 - 78 STANDARD GOLDEN BUFF BRICK
 - 79 SCUPPER CENTERED BETWEEN WINDOWS
 - 80 METAL PANEL SOFFIT - SEE AE141
 - 81 1" TRAVERTINE SURFACE
 - 82 KAWNEER 1600 CURTAIN WALL SYSTEM
 - 83 SEE SHEET AE601 FOR WINDOW TYPES
 - 110 CONCRETE PAD CENTERED BENEATH SCUPPER



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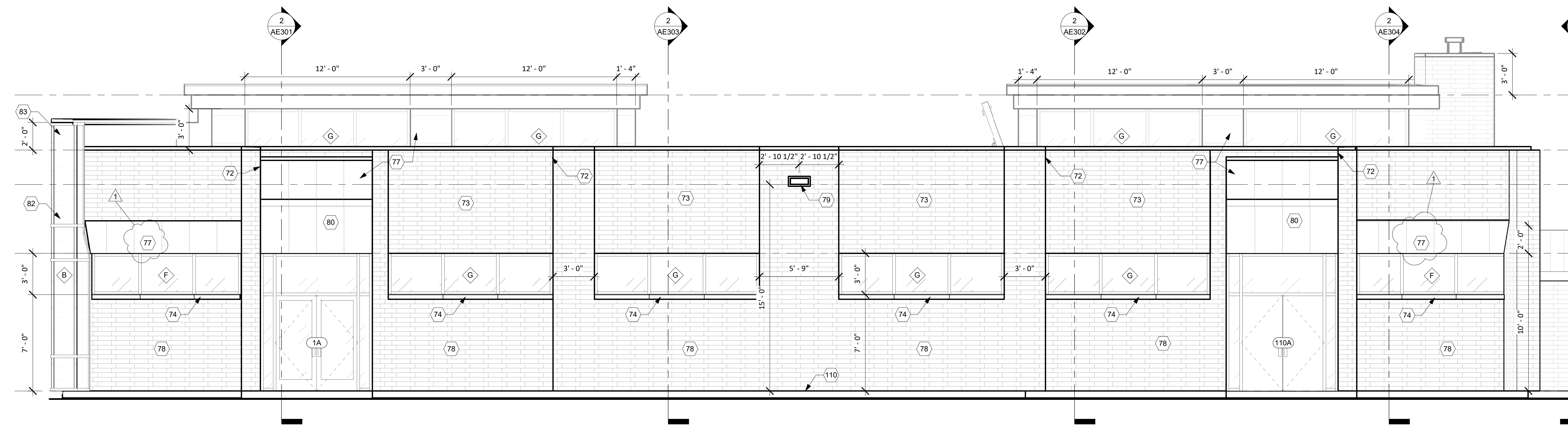


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2 EAST ELEVATION

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

PROJECT NAME:

BRIGHAM YOUNG UNIVERSITY - IDAHO
SPORI ANNEX

PROJECT NO: 11513

SHEET NUMBER:

EXTERIOR ELEVATIONS

AE201



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PROJECT NAME:

BRIGHAM YOUNG UNIVERSITY - IDAHO
SPORI ANNEX

PROJECT NO: 11513

SHEET NAME:

EXTERIOR ELEVATIONS

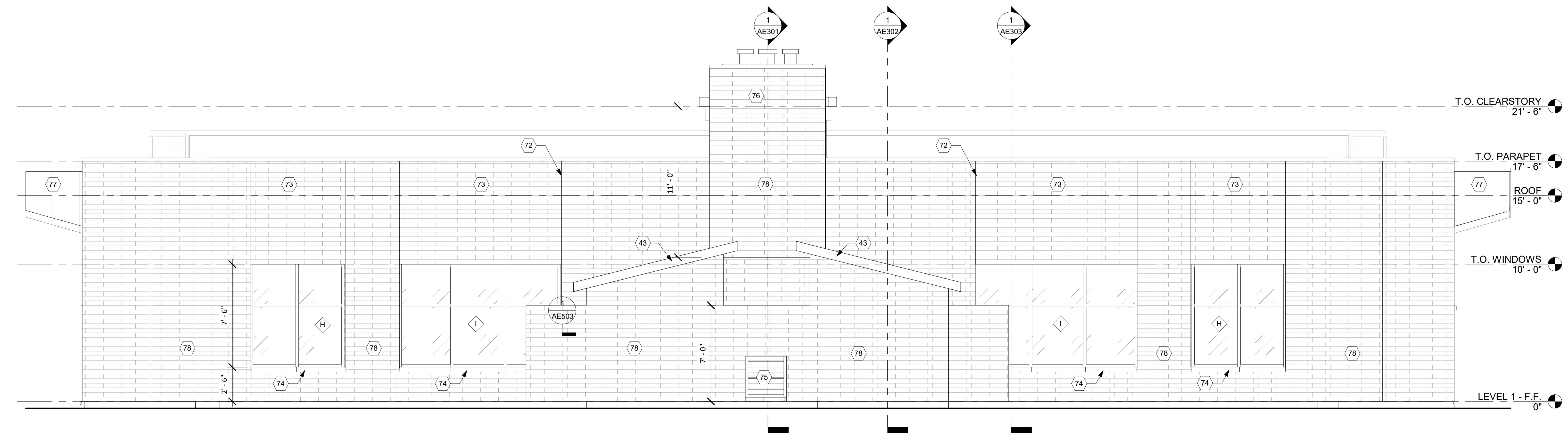
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AE202

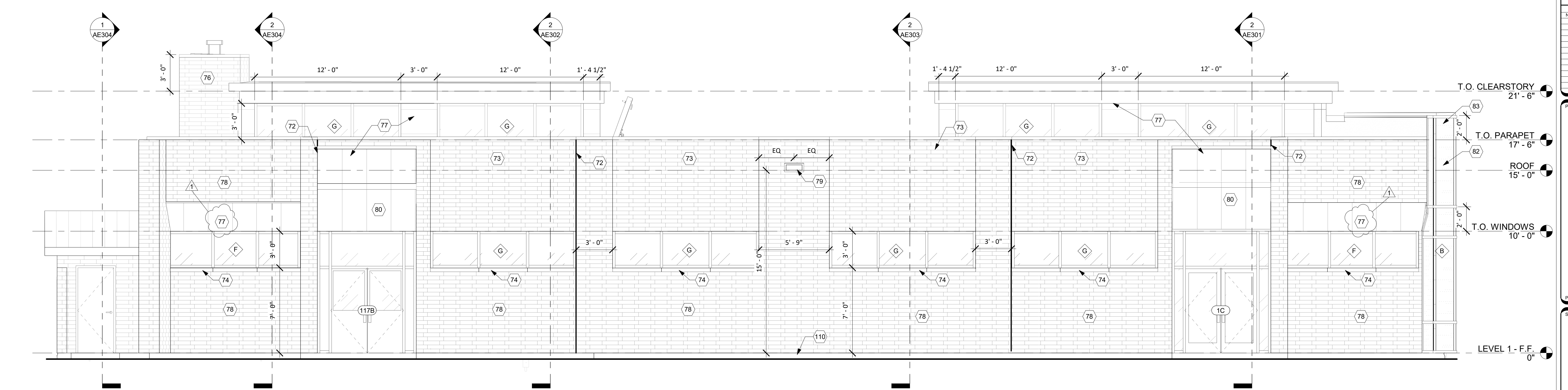
- GENERAL NOTES**
- ALL DIMENSIONS ARE FROM THE FACE OF FRAMING U.N.O.
 - HINGE SIDE OF DOORS ARE SIX INCHES (6") FROM ADJACENT IN WALL U.N.O.
 - WALLS EXTEND TO THE BOTTOM OF ROOF DECK ABOVE. FINISH AROUND ROOF JOISTS, MECHANICAL, ELECTRICAL, ETC. U.N.O.

KEYNOTES
INDICATED THUS: (X)

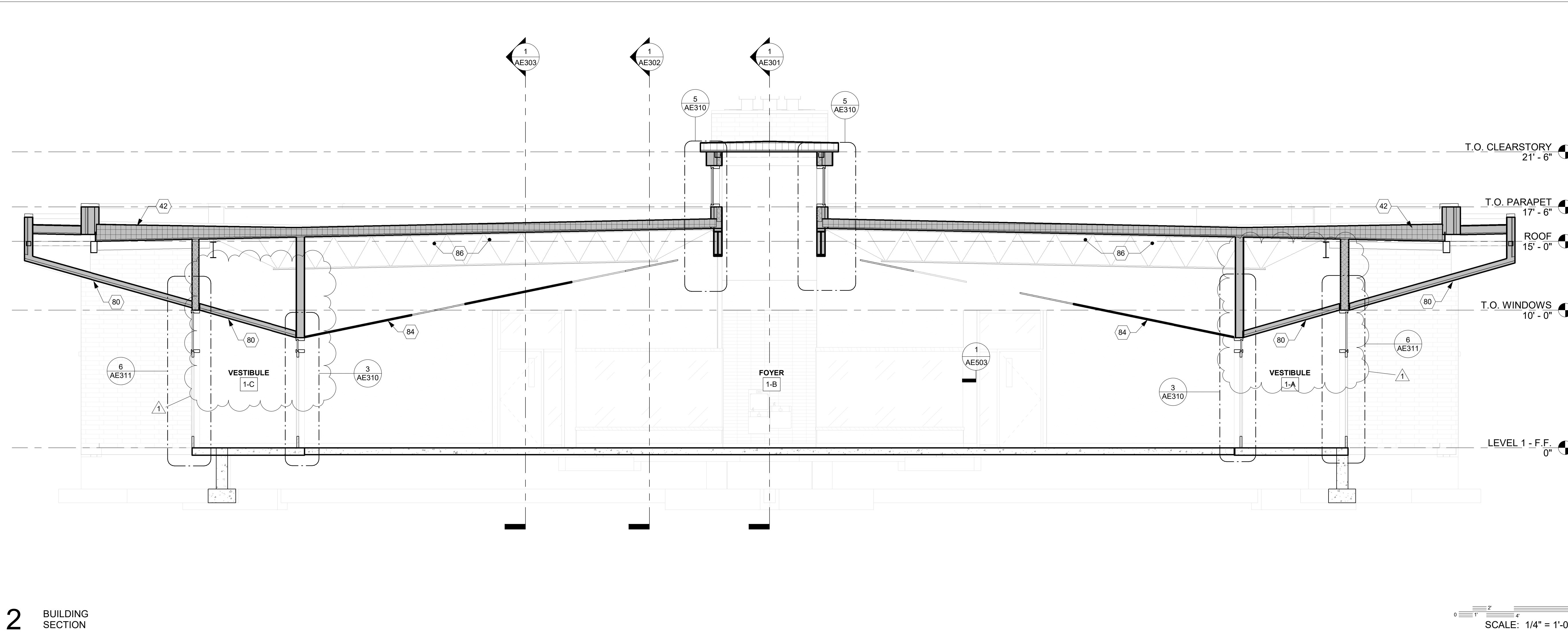
- STANDING SEAM METAL ROOF
- EXPANSION JOINT IN THIS LOCATION - SEE DETAIL S/AE503
- STANDARD GOLDEN BUFF BRICK W/ 3/4" INSET
- PRECAST CONCRETE SILL W/ GROUT JOINTS CENTERED UNDER VERTICAL MULLIONS OF RESPECTIVE WINDOW
- 3' X 5' LOUVERED VENT IN WALL
- RAKU CHIMNEY
- 2" INSULATED METAL WALL PANEL
- STANDARD GOLDEN BUFF BRICK
- SCUPPER CENTERED BETWEEN WINDOWS
- METAL PANEL SOFFIT - SEE AE141
- KAWNEER 1600 CURTAIN WALL SYSTEM
- SEE SHEET AE601 FOR WINDOW TYPES
- CONCRETE PAD CENTERED BENEATH SCUPPER



1 SOUTH ELEVATION



2 WEST ELEVATION



2 BUILDING SECTION

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

- GENERAL NOTES**
1. ALL DIMENSIONS ARE FROM THE FACE OF FRAMING U.N.O.
 2. HINGE SIDE OF DOORS ARE SIX INCHES (6") FROM ADJACENT IN WALL U.N.O.
 3. WALLS EXTEND TO THE BOTTOM OF ROOF DECK ABOVE. FINISH AROUND ROOF JOISTS, MECHANICAL, ELECTRICAL, ETC. U.N.O.

- KEYNOTES INDICATED THUS: (X)**
- 1 LOUVER WALL
 - 3 MECHANICAL LOFT PULL-DOWN ACCESS LADDER
 - 42 DRINKING FOUNTAIN AND BOTTLE FILLING STATION
 - 62 ROOF MEMBRANE BUILT UP WITH INSULATION TO FORM CRICKETS
 - 62 3' GATE WITHIN LOUVER WALL
 - 75 3' X 5' LOUVERED VENT IN WALL
 - 80 METAL PANEL SOFFIT - SEE AE141
 - 84 PERFORATED ALUMINUM CEILING WITH SLOPE - SEE AE151
 - 86 EXPOSED STRUCTURE IN THIS AREA - SEE STRUCTURAL



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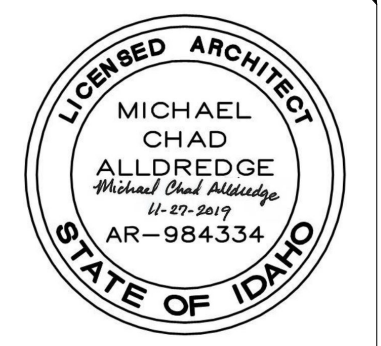
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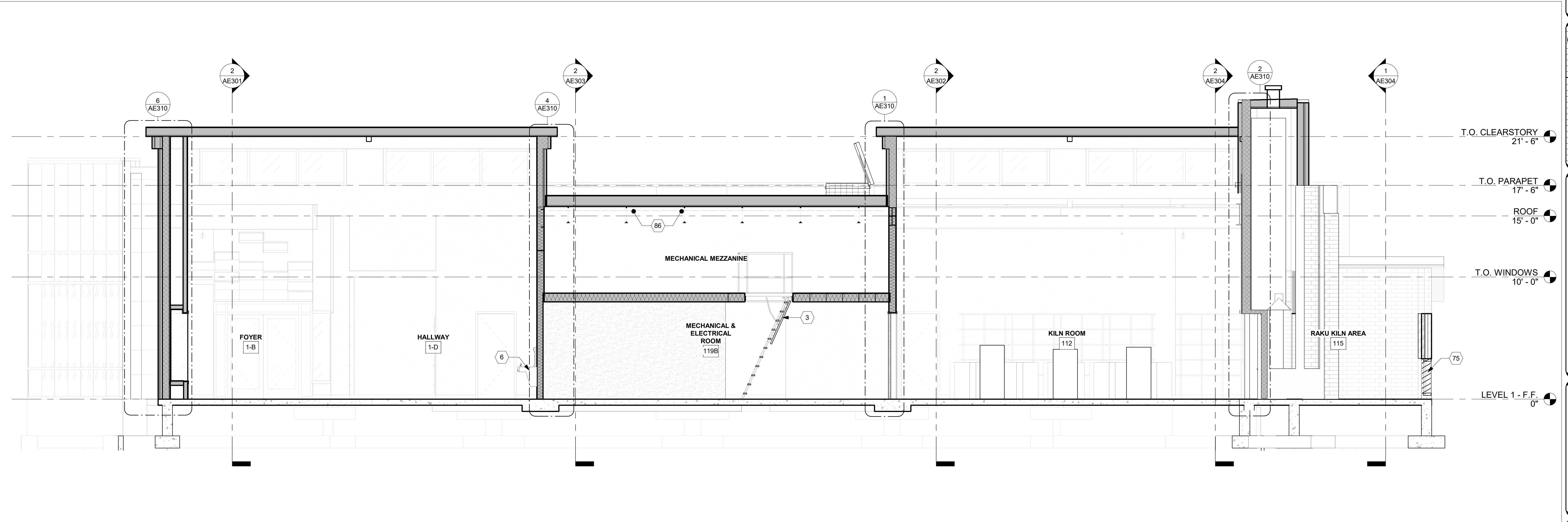


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NO.	DESCRIPTION	DATE
1	ADDENDUM 3	1/30/2020



1 BUILDING SECTION

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PROJECT NAME:

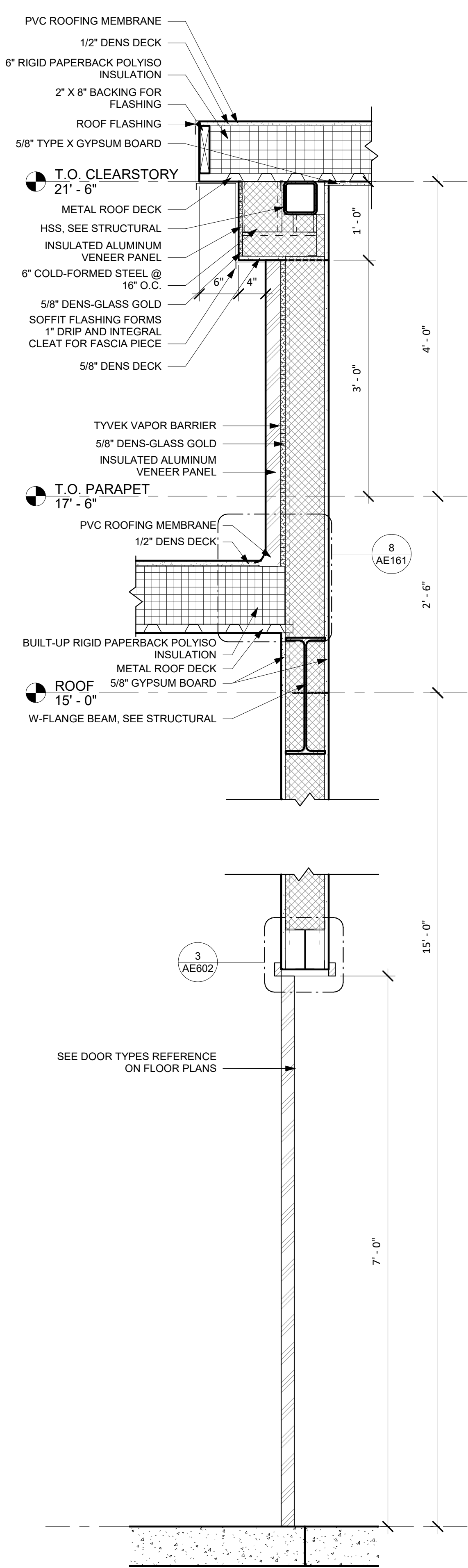
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PROJECT NO: 11513

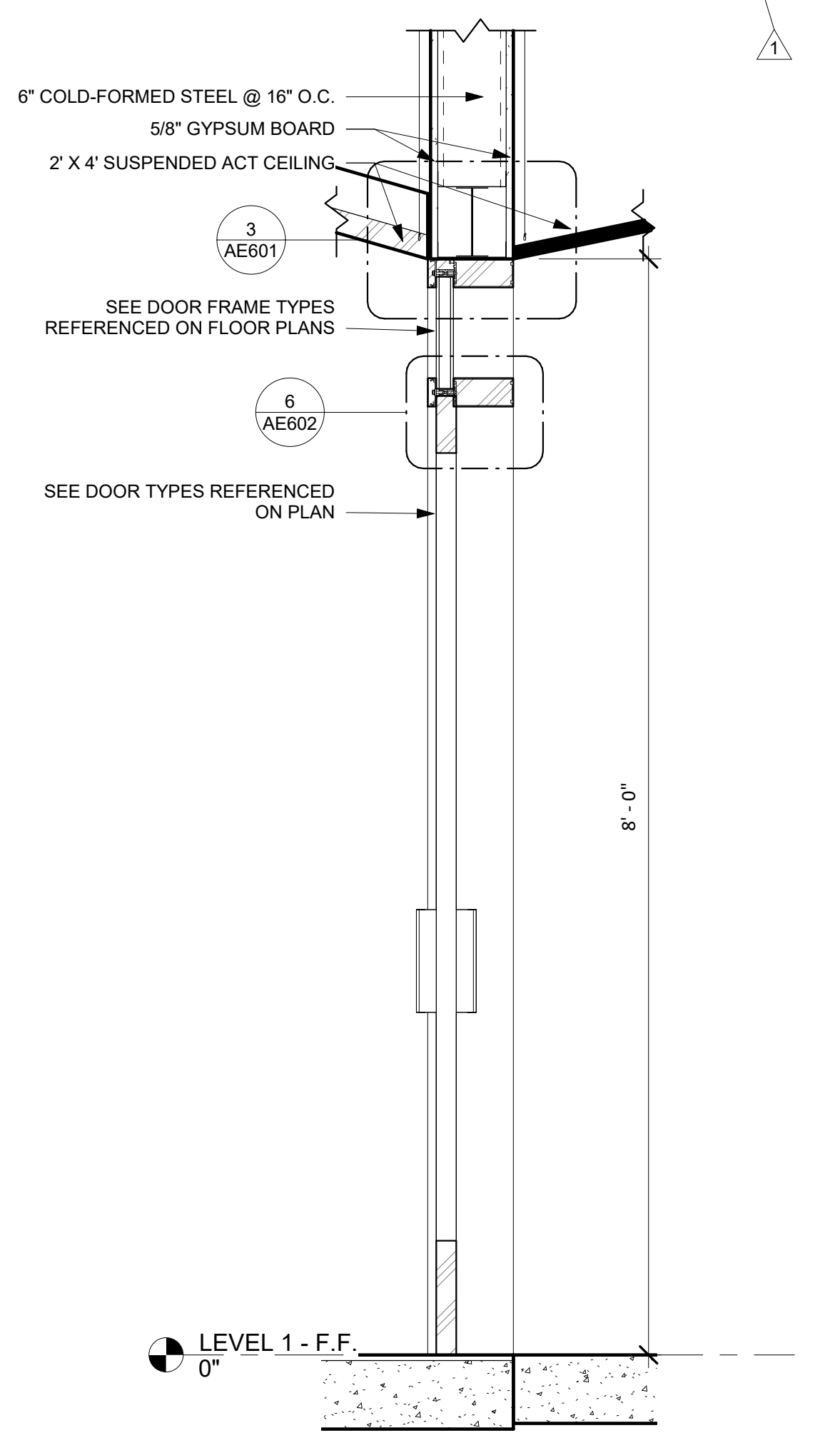
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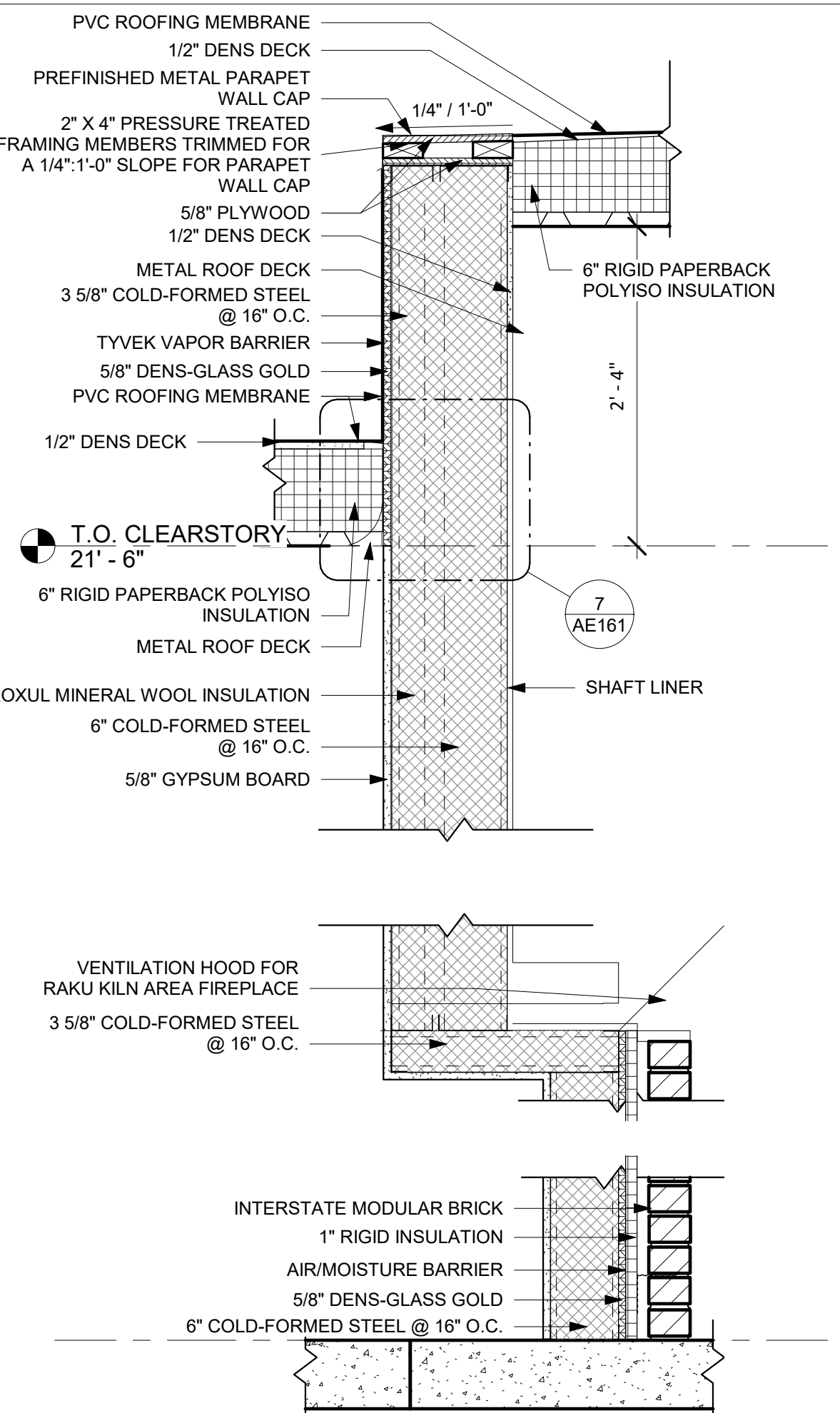
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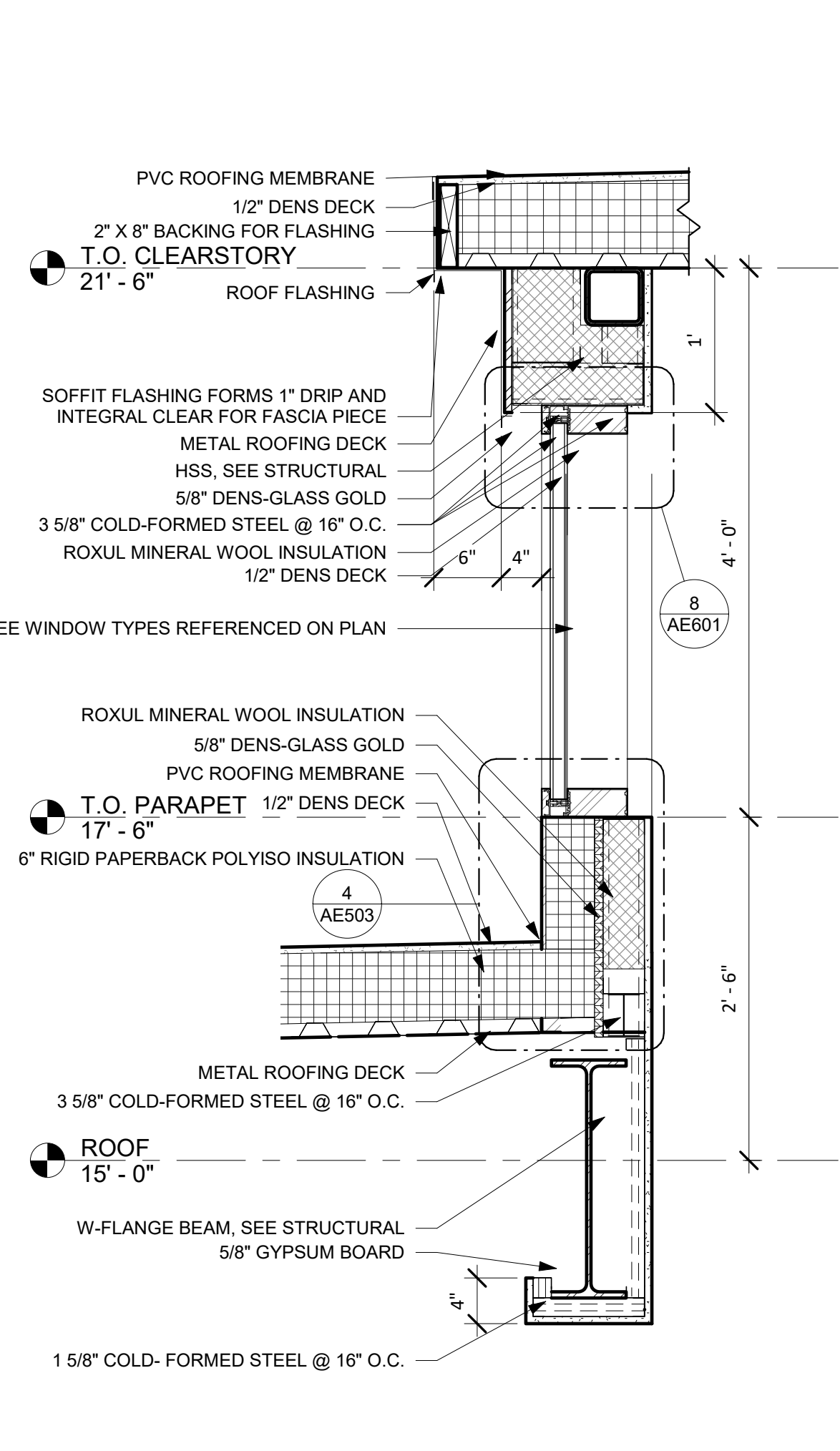
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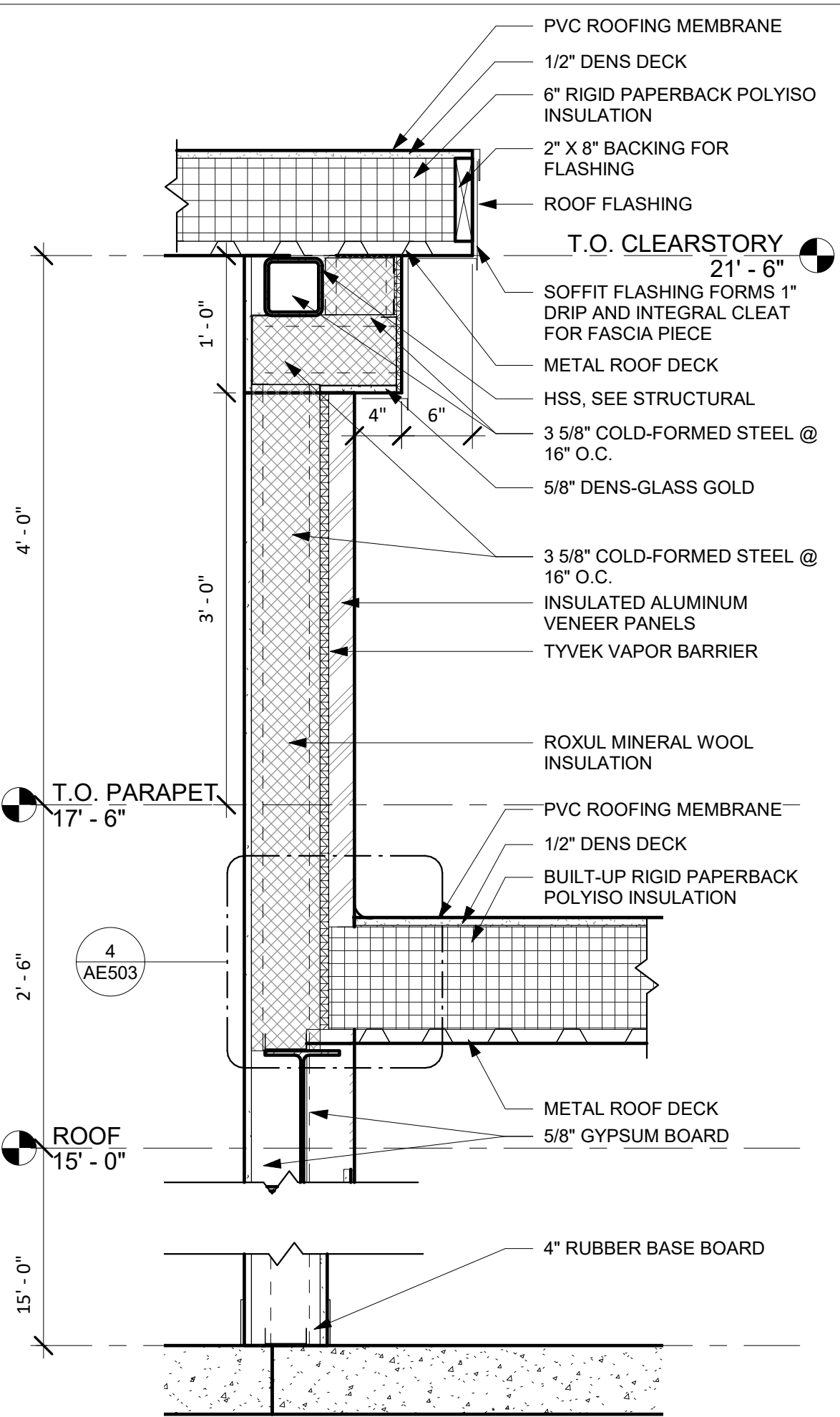
3 INNER ENTRY WALL SECTION
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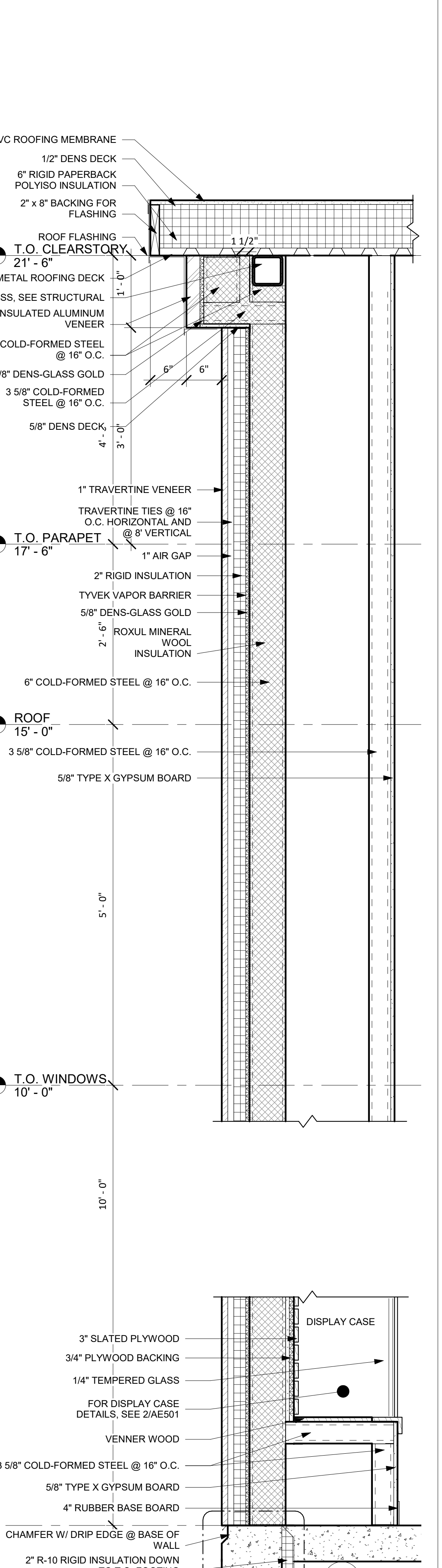
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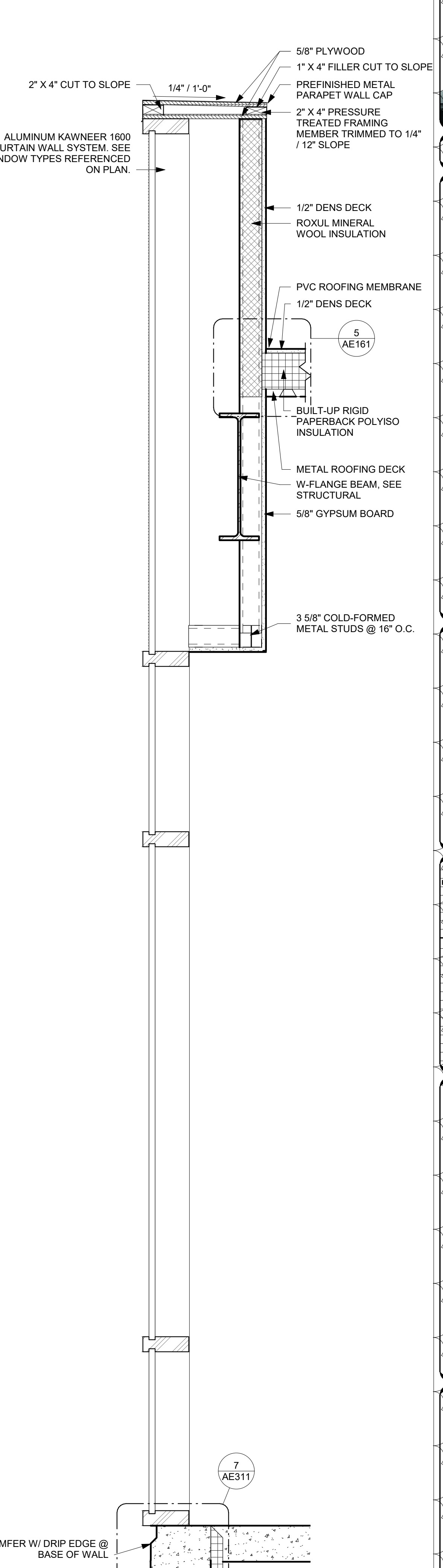
5 EAST & WEST CLEARSTORY WALL SECTION
SCALE: 1" = 1'-0"



4 ENDS OF CLEARSTORY WALL SECTION
SCALE: 1" = 1'-0"



6 NORTH CLEARSTORY WALL SECTION
SCALE: 1" = 1'-0"



7 NORTH CURTAIN WALL WALL SECTION
SCALE: 1" = 1'-0"



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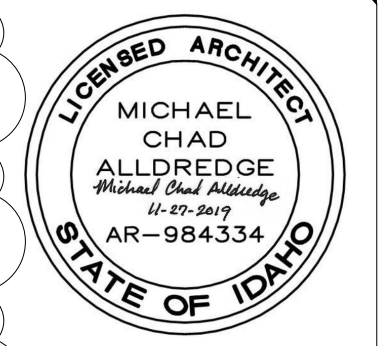
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1	ADDENDUM 3			12/01/2020

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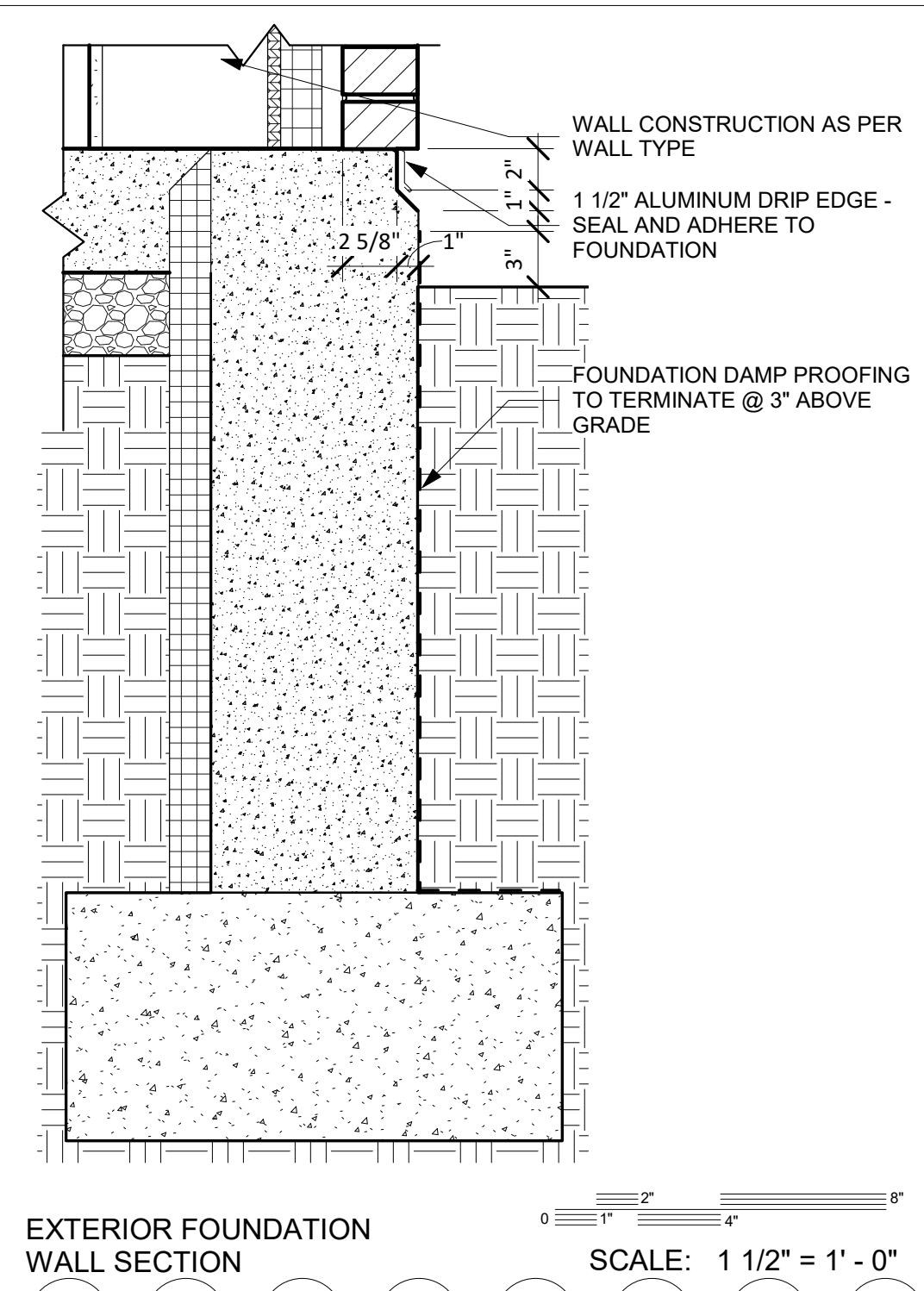
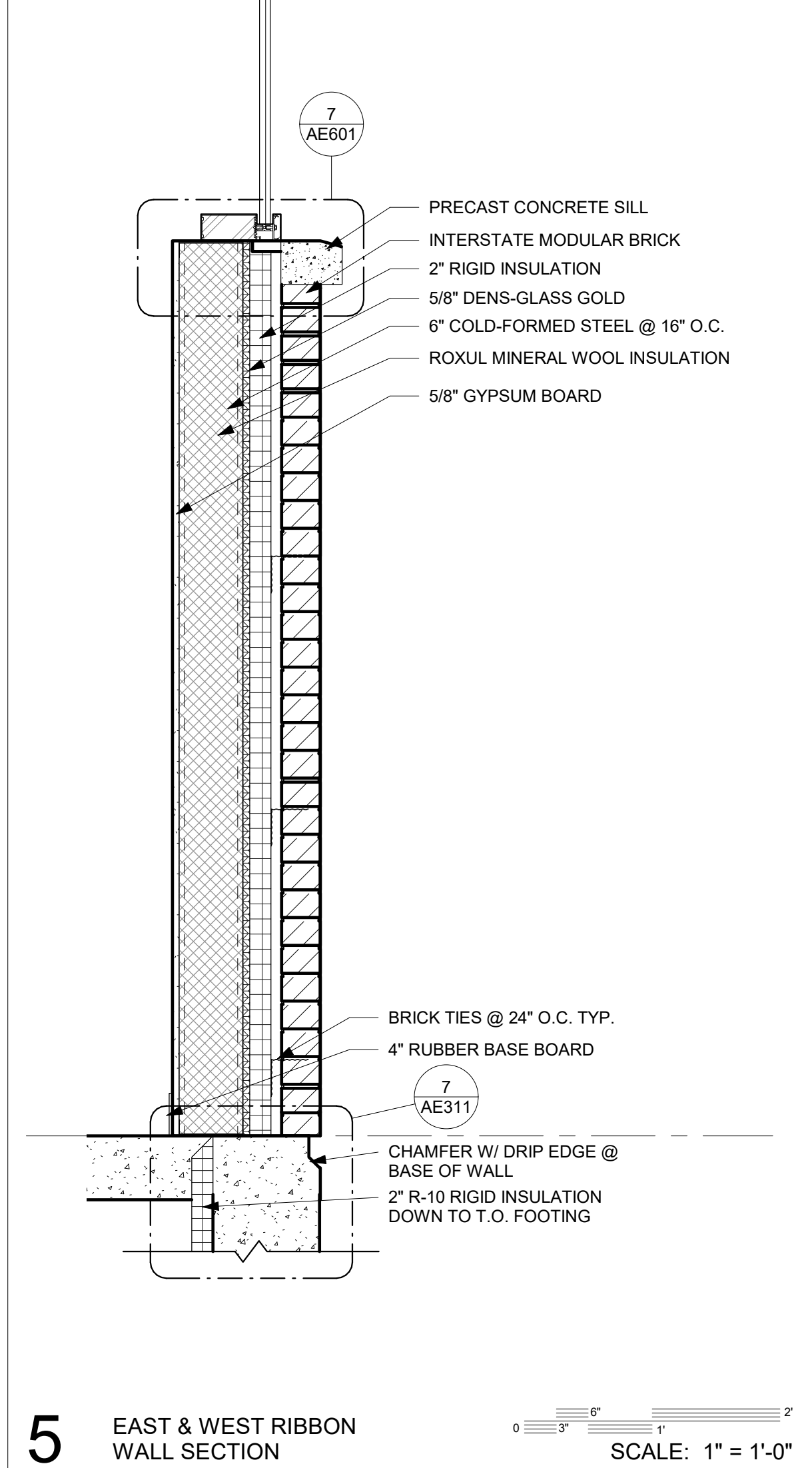
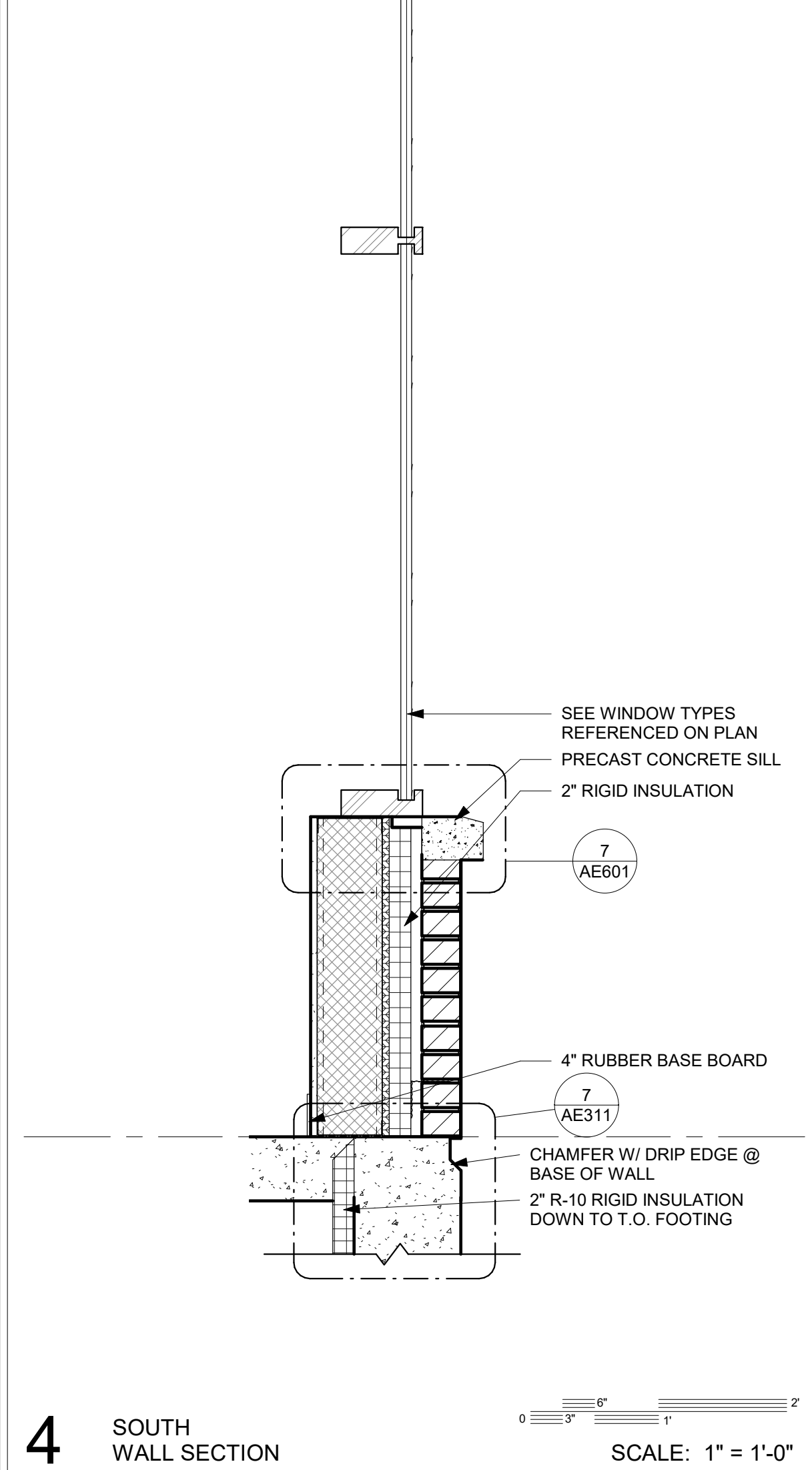
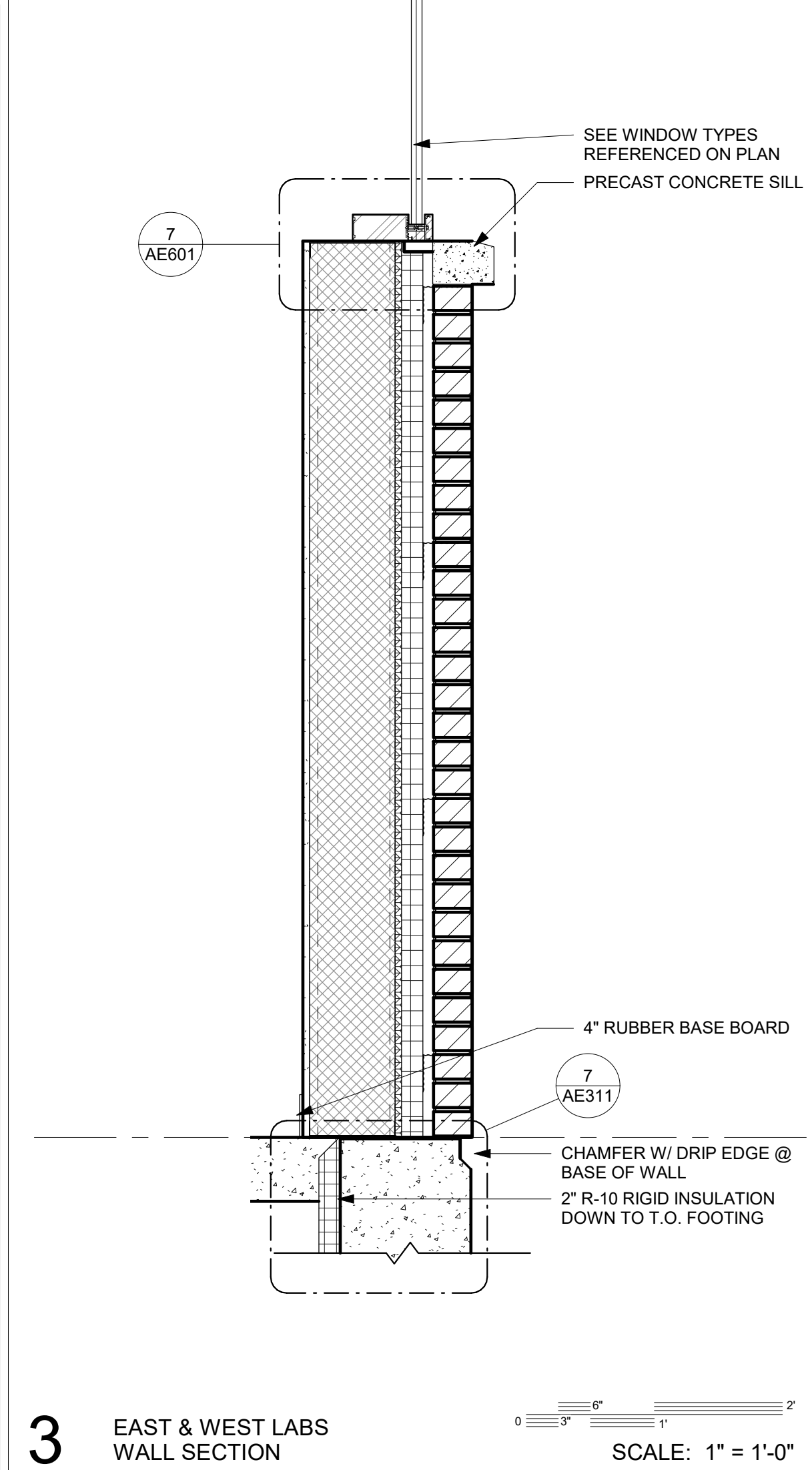
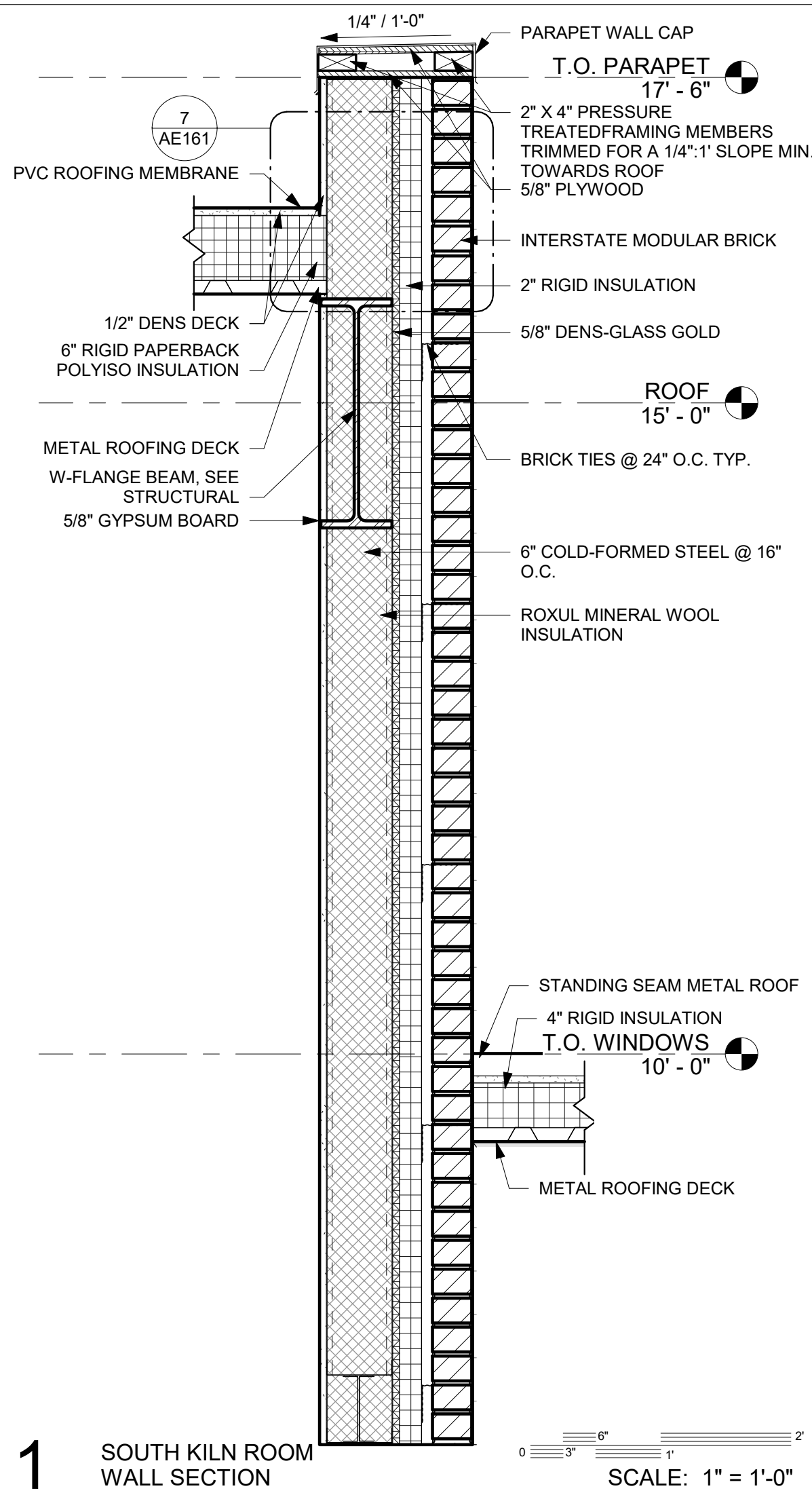
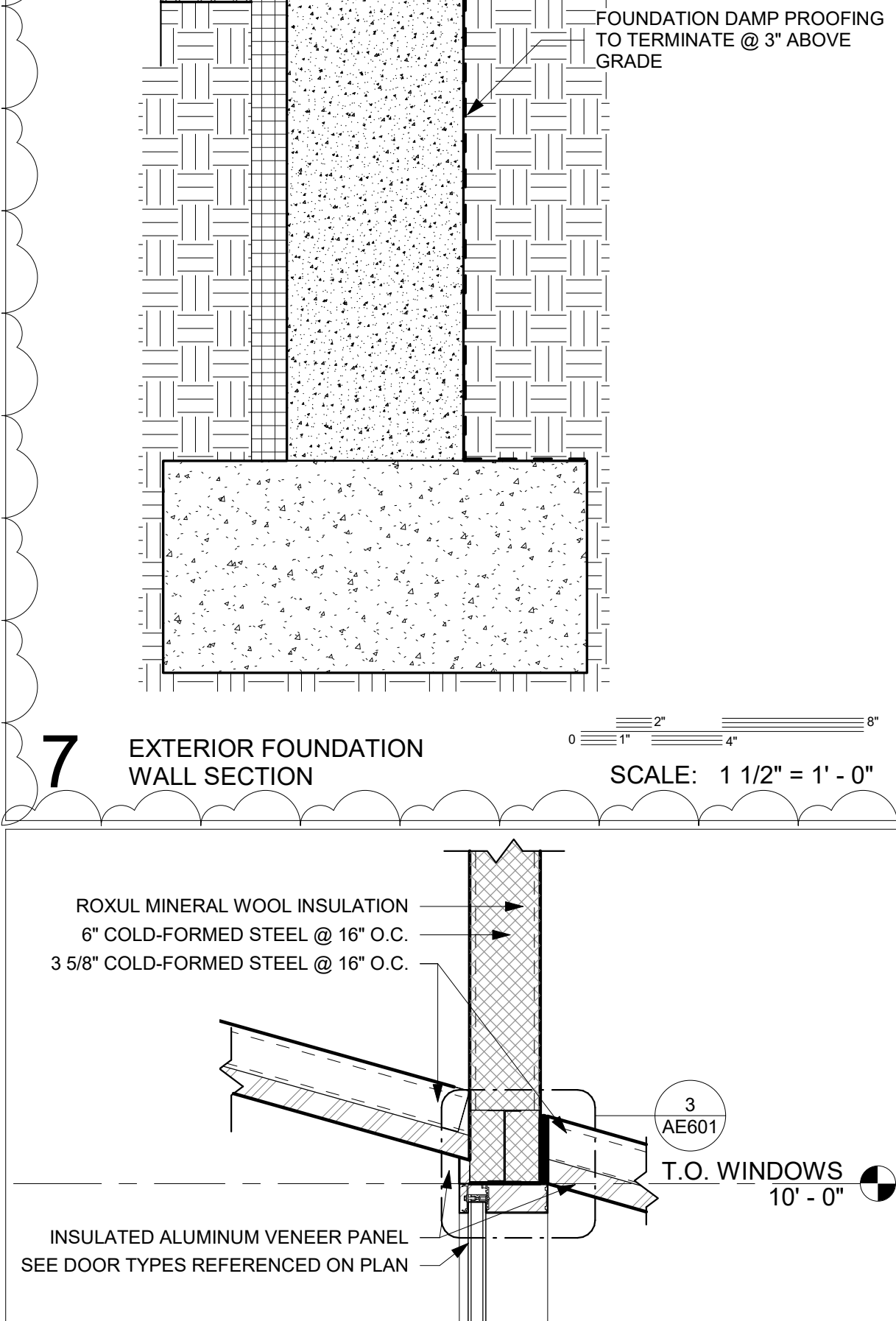
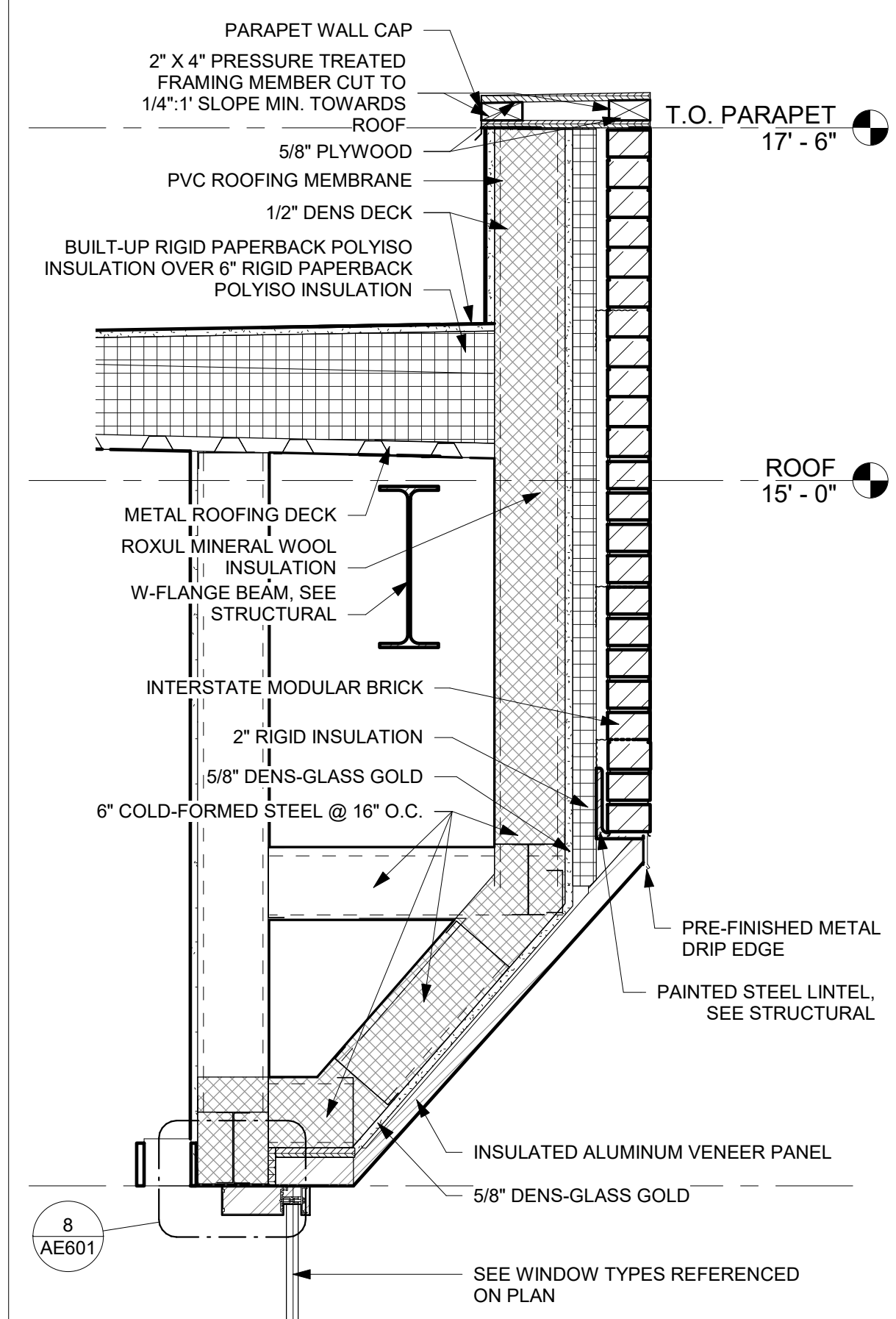
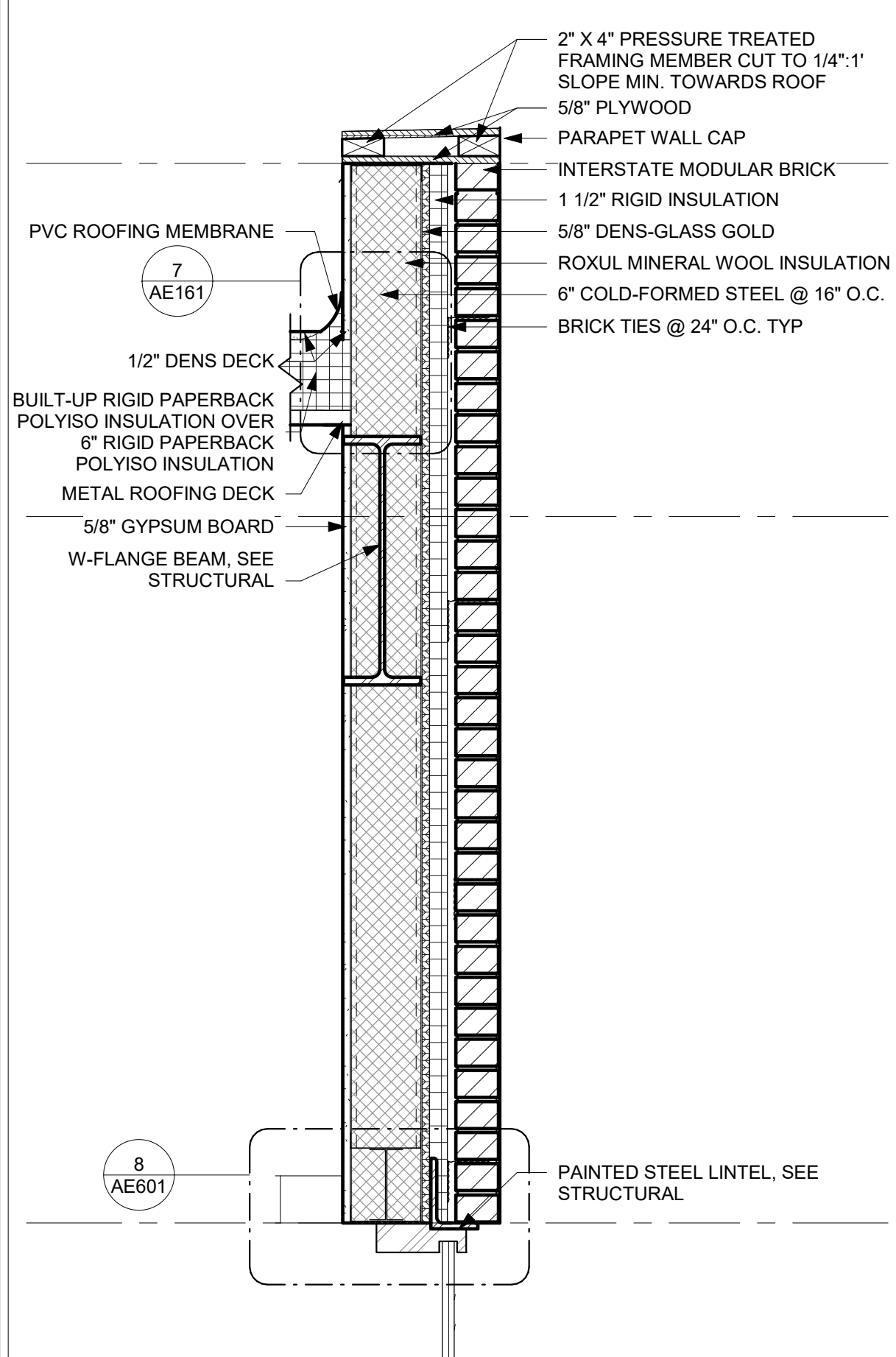
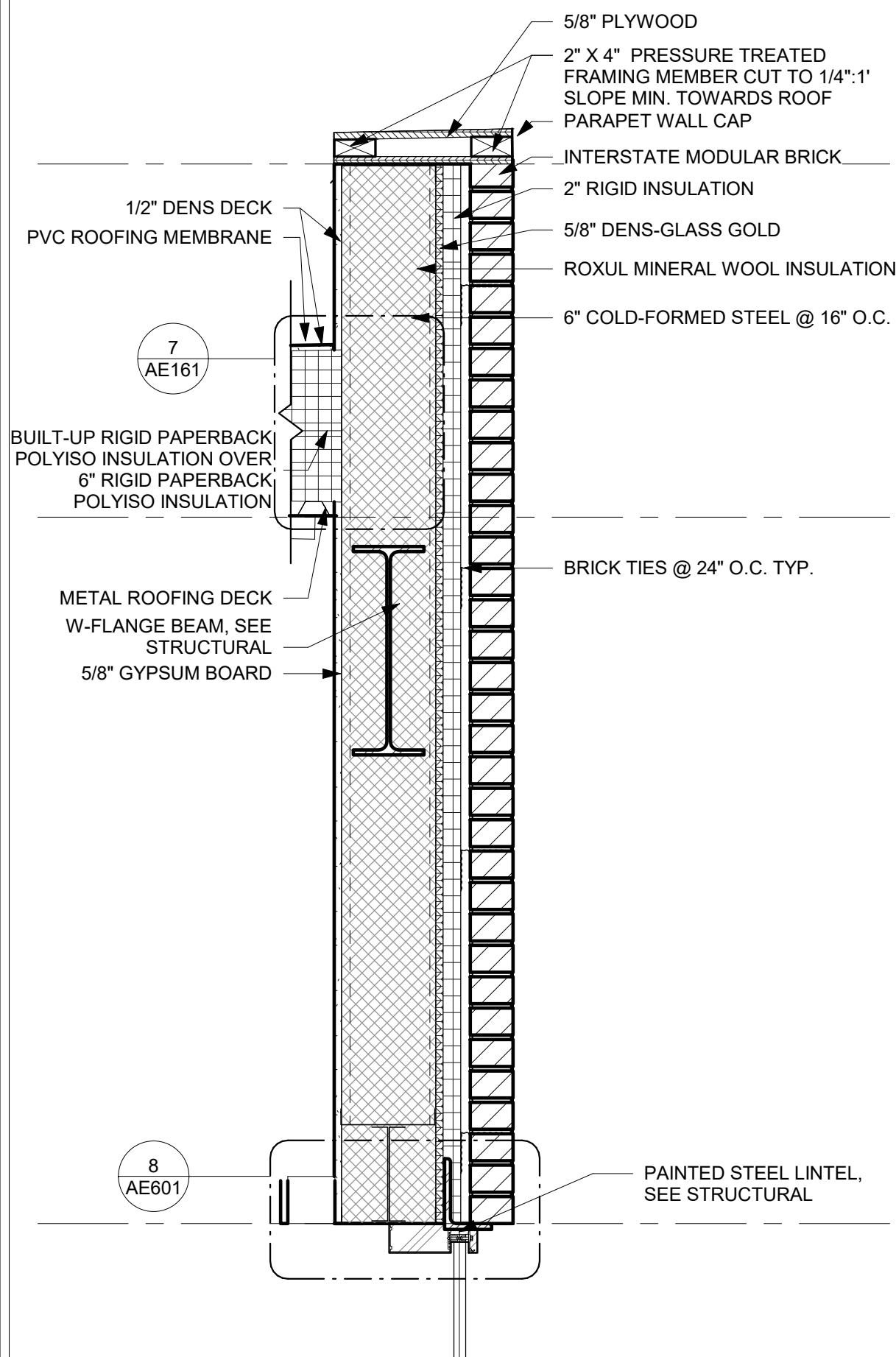
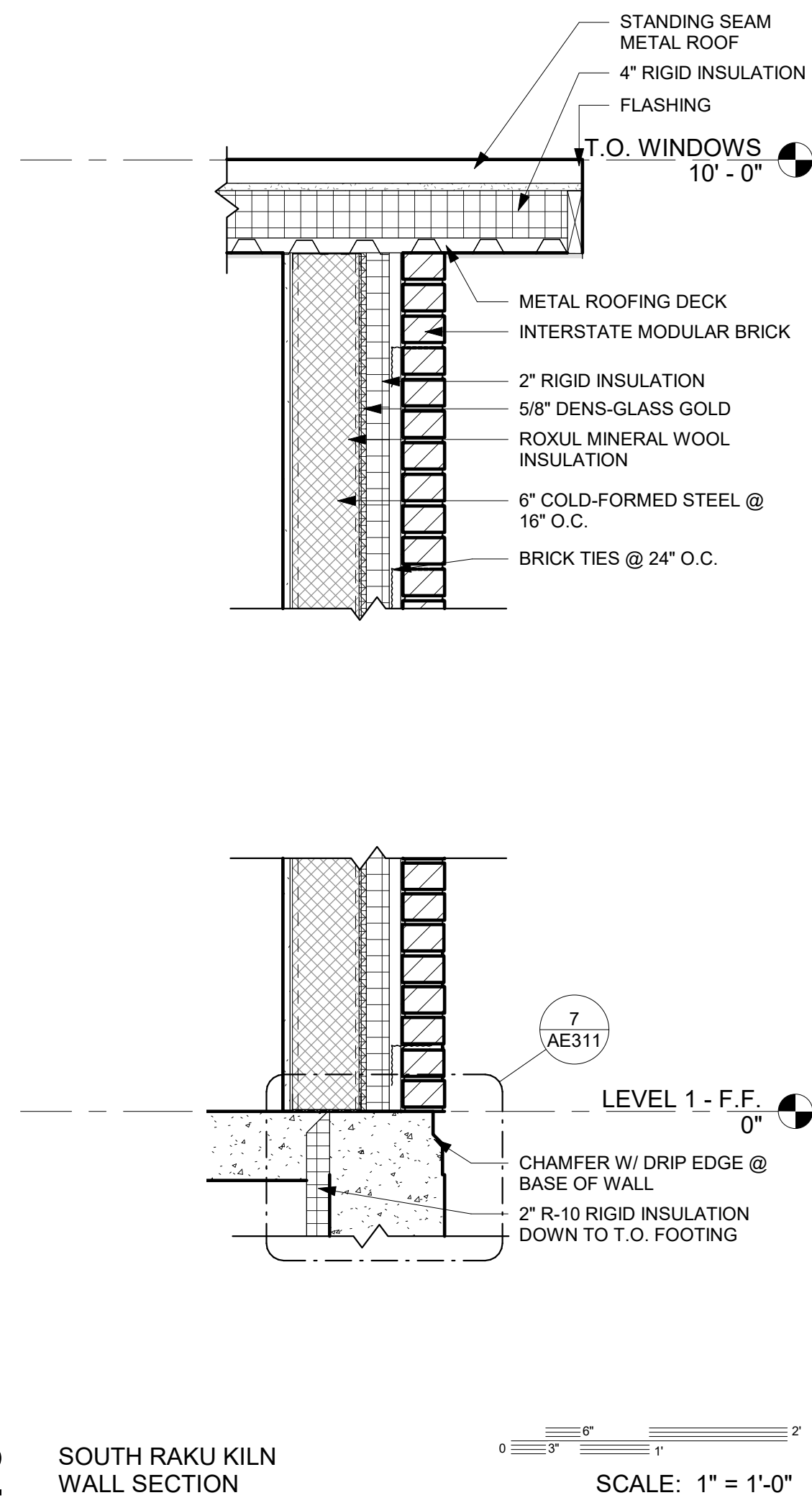
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PROJECT NO: 11513

SHEET NAME:

WALL SECTIONS

SHEET NUMBER:
AE310



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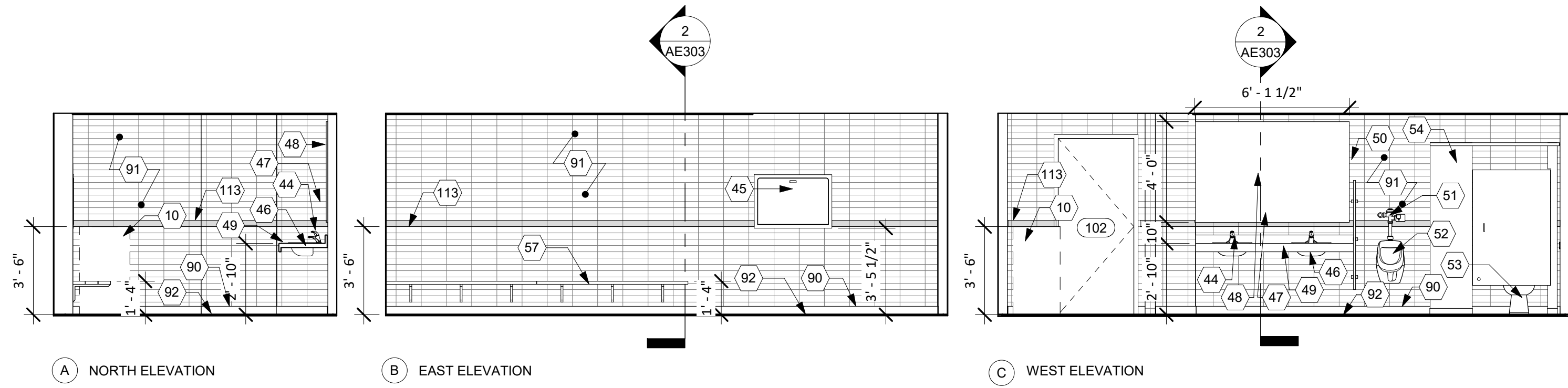
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BRIGHAM YOUNG UNIVERSITY - IDAHO SPORI ANNEX

PROJECT NO: 11513

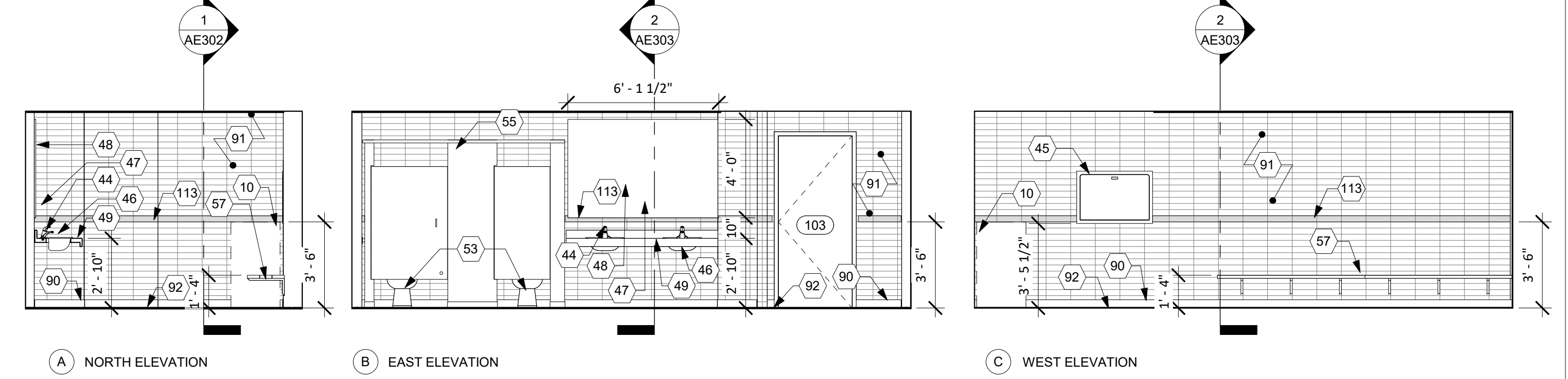
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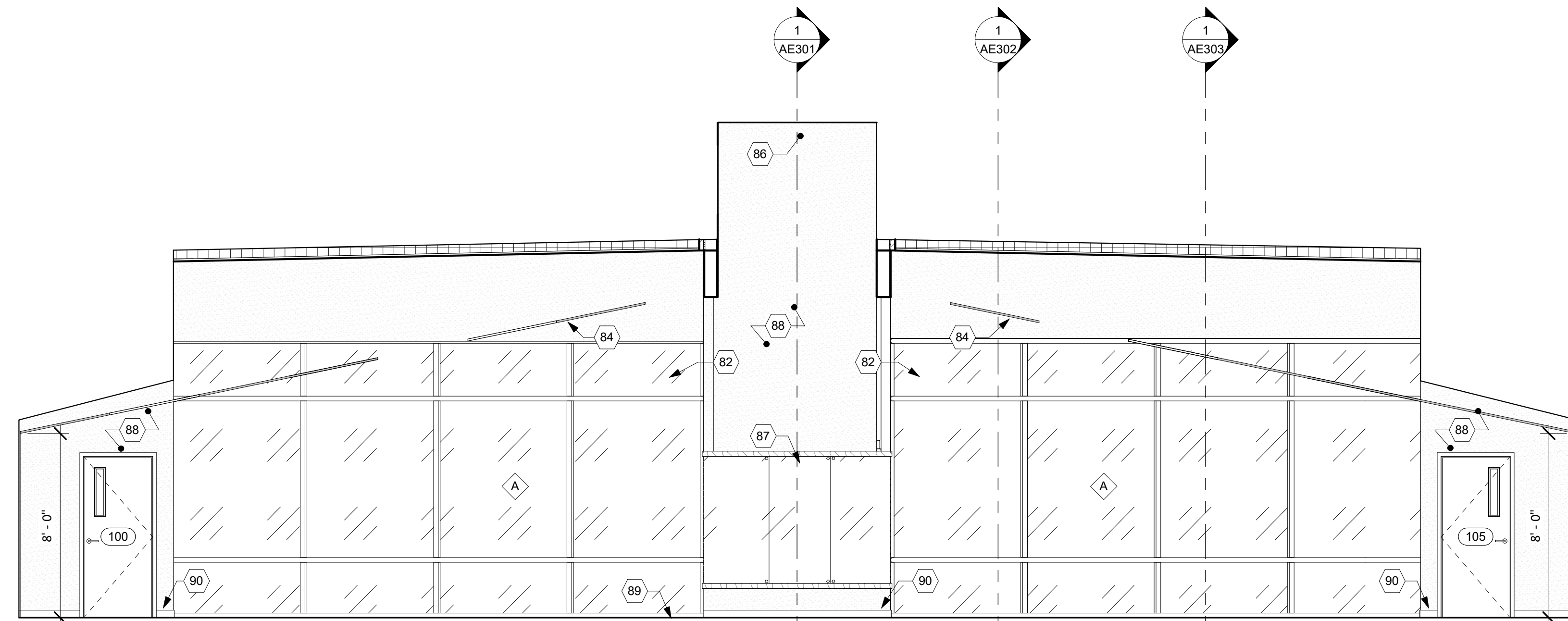
1 INTERIOR ELEVATIONS
MEN'S RESTROOM

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

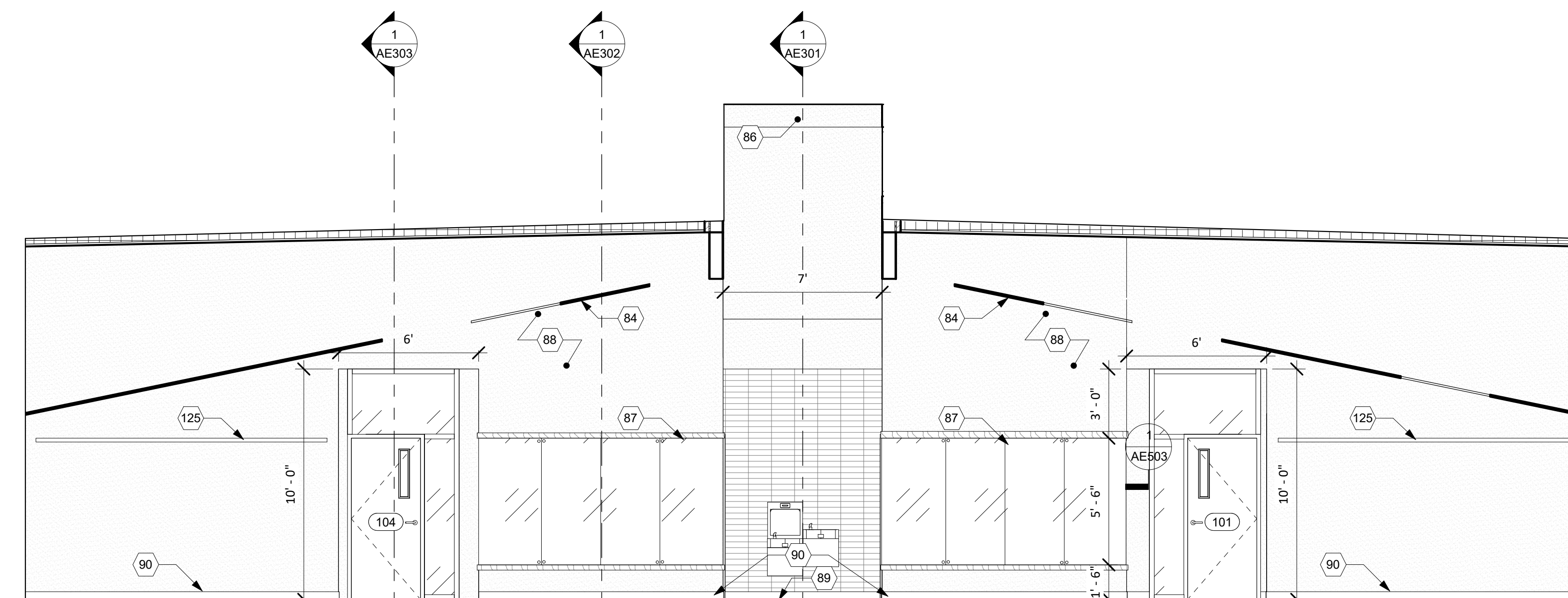


2 INTERIOR ELEVATIONS
WOMEN'S RESTROOM

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



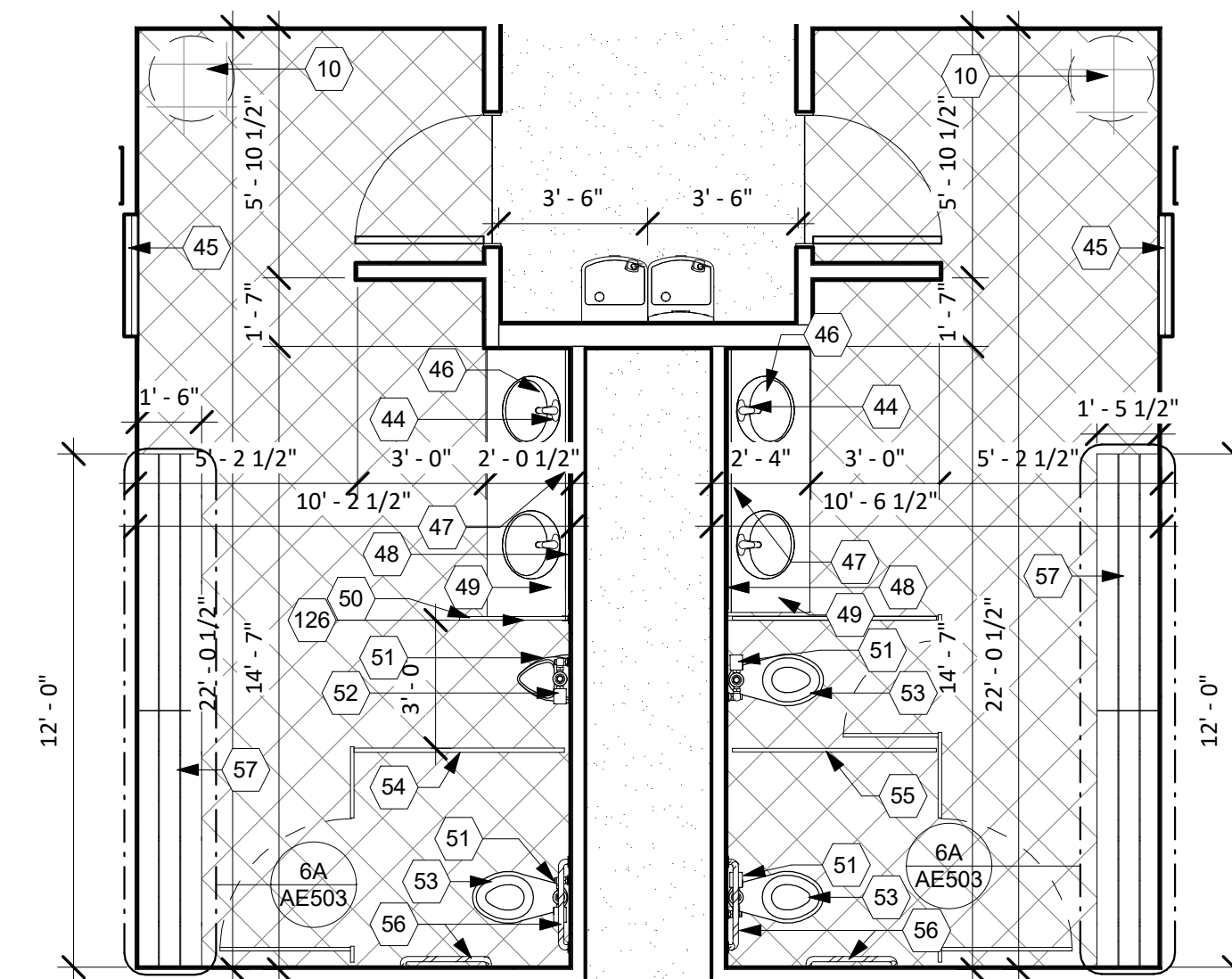
A NORTH ELEVATION



B SOUTH ELEVATION

3 INTERIOR ELEVATIONS
LOBBY

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

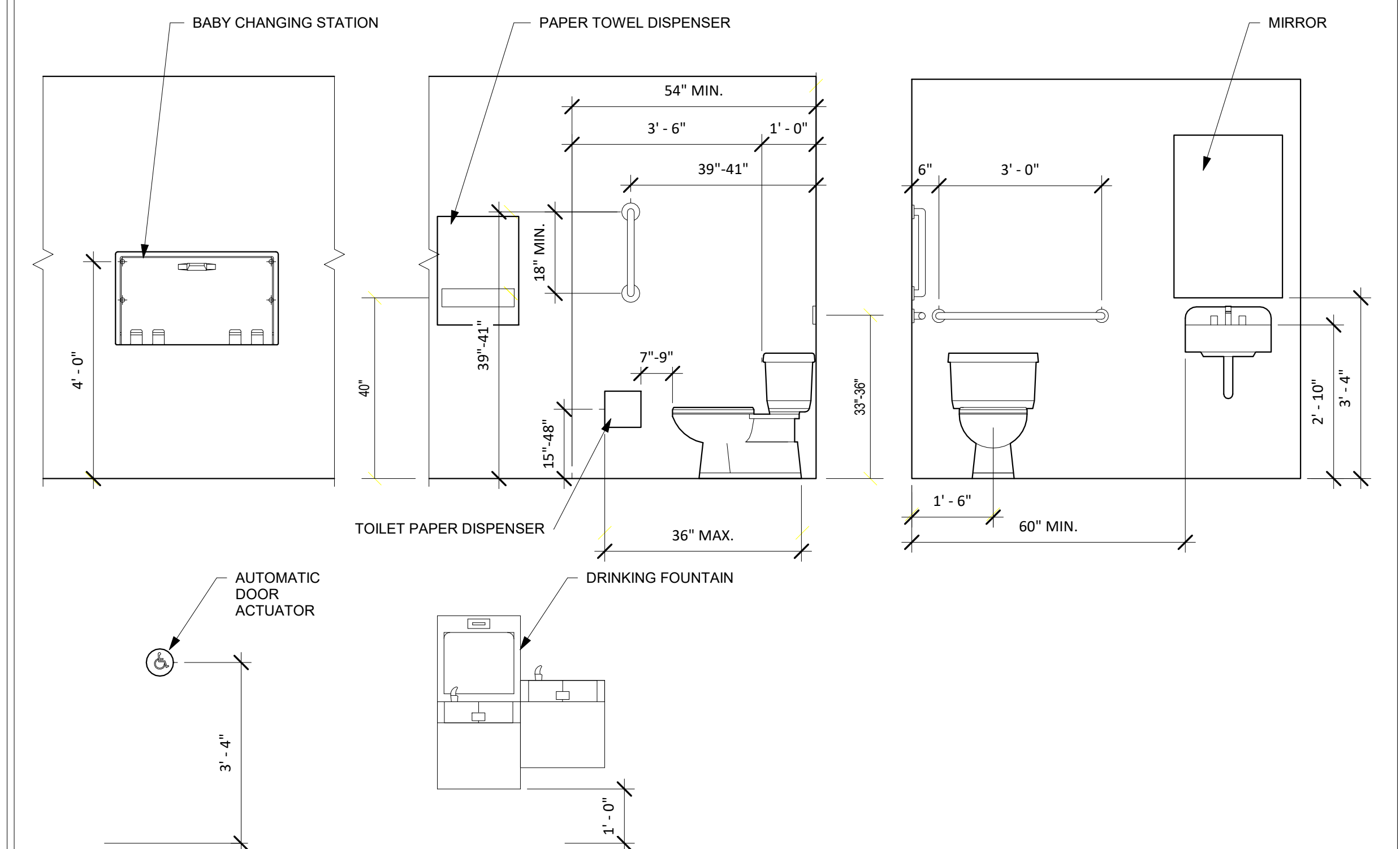


4 ENLARGED FLOOR PLAN
MEN'S & WOMEN'S RESTROOMS

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

KEYNOTES
INDICATED THUS: (X)

- 10 TRASH RECEPTACLE - OP/OI
- 44 SINK FACUET TYP.
- 45 BABY CHANGING STATION - OP/OI
- 46 SINK TYP.
- 47 HAND SOAP DISPENSER TO BE CENTERED IN THE MIRROR. SEE ELEVATION - OP/OI
- 48 MIRROR - CP/CI
- 49 SOLID SURFACE COUNTER TOP - SEE DETAIL S/AE501
- 50 PRIVACY SCREEN - SEE KEYNOTE 126
- 51 AUTOMATIC FLUSH VALVE
- 52 URINAL
- 53 WATER CLOSET
- 54 ADA ACCESSIBLE STALL - SEE KEYNOTE 126
- 55 TWO STALL BATHROOM W/ AN ADA ACCESSIBLE STALL - SEE KEYNOTE 126
- 56 ADA GRAB BARS
- 57 18" WALL-MOUNTED BENCH CP/CI
- 82 KAWNEER 1600 CURTAIN WALL SYSTEM
- 84 PERFORATED ALUMINUM CEILING WITH SLOPE - SEE AE151
- 86 EXPOSED STRUCTURE IN THIS AREA - SEE STRUCTURAL
- 87 BUILT-IN DISPLAY CASE - SEE 1/AE501
- 88 PAINT AND TEXTURE ON GYPSUM BOARD
- 89 SEALED CONCRETE
- 90 4" RESILIENT RUBBER BASEBOARD
- 91 3" X 12" CERAMIC TILE W/ ACCENT BOARD @ 36" A.F.F.
- 92 CERAMIC TILE ON CONCRETE
- 113 3" X 12" CERAMIC TILE ACCENT BAND @ 36" A.F.F.
- 125 PICTURE RAIL MOUNTED IN THIS LOCATION - 6" SHORT OF WALL LENGTH
- 126 ALUMINUM MOUNTING TRACK TO BE 1/8" PROUD OF THE ACCENT TILE BAND - DO NOT STOP AND RESTART THE ALUMINUM TRACK - ROUTE FOR SMOOTH NOTCH - FINISH AND EASE THE EDGES



5 TYPICAL MOUNTING HEIGHTS

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

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BID DOCUMENTS			11/27/2019

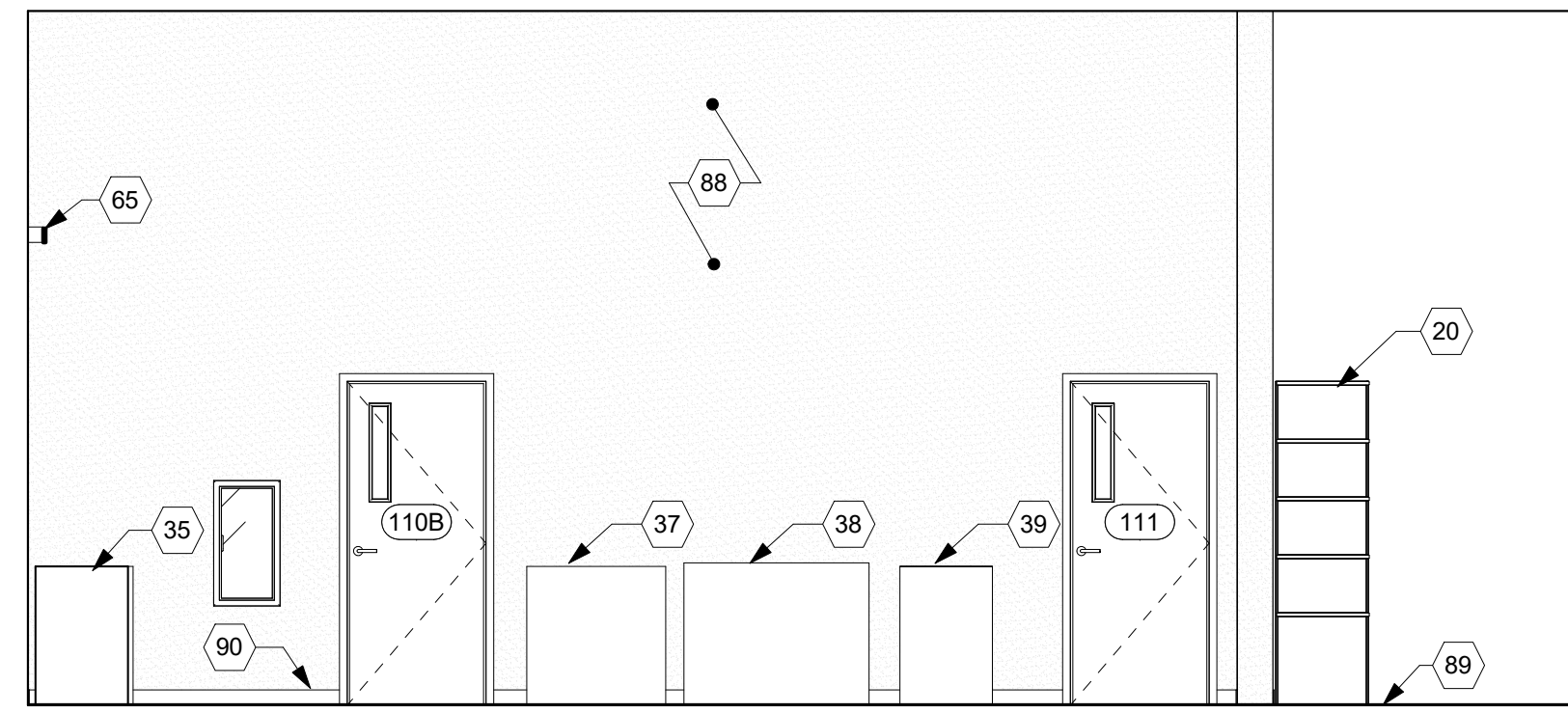
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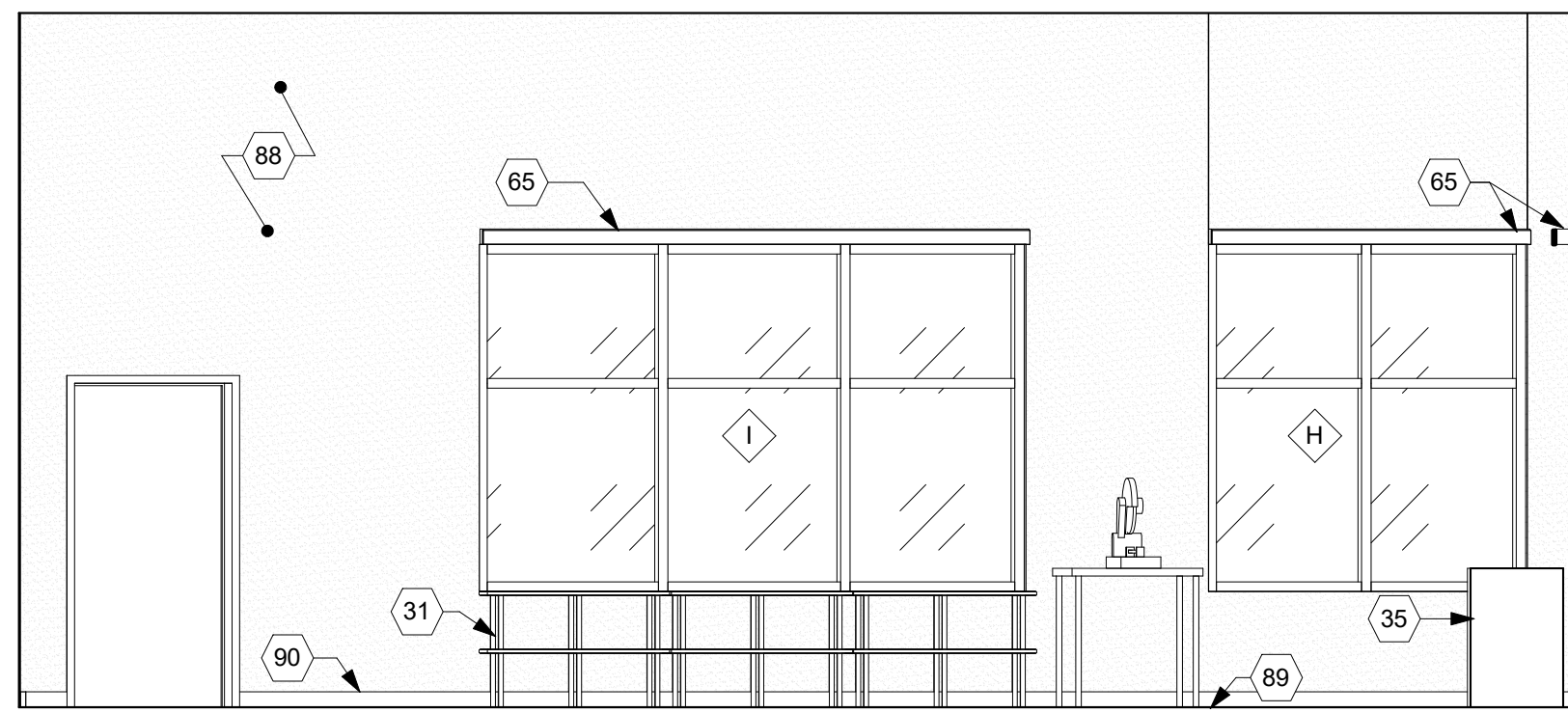
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SHEET NAME:
ENLARGED FLOOR PLANS & INTERIOR ELEVATIONS

SHEET NUMBER:
AE401

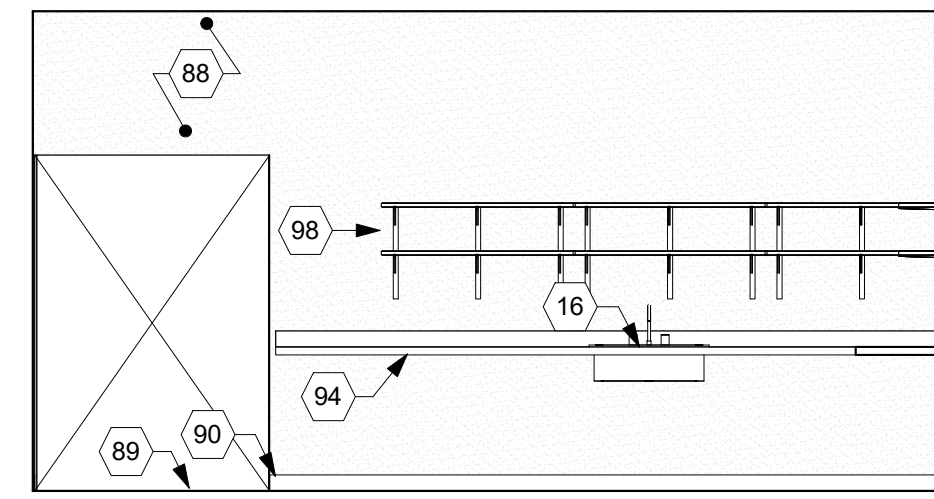


A NORTH ELEVATION

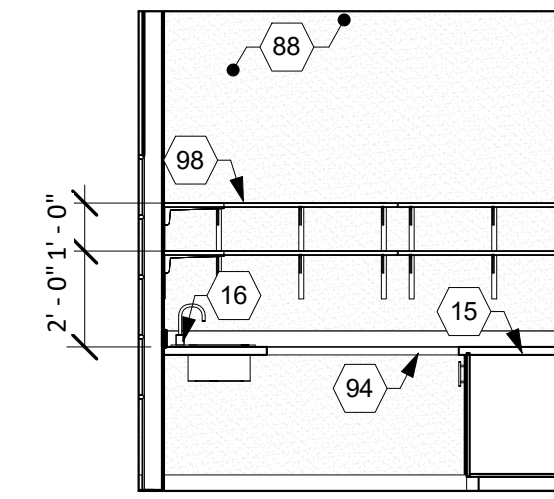


B SOUTH ELEVATION

1 INTERIOR ELEVATIONS
FOUNDRY



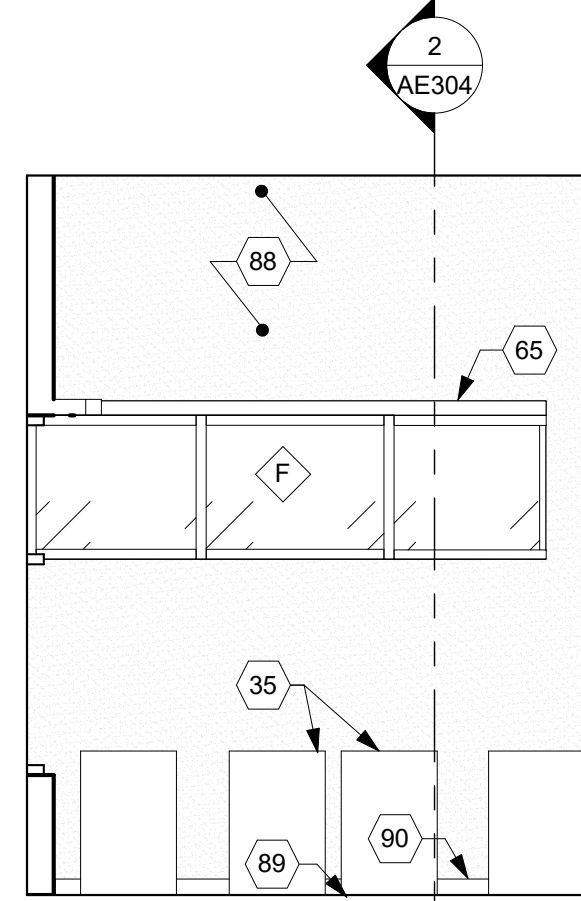
A NORTH ELEVATION



B WEST ELEVATION

2 INTERIOR ELEVATIONS
PLASTER AREA

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

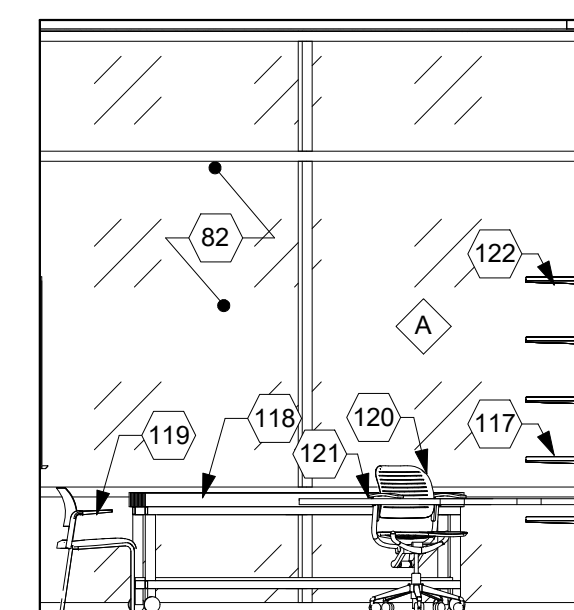


C WEST ELEVATION

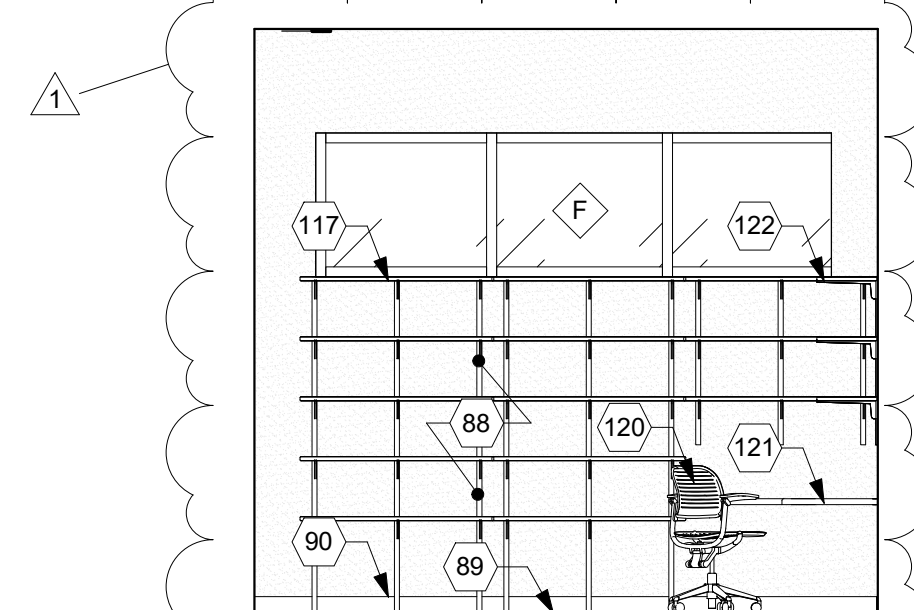
SCALE: 1/4" = 1'-0"

3 ENLARGED FLOOR PLAN
CUSTODIAL ROOM

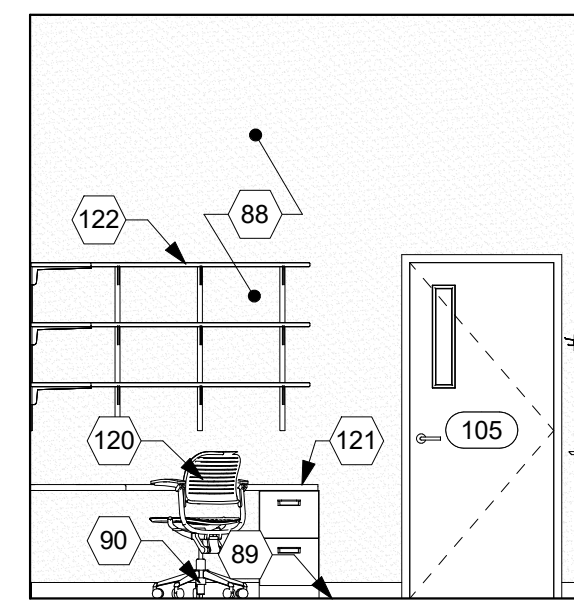
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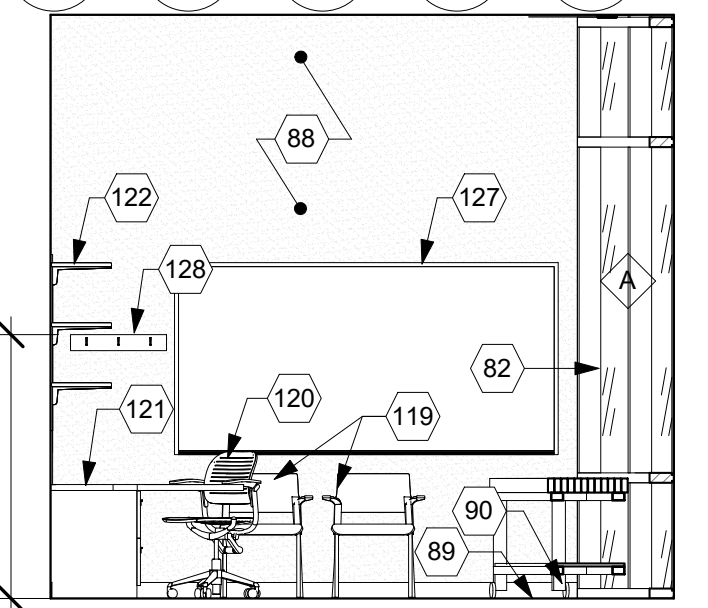
A NORTH ELEVATION



B EAST ELEVATION



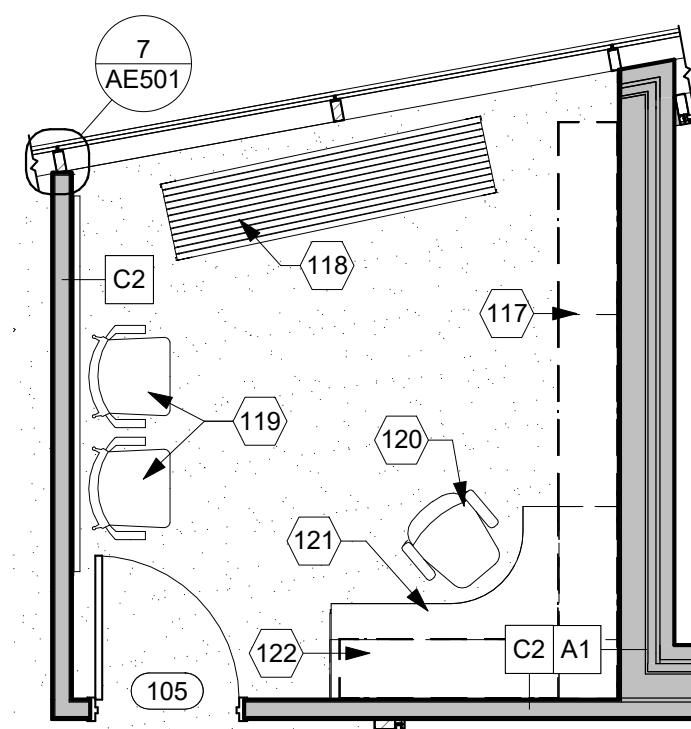
C SOUTH ELEVATION



D WEST ELEVATION

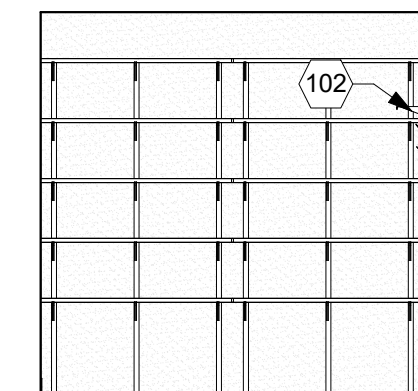
4 INTERIOR ELEVATIONS
OFFICE

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

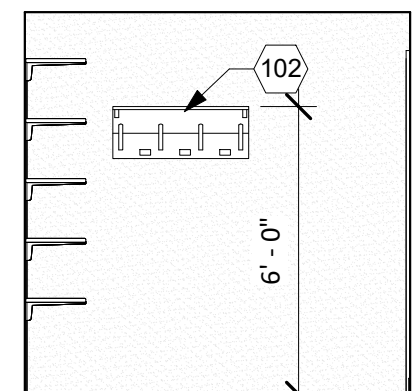


5 ENLARGED FLOOR PLAN
OFFICE

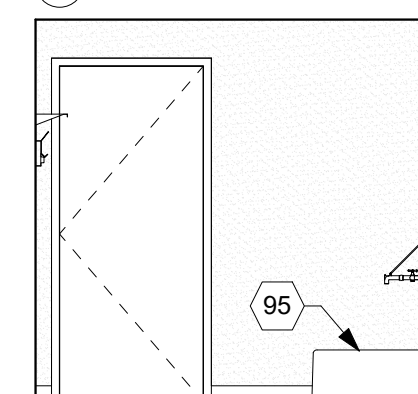
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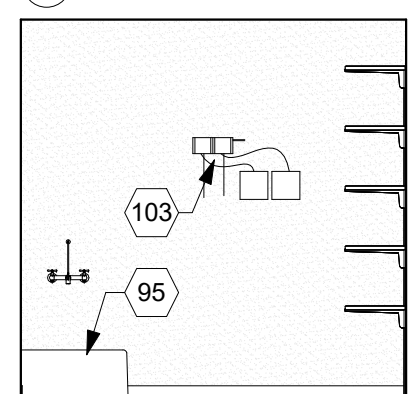
A NORTH ELEVATION



B EAST ELEVATION



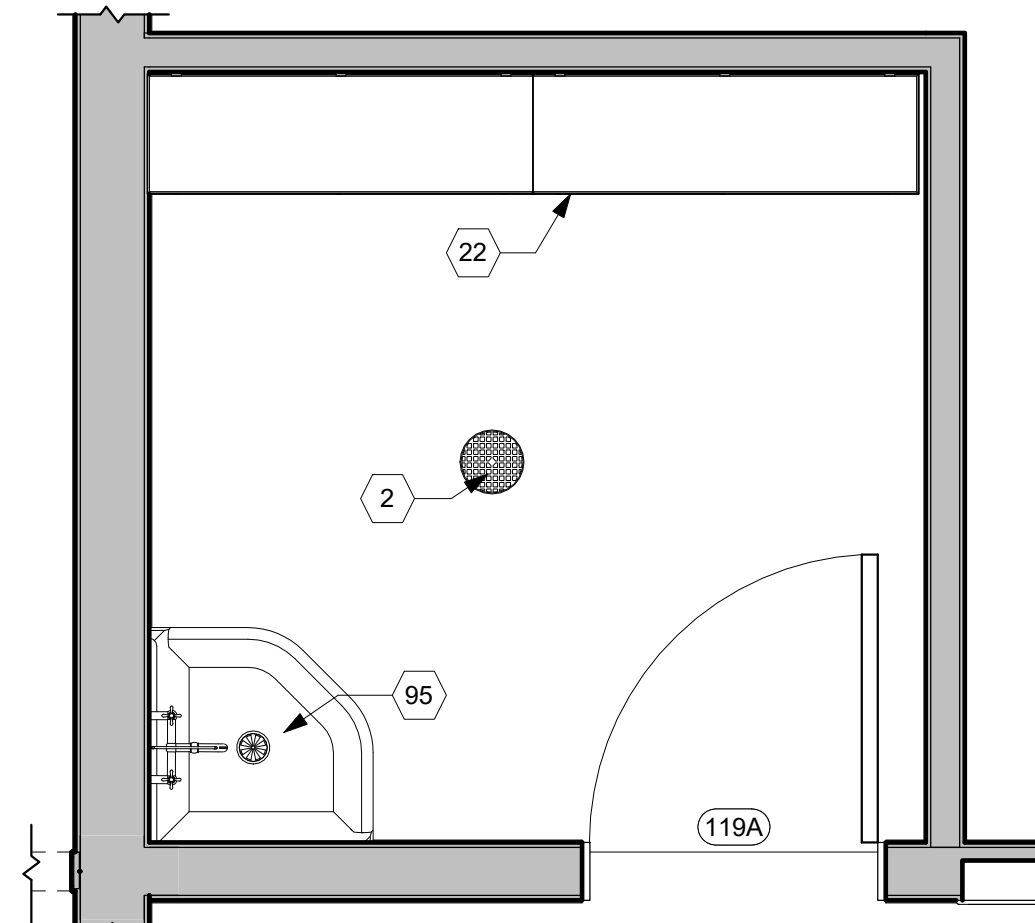
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D WEST ELEVATION

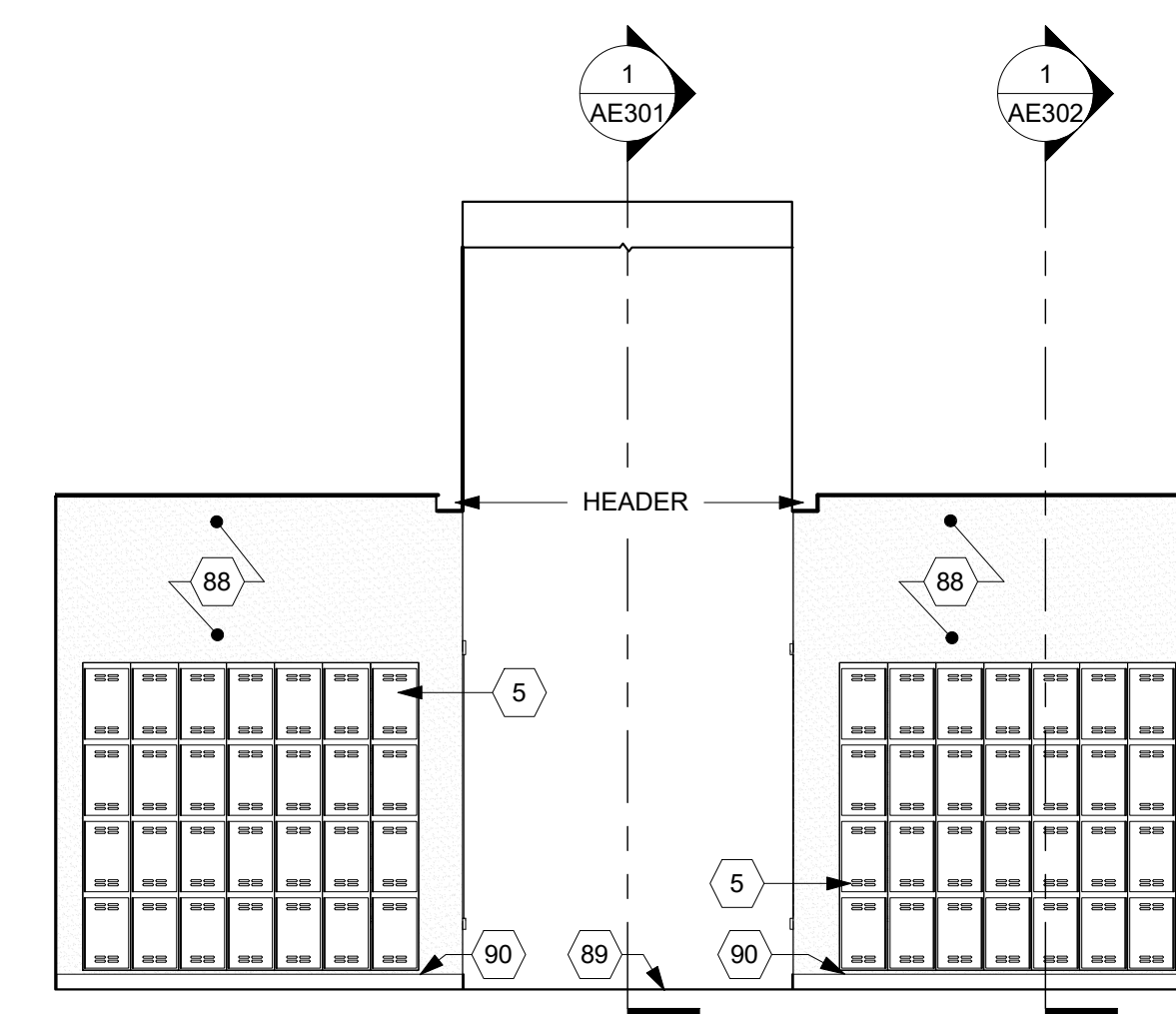
6 INTERIOR ELEVATIONS
CUSTODIAL ROOM

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

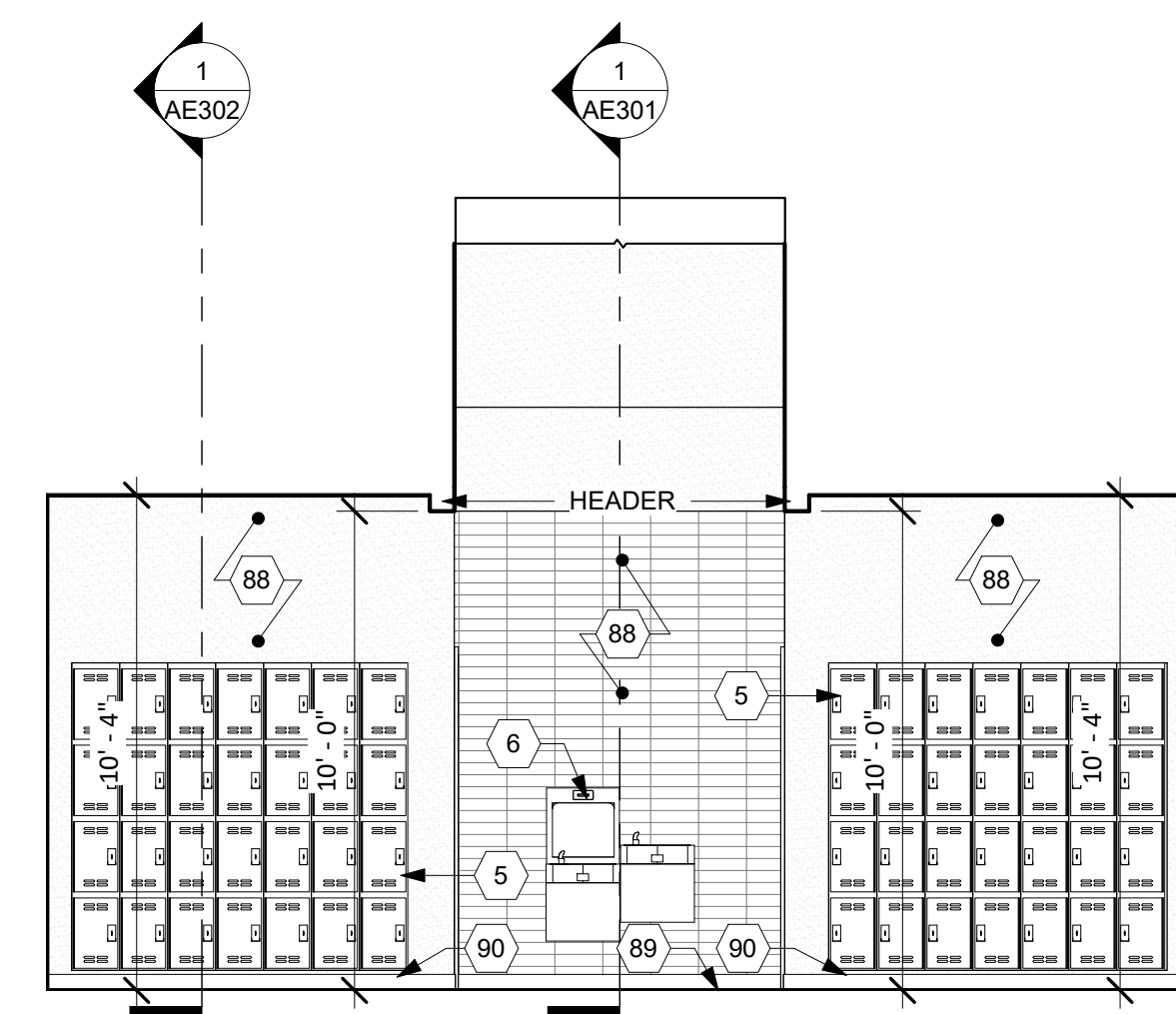


3 ENLARGED FLOOR PLAN
CUSTODIAL ROOM

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



A NORTH ELEVATION



B SOUTH ELEVATION

7 INTERIOR ELEVATIONS
HALLWAY 1-D

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

- KEYNOTES**
INDICATED THUS: X
- 2 FLOOR DRAIN IN THIS LOCATION WITH 1/8"-1'-0" FLOOR SLOPE TO DRAIN
 - 5 12" X 12" X 18" SCRANTON LOCKER UNITS - CP/CI
 - 6 DRINKING FOUNTAIN AND BOTTLE FILLING STATION
 - 15 8' X 3' - 6" STAINLESS STEEL ISLAND W/ BASE CABINETS CP/CI
 - 16 SINGLE BAY SINK - CP/CI
 - 22 1' - 3" X 4" WALL MOUNTED SHELVING UNIT, W/ 5 SHELVES - TYPICAL IN ROOM U.N.O. - O/POI
 - 31 7' TALL W/ 5 SHELVES - TYPICAL IN ROOM U.N.O. - O/POI
 - 35 2' X 2' WELDING BENCH - O/POI
 - 65 ROLLER SHADE W/ HOUSING POWERED BY ELECTRIC MOTOR
 - 82 KAWNEER 1600 CURTAIN WALL SYSTEM
 - 88 PAINT AND TEXTURE ON GYPSUM BOARD
 - 89 SEALED CONCRETE
 - 90 4" RESILIENT RUBBER BASEBOARD
 - 94 WALL MOUNTED STAINLESS STEEL COUNTER W/ 2" DEPTH, BULL-NOSE EDGE, & 4" X 3/4" BACKSPLASH
 - 95 MOP SINK W/ FAUCET ABOVE
 - 98 OVERHEAD ADJUSTABLE SHELVES - O/POI
 - 102 WALL MOUNTED MOP AND BROOM HANGERS - CP/CI
 - 103 CHEMICAL DISPENSERS - O/POI
 - 117 1' 3" X 4" WALL MOUNTED ADJUSTABLE SHELVING UNIT W/ 5 SHELVES - O/POI
 - 118 18" X 68" WORK TABLE ON CASTERS - CP/CI
 - 119 CHAIRS - O/POI
 - 120 STEELCASE OFFICE CHAIR - O/POI
 - 121 STEELCASE DESK - O/POI
 - 122 13" X 4" WALL MOUNTED ADJUSTABLE SHELVING UNIT W/ 3 SHELVES - O/POI
 - 127 8' X 4' WALL MOUNTED WHITEBOARD O/POI
 - 128 COAT HANGERS MOUNTED @ 5'-6" A.F. - O/POI



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1	ADDENDUM 3	1/30/2020

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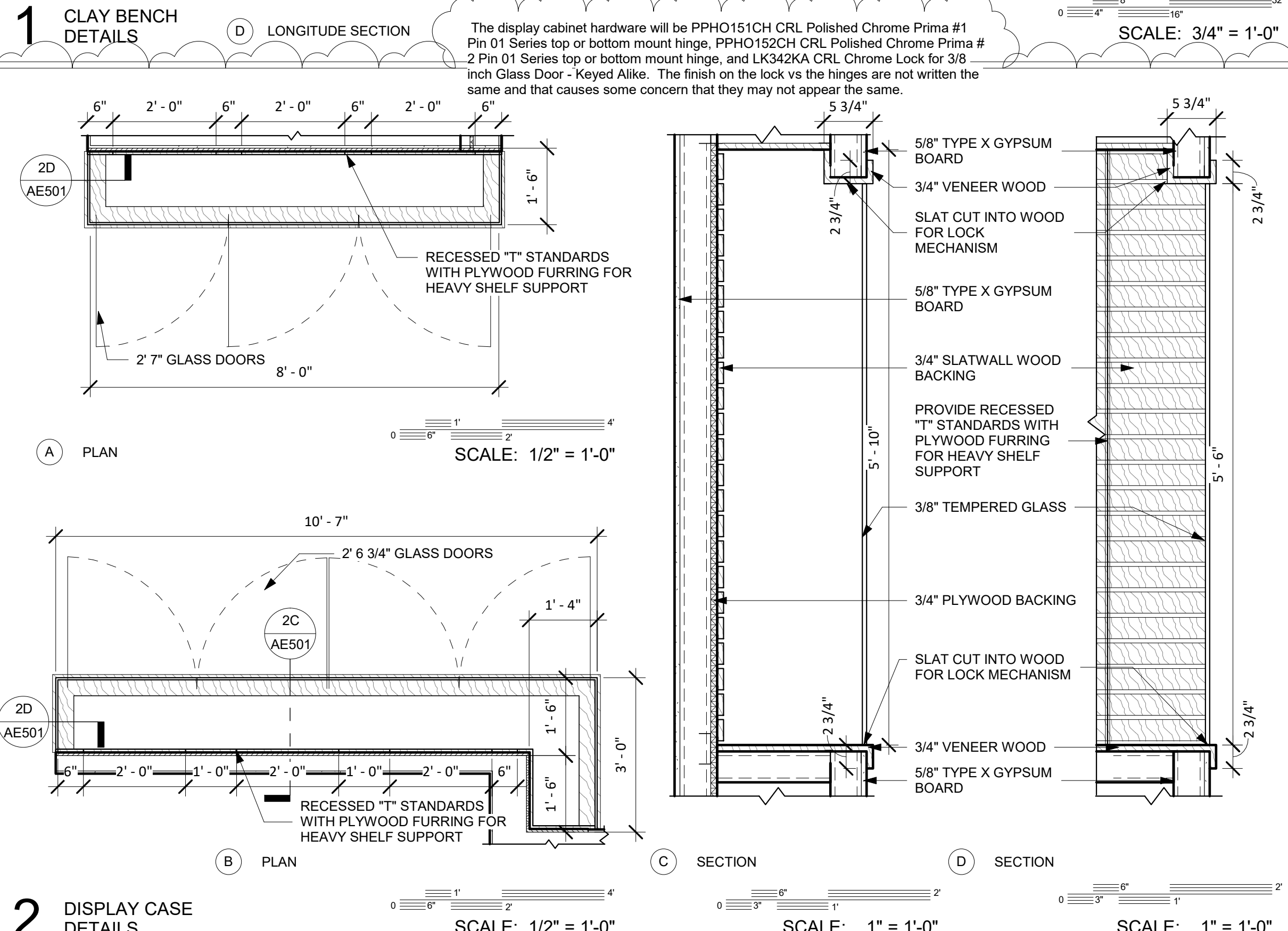
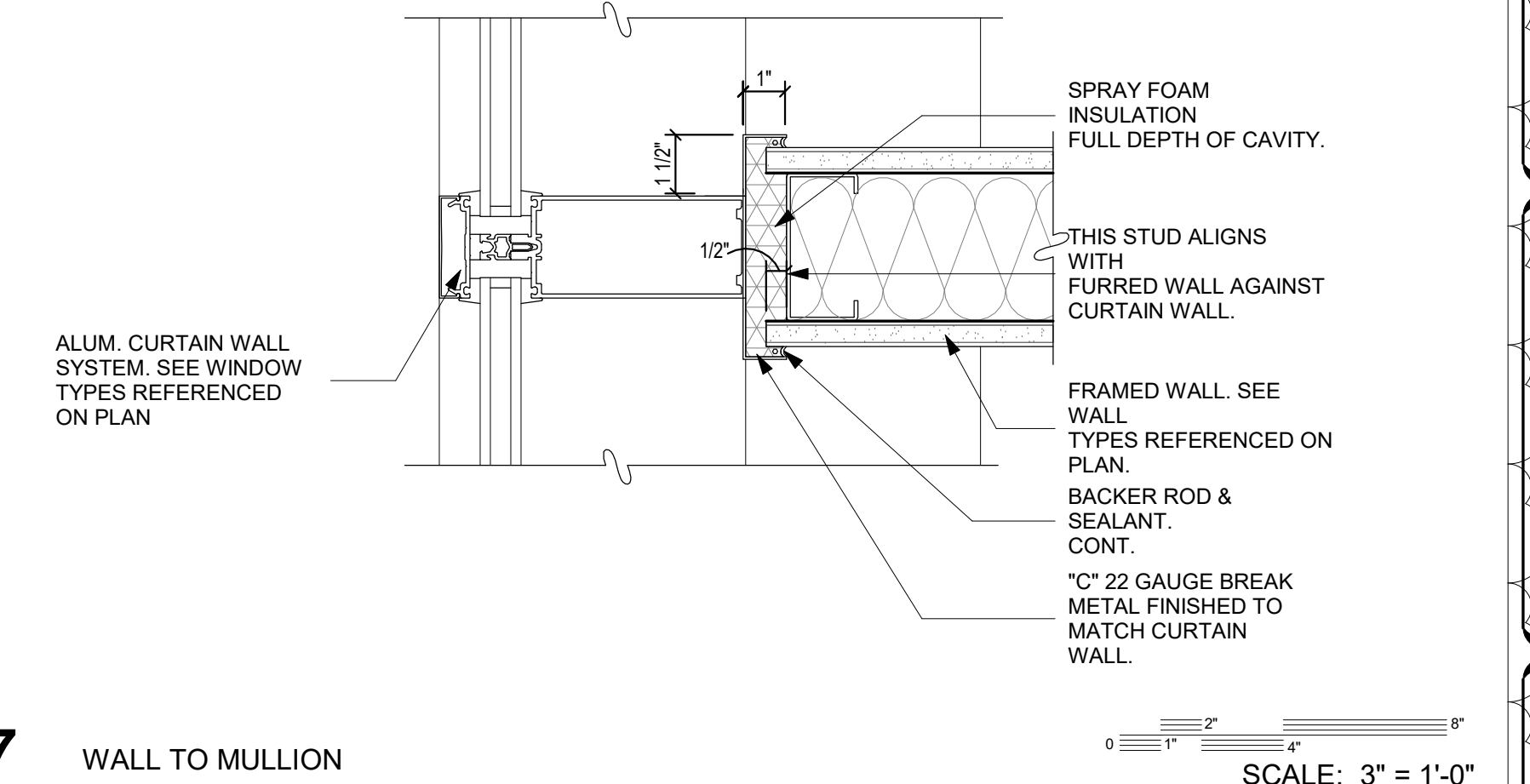
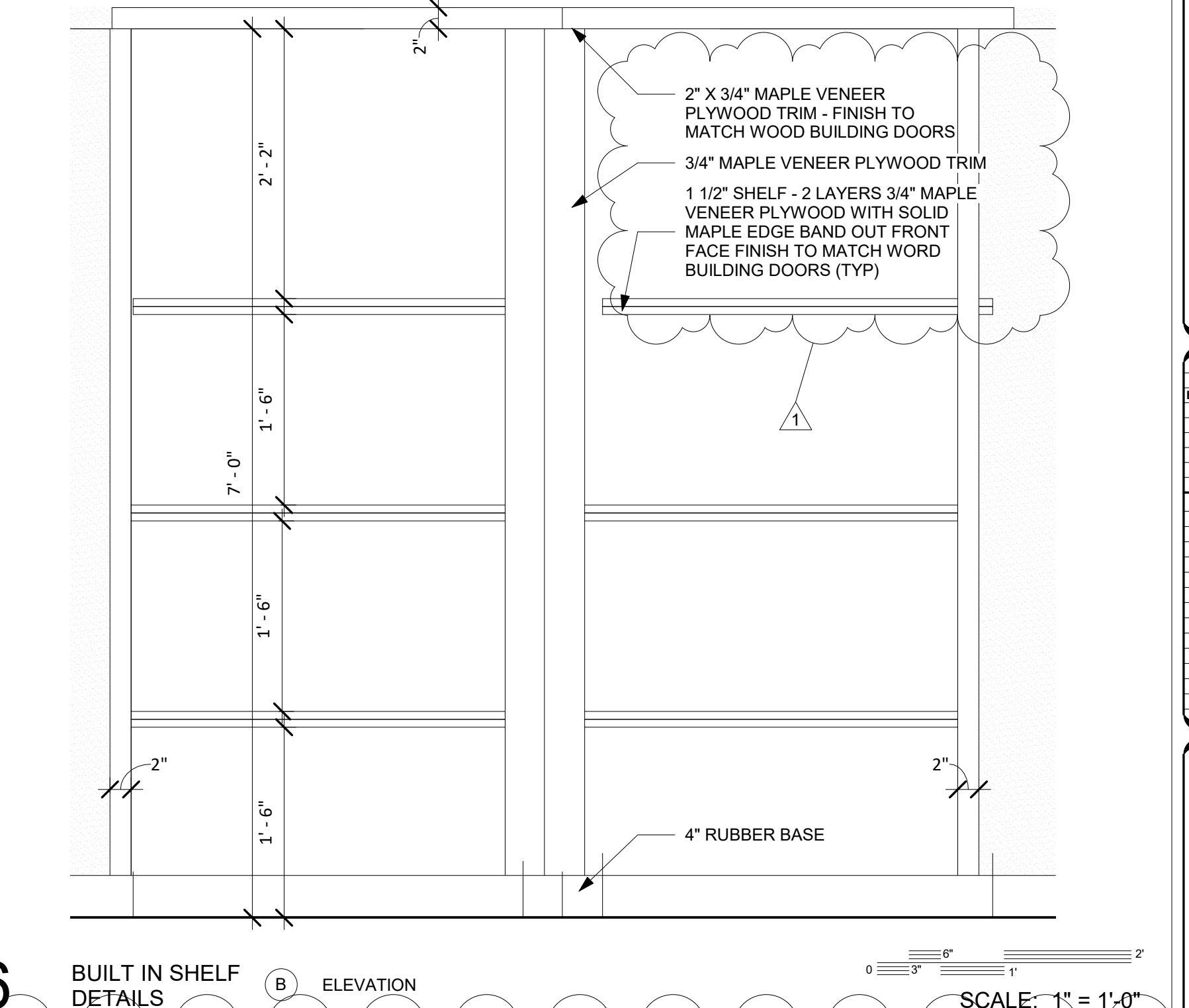
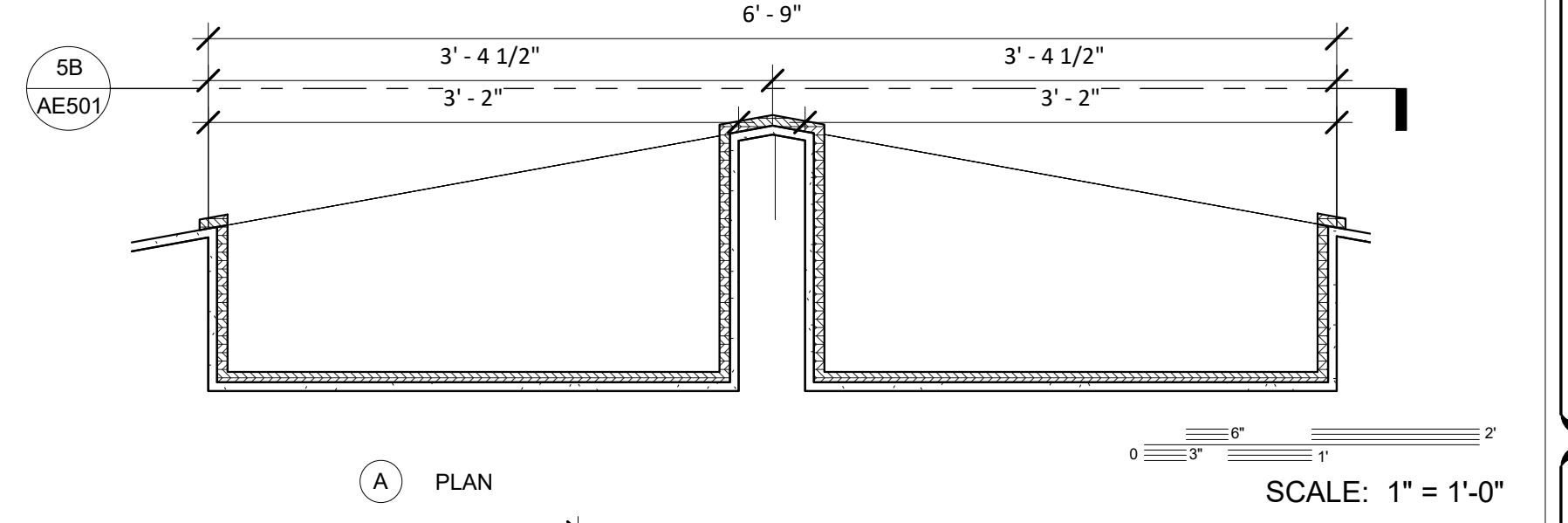
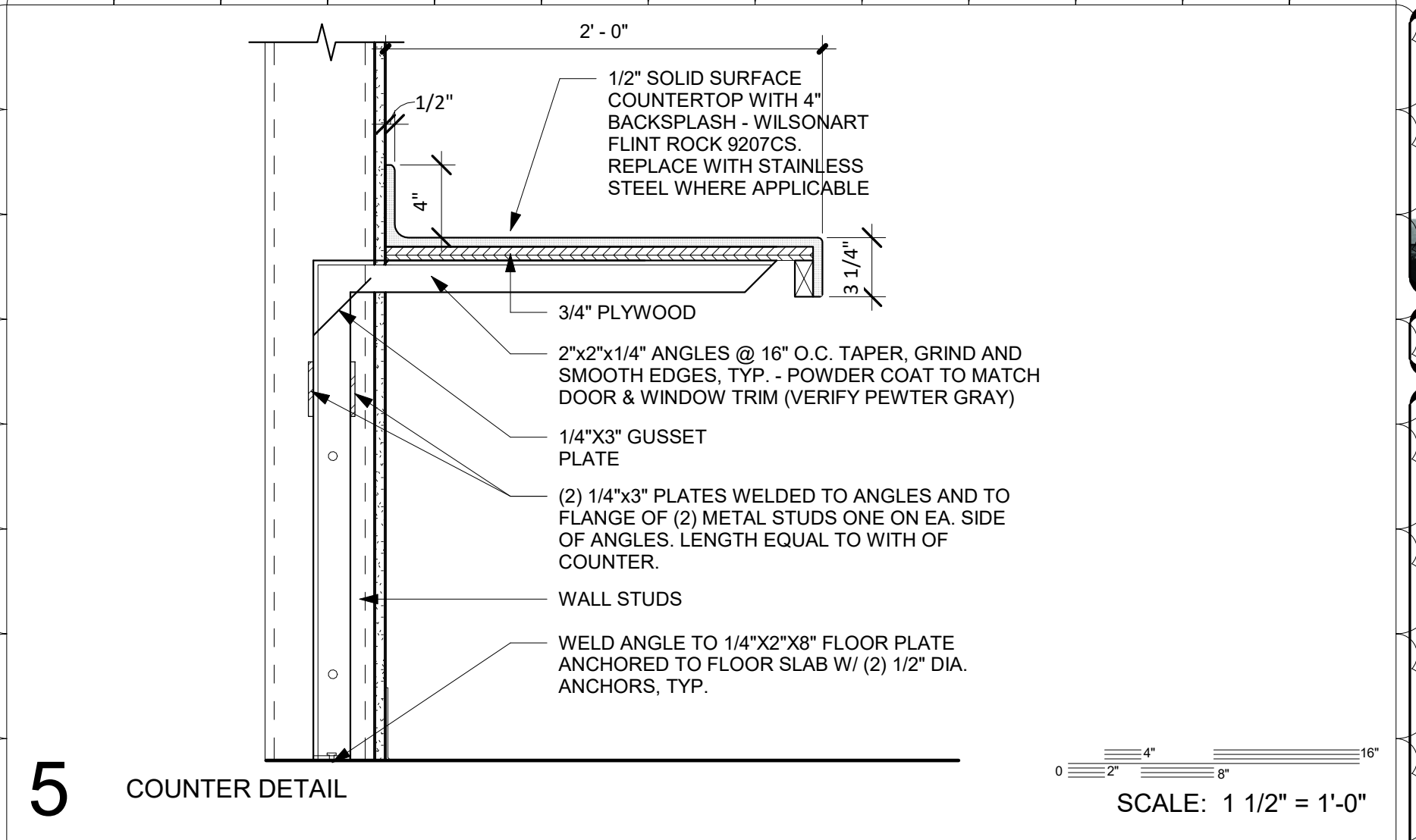
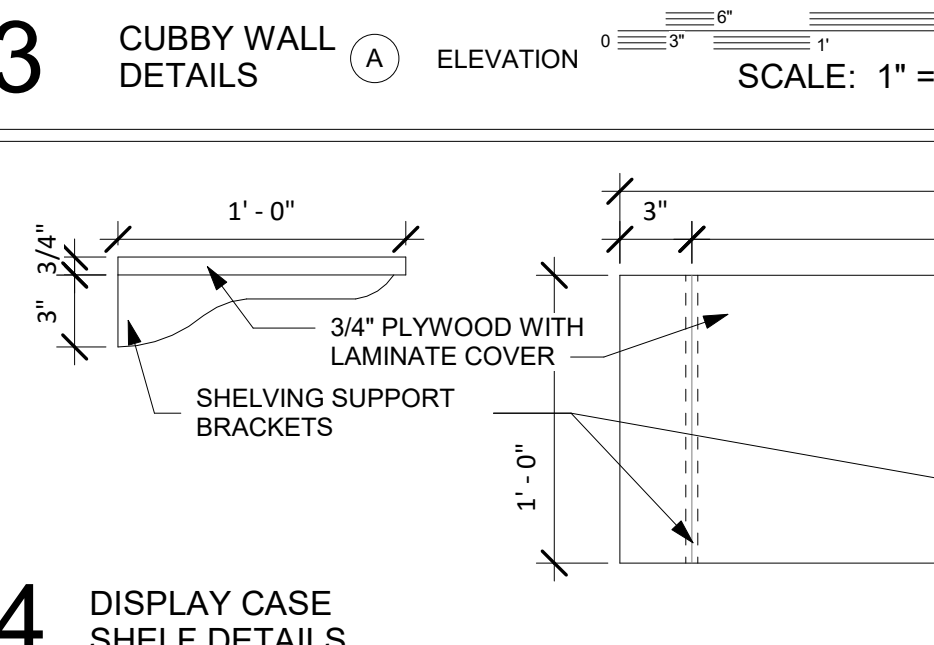
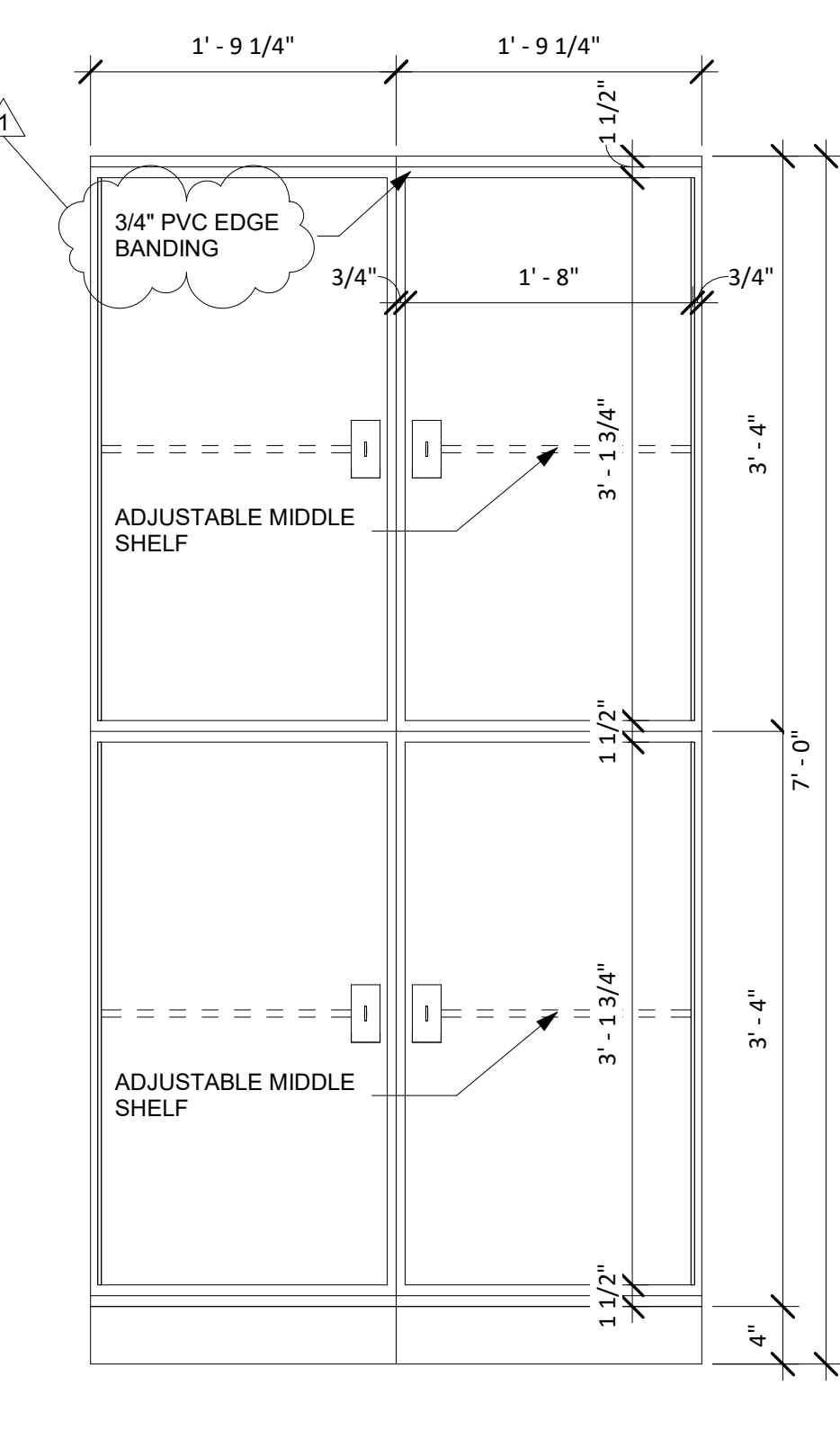
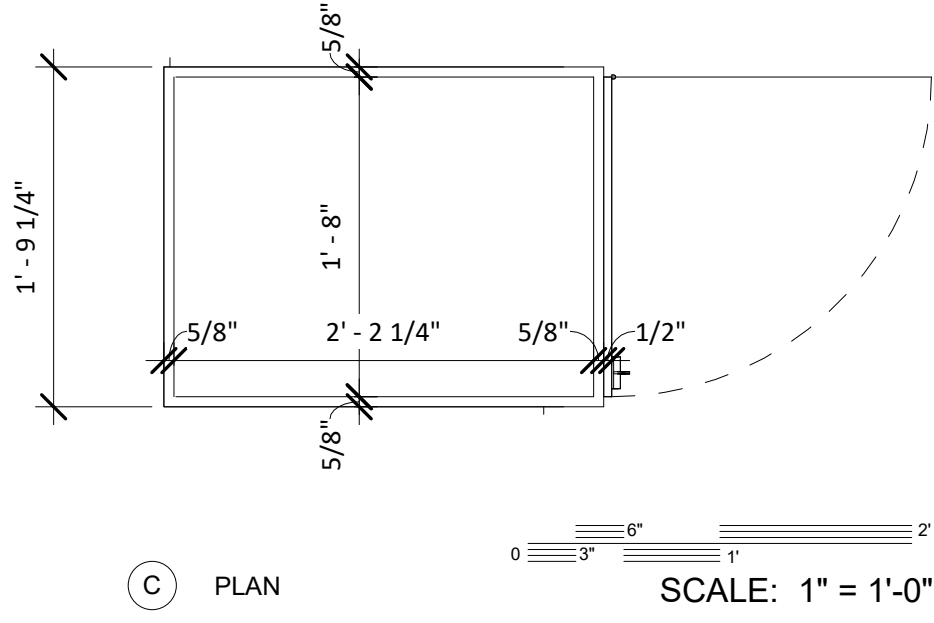
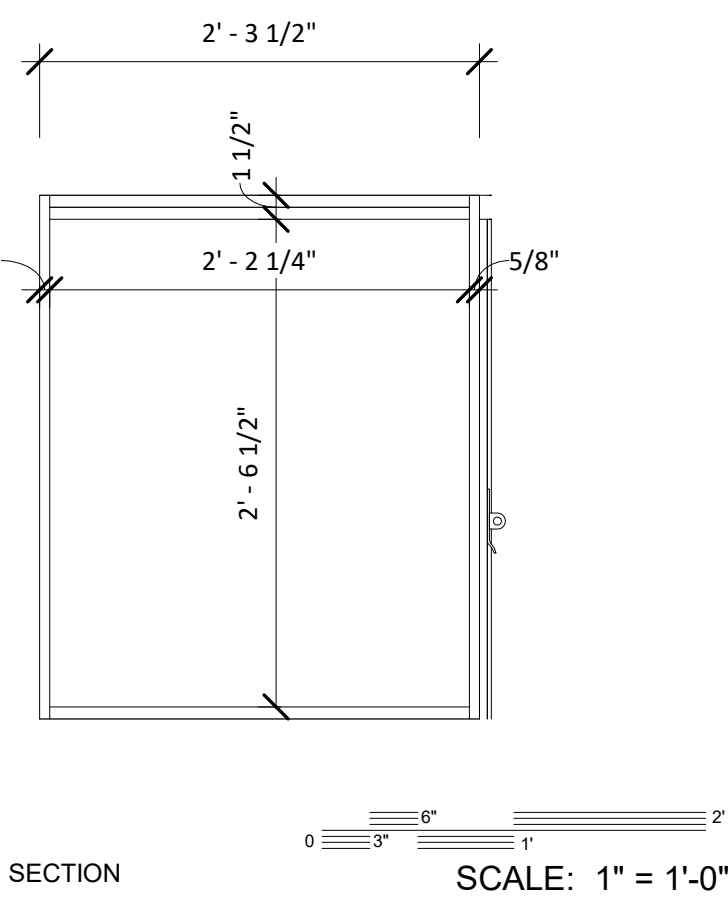
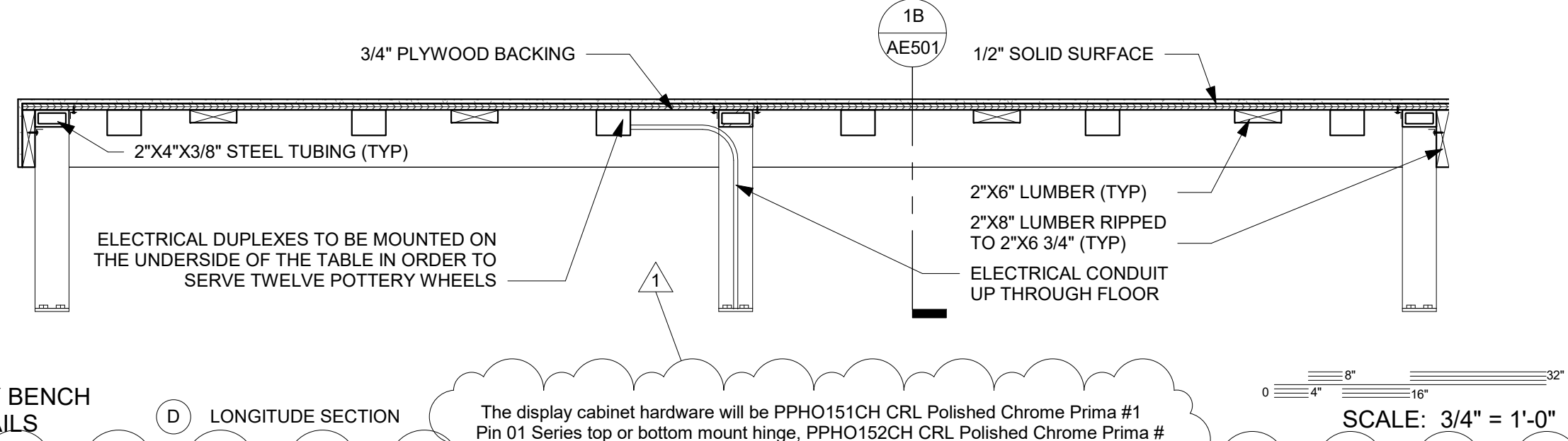
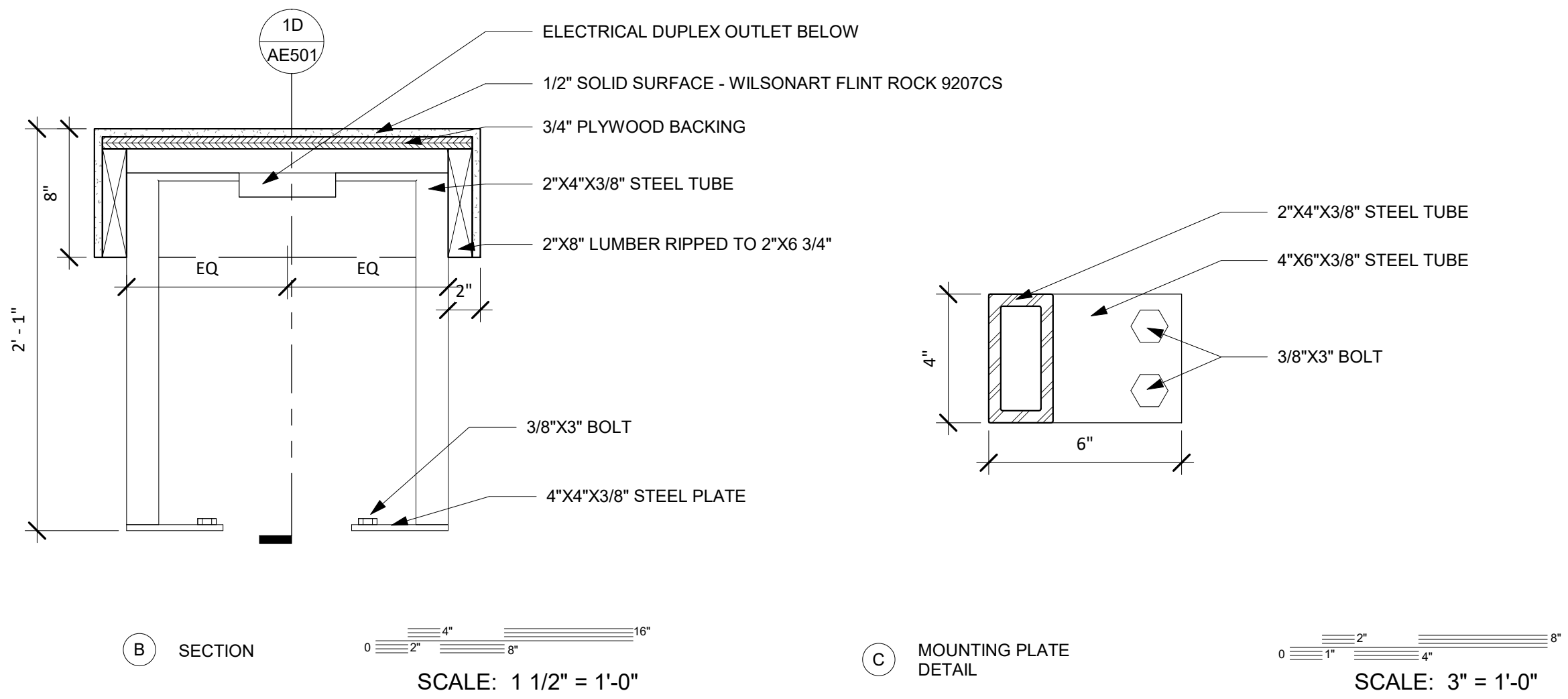
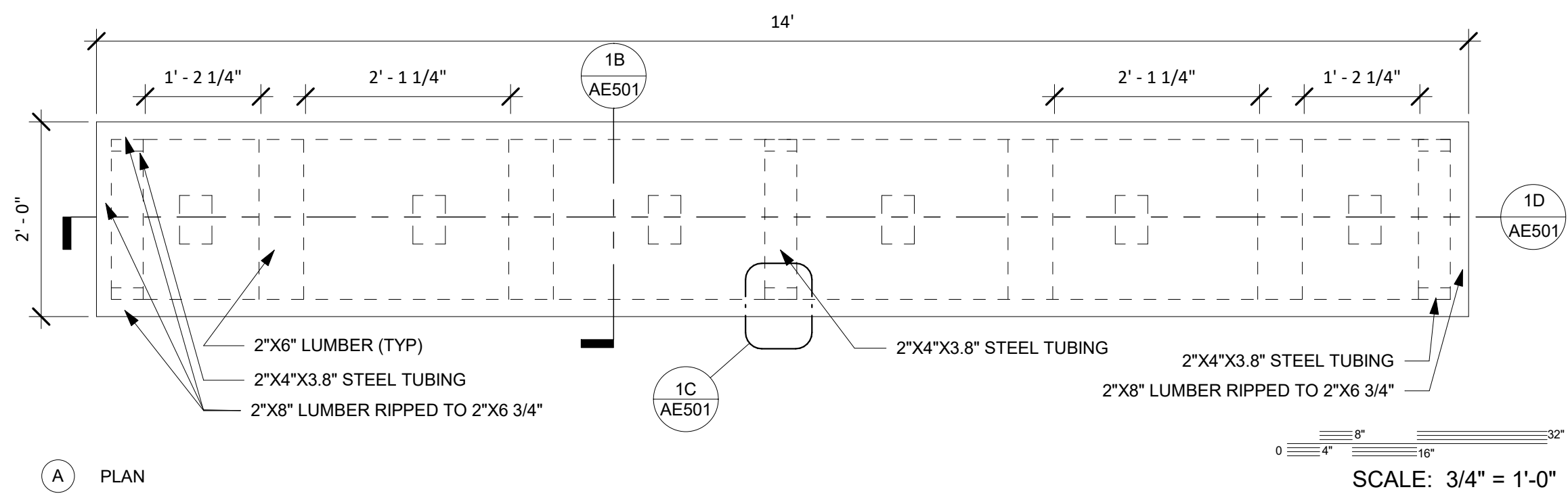
BRIGHAM YOUNG UNIVERSITY - IDAHO SPORI ANNEX

SHEET NAME:

ENLARGED PLANS & INTERIOR ELEVATIONS

SHEET NUMBER:

AE404



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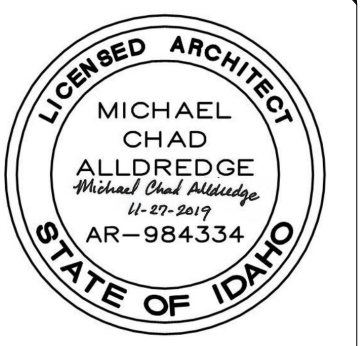
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DOCUMENT STATUS		STATUS	DATE
BID DOCUMENTS			11/27/2019
REVISION SCHEDULE <td></td> <td></td>			
NO.	DESCRIPTION		DATE
1	ADDENDUM 3		1/20/2020

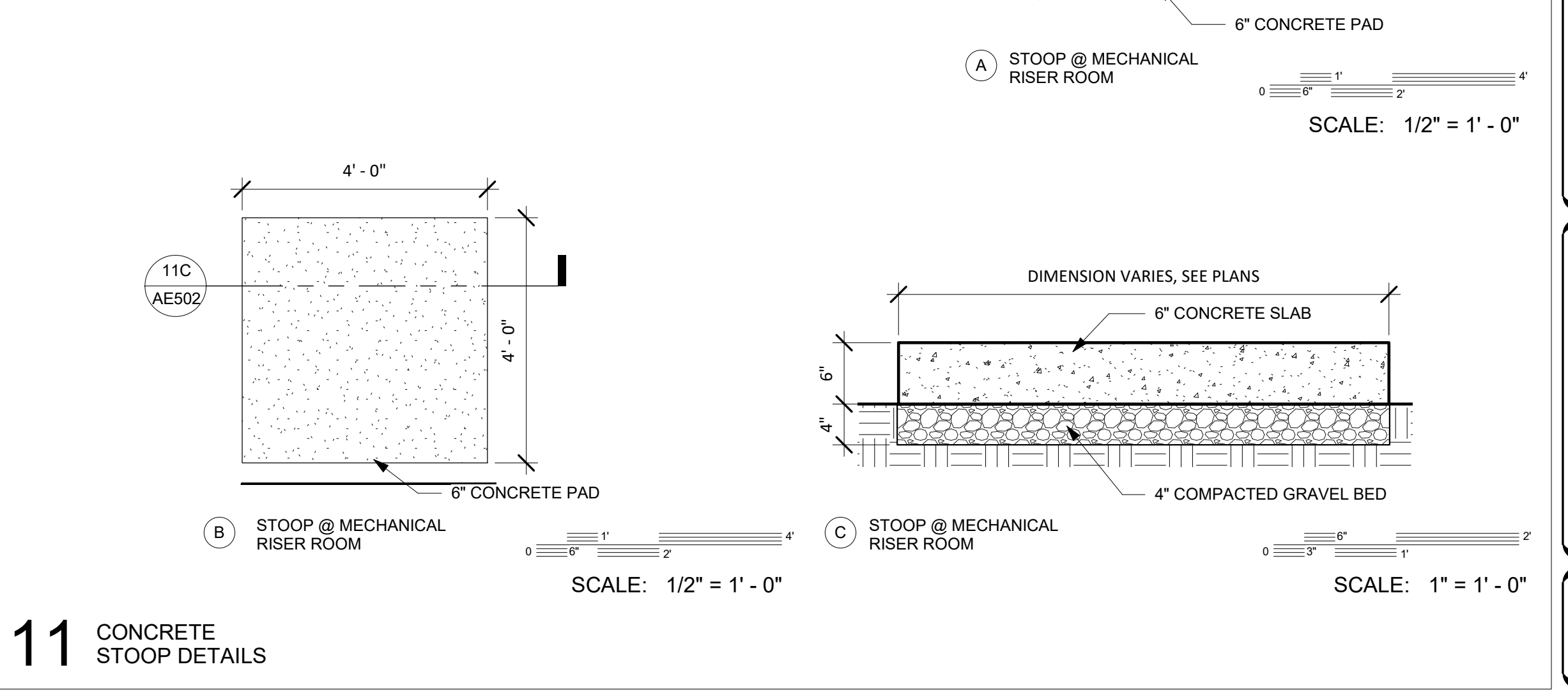
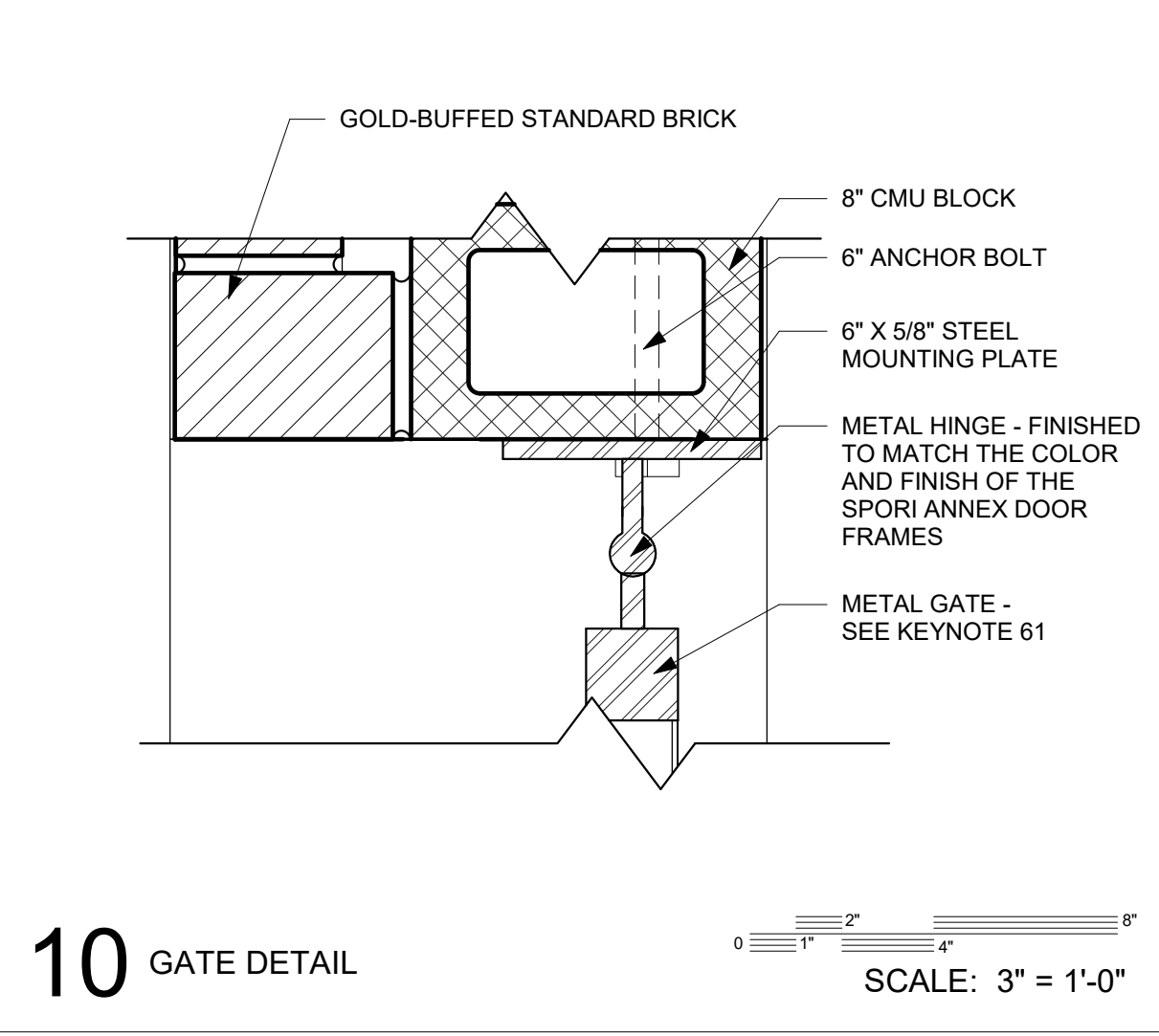
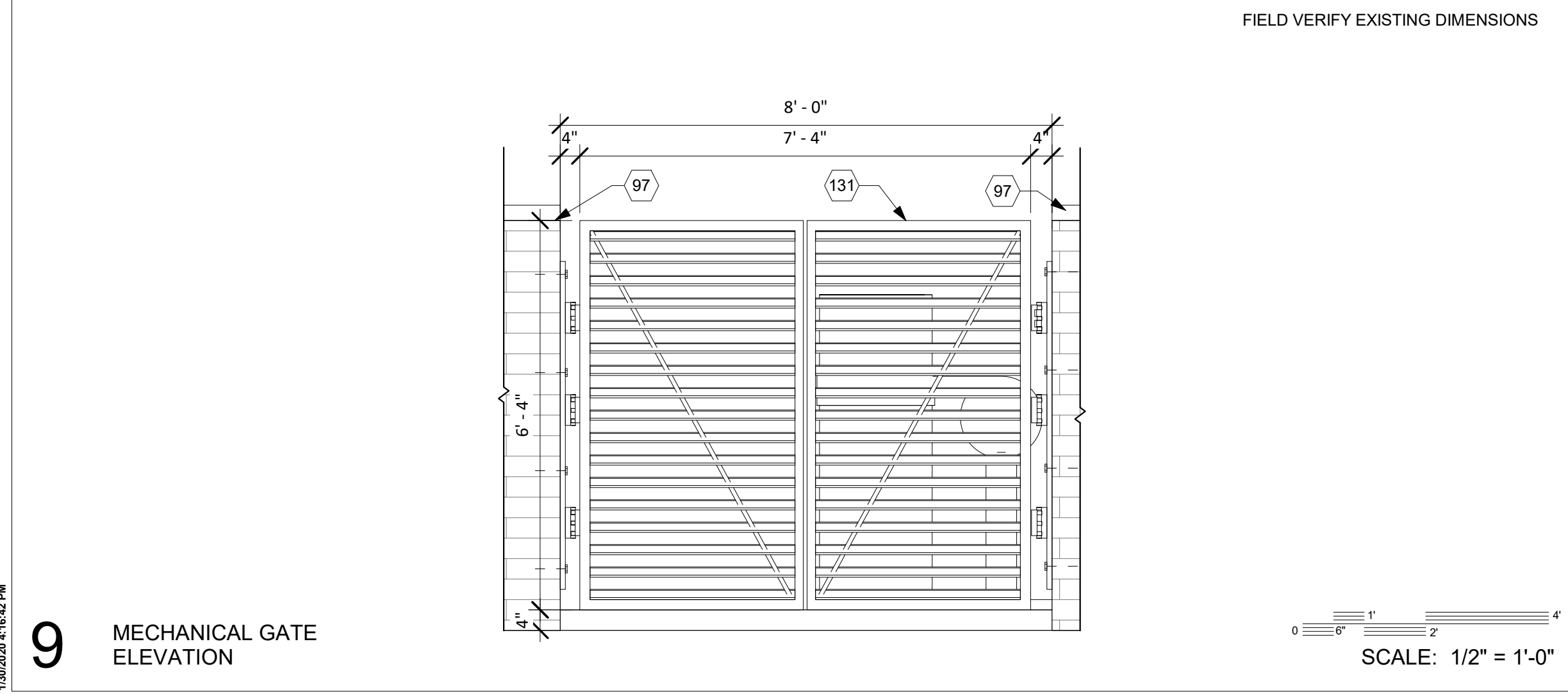
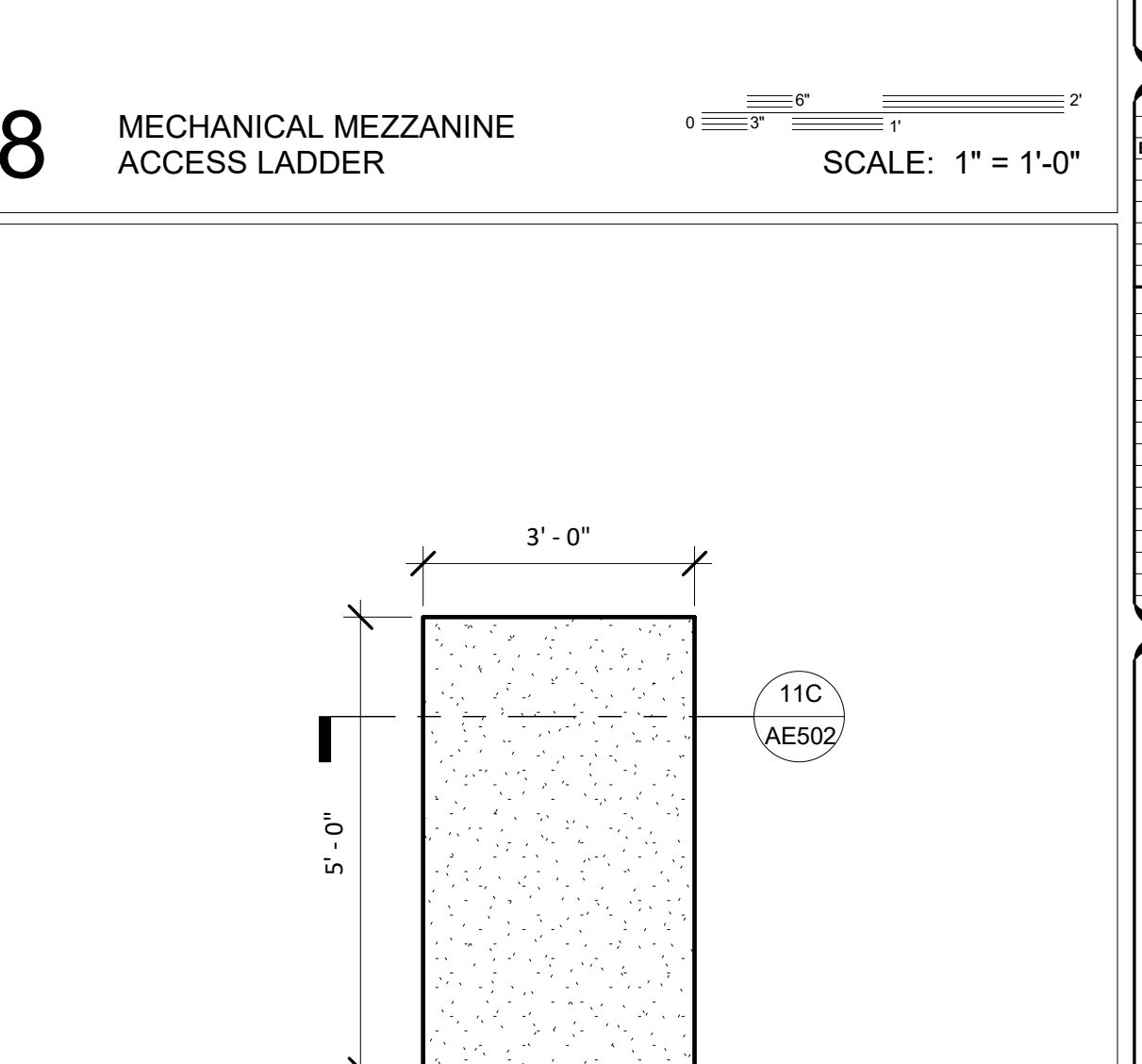
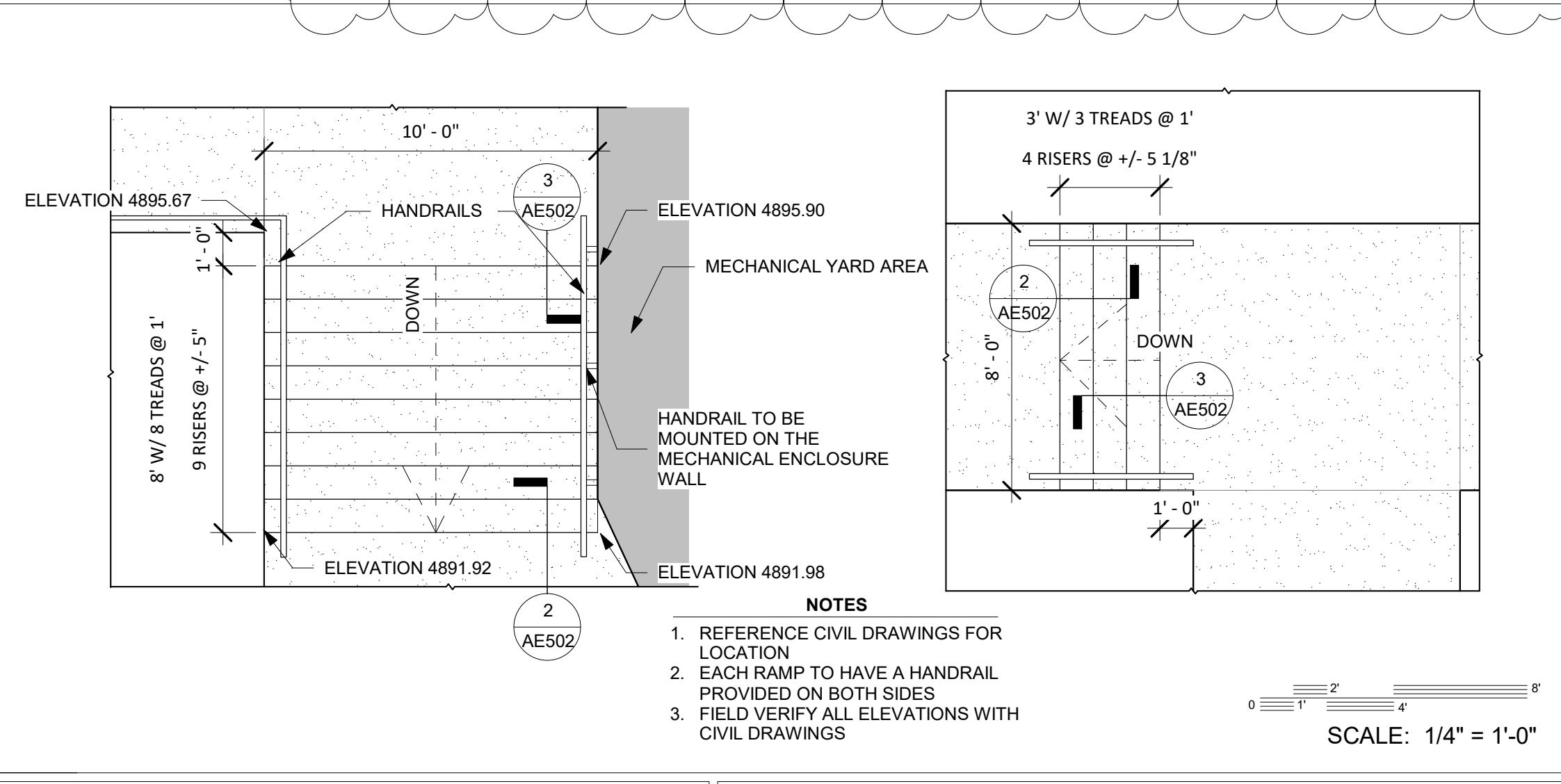
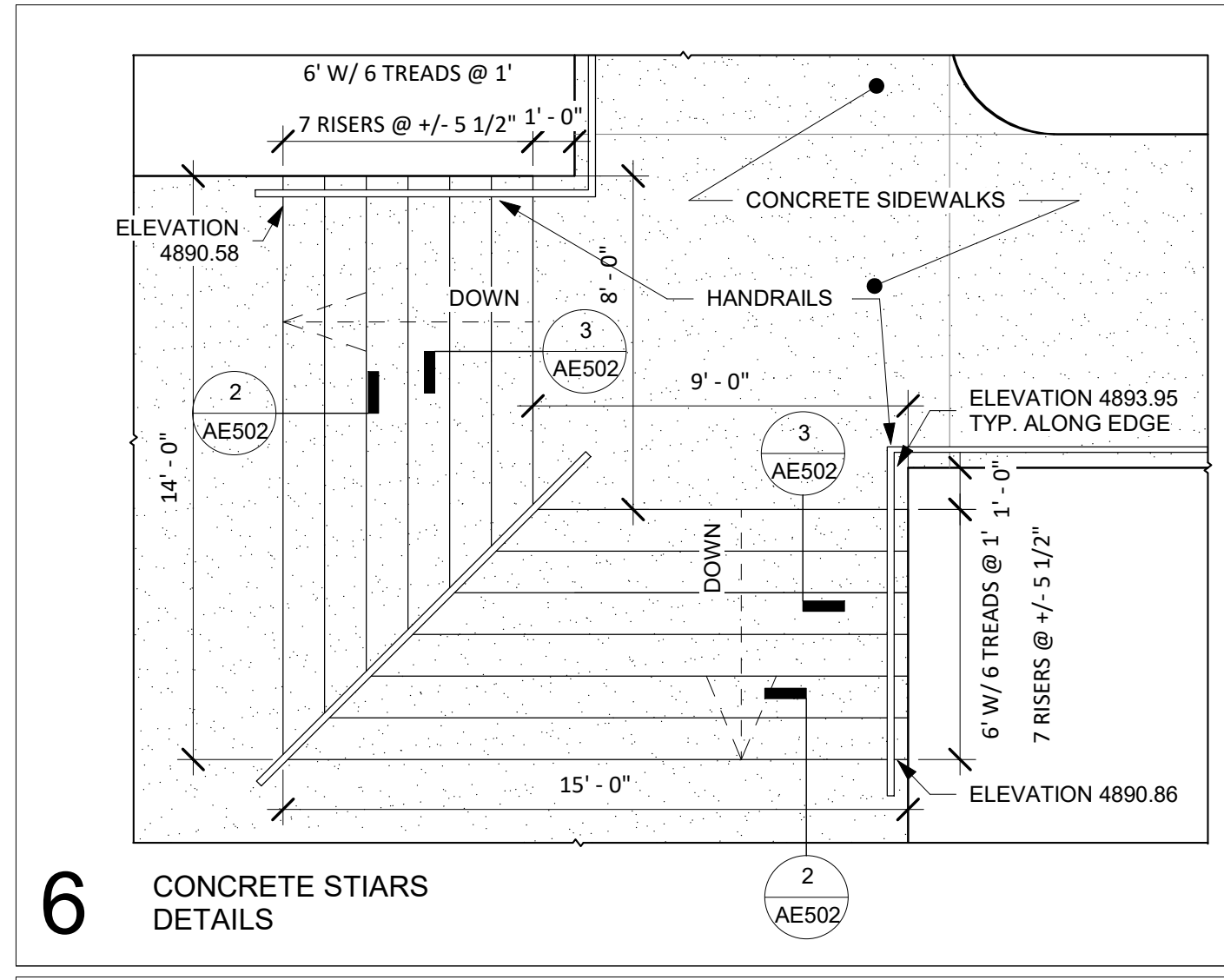
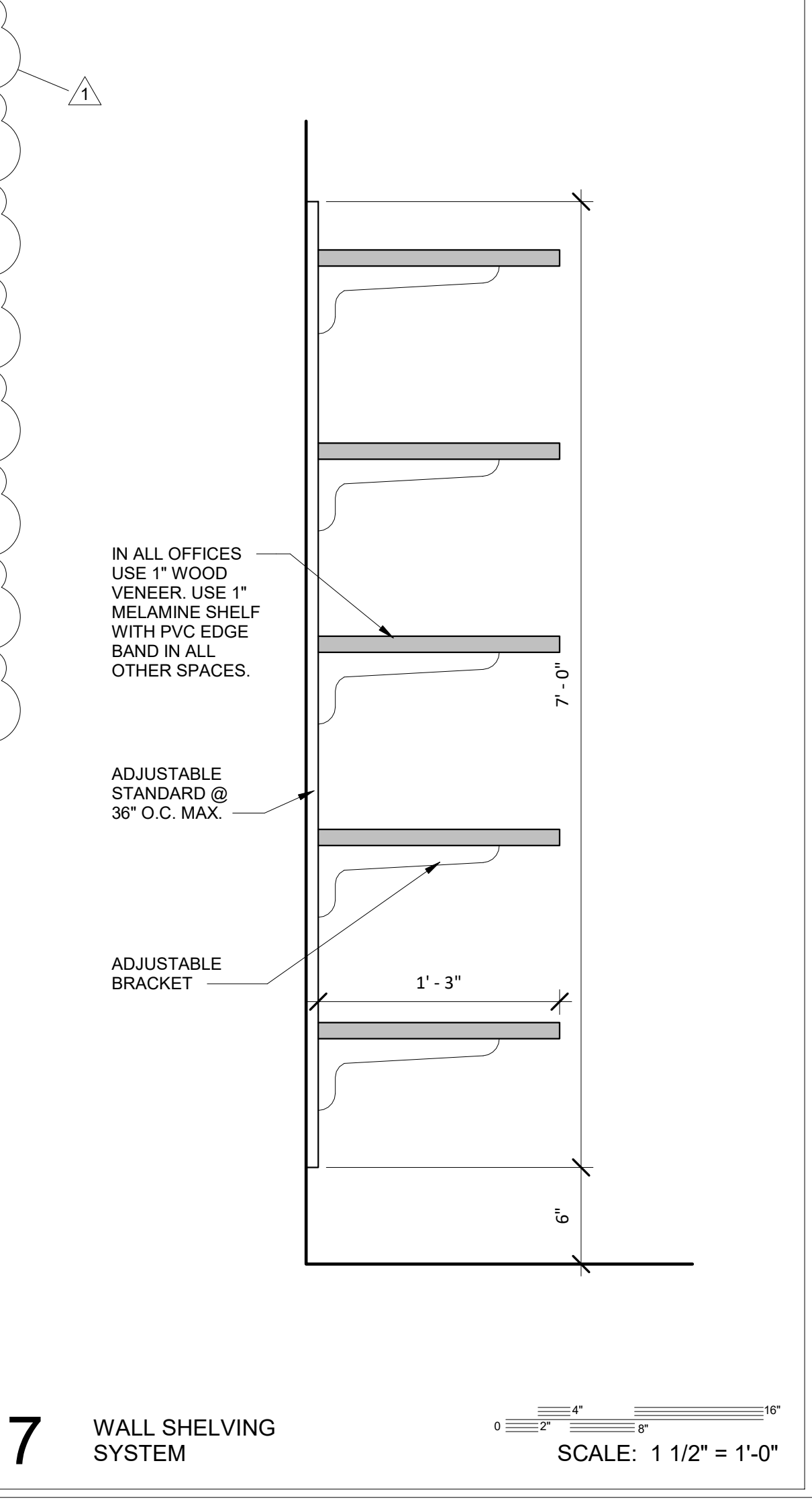
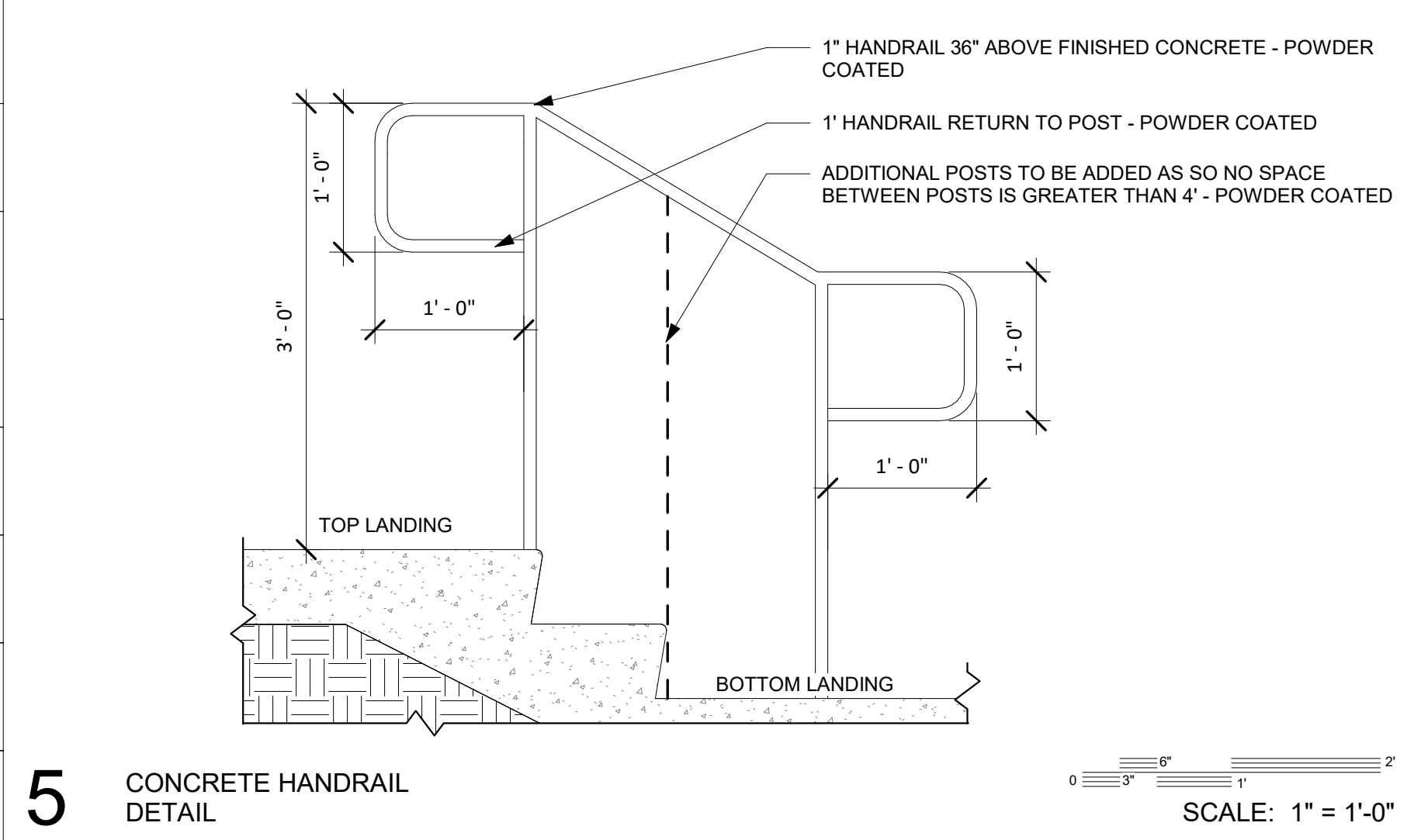
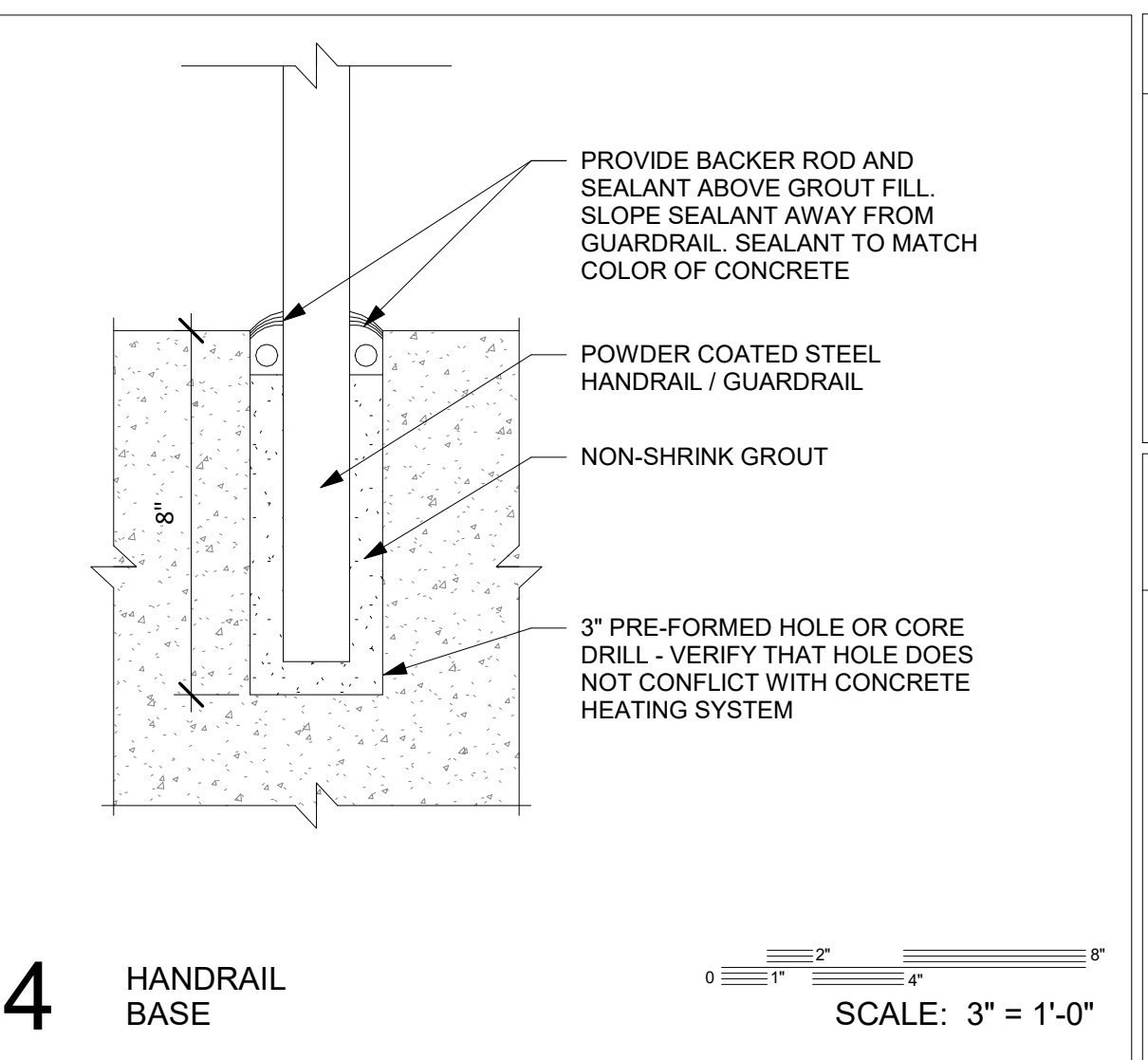
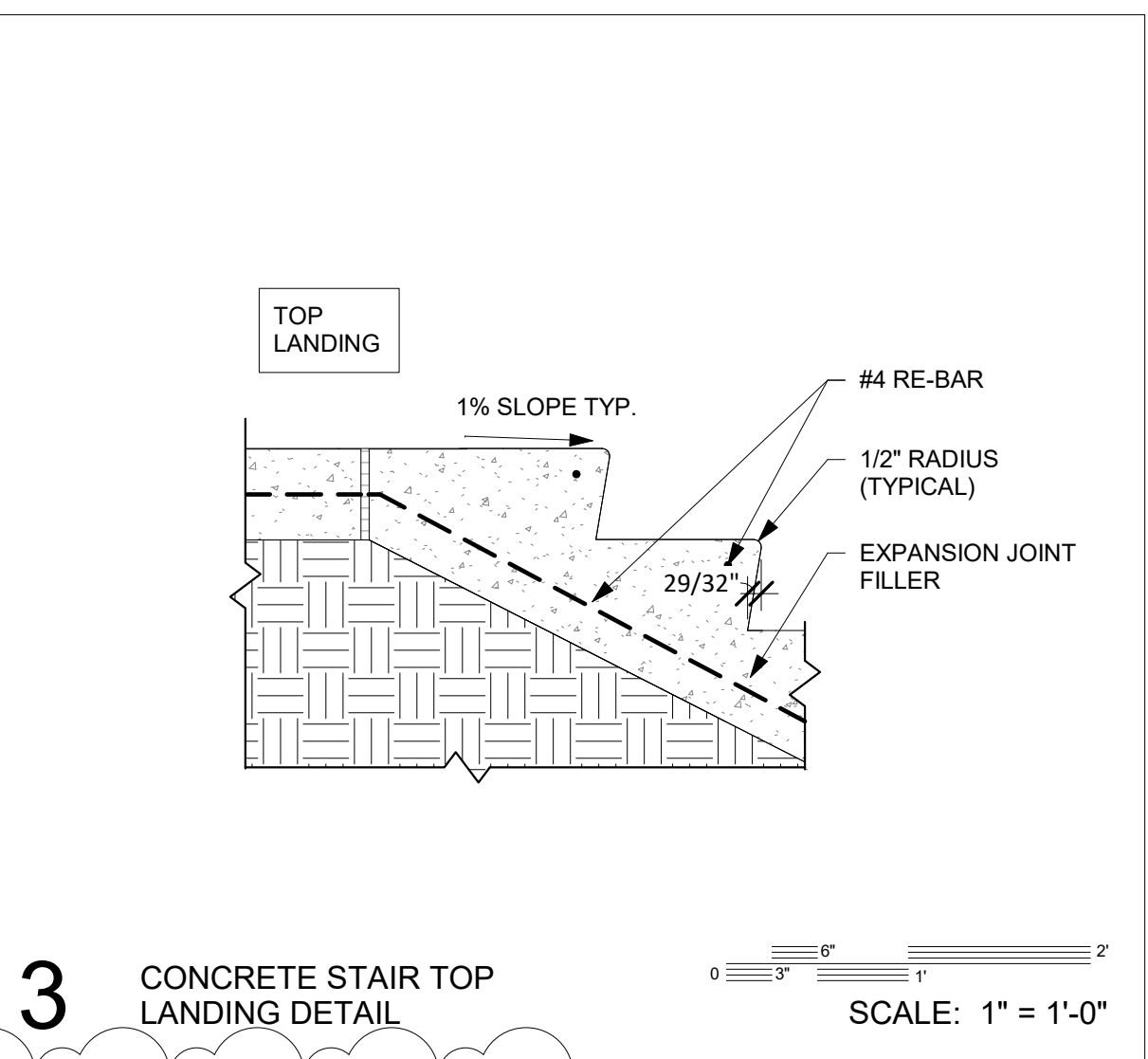
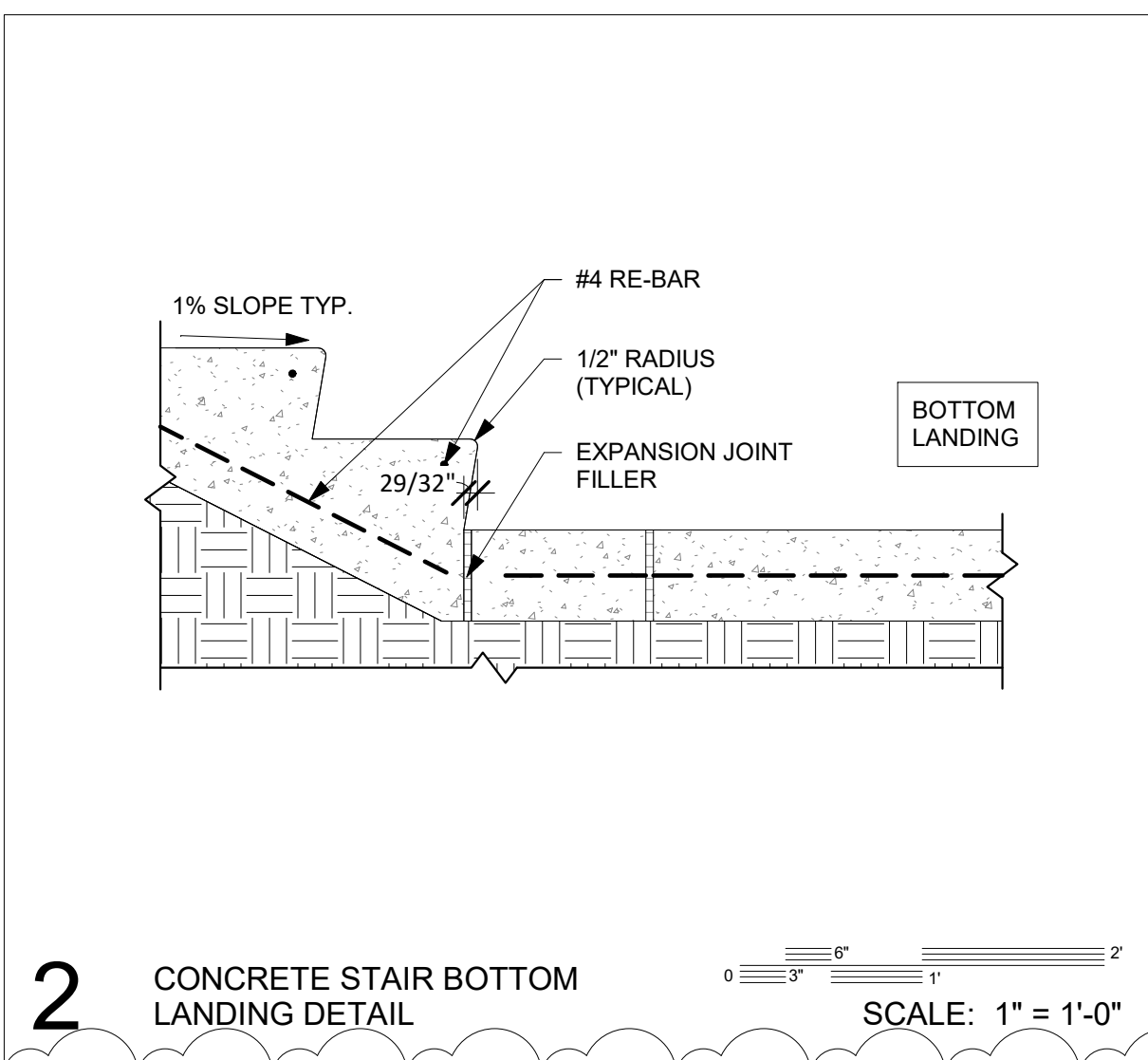
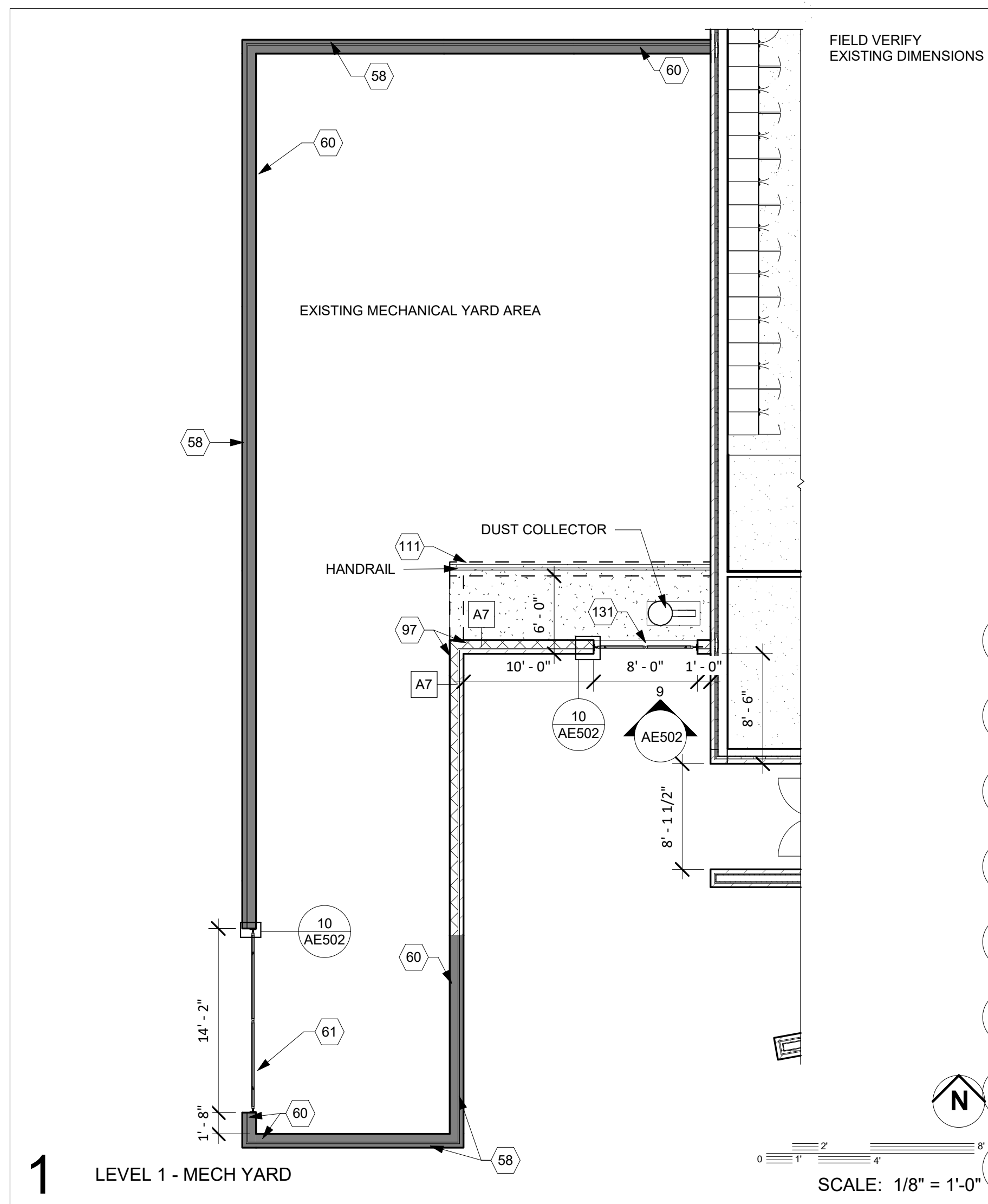
PROJECT NAME:
BRIGHAM YOUNG UNIVERSITY - IDAHO SPORI ANNEX

PROJECT NUMBER:
11513

SHEET NUMBER:
AE501

DETAILS

SHEET NUMBER:
AE501



GENERAL NOTES

- ALL DIMENSIONS ARE FROM THE FACE OF FRAMING U.N.O.
- HINGE SIDE OF DOORS ARE SIX INCHES (6") FROM ADJACENT IN WALL U.N.O.
- WALLS EXTEND TO THE BOTTOM OF ROOF DECK ABOVE. FINISH AROUND ROOF JOISTS, MECHANICAL, ELECTRICAL, ETC. U.N.O.

KEYNOTES INDICATED THUS: (X)

58 PATCH AND REPAIR THE EXISTING BRICK AND CMU FROM CONSTRUCTION ACTIVITY - CLEAN AND POWER WASH THE BRICK AND CMU BLOCK FOR LIKE NEW FINISH AND FINISH

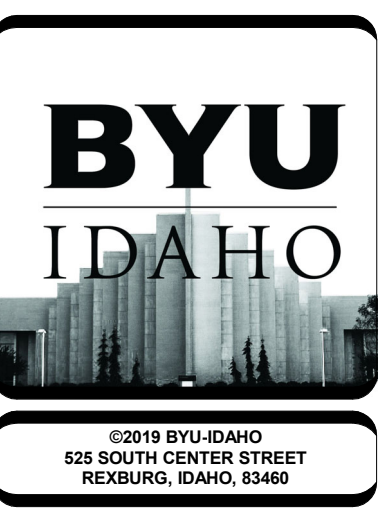
60 REMOVE AND REPLACE THE ENTIRE EXISTING PREFINISHED METAL WALL CAP WITH NEW PREFINISHED METAL WAPP CAP TO MATCH THE NEW SPORI ANNEX WALL CAP IN STYLE, COLOR, MATERIAL, AND FINISH

61 REMOVE, MEDIA BLAST AND POWDERCOAT THE EXISTING GATE TO MATCH THE COLOR AND FINISH OF THE NEW SPORI ANNEX DOOR FRAMES

97 NEW DOUBLE WIDTH BRICK WALL - HEIGHT TO MATCH EXISTING - WITH PREFINISHED METAL CAP TO MATCH THE EXISTING TO REMAIN - SEE WALL TYPE LEGEND SHEET AE101

111 LOCATION OF EXISTING MECHANICAL YARD WALL TO BE REMOVED

131 NEW METAL GATE FINISHED TO MATCH EXISTING AND REFINISHED GATE - SEE KEYNOTE 61



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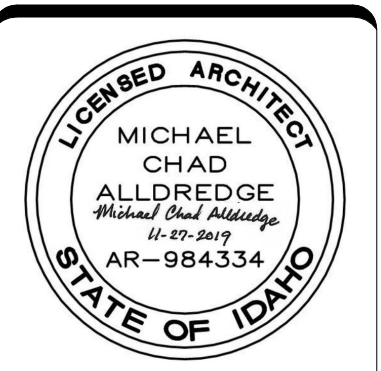
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DOCUMENT STATUS		STATUS	DATE
BID DOCUMENTS			11/27/2019

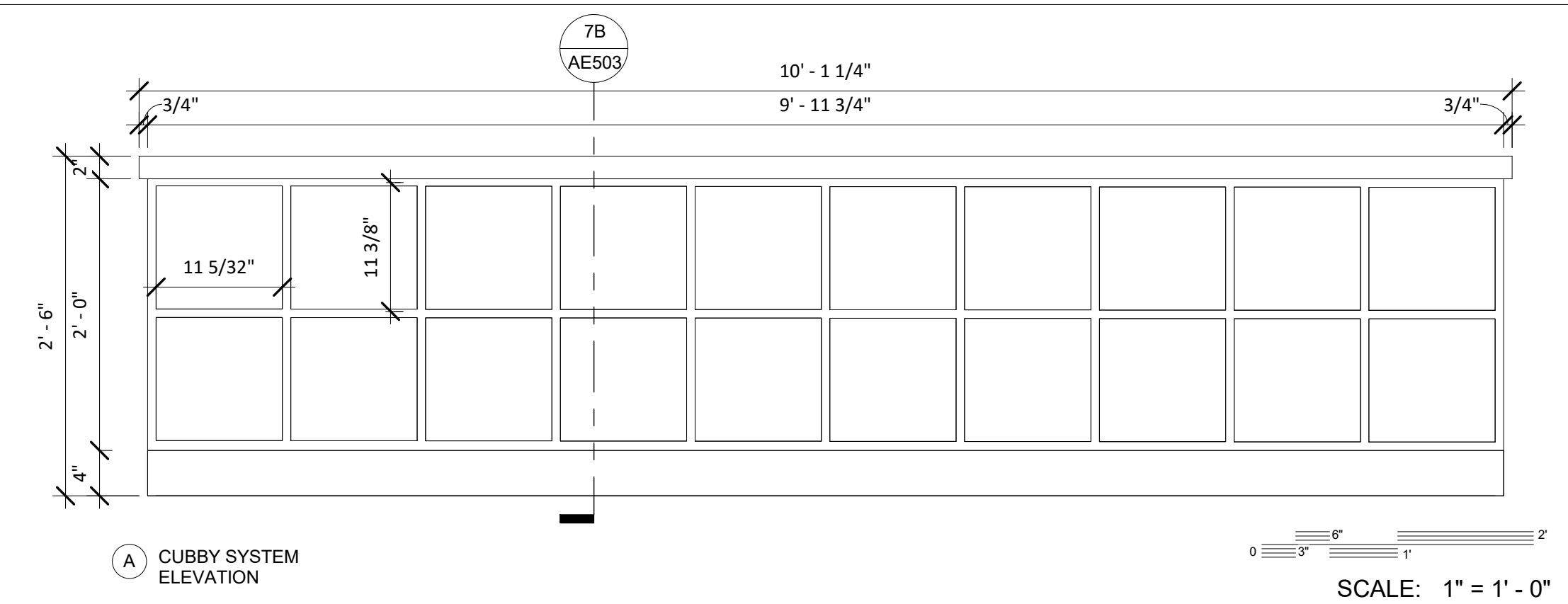
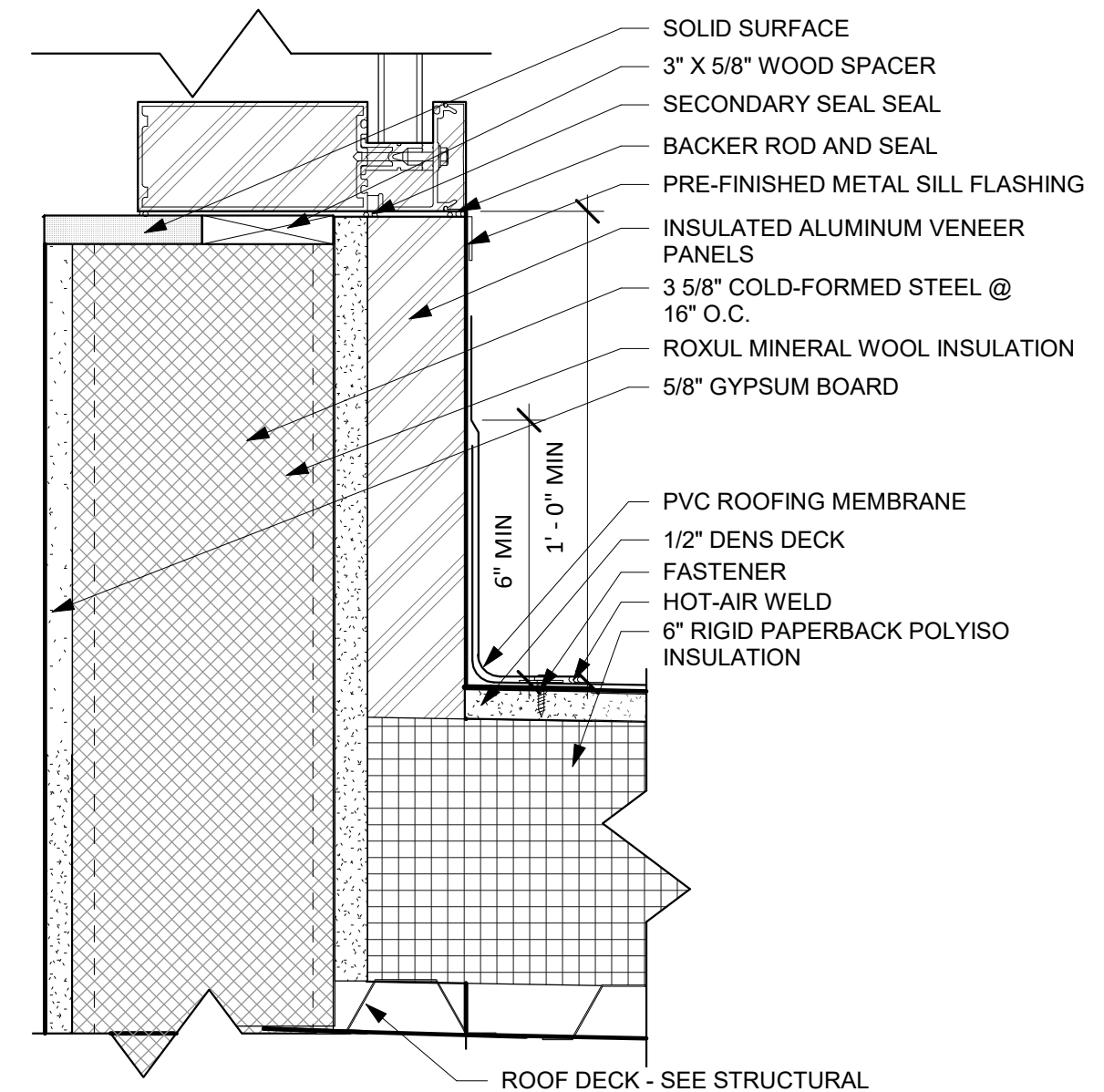
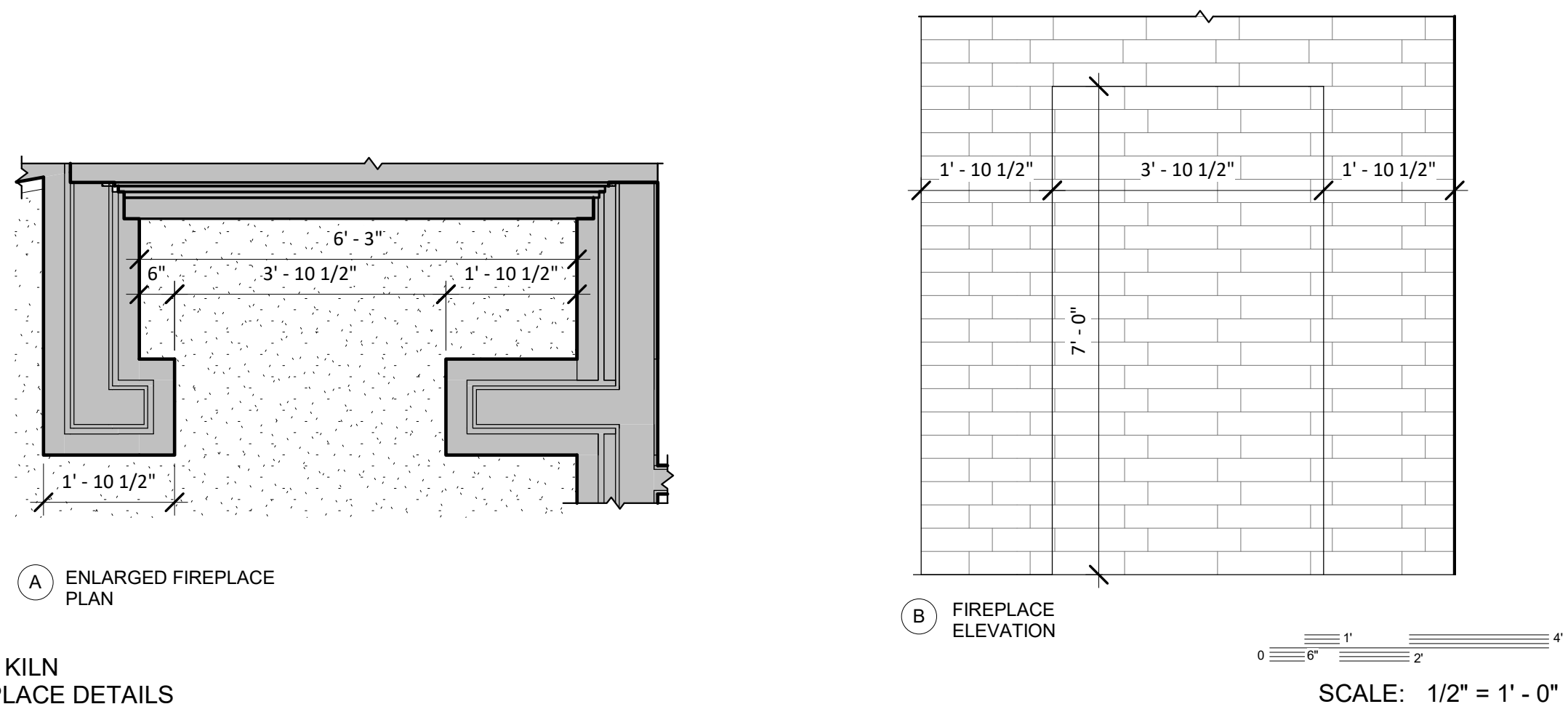
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NO.	DESCRIPTION	DATE
1	ADDENDUM 3	1/30/2020

PROJECT NAME:
BRIGHAM YOUNG UNIVERSITY - IDAHO SPORI ANNEX

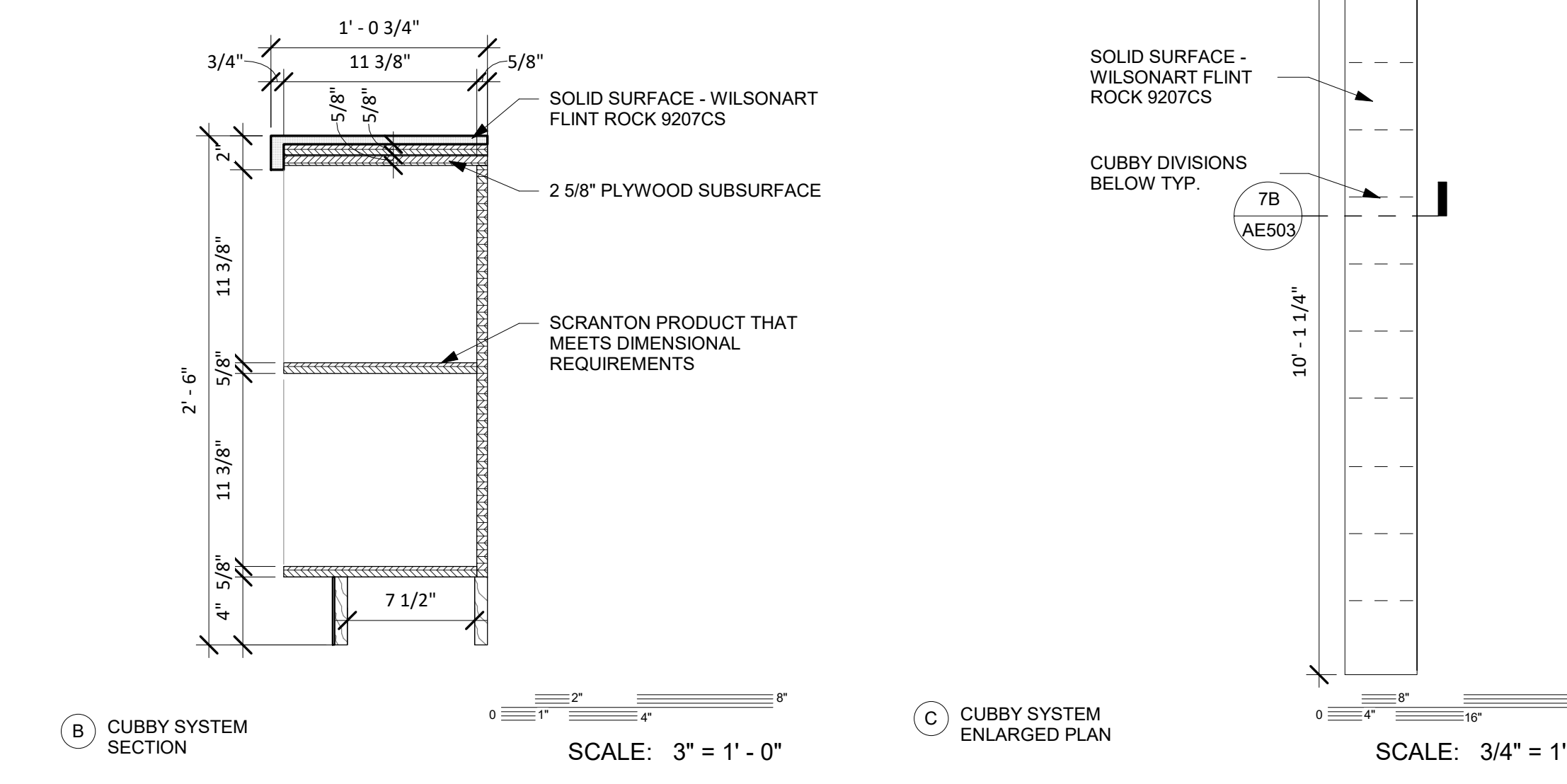
PROJECT NO: 11513

SHEET NAME:
DETAILS

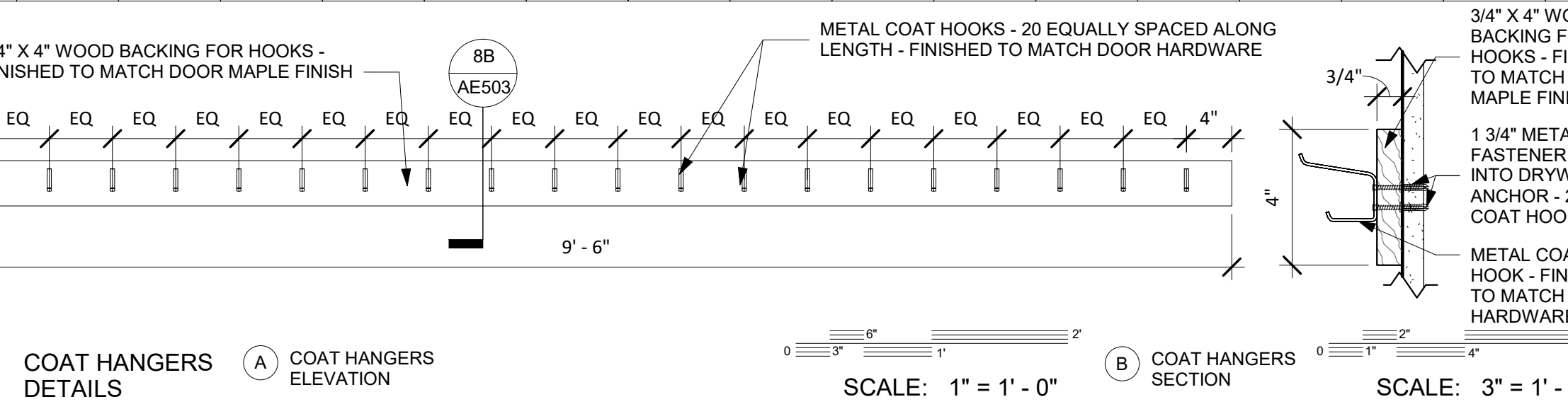
SHEET NUMBER:
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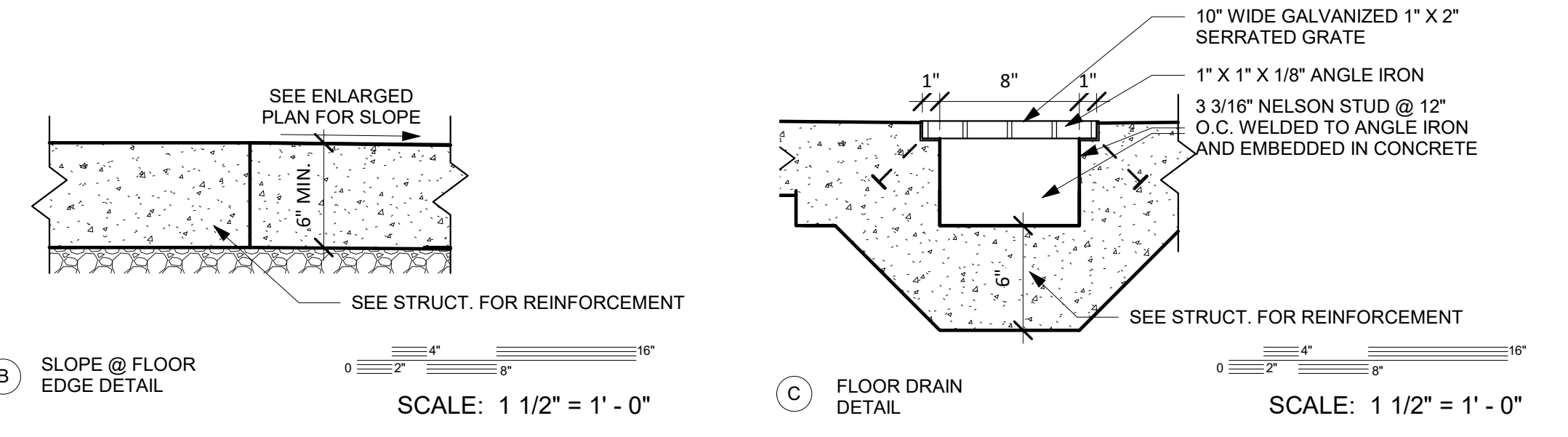
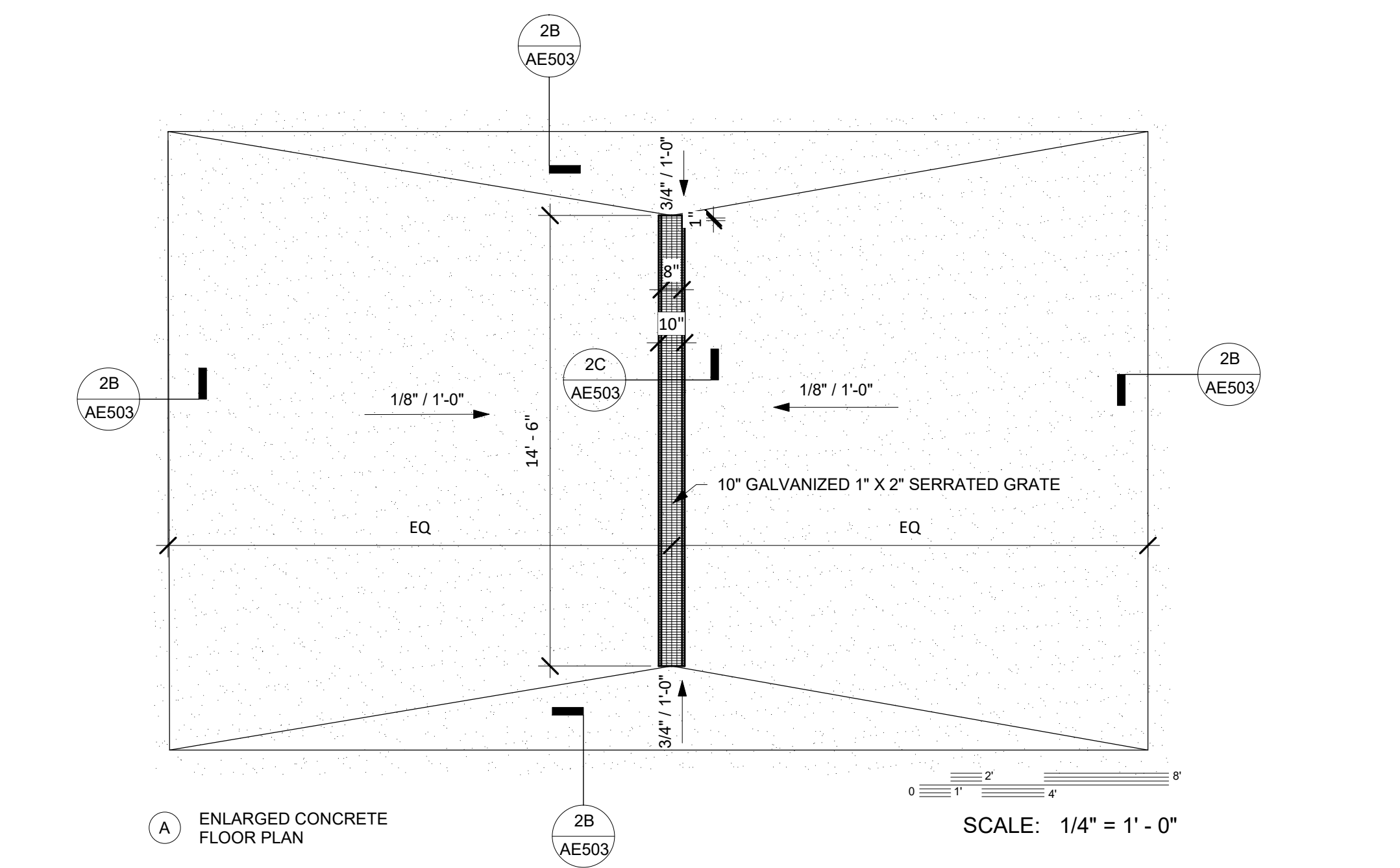
4 ROOF @ CLEARSTORY DETAIL SCALE: 3" = 1'-0"



7 CUBBY SYSTEM DETAILS

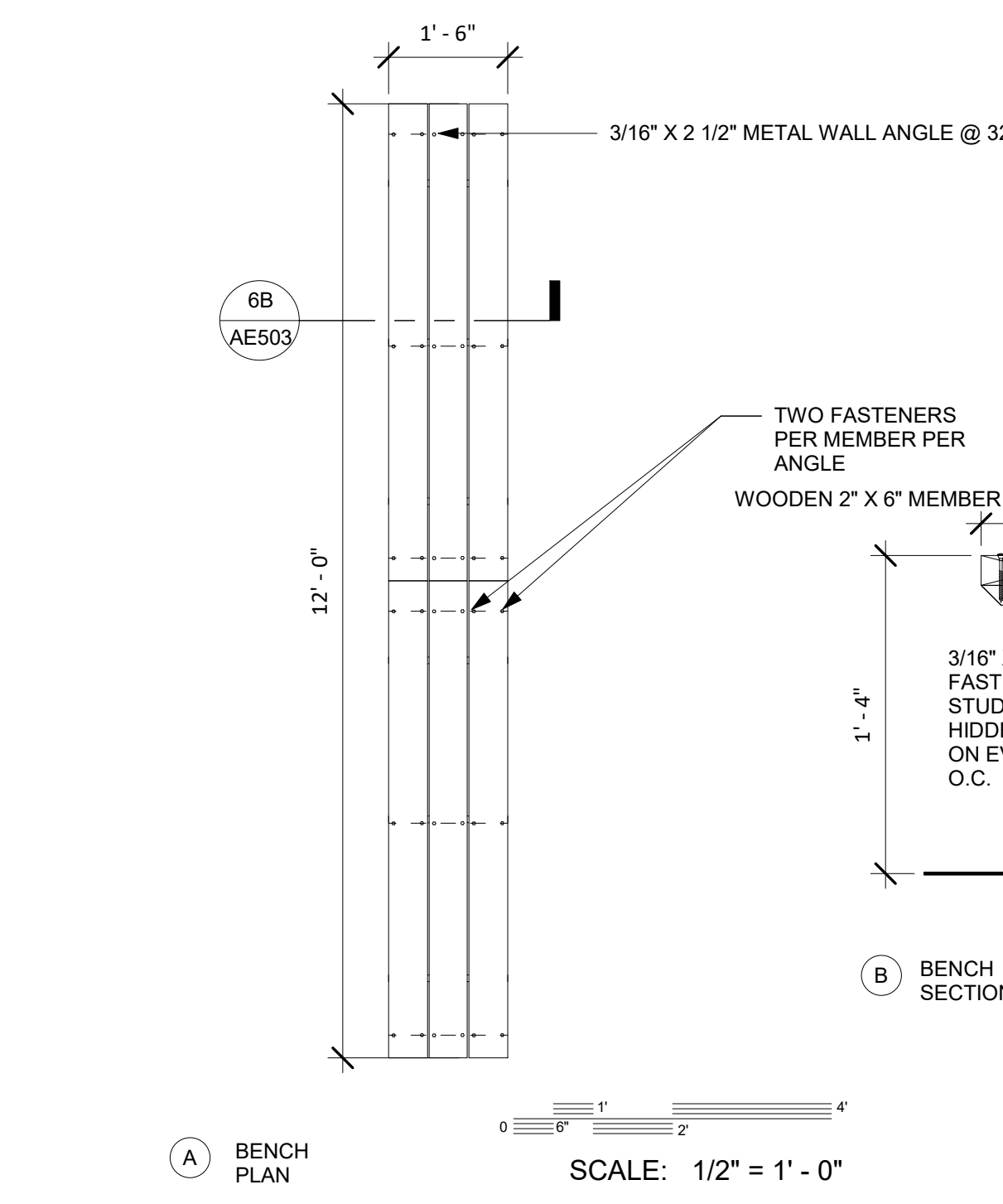


8 COAT HANGERS DETAILS

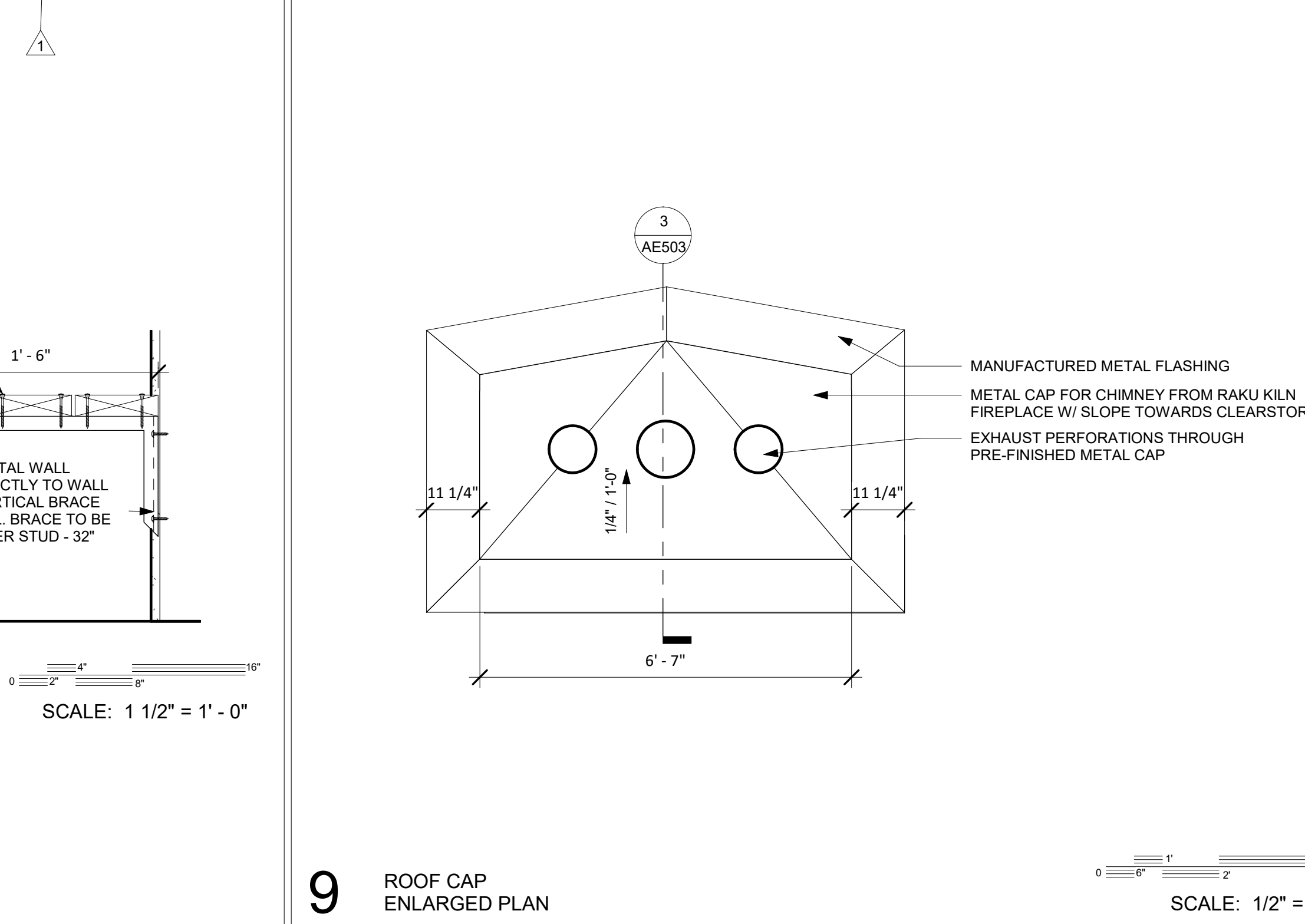


2 CONCRETE FLOOR DETAILS

5 EXPANSION JOINT DETAIL SCALE: 3" = 1'-0"



6 18" BENCH DETAILS



9 ROOF CAP ENLARGED PLAN



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K. JACOB KNIVILLE

NO.	DESCRIPTION	DATE
1	ADDENDUM 3	12/20/2020

NO.	DESCRIPTION	DATE
1	ADDENDUM 3	12/20/2020

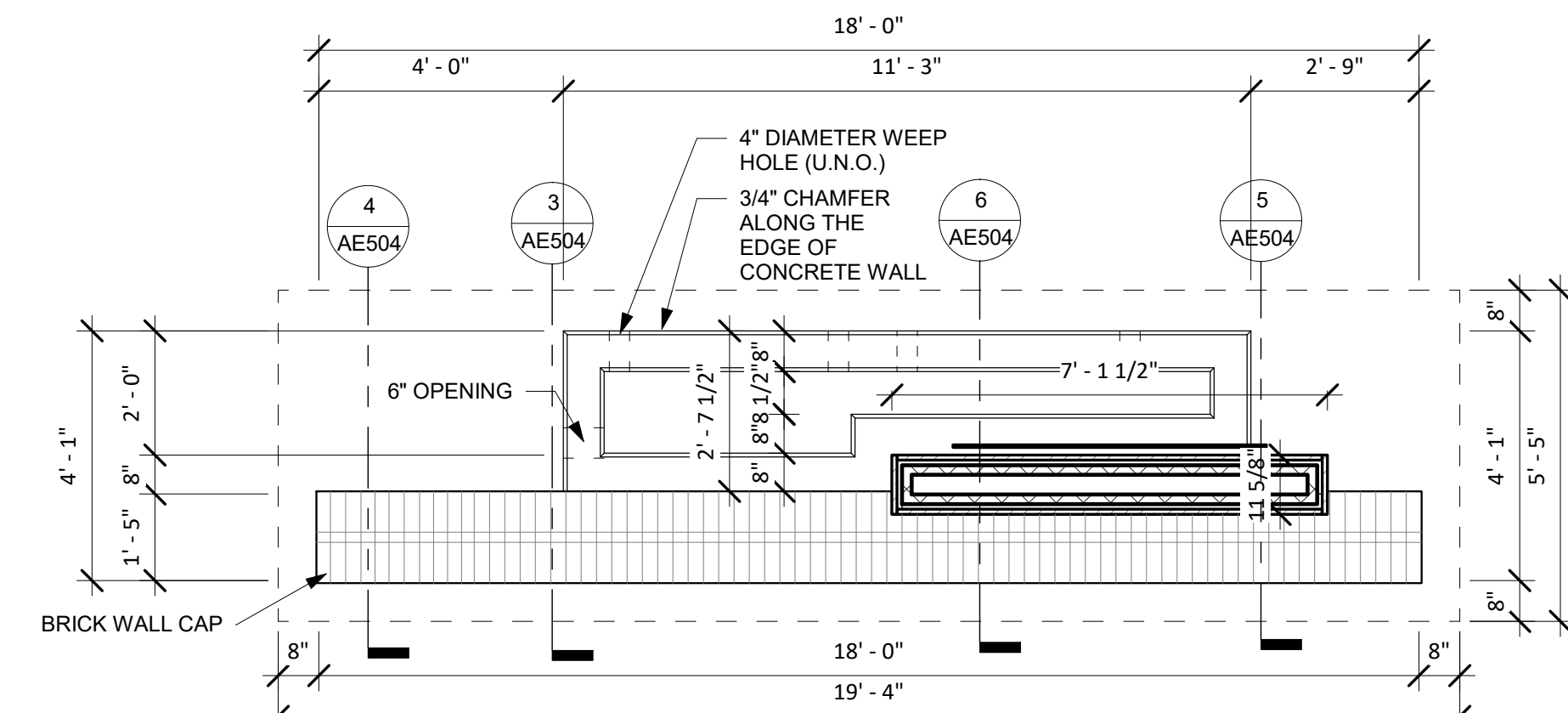
PROJECT NAME:
BRIGHAM YOUNG UNIVERSITY - IDAHO SPORI ANNEX

PROJECT NO: 11513

SHEET NUMBER:
AE503

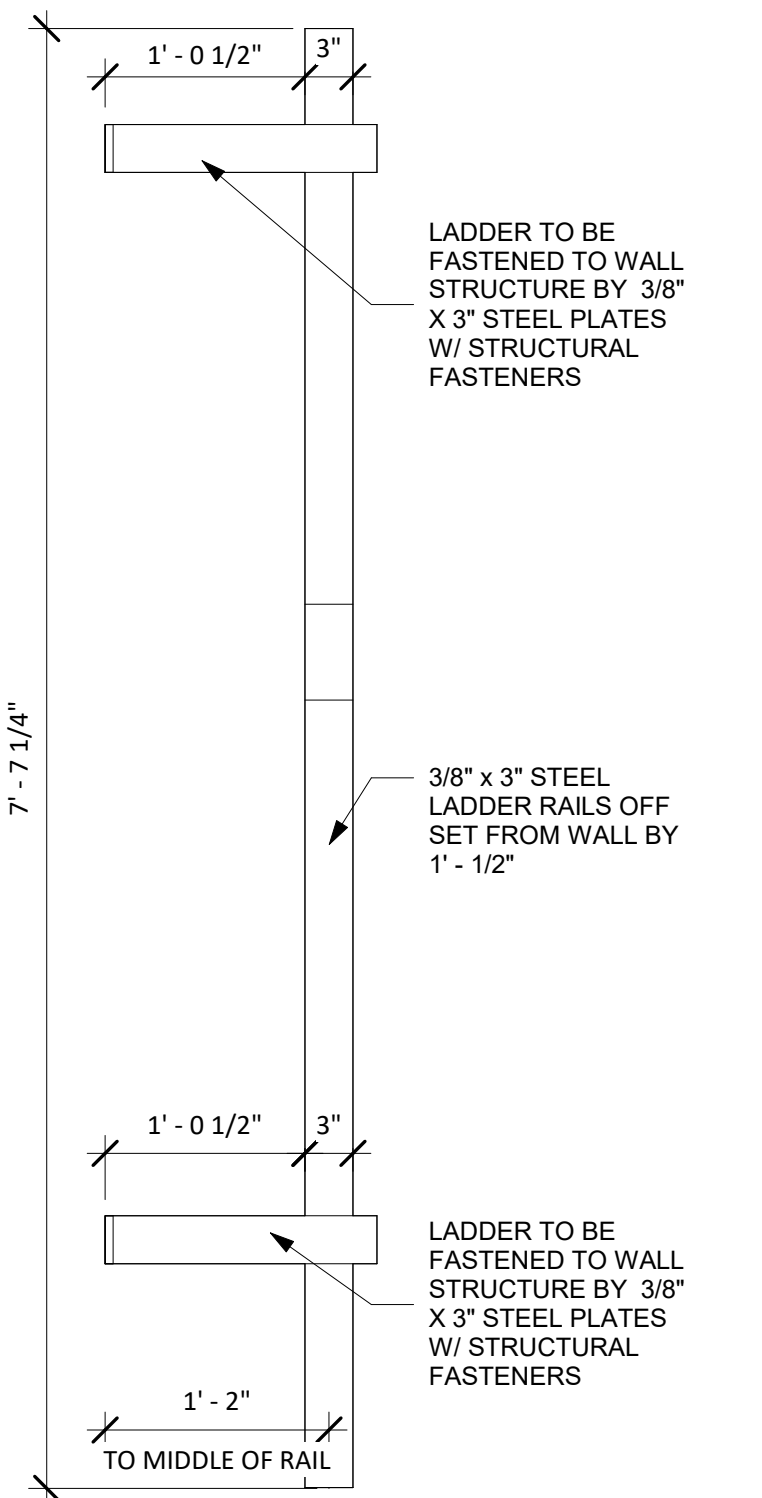
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SHEET NUMBER:
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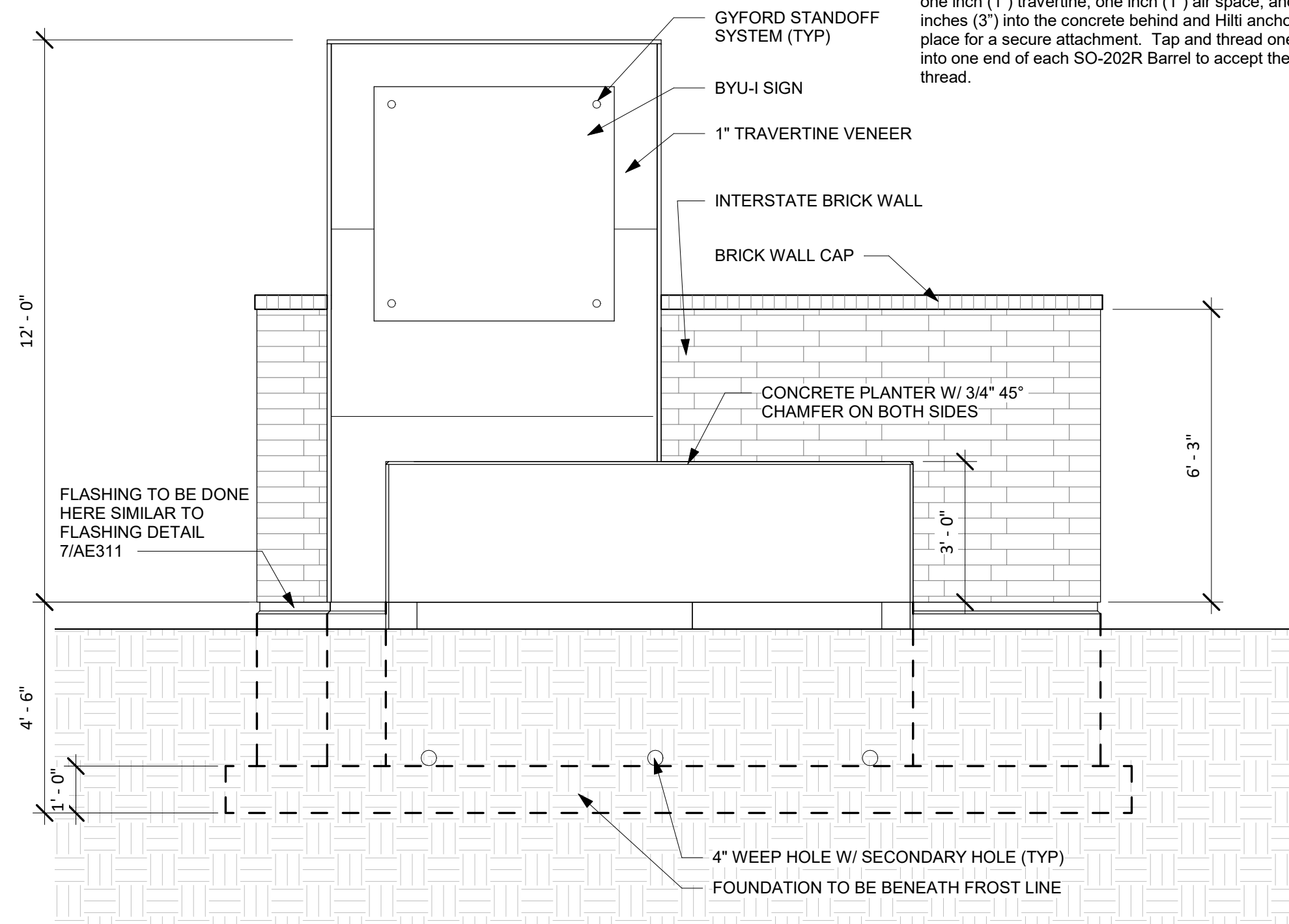
1 MONUMENT ENLARGED PLAN

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



7 ROOF ACCESS LADDER SIDE

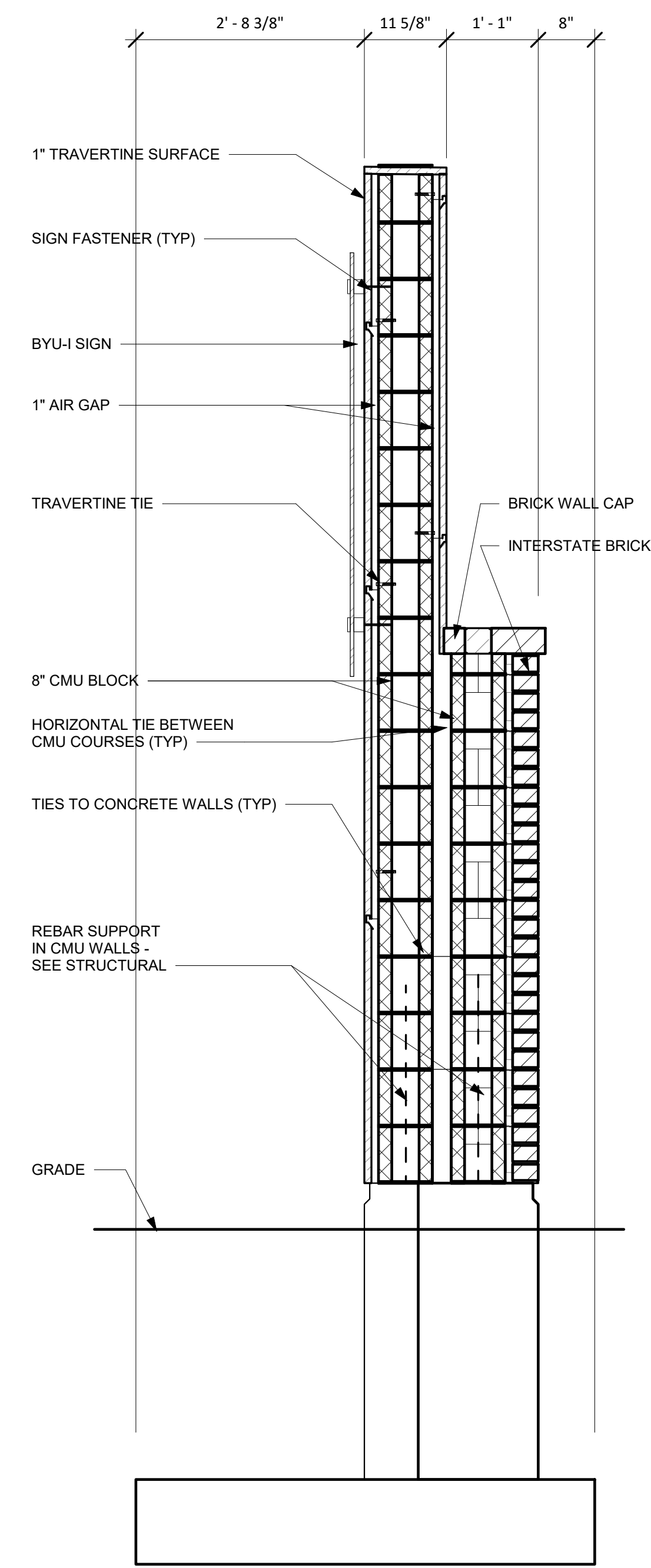
SCALE: 1" = 1'-0"



2 MONUMENT ELEVATION

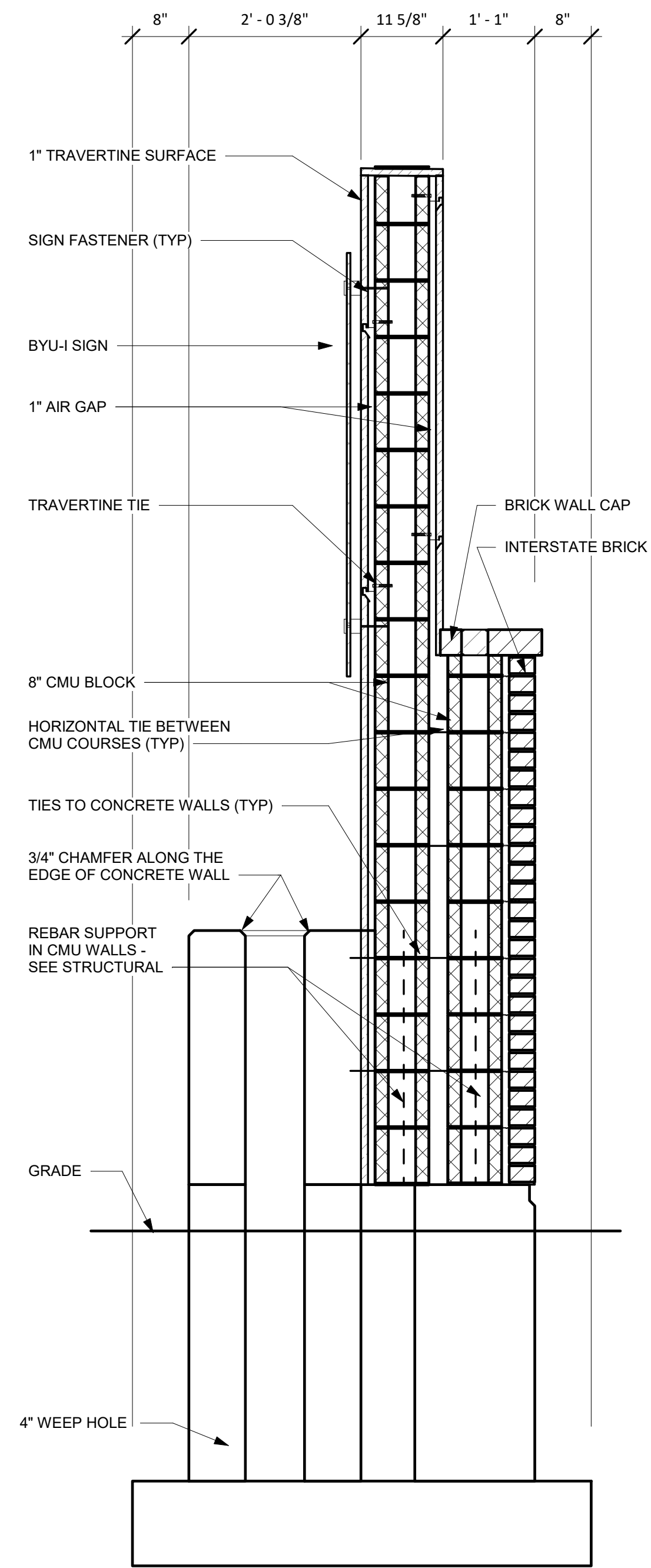
SCALE: 3/8" = 1'-0"

The BYUI sign will be Contractor provided and installed. It will be 3/8" 6061 aluminum with 1/4" rounded corners, 1/16" eased edges, 7/16" holes centered at each corner four and one half inches (4.5") in from each side to accommodate a Gyford Standoff System. Sign plate shall be anodized aluminum with BYUI logo etched into the surface. Polish and otherwise prepare the surfaces of the sign to accept smooth, clean, and consistent anodizing color prior to anodizing. Verify anodizing color with Owner prior to ordering as well as request a high resolution logo image from Owner prior to and for use in etching. All exposed Gyford Standoff System parts shall have an anodized finish and color to match the signs finish and color. Gyford standoff assembly has SO-202R Barrels with SO-CAP22R Standard Caps and 1-1/4" long threaded studs. Other hardware as necessary. Rather than using the combination screw and nylon anchor or 5/16"-18 all thread by Gyford, use 1/2"-20 all thread installed through the one inch (1") travertine, one inch (1") air space, and three inches (3") into the concrete behind and Hilti anchored into place for a secure attachment. Tap and thread one inch (1") into one end of each SO-202R Barrel to accept the 1/2"-20 all thread.



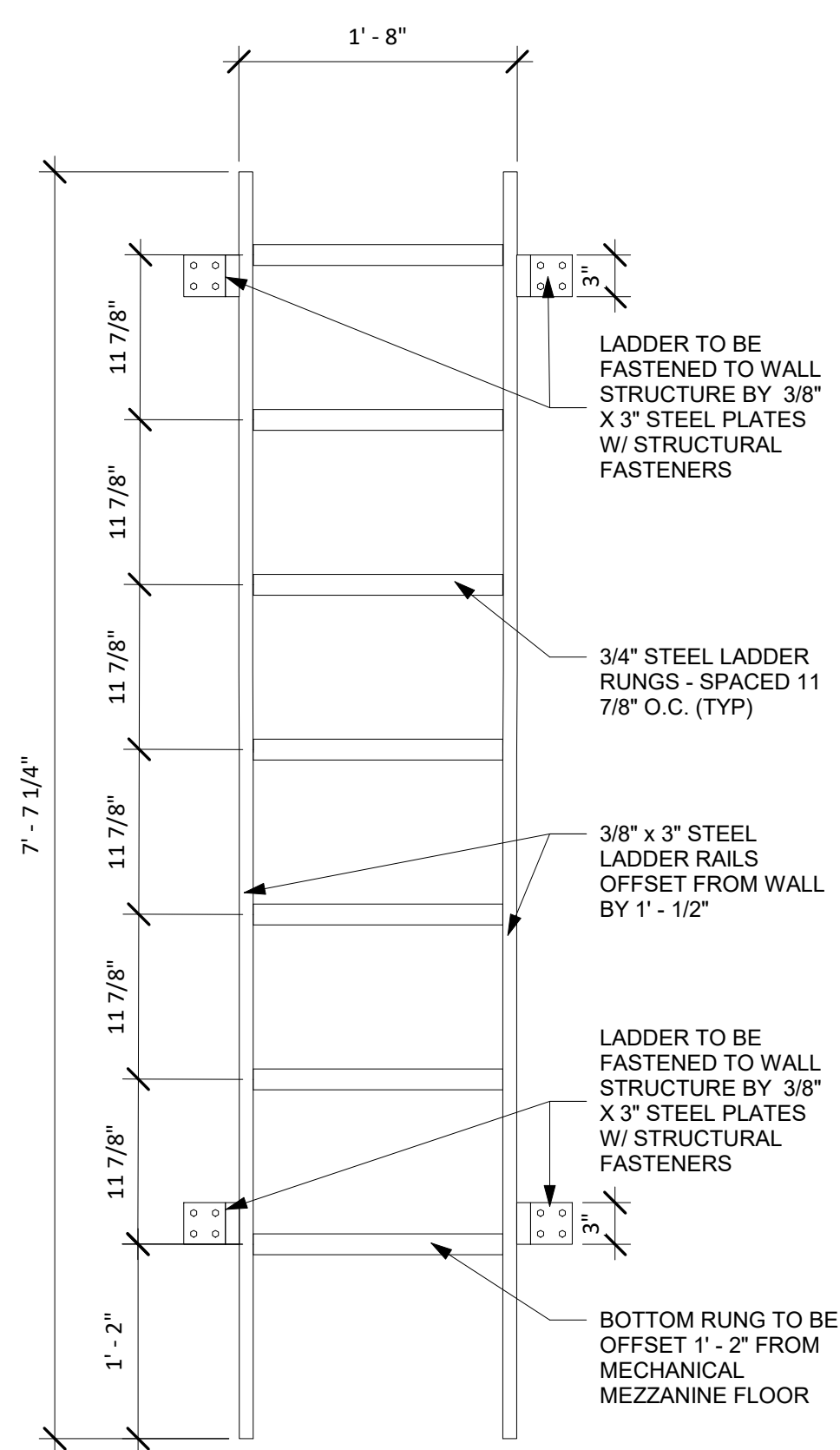
5 WALL AND TOWER DETAIL

SCALE: 3/4" = 1'-0"



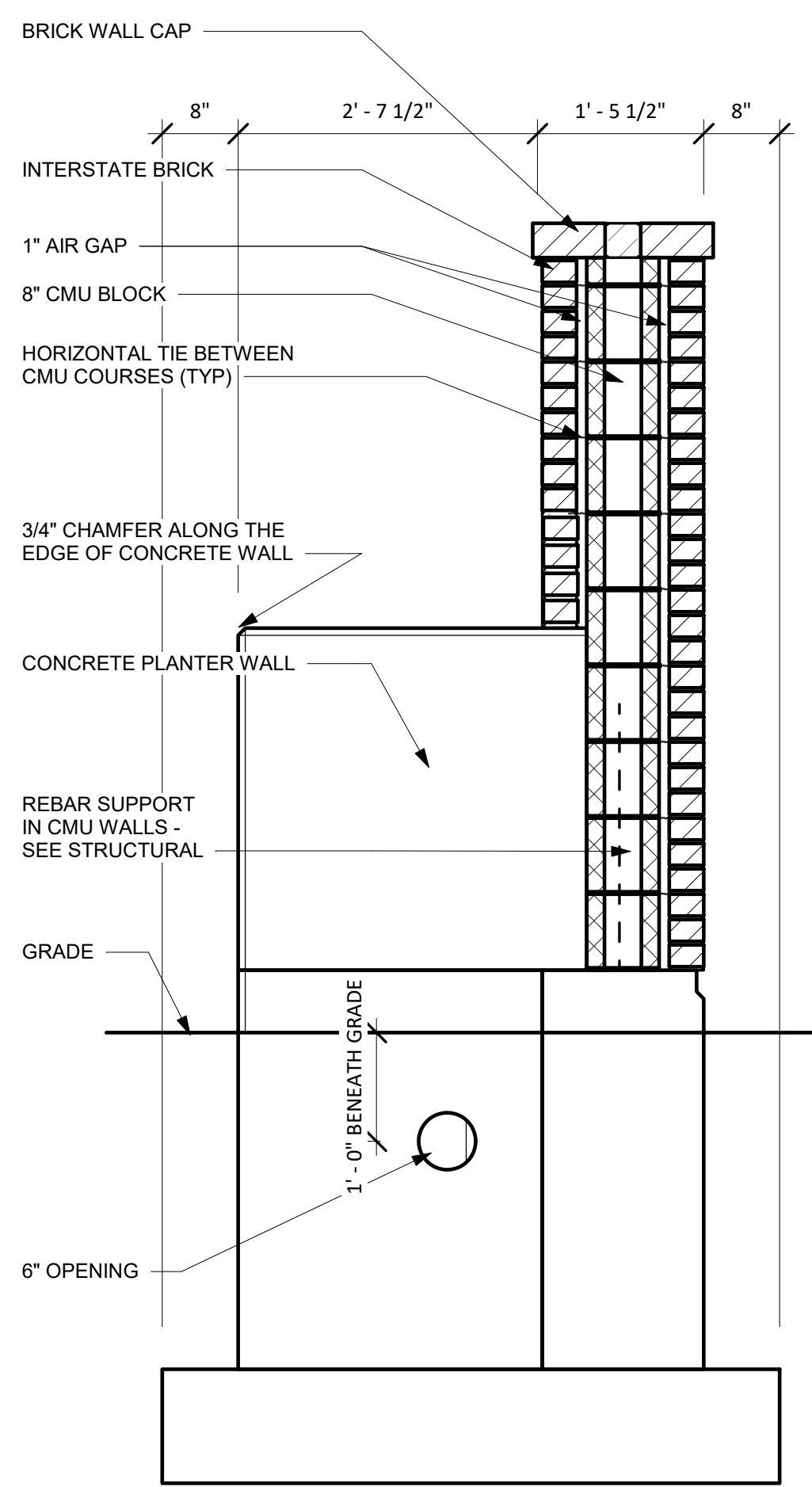
6 WALL, TOWER, AND PLANTER DETAIL

SCALE: 3/4" = 1'-0"



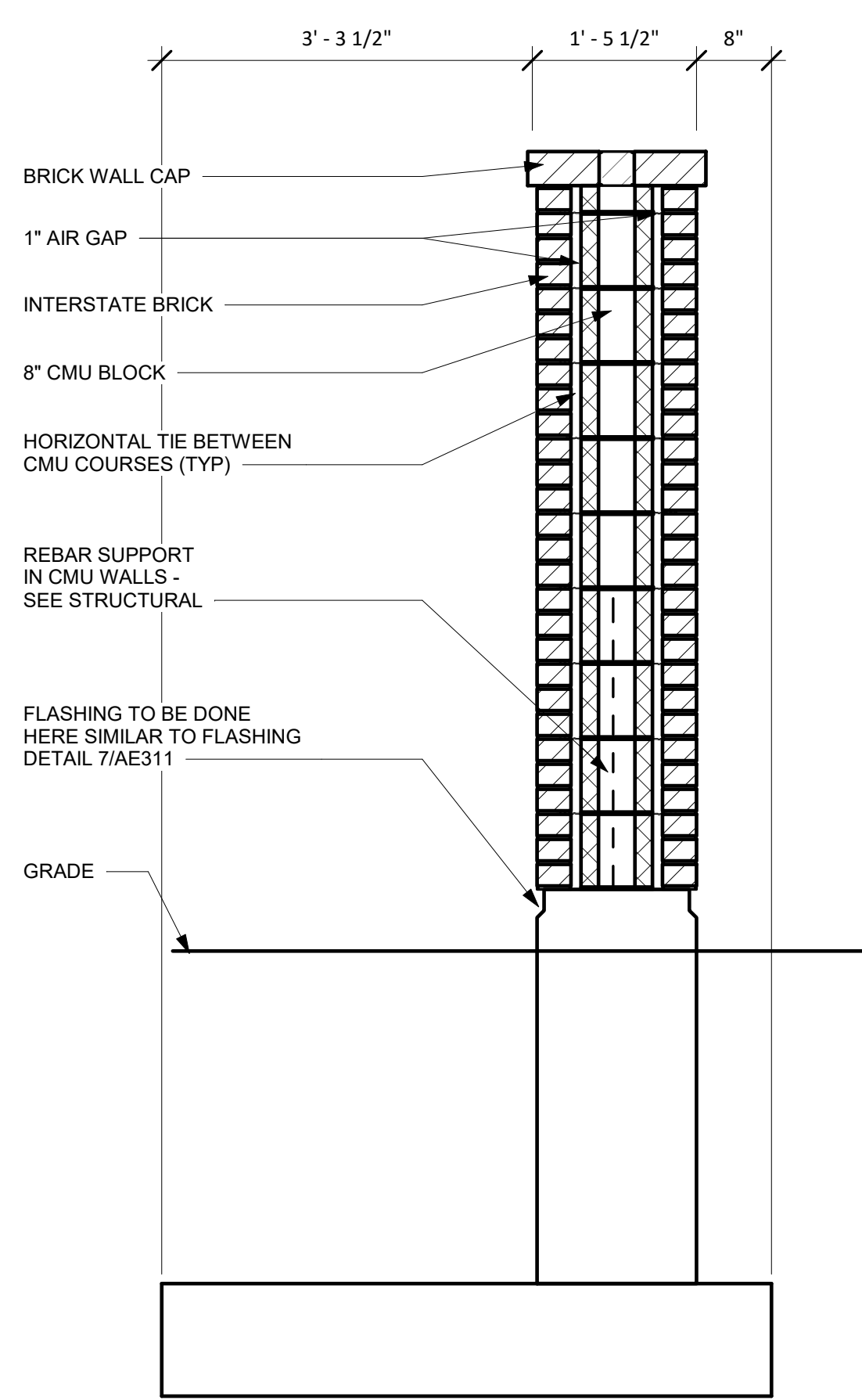
8 ROOF ACCESS LADDER ELEVATION

SCALE: 1" = 1'-0"



3 WALL AND PLANTER DETAIL

SCALE: 3/4" = 1'-0"



4 WALL DETAIL

SCALE: 3/4" = 1'-0"

NOTES

- T - INDICATES TEMPERED GLASS IN THIS LOCATION
- S - INDICATES SPANDREL GLASS IN THIS LOCATION
- TS - INDICATES TEMPERED AND SPANDREL GLASS IN THIS LOCATION

GENERAL NOTES

1. ALL DIMENSIONS ARE FROM THE FACE OF FRAMING U.N.O.
2. HINGE SIDE OF DOORS ARE SIX INCHES (6") FROM ADJACENT IN WALL U.N.O.
3. WALLS EXTEND TO THE BOTTOM OF ROOF DECK ABOVE. FINISH AROUND ROOF JOISTS, MECHANICAL, ELECTRICAL, ETC. U.N.O.



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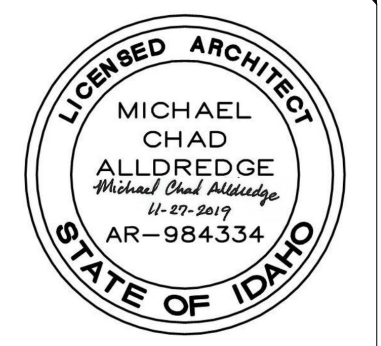
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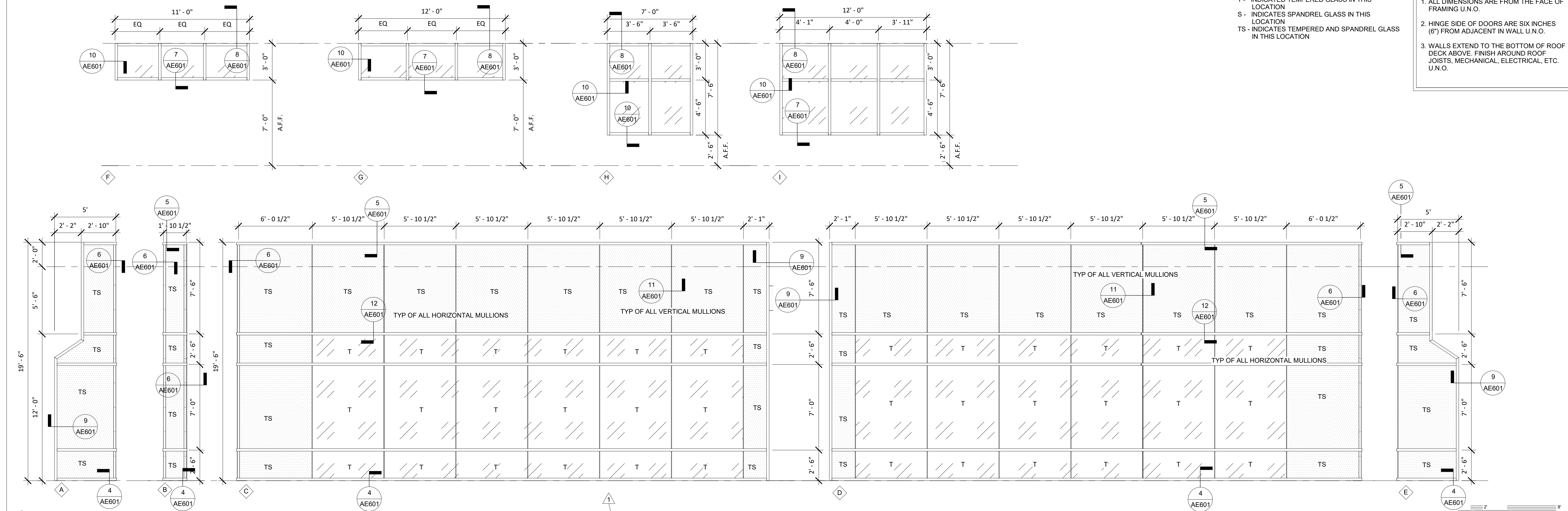
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STATUS	DATE	
BID DOCUMENTS	11/27/2019	
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
1	ADDENDUM 3	1/30/2020

PROJECT NAME:
BRIGHAM YOUNG UNIVERSITY - IDAHO SPORI ANNEX

PROJECT NO: 11513

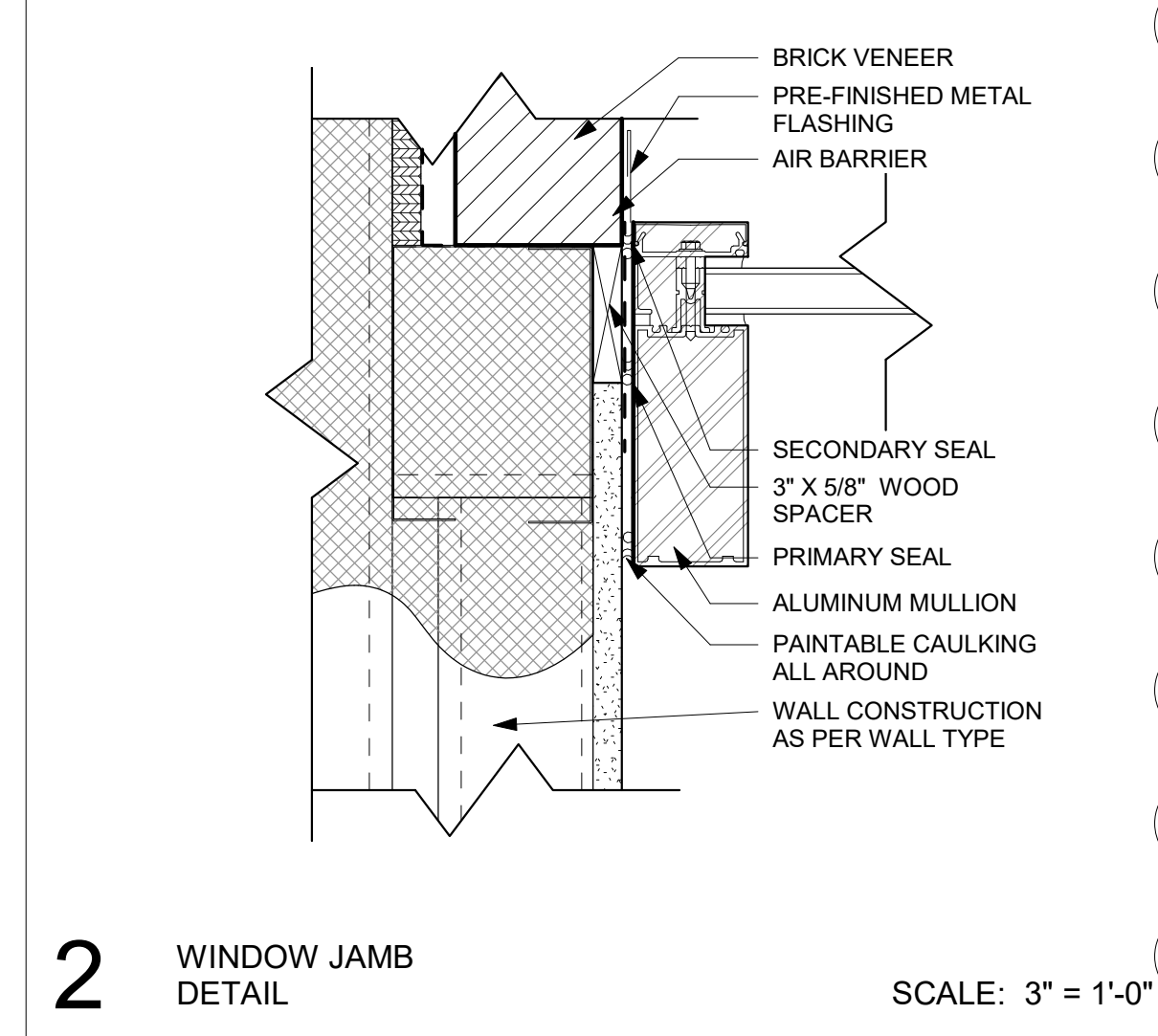
SHEET NAME:
WINDOW SCHEDULE & DETAILS

SHEET NUMBER:
AE601



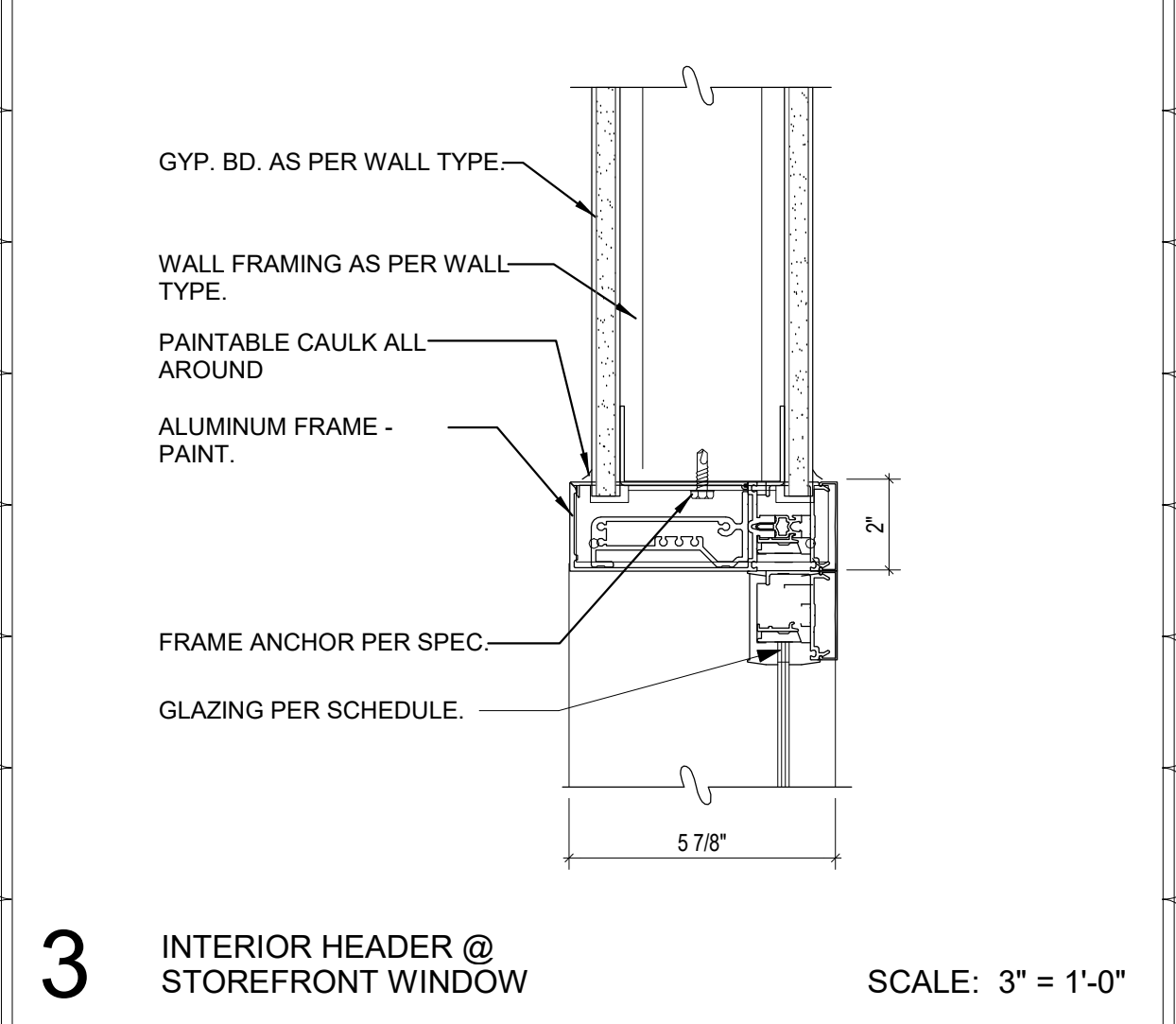
1 WINDOW SCHEDULE

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



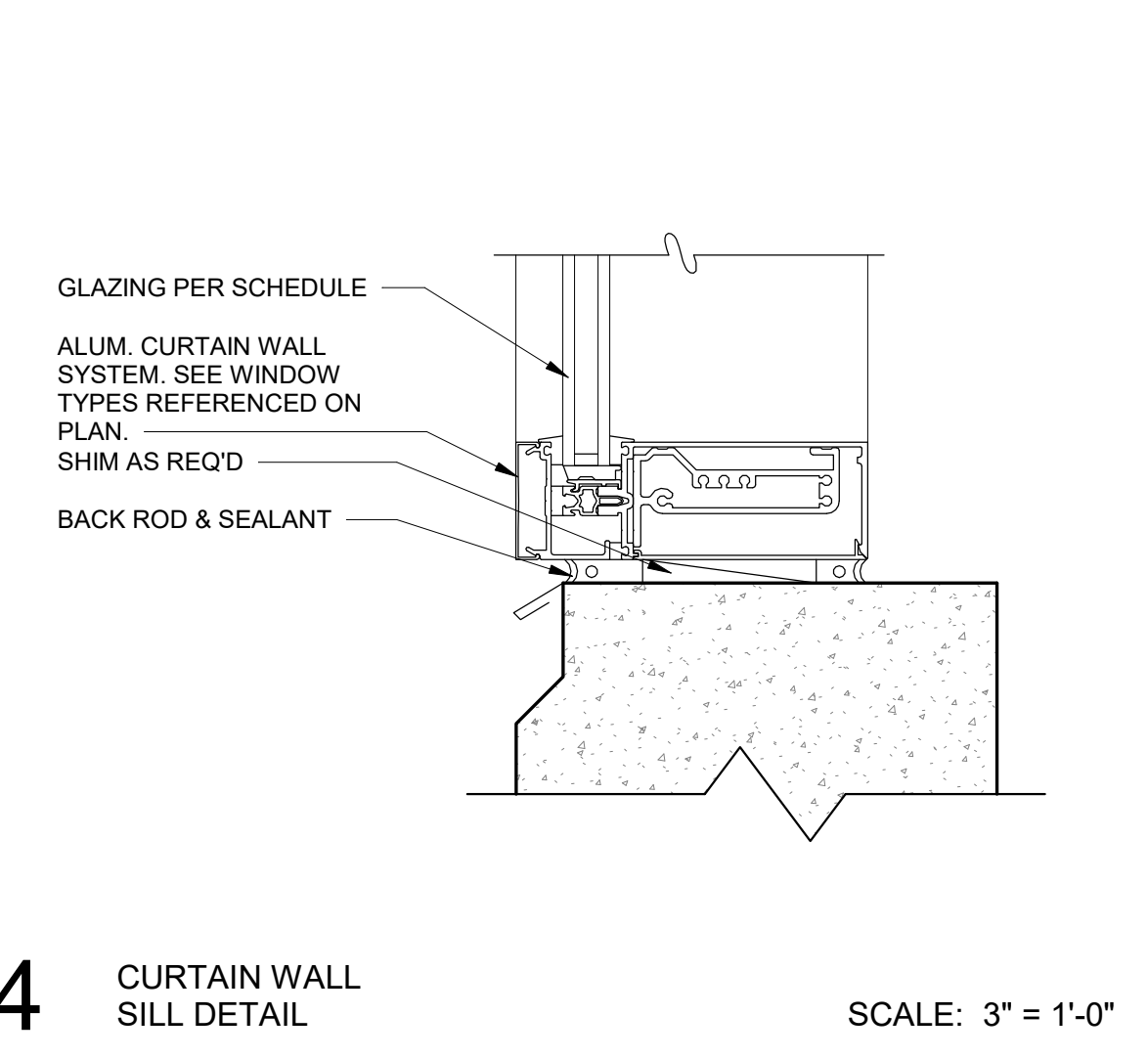
2 WINDOW JAMB DETAIL

SCALE: 3" = 1'-0"



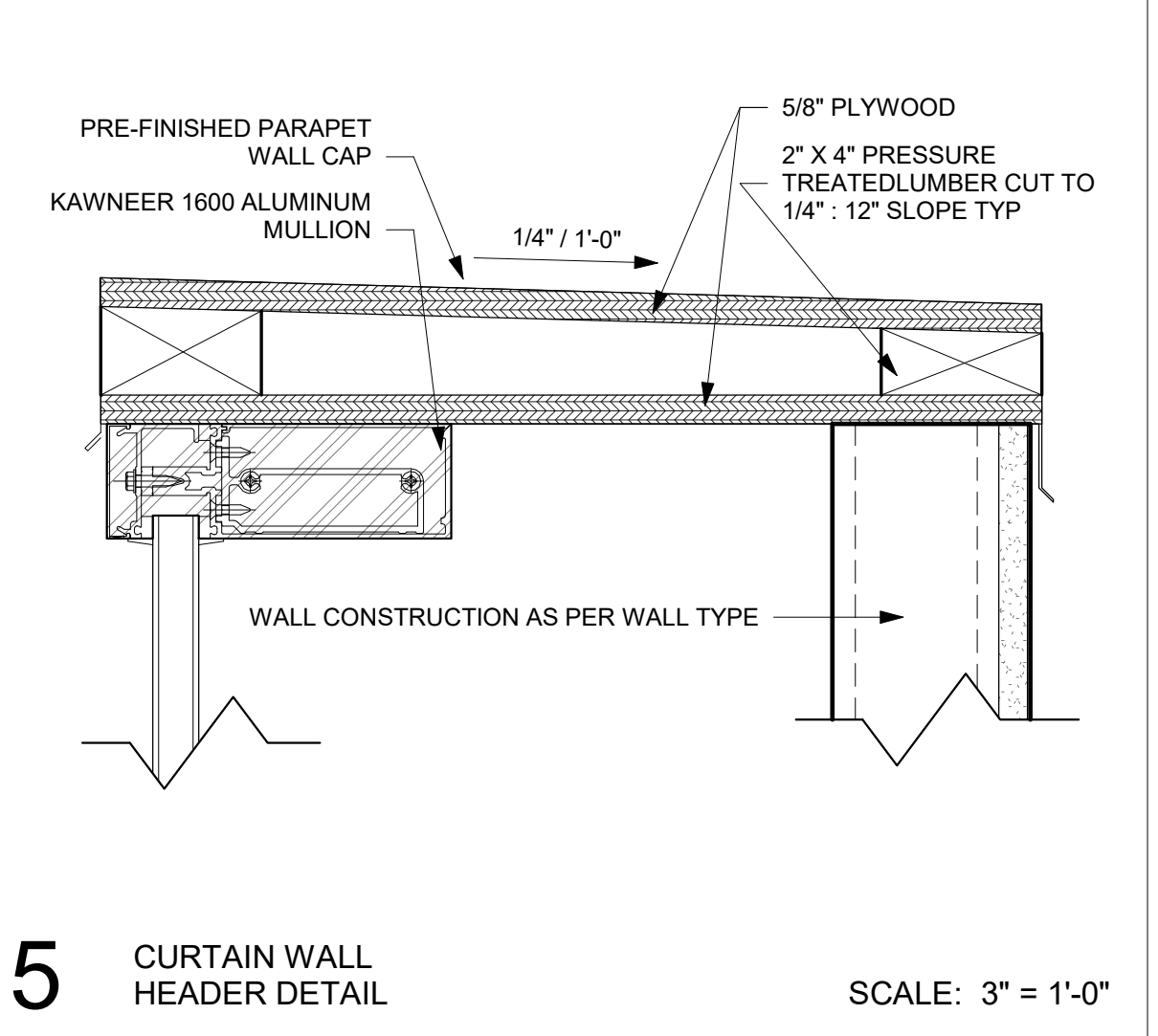
3 INTERIOR HEADER @ STOREFRONT WINDOW

SCALE: 3" = 1'-0"



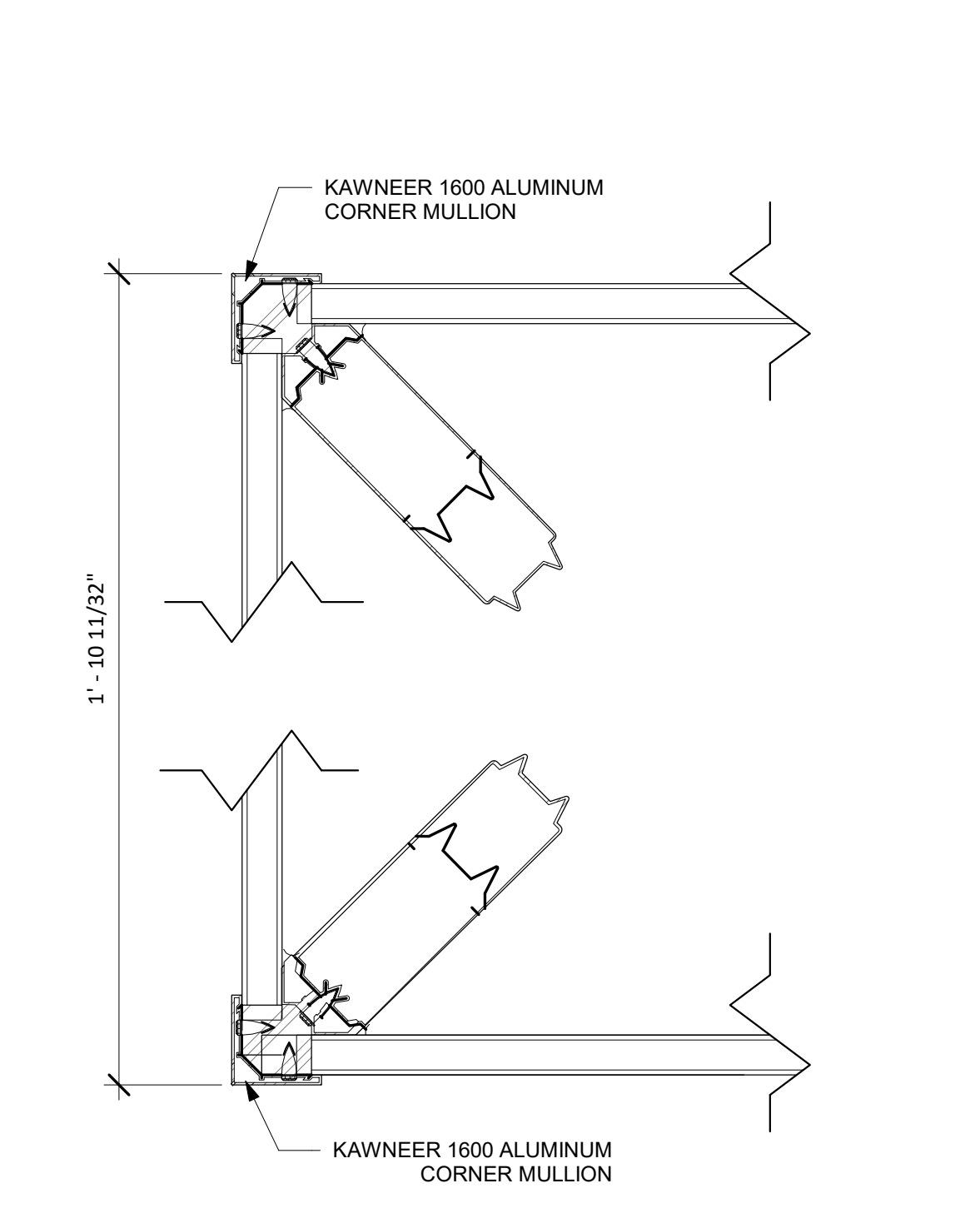
4 CURTAIN WALL SILL DETAIL

SCALE: 3" = 1'-0"



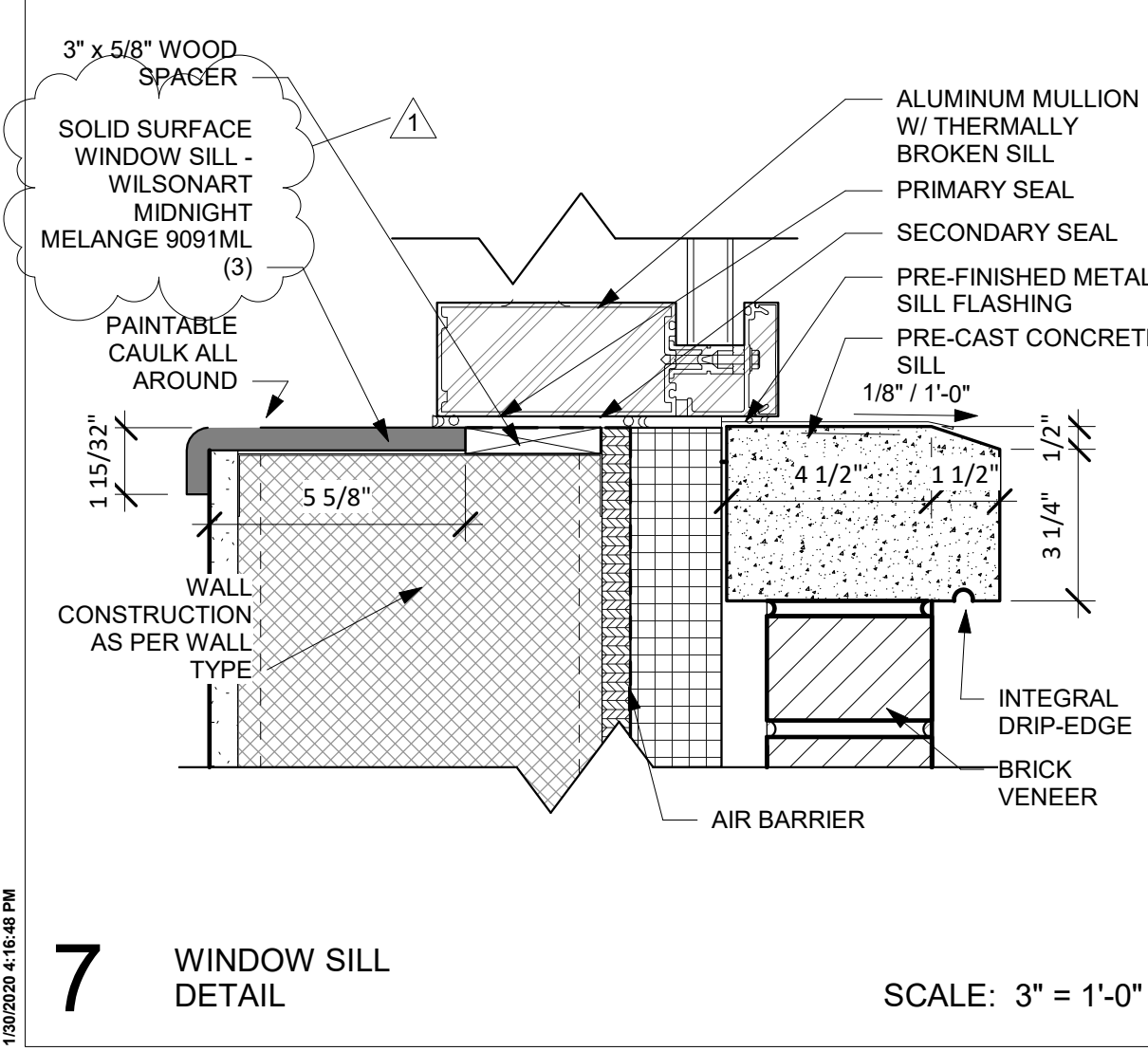
5 CURTAIN WALL HEADER DETAIL

SCALE: 3" = 1'-0"



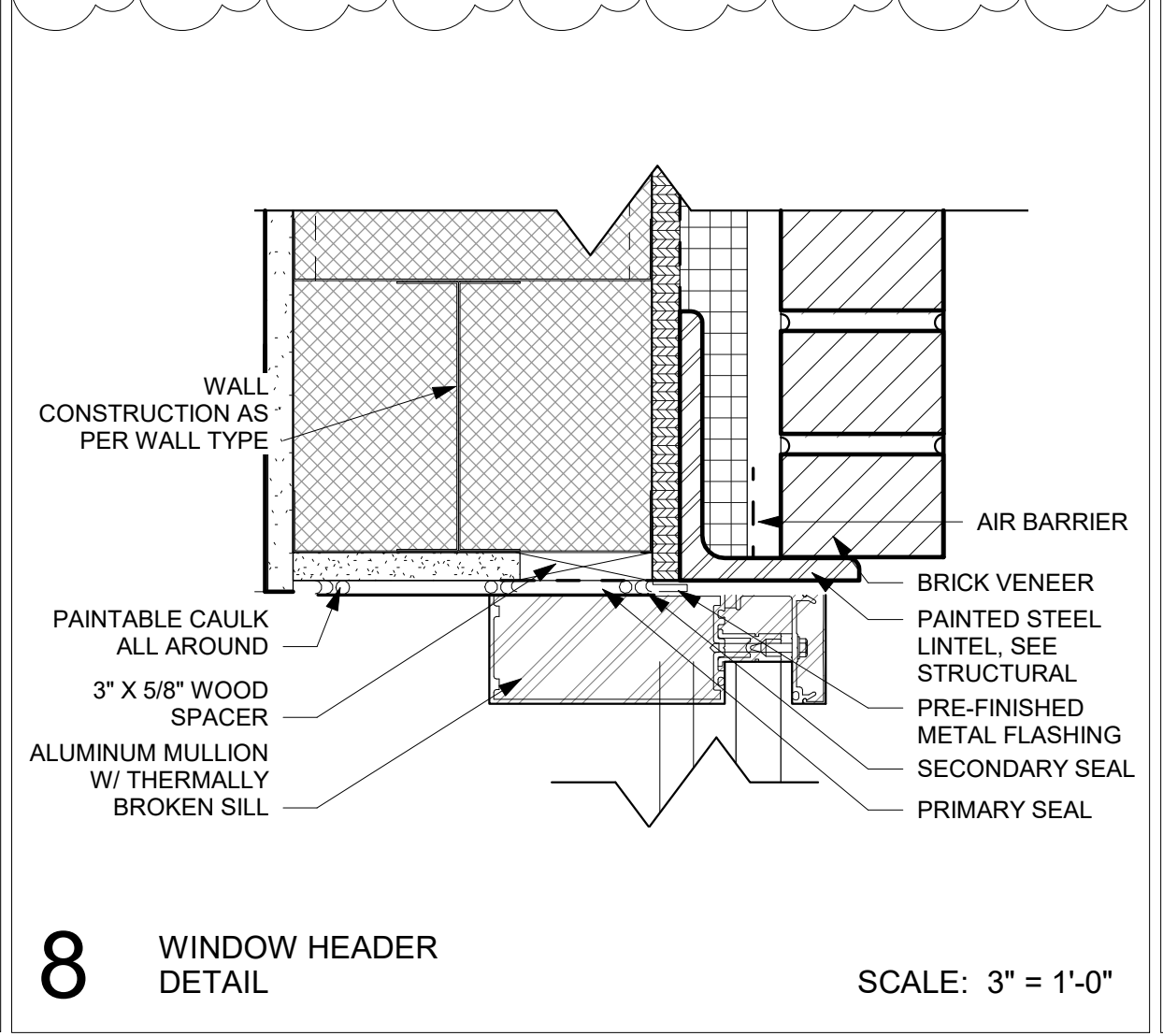
6 CURTAIN WALL CORNER DETAIL

SCALE: 3" = 1'-0"



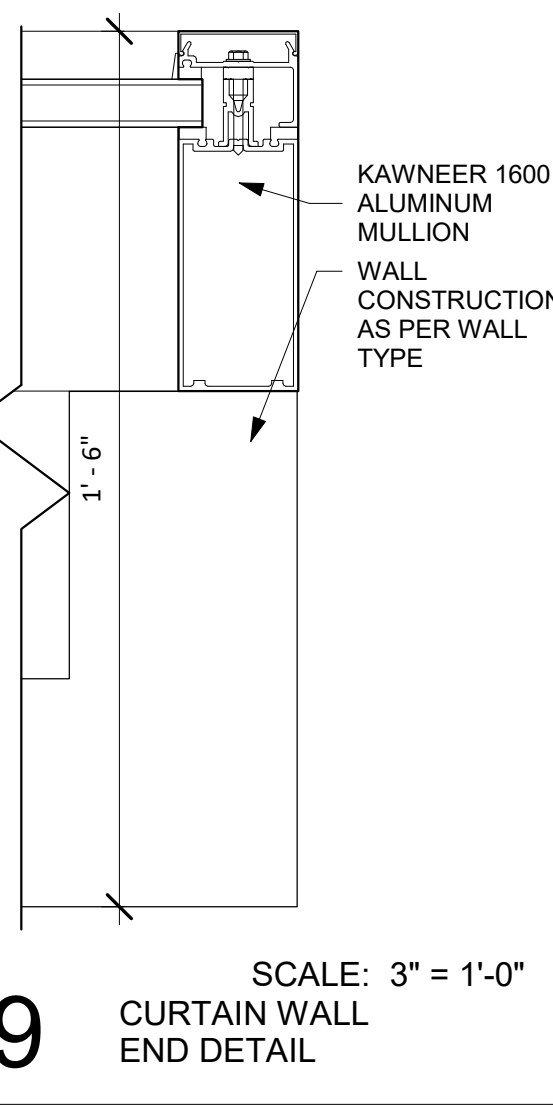
7 WINDOW SILL DETAIL

SCALE: 3" = 1'-0"



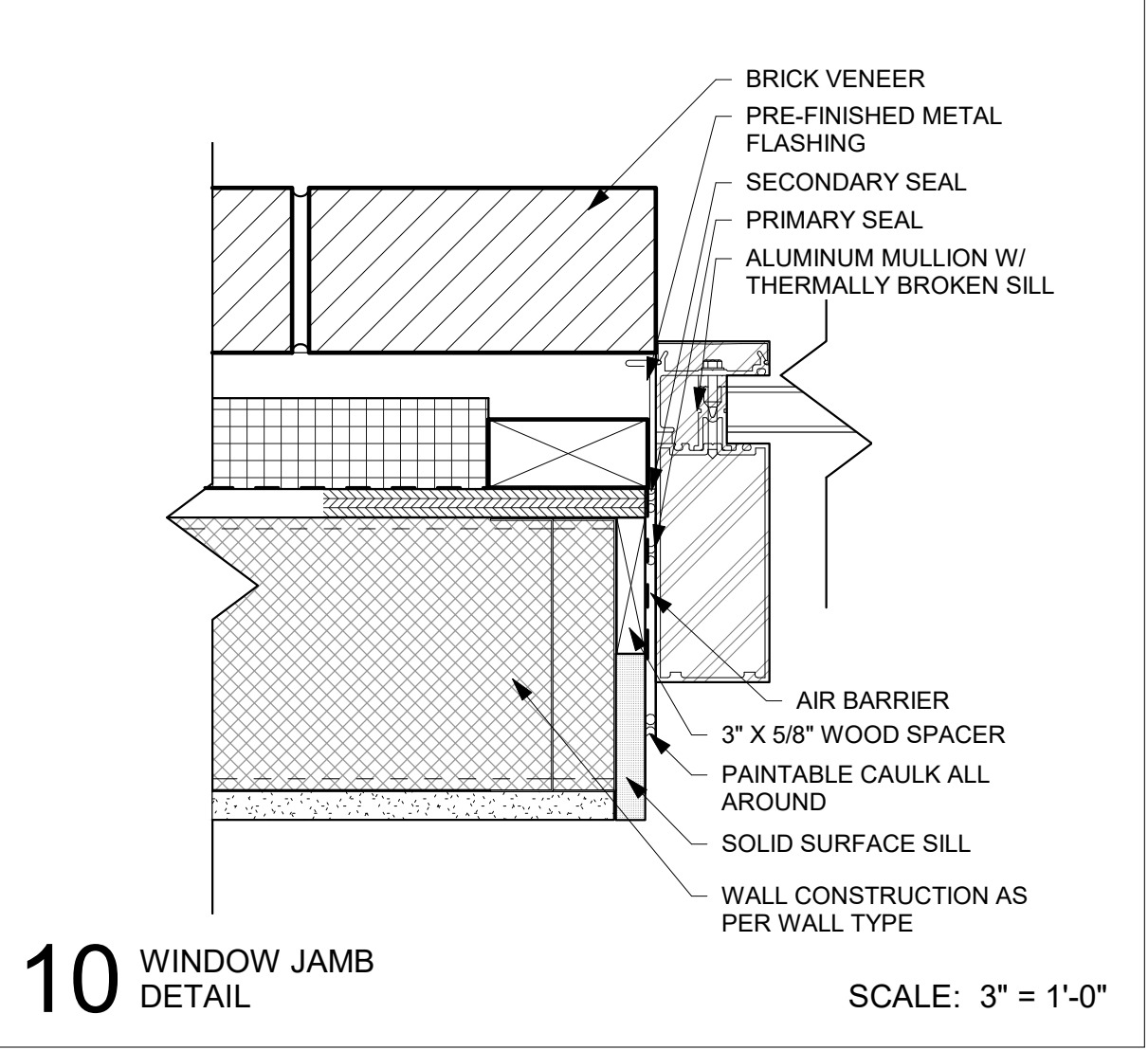
8 WINDOW HEADER DETAIL

SCALE: 3" = 1'-0"



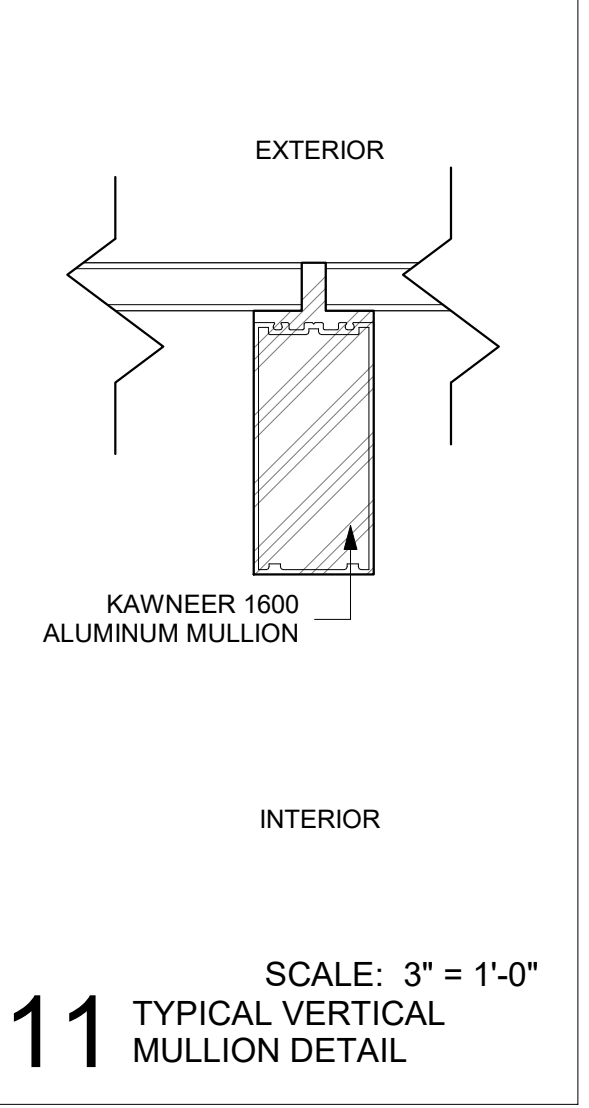
9 CURTAIN WALL END DETAIL

SCALE: 3" = 1'-0"



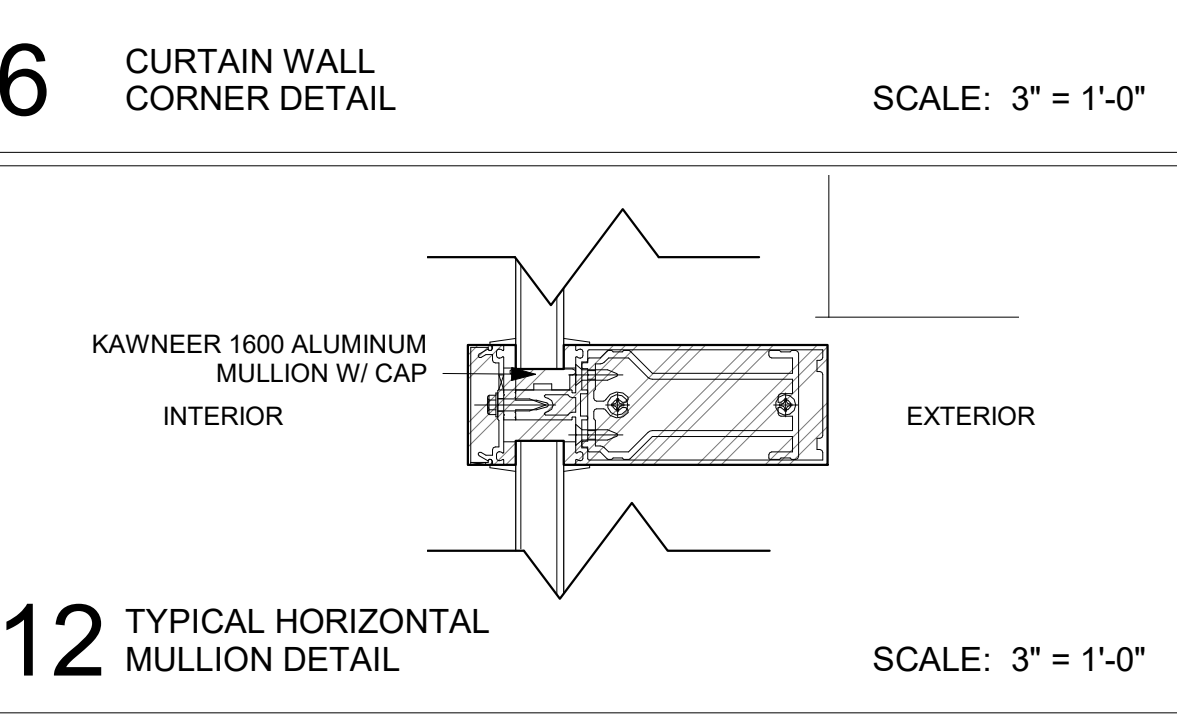
10 WINDOW JAMB END DETAIL

SCALE: 3" = 1'-0"



11 TYPICAL VERTICAL MULLION DETAIL

SCALE: 3" = 1'-0"



12 TYPICAL HORIZONTAL MULLION DETAIL

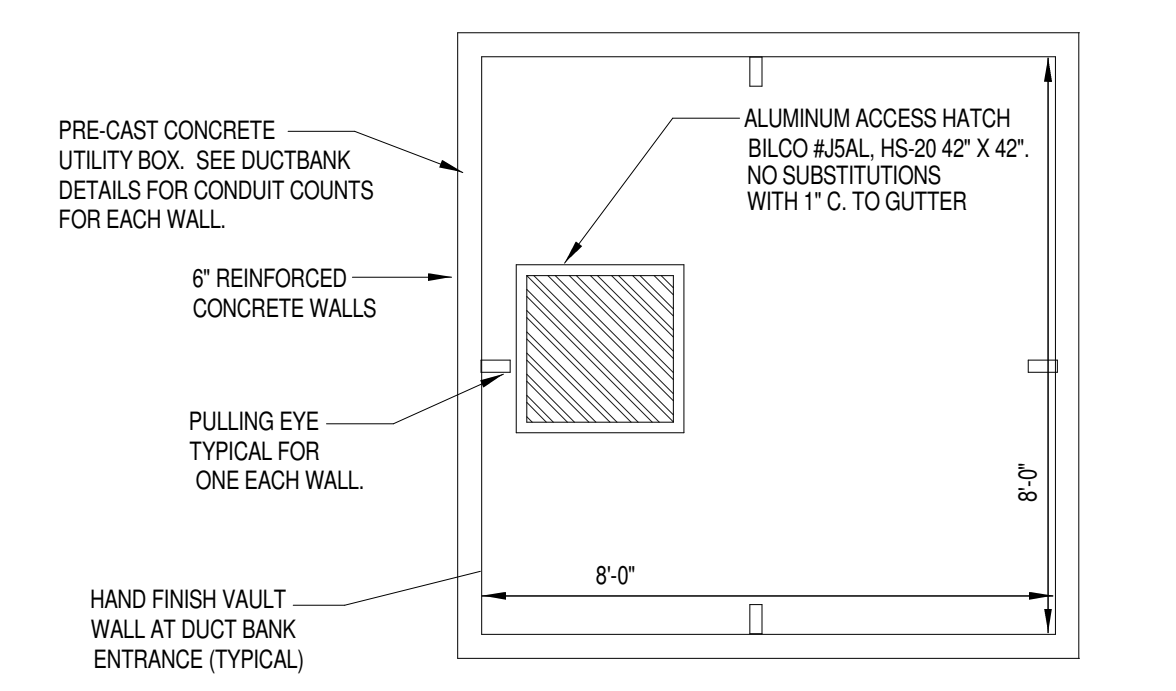
SCALE: 3" = 1'-0"

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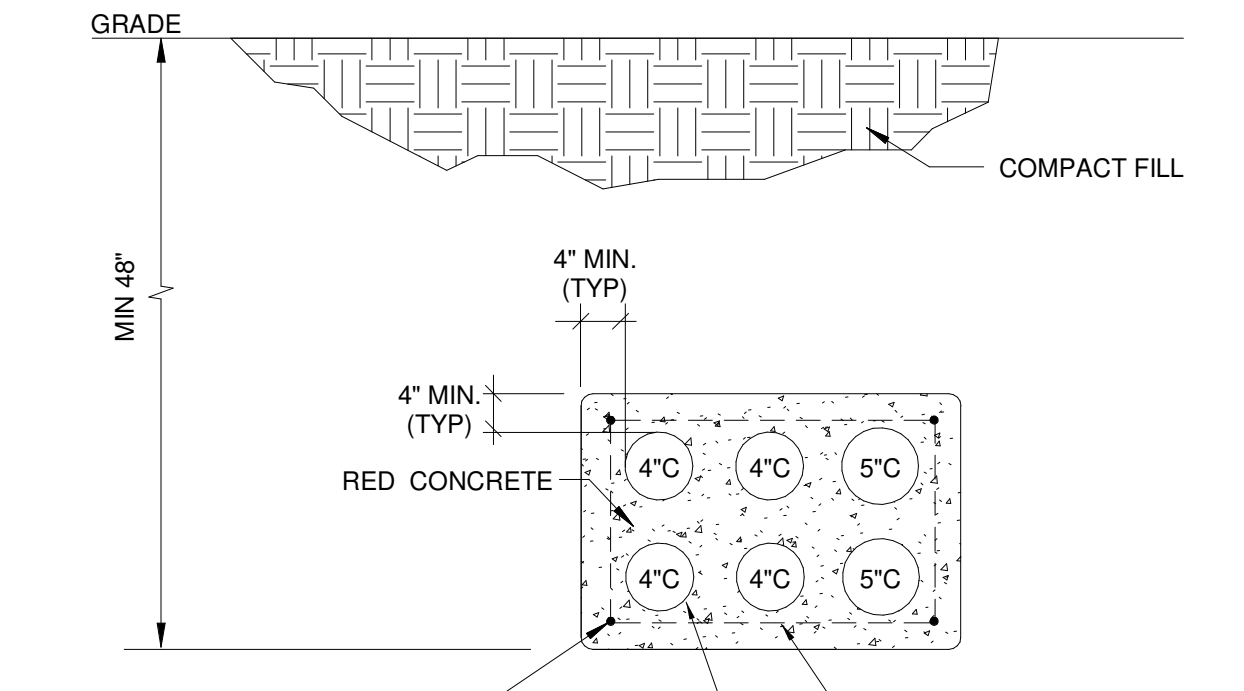
ALL HV WORK SHOWN SHALL BE PERFORMED BY BYU-IDAHO, E.C. SHALL BE RESPONSIBLE FOR ALL DUCT BANK, CONDUIT, AND CONDUCTORS FOR LV. COMPARTMENT OF TRANSFORMER

KEY NOTES:

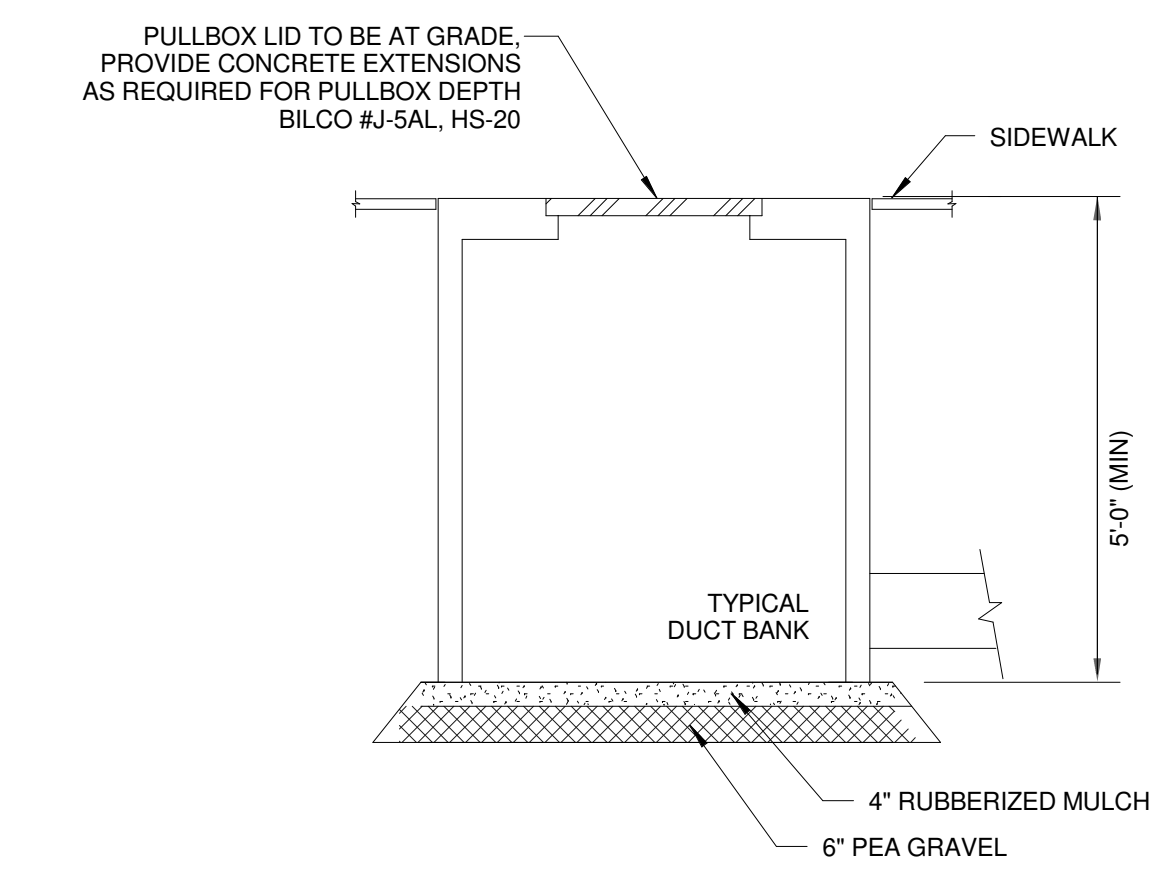
- 1 PROVIDE AND INSTALL (3) 3" CELL FABRIC INNERDUCT IN EACH CONDUIT IN DUCT BANK
- 2 THERE IS A 144 COUNT FIBER CABLE THAT WAS CUT AT VAULT E16 AND PULLED BACK TO VAULT E19 E.C. SHALL REINSTALL THIS F.O. CABLE FROM E19 TO E16 AND SPLICE ONTO EXISTING CABLE IN VAULT E16 RESTORING THE CAMPUS EAST FIBER LOOP
- 3 EXISTING GENERATOR TO REMAIN
- 4 EXISTING CHILLER TRANSFORMER TO REMAIN
- 5 EXISTING SPORI TRANSFORMER TO REMAIN
- 6 EXISTING SWITCH R5 TO BE RELOCATED, RECEIVE AND INSTALL EXISTING TRANSFORMER FROM OWNER AND INSTALL IN THIS LOCATION (WORK BY OWNER)
- 7 EXISTING EMERGENCY PANEL TO REMAIN PROVIDE AND INSTALL A 100A 3P BREAKER FOR E-POWER IN NEW SPORI ANNEX.
- 8 CAREFULLY DISCONNECT, REMOVE, AND RELOCATE EXISTING SWITCH R5 TO THIS LOCATION. REWORK EXISTING FEEDERS FROM STADIUM, SNOW, SPORI, AND ROMNEY INTO THIS SWITCH. WORK PERFORMED BY OWNER
- 9 PROVIDE AND INSTALL 3 - #2 15KV CABLE + GND IN EXISTING CONDUIT FROM NEW SWITCH LOCATION TO NEW SPORI ANNEX TRANSFORMER. WORK PERFORMED BY OWNER
- 10 THERE IS A 72 COUNT FIBER CABLE THAT WAS CUT AT VAULT E19 AND PULLED BACK TO VAULT E16. E.C. SHALL REINSTALL THIS F.O. CABLE FROM E16 TO E19 AND SPLICE ONTO EXISTING CABLE IN VAULT E19 RESTORING THE CAMPUS WEST FIBER LOOP
- 11 PROVIDE AND INSTALL NEW 24 STRAND SINGLE NODE FIBER FROM VAULT E16 TO DEMARK IN NEW CERAMICS LAB. SPLICE TO PREVIOUSLY CUT STRANDS THAT FED THE KIRKHAM BUILDING, MAKE ALL TERMINATIONS.
- 12 E.C. SHALL CAREFULLY EXPOSE EXISTING CONDUIT IN EXISTING DUCT BANK SPLICE ONTO CONDUIT AND EXTEND TO NEW IT ROOM AND VAULT AS INDICATED ENCASE IN CONCRETE SEE DETAIL.
- 13 E.C. SHALL DISCONNECT AND REMOVE EXISTING POLE LIGHTS IN CONFLICT WITH THE REMODEL. REMOVE ALL ASSOCIATED FOUNDATION, CONDUIT, AND WIRE. E.C. SHALL REWORK EXISTING CIRCUIT TO THE THREE EXISTING LIGHTS ON THE EAST SIDE OF THE CLARKE BUILDING AND MAKE ALL REQUIRED CONNECTIONS. TURN UNUSED POLE LIGHTS OVER TO THE OWNER.
- 14 STUB AND CAP (1) 4" AND (1) 2" CONDUIT ADJACENT TO EXISTING EMERGENCY PANEL IN UTILITY YARD TO CONSTRUCTION LIMIT LINE ON EAST SIDE OF THE CLARKE BUILDING FOR FUTURE USE. SPECIFICALLY RECORD EXACT LOCATION REFERENCED FROM THE CLARKE BUILDING
- 15 INTERCEPT EXISTING LIGHTING CIRCUIT IN NEW GROUND BOX LANDSCAPE AREA. SPLICE AND EXTEND TO EXISTING POLES ON EAST SIDE OF CLARKE. INTERCEPT EXISTING CONDUIT AND INSTALL NEW CONDUITS.



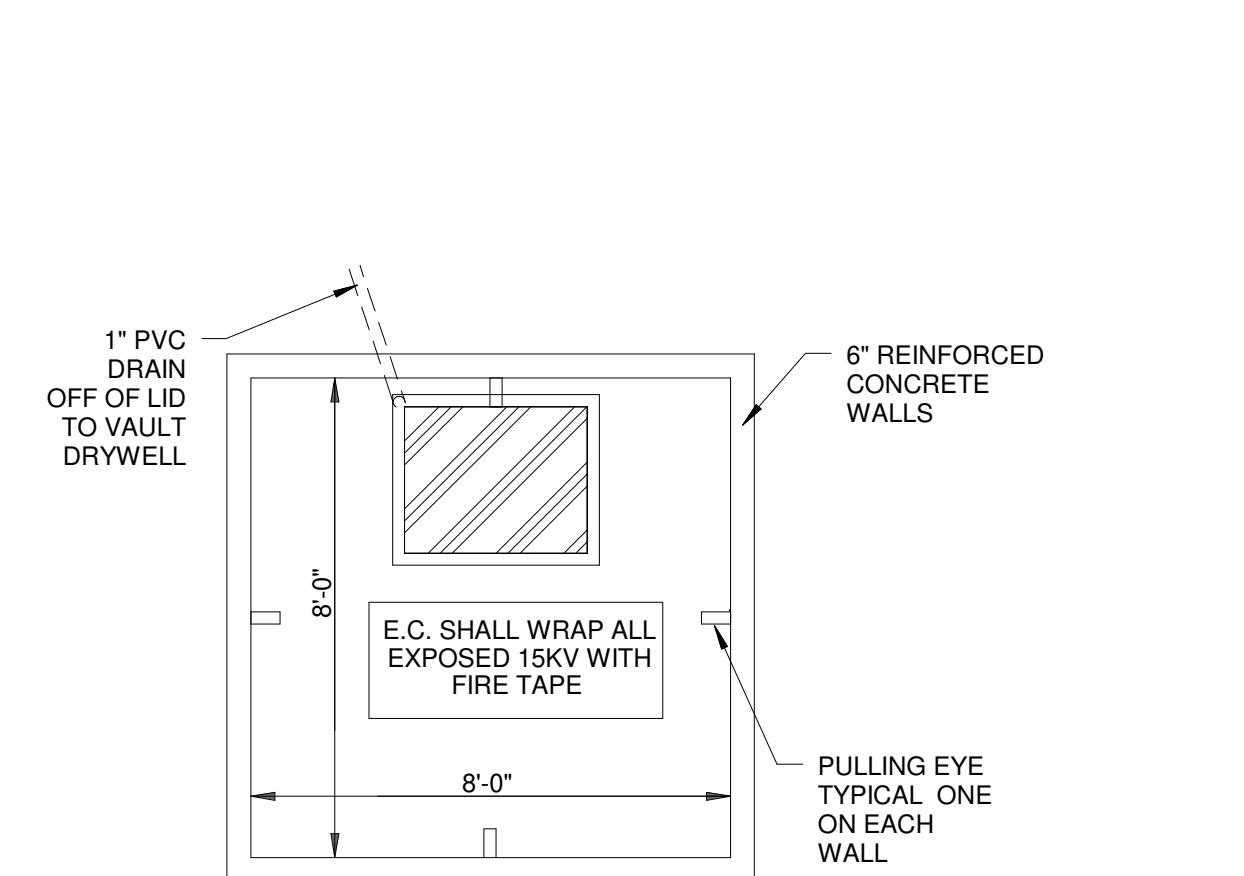
A POWER PULL BOX DETAIL - BY OWNER
SCALE: NONE



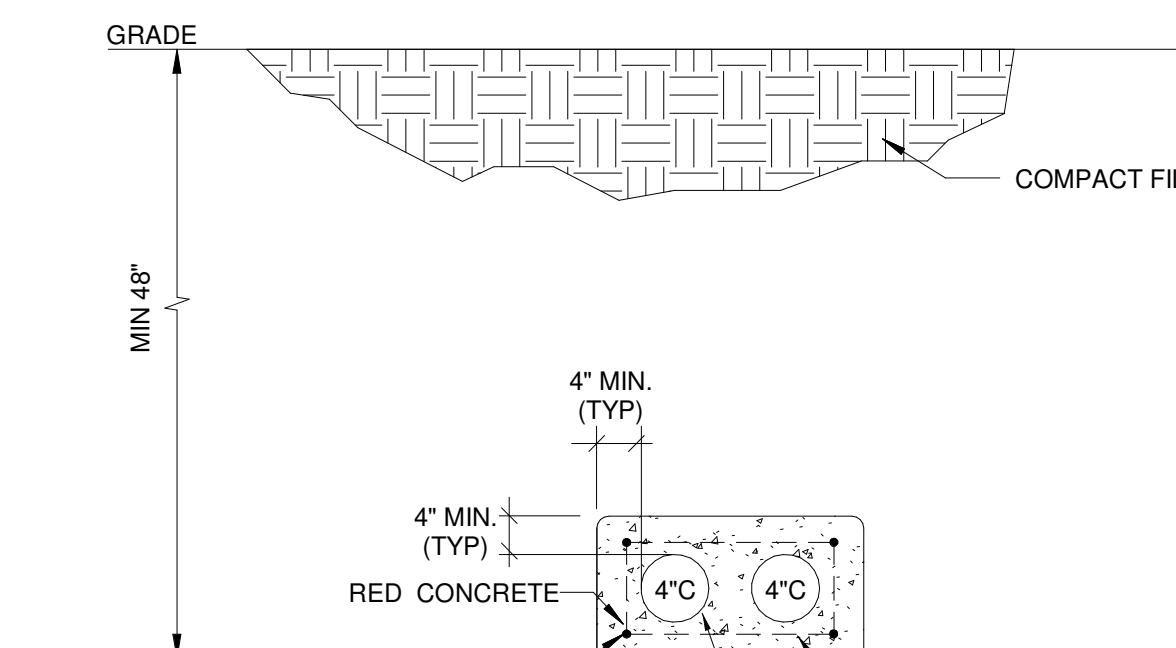
B DUCT BANK DETAIL
SCALE: NONE



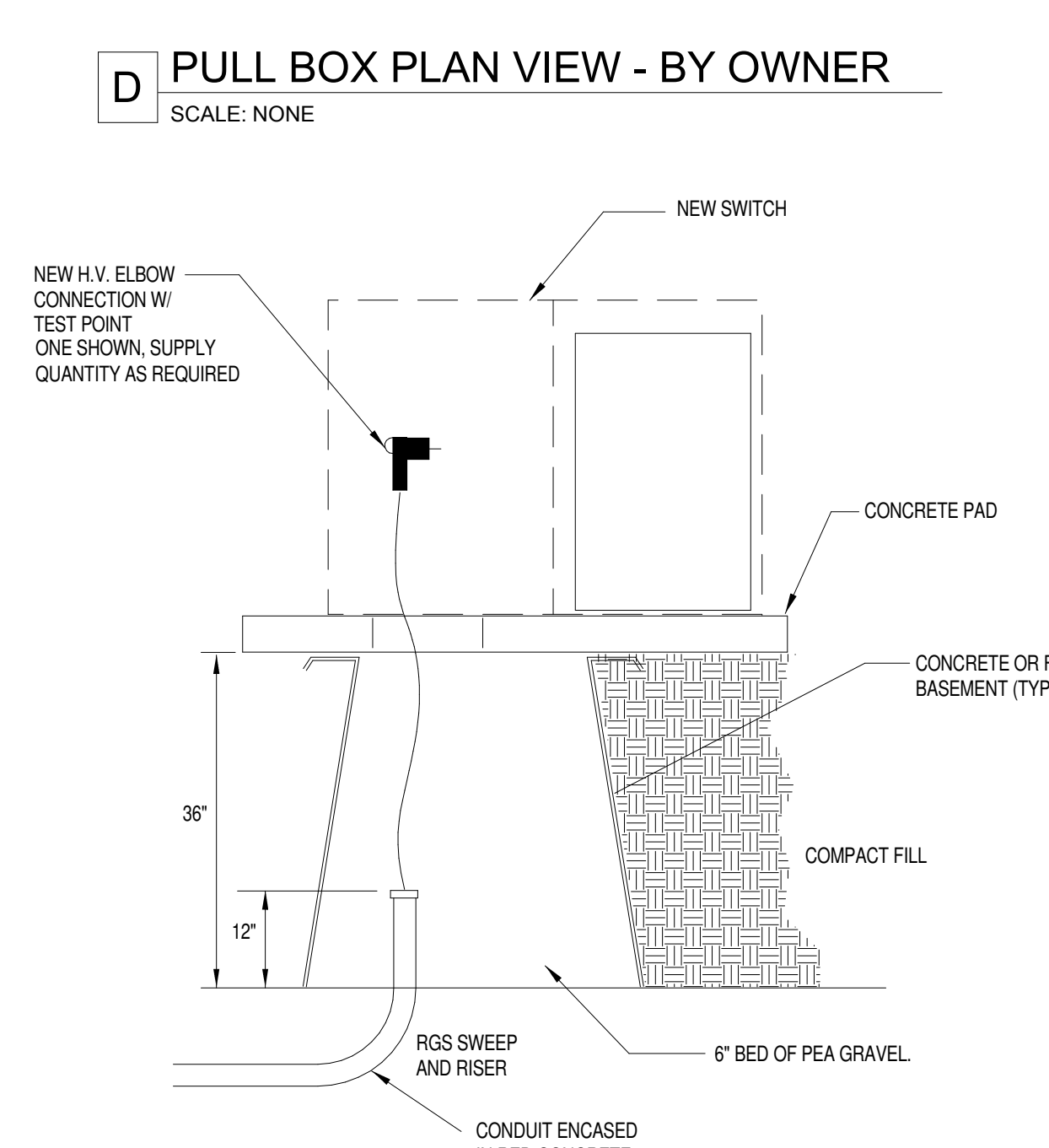
C PULL BOX SECTION VIEW - BY OWNER
SCALE: NONE



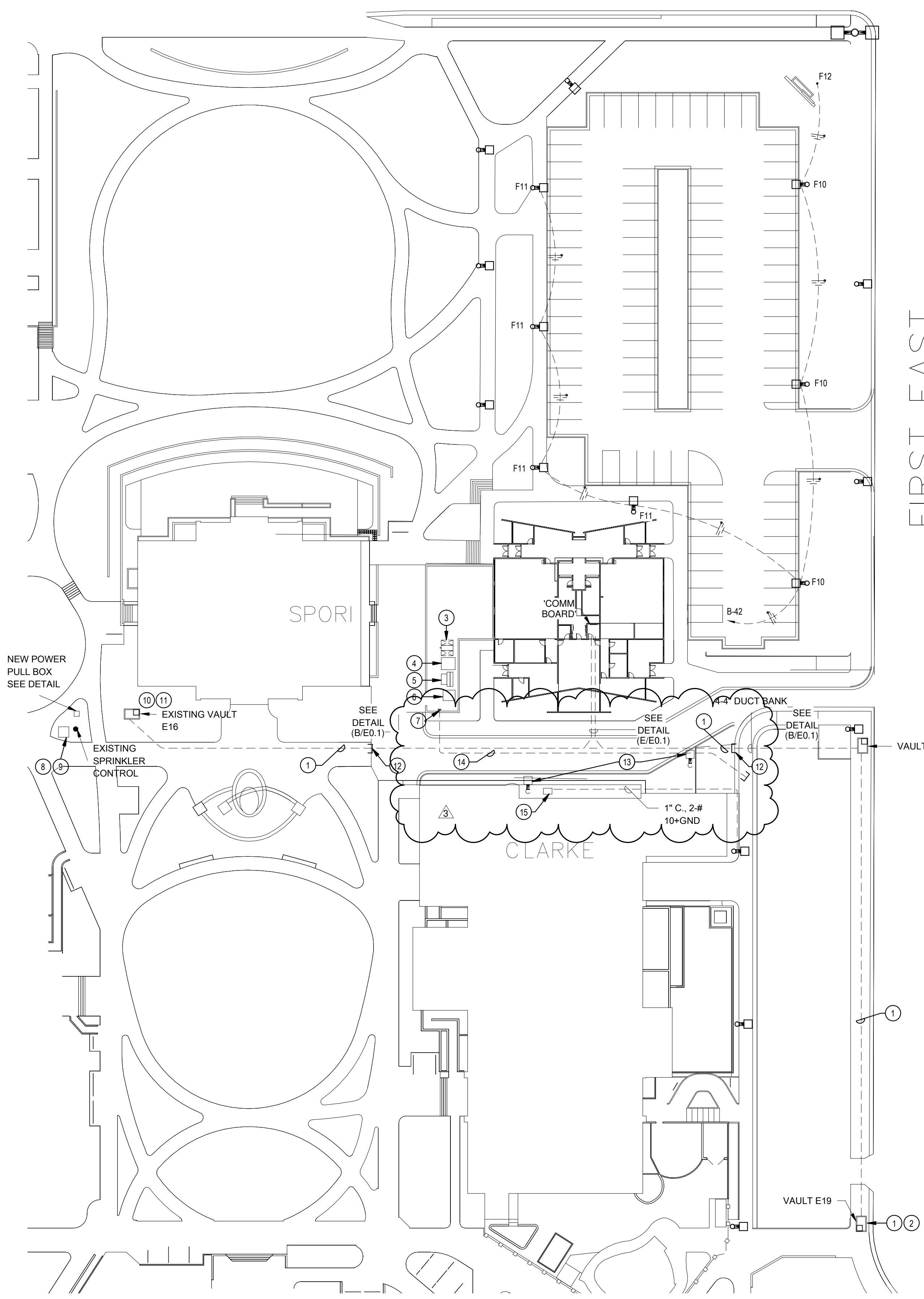
D PULL BOX PLAN VIEW - BY OWNER
SCALE: NONE



E DUCT BANK DETAIL - INTO BUILDING
SCALE: NONE



F TYPICAL SWITCH PAD DETAIL - BY OWNER
SCALE: NONE



1 ELECTRICAL SITE PLAN
SCALE: 1" = 40'-0"

FIRST EAST



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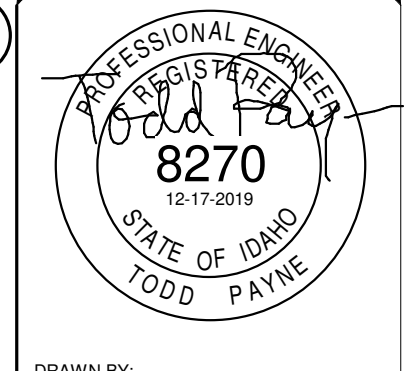
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DOCUMENT STATUS		DATE
NO.	DESCRIPTION	DATE
1	ADDENDUM 003	1/23/2020

PROJECT NAME:
BRIGHAM YOUNG UNIVERSITY - IDAHO SPORI ANNEX

PROJECT NO.: 11513

SHEET NUMBER:
ELECTRICAL SITE PLAN

E0.1

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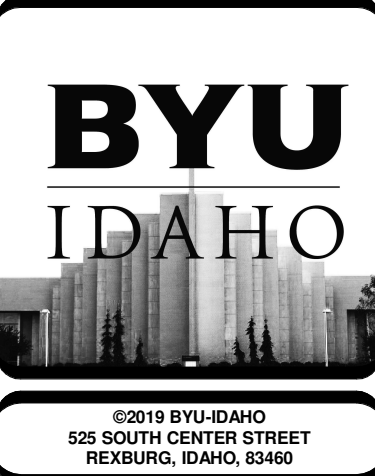


GENERAL NOTES:

- A. REFER TO SYMBOL SCHEDULES FOR GENERAL NOTES ASSOCIATED WITH THE INSTALLATION OF EACH SYSTEM, LIGHTING, POWER, FIRE ALARM, SPECIAL SYSTEMS, ETC.

KEY NOTES:

- 1 SLIM-LINE AV SYSTEM CABINET. PROVIDE (2) DUPLEX OUTLETS IN CABINET, EXTRA-DEEP BOX WITH 1 1/2" CONDUIT TO STRUCTURAL CEILING SPACE FOR DATA/AV CABLING. COORDINATE EXACT PLACEMENT OF BOXES WITH CABINET PRIOR TO ROUGH-IN. PROVIDE A #10 GREEN INSULATED GROUND CONDUCTOR FROM CABINET TO NEAREST ELECTRICAL ROOM GROUND BAR. FIELD VERIFY FINAL LOCATION PRIOR TO ROUGH-IN.
- 2 ACCESS CONTROL CONNECTION TO DOOR FRAME. REFER TO SYMBOL SCHEDULE.
- 3 CONNECT TO AUTOMATIC ADA DOOR. PROVIDE ALL REQUIRED CONNECTION AND ROUGH-IN OF PUSHBUTTONS. COORDINATE WITH G.O. PRIOR TO ROUGH-IN.
- 4 E.C. SHALL PROVIDE AND INSTALL 120V AND ALL REQUIRED CONNECTIONS TO MOTORIZED ROLLER SHADES AND CONTROLLERS. COORDINATE EXACT REQUIREMENTS WITH SHADE SHOP DRAWINGS PRIOR TO ROUGH IN. SEE PLANS FOR CIRCUIT.



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STATUS	DATE
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REVISION SCHEDULE

NO.	DESCRIPTION	DATE
3	Addendum 003	1-23-2020

PROJECT NAME:

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SPORI ANNEX

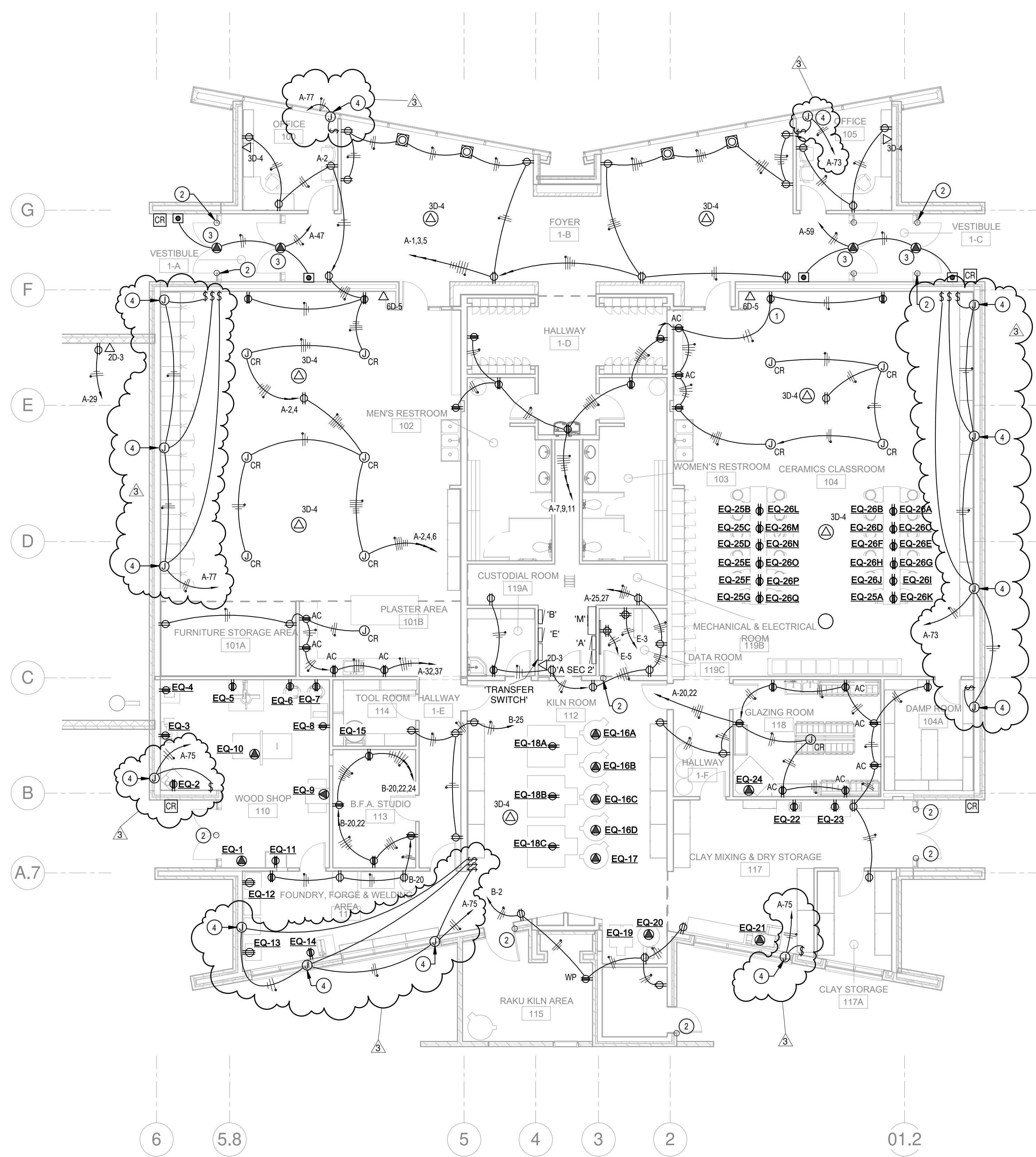
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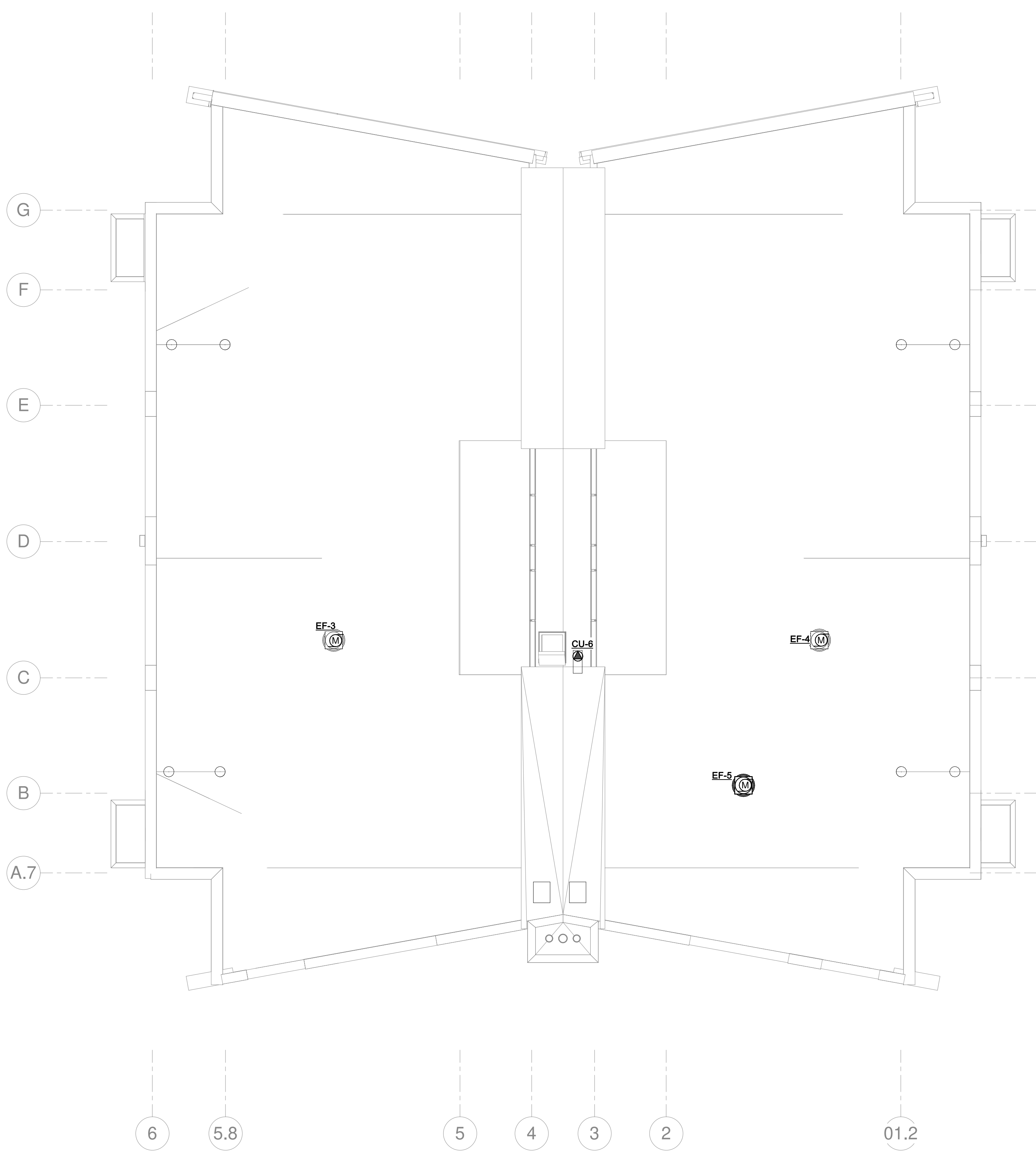
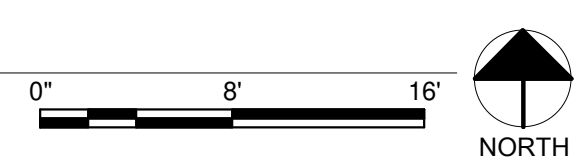
POWER/DATA /ROOF PLAN

SHEET NUMBER:
E2.0

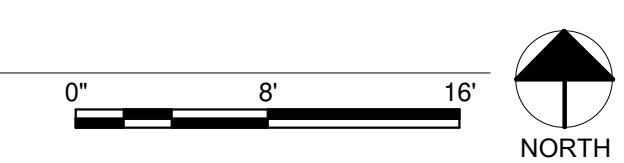
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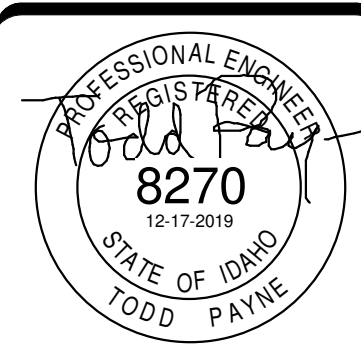


1 POWER & DATA PLAN
SCALE: 1/8" = 1'-0"



2 ROOF
SCALE: 1/8" = 1'-0"





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NO.	DESCRIPTION	DATE
1	Revision 1	1-9-2020
3	Addendum 003	1-23-2020

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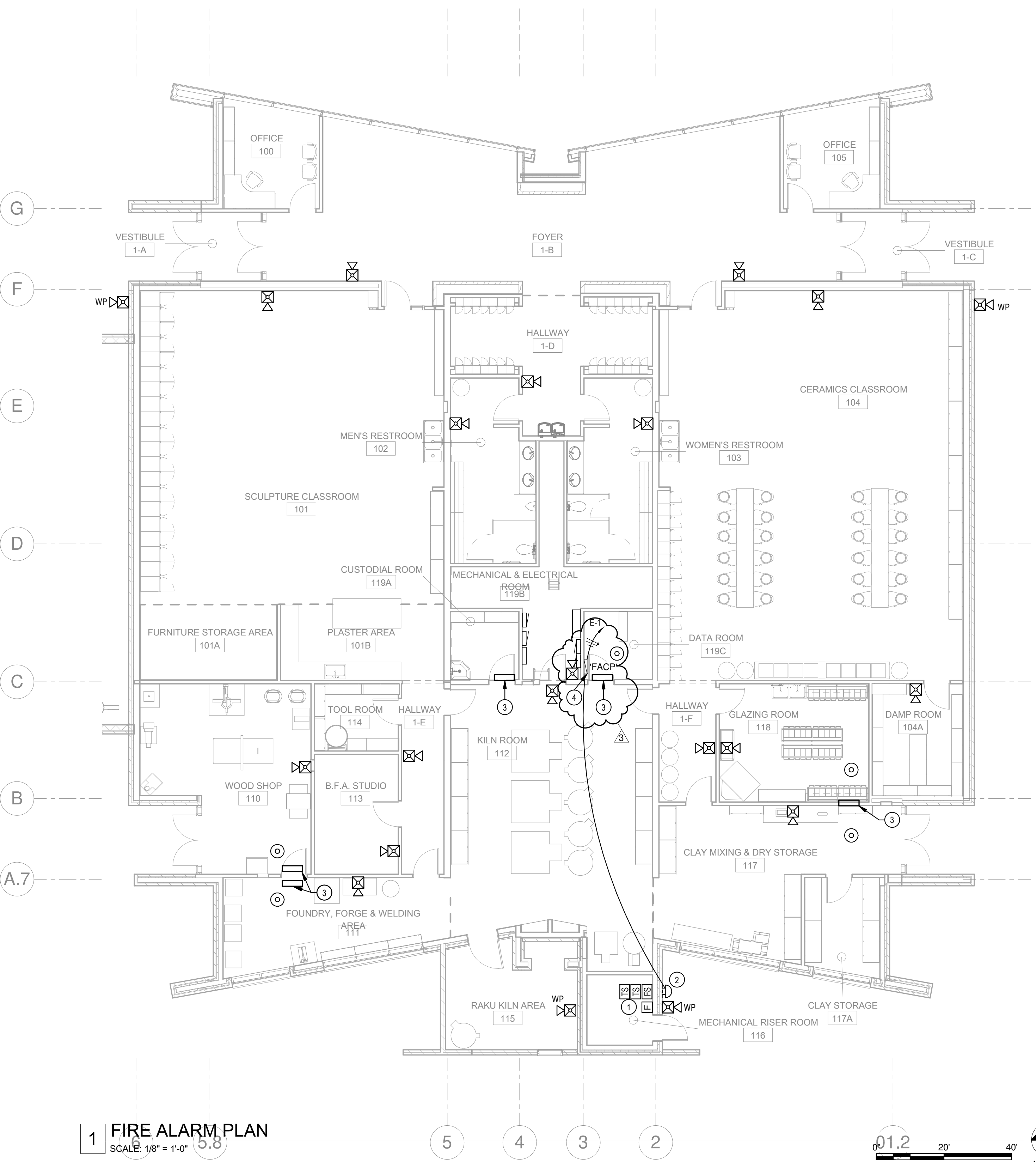
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SHEET NAME:
FIRE ALARM PLAN

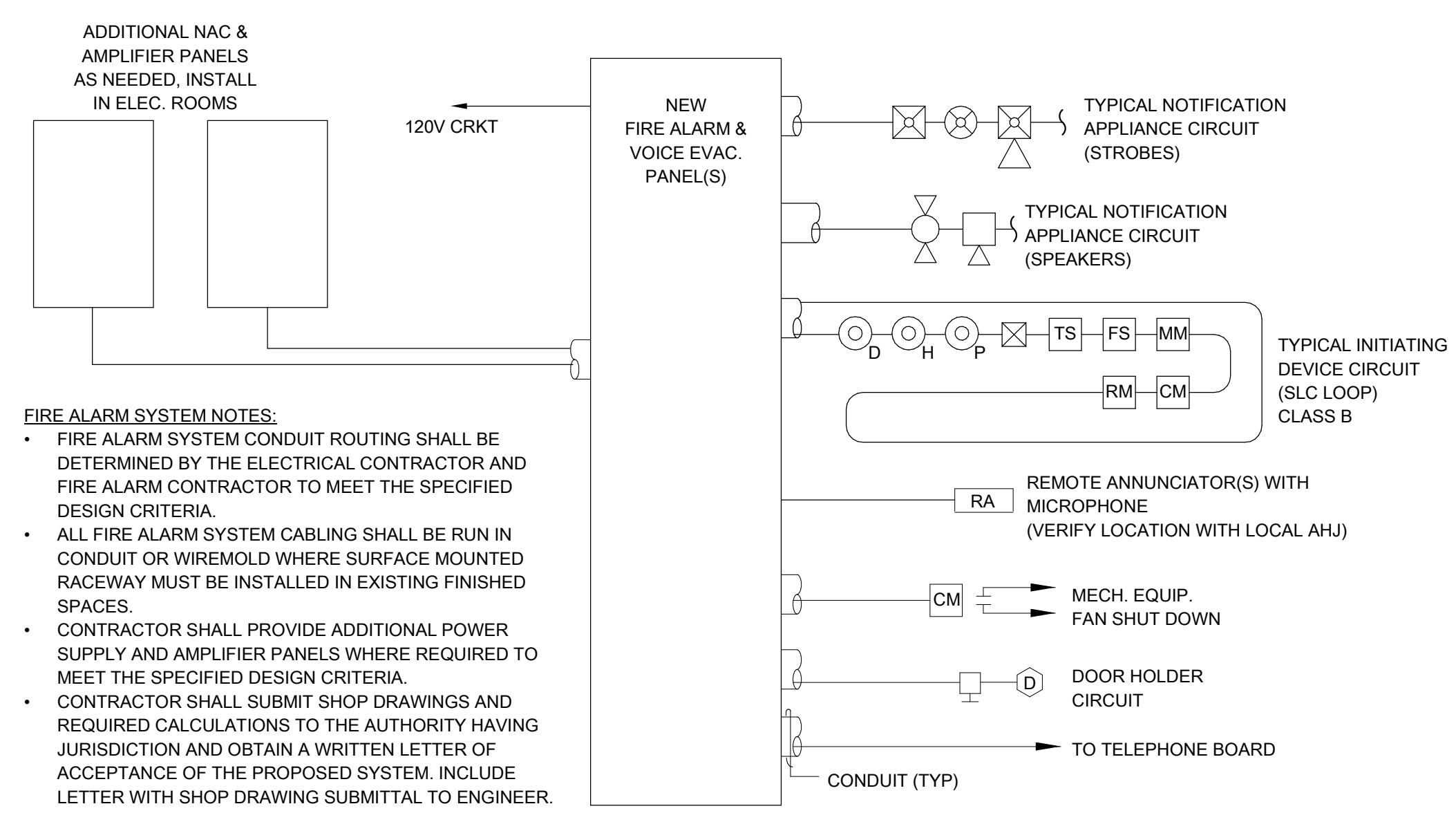
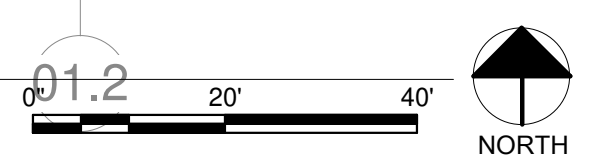
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E3.0

- GENERAL NOTES:**
- DO NOT INSTALL MORE THAN (10) NOTIFICATION APPLIANCES ON ANY SINGLE CLASS "A" SIGNAL CIRCUIT. DO NOT EXCEED 400 FT. OF NO. 14 WIRE IN THE TOTAL LOOP.
 - NFPA ALLOWS NOTIFICATION APPLIANCES TO BE MOUNTED AT A HEIGHT RANGE BETWEEN 80" TO 96" ABOVE FINISH FLOOR. THE PREFERRED HEIGHT IS 80". IF THIS CONFLICTS WITH OTHER TRADES OR ROOM FURNISHINGS, LOCATE AS CLOSE TO 80" AS POSSIBLE, NOT EXCEEDING 96". ALL NOTIFICATION APPLIANCES IN A COMMON ROOM OR LINE OF SIGHT SHALL BE LOCATED AT A COMMON HEIGHT.
 - MOUNT PULL STATIONS AT 46-48" A.F.F. TO THE OPERATING HANDLE TO MEET ADA REQUIREMENTS.
 - DO NOT CONNECT THE FIRE ALARM SYSTEM TO ANY DEVICE WHICH HAS A POWER HELD CONTACTS (FLOW, TAMPER, HOOD SYSTEM, DUCT DETECTOR, ETC.). FALSE ALARM WILL OCCUR.
 - ELECTRICAL CONTRACTOR SHALL SUPPLY AND INSTALL CONDUCTOR QUANTITIES PER FIRE ALARM SYSTEM SUPPLIER, AND AS PER NFPA AND NEC REQUIREMENTS.
 - DO NOT INSTALL ANY SMOKE OR HEAT DETECTORS WITHIN 3 FEET OF ANY AIR DIFFUSER.
 - DO NOT EXCEED 2500 FEET ON ANY ADDRESSABLE DEVICE RUN. DO NOT EXCEED 120 DEVICES ON ANY ONE ADDRESSABLE DEVICE RUN.
 - ALL AIR HANDLING EQUIPMENT 2000 CFM OR MORE MUST BE SHUT DOWN UPON FIRE ALARM AS PER LIFE SAFETY CODES.
 - ALL CLASS "B" INITIATING CIRCUITS WITH ADDRESSABLE DEVICES NEED EOLR. (END OF LINE RESISTORS).
 - IN CORRIDORS, NOTIFICATION APPLIANCES MUST BE LOCATED WITHIN 15' FROM ENDS OF CORRIDORS AND A MAXIMUM OF 100' SPACING.
 - PROVIDE THE REQUIRED CANDELA RATING OF ALL NOTIFICATION APPLIANCES ACCORDING TO ROOM SIZE, ETC.
 - NOTIFICATION APPLIANCES TO BE SYNCHRONIZED TO PROVIDE A 3-3-3 TEMPORAL PATTERN.
 - ALL WIRING AND CONDUIT ROUTING TO BE AS DESCRIBED ON SUPPLIED SHOP DRAWINGS. FIRE ALARM PLAN IS SHOWN FOR GENERAL LOCATION AND LAYOUT ONLY.
 - THE FIRE ALARM SYSTEM TO BE IN COMPLIANCE WITH ALL APPLICABLE LOCAL, STATE AND ADA REQUIREMENTS.
 - ELECT. CONTR. TO CONNECT SPRINKLER SYSTEM TAMPER SWITCHES AND FLOW VALVES TO FIRE ALARM SYSTEM AS REQUIRED. SEE FIRE SPRINKLER SYSTEM DRAWINGS FOR EXACT LOCATIONS AND QUANTITIES.
 - ELECT. CONTR. TO CONNECT FIRE SPRINKLER SYSTEM WATER GONG, TO NEAREST SOURCE OF 120 VOLT UNSWITCHED POWER.

- GENERAL NOTES:**
- A. REFER TO SYMBOL SCHEDULES FOR GENERAL NOTES ASSOCIATED WITH THE INSTALLATION OF EACH SYSTEM: LIGHTING, POWER, FIRE ALARM, SPECIAL SYSTEMS, ETC.
- KEY NOTES:**
- PROVIDE MONITORING OF FLOW AND TAMPER SWITCHES. VERIFY EXACT NUMBER OF SWITCHES WITH FIRE SPRINKLER CONTRACTOR.
 - INSTALL FIRE BELL AND HORN/STROBE ABOVE FIRE DEPT. CONNECTION. FIELD LOCATION. COORDINATE LOCATION WITH FIRE SPRINKLER CONTRACTOR PRIOR TO ROUGH-IN.
 - MAKE ALL REQUIRED CONNECTIONS TO SMOKE DETECTORS AND SMOKE DAMPERS. PROVIDE REQUIRED RELAY AND MONITOR MODULES AND PROGRAM TO CLOSE DAMPERS UPON DETECTION OF SMOKE. COORDINATE WITH HVAC CONTRACTOR.
 - PROVIDE (2) STRANDS OF FIBER OPTIC CABLE FROM OPTICAL PATCH PANEL TO FIRE ALARM PANEL FOR COMMUNICATIONS



1 FIRE ALARM PLAN
SCALE: 1/8" = 1'-0"



A FIRE ALARM RISER DIAGRAM
SCALE: NONE

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MECHANICAL - FAN COIL UNIT SCHEDULE							
ID	#	VOLTS	PH.	HP	PANEL	CIRCUIT	NOTES
FC 1	208 V	1	1-1/2		B	9,11	PROVIDE WITH LOCAL DISCONNECT
FC 2	208 V	1	1		B	44,46	PROVIDE WITH LOCAL DISCONNECT
FC 3	208 V	1	1-1/2		A	65,67	PROVIDE WITH LOCAL DISCONNECT
FC 4	208 V	1	1-1/2		A	58,60	PROVIDE WITH LOCAL DISCONNECT
FC 5	208 V	1	1		A	54,56	PROVIDE WITH LOCAL DISCONNECT
FC 6	208 V	1			A	62,64	1,2
FC 7	208 V	1			A	55,57	PROVIDE WITH LOCAL DISCONNECT
FC 8	208 V	1			A	66,68	PROVIDE WITH LOCAL DISCONNECT

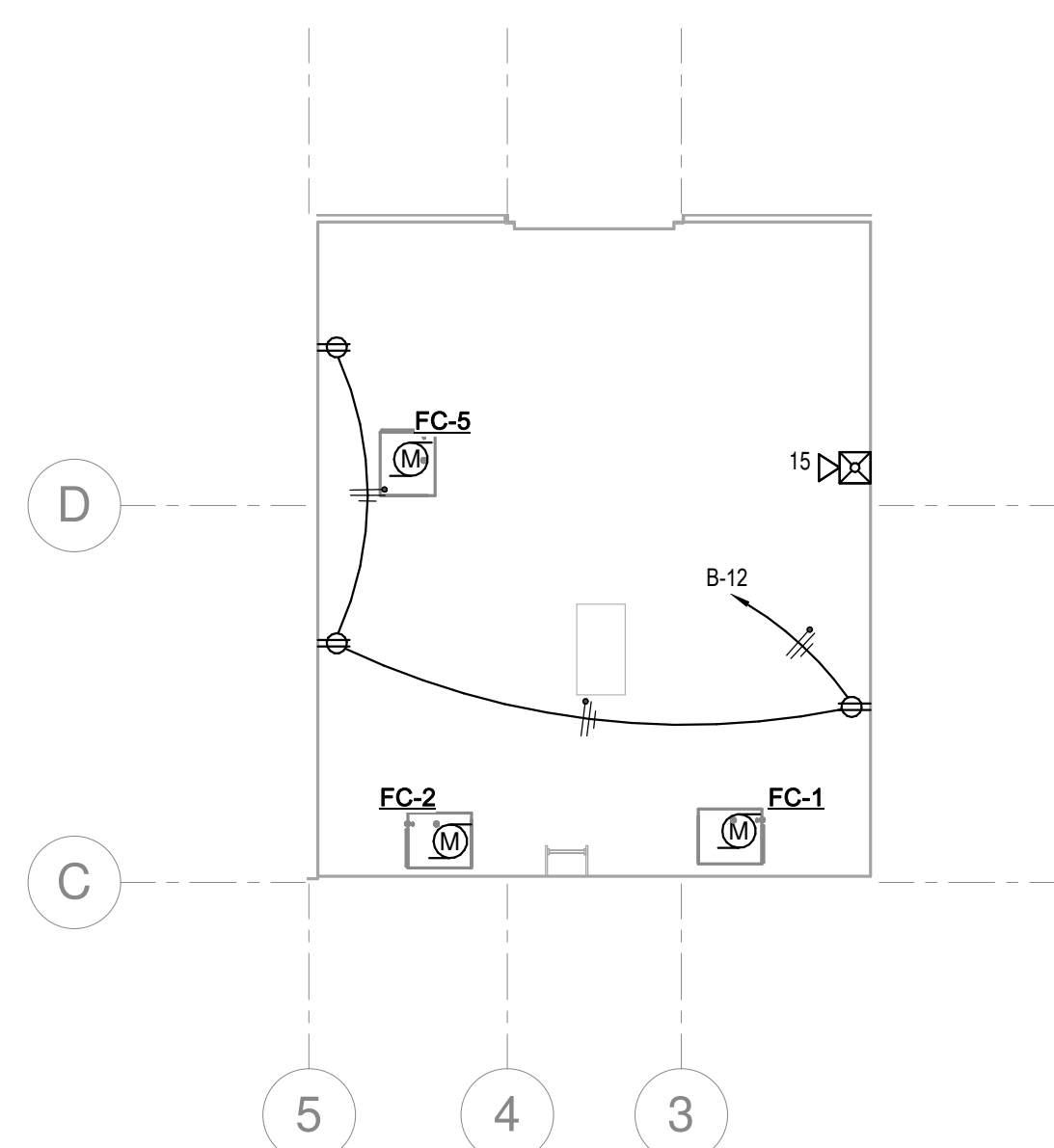
MECHANICAL SCHEDULE NOTES: FAN COIL UNITS							
1. INDOOR UNIT POWERED FROM OUTDOOR UNIT W/ 2 #12 + GND							
2. INSTALL A 1/2" CONDUIT BETWEEN INDOOR AND OUTDOOR UNIT FOR CONTROL							

MECHANICAL - CONDENSING UNIT SCHEDULE								
ID	#	VOLTS	PH.	MCA	PANEL	CIRCUIT	FEEDER	NOTES
CU	6	208 V	1	18 A	A	62,64	3/4" C., 3-#12 + 1#12GND	

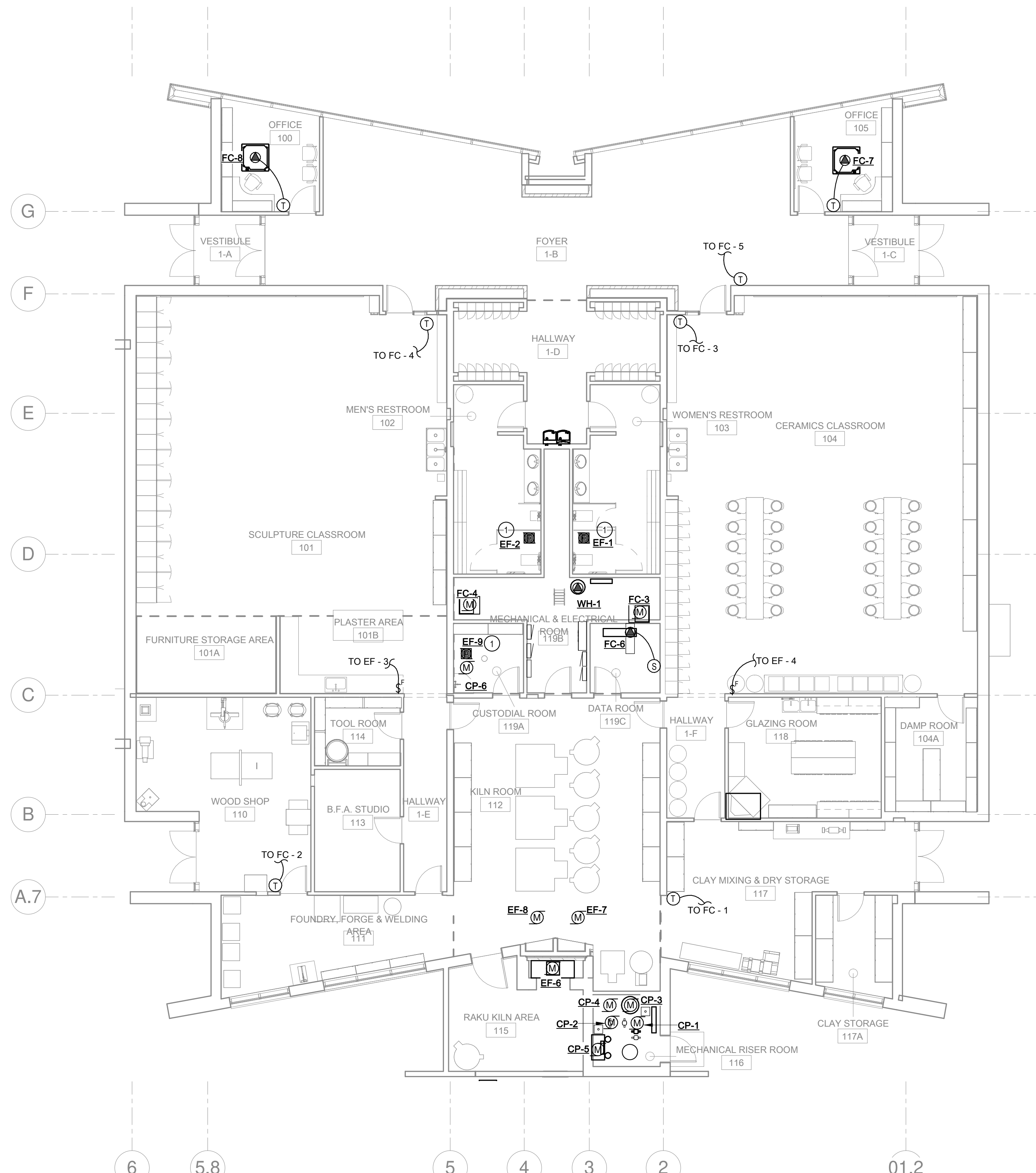
MECHANICAL - EXHAUST FAN SCHEDULE									
ID	#	VOLTS	PH.	HP	WATTS	PANEL	CIRCUIT	FEEDER	NOTES
EF 1	1	120 V	1		100 W	B	13	3/4" C., 2-#12 + GND	CONNECT TO LIGHTING CKT AND CONTROLS
EF 2	2	120 V	1		100 W	B	13	3/4" C., 2-#12 + GND	CONNECT TO LIGHTING CKT AND CONTROLS
EF 3	3	120 V	1	1/4		B	30	3/4" C., 2#12+1#12G	PROVIDE WITH LOCAL DISCONNECT
EF 4	4	120 V	1	1/4		B	29	3/4" C., 2#12+1#12G	PROVIDE WITH LOCAL DISCONNECT
EF 5	5	120 V	1	1/4		B	29	3/4" C., 2#12+1#12G	PROVIDE WITH LOCAL DISCONNECT
EF 6	6	120 V	1	1/4		A	39	3/4" C., 2#12+1#12G	PROVIDE WITH LOCAL DISCONNECT
EF 7	7	120 V	1	1/2		B	4	3/4" C., 2#12+1#12G	PROVIDE WITH LOCAL DISCONNECT
EF 8	8	120 V	1	1/4		B	4	3/4" C., 2#12+1#12G	PROVIDE WITH LOCAL DISCONNECT
EF 9	9	120 V	1		100 W	B	13	3/4" C., 2-#12 + GND	CONNECT TO LIGHTING CKT AND CONTROLS

PLUMBING - CIRCULATION PUMP									
ID	#	VOLTS	PH.	HP	PANEL	CIRCUIT	FEEDER	NOTES	
CP 1	208 V	1	1		A	70,72	3/4" C., 2#12+1#12G	SEE MECHANICAL DRAWINGS FOR LOCATIONS AND SIZING. PROVIDE WITH LOCAL DISCONNECT	
CP 2	208 V	1	1		A	74,76	3/4" C., 2#12+1#12G	SEE MECHANICAL DRAWINGS FOR LOCATIONS AND SIZING. PROVIDE WITH LOCAL DISCONNECT	
CP 3	120 V	1	1/4		A	69	3/4" C., 2#12+1#12G	SEE MECHANICAL DRAWINGS FOR LOCATIONS AND SIZING. PROVIDE WITH LOCAL DISCONNECT	
CP 4	120 V	1	1/4		A	71	3/4" C., 2#12+1#12G	SEE MECHANICAL DRAWINGS FOR LOCATIONS AND SIZING. PROVIDE WITH LOCAL DISCONNECT	
CP 5	120 V	1	(2) 3/4		A	30	3/4" C., 2#10+1#10G	SEE MECHANICAL DRAWINGS FOR SIZING. PROVIDE WITH LOCAL DISCONNECT	
CP 6	208 V	1	1		A	78,80	3/4" C., 2#12+1#12G	SEE MECHANICAL DRAWINGS FOR LOCATIONS AND SIZING. PROVIDE WITH LOCAL DISCONNECT	

PLUMBING - WATER HEATER							
ID	#	VOLTS	PH.	PANEL	CIRCUIT	FEEDER	NOTES
WH	1	208 V	1	A	61,63	3/4" C., 3#10 + 1#12 GND	



2 MEZZANINE
SCALE: 1/8" = 1'-0"



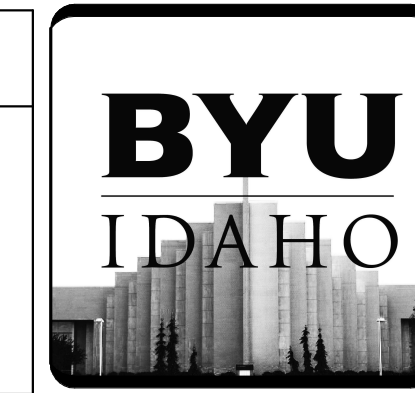
1 MECH
SCALE: 1/8" = 1'-0"

GENERAL NOTES:

A. REFER TO SYMBOL SCHEDULES FOR GENERAL NOTES ASSOCIATED WITH THE INSTALLATION OF EACH SYSTEM; LIGHTING, POWER, FIRE ALARM, SPECIAL SYSTEMS, ETC.

KEY NOTES:

1. CONNECT TO LIGHTING CIRCUITS AND CONTROLS



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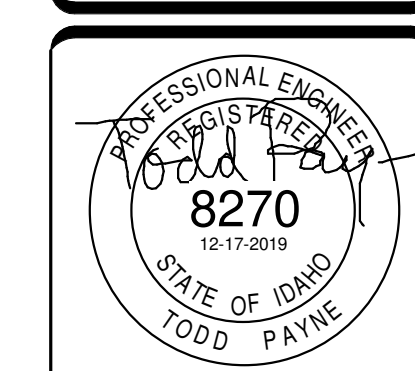
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REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
3	Addendum 003	1-23-2020

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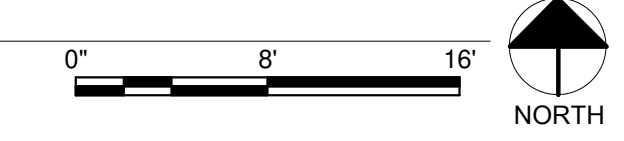
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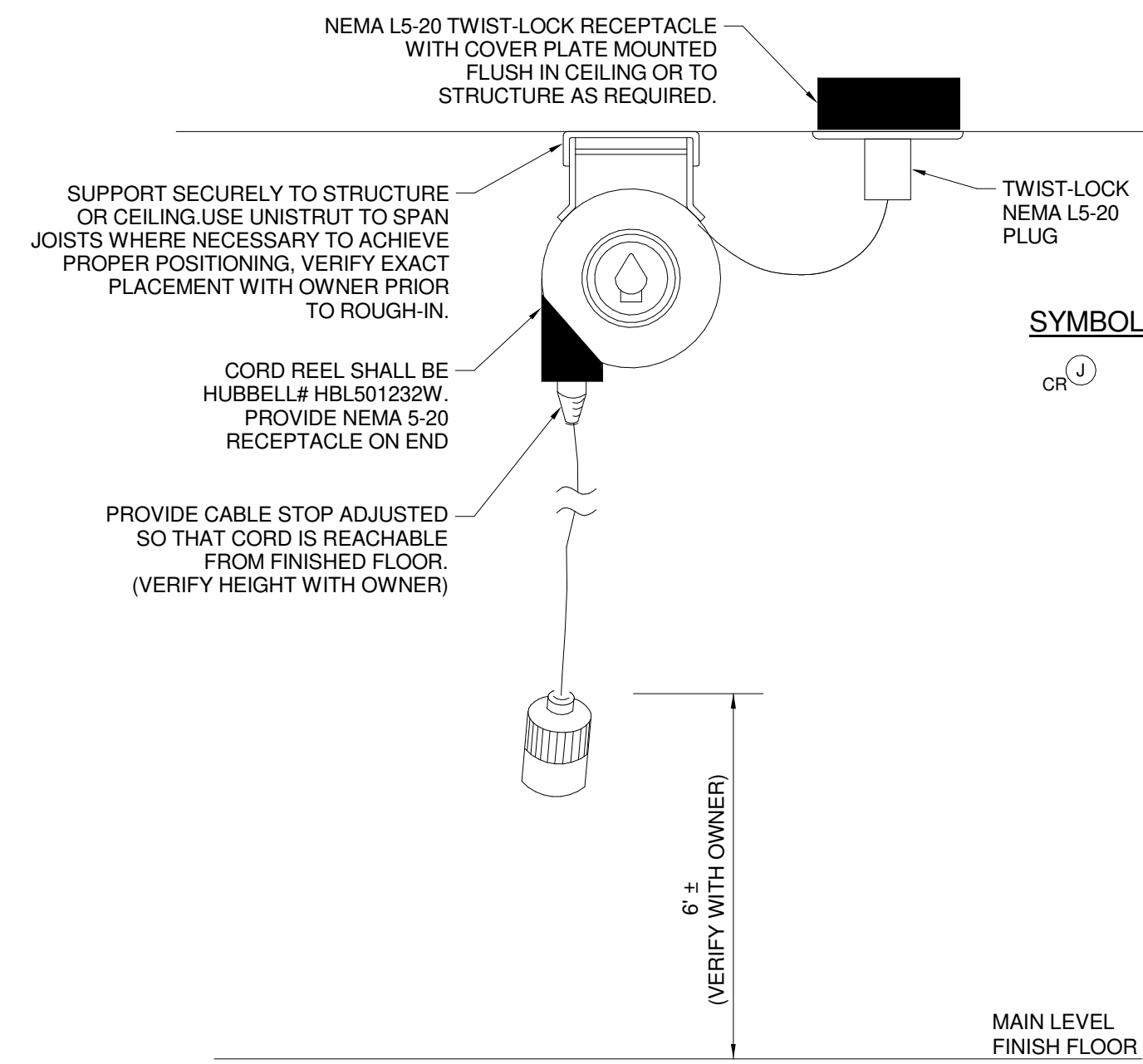
MECHANICAL PLAN

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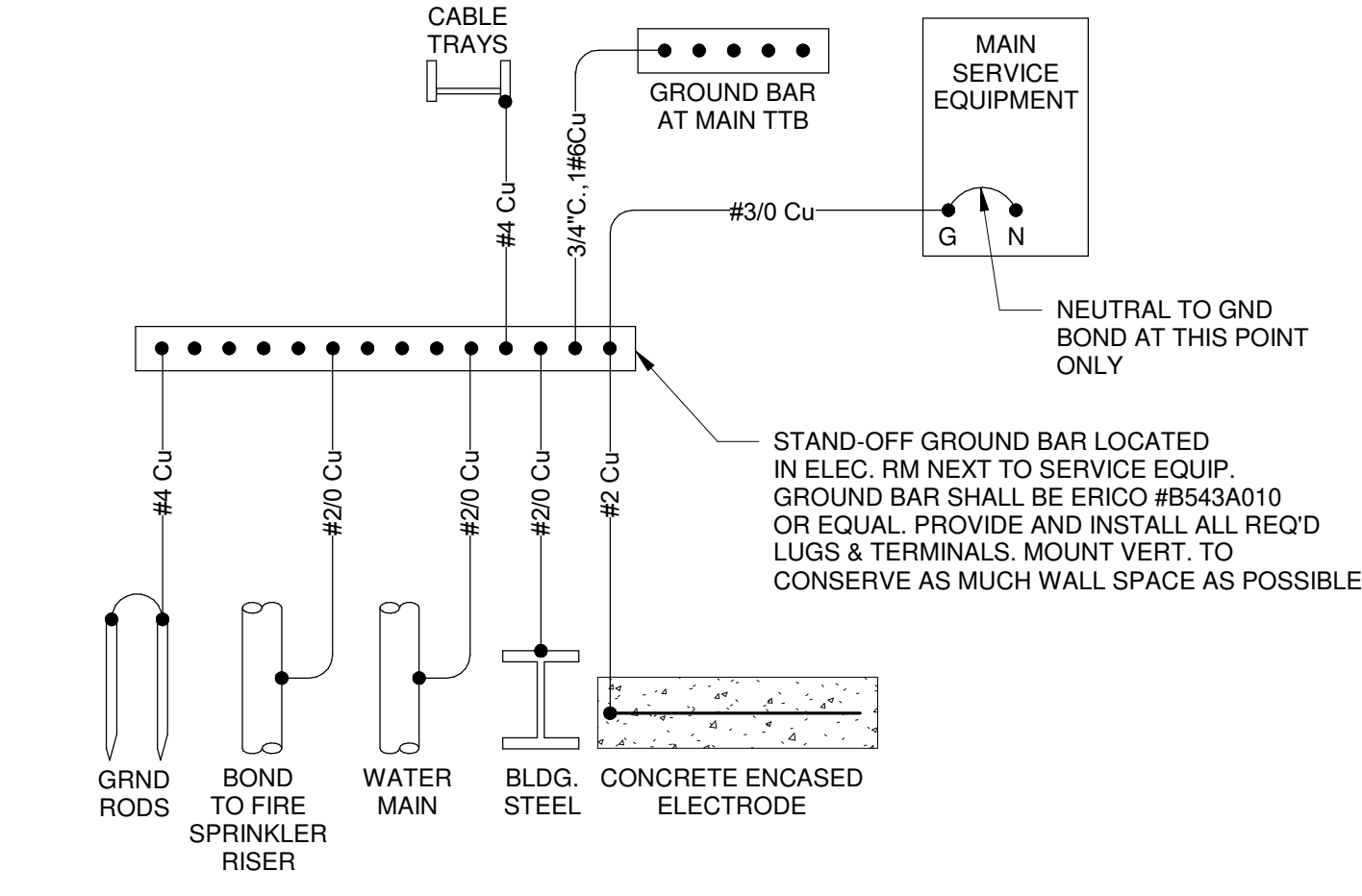
E4.0

P.E. JOB #1977
IPAYNE
Engineering Inc.
1823 E. Center
Pocatello, Idaho 83201
tel (208) 232-4439
www.payneengineeringinc.com

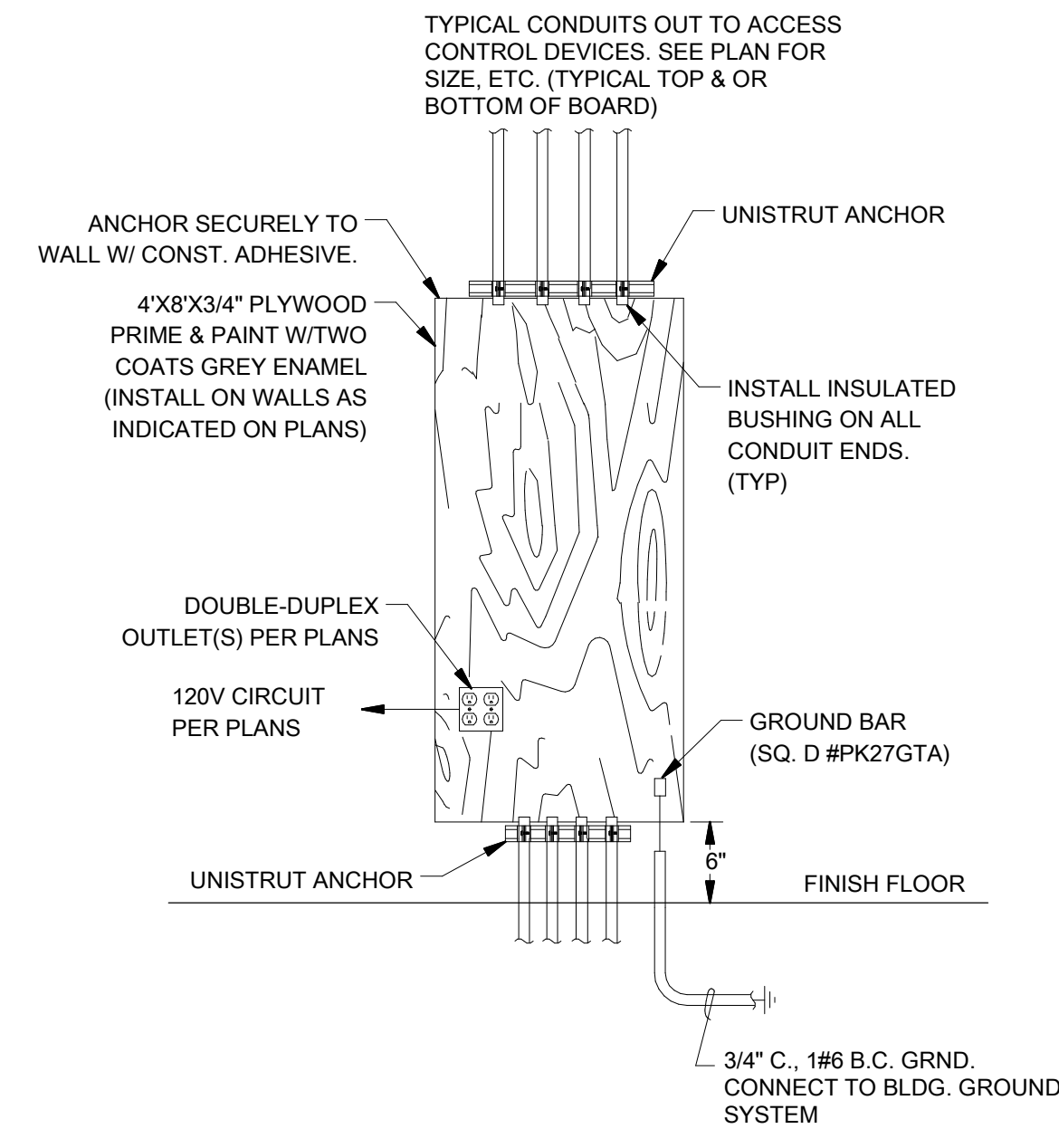




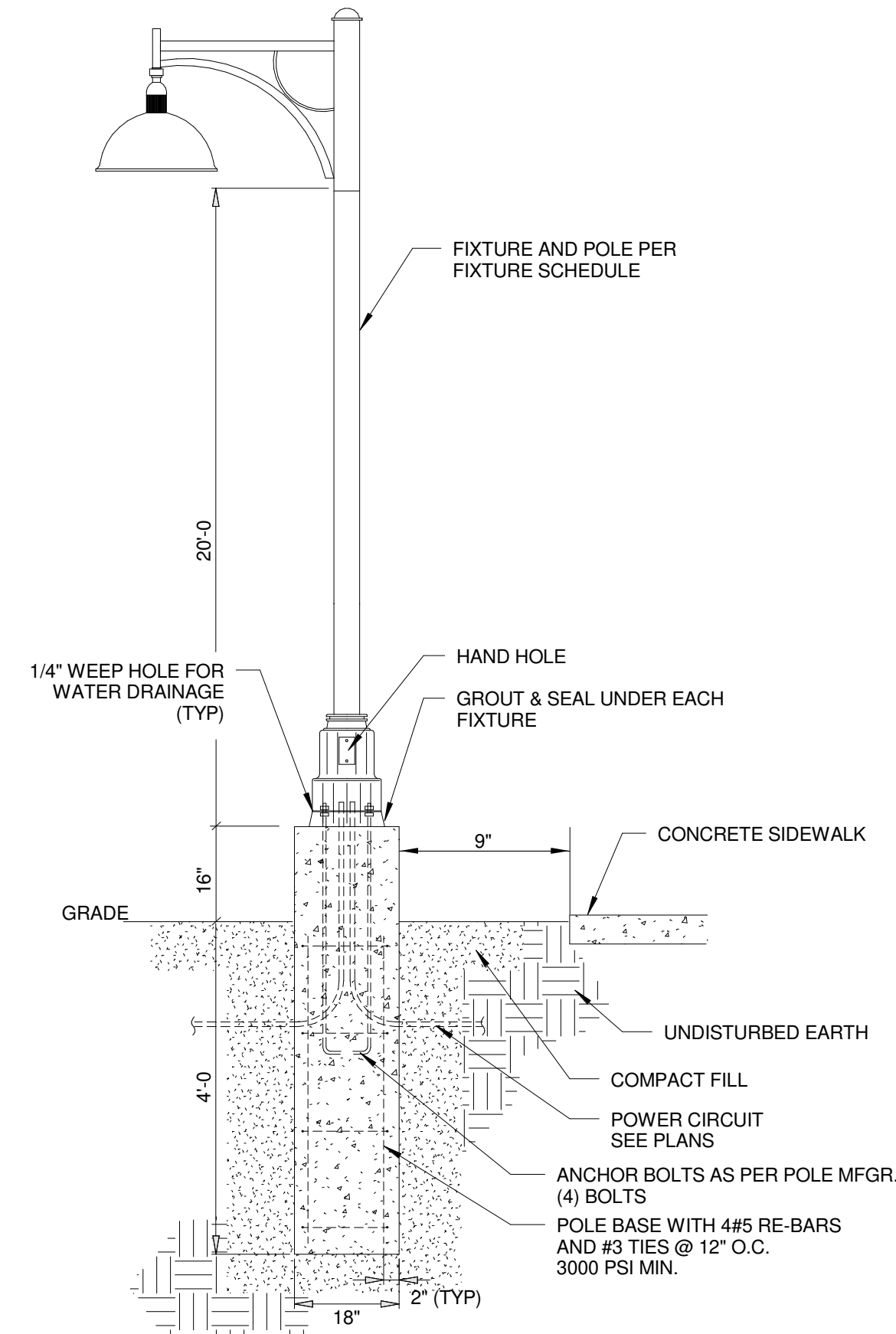
A CORD REEL DETAIL
SCALE: NONE



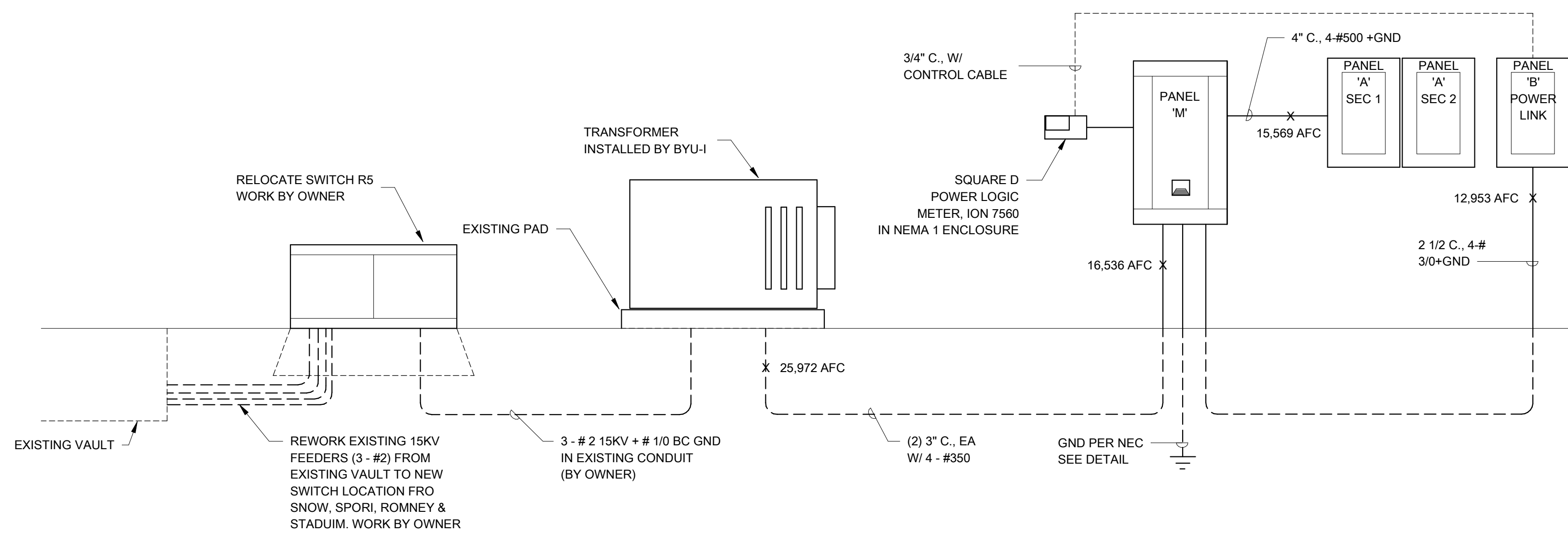
B BLDG GROUNDING ELECTRODE SYSTEM DETAIL
SCALE: NONE



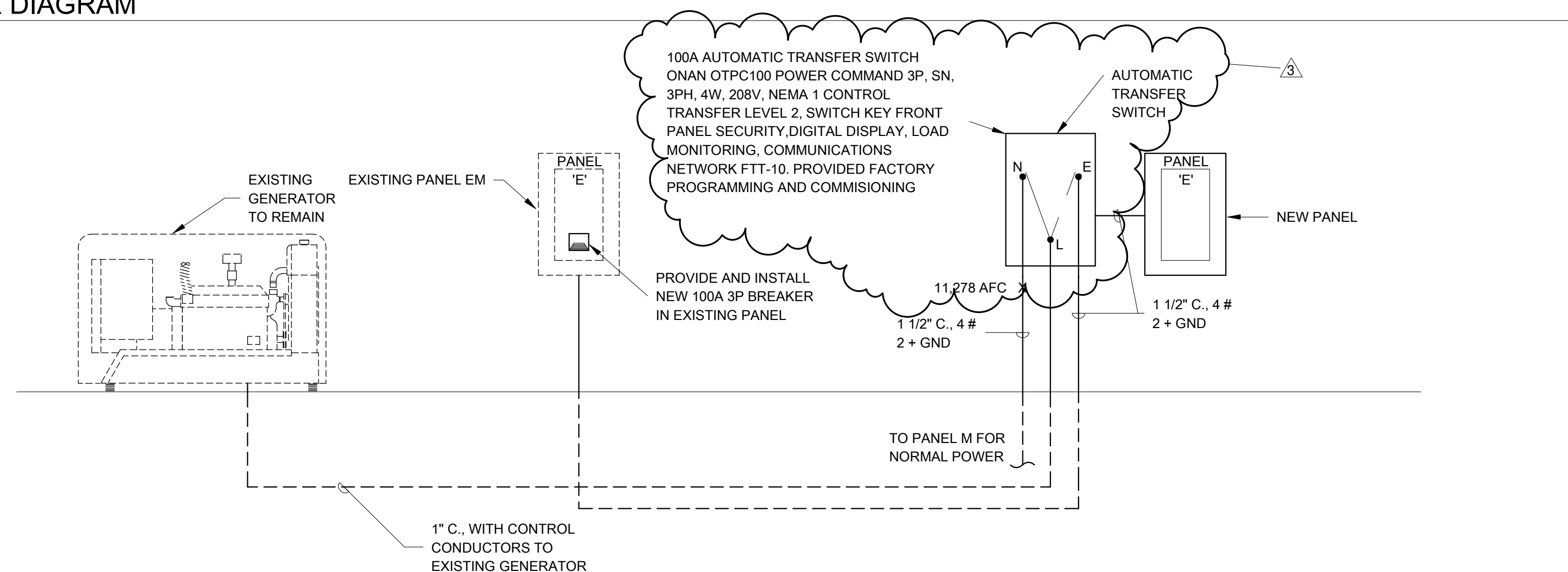
C ACCESS CONTROL DEVICES DETAIL
SCALE: NONE



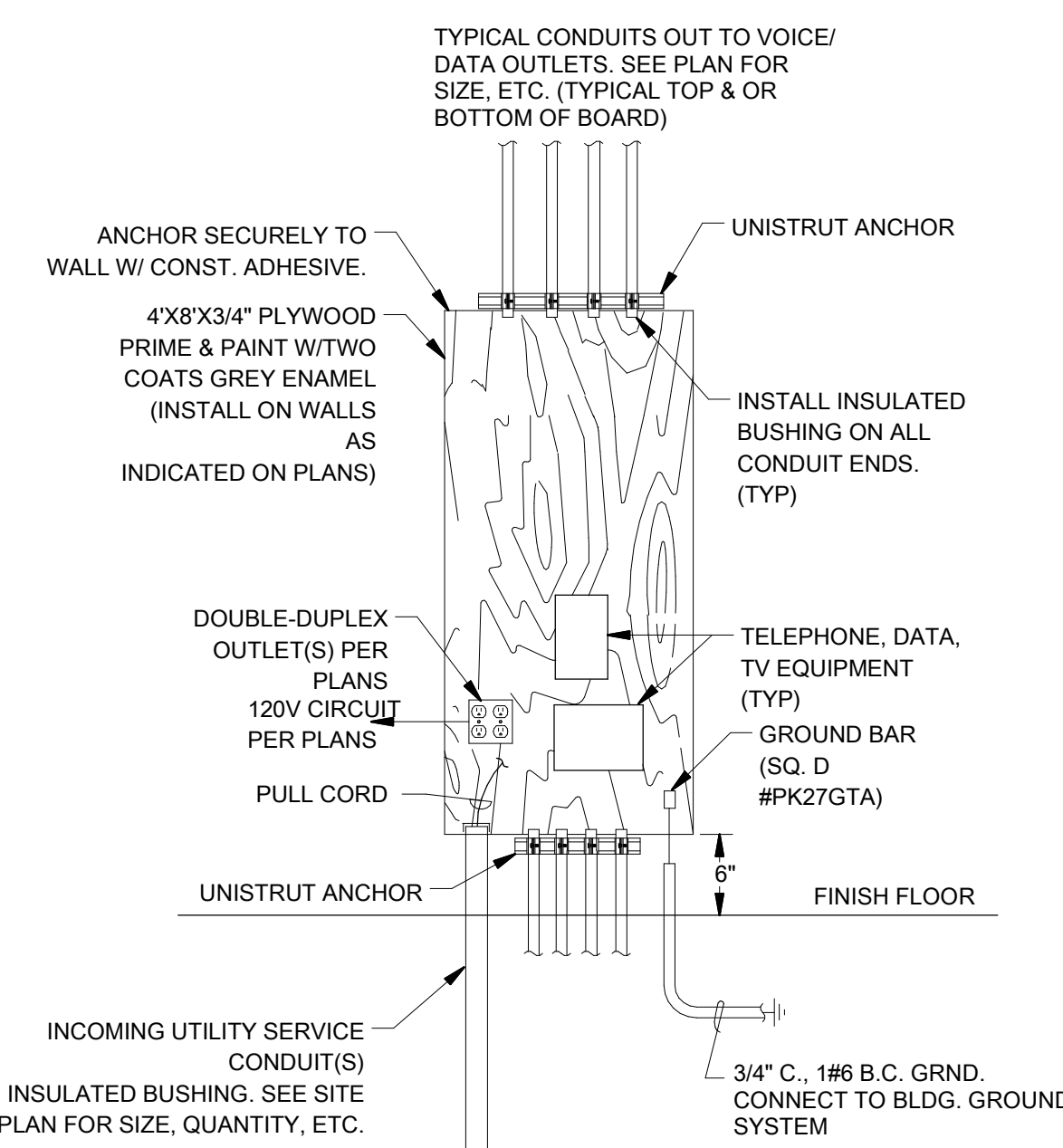
D PARKING LOT LIGHT (1 HEAD)
SCALE: NONE



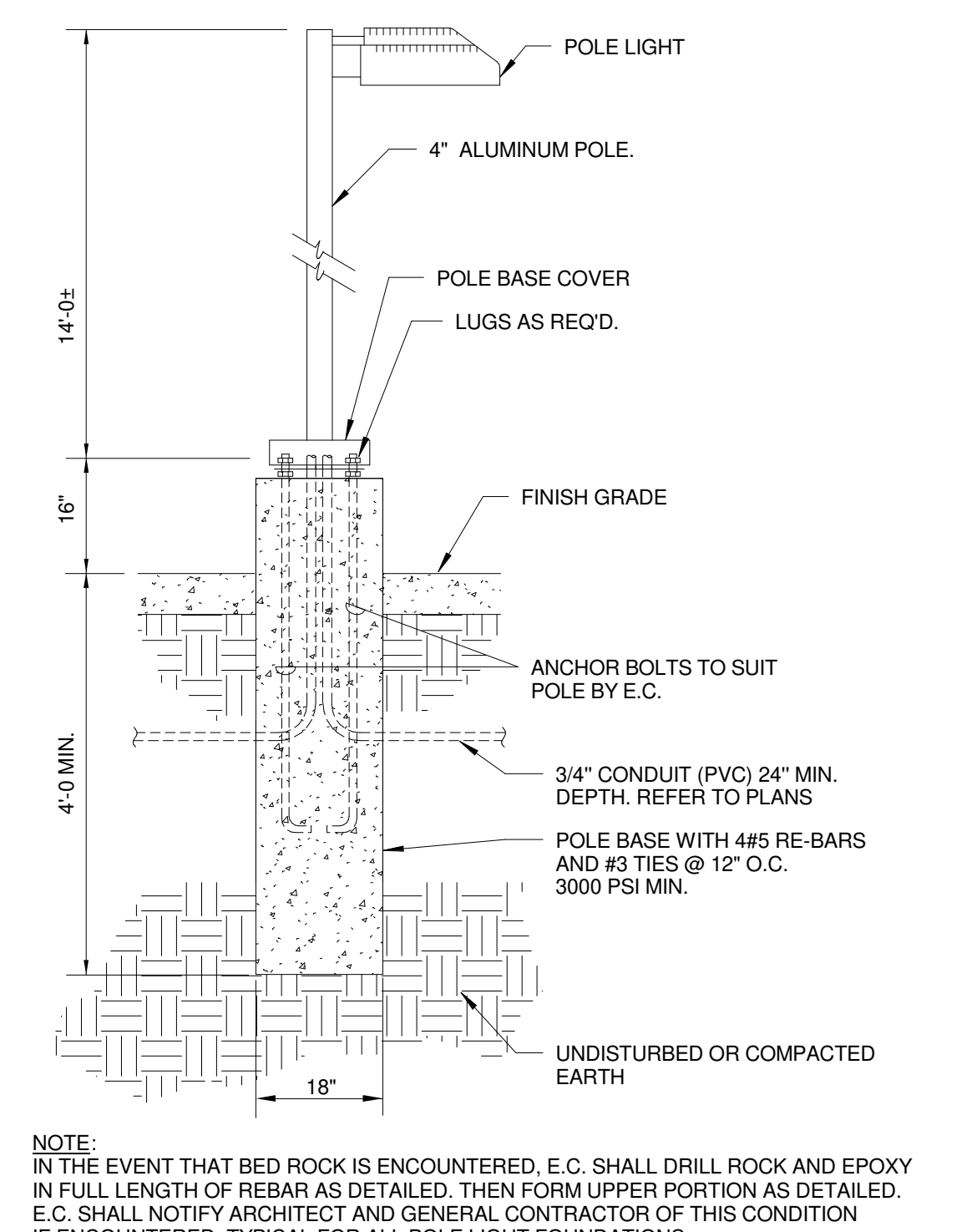
E POWER RISER DIAGRAM
SCALE: NONE



F EMERGENCY POWER RISER DIAGRAM
SCALE: NONE



G COMM TERMINAL BOARD DETAIL
SCALE: NONE



H SIDEWALK LIGHT
SCALE: NONE

DOCUMENT STATUS		
STATUS	DATE	
BID DOCUMENTS		
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
3	Addendum 003	1-23-2020