

ADDENDUM

PROJECT	BCH Helipad & Roof Replacement	PROJECT #	24003
OWNER	Boone County Hospital	DATE	6-27-24
LETTING DATE	07-02-24	ADDENDUM #	02

TO ALL HOLDERS OF DRAWINGS AND PROJECT MANUALS

This addendum is issued to incorporate the following changes in the drawings and project manual. For bids to be considered, this addendum must be acknowledged by so indicating on the Form of Bid.

Bidders shall make the following corrections or additions to the bidding documents. These items shall supersede, modify, and/or change all statements or drawings to the contrary in the drawings and project manual and shall take precedence over these documents. Bidders shall base their bid on the drawings and project manual and as modified by the changes herein stated.

This addendum consists of (# of pages)

Text	Supplemental Drawings		Project Manual	Total Pages
	30x42	Other		
3	7	-	38	48

REVISIONS

1 Prior Addenda

Item #	Add #	Add Item #	Attachment	Description of Change
1.01	01	N/A	N/A	Reference ADDENDUM 01, issued on June 21, 2024.

2 Architectural

Project Manual Changes

Item #	Sheet/Section	Detail/Paragraph	Attachment	Description of Change
2.01	00 01 12	-	00 01 12	REVISE with Public Hearing Information
2.02	00 80 00	Line 67.)	00 80 00	ADD Verbiage to clarify logistics of MRI truck in place.
2.03	00 80 00	Line 70.)	00 80 00	ADD Language to clarify the use of allowances.
2.04	00 80 01	Line 14.)	00 80 01	REVISE verbiage to clarify the permitting being covered,
2.05	00 80 01	Line 16.)	00 80 01	REVISE verbiage to add project specific information
2.06	00 80 01	Line 21.)	00 80 01	REVISE to add additional information for intent of contractor scope
2.07	00 80 01	Line 22.)	00 80 01	REMOVE verbiage to indicate appropriate verbiage contained in line 46.
2.08	00 80 01	Line 33.)	00 80 01	REVISE for the addition of slab saw cut and demo allowance,
2.09	00 80 01	Line 34.)	00 80 01	REMOVE Line 34 in favor of 33.

2.10	00 80 01	Line 39.)	00 80 01	REVISED to account for new metal grating at transition of walkway to helipad.
2.11	00 80 01	Line 41.)	00 80 01	REVISE Verbiage to clarify the intent of the scope that BP 01 will cover at the slab.
2.12	00 80 01	Line 42.)	00 80 01	REMOVE Line 42. in favor of line 41.
2.13	00 80 01	Line 43.)	00 80 01	REMOVE Line 43. in favor of line 41.
2.14	00 80 01	Line 45.)	00 80 01	REMOVE Line 45. In favor of line 41.
2.15	00 80 01	Line 51.)	00 80 01	ADD Allowance to cover removal and replacement of wood blocking per 7/A5.01
2.16	00 80 01	Line 48c.)	00 80 01	ADD Language to reference AD1.31
2.17	00 80 01	Line 52.)	00 80 01	ADD \$5,000 allowance to capture the removal and replacement of the wood blocking along the helipad perimeter.
2.18	00 80 02	Line 34.)	00 80 02	REVISE to indicate the specific amount of time anticipated for the use of the stair tower.
2.19	00 80 02	Line 36.)	00 80 02	ADD Clarification for detail 7/A5.01
2.20	00 80 03	Line 55.)	00 80 03	ADD \$5,000 allowance for unforeseen conditions at roof drains.
2.21	07 14 00	-	07 14 00	ADD section 07 14 00.
2.22	07 54 00	Line 2.03 A 1 a 1)	-	OMIT line 2.03 A1a1). Fluid-Applied waterproofing will be used at the split slab instead.

Drawing Changes

Item #	Sheet/ Section	Detail/ Paragraph	Attachment	Description of Change
2.23	A0.01	ASSEMBLIES	A0.01	REVISE to remove existing bentonite complete, infill flush with non-shrink grout
2.24	AD1.31	2	AD1.31	REVISE to remove existing bentonite complete, infill with non-shrink grout, and remove existing blocking as required
2.25	A1.31	1	A1.31	ADD detail callout for 16/A5.01 and dimension for steel grate
2.26	A5.01	6,7,10,11,12,13,14	A5.01	REVISE details 6,7,10,11,12,13, and 14 as shown in the attached documents.
2.27	A5.01	16	A5.01	ADD detail 16 HELIPAD EDGE DETAIL AT WALKWAY

3 Mechanical

Project Manual Changes

Item #	Sheet/ Section	Detail/ Paragraph	Attachment	Description of Change
3.01	232800	1.2	232800	REVISE references.
3.02	23 28 00	2.2	232800	REVISE Radiant heating piping (downstream of manifolds) section.
3.03	23 28 00	2.3	232800	REMOVE exterior buried piping (upstream of manifolds) section.

Drawing Changes

Item #	Sheet/ Section	Detail/ Paragraph	Attachment	Description of Change
3.04	M1.0	-	M1.0	REVISE keyed note #11.
3.05	M5.0	-	M5.0	REVISE snowmelt zone control diagram. REVISE roof drain detail.
3.06	M6.0	-	M6.0	REVISE glycol heating water (snow melt) material and joints in the piping application schedule. REVISE RD-1 on the plumbing material list.

4 Substitution Requests

Item #	Sheet/ Section	Detail/ Paragraph	Attachment	Description of Change
4.01	07 19 00	2.01	N/A	Tenon Siloxane Sealer accepted as an approved substitution provided the product is in accordance with the specifications.

End of Addendum

Submitted By



Heidi Willis, AIA, WELL AP

SECTION 00 01 12 – NOTICE TO BIDDERS

NOTICE TO BIDDERS
CLINIC & INFRASTRUCTURE IMPROVEMENTS
BOARD OF TRUSTEES
BOONE COUNTY HOSPITAL
BOONE, IOWA

Sealed proposals will be received by the Construction Manager – Graham Construction at Boone County Hospital located at 1015 Union Street, Boone, IA on Tuesday, the 2nd day of July 2024 at 4:00 PM and opened at 4:05 PM the same day for furnishing all labor, materials, and equipment for all Bid Packages (01,02,03). The proposals will be presented to and considered by the Board of Trustees of the Hospital who shall decide on July 9th, at 1:00PM. Such proposals received will be acted upon at such time and place or at such later time and place as may then be fixed.

DESCRIPTION: Furnish all labor, material and equipment required to accomplish the construction described in the specifications, indicated on the plans, and according to the schedule. The work includes, but is not limited to, general construction, sitework, paving, demolition, as well as electrical work for the paving improvements on site at the hospital.

Bids are for:

Bid Package 01 – Concrete Slabs and Paving

Bid Package 02 – Roofing

Bid Package 03 – HVAC, Plumbing & Fire Suppression, Electrical & Low Volt

Bidding documents may be obtained starting Friday, June 14th, 2024, from Action Reprographics, 5037 NE 14th St., Des Moines, IA 50313 (phone) 515-288-2146, upon deposit of the sum of one hundred dollars (\$100.00). This deposit will be refunded upon return of the bidding documents in good condition within thirty days after receipt of bids. MBI bid cards will be accepted. Include a nonrefundable check in the amount of twenty dollars (\$20.00) for plans to be shipped.

Bidding documents may be examined at:

Graham Construction Company
421 Grand Avenue
Des Moines, IA 50309
515-244-1279

Boone County Hospital
1015 Union Street
Boone, IA 50036
515-432-3140

Construction Update Plan Room
1406 Central Avenue, Box T
Fort Dodge, IA 50501
515-955-5500

Construction Update Plan Room & ISqFt
221 Park Street
Des Moines, IA 50309
515-288-8904

BID SECURITY: All bids must be accompanied by bid security payable to OWNER in an amount equal to at least 5% of the highest total amount including Add Alternates. The bid

Helipad & Roof Replacement
Boone County Hospital
INVISION #24003

security may be in the form of a Certified Check, Cashier's Check or a bid bond executed by corporations authorized to contract as surety in the State of Iowa. The bid bond shall be executed by the Bidder on AIA Bond Document. Bid Security shall be in a separate envelope with the sealed bid and shall be forfeited to the Owner as liquidated damages in the event the bidder fails to enter into a contract and furnish a bond within ten days after his bid has been accepted. No Bidder may withdraw his bid for at least sixty (60) days after the scheduled closing time for the receipt of bids the 2nd day of July 2024.

The successful Bidder will be required to furnish and pay for satisfactory Performance Bond and Labor and Material Payment Bond in the amount of 100% of the Contract Price. Bond to be issued by a responsible surety approved by the Board of Trustees of Boone County Hospital.

The Notice to Proceed will be issued following acceptance of the executed Contract by the successful Bidder and the requisite Performance Bond and Labor and Material Payment Bond and insurance certificates, and a determination by the OWNER that it has secured permanent financing for the Project. All work for this package shall be completed within the given schedule.

QUALIFICATIONS: The Owner reserves the right to request qualification forms before issuing documents or before Contract is awarded, and to further reject any or all proposals or to waive technicalities or irregularities and to accept any bid which will best serve the interests of the Owner. By virtue of statutory authority, a preference shall be given to products and provisions grown and coal produced within the State of Iowa.

Notice is hereby given that a public hearing will be held concurrently with the Board of Trustees approval on July 9th, at 1:00PM. This hearing will be held in the 4th Floor Board Room at the Boone County Hospital, 1015 Union Street, Boone IA 50036, and via. phone ([+1 469-518-1640](tel:+14695181640), [43291297](tel:+143291297)), Conference ID: 432 912 97#) and web call in via the link below:

https://teams.microsoft.com/l/meetup-join/19%3ameeting_OGJlZTgzMDAtZmRlMS00OGJhLTk5MzQtYTFlNTkyZWU4MGE0%40tHread.v2/0?context=%7b%22Tid%22%3a%22cb6589ec-fea7-4f75-a85a-3b54061265e9%22%2c%22Oid%22%3a%222597256-f539-43fd-9fb8-58499868a37a%22%7d

END OF SECTION 00 0112

SECTION 00 8000 – BID PACKAGE #00

Bid Package 00: General Requirements

The following general provisions **shall apply to all bid packages.**

Furnish complete all necessary labor, materials, office and field supervision, insurance, tools, equipment, layout, hoisting, rigging, shop drawings, submittals, permits, licenses and fees necessary to complete the work outlined below. Include all shift pay, overtime, weekend and holiday pay to complete the work in the scheduled durations shown in the project schedule in Specifications.

Work that is not specifically shown, listed or detailed in the Contract Documents, but necessary for a complete system and could be reasonably inferred by the nature of the scope of work shall be included in this bid. In the event there is a contradiction in the plans or specification, request clarification or assume the more costly option.

All work in this Bid Package shall be provided in accordance with OSHA regulations and applicable state and local codes. Provide proof of all training and certificates required and provide written safety and fall protection programs. **This project is participating in the OSHA Partnership; all employees on site will participate fully including Monday safety meetings and monthly third-party safety job site walk-throughs.**

1. The general construction **building permit** will be applied for and paid for by the Construction Manager. Each Prime Contractor shall apply for and pay for any and all permits required to complete their specific bid package scope of work. Include all permits, tap fees, development fees, etc. that may be charged by the utility company, city, county, state and any other agency having jurisdiction. Copies of all permits must be provided to the Construction Manager for record.
2. All contractors that have scope of work that is going to be completed outside of flagging must complete the scope of work with full OSHA compliant fall protection. A spotter system will not be considered adequate for Graham Construction's fall protection policy. Adequate engineered controls must be implemented when working outside of flagged areas (D-Rings, Raptor Carts, etc.) (ADD #1)
3. All contractors are to include any and all inflationary/material escalation costs to complete the project in their bids.
4. After bid day, no change orders will be accepted due to inflation or material escalation.
5. Dress code: each Prime Contractor, Subcontractor, Sub-Subcontractor, etc. shall ensure that each worker has the following and is worn at all times. The Construction Manager has the right to ease the requirements at their discretion.
 - a. Hard hats, safety glasses, work boots/shoes meeting OSHA requirements.
 - b. Gloves are required for to be worn while performing work.

- c. Pants (no shorts).
 - d. Sleeved shirt.
6. Construction employee vehicle parking in the hospital parking lot(s) is strictly prohibited. Limited parking will be provided for Prime Contractors in the staging area. See Construction Manager's representative for availability. Job Trailers are not allowed to be stationed on site or in the designated parking lot provided, unless coordinated with the Construction Manager, limited space is available.
 7. Submittals 30 days from contract execution or to otherwise not impact the project schedule. **(ADD #1)**
 8. Closeouts 30 days prior to substantial or to otherwise not impact the project schedule. **(ADD #1)**
 9. Construction Manager may request proof of order/procurement and contractor is required to provide.
 10. Contractors required to fill out JHA's and construction manager may request to receive these.
 11. All prime contractors are responsible to keep updated with project information through Procore
 12. All prime contractors required to submit RFI's to Procore on their own.
 13. All contractors on site must be present in schedule/foreman's meeting.
 14. Everyone is required to do their own cleanup typical to their scope of work. Any additional cleanup will be tracked and billed back as applicable by the CM at \$130/hr for supervision and \$80/hr for labor. **(ADD #1)**
 15. Everyone is required to do their own snow removal as required to continue their scope of work.
 16. Prior to starting work, all workers must attend a Site Safety Orientation located in the Graham trailer to go over hospital policies and safety requirements and receive a hard hat sticker before they can enter the jobsite to work or deliver material for use by installers. Please coordinate with Graham when new employees arrive on site. All workers will also be badged by the hospital and must keep on them at all times while on site.
 17. Each Contractor is responsible for following, at minimum, all safety policies as outlined by Graham in the Site Orientation as well as in the Site-Specific Safety manual.
 18. Each Contractor shall follow the JHA (Job Hazard Analysis) Policy outlined in the Site-Specific Safety Manual and Bid Package 01 5800 CONSTRUCTION MANAGER SAFETY POLICY.

19. The hospital need to remain in operation 24/7, the hospital can request work be shut down at any time for noise, vibration, or any inconvenience to their everyday operation. Coordinate disruptive work with the Construction Manager and give adequate notice for all shutdowns and inconvenient work. Work causing noise, vibration, or other interruption needs to be coordinated at least 72 hours before the start of work and could be requested to happen after hours. This requested afterhours work will not be an additional cost to the project.
20. The jobsite and staging areas are limited for space. Material will need to be delivered as required for the work to occur as stocking of material for the entire project will not be available. Delivery hours will be determined by the hospital, and then the Construction Manager will coordinate these hospital hours with the Prime Contractor. Transporting material to and from this location is the responsibility of each contractor. The Prime Contractors are responsible for receiving all deliveries, unloading, and moving of materials as it relates to their contract scope. All deliveries must be coordinated and scheduled with the Construction Manager.
21. All demolition trash, debris, and material transported through the existing hospital will need to be covered. Contractor to provide dust control measures so trash carts' wheels and anyone's foot traffic won't track dust out of the construction areas.
22. Step-Up Scaffolds will not be allowed for use of any type on the jobsite. Contractors attempting to use step-up scaffolds for installation or storage of material will be required to stop work until scaffolds are removed from site and a safer alternative is acquired.
23. No Smoking is allowed on site, except in Designated Smoking Areas, which will be outlined in the Contractor's required Orientation. Contractors found smoking outside of designated areas will be removed from site immediately.
24. Where work occurs in existing areas/rooms that have finishes to remain, install poly and/or other means to protect existing cabinetry, equipment and room finishes.
25. All work above ceilings where those ceilings are not shown to be removed and replaced in the Contract Documents will need to be removed and replaced. This note applies to phasing and scheduling as well. For any work that occurs above ceilings before or after those ceilings get replaced because of phasing, each contractor will need to remove and replace ceilings as needed to do the work and will be responsible for any damages incurred.
26. Take adequate safety precautions to protect patients, visitors, hospital staff and other construction workers as needed or required by OSHA requirements. Coordinate with the Construction Manager and Owner when closing an occupied area for exploratory and/or construction activities.

27. Each Prime Contractor is responsible for providing fresh, clean, potable water for their workers and workers of their subcontractors and sub-subcontractors per OSHA requirements. Each contractor must also have 1st AID kits readily available on site for their workers and subcontractors per OSHA requirements.
28. Each Prime Contractor shall restore all public and private land disturbed by their bid package to the original condition.
29. Existing streets and roadways to and from the site shall remain free from damage by work performed by each Contractor. Repair any damage caused by this contractor scope to existing public roadways at no additional cost to the Owner. This applies to the public improvement roads on the project site. Final discretion of responsible parties will be determined by the Construction Manager.
30. Locate and protect all existing utilities to remain. Confirm locations prior to demolition and provided temporary utilities as required. When existing utilities are in the work area they shall be pot-holed to located.
31. Provide and maintain all barricades required to protect the public and workers. Barricades will remain in place until work by all bid packages is complete. Remove barricades after work is complete. Barricades shall clearly mark and block the hazards present and keep the public and other workers safe from harm.
32. Each Prime Contractor is responsible for protecting their work until acceptance by the owner. Each Prime Contractor is responsible for respecting the work completed by all other Prime Contractors and shall be responsible for replacing anything damaged.
33. Each Prime Contractor shall provide **daily** jobsite clean-up for debris and dust generated by the installation of their scope of work. Haul debris to the dumpster provided by the Construction Manager. **Daily** jobsite clean-up shall consist of all prime contractor's employees cleaning the work area for at least 30 minutes before leaving.
34. All extension cords shall be rolled up and checked for cuts or defects at the end of each workday. Damaged cords or cords with missing ground pins will be destroyed and removed from site at contractor's expense.
35. Each Prime Contractor shall provide all layout and surveying as required to complete their scope of work.

36. The cost of testing and inspections shall be paid for by the Owner as required by the Contract Documents. All testing and inspections shall be called for by each Prime Contractor and tests shall be coordinated with the Construction Manager. Costs of retesting due to failed tests will be the responsibility of the Prime Contractor.
37. Each Prime Contractor is responsible for cutting, protecting and covering penetrations in the roof, slab on grade and walls to install their work. Follow all OSHA guidelines for covering, securing and marking holes. Make the Construction Manager aware of all penetrations, holes, etc. prior to cutting or uncovering.
38. All work to be completed in accordance with the schedule and phasing included in the specification section and as noted in the Contract Documents. The contractor shall include additional mobilizations as required to meet the schedule and phasing as noted.
39. The cost to move materials shall be included. Each prime contractor is responsible for storage and protection of their materials prior to and following installation until accepted at substantial completion.
40. As applicable, each Contractor shall provide, maintain and empty a concrete wash-out container for use of any concrete, grout, mortar, etc. generated by their scope of work. The concrete wash-out spoils shall be disposed off-site in a legal manner. Coordinate all aspects of the concrete wash-out with Construction Manager. NOTE: Any other means of concrete wash out shall be approved by the Construction Manager 10 days prior to commencement of concrete or other cementitious work.
41. Each prime contractor is responsible for always providing a Superintendent or Foreman on site while workers are on site. Same aspect applies to weekend work that is requested by said contractor.
42. Each Prime Contractor is responsible to have a minimum of one English speaking supervisor on-site during the duration of the contractor's work.
43. All work to be completed in accordance with the schedule included in specification section 01 1520 and as noted in the Contract Documents. The contractor must include additional mobilizations as needed to meet the schedule as noted.
44. Include taking any deliveries related to this bid package, and moving materials and clean-up as required.
45. The existing hospital will remain in everyday operation. The hospital can request work be shutdown at any time for noise, vibration, or any inconvenience to their everyday operation. Coordinate when this work can occur with the Construction Manager. Give adequate notice for all shutdowns and inconvenient work to the Construction Manager.

46. Each Prime Contractor is responsible to supervise all subcontractors and suppliers under their contract. If the Construction Manager must supervise or coordinate a Prime Contractors workers or subcontractors, the Construction Manager will charge \$130 per hour.
47. Each Prime Contractor is responsible for replacing anything they damage such as spray fireproofing, building components, etc that are compromised by their work
48. Each Prime Contractor is responsible to provide fire and acoustical caulking of any penetrations made by their scope of work per wall types and ratings. Patch any openings made by this bid package as needed for penetrations in existing walls, floors, and ceilings.
49. The use of internal combustion type equipment inside the building is not allowed without prior approval by the Construction Manager at least 1 week prior to commencement of the work. For any internal combustion equipment used, provide carbon monoxide/carbon dioxide scrubbers on the equipment.
50. Coordinate shop drawings and installation with other trade contractors. All work shall be installed to provide the maximum benefit to the Owner and allow for full access to equipment requiring maintenance.
51. Each Contractor is to fill out a hot work permit prior to commencement of work and must be filled out weekly as they expire. Please see construction manager for permits and location to post permit.
52. All materials within proximity to the helicopter landing pad are required to be tied down before any air lifts. Coordinate with Construction Manager and hospital.
53. Prime Contractors are responsible for providing a fire watch on a continuous basis if they need to shut the Fire Protection system down any longer than 4 hours until the system is active.
54. Prime Contractors are responsible for providing a fire watch for any hot work requiring the Fire Protection system being shut down and fill out appropriate paperwork.
55. Prime Contractors are required to follow all safety requirements implemented by the Construction Manager. This includes but not limited to: Construction Manager Site Specific Safety Plan, PPE requirements, Job Hazard Analysis Forms (JHAs), fall protection requirements, safety orientation, owner required safety orientation, and owner safety requirements.

- a. *JHA forms and proper training on filling out each form will be provided by the Construction Manager.*
56. This project will utilize Last Planner Construction Schedule tools to plan the work, update the schedule, and monitor progress. It is a requirement to provide all paperwork and attend all meetings as requested by the Construction Manager. Some of the items included are, but not limited to:
 - a. A minimum of one schedule coordination meeting will be held with the Prime Contractor project managers and foremen that will be on site daily. These meetings may last a full day and are mandatory. In this meeting, you will be required to list all activities, assign accurate durations, and work with other contractors to sequence the activities as a group.
 - b. Weekly foremen's meetings will be held where weekly work plans (WWP's) will be turned in to the Construction Manager for review and the 6-week project schedule will be discussed. Weekly work plans are required to be turned in prior to the weekly meeting so all activities can be compiled into one WWP and distributed at the meeting.
 - c. Daily stand-up meetings are a daily progress check and planning session for the following day. These meetings will be held on the project site, foremen for all trades on site are required to be there, and they should take no longer than fifteen minutes per day.
57. Project foreman's meetings will be held weekly at the site and Project Managers shall attend bi-weekly. Contractor shall have a representative at each meeting while contractor is on site or within 4 weeks of starting a task. This representative shall have knowledge of the project and empowered to make manpower and financial decisions while at the meeting. Absences to be discussed with the construction manager prior to the meeting.
58. Procore will be used for maintaining project information. Each contractor shall check the program at a minimum of twice a week. The cost of ProCore is by the Construction Manager.
59. Each Prime Contractor will be responsible for completing two punch lists per phase and/or area. One for the Construction Manager and one for the Architect / Owner. Corrections to the Construction Manager punchlist must be complete before the Architect / Owner punch list starts. These will be managed through Procore, and it is the responsibility of each Contractor to maintain their assigned items in Procore.
60. All site observation reports must be responded to within 5 working days and should not alter the project schedule. These will be managed through Procore, and it is the responsibility of each Contractor to maintain their assigned items in Procore.
61. Provide all work per the contract schedule. Durations are not always intended to be cumulative and must be interpreted to the context shown in the schedule. The Prime Contractor understands that there will be concurrent work activities taking place that may require additional supervision, manpower, and equipment or material deliveries to accommodate the schedule needs. Provide sufficient labor, material, and equipment to maintain progress in accordance with project schedule. Durations for each activity are to be maintained. Start dates may shift according to the Construction Manager's schedule.

62. Each prime contractor is responsible to field verify all dimensions prior to fabrication of products.
63. All Closeout Documents must be provided to the Construction Manager by the designated due dates provided through Procore. Due dates will be set for two months prior to the first designated turnover date. Closeout Documents must be 100% submitted prior to Final Billing. If Closeouts are not submitted by the designated due date, monthly payment will be withheld at the discretion of the Construction Manager.
64. Failure to perform work to meet the schedule, quality, sequencing, etc., will result in the supplementation of work at the Construction Manager's discretion. This supplemented work will be back charged to the trade failing to perform the original designated work. **Any task to be performed by each bid package that is delayed more than 5 days from the scheduled date will qualify for supplemented work.**
65. All time and material work orders must be signed within 48 hours by the prime contractor foreman and Graham Superintendent, or they will not be paid.
66. Prime Contractor to provide proof of purchase, shipment, reception, or production upon the request of the Construction Manager.
67. Contractors to assume that the MRI Truck will be in place on the Southwest Corner of the site phasing plan full-time and plan movements accordingly. **(ADD #2)**
68. Prime Contractor to be adequately qualified to perform work in a healthcare environment as outlined below:
 - a. Prime Contractor has completed three similar projects in size, type, and scope in the past seven years.
 - Prime Contractor to provide reference list with bid including customer information.
 - b. Prime Contractor will have an afterhours/24-hour emergency service under the entire contract and warranty period.
 - c. Prime Contractor will have sufficient manpower to staff the project to meet the project schedule outlined in Specifications.
 - d. Prime Contractor must have a competent person on site during all times while any direct subcontractors are on site.
 - e. Field and office management/supervisors must have a minimum of three years of healthcare experience.
 - f. All supervision and project management must have completed infection control and risk assessment training.

- g. Prime Contractor to provide reference list with bid including customer contract information.
 - h. All supervision must have a minimum of 10 hours OSHA training.
 - i. All supervision must have CPR / First Aid Training.
69. Prime Contractors are not allowed to order or eat in the hospital's cafeteria or dining room.
- 70.** All allowances are assumed to be additional to the scope of work indicated in the contract documents. The use of allowances must be authorized by the Construction Manager, and tracked by the Prime Contractor. Allowances must be listed as individual line items on the Pay-Application Schedule of Values. The Construction Manager may request the supporting documentation at any point. At the end of the project, all allowances not used will be deducted from each respective prime contractors scope of work as a credit to the owner. **(ADD #2)**

END OF SECTION 00 8000

SECTION 00 80 01 – BID PACKAGE #01
Bid Package 01: Concrete Slab Helipad and Walkway

Furnish all necessary labor, materials, office and field supervision, insurance, tools, equipment, layout, hoisting, rigging, shop drawings, field measurements, submittals, permits, licenses and fees necessary to complete the work outlined below. Include all mobilizations, phasing, shift pay, overtime, weekend and holiday pay to complete the work in the scheduled durations shown in the project schedule.

This bid package includes, but is not limited to the following scope of work:

1. Bid Package #00 – General Requirements
2. Plans by INVISION dated June 14th, 2024
3. This Bid Package includes, but is not limited to the following scope of work:
 - a. Specifications from the Project Manual by INVISION, dated June 14th, 2024 including, but not limited to the following sections:
 - i. 02 41 00 Demolition
 - ii. 03 30 00 Cast-in-Place Concrete
 - iii. Division 07 as it pertains to this scope of work including but not limited to
 1. 07 21 00 Thermal Insulation
 2. 07 92 00 Joint Sealants
4. All testing and inspections shall be scheduled by this bid package and coordinated with the Construction Manager. The cost of initial testing and inspections will be paid for by the Owner. All re-testing for failed tests due to deficient work, or costs for any testing cancellations or delays shall be paid for by the Contractor.
5. Where demolition of existing is only partial, demolition shall be done to a point needed to be able to build the new construction as noted.
6. Verify all dimensions in the field prior to fabrication of any items.
7. Contractor must supply all submittals upon notice to proceed to maintain the project schedule as intended.
8. Coordinate any embeds, rebar, electrical boxes, hose bibs, beam pockets, etc with other Bid Packages. Contractor will not be compensated for rework to due to failure to coordinate with other trades. Failure to report discrepancies prior to start of work will exclude contractor from any future compensation for remedial work.
9. Per the schedule in the contract documents there will be a Construction Manager punch list as well as an Owner/Architect/Engineer punch list. Contractor to include mobilizations as needed for punch list corrections.
10. This bid package shall include multiple mobilizations to meet the schedule.
11. Provide all required traffic control for installation of work.
12. Provide all surveying, staking, and layout needed for this scope of work.

13. Provide temporary power and water for this scope of work if other permanent or temporary power and water are not readily available at the jobsite.
14. This Bid Package to apply and maintain all applicable permits. This will not include the City of Boone Building Permit. This permit will be held by the Construction Manager/Owner. (ADD #2)
15. Include full depth saw-cutting as necessary for the demolition and removal of the concrete pad and walkway. Sawcutting to be wet or vacuum cut as necessary and specific precautions are to be taken to not over-cut. (ADD #1)
16. Include hand removal, shoring, and protection to expose any adjacent existing building structure as needed. Please see AD1.31 General demolition plan notes for any additional information. (ADD #2)
17. Clean streets and roadways to keep them free of dirt, mud and debris generated by this scope of work. Clean daily or more often as site conditions require.
18. Provide daily jobsite clean-up. Haul and place all debris unrelated to the demo of the helipad to the jobsite dumpster.
19. A concrete wash-out container for use by this Bid Package to be provided by this Bid Package. Concrete wash out to be off-site or on-site concrete wash out container to be emptied off site. Any other means of concrete wash out to be approved by Construction Manager.
20. Concrete waste created by this Bid Package shall be removed from the site by this Bid Package. Concrete waste cannot be placed in the dumpster provide by the Construction Manager.
21. Furnish and install joint sealant at paving and sidewalks and include sealant where concrete poured by this bid package meets any dissimilar material. Contractors are to review all drawings for any sealants that intend to be used in conjunction with the slab assembly. (ADD #2)
- ~~22. Furnish and install all pavement markings, traffic signs, handicap parking signs, etc. as indicated in the contract documents. Scope includes the repair of existing pavement markings damaged due to concrete repairs. Striping repair to be completed from curb to curb or the full extent of the marking. See line 46 for appropriate verbiage. (ADD #2)~~
23. Power washing and cleaning of the helipad may be required before applying pavement markings. This cost will be included in this bid package.
24. Provide all labor and equipment for puddling of concrete.
25. Slope slab on grade to drains as outlined on the drawings. The required thickness for the slab on grade or slab on deck must be maintained.
26. Furnish and install all reinforcement including welded wire fabric and any macro/microfibers, dosage rate to be confirmed with Engineer and Manufacturer. All reinforcement must be inspected by testing agent. Coordinate with the testing agent and construction Manager.
27. Miscellaneous embeds, anchor bolts, and dowls to be provided and installed by this package.
28. Clean-up concrete debris, splatter, etc. at all building components.
29. Provide all depressions shown or required in the contract documents.
30. Provide proper FF & FL and sloping per the contract documents.

31. Coordinate concrete sloping around all floor drains with Mechanical / Plumbing Bid Package and Construction Manager.
32. Furnish and install block outs for expansion joint covers in floor slabs and poured concrete walls as indicated in the Contract Documents. Coordinate this work with other bid packages.
33. ~~Review Mechanical and Electrical Drawings to patch existing floors where floor slab work has been completed.~~ Contractor to provide an allowance of 50sf of slab sawcut and demo, to be used in the interior of the mechanical room adjacent to the helipad and roof. This area to be identified by MEP and removed accordingly. **(ADD #2)**
34. ~~Provide all misc. concrete patching noted in the Contract Documents.~~ See line 33. **(ADD #2)**
35. Provide, inventory and install anchor bolts, embeds, base plates, leveling plates, angles, reglets, metal expansion joint assemblies, etc. Prime Contractor shall report all damaged items or shortages upon finalization of receipt and inventory. Shortages or replacement of items due to loss or damage that can be attributed to Prime Contractor lack of care or management will be the responsibility of the Prime Contractor.
36. Monitor concrete placement and adjust/maintain positioning of reinforcing during pours.
37. Rub, fill, grind, and patch as necessary to prepare surfaces for specified finishes or as necessary to achieve specified tolerances. Patch all exposed form tie holes immediately following stripping operations.

Project Specific Requirements

38. This package is responsible for the removal of all demolished materials from the jobsite. The jobsite dumpsters are not to be used for concrete debris removal. This is assumed to be done via. truck or dedicated dumpster and displaced to an appropriate location offsite.
39. ~~This package to remove and reinstall the metal grating and threshold at the entrance to the hospital.~~ This package to install new metal angle and grating at the transition from the walkway to the helicopter pad. This grating to be sequenced with roofing to allow for constructability. **(ADD #2)**
40. This package is responsible for any measures to ensure the protection of all roofing materials in place during the demolition of the helipad and walkway. If the roofing is damaged due to this scope of work, then the repair, replacement, and incidental expenses will be at the cost of this package.
41. This package to supply and instal the following slab connection components (see exact verbiage per detail 7/A5.01). For constructability, this to assumed to be a separate mobilization. **(ADD #2)**
 - a. Chamfered Edges
 - b. Surface Applied Water Repellent
 - c. Concrete Slab
 - d. 10 Mil Polyethylene Slip Sheet
 - e. Mechanically Fastened Retrofit Water Stop in Sealant
 - f. 2" Rigid Insulation R10 Min.
 - g. Backer Rod & Sealant
 - h. Protection Fabric
 - i. Removal of 1" Granular Fill with Non-Shrink Grout
 - j. See note below about allowance for wood blocking

- ~~42. This package to supply all of the sub-concrete weatherproofing and roof system related components including insulation, roofing, bentonite goods, etc. as shown in the drawings. Removed. See line 41. (ADD #2)~~
- ~~43. This package to provide an allowance of \$10,000 for the replacement of the existing bentonite waterproofing and existing bentonite granules and drainage layer under the helicopter pad. Removed. See line 41. (ADD #2)~~
44. This package is responsible for the application of Salt-Guard Product
- ~~45. This package is responsible for supplying the layout of the helipad and walk-way extents for the roofer to install the insulation and roofing components. This will be assumed to be a separate mobilization. Removed. See line 41. (ADD #2)~~
46. This package is responsible for all of the saw cutting, backer rod, joint sealants, and adhesives as shown in the contract drawings for all adjoining surfaces including the concrete next to the permanent structure.
47. This package is responsible for all of the helipad paint as required per the contract documents. Please review and coordinate with cure times and product applications to ensure longevity and warranty.
48. This package is to include all necessary tools and equipment for the hoisting and removal of materials as it pertains to your scope of work.
- a. There will not be equipment provided on site to complete this. This package is responsible for supplying equipment and qualified operators to ensure timely and safe operation.
 - b. If this package would like to use equipment to assist with the demolition of materials from the roof – that information must be sent to the Construction Manager for approval by the Engineer of Record.
 - c. Please see AD1.31 General demolition plan notes for any additional information. **(ADD #2)**
49. This package to coordinate the routing of all MEP components of the in-slab radiant heat, electrical, sensors, etc. as it applies to the work, concrete reinforcing, and forms as it applies to this scope of work.
50. This package to review and install the concrete joint layout per the drawings as indicated.
51. This package to include the forming and finishing of concrete to ensure the complete installation of all systems as indicated, including the cubs, and chamfering as noted.
- 52. Provide allowance of \$5,000 for the removal and replacement of wood blocking along the helipad perimeter. (ADD #2)**

53. The Prime Contractor agrees to the following unit/alternate prices, which include all delivery, hoisting, supervision, fringes, equipment, travel time, insurance, taxes, bonds, overhead and profit for the Work if ordered in writing by the Construction Manager. Provide Unit Prices per Bid Breakdown including all mark ups:

- A. Slab-on-Grade: \$ _____/sf
- B. Survey Crew \$ _____/Hr
- C. Provide a list of hourly labor rates for change order work including subcontractors working under the prime contractor. Include overtime rates.
- D. Provide a list of billable tool/equipment rates for change order work including subcontractors.

Company Information:

Bidder's Company Name

Telephone Number

Date of Proposal

Fax Number

Signature

Printed Name

END OF SECTION 00 80 02

SECTION 00 80 02 – BID PACKAGE #02
Bid Package 02: Roofing

Furnish all necessary labor, materials, office and field supervision, insurance, tools, equipment, layout, hoisting, rigging, shop drawings, field measurements, submittals, permits, licenses and fees necessary to complete the work outlined below. Include all mobilizations, phasing, shift pay, overtime, weekend and holiday pay to complete the work in the scheduled durations shown in the project schedule.

This bid package includes, but is not limited to the following scope of work:

1. Bid Package #00 – General Requirements
2. Plans by INVISION dated June 14th, 2024.
3. This Bid Package includes, but is not limited to the following scope of work:
 - a. Specifications from the Project Manual by InVision, dated June 14th, 2024 including, but not limited to the following sections:
 - i. All Division 00 and 01 specifications
 - ii. 02 41 00 Demolition
 - iii. 06 10 00 Rough Carpentry (as applicable)
 - iv. 07 01 50.19 Preparation for Re-Roofing
 - v. 07 14 19 Fluid Applied Waterproofing
 - vi. 07 19 00 Water Repellents
 - vii. 07 21 00 Thermal Insulation
 - viii. 07 24 00 Exterior Insulation and Finish Systems (as applicable)
 - ix. 07 54 00 Thermoplastic Membrane Roofing
 - x. 07 62 00 Sheet Metal Flashing and Trim
 - xi. 07 71 00 Roof Specialties
 - xii. 07 92 00 Joint Sealants
4. The below items are further clarifications and/or additional requirements to the above specification sections.
5. Contractor shall furnish and install complete roofing system as designed in the Contract Documents. Bid Package pricing shall align with inclusions and exclusions as outlined in this document, this includes but not limited to; insulation, membrane, flashings, termination bars, penetration seals, curb detailing, roof hatches, scuppers, adhesives, fasteners, and any appurtenances for complete system.
6. Contractor must supply all submittals upon notice to proceed in order to maintain the project schedule as intended.
7. Contractor shall familiarize themselves with architectural layout of cricket, tapers, and roof drains shown in Contract Documents, and shall provide shop drawings of actual tapers and build-up of roofing materials to verify required slope per the Contract Documents.
8. Include additional roof penetration flashings for roof mounted equipment items such as vent piping, exhaust fans, mechanical items, mounts for solar array. Contractor shall familiarize themselves with the roof mounted equipment with the required penetrations and curb detailing for such equipment.

9. Contractor shall provide and install rubber walkway pads as outlined in the Contract Documents.
10. Contractor shall provide and install all coping cap at parapets, along with weather seal, and misc. counter-flashings. Contractor shall coordinate color and finish of metals as noted in the Contract Documents and to match building design elements.
11. All roof penetrations may not be ready at the time of roof installation. Provide 3 additional mobilizations to flash roof penetrations after the main roofing has been completed.
12. This Bid Package is responsible for all hoisting of materials related to this package. Materials on roof are to be secured daily.
13. Provide all layouts as required to complete this scope of work. This Bid Package is to field verify all dimensions prior to fabrication of products.
14. Contractor shall include safe access to and from the roof for the duration required for roofing install.
15. Provide and install all expansion joints if required by manufacturer's recommendations.
16. Provide all caulking as needed for roof flashing or any materials supplied by this Bid Package. Include all caulking from flashings to metal panels and flashing to other dissimilar materials.
17. Contractor shall enclose and detail all curbs, boots, and all penetrations for mechanical and electrical as noted in the Contract Documents.
18. Contractor shall provide all submittals, product data, shop drawings, and documents as required by the Construction Documents.
19. Contractor shall provide specific warranties as identified in Contract Documents.
20. Safety
 - a. Contractor shall provide, maintain, and remove a temporary Warning Line System 15' from the edge of the roof around the entire helipad rooftop perimeter. This system shall meet all requirements of OSHA regulations especially 1926.502 10. Install this warning line system at the commencement of work. The warning line system shall be maintained by this Bid Package until 10 days after substantial completion (or before this date as directed by the Construction Manager). This warning lined to be utilized by all trades on the jobsite.
 - i. Contractor to ensure appropriate entrances and exits at stair tower, trash chute, and other means of entrance, egress, and disposal.
 - ii. Work outside of established warning line will require 100% fall protection. Any tie-off equipment shall be provided by Contractor not Construction Manager
21. This package to exclude providing/installing any ladders.

Project Specific Requirements

22. This package to provide the complete removal and replacement of all roofing components.
 - a. This package must haul off roofing components separate from the jobsite dumpsters provided, and must plan to clean, remove, and haul off at the end of each workday to ensure no remaining debris is left.
 - b. This to include the removal and disposal of all pavers as applicable.
23. This package is responsible of ensuring that the roofing removal is phased as to be weather tight at the end of each work day.
24. This package to supply the installation of the sub-slab pink foam for the helipad
25. This package to supply all of the sub-concrete weatherproofing and roof system related components including insulation, roofing, bentonite goods, etc. as shown in the drawings.
- 26. This package to provide an allowance of \$10,000 for the replacement of the existing bentonite waterproofing and existing bentonite granules and drainage layer under the helicopter pad.**
27. This package to make note of, and adhere to detail 1/A5.01 to ensure warrantable roofing condition.
28. This package to include the removal and patch-back of the curbs as noted.
29. This package to review the roof penetrations on the MEP, Architectural, and Structural drawings to develop an understanding of the number of penetrations as required to complete this scope.
30. This package to supply the roof walkway pads as indicated on A1.31
31. This package to plan for multiple mobilizations including the removal of the existing roofing, the replacement of the roofing including all components under the helipad, and the final tie-in and roofing of the remainder of the roof.
32. This package is to include all necessary tools and equipment for the hoisting and removal of materials as it pertains to your scope of work.
 - a. There will not be equipment provided on site to complete this. This package is responsible for supplying equipment and qualified operators to ensure timely and safe operation.
33. This contractor to review safety requirements above. This package to supply flagging around the entire scope of work for the use of all trades, for the full duration of the construction project. (ADD #1)
- 34. This contractor to supply a stair-tower that is to be regularly inspected for use by all trades for the full duration of the construction project. This to be in place prior to scheduled start of the project Assume 07/29/2024, and remain in place until Substantial Completion, Assume 11/01/2024. Contractor to implement a means of securing the stair-tower when off site. (ADD #2)**

35. This package to supply all new components as required by contract drawings, including but not limited to membrane, adhesives, fasteners, termination bars, and other roofing accessories.
36. This package to supply the installation of the following roofing components at the Helicopter slab (see exact verbiage per detail 7/A5.01): **(ADD #2)**
 - a. Perimeter Counter Flashing
 - i. This contractor is responsible for the field cut recess into the concrete, adhesives, and any other means of fastening installing.
 - b. Termination Bar
 - c. Roof Membrane
 - d. Roof Deck Sheathing
 - e. Hot Applied Waterproofing Membrane
- 37.
38. This package is responsible for supplying all means of engineered controls of fall protection including but not limited to, D-Rings, Raptor Carts, and other Tie-off Points. **(ADD #1)**
39. **This package to supply an allowance of \$12,000 for the removal and replacement of form roofing if found to have been further deteriorated beyond covering.**

40. Provide unit prices for the following items:

1. Provide a list of hourly labor rates for change order work including subcontractors working under the prime contractor. Include overtime rates.
2. Provide a list of billable tool/equipment rates for change order work including subcontractors.

Alternates: Provide pricing on Bid Form for all applicable alternates as defined in Specifications

Company Information:

Bidder's Company Name

Telephone Number

Date of Proposal

Fax Number

Signature

Printed Name

END OF SECTION

SECTION 00 80 03 – BID PACKAGE #03
Bid Package 03: Plumbing, HVAC, Electrical, Lighting

Furnish complete all necessary labor, materials, office and field supervision, insurance, tools, equipment, layout, hoisting, rigging, shoring, shop drawings, submittals, permits, licenses and fees necessary to complete the work outlined below. Include all shift pay, overtime, weekend and holiday pay to complete the work in the scheduled durations shown in the project schedule in Specification Section 01 15 20.

This Bid Package includes, but is not limited to the following scope of work:

1. Bid Package #00 – General Requirements
2. Plans by INVISION dated June 14th, 2024
3. Specifications from the Project Manual by INVISION, dated June 14th, 2024 including, but not limited to the following sections:
 - a. All Division 00 and 01 specifications
 - b. Division 07 – Thermal and Moisture Protection (as applicable)
 - c. Division 22 – Plumbing
 - d. Division 23 – Heating, Ventilation and Air Conditioning (HVAC)
 - e. Division 26 - Electrical
4. The below items are further clarifications and/or additional requirements to the above specification sections.
5. Provide complete demolition of all plumbing, mechanical, electrical and HVAC systems per plans and specifications. Any items not specifically shown or listed in the contract documents but are required to be removed or relocated for this contractor's or other trade's work or as required by code shall be included.
6. If this bid packages removes any ceiling tile or grid for above ceiling work, they are responsible to replace it. Tile and grid should be clean and damage free.
7. Furnish and install complete plumbing, mechanical, electrical, and HVAC, systems per plans and specification sections listed above and as indicated in the Contract Documents. Contractor is responsible to review Architectural, Structural, and Civil drawing sheets for coordination and any mechanical items not identified on the MEP drawing sheets.
8. Mechanical contractor to include all necessary core drilling through walls and floors as required to complete their scope of work.
9. This package is responsible for all patching as applicable to their scope of work.
10. Provide and install all housekeeping pads
11. Coordinate with the other trade contractors on rough-ins and final connections
12. Obtain and pay for the plumbing/mechanical building permit for specification sections noted above. Construction Manager to obtain building permit.

13. Contractor to be adequately qualified to perform work in a healthcare environment as outlined below:
 - a. Contractor has completed similar healthcare projects in the past three years.
 - b. Contractor will have an after hours/24-hour emergency service under the entire contract and warranty period.
 - c. Contractor will have sufficient manpower to staff the project to meet the project schedule outlined in Specification Section 01 10 00.
 - d. Field and office management/supervisors must have a minimum of three years of healthcare experience.
14. The owner has salvage rights to any materials being removed / demolished for the construction of this project. Any materials the owner does not want to retain will be removed as noted by the contract documents.
15. Furnish and install all roof curbs for pipe and duct penetrations as indicated on the Contract Documents.
16. Protect all ductwork and piping from water, oil, dust and other contaminants after delivery to the jobsite. Store off the floor. Cover ends of pipe and ductwork delivered and stored at the jobsite. Installed ductwork and medical gas piping ends shall remain covered until the adjacent piece is installed. Clean ductwork as it is being installed if necessary. Clean ductwork upon completion per specifications or provide a written clean-duct protocol for the project, subject to review and approval.
17. This Contractor and main Subcontractors will be required to sit in and participate in up to 3 coordination meetings.
18. Coordinate shop drawings and installation of the work in this bid package with other trade contractors to maximize the free space. All work shall be installed so as to provide the maximum benefit to the Owner and allow for full access to equipment requiring maintenance.
19. Provide electronic coordination drawings, shop drawings and as-built drawings as required for this project. Drawings to be sent to the electrical contractors for coordination.
20. Provide phasing and additional mobilizations as needed to meet the schedule. Where sprinklers are added in existing areas, upgrade any existing sprinkler zones as needed and as determined by the design by this Contractor.
21. This Bid Package is responsible for demolition and removal of any and all existing concrete slab on grade and slab on deck required to be removed for this Bid Package's work at any location.
22. Furnish and install all roof curbs for roof top mechanical equipment.
23. Install temporary drain piping (flexible) to roof drains as needed to avoid storm water from dumping inside the building after the roof membrane has been installed and before the permanent roof drain piping has been installed.
24. Adjust or raise all storm drains as indicated on the contract drawings to properly reach adjacent surfaces.
25. At no time shall the Hospital be without essential services (electricity—both normal and generator power, gas, water, hot water, chilled water, steam, med gas, heating and cooling, etc. All interruptions to these services to be coordinated with the Construction Manager.

26. Provide and patch / fire caulk as needed for any penetrations required by this Bid Package. Also patch any openings made by this Bid Package as needed for penetrations in existing walls, floors, and ceilings. Patch abandoned Mechanical shafts, chases, penetrations with approved UL design.
27. Any penetrations at existing construction made by this Bid Package need to be sealed watertight and/or fire stopped as required.
28. For any combustion equipment used for temporary heating, provide scrubbers on the equipment.
29. Provide mechanical connections for any equipment Owner supplied or otherwise noted on the Contract Documents and on the Owner supplied equipment cut sheets.
30. Contractor is responsible to review Architectural, Structural, Plumbing, and Mechanical drawing sheets for coordination of sprinkler lines and head locations as to not conflict with other systems.
31. Provide additional material and labor for a two phase connection of the sanitary sewer and water main on the west side of hospital.

Electrical and Low Voltage

32. Provide complete demolition of all electrical systems per plans and specifications. Any items not specifically shown or listed in the contract documents but are required to be removed for this contractor's or other trade's work or as required by code shall be included.
33. If this bid packages removes any ceiling tile or grid for above ceiling work, they are responsible to replace it. Tile and grid should be clean and damage free.
34. Furnish and install a complete electrical system per specification sections listed above and as indicated in the Contract Documents. Contractor is responsible to review Architectural, Structural, and Civil drawing sheets as applicable for coordination and any mechanical items not identified on the MEP drawing sheets. Refer to the responsibility matrix provided in the contract documents for Contractor responsibility of owner provided items.
35. Provide all required electrical systems and connections for equipment as shown on the contract documents.
36. Provide all electrical demolition, disconnection of power, phone, and data as required for project demolition and construction. Coordinate work with other trades demolition contractors and Construction Manager.
37. The owner has salvage rights to any materials being removed / demolished for the construction of this project. Any materials the owner does not want to retain will be removed as noted by the contract documents or as needed for construction. Coordinate with Owner and Construction Manager for Owner removal of copper wiring.
38. Obtain and pay for the electrical building permit through the City of Boone. General building permit will be obtained by the Construction Manager.
39. This Contractor and main Subcontractors will be required to sit in and participate in up to 2 coordination meetings (above and beyond regularly scheduled progress meetings) to coordinate rough-ins.

40. Provide electronic documents as needed for coordination drawings, shop drawings and as-built drawings for this project. Drawings to be sent to CM for coordination.
41. Provides conduit, wiring & in-wall rough-in of all back boxes as applicable.
42. Coordinate the outlets and switches to be compliant with OSHA. Power needs turned off to these outlets when the switch plates and outlet plates are removed for painting. If the power cannot be turned off (e.g. breaker run adjacent hospital room that cannot be shutoff) provide alternate plates to allow finish paint to be finished beyond the edge of the cover plate outlines.
43. Provide and install all required housekeeping pads
44. Coordinate with Mechanical Contractor on wiring and power requirements for mechanical equipment

Project Specific Requirements

45. This package will be responsible for the patching of EIFS as shown on the plans.
 - a. This package to ensure that all penetrations are properly sealed and finished to ensure continuous barrier is maintained.
 - b. This package also to include refinishing as applicable for an architecturally acceptable final finish. Package to coordinate final condition with CM and Architect.
46. This package is to include all necessary tools and equipment for the hoisting and removal of materials as it pertains to your scope of work.
 - a. There will not be equipment provided on site to complete this. This package is responsible for supplying equipment and qualified operators to ensure timely and safe operation.
47. This package is responsible for the protection of all MEPT components during construction
48. This package is responsible for providing all painted steel stands, mounting equipment, and similar structures for the support of all MEPT components.
49. This package is responsible for rebalancing.
50. This package is responsible for all project specific keynotes as indicated in the drawing. Please refer to M1.0 specifically for more information.
51. This contractor is responsible for the coordination of the in-slab sensors with the Concrete Contractor. This will be assumed to be a separate mobilization to ensure the timely installation
52. This contractor is responsible for all sleeves necessary to complete scope of work through walls, and other surfaces.
53. This package will be responsible for the installation of all new lighting
- 54. This package is to include a \$5,000 allowance for the investigation and replacement of existing lighting issues that are to remain per the contractual drawings.**
- 55. This package is to include a \$5,000 allowance for any unforeseen conditions as it pertains to the removal and replacement of the roof drains. These costs must be reasonably unforeseen given the information supplied in the contract documents. (ADD #2)**

Include additional description as needed to correlate with spec sections added above

Provide unit prices for the following items:

1. Provide a list of hourly labor rates for change order work including subcontractors working under the prime contractor. Include overtime rates.
2. Provide a list of billable tool/equipment rates for change order work including subcontractors.

Alternates: Provide pricing on Bid Form for all applicable alternates as defined in Specifications.

Provide unit prices for the following items:

3. Provide a list of hourly labor rates for change order work including subcontractors working under the prime contractor. Include overtime rates.
4. Provide a list of billable tool/equipment rates for change order work including subcontractors.

Alternates: Provide pricing on Bid Form for all applicable alternates as defined in Specifications.

Company Information:

Bidder's Company Name

Telephone Number

Date of Proposal

Fax Number

Helipad & Roof Replacement
Boone County Hospital
INVISION #24003

Boone County Hospital
Helipad Replacement

BOONE , IOWA

Signature

Printed Name

END OF SECTION 00 80 05

Helipad & Roof Replacement
Boone County Hospital
INVISION #24003

00 80 03 PLUMBING/HVAC/FIRE/SPRINKLER

SECTION 07 14 00
FLUID-APPLIED WATERPROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Synthetic rubber waterproofing.

1.02 RELATED REQUIREMENTS

- A. Section 03 30 13 - Concrete Accessories: Waterstop and drainage mat above waterproofing.
- B. Section 07 21 00 - Thermal Insulation: Insulation above waterproofing.

1.03 REFERENCE STANDARDS

- A. ASTM D2370 - Standard Test Method for Tensile Properties of Organic Coatings.
- B. NRCA (WM) - The NRCA Waterproofing Manual.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data for membrane, surface conditioner, flexible flashings, joint cover sheet, and joint and crack sealants.
- C. Shop Drawings: Indicate special joint or termination conditions and conditions of interface with other materials.
- D. Warranty Documentation:
 - 1. Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
 - 2. Submit installer's documentation that installation complies with warranty conditions for the field-applied waterproofing.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience and approved by manufacturer.

1.06 FIELD CONDITIONS

- A. Maintain ambient temperatures above 40 degrees F for 24 hours before and during application and until cured.
- B. Do not apply waterproofing to a damp or wet substrate. Do not apply waterproofing in snow, rain, fog, or mist.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to site in manufacturer's original, unopened packaging, with labels clearly identifying product name and manufacturer.
- B. Store products in manufacturer's unopened packaging until ready for installation.
- C. Protect materials during handling to prevent damage.

1.08 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Installer Warranty: Provide 5-year warranty for waterproofing failing to resist penetration of water commencing on Date of Substantial Completion. Complete forms in Owner's name and register with installer.

1. No Dollar Limit (NDL), non-prorated system warranty; material and labor warranty; in which manufacturer agrees to replace components of bentonite waterproofing system that fail in materials or workmanship within the specified warranty period.
2. Special Inspections and Requirements: Comply with manufacturer's requirements for full system warranty, including but not limited to applicator qualifications, on-site supervision, and special third-party inspections of the work.
3. Division 03: Coordinate waterstops used in cast-in-place concrete with waterproofing manufacturer's requirements.

PART 2 PRODUCTS

2.01 FLUID-APPLIED WATERPROOFING APPLICATIONS

- A. Synthetic Rubber Waterproofing:
 1. Location: Split-slabs.
 2. Cover with protection fabric.

2.02 FLUID-APPLIED WATERPROOFING MATERIALS

- A. Synthetic Rubber Waterproofing: a two part, self-curing, synthetic rubber based material complying with ASTM C 836/C 836M
 1. Cured (Dry) Thickness: 90 mils (0.060 inches), minimum.
 2. Suitable for installation over concrete substrates.
 3. Elongation: 500 percent, minimum, measured in accordance with ASTM D2370.
 4. Low Temperature Resistance: No cracking, loss of adhesion, splitting or pinholes when tested at minus 15 degrees F in accordance with ASTM C836/C836M.
 5. Puncture Resistance: 170 N (38 lbs), minimum, measured in accordance with ASTM D4833.
 6. Products:
 - a. **BASIS OF DESIGN:** Carlisle Coatings & Waterproofing, Inc; CCW-500 or MiraSEAL: www.carlisleccw.com/#sle.
 - f. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Flexible Flashings: Type recommended by membrane manufacturer.

2.03 ACCESSORIES

- A. Surface Conditioner: primer type, compatible with membrane compound; as recommended by membrane manufacturer.
- B. Sealant for Joints and Cracks in Substrate: Type compatible with waterproofing material and as recommended by waterproofing manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify substrate surfaces are free of frozen matter, dampness, loose particles, cracks, pits, projections, penetrations, or foreign matter detrimental to adhesion or application of waterproofing system.
- C. Verify that substrate surfaces are smooth, free of honeycomb or pitting, and not detrimental to full contact bond of waterproofing materials.
- D. Verify that items penetrating surfaces to receive waterproofing are securely installed.
- E. Where existing conditions are responsibility of another installer, notify Architect of unsatisfactory conditions.
- F. Do not proceed with this work until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Protect adjacent surfaces from damage not designated to receive waterproofing.

- B. Clean and prepare surfaces to receive waterproofing in accordance with manufacturer's instructions; vacuum substrate clean.
- C. Do not apply waterproofing to surfaces unacceptable to waterproofing manufacturer.
- D. Fill non-moving joints and cracks with a filler compatible with waterproofing materials.
- E. Seal moving cracks with sealant and non-rigid filler, using procedures recommended by sealant and waterproofing manufacturers.
- F. Install cant strips at inside corners.

3.03 INSTALLATION, GENERAL

- A. Install waterproofing to specified minimum thickness in accordance with manufacturers instructions and NRCA (WM) applicable requirements.
- B. Apply primer or surface conditioner at a rate recommended by manufacturer, and protect conditioner from rain or frost until dry.
- C. At joints and cracks less than 1/2 inch in width including joints between horizontal and vertical surfaces, apply 12 inch wide strip of joint cover sheet.
- D. At joints from 1/2 inch to 1 inch in width, loop joint cover sheet down into joint between 1-1/4 inch to 1-3/4 inch, and extend sheet at least 6 inches on either side of expansion joint.
- E. Center joint cover sheet over joints, roll sheet into 1/8 inch thick coating of waterproofing material and apply second coat over sheet extending at least 6 inches beyond sheet edges.
- F. Apply extra thickness (120 mils) of waterproofing material at corners, intersections, angles, hairline cracks, and around drains and penetrations.
- G. Flexible Flashings: Seal items watertight that penetrate through waterproofing membrane with flexible flashings.
- H. Extend waterproofing material and flexible flashing into drain clamp flange, apply adequate coating of liquid membrane to ensure clamp ring seal, and coordinate with drain installation requirements specified in Division 33 - Utilities.
- I. Seal membrane and flashings to adjoining surfaces.
 - 1. Install termination bar along edges.
 - 2. Install counterflashing over exposed edges.

3.04 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements for additional requirements.
- B. Owner will provide testing and inspection services, and Contractor to provide temporary construction and materials for testing.

3.05 PROTECTION

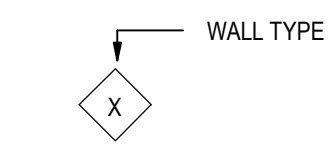
- A. Do not permit traffic over unprotected or uncovered membrane.

END OF SECTION

GENERAL WALL TYPE CONSTRUCTION NOTES:

- SEE FLOOR PLANS FOR LOCATIONS OF WALL TYPES. NOT ALL WALLS ARE KEYS WITH TAGS. IF WALL TYPE IS IN QUESTION, CONTACT ARCHITECT FOR CLARIFICATION.
- TYPICAL WALL STYLE - UNLESS INDICATED OTHERWISE ON THE PLANS, THE STANDARD EXTERIOR WALL IS WALL TYPE **Z**.
- WALL CONSTRUCTION - WALL TYPES DESCRIBE GENERAL CONSTRUCTION OF EACH ASSEMBLY. PROVIDE CONSTRUCTION PER NOTED FIRE RATED SYSTEMS, SOUND TEST RATINGS, & REFERENCED STANDARDS, OR APPROVED EQUALS.
- CONNECTIONS AT SPRAY APPLIED FIREPROOFING - AT FRAMING CONNECTIONS TO COMPONENTS WITH SPRAY APPLIED FIRE PROOFING, PROVIDE REQUIRED STAND-OFF BRACKETS/CLIPS TO MAINTAIN RATINGS.
- RECESSED UTILITY BOXES OR EQUIPMENT - RECESSED BOXES OR EQUIPMENT ON OPPOSITE WALL FACES ARE TO BE STAGGERED, UNLESS SPECIFICALLY NOTED TO BE INSTALLED BACK TO BACK. PROVIDE MINIMUM 3" OF ACOUSTIC INSULATION BETWEEN STAGGERED ITEMS.
- CONCEALED WALL BACKING - PROVIDE CONCEALED BLOCKING OR BACKING FOR SURFACE MOUNTED CONSTRUCTION & EQUIPMENT. WHETHER IN CONTRACT OR OWNER SUPPLIED, CONTRACTOR TO VERIFY OWNER SUPPLIED EQUIPMENT SUCH AS, BUT NOT LIMITED TO, BREAK ROOM ACCESSORIES, TOILET ACCESSORIES, FURNITURE, ARTWORK, MEDICAL EQUIPMENT, TVS, PROJECTION SCREENS, ETC. CONTRACTOR SHALL VERIFY WITH OWNER AND/OR OWNERS AGENT PRIOR TO BIDDING IF APPLICABLE.

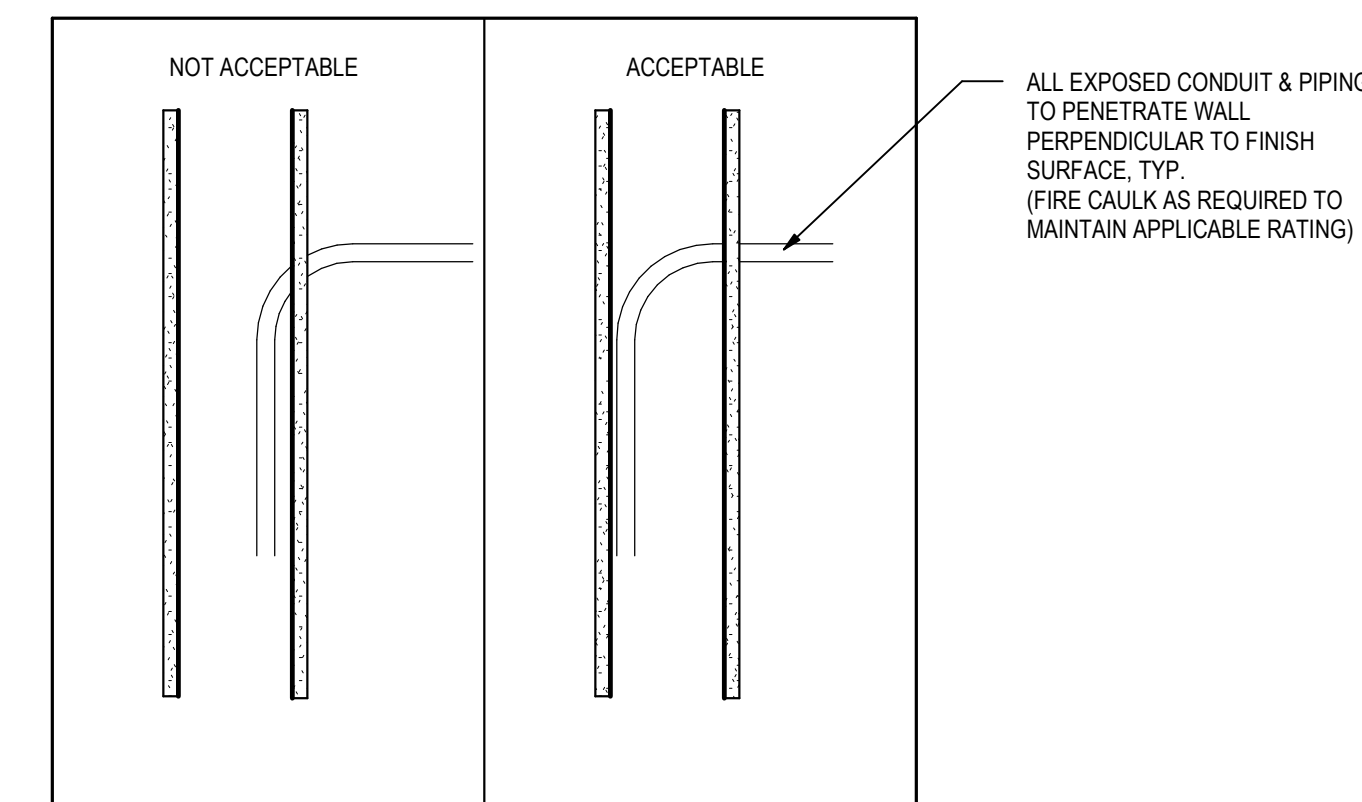
EXTERIOR WALL TAGS



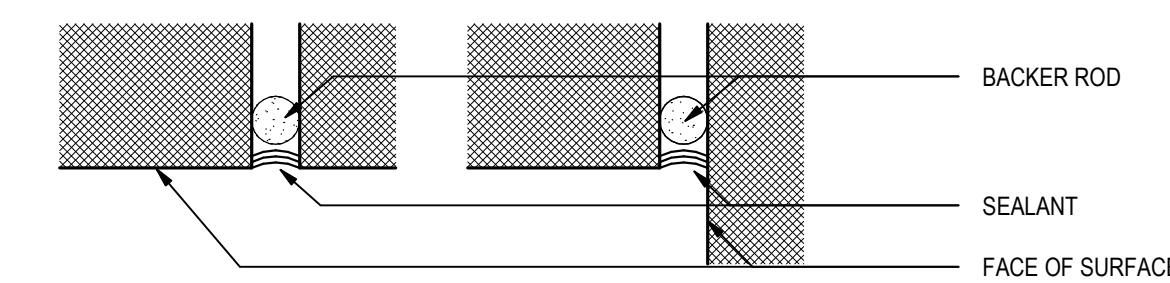
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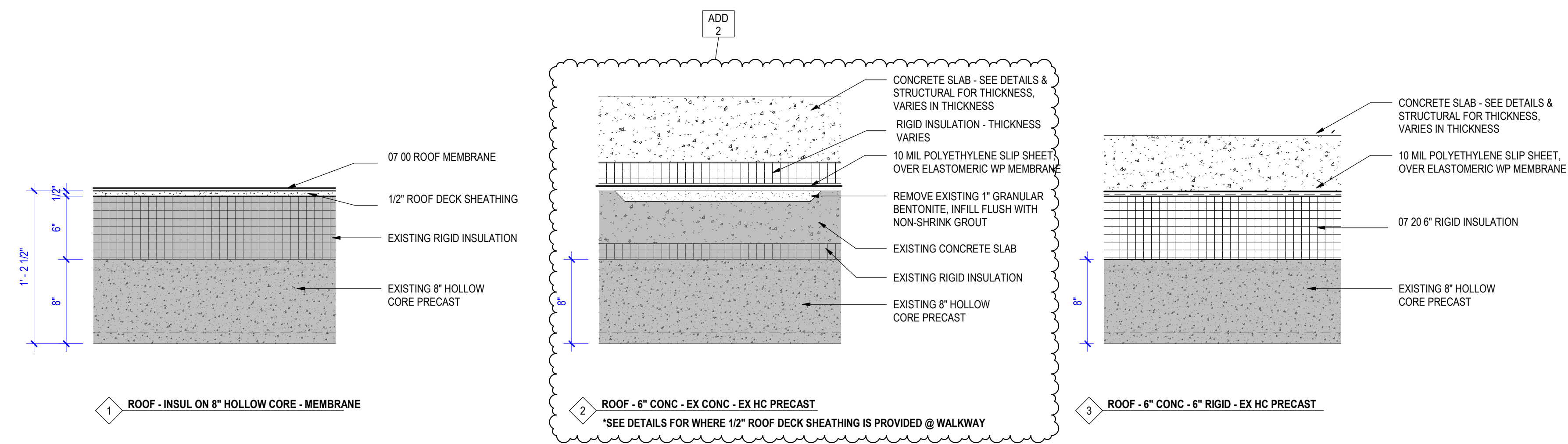
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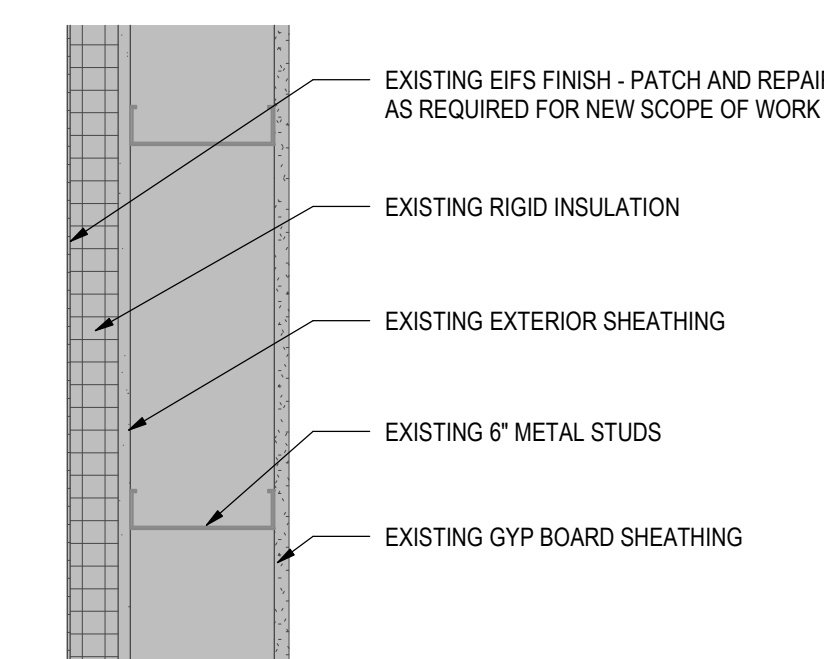
2 SECTION DETAIL
1 1/2" = 1'-0"



1 TYP. SEALANT JOINT
6" = 1'-0"

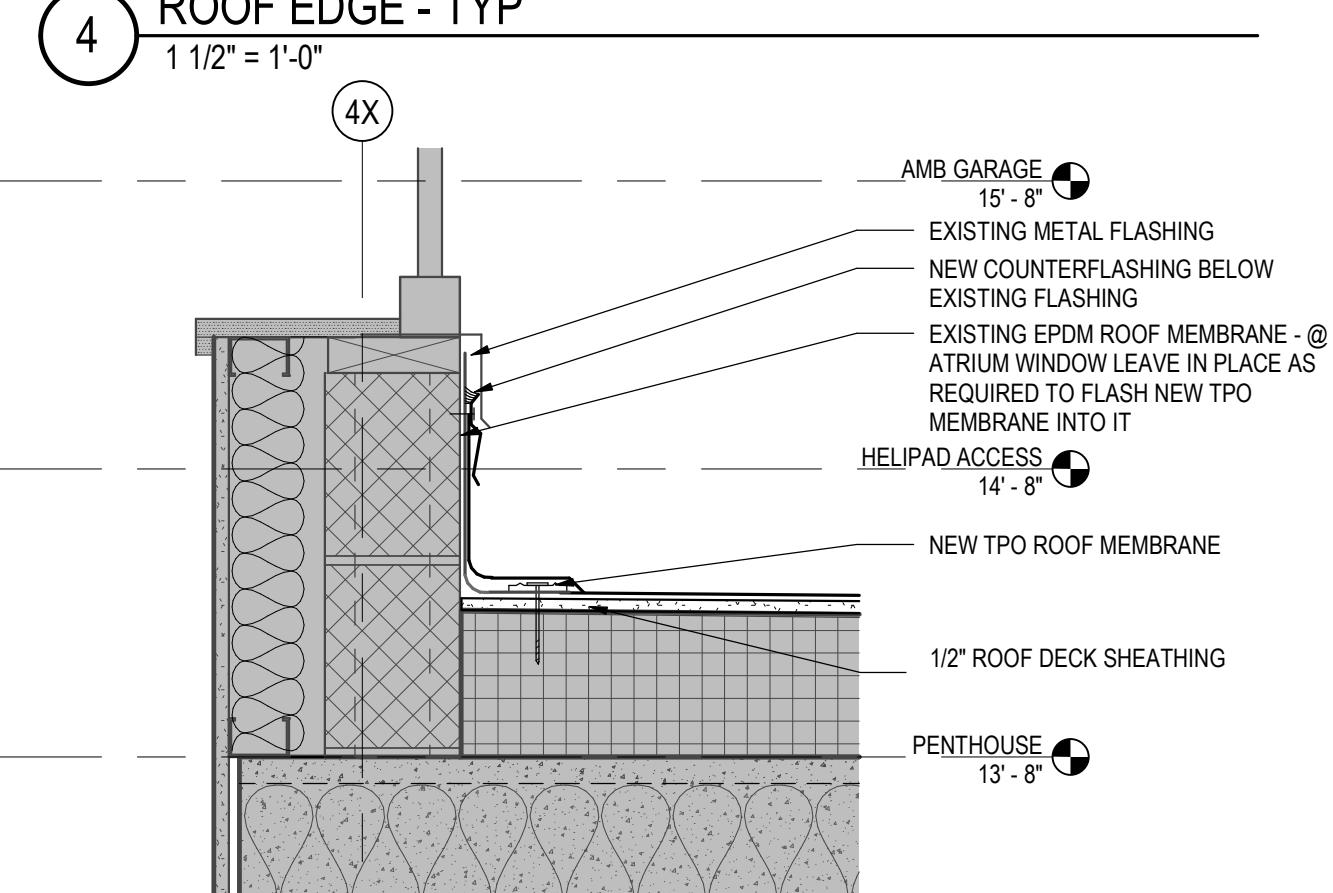
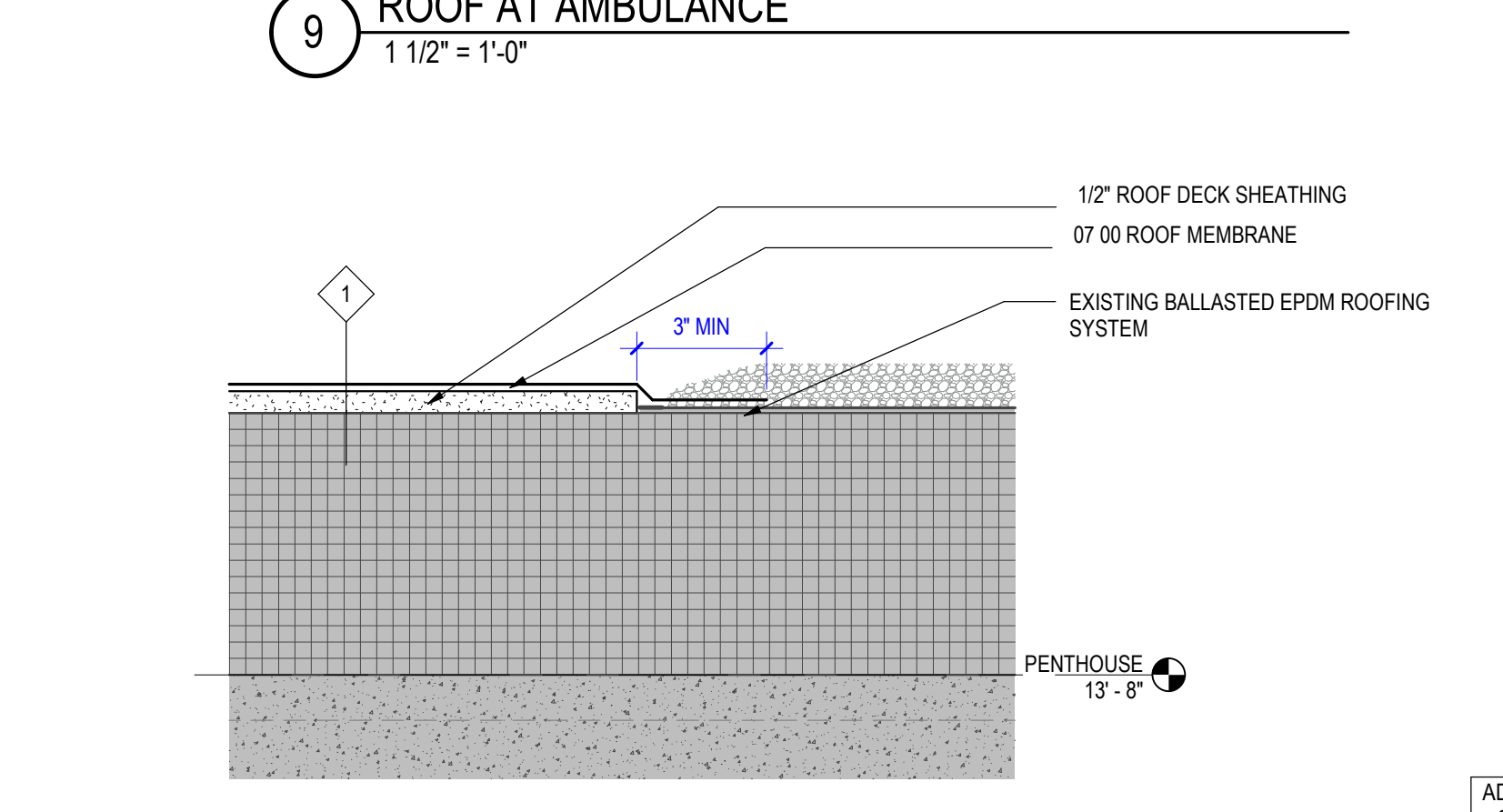
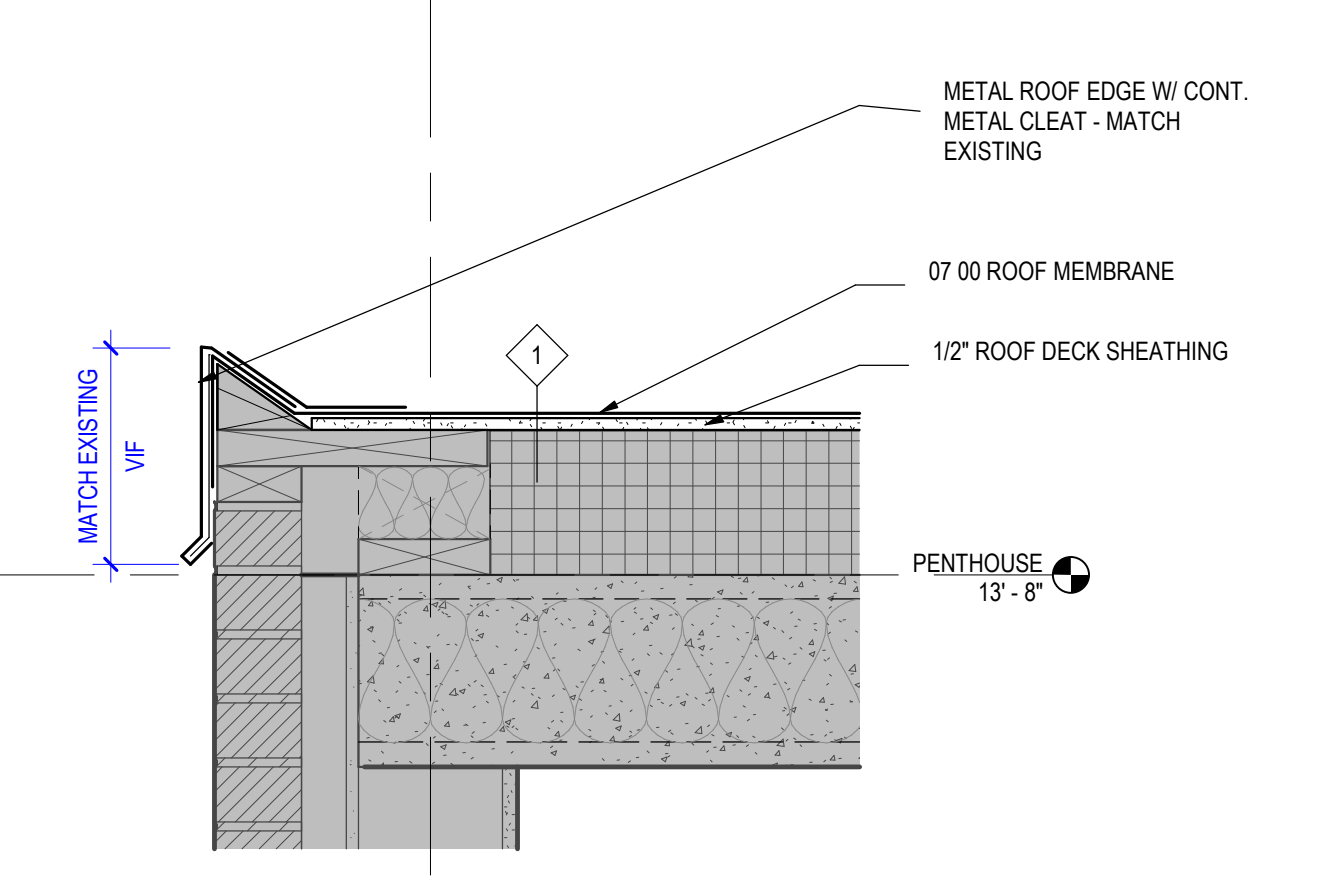
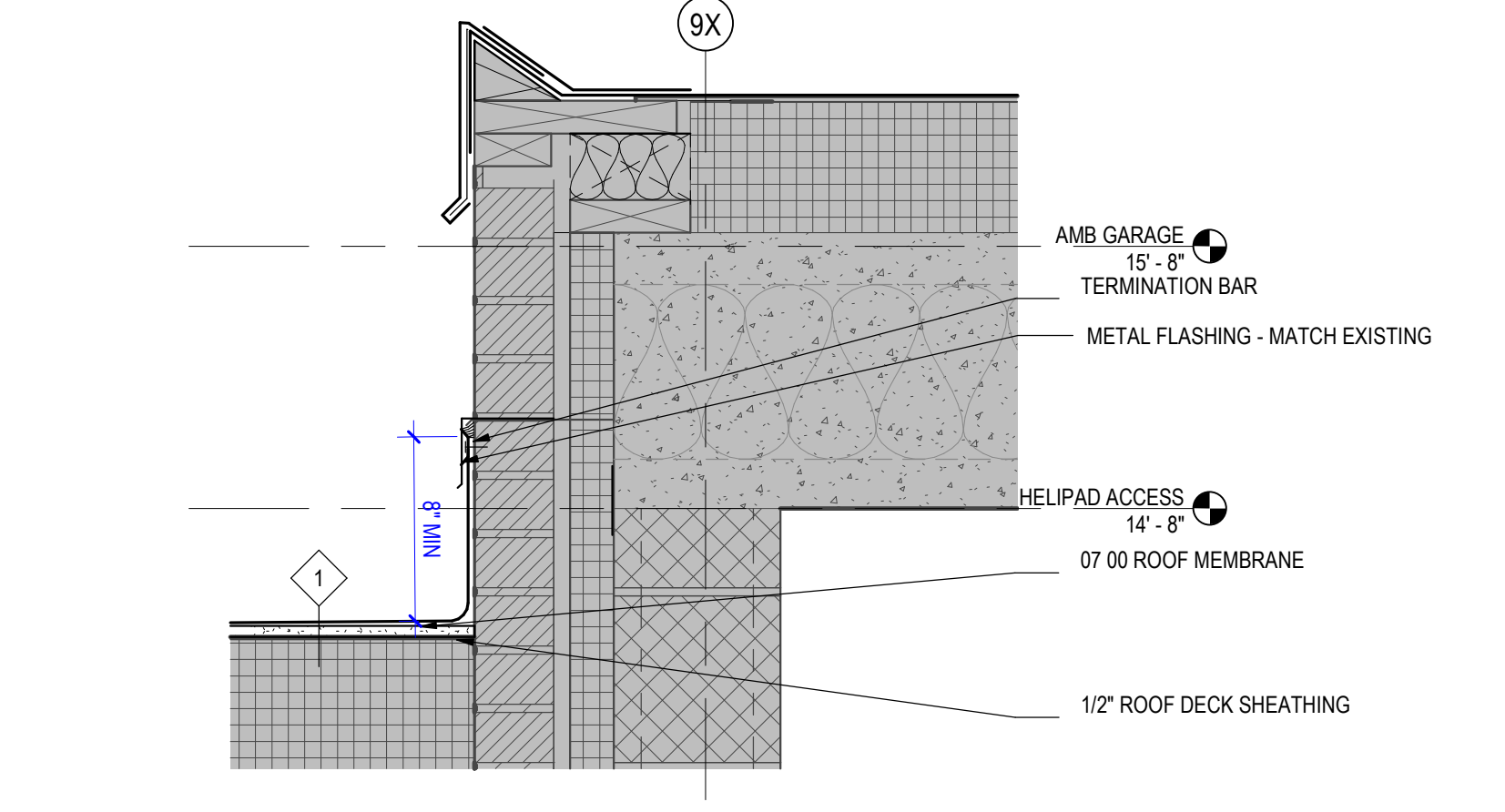
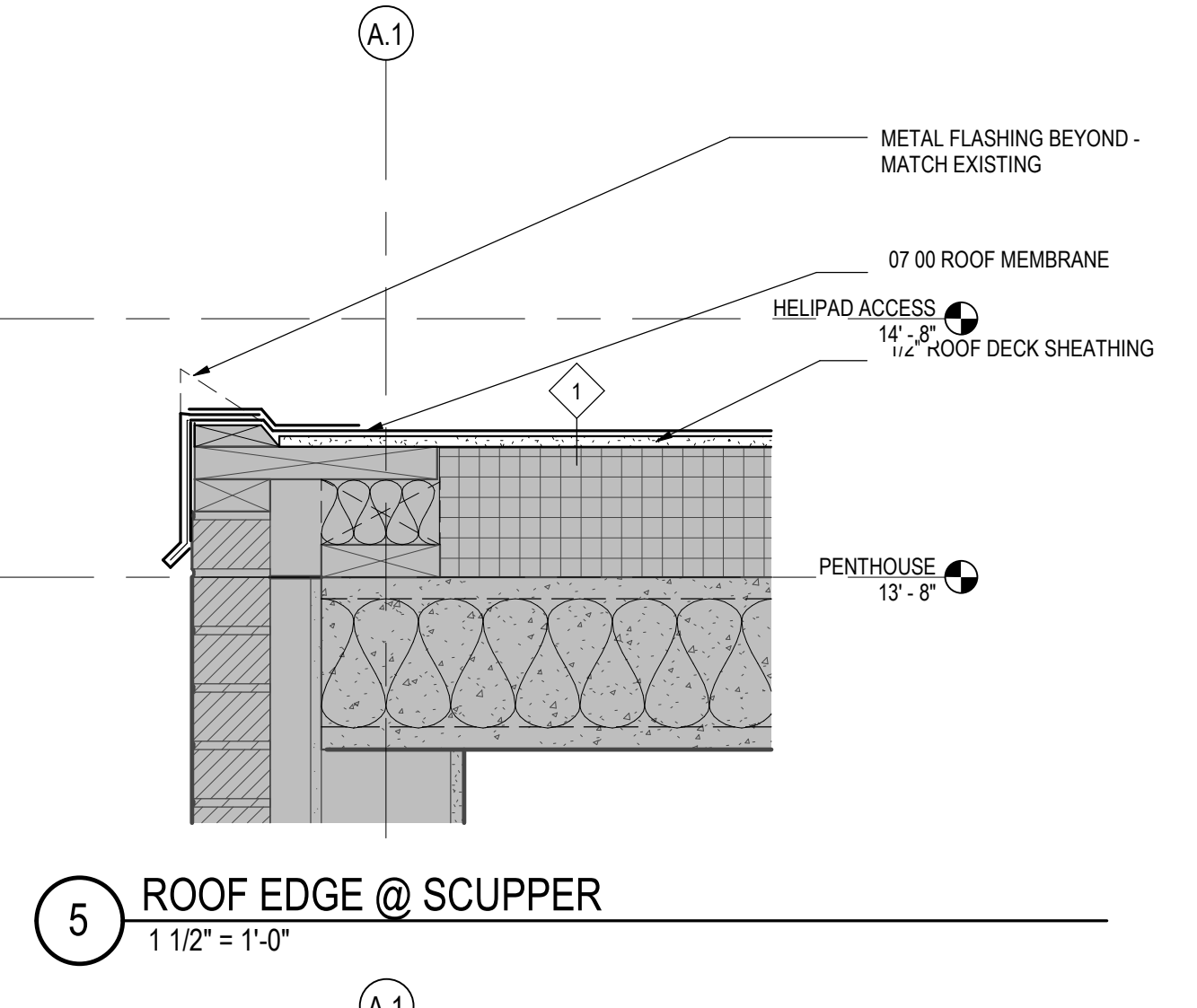
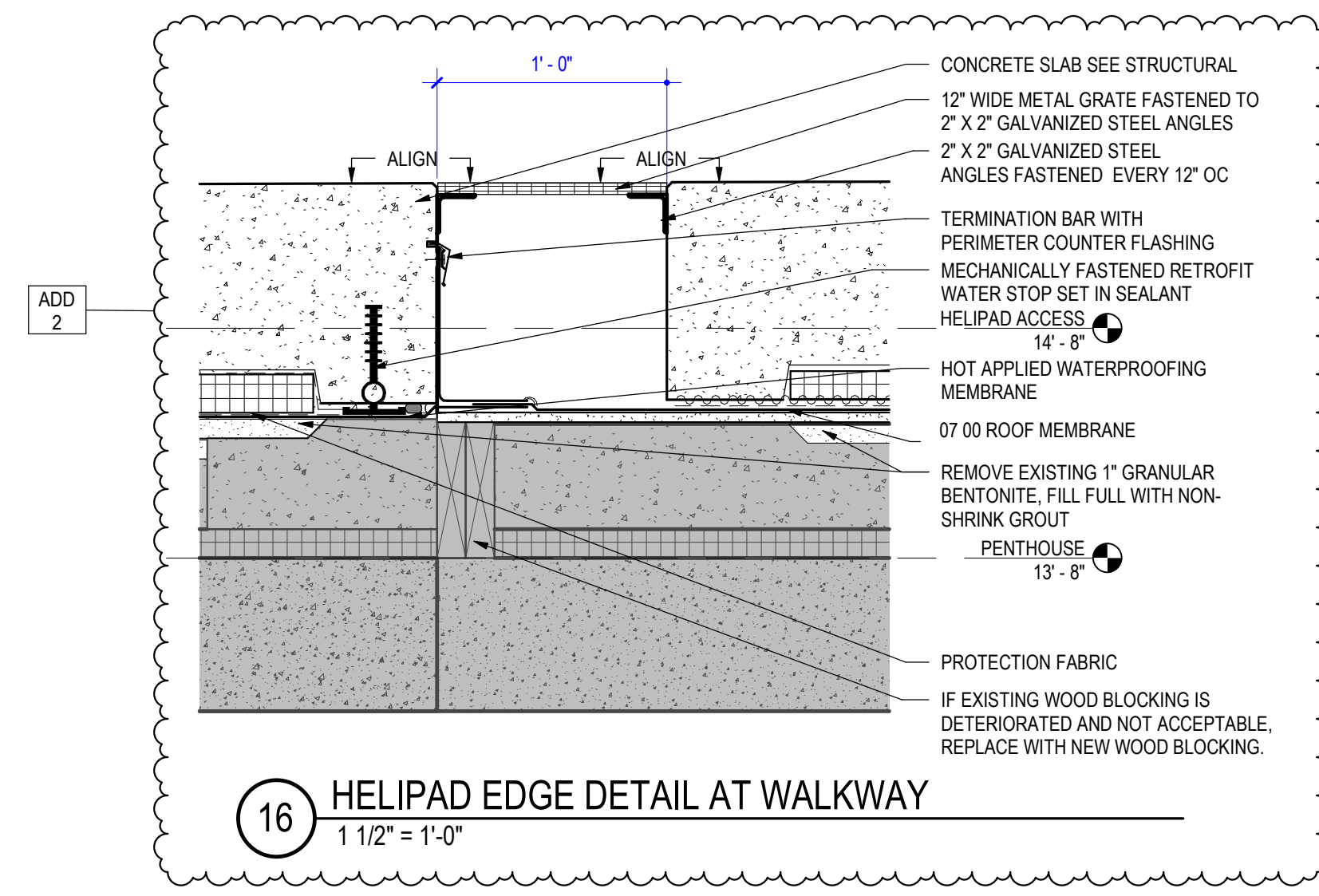
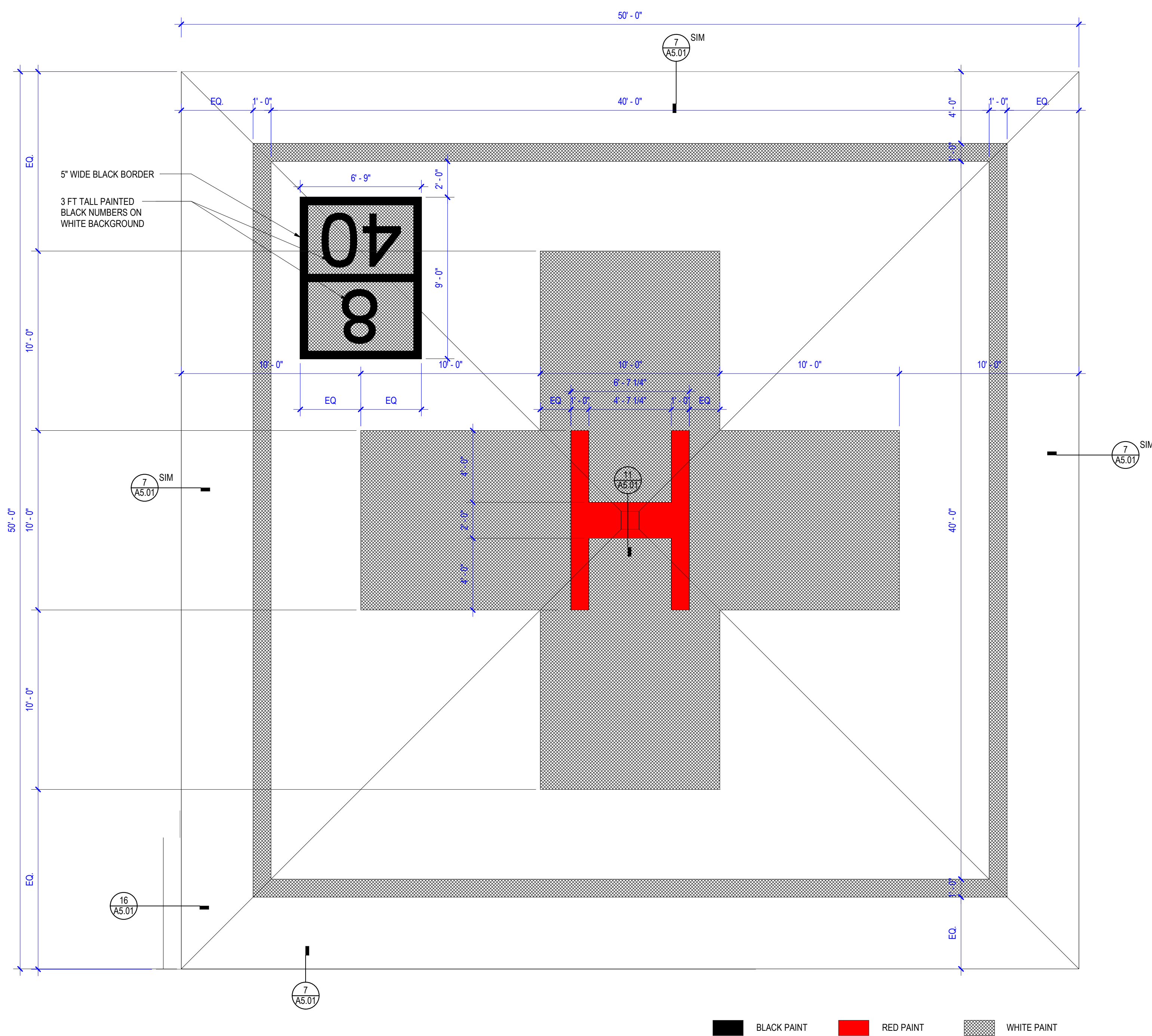


ASSEMBLIES
1 1/2" = 1'-0"

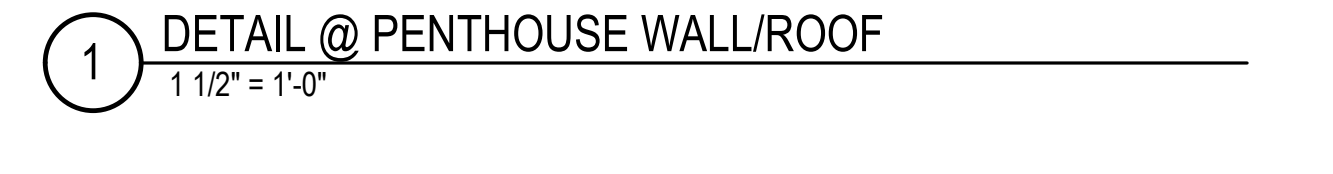
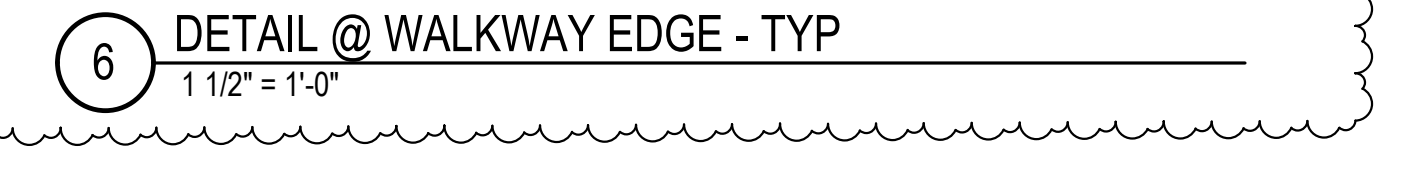
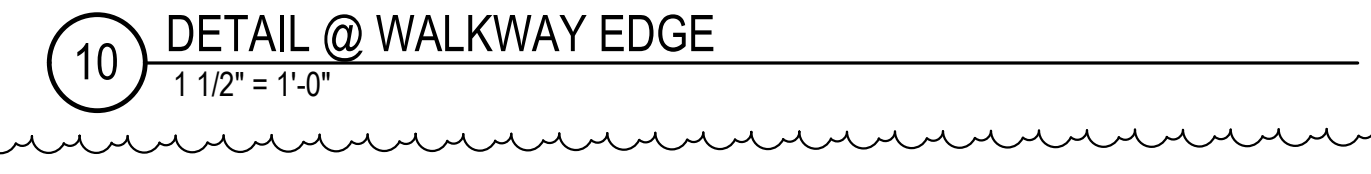
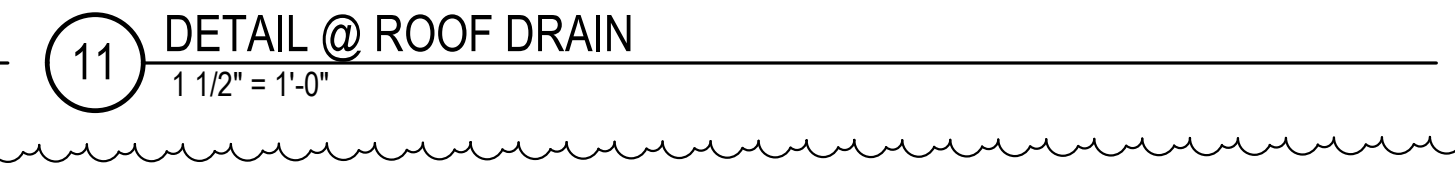
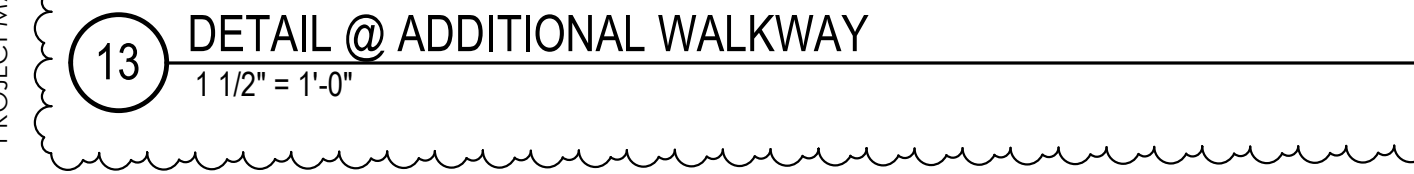
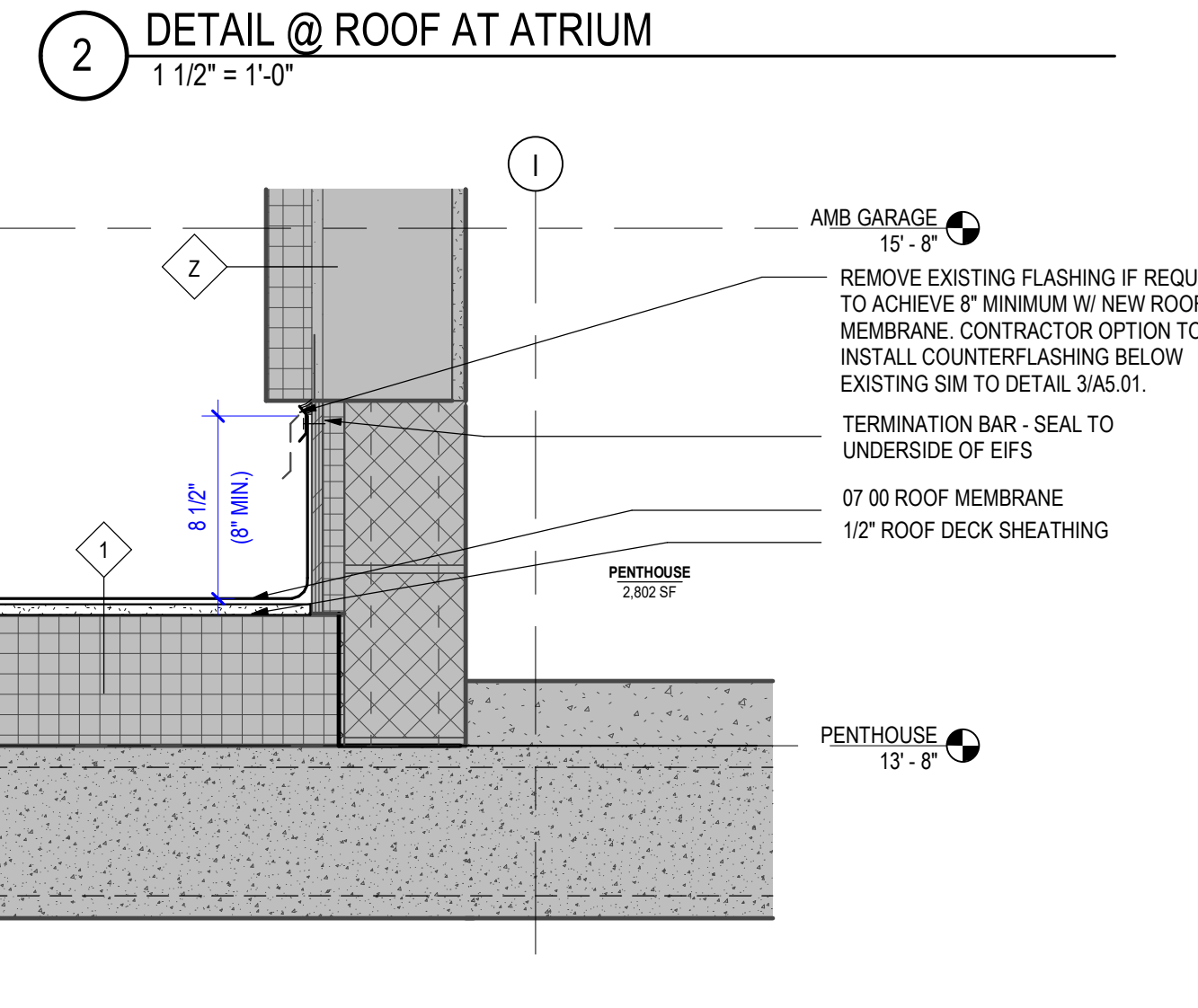
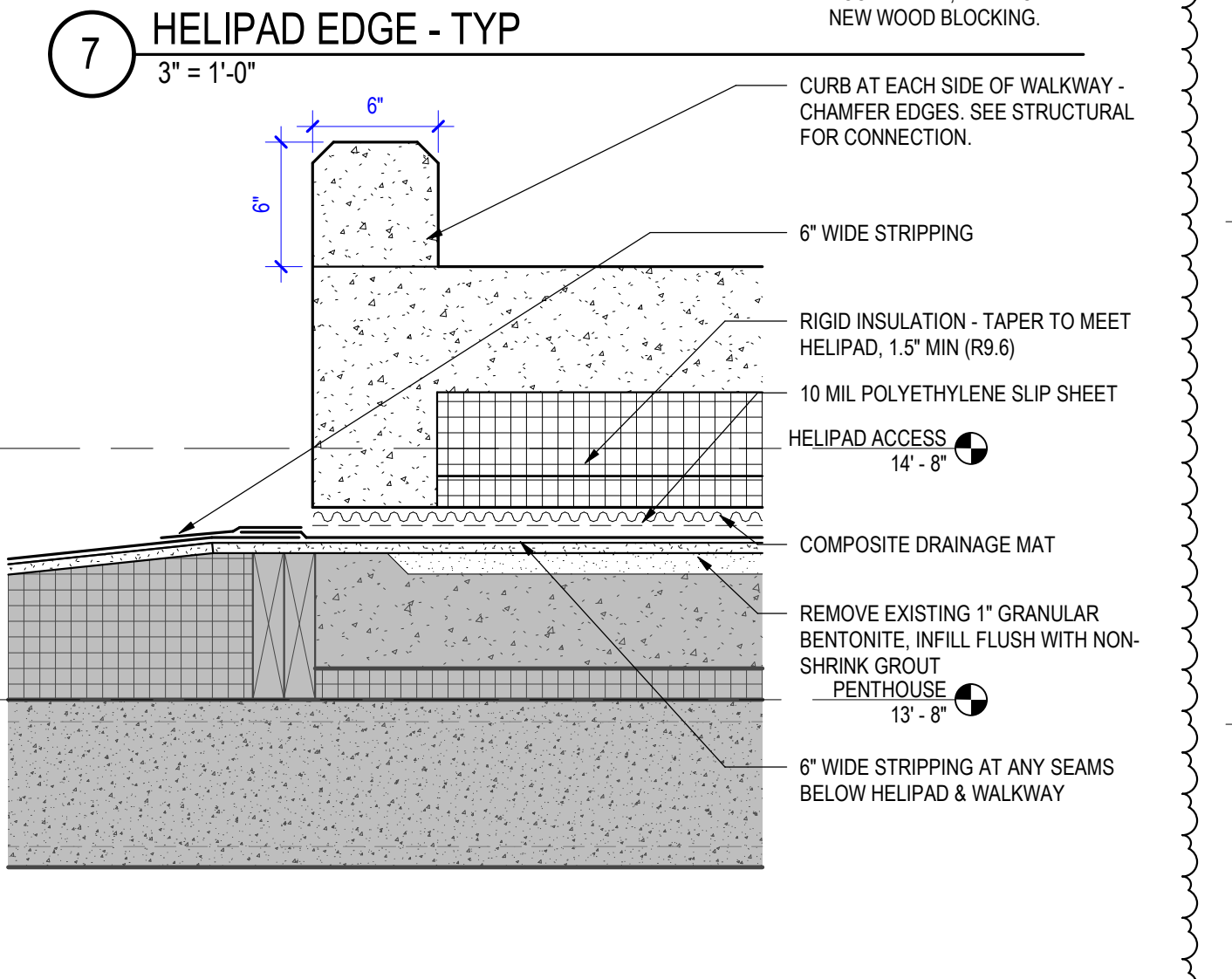
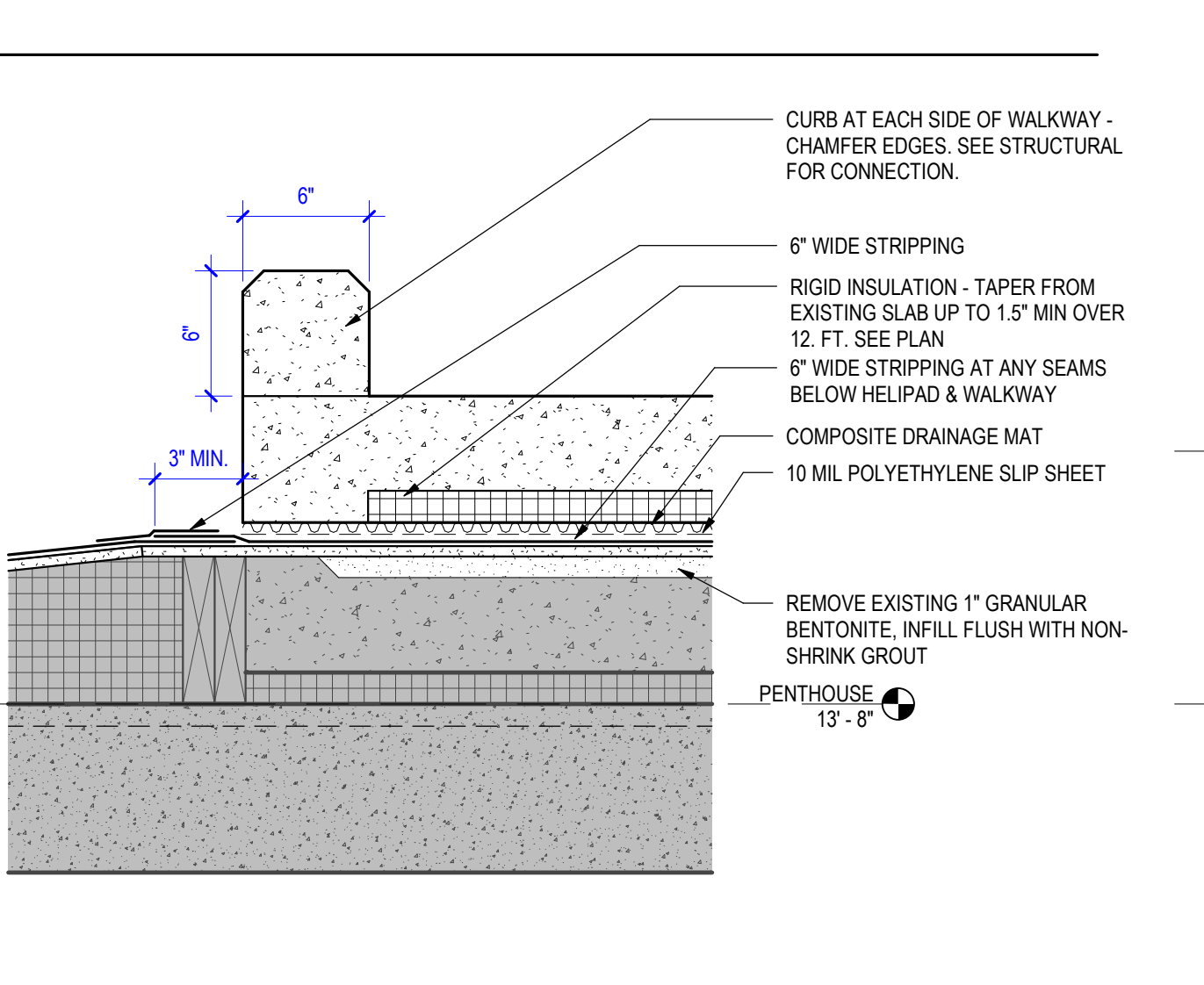
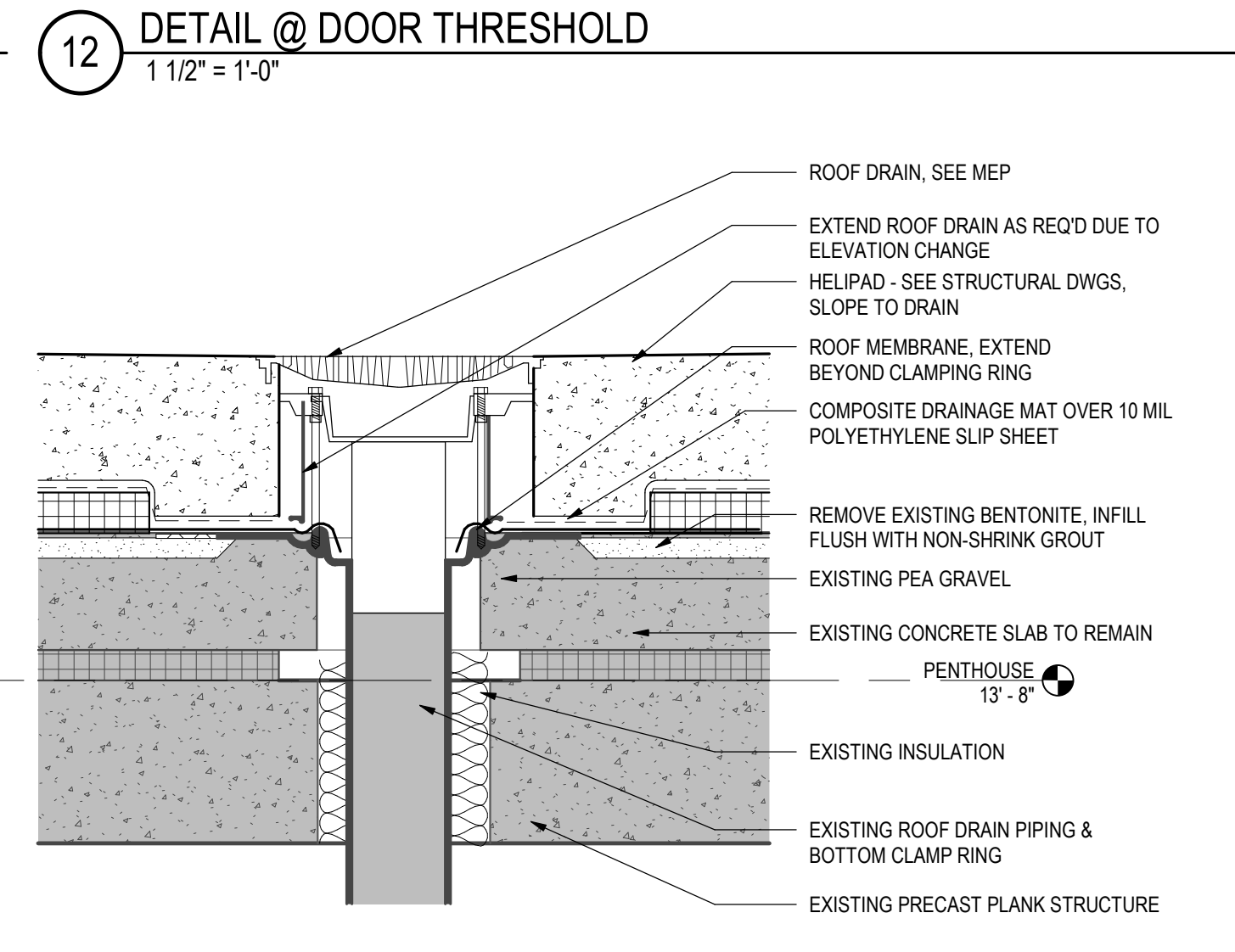
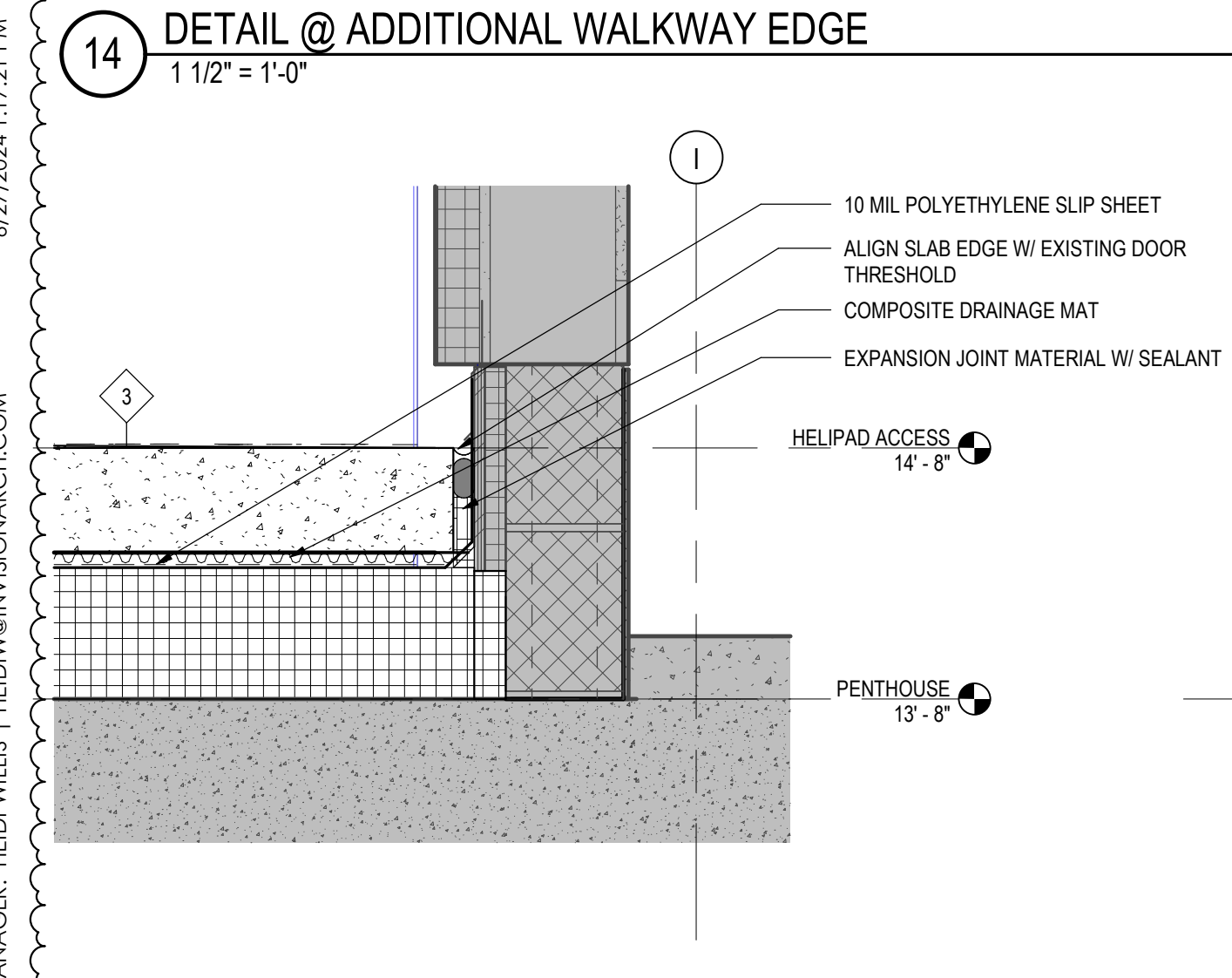
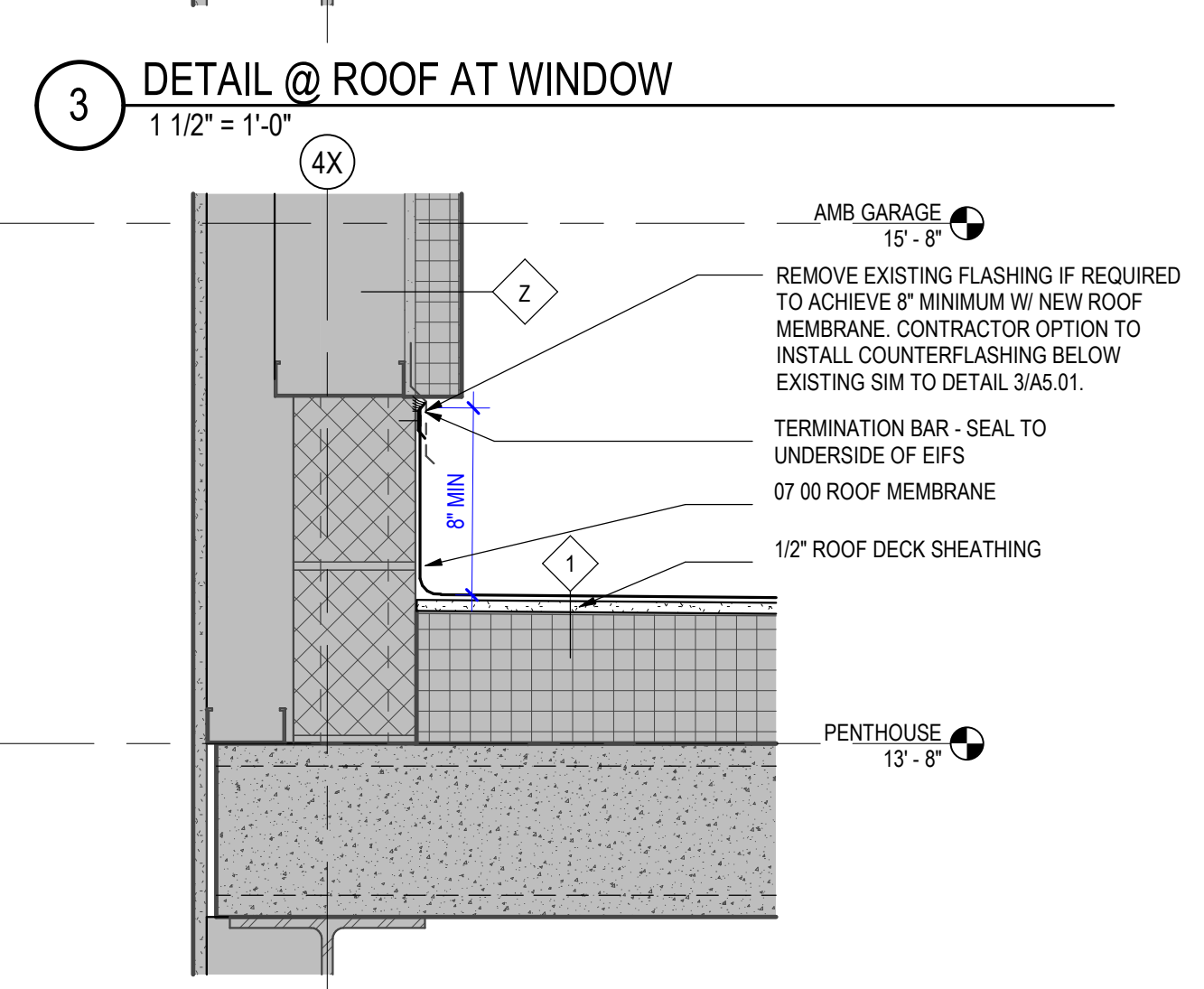
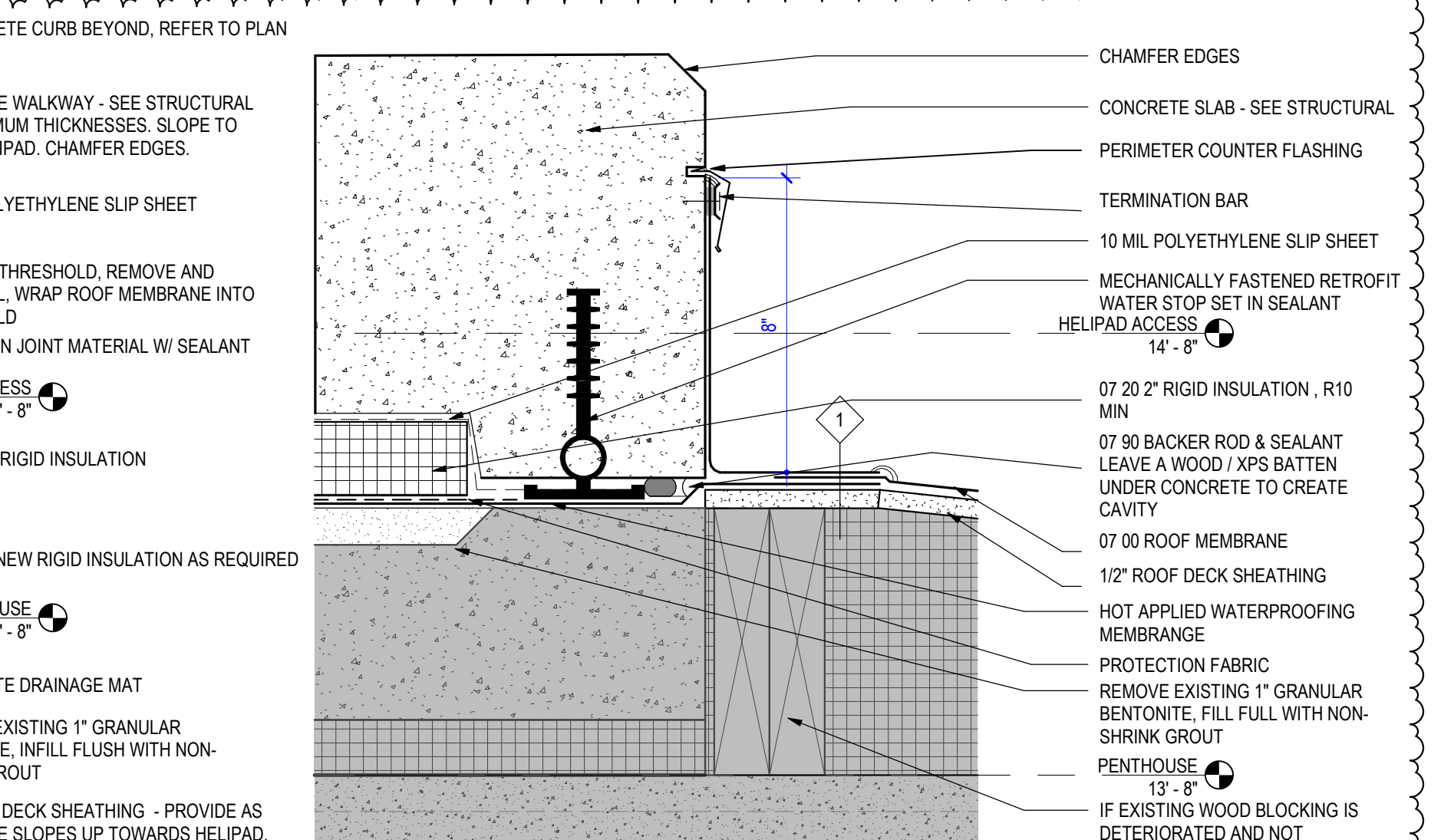
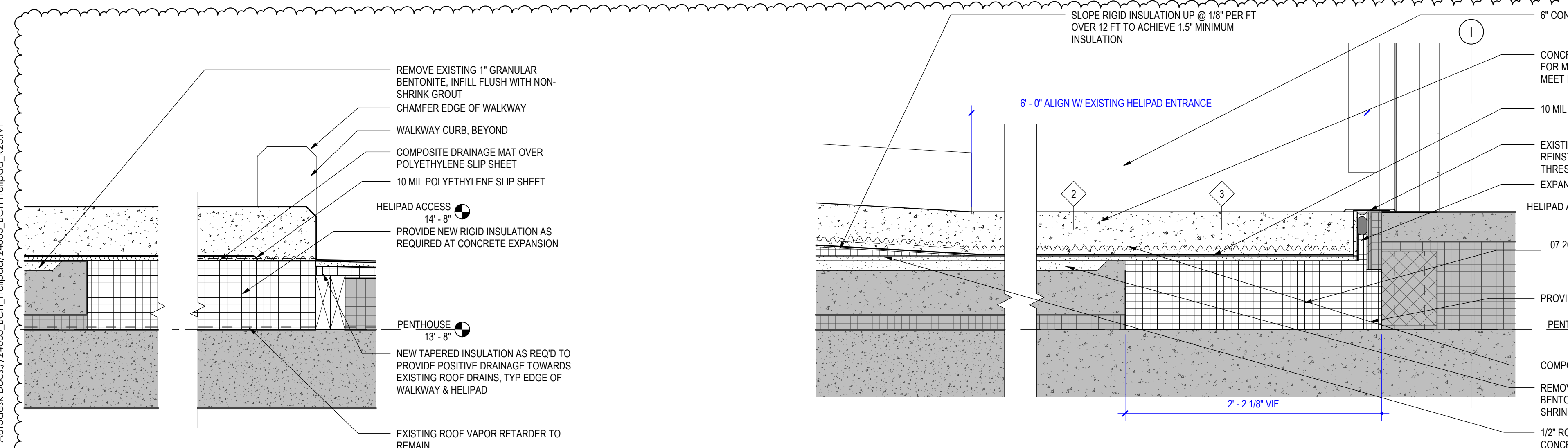


Z # EIFS-RIGID-GYP-6 MTL STUD-GYP
R 13.8354 (h-h)*F)BTU
MASS 1.3738 BTU/(h*F)

EXTERIOR WALL TYPES
1 1/2" = 1'-0"



15 HELIPAD ENLARGED PLAN
1/4" = 1'-0"
HELIPAD MARKINGS & SIZES SHOWN FROM FAA GUIDELINES FOR HOSPITAL HELIPTS.

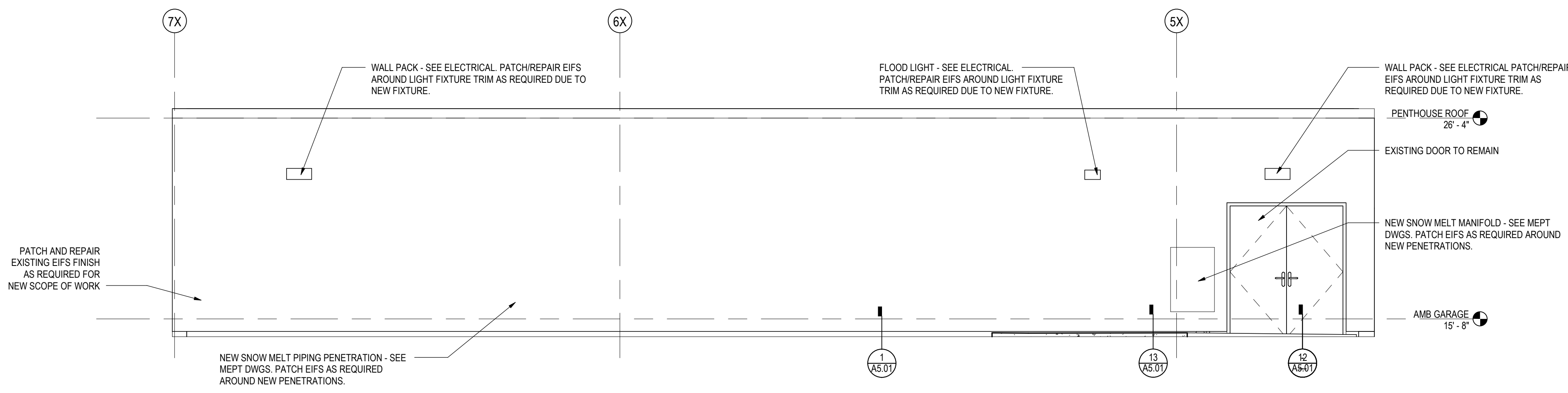


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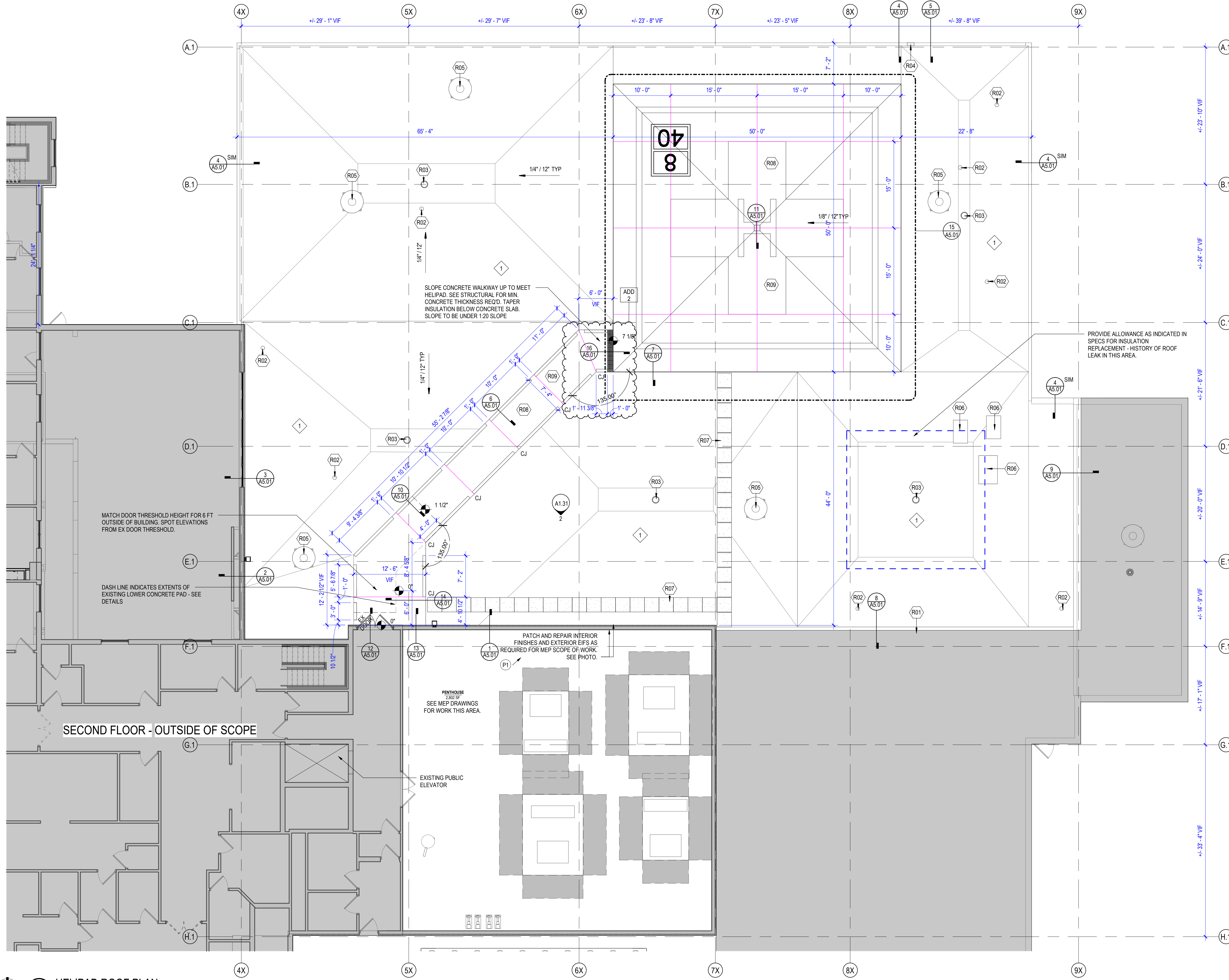
Description	Date	No.
ADD 2	06-27-24	2

OWNER SIGN-OFF:
DATE: _____ NAME: _____

PROJECT MANAGER: HEDI WILLIS | HED@INVISIONARCH.COM
6/27/2024 11:21 PM | Autodesk Docs | 74003_BCH_Helipad/24003_BCH_Helipad_R23.rvt



2 PENTHOUSE - NORTH
1/4" = 1'-0"



1 HELIPAD ROOF PLAN
1/8" = 1'-0"

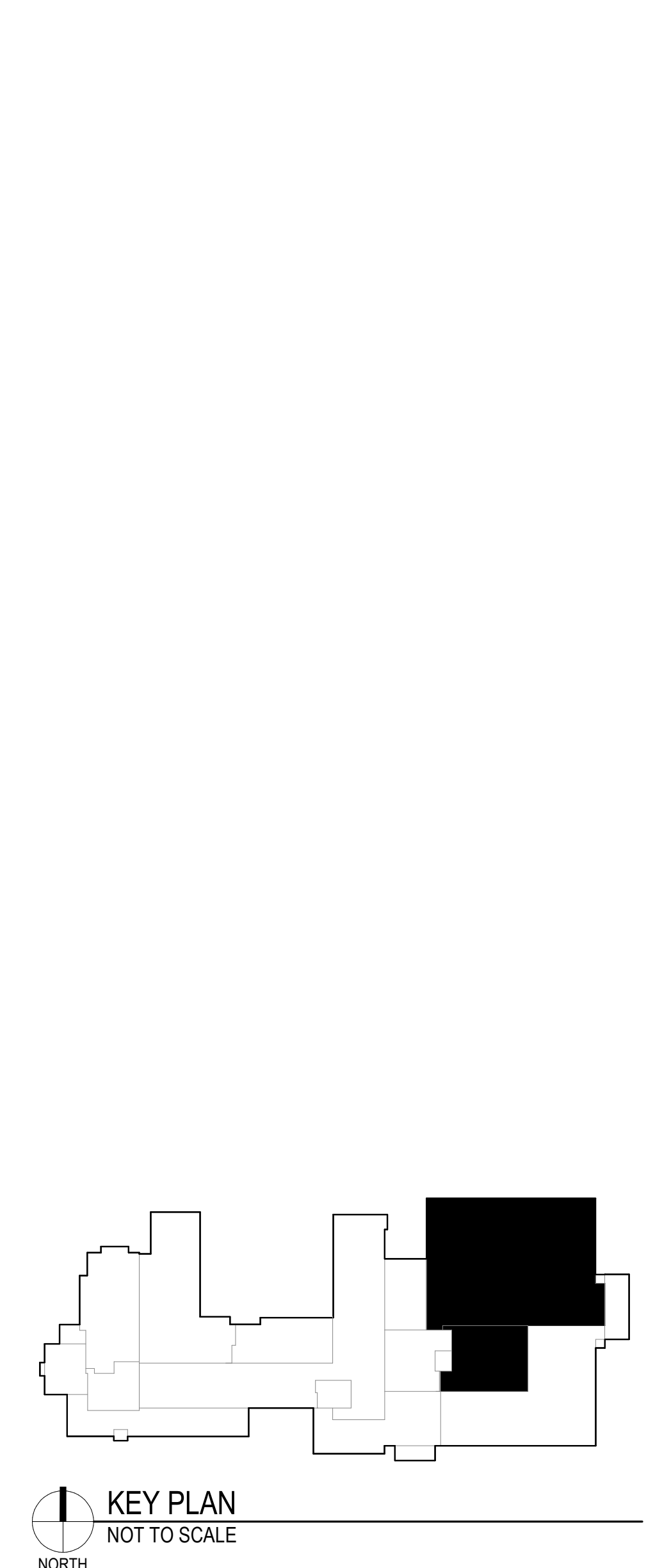
GENERAL FLOOR PLAN NOTES:

- REFER TO ADDITIONAL NOTES AND REQUIREMENTS ON ALL OTHER DOCUMENTS, OTHER DISCIPLINES AND SPECIFICATIONS.
- ALL SITE INFO, FIXTURES AND EQUIPMENT SHOWN ON THIS SHEET IS PROVIDED FOR COORDINATION PURPOSES ONLY. THE LAYOUT IS CONSIDERED CONCEPTUAL. REFER TO MECHANICAL, ELECTRICAL, PLUMBING, FIRE SPRINKLER, LIFE-SAFETY, ETC. DOCUMENTS FOR SPECIFIC DESIGN INFORMATION.
- CAULK & SEAL ALL CONTROL-EXPANSION, SAWCUT JOINTS AT ALL INTERIOR & EXTERIOR MASONRY & CONCRETE.
- PATCH/REPAIR EIFS AS REQUIRED DUE TO NEW WORK AT CONTRACTORS EXPENSE. MATCH EXISTING COLOR.

GENERAL ROOF PLAN NOTES:

- HATCHED AREAS ARE SHOWN FOR REFERENCE ONLY AND ARE GENERALLY OUTSIDE OF PROJECT SCOPE.
- ARROWS ON THE PLAN INDICATE DIRECTION OF DRAINAGE OF THE SLOPED STRUCTURE OR TAPERED INSULATION CRICKET (SLOPED +/- 1/4" PER 12" UNLESS NOTED OTHERWISE).
- DETAIL REFERENCES NOTED AS "TYPICAL" ON THE PLAN ENCOMPASS ALL SIMILAR LOCATIONS ON THE PROJECT UNLESS NOTED OTHERWISE.
- INDICATES CONCRETE CONTROL JOINT

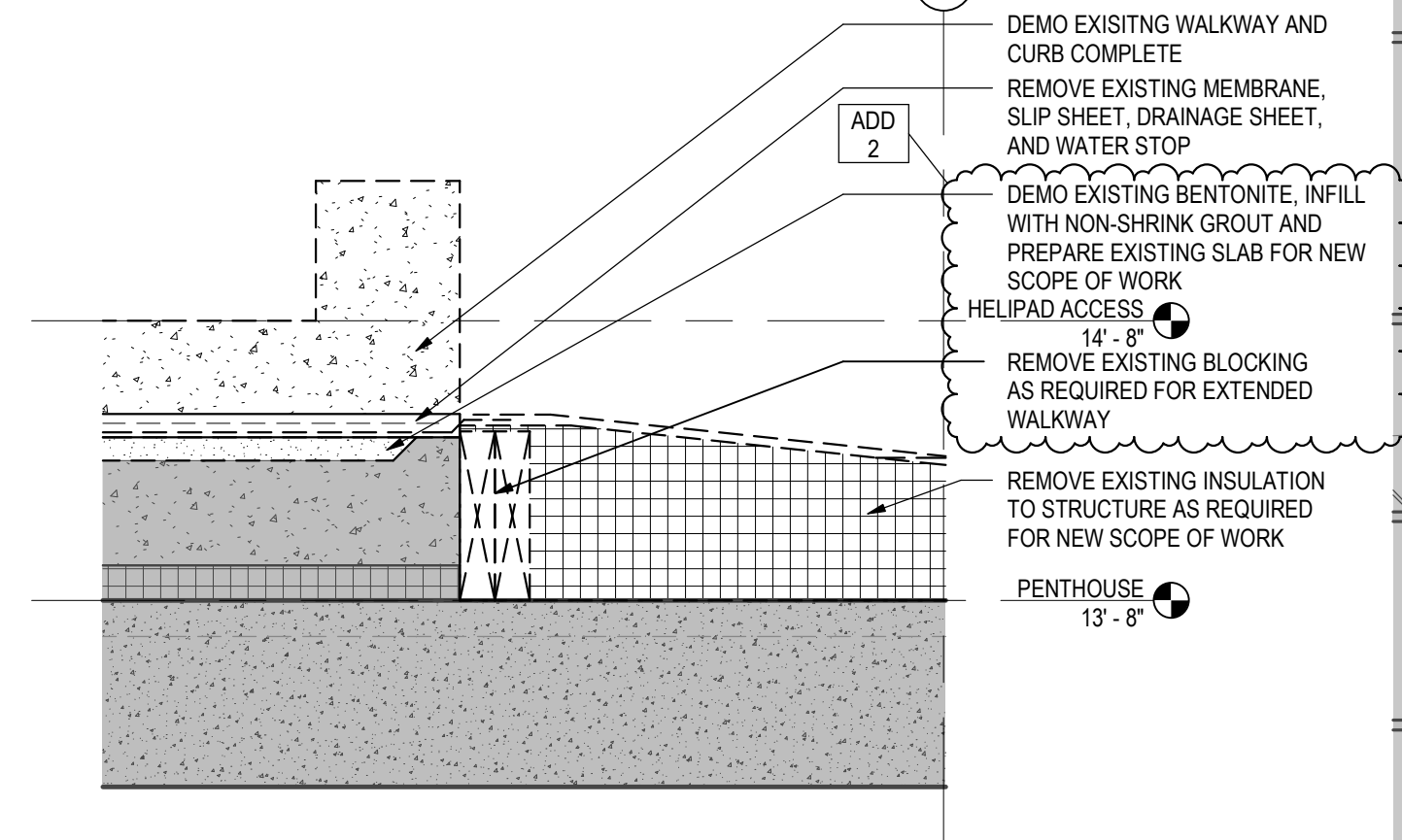
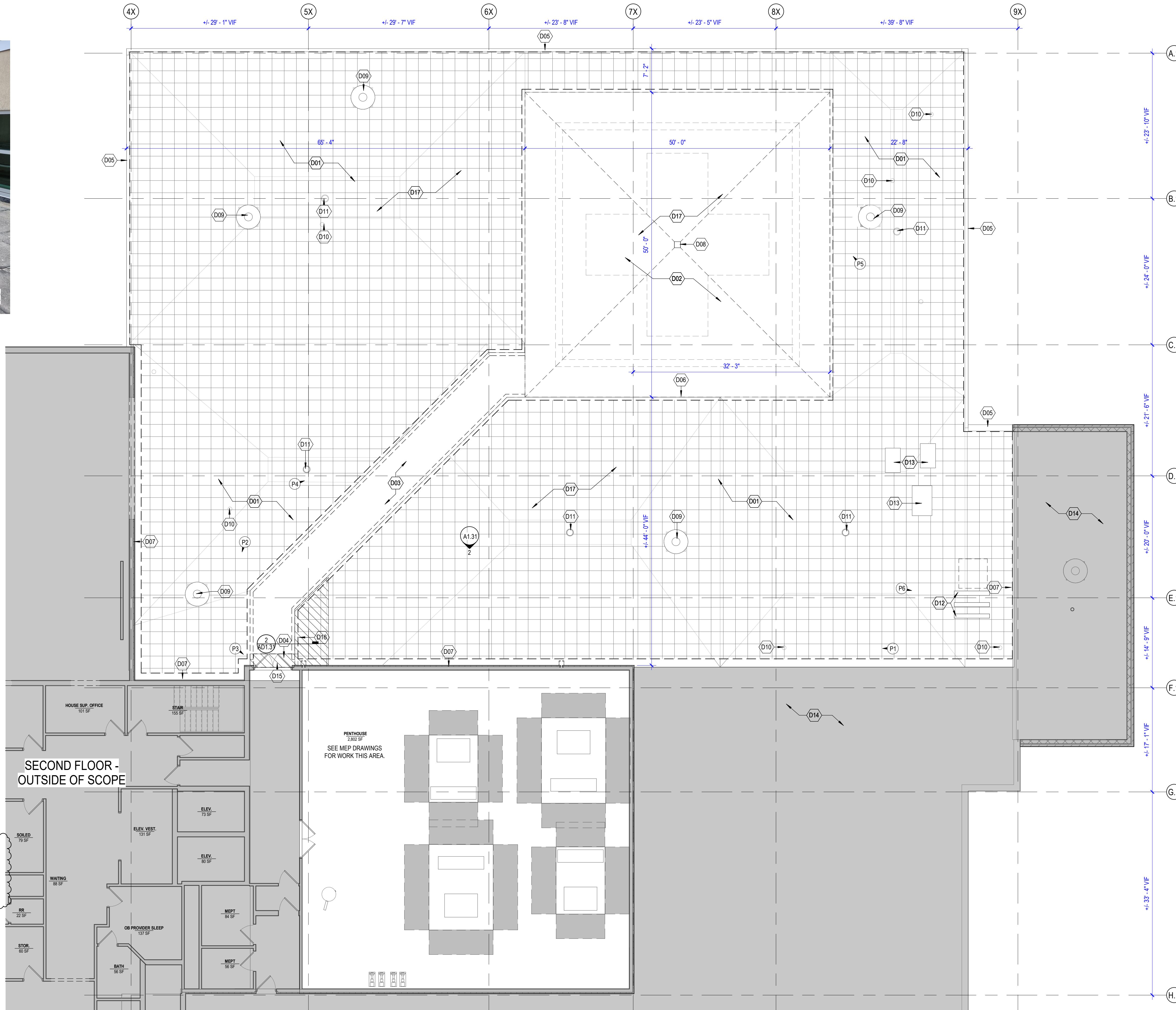
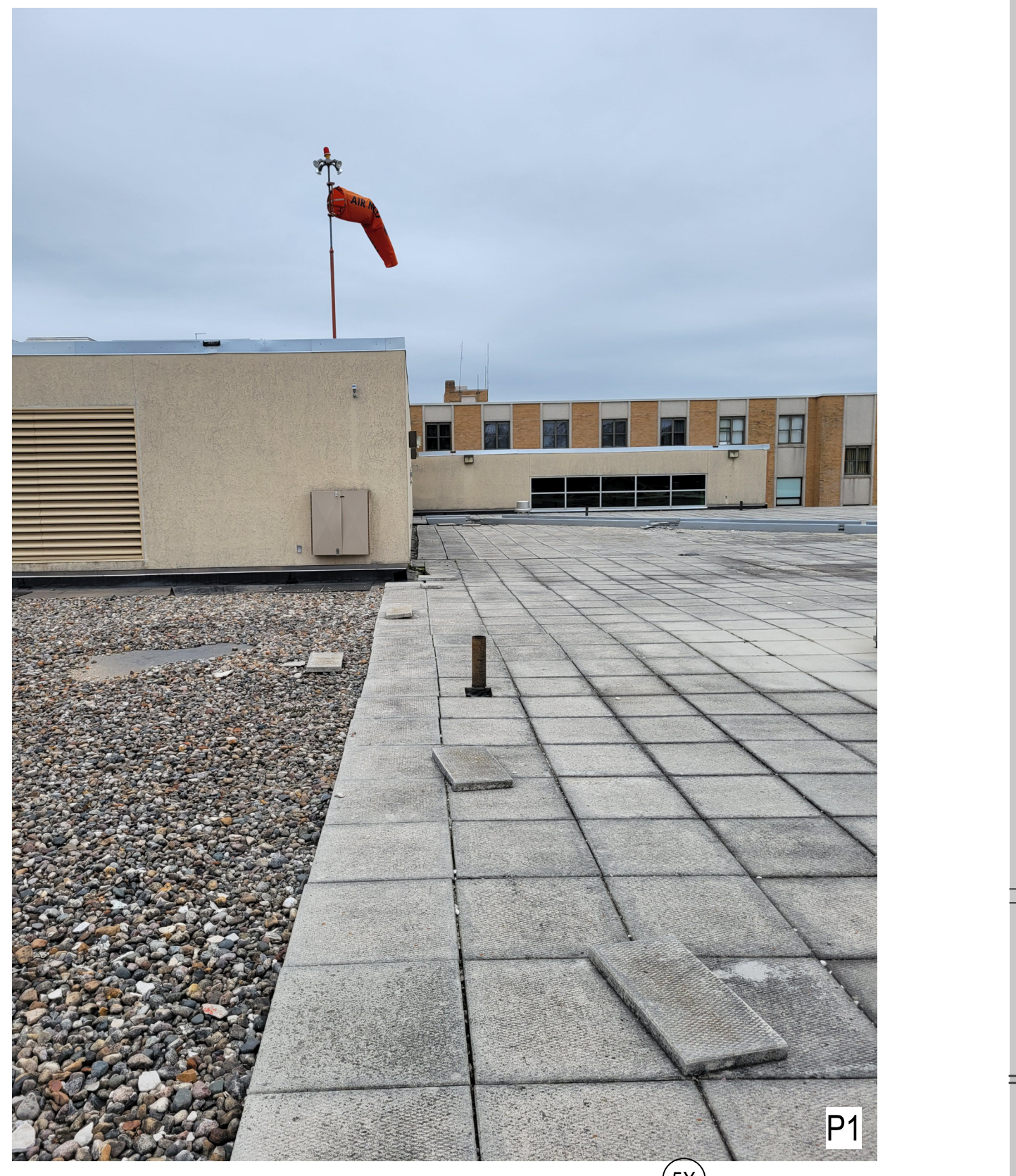
ROOF KEYNOTES	
#	DESCRIPTION
R01	PROVIDE MANUFACTURER-APPROVED TRANSITION BETWEEN NEW TPO ASSEMBLY AND EXISTING BALLASTED ROOF.
R02	EXISTING PLUMBING VENT - SEE PLUMBING.
R03	EXISTING ROOF DRAIN.
R04	EXISTING METAL SCUPPER AT ROOF EDGE. REPLACE METAL FLASHING AS REQUIRED. TO REMAIN IN SAME LOCATION.
R05	EXISTING EXHAUST VENT - SEE MECH.
R06	EXISTING MECHANICAL UNIT ON EXISTING PAVERS. RELOCATE TO NEW ROOF CURB. SEE MECH DWGS.
R07	ROOF WALKWAY PADS. EXTEND TO EXISTING WALKWAY.
R08	SALT & WATER GUARD - HELIPAD & WALKWAY. SEE SPEC.
R09	6" WIDE TPO SELF-ADHERING STRIPPING AT ANY SEAMS BELOW HELIPAD & HELIPAD WALKWAY.



REVISIONS:	Description	Date	No.
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OWNER SIGN-OFF:
DATE _____ NAME _____

PROJECT MANAGER: HEIDI WILLIS | HEIDI@INVISIONARCH.COM
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2 WALKWAY DEMO @ ADDED WALKWAY
1 1/2" = 1'-0"

1 HELIPAD ROOF DEMO PLAN
1/8" = 1'-0"

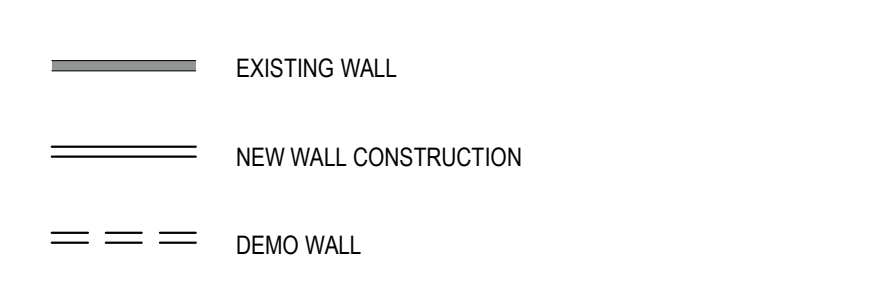
GENERAL DEMOLITION PLAN NOTES:

- HATCHED AREAS ARE SHOWN FOR REFERENCE ONLY AND ARE GENERALLY OUTSIDE OF PROJECT SCOPE.
- EXISTING ROOM NUMBERS AND NAMES SHOWN ON DEMOLITION PLANS. SEE NEW WORK PLANS FOR NEW ROOM NUMBERS AND NAMES.
- DASHED LINES INDICATE ITEMS TO BE REMOVED. PATCH AND REPAIR ALL ADJACENT SURFACES TO MATCH EXISTING SURFACE.
- SEE ALL OTHER DISCIPLINES SHEETS FOR ADDITIONAL DEMOLITION.
- REFER TO FLOOR PLANS FOR DIMENSIONS OF NEW OPENINGS NOT DIMENSIONS ON THE DEMOLITION SHEETS.
- PROTECT ALL ITEMS / SURFACES TO REMAIN DURING DEMOLITION / CONSTRUCTION. REPAIR / REPLACE ALL ITEMS DAMAGED DURING DEMOLITION / CONSTRUCTION.
- PATCH SURFACES TO MATCH ADJACENT SURFACES AT ALL REMOVED (ALL DISCIPLINES) DEVICES.
- SURFACE TEXTURE OF ALL WALL PATCHES / INFILL TO MATCH ADJACENT EXISTING SURFACES. BLEND NEW WALL TEXTURE INTO EXISTING WALL TEXTURE FOR UNIFORM FINISH / APPEARANCE. REPAINT ENTIRE WALL.
- ANY EQUIPMENT USED FOR DEMOLITION ON THE ROOF NEEDS TO BE APPROVED BY THE DESIGN TEAM FOR REVIEW OF EQUIPMENT WEIGHT AND PATH OF USE.

ROOF DEMO NOTES

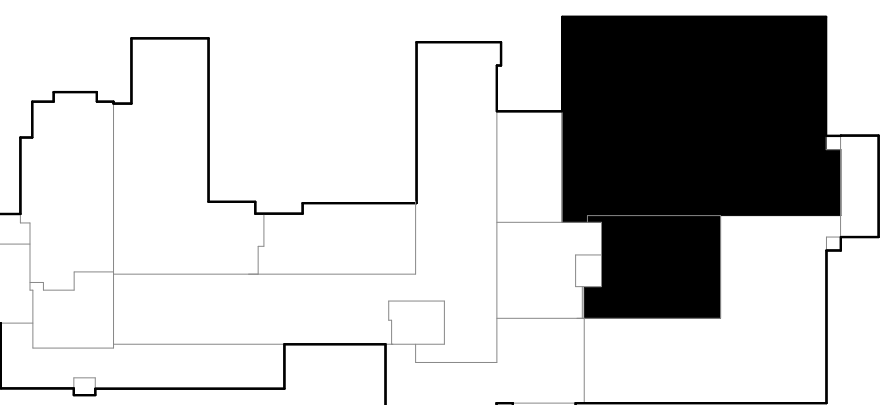
- HATCHED AREAS ARE SHOWN FOR REFERENCE ONLY AND ARE GENERALLY OUTSIDE OF PROJECT SCOPE.
- ROOF PLAN LAYOUT, LOCATIONS, SECTIONS AND DETAILS WERE TAKEN FROM EXISTING BUILDING PLANS AND FIELD OBSERVATIONS. THE CONTRACTOR SHALL FIELD VERIFY ALL CONDITIONS PRIOR TO THE START OF CONSTRUCTION.
- EXISTING ROOFING SYSTEM ARE BELIEVED TO CONSIST OF THE FOLLOWING (ALL ROOF AREAS UNLESS NOTED OTHERWISE):
 - EXISTING ROOF IN SCOPE BOUNDARIES:
 - CONCRETE PAVES
 - EPDM ROOFING SYSTEM
 - POLY-ISO INSULATION (4" MIN. 6" AVERAGE)
 - EXISTING BALLAST ROOF:
 - BALLAST ROCK
 - EPDM ROOFING SYSTEM
 - POLY-ISO INSULATION (4" MIN. 6" AVERAGE)
- REFER TO MECHANICAL, PLUMBING, AND ELECTRICAL SHEETS FOR ADDITIONAL DEMOLITION NOTES.
- PROTECT ALL ITEMS / SURFACES TO REMAIN DURING DEMOLITION / CONSTRUCTION. REPAIR / REPLACE ALL ITEMS / SURFACES DAMAGED DURING DEMOLITION / CONSTRUCTION TO MATCH EXISTING CONDITIONS.

WALL LEGEND:



DEMO KEYNOTES

#	DESCRIPTION
D01	REMOVE EXISTING CONCRETE ROOF PAVERS COMPLETE.
D02	DEMO EXISTING CONCRETE HELIPAD (6' CONCRETE SLAB). PROTECT EXISTING SLAB TO REMAIN BELOW ROOF MEMBRANE. NOTIFY DESIGN TEAM & CM IF THERE APPEARS TO BE DAMAGE/DEGRADATION TO SLAB BELOW EXISTING ROOF MEMBRANE.
D03	DEMO EXISTING 6" CONCRETE WALKWAY AND CURB. PROTECT EXISTING SLAB TO REMAIN BELOW ROOF MEMBRANE. NOTIFY DESIGN TEAM & CM IF THERE APPEARS TO BE DAMAGE/DEGRADATION TO SLAB BELOW EXISTING ROOF MEMBRANE.
D04	REMOVE EXISTING GRATING AND ANGLE SUPPORT.
D05	REMOVE EXISTING PREFINISHED SHEET METAL COPING.
D06	SEE MEPT PLANS AND SPECIFICATIONS FOR DEMOLITION OF EXISTING FIXTURES.
D07	EXISTING SHEET METAL FLASHING TO REMAIN.
D08	REFER TO PLUMBING DWGS FOR EXTENT OF REMOVAL OF EXISTING DRAIN AND GRATE.
D09	EXISTING EXHAUST VENT - SEE MECH - PROTECT DURING CONSTRUCTION.
D10	EXISTING PLUMBING VENT - SEE PLUMBING - PROTECT DURING CONSTRUCTION.
D11	EXISTING ROOF DRAIN - PROTECT DURING CONSTRUCTION.
D12	DEMO EXISTING CURB.
D13	EXISTING RTU - PROTECT DURING CONSTRUCTION.
D14	EXISTING BALLAST ROOF TO REMAIN.
D15	EXISTING DOOR TO REMAIN. REMOVE AND REINSTALL DOOR THRESHOLD AS REQUIRED FOR SCOPE OF WORK.
D16	REMOVE PORTION OF EXISTING INSULATION TO PRECAST. PREPARE FOR NEW SCOPE OF WORK.
D17	REMOVE EXISTING EPDM MEMBRANE IN AREA OF SCOPE OF WORK INCLUDING BELOW PAVERS, HELIPAD, AND WALKWAY AS REQUIRED FOR ROOF REPLACEMENT.



KEY PLAN
1" = 100'-0"

REVISIONS:

Description	Date	No.
ADD 2	06-27-24	2

OWNER SIGN-OFF:
DATE: _____ NAME: _____

**SECTION 23 83 00
RADIANT HEATING SYSTEM**

PART 1 - GENERAL

1.1 SCOPE

- A. Perform all work required to provide and install the following Radiant Heating System indicated by the Contract Documents with supplementary items necessary for proper installation.
- B. Equipment Included in This Section
 - 1. Piping
 - 2. Distribution manifolds
 - 3. Circuit isolation and balancing valves
 - 4. Controls

1.2 REFERENCES

- A. ASTM F2623 – Standard Specification for Polyethylene of Raised Temperature (PE-RT) Systems for Non-Potable Water Applications.
- B. CAN/CSA-B137.5 - Cross-Linked Polyethylene (PEX) Tubing Systems for Pressure Applications.
- C. NSF / ANSI Standard 14 – Certification of Plastic Piping Products

1.3 SUBMITTALS

- A. Provide detailed scaled drawings showing tubing layout and installation. Details shall show detailed manifold, inslab piping, and control layouts.
- B. Submit the following:
 - 1. System performance to verify system design as scheduled.
 - 2. Pump data and pump curves.
 - 3. Piping material information.
 - 4. Complete and detailed controls information.

1.4 WARRANTY

- A. In slab piping shall carry a twenty-five (25) year manufacturer's warranty.

PART 2 - PRODUCTS

2.1 RADIANT INFLOOR HEATING SYSTEM

- A. Radiant heating system shall include manifolds containing supply and return outlets with balancing adjustment for each circuit, pumps, expansion tank, control circuit with digital display, three (3)-way mixing valve, automatic air vent, temperature adjustment, 24 VAC control transformers, and mounting bracket with isolation valves.
- B. All components except for the controller and pump shall be provided by a single manufacturer.
- C. Acceptable Manufacturers:
 - 1. Piping, manifold, and valves: Uponor, Rehau, Wirsbo, Watts, Roth, Heat Link or Prior Approved Equal
 - 2. Pumps: Bell & Gossett, Grundfos, Taco, Patterson Pumps or Prior Approved Equal
 - 3. Controls: Rehau, Taco, Tekmar, Roth, Heat Link or Prior Approved Equal

2.2 RADIANT HEATING PIPING (DOWNSTREAM OF MANIFOLDS)

- A. Piping shall be a five-layer pipe consisting of ethylene-vinyl alcohol polymer (EVOH) oxygen barrier between two layers of PE-RT and two layers of adhesive polymer. Pipe shall be a composite PEX-RT in accordance with ASTM F2623. The PEX-RT tubing shall be third party certified to NSF/ANSI Standard 14.
- B. Pipe shall have minimum temperature and pressure ratings as follows: 200 psi at 73.4°F; 100 psi at 180°F.
- C. The pipe shall have an oxygen barrier capable of limiting oxygen diffusion below 0.1g/m³/day at 104°F as per DIN 4726. This oxygen barrier shall not be affected by sunlight and must be located within the pipe wall.
- D. Pipe shall have a ULC listed fire rating of five (5) for smoke development rating and five (5) for flame spread rating.
- E. Pipe fittings shall be the same as the pipe manufacturer and intended for infloor heating system use. Fittings shall be brass with double EPDM seals. Fittings shall be attached by pipe manufacturer's crimp ring tool.

2.3 MANIFOLDS AND SYSTEM ASSEMBLIES

- A. Manifolds shall be of brass construction, manufactured of alloys to prevent dezincification, and have integral isolation valves on the supply manifold and circuit balancing valves on the return.
- B. All manifolds shall be supplied with isolation valves between the heat source and the unit.
- C. On a closed loop heating system the system assembly must be complete with a properly sized expansion tank to accommodate the fluid expansion in the piping.

- D. All manifolds shall be supplied with air vent and fill / purge valve . Provide with temperature and pressure gauges for monitoring.
- E. The system assembly must be factory tested to 50 psi prior to shipment. Installation shall be according to manufacturer's installation guide and wiring diagrams.

2.4 CONTROLS

- A. All hydronic controls must be installed in a steel cabinet (panel) of suitable gauge and size complete with a hinged door and latch.
- B. The control panel must provide constant circulation of the secondary loop water where possible.
- C. Install an inslab temperature sensor to maintain a slab temperature of 78° F (adj.).
- D. Pump and mixing valve shall work to maintain scheduled supply water temperature and slab temperature.
- E. Panel shall have auxiliary contacts to communicate a general system alarm to the DDC.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Piping shall be continuous without any splices in the floor slab. If a fitting must be installed in the concrete slab it must be protected with a sleeve as recommended by the manufacturer and must be approved by the engineer.
- B. Pipe shall be installed in accordance with manufacturer's recommendations and the details on the contract drawings.
- C. All fittings shall be accessible for maintenance.
- D. When installing the pipe, the manifold connection must be made immediately or capped with tape to seal the pipe from contaminants.
- E. Pipe that passes through expansion joints shall be sleeved a minimum of 10" on both sides of the joint. Where pipe exits the floor and is subject to mechanical damage a protective sleeve shall be placed around the tube. The sleeve shall extend a minimum of 2" out of the floor.
- F. All circuits will be labeled and marked as Supply and Return, or colored piping dedicated to each service shall be used, e.g. red piping for supply and blue for return.
- G. The contractor will submit a record of actual pipe circuit length for final balancing purposes.
- H. The heating system will be put into full operation after the concrete slab has cured. If it is necessary to operate the heating system to prevent freezing, a maximum supply temperature of 59°F shall be used while the concrete slab is curing. The supply temperature shall be increased by 5°F each day until the maximum operating temperature is reached.
- I. Balance each circuit to maintain even temperature in spaces.

- J. Install the slab temperature sensor in conduit with a pull string such that it can be inspected and/or replaced later without flooring demolition.

3.2 TESTING

- A. The pipe and fittings shall be pressure tested in accordance with applicable codes and industry standards after installation and before the tubing is covered. The pressure test must be performed a minimum of 24 hours prior to the concrete pour.
- B. If no standard is available perform a test by charging the installed but not yet concealed pipe with water or air. Check the system for leaks. Perform a preliminary pressure test to a maximum pressure of 75 psi. Stabilize the pressure over 30 minutes. Test the system for a minimum of one (1) hour. During this time the pressure shall not fall more than 2 psi. No leakage should be detected. Reduce the pressure to 40 psi and maintain the pressure test throughout the concrete pour and a minimum of 24 hours after the concrete pour.

END OF SECTION

**SECTION 23 83 00
RADIANT HEATING SYSTEM**

PART 1 - GENERAL

1.1 SCOPE

- A. Perform all work required to provide and install the following Radiant Heating System indicated by the Contract Documents with supplementary items necessary for proper installation.
- B. Equipment Included in This Section
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- A. ASTM F2623 – Standard Specification for Polyethylene of Raised Temperature (PE-RT) Systems for Non-Potable Water Applications.
- B. CAN/CSA-B137.5 - Cross-Linked Polyethylene (PEX) Tubing Systems for Pressure Applications.
- C. NSF / ANSI Standard 14 – Certification of Plastic Piping Products

1.3 SUBMITTALS

- A. Provide detailed scaled drawings showing tubing layout and installation. Details shall show detailed manifold, inslab piping, and control layouts.
- B. Submit the following:
 - 1. System performance to verify system design as scheduled.
 - 2. Pump data and pump curves.
 - 3. Piping material information.
 - 4. Complete and detailed controls information.

1.4 WARRANTY

- A. In slab piping shall carry a twenty-five (25) year manufacturer's warranty.

PART 2 - PRODUCTS

2.1 RADIANT INFLOOR HEATING SYSTEM

- A. Radiant heating system shall include manifolds containing supply and return outlets with balancing adjustment for each circuit, pumps, expansion tank, control circuit with digital display, three (3)-way mixing valve, automatic air vent, temperature adjustment, 24 VAC control transformers, and mounting bracket with isolation valves.
- B. All components except for the controller and pump shall be provided by a single manufacturer.
- C. Acceptable Manufacturers:
 - 1. Piping, manifold, and valves: Uponor, Rehau, Wirsbo, Watts, Roth, Heat Link or Prior Approved Equal
 - 2. Pumps: Bell & Gossett, Grundfos, Taco, Patterson Pumps or Prior Approved Equal
 - 3. Controls: Rehau, Taco, Tekmar, Roth, Heat Link or Prior Approved Equal

2.2 RADIANT HEATING PIPING (DOWNSTREAM OF MANIFOLDS)

- A. Piping shall be a five-layer pipe consisting of ethylene-vinyl alcohol polymer (EVOH) oxygen barrier between two layers of PE-RT and two layers of adhesive polymer. Pipe shall be a composite PEX-RT in accordance with ASTM F2623. The PEX-RT tubing shall be third party certified to NSF/ANSI Standard 14.
- B. Pipe shall have minimum temperature and pressure ratings as follows: 200 psi at 73.4°F; 100 psi at 180°F.
- C. The pipe shall have an oxygen barrier capable of limiting oxygen diffusion below 0.1g/m³/day at 104°F as per DIN 4726. This oxygen barrier shall not be affected by sunlight and must be located within the pipe wall.
- D. Pipe shall have a ULC listed fire rating of five (5) for smoke development rating and five (5) for flame spread rating.
- E. Pipe fittings shall be the same as the pipe manufacturer and intended for infloor heating system use. Fittings shall be brass with double EPDM seals. Fittings shall be attached by pipe manufacturer's crimp ring tool.

2.3 MANIFOLDS AND SYSTEM ASSEMBLIES

- A. Manifolds shall be of brass construction, manufactured of alloys to prevent dezincification, and have integral isolation valves on the supply manifold and circuit balancing valves on the return.
- B. All manifolds shall be supplied with isolation valves between the heat source and the unit.
- C. On a closed loop heating system the system assembly must be complete with a properly sized expansion tank to accommodate the fluid expansion in the piping.

- D. All manifolds shall be supplied with air vent and fill / purge valve . Provide with temperature and pressure gauges for monitoring.
- E. The system assembly must be factory tested to 50 psi prior to shipment. Installation shall be according to manufacturer's installation guide and wiring diagrams.

2.4 CONTROLS

- A. All hydronic controls must be installed in a steel cabinet (panel) of suitable gauge and size complete with a hinged door and latch.
- B. The control panel must provide constant circulation of the secondary loop water where possible.
- C. Install an inslab temperature sensor to maintain a slab temperature of 78° F (adj.).
- D. Pump and mixing valve shall work to maintain scheduled supply water temperature and slab temperature.
- E. Panel shall have auxiliary contacts to communicate a general system alarm to the DDC.

PART 3 - EXECUTION

3.1 INSTALLATION

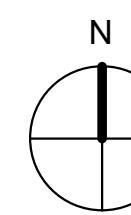
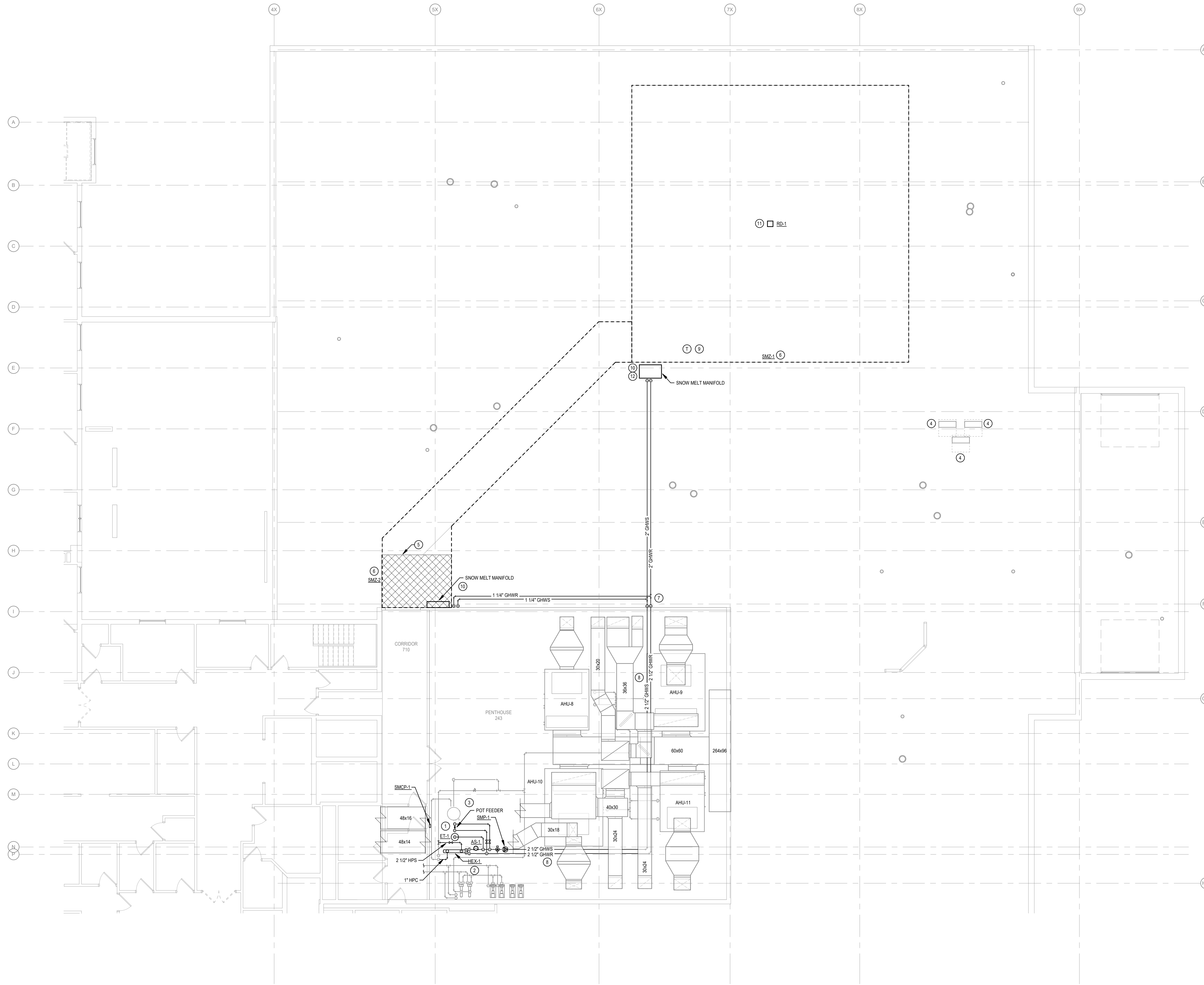
- A. Piping shall be continuous without any splices in the floor slab. If a fitting must be installed in the concrete slab it must be protected with a sleeve as recommended by the manufacturer and must be approved by the engineer.
- B. Pipe shall be installed in accordance with manufacturer's recommendations and the details on the contract drawings.
- C. All fittings shall be accessible for maintenance.
- D. When installing the pipe, the manifold connection must be made immediately or capped with tape to seal the pipe from contaminants.
- E. Pipe that passes through expansion joints shall be sleeved a minimum of 10" on both sides of the joint. Where pipe exits the floor and is subject to mechanical damage a protective sleeve shall be placed around the tube. The sleeve shall extend a minimum of 2" out of the floor.
- F. All circuits will be labeled and marked as Supply and Return, or colored piping dedicated to each service shall be used, e.g. red piping for supply and blue for return.
- G. The contractor will submit a record of actual pipe circuit length for final balancing purposes.
- H. The heating system will be put into full operation after the concrete slab has cured. If it is necessary to operate the heating system to prevent freezing, a maximum supply temperature of 59°F shall be used while the concrete slab is curing. The supply temperature shall be increased by 5°F each day until the maximum operating temperature is reached.
- I. Balance each circuit to maintain even temperature in spaces.

- J. Install the slab temperature sensor in conduit with a pull string such that it can be inspected and/or replaced later without flooring demolition.

3.2 TESTING

- A. The pipe and fittings shall be pressure tested in accordance with applicable codes and industry standards after installation and before the tubing is covered. The pressure test must be performed a minimum of 24 hours prior to the concrete pour.
- B. If no standard is available perform a test by charging the installed but not yet concealed pipe with water or air. Check the system for leaks. Perform a preliminary pressure test to a maximum pressure of 75 psi. Stabilize the pressure over 30 minutes. Test the system for a minimum of one (1) hour. During this time the pressure shall not fall more than 2 psi. No leakage should be detected. Reduce the pressure to 40 psi and maintain the pressure test throughout the concrete pour and a minimum of 24 hours after the concrete pour.

END OF SECTION



1 MECHANICAL ROOF PLAN
1/8" = 1'-0"

GENERAL NOTES:

- ALL VALVES TO BE LOCATED IN ACCESSIBLE LOCATIONS. COORDINATE WITH ARCHITECTURAL DRAWINGS.
- BALANCING CONTRACTOR TO BALANCE ALL SNOW MELT SYSTEM TO THE VALUES LISTED ON THE DRAWINGS.
- REFER TO M&E SERIES DRAWINGS FOR THE FOLLOWING REFERENCED DETAILS
 - SNOWMELT RADIANT IN FLOOR HEATING CONTROL DIAGRAM
 - SNOWMELT ZONE CONTROL DIAGRAM
 - PUMPS - IN-LINE VERTICAL
 - SNOW MELT - RADIANT IN-FLOOR MANIFOLD
 - STEAM TRAP - STEAM TRAP ASSEMBLY
 - RADIANT SNOW MELT TUBING
 - PIPE HANGERS
 - HEAT EXCHANGER - STEAM - SHELL AND TUBE
 - ROOF DRAIN

KEYED NOTES:

- REMOVE EXISTING RO SYSTEM IN THIS AREA. REMOVE ASSOCIATED PIPING BACK TO THE MAINS AND CAP. PATCH INSULATION TO MATCH EXISTING.
- M.C. TO PROVIDE STEEL RACK FOR HEAT EXCHANGER MOUNTING.
- LOCATED ALL NEW EQUIPMENT ABOVE THE CURBED DRAIN AREA IN THIS LOCATION.
- PROVIDE STANDS FOR EXISTING SPLIT SYSTEM CONDENSING UNIT. STANDS SHALL BE EQUAL TO RECTORSEAL BIG FOOT STANDS PH 85524. MODIFY/EXTEND REFRIGERANT PIPING AND ELECTRICAL CONNECTIONS AS REQUIRED TO ACCOMMODATE STANDS.
- SNOW MELT TUBING IN HATCHED AREA SHALL BE 6" ON CENTER. REFER TO ARCHITECTURAL PLANS FOR MORE INFORMATION RELATED TO SLAB THICKNESS.
- PROVIDE CORRUGATED PIPE SLEEVES WHERE SNOW MELT TUBING CROSSES SLAB SAW CUT JOINTS.
- EXTERIOR ROOF MOUNTED PIPING. INSTALL RISER TIGHT TO EXTERIOR WALL. REFER TO PIPING APPLICATION SCHEDULE FOR JACKETING REQUIREMENTS.
- COORDINATE HYDRONIC PIPING ROUTING WITH EXISTING DUCTWORK, AHUS, PIPING, ETC. PRIOR TO INSTALLATION.
- SLAB TEMPERATURE AND MOISTURE SENSOR. FIELD COORDINATE FINAL LOCATION PRIOR TO INSTALLATION. SENSOR SHALL BE PROVIDED WITH AND INSTALLED IN A BRASS SLEEVE. CONTROL WIRING SHALL BE INSTALLED IN RIGID CONDUIT BACK TO SNOW MELT CONTROLLER. CONDUIT INSTALLATION BY E.C. COORDINATE CONDUIT ROUTING WITH ELECTRICAL PLANS.
- INSTALL MANIFOLDS IN EXTERIOR RATED, LOCKABLE ENCLOSURE.
- DEMO AND REPLACE EXISTING HELIPAD ROOF DRAIN. EXTEND EXISTING STORM DRAIN AS REQUIRED TO NEW HELIPAD SLAB BASE. PROVIDE 1" DRAIN EXTENSION AS REQUIRED TO ACCOMMODATE NEW HELIPAD SLAB THICKNESS. COORDINATE EXTENSION REQUIREMENTS WITH ARCHITECTURAL PLANS PRIOR TO ORDERING.
- INSTALL MANIFOLD HORIZONTALLY ADJACENT TO THE HELIPAD. HEIGHT OF MANIFOLD CABINET SHALL BE EVEN WITH TOP OF HELIPAD SLAB. COORDINATE HEIGHTS WITH ARCHITECTURAL PLANS.

REVISIONS:	Description	Date	No.
ADDENDUM #2		6/26/2024	2

OWNER SIGN-OFF:
DATE _____ NAME _____

BOONE COUNTY HOSPITAL
BCH HELIPAD
1015 UNION ST.
BOONE, IA 50036

PROJECT NO:
24003

DATE:
14 JUNE 2024
SHEET SET:
CONSTRUCTION DOCUMENTS

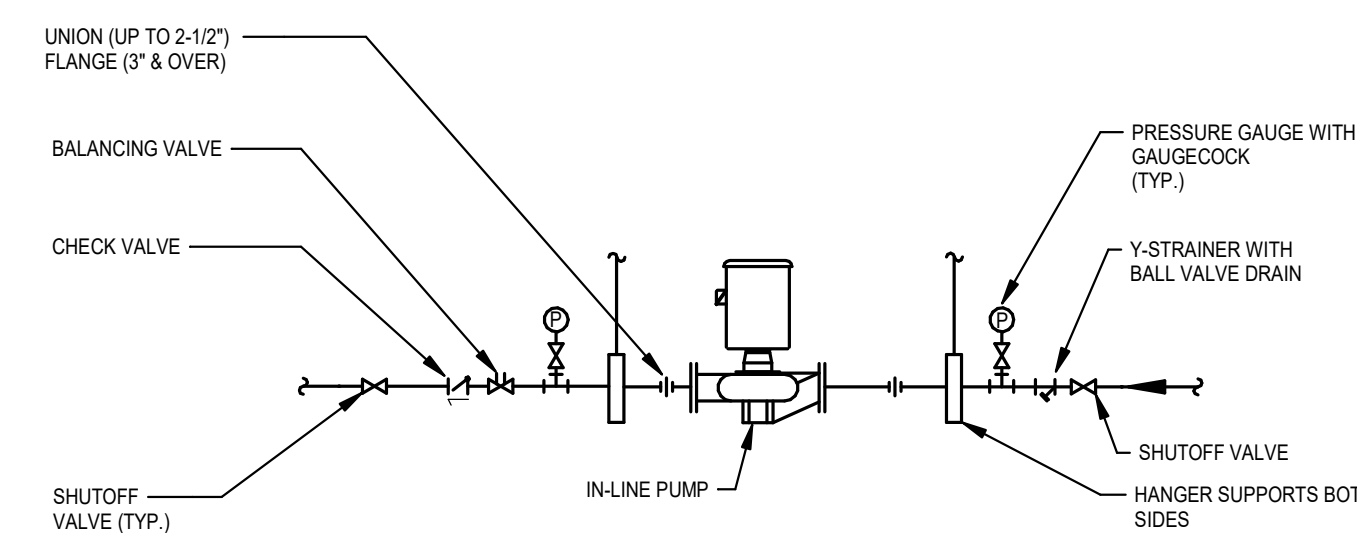
SHEET NAME:
MECHANICAL ROOF PLAN

SHEET:
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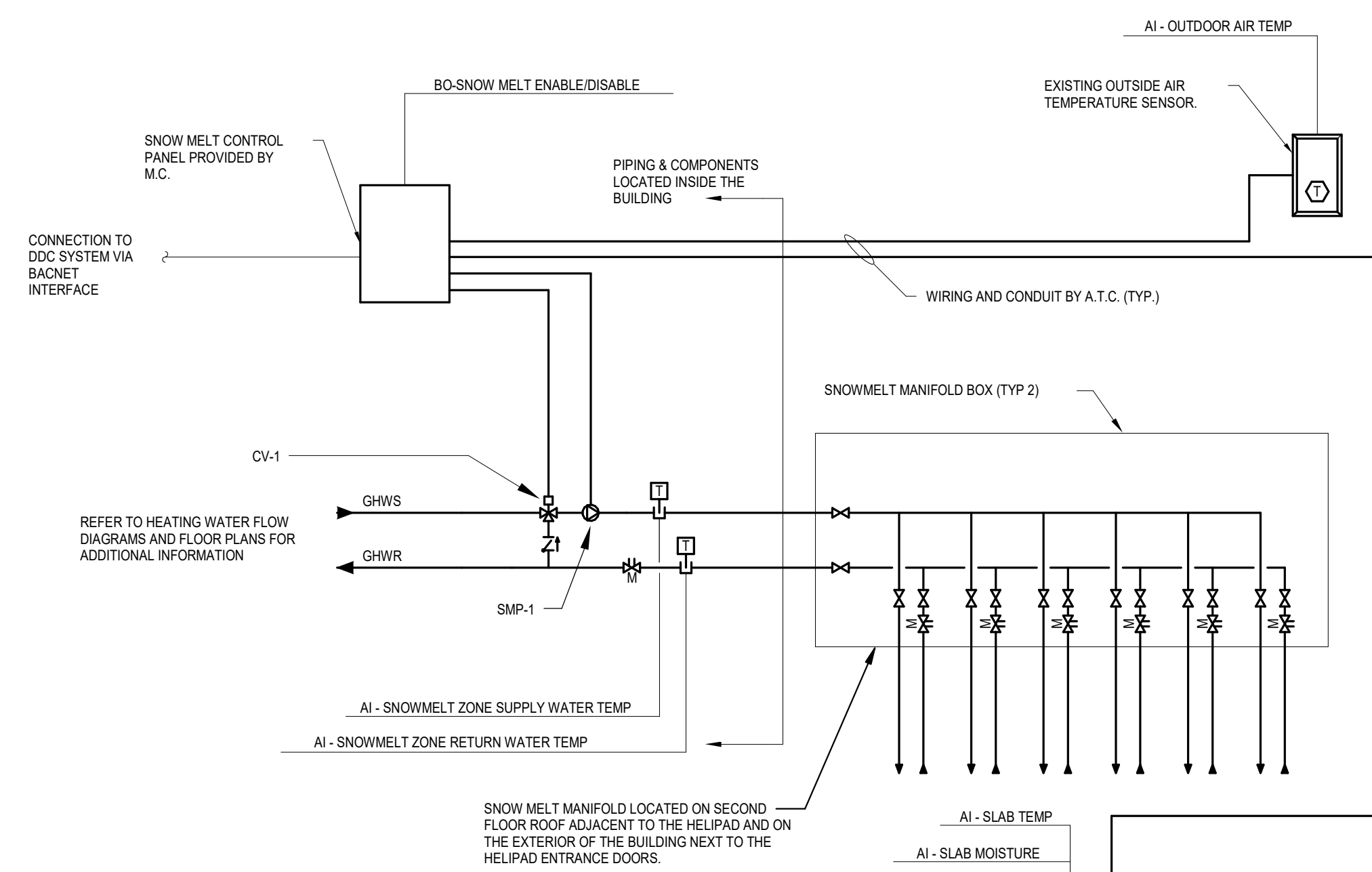
CONSULTANT:
STRUCTURAL
RAKER RHODES
ENGINEERING
MEP
BLUESTONE
ENGINEERING



3 PUMPS - IN-LINE VERTICAL
N.T.S.

GENERAL NOTES:

- SUPPORT PUMP INDEPENDENTLY OF PIPING FROM STRUCTURE OR FLOOR.
- SUPPORT PUMP ON STRUCTURAL STEEL FRAME. PIPING MAY BE SUPPORTED FROM SAME FRAME AS PUMP, BUT PIPING MAY NOT BE SUPPORTED BY PUMP ALONE.



2 SNOWMELT ZONE CONTROL DIAGRAM
N.T.S.

CONTROL SEQUENCE:

RUN STATUS:
EAS TO CONNECT TO SNOW MELT CONTROLLER THROUGH BAGNET INTERFACE. BAG SHALL MONITOR ALARMS AND STATUS.

SLAB IDLE:
IF THE OUTSIDE AIR TEMPERATURE IS BELOW 40°F (ADJ.) & THE SLAB TEMPERATURE IS BELOW 30°F (ADJ.), WHILE IN IDLE MODE.

SNOW MELT CONTROL PANEL TO MONITOR THE FOLLOWING:
- SNOW MELT MANIFOLD SUPPLY WATER TEMPERATURE
- SNOW MELT MANIFOLD RETURN WATER TEMPERATURE
- SNOW MELT ZONE PUMP STATUS
- CONTROL VALVE POSITION

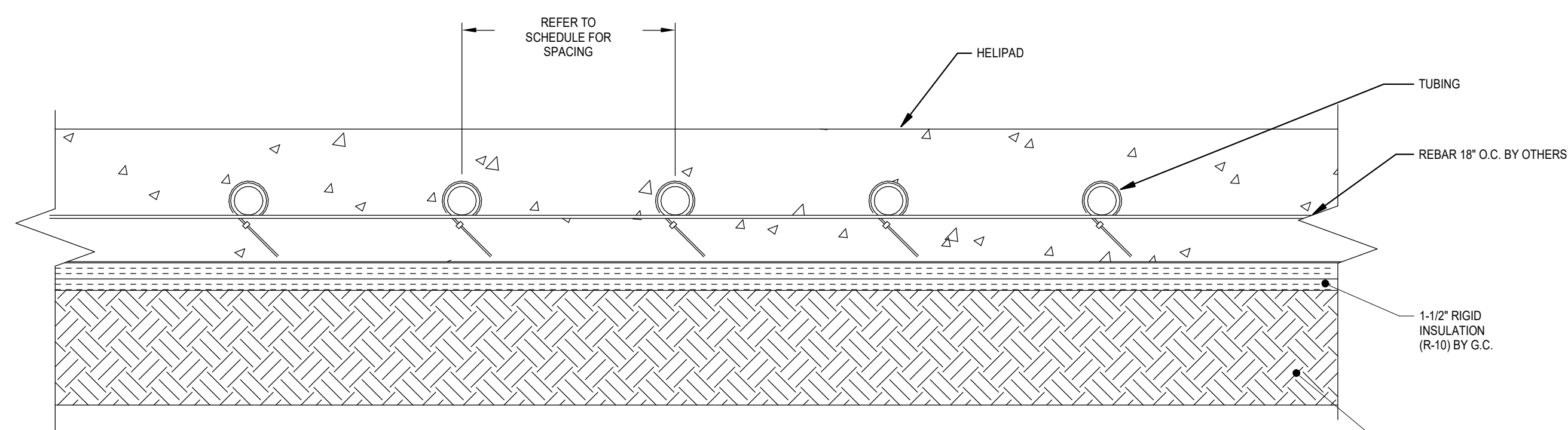
SNOW MELT CONTROLLER SEQUENCE OF OPERATIONS:
SNOW MELT CONTROLLER TO MONITOR SLAB TEMPERATURE, SLAB SURFACE MOISTURE, AND OUTSIDE AIR TEMPERATURE.
SNOW MELT CONTROLLER TO ENABLE PUMP (SMP-1) AND MODULATE ZONE VALVE (CV-1) TO MAINTAIN SCHEDULED SLAB TEMPERATURE OF 40°F (ADJ.).

ALARMS SHALL BE PROVIDED AS FOLLOWS:
- SNOW MELT MANIFOLD SUPPLY TEMPERATURE
a. HIGH TEMP. TEMPERATURE IS ABOVE 140°F (ADJ.) FOR MORE THAN 5 MIN (ADJ.).
b. LOW TEMP. TEMPERATURE IS BELOW 105°F (ADJ.) FOR MORE THAN 5 MIN (ADJ.).
- SYSTEM PUMP (SMP-1)
a. FAILURE, COMMANDED ON, BUT THE STATUS IS OFF.
b. RUNNING IN HAND, COMMANDED OFF, BUT THE STATUS IS ON.
- SENSOR FAILURE: SENSOR READING INDICATES SHORTED OR DISCONNECTED SENSOR.

WARM WEATHER SHUTDOWN:
- IF THE OUTSIDE AIR TEMPERATURE EXCEEDS 38°F (ADJ.) AND THE SLAB TEMPERATURE EXCEEDS 34°F (ADJ.).

COLD WEATHER CUT OUT:
- IF THE OUTSIDE AIR TEMPERATURE DROPS BELOW 0°F (ADJ.) & THE SLAB TEMPERATURE IS BELOW 32°F (ADJ.) THE SNOW MELT ZONE SHALL SHUT OFF.

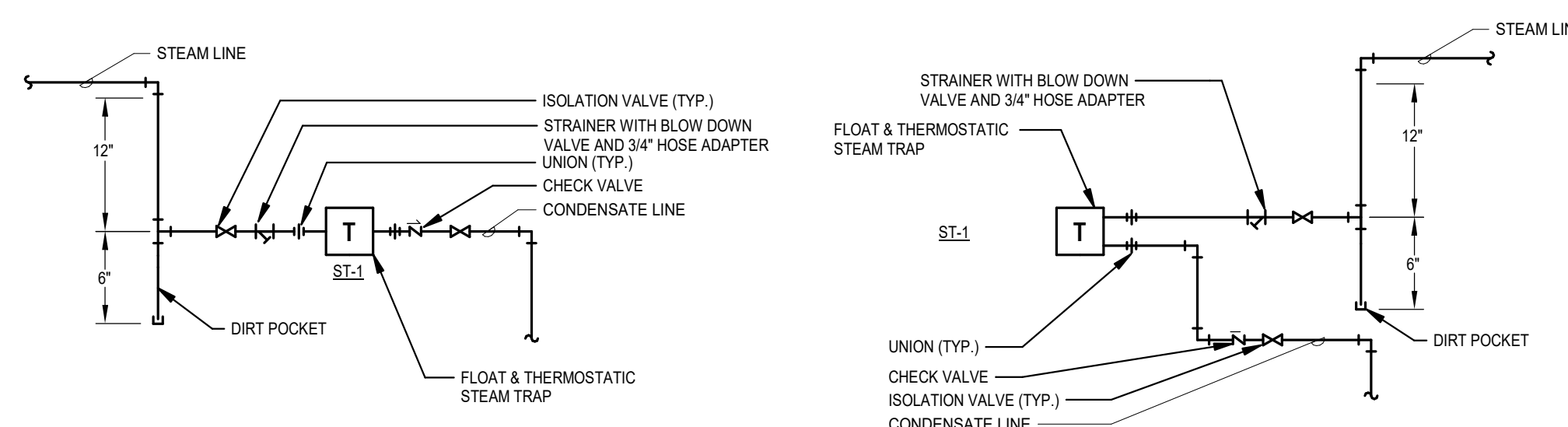
SLAB PROTECTION:
THE SNOW MELT CONTROLLER SHALL MEASURE THE SLAB TEMPERATURE & THE SUPPLY WATER TEMPERATURE & USE INTERNAL CONTROLS LOGIC TO MODULATE THE SNOW MELT ZONE SUPPLY WATER TEMPERATURE. THE CONTROLLER SHALL LIMIT THE TEMPERATURE DIFFERENTIAL BETWEEN THE CONCRETE SLAB & THE SUPPLY WATER TEMPERATURE TO PREVENT SHOCKING THE SLAB.



6 RADIANT SNOWMELT HEAT TUBING
N.T.S.

GENERAL NOTES:

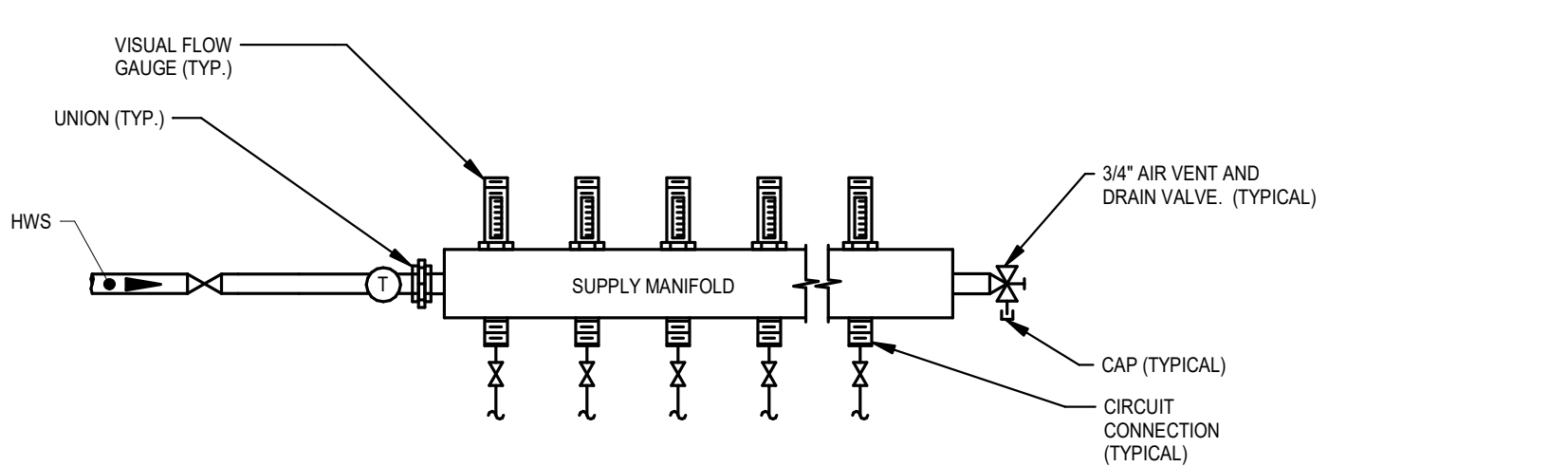
- INSTALL INSULATION BELOW ALL SNOW MELT ZONES.
- INSTALL TUBING PER INDIVIDUAL MANUFACTURER'S REQUIREMENTS.
- INSTALL PROTECTIVE SLEEVES AT EXPANSION JOINTS.



5 STEAM TRAPS - STEAM TRAP ASSEMBLY
N.T.S.

GENERAL NOTES:

- ALL DRIP POINTS ON STEAM MAINS SHALL BE PROVIDED WITH A 12" MINIMUM HIGH DRIP LEG FROM BOTTOM OF STEAM MAIN TO TRAP INLET. DRIP LEG SHALL HAVE 6" DIRT POCKET BELOW TRAP INLET.



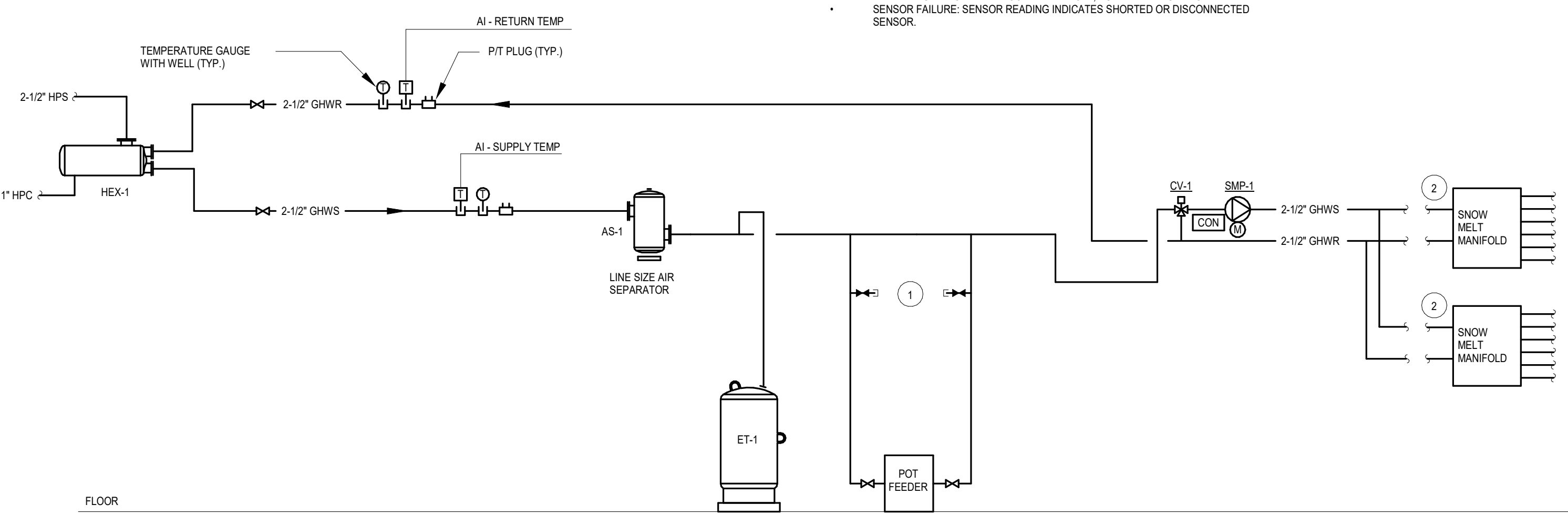
NOTE TO SPECIFIER:

- EDIT FOR CONTROL TYPE AND PUMPING ON SPECIAL PROJECT.

4 SNOW MELT - RADIANT IN-FLOOR MANIFOLD
N.T.S.

GENERAL NOTES:

- ALL COMPONENTS SHOWN ARE PREINSTALLED IN MANIFOLD CABINET.



1 SNOWMELT / RADIANT IN-FLOOR HEATING CONTROL DIAGRAM
N.T.S.

GENERAL NOTES:

- REFER TO SNOW MELT ZONE CONTROL DIAGRAM.
- REFER TO HYDRONIC DETAILS SHEETS FOR THE FOLLOWING DETAILS:
- PUMP
- STEAM TO HOT WATER HEAT EXCHANGER
- AIR SEPARATOR, EXPANSION TANK, AND POT FEEDER
- SNOW MELT HEATING MANIFOLD
- SNOW MELT HEAT TUBING

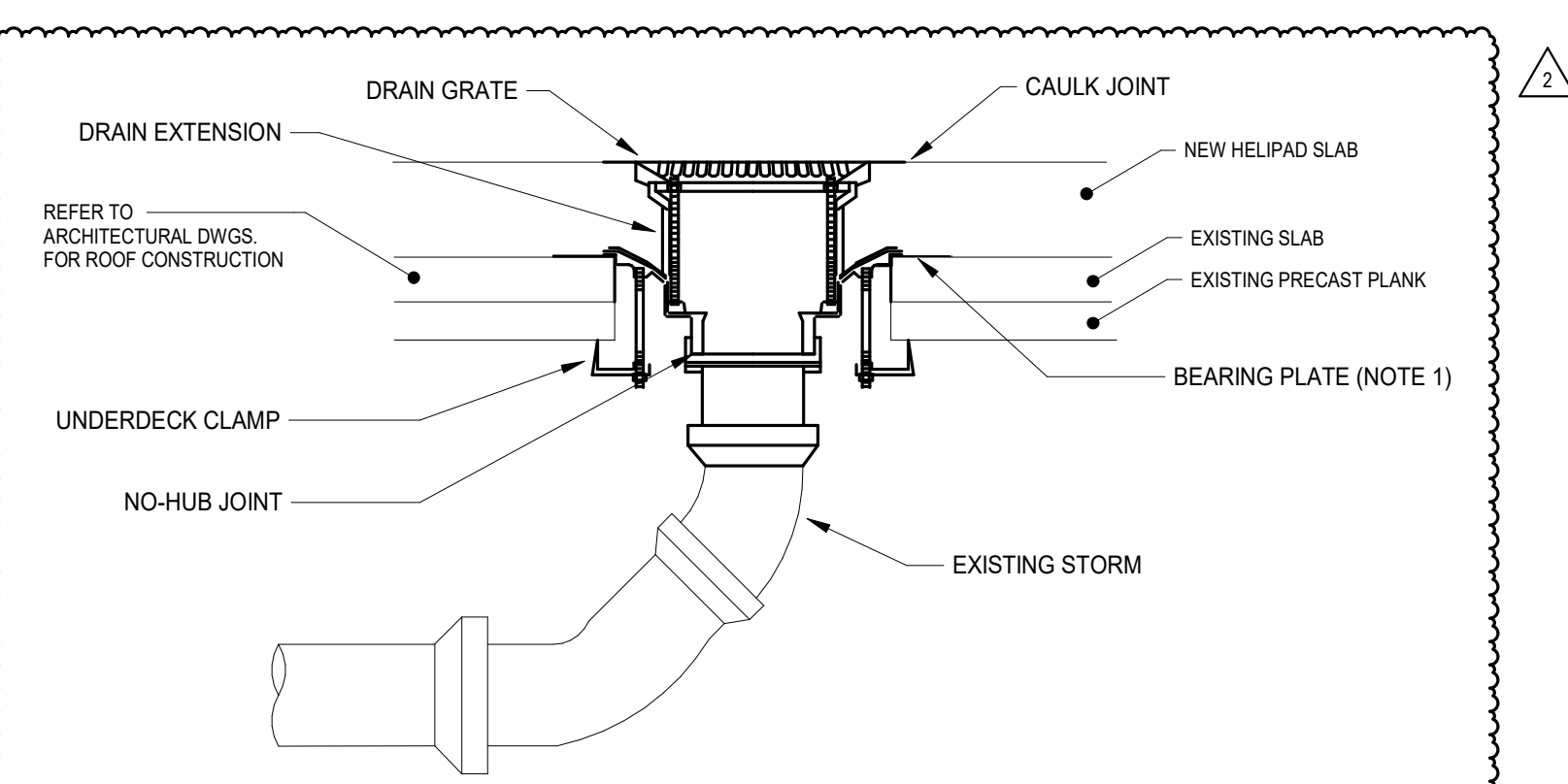
KEYED NOTES:

- PROVIDE CONNECTIONS FOR FLUSHING AND CLEANING OF SYSTEM.
- REFER TO SNOW MELT HEATING MANIFOLD CONTROLS DETAILS FOR ADDITIONAL REQUIREMENTS.



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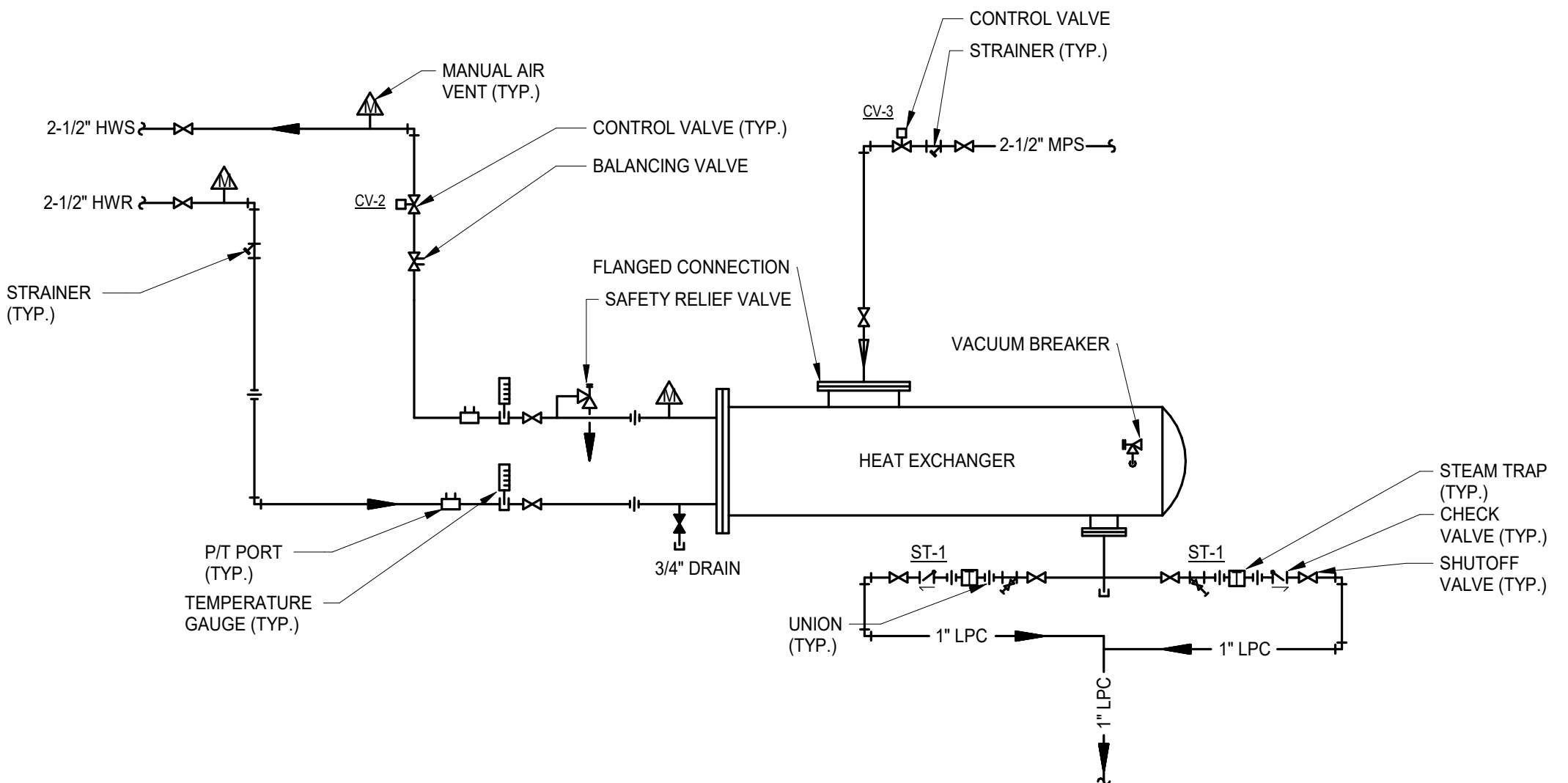
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9 ROOF DRAIN
N.T.S.

GENERAL NOTES:

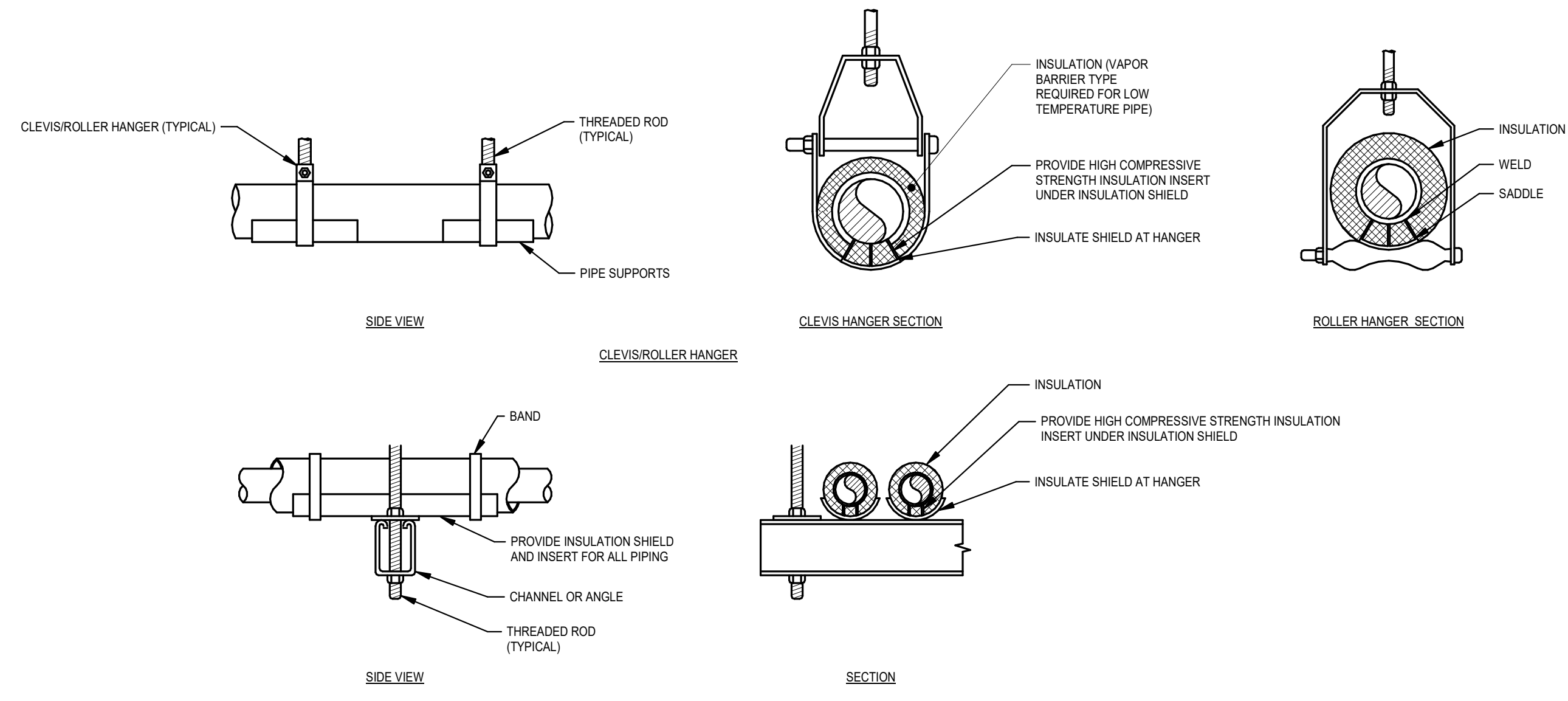
- REFER TO ROOF MANUFACTURER'S REQUIREMENTS FOR DECK FASTENING REQUIREMENTS.
- INSULATE STORM PIPING AND ROOF DRAIN BODIES PER SPECIFICATIONS.
- REFER TO PIPING APPLICATION SCHEDULE AND SPECIFICATIONS FOR ALLOWED JOINT TYPES.



8 HEAT EXCH - STEAM - SHELL AND TUBE
N.T.S.

NOTES:

- INSTALL HEAT EXCHANGERS STACKED ON A PAINTED STRUCTURAL STEEL STAND.
- MAINTAIN 12" FROM CONDENSATE RECEIVER INLET BELOW HEAT EXCHANGERS TO LOWEST STEAM TRAP OUTLET.
- INSTALL CHECK VALVE VACUUM BREAKER ON STEAM SIDE OF HEAT EXCHANGER, SEE SPECIFICATION.



7 PIPE HANGERS
N.T.S.

MAXIMUM PIPE/TUBING SUPPORT SPACING, FEET																		
NOM. SIZE	THRU 3/4"	1	1 1/4	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14	16	18	20	24
STEEL PIPE - STD. WT.	7 FT	9	11	12	13	15	16	17	20	22	23	24	25	25	25	25	25	25
COPPER TUBING	5 FT	6	7	8	8	10	10	12	15	15	15	-	-	-	-	-	-	-
SCH. 40 PVC, CPVC (73°F)	3 FT	4	4	5	6	6	6	8	8	9	9	10	11	12	-	-	-	-
SCH. 80 PVC, CPVC (73°F)	3 FT	4	4	5	6	6	7	8	10	10	11	12	13	-	-	-	-	-
SCH. 40 CPVC (140°F)	-	-	-	-	5	6	6	7	7	7	8	-	-	-	-	-	-	-
SCH. 80 CPVC (140°F)	-	-	-	-	6	6	7	7	8	8	9	10	-	-	-	-	-	-
SDR 11 HDPE PIPE (73°F)	-	-	-	-	-	7	8	10	10	11	13	14	15	16	17	18	19	-

NOTE: FOR TRAPEZE HANGER TAKE SPACING OF SMALLEST SIZE ON TRAPEZE.

GENERAL NOTES:

- SEE SPECIFICATIONS FOR HANGER AND INSULATION REQUIREMENTS.

NOTES:															CONFIGURATION:				
1. FLOOR MOUNTED UNITS TO BE INSTALLED ON A HOUSEKEEPING PAD. 2. REFER TO DETAILS FOR LOCATION OF VARIOUS SYSTEM COMPONENTS.															1. AIR SEPARATOR 2. AIR SEPARATOR WITH STRAINER 3. AIR / DIRT SEPARATOR				

EXPANSION TANK SCHEDULE

MARK	MANUFACTURER	MODEL	SYSTEM	CONFIGURATION (HORIZONTAL OR VERTICAL) (NOTE 1)	GLYCOL			TANK / SYSTEM PARAMETERS (NOTE 2)							AIR SEPARATOR					NOTES
					TYPE	%	ASME RATED	SYSTEM VOLUME (GAL)	TANK TOTAL VOLUME (GAL)	MIN SYSTEM PRESSURE (PSI)	MAX SYSTEM PRESSURE (PSI)	RELIEF VALVE SETTING (PSI)	TANK PRE-CHARGE PRESSURE (PSI)	PRV / FILL WATER PRESSURE (PSI)	MARK	MANUFACTURER	MODEL	CONFIGURATION	SIZE	
ET-1	TACO	CA80-125	SNOW MELT	VERTICAL	PROPYLENE	40	YES	160	23	10	25	30	12	10	AS-1	TACO	4900	2	2.5	

NOTES:
1. THE TEMPERATURE CONTROLS CONTRACTOR SHALL PROVIDE ALL NECESSARY ADDITIONAL SENSORS TO EXECUTE ALL SEQUENCES AS INDICATED ON THE DRAWINGS. COORDINATE ADDITIONAL SENSOR REQUIREMENTS WITH EQUIPMENT MANUFACTURERS(S).
2. ATC TO CONNECT THE PACKAGED CONTROLS TO THE DDC SYSTEM.
3. CONTROLS SHALL BE PROVIDED BY BASEPOINT BUILDING SOLUTIONS (C13).

TEMPERATURE CONTROLS RESPONSIBILITY MATRIX		
ITEM	PROVIDED BY	INSTALLED BY
THERMOSTATS AND TEMPERATURE SENSORS FOR EQUIPMENT CONTROLLED BY THE DDC SYSTEM	ATC	ATC
THERMOSTATS AND TEMPERATURE SENSORS FOR STAND-ALONE EQUIPMENT	EQUIP MFR	EC
SENSORS AND METERS REFERENCED IN THE CONTROLS DOCUMENTS	ATC (NOTE 1)	MC
PRESSURE AND TEMPERATURE WELLS	MC	MC
DDC CONTROL VALVES	ATC	MC
SNOW MELT HEATING WATER CONTROL VALVE	MC	MC
VALVE ACTUATORS	ATC	ATC
TEMPERATURE CONTROL WIRING AND CONDUIT	ATC	ATC
INTERFACE FROM PACKAGED EQUIPMENT CONTROLS TO THE DDC	MC	ATC (NOTE 2)

NOTES:
1. REFER TO VIBRATION ISOLATION SCHEDULE FOR SPECIFIC EQUIPMENT REQUIREMENTS.

PUMP SCHEDULE

MARK	MANUFACTURER	MODEL	TYPE	SERVICE	GLYCOL		FLOW RATE (GPM)	PUMP HEAD AT DESIGN (FT)	PUMP FT. HEAD AT 0 GPM	INLET SIZE (IN.)	IMPELLER SIZE (IN.)	MINIMUM EFFICIENCY (%)	ELECTRICAL							NOTES	
					TYPE	%							BHP	HP	RPM	VOLT	PH	EMERGENCY POWER	DISCONNECT BY		STARTER BY
SMP-1	TACO	1990 SERIES	IN-LINE - CLOSE COUPLED	SNOW MELT	PROP	40	49.0	52	55.0	2.5	7.6	53	1.3	2	1,700	460	3	NO	EC	EC	1

NOTES:
1. REFER TO EACH PIPING SPECIFICATION FOR SPECIFIC PIPING REQUIREMENTS.
2. SEE SPECIFICATION SECTION 230719 FOR COMPLETE INSULATION AND JACKETING REQUIREMENTS. ALL INSULATION SHALL BE PLENUM RATED MEETING ASTM E84 WHERE INSTALLED IN A RETURN AIR PLENUM.
3. INSTALL RIGID CALCIUM SILICATE INSERTS AT ALL PIPING HANGERS.
4. ALL EXTERIOR/ROOF MOUNTED PIPING TO BE ALUMINUM JACKETED. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
5. ALL PIPING LOOPS EMBEDDED IN CONCRETE SHALL BE CONTINUOUS WITH NO JOINTS.

PIPING APPLICATION SCHEDULE

SYSTEM (NOTE 1)	LOCATION	DESIGN WORKING PRESSURE (PSI)	THERMOMETER REQUIREMENTS		MATERIAL	JOINTS	USAGE SIZE RANGE	INSULATION APPLICATION		NOTES
			TYPE	TEMP. RANGE (°F)				THICKNESS (IN.)	TYPE (NOTES 2, 3)	
GLYCOL HEATING WATER	GENERAL	150	LIQUID IN GLASS	40 - 260	SCH 40 BLACK STEEL, COPPER	THREADED, FLANGED, WELDED, GROOVED, OR SOLDER	LESS THAN 1-1/2" - 1-1/2" AND GREATER	1-1/2"	FIBERGLASS	4
GLYCOL HEATING WATER (SNOW MELT)	SNOW MELT & RADIANT TUBING EMBEDDED IN CONCRETE	150	NA	NA	RADIANT PEX-RT	RADIANT PEX-RT	ALL	-	-	5
	DISTRIBUTION MAINS BETWEEN BUILDING & SNOW MELT MANIFOLD BOX	150	NA	NA	SCH 40 BLACK STEEL, COPPER	THREADED, FLANGED, WELDED, GROOVED, OR SOLDER	ALL	2"	PRE INSULATED - ELASTOMERIC FOAM WITH ALUMINUM JACKETING	5, 6
HIGH PRESSURE STEAM (30-125#)	GENERAL	150	LIQUID IN GLASS	40 - 260	SCH 40 BLACK STEEL	THREADED, FLANGED, OR WELDED	LESS THAN 1" - 1" & GREATER	4.5"	FIBERGLASS	
HIGH PRESSURE CONDENSATE	GENERAL	150	LIQUID IN GLASS	40 - 260	SCH 80 BLACK STEEL	THREADED, FLANGED, OR WELDED	LESS THAN 4" - 4" & GREATER	2-1/2"	FIBERGLASS	

NOTES:
1. REFER TO FLOOR PLANS FOR AREAS & LOCATIONS.
2. DESIGN BASED ON THE FOLLOWING CRITERIA:
- 140 DEG F MEAN WATER TEMP
- FLOOR COVERING R-VALUE 0.50
- 40 DEG F FLOOR SURFACE TEMP
3. PRESSURE DROP INCLUDES MANIFOLD, SHUTOFF VALVES, BALANCING VALVE, AND LOOP PIPING.
4. PROVIDE WITH A POWDER COATED RECESSED, LOCKABLE CABINET FOR MANIFOLD TO BE INSTALLED
5. REFER TO FLOOR PLANS NOTING WHERE TUBE SPACING SHALL 6 INCHES.

RADIATION SCHEDULE (SNOW MELT)

MARK	MANUFACTURER	MODEL	SYSTEM TYPE	SERVICE (NOTE 1)	GLYCOL		AREA (FT ²)	AVERAGE BTU/HFT	RADIANT HEAT OUTPUT (BTU/HFT)	SURFACE TEMP (°F) (NOTE 2)	FLOW RATE (GPM)	EWT (°F) (NOTE 2)	LWT (°F) (NOTE 2)	TUBE SPACING (INCHES)	TUBE DIAMETER	MAX. LOOP LENGTH	ESTIMATED NUMBER OF LOOPS/CIRCUITS	MAX. PRESSURE DROP (FT HEAD) (NOTE 3)	NOTES
					TYPE	%													
SMZ-1	ROTH	X-PERT	RADIANT SNOW MELT	HELIPAD	PROPYLENE	40	2,500	190	475,000	40	41.0	140	110	9	5/8"	300	12	20	4
SMZ-2	ROTH	X-PERT	RADIANT SNOW MELT	WALKWAY	PROPYLENE	40	500	190	95,000	40	8.0	140	110	9 (NOTE 5)	5/8"	300	3	5	4

GENERAL NOTES: (APPLIES TO ALL VALVE TYPES)
1. REFER TO THE VARIOUS COMPONENT PIPING DIAGRAMS FOR CONFIGURATION OF SYSTEM COMPONENTS AND ADDITIONAL REQUIREMENTS.
2. VALVE MODULATION SPEED TO BE ADJUSTABLE FROM 0 - 120 SEC STROKE TIME TO DAMPEN THE EFFECTS TO THE SYSTEM WHEN THE VALVE MODULATES.
3. ACTUATORS WITH POSITION INDICATOR FEEDBACK TO DDC SYSTEM, INCLUDES % OPEN.
4. MODULATING VALVES SHALL HAVE A LINEAR RELATIONSHIP BETWEEN VALVE POSITION AND FLOW RATE.

NOTES:
1. VALVE SIZE MAY VARY BASED ON PERFORMANCE REQUIREMENTS. SIZE LISTED BELOW IS FOR THE PIPE SIZE THAT THE VALVE WILL BE INSTALLED IN. M.C. TO TRANSITION PIPING AS NECESSARY.

VALVE SCHEDULE

MARK	EQUIPMENT SERVED	EQUIPMENT DESCRIPTION	SYSTEM SERVED		VALVE SIZING (NOTE 1)		VALVE TYPE							BALANCING VALVE (MANUAL OR AUTOMATIC)	NOTES
			HEATING WATER	STEAM	PIPE SIZE	GPM	2-WAY OR 3-WAY	TWO POSITION OR MODULATING	FAIL POSITION	SPRING RETURN	PRESSURE INDEPENDENT	N.O. / N.C. / LAST POSITION	YES OR NO		
CV-1	SMP-1	SNOW MELT SYSTEM	X		2.5	49	3-WAY	MODULATING	L.P.	NO	NO	NO	MANUAL		
CV-2	HX-1	HEAT EXCHANGER (SHELL & TUBE)	X		2.5	49	2-WAY	TWO POSITION	N.C.	YES	NO	MANUAL			
CV-3	HX-1	HEAT EXCHANGER (SHELL & TUBE)		X	2.5	-	2-WAY	TWO POSITION	N.C.	YES	NO	MANUAL			

NOTES:
1. CAPACITY LISTED IS FOR EACH TRAP AND INCLUDES SAFETY FACTOR.
2. SIZE LISTED IS FOR PIPING CONNECTIONS.
3. CONTRACTOR TO FIELD VERIFY TRAP CONFIGURATION FOR EACH LOCATION. PROVIDE WITH STANDARD OR IN-LINE PIPING CONNECTIONS AS NECESSARY.
4. PROVIDE WITH INTERNAL CHECK VALVE AND THERMIC VENT BUCKET FOR APPLICATIONS OF LESS THAN 130 PSI. FOR HIGHER PRESSURES, THERMIC VENT BUCKET MAY BE OMITTED.

STEAM TRAP SCHEDULE

MARK	MANUFACTURER	MODEL	SERVICE	TYPE	CONSTRUCTION		VACUUM BREAKER	SAFETY FACTOR	SIZE (NOTE 2)	PERFORMANCE			NOTES
					BODY	INTERNALS				CAPACITY (LBS/HR) (NOTE 1)	INLET PRESSURE (PSI)	MAX PRESSURE RATING (PSI)	
ST-1	ARMSTRONG	A-SERIES	SNOW MELT (HEX-1)	FLOAT & THERMOSTATIC	CAST IRON	STAINLESS STEEL	YES	3	1"	2200	50	125	

NOTES:
1. ALL CONTROL CABINETS IN WET OR DAMP LOCATIONS TO BE NEMA 3 RATED.

MISCELLANEOUS MECHANICAL EQUIPMENT SCHEDULE

MARK	MANUFACTURER	MODEL	DESCRIPTION	SERVICE	SYMBOL					NOTES
					VOLT	PH	MOCIP	BY	DISCONNECT TYPE	
SMCP-1	HEAT TIMER	SMC	SNOW MELT CONTROLLER	SNOW MELT	120	1	20	EC	NON-FUSED	1

NOTES:
1. STEAM PRESSURE INDICATED IS THE PRESSURE AVAILABLE DOWNSTREAM OF THE CONTROL VALVE.
2. PROVIDE 2.5" TUBE STEEL SUPPORT STRUCTURE WITH CRADLES FOR HEAT EXCHANGER.

HEAT EXCHANGER SCHEDULE - STEAM TO WATER

MARK	MANUFACTURER	MODEL	SERVICE	STEAM		WATER			HEATING SURFACE (FT.)	FOULING FACTOR	NOTES	
				CAPACITY (LBS/HR)	STEAM PRESSURE (PSIG) (NOTE 1)	GPM	MAX W.P.D. (FT. HEAD)	EWT (°F)				LWT (°F)
HEX-1	TACO	ED6208-6	SNOW MELT	810	50	49	1	110	140	19.3	0.00025	2

NOTES:
1. SEE SPECIFICATIONS FOR LIST OF ACCEPTABLE MANUFACTURERS AND INSTALLATION REQUIREMENTS.

PLUMBING MATERIAL LIST

FIXTURE	MANUFACTURER (NOTE 1)	DESCRIPTION	AREA SERVED	NOTES
RD-1	ZURN Z-150	FIXTURE: SQUARE TOP PROM-DECK DRAIN - CAST IRON BODY, SQUARE TOP FLUSH TO DECK, UNDERDECK CLAMP, BEARING PAN, HEAVY DUTY, FLEE-PROOF, ROTATABLE FRAME & SEDIMENT BUCKET, 1/4" X 1/4" GRATE. PROVIDE EXTENSIONS AS REQUIRED TO ACCOMMODATE NEW HELIPAD SLAB THICKNESS.	HELIPAD	

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