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FAX

DATE: 05/28/2026	JOB # 2386
RE: New Units at River Bend	
For Litchfield Housing Authority	
Addendum #3	

**PLEASE COMPLETE SECTION BELOW AND FAX OR EMAIL BACK TO
 860-677-8534 OR EBENKEN@QAMARCH.COM**

Received (Addendum #3)

CONTRACTOR : _____

SIGNED : _____ Date: _____

NUMBER OF PAGES INCLUDING COVER PAGE: 93

FROM: Erin Benken

If the attached is incomplete, kindly notify us at once.



New Units at River Bend

Addendum #3

05/28/2026

General/Clarifications

Plan Holders List (See Attached)

BIDS DUE **2:00 pm on Thursday, June 4, 2026**
Office of the First Selectman
Litchfield Town Hall
74 West Street, Litchfield, CT 06759

RFI Questions

Question #1	Are Building permit fees waived or by the contractor?
Answer #1	Building permit fees are not waived and will be the responsibility of the contractor.
Question #2	Please confirm contractors are to provide the underground propane tank and that whoever the owner is buying propane from is not providing it.
Answer #2	Contractor is to purchase and install the underground propane tank.
Question #3	Is there Tyvek on the exterior of the building or is the insulation the weather barrier?
Answer #3	Provide ZIP sheathing or equal as shown on the exterior wall types on sheet A5.0.
Question #4	Regarding the Towel Ring, the part number provided in the spec Kohler Archer K-11057 has been discontinued. Also, the Kohler K-13433 Robe Hook; this part number is also discontinued. Please provide different desired model numbers for accurate bidding purposes.
Answer #4	See revised specification section 102800 Toilet, Bath and Laundry Accessories, attached.



Question #5 The following Specification Section 012100 - ALLOWANCES, 012600 CONTRACT MODIFICATION PROCEDURES, 015713 TEMPORARY EROSION & SEDIMENT CONTROLS, 017123.13 CONSTRUCTION LAYOUT and 017329 CUTTING AND PATCHING are listed in the Table of Contents but are missing from the distributed Bidding Documents. Please confirm if these specs are applicable to this project.

Answer #5 Allowances are not applicable to this project. Contract Modification Procedures are already included in the project manual, see section 12600. Added specification sections and revised table of contents are attached.

Question #6 When are the construction start and finish dates?

Answer #6 Construction will begin as soon as we close on permanent financing. We will work with the selected contractor on timeline once the closing date is established. Work should be completed with 365 days of mobilization.

Question #7 Quality assurance testing is by Owner?

Answer #7 Special inspections will be provided by the Owner.

Question #8 Within the Contract Documents, there does not appear to be a defined irrigation system design, irrigation specifications, irrigation drawings, planting irrigation requirements, or irrigation performance criteria identified. However, portions of the documents appear to imply Contractor responsibility for landscape establishment and maintenance. Please clarify whether permanent irrigation systems are required as part of the Contract Work. If required, please provide the basis-of-design, extent of coverage, point of connection requirements, controls requirements, and associated specifications/drawings.

Answer #8 There is no formal permanent irrigation system for the project. The contractor is responsible for irrigation, as required, to plant and establish all lawns and landscaping.

Question #9 Please confirm that the Contractor's responsibility for rock excavation is limited to the quantities identified in Alternate No. 1 and that no additional compensation restrictions, contingency assumptions, or unclassified excavation requirements apply beyond the unit price/alternate mechanism identified in Specification Section 012300. Please also confirm whether rock encountered in utility trenching, grinder pump installation, and footing excavation is included within the same rock excavation definition.

Answer #9 Confirmed.



Question #10 Please provide the contract definition of “rock excavation,” including whether rippable material, weathered rock, decomposed rock, boulders, and ledge encountered during utility trenching or footing excavation are considered rock excavation for bidding purposes.

Answer #10 Rock excavation means any and all rock. However, depending on the specific field conditions the owner and contractor reserve the right to negotiate alternate solutions.

Question #11 Please confirm whether temporary dewatering discharge permits, filtration requirements, testing requirements, or wetlands monitoring requirements apply to groundwater encountered during excavation activities.

Answer #11 The site contractor will be responsible for all measures required to carry out any dewatering.

Question #12 Please confirm whether temporary dewatering associated with footing excavation, utility installation, grinder pump installation, and stormwater system installation is included in the Contractor’s scope and whether any treatment, testing, filtration, or permit requirements apply prior to discharge.

Answer #12 Temporary dewatering and any/all means and methods required to carry out the sitework and foundations are the responsibilities of the contractor. The contractor is also responsible for all measures required to carry out the dewatering.

Question #13 Please confirm utility company responsibilities versus Contractor responsibilities for electrical, gas, water service tap fees, sewer connection fees, and coordination.

Answer #13 The owner will pay for utility connection fees. The Contractor is responsible for coordination with the utility companies.

Question #14 Please confirm that all siding, trim, soffit, WRB integration, flashing requirements, fastening requirements, control joints, and substrate requirements associated with the revised fiber cement siding system are fully incorporated into the Contract Documents and that no additional framing, engineering, or substrate modifications are required beyond those shown.

Answer #14 The contractor is required to provide all means, methods, and supporting work necessary to provide and install the complete fiber cement siding wall assembly per the manufacturers requirements including siding, trim, flashing, etc.



Question #15 Please confirm the basis-of-design WRB/air barrier manufacturer intended for compatibility with the specified fiber cement siding assembly, flashing tapes, sealants, and adjacent trim materials.

Answer #15 Follow requirements as outlined by siding manufacturer. See attached technical bulletin from basis-of-design manufacturer, Hardie. Also refer to wall sections and details showing the wall types and assemblies.

Question #16 Please define permitted construction working hours, weekend work restrictions, holiday restrictions, noise limitations, delivery restrictions, and any occupied-campus operational constraints applicable to the project. Please also confirm whether any off-hours work requirements are anticipated.

Answer #16 Typical work hours will be from 8am – 4pm. Mobilization activities that do not create noise may be conducted between 7am – 8am. Weekend work will be permitted on a limited, as-needed, basis with prior authorization by the Litchfield Housing Authority and adequate notice to tenants of adjacent properties. Work on federal holidays will not be permitted. Noise must comply with the Town of Litchfield noise regulations. Deliveries must be coordinated to reduce disruption to shared access road with adjacent housing units. Any activities that will disrupt neighbors and residents of the existing units (i.e. water or utility distribution, etc.) will require coordination with the Litchfield Housing Authority and adequate notice to the affected residents.

Question #17 Please confirm the anticipated duration bid pricing must remain valid pending CT DOH funding approval and whether material escalation occurring after the bid date but prior to Notice to Proceed will be eligible for adjustment.

Answer #17 Bids are to be held for 120 days as indicated in the project manual.

Question #18 Please clarify the required slab-on-grade subbase assembly. Structural/general notes indicate a minimum 6-inch crushed stone base beneath slabs, while the geotechnical report recommends a minimum 16-inch controlled fill layer plus 4 inches of processed aggregate beneath slabs. Please confirm governing requirement.

Answer #18 Required slab-on grade subbase assembly should be coordinated with Geotech / civil engineer.



Question #19	Please confirm that the grinder pump system design shown in the Contract Documents includes all components, controls, alarms, wiring interfaces, startup requirements, and appurtenances necessary for a complete and fully operational system, and that no additional equipment, monitoring systems, manufacturer-required accessories, or third-party integration requirements are intended beyond those shown or specified.
Answer #19	Yes, the grinder pump station is complete system. The Contractor shall include Manufacturers start-up services. Station Control Panel to be “Duplex Protect Plus with Sentry Advisor” Option. Typical Installation Instructions are attached.
Question #20	Please identify all required third-party testing, inspections, observations, certifications, and commissioning-related services associated with the project, and clarify whether such services are Owner-provided or Contractor-provided.
Answer #20	See statement of special inspections, attached. The Owner will provide special inspections.
Question #21	Clarify whether the Contract Documents anticipate any engineered/stamped shop drawings, calculations, or manufacturer-designed system components beyond the standard HVAC coordination, submittal, and complete operational system requirements indicated within the mechanical specifications. Please confirm no additional delegated engineering/design services are required as part of the Contract.
Answer #21	None that we require.
Question #22	Please provide all approved Inland Wetlands permit conditions, restoration requirements, monitoring requirements, and post-construction stabilization obligations applicable to the project site.
Answer #22	See Inland Wetlands permit conditions, attached.
Question #23	Please clarify the required footing drainage system design, including whether exterior footing drains, interior underdrain systems, sump systems, discharge piping, daylight discharge, or connection to storm systems are required. Foundation notes currently indicate footing drains “as required by site conditions” without a fully defined system layout.
Answer #23	Footing drains are not required for this project. Required slab-on grade subbase assembly should be coordinated with Geotech / civil engineer.



Question #24 Please clarify governing slab subgrade bearing criteria. Site notes reference mechanically compacted crushed stone capable of supporting 2,000 PSF while the geotechnical report identifies allowable bearing pressure of 4,000 PSF. Please confirm intended design criteria for slab support and structural fill preparation.

Answer #24 Slab subgrade bearing criteria should be the one stated in the geotechnical report: 4,000 PSF

Question #25 Please clarify governing foundation frost protection requirements. Architectural/Foundation Notes require bottoms of exterior footings to be a minimum of 4'-0" below finished grade, while the geotechnical report identifies a frost protection depth of 3.5 feet below finish grades. Please confirm the intended footing/frost wall bearing elevations and whether any frost-protected shallow foundation provisions are being utilized in the design.

Answer #25 We are showing -4'-0" on plan views because the grade is usually a little bit lower than the first floor. However, our typ. Exterior foundation sections call out for min. 3'-6" frost protection.

Question #26 Please confirm that the proposed foundation elevations, footing depths, and slab elevations shown in the Contract Documents have been coordinated with the geotechnical findings indicating auger refusal on bedrock between approximately 7.5 feet and 17.5 feet below existing grades, and that no additional stepped footing, over-excavation, or rock undercut requirements are anticipated beyond those shown.

Answer #26 Foundations elevations have not been coordinated with this Geotech report finding. Report was not available during design.

Question #27 Regarding the Towel Ring, the part number provided in the spec Kohler Archer K-11057 has been discontinued. Please provide a new product model. Also please provide a new model for the Kohler K-13433 Robe Hook; this part number is also discontinued.

Answer #27 See revised specification section 102800 Toilet, Bath and Laundry Accessories, attached.

Question #28 Does each unit require its own backflow preventer since they are all individually fed?

Answer #28 We can remove the backflow preventer from the services coming into the building as long as there is a double check valve on the meter pit.



Question #29 Unit D the ADA unit shows a P4 same as everywhere else. This is not a roll in like it is drawing on the arch floor plan. The P4 is spec'd on the fixture schedule as "less ADA trim" is this correct?

Answer #29 All ADA units are to have a roll in shower assembly as shown on the architectural drawings. See revised plumbing drawings, attached.

Changes to Specifications

P&Z Conditions **Add** Document in its entirety. [attached]

Inland Wetland Conditions **Add** Document in its entirety. [attached]

015713 **Add** Section in its entirety. [attached]

017329 **Add** Section in its entirety. [attached]

102800 **Change** basis of design product for the following bathroom accessories: Mirror Unit, Private Use Towel Bar, Towel Ring, and Robe Hook. [attached]

Changes to Drawings

A1.4 **Update** details 3/A1.4 and 6/A1.4. [attached]

A1.5 **Update** detail 3/A1.5. [attached]

A4.0 **Update** detail 1/A4.0. [attached]

A4.1 **Update** details 1/A4.1, 2/A4.1, and 3/A4.1. [attached]

A5.0 **Update** wall type F. [attached]

A5.1 **Update** details 3/A5.1, 6/A5.1, 7/A.1 and add note. [attached]

A5.2 **Update** details 1/A5.2, 2/A5.2, 3/A5.2, 4/A5.2 , 5/A5.2 and add note. [attached]

A5.3 **Update** details 1/A5.3, 2/A5.3, 3/A5.3, 4/A5.3 and add note. [attached]

A5.4 **Update** details 2/A5.4, 4/A5.4, 6/A5.4 and add note. [attached]

A9.1 **Update** details 7/A9.1 and 8/A9.1. [attached]



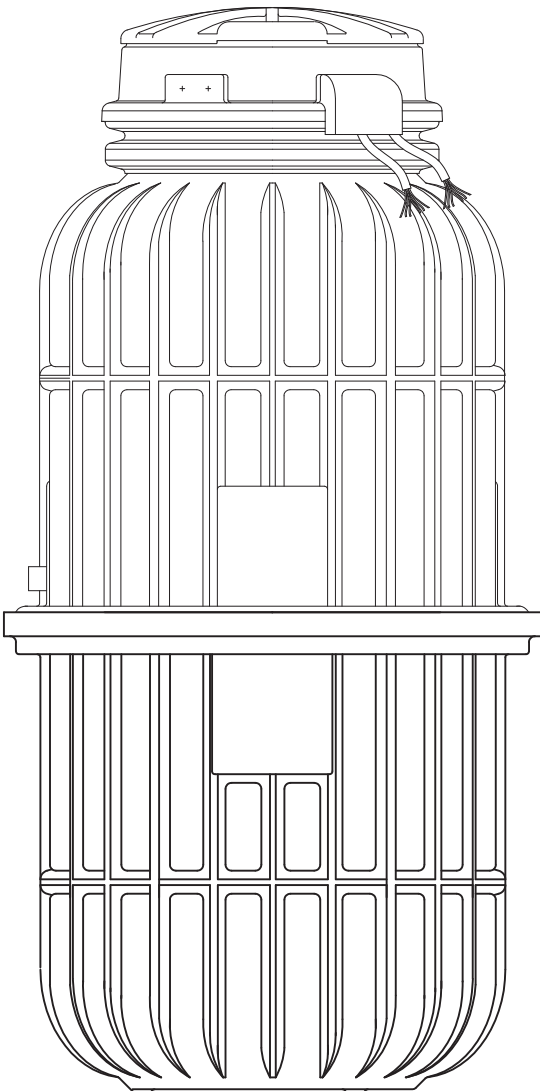
- P2.1 **Update** drawing 5/P2.1. [attached]
- P3.0 **Update** Domestic Water service detail. [attached]
- P4.0 **Update** fixture Schedule. [attached]

End of Addendum #3

New Housing Units River Bend for Litchfield Housing Authority

Plan Holders

Date	Company	Contact
5/5/26 12:37 pm	Beacon Construction Services 666 B Heritage Vlg Southbury, CT 06488	John Bigham Tel: 609-820-6568
5/1/26 2:03 pm	ConstructConnect 3825 Edwards Rd Suite 800 Cincinnati, OH 45209	Plan Acquisition Tel: 800-364-2059
5/12/26 12:14 pm	LaRosa Building Group, LLC 163 Research Parkway Meriden, CT 06450	Tiffany Lengyel Tel: 203-235-1770
4/30/26 7:44 am	Millennium Builders, Inc. 176 Old Winsted Road Torrington, CT 06790	Daniel E Lowell Tel: 8605710555
5/1/26 9:17 am	Nosal Builders, Inc. 10 McKee Place Cheshire, CT 06410	ROEL LEGASPI Tel: 2034399320
5/13/26 9:18 am	Pelletier Construction Management llc 27 West Main Street Clinton, CT 06413	Noah Brenckle Tel: 860-430-5513



DH152 & DR152

Typical Installation Instructions & Warranty Information

**Duplex Station
150-Gal. Capacity**

Environment One Grinder Pump Feature Identification

1. **GRINDER PUMP BASIN** – High density polyethylene (HDPE)
2. **ACCESSWAY COVER** – HDPE
3. **ELECTRICAL QUICK DISCONNECT (EQD)** – Cable from pump core terminates here.
4. **POWER AND ALARM CABLE** – Circuits to be installed in accordance with local codes.
5. **ALARM PANEL** – NEMA 4X enclosure. Equipped with circuit breakers. Locate according to local codes.
6. **ALARM DEVICE** – Every installation is to have an alarm device to alert the homeowner of a potential malfunction. Visual devices should be placed in very conspicuous locations.
7. **INLET** – EPDM grommet (4.5" ID). For 4.5" OD DWV pipe.
8. **WET WELL VENT** – 2.0" tank vent, supplied by factory in units with accessways.
9. **GRAVITY SERVICE LINE** – 4" DWV, (4.5" OD). Supplied by others.
- 9a. **STUB-OUT** – 4" X 5' Long **watertight** stub-out, to be installed at time of burial unless the gravity service line is connected during installation. Supplied by others.
10. **DISCHARGE VALVE** – 1-1/4" Female pipe thread.
11. **DISCHARGE LINE** – 1-1/4" Nominal pipe size. Supplied by others.
12. **CONCRETE ANCHOR** – See Ballast Calculations for specific weight for your station height. Supplied by others.
13. **BEDDING MATERIAL** – 6" minimum depth, round aggregate (gravel). Supplied by others.
14. **FINISHED GRADE** – Grade line to be 1 to 4 inches below removable lid and slope away from the station.
15. **VENT** – Indoor installation. See section 6, Venting, on page 6.
16. **VALVE** – Full ported ball valve. Recommended option, for use during service operations. Supplied by others.
17. **CONDUIT** – 1" or 1-1/4", material and burial depth as required per national and local codes. Conduit must enter panel from bottom and be sealed per NEC section 300.5 & 300.7. Supplied by others.
18. **UNION** – 1-1/4" or compression type coupling. Supplied by others. (Do not use rubber sleeve and hose clamp type coupling.)
19. **VALVE** – Ball valve, must provide a full-ported 1-1/4" round passage when open. Supplied by others.
20. **REBAR** – Required to lift tank after ballast (concrete anchor) has been attached, 4 places, evenly spaced around tank.

Figure 1a

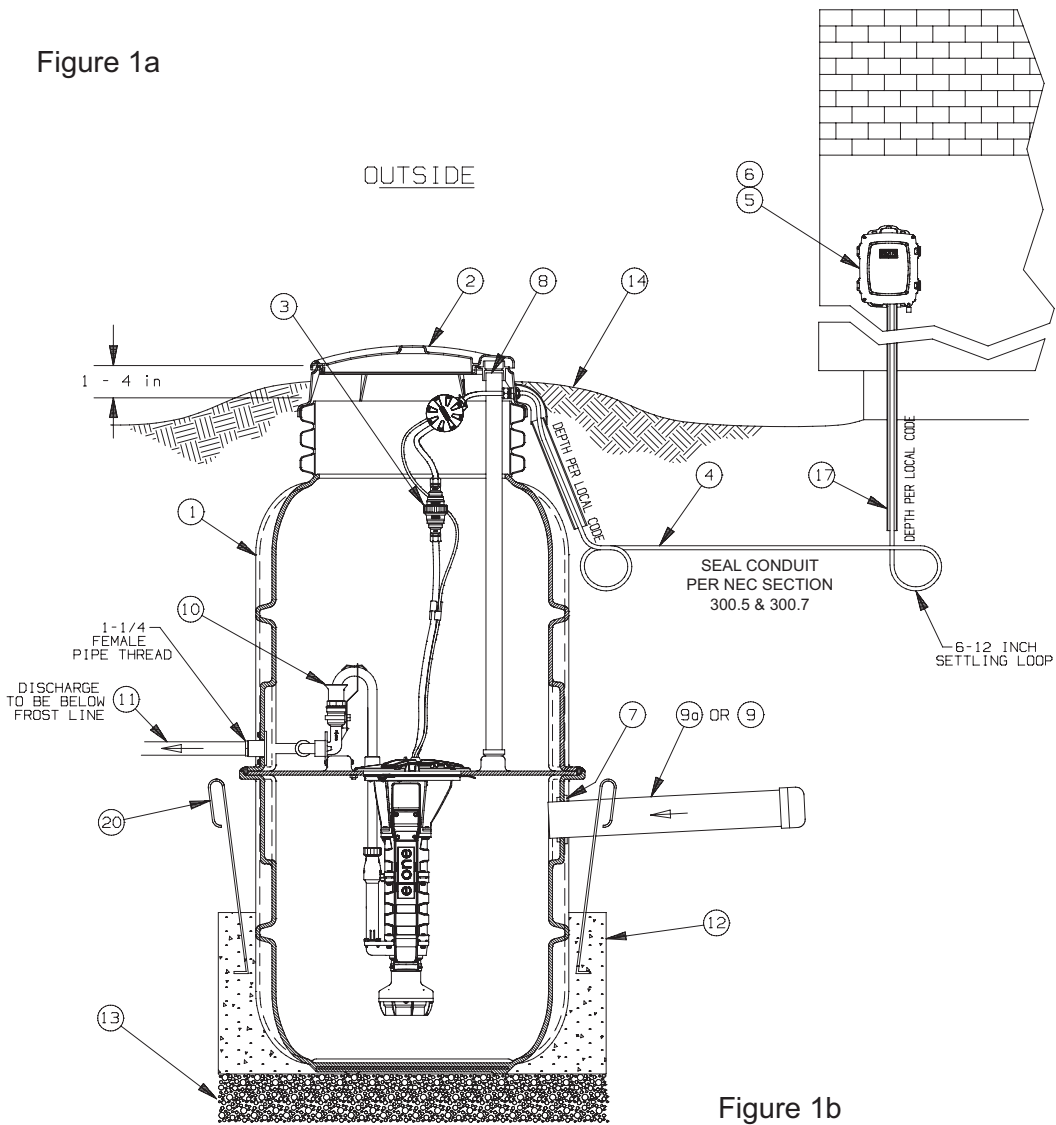
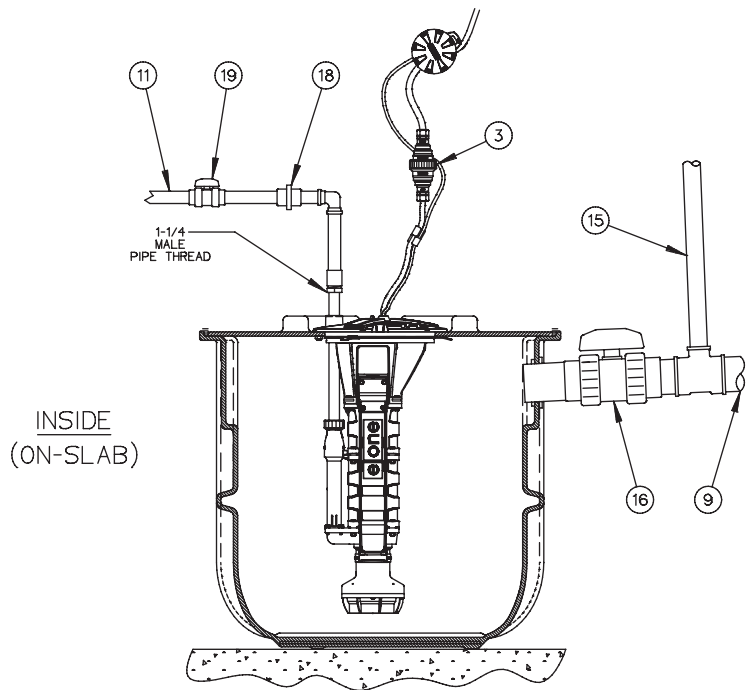


Figure 1b



**FAILURE TO COMPLY
WITH INSTALLATION
INSTRUCTIONS WILL
VOID WARRANTY**

The Environment One grinder pump is a well-engineered, reliable and proven product; proper installation will assure years of trouble-free service. The following instructions define the recommended procedure for installing the grinder pump station. These instructions cover the installation of units with and without accessways.

This is a sewage handling pump and must be vented in accordance with local plumbing codes. This pump is not to be installed in locations classified as hazardous in accordance with National Electric Code, ANSI / NFPA 70. All piping and electrical systems must be in compliance with applicable local and state codes.

1. REMOVE PACKING

MATERIAL: The User Instructions must be given to the homeowner. Hardware supplied with the unit, if any, will be used at installation.

2. TANK INSTALLATION:

Lift the station using only the methods described on page 9, Lifting Instructions. The tank is supplied with a standard grommet for connecting the 4" DWV (4.50" outside dia.) incoming sewer drain. Other inlet types and sizes are optional (Caution: 4" DR-35 pipe has a smaller diameter and won't create a watertight joint with the standard grommet). Please confirm that you have the correct inlet before continuing. If a concrete ballast is attached to the tank, lift only by the lifting eyes (rebar) embedded in the concrete. **Do not drop, roll, or lay tank on its side. This will damage the unit and void the warranty.**

• **If the tank has no accessway (Fig. 1b): (Indoor Installation):** The pump may be installed on or in the basement floor (see Fig. 1b). If the tank is to be set on the floor, it must be a flat and level bearing surface. If the tank is to go into the basement floor, it must be anchored to prevent unit from floating due to high ground water (see Chart 1, page 12 for weight).

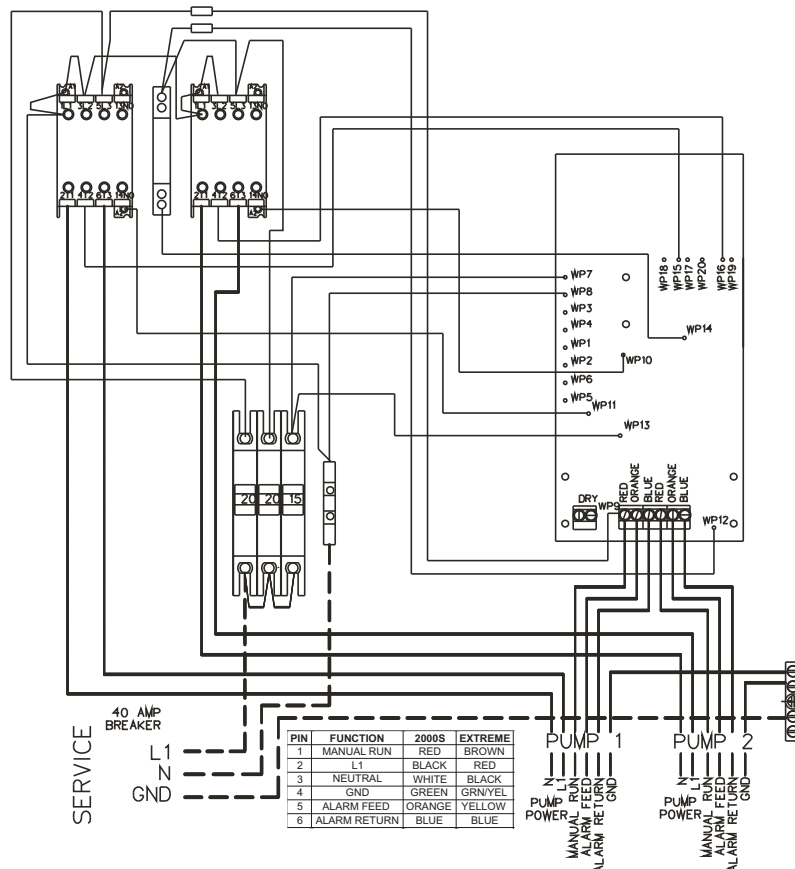
• **If the tank is to go in the floor:** A hole of the correct width and depth should be excavated. The tank must be placed on a 6" bed of gravel made up of naturally rounded aggregate, clean and free flowing, with particle size not less than 1/8" or more than 3/4" in diameter. The wetwell should

be leveled and filled with water prior to pouring the concrete to prevent the tank from shifting. If it is necessary to pour the concrete to a level above the inlet, the inlet must be sleeved with an 8" tube before pouring.

There must be a minimum clearance of three feet directly above the tank to allow for removal of the pump.

• **If the tank has an accessway (Fig. 1a):** Excavate a hole to a depth, so that the removable cover extends above the finished grade line. The grade should slope away from the unit. The diameter of the hole must be large enough to allow for a concrete anchor. Place the unit on a bed of gravel, naturally rounded aggregate, clean and

Figure 2a



120 VOLT DUPLEX WIRING

free flowing, with particles not less than 1/8" or more than 3/4" in diameter. The concrete anchor is not optional. (See Chart 1 on page 12 for specific requirements for your unit.)

The unit should be leveled and the wetwell filled with water to the bottom of the inlet to help prevent the unit from shifting while the concrete is being poured. The concrete must be vibrated to ensure there are no voids.

If it is necessary to pour the concrete to a higher level than the inlet, the inlet must be sleeved with an 8" tube before pouring.

If your unit is a model taller than 93" it may be shipped in two sections, requiring field assembly. See Field Joint

Assembly Instructions on page 8 for additional information.

3. INLET PIPE

INSTALLATION: Mark the inlet pipe 3-1/2" from the end to be inserted. Inlet pipe should be chamfered and lubricated with a soap solution. Lubricate the inlet grommet with soap solution as well. Insert the pipe into the grommet up to the 3-1/2" mark. Inspect to ensure the grommet has remained intact and in place.

4. DISCHARGE: The use of 1-1/4" PVC pressure pipe Schedule 40 and polyethylene pipe SDR 11 or SDR 7 are recommended. If polyethylene is chosen, use compression type fittings to provide a smooth inner passage. It is recommended that a

Redundant Check Valve Assembly (E/One part no. NC0042GXX) be installed between the pump discharge and the street main on all installations. Never use a ball type valve as a check valve. E/One recommends the valve be installed as close to the public right-of-way as possible. Check local codes for applicable requirements.

CAUTION: Redundant check valves on station laterals and anti-siphon/check valve assemblies on grinder pump cores should not be used as system isolation valves during line tests.

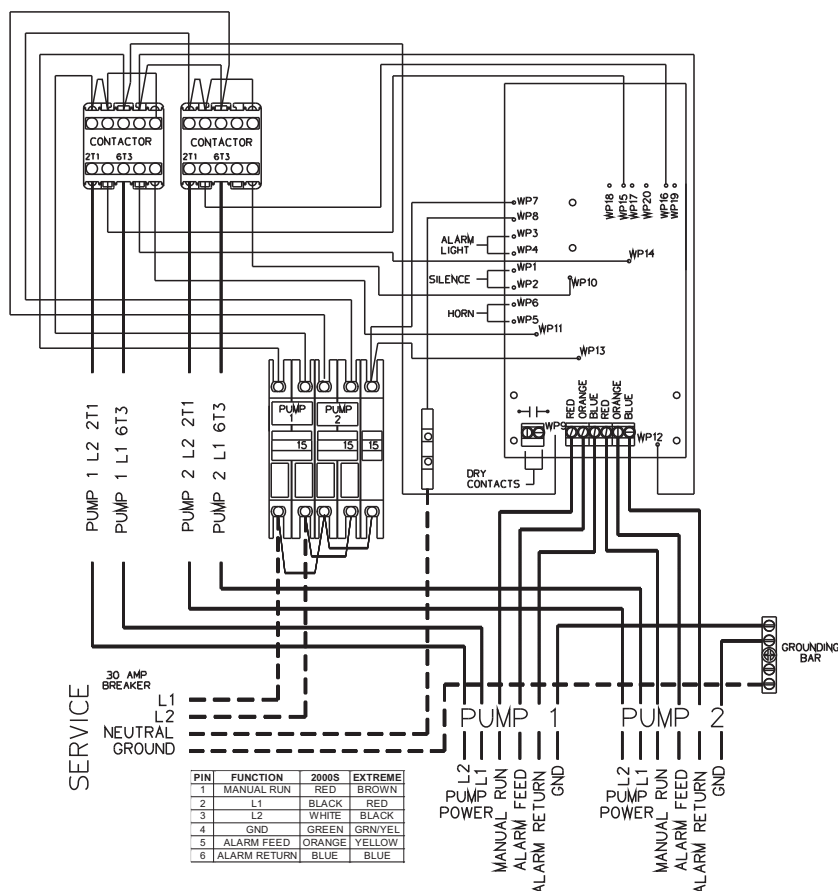
- **If the tank has no accessway: (Indoor Installation)** The discharge connection is a 1-1/4" male NPT. The discharge piping must incorporate a shut-off valve and a union with a minimum pressure rating of 160 psi, or a suitable piping disconnect to allow for removal of the pump core. The valve should be of the type that provides a full-ported passage (i.e. a ball or gate valve). A standard 1-1/4" union or a compression type coupling should be used as a disconnect joint.

- **If the tank has an accessway:** There is a ball valve and a quick disconnect pre-installed in the accessway. There is a 1-1/4" female NPT discharge connection on the outside of the tank 41" above the bottom of the tank.

5. BACKFILL

REQUIREMENTS: Proper backfill is essential to the long term reliability of any underground structure. Several methods of backfill are available to produce favorable results with different native soil

Figure 2b



240 VOLT DUPLEX WIRING

conditions.

The recommended method of backfilling is to surround the unit to grade using Class I or Class II backfill material as defined in ASTM 2321. Class 1A and Class 1B are recommended where frost heave is a concern; Class 1B is a better choice when the native soil is sand or if a high, fluctuating water table is expected. Class I, angular crushed stone, offers an added benefit in that it needs minimal compaction. Class II, naturally rounded stone, may require more compactive effort, or tamping, to achieve the proper density.

If the native soil condition consists of clean, compactible soil with less than 12% fines, free of ice, rocks, roots, and organic material, it may be an acceptable backfill. Such soil must be compacted in lifts not to exceed one foot to reach a final Proctor Density between 85% and 90%. Non-compactible clays and silts are **not** suitable backfill for this or any underground structure such as inlet or discharge lines. If you are unsure of the consistency of the native soil, it is recommended that a geotechnical evaluation of the material be obtained before specifying backfill.

Another option is the use of a flowable fill (i.e., low slump concrete). This is particularly attractive when installing grinder pump stations in augured holes where tight clearances make it difficult to assure proper backfilling and compaction with dry materials. Flowable fills should not be dropped with more than 4 feet between the discharge

nozzle and the bottom of the hole because this can cause separation of the constituent materials.

6. VENTING: The unit must be properly vented to assure correct operation of the pump. If you have an indoor unit, it can be vented through the 2" port supplied at the top of the wetwell or through the incoming sewer line with a 2" pipe (the vent must be within 4 feet of the grinder pump, and before the first change of direction fitting).

The outdoor units are supplied with a vent pipe from the wetwell to the top of the accessway. Failure to *properly vent* the tank will result in faulty operation and will void the warranty.

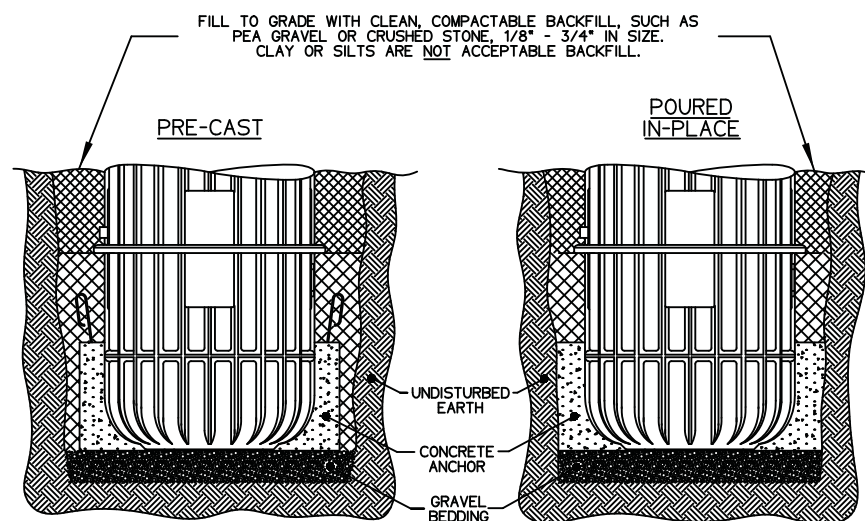
7. ELECTRICAL CONNECTION: (Supply panel to E/One Alarm Panel) Before proceeding, verify that the service voltage is the same as the motor voltage shown on the name plate. An alarm

device is to be installed in a conspicuous location where it can be readily seen by the homeowner. An alarm device is required on every installation. There shall be no exceptions.

Wiring of supply panel and alarm panel shall be per Figures 2a and 2b, alarm panel wiring diagrams and local codes. A dedicated 30 amp breaker is required before a 240V duplex alarm panel, and a dedicated 40 amp breaker is required before a 120V duplex alarm panel.

8. ELECTRICAL CONNECTION: (Pump to Panel) (Fig. 4) The grinder pump station is provided with a cable for connection between the station and the alarm panel (supply cable). The supply cable is shipped inside the station with a small portion fed through the cable connector mounted on the wall of the fiberglass shroud. The supply cable, a six conductor tray cable, meets

Figure 3



TYPICAL IN-GROUND SECTION VIEW

NEC requirements for direct burial as long as a minimum of 24" burial depth is maintained. Those portions of the cable which have less than 24" of cover must be contained in suitable conduit. This includes the vertical portion dropping to a 24" depth at the station and the length rising out of the ground at the control panel.

NOTE: Wiring must be installed per national and local codes. Conduit must enter panel from bottom and be sealed per NEC section 300.5 & 300.7.

8a. Installing E/One supply cable:

1) Open the lid of the station. Locate the cable and the feed-thru connector on the wall of the shroud. If the station has a field joint and was delivered in two pieces, be sure both halves of the EQD are securely assembled together. Loosen the nut on the connector and pull the supply cable out through the connector until it hits the

crimped-on stop feature on the cable, approximately 24" from the EQD. ****IMPORTANT: All but 24" of the cable must be pulled out of the station, and the EQD and Equalizer should be hung as high in the station as possible to ensure that the pump functions properly. Do not leave the excess cable in the station.**

2) Retighten the nut. This connection must be tight or ground water will enter the station.

3) Feed the wire through the length of conduit (contractor provided), which will protect it until it is below the 24" burial depth.

4) Position the conduit vertically below the cable connector along side of the station reaching down into the burial depth. Attach the small guard (protective shroud) provided with the station to protect the exposed cable where it enters the station. Four self-tapping screws are

provided.

5) Run the cable underground, in a trench or tunnel, to the location of the alarm panel. Leave a 6- to 12-inch loop of cable at each end to allow for shifting and settling. Connections made at the panel are shown in Figures 2a and 2b.

9. DEBRIS REMOVAL: Prior to start-up test procedure, the core must be removed and the incoming sewer line flushed to force all miscellaneous debris into the tank. Next, all liquid and debris must be removed. Once tank is clean, reinstall the pump and proceed with the test.

10. TEST PROCEDURE: When the system is complete and ready for use, the following steps should be taken to verify proper pump and high level alarm operation:

a) Make sure that the discharge shutoff valve is fully open. This valve must not be closed when the pump is operating. In some installations there may be a valve, or valves, at the street main that must also be open.

(Ignore all Trouble indications, LEDs and/or messages until the panel is reset at the end of this procedure.)

For model DH152:

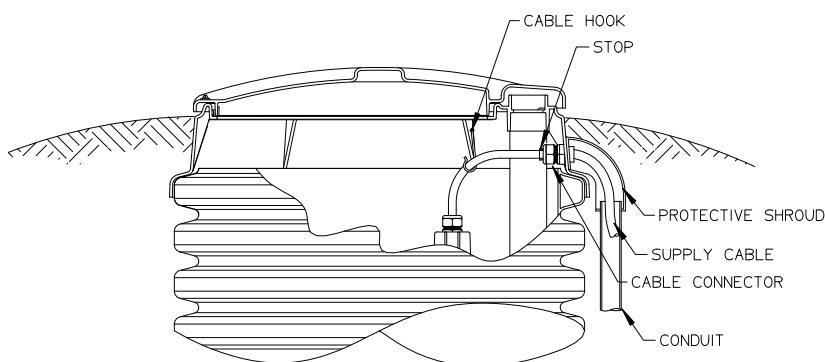
b) Turn on the alarm breaker.
c) Fill tank with water until the high level alarm turns on. Shut off water.

d) Turn on pump breaker; the pump should turn on immediately. Verify that the high level alarm turns off and then the pump turns off. Proceed to Step E.

For model DR152:

b) Fill tank with 100 gallons of

Figure 4



Power at the station must not drop below 10% of nameplate voltage. Maximum Recommended Length:
120 Volt 60' (min. voltage at pump — 108V)
240 Volt 150' (min. voltage at pump — 216V)
Consult factory for longer lengths

TYPICAL SUPPLY CABLE CONFIGURATION

water.

c) Turn on pump and alarm breakers; the pump and high level alarm should turn on immediately.

d) Verify that the high level alarm turns off and then the pump turns off.

e) Clear/Reset the alarm panel:

Sentry and T260 panels:
Reset is not required.

Protect Panel: Turn pump and alarm breakers off and back on simultaneously.

Protect Plus Panels: Perform a "cold start" from the Initialize System menu. Any user setting that were previously chosen will not be reset.

f) If any Trouble or alarm conditions are indicated after the panel is reset, contact your local service provider.

Field Joint Assembly Instructions

IT IS EXTREMELY IMPORTANT THAT THE JOINT IS SEALED PROPERLY BEFORE BACKFILLING. EXCAVATING A UNIT FOR REPAIR IS VERY EXPENSIVE AND CAN BE EASILY AVOIDED BY USING PROPER CAUTION DURING THE FOLLOWING PROCEDURE.

Parts included in Field Joint Kit:
Identify all parts before proceeding with installation.

- (16) 3/8-16 x 1-1/2 long screws
- (16) 3/8-16 Elastic Stop Nuts
- (32) Flat Washers
- (1) Length Sealant (Sika) Tape
- (1) Hole Punch
- (1) Vent Pipe Extension

1) Carefully clean and dry both accessway flanges with solvent.

IMPORTANT: Sealing surfaces must be dry to ensure the sealant adheres correctly.

2) Starting at one hole of tank flange, apply two layers of Sika Tape around the inside half of the flange. Align the outside edge of the tape with the bolt circle. Move to the adjacent hole and apply one layer of Sika Tape around the outside of the flange. Align inside of tape with the bolt circle. Remove the backing paper as you lay the adhesive on the flange.

Do not stretch Sika tape during application; it may result in a leak. The tape should overlap at the end by approximately 1/2 inch, as shown in Fig. 5a. If a section of Sika Tape is misapplied, the bad section may be cut out and replaced. Cut away the poorly laid portion cleanly with a knife and be sure to overlap the tape at each end about 1/2 inch.

3) Using the tool provided, punch a hole through the tape at each of the 16 existing bolt holes in the flange. **Be careful to keep the exposed sealant clean and dry.**

4) Insert three of the sixteen 3/8-16 x 1-1/2" long bolts, with a flat washer, into the flange attached to the upper part of the accessway. These will act as guides while

aligning the bolt pattern of the two flanges.

5) Support the upper accessway section a few inches over the tank, making sure to align the vent port in the lid with the vent pipe in the tank. Once aligned, lower the upper section onto the mating flange using the three bolts to guide it to the proper position. See Fig. 5b.

6) Insert the remaining 13 bolts with flat washers into the flanges. Place a flat washer and elastic stop nut on the end of each bolt, turning the nut on just enough to hold the washer in place.

7) Tighten the bolts until the sealant begins to squeeze out from between the flanges. To ensure a consistent, sturdy seal, tighten them in the following sequence: 1, 9; 5, 13; 3, 11; 7, 15; 2, 10; 4, 12; 6, 14; 8, 16. Always be sure to tighten one bolt and then the bolt at the position 180° from it; see Fig. 1 for position

numbers.

8) Using the same sequence as in Step 7, tighten each bolt to 60 in-lbs. Visually inspect the joint, each bolt and each nut should have a flat washer between it and the flange, and a uniform amount of sealant should be protruding from the seam along the entire perimeter.

In the event that there are any voids in the sealant, the joint may leak. Take corrective actions if necessary and be sure that the joint is leak free before continuing.

9) Install the vent pipe extension piece, which was shipped inside the upper piece of the accessway. Push the extension pipe into the bell mouth fitting on the pipe installed in the wet well tank. Be sure the pipe is seated correctly. Slide the top end of the extension pipe into the receptacle on the bottom of the lid.

Figure 5a

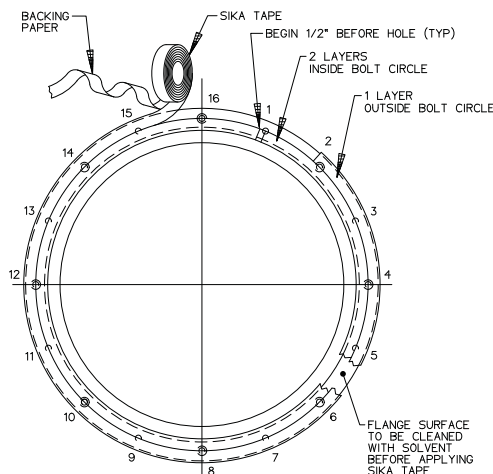
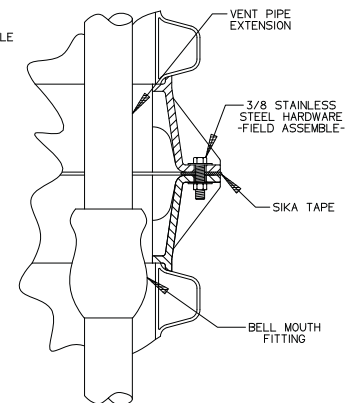


Figure 5b



Lifting Instructions

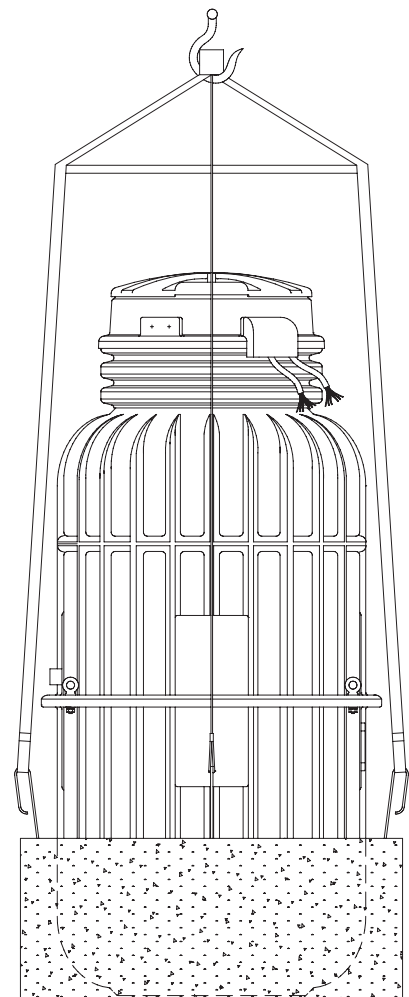
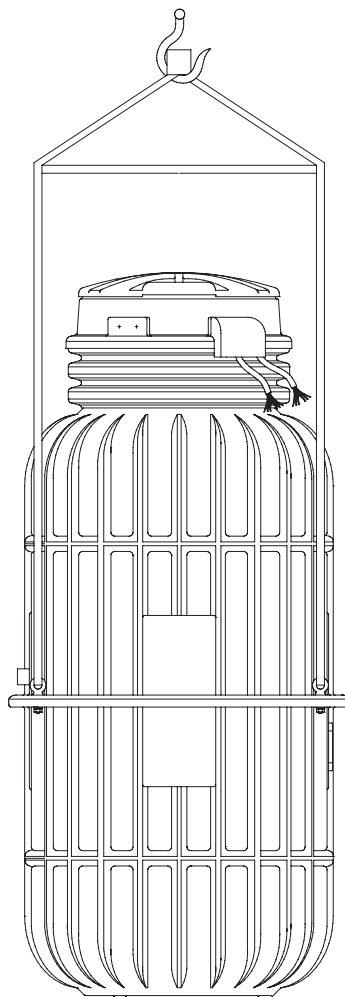
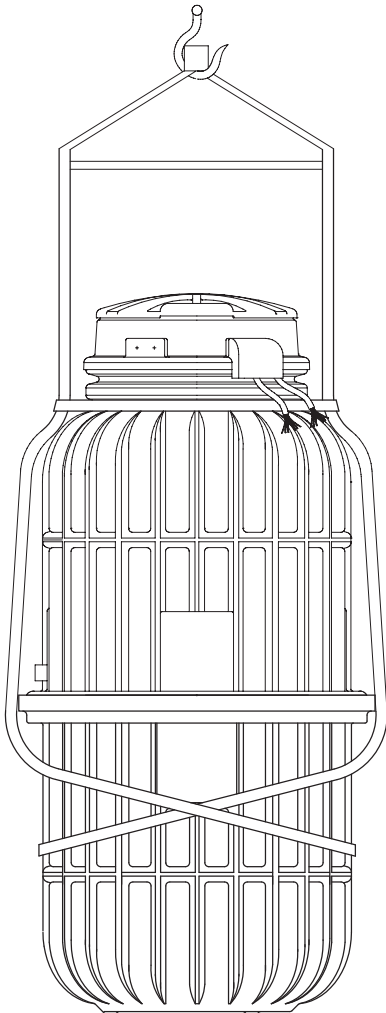
FAILURE TO FOLLOW THESE INSTRUCTIONS COMPLETELY WILL VOID WARRANTY.

* Transporting unit to installation site: **Always lift a unit from the bottom for the purpose of transportation. The station should be received attached to a pallet for this purpose.** Never roll a station or move it on its side.

1. No Ballast, No Eye bolts (Ballast to be poured in place): If the concrete anchor is to be poured while the station is in place and it has no eye bolts, lift the unit by securing two 20 foot flat or round eye slings around the station. Loop the slings around the station and use an appropriate lifting beam or tie-down strap to ensure the safety of the station and people close to the unit. (see below)

2. No Ballast, Factory- Installed Eye Bolts (Ballast to be poured in place): If the concrete anchor is to be poured while the station is in place lift the unit by securing straps to the eyebolts supplied on the lower flange, as shown below. Keep station oriented vertically to avoid any damage. Only lift from the eyebolts to put unit in hole, not for moving any distance. (see below)

3. Precast Ballast: Never lift a station that has a ballast attached by any means except the rebar hooks. The weight of the concrete will damage the station if you attempt to lift it from any part of the station. (see below)



E/One Grinder Pump Station Ballast Calculations

Any buried vessel that is submerged, or partially submerged, in water will be acted on by an upward buoyant force that attempts to return the vessel to a non-submerged state. The magnitude of this buoyant force is equal to the volume of the vessel that is submerged multiplied by the density of water. On most in-ground installations a ballast, or concrete anchor, of proper volume and weight is required to resist the buoyant force. The amount of ballast required for a given set of installation site conditions may be calculated as follows.

Installation Site Assumptions

1. Low water table – under worst case ground water or flood conditions only the wet well portions of the E/One grinder pump stations will be submerged.
2. Backfill materials are per these installation instructions.
3. The consulting engineer should perform a soil test to determine if the assumptions that have been made are valid. If the site conditions differ from these assumptions, then the consulting engineer must revise the calculations as shown in this document.

Physical Constants

1. Density of Water = 62.4 lb/cu ft
2. Density of Concrete = 150 lb/cu ft (in air)
3. Density of Concrete = 87.6 lb/cu ft (in water)
4. Density of Dry Compacted Backfill = 110 lb/cu ft
5. Density of Saturated Backfill = 70 lb/cu ft

Procedure

A. Determine The Buoyant Force Exerted On The Station

1. Determine the buoyant force that acts on the grinder pump station when the wet well is submerged in water.
2. Subtract the weight of the station from the buoyant force due to the submerged wet well to determine the net buoyant force acting on the station.

B. Determine The Ballast Force Exerted On The Station

1. Determine the ballast force applied to the station from the concrete, saturated soil and dry soil

C. Subtract The Ballast Force From the Buoyant Force.

1. Note – if the installation site conditions are different from those listed above, the consulting engineer should recalculate the concrete ballast.

Ballast Calculations

The following calculations are to outline the areas used to determine the volumes of the different materials for the ballast. All sections referred to in the calculations are marked on the accompanying drawing.

E/One Grinder Pump Station Ballast Calculations

Sample Calculation

Volume of Station Wet Well = 22.0 cu ft

Station Weight = 470 lb

Station Height = 93.5"

A. Buoyant Force

1. The buoyant force acting on the submerged DH152-93 is equal to the weight of the displaced water for the section of the tank that is submerged (wet well).

$$\begin{aligned}F_{\text{buoyant}} &= (\text{density of water})(\text{volume of DH152-93 wet well}) \\ &= (62.4 \text{ lb/cu. ft})(22.0 \text{ cu. ft}) \\ &= 1372.8 \text{ lb}\end{aligned}$$

2. The net buoyant force acting on the station ($F_{\text{net-buoyant}}$) is equal to the buoyant force (F_{buoyant}) minus the weight of the grinder pump station.

$$\begin{aligned}F_{\text{net-buoyant}} &= 1372.8 \text{ lb} - 470 \text{ lb} \\ &= 902.8 \text{ lb}\end{aligned}$$

B. Ballast Force

1. Determine the volume of concrete (if applicable) & soil (saturated and dry)

Section I: Used To Determine The Volume Of Concrete

$$\begin{aligned}\text{Area} &= (\text{Height})(\text{Width}) + (\text{Triangular Area}) \\ &= (20'')(3.1'') + (1/2)(7'')(5.5'') \\ &= 81.3\text{in}^2\end{aligned}$$

$$\begin{aligned}\text{Volume} &= (\text{Area})(\text{Average Perimeter of the cylinder}) \\ &= (81.3\text{in}^2)(2\pi)(20.95'') \\ &= (10695.2 \text{ in}^3)(1/1728 \text{ ft}^3/\text{in}^3) \\ &= 6.1 \text{ ft}^3\end{aligned}$$

Section II: Used To Determine The Volume Of Saturated Soil

$$\begin{aligned}\text{Area} &= (\text{Height})(\text{Width}) \\ &= (16.5'')(3.1'') \\ &= 51.2\text{in}^2\end{aligned}$$

$$\begin{aligned}\text{Volume} &= (\text{Area})(\text{Average Perimeter of the cylinder}) \\ &= (51.2\text{in}^2)(2\pi)(21.0'') \\ &= (6755.7 \text{ in}^3)(1/1728 \text{ ft}^3/\text{in}^3) \\ &= 3.9 \text{ ft}^3\end{aligned}$$

E/One Grinder Pump Station Ballast Calculations

Sample Calculation, Continued

Section III: Used To Determine The Volume Of Dry Soil

$$\begin{aligned} \text{Area} &= (\text{Height})(\text{Width}) + (\text{Top Area}) \\ &= (36.5'')(3.1'') + (17.5'')(9.3'') \\ &= 275.9\text{in}^2 \end{aligned}$$

$$\begin{aligned} \text{Volume} &= (\text{Area})(\text{Average Perimeter of the cylinder}) \\ &= (275.9\text{in}^2)(2\pi)(17.9'') \\ &= (31030.2 \text{ in}^3)(1/1728 \text{ ft}^3/\text{in}^3) \\ &= 18.0 \text{ ft}^3 \end{aligned}$$

2. Determine the combined ballast

Ballast (total) = Ballast (concrete) + Ballast (saturated soil) + Ballast (dry soil)

$$\begin{aligned} &= (V_{\text{concrete}})(\text{density concrete in water}) + (V_{\text{soil}})(\text{density wet soil}) + (V_{\text{soil}})(\text{density dry soil}) \\ &= (6.1 \text{ cu ft})(87.6 \text{ lb/ft}^3) + (3.9 \text{ cu ft})(70 \text{ lb/ft}^3) + (18.0 \text{ cu ft})(110 \text{ lb/ft}^3) \\ &= 534.4 \text{ lb} + 273 \text{ lb} + 1980 \text{ lb} \\ &= 2787.4 \text{ lb} \end{aligned}$$

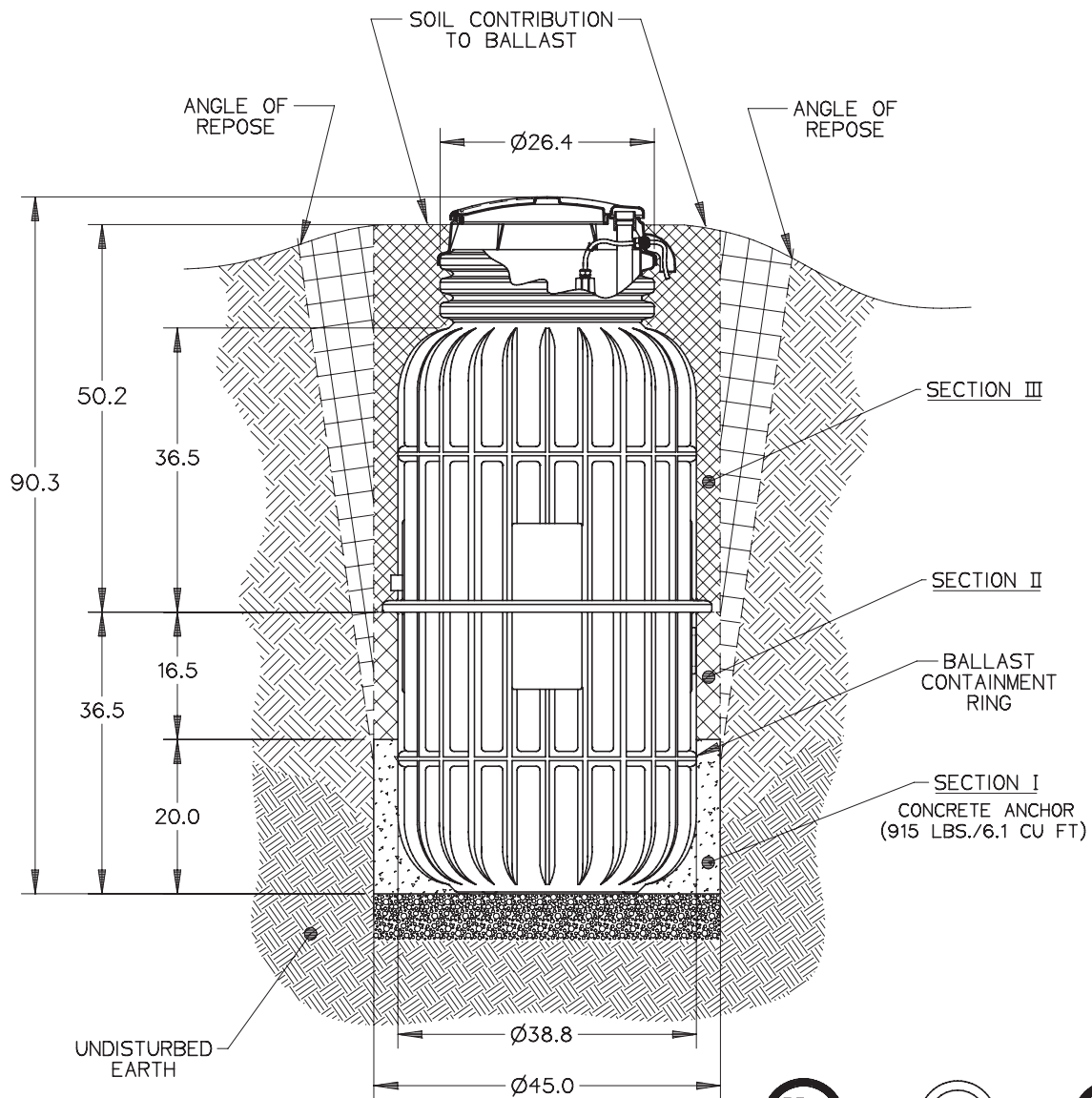
C. Subtract the buoyant force from the ballast force to determine the final condition





$$\begin{aligned} \text{Final Condition} &= \text{Ballast Force} - \text{Buoyant Force} \\ &= 2787.4 \text{ lb} - 902.8 \text{ lb} \\ &= 1884.6 \text{ lb} \end{aligned}$$

The approach outlined above may be used to calculate the ballast requirements listed below.

Chart 1

Station Height (in)	Wetwell Volume (cu ft)	FNet-Buoyant (lb)	Station Weight (lb)	Fballast (lb)	Volume Concrete (cu ft)	Weight Concrete in Air (lb)
93 inches	22	902.8	470	2787.4	6.1	915
129 inches	22	863.8	509	5174.4	6.1	915
160 inches	22	833.8	539	7253.4	6.1	915



-  SECTION III - DRY SOIL (ACCESS WAY)
-  SECTION II - SATURATED SOIL (WET WELL)
-  SECTION I - CONCRETE ANCHOR
-  ROUND AGGREGATE (GRAVEL)



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BALLAST INFORMATION

Adjusting the Height of the Grinder Pump Station

TO INCREASE STATION HEIGHT 6 INCHES

1. Increasing station height can be done without cutting the station. Use the E/One Extender cover shroud kit (ND0082G01) and follow the instructions that are included with the kit.

TO INCREASE STATION HEIGHT MORE THAN 6 INCHES or TO REDUCE THE STATION HEIGHT:

REMOVE EXISTING COVER ASSEMBLY (Fig. 6)

If your existing station has a welded-on cover shroud you will need the appropriate replacement cover kit (see Table 2, page 15).

1. Turn off all power to the grinder pump station.
2. Remove the tank lid and the electrical shroud.
3. Unplug the electrical quick disconnect (EQD) and remove the EQD from the supply cable. *Note: DO NOT CUT CABLE.* Loosen liquid tight cable connector and pull the supply cable out through the connector on the side of tank.

4. Tape the pump breather cable to the vent pipe in the tank.

5. Remove the soil around the tank, exposing three of the tank corrugations below grade. Use caution not to damage buried cable.

6. Remove existing cover shroud.

- 6a. Welded-on shroud (standard) - Using a hand saw, cut the tank in the valley between the two corrugations at grade, discard existing welded-on shroud and attached corrugations (*shroud is not to be reused*). *Caution: Be careful not to cut either the vent pipe or the pump breather cable.*

- 6b. Clamped-on shroud - Remove band clamp and cover shroud.

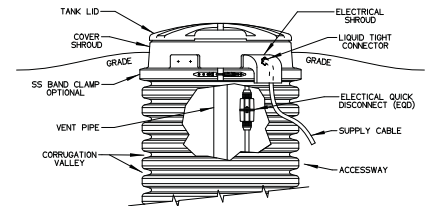


Figure 6

REDUCING STATION HEIGHT (Fig. 7)

7. Using a hand saw, cut the tank in the valley between the two corrugations at grade.

8. Cut vent pipe 4 3/4" above the cut made on the tank. *Proceed to step 16.*

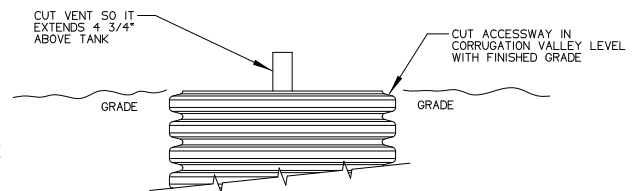


Figure 7

INCREASING STATION HEIGHT (Fig. 8 and Fig. 9)

9. Remove the soil around the tank exposing it 18" deeper than the extension being installed. For example, if you have a 2' extension (not including the coupler) you must dig down 3'6" minimum from grade; if you have a 4' extension (not including the coupler) you must dig down 5'6" minimum from grade. Use caution not to damage buried cable.

10. Measure from grade down 2' (for a 2' extension) or 4' (for a 4' extension) and mark accessway. Using a hand saw, cut the tank in the valley between the two corrugations that are closest to your mark. *Note: Make sure the welded-on shroud of the extension will be at grade level. Be sure you are not cutting into the wet well and you must have two corrugations below your cut, if there are less than two corrugations, this extension kit can not be used.*

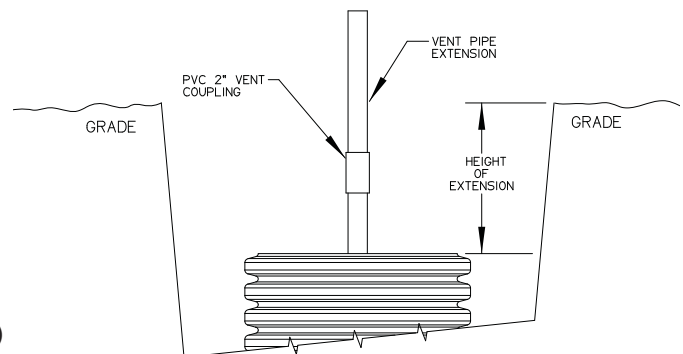


Figure 8

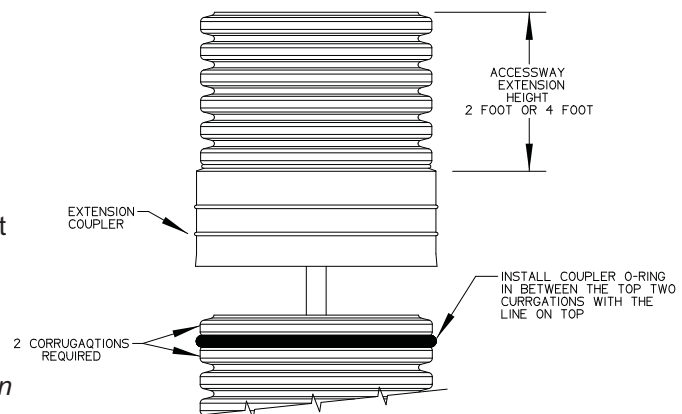


Figure 9

Caution: Be careful not to cut either the vent pipe or the pump breather cable.

11. Attach the vent pipe extension with the 2" vent coupling, bringing the vent well above grade.
12. Clean all dirt and debris from top four corrugations on tank. Install the 24" coupler O-ring on the tank between the top two corrugations with the white or yellow line facing out and on top.
13. Lube extension coupler and coupler O-ring with pipe lube or dish soap.
14. Manually press coupling evenly over lubricated O-ring. If additional force is needed, place a plywood cover over the accessway and apply gentle mechanical pressure to the coupler. *Note: Care must be used when pushing down on the coupler. Excessive force or impact may result in damage and leakage.*
15. Frequent visual inspections during installation must be performed to determine when the tank has fully engage the coupler.

INSTALL REPLACEMENT COVER ASSEMBLY (Fig. 10)

16. Clean top corrugation on accessway extension and mating surface of replacement shroud with acetone.
17. Liberally apply the silicone sealer provided to the under side of the replacement shroud where it will come in contact with the accessway extension.
18. Lube wet well vent grommet and vent pipe extension with pipe lube, non-grit hand cleaner or dish soap and slide vent pipe through grommet until tank shroud seats to accessway.
19. Place SS band clamp around top corrugation and the replacement shroud. Tap with a mallet around clamp to help seat the clamp. Torque stud assembly on band clamp to a maximum 125 inlb.

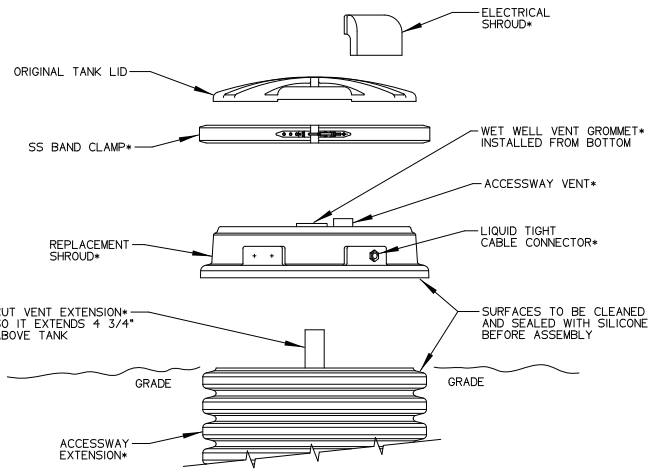


Figure 10

20. Reinstall the supply cable, EQD**, tank lid and electrical shroud and tighten cable connector. (**See "EQD wiring order," Table 1)
21. Follow start-up procedures to ensure proper pump operation (you will find the start-up instructions in our service manual or the station installation instruction guide).

****EQD wiring order**

PIN #	COLOR
1	Brown
2	Red
3	Black
4	Grn/Yellow
5	Yellow
6	Blue

Table 1

Table 2

DESCRIPTION	PART NO.
Simplex station	NC0022G15
Simplex, flood plain config	NC0022G16
Duplex station	NC0022G17
Duplex, flood plain config	NC0022G18

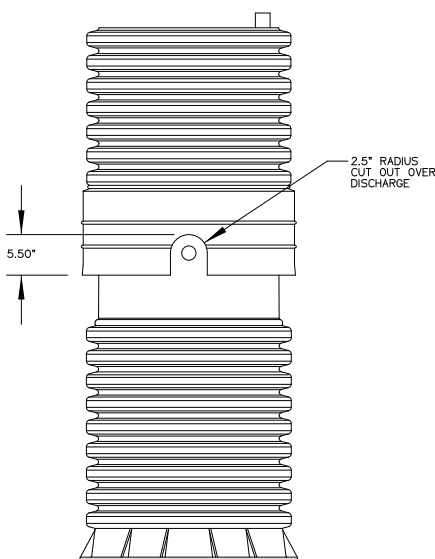


Figure 11

NOTE: IF EXISTING ACCESSWAY HAS ONLY 2 CORRUGATIONS (Fig. 11)

- If the coupler will not engage completely because the discharge piping is in the way, and it doesn't have a cut out, you will need to cut a slot in the coupler.

- Using a hand, reciprocating or hole saw, cut an arch in the coupler; the cut-out is not to exceed 5.50" tall or 5.00" wide.

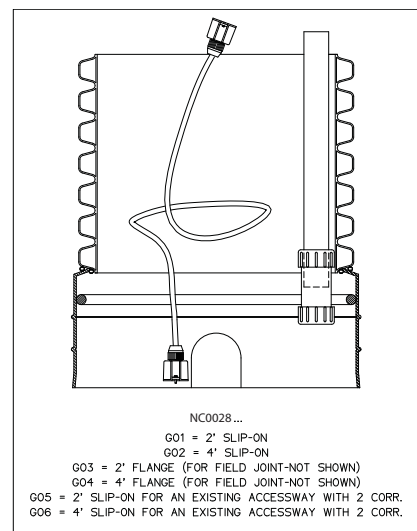


Figure 12



A Precision Castparts Company

Environment One Corporation
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www.eone.com

NA0063P01 Rev E
4/13

User Instructions for the Environment One Grinder Pump

General Information

Your home is served by a low pressure sewer system; the key element is an Environment One grinder pump. The tank collects all solid materials and wastewater from the house. The solid materials are then ground to a small size suitable for pumping as a slurry with the wastewater. The grinder pump generates sufficient pressure to pump this slurry from your home to the wastewater treatment receiving line and/or disposal plant.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: 1) this device may not cause harmful interference; and 2) this device must accept any interference received, including interference that may cause undesired operation. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Care and Use of your Grinder Pump

The Environment One grinder pump is capable of accepting and pumping a wide range of materials, and an extensive grind test is required in order to obtain NSF approval. However, regulatory agencies advise that the following items should not be introduced into any sewer, either directly or through a kitchen waste disposal unit:

Glass	Seafood shells	Diapers, socks, rags or cloth	Syringes
Cotton swabs	Personal/cleaning wipes & sponges	Disposable toothbrushes	Latex/vinyl items
Metal	Plastic objects (toys, utensils, etc.)	Kitty litter	Dental floss
Aquarium gravel	Sanitary napkins or tampons	Cigarette butts	

Caution: Kitchen garbage disposals do not keep grease/oil out of the plumbing system

In addition, you must **never** introduce into any sewer:

Explosives	Strong chemicals	Lubricating oil and/or grease
Flammable material	Gasoline	

Items introduced into the sewer system from your home can potentially impact the water environment. Proper disposal of household wastes such as window cleaners, unused/expired pharmaceuticals, paint thinners, fats, fruit labels, etc. is important. For more information, visit <http://www.wef.org>.

Periods of Disuse

If your home or building is left unoccupied for longer than a couple of weeks, perform the following procedure:

Purge the System. Run clean water into the unit until the pump activates. Immediately turn off the water and allow the grinder pump to run until it shuts off automatically.

Duplex Units. Special attention must be taken to ensure that both pumps turn on when clean water is added to the tank.

Caution: Do not disconnect power to the unit

Power Failure

Your grinder pump cannot dispose of wastewater without electrical power. If electrical power service is interrupted, keep water usage to a minimum.

Pump Failure Alarm

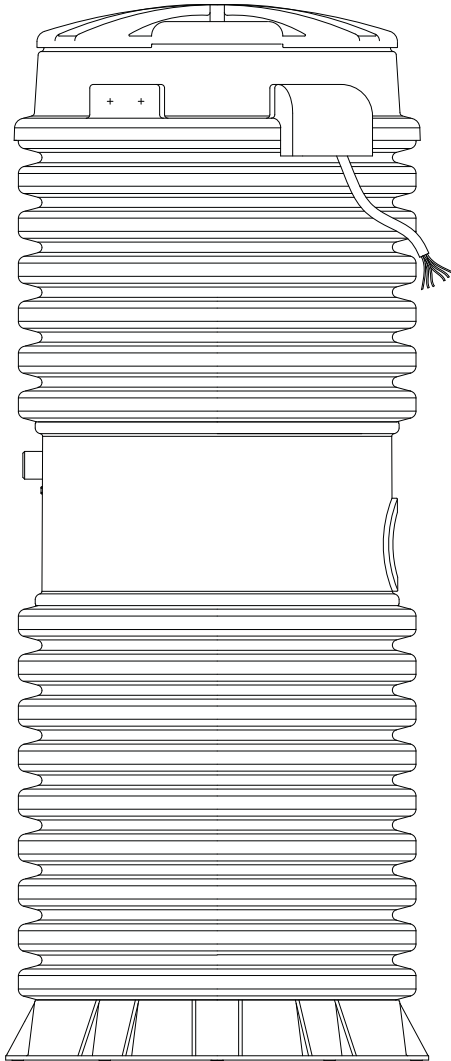
Your Environment One grinder pump has been manufactured to produce an alarm signal (120 volt) in the event of a high water level in the basin. The installer must see that the alarm signal provided is connected to an audible and/or visual alarm in such a manner as to provide adequate warning to the user that service is required. During the interim prior to the arrival of an authorized service technician, water usage must be limited to the reserve capacity of the tank.

For service, please call your local distributor:



Limited Warranty

For E/One Extreme D-Series,
W-Series & Upgrade



Environment One Corporation offers a limited warranty that guarantees its product to be free from defects in material and factory workmanship for a period of two years from the date of installation, or 27 months from the date of shipment, whichever occurs first, provided the product is properly installed, serviced and operated under normal conditions and according to manufacturer's instructions. Repair or parts replacement required as a result of such defect will be made free of charge during this period upon return of the defective parts or equipment to the manufacturer or its nearest authorized service center.

Model Number: _____

Serial Number: _____

Installation Date: _____



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Technical Bulletin for Applying Hardie® siding over non-nailable substrates

Technical
Bulletin **19**

SCOPE: This technical bulletin provides options for attaching Hardie® siding when there are increased layers of non-nailable substrates (e.g., continuous insulation, exterior gypsum) between the siding and the structural members to which the product is attached.

- **Method 1A** - Install Hardie® siding directly over continuous insulation (c.i.) and other non-nailable substrates (e.g., gypsum sheathing) with a combined thickness of 1 in. or less.
- **Method 1B** - Install Hardie® siding directly over continuous insulation (c.i.) and other non-nailable substrates (e.g., gypsum sheathing) with a combined thickness of 1 in. to 1-5/8 in.
- **Method 2** - Install Hardie® siding to furring strips that are attached through continuous insulation (c.i.) and other non-nailable substrates (e.g., gypsum sheathing) to the wall framing.

Building codes are evolving to address changing regional conditions around energy efficiency, wildfire occurrence, and other natural hazards. This bulletin presents methods to install Hardie® products over materials which may now be required on the outside of a building.

For more information about new energy code requirements or Wildland-Urban Interface requirements in your area, please consult the International Energy Conservation Code (IECC), International Wildland-Urban Interface Code (IWUIC), or the applicable codes for your area. This document includes solutions for greater design flexibility to comply with new code provisions for increased energy efficiency and resilience to natural hazards.

DESIGN CONSIDERATIONS: While longer fasteners can be used to penetrate non-nailable substrates (up to 1-5/8 in.), they may not always be ideal due to visible fastener heads, which can detract from the siding appearance, especially on smooth or ColorPlus® Technology finishes. Consult design professionals and your local James Hardie representative for guidance.

CONTENT

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Method 2 - Applying Hardie® siding to furring installed over non-nailable substrates up to 4 in. thick	Page 5
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Table 2 - Softwood furring weight	Page 7
Appendix B - Example scenarios	Page 8
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Technical Bulletin for Applying Hardie® siding over non-nailable substrates

Method 1: Applying Hardie® siding directly through c.i. and non-nailable substrates up to 1-5/8 inch thick

When installing Hardie® siding over non-nailable substrates up to 1-5/8 in. thick (e.g., exterior continuous insulation, 5/8 in. gypsum), it's important to note that these materials lack nail-holding capacity. Method 1 extends the fastener length to account for the combined thickness of the non-nailable substrates. This ensures the fastener penetrates the wall framing adequately for meeting wind load requirements.

Exterior Wall Covering Assembly

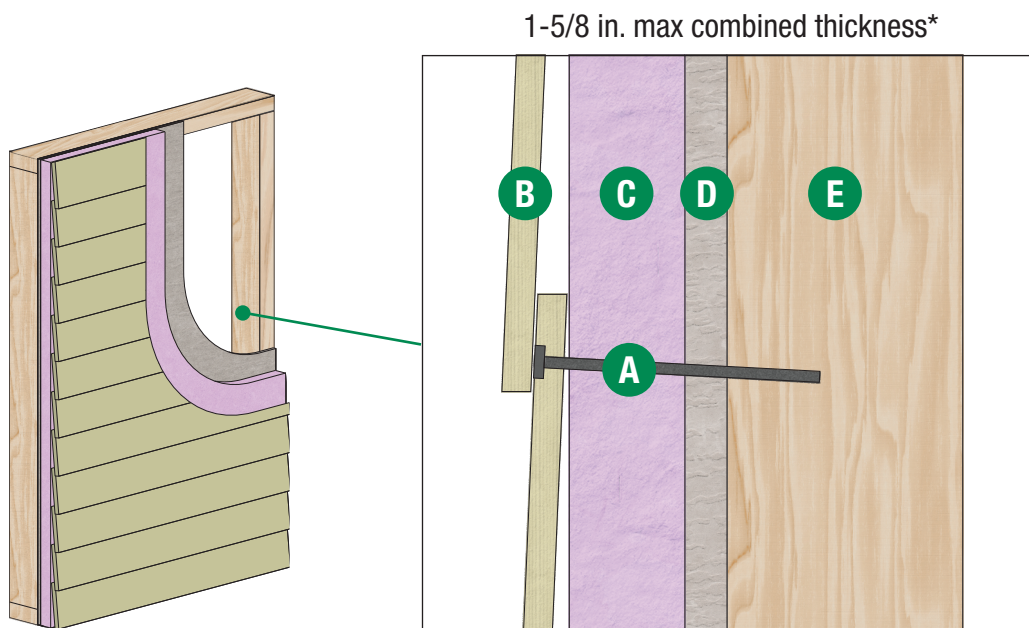


Figure 1: Exterior Wall Assembly for Siding applied directly over 1-5/8 in. non-nailable substrate

- A** Siding fastener (nail or screw) (face or blind nail, see relevant installation instructions)
- B** Hardie® siding
- C** Thickness of exterior continuous insulation
- D** Optional wall sheathing, as required by applicable building code (e.g., gypsum sheathing, WSP, or other)*
- E** Wall framing per code (e.g., wood or steel studs)

Consult water-resistive barrier (WRB) manufacturer for placement of WRB.

***NOTE:** If layer D from Figure 1 is a non-nailable substrate (e.g. gypsum sheathing), the combined thickness of layers C and D must be 1-5/8 in. or less. If greater than 1-5/8 in., see Method 2.

Technical Bulletin for Applying Hardie® siding over non-nailable substrates

Method 1 Guidance

Step 1: Determine the total thickness of non-nailable substrate specified for your project.

Step 2: Determine the wind load requirements for the project in compliance with the local building codes.

Step 3: Determine the wall frame spacing and stud type for the project.

Step 4: Determine the appropriate siding fastener for the project's wind load requirements. Wind pressure ratings can be found in the relevant ICC-ES product evaluation report or technical data sheet at jameshardie.com.

Step 5: Add the value from Step 1 to the fastener length from Step 4 to determine the correct fastener length.

Stud Material	Method 1A (combined thickness of 1 in. or less)	Method 1B (combined thickness between 1 in. and 1-5/8 in.)
Wood studs	Use fasteners of the length determined in Step 5 to fasten Hardie® siding.	Use fasteners of the length determined in Step 5 to fasten Hardie® siding. NOTE: Fasteners must have a minimum shank diameter of .120 in.
Metal studs (with screws)	Use #8 screws of the length determined in Step 5 to fasten Hardie® siding. NOTE: Ensure the screw penetrates through the stud by at least three (3) full threads.	
Metal studs (with knurled shank hardened pins)	Use pins of the length determined in Step 5 to fasten Hardie® siding. NOTE: Ensure the pin penetrates through the stud by at least 1/4 in. Refer to the pin fastener/toll manufacturer instructions for additional guidance.	No solution using pin fasteners. MUST USE SCREW FASTENERS.

Technical Bulletin for Applying Hardie® siding over non-nailable substrates

Method 1 Guidance (Continued)

Step 6: Install the Hardie® siding following the installation instructions appropriate for your Hardie® siding product, available at jameshardie.com.

- Secure the siding to the framing members.
- Exercise caution as irregularities and unevenness in framing, sheathing, insulation, and other wall assembly components, including under-driven nails, can show through to the finished siding and trim. These irregularities should be corrected before installing the siding. When using continuous insulation, avoid over-driving fasteners to prevent dimpling of the siding due to the compressible nature of the insulation. Extra care is needed if using power-driven fasteners for attaching siding over foam sheathing; ensure gun pressures are set to prevent overdriving.

NOTE: We recommend performing a small siding mock-up before installation to ensure the fastening practice and tools are properly adjusted. Fasteners must be installed to avoid overdriving, yet be snug enough to eliminate gaps between the connected parts.

- If using foam sheathing, it must have a minimum compressive strength of 15 pounds per square inch (psi) in accordance with ASTM C578 or ASTM C1289 (IRC R703.15 for wood framing, R703.16 for steel framing). If using other continuous insulation that does not meet this requirement (e.g., mineral wool or type 1 EPS foam), consult the insulation manufacturer for design solutions.
- Snap chalk lines of the frame layout and mark siding fastener locations on the outermost non-nailable substrate. **NOTE:** Some products may come with pre-marked fastener lines.
- Ensure adequate framing is present under non-nailable substrates at inside and outside corners and penetrations.

Technical Bulletin for Applying Hardie® siding over non-nailable substrates

Method 2: Applying Hardie® siding to furring installed over non-nailable substrates 1-5/8 to 4 in. thick

When installing Hardie® siding on furring strips over non-nailable materials (e.g., exterior insulation or gypsum sheathing) up to 4 inches thick, it's important to note that these materials cannot hold nails. Therefore, the designer must create a new surface for the siding to be nailed into. In this method, the furring strips serve as the nail-holding surface for the siding. Method 2 establishes a nail base on top of the foam sheathing by using furring strips that are anchored to framing and thick enough to hold the fasteners.

NOTE: For other rainscreen solutions, pre-insulated nailbase, or Z-girts, refer to the manufacturer for engineering details.

Exterior Wall Covering Assembly

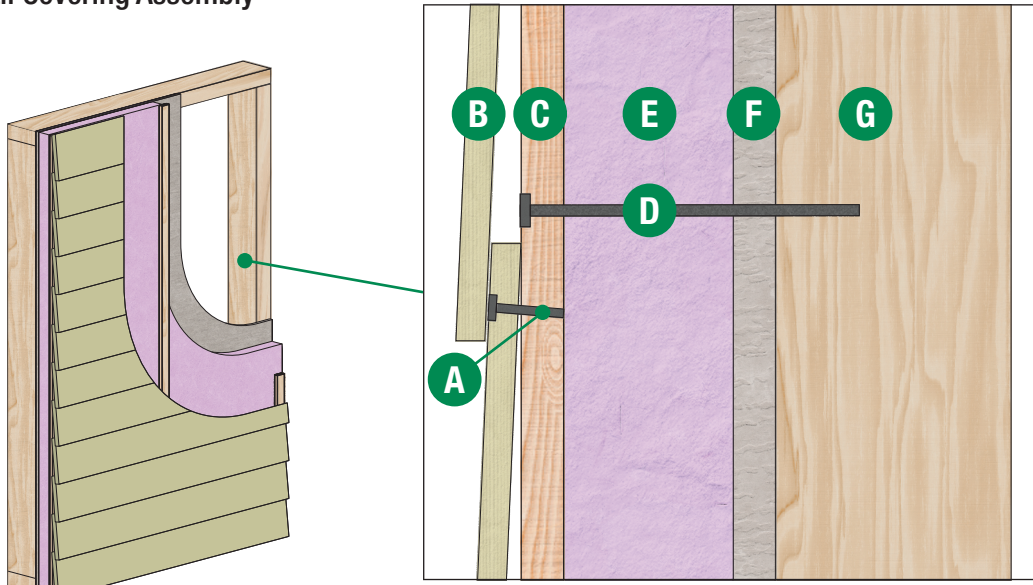


Figure 2: Exterior Wall Assembly for siding applied to Furring

- A** Siding fastener (nail or screw) (face or blind nail, see relevant installation instructions)
- B** Hardie® siding
- C** Furring (e.g., lumber, WSP, steel, etc.)
- D** Furring fastener
- E** Thickness of rigid foam sheathing
- F** Optional wall sheathing, as required by applicable building code (e.g., gypsum sheathing, WSP, or other)
- G** Wall framing per code (e.g., wood or steel studs)

Consult water-resistive barrier (WRB) manufacturer for placement of WRB.

NOTE: If layer F from Figure 2 above is a non-nailable substrate (e.g. gypsum sheathing), the combined thickness of layers E + F must be less than 4 inches.

Technical Bulletin for Applying Hardie® siding over non-nailable substrates

Method 2 Guidance

- Step 1:** Determine the total thickness of non-nailable substrates (in.) needed to achieve the specified r-value and/or fire-resistance rating.
- Step 2:** Determine the wind load requirements for the project as specified by the local building codes.
- Step 3:** Determine the wall frame spacing and stud type for the project.
- Step 4:** Determine the appropriate siding fastener based on the project's wind load requirements. Wind pressure ratings can be found in the relevant ICC-ES product evaluation report or technical data sheet, available at jameshardie.com. **NOTE:** The fastener length and stud type will dictate the furring thickness and furring type in Step 5 (IRC R703.15.2 for wood, R703.16.2 for steel).
- Step 5:** Select the appropriate furring material. **NOTE:** Local building codes may dictate furring requirements that supercede this bulletin.
- **For metal furring:** The metal furring must be between 20 gauge min. (33 mil) and 16 gauge (54 mil), ensuring it meets the installation requirements.
 - **For wood furring:** The thickness of the wood furring will depend on the selected fastener, matching the net penetration of the fastener. As a best practice, use wood furring that is nominally 4 inches wide. The specific gravity of the wood furring should be equivalent to the reference wood stud specific gravity in the James Hardie installation literature or product evaluation report.
 - For other rainscreen solutions, pre-insulated nailbase, or non-metallic Z-girts, refer to the manufacturer for engineering details.
- Step 6:** Calculate the combined weight of the siding and furring. Refer to Table 1 for Hardie® siding weights and Table 2 for softwood furring weights.
- Step 7:** Choose the appropriate furring strip fastener size and spacing based on wind loads and system weight (IRC R703.15.2 for wood, R703.16.2 for steel). Refer to Table 3 for details. Ensure the availability of furring fasteners in lengths that provide the necessary net penetration into the framing.
- Step 8:** Install the furring strips over the foam according to the installation guidance provided by the furring fastener manufacturer or the ACC Foam Sheathing Committee. For guidance on installation over mineral wool or other fibrous insulation, refer to North American Insulation Manufacturer's Association. **NOTE:** James Hardie recommends conducting a wall mock-up before installation to ensure that fastening practices and tools are properly adjusted. Fasteners should be installed to avoid overdriving while being snug enough to eliminate gaps between connected parts. Adjust driving tools and installation practices as necessary.
- Step 9:** Install the Hardie® siding onto the furring strips in accordance with relevant Hardie® product installation instructions, available at jameshardie.com.

Technical Bulletin for Applying Hardie® siding over non-nailable substrates

APPENDIX A: REFERENCE MATERIAL

TABLE 1: Hardie® siding weight¹

PRODUCT	THICKNESS (INCHES)	POUNDS PER SQUARE FOOT ¹
Hardie® Shingle	1/4	1.9
Hardie® Plank	5/16	2.5
Hardie® Panel	5/16	2.3
Cemplank®	5/16	2.5
Cempanel®	5/16	2.3
Hardie® Artisan® Lap	5/8	4.6
Hardie® Artisan® siding with Lock Joint System	5/8	4.6
Hardie® Artisan® Trim	1-1/2	8
4/4 Hardie® Trim	3/4	4.4
5/4 Hardie® Trim	1	7.1
Hardie® Architectural Panel	5/16	2.3

¹ Consult jameshardie.com for the most up to date information.

NOTE: It is the designer's responsibility to account for the weight of the installed condition (e.g., overlapped products).

TABLE 2: Softwood furring weight¹

NOMINAL SIZE (in x in)	ACTUAL SIZE		Weight (lb/ft) ¹	FURRING WEIGHT CONTRIBUTION AT SPACING	
	(in x in)	(mm x mm)		16 in. OC (psf)	24 in. OC (psf)
1 x 1	3/4 x 3/4	19 x 19	0.14	0.11	0.07
1 x 2	3/4 x 1 1/2	19 x 38	0.27	0.20	0.14
1 x 3	3/4 x 2 1/2	19 x 64	0.47	0.35	0.24
1 x 4	3/4 x 3 1/2	19 x 89	0.64	0.48	0.32
1 x 6	3/4 x 5 1/2	19 x 140	1	0.75	0.50
1 x 8	3/4 x 7 1/4	19 x 184	1.32	0.99	0.66
2 x 2	1 1/2 x 1 1/2	38 x 38	0.55	0.41	0.28
2 x 3	1 1/2 x 2 1/2	38 x 64	0.94	0.71	0.47
2 x 4	1 1/2 x 3 1/2	38 x 89	1.28	0.96	0.64
2 x 6	1 1/2 x 5 1/2	38 x 140	2	1.50	1.00
2 x 8	1 1/2 x 7 1/4	38 x 184	2.64	1.98	1.32

¹ [The Engineering Toolbox](http://www.engineeringtoolbox.com/softwood-lumber-dimensions-d_1452.html), 03/05/2012, http://www.engineeringtoolbox.com/softwood-lumber-dimensions-d_1452.html

Technical Bulletin for Applying Hardie® siding over non-nailable substrates

Method 1 Example (any scenario where the total thickness of non-nailable substrates is 1 in. or less)

Consider the scenario where direct installation to foam sheathing is used, with the following project details:

Climate zone	5
Construction type	Residential wood frame
Required wall R-value (2021 IECC)	R-30, or R-20+5ci, or R-13+10ci, or R-0+20ci
Product type	5/16 in. thick Hardie® Plank
Product spacing	Lap siding at 8.25 in. width
Wall stud spacing	16 in. O.C. with SPF stud type
Design wind speed	100mph, for wind exposure category B, with a project mean roof height of 30 ft.

Solution

The designer chose the R-15+5ci option to comply with thermal envelope insulation requirements and followed these steps:

Step 1: To meet the R-5 requirement for continuous insulation, the foam insulation must consist of 1 inch polyisocyanurate or 1 in. extruded polystyrene (refer to the foam sheathing manufacturer's data). Also, verify the foam sheathing's wind pressure resistance by consulting with the foam sheathing manufacturer.

Step 2: Find an assembly that meets the wind load requirements (100 mph, Category B, with a 30 ft mean roof height), as listed in ESR-2290, to cover 16 inch on center framing and a building height of 30 feet. Note that the fastener length in the ESR is 2 inches long.

ESR-2290 **ICC-ES** Most Widely Accepted and Trusted

PRODUCT	PRODUCT DIMENSION (IN.)		FASTENER TYPE ^{4,16}	FASTENING METHOD ²	FRAME TYPE ^{1,8}	STUD SPACING (IN.)	BUILDING HEIGHT (FT.)	EXPOSURE CATEGORY		
	THICK.	WIDTH						B	C	D
Hardie® Plank	5/16	8 1/4	6d-2 inch long X 0.092 inch shank X 0.222 inch head diameter siding nail	Blind Nailed Through top edge of plank	2 x 4 wood	16	0-15	107	97	88
							20	107	94	86
							40	102	88	-
							60	97	-	-

Step 3: For the installation of Hardie® Plank with wood studs, add the thickness of the non-nailable substrates (up to 1 in.) to the suggested fastener length. Therefore, a total length of 3 in. long x 0.092 inch shank x 0.222 inch head diameter siding nail is the appropriate fastener needed to apply Hardie® siding over foam sheathing in this example. Consult the fastener manufacturer to find the required fastener. **NOTE:** As described in Method 1B. when attaching siding to a non-nailable substrate with a width greater than 1 in. but less than 1-5/8 in., a fastener with minimum shank diameter of 0.120 in. must be used. In addition, the head bearing area and net penetration into the timber are equivalent to those specified in the relevant approvals section.

Step 4: Install Hardie® Plank siding following the relevant Hardie® product installation instructions.

Technical Bulletin for Applying Hardie® siding over non-nailable substrates

Method 2 Example (any scenario where the total thickness of non-nailable substrates is between 1-5/8 - 4 in.)

Consider the scenario where furring on non-nailable substrates is used, with the following project details:

Climate zone	6
Construction type	Residential wood frame
Required wall R-value (2021 IECC)	R-30, or R-20+5ci, or R-13+10ci, or R-0+20ci
Product type	5/16 in. thick Hardie® Plank
Product spacing	Lap siding at 8.25 in. width
Wall stud spacing	16 in. O.C. with SPF stud type
Fire-resistance rating	1-hour
Design wind speed	110mph, for wind exposure category B, with a project mean roof height of 40 ft.

Solution

The designer chose R-13+10ci to comply with energy requirements and followed these steps:

Step 1: To meet the R-10 requirement for continuous insulation, the foam insulation must be 2 in. XPS or 1.55 in. polyisocyanurate. To meet the 1-hour fire-resistance rating requirement, an assembly using 5/8 in. type-x gypsum on the outside of the framing was chosen.

Step 2: Find an assembly that meets the wind load requirements, as listed in ESR-2290, to cover 16 in. on center SPF wood studs. Note that the fastener length in the ESR is 1.25 in. long.

ESR-2290 ICC-ES[®] Most Widely Accepted and Trusted

PRODUCT	PRODUCT DIMENSION (IN.)		FASTENER TYPE ^{4,16}	FASTENING METHOD ²	FRAME TYPE ^{1,8}	STUD SPACING (IN.)	BUILDING HEIGHT (FT.)	EXPOSURE CATEGORY		
	THICK.	WIDTH						B	C	D
Hardie® Plank	5/16	8 1/4	No. 11 gauge, 1.25" long roofing nail	Blind Nailed Through top edge of plank	2 x 4 wood	16	0-15	123	112	101
							20	123	108	99
							40	118	101	93
							60	112	97	90

Step 3: Select a furring material that meets ESR-2290's specific gravity requirements. Space it 16 inches on center, aligned with the wall framing. The thickness of the wood furring will depend on the selected fastener, matching the net penetration of the fastener. As a best practice, use wood furring that is nominally 4 inches wide. The specific gravity of the wood furring should be equivalent to the reference wood stud specific gravity in the James Hardie installation literature or product evaluation report.

Step 4: Calculate the assembly weight of the siding and furring using Table 1 and Table 2.

(continued on next page)

Technical Bulletin for Applying Hardie® siding over non-nailable substrates

Method 2 Example (continued)

Step 5: Select the furring strip fastener size and system weight using Table 3.

For this design, nominal 1 in. x 4 in. wood furring is required. FastenMaster® HeadLok® fasteners were chosen to attach the furring through the foam and gypsum and into the wall studs. Table 3 in [TER No. 1009-01](#) shows that 24-inch on-center spacing is sufficient for wind load, siding and furring weight, and furring spacing. Table 2 shows the fastener must penetrate 2 in. into the wood stud. Therefore, the required length is 4.75 in. (0.75 in. furring + 2 in. foam + 5/8 in. type-x gypsum + 2 in. penetration). Since 5-3/8 in. fasteners are unavailable, 5-1/2 in. FastenMaster® HeadLok® fasteners were used.

Step 6: Install furring strips over the non-nailable substrates following fastener manufacturer installation guidance.

Step 7: Install the Hardie® siding onto the furring strips in accordance with the product installation literature, available at jameshardie.com.

DISCLAIMER

The guidance and instructions provided in this technical bulletin are valid for and applicable to Hardie® products only. James Hardie Building Products Inc. makes no warranty or representation with respect to use of the information contained herein for any use other than with Hardie® products, including but not limited to use with fiber cement siding products made by others or siding products made of other materials.

You bear all risk associated with using any of the information contained herein in any way other than with Hardie® products, including in the design or construction of structures with fiber cement siding products made by others or siding products made from other materials.

All national, state, and local building code requirements must be followed, and where they are more stringent than the Hardie® product installation instructions, state and local requirements will take precedence.

Current and detailed information on James Hardie product applications are found at jameshardie.com.

With regards to design advice: Any information or assistance provided by James Hardie in relation to specific projects must be approved by the relevant specialists engaged for the project, e.g., your builder, architect or engineer. James Hardie will not be responsible in connection with any such information or assistance. It is the responsibility of the licensed architect, designer, specifier or builder to ensure that the construction details are suitable for the intended application of the project. The responsible party shall also identify moisture related risks associated with any particular building design. The wall construction design must effectively manage moisture and provide consideration to wind driven rain, wall penetrations or artificially heated and cooled spaces.

NOTE: The design of the siding attachment system is the responsibility of the design professional. Any advice provided on constructing a nailable base (e.g., 1-inch nominal, 2-inch nominal wood furring, or minimum 20-gauge metal channels) over foam sheathing and other non-nailable substrates must be approved by the relevant specialists engaged for the project (e.g., builder, architect, or engineer). James Hardie shall not be held liable for any such information or assistance provided.



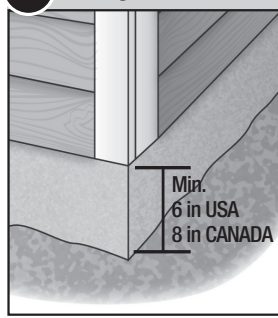
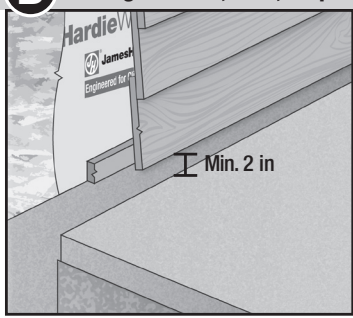
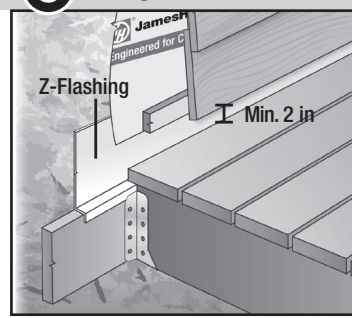
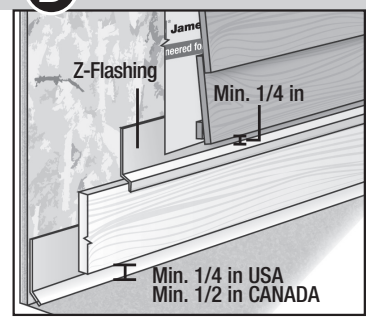
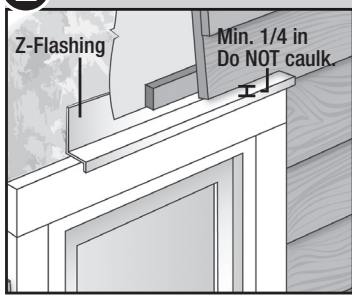
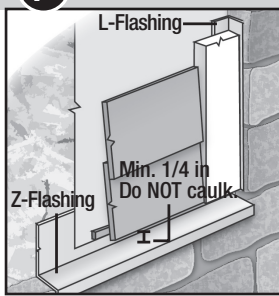
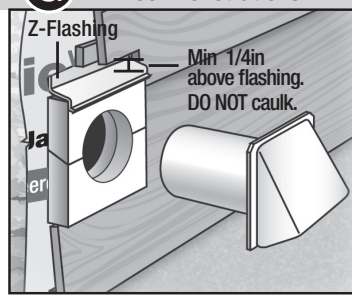
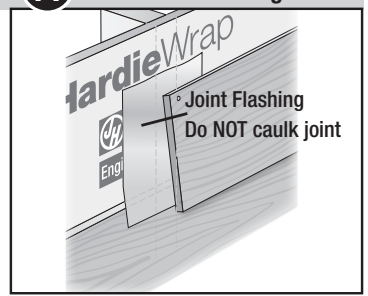
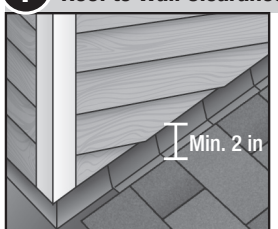
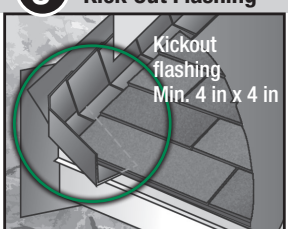

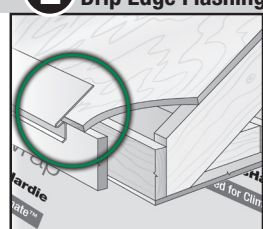

QUICK START INSTALLATION GUIDE

JamesHardiePros.com

IMPORTANT: This document is not intended to take the place of James Hardie published installation instructions. Failure to install and finish this product in accordance with applicable

building codes and James Hardie published instructions may lead to personal injury, affect system performance, violate local building codes, and void the product only warranty. For the latest

set of complete installation instructions applicable to your jobsite location, visit JamesHardiePros.com or call 1-866-942-7343 (866-9-HARDIE)

<p>A Siding to Ground</p>  <p>Min. 6 in USA 8 in CANADA</p>	<p>B Siding to Slabs, Path, Steps</p>  <p>Min. 2 in</p>	<p>C Siding to Deck</p>  <p>Z-Flashing Min. 2 in</p>	<p>D Sheltered Areas</p>  <p>Z-Flashing Min. 1/4 in Min. 1/4 in USA Min. 1/2 in CANADA</p>	
<p>E Horizontal Flashing</p>  <p>Z-Flashing Min. 1/4 in Do NOT caulk.</p>	<p>F Mortar Masonry</p>  <p>L-Flashing Z-Flashing Min. 1/4 in Do NOT caulk.</p>	<p>G Block Penetrations</p>  <p>Z-Flashing Min 1/4in above flashing. DO NOT caulk.</p>	<p>H Field-Joint Flashing</p>  <p>Joint Flashing Do NOT caulk joint</p>	
<p>I Roof to Wall Clearances</p>  <p>Min. 2 in</p>	<p>J Kick Out Flashing</p>  <p>Kickout flashing Min. 4 in x 4 in</p>	<p>K Siding to Gutter</p>  <p>1 in</p>	<p>L Drip Edge Flashing</p> 	<p>M Valley Flashing</p>  <p>Extend shingles at least 1 in out from the fascia when gutters are present</p>

IMPORTANT FASTENING INFORMATION: James Hardie® siding, trim and soffit products must be installed in a manner that meets local building code and wind load requirements. It is the responsibility of the installer, builder, architect or other building professional and the home or property owner to ensure the fasteners and fastening schedules used result in an installation that is code compliant.

Consult ESR 1844 and ESR 2290 or other applicable, local code compliance documentation for guidance on fastener selection and placement to achieve design wind loads for the specific James Hardie siding product, framing type, building height, wind exposure category and other factors relevant to your project.

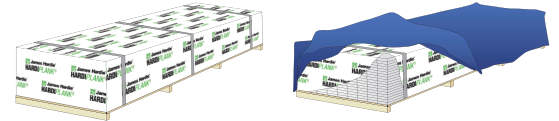
For special circumstances outside the scope of these documents, please refer to the Technical Document library at www.jameshardiepros.com or contact James Hardie's Technical Services at 1-888-J-HARDIE (1-888-542-7343).



Job Site Storage & Proper Handling

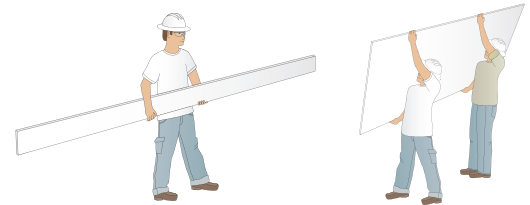
JOBSITE STORAGE

James Hardie siding and trim products must be kept dry at all times prior to installation. James Hardie products should be stored in their original packaging. They must be kept off the ground on a pallet. If stored outside, protect with an additional waterproof covering.



PROPER HANDLING

To help avoid injury and product damage, lap siding, trim, and soffit material should always be carried on edge. One person should hold planks on edge in the middle with arms spread apart to support the product. Panel products should always be carried by two people, on edge.



ColorPlus Technology Accessories

TOUCH-UP KITS

Estimated one kit per 4000 sq ft of siding or 1600 sq ft of trim.

Edge Coater - edge coating is required for any field cuts to seal the edges and make joints less visible.

Touch-up Pens - conceal nailheads and very small nicks and scratches less than a dime size. Replace the area with a new piece of plank or panel if area is larger than a dime.



COLOR MATCHED CAULK

Use caulk that comply with ASTM C920 Grade NS, Class 25 or higher or a latex joint sealant complying with ASTM C834. Apply caulk in accordance with the manufacturer's written instructions. About 18-20 linear feet per OSI® QUAD® MAX sealant tube.

LAMINATE

Leave protective laminate sheet in place during cutting, installation and touch-up, then remove laminate and discard.



Visit **JamesHardiePros.com** for the latest installation instructions and useful job-site tips in our industry-leading Best Practice Guide.



INICIO RÁPIDO GUÍA DE INSTALACIÓN

JamesHardiePros.com

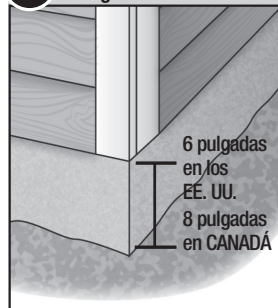
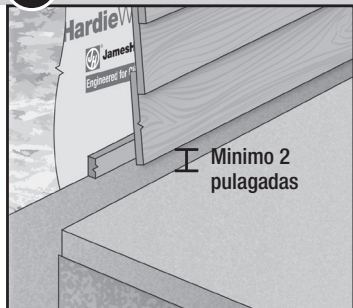


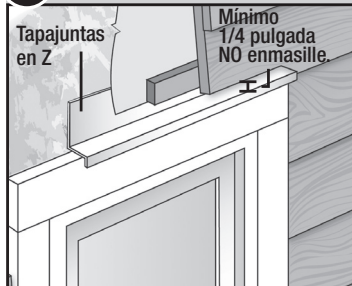
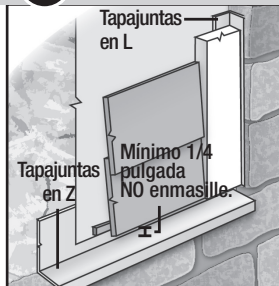


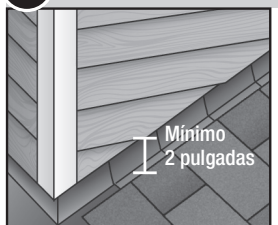


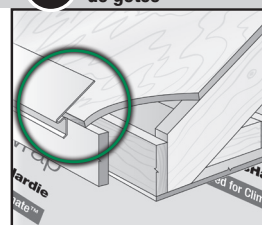
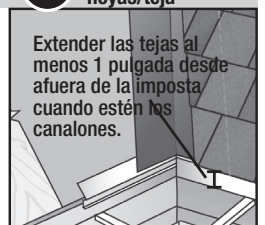
IMPORTANTE: Este documento no tiene como propósito sustituir las instrucciones de instalación publicadas por James Hardie.

El no realizar instalación y finalización del producto de acuerdo con las normas de construcción pertinentes y

las instrucciones publicadas por James Hardie puede resultar en lesiones personales, afectar el rendimiento del sistema, violar las normas de construcción locales y anular la garantía única del producto.

Para obtener el último conjunto de instrucciones de

instalación completas pertinentes a la ubicación de su sitio de trabajo, visite JamesHardiePros.com o comuníquese al 1-866-942-7343 (866-9-HARDIE).

<p>A Revestimiento de los márgenes del suelo</p>  <p>6 pulgadas en los EE. UU. 8 pulgadas en CANADÁ</p>	<p>B Losas, caminos y escalones para revestimiento</p>  <p>Mínimo 2 pulgadas</p>	<p>C De la plataforma a la pared</p>  <p>Tapajuntas en Z Mínimo 2 pulgadas</p>	<p>D Áreas resguardadas</p>  <p>Tapajuntas en Z Mínimo 1/4 pulgada Mínimo 1/4 pulgada en los EE.UU. Mínimo 1/2 pulgada en Canadá</p>	
<p>E Tapajuntas horizontales</p>  <p>Tapajuntas en Z Mínimo 1/4 pulgada NO enmasille.</p>	<p>F Mortero/Mampostería</p>  <p>Tapajuntas en L Tapajuntas en Z Mínimo 1/4 pulgada NO enmasille.</p>	<p>G Aberturas bloqueadas</p>  <p>Tapajuntas en Z Mínimo 1/4 pulgada sobre tapajuntas NO enmasille.</p>	<p>H Tapajuntas de unión o tope</p>  <p>Tapajuntas de unión NO enmasille la unión</p>	
<p>I Del techo a la pared</p>  <p>Mínimo 2 pulgadas</p>	<p>J Tapajuntas de desviación</p>  <p>Tapajuntas de desviación 4 x 4 pulgadas como mínimo</p>	<p>K Canalón de revestimiento</p>  <p>Mínimo 1 pulgada</p>	<p>L Tapajuntas del borde de goteo</p>  <p>Mínimo 1 pulgada</p>	<p>M Extensión de limas hoyas/teja</p>  <p>Extender las tejas al menos 1 pulgada desde afuera de la imposta cuando estén los canalones.</p>

INFORMACIÓN DE FIJACIÓN IMPORTANTE: Los productos de revestimiento, paneles de sofito y molduras James Hardie® deben instalarse siguiendo las normas de construcción locales y los requisitos de carga de viento. Es responsabilidad del instalador, constructor, arquitecto o cualquier otro profesional de la construcción y el dueño de la casa o propiedad asegurarse de que los sujetadores y los programas de fijación utilizados en la instalación cumplan con las normas.

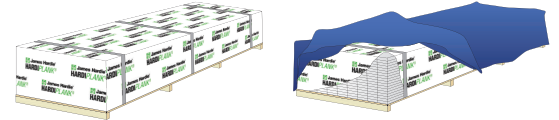
Consulte ESR 1844 y 2290 de ESR o cualquier otra documentación de cumplimiento pertinente de las normas locales como guía de selección y colocación de sujetadores para conseguir diseños para las cargas de viento para los productos específicos de revestimiento James Hardie, los tipos de estructuración, la altura de la construcción, la categoría de exposición de viento y otros factores relevantes a su proyecto.



Almacenamiento en sitio de trabajo y manejo adecuado

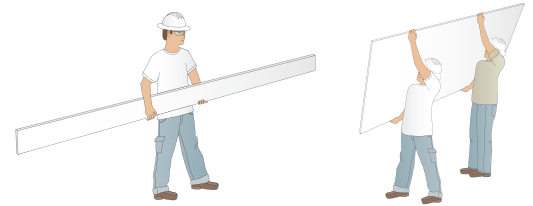
ALMACENAMIENTO EN EL SITIO DE TRABAJO

Los productos de revestimiento y molduras James Hardie deben mantenerse secos en todo momento antes de su instalación. Los productos James Hardie deben ser almacenados en su empaque original. Deben ser conservados lejos del suelo sobre una tarima o palé. En caso de almacenarlos en el exterior, deberán ser protegidos con una envoltura impermeable adicional.



UTILIZACIÓN ADECUADA

Para evitar lesiones, y daños al producto, las tablas de revestimiento, los materiales para molduras y paneles de sofito se deben tomar por los bordes. Una persona debe sostener, con los brazos separados, la tabla en el borde para apoyar el producto. Los productos de paneles deben ser manipulados por dos personas desde los extremos.



Accesorios de tecnología ColorPlus

KITS DE RETOQUE

Se estima un kit por 4000 pies cuadrados de revestimiento o 1600 pies cuadrados de moldura.

Recubridor de bordes - es necesario recubrir los cortes hecho en el sitio de la obra para sellar los bordes y que las juntas sean menos visibles.

Lápices de retoque - para ocultar cabezas de clavos y muy pequeñas mellas y arañazos de tamaño menor al de una moneda de diez centavos. Reemplace el área con un pedazo de tabla o panel si el área es mayor a la de una moneda de diez centavos.



MASILLA QUE COMBINA CON LOS COLORES

Utilice masilla que cumpla con ASTM C920 grado NS, clase 25 o superior, o un sellador de juntas de látex que cumpla con ASTM C834. Aplicar masilla de acuerdo con las instrucciones escritas del fabricante. Aproximadamente 18-20 pies lineales por tubo sellador OSI® QUAD® MAX.

LAMINADO

Deje la hoja de laminado protectora en el lugar durante el corte, instalación y retoque; luego quítela y deséchela.



Visita **JamesHardiePros.com** para las últimas instrucciones y consejos útiles del sitio de trabajo en nuestra influyente Guía de Mejores Prácticas.

Statement of Special Inspections

Project: Litchfield Housing Project

Location: Litchfield, CT

Owner: Town of Litchfield

Design Professional in Responsible Charge: GNCB Consulting Engineers, P.C.

This Statement of Special Inspections is submitted as a condition for permit issuance in accordance with the Special Inspection and Structural Testing requirements of the Building Code. It includes a schedule of Special Inspection services applicable to this project as well as the name of the Special Inspection Coordinator and the identity of other approved agencies to be retained for conducting these inspections and tests. This Statement of Special Inspections encompass the following disciplines:

- Structural Mechanical/Electrical/Plumbing
 Architectural Other: _____

The Special Inspection Coordinator shall keep records of all inspections and shall furnish inspection reports to the Building Official and the Registered Design Professional in Responsible Charge. Discovered discrepancies shall be brought to the immediate attention of the Contractor for correction. If such discrepancies are not corrected, the discrepancies shall be brought to the attention of the Building Official and the Registered Design Professional in Responsible Charge. The Special Inspection program does not relieve the Contractor of his or her responsibilities.

Interim reports shall be submitted to the Building Official and the Registered Design Professional in Responsible Charge.

A Final Report of Special Inspections documenting completion of all required Special Inspections, testing and correction of any discrepancies noted in the inspections shall be submitted prior to issuance of a Certificate of Use and Occupancy.

Job site safety and means and methods of construction are solely the responsibility of the Contractor.

Reports to be issued to all relevant parties via email in real time.

Prepared by:

Richard Centola, PE

Engineers Name

(type or print name)



Signature

Date



Owner's Authorization:

Building Official's Acceptance:

Signature

Date

Signature

Date

Schedule of Inspection and Testing Agencies

This Statement of Special Inspections / Quality Assurance Plan includes the following building systems:

- | | |
|---|--|
| <input checked="" type="checkbox"/> Soils and Foundations | <input type="checkbox"/> Spray Fire Resistant Material |
| <input checked="" type="checkbox"/> Cast-in-Place Concrete | <input type="checkbox"/> Wood Construction |
| <input type="checkbox"/> Precast Concrete | <input type="checkbox"/> Exterior Insulation and Finish System |
| <input checked="" type="checkbox"/> Masonry | <input type="checkbox"/> Mechanical & Electrical Systems |
| <input checked="" type="checkbox"/> Structural Steel | <input type="checkbox"/> Architectural Systems |
| <input checked="" type="checkbox"/> Cold-Formed Steel Framing | <input type="checkbox"/> Special Cases |

Special Inspection Agencies	Firm	Address, Telephone, e-mail
1. Special Inspection Coordinator	<i>TBD</i>	<i>TBD</i>
2. Inspector	<i>TBD</i>	<i>TBD</i>
3. Inspector		
4. Testing Agency	<i>TBD</i>	<i>TBD</i>
5. Testing Agency		
6. Other		

Note: The inspectors and testing agencies shall be engaged by the Owner or the Owner's Agent, and not by the Contractor or Subcontractor whose work is to be inspected or tested. Any conflict of interest must be disclosed to the Building Official, prior to commencing work.

Soils and Foundations

Item	Agency # (Qualif.)	Scope
1. Shallow Foundations	1/4	<p><i>Inspect soils below footings for adequate bearing capacity and consistency with geotechnical report.</i></p> <p><i>Inspect removal of unsuitable material and preparation of subgrade prior to placement of controlled fill</i></p>
2. Controlled Structural Fill	4	<p><i>Perform sieve tests (ASTM D422 & D1140) and modified Proctor tests (ASTM D1557) of each source of fill material.</i></p> <p><i>Inspect placement, lift thickness and compaction of controlled fill.</i></p> <p><i>Test density of each lift of fill by nuclear methods (ASTM D2922)</i></p> <p><i>Verify extent and slope of fill placement.</i></p>
3. Deep Foundations		
4. Load Testing		
4. Other:		

Cast-in-Place Concrete

Item	Agency # (Qualif.)	Scope
1. Mix Design	4	<i>Review concrete batch tickets and verify compliance with approved mix design. Verify that water added at the site does not exceed that allowed by the mix design.</i>
2. Material Certification		
3. Reinforcement Installation	1/4	<i>Inspect size, spacing, cover, positioning and grade of reinforcing steel. Verify that reinforcing bars are free of form oil or other deleterious materials. Inspect bar laps and mechanical splices. Verify that bars are adequately tied and supported on chairs or bolsters</i>
4. Post-Tensioning Operations		
5. Welding of Reinforcing		
6. Anchor Rods	4	<i>Inspect size, positioning and embedment of anchor rods. Inspect concrete placement and consolidation around anchors.</i>
7. Concrete Placement	4	<i>Inspect placement of concrete. Verify that concrete conveyance and depositing avoids segregation or contamination. Verify that concrete is properly consolidated.</i>
8. Sampling and Testing of Concrete	4	<i>Test concrete compressive strength (ASTM C31 & C39), slump (ASTM C143), air-content (ASTM C231 or C173) and temperature (ASTM C1064).</i>
9. Curing and Protection	1/4	<i>Inspect curing, cold weather protection and hot weather protection procedures.</i>
10. Other:		

Wood Construction

Item	Agency # (Qualif.)	Scope
1. Fabricator Certification/ Quality Control Procedures <input type="checkbox"/> Fabricator Exempt	1/4	<i>Inspect shop fabrication and quality control procedures for wood truss plant.</i>
2. Material Grading	1/4	<i>Verify materials are of the required grade.</i>
3. Connections	4	<i>Verify connections, fasteners, and hardware are per design drawings or approved submittals.</i>
4. Framing and Details	4	<i>Verify details are in general conformance with design drawings.</i>
5. Diaphragms and Shearwalls	4	<i>Inspect size, configuration, blocking and fastening of shearwalls and diaphragms. Verify panel grade and thickness.</i>
6. Prefabricated Wood Trusses	1/4	<i>Inspect the fabrication of wood trusses.</i>
7. Permanent Truss Bracing	4	<i>Inspect installation of permanent bracing and bridging.</i>
8. Other:		

Final Report of Special Inspections

Project: *Litchfield Housing Project*

Location: *Litchfield, CT*

Owner: *Town of Litchfield*

Owner's Address: *74 West St.
Litchfield, CT*

Architect of Record: *QA+M Architecture*

Structural Engineer of Record: *GNCB Consulting Engineers, P.C.*

To the best of my information, knowledge and belief, the Special Inspections required for this project, and itemized in the *Statement of Special Inspections* submitted for permit, have been performed and all discovered discrepancies have been reported and resolved other than the following:

Comments:

(Attach continuation sheets if required to complete the description of corrections.)

Interim reports submitted prior to this final report form a basis for and are to be considered an integral part of this final report.

Respectfully submitted,
Special Inspector

Engineers Name

(Type or print name)

Signature Date



Final Report of Special Inspections

Agent's Final Report

Project: *Litchfield Housing Project*

Agent:

Special Inspector:

To the best of my information, knowledge and belief, the Special Inspections or testing required for this project, and designated for this Agent in the *Statement of Special Inspections* submitted for permit, have been performed and all discovered discrepancies have been reported and resolved other than the following:

Comments:

(Attach continuation sheets if required to complete the description of corrections.)

Interim reports submitted prior to this final report form a basis for and are to be considered an integral part of this final report.

Respectfully submitted,
Agent of the Special Inspector

(Type or print name)

Signature Date





Town of Litchfield
Planning and Zoning Commission

Town Hall Annex
80 Doyle Road. Bantam, CT

Ph: (860) 567-7565
Fax: (860) 567-7573

Mailing Address: P.O. Box 12
Bantam, CT 06750

October 22, 2025

Litchfield Housing Authority
30 Doyle Rd, Suite 37
Bantam, CT 06750

Re: Site Plan / Special Exception Approval - 8-unit affordable housing development - includes the construction of two buildings with 4-units each and a new 16-space parking lot, in accordance with plans entitled "River Bend", revised through 9/9/25 by Haley Ward, Inc. sheets 1-11, Beneche & Co. Landscape Plan L.1.0 and L.1.1. Revised through 9/9/25 and QA+M Architecture Plans dated 2/3/25, the project approval is supported by the Housing Guiding Policy of the 2017 Plan of Conservation and Development and the 2022 Housing Affordability Plan.

Location: 176 East Street / 64 Wells Run, Litchfield, CT 06759 MBL#'s 219-038-50A & 219-038-48A.

Dear Litchfield Housing Authority,

At the October 6, 2025 meeting, the Planning and Zoning Commission approved your Site Plan / Special Exception application for the above listed activity with the following conditions:

1. A final Mylar of the approved site plan shall be submitted for the Chair of the Planning and Zoning Commission's signature and then filed in the Litchfield Land Records by the Applicant.
2. A copy of the Special Exception approval and all conditions of approval shall be filed in the Litchfield Land Records by the Applicant.
3. This approval is for the specific use and structures identified in the application. Any change in the nature of the use or the structure will require new approvals from the Litchfield Planning and Zoning Commission or Land Use Administrator as set forth in the zoning regulations.
4. Property known as 64 Wells Run, MLB: 219-038-48A to be merged with 176 East Street, MLB: 219-038-50A as shown on Haley Ward Sheet #3. Pins to be placed delineating the boundaries of the newly configured single parcel;
5. All three (3) easements submitted and reviewed by Attorney Byrne are to be recorded on the Litchfield Land Records prior to the issuance of a Zoning Permit. The three (3) easements are as follows;
 - a) A Drainage Easement and Right to Drain in favor of the Litchfield Housing

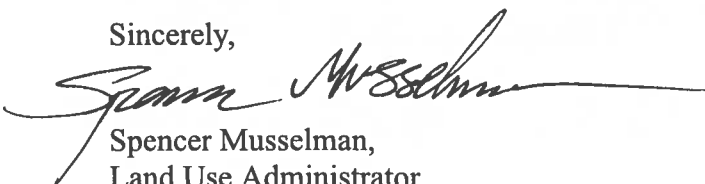
Authority over 158 East Street.

- b) A Sanitary Sewer Easement in favor of 158 East Street that would allow future connection to the sewer service line on 176 East Street.
 - c) An Access Easement in favor of 170 East Street to allow continued access of existing driveway over the Litchfield Housing Authority property at 176 East Street.
6. A pre-construction meeting with Town Staff will be held prior to the start of construction. Applicant shall provide the name and phone number of the contact person responsible for 24/7 zoning compliance and response.
 7. The following bonds are to be posted with the Town of Litchfield prior to the issuance of a zoning permit, the form of which must be suitable to the Commission's attorney and in an amount to cover 100% of the cost of construction to be reviewed by the Commission's engineer, for the following:
 - a) Sedimentation and Erosion Control
 - b) Public Improvements
 - c) Driveway
 8. Erosion controls shall be installed and inspected by the Land Use Administrator prior to the start of construction and shall be maintained in accordance with site plan sheets #4 and #9 titled "Grading and Erosion Control Plan" and "Erosion Control Plan Narrative and Details" respectively by Haley Ward, Inc. Erosion controls shall be maintained until the site is stabilized post-construction and a Certificate of Zoning Compliance has been issued.
 9. All requested site plan revisions as stated in Town Engineer Raz Alexe's review letter, dated 8/25/25 will be implemented as stated in Haley Ward's response letter, dated 9/10/25. Site plan sheet #5 "Drainage Plan" was updated in accordance with the requested modifications.
 10. As stated in Haley Ward's response letter, dated 9/10/25 to DPW Assistant Supervisor Brett Seamans' landscape plan review, all requested landscape plan revisions will be implemented as shown on Sheets L1.0 and L1.1 as updated on 9/9/25 in accordance with the requested revisions.
 11. All work and site improvements are to be in accordance with the Inland Wetlands Commission approval dated 3/12/25.
 12. The applicant shall comply with the requirements of the Town of Litchfield Water Pollution and Control Authority.
 13. All work and site improvements are to be in accordance with the Litchfield Historic District Commission approval dated 5/1/2025.
 14. An as-built plan showing all site improvements be submitted to the Land Use Office prior to the issuance of a Certificate of Zoning Compliance.

The enclosed Certificate of Approval must be filed on the Land Records with the Town Clerk.

Please note that additional zoning and building permits may be required before construction can begin. Please obtain applicable approvals from the following: Fire Marshal, Building Inspector and Torrington Area Health District.

Sincerely,


Spencer Musselman,
Land Use Administrator
Town of Litchfield



Certificate of Application Approval

Applicant: The Litchfield Housing Authority
For: Site Plan / Special Exception Approval - 8-unit affordable housing development - includes the construction of two buildings with 4-units each and a new 16-space parking lot, in accordance with plans entitled "River Bend", revised through 9/9/25 by Haley Ward, Inc. sheets 1-11, Beneche & Co. Landscape Plan L.1.0 and L.1.1. Revised through 9/9/25 and QA+M Architecture Plans dated 2/3/25, the project approval is supported by the Housing Guiding Policy of the 2017 Plan of Conservation and Development and the 2022 Housing Affordability Plan.

Location: 176 East Street / 64 Wells Run, Litchfield CT 06759 – MBL # 219-038-50A & 219-038-48A.

I hereby certify that the above Site Plan / Special Exception Application was approved by the Litchfield Planning and Zoning Commission on October 6, 2025.

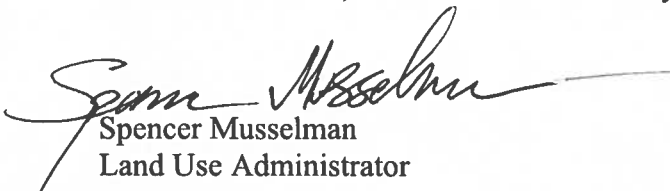
Conditions of approval:

1. A final Mylar of the approved site plan shall be submitted for the Chair of the Planning and Zoning Commission's signature and then filed in the Litchfield Land Records by the Applicant.
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5. All three (3) easements submitted and reviewed by Attorney Byrne are to be recorded on the Litchfield Land Records prior to the issuance of a Zoning Permit. The three (3) easements are as follows;
 - a) A Drainage Easement and Right to Drain in favor of the Litchfield Housing Authority over 158 East Street.
 - b) A Sanitary Sewer Easement in favor of 158 East Street that would allow future connection to the sewer service line on 176 East Street.
 - c) An Access Easement in favor of 170 East Street to allow continued access of existing driveway over the Litchfield Housing Authority property at 176 East Street.
6. A pre-construction meeting with Town Staff will be held prior to the start of construction. Applicant shall provide the name and phone number of the contact person responsible for 24/7 zoning compliance and response.

7. The following bonds are to be posted with the Town of Litchfield prior to the issuance of a zoning permit, the form of which must be suitable to the Commission's attorney and in an amount to cover 100% of the cost of construction to be reviewed by the Commission's engineer, for the following:
 - a) Sedimentation and Erosion Control
 - b) Public Improvements
 - c) Driveway
8. Erosion controls shall be installed and inspected by the Land Use Administrator prior to the start of construction and shall be maintained in accordance with site plan sheets #4 and #9 titled "Grading and Erosion Control Plan" and "Erosion Control Plan Narrative and Details" respectively by Haley Ward, Inc. Erosion controls shall be maintained until the site is stabilized post-construction and a Certificate of Zoning Compliance has been issued.
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13. All work and site improvements are to be in accordance with the Litchfield Historic District Commission approval dated 5/1/2025.
14. An as-built plan showing all site improvements be submitted to the Land Use Office prior to the issuance of a Certificate of Zoning Compliance.

The owner of record is: The Litchfield Housing Authority
Volume/page: 406 / 610.

Dated in Litchfield, Connecticut this 22nd day of October 2025.


Spencer Musselman
Land Use Administrator

**THIS CERTIFICATE OF APPROVAL MUST BE FILED
ON THE LAND RECORDS WITH THE TOWN CLERK**



Town of Litchfield
Inland Wetlands Commission

Town Hall Annex
80 Doyle Road, Bantam, CT

Ph: (860) 567-7565
Fax: (860) 567-7573

Mailing Address: P.O. Box 12
Bantam, CT 06750

April 3, 2025

Litchfield Housing Authority
30 Doyle Road, Suite, 37
Litchfield, CT 06759

Re: Construction of eight (8) affordable housing units - two buildings each containing (1) one-bedroom unit, (2) two-bedroom units, and (1) three-bedroom unit. Two units will be fully ADA compliant - parking for 16 cars, a concrete sidewalk, landscaping and connections to public utilities as per plan by Haley Ward Engineering titled "River Bed 176 East St. & 64 Wells Run, Litchfield, CT", pages 1-10 L.1.0, L.1.1 and SL1 sheets, dated 2/5/25, updated 2/6/25. Access to the new buildings will be from the existing Wells Run entrance.

Location: 176 East Street - MBL# 219-038-50A & 64 Wells Run, Litchfield CT - MBL# 219-038-48A.

Dear Mr. Simoncelli,

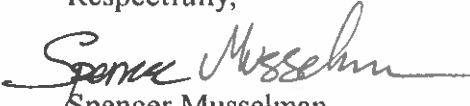
At their March 12, 2025 meeting, the Inland Wetlands Commission approved your application for the above activities.

A permit is enclosed with conditions listed. Please read it carefully, as all construction or other work must conform to what the permit authorizes.

It is suggested that you contact the Land Use Office to determine applicability of zoning regulations regarding any construction associated with this permit, as additional zoning and building permits may be required.

If you have any questions, please contact the Land Use Office at 860-567-7565.

Respectfully,


Spencer Musselman
Land Use Administrator



Town of Litchfield Inland Wetlands Permit

Litchfield Housing Authority
176 East Street & 64 Wells Run
Litchfield, CT 06759
MBL# 219-038-50A & 219-038-48A

04/03/2025

Wetlands Permit# CC00001602

This authorization refers to your application to conduct regulated activities in the town of Litchfield. The Inland Wetlands Commission has considered your application with due regard for the matters enumerated in the Inland Wetlands Regulations and has found that the proposed work, as specified and conditioned below, conforms to the purposes and provisions of said regulations.

The authorized activity consists of: **Construction of eight (8) affordable housing units - two buildings each containing (1) one-bedroom unit, (2) two-bedroom units, and (1) three-bedroom unit (two units will be fully ADA compliant) - parking for 16 cars, a concrete sidewalk, landscaping and connections to public utilities as per plan by Haley Ward Engineering titled "River Bed 176 East St. & 64 Wells Run, Litchfield, CT", pages 1-10 L.1.0, L.1.1 and SL1 sheets, dated 2/5/25, updated 2/6/25. Access to the new buildings will be from the existing Wells Run entrance.**

This permit is subject to the following conditions and/or modifications.

1. The permittee shall notify the Inland Wetlands Commission immediately upon the commencement of work and upon its completion.
2. If the authorized activity is not completed on or before **03/12/2030** said activity shall cease and, if not previously revoked or specifically renewed or extended, this permit shall be null and void. Any request to renew or extend the expiration date of a permit should be filed in accordance with the Inland Wetland Regulations of the Town of Litchfield. Expired permits may not be renewed and the Inland Wetlands Commission may require a new application for regulated activities.
3. All work and all regulated activities conducted pursuant to this authorization shall be consistent with the terms and conditions of this permit. Any structures, excavation, fill, obstructions, encroachments, or regulated activities not specifically identified and authorized herein shall constitute a violation of this permit and may result in its modification, suspension, or revocation.
4. This authorization is not transferable without the written consent of the Inland Wetlands Commission.
5. In evaluating this application, the Inland Wetlands Commission has relied on information provided by the applicant. If such information is subsequently proved to be false, incomplete, or misleading, this permit may be modified, suspended, or revoked and the permittee may be subject to any other remedies or penalties provided by law.
6. The permittee shall employ the best management practices, consistent with the terms and conditions of this permit, to control stormwater discharges and to prevent erosion and sedimentation and to otherwise prevent pollution of wetlands or watercourses. For information and technical assistance contact the Land Use Administrator. The permittee shall immediately inform the Commission of any problems involving the wetlands or watercourses that have developed in the course of, or that are caused by, the authorized work.
7. No equipment or material including without limitation, fill construction materials or debris, shall be deposited, placed, or stored in any wetland or watercourse on or off site unless specifically authorized by this permit.
8. The permit is subject to and does not derogate any rights or powers of the Town of Litchfield, conveys no property rights or exclusive privileges, and is subject to all public and private rights to all applicable federal, state, and local laws. In conducting and maintaining any activities authorized herein, the permittee may not cause pollution, impairment, or destruction of the inland wetlands and watercourses of Litchfield.
9. If the activity authorized by the inland wetlands permit also involves activity or a project that requires zoning or subdivision approval, special permit, variance, or special exception, no work pursuant to the wetlands permit may begin until such approval is obtained.
10. The permittee shall maintain sediment and erosion controls at the site in such an operable condition as to prevent the pollution of wetlands and watercourses. Said controls are to be inspected by the permittee for deficiencies at least once per week and immediately after rains. The permittee shall correct any such deficiencies within 24 hours of said deficiency being found. The permittee shall maintain such control measures until all areas of disturbed soils at the site have been stabilized.
11. **Erosion and sedimentation controls be installed and inspected prior to site disturbance.**

ADDITIONAL CONDITIONS AND/OR MODIFICATIONS:

**NEW UNITS
RIVERBEND
LITCHFIELD, CT**

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SECTION 017329 – CUTTING AND PATCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section “Summary”, Paragraph 1.1A, entitled “Related Documents.”

1.2 SUMMARY

- A. This Section includes procedural requirements for cutting and patching.

1.3 DEFINITIONS

- A. Cutting: Penetration of in-place construction necessary to permit installation or performance of other Work, including the removal of debris.
- B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.4 SUBMITTALS

- A. Cutting and Patching Proposal: Submit a proposal describing procedures at least 10 days before the time cutting and patching will be performed, requesting approval to proceed. Include the following information:
 - 1. Extent: Describe cutting and patching, show how they will be performed, and indicate why they cannot be avoided.
 - 2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building's appearance and other significant visual elements.
 - 3. Products: List products to be used and firms or entities that will perform the Work.
 - 4. Dates: Indicate when cutting and patching will be performed.
 - 5. Utility Services and Mechanical/Electrical Systems: List services/systems that cutting and patching procedures will disturb or affect. List services/systems that will be relocated and those that will be temporarily out of service. Indicate how long services/systems will be disrupted.
 - 6. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.
 - 7. Architect's Approval: Obtain approval of cutting and patching proposal before cutting and patching. Approval does not waive Architect's right to later require removal and replacement of unsatisfactory work.

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1.5 QUALITY ASSURANCE

- A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio. Structural elements include, but are not limited to the following:
1. Concrete foundation construction.
 2. Bearing and retaining walls, including architectural precast panels.
 3. Lintels.
 4. Structural steel frame.
 5. Structural decking.
 6. Miscellaneous structural metals.
 7. Interior and/or exterior load bearing masonry wall construction.
- B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operating elements include the following:
1. Primary operational systems and equipment.
 2. Air or smoke barriers.
 3. Mechanical systems piping and ducts.
 4. Control systems.
 5. Communication systems.
 6. Electrical wiring systems.
- C. Miscellaneous Elements: Do not cut and patch miscellaneous elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Miscellaneous elements include the following:
1. Water, moisture, or vapor barriers.
 2. Membranes and flashings.
 3. Piping, ductwork, vessels, and equipment.
 4. Noise- and vibration-control elements and systems.
 5. Roofing systems.
- D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- E. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections.

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- B. In-Place Materials: Use materials identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
 - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
 - 1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.
 - 2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Temporary Support: Provide temporary support of Work to be cut.
- B. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.

3.3 PERFORMANCE

- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
 - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size

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- required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 4. Excavating and Backfilling: Comply with requirements in applicable Division 2 Sections where required by cutting and patching operations.
 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 6. Proceed with patching after construction operations requiring cutting are complete.
- C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.
1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
 - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
 - b. Restore damaged pipe covering to its original condition.
 3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - a. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
 4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
 5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.
- D. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

END OF SECTION 017329

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PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Installation of temporary erosion and sedimentation control measures
2. Maintenance of temporary erosion and sedimentation control measures.
3. Monitoring of site condition and installation of supplemental temporary erosion and sedimentation control measures.
4. Sediment removal and disposal
5. Temporary seeding or other surface stabilization measures.
6. Removal of temporary erosion and sedimentation control measures.
7. Monitoring, documentation, and recordkeeping.
8. Installation of permanent erosion control materials.
9. Final cleanup.

B. Erosion and sediment control techniques include, but are in no way limited to, silt fence, hay bales, drainage structure inserts/filters, mulching with hay/straw, netting/matting, grassing, stone dikes/berms/check-dams, compost blankets and berms, barriers, diversions, traps, basins, and appurtenances which will ensure that erosion and sediment pollution will be either eliminated or maintained within acceptable limits.

C. The measures specified herein are the minimum requirements which Contractor shall comply to control erosion and siltation throughout execution of the work. Contractor shall provide additional work if necessary to control erosion and siltation throughout the duration of the construction as conditions dictate, or as directed by Engineer.

D. Contractor shall coordinate work between all Contractors, sections, and trades required for the proper completion of the work.

E. Contractor is responsible for all health and safety.

1.2 SUBMITTALS

A. Submit material specifications and shop drawings for all materials furnished under this Section.

B. Prior to the start of the construction, submit schedule for the construction of required stormwater detention basins, temporary and permanent erosion and sedimentation control measures, clearing and grubbing, grading, structures at watercourses, construction, and paving.

C. During construction, submit to Engineer schedule changes that affect timing of construction.

D. Submit copies of all inspection and maintenance report forms.

1.3 REFERENCES

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- A. Reference herein to any technical society, organization, group or regulation are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable.
- B. Regulations of Connecticut State Agencies (RCSA)
 - 1. 22a-315-10 through 19, Soil and Water Conservation
- C. Connecticut Department of Energy and Environmental Protection (DEEP)
 - 1. Connecticut Guidelines for Soil Erosion and Sediment Control, State of Connecticut Council on Soil and Water Conservation, 2023.
- D. State of Connecticut Department of Transportation (ConnDOT)
 - 1. Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, Form 817, 2016 and any supplements.

1.4 PERMIT CONDITIONS

- A. Contractor and Subcontractors are bound to comply with any project-related permits obtained by Owner or Engineer for the work of the project. Such permits will affect performance of the work, and Contractor and Subcontractors are bound to comply with requirements of such permit and representations contained in permit application as though Contractor and Subcontractor were the Permittee/permit-holder. Requirements and conditions set forth in Owner or Engineer-obtained project-related permits and permit applications shall be binding on Contractor just as any Specification would be.

1.5 QUALITY CONTROL

- A. Contractor shall be responsible for the timely installation and maintenance of all sedimentation control devices necessary to prevent the erosion of soil or movement of sediment from construction activities to off-site areas via surface runoff or underground drainage systems. Measures in addition to those shown on the Drawings necessary to prevent the movement of sediment off site shall be installed, maintained, removed, and cleaned up at the expense of Contractor.
- B. Where additional erosion and sedimentation control measures are required beyond what is indicated on the Drawings or herein, comply with applicable sections of the Connecticut Guidelines for Soil Erosion and Sediment Control, DEEP Bulletin 34, State of Connecticut Council on Soil and Water Conservation, 2002.
- C. If applicable, comply with applicable provisions of the Connecticut Department of Energy and Environmental Protection (DEEP) General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities, (DEEP-WPED-GP-015), latest revision thereof. Conditions of such General Permit, other conditions of approval or authorizations, and associated Stormwater Pollution Control Plan (SWPCP) shall become part of the Contract Documents.
- D. Engineer has the authority to order immediate, additional, temporary control measures to prevent contamination of adjacent streams or other watercourses, or other areas of water impoundment and damage by erosion.

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- E. If Engineer observes construction procedures and operations that jeopardize erosion control provisions, Engineer will notify Contractor. If such construction procedures and operations are not corrected promptly, Engineer may suspend the performance of any or all construction until corrections have been made, and such suspension shall not be the basis of any claim by Contractor for additional compensation, nor for an extension of time to complete the Work.
- F. Should construction materials be washed away or otherwise rendered ineffective in the opinion of Engineer during the progression of the Work, Contractor shall replace the installations at no additional cost to the Owner.

1.6 COORDINATION WITH PERMANENT EROSION CONTROL PROVISIONS

- A. Coordinate temporary erosion and sedimentation control measures with permanent erosion control features to the extent practical to ensure economical, effective and continuous erosion control throughout construction and post-construction periods.

PART 2 PRODUCTS

2.1 HAY BALES

- A. Hay bales shall be made of cut hay with forty (40) pounds minimum weight and 120 pounds maximum weight. Bales shall be free of rotten or degraded hay, significant splits or voids. Hay bales shall be held together with a minimum of two bands made of either wire or heavy twine.
- B. Stakes to anchor the bales shall be a minimum of 36 inches long and made of hardwood with a minimum dimension of 1½-inch by 1½-inch normal size. Metal stakes may be used instead of wooden stakes. Metal stakes shall be round, “U,” “T,” “L,” or “C” shaped with a minimum weight of 0.5 pounds per foot.
- C. Replace individual hay bales upon loss of 30% of original mass or volume, whichever is less.

2.2 SILT FENCE

- A. Woven Polypropylene geotextile having a minimum weight of 3.1 ounces per square yard conforming to the following:
 1. Mechanical and Physical Properties of Silt Fence Geotextile

Mechanical Properties	Test Method	Unit	Minimum Average Roll Value
Weight	ASTM D 3776	oz/yd ²	5.6
Grab Tensile Strength	ASTM D 4632	Pounds	60
Grab Elongation (Max percent)	ASTM D 4632	Percent (%)	15–30
Trapezoidal Tear	ASTM D 4533	Pounds	30
Puncture	ASTM D 4833	Pounds	30
Mullen Burst	ASTM D 3786	psi	150–200
Permittivity	ASTM D 4491	Sec ⁻¹	0.15
Flow Rate	ASTM D 4491	gal/min/ft ²	15–20
Apparent Opening Size	ASTM D 4751	(U.S. Sieve)	30–35
UV Resistance (at 500 hours)	ASTM D 4355	% strength retained	70

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- B. Silt fence shall be constructed of a minimum thirty-six (36) inch wide continuous woven geotextile. The material shall have a high sediment filtration capacity, high slurry flow and minimum clogging characteristics. Edges of the fabric shall be finished to prevent the outer fibers from pulling away from the geotextile. Geotextile shall be free of defects or flaws that significantly affect its physical and/or filtering properties.
- C. Fabric shall be securely fastened to stakes a minimum of 42 inches long and made of hardwood with a minimum dimension of 1½ inch by 1½ inch normal size such that a 6 to 8 inch length of fabric is unattached at the bottom for anchorage in soil. Metal stakes may be used instead of wooden stakes. Metal stakes shall be round, “U,” “T,” “L,” or “C” shaped with a minimum weight of 0.5 pounds per foot. Stakes shall be spaced not greater than ten feet apart. When required, wire or another type of support shall be constructed between the geotextile fabric and the posts to improve the load carrying capacity of the silt fence.

2.3 CATCH BASIN INSERT

- A. Manufactured “bag type” catch basin insert of woven polypropylene geotextile with integral lifting loops or straps conforming to the following:

1. Mechanical and Physical Properties of Catch Basin Insert

Mechanical Properties	Test Method	Unit	Minimum Average Roll Value
Grab Tensile Strength	ASTM D 4632	Pounds	315
Grab Elongation (Max percent)	ASTM D 4632	Percent (%)	30
Trapezoidal Tear	ASTM D 4533	Pounds	40x50 (min)
Puncture	ASTM D 4833	Pounds	135 (min)
Mullen Burst	ASTM D 3786	psi	420 (min)
Permittivity	ASTM D 4491	gal/min/sq ft	0.7
Flow Rate	ASTM D 4491	gal/min/ft ²	50-200
Apparent Opening Size	ASTM D 4751	(U.S. Sieve)	20-40
UV Resistance (at 500 hours)	ASTM D 4355	% strength retained	80 (min)

Note: Catch basin inserts for catch basins with curb openings shall be equipped with integral curb deflector.

2.4 STRAW MULCH

- A. Straw mulch shall be comprised of threshold straw of oats, wheat, barely, or rye that is free from noxious weeds, mold or other objectionable material. Straw mulch shall contain at least 50 percent by weight of material to be 10-in or longer. Straw shall be in an air-dry condition and suitable for placement with blower equipment. Straw mulch shall be utilized on all newly graded areas with slopes exceeding 5% to protect areas against washouts and erosion unless other erosion control measures are provided.

2.5 FILTER BERM COMPOST

- A. Where establishing vegetation is not planned, compost shall be a decomposed, weed free organic matter source derived from agricultural, food, or industrial residuals; biosolids (treated sewage sludge); yard trimmings; or source-separated or mixed solid waste. Compost shall

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possess a moisture content of 30 to 60% and an organic matter content of 25 to 100%. The maximum particle length shall be 6", and 100% passing a 3", 90 to 100% passing a 1", 70% to 100% passing a 3/4", and 30% to 75% passing a 1/4" screen. However, no more than 50% passing a 1/4" screen in high rainfall/flow rate situations.

- B. Where establishing vegetation is planned, compost shall be use a well decomposed, stable, weed free organic matter source derived from agricultural, food, or industrial residuals; biosolids (treated sewage sludge); yard trimmings; or source-separated or mixed solid waste. Compost shall possess a moisture content of 30 to 60%, a pH of 6.0 to 8.5 and an organic matter content of 25 to 65%. The maximum particle length shall be 6", and 100% passing a 3", 90 to 100% passing a 1", 70% to 100% passing a 3/4", and 30% to 75% passing a 1/4" screen. However, no more than 60% passing a 1/4" in high rainfall/flow rate situations. It shall contain no substances toxic to plants, shall possess no objectionable odors, and shall not resemble the raw material from which it was derived.

2.6 COMPOST SOIL BLANKET

- A. Compost soil blankets may be utilized on slopes of up to 2:1.
- B. Slightly scarify slopes and remove large clods, rocks, stumps, roots larger than 2 inches in diameter and debris on slopes, where vegetation is to be established. This soil preparation step may be eliminated where approved by the Landscape Architect/Designer, or where seeding or planting isn't planned. Track (compact) slope using a bulldozer before applying compost.
- C. Apply compost at the following rates:

Compost Application Rates

Annual Rainfall/Flow Rate	Total Precipitation & Rainfall Erosivity Index	Application Rate for Slopes to be Vegetated (Note 1)	Application Rate for Slopes not being Unvegetated
Low	1"-25" & 20-90	1/2"-3/4"	1"-1 1/2"
Average	26"-50" & 91-200	3/4"-1"	1 1/2"-2"
High	51" and above, & 201 and above	1"-2"	2"-4"

- D. Lower application rates indicated for slopes to be vegetated should only be used in conjunction with seeding, and for compost blankets applied during the prescribed planting season for the particular region.
- E. Compost shall be uniformly applied using an approved spreader unit, including bulldozers, side discharge manure spreaders, etc. Track (compact) the compost layer using a bulldozer or other appropriate equipment. (This step may be eliminated where impractical or where deemed unnecessary by the Landscape Architect/Designer.) Alternatively, apply compost using a pneumatic (blower) unit, or other unit that propels the product directly at the soil surface, thereby preventing water from moving between the soil-compost interface. Thorough watering may be used to improve settling of the compost. Apply compost layer approximately 3 feet (90 cm) over the top of the slope, or overlap it into existing vegetation.
- F. On highly unstable soils, use compost in conjunction with appropriate structural measures.

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- G. Dry or hydraulic seeding may be completed following compost application, as required, or during the compost application itself, where a pneumatic unit is used to apply the compost.

2.7 STONE CHECK DAM

- A. Stone shall be graded as follows:

Gradation of Stone for Check Dam (ConnDOT M.01.01 Grading No. 3)

Sieve	Percent Passing by Weight
2 1/2"	100
2"	90-100
1 1/2"	35-70
1	0-15
1/2"	0-5

Stone shall be sound, tough, durable, angular, not subject to disintegration, on exposure to water, or weathering, be chemically stable and shall be suitable in all other respects for the purpose intended.

- B. Geotextile may be used under the stone to provide a stable foundation and to facilitate removal of the stone.

2.8 EROSION CONTROL SEED MIXTURE

Erosion Control Seed

Species (Note 1)	Application Rate, Pounds Per Acre	Application rate, Pounds Per 1,000 sf	Optimum Seed Depth, inches (Note 2)	Optimum Seeding Dates (Note 3)
Annual ryegrass <i>Lolium multiflorum</i>	40	1.00	0.5	3/1-6/15 and 8/1-10/15
Perennial ryegrass <i>Lolium perenne</i>	40	1.00	0.5	3/15-7/1 and 8/1-10/15
Winter Rye <i>Secale cereale</i>	120	3.00	1.00	4/5-7/1 and 8/15-10/15
Oats <i>Avena sativa</i>	86	2	1	3/1-6/15 and 8/1-9/15
Winter Wheat <i>Triticum aestivum</i>	120	3	1	4/15-7/1 and 8/15-10/15
Millet <i>Echinochloa crusgalli</i>	20	.5	1	5/15-7/15
Sudangrass <i>Sorghum sudanese</i>	30	.7	1	5/15-8/1
Buckwheat <i>Fagopyrum esculentum</i>	15	.4	1	4/1-9/15
Weeping lovegrass <i>Eragostis cymbula</i>	5	.2	.25	6/1-7/1
ConnDOT All Purpose Mix	150	3.4	.5	3/1-6/15 and 8/1-10/15

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Notes:

1 – Listed species may be used in combinations to obtain a broader time spectrum. If used in combinations, reduce each species planting rate by 20% of that listed

2 – Seed at twice the indicated depth for sandy soils.

3 – May be planted throughout summer if soil moisture is adequate or can be irrigated. Fall seeding may be extended 15 days in the coastal towns

2.9 EROSION CONTROL MATTING

- A. Temporary Erosion Control Blanket shall be 1) Curlex® Excelsior Blanket, as manufactured by American Excelsior Company, 2) ERO-MAT® V75S(FD), as manufactured by Verdyol Plant Research, Ltd., or 3) Landlok® S2 RD, as manufactured by SI® Geosolutions, or 4) approved equal.
- B. Degradable Erosion Control Fabric Netting shall be Landlok® 407 GR, as manufactured by 1) SI® Geosolutions, or 2) GeoJute® as manufactured by Belton Industries, Inc., or 3) BioNet® S150BN™ Double Net Straw Blanket, as manufactured by North American Green, or 4) approved equal.
- C. Long-Term and Non-degradable Turf Reinforcement Mats shall be 1) Pyramat®, as manufactured by SI® Geosolutions, or 2) Recyclex® Turf Reinforcement Matting, as manufactured by American Excelsior Company, or 3) Vmax3 C350™, as manufactured by North American Green, or 4) approved equal.
- D. Erosion control matting shall be secured with staples or an alternative attachment device such as geotextile pins or plastic pegs as recommended by the manufacturer. The Contractor shall submit a sample of the alternative attachment device for the Engineer's approval prior to installation.

PART 3 EXECUTION

3.1 GENERAL

- A. Install erosion and sedimentation control measures as shown on the Drawings prior to any site disturbance.
- B. No work shall be started until erosion control schedules and installation have been accepted by Engineer.
- C. Engineer has the authority to control the surface area of each material exposed by construction operations and to direct Contractor to immediately provide permanent or temporary pollution control measures to prevent contamination of adjacent watercourses or other areas of water impoundment. Every effort shall be made by Contractor to prevent erosion on the site and abutting properties or areas.
- D. Contractor shall construct all permanent erosion and sediment control features at the earliest practical time as outlined in the accepted schedule. Temporary erosion and sediment control measures shall be used to correct conditions that develop during construction, which were unforeseen, but are needed prior to installation of permanent control features, or that are needed temporarily to control erosion or sedimentation which develops during construction operations.

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- E. Contractor shall limit as necessary the surface area of the earth material exposed to sufficiently maintain and protect the slopes to prevent pollution. Where erosion is likely to be a problem, clearing and grubbing operations shall be scheduled and performed so that grading operations and permanent erosion and sediment control features can follow immediately thereafter, if conditions permit; otherwise, temporary control measures will be required between successive construction stages.
- F. Erosion control measures shall be maintained by Contractor, and he shall remove such installations only upon completion of the work and the site is stabilized or when authorized to do so by Engineer.
- G. Contractor shall operate all equipment and perform all construction operations so as to minimize pollution. Contractor shall cease any of his operations, which will increase pollution during rainstorms.
- H. Failure by Contractor to control erosion, pollution, and siltation shall be cause for the Engineer to employ outside assistance to provide the necessary corrective measures. The cost of such assistance, including engineering costs, will be charged to Contractor and appropriate deductions made to Contractor's payment.

3.2 HAY BALES

- A. Hay bales shall be positioned as indicated on the Drawings and/or as necessary to prevent off site movement of sediment produced by, or as a result of, construction activities, or as direct by the Engineer.
- B. Hay bales shall be utilized on all catch basins and drainage facilities on the Project Site to prevent the entry of sediments or other debris. Maintain such protection throughout execution of the work until such drainage facilities have been abandoned/removed.
- C. Bales shall be placed lengthwise with ends of adjacent bales tightly abutting one another to form a continuous barrier. Bales shall be entrenched to a depth of 4 inches and backfilled, with the backfill placed toward the potential source of runoff and sediment. All bales shall be installed so that bindings are oriented around the sides rather than along the tops and bottoms. Each bale shall be anchored with a minimum of two stakes, driving the first stake in each bale towards the previously laid bale to drive the bales together. Stakes must be driven a minimum of 18 inches into the ground. Loose hay shall be inserted between bales as required to prevent water from escaping between the bales.

3.3 GEOTEXTILE SILT FENCE

- A. Install a filter fabric silt fence prior to construction and remove after full surface restoration has been achieved. Install silt fence as indicated on the Drawings and/or as necessary to prevent off site movement of sediment produced by, or as a result of, construction activities.
- B. Install as follows:
 - 1. Hand shovel excavate a small trench a minimum of six inches wide by six inches deep on the upslope side of the desired fence line location.
 - 2. Unroll the siltation fence system, position the post in the back of the trench (downhill side), and hammer the post at least 12 inches into the original ground.

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3. Fabric rolls shall be spliced at posts. The fabric shall be overlapped six inches, folded over and securely fastened to posts.
4. Lay the bottom 6 inches of the fabric into the trench to prevent undermining by storm water run-off.
5. Backfill the trench and compact. Compaction is necessary to prevent the run-off from eroding the backfill.
6. For slope and swale installations, extend the ends of the trench sufficiently up slope such that the bottom end of the fence will be higher than the top of the lowest portion of the fence.

3.4 CATCH BASIN INLET SEDIMENT CONTROL

- A. Install catch basin inlet sediment control devices in each exiting catch basin as long as it remains in use in accordance with manufacturer's guidelines at the locations shown on the Drawings.
- B. A catch basin sediment filter shall be installed and changed/cleaned per the manufacturer's recommendations, or as directed by the Engineer, during construction.
- C. New catch basins shall have a filter installed immediately upon completion of construction. In addition, a hay bale, or similar, barrier shall be installed around the new basin and maintained in place until binder is placed or disturbed areas draining to it are stabilized.
- D. Catch basins with curb openings shall have filter fabric covering the opening and the edges of the fabric shall be secured. A filter boom shall also be placed over the opening.

3.5 TEMPORARY SEDIMENT BASINS

- A. Temporary sedimentation basins shall be employed as required during construction. Sedimentation shall be periodically removed from the basins and from behind erosion and sedimentation control devices. The Contractor shall direct all possible site runoff to the temporary sedimentation basins.
- B. The temporary sedimentation basins shall be maintained from the start of construction until construction of the permanent detention basins is completed and perimeter areas are stabilized.

3.6 TEMPORARY MULCHING

- A. Apply temporary mulch to areas where rough grading has been completed but final grading is not anticipated to begin within 30 calendar days of the completion of rough grading or where final grading has been completed but seeding is not anticipated for 20 days.

1. Straw/Hay Mulch

Exposure Period: 6 months

Application Method: By hand or machine

Application Rate: 110 lbs/1,000 square feet.

2. Bark Chips/Shredded Bark

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Exposure Period: Less than one year

Application Method: By hand or machine

Application Rate: 6 cubic yards /1,000 square feet.

3.7 TEMPORARY EROSION CONTROL MATS

- A. Erosion control mats shall be furnished, installed, maintained, and later removed in ditches or swales, on embankment slopes, and excavation slopes at the locations shown on the Drawings in accordance with the manufacturer's recommendations.
- B. All areas shall be smooth graded and compacted. Remove all rocks, dirt clods, vegetation and other obstructions that may cause damage to the mats.
- C. Unroll mats parallel to the direction of water flow and lay flat against the ground. Overlap roll ends 1–2 feet with upslope mat on the top to prevent uplift of mat end by water flow. Overlay adjacent edges of mat by six inches. Extend mat 2–3 feet above the crest of steep slopes and anchor by excavating a 6-inch-deep trench, and secure end of mat in trench, backfill and compact. Secure mat to the ground using staples or pins furnished by manufacturer of mat.
- D. When no longer required, as determined by the Engineer, temporary erosion control mats shall become the property of the Contractor and be removed and properly disposed.
- E. Ground disturbances, including holes and depressions caused by the installation and removal of the temporary erosion control blanket shall be backfilled and repaired.

3.8 INSPECTIONS AND MAINTENANCE

- A. Contractor is responsible to maintain the sediment and erosion control features at all times throughout the project duration and until the completion certification and approval has been issued.
- B. Regular erosion and sediment control system inspections shall be conducted by Contractor throughout the project duration. At a minimum, Contractor shall conduct daily inspections and maintain erosion control systems in good operating condition. Report the results of the inspection and the recommended maintenance and/or repair requirements to Engineer.
- C. Additional inspections may be required and/or directed prior to, or immediately following, a storm event >0.1 inches. Repairs shall be made as necessary.
- D. In the event that the sedimentation and erosion control measures employed by Contractor prove to be inadequate as determined by the Engineer, Contractor shall adjust operations to the extent necessary to prevent erosion and sediment transport.
- E. Surface water shall be pumped to maintain excavations free of water. Comply with applicable requirements of the Connecticut Department of Environmental Protection, specifically those requirements related to the management of stormwater and dewatering wastewaters associated with construction activities.
- F. Hay bales and/or silt fences.
 - 1. Remove accumulated sediment once it builds up to one-half of the height of the bale or fabric.

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2. Replace damaged or degraded bales as necessary or when directed by the Engineer.
 3. Replace damaged fabric, or patch with a 2-ft minimum overlap. Overlaps may only be made at fence posts.
 4. Make other repairs as necessary to ensure that the bales/fence is filtering all runoff.
- G. Erosion Control Mats shall be inspected at least once a week. Areas where the mat has become dislodged from the soil surface or become torn shall be re-graded and re-seeded as necessary and the mat re-installed. When repetitive failures occur at the same location review conditions and modify erosion control measures to reduce failure rate. Temporary erosion control blanket damaged during the progress of work or resulting from the Contractor's vehicles, equipment, or operations shall be repaired or replaced at the expense of the Contractor.
- H. Clean catch basin inlet sediment control devices in accordance with manufacturer's guidelines.
- I. Any catch basins that collect sediment as a result of Contractor's work shall be thoroughly cleaned out by Contractor.

END OF SECTION

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SECTION 102800 – TOILET AND BATH ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01 Section "Summary", Paragraph 1.1A, entitled "Related Documents."

1.2 SUMMARY

- A. Section Includes:

- 1. Private-use bathroom accessories.

- B. Related Requirements:

- 1. Division 22 Section "Plumbing" for under-lavatory guards and shower units and accessories.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include the following.

- 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
 - 2. Include anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
 - 3. Features that will be included for Project.

- B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.

- 1. Identify locations using room designations indicated on Drawings.
 - 2. Identify products using designations indicated on Drawings.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For toilet and bath accessories to include in maintenance manuals.

1.5 QUALITY ASSURANCE

- A. Source Limitations: For products listed together in the same articles in Part 2, provide

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products of same manufacturer unless otherwise approved by Architect.

- B. Accessibility: Comply with applicable provisions in the 2010 ADA Standards and ICC/ANSI A117.1.

1.6 COORDINATION

- A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.
- B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Stainless Steel: ASTM A666, Type 304, 0.0312-inch- minimum nominal thickness unless otherwise indicated.
- B. Steel Sheet: ASTM A1008/A1008M, Designation CS (cold rolled, commercial steel), 0.0359-inch- minimum nominal thickness.
- C. Fasteners: Screws, bolts, and other devices of same material as accessory unit, and tamper and theft resistant where exposed, and of stainless or galvanized steel where concealed.

2.2 PRIVATE-USE BATHROOM ACCESSORIES

- A. Basis-of-Design Product: subject to compliance with requirements, provide products indicated or a comparable product by one of the following:
 - 1. American Standard.
 - 2. Delta.
- B. Toilet Tissue Dispenser:
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide **Kohler; Riff Tissue Holder K-27413**.
 - 2. Description: Single-roll dispenser.
 - 3. Mounting: Surface Mounted.
 - 4. Capacity: Designed for up to 4-1/2- diameter tissue rolls.
 - 5. Material and Finish: To be selected by Architect from manufacturers full range.
- C. Grab Bar:

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1. Basis-of-Design Product: **Bobrick; B-6806.99 Series.**
2. Mounting: Flanges with concealed fasteners.
3. Material: Stainless Steel, 18 gauge.
 - a. Finish: Smooth, No. 4, satin finish on ends and slip-resistant texture in grip area.
 - b. Outside Diameter: 1-1/2 inches.
 - c. Configuration and Length- Provide in straight lengths, in sizes indicated.

D. Medicine Cabinet:

1. Basis-of-Design Product: Subject to compliance with requirements, provide **Kohler; Verdera Medicine Cabinet K-99003-SCF.**
2. Mounting: Recessed.
3. Size: 20 inches by 26 inches.
4. Door: Framed mirror door concealing storage cabinet equipped with continuous hinge and spring-buffered, rod-type stop and magnetic door catch.
5. Shelves: Two, adjustable.
6. Material and Finish: Anodized aluminum construction, mirrored door with silver-finish frame, mirrored interior, and two way adjustable hinges with 108 degree opening.

E. Mirror Unit:

1. Basis-of-Design Product: **Kohler; Tresham Framed Mirror K-99650.**
2. Mirror: No. 1 quality, 1/4-inch select float glass, with all edges protected by plastic filler strips. Provide protective backing of full-size, shock absorbing, water resistant, nonabrasive, 1/8-inch thick polyethylene padding.
3. Size: 23-1/2 x 32 inches.

F. Private-Use Towel Bar:

1. Basis-of-Design Product: Subject to compliance with requirements, provide **Kohler; Riff Towel Bar K-27409 / K-27410.**
2. Description: Single Towel Bar.
3. Mounting: Concealed wall plates.
4. Length: 18 inches and 24 inches as indicated.
5. Material and Finish: To be selected by Architect from Manufacturers full range.

G. Towel Ring:

1. Basis-of-Design Product: **Kohler; Riff Towel Ring K-27412.**
2. Description: Towel Ring.
3. Mounting: Concealed Wall Plates.
4. Material and Finish: To be selected by Architect from Manufacturers full range.

H. Robe Hook:

1. Basis-of-Design Product: **Kohler; Riff Double Robe Hook K-27411.**
2. Mounting: Surface Mounted, with concealed tenon plate.
3. Material and Finish: to be selected by architect from manufacturers full range.

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- I. Shower Curtain Rod:
 - 1. Basis-of-Design Product: **Kohler; Expanse.**
 - 2. Description: Curved shower curtain rod.
 - 3. Mounting Flanges: Concealed.
 - 4. Finish: No. 4 (satin) stainless steel.

2.3 FABRICATION

- A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.
- B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION

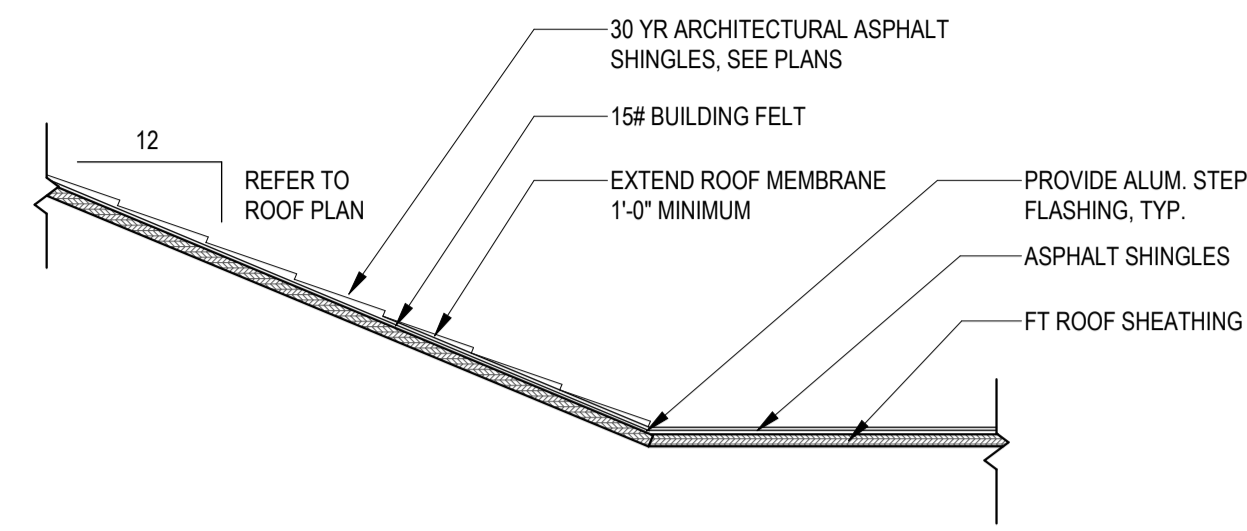
- A. Install accessories in accordance with manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
- B. Grab Bars: Install to withstand a downward load of at least 250 lbf, when tested according to method in ASTM F 446.
- C. Shower Seats: Install to comply with specified structural-performance requirements.

3.2 ADJUSTING AND CLEANING

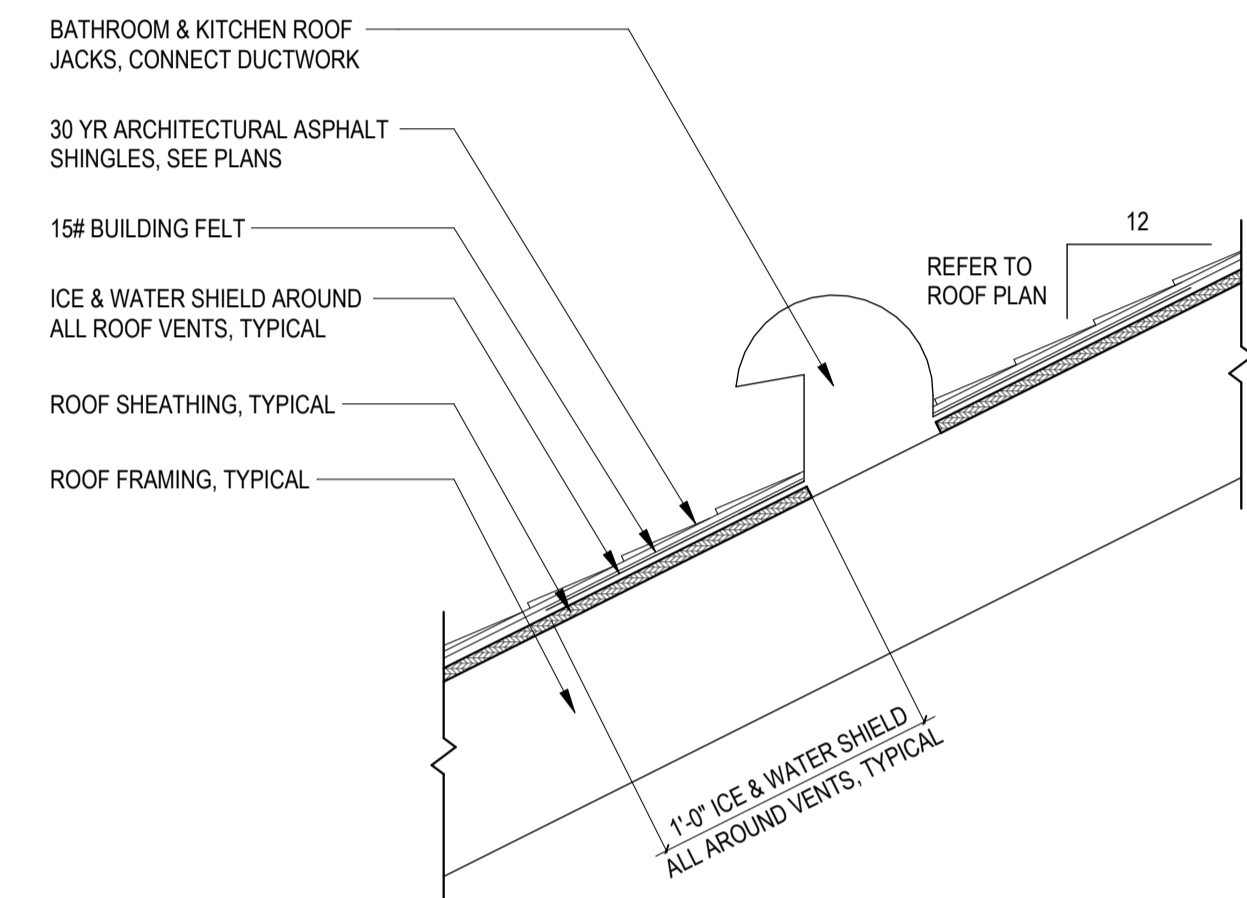
- A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.
- B. Remove temporary labels and protective coatings.
- C. Clean and polish exposed surfaces in accordance with manufacturer's written instructions.

END OF SECTION 102800

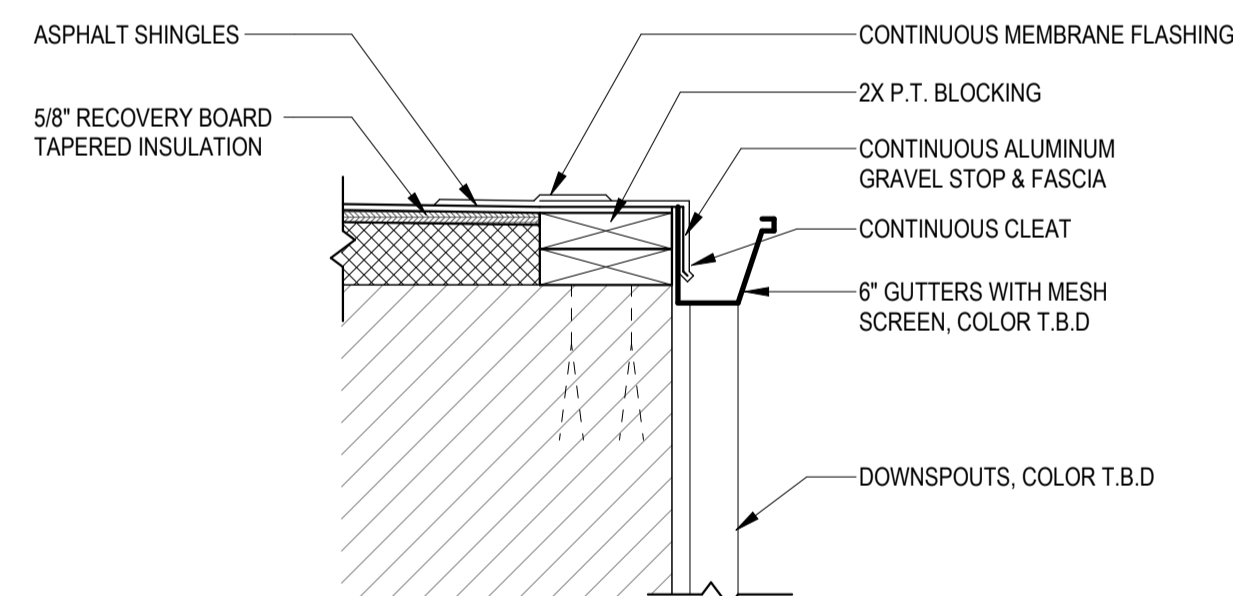
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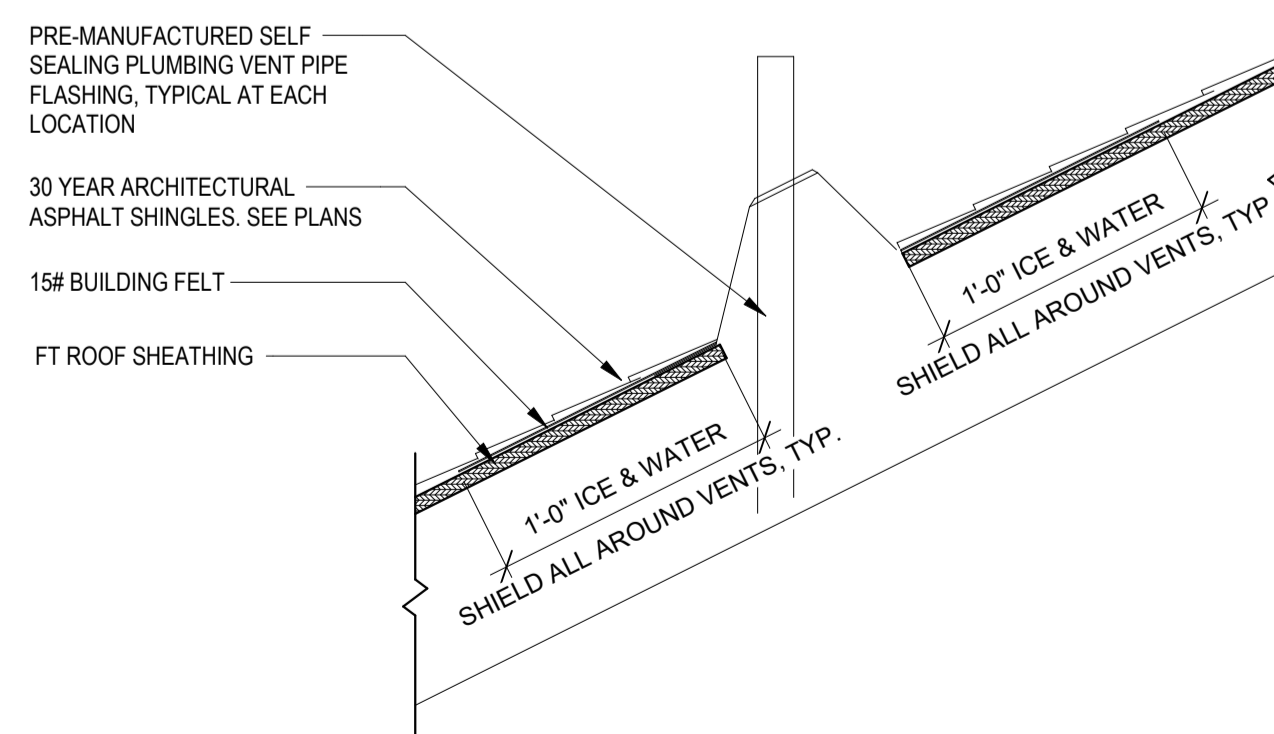
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1 1/2" = 1'-0"



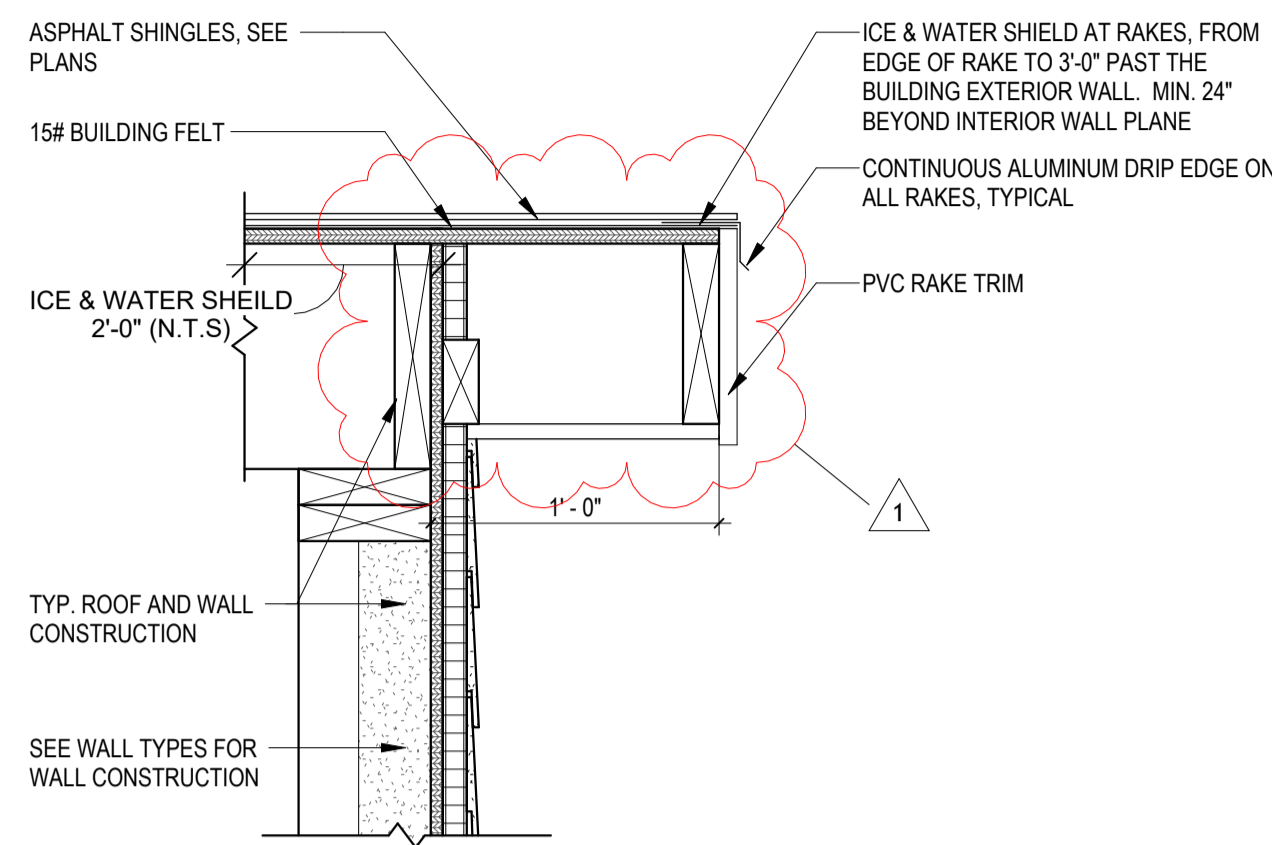
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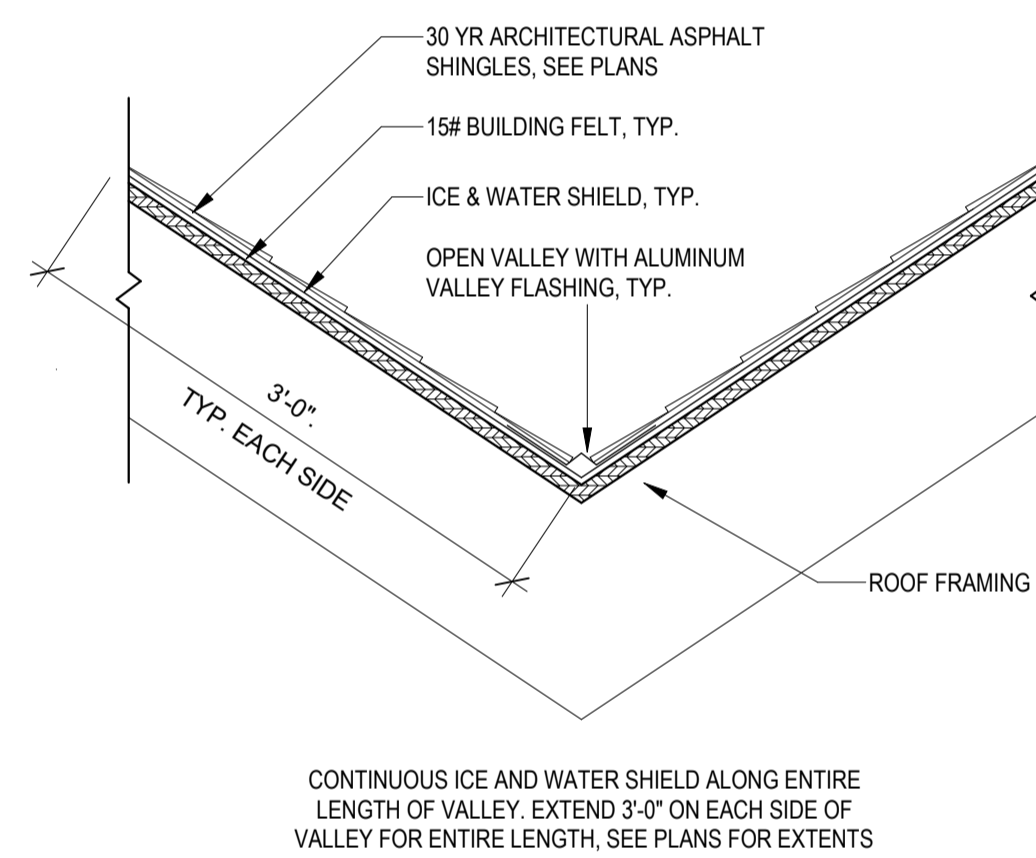
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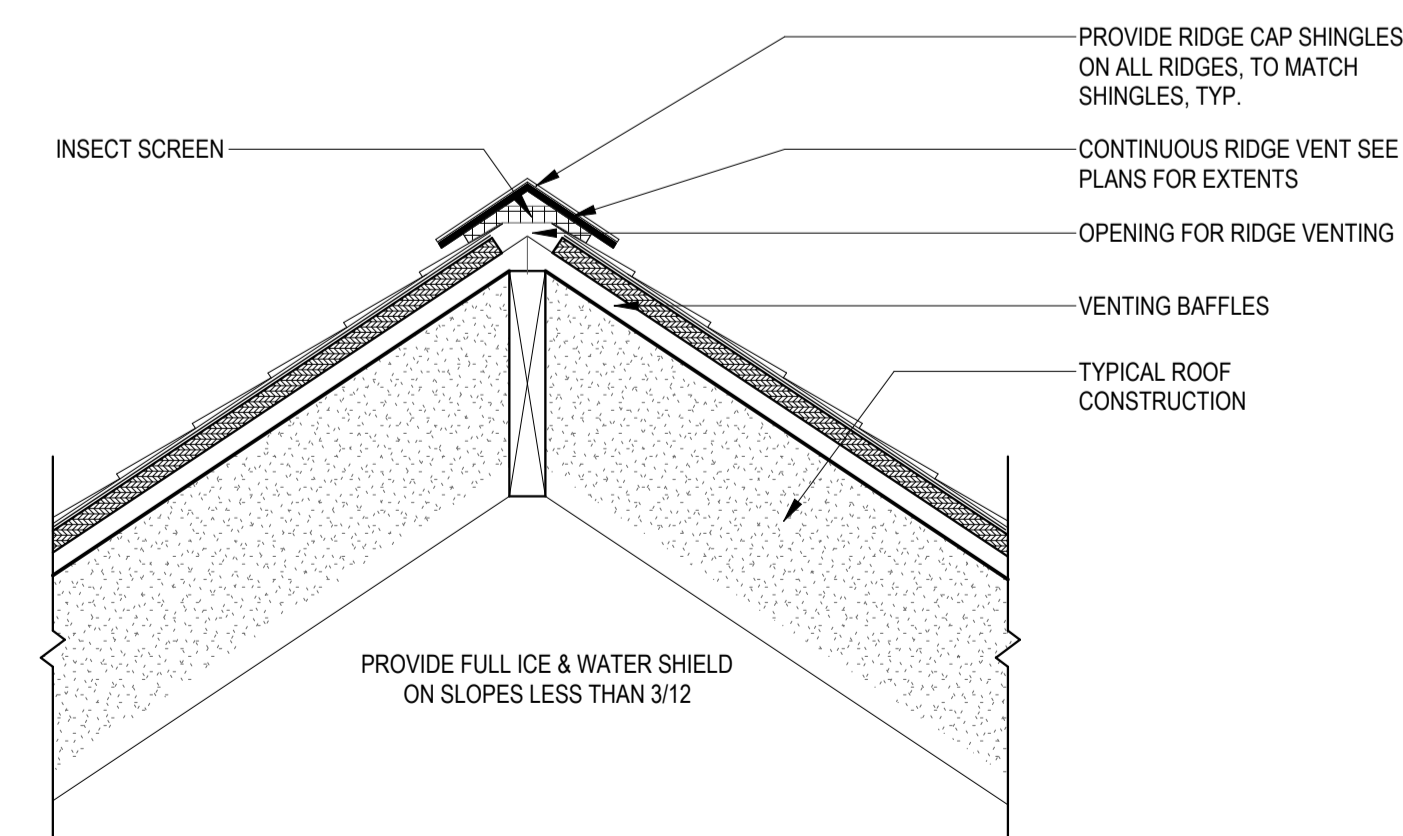
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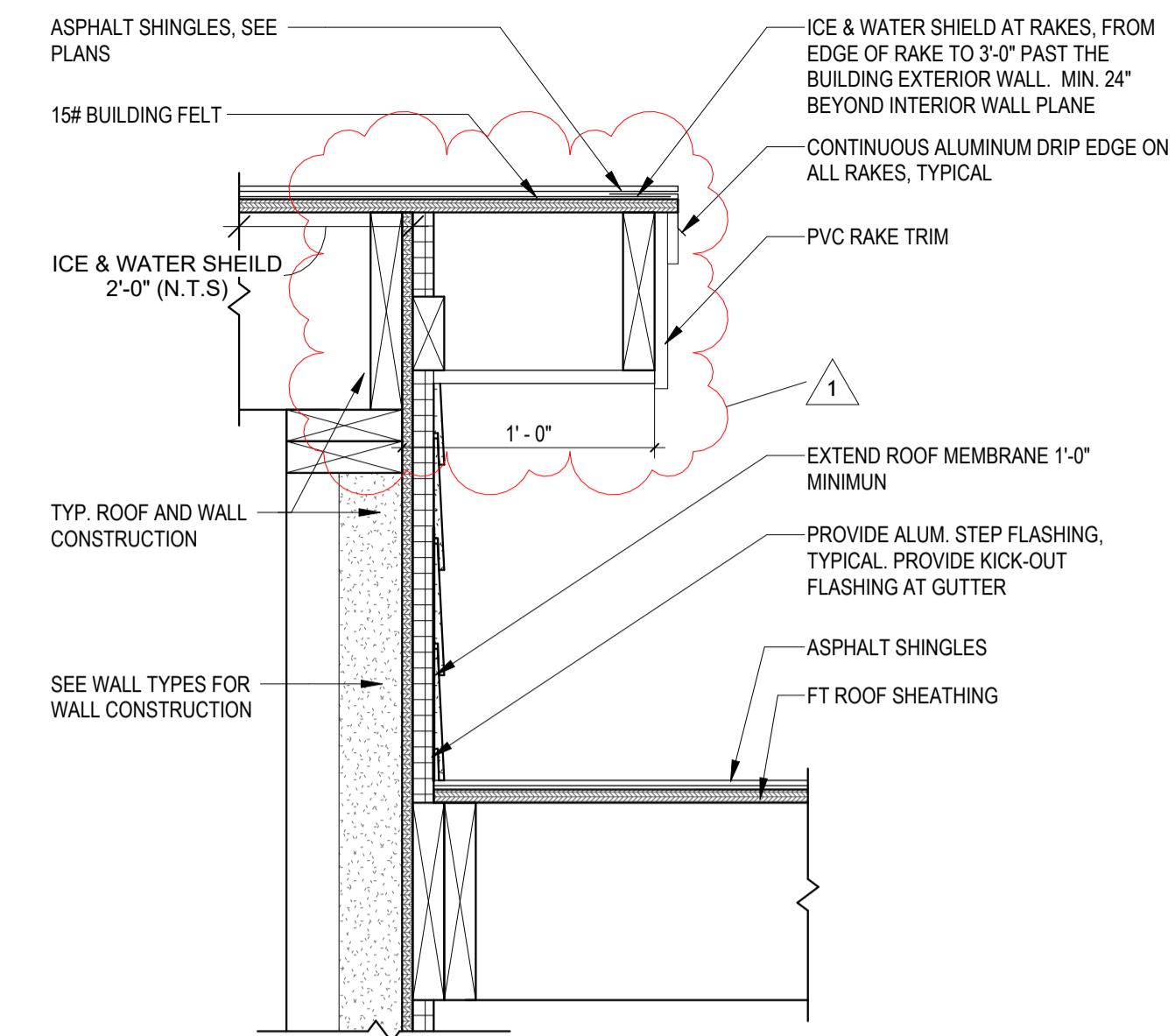
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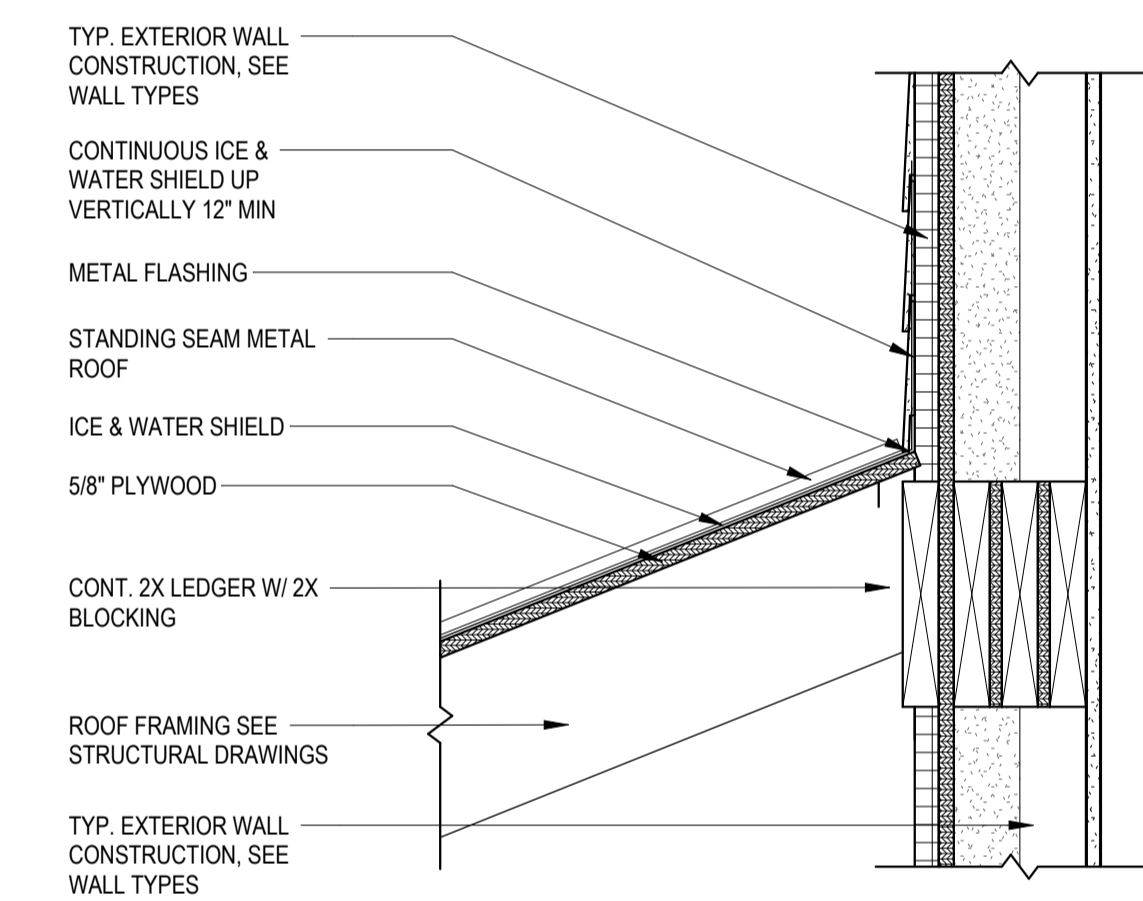
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1 1/2" = 1'-0"



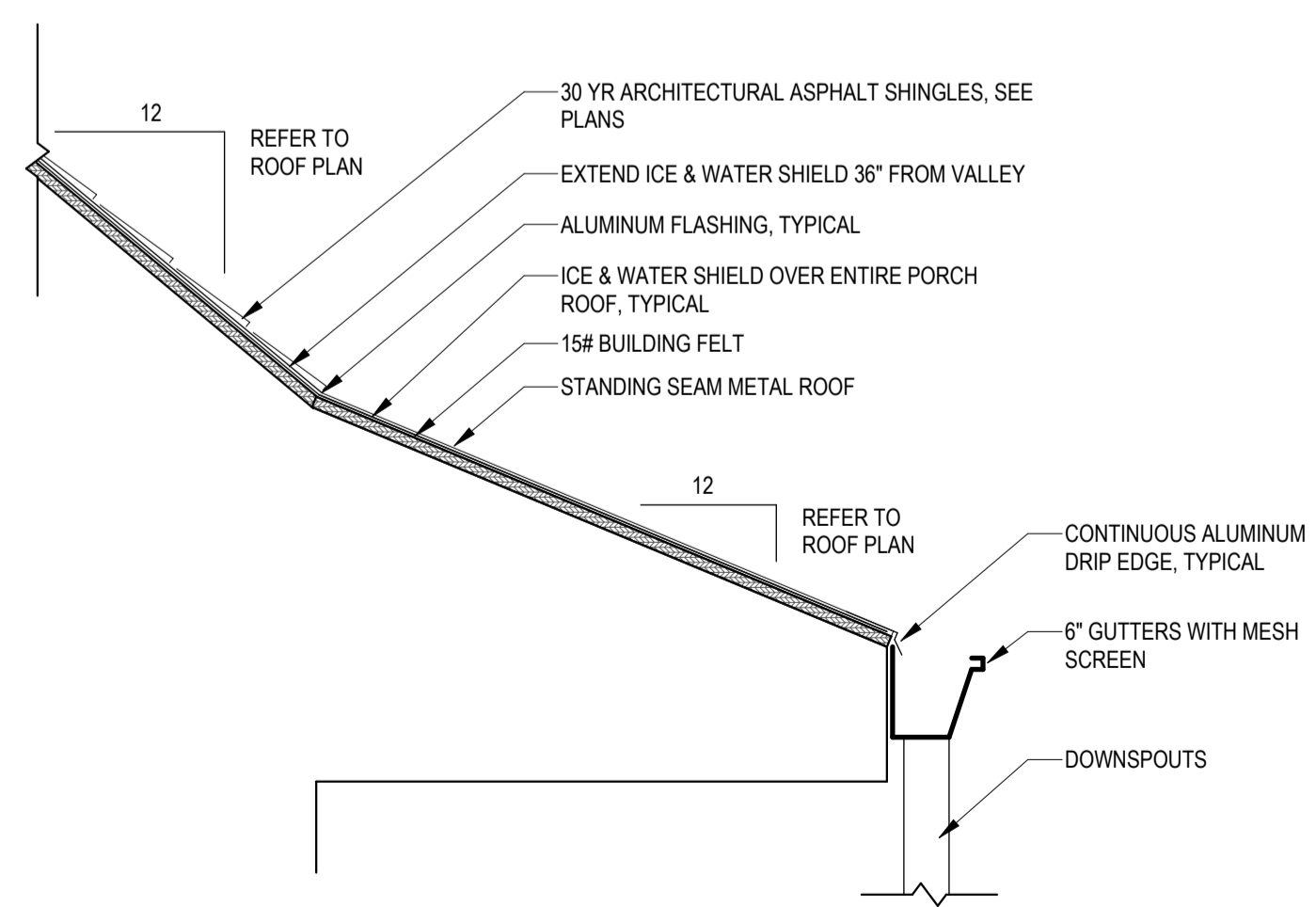
4
A1.4
1 1/2" = 1'-0"



3
A1.4
1 1/2" = 1'-0"



2
A1.4
1 1/2" = 1'-0"



1
A1.4
1 1/2" = 1'-0"

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NEW HOUSING DEVELOPMENT
AT:

RIVER BEND

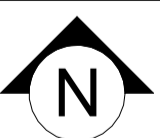
LITCHFIELD, CT

Project #: 2386

Revision 1 -
ADDENDUM #3 5/28/2026

Revisions

Issue Dates:



BID DOCUMENTS
APRIL 28, 2026

ROOF DETAILS

A1.4

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NEW HOUSING DEVELOPMENT
 AT:

RIVER BEND

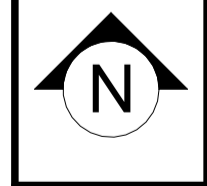
LITCHFIELD, CT

Project #: 2386

Revision 1 - 5/28/2026
 ADDENDUM #3

Revisions

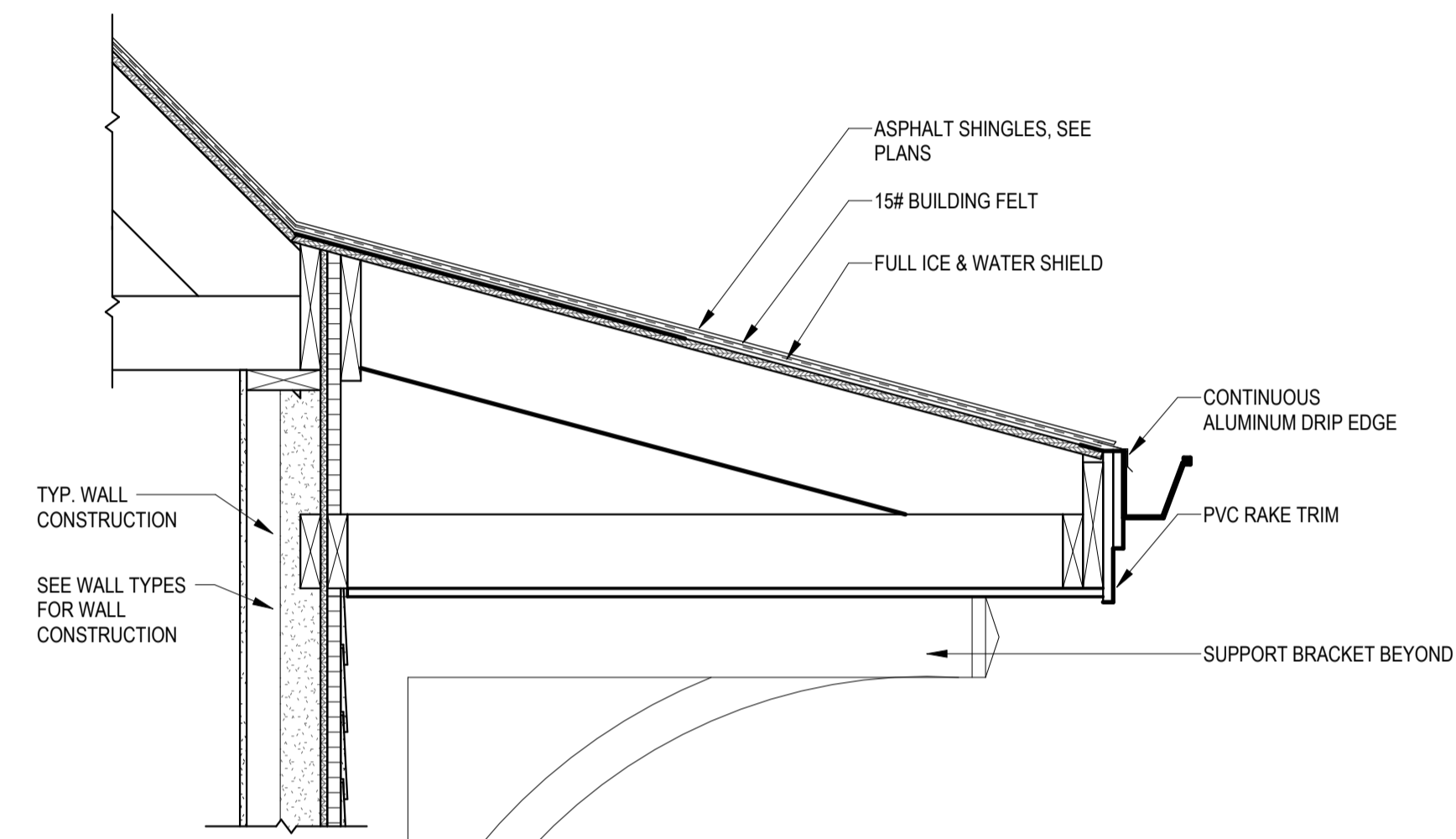
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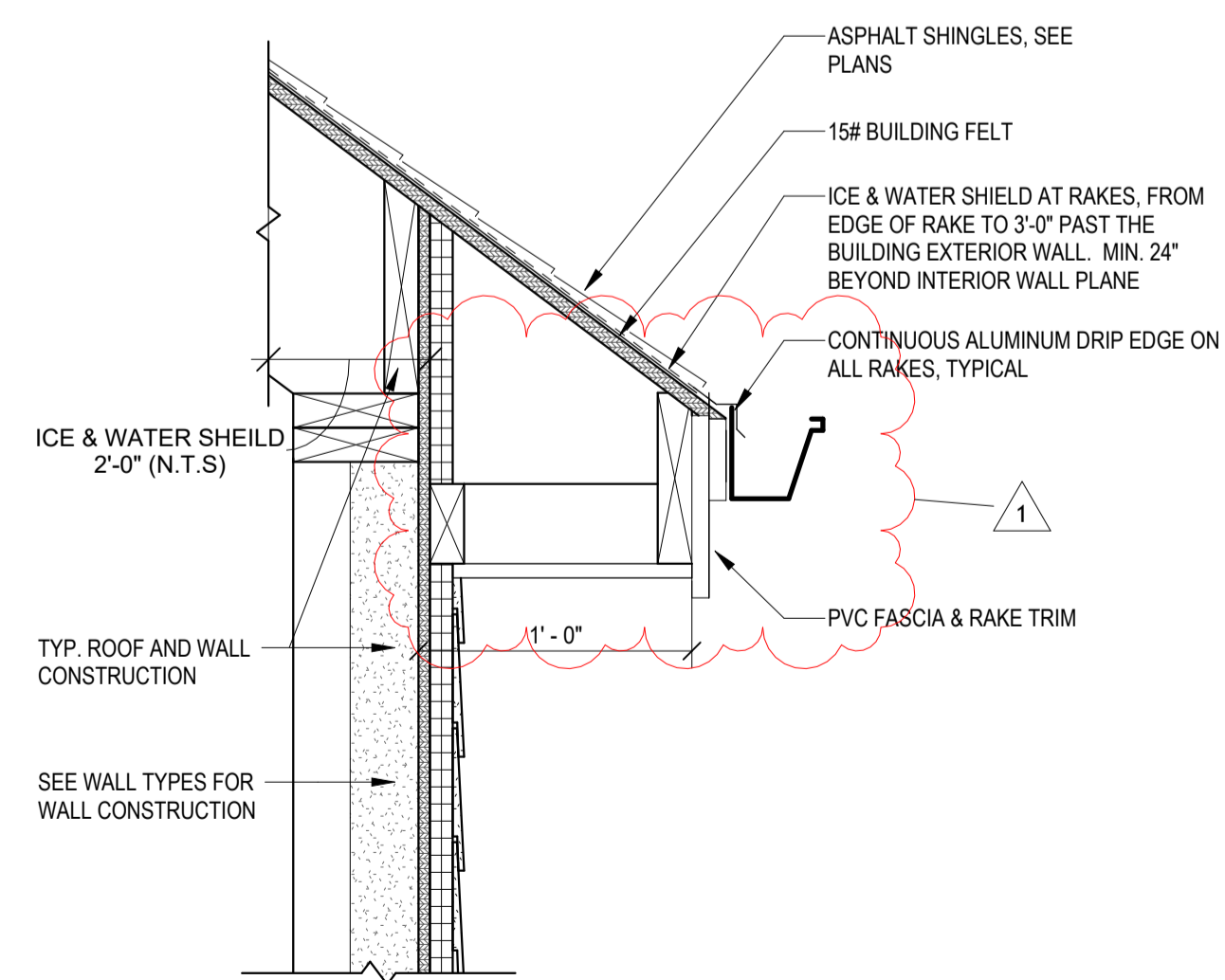
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 APRIL 28, 2026

ROOF DETAILS

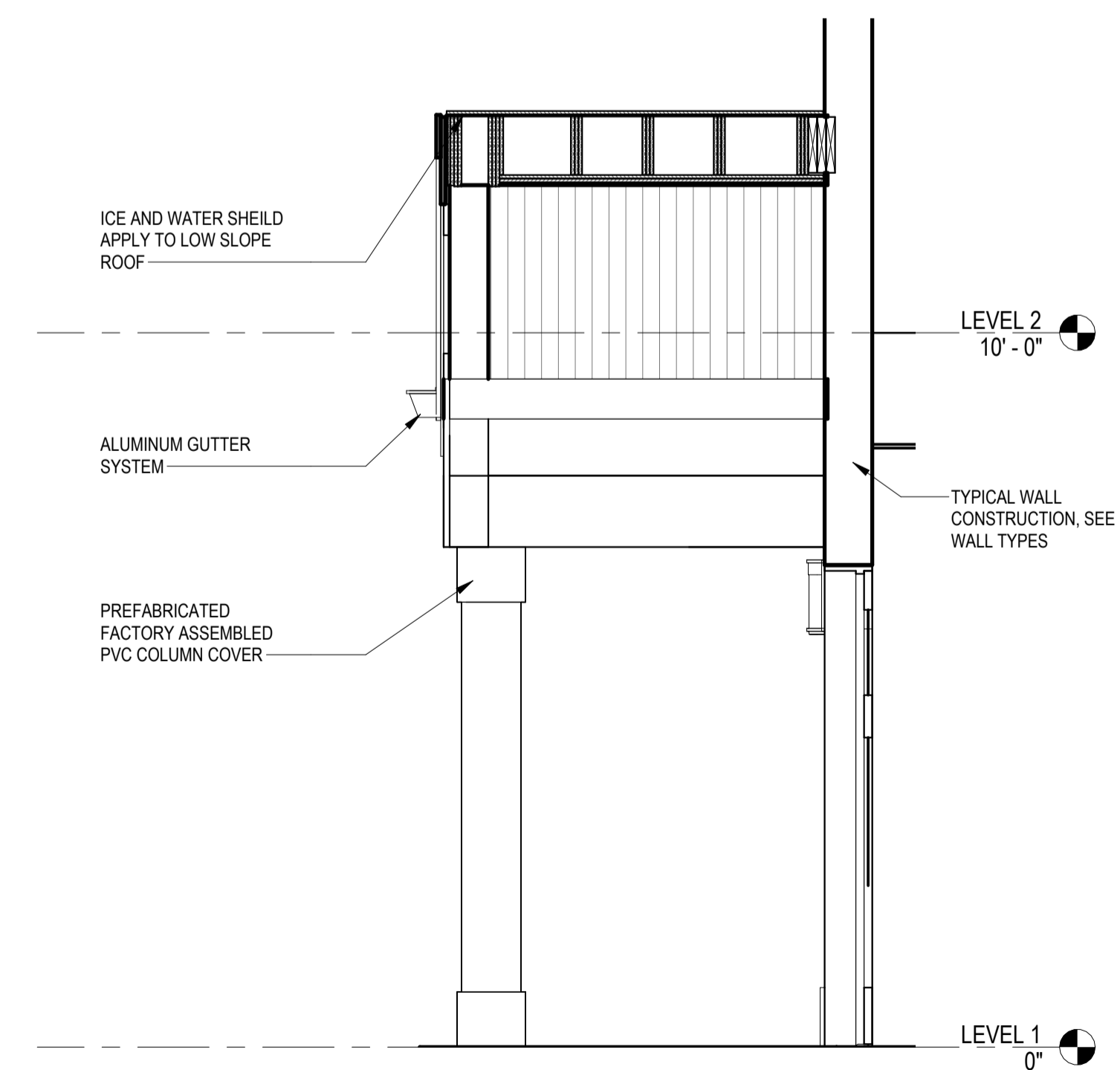
A1.5



4 CANOPY ROOF OVERHANG
 A1.5 1" = 1'-0"



3 TYPICAL EAVE DETAIL
 A1.5 1 1/2" = 1'-0"



1 PORCH ROOF SECTION 1
 A1.5 1/2" = 1'-0"

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NEW HOUSING DEVELOPMENT
 AT:

RIVER BEND

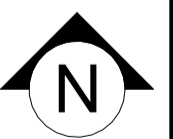
LITCHFIELD, CT

Project #: 2386



1
 A4.0
 OVERALL BUILDING SECTION
 1/4" = 1'-0"

Revision 1 - ADDENDUM #3	5/28/2026
Revisions	
Issue Dates:	

 BID DOCUMENTS
 APRIL 28, 2026

BUILDING SECTIONS
A4.0

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NEW HOUSING DEVELOPMENT
AT:

RIVER BEND

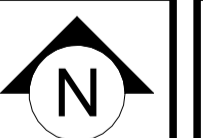
LITCHFIELD, CT

Project #: 2386

Revision 1 -
ADDENDUM #3 5/28/2026

Revisions

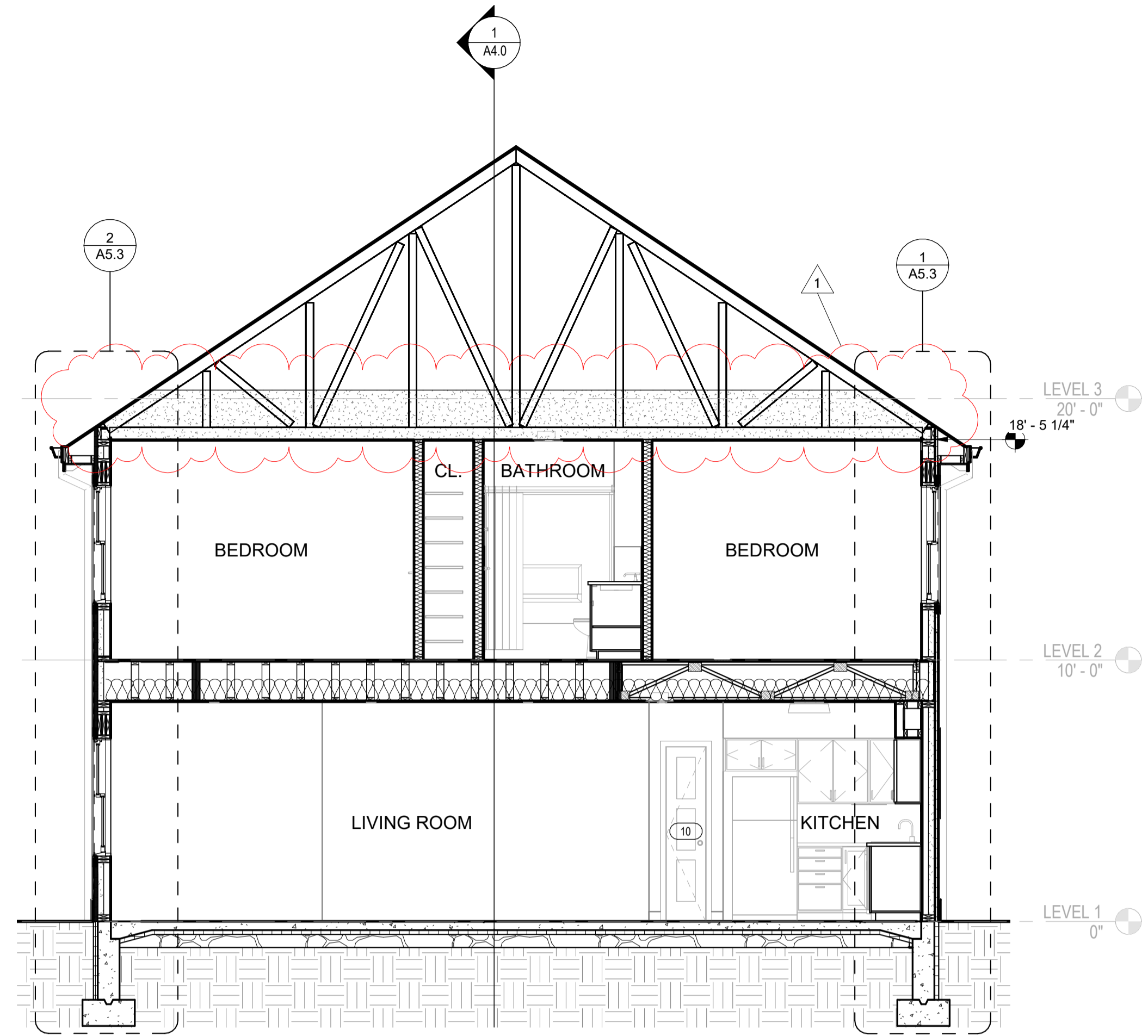
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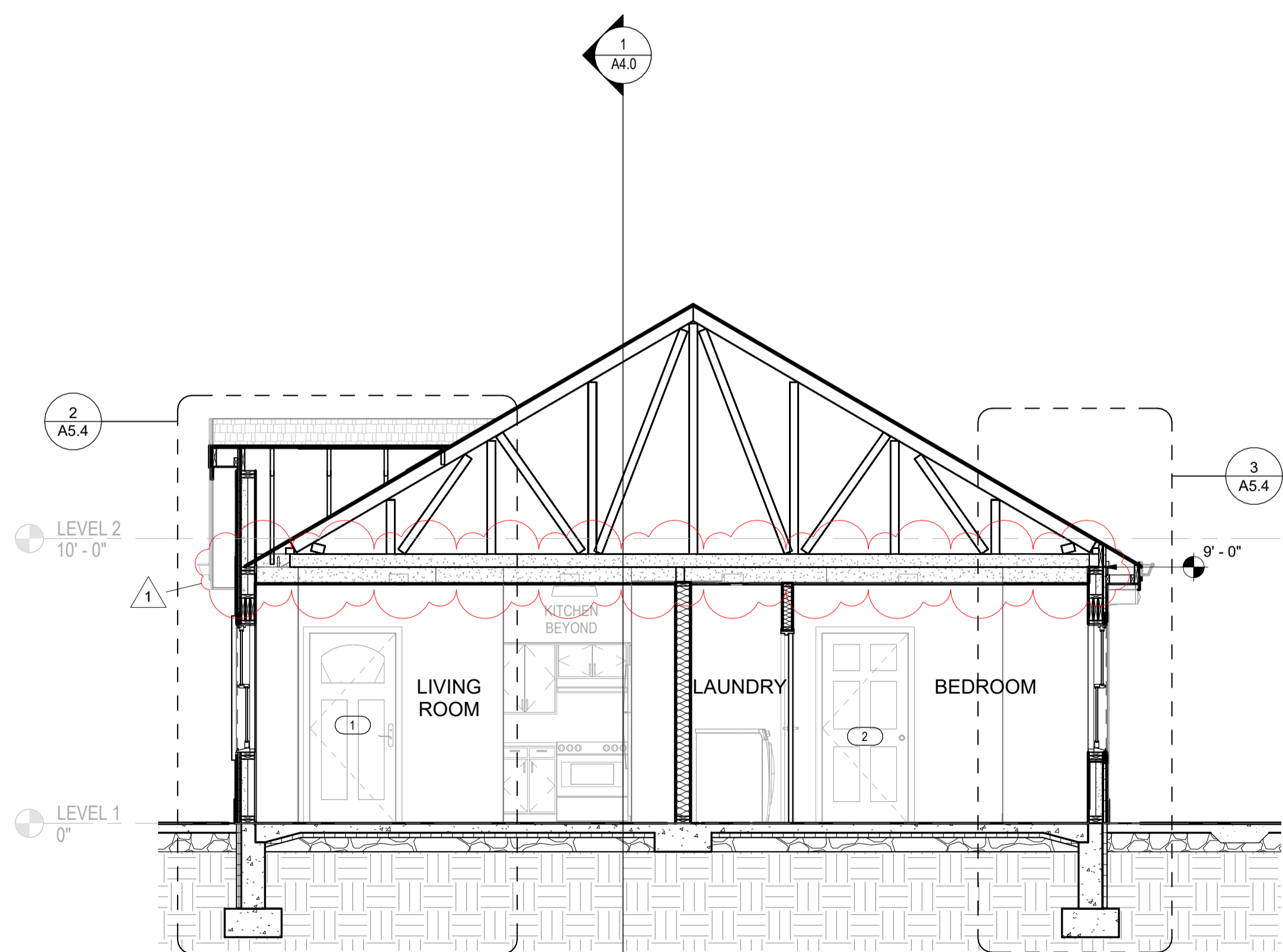
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APRIL 28, 2026

BUILDING SECTIONS

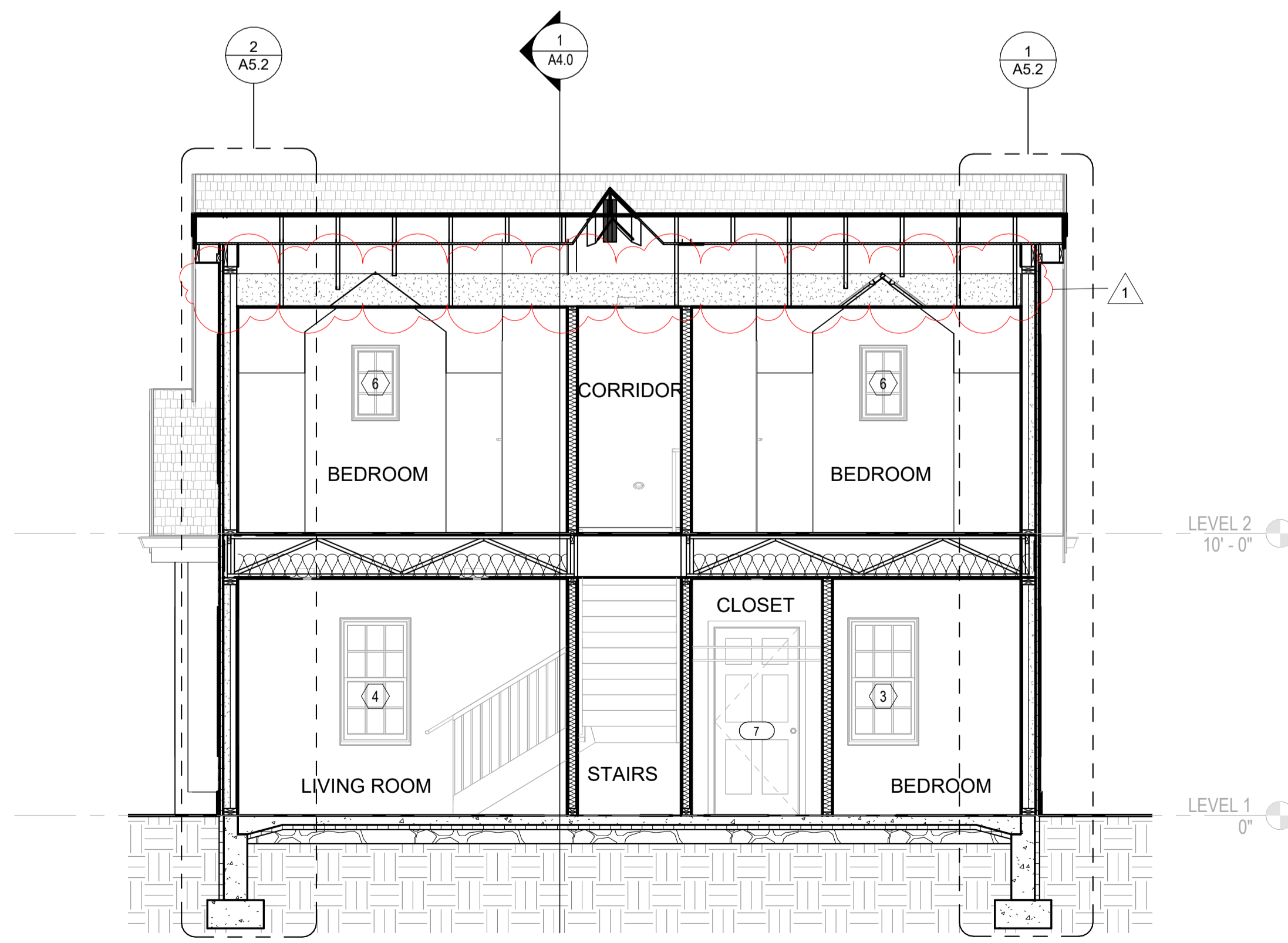
A4.1



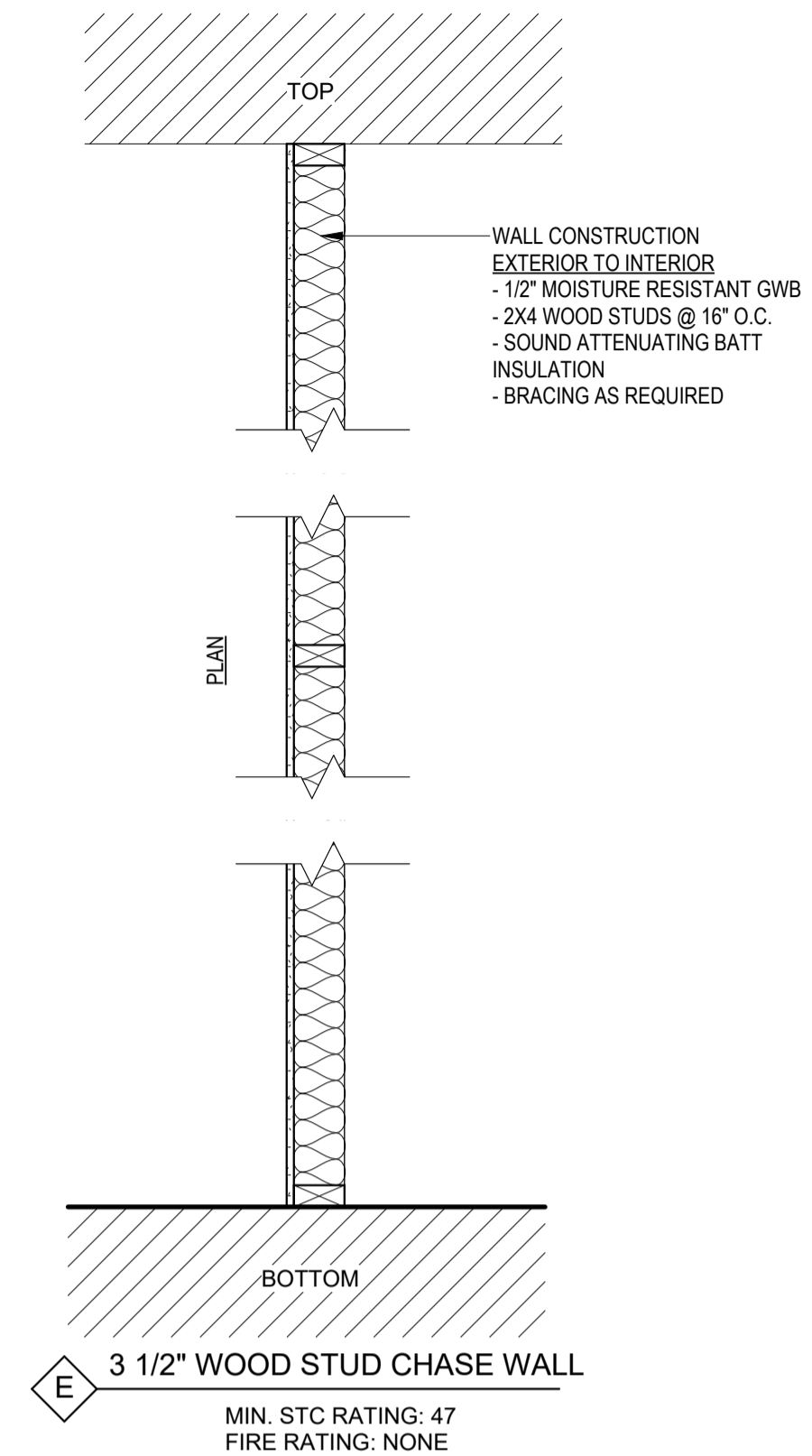
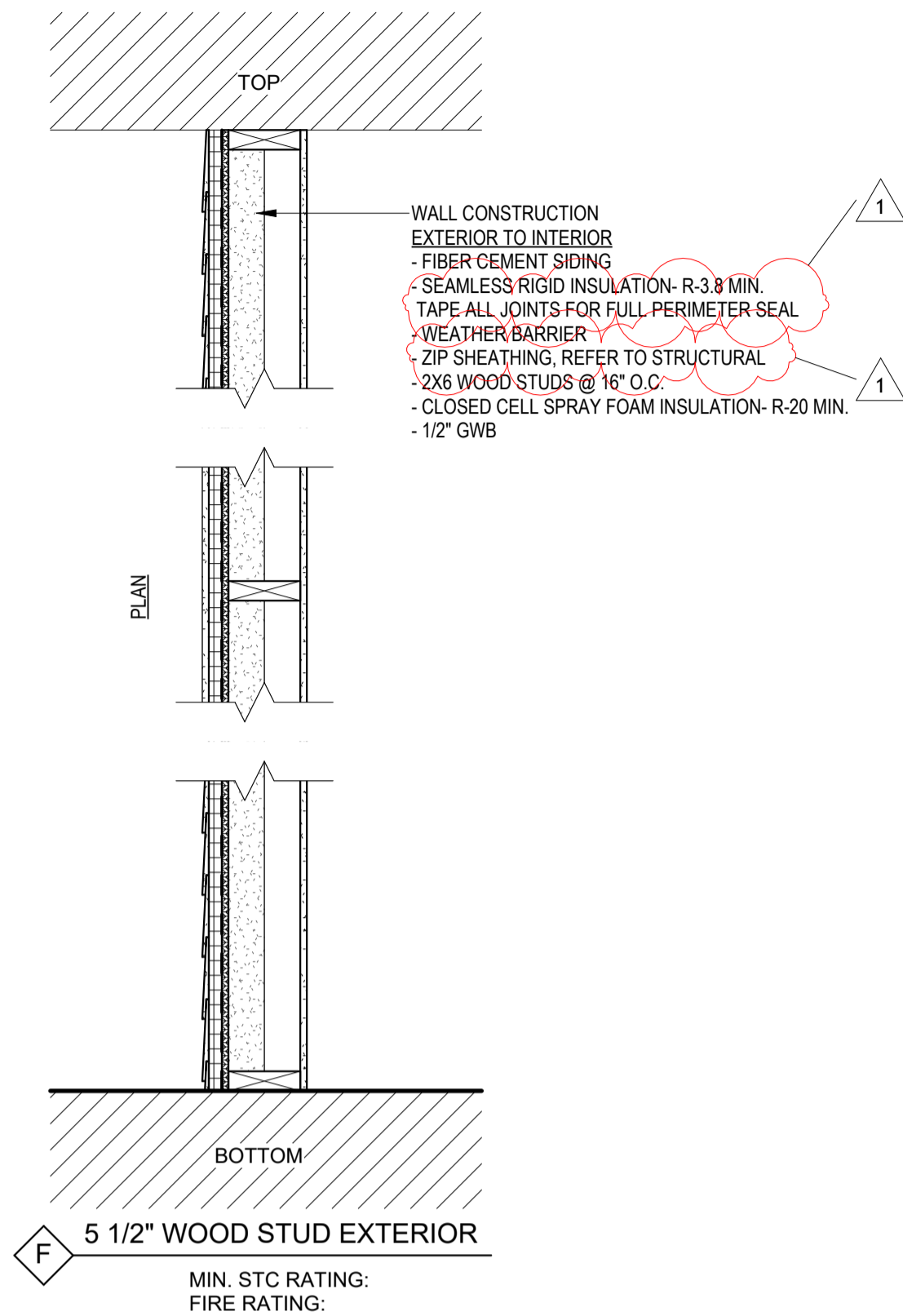
2 SECTION THROUGH UNIT TYPE 2
A4.1 1/4" = 1'-0"



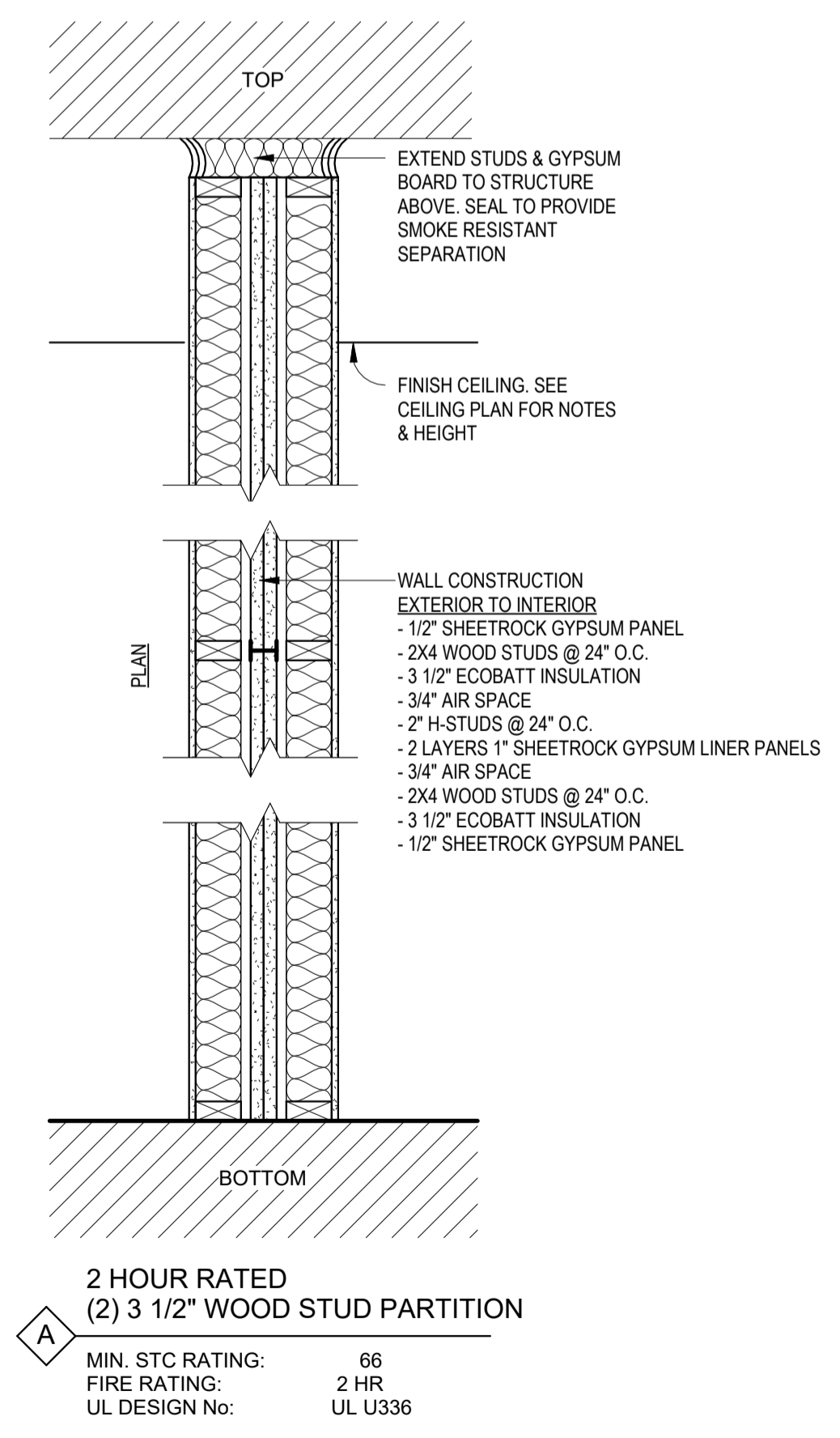
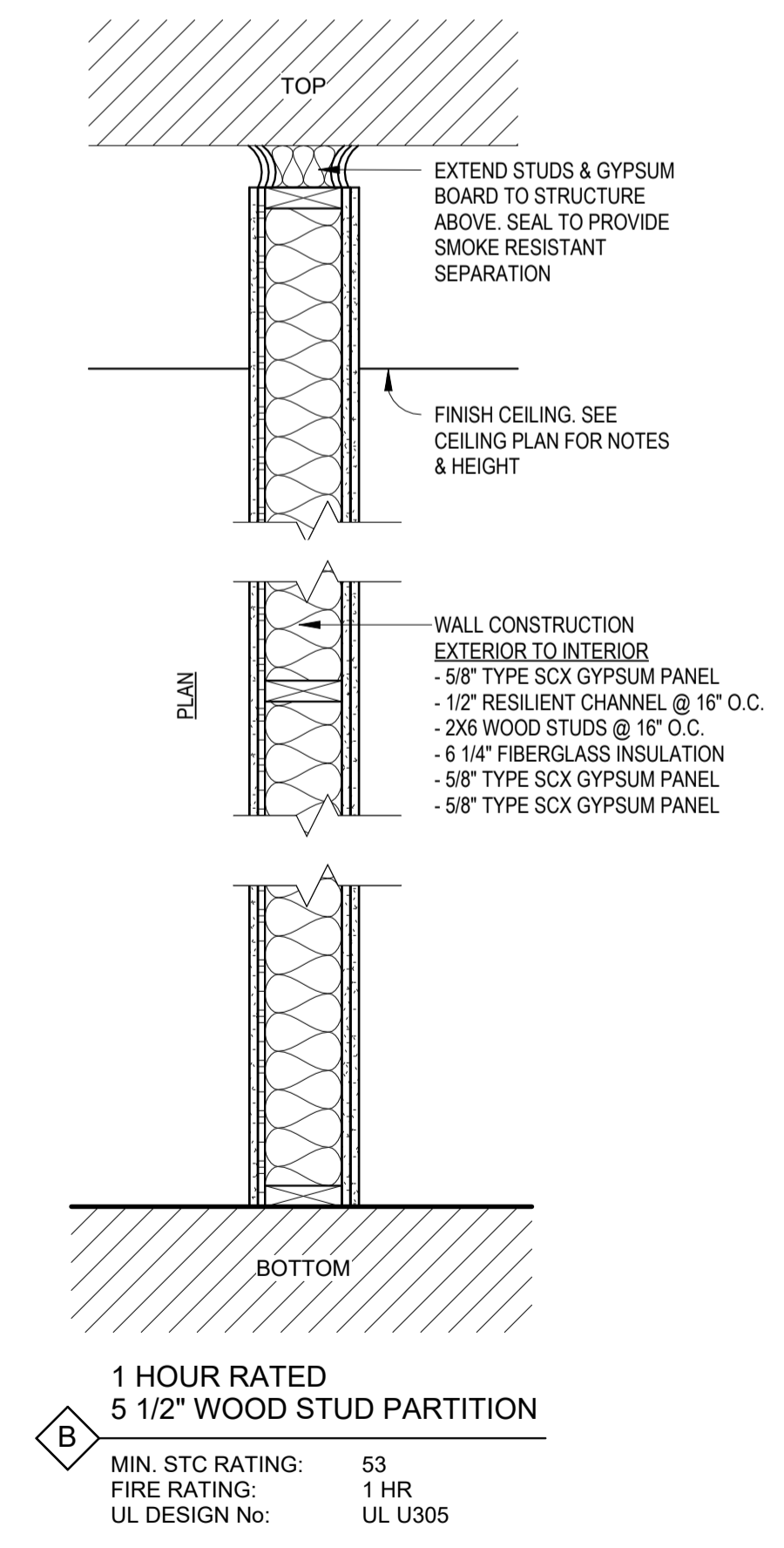
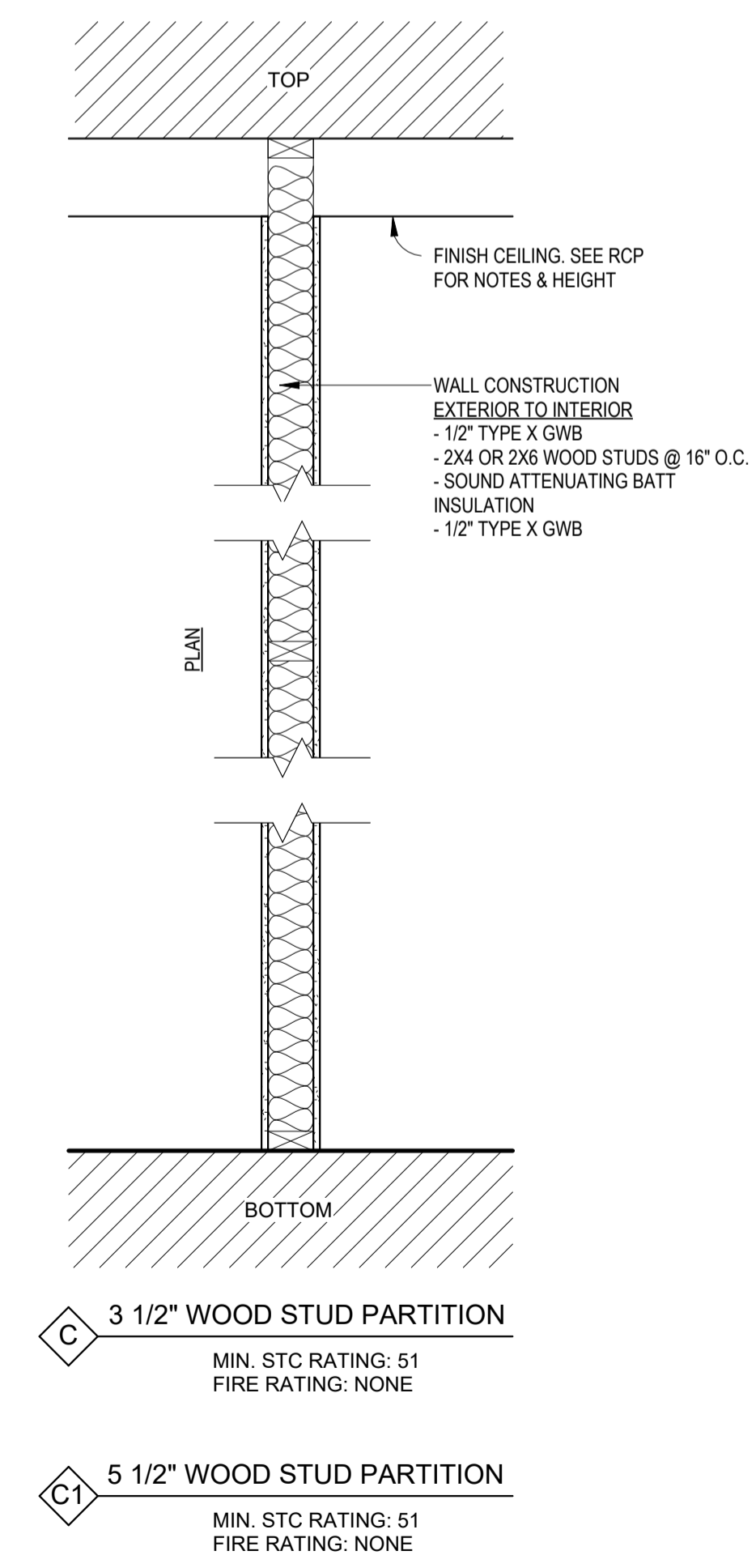
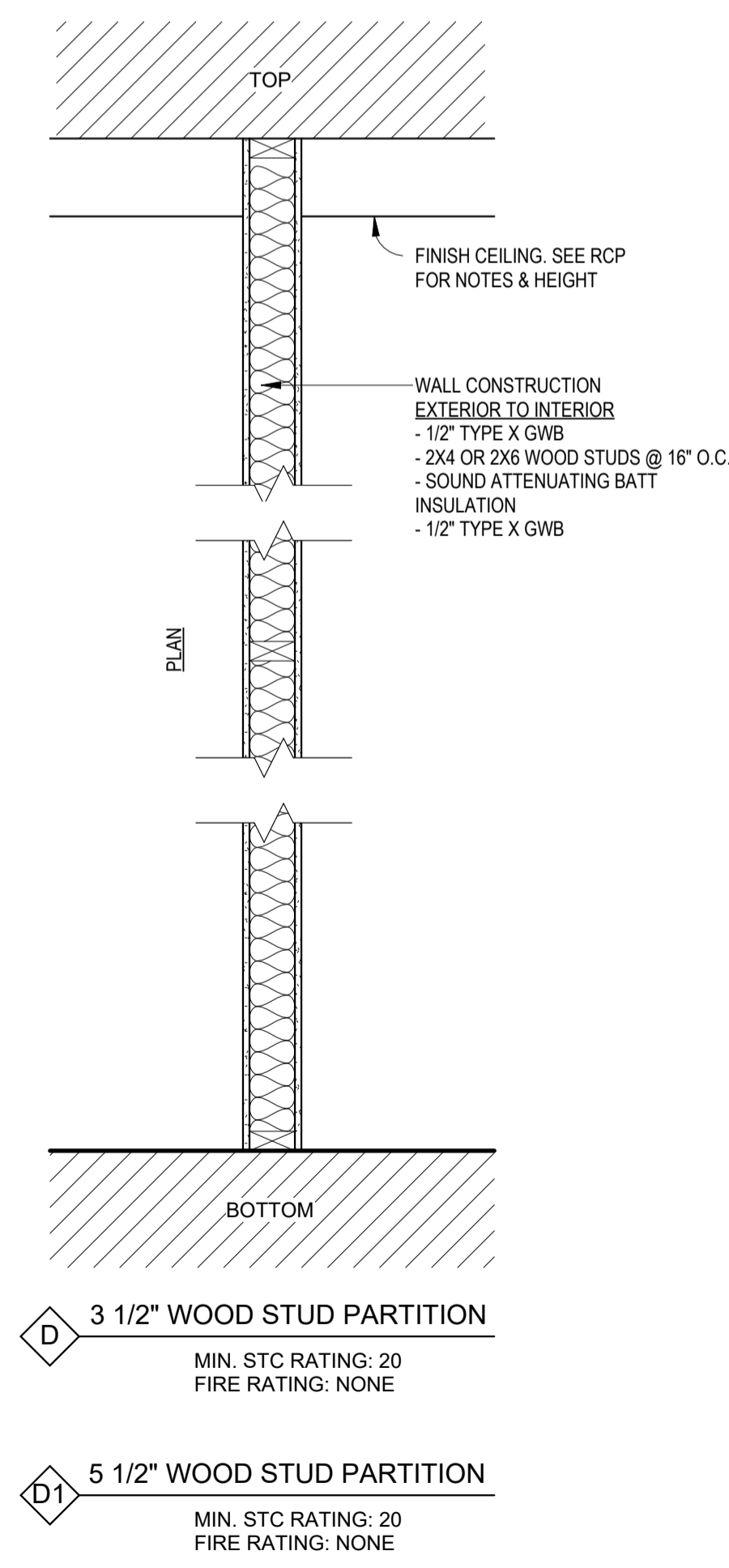
3 SECTION THROUGH UNIT TYPE 3
A4.1 1/4" = 1'-0"



1 SECTION THROUGH UNIT TYPE 1
A4.1 1/4" = 1'-0"



- WALL NOTES**
1. FIRECODE GYPSUM BOARD IN A ONE OR TWO HOUR RATED PARTITION MUST BEAR THE U.L CLASSIFICATION.
 2. ALL FIRE AND SMOKE RESISTANT SEPARATIONS ARE TO EXTEND OR BE EXTENDED TO THE UNDERSIDE OF FLOOR OR ROOF DECK ABOVE, TYPICAL.
 3. FOR SMOKE RESISTANT SEPARATIONS, PROVIDE FIRE SAFING AND SEALANT AT FLOOR ROOF DECK AND ALL PENETRATIONS TO PREVENT THE PASSAGE OF SMOKE.
 4. FOR ALL FIRE RATED PARTITIONS, PROVIDE FIRE SAFING AND SEALANT AT FLOOR, ROOF DECK AND ALL PENETRATIONS TO PREVENT PASSAGE OF SMOKE. THE FIRE SAFING AND SEALANT SYTEM MUST MAINTAIN THE RATING OF THE SEPARATION.
 5. AT ALL NON-RATED PARTITIONS FILL ALL THE VOIDS WHERE PARTITIONS MEET THE STRUCTURE ABOVE WITH BATT INSULATION.
 6. AT ALL NON-RATED PARTITIONS FILL ALL THE VOIDS BETWEEN PIPES, ELECTRICAL CONDUITS, DUCTWORK, ETC. WHERE THEY PENETRATE WALLS, WITH BATT INSULATION.
 7. PROVIDE SMOKE DAMPERS AT ALL MECHANICAL PENETRATIONS THROUGH ONE HOUR RATED SMOKE BARRIERS.
 8. PROVIDE FIRE DAMPERS AT ALL MECHANICAL PENETRATION THROUGH TWO HOUR FIRE RATED PARTITIONS.
 9. AT ALL NON-RATED PARTITIONS AND PARTITIONS WITH NO S.T.C REQUIREMENTS, EXTEND SHEATHING TO THE FINISHED CEILING CONSTRUCTION, TYPICAL.
 10. SEE STRUCTURAL DRAWINGS FOR SHEATHING REQUIREMENTS



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NEW HOUSING DEVELOPMENT AT:

RIVER BEND

LITCHFIELD, CT

Project #: 2386

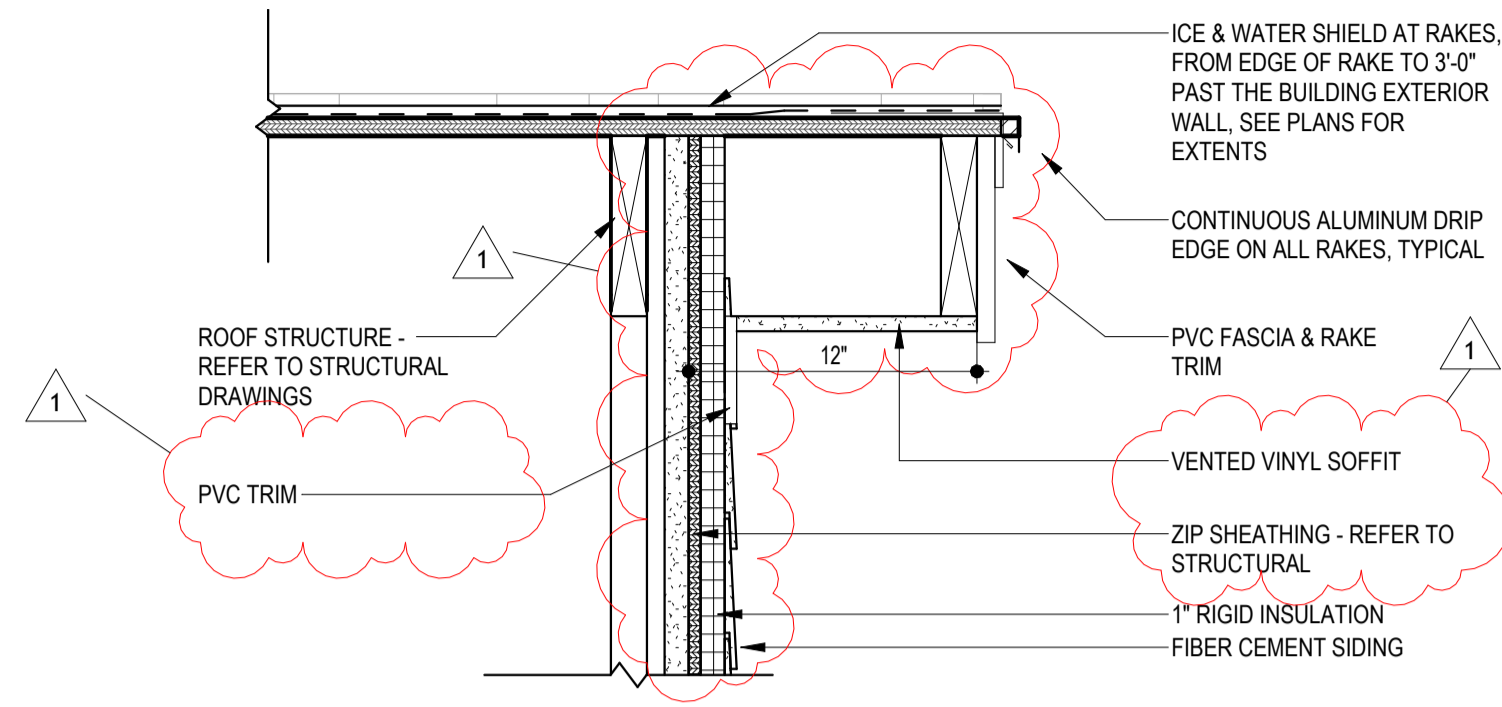
Revision 1 -	5/28/2026
ADDENDUM #3	
Revisions	
Issue Dates:	

BID DOCUMENTS
APRIL 28, 2026

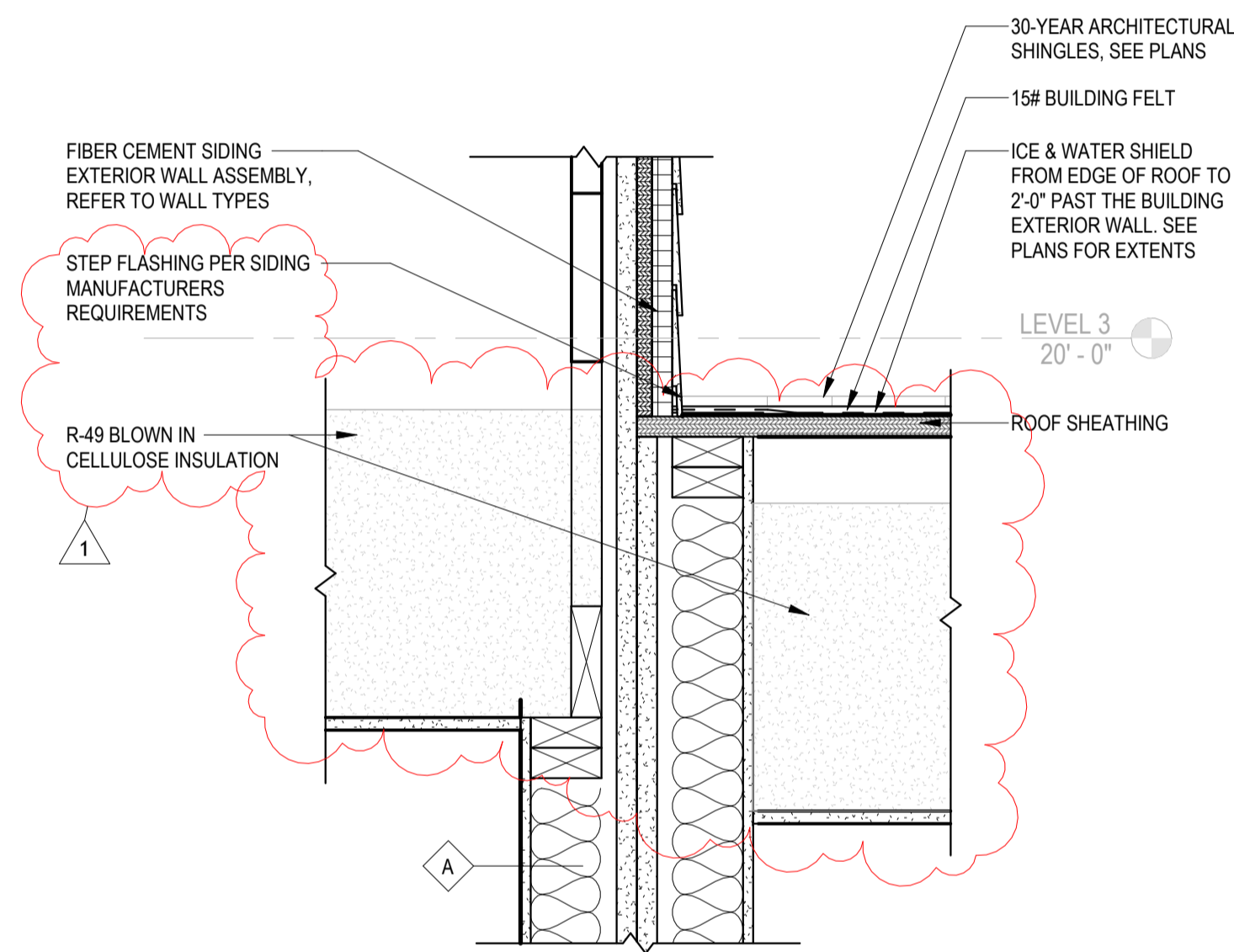
WALL TYPES

A5.0

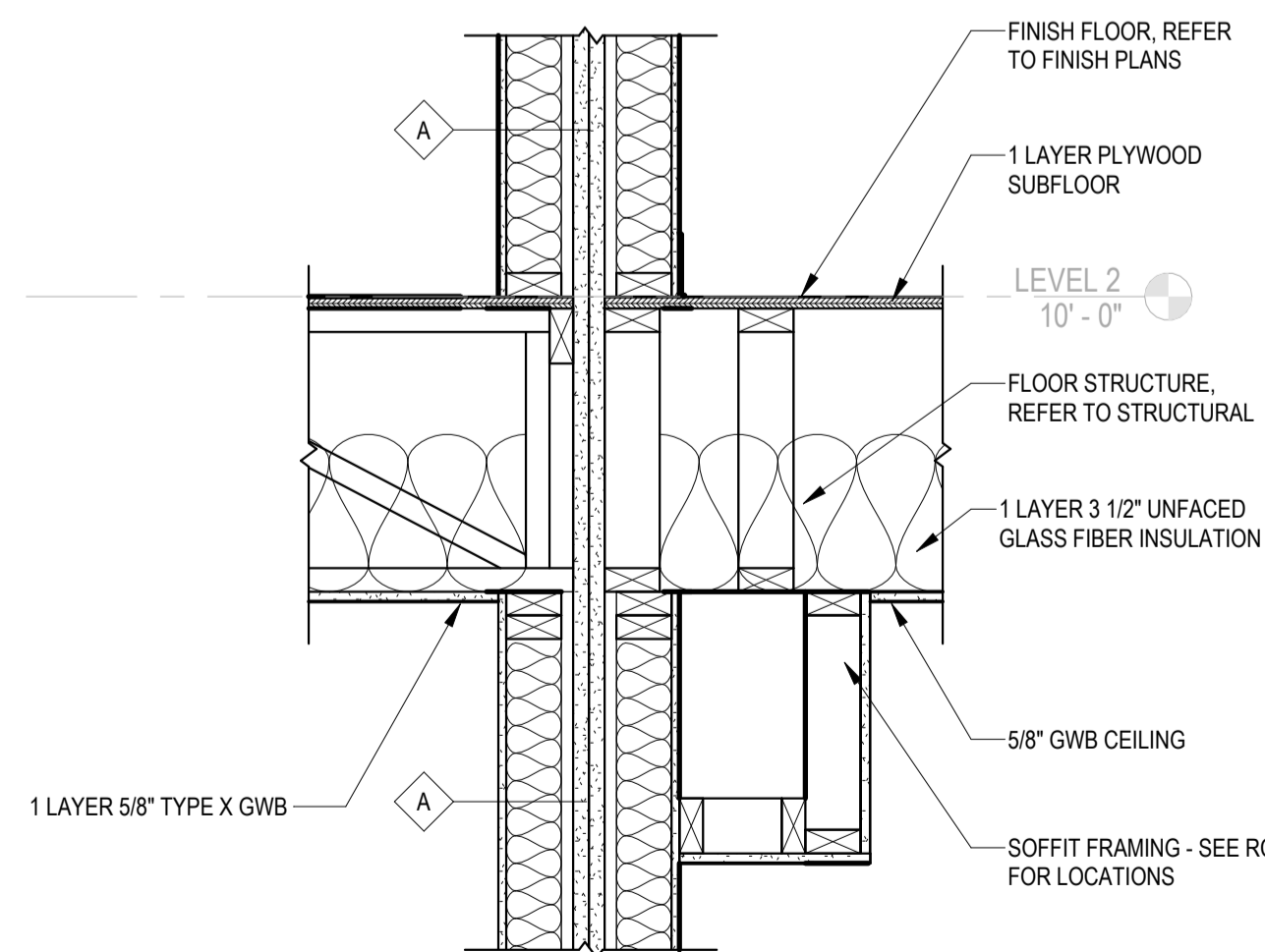
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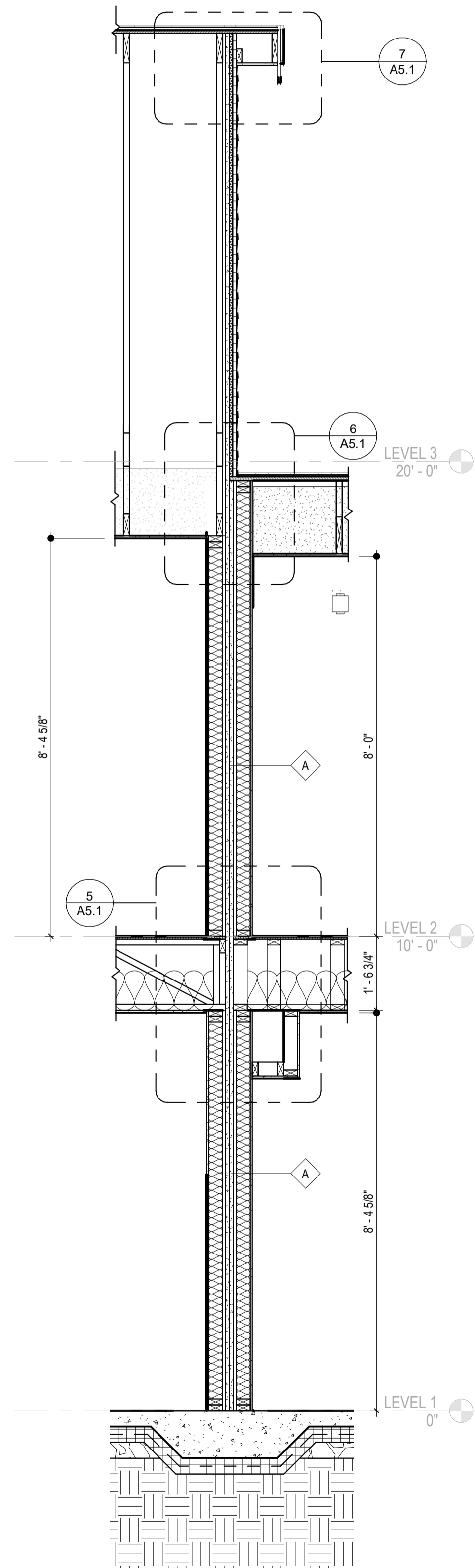
7 WALL SECTION 2 - RAKE DETAIL
A5.1 1 1/2" = 1'-0"



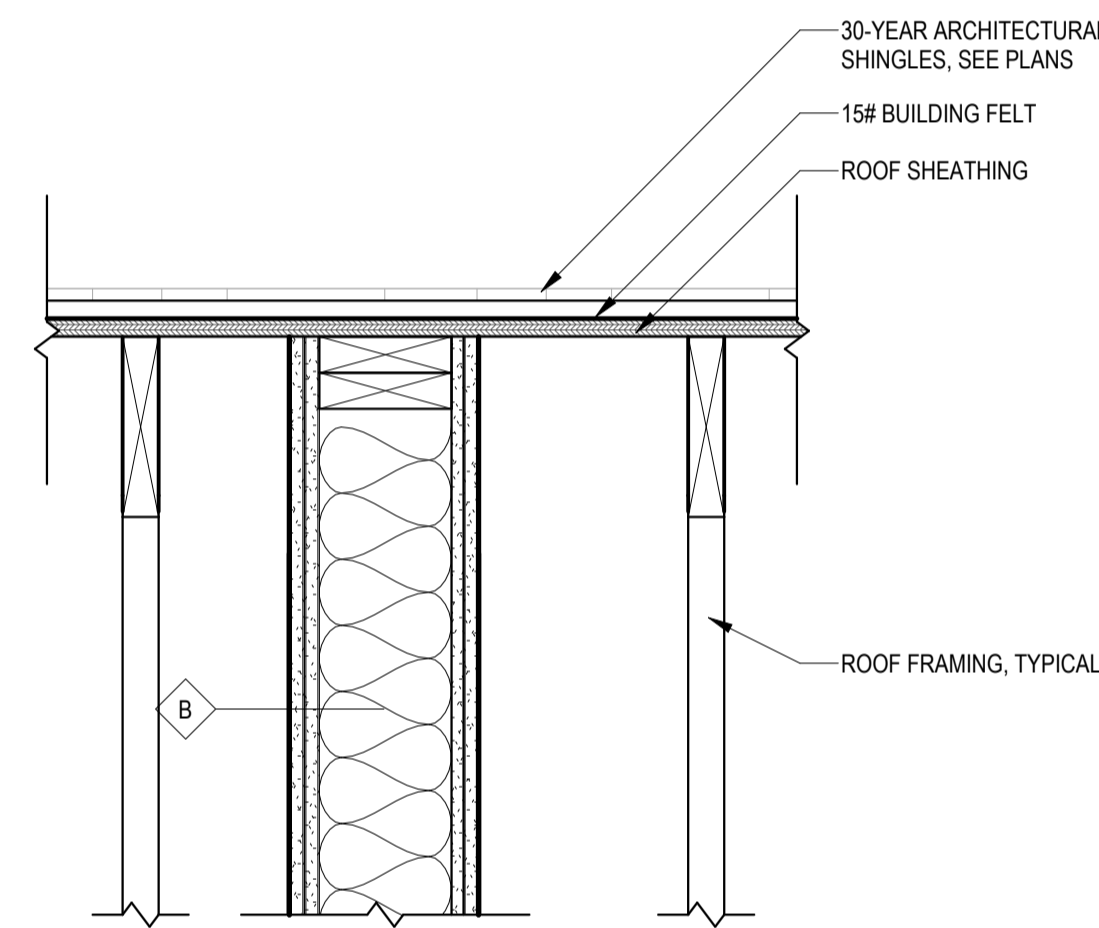
6 WALL SECTION 2 - ROOF & CEILING DETAIL
A5.1 1 1/2" = 1'-0"



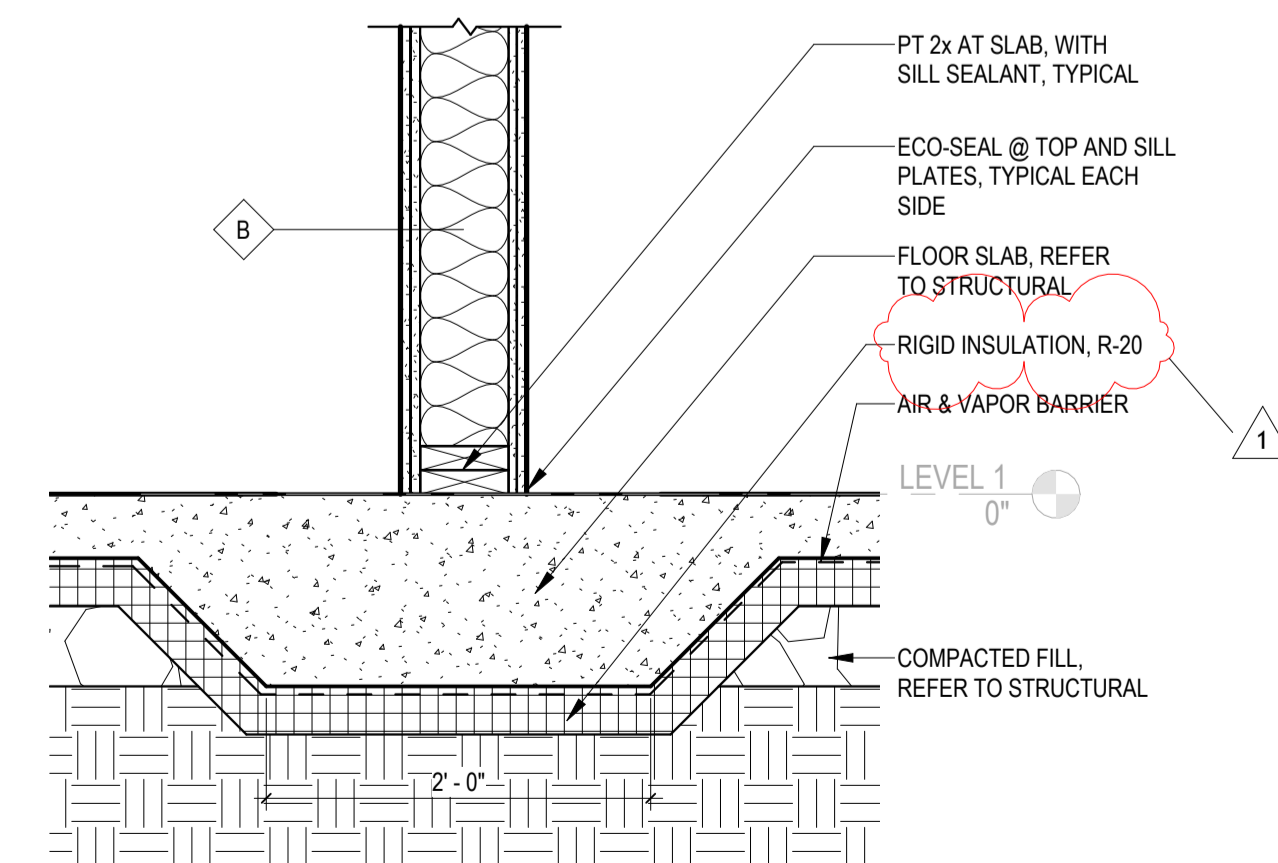
5 WALL SECTION 2 - FLOOR & CEILING DETAIL
A5.1 1" = 1'-0"



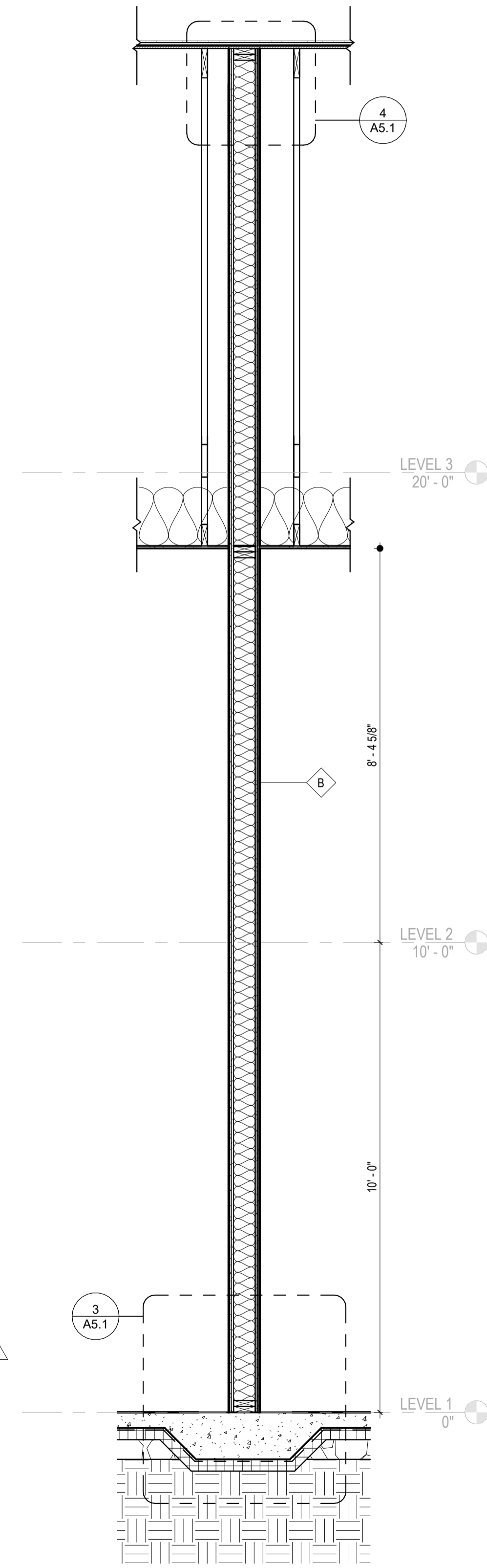
2 WALL SECTION 2
A5.1 1/2" = 1'-0"



4 WALL SECTION 1 - ROOF DETAIL
A5.1 1 1/2" = 1'-0"



3 WALL SECTION 1 - FOUNDATION DETAIL
A5.1 1" = 1'-0"



1 WALL SECTION 1
A5.1 1/2" = 1'-0"

NOTE:
PROVIDE R-49 BLOWN IN CELLULOSE INSULATION AT ALL TYPICAL ROOFS.
PROVIDE R-49 SPRAY FOAM INSULATION AT ALL VAULTED CEILING.

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NEW HOUSING DEVELOPMENT
AT:

RIVER BEND

LITCHFIELD, CT

Project #: 2386

Revision 1 - 5/28/2026
ADDENDUM #3

Revisions

Issue Dates:

BID DOCUMENTS
APRIL 28, 2026

WALL SECTIONS & DETAILS

A5.1

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NEW HOUSING DEVELOPMENT
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Revision 1 -
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Revisions

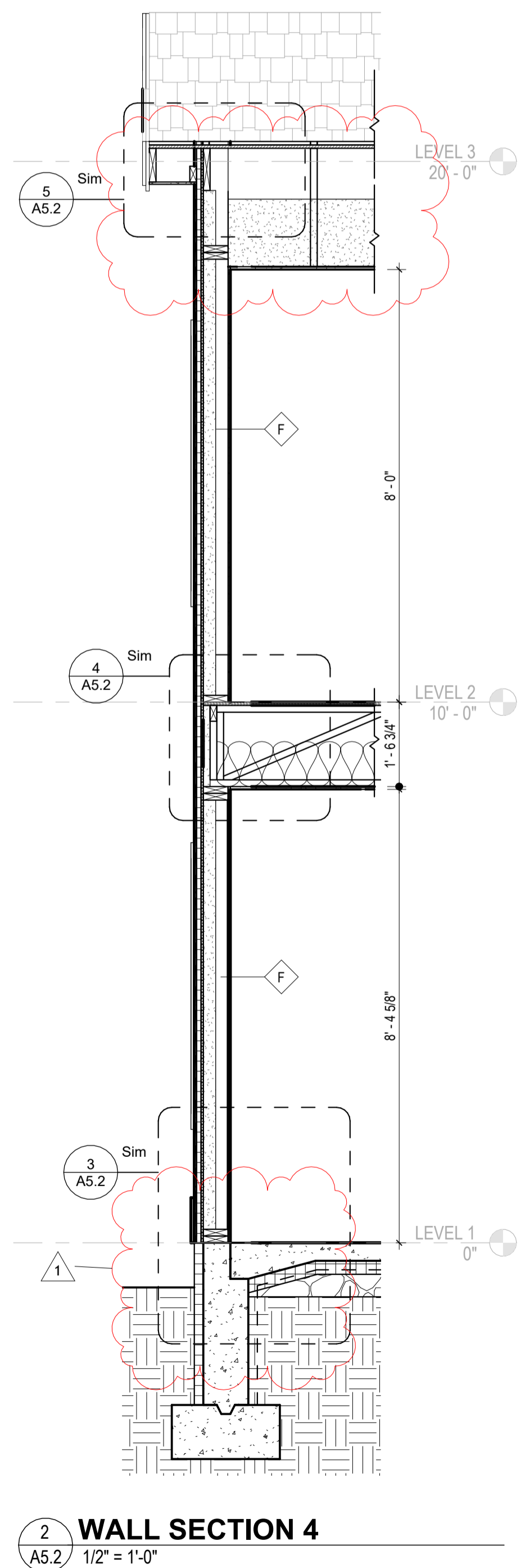
Issue Dates:

BID DOCUMENTS
APRIL 28, 2026

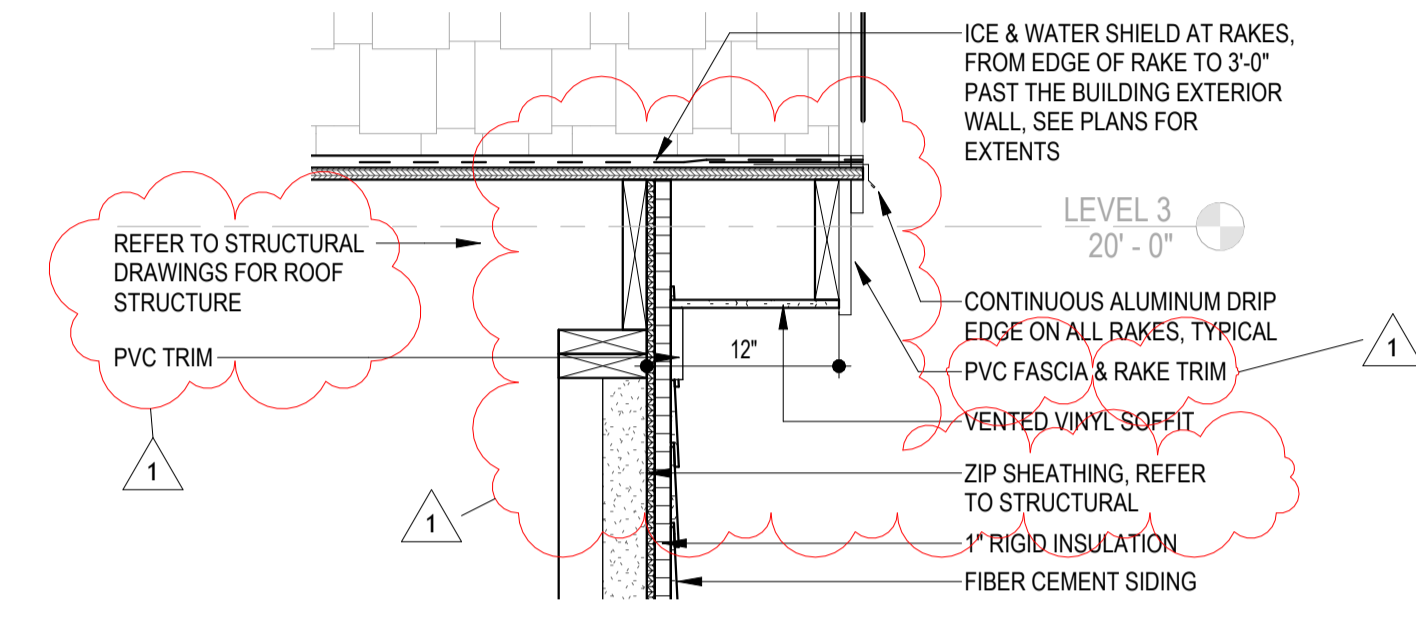
WALL SECTIONS & DETAILS

A5.2

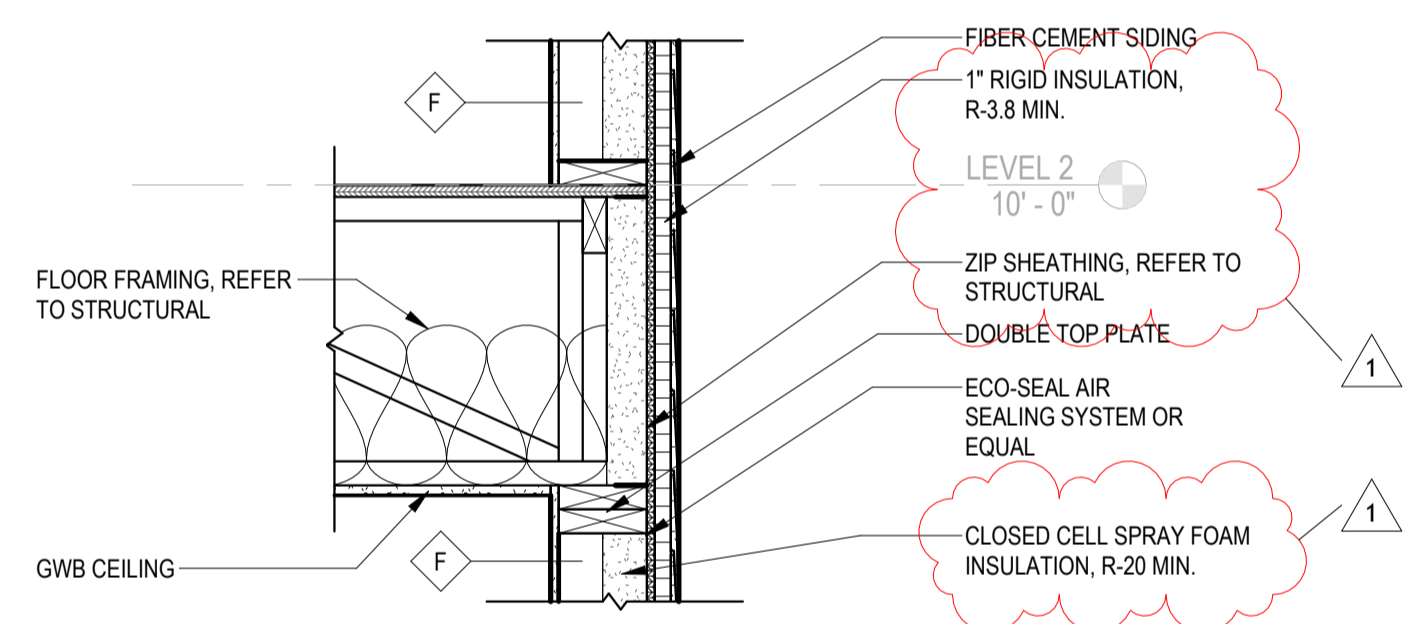
NOTE:
PROVIDE R-49 BLOWN IN CELLULOSE INSULATION AT ALL TYPICAL ROOFS.
PROVIDE R-49 SPRAY FOAM INSULATION AT ALL VAULTED CEILING.



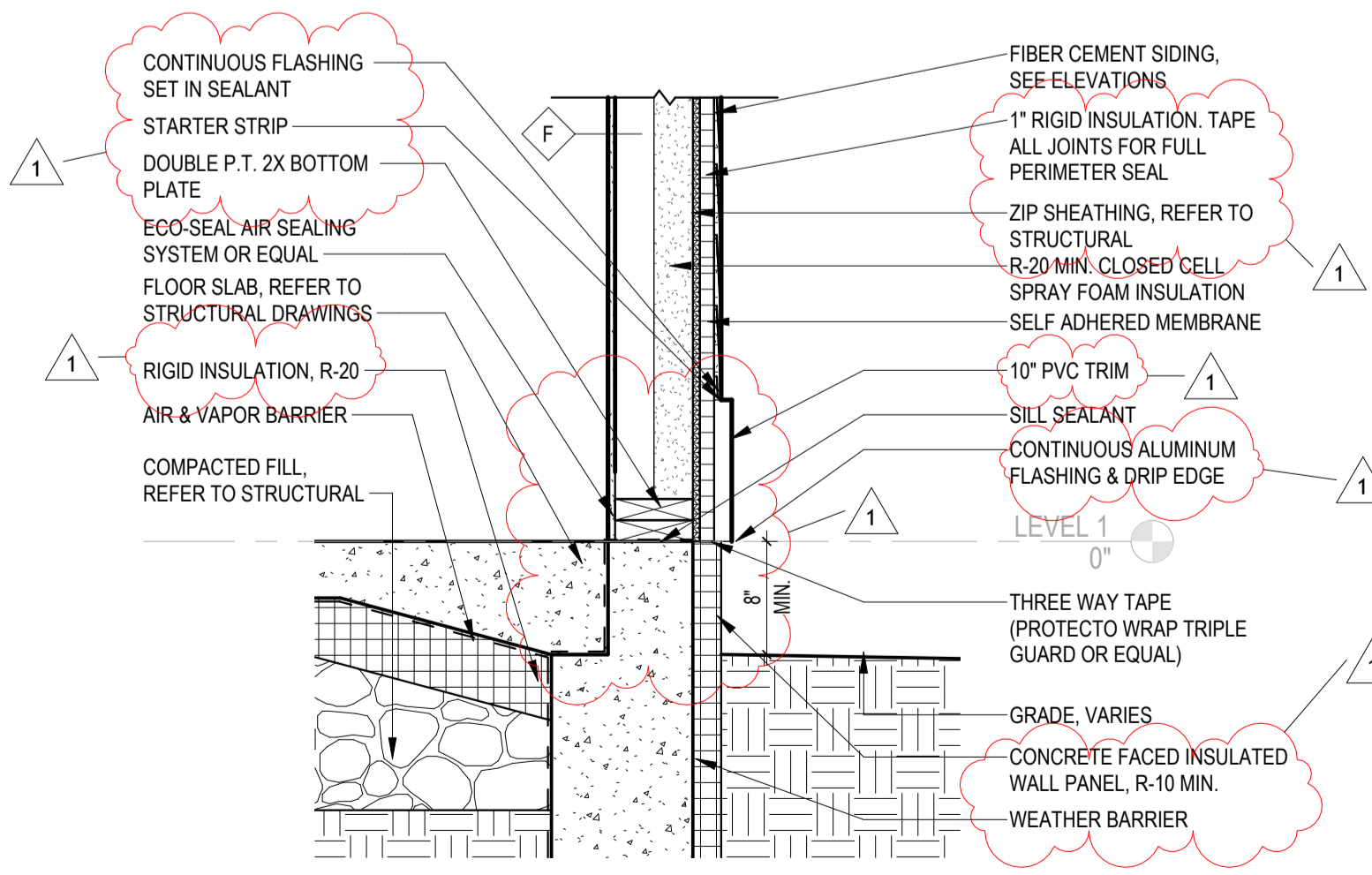
2 WALL SECTION 4
A5.2 1/2" = 1'-0"



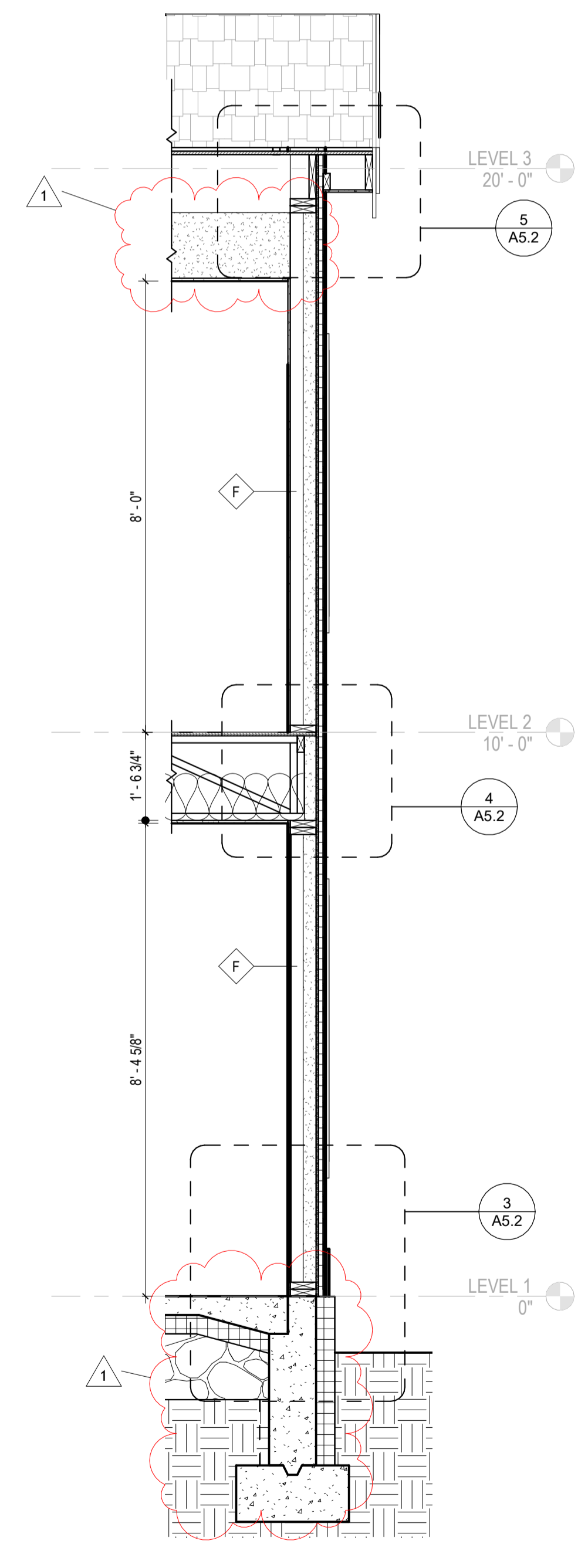
5 WALL SECTION 3 - RAKE DETAIL
A5.2 1" = 1'-0"



4 WALL SECTION 3 - FLOOR DETAIL
A5.2 1" = 1'-0"



3 WALL SECTION 3 - FOUNDATION DETAIL
A5.2 1" = 1'-0"



1 WALL SECTION 3
A5.2 1/2" = 1'-0"

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NEW HOUSING DEVELOPMENT
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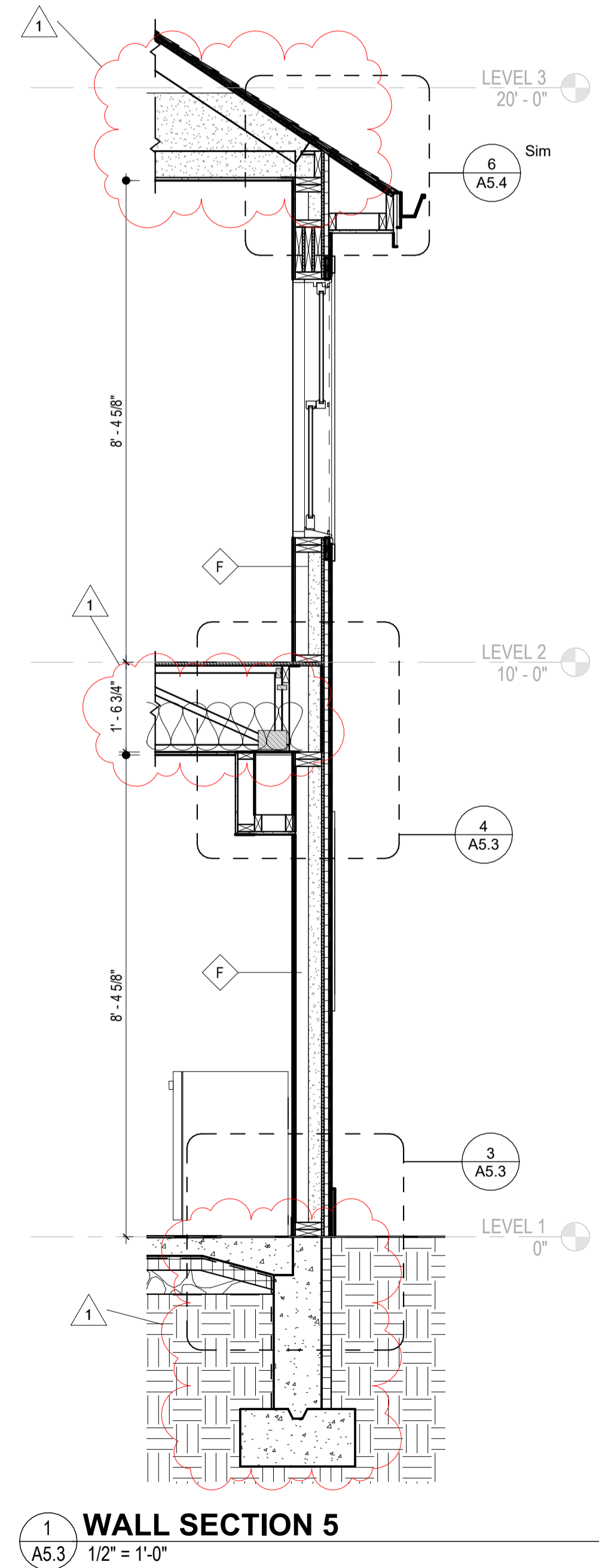
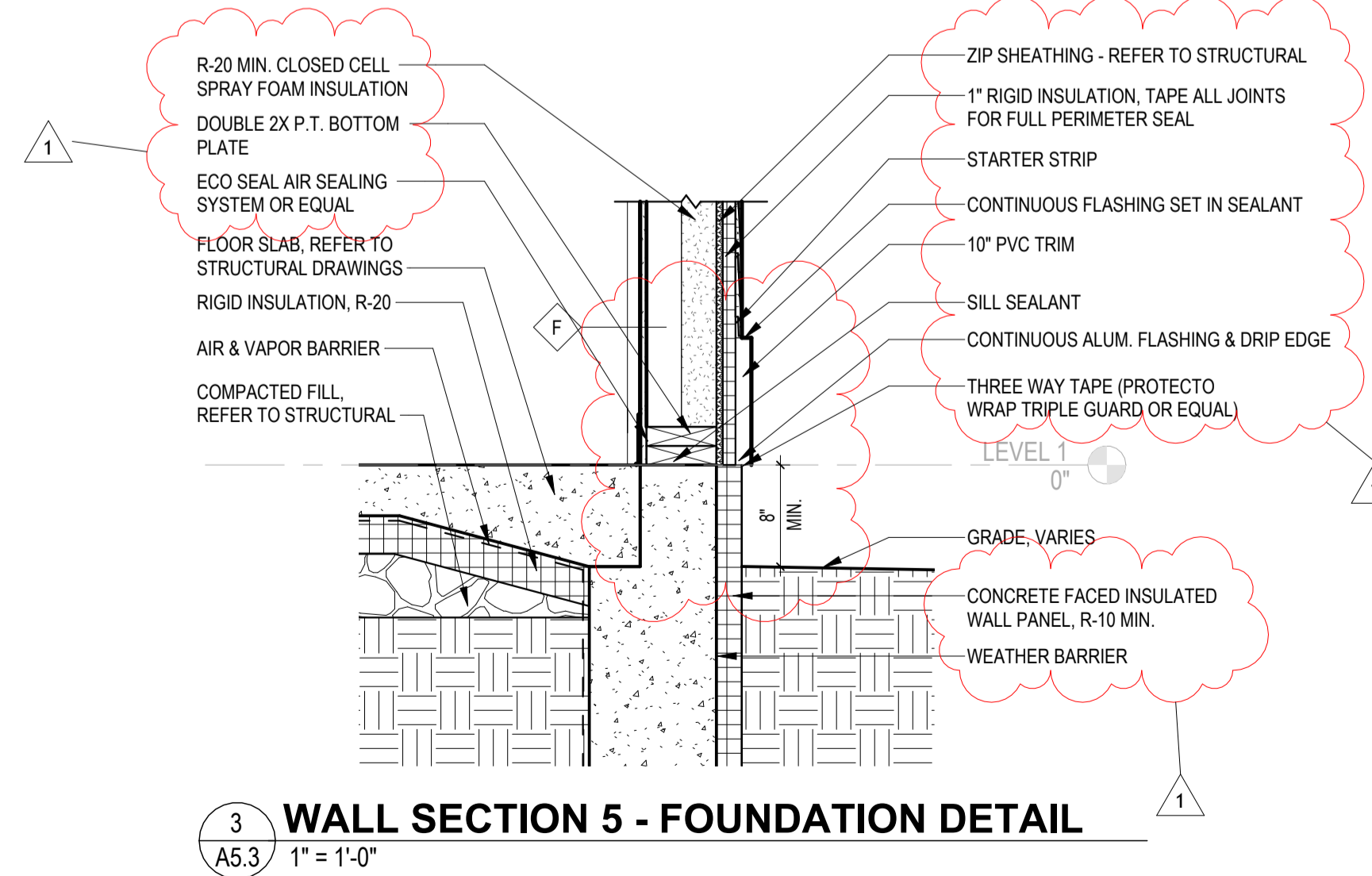
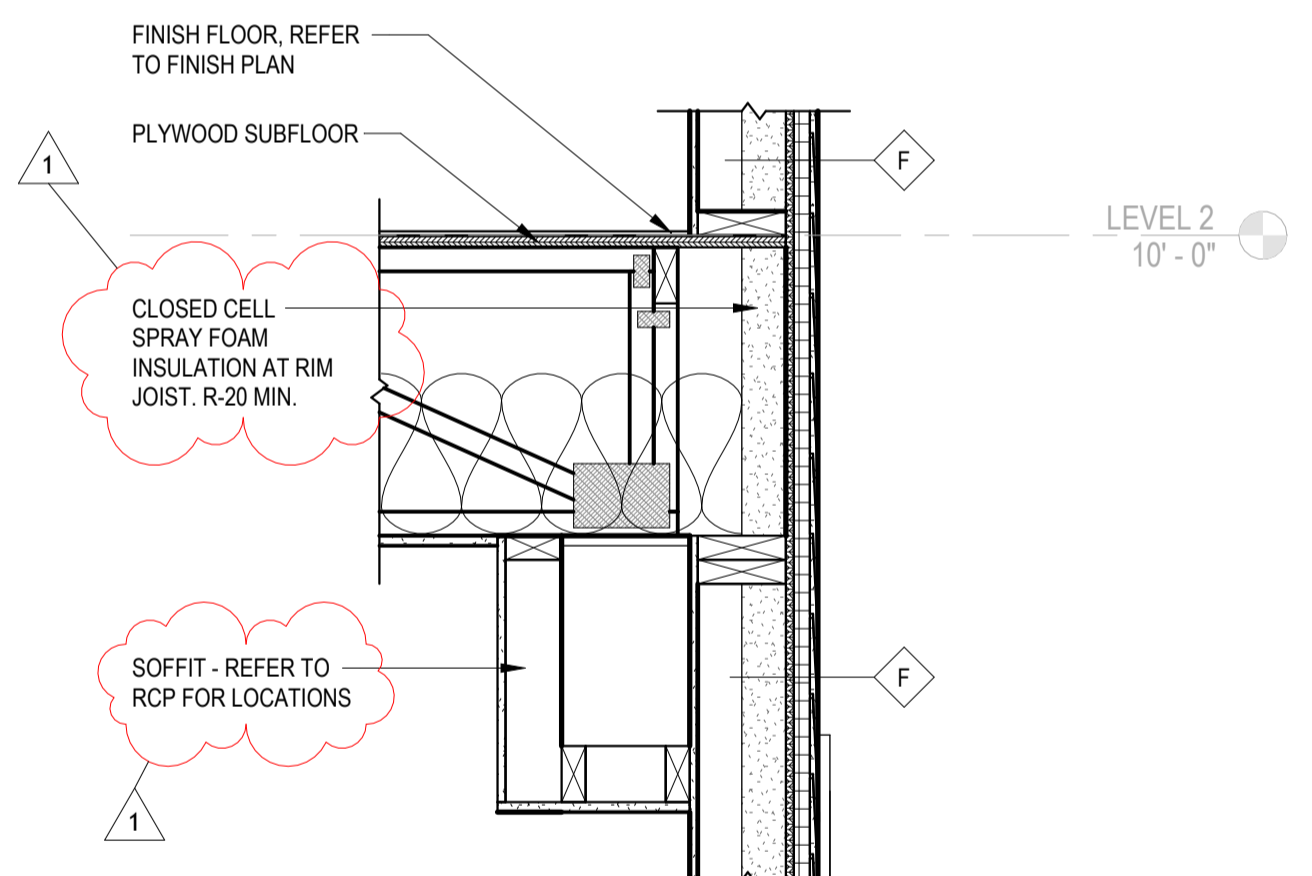
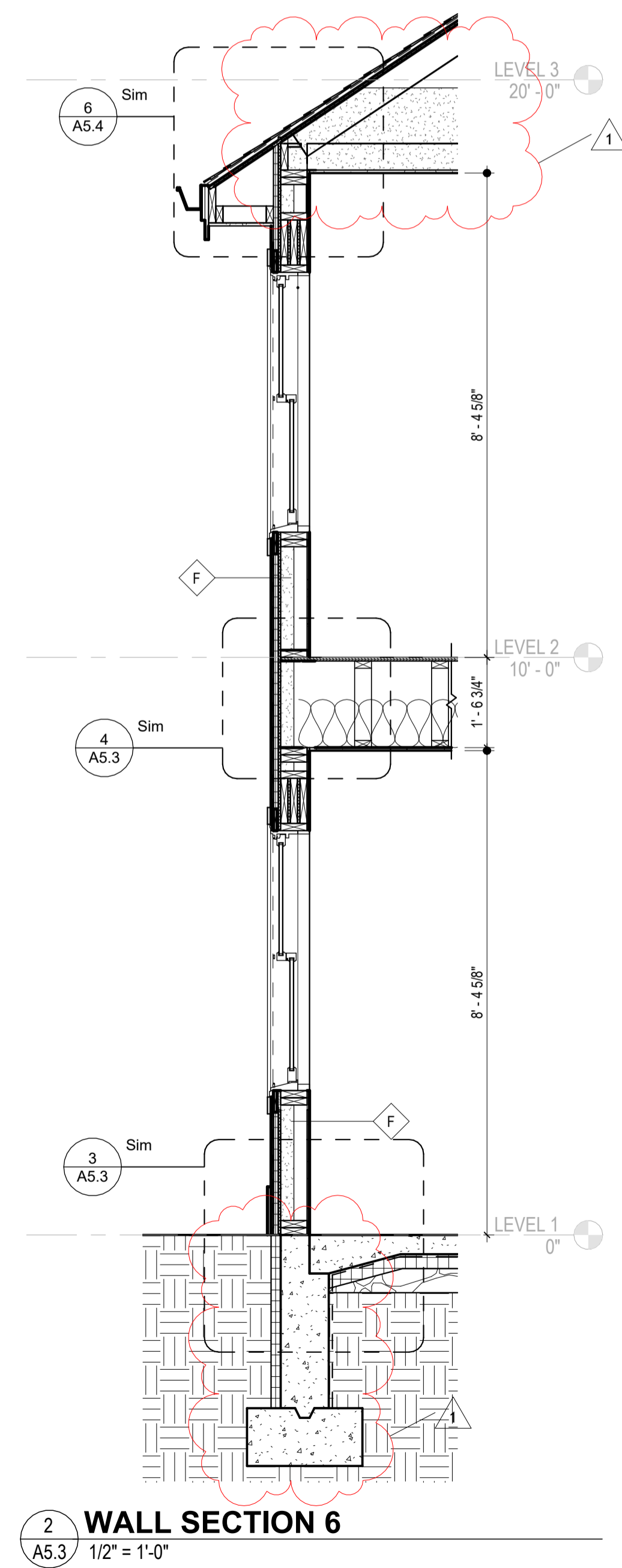
Issue Dates:

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 APRIL 28, 2026

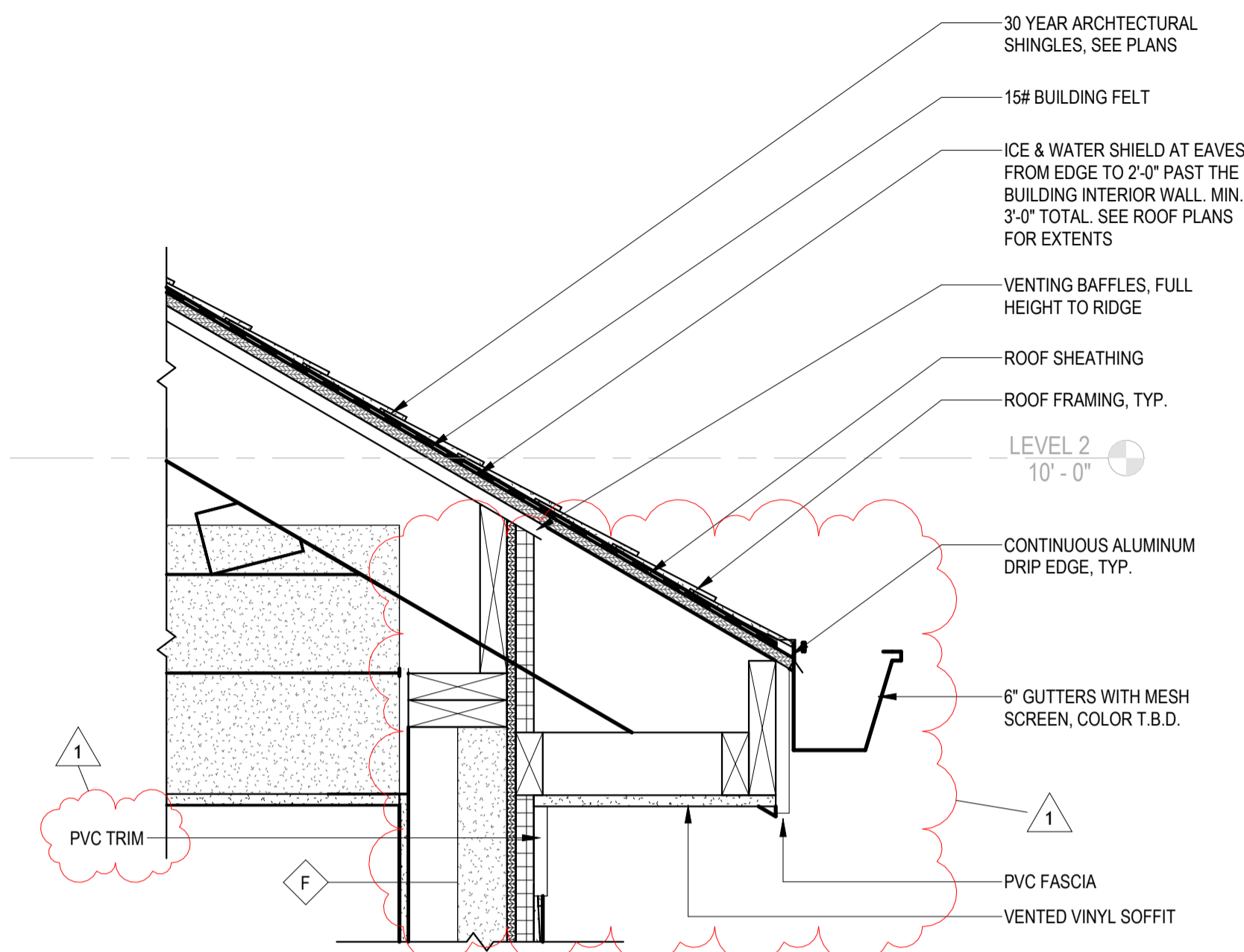
WALL SECTIONS & DETAILS

A5.3

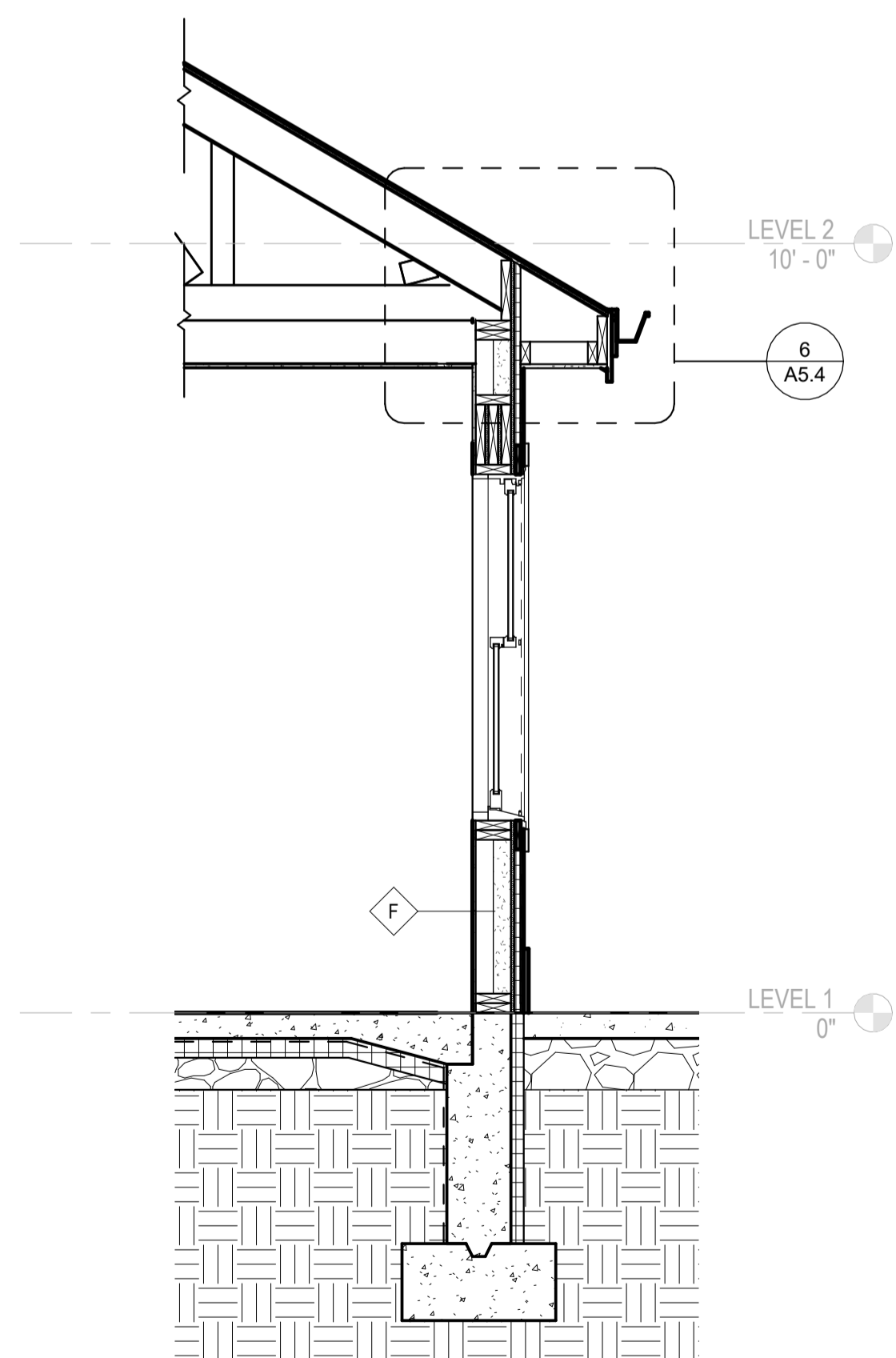
NOTE:
 PROVIDE R-49 BLOWN IN CELLULOSE INSULATION AT ALL TYPICAL ROOFS.
 PROVIDE R-49 SPRAY FOAM INSULATION AT ALL VAULTED CEILING.



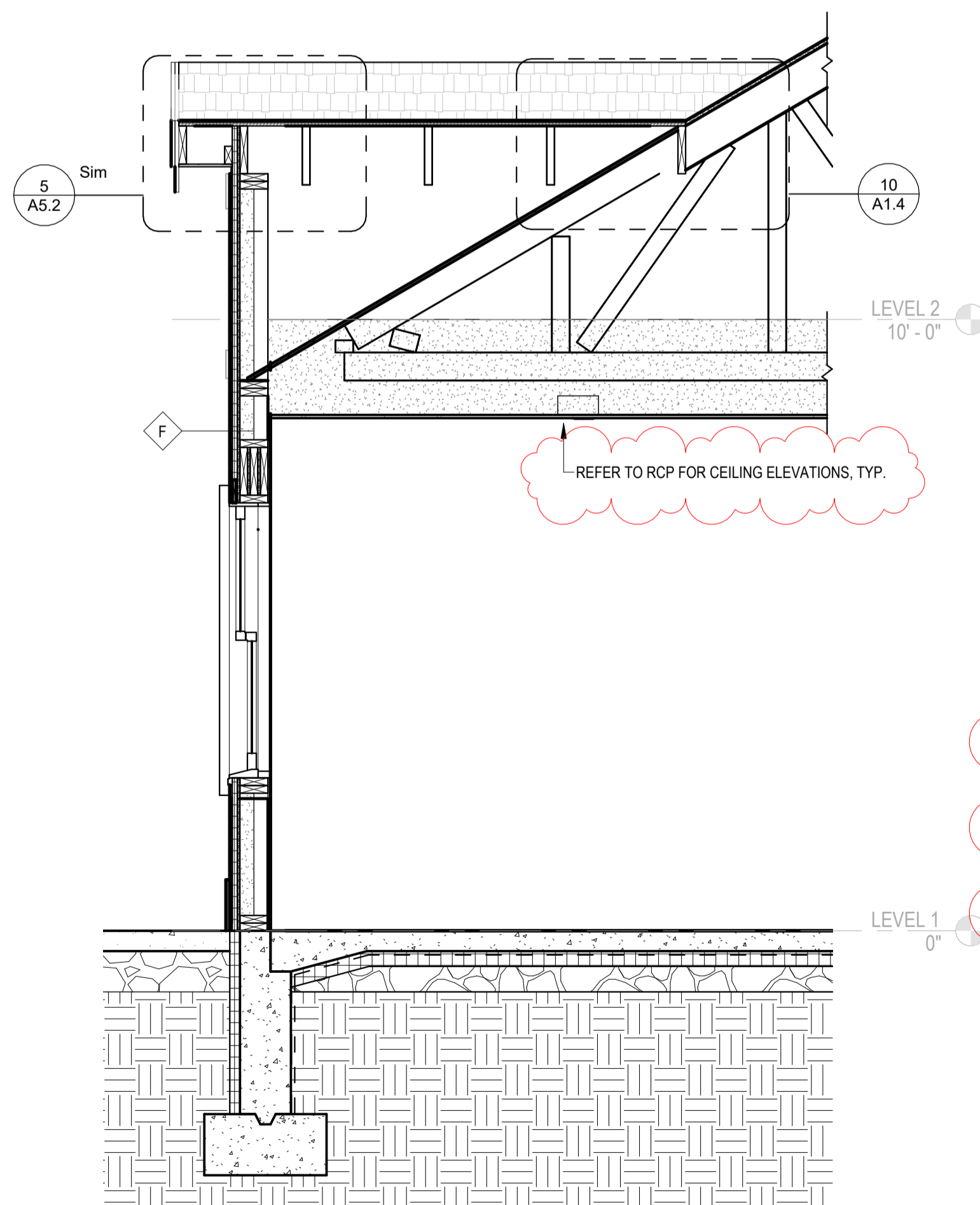
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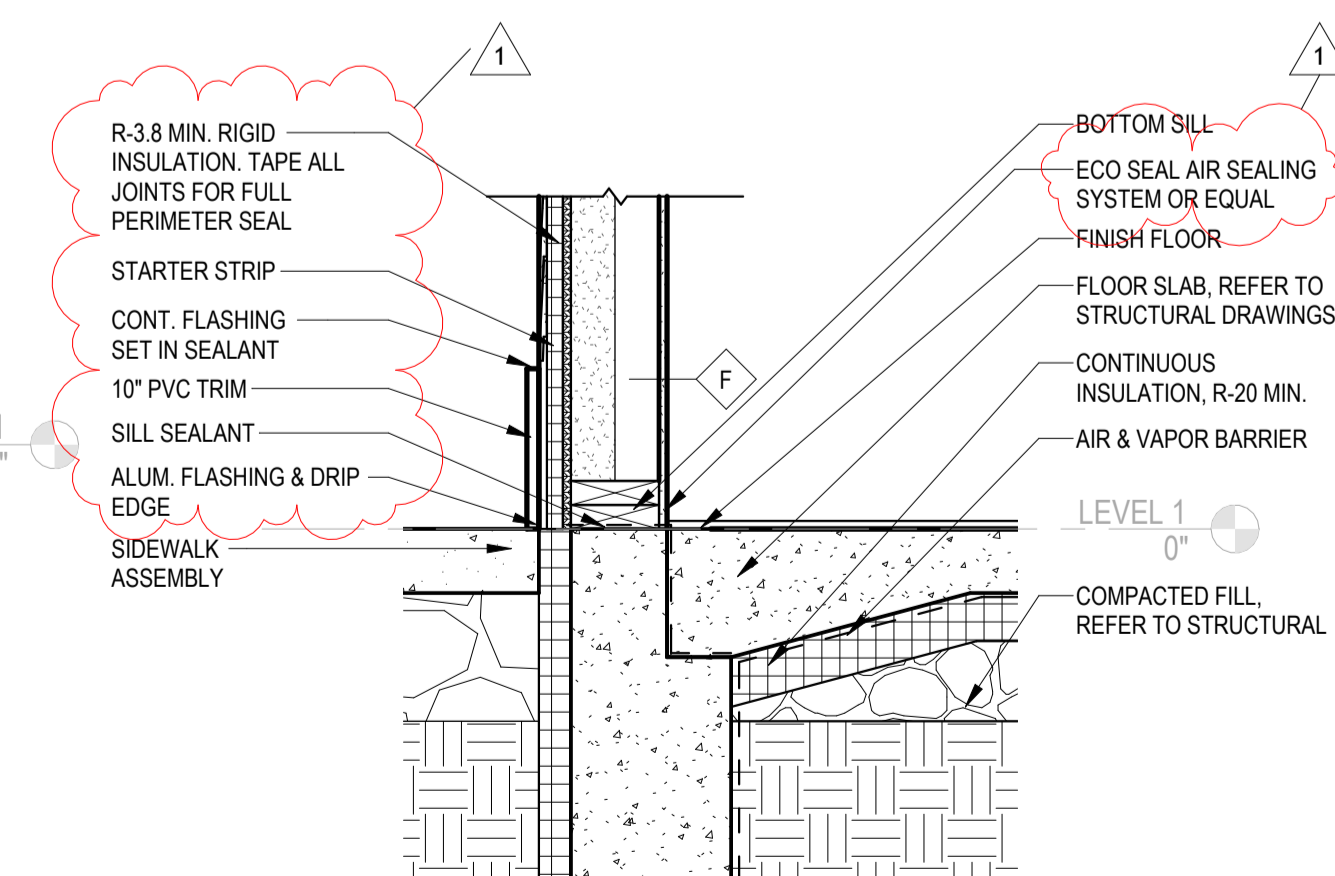
6 WALL SECTION 9 - ROOF DETAIL
A5.4 1 1/2" = 1'-0"



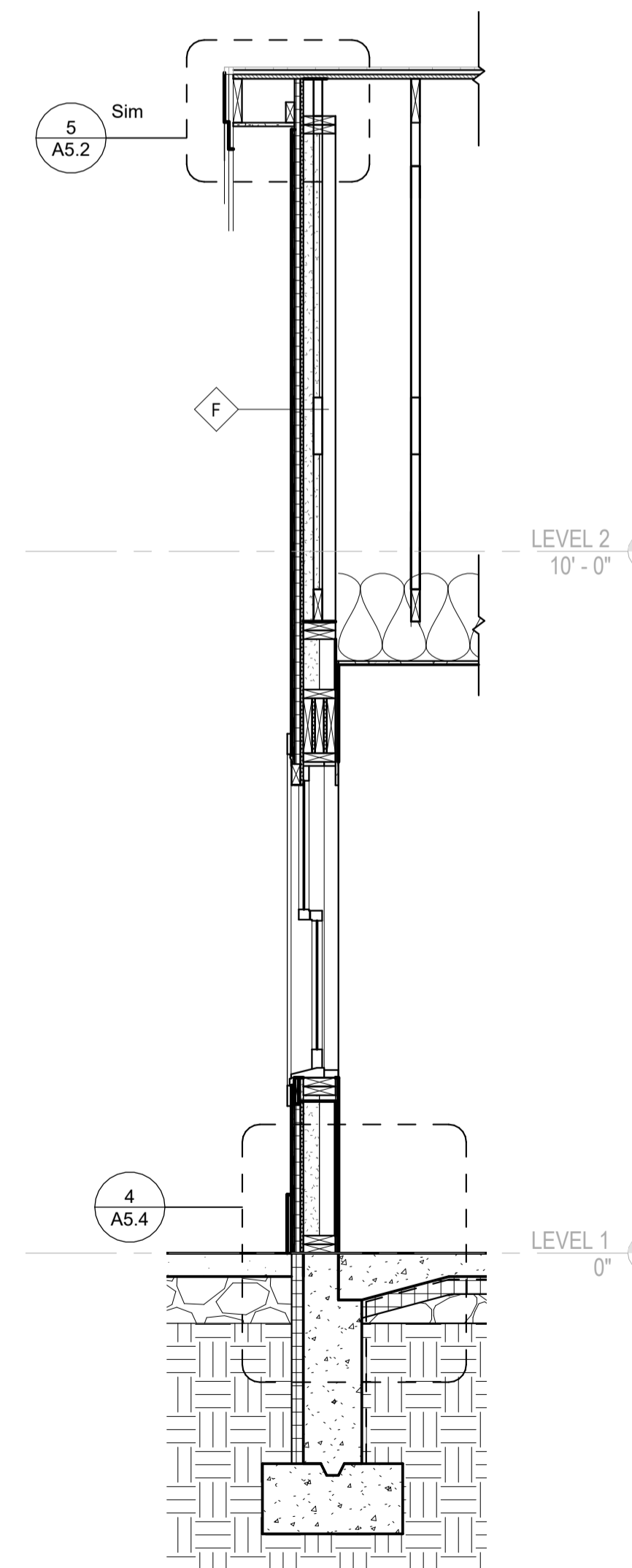
3 WALL SECTION 9
A5.4 1/2" = 1'-0"



2 WALL SECTION 8
A5.4 1/2" = 1'-0"



4 WALL SECTION 7 - FOUNDATION DETAIL
A5.4 1" = 1'-0"



1 WALL SECTION 7
A5.4 1/2" = 1'-0"

NOTE:
PROVIDE R-49 BLOWN IN CELLULOSE INSULATION AT ALL TYPICAL ROOFS.
PROVIDE R-49 SPRAY FOAM INSULATION AT ALL VAULTED CEILINGS.

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NEW HOUSING DEVELOPMENT
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RIVER BEND

LITCHFIELD, CT

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WALL SECTIONS & DETAILS

A5.4

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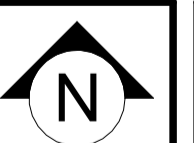
LITCHFIELD, CT

Project #: 2386

Revision 1 - 5/28/2026
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Revisions

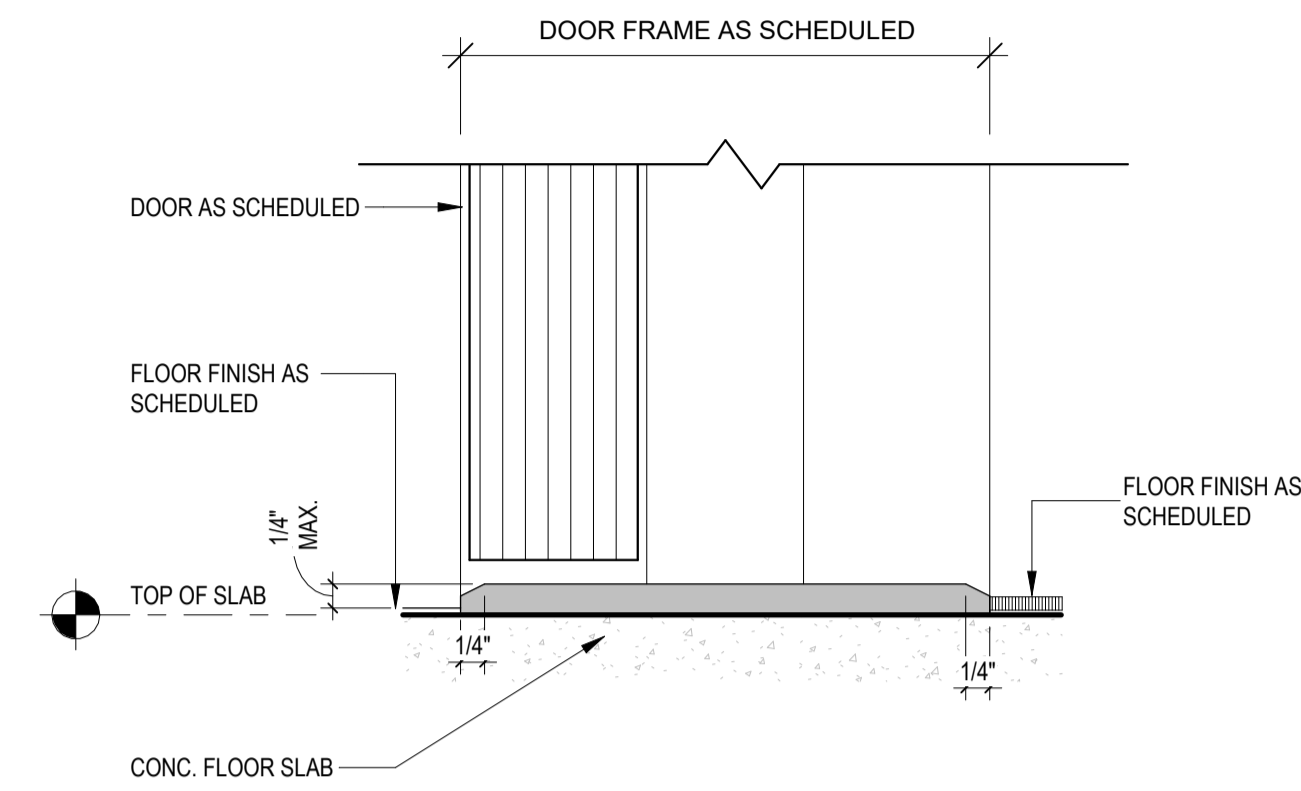
Issue Dates:



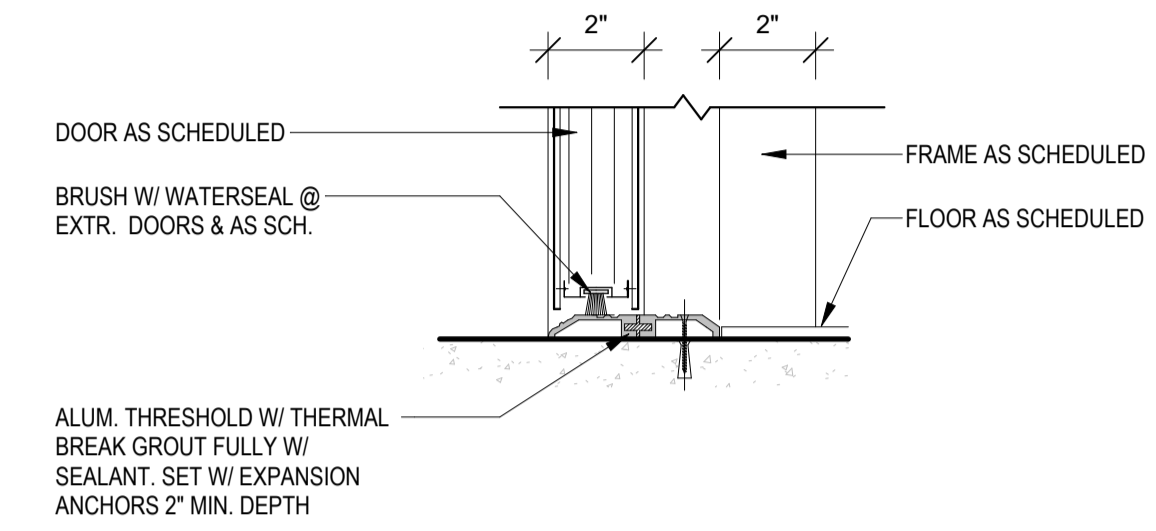
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DOOR DETAILS

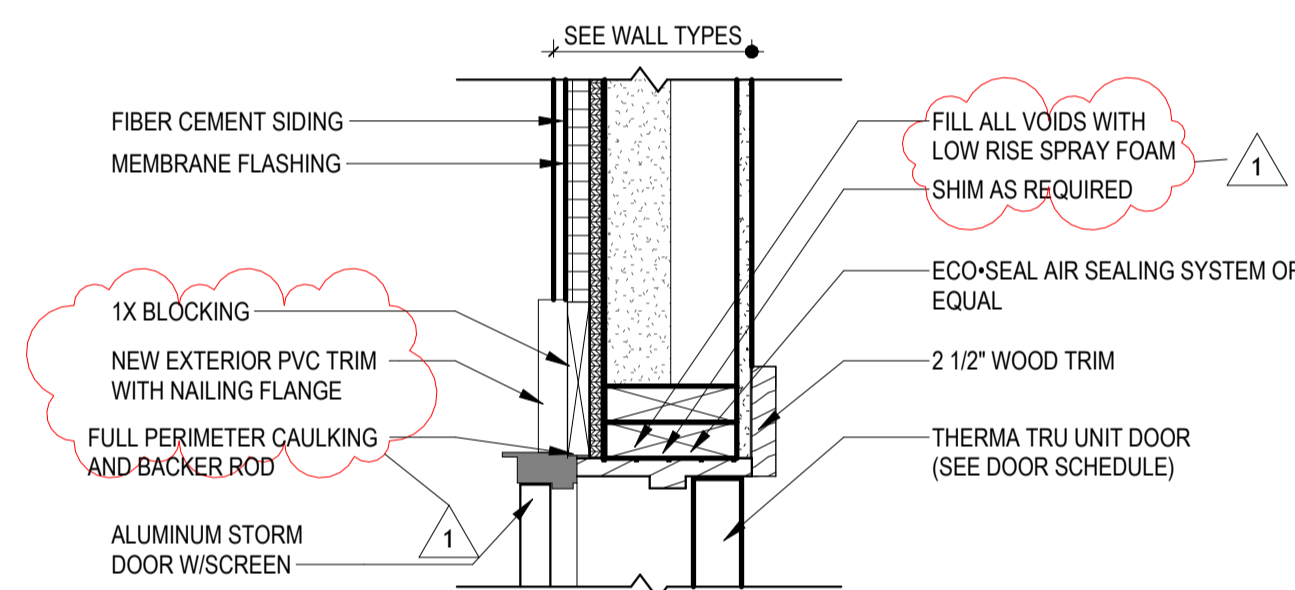
A9.1



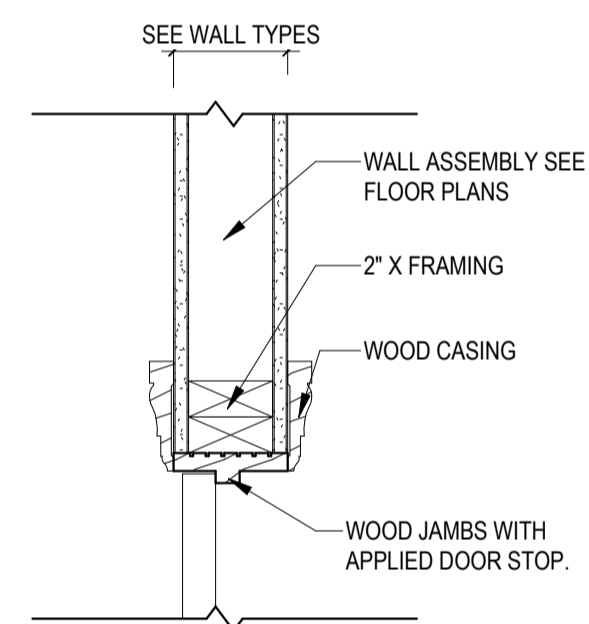
6 SILL DETAIL S-2
 A9.1 6" = 1'-0"



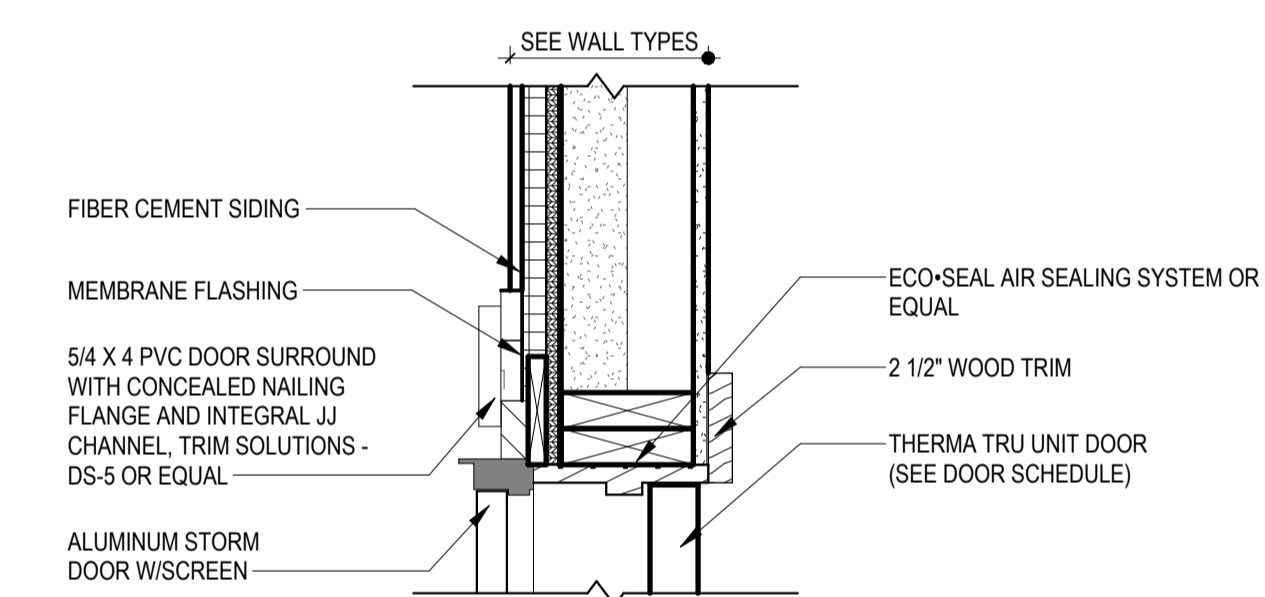
3 SILL DETAIL S-1
 A9.1 3" = 1'-0"



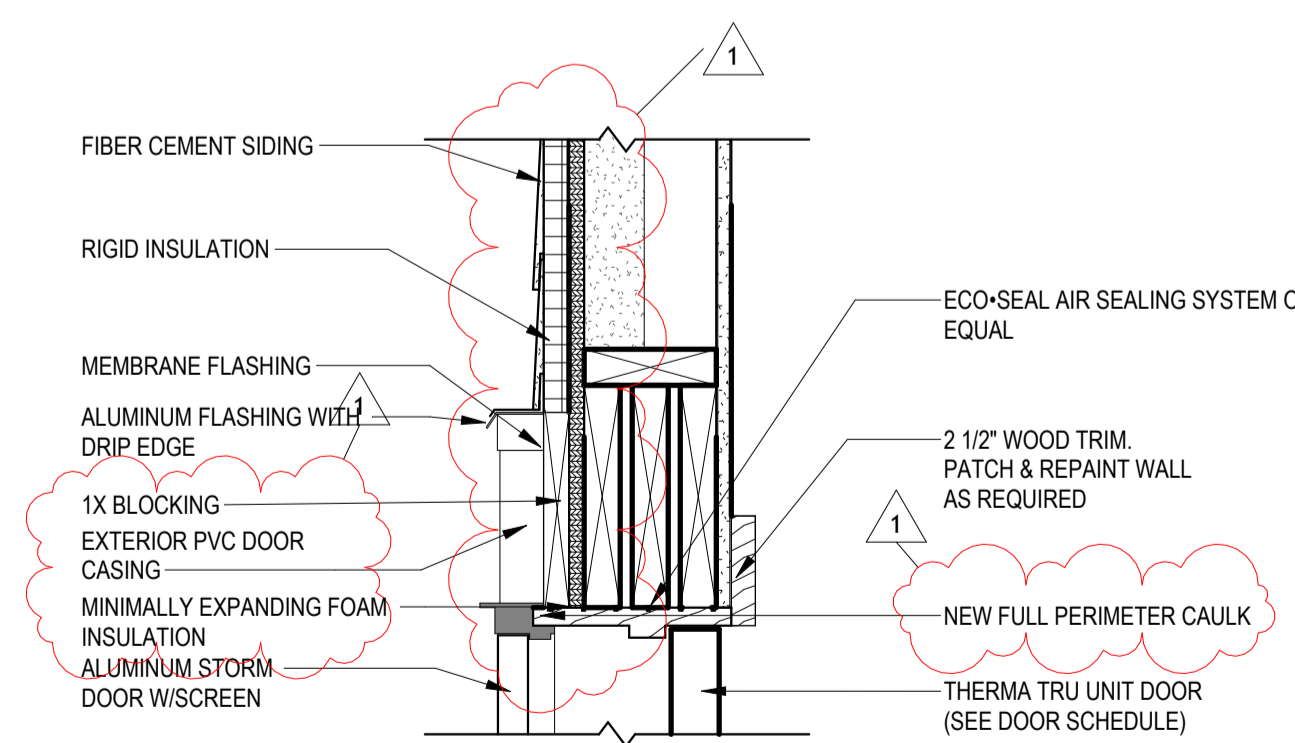
8 EXTERIOR DOOR JAMB J-3
 A9.1 1 1/2" = 1'-0"



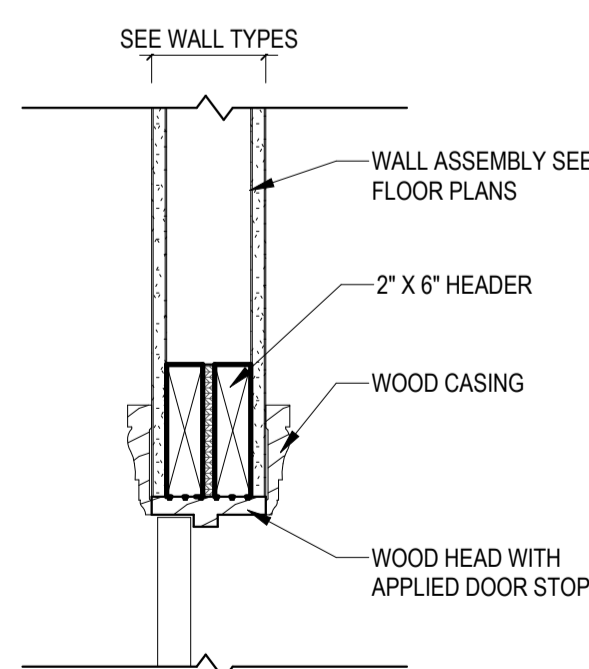
5 INTERIOR DOOR JAMB DETAIL J-2
 A9.1 1 1/2" = 1'-0"



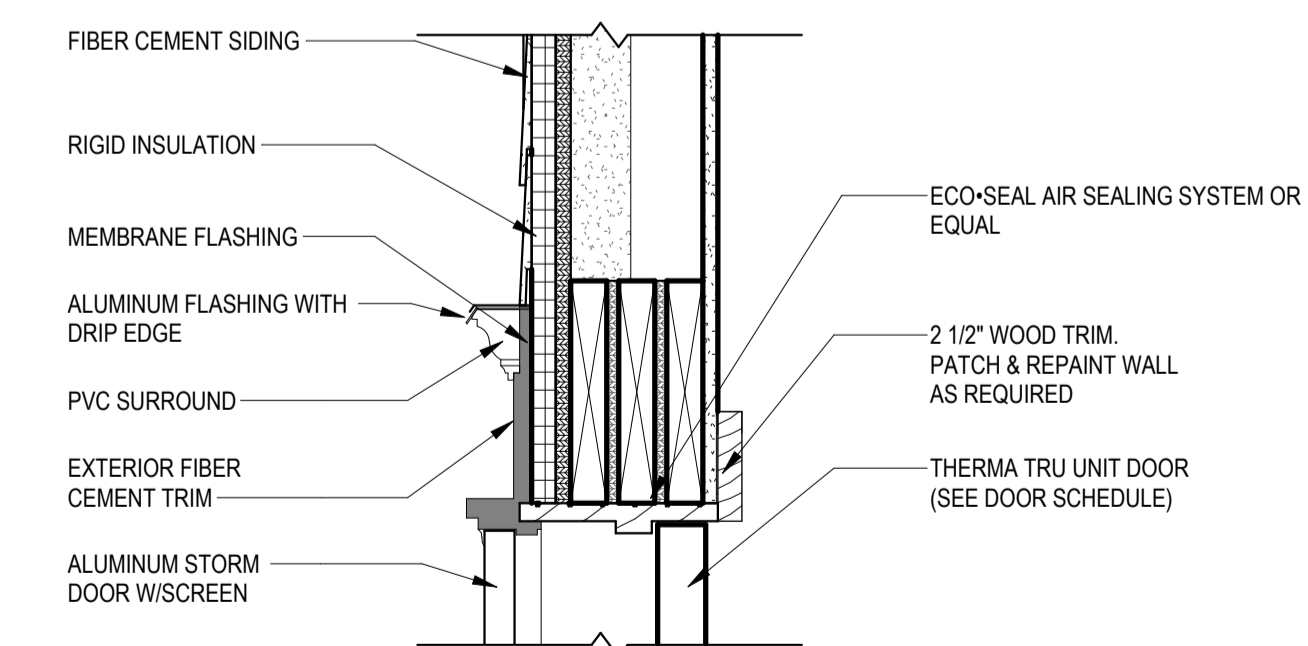
2 EXTERIOR DOOR JAMB J-1
 A9.1 1 1/2" = 1'-0"



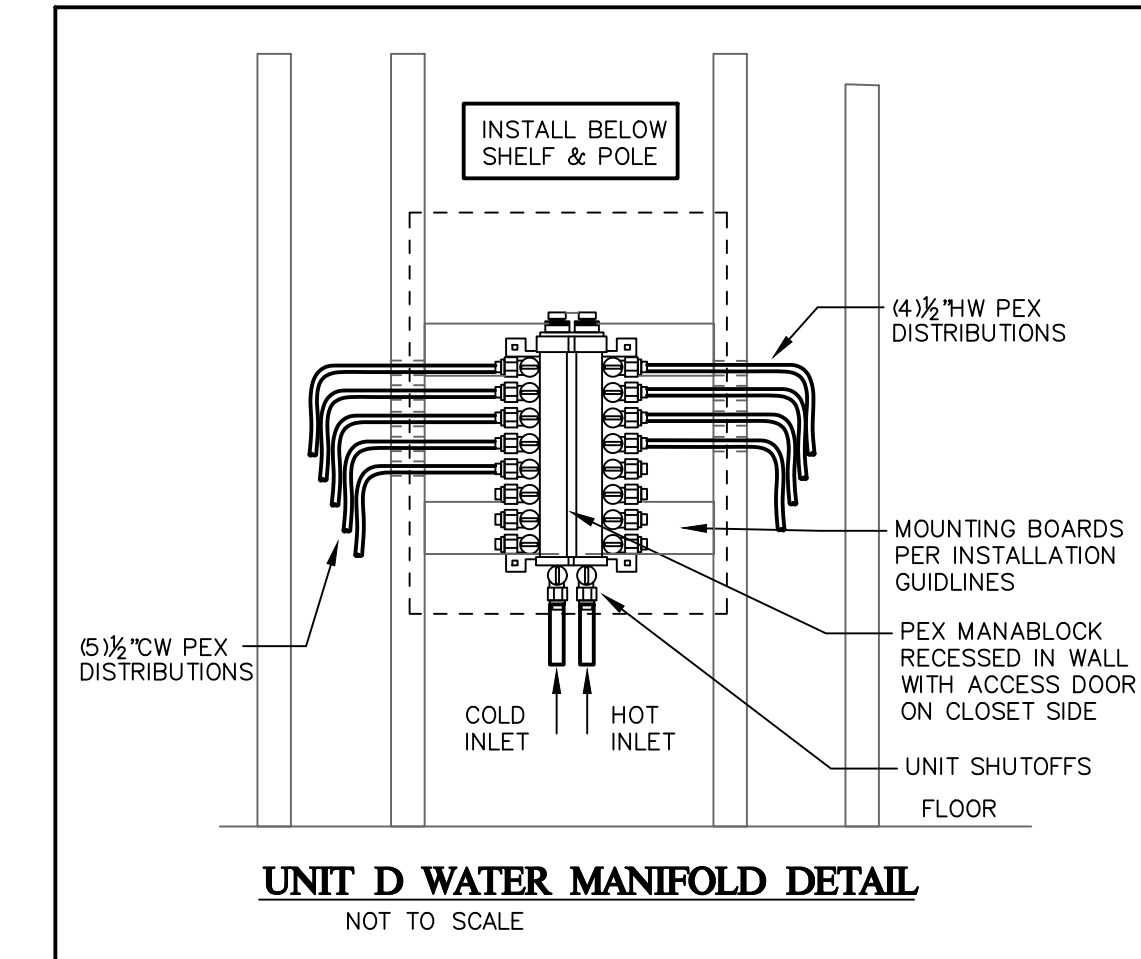
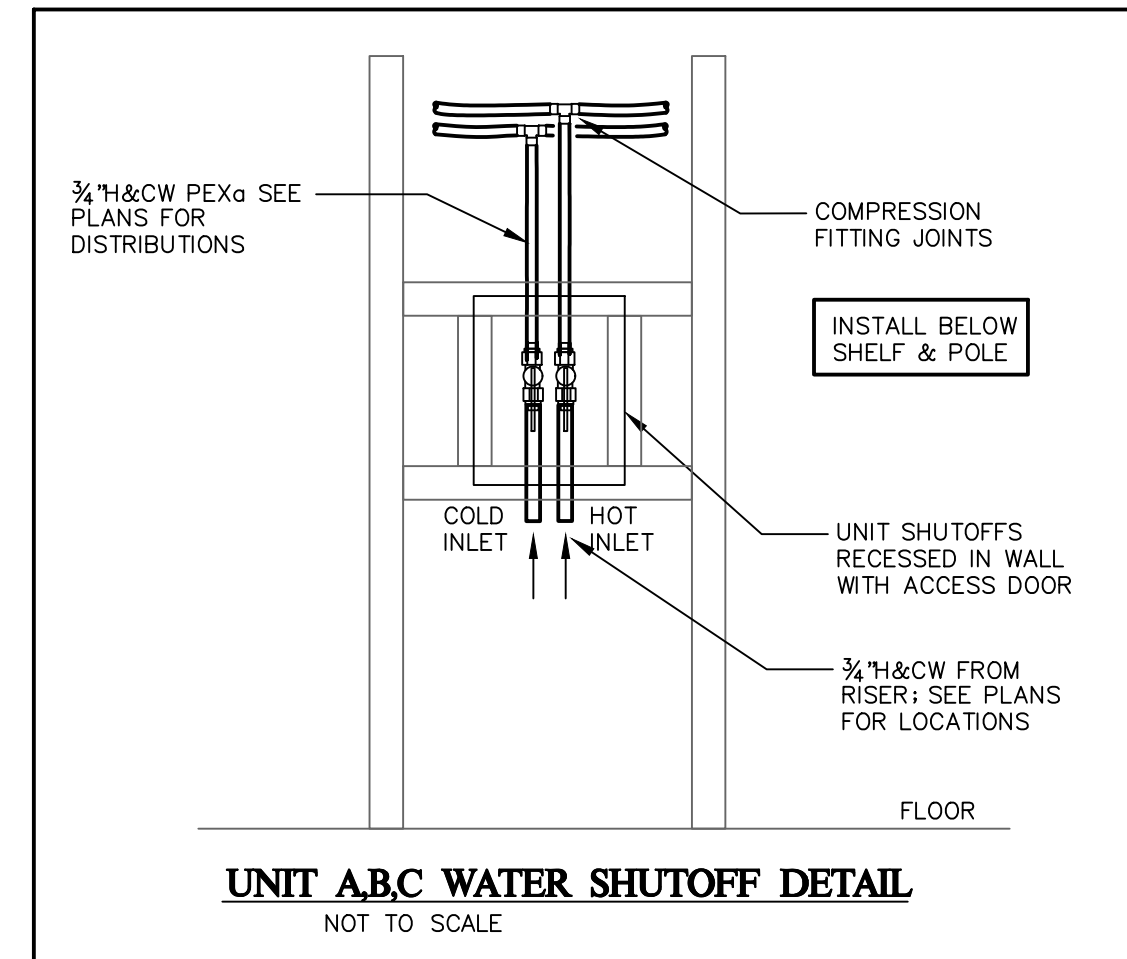
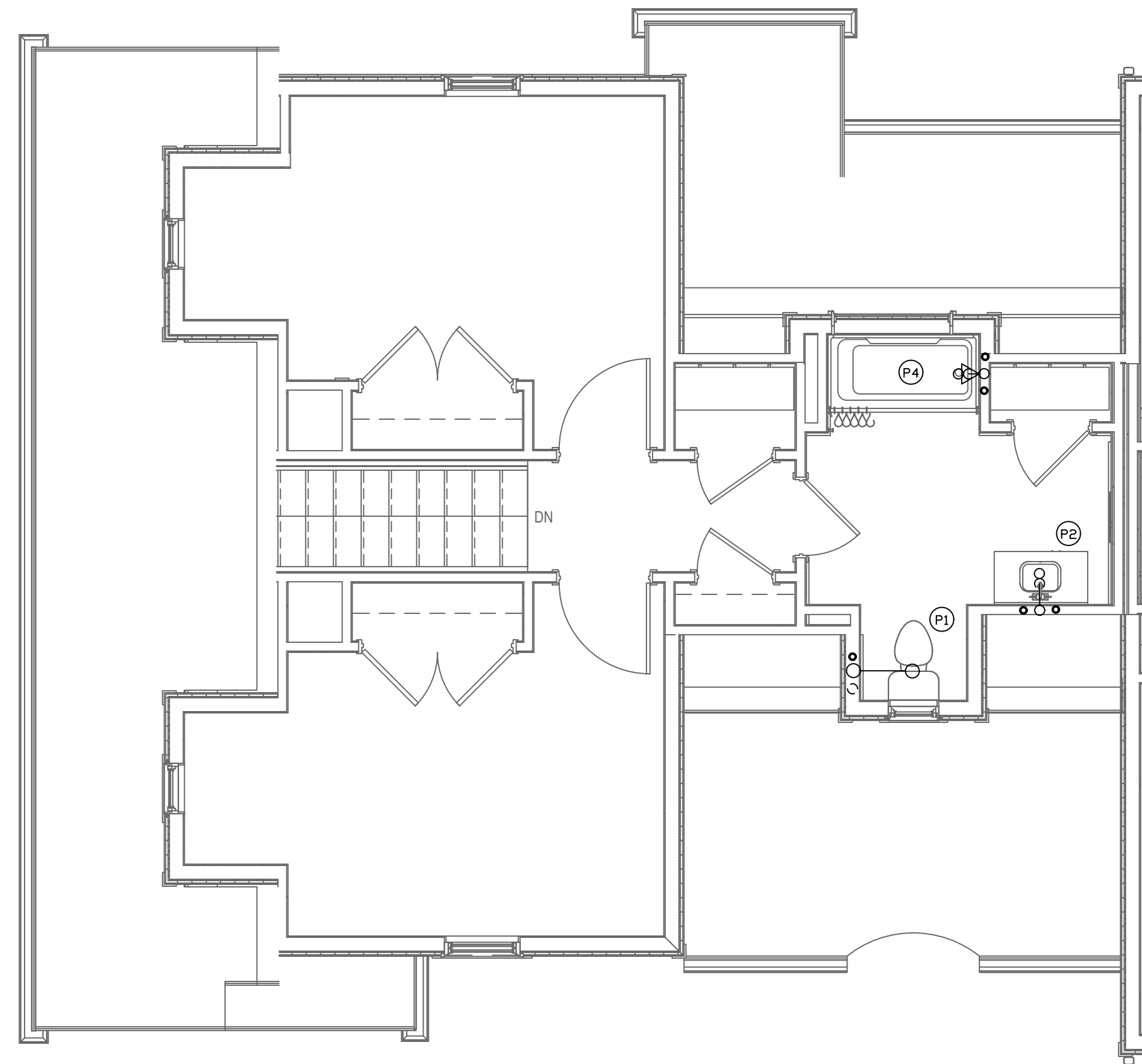
7 EXTERIOR DOOR HEAD H-3
 A9.1 1 1/2" = 1'-0"



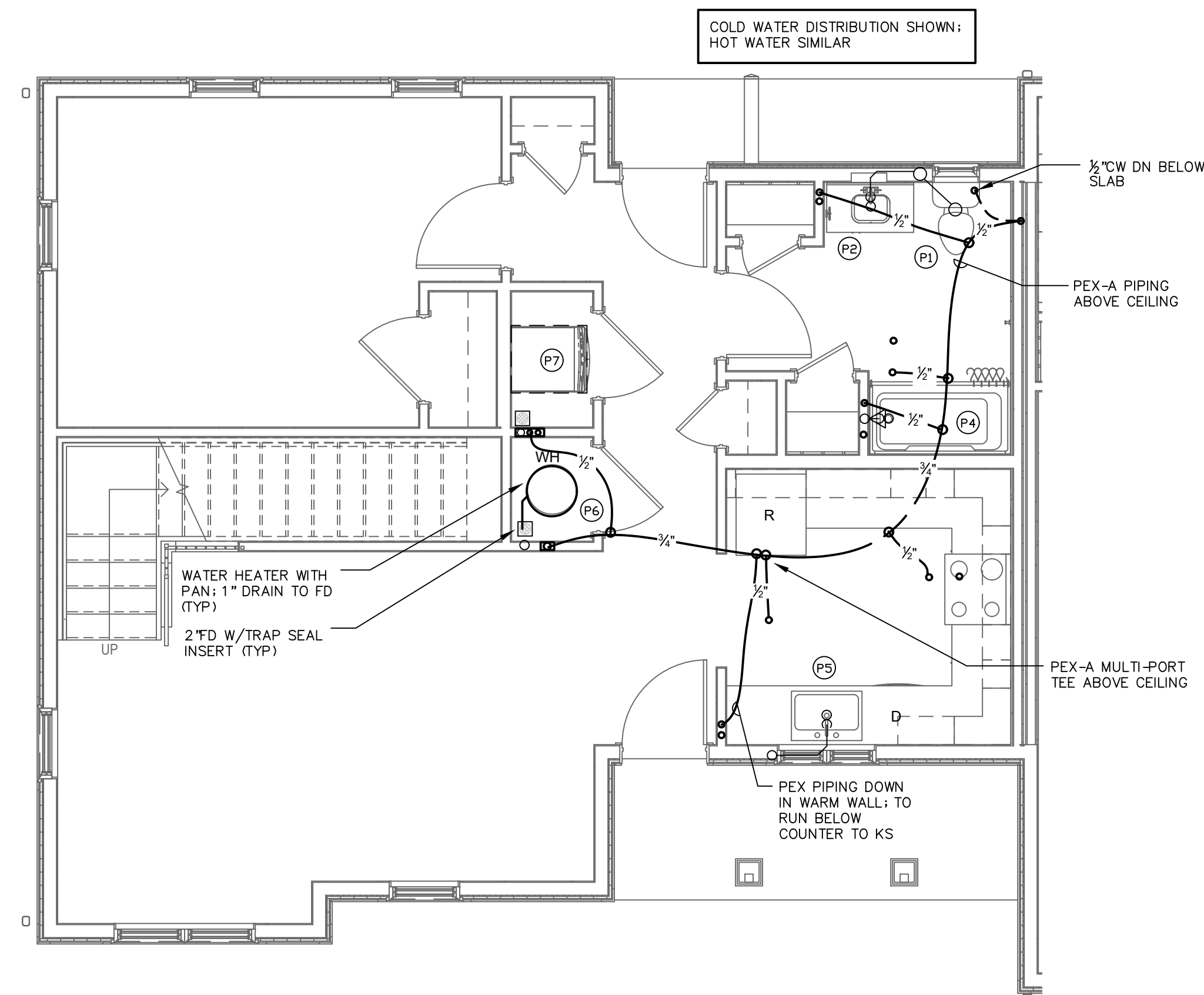
4 INTERIOR DOOR HEAD DETAIL H-2
 A9.1 1 1/2" = 1'-0"



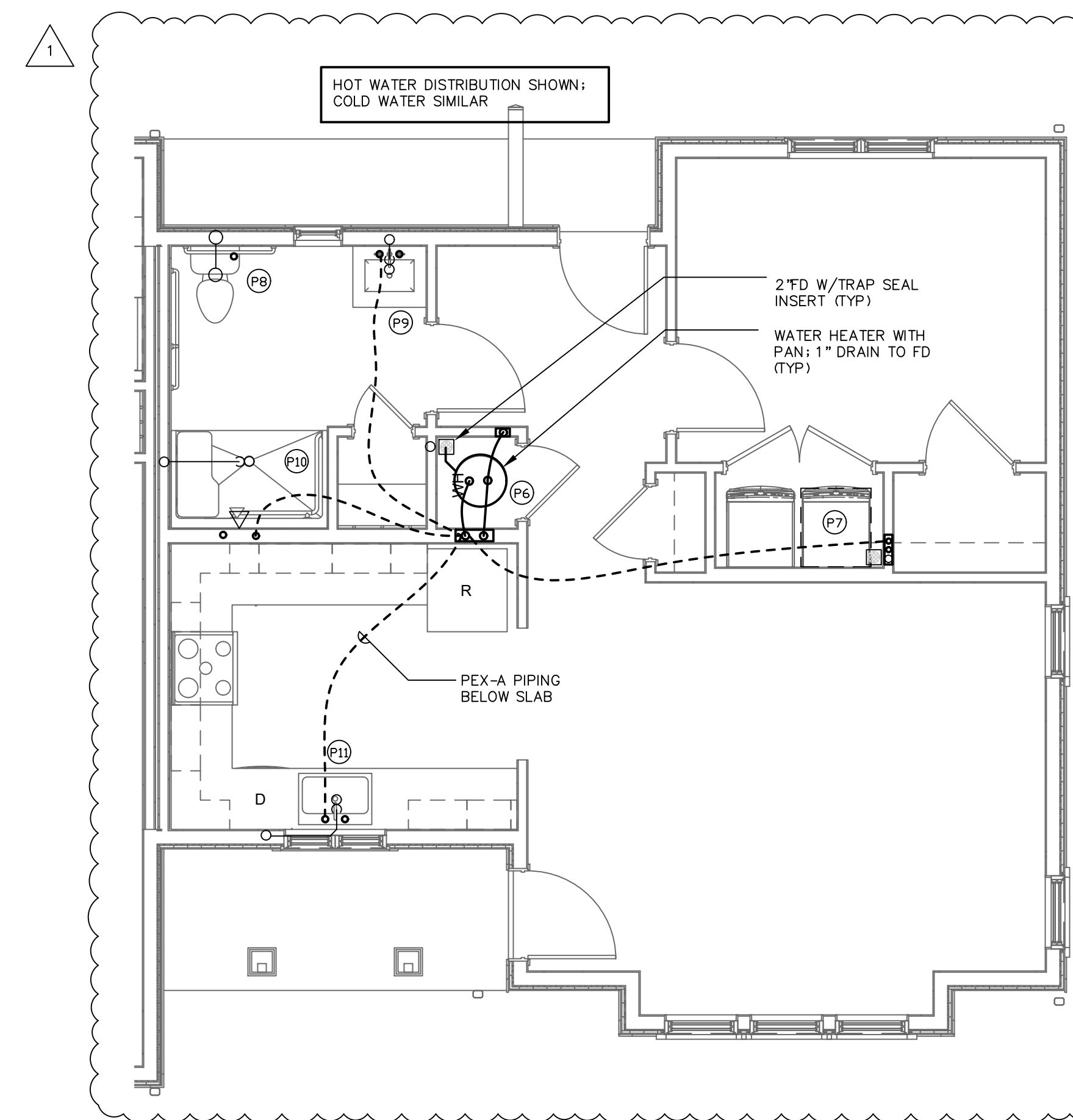
1 EXTERIOR DOOR HEAD H-1
 A9.1 1 1/2" = 1'-0"



3 **TYPICAL UNIT A SECOND FLOOR**
P2.1 1/4" = 1'-0"



4 **TYPICAL UNIT A FIRST FLOOR**
P2.1 1/4" = 1'-0"



5 **TYPICAL UNIT D FIRST FLOOR**
P2.1 1/4" = 1'-0"

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PROJECT DESCRIPTION:

LITCHFIELD HOUSING
LITCHFIELD, CT

Project #: PROJECT #

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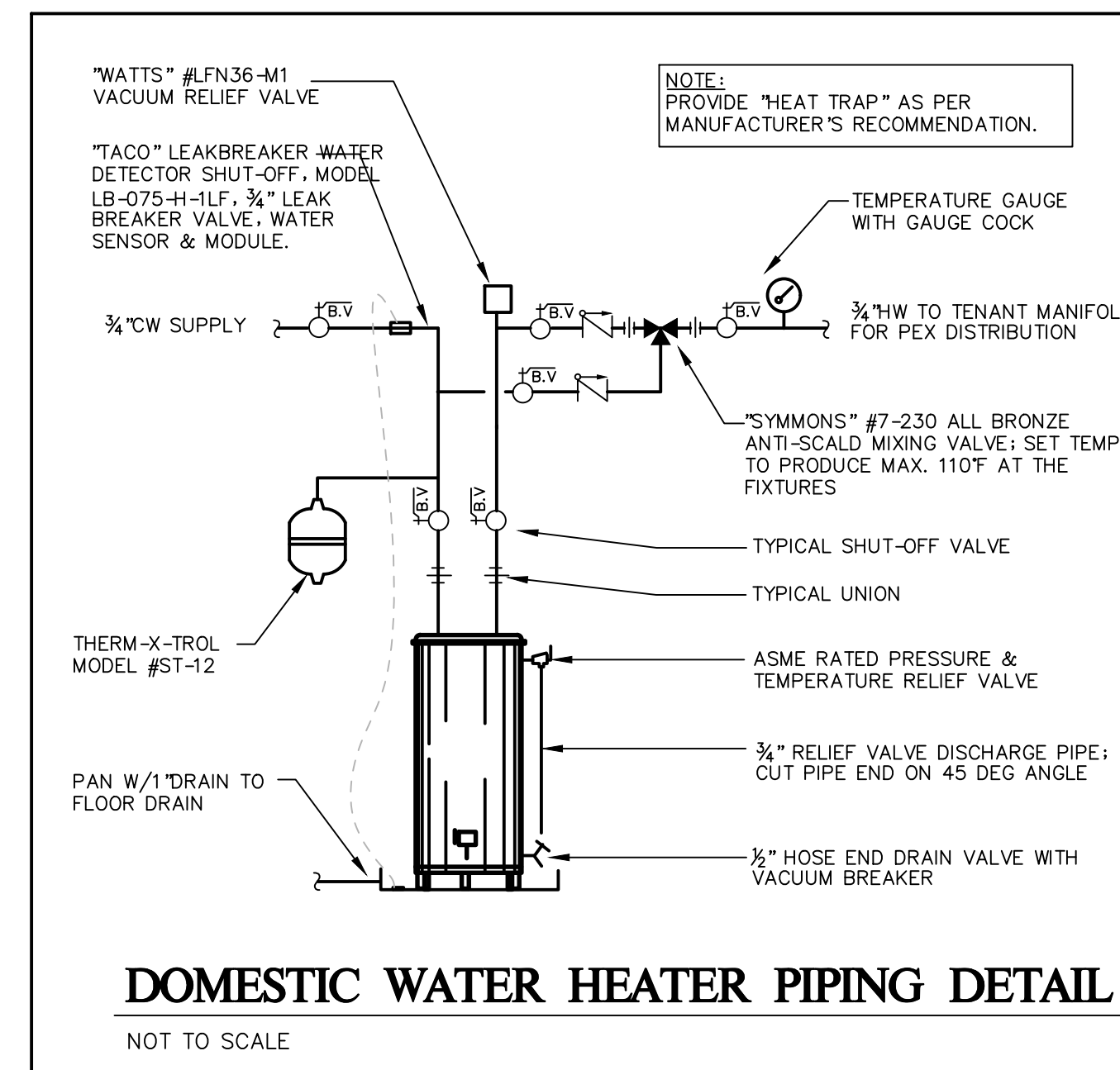
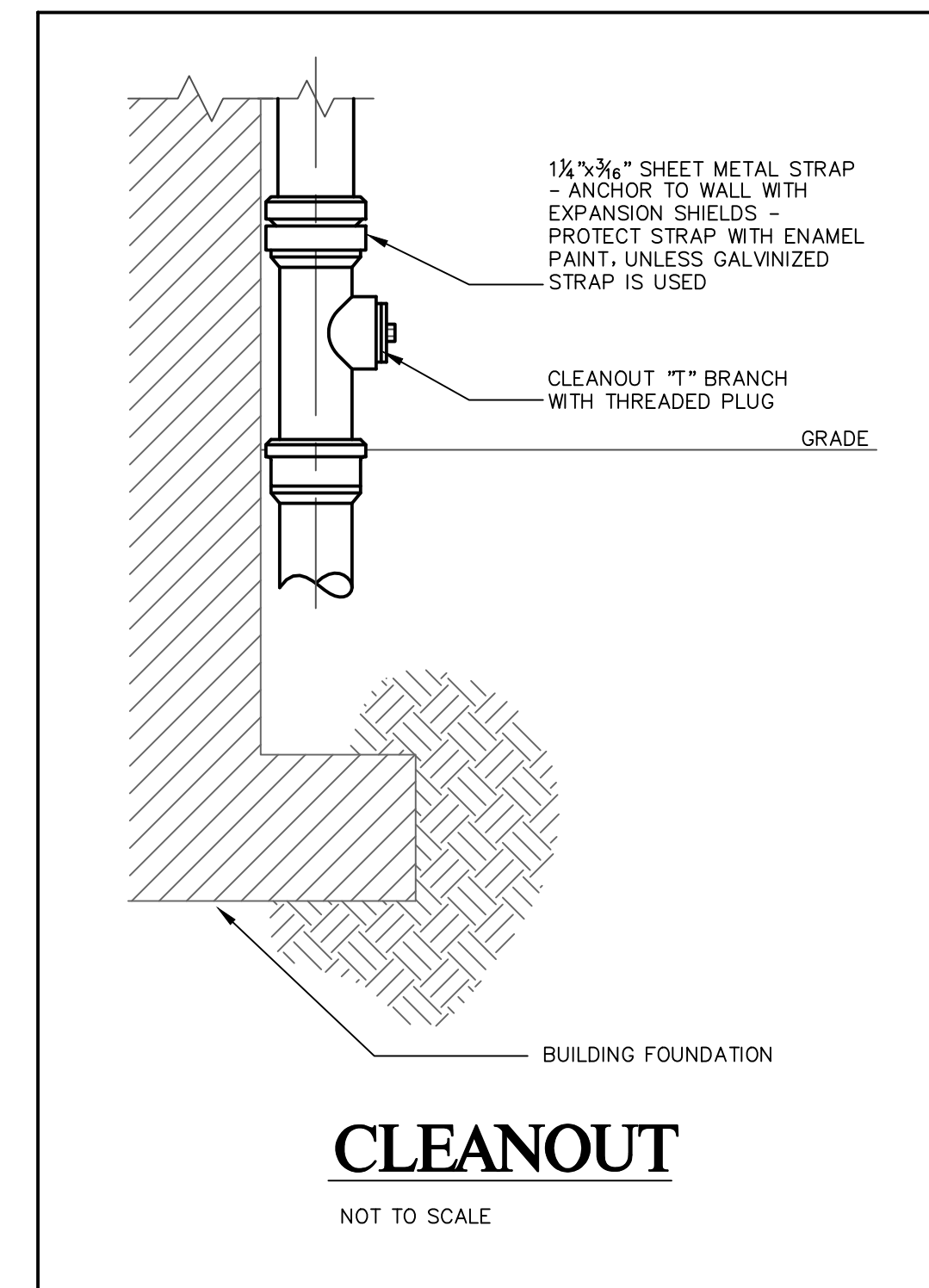
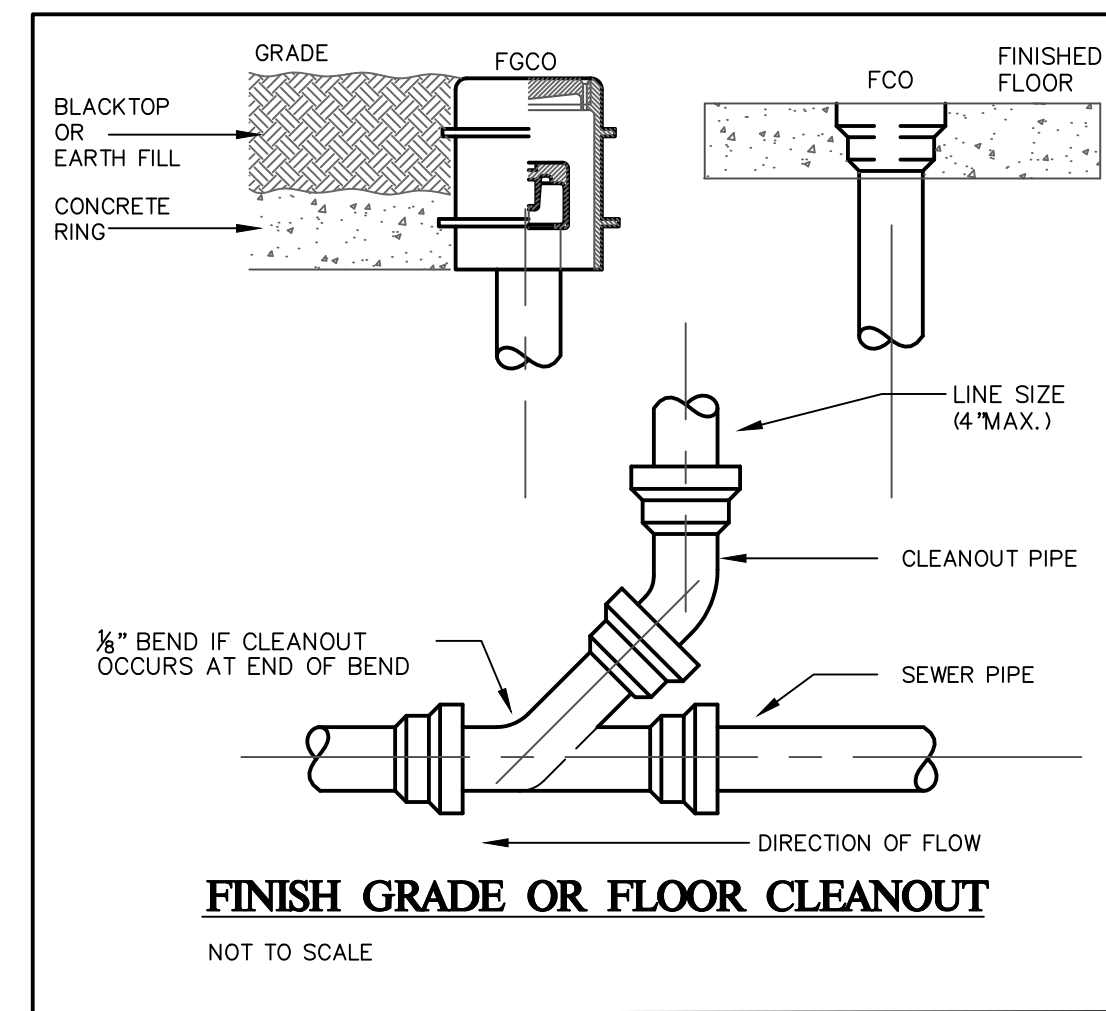
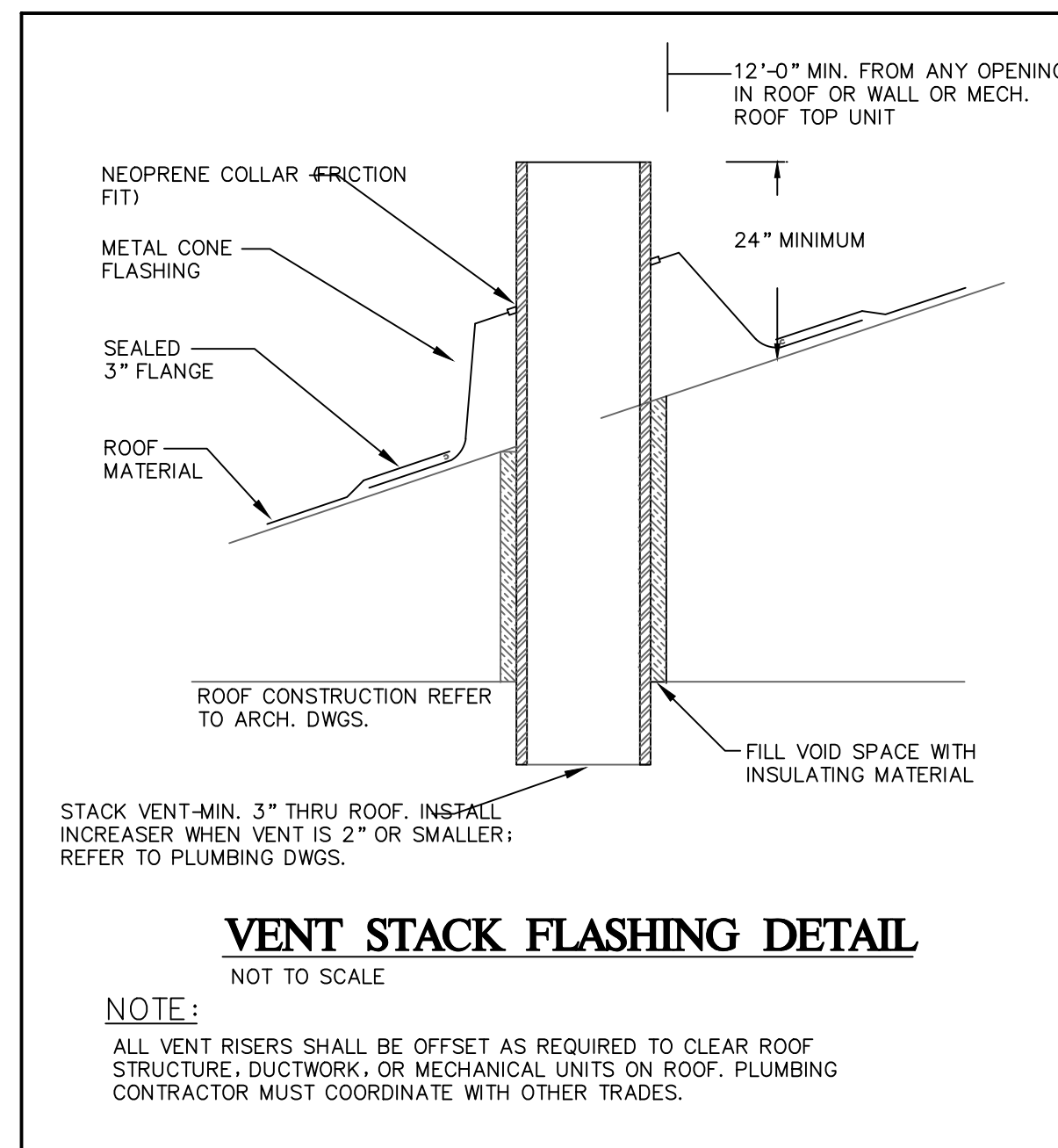
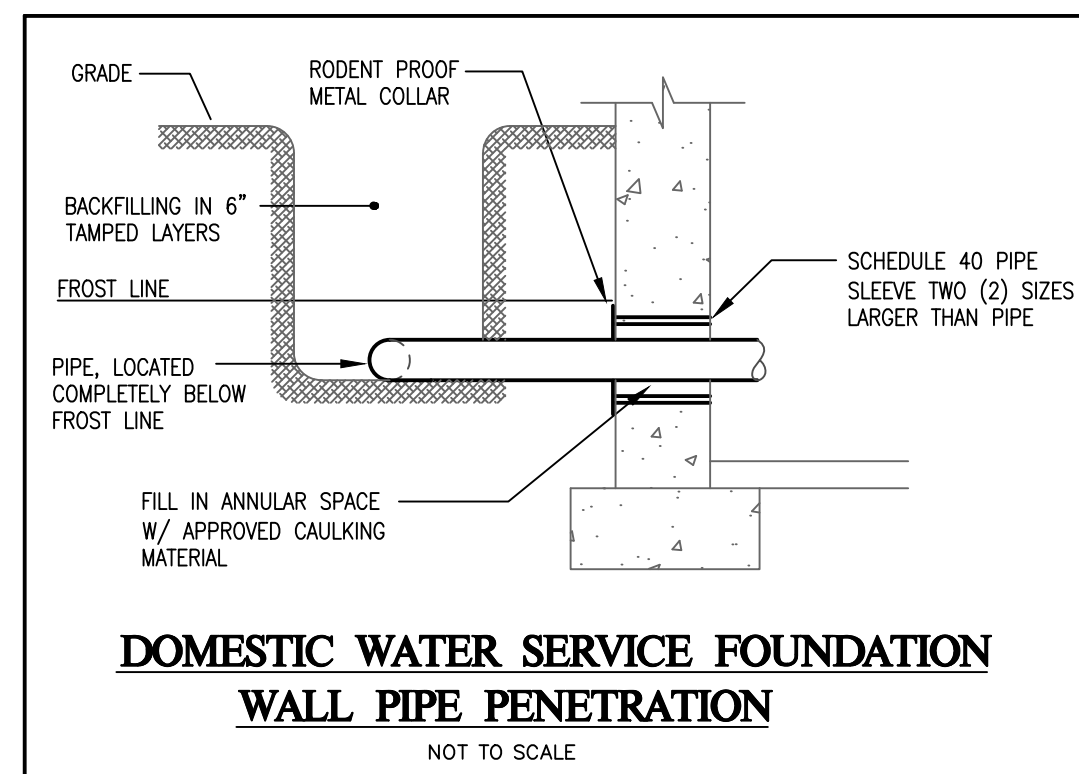
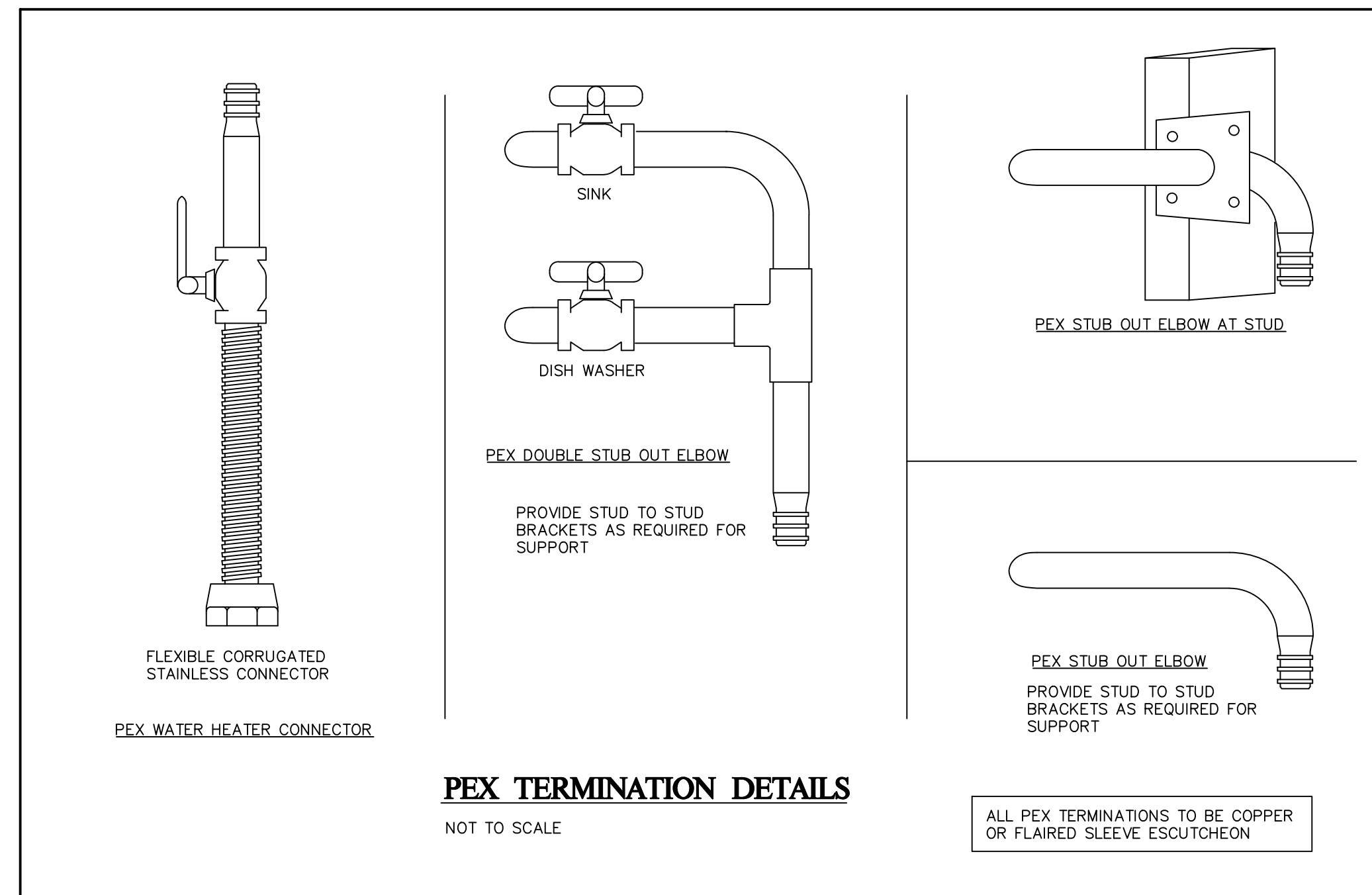
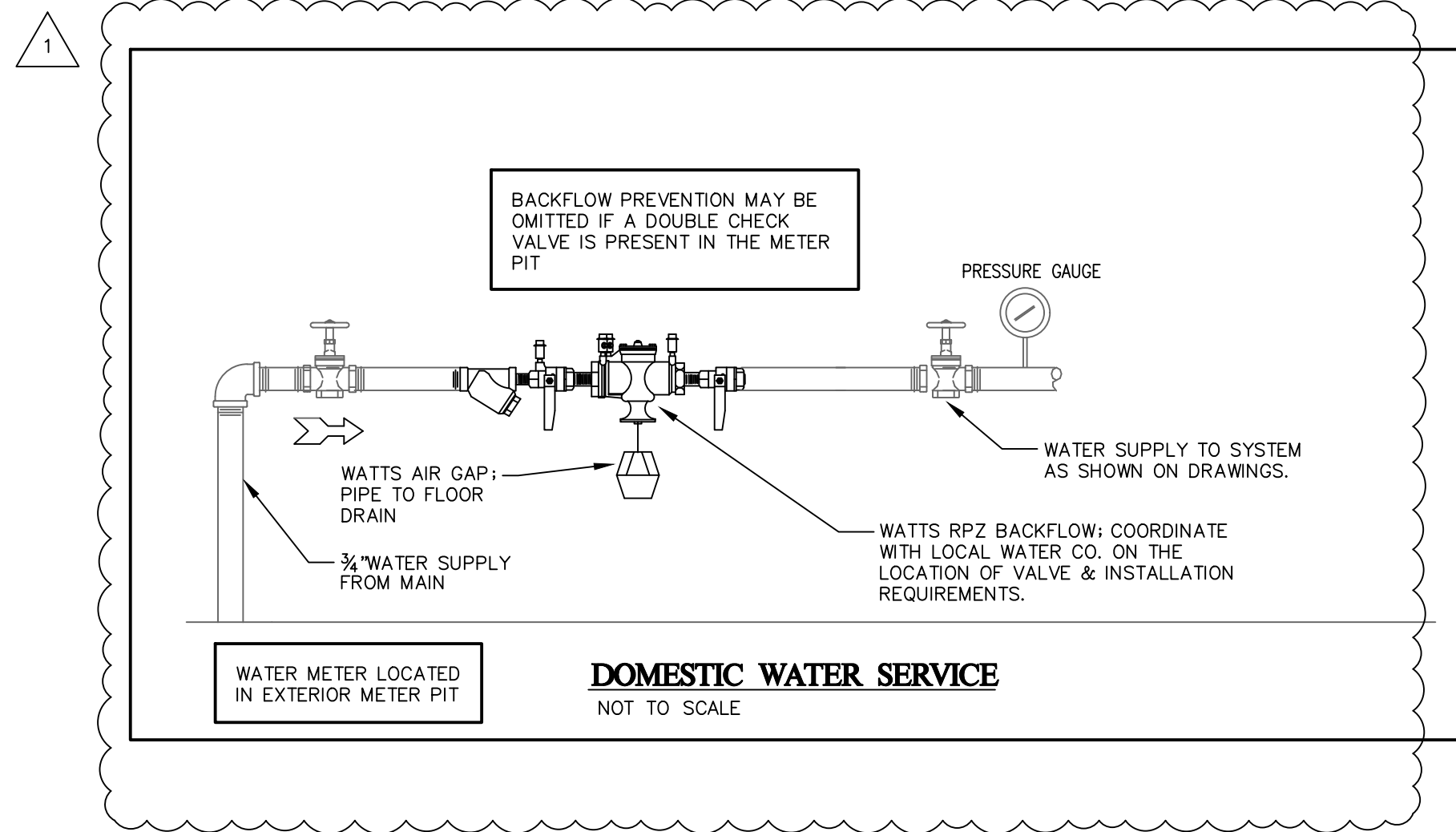
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TYPICAL UNIT PLAN- PLUMBING

P2.1



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LITCHFIELD, CT

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DETAILS - PLUMBING

P3.0

