ADDENDUM NO. 3

March 15, 2012

The Cottage at Thornapple
2580 Nashville Road
Hastings, MI 49058

Owner:
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Hastings, MI 49058

Architect:
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Project No. 2011-11-021

Contents

DISTRIBUTION TO: Bidders, Owner, Construction Manager, Architect, Civil Engineer, Structural Engineer, Mechanical Engineer, Electrical Engineer and Food Service Consultant.

The Contract Documents shall be amended and/or revised by Addendum hereinafter specified and all Work affected by Addendum shall be included.

Except as may be otherwise described, labor and material for the Work hereinafter specified shall conform to all requirements of the Original Contract Documents.

SPECIFICATIONS

ADM3-SP1 SECTION 00 0100 TABLE OF CONTENTS

1. ADD – *03 4100 PRECAST STRUCTURAL CONCRETE*

2. REVISE – 07 4213 METAL ~~WALL~~ *SOFFIT* PANELS

ADM3-SP2 SECTION 00 3000 TRADE PACKAGES SCOPE OF WORK

1. REFER to Trade Package 06A. ADD the following:

   3. All exterior traffic signs and handicap parking signs. An allowance of 650.00 shall be included for the project signage. All temporary fencing shall be provide during the project and removed at the project completion. *Temporary fencing to include 400' of 4'-0" high fence and two gate systems.*

   04 4313.16 Adhered Stone Masonry *(Exterior Only)*

2. REFER to Trade Package 09C. ADD the following:

   04 4313.16 Adhered Stone Masonry (Interior Only)

3. REFER to Trade Package 21A. ADD the following:

   3. Provide and install Fire Protection Storage Tank.

4. REFER to Trade Package 26A. ADD the following:

   9. Provide and install Fiber.

5. REFER to Trade Package 31A. REVISE the following:

   11. Provide and install underground conduits.

ADM3-SP3 SECTION 03 4100 PRECAST STRUCTURAL CONCRETE

1. ADD section in its entirety.

ADM3-SP4 SECTION 05 5000 METAL FABRICATIONS

1. REFER to Paragraph 2.5.B. REVISE the following:

   2. ~~Space siderails 18 inches apart unless otherwise indicated~~. *Siderail Spacing:*

      a. Ships Ladder to Attic: Space siderails 26" apart unless otherwise indicated.
      b. Fixed Ladder to Pump Room and Roof: Space siderails 18" apart unless otherwise indicated.
      c. Safety Post at Fixed Ladder: Provide Bilco Ladder Up Safety Post.

ADM3-SP5 SECTION 06 4116 PLASTIC-LAMINATE-FACED ARCHITECTURAL CABINETS

1. REFER to Paragraph 2.1.I. REVISE and ADD the following:

   A. ~~Products: Subject to compliance with requirements, provide Northern Contours Shaker Series, Bradford. No Substitutions.~~ *Basis-of-Design Product: Subject to compliance with requirements, provide Northern Contours Shaker Series, Bradford or comparable product by one of the following:*

      1. Executive Cabinetry – Bellini Division Shaker Beaded Door Style (Pumice Foil Finish)

ADM3-SP6 SECTION 07 1416 HOT-FLUID-APPLIED RUBBERIZED ASPHALT WATERPROOFING

1. ADD section in its entirety.

ADM3-SP7 SECTION 07 4213 METAL SOFFIT PANELS

1. RE-ISSUE section in its entirety.

ADM3-SP8 SECTION 08 3113 ACCESS DOORS AND FRAMES

1. RE-ISSUE section in its entirety.

ADM3-SP9 SECTION 08 7100 DOOR HARDWARE

1. REFER to Paragraph 2.11.B.1. ADD the following:

   d. Horton Automatics

ADM3-SP10 SECTION 10 4413 FIRE EXTINGUISHER CABINETS

1. REFER to Paragraph 1.4. ADD the following:

   C. Fire-Rated, Fire Protection Cabinets: Listed and labeled to comply with requirements in ASTM E 814 for fire-resistance rating of walls where they are installed.

2. REFER to Paragraph 2.2. REVISE and ADD the following:

   B. Cabinet Construction: Non-rated *and 1-hour fire rated.*

      1. Fire-Rated Cabinets: Construct fire-rated cabinets with double walls fabricated from 0.0428-inch- (1.1-mm-) thick, cold-rolled steel sheet lined with minimum 5/8-inch- (16-mm-) thick, fire-barrier material. Provide factory-drilled mounting holes.

ADM3-SP11 SECTION 10 4416 FIRE EXTINGUISHERS

1. REFER to Paragraph 2.2. REVISE the following:

   B. Multipurpose Dry-Chemical Type: UL-rated *10* ~~40~~ lb. nominal capacity, with monoammonium phosphate-base dry chemical in manufacturer's standard enameled container.

ADM3-SP12 SECTION 10 5113 METAL LOCKERS

1. RE-ISSUE section in its entirety due to printing error.

2. REFER to Paragraph 2.2. ADD the following:

   A. Basis-of-Design Product: Subject to compliance with the requirements, provide Republic Storage Systems Company Quiet Locker or comparable, ~~Architect-approved equal~~ *product by one of the following or Architect approved equal:*

   1. ASI Storage Solutions

ADM3-SP13 SECTION 22 1123 DOMESTIC WATER PUMPS

1. REFER to Paragraph 2.1.A. ADD the following:

   4. Taco, Inc.

ADM3-SP14 SECTION 23 2113 HYDRONIC PIPING

1. REFER to Paragraph 2.6. ADD the following:

   A. Flow Meter: Differential-pressure wafer type or venturi type design for insertion into piping. Meter shall have brass shut-off valves with ¼" NPT connections and attached tag with flow conversion data. Meter shall be pressure rated for a minimum of 300 psig and 250 ° F. Bell & Gossett, ***Taco*** or equal.

   B. Manual Air Vent: Bronze body and nonferrous internal parts; 150 psig working pressure, 225 ° F operating temperature; manually operated with screwdriver or thumbscrew; and having 1/8 inch discharge connection and ½ inch inlet connection. Bell & Gossett, ***Taco*** or equal.

   C. Expansion Tanks: Size and number as indicated; construct of welded carbon steel for 125 psig working pressure, 375 ° F maximum operating temperature. Provide taps in bottom of tank for tank fitting. Tank with taps constructed shall be tested and labeled in accordance with ASME Pressure Vessel Code, Section VIII, Division 1. Bell & Gossett, ***Taco*** or equal. Furnish with the following fittings and accessories:

   D. Air Separator: welded black steel; ASME constructed and labeled for minimum 125 psig water working pressure and 375 ° F operating temperature; perforated stainless steel air collector tube designed to direct released air into compression tank; tangential inlet and outlet connections; screwed connections up to and including 2" NPS; flanged connections for 2-1/2" NPS and above; threaded blowdown connection. Bell & Gossett, ***Taco*** or equal.

   E. Pump Suction Diffusers: Bell & Gossett or Victaulic ***or Taco*** diffuser with ductile-iron or cast-iron body, with threaded connections for 2 inch and smaller, grooved inlet and flanged connections for 2-1/2 inch and larger; 300 psig working pressure, 230° F maximum operating temperature; and complete with the following features:

F. Y-Pattern Strainers: 300 psig working pressure ductile-iron (ASTM A536, Grade 65-45-12) or cast-iron body (ASTM A 126, Class B), grooved or flanged ends for 2-1/2 inch and larger, threaded connections for 2 inch and smaller, bolted cover, perforated Type 304 stainless steel basket, and bottom drain connection. Victaulic Series 732/W732, ***Taco*** or equal.

G. Hydronic Heating Bypass Filter: Filter housing construction to be 304 L stainless steel, rated for 150 psi and 450 ° F. Unit to be complete with Buna-N gasket, poly-coat finish, mounting legs, flanged connections, vent, drain and swing bolt lid. Filters to be high temperature polyester filter cartridge with high temp. Glass filled cores. Provide United, Shelco, ***Harmsco*** or equal. Contractor shall change filter at completion of system cleaning and maintain filters during temporary use of system. At project completion, Contractor shall change filters and provide owner with two cases of extra filters.

H. Glycol Solution/Water Make-up Unit: Packaged, automatic glycol solution make up unit model GMU as manufactured by Bell & Gossett, ***Taco*** or approved equal. The package shall consist of a base, polyethylene reservoir with removable lid and visible solution level scale in gallons, y-strainer, isolation valve, pump, open drip-proof motor, pump isolation, check and balance valve, expansion tank, discharge pressure gauge, motor contactor, pressure control and necessary interconnecting piping. Pump shall start based on falling pressure. Green light shall indicate power supplied to unit. System shall require a 115/1/60 single power connection and a ¾" NPT system piping connection. GMU shall provide (10 or 5) GPM and maintain a fill pressure of (30 or 60) PSI. Unit includes low level cutout, with red indicator light and a dry contact for alarm indication, to stop the pump during low level condition. Contractor shall furnish application specific pressure reducing valve between GMU and connection to the system piping.

ADM3-SP15 SECTION 23 2123 HVAC PUMPS

1. REFER to Paragraph 2.1.A. ADD the following:

4. Taco, Inc.

ADM3-SP16 SECTION 23 3113 METAL DUCTWORK

1. REFER to Paragraph 2.6.D. ADD the following:

8. Universal Spiral Air
9. Zinger Sheet Metal

ADM3-SP17 SECTION 23 6423 AIR COOLED SCROLL WATER CHILLERS

1. REFER to Paragraph 1.3.A. ADD the following:

e. Dunham Bush Air Cooled Scroll Chiller

ADM3-SP18 SECTION 23 7313 CENTRAL STATION AIR HANDLING UNITS

1. REFER to Paragraph 2.1.A. ADD the following:

5. Dunham Bush Central Station Air Handler

ADM3-SP19 SECTION 23 8126 SPLIT-SYSTEM AIR-CONDITIONING UNITS

1. REFER to Paragraph 2.1.A. ADD the following:

   7. LG Electronics

ADM3-SP20 SECTION 26 3213 ENGINE GENERATORS

1. REFER to Paragraph 2.3.E. DELETE the following:

   ~~3. Dual Natural Gas with LP Gas Backup (Vapor Withdrawal) System:~~

   ~~a. Carburetor.~~
   ~~b. Secondary Gas Regulators: One for each fuel type.~~
   ~~c. Fuel Shutoff Solenoid Valves: One for each fuel source.~~
   ~~d. Flexible Fuel Connectors: One for each fuel source.~~

ADM3-SP21 SECTION 28 2300 VIDEO SURVEILLANCE

1. REFER to Paragraph 2. ADD the following:

   2.6 VIDEO ARCHIVING EQUIPMENT

   A. Provide one hard drive large enough to store a minimum of 3 months of recorded video. Hard drive should be a RAID level 0. *The owner would like a camera system separate from their server storage. Whether it records via a DVR or NVR it needs to work with the specified Axis camera. Any user needs to be able to bring up a single live camera feed with just the browser but not see any other cameras as well as a main screen where any admin can look at all the cameras and search back at prior dates. Capability to burn any video data onto a DVD/CD for later use is also needed. The owner would like high quality images so that they can tell who is on the recording if need be. The frames per second should match the specifications of the camera.*

ADM3-SP22 SECTION 33 2100 SANITARY LIFT STATION SYSTEM

1. REFER to Paragraph 2.1.A. REVISE the following:

   9. Frames and Covers: Bilco aluminum hatch Type ~~J-4AL-H20~~ *J-2AL H20*, ~~36" X 36"~~ *30" X 30"*or approved equal.

DRAWINGS

CIVIL

ADM3-C1 REFER TO SHEET C203

1. 12" Casting Sleeves to be – PVC SDR 26 and buried 5'-0" below grade.

2. Water main to be – DIP CL 52.

3. REVISE storm sewer structure schedule. REFER to attached sketch CSK-01.

ADM3-C2 REFER TO SHEET C204

1. Retaining wall section – Decorative pattern to be a stamped pattern. Coordinate with Architect.

ARCHITECTURAL

ADM3-A1 REFER TO SHEET G100

1. RE-ISSUE sheet with revised Construction Type VA (111)

ADM3-A2 REFER TO SHEET A000

1. RE-ISSUE sheet.

    a. REVISE detail 12 - 2 layers of gypsum board to be 1 layer of 5/8" type 'x' gypsum board on ½" resilient channel installed perpendicular to trusses at 12" o.c. on the underside of wood trusses (1 HR rating). 2 layers of 5/8" type 'x' gypsum board to remain at all column and beam locations.

    b. ADD details 13 and 14.

    c. ADD notes 16 and 17.

ADM3-A3 REFER TO SHEET A100

1. RE-ISSUE sheet.

    a. ADD pump room plan.

    b. ADD 1 HR rating to interior bearing walls and revise partition types.

ADM3-A4 REFER TO SHEET A101

1. REVISE Spa room dimension, per ASK-06.

ADM3-A5 REFER TO SHEET A200

1. RE-ISSUE sheet.

    a. ADD pump room.

    b. REVISE note requiring 2 layers of gypsum board to be 1 layer of 5/8" type 'x' gypsum board on ½" resilient channel at the attic access, mechanical and electrical rooms.

ADM3-A6 REFER TO SHEET A302

1. REVISE Spa room dimension. Refer to attached sketch ASK-07.

ADM3-A7 REFER TO SHEET A500

1. RE-ISSUE sheet.

    a. ADD pump room.

    b. REVISE note requiring 2 layers of gypsum board to be 1 layer of 5/8" type 'x' gypsum board on ½" resilient channel installed perpendicular to trusses at 12" o.c. on the underside of wood trusses (1 HR rating). 2 layers of 5/8" type 'x' gypsum board to remain at all column and beam locations.

ADM3-A8 REFER TO SHEET A600

1. RE-ISSUE sheet.

    a. REVISE note requiring two layers of gypsum board to be 1 layer of 5/8" type 'x' gypsum board on ½" resilient channel installed perpendicular to trusses at 12" o.c. on the underside of wood trusses (1 HR rating) (Refer to 12/A000). 2 layers of 5/8" type 'x' gypsum board to remain at all column and beam locations.

ADM3-A9 REFER TO SHEET A601

1. RE-ISSUE sheet.

    a. REVISE note requiring two layers of gypsum board to be 1 layer of 5/8" type 'x' gypsum board on ½" resilient channel installed perpendicular to trusses at 12" o.c. on the underside of wood trusses (1 HR rating) (Refer to 12/A000). 2 layers of 5/8" type 'x' gypsum board to remain at all column and beam locations.

    b. REVISE waterproof membrane note.

ADM3-A10 REFER TO SHEET A602

1. RE-ISSUE sheet.

    a. REVISE note requiring two layers of gypsum board to be 1 layer of 5/8" type 'x' gypsum board on ½" resilient channel installed perpendicular to trusses at 12" o.c. on the underside of wood trusses (1 HR rating) (Refer to 12/A000). 2 layers of 5/8" type 'x' gypsum board to remain at all column and beam locations.

    b. REVISE waterproof membrane note.

ADM3-A11 REFER TO SHEET A603

1. RE-ISSUE sheet.

    a. ADD pump room.

    b. REVISE note requiring two layers of gypsum board to be 1 layer of 5/8" type 'x' gypsum board on ½" resilient channel installed perpendicular to trusses at 12" o.c. on the underside of wood trusses (1 HR rating) (Refer to 12/A000). 2 layers of 5/8" type 'x' gypsum board to remain at all column and beam locations.

c. REVISE waterproof membrane note.

ADM3-A12 REFER TO SHEET A604

1. RE-ISSUE sheet.

    a. REVISE note requiring two layers of gypsum board to be 1 layer of 5/8" type 'x' gypsum board on ½" resilient channel installed perpendicular to trusses at 12" o.c. on the underside of wood trusses (1 HR rating) (Refer to 12/A000). 2 layers of 5/8" type 'x' gypsum board to remain at all column and beam locations.

    b. REVISE waterproof membrane note.

ADM3-A13 REFER TO SHEET A700

1. RE-ISSUE sheet.

    a. REVISE footing at column.

    b. ADD 2 layers of 5/8" type 'x' gypsum board wrap to tube steel column.

ADM3-A14 REFER TO SHEET A710

1. ADD detail #15. Refer to attached sketch ASK-08.

ADM3-A15 REFER TO SHEET A730

1. RE-ISSUE sheet.

    a. REVISE detail 3 to be 1 layer of 5/8" type 'x' gypsum board on ½"resilient channel.

    b. ADD 2 layers of 5/8" type 'x' gypsum board wrap to tube steel column.

ADM3-A16 REFER TO SHEET A900

1. REVISE RB-1 to be MW-22-J, Pearl.

ADM3-A17 REFER TO SHEET A910

1. REVISE doors 619 (Housekeeping) and 719 (Housekeeping) to be 45 minute rated doors.

ADM3-A18 REFER TO SHEET A920

1. REVISE Hardware Set #8 to include 1 Gasketing S88D PE (Use at doors 619 and 719 only).

STRUCTURAL

ADM3-S1 REFER TO SHEET S001

1. RE-ISSUE sheet.

    a. ADD precast plank notes.

b. REVISE engineering data for precast.

ADM3-S2 REFER TO SHEET S111

1. RE-ISSUE sheet.

    a. REVISE pier callout at north entries.

    b. ADD P2 to note #9.

    c. REVISE foundations for pump room.

ADM3-S3 REFER TO SHEET S201

1. RE-ISSUE sheet.

    a. ADD details 7A, 15 and 16.

MECHANICAL

ADM3-M1 REFER TO SHEET M-110

1. REVISE Mechanical Plan. Supply air drops to be relocated and humidifier dispersion unit in duct eliminated. Refer to attached sketches MSK-01 and MSK-02.

ADM3-M2 REFER TO SHEET M-120

1. REVISE Attic Mechanical Plan. AHU dimensions to be revised. Refer to attached sketches MSK-03 and MSK-04.

2. REVISE AHU-1 and 2 Detail. Refer to attached sketch MSK-05.

ADM3-M3 REFER TO SHEET M-220

1. REVISE Attic HVAC Piping Plan. Humidifier dispersion unit to be relocated to AHU. Refer to attached sketches MSK-06 and MSK-07.

ADM3-M4 REFER TO SHEET M-300

1. REVISE Mechanical Section A. Refer to attached sketches MSK-08 and MSK-09.

2. REVISE Enlarged mechanical room as indicated. Refer to attached sketch MSK-10.

ADM3-M5 REFER TO SHEET M-400

1. REVISE humidifier detail. Dispersion unit to be installed in AHU. Refer to attached sketch MSK-12

ADM3-M6 REFER TO SHEET M-500

1. REVISE equipment list. AHU plenum section to be lengthened and provided with a stainless steel drain pan. Refer to attached sketch MSK-11.

ADM3-M7 REFER TO SHEET M-501

1. DELETE humidifier dispersion tube detail. Refer to attached sketch MSK-13.

PLUMBING

ADM3-P1 REFER TO SHEET P-100

1. REVISE plumbing as indicated. Refer to attached sketches PSK-01 and PSK-02.
2. ADD sump pump SP-1. Refer to attached sketch PSK-03

ADM3-P2 REFER TO SHEET P-110

1. REVISE plumbing as indicated. Refer to attached sketches PSK-04, PSK-05 and PSK-06.

FIRE PROTECTION

ADM3-FP1 REFER TO SHEET FP110

1. RE-ISSUE sheet.
    a. REVISE as indicated.

ADM3-FP2 REFER TO SHEET FP120

1. RE-ISSUE Sheet.
    a. REVISE as indicated.

ELECTRICAL

ADM3-E1 REFER TO SHEET E100

1. ADD note – From the existing building to the Cottage, pull in the underground conduit (2) RG-11/U cables. Each RG-11/U cable will terminate in a distribution splitter in the IT room. Each distribution splitter will distribute to each half of the Cottage. Run a single RG-6/U cable from the distribution splitter, in the IT room, to each resident room.

ADM3-E2 REFER TO SHEET E300

1. ADD note at service transformer – Consumers Energy states that the existing voltage at the site is 8,320/4,800V. **EC is responsible for contacting Consumers Energy to confirm that information is correct.**

ADM3-E3 REFER TO SHEETS E110, E111, E210, E400 AND E500

1. A Pump Room was added under the Mechanical Room #814.
2. ADD power to sump pump SP-1, supplied and installed by M.C. Connect to circuit EM4-35 as shown. Fire Pump location shown for clarity. Verify exact locations with M.C. Refer to attached sketches ESK-04 to ESK-08.

3. ADD lights, light switch, heat detector, fire alarm visual indicating appliance and GFCI receptacle in Sump Room as shown. Connect to circuits indicated. Refer to attached sketches ESK-04 to ESK-08.

4. RELOCATE boiler shutdown button as shown. Refer to attached sketch ESK-04.

END OF ADDENDUM NO. 3

SECTION 03 4100 - PRECAST STRUCTURAL CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section. If differing requirements are identified elsewhere (in these specifications or on drawings or separate instructions), the more stringent requirement shall be met.

1.2 SUMMARY

A. This Section includes plant-precast structural concrete units, including the following:

1. Hollow-core slab units.

B. Related Sections include the following:

1. Division 7 Section "Through-Penetration Firestop Systems" for joint filler materials for fire-resistance-rated construction.
2. Division 7 Section "Joint Sealants" for elastomeric joint sealants and sealant backings.

1.3 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide precast structural concrete units and connections capable of withstanding design loads within limits and under conditions indicated.

B. Structural Performance: Provide precast structural concrete units and connections capable of withstanding the following design loads within limits and under conditions indicated:

1. Dead Loads: See drawings.
2. Live Loads: See drawings.
3. Wind Loads: See drawings.
4. Earthquake Loads: See drawings.

1.4 SUBMITTALS

A. Product Data: Contractor to provide a certified letter stating that materials/products used on this project meet or exceed material/products specified within the contract documents.

B. Shop Drawings: Submit final detail, fabrication and installation of precast structural concrete units. Indicate member locations, plans, elevations, dimensions, shapes, cross sections, openings, and types of reinforcement, including special reinforcement.

1. Indicate welded connections by AWS standard symbols. Detail loose and cast-in hardware, inserts, connections, and joints, including accessories.

2. Indicate locations and details of anchorage devices to be embedded in other construction.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed precast structural concrete work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

B. Fabricator Qualifications: A firm that complies with the following requirements and is experienced in manufacturing precast structural concrete units similar to those indicated for this Project and with a record of successful in-service performance.

1. Assumes responsibility for engineering precast structural concrete units to comply with performance requirements. This responsibility includes preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional engineer.
2. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of precast structural concrete that are similar to those indicated for this Project in material, design, and extent.
3. Participates in PCI's Plant Certification program and is designated a PCI-certified plant for Group C, Category C3 and C4.
4. Has sufficient production capacity to produce required units without delaying the Work.

C. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1077 and ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548.

D. Design Standards: Comply with ACI 318 and the design recommendations of PCI MNL 120, "PCI Design Handbook--Precast and Prestressed Concrete."

E. Quality-Control Standard: For manufacturing procedures and testing requirements, quality-control recommendations, and camber and dimensional tolerances for types of units required, comply with PCI MNL 116, "Manual for Quality Control for Plants and Production of Precast and Prestressed Concrete Products."

F. Product Options: Drawings indicate size, profiles, and dimensional requirements of precast concrete units and are based on the specific types of units indicated. Other fabricators' precast concrete units complying with requirements may be considered. Refer to Division 1 Section "Substitutions."

G. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code--Steel"; and AWS D1.4, "Structural Welding Code--Reinforcing Steel."

H. Fire Resistance: Provide precast structural concrete units with a 1 hour fire rating in accordance with PCI MNL 124, "Design for Fire Resistance of Precast Prestressed Concrete," and is acceptable to authorities having jurisdiction.

I. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Meetings."

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver precast structural concrete units to Project site in such quantities and at such times to ensure continuity of installation. Store units at Project site to prevent cracking, distorting, warping, staining, or other physical damage, and so markings are visible.

B. Lift and support units only at designated lifting and supporting points as shown on Shop Drawings.

1.7 SEQUENCING

A. Furnish anchorage items to be embedded in other construction without delaying the Work. Provide setting diagrams, templates, instructions, and directions, as required, for installation.

PART 2 - PRODUCTS

2.1 FABRICATORS

A. Available Fabricators: Subject to compliance with requirements, fabricators offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Fabricators: Subject to compliance with requirements, provide products by one of the following:

1. As selected by Construction Manager.

2.2 MOLD MATERIALS

A. Molds: Provide molds and, where required, form-facing materials of metal, plastic, wood, or another material that is nonreactive with concrete and dimensionally stable to produce continuous and true precast concrete surfaces within fabrication tolerances and suitable for required finishes.

2.3 REINFORCING MATERIALS

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.

B. Low-Alloy-Steel Reinforcing Bars: ASTM A 706/A 706M, deformed.

C. Steel Bar Mats: ASTM A 184/A 184M, assembled with clips, as follows:

1. Steel Reinforcement: Per design.

D. Plain-Steel Wire: ASTM A 82, as drawn.

E. Deformed-Steel Wire: ASTM A 496.

F. Plain-Steel Welded Wire Fabric: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.

G. Deformed-Steel Welded Wire Fabric: ASTM A 497, flat sheet.

H. Supports: Manufacturer's bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place according to CRSI's "Manual of Standard Practice," PCI MNL 116, and as follows:

1. For uncoated reinforcement, use all-plastic bar supports.

2.4 PRESTRESSING TENDONS

A. Prestressing Strand: ASTM A 416/A 416M, Grade 250 or 270, uncoated, 7-wire, low-relaxation strand.

2.5 CONCRETE MATERIALS

A. Portland Cement: ASTM C 150, Type I or Type III, of same type, brand, and source.

B. Normal-Weight Aggregates: Except as modified by PCI MNL 116, ASTM C 33, with coarse aggregates complying with Class Plant Standard.

C. Lightweight Aggregates: ASTM C 330.

D. Water: Potable; free from deleterious material that may affect color stability, setting, or strength of concrete and complying with chemical limits of PCI MNL 116.

E. Air-Entraining Admixture: ASTM C 260, certified by manufacturer to be compatible with other required admixtures.

F. Water-Reducing Admixture: ASTM C 494, Type A.

G. Retarding Admixture: ASTM C 494, Type B.

H. Water-Reducing and Retarding Admixture: ASTM C 494, Type D.

I. High-Range, Water-Reducing Admixture: ASTM C 494, Type F.

J. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494, Type G.

K. Plasticizing Admixture: ASTM C 1017.

L. Fly Ash Admixture: ASTM C 618, Class C or F.

2.6 STEEL CONNECTION MATERIALS

A. Carbon-Steel Shapes and Plates: ASTM A 36/A 36M.

B. Carbon-Steel Headed Studs: ASTM A 108, AISI 1018 through AISI 1020, cold finished; AWS D1.1, Type A or B, with arc shields.

C. Malleable Steel Castings: ASTM A 47.

D. Deformed-Steel Wire or Bar Anchors: ASTM A 496 or ASTM A 706/A 706M.

E. Welding Electrodes: Comply with AWS standards.

F. Accessories: Provide clips, hangers, plastic shims, and other accessories required to install precast structural concrete units.

2.7 BEARING PADS

A. Provide bearing pads for precast structural concrete units as follows:

1. Elastomeric Pads: AASHTO M 251, plain, vulcanized, 100 percent polychloroprene (neoprene) elastomer, molded to size or cut from a molded sheet, 50 to 70 Shore A durometer, minimum tensile strength 2250 psi per ASTM D 412.
2. Random-Oriented, Fiber-Reinforced Elastomeric Pads: Preformed, randomly oriented synthetic fibers set in elastomer. Surface hardness of 70 to 90 Shore A durometer.
3. Cotton-Duck-Fabric-Reinforced Elastomeric Pads: Preformed, horizontally layered cotton-duck fabric bonded to an elastomer. Surface hardness of 80 to 100 Shore A durometer.
4. Frictionless Pads: Tetrafluoroethylene, glass-fiber reinforced, bonded to mild-steel plate, of type required for in-service stress.
5. High-Density Plastic: Multimonomer, nonleaching, plastic strip.

2.8 GROUT MATERIALS

A. Sand-Cement Grout: Portland cement, ASTM C 150, Type I, and clean, natural sand, ASTM C 144. Mix at ratio of 1 part cement to 2-1/2 parts sand, by volume, with minimum water required for placement and hydration.

B. Nonmetallic, Nonshrink Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout containing selected silica sands, portland cement, shrinkage-compensating agents, plasticizing and water-reducing agents, complying with ASTM C 1107, of consistency suitable for application.

C. Epoxy Grout: ASTM C 881, 2-component epoxy resin, of type, grade, and class to suit requirements.

2.9 CONCRETE MIXES

A. Prepare design mixes for each type of concrete required.

1. Limit use of fly ash and silica fume to not exceed, in aggregate, 25 percent of portland cement by weight.

B. Design mixes may be prepared by a qualified independent testing agency or by qualified precast plant personnel at precast structural concrete fabricator's option.

C. Limit water-soluble chloride ions to the maximum percentage by weight of cement permitted by ACI 318.

D. Normal-Weight Concrete: Proportion mixes by either laboratory trial batch or field test data methods according to ACI 211.1, with materials to be used on Project, to provide normal-weight concrete with the following properties:

1. Compressive Strength (28 Days): As per design.
2. Maximum Water-Cementitious Materials Ratio: 0.40.

E. Lightweight Concrete: Proportion mixes by either laboratory trial batch or field test data methods according to ACI 211.2, with materials to be used on Project, to provide lightweight concrete with the following properties:

1. Compressive Strength (28 Days): As required.
2. Unit Weight: Calculated equilibrium unit weight of 115 lb/cu. ft., plus or minus 3 lb/cu. ft., according to ASTM C 567.

F. Other Admixtures: Use water-reducing, high-range water-reducing, water-reducing and accelerating, or water-reducing and retarding admixtures according to manufacturer's written instructions.

G. Concrete Mix Adjustments: Concrete mix design adjustments may be proposed if characteristics of materials, Project conditions, weather, test results, or other circumstances warrant.

2.10 FABRICATION

A. Formwork: Accurately construct forms, mortar tight, of sufficient strength to withstand pressures due to concrete-placement operations and temperature changes and for pretensioning and detensioning operations. Maintain formwork to provide completed precast concrete units of shapes, lines, and dimensions indicated, within fabrication tolerances.

1. Coat surfaces of forms with bond-breaking compound before reinforcement is placed. Provide commercial-formula, form-coating compounds that will not bond with, stain, or adversely affect concrete surfaces and that will not impair subsequent treatments of concrete surfaces requiring bond or adhesion. Apply in compliance with manufacturer's written instructions.
2. Unless forms for precast, prestressed concrete units are stripped before detensioning, design forms so stresses are not induced in precast concrete units because of deformation or movement of concrete during detensioning.

B. Built-in Anchorages: Accurately position built-in anchorage devices and secure to formwork. Locate anchorages where they do not affect position of main reinforcement or concrete placement. Do not relocate bearing plates in units unless approved by Architect.

C. Cast-in openings larger than 10 inches in diameter or 10 inches square according to Shop Drawings. Smaller holes may be field cut by trades requiring them, as approved by Architect.

D. Reinforcement: Comply with recommendations in CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

1. Clean reinforcement of loose rust and mill scale, earth, and other materials that reduce or destroy the bond with concrete.
2. Accurately position, support, and secure reinforcement against displacement by formwork, construction, or concrete-placement operations. Locate and support reinforcement by metal chairs, runners, bolsters, spacers, and hangers, as required.
3. Place reinforcement to obtain at least the minimum coverage for concrete protection. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position while placing concrete. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.
4. Install welded wire fabric in lengths as long as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

E. Prestress tendons for precast structural concrete units by either pretensioning or posttensioning methods. Comply with PCI MNL 116.

1. Delay detensioning until concrete has reached at least 70 percent of its compressive strength as established by test cylinders cured under the same conditions as concrete.
2. If concrete has been heat cured, detension while concrete is still warm and moist to avoid dimensional changes that may cause cracking or undesirable stresses.
3. Detension pretensioned tendons either by gradually releasing tensioning jacks or by heat-cutting tendons, using a sequence and pattern to prevent shock or unbalanced loading.

F. Mix concrete according to PCI MNL 116 and requirements in this Section. After concrete batching, no additional water may be added.

G. Place concrete in a continuous operation to prevent seams or planes of weakness from forming in precast concrete units. Comply with requirements in PCI MNL 116 for measuring, mixing, transporting, and placing concrete.

H. Thoroughly consolidate placed concrete by internal and external vibration without dislocating or damaging reinforcement and built-in items. Use equipment and procedures complying with PCI MNL 116.

I. Comply with ACI 306.1 procedures for cold-weather concrete placement.

J. Comply with ACI 305R recommendations for hot-weather concrete placement.

K. Identify pickup points of precast concrete units and orientation in structure with permanent markings, complying with markings indicated on Shop Drawings. Imprint casting date on each precast concrete unit on a surface that will not show in finished structure.

L. Cure concrete, according to requirements in PCI MNL 116, by moisture retention without heat or by accelerated heat curing using low-pressure live steam or radiant heat and moisture.

M. Product Tolerances: Fabricate precast structural concrete units straight and true to size and shape with exposed edges and corners precise and true so each finished unit complies with PCI MNL 116 product tolerances.

N. Finish formed surfaces of precast structural concrete as indicated for each type of unit, and as follows:

1. Commercial Finish (Typical unless noted): Remove fins and large protrusions and fill large holes. Rub or grind ragged edges. Faces are to be true, well-defined surfaces.

O. Screed finish unformed surfaces. Strike off and consolidate concrete with vibrating screeds to a uniform finish. Hand screed at projections.

P. Smooth steel trowel finish unformed surfaces. Consolidate concrete, bring to proper level with straightedge, float, and trowel to a smooth, uniform finish.

1. Apply scratch finish to precast concrete units that will receive concrete topping after installation. After initial strikeoff, transversely scarify surface to provide ridges approximately 1/4 inch deep.

Q. Recess prestressing tendons a minimum of 1/2 inch, fill recesses with grout, and apply a sack finish to vertical ends of precast concrete units.

R. Weeps: Provide 3/8” diameter weep holes on the bottom of each plank at each end to allow for water drainage.

2.11 HOLLOW-CORE SLAB UNITS

A. Type: Precast, prestressed concrete units with open, hollow cores running the full length of the slab units.

B. Furnish units free of voids and honeycombs.

C. Provide standard finish to precast concrete units. Top surface shall be rough to enhance bond for composite action of topping.

D. Reinforce units to resist transportation and erection stresses.

E. Include cast-in weld plates where required.

F. Coordinate with other trades for installation of cast-in items.

G. Provide solid, monolithic, precast concrete slab units forming an integral part of hollow-core slab unit system. Design and fabricate solid units to dimensions and details indicated for hollow-core slab units.

H. Provide headers of cast-in-place concrete or structural-steel shapes for openings larger than one slab width according to hollow-core slab unit fabricator's written recommendations.

2.12 SOURCE QUALITY CONTROL

A. Fabricate all precast concrete using a PCI Certified plant and by manufacturer registered and approved to perform such work without special inspections.

1. Submit Certificate of Compliance to Building Official, stating all work was performed in accordance with approved construction documents.

B. Quality-Control Testing: Test and inspect precast concrete according to PCI MNL 116 requirements.

C. Strength of precast concrete units will be considered deficient if units fail to comply with PCI MNL 116 requirements, including the following:

1. Units fail to comply with compressive-strength test requirements.
2. Reinforcement and prestressed tendons of units do not comply with fabrication requirements.
3. Concrete curing and protection of units against extremes in temperature fail to comply with requirements.
4. Units are damaged during handling and erecting.

D. Testing: If there is evidence that the strength of precast concrete units may be deficient or may not comply with PCI MNL 116 requirements, Owner will employ an independent testing agency to obtain, prepare, and test cores drilled from hardened concrete to determine compressive strength according to ASTM C 42.

1. A minimum of three representative cores will be taken from units of suspect strength, from locations directed by Architect.
2. Cores will be tested, after immersion in water, in a wet condition per ACI 301 if units will be wet under service conditions.
3. Cores will be tested in an air-dry condition per ACI 301 if units will be dry under service conditions.
4. Strength of concrete for each series of 3 cores will be considered satisfactory if the average compressive strength is equal to at least 85 percent of the 28-day design compressive strength and no single core is less than 75 percent of the 28-day design compressive strength.
5. Test results will be made in writing on the same day that tests are performed, with copies to Architect, Contractor, and precast concrete fabricator. Test reports will include the following:

    a. Project identification name and number.
    b. Date when tests were performed.
    c. Name of precast concrete fabricator.
    d. Name of concrete testing agency.
    e. Identification letter, name, and type of precast concrete unit or units represented by core tests; design compressive strength; type of break; compressive strength at break, corrected for length-diameter ratio; and direction of applied load to core in relation to horizontal plane of concrete as placed.

E. Patching: If core test results are satisfactory and precast concrete units comply with requirements, clean and dampen core holes and solidly fill with precast concrete mix that has no coarse aggregate, and finish to match adjacent precast concrete surfaces.

F. Dimensional Tolerances: Units with dimensions smaller or larger than required and not complying with tolerance limits may be subject to additional testing.

1. Precast concrete units with dimensions larger than required will be rejected if the appearance or function of the structure is adversely affected or if larger dimensions interfere with other construction. Repair or remove and replace rejected units, as required, to comply with construction conditions.

G. Defective Work: Precast concrete units that do not comply with requirements, including strength, manufacturing tolerances, and finishes, are unacceptable. Replace with precast concrete units that comply with requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions for compliance with requirements for installation tolerances, true and level bearing surfaces, and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Bearing Pads: Install bearing pads as precast concrete units are being erected. Set pads on true, level, and uniform bearing surfaces and maintain in correct position until precast concrete units are placed.

B. Install precast structural concrete. Shore and brace precast concrete units to maintain location, stability, and alignment until permanent connections are installed.

C. Welding: Perform welding in compliance with AWS D1.1 and AWS D1.4, with qualified welders.

1. Protect precast concrete units and bearing pads from damage by field welding or cutting operations and provide noncombustible shields as required.
2. Repair damaged metal surfaces by cleaning and applying a coat of galvanized repair paint to galvanized surfaces.
3. Repair damaged metal surfaces by cleaning and repriming damaged painted surfaces.

D. Fasteners: Do not use drilled or powder-actuated fasteners for attaching accessory items to precast, prestressed concrete units unless approved by Architect.

E. Erection Tolerances: Install precast concrete units level, plumb, square, and true, without exceeding the recommended erection tolerances in PCI MNL 127, "Recommended Practice for Erection of Precast Concrete."

F. Grouting Connections and Joints: After precast concrete units have been placed and secured, grout open spaces at keyways, connections, and joints as follows:

1. Provide forms or other approved method to retain grout in place until hard enough to support itself. Pack spaces with stiff grout material, tamping until voids are completely filled. Place grout to finish smooth, level, and plumb with adjacent concrete surfaces. Keep grouted joints damp for not less than 24 hours after initial set. Promptly remove grout material from exposed surfaces before it hardens.

3.3 FIELD QUALITY CONTROL

A. Testing: Engage a qualified independent testing and inspecting agency to perform field tests and inspections.

B. Field welds and connections using high-strength bolts will be subject to tests and inspections.

C. Testing agency will report test results promptly and in writing to Contractor and Architect.

D. Remove and replace work that does not comply with specified requirements.

E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of corrected work with specified requirements.

3.4 CLEANING

A. Clean exposed surfaces of precast concrete units after erection to remove weld marks, other markings, dirt, and stains.

1. Wash and rinse according to precast concrete fabricator's written recommendations. Protect other work from staining or damage due to cleaning operations.
2. Do not use cleaning materials or processes that could change the appearance of exposed concrete finishes.

END OF SECTION 034100

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SECTION 07 1413 - HOT FLUID-APPLIED RUBBERIZED ASPHALT WATERPROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes rubberized-asphalt waterproofing membrane, unreinforced.

B. Related Section: See Section 07 2100 “Thermal Insulation” for insulation for below-grade applications.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Show details for substrate joints and cracks, sheet flashings, penetrations, inside and outside corners, tie-ins to adjoining waterproofing, and other termination conditions.

1.4 INFORMATIONAL SUBMITTALS

A. Sample Warranties: For special warranties.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

1.6 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace waterproofing and sheet flashings that do not comply with requirements or that fail to remain watertight within specified warranty period.

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

PART 2 - PRODUCTS

2.1 WATERPROOFING MEMBRANE

A. Hot Fluid-Applied, Rubberized-Asphalt Waterproofing Membrane: Single component; 100 percent solids; hot fluid-applied, rubberized asphalt.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. American Hydrotech, Inc; Monolithic Membrane 6125 or Permaquik 6100.
b. Barrett Company; Ram-Tough 250.
c. Carlisle Coatings & Waterproofing Inc; CCW-500R.
d. Henry Company; 790-11.
e. Tamko Building Products, Inc; TW-Hot Melt.
f. Tremco Incorporated; Tremproof 150.

2.2 AUXILIARY MATERIALS

A. Primer: ASTM D 41/D 41M, asphaltic primer.

B. Elastomeric Sheet: 50-mil-minimum, uncured sheet neoprene with manufacturer's recommended contact adhesives as follows:

1. Tensile Strength: 1400 psi minimum; ASTM D 412, Die C.
2. Elongation: 300 percent minimum; ASTM D 412.
3. Tear Resistance: 125 psi minimum; ASTM D 624, Die C.
4. Brittleness: Does not break at minus 30 deg F; ASTM D 2137.

C. Metal Termination Bars: Manufacturer's standard, predrilled stainless-steel or aluminum termination bars; approximately 1 by 1/8 inch thick; with stainless-steel anchors.

D. Sealants and Accessories: Manufacturer's recommended sealants and accessories.

E. Protection Course: ASTM D 6506, semi-rigid sheets of fiberglass or mineral-reinforced-asphaltic core, pressure laminated between two asphalt-saturated fibrous liners and as follows:

1. Thickness: 1/8 inch, nominal.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean and prepare substrates according to manufacturer's written instructions. Provide clean, dust-free, and dry substrate for waterproofing application.

3.2 JOINTS, CRACKS, AND TERMINATIONS

A. Prepare and treat substrates to receive waterproofing membrane, including joints and cracks, deck drains, corners, and penetrations according to manufacturer's written instructions.

1. Adhere strip of elastomeric sheet to substrate in a layer of hot rubberized asphalt. Extend elastomeric sheet a minimum of 6 inches on each side of moving joints and cracks or joints and cracks exceeding 1/8 inch thick, and beyond deck drains and penetrations. Apply second layer of hot fluid-applied, rubberized asphalt over elastomeric sheet.
2. Embed strip of reinforcing fabric into a layer of hot rubberized asphalt. Extend reinforcing fabric a minimum of 6 inches on each side of nonmoving joints and cracks not exceeding 1/8 inch thick, and beyond roof drains and penetrations.

a. Apply second layer of hot fluid-applied, rubberized asphalt over reinforcing fabric.

B. At expansion joints and discontinuous deck-to-wall or deck-to-deck joints, bridge joints with elastomeric sheet extended a minimum of 6 inches on each side of joints and adhere to substrates in a layer of hot rubberized asphalt. Apply second layer of hot fluid-applied, rubberized asphalt over elastomeric sheet.

3.3 FLASHING INSTALLATION

A. Install elastomeric sheets at terminations of waterproofing membrane according to manufacturer's written instructions.

3.4 MEMBRANE APPLICATION

A. Apply primer, at manufacturer's recommended rate, over prepared substrate and allow it to dry.

B. Heat and apply rubberized asphalt according to manufacturer's written instructions.

C. Unreinforced Membrane: Apply hot rubberized asphalt to substrates and adjoining surfaces indicated. Spread to form a uniform, unreinforced, seamless membrane, 180-mil minimum thickness.

D. Apply waterproofing over prepared joints and up wall terminations and vertical surfaces to heights indicated or required by manufacturer.

E. Cover waterproofing with protection course with overlapped joints before membrane is subject to backfilling.

3.5 INSULATION INSTALLATION

A. On vertical surfaces, set insulation units into rubberized asphalt according to manufacturer's written instructions.

3.6 CLEANING AND PROTECTION

A. Protect waterproofing from damage and wear during remainder of construction period.

B. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 07 1413

SECTION 07 4213 - METAL ~~WALL~~ *SOFFIT* PANELS

NOTE: Items in italics were added as part of Addendum #3. Items that are struck out were eliminated as part of Addendum #3.

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes metal soffit panels.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show fabrication and installation layouts of metal wall panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details. Distinguish between factory-, shop- and field-assembled work.

C. Samples: For each type of exposed finish required.

1.3 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and approved by manufacturer.

B. Preinstallation Conference: Conduct conference at Project site.

1.5 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal wall panel assemblies that fail in materials or workmanship within specified warranty period.

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

B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal wall panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PANEL MATERIALS

~~A. Metallic-Coated Steel Sheet: Restricted flatness steel sheet metallic coated by the hot-dip process and prepainted by the coil-coating process to comply with ASTM A 755/A 755M.~~

~~1. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, G90 (Z275) coating designation; structural quality.~~

B. Aluminum Sheet: Coil-coated sheet, ASTM B 209, alloy as standard with manufacturer, with temper as required to suit forming operations and structural performance required.

1. Surface: Smooth, flat finish.
2. Exposed Coil-Coated Finish:

a. 2-Coat Fluoropolymer: AAMA 620. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat.

2.2 METAL SOFFIT PANELS

A. Provide factory-formed perforated metal soffit panels designed to be installed by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners and factory-applied sealant in side laps. Include accessories required for weathertight installation.

B. Metal Soffit Panels: ~~Match profile and material of metal wall panels.~~

1. Finish: As indicated *in Exterior Finish Schedule* on Drawings.
2. Sealant: Factory applied within interlocking joint.
3. Manufacturers: Subject to compliance with requirements, ~~provide products by one of the following~~ available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. AEP-Span.
b. Architectural Building Components.
c. ATAS International, Inc.
d. Berridge Manufacturing Company.
e. CENTRIA Architectural Systems.
f. Cheney Flashing Company.
g. Copper Sales, Inc.
h. Dimensional Metals, Inc.
i. Englert, Inc.
j. Fabral.
k. Innovative Metals Company, Inc.
l. MBCI; Div. of NCI Building Systems.
m. McElroy Metal, Inc.
n. Merchant & Evans Inc.
o. Metal-Fab Manufacturing, L.L.C.
p. Metal Sales Manufacturing Corporation.
q. Petersen Aluminum Corporation.
r. Ultra Seam Incorporated.

4. Profile: V groove.
~~5. Material: Zinc-coated (galvanized) steel sheet, 0.022-inch nominal thickness.~~

~~a. Exterior Finish: 2-coat fluoropolymer.~~
~~b. Color: As selected by Architect from manufacturer's full range.~~

6. Material: Aluminum sheet, 0.032 inch thick.

a. Exterior Finish: 2-coat fluoropolymer.
b. Color: As selected by Architect from manufacturer's full range.

7. Panel Coverage: 12 inches.
8. Panel Height: 1.5 inches.
~~9. Sealant: Factory applied within interlocking joint.~~

2.3 ACCESSORIES

A. Flashing and Trim: Formed from 0.018-inch minimum thickness, zinc-coated (galvanized) steel sheet or aluminum-zinc alloy-coated steel sheet prepainted with coil coating. Provide flashing and trim as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, bases, drips, sills, jambs, corners, endwalls, framed openings, rakes, fasciae, parapet caps, soffits, reveals, and fillers. Finish flashing and trim with same finish system as adjacent metal wall panels.

2.4 FABRICATION

A. General: Fabricate and finish metal wall panels and accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

B. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.

C. Sheet Metal Accessories: Fabricate flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal, and other characteristics of item indicated.

PART 3 - EXECUTION

3.1 PREPARATION

A. Miscellaneous Framing: Install subgirts, base angles, sills, furring, and other miscellaneous wall panel support members and anchorages according to ASTM C 754 and metal wall panel manufacturer's written recommendations.

3.2 METAL ~~WALL~~ *SOFFIT* PANEL INSTALLATION

A. Metal Soffit Panels: Provide metal soffit panels full width of soffits. Install panels perpendicular to support framing.

1. Flash and seal panels with weather closures where metal soffit panels meet walls and at perimeter of all openings.

3.3 ACCESSORY INSTALLATION

A. General: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal wall panel assembly including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.

B. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

3.4 CLEANING AND PROTECTION

A. Remove temporary protective coverings and strippable films, if any, as metal wall panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal wall panel installation, clean finished surfaces as recommended by metal wall panel manufacturer. Maintain in a clean condition during construction.

~~B. After metal wall panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.~~

END OF SECTION 07 4213

SECTION 08 3113 - ACCESS DOORS AND FRAMES

NOTE: Items in italics were added as part of Addendum #3.

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Access doors and frames for ceilings.
2. *Floor access doors and frames.*

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

C. Samples: For each door face material.

D. Schedule: Types, locations, sizes, latching or locking provisions, and other data pertinent to installation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Rated Access Doors and Frames: Units complying with NFPA 80 tested according to the following test method:

1. NFPA 288 for fire-rated access door assemblies installed horizontally.

2.2 ACCESS DOORS AND FRAMES FOR CEILINGS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Acudor Products, Inc. Recessed Access Door, model DW-5015 or comparable product by one of the following:

1. Access Panel Solutions.
2. Alfab, Inc.
3. Babcock-Davis.
4. Cendrex Inc.
5. Elmdor/Stoneman Manufacturing Co.; Div. of Acorn Engineering Co.
6. Jensen Industries; Div. of Broan-Nutone, LLC.
7. J. L. Industries, Inc.; Div. of Activar Construction Products Group.
8. Karp Associates, Inc.
9. Larsen's Manufacturing Company.

10. Maxam Metal Products Limited.
11. Metropolitan Door Industries Corp.
12. MIFAB, Inc.
13. Milcor Inc.
14. Nystrom, Inc.
15. Williams Bros. Corporation of America (The).

B. Source Limitations: Obtain each type of access door and frame from single source from single manufacturer.

C. Recessed Access Doors:

1. Assembly Description: Fabricate door in the form of a pan recessed 1 inch for gypsum board infill. Provide frame with gypsum board bead for concealed flange installation.
2. Locations: Ceiling.
3. Door Size: 18 inches x 18 inches.
4. Uncoated Steel Sheet for Door: Nominal 0.060 inch, 16 gage.

    a. Finish: Factory prime.

5. Frame Material: Galvanized steel with drywall taping bead all around.
6. Hinges: Manufacturer's standard concealed hinge.
7. Hardware: Cylinder Lock.

2.3 FLOOR ACCESS DOORS AND FRAMES

A. Basis-of-Design Product: Subject to compliance with requirements, provide Acudor Products, Inc. Fire-Rated, Flush Diamond Plate Floor Door, model FRFD or comparable product by one of the following:

1. Babcock-Davis.
2. Bilco Company (The).
3. Cendrex Inc.
4. Dur-Red Products.
5. Halliday Products.
6. Jensen Industries; Div. of Broan-Nutone, LLC.
7. Karp Associates, Inc.
8. Maxam Metal Products Limited.
9. Metropolitan Door Industries Corp.
10. MIFAB, Inc.
11. Milcor Inc.
12. Nystrom, Inc.
13. U.S.F. Fabrication.
14. Williams Bros. Corporation of America (The).

B. Floor Doors, General: Equip each door with adjustable counterbalancing springs, heavy-duty hold-open arm that automatically locks door open at 90 degrees, release handle with red vinyl grip that allows for one-handed closure, and recessed lift handle.

C. Aluminum Floor Door: Single-leaf opening. Extruded-aluminum angle frame with 1/4-inch-thick, diamond-pattern, aluminum tread plate door; non-watertight; loading capacity to support 150-lbf/sq. ft. pedestrian live load.

1. Fire-Resistance Rating: Not less than 1 hour.

D. Hardware: Provide the following:

1. Hinges: Heavy-duty, stainless-steel continuous piano hinge.
2. Latch: Stainless-steel slam latch assembly with interior release.
3. Lock: Keyed cylinder lock.
4. Hardware Material: Manufacturer's standard.

E. Insulation: Two 1-inch thick layers of ceramic blanket insulation attached to bottom frame or equivalent.

2.4 MATERIALS

A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

B. Steel Sheet: Uncoated or electrolytic zinc coated, ASTM A 879/A 879M, with cold-rolled steel sheet substrate complying with ASTM A 1008/A 1008M, Commercial Steel (CS), exposed.

C. Aluminum Extrusions: ASTM B 221, Alloy 6063-T6.

D. Aluminum-Alloy Rolled Tread Plate: ASTM B 632/B 632M, Alloy 6061-T6.

E. Aluminum Sheet: ASTM B 209, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with not less than strength and durability properties of Alloy 5005-H15; with minimum sheet thickness according to ANSI H35.2.

F. Frame Anchors: Same type as door face.

G. Inserts, Bolts, and Anchor Fasteners: Hot-dip galvanized steel according to ASTM A 153/A 153M or ASTM F 2329.

2.5 FABRICATION

A. General: Provide access door and frame assemblies manufactured as integral units ready for installation.

B. Metal Surfaces: For metal surfaces exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.

C. Doors and Frames: Grind exposed welds smooth and flush with adjacent surfaces. Furnish attachment devices and fasteners of type required to secure access doors to types of supports indicated.

D. Recessed Access Doors: Form face of panel to provide recess for application of applied finish. Reinforce panel as required to prevent buckling.

E. Latching Mechanisms: Furnish number required to hold doors in flush, smooth plane when closed.

1. For cylinder locks, furnish two keys per lock and key all locks alike.
2. For recessed panel doors, provide access sleeves for each locking device. Furnish plastic grommets and install in holes cut through finish.

F. Extruded Aluminum: After fabrication, apply manufacturer's standard protective coating on aluminum that will come in contact with concrete.

2.6 FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

D. Steel Finishes:

1. Factory Prime: Apply manufacturer's standard, fast-curing, lead- and chromate-free, universal primer immediately after surface preparation and pretreatment.

E. Aluminum Finishes: Mill finish.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with manufacturer's written instructions for installing access doors and frames.

B. Install doors flush with adjacent finish surfaces or recessed to receive finish material.

3.2 ADJUSTING

A. Adjust doors and hardware, after installation, for proper operation.

B. Remove and replace doors and frames that are warped, bowed, or otherwise damaged.

END OF SECTION 08 3113

SECTION 10 5113 - METAL LOCKERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes knocked-down corridor lockers.

1.2 ACTION SUBMITTALS

A. Product data.

B. Shop Drawings: Include plans, elevations, sections, details, attachments to other work, and locker identification system and numbering sequence.

C. Samples: For each color specified.

1.3 INFORMATIONAL SUBMITTALS

A. Sample warranties.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.5 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of metal lockers that fail in materials or workmanship, excluding finish, within specified warranty period.

1. Warranty Period for Knocked-Down Metal Lockers: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Accessibility Requirements: For lockers indicated to be accessible, comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines, ICC A117.1 and all local requirements.

2.2 KNOCKED-DOWN CORRIDOR LOCKERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Republic Storage Systems Company Quiet Locker or comparable, Architect-approved equal.

B. Doors: One piece; fabricated from 0.060-inch nominal-thickness steel sheet; formed into channel shape with double bend at vertical edges and with right-angle single bend at horizontal edges.

1. Doors less than 12 inches wide may be fabricated from 0.048-inch nominal-thickness steel sheet.
2. Doors for box lockers less than 15 inches wide may be fabricated from 0.048-inch nominal-thickness steel sheet.
3. Reinforcement: Manufacturer's standard reinforcing angles, channels, or stiffeners for doors more than 15 inches wide; welded to inner face of doors.
4. Stiffeners: Manufacturer's standard full-height stiffener fabricated from 0.048-inch nominal-thickness steel sheet; welded to inner face of doors.
5. Door Style: Vented panel as follows:

a. Louvered Vents: No fewer than three louver openings at top and bottom for double-tier lockers.

C. Body: Assembled by riveting or bolting body components together. Fabricate from unperforated steel sheet with thicknesses as follows:

1. Tops, Bottoms, and Intermediate Dividers: 0.024-inch nominal thickness, with single bend at sides.
2. Backs and Sides: 0.024-inch nominal thickness, with full-height, double-flanged connections.
3. Shelves: 0.024-inch nominal thickness, with double bend at front and single bend at sides and back.

D. Frames: Channel formed; fabricated from 0.060-inch nominal-thickness steel sheet; lapped and factory welded at corners; with top and bottom main frames factory welded into vertical main frames. Form continuous, integral, full-height door strikes on vertical main frames.

E. Hinges: Manufacturer's standard, steel, continuous or knuckle type.

F. Recessed Door Handle and Latch: Stainless-steel cup with integral door pull, recessed so locking device does not protrude beyond door face; pry and vandal resistant.

1. Multipoint Latching: Finger-lift latch control designed for use with built-in combination locks, built-in key locks, or padlocks; positive automatic latching and prelocking.

a. Latch Hooks: Equip doors 48 inches and higher with three latch hooks and doors less than 48 inches high with two latch hooks; fabricated from 0.105-inch nominal-thickness steel sheet; welded or riveted to full-height door strikes; with resilient silencer on each latch hook.
b. Latching Mechanism: Manufacturer's standard, rattle-free latching mechanism.

G. Locks: Combination padlocks.

H. Identification Plates: Manufacturer's standard, etched, embossed, or stamped aluminum plates, with numbers and letters at least 3/8 inch high.

I. Hooks: Manufacturer's standard ball-pointed type hooks, aluminum or steel; zinc plated.

J. Recess Trim: Fabricated from 0.048-inch nominal-thickness steel sheet.

K. Filler Panels: Fabricated from manufacturer's standard thickness, but not less than 0.036-inch nominal-thickness steel sheet.

L. Materials:

1. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B, suitable for exposed applications.

M. Finish: Baked enamel or powder coat.

1. Color: As selected by Architect from manufacturer's full range.

2.3 LOCKS

A. Combination Padlocks: Provided by Owner.

2.4 FABRICATION

A. Fabricate metal lockers square, rigid, without warp, and with metal faces flat and free of dents or distortion. Make exposed metal edges safe to touch and free of sharp edges and burrs.

B. Fabricate each metal locker with an individual door and frame; individual top, bottom, and back; and common intermediate uprights separating compartments. Factory weld frame members of each metal locker together to form a rigid, one-piece assembly.

C. Equipment: Provide each locker with an identification plate and the following equipment:

1. Double-Tier Units: One double-prong ceiling hook and two single-prong wall hooks.

D. Knocked-Down Construction: Fabricate metal lockers using nuts, bolts, screws, or rivets for preassembly at plant prior to shipping.

E. Accessible Lockers: Fabricate as follows:

1. Locate bottom shelf no lower than 15 inches above the floor.
2. Where hooks, coat rods, or additional shelves are provided, locate no higher than 48 inches above the floor.

F. Recess Trim: Fabricated with minimum 2-1/2-inch face width and in lengths as long as practical; finished to match lockers.

G. Filler Panels: Fabricated in an unequal leg angle shape; finished to match lockers. Provide slip-joint filler angle formed to receive filler panel.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Install lockers level, plumb, and true; shim as required, using concealed shims.

1. Anchor locker runs at ends and at intervals recommended by manufacturer, but not more than 36 inches o.c. Using concealed fasteners, install anchors through backup reinforcing plates, channels, or blocking as required to prevent metal distortion.
2. Anchor single rows of metal lockers to walls near top and bottom of lockers.

B. Knocked-Down Lockers: Assemble with standard fasteners, with no exposed fasteners on door faces or face frames.

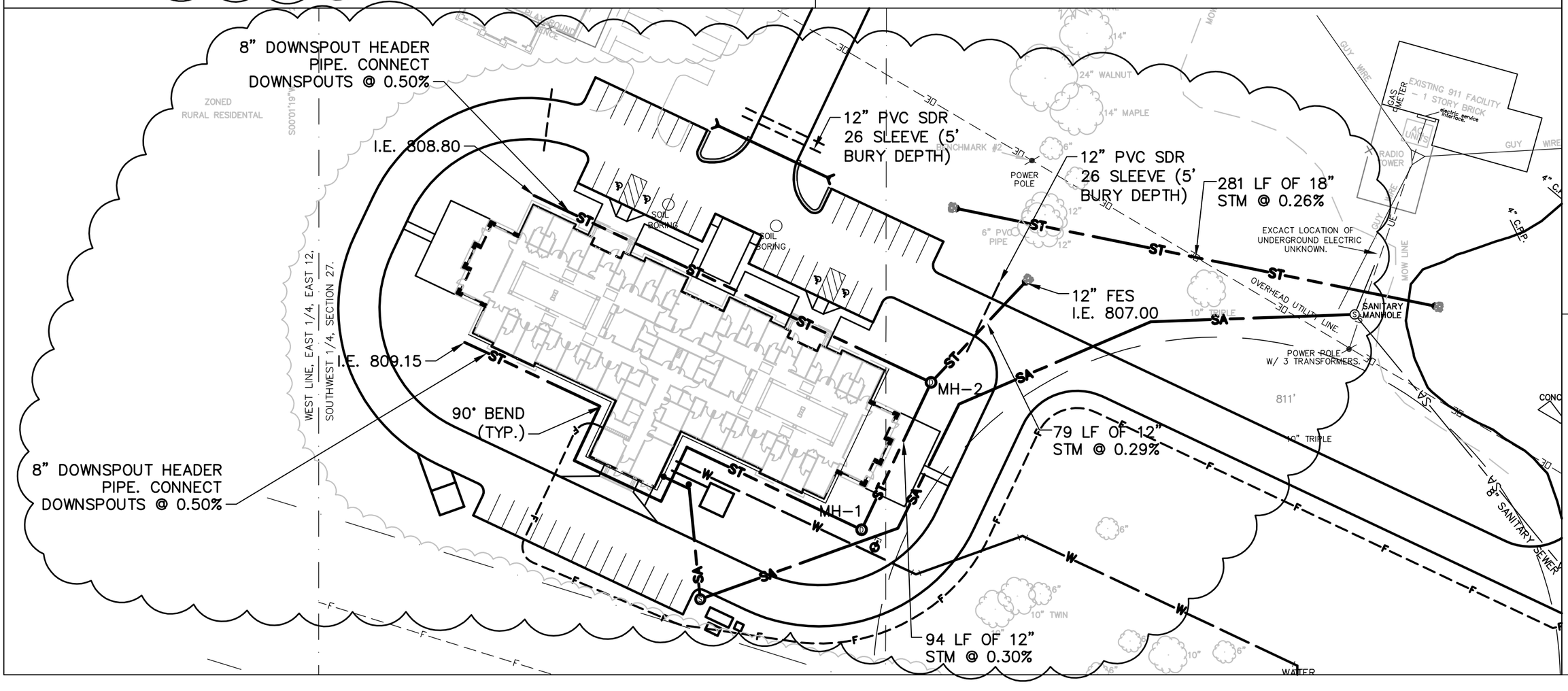
C. Trim: Fit exposed connections of trim, fillers, and closures accurately together to form tight, hairline joints, with concealed fasteners and splice plates.

1. Attach recess trim to recessed metal lockers with concealed clips.
2. Attach filler panels with concealed fasteners.

END OF SECTION 10 5113

STORM SEWER STRUCTURE SCHEDULE

STR. #	RIM EL.	DIAM.	CASTING	PIPES IN:	PIPES OUT
MH–1	811.10	4’	EJIW 1060	8” NW: 807.51	12” NE: 807.51
MH–2	811.50	4’	EJIW 1060	8” NW: 807.50 12” SW: 807.23	12” NE: 807.23
OUTLET STR.	808.72	???’	Standard		18” E: 807.07



REF SHEET C203

CSK 01

03/15/12

2011-11-021

THE COTTAGE at THORNAPPLE
HASTINGS, MICHIGAN

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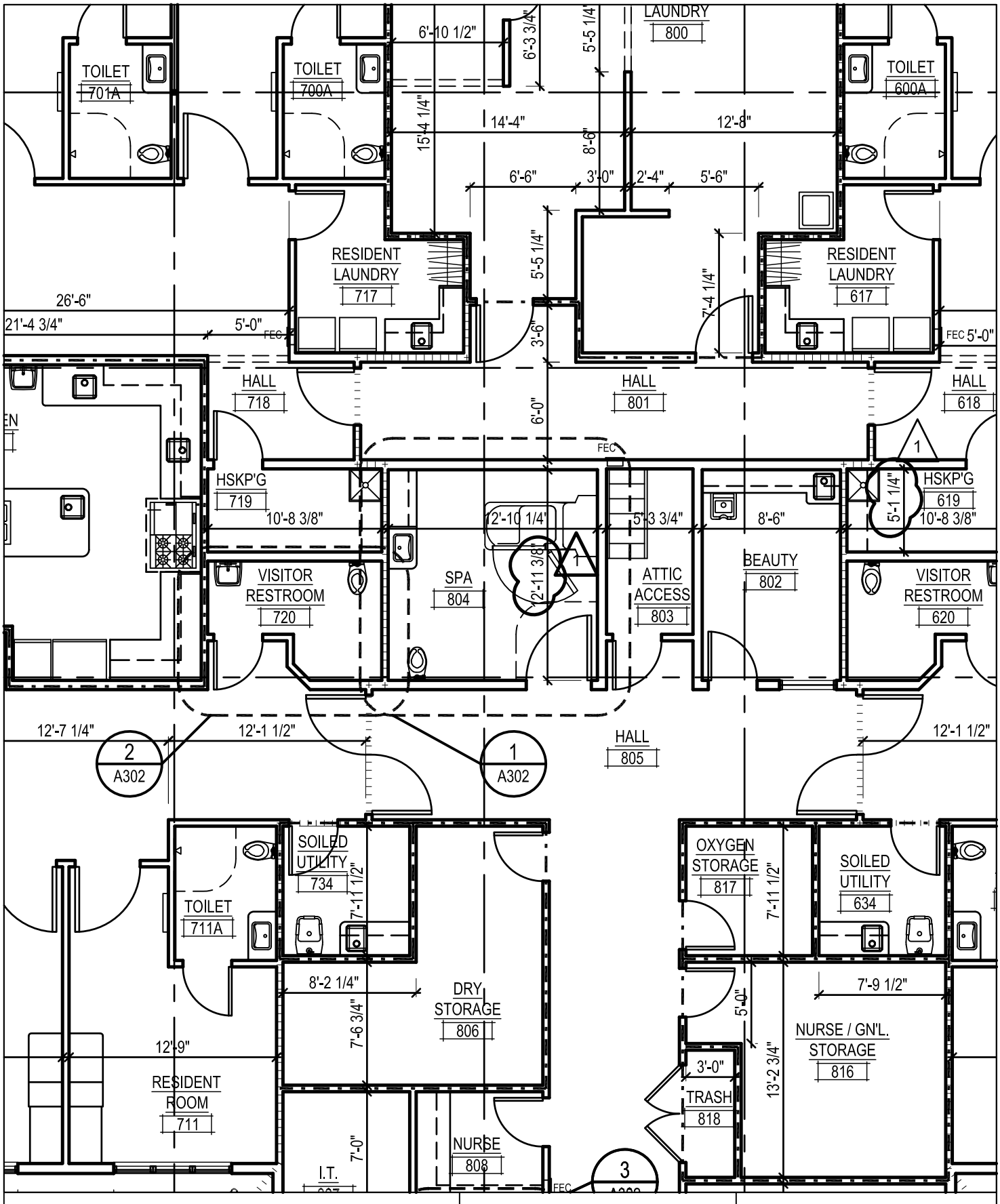

REFERENCE SHEET A101 | **SCALE: 1/8" = 1'-0"** | **ADDENDUM #3**

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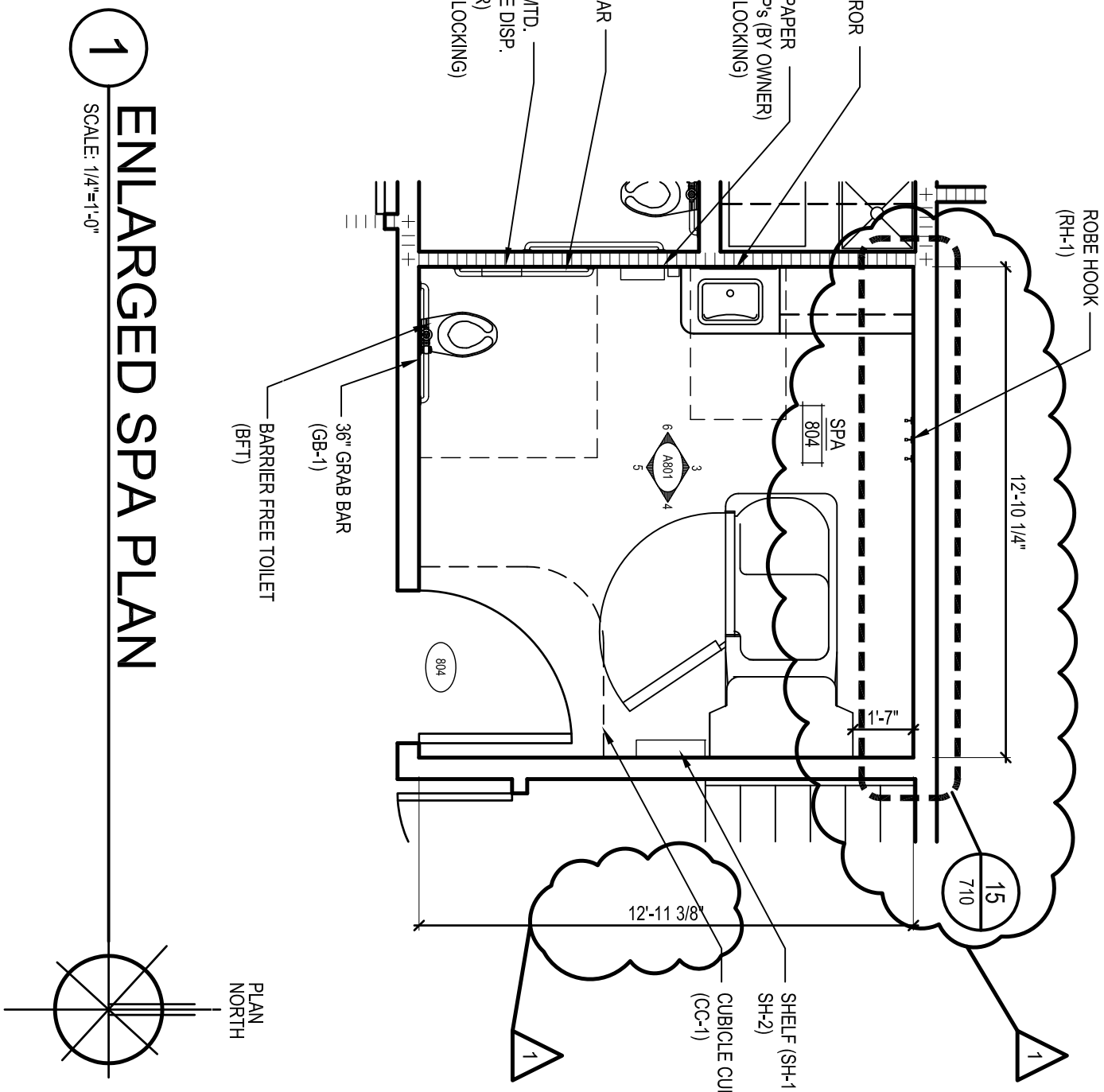
2011-11-021

ASK
06



REFERENCE SHEET A302	SCALE: 1/4" = 1'-0"	ADDENDUM #3

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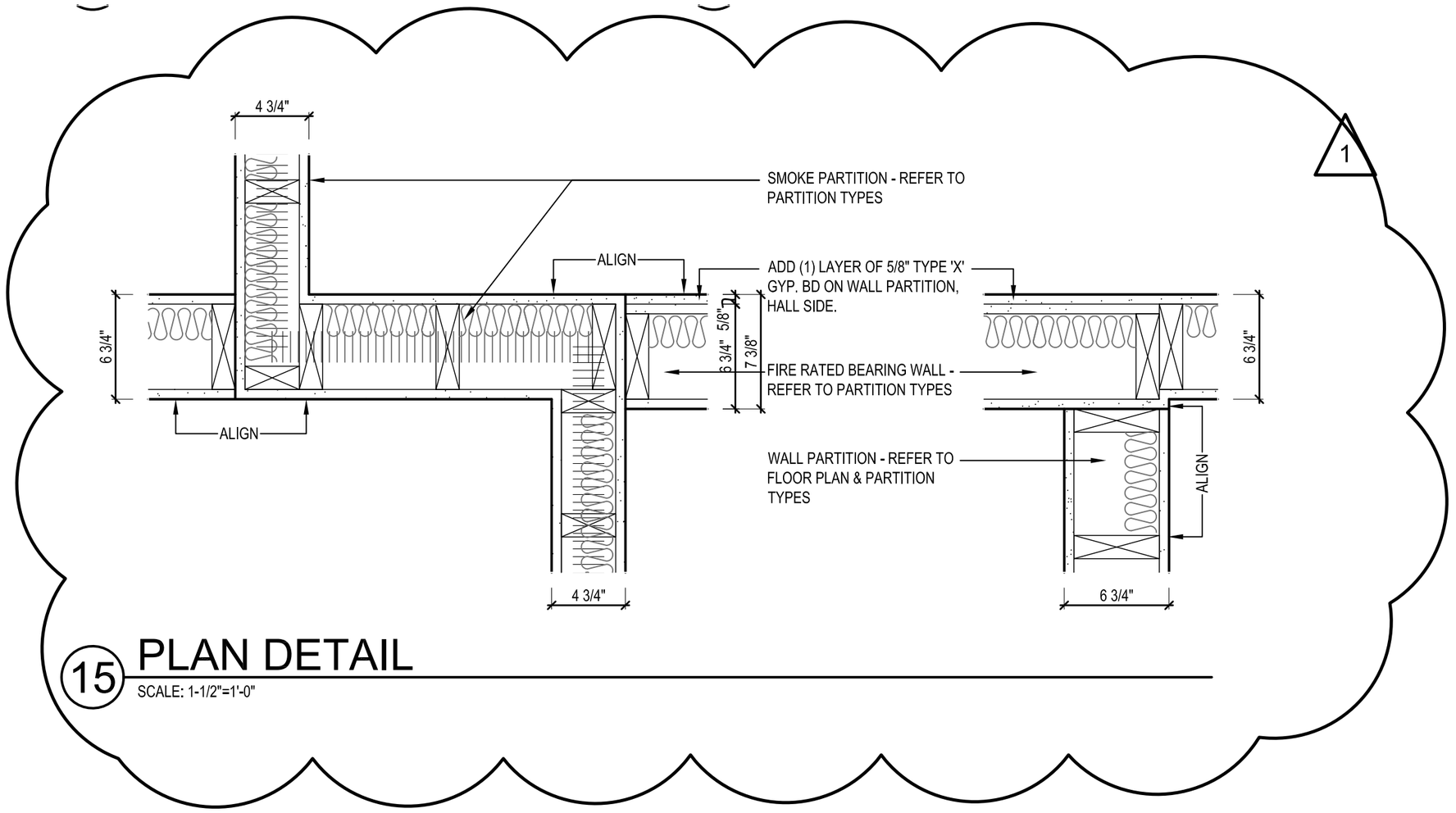
03/15/12
2011-11-021

ASK
07



15 PLAN DETAIL

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

ADDENDUM #3

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

REFERENCE SHEET A302

ASK 08

03/15/12

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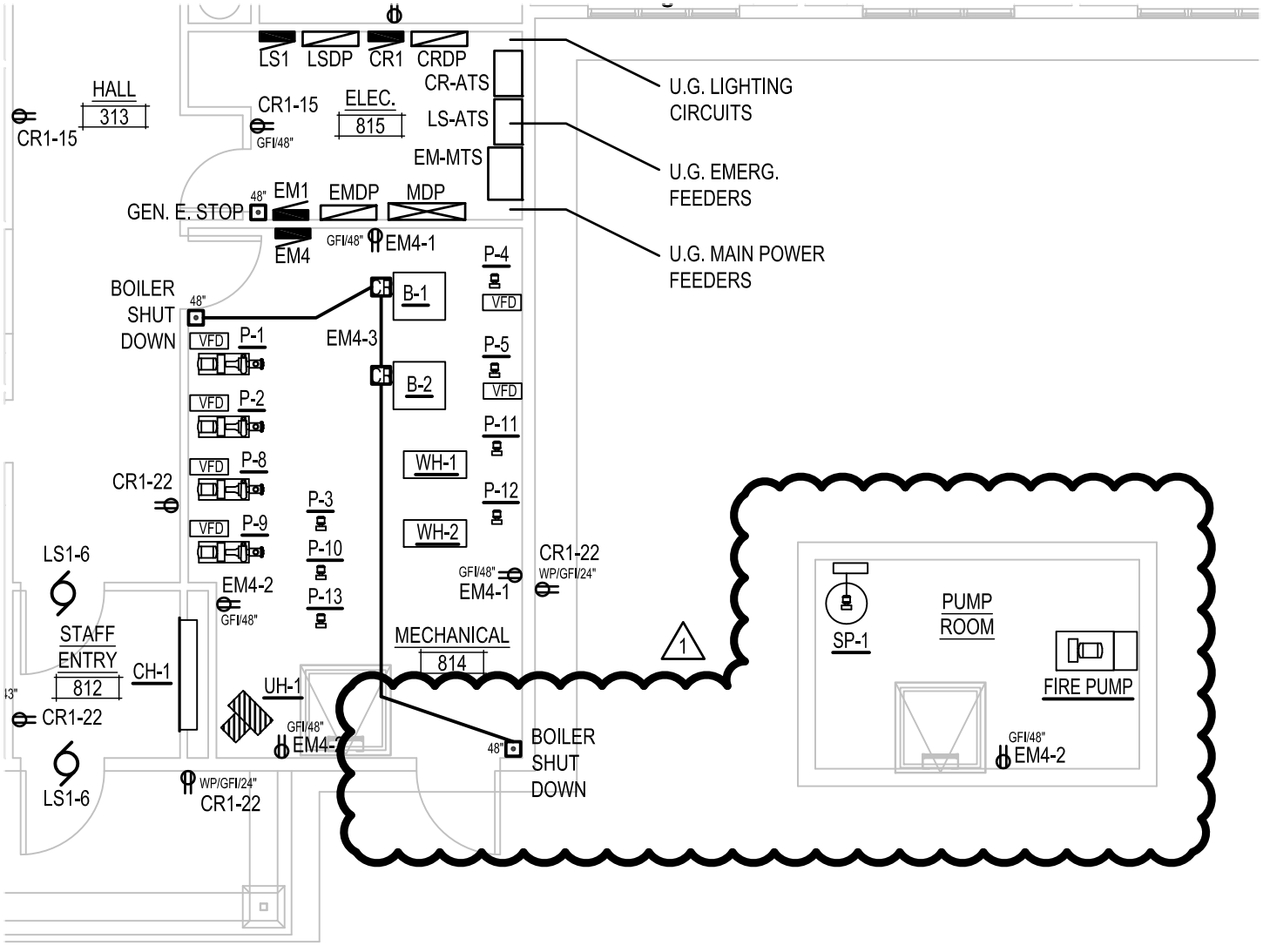

REFERENCE SHEET E110	1" = 8'-0"	ADDENDUM #3

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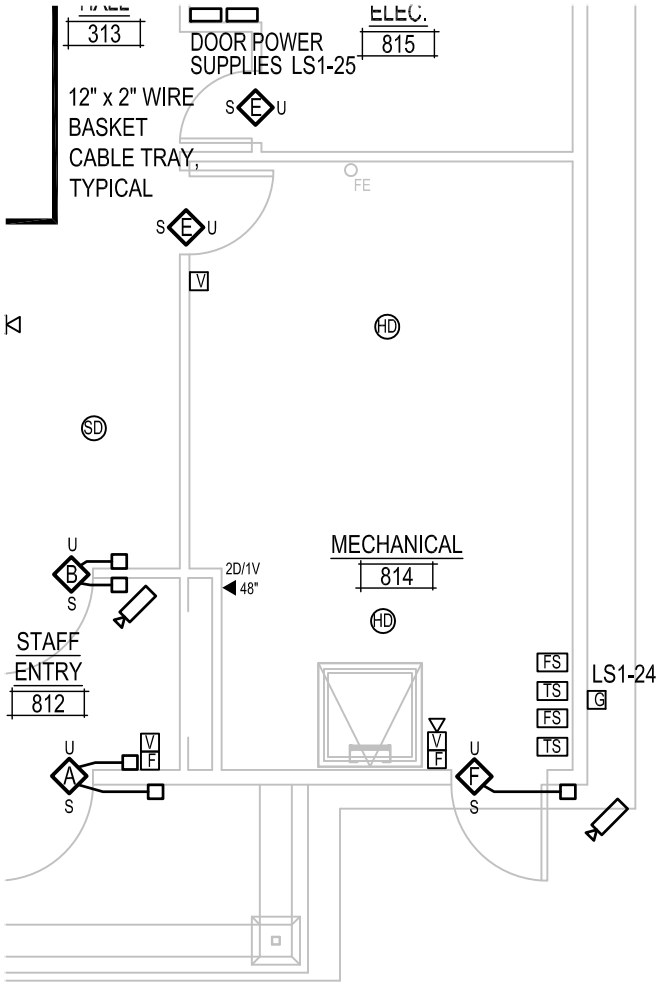

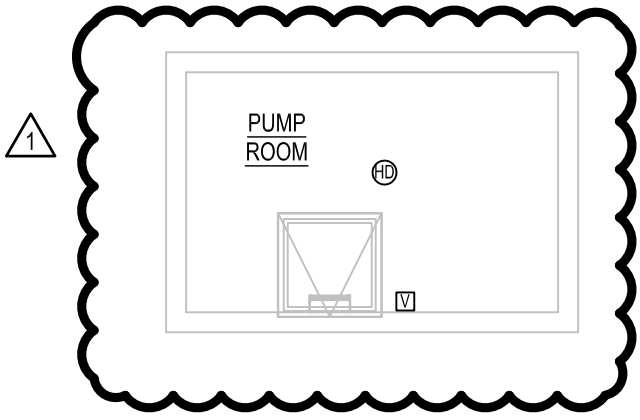

NORTH

REFERENCE SHEET E111	1" = 8'-0"	ADDENDUM #3

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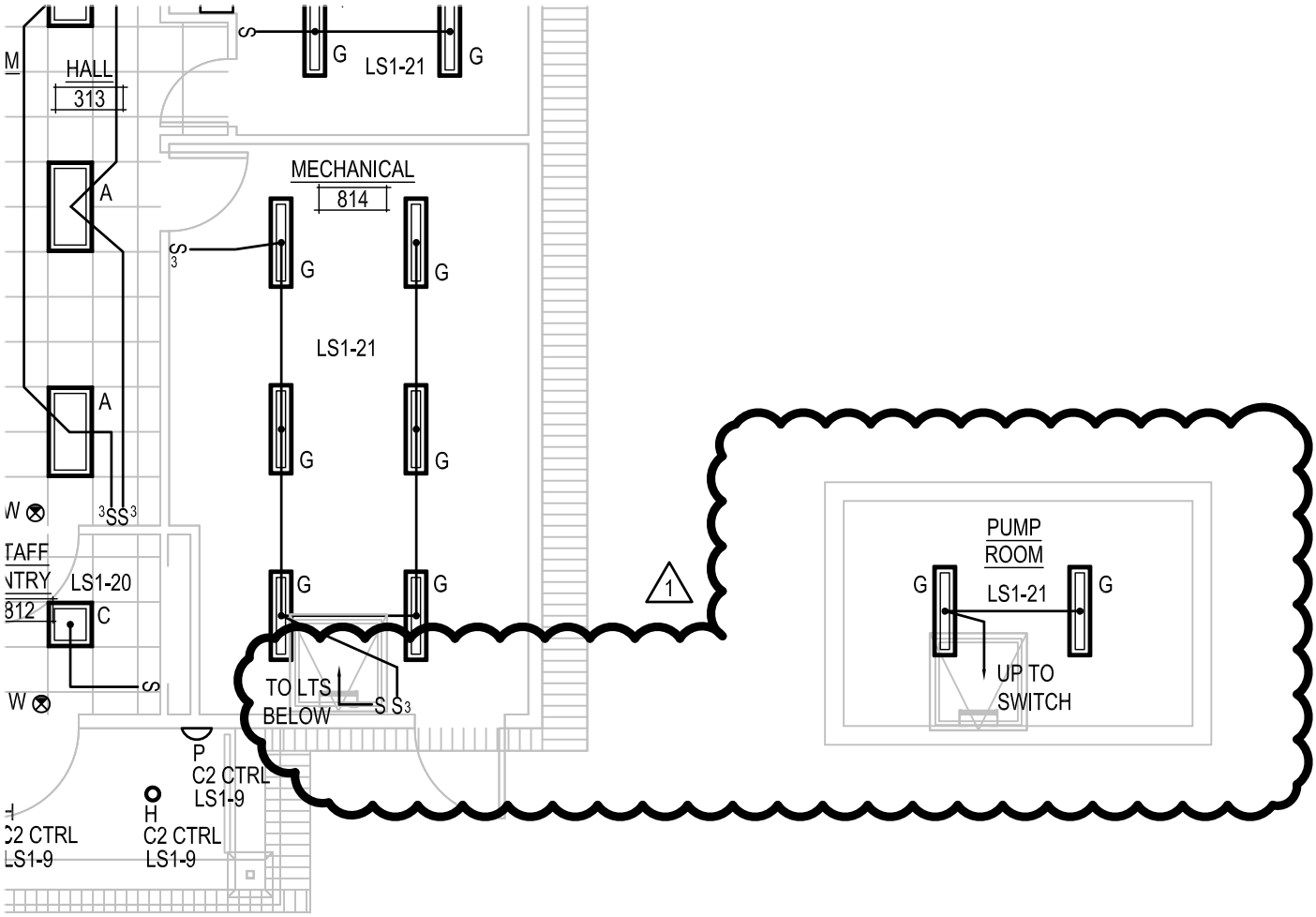

REFERENCE SHEET E210	1" = 8'-0"	ADDENDUM #3

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P-8	PUMP #8	208V	3PH	32 A	11.5 KW	10 HP	45 A	VFD BY E.C.	#6 AWG	EM4-24,26,28 50A, 3P, CB
P-9	PUMP #9	208V	3PH	32 A	11.5 KW	10 HP	45 A	VFD BY E.C.	#6 AWG	EM4-25,27,29 50A, 3P, CB
P-10	PUMP #10	120V	1PH	7.2 A	0.9 KW	1/3 HP	N/A	MANUAL MOTOR STARTER	#12 AWG	EM4-30 20A, 1P, CB
P-11	PUMP #11	120V	1PH	5.8 A	0.7 KW	1/4 HP	N/A	MANUAL MOTOR STARTER	#12 AWG	EM4-31 20A, 1P, CB
P-12	PUMP #12	120V	1PH	5.8 A	0.7 KW	1/4 HP	N/A	MANUAL MOTOR STARTER	#12 AWG	EM4-32 20A, 1P, CB
P-13	PUMP #13	120V	1PH	2.1 A	0.3 KW	1/25 HP	N/A	MANUAL MOTOR STARTER	#12 AWG	EM4-33 20A, 1P, CB
VAV-101 TO 105	VARIABLE AIR VOLUME BOX	120V	1PH	5.0 A	0.6 KW	N/A	N/A	FACTORY SWITCH	#12 AWG	EM2-17 20A, 1P, CB
VAV-106 TO 110	VARIABLE AIR VOLUME BOX	120V	1PH	5.0 A	0.6 KW	N/A	N/A	FACTORY SWITCH	#12 AWG	EM2-18 20A, 1P, CB
VAV-111 TO 115	VARIABLE AIR VOLUME BOX	120V	1PH	5.0 A	0.6 KW	N/A	N/A	FACTORY SWITCH	#12 AWG	EM2-19 20A, 1P, CB
VAV-116 TO 122	VARIABLE AIR VOLUME BOX	120V	1PH	7.0 A	0.8 KW	N/A	N/A	FACTORY SWITCH	#12 AWG	EM2-20 20A, 1P, CB
VAV-201 TO 205	VARIABLE AIR VOLUME BOX	120V	1PH	5.0 A	0.6 KW	N/A	N/A	FACTORY SWITCH	#12 AWG	EM3-17 20A, 1P, CB
VAV-206 TO 210	VARIABLE AIR VOLUME BOX	120V	1PH	5.0 A	0.6 KW	N/A	N/A	FACTORY SWITCH	#12 AWG	EM3-18 20A, 1P, CB
VAV-211 TO 215	VARIABLE AIR VOLUME BOX	120V	1PH	5.0 A	0.6 KW	N/A	N/A	FACTORY SWITCH	#12 AWG	EM3-19 20A, 1P, CB
VAV-216 TO 221	VARIABLE AIR VOLUME BOX	120V	1PH	6.0 A	0.7 KW	N/A	N/A	FACTORY SWITCH	#12 AWG	EM3-20 20A, 1P, CB
H-1	HUMIDIFIER #1	208V	3PH	83.3 A	30.0 KW	N/A	110A	200A, 3P	#1/0 AWG	MDP 125A, 3P, CB
H-2	HUMIDIFIER #2	208V	3PH	55.5 A	20.0 KW	N/A	70A	100A, 3P	#1 AWG	MDP 100A, 3P, CB
AC-1	SPLIT SYSTEM INDOOR UNIT	208V	1PH	1.0 A	0.2 KW	N/A	N/A	N/A	#10 AWG	EM1-20,22 30A, 2P, CB
ACCU-1	OUTDOOR SPLIT SYSTEM CONDENSOR	208V	1PH	14.4 A	3.0 KW	N/A	30A	30A, 3P	#10 AWG	EM1-20,22 30A, 2P, CB
LIFT STATION	LIFT STATION	208V	3PH	14 A	5.0 KW	(2) 2 HP	N/A	FACTORY CTRL PNL	#10 AWG	EM4-34,36,38 [illegible]
SP-1	SUMP PUMP #1	120V	1PH	7 A	0.8 KW	1/3 HP	N/A	FACTORY CTRL PNL	#12 AWG	EM4-35 20A, 1P, CB 2

VFD AND MANUAL MOTOR STARTERS TO BE CONTROLLED BY BUILDING MANAGEMENT SYSTEM. COORDINATE WITH M.C. TO VERIFY IF ANY CONTROL RELAYS, 4-20mASIGNALS OR DEVICES ARE REQUIRED TO OPERATE VFDS, PUMPS, VAV BOXES OR FANS.

PROVIDE 100VA, 120V TO 24V CONTROL TRANSFORMER ON EACH VAV BOX.

REFERENCE SHEET E400 | **N.T.S.** | **ADDENDUM #3**

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Panelboard Schedule EM4

Project: Thornapple Cottage
Voltage: 208Y/120V
Job Number: 2011-11-021
Mains: 225 MLO
Panel: EM3
Mounting: FLUSH
Lo
Fed

Load/Location	Voltamps				Breaker				Breaker		Voltamps			
	RECEPT	LTG	HEAT	MTR	AMP	P			P	AMP	RECEPT	LTG	HEAT	M
RECEPTS. MECH.	360				20	1	1	2	1	20	360			
BOILER SHUTDOWN				180	20	1	3	4	1	20			1,200	
B-2			1,200		20	1	5	6	1	20			1,000	
WH-2			1,100		20	1	7	8	1	20				
P-1				2,100	30	3	9	10	3	30				2
				2,100			11	12						2
				2,100			13	14						2
P-3				800	20	1	15	16	3	20				
P-5				730	20	3	17	18						
				730			19	20						
				730			21	22	1	20				
P-7				700	20	1	23	24	3	50				3
P-9				3,833	50	3	25	26						3
				3,833			27	28						3
				3,833			29	30	1	20				
P-11				700	20	1	31	32	1	20				
[illegible]				[illegible]	[illegible]	[illegible]	33	34	3	25				1
SP-1				800	20	1	35	36						1
[illegible]					[illegible]	[illegible]	[illegible]	38						1
SPARE					20	1	39	40	1	20				
SPARE					20	1	41	42	1	20				
	360	0	2,200	22,769							360	0	2,200	2

2

Totals

RECEPT	LTG	HEAT	MTR	TOTAL
720	0	4,400	49,501	54,261

REFERENCE SHEET E500 | **N.T.S.** | **ADDENDUM #3**

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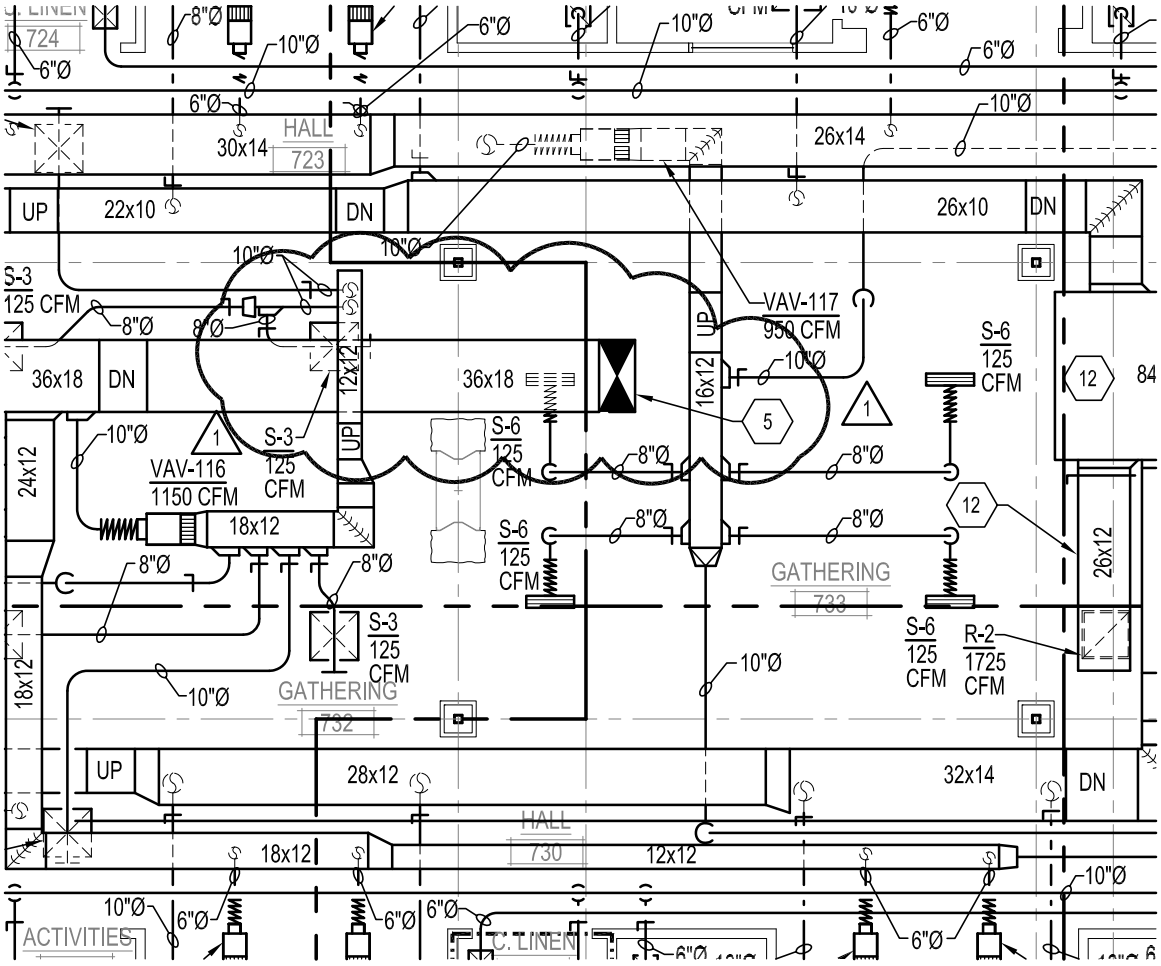

PARTIAL MECHANICAL PLAN

1

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

1

8. NOT USED.

REFERENCE SHEET M110	SCALE: 1/8" = 1'-0"	ADDENDUM No. 3

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THE COTTAGE
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03/15/2012

Project # 2011-11-021

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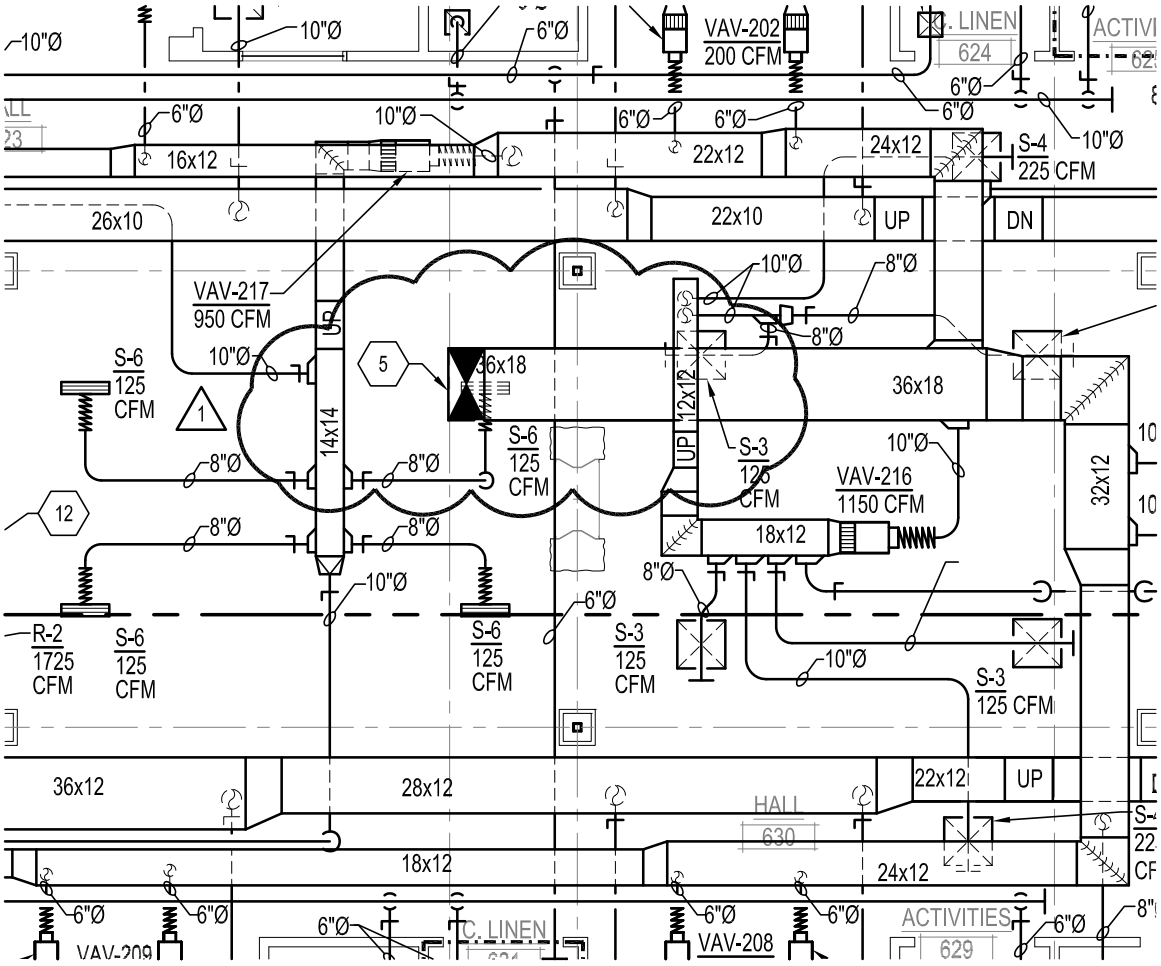

1 PARTIAL MECHANICAL PLAN

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

1

8. NOT USED.

REFERENCE SHEET M110	SCALE: 1/8" = 1'-0"	ADDENDUM No. 3

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THE COTTAGE
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HASTINGS, MICHIGAN

03/15/2012
Project # 2011-11-021

MSK
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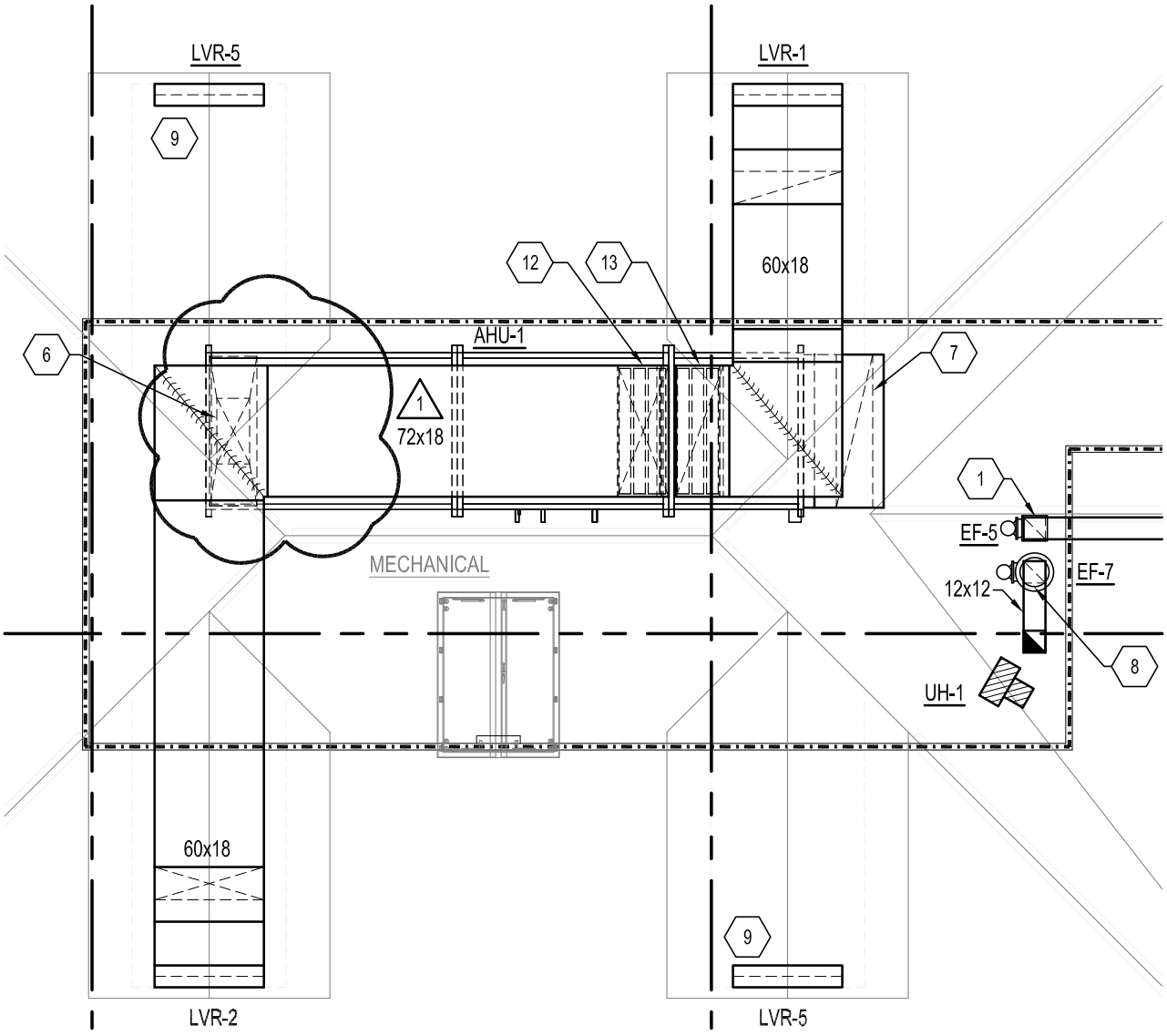

PARTIAL ATTIC MECHANICAL PLAN

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

REFERENCE SHEET M120 | **SCALE: 1/8" = 1'-0"** | **ADDENDUM No. 3**

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THE COTTAGE
at
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03/15/2012
Project # 2011-11-021

MSK
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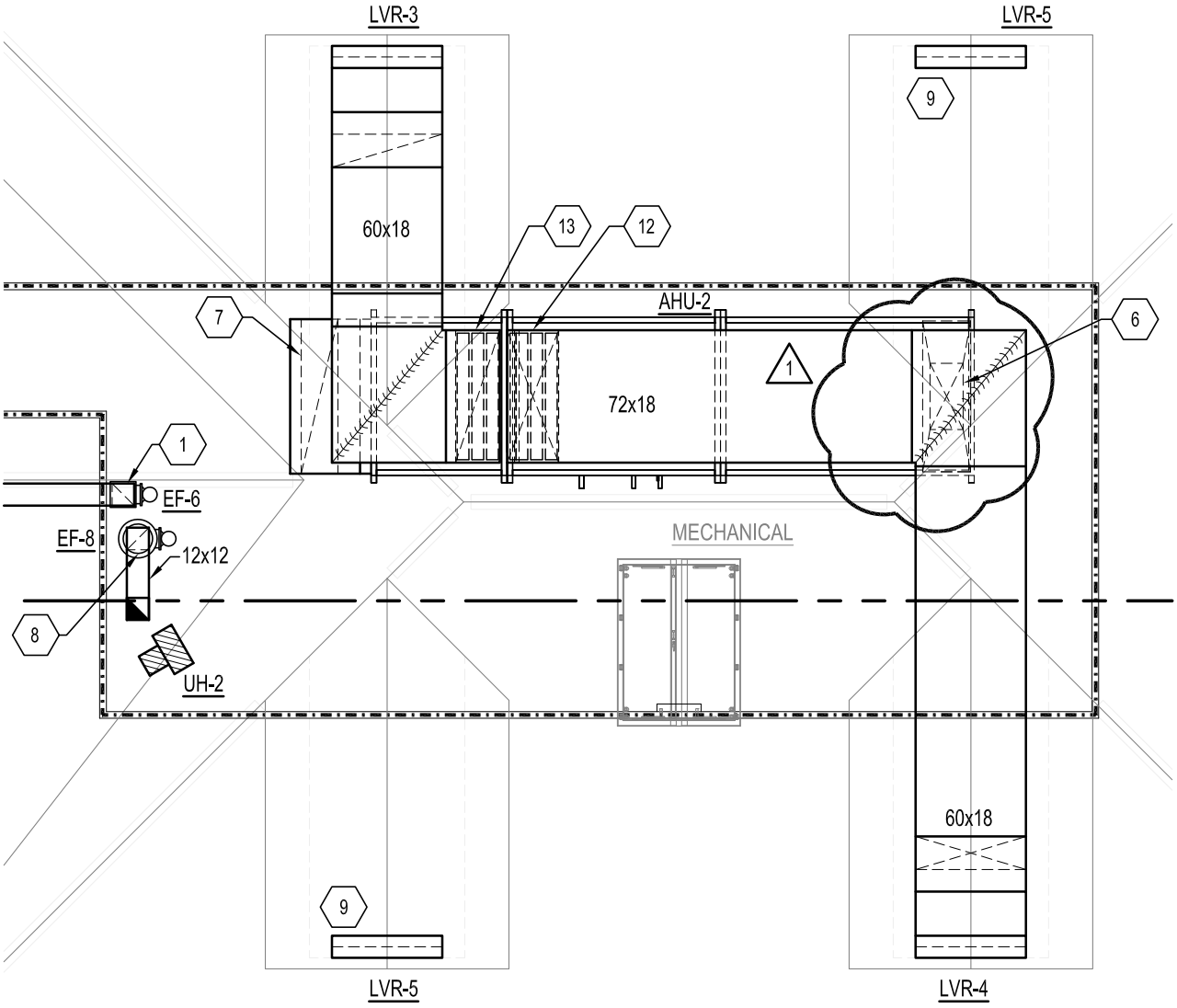

1 PARTIAL ATTIC MECHANICAL PLAN

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

REFERENCE SHEET M120	SCALE: 1/8" = 1'-0"	ADDENDUM No. 3

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03/15/2012
Project # 2011-11-021

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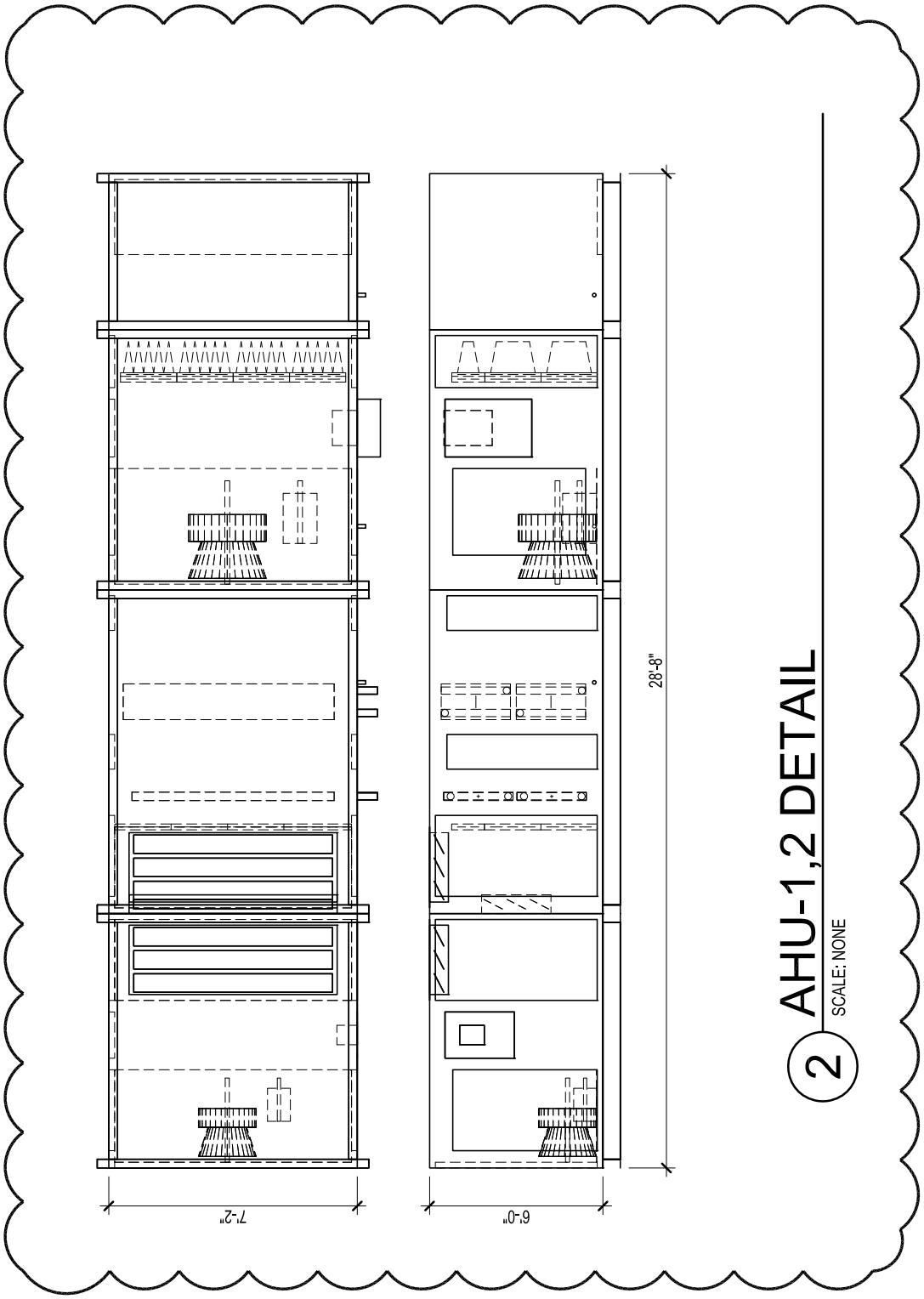

2 AHU-1,2 DETAIL

SCALE: NONE

1

REFERENCE SHEET M120 | **SCALE: 1/8" = 1'-0"** | **ADDENDUM No. 3**

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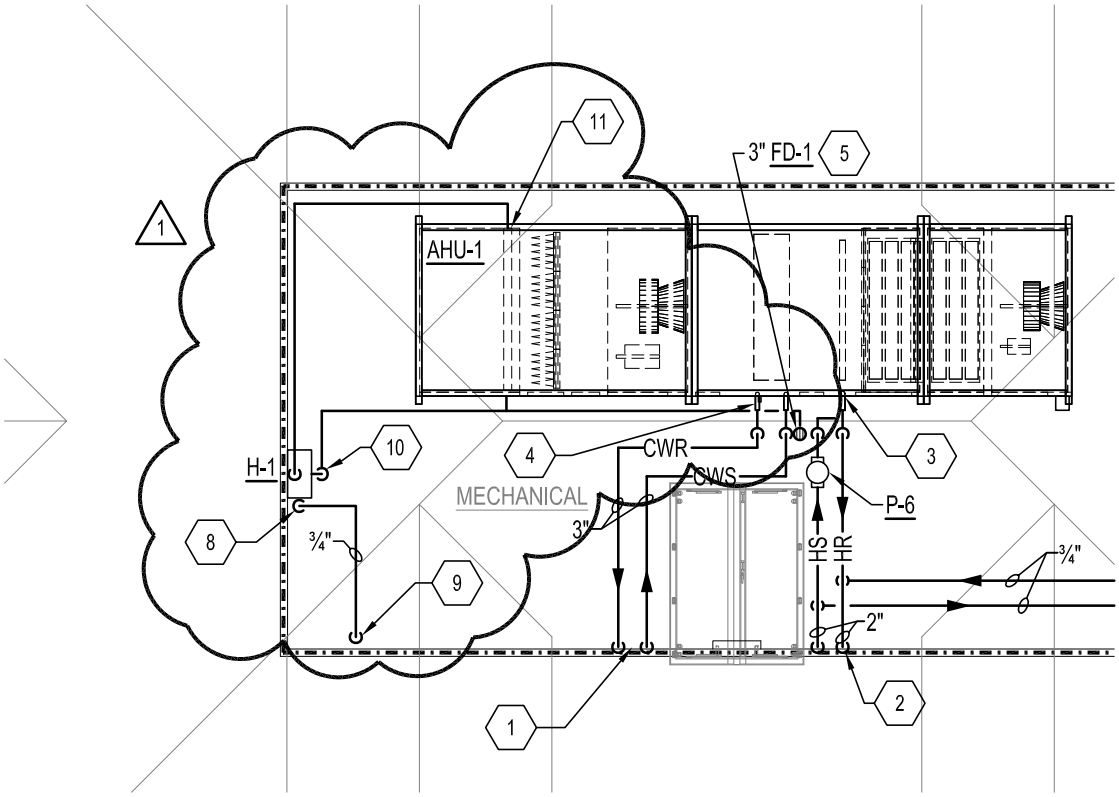

PARTIAL ATTIC HVAC PIPING PLAN

1

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

1

10. ¾" CONDENSATE ROUTED TO FLOOR DRAIN.

11. DISPERSION TUBES IN AHU. REFER TO DETAIL ON SHEET M501.

REFERENCE SHEET M220	SCALE: 1/8" = 1'-0"	ADDENDUM No. 3

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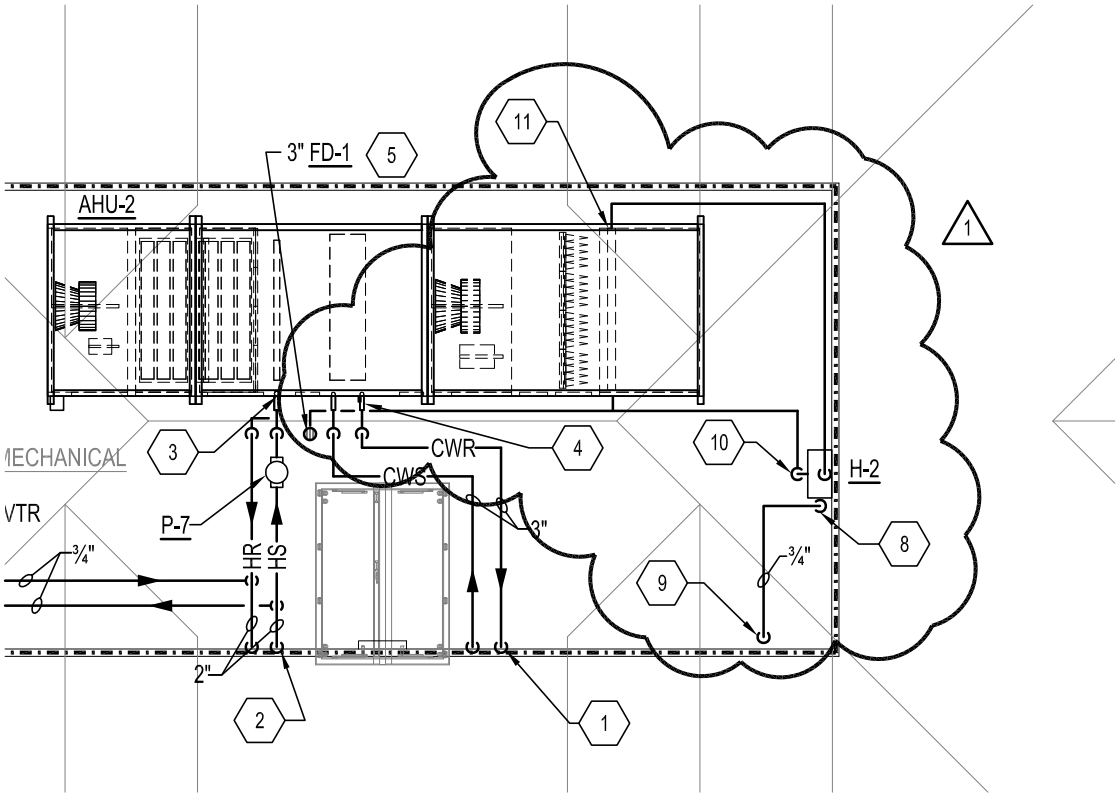

PARTIAL ATTIC HVAC PIPING PLAN

1

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

1

10. ¾" CONDENSATE ROUTED TO FLOOR DRAIN.

11. DISPERSION TUBES IN AHU. REFER TO DETAIL ON SHEET M501.

REFERENCE SHEET M220 | **SCALE: 1/8" = 1'-0"** | **ADDENDUM No. 3**

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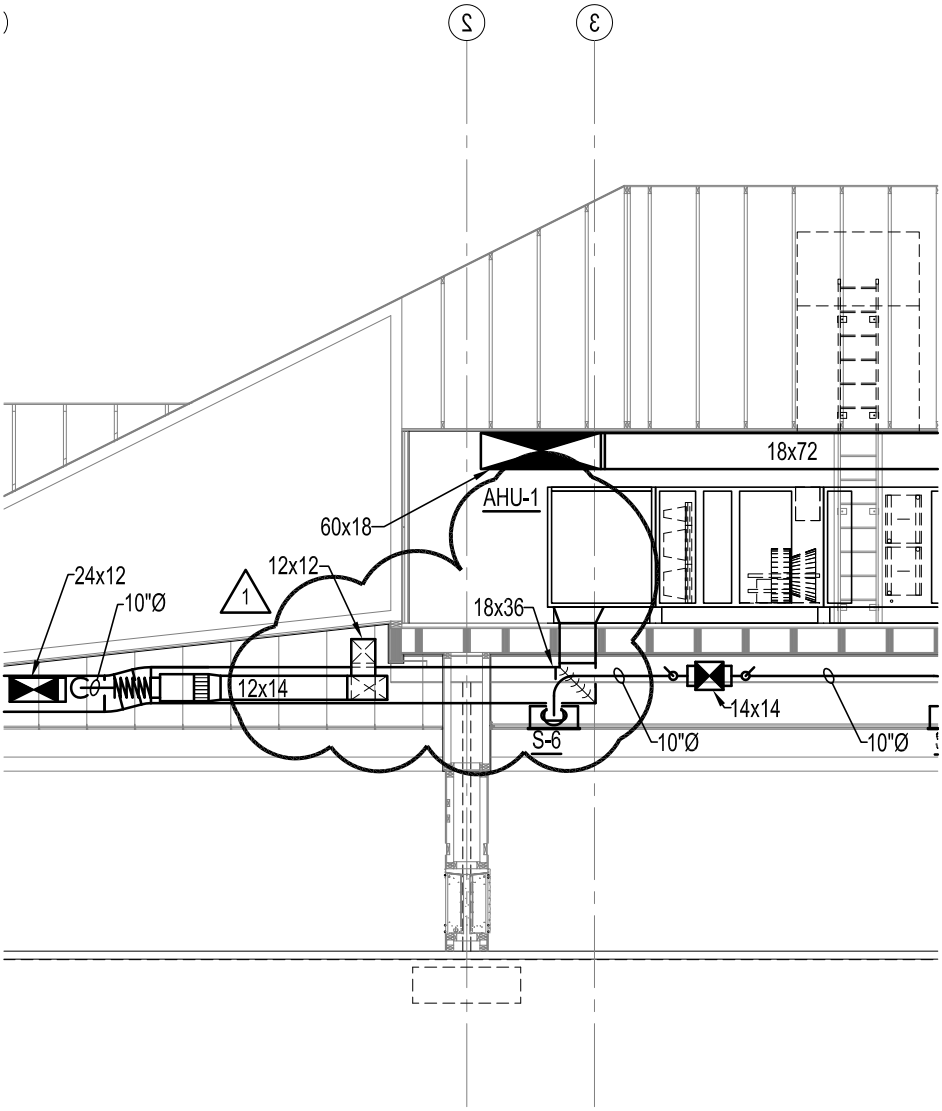

1 PARTIAL MECHANICAL SECTION 'A'

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

REFERENCE SHEET M300	SCALE: 1/8" = 1'-0"	ADDENDUM No. 3

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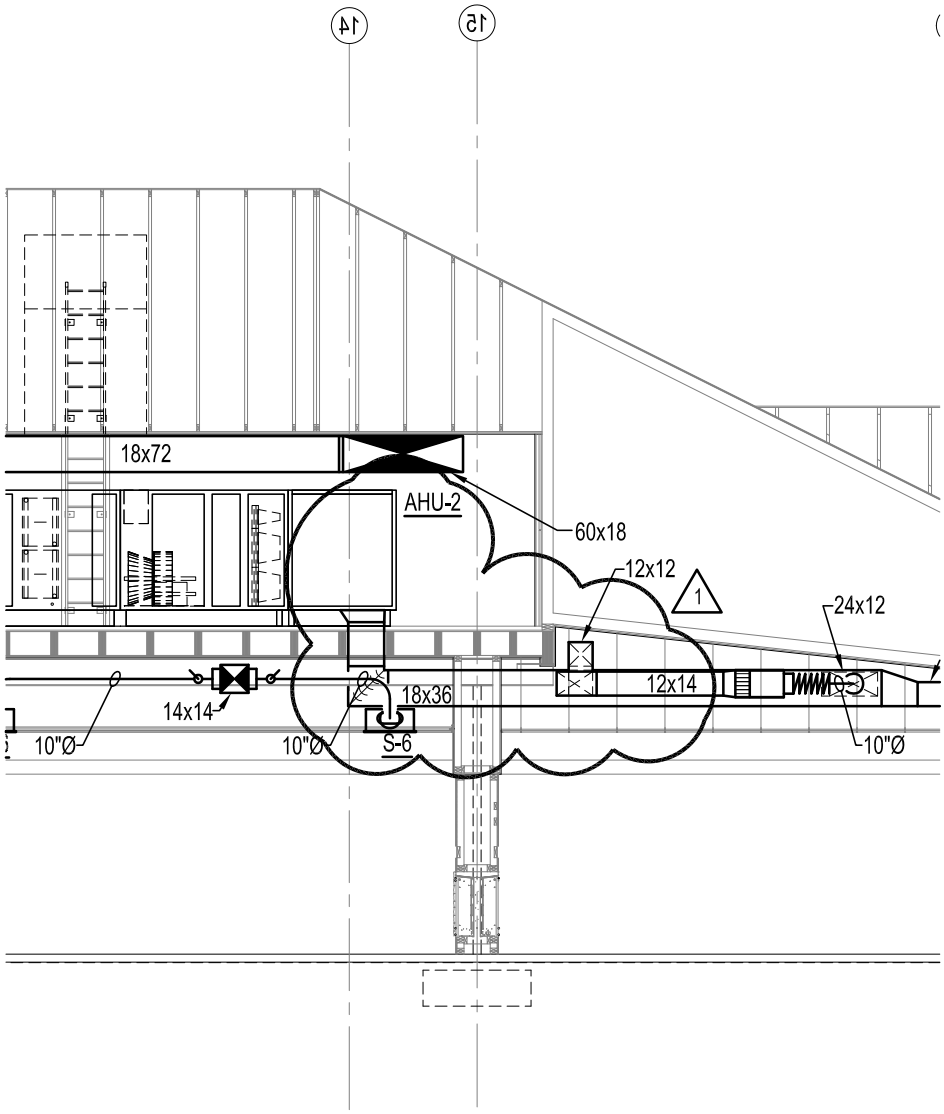

1 PARTIAL MECHANICAL SECTION 'A'

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

REFERENCE SHEET M300	SCALE: 1/8" = 1'-0"	ADDENDUM No. 3

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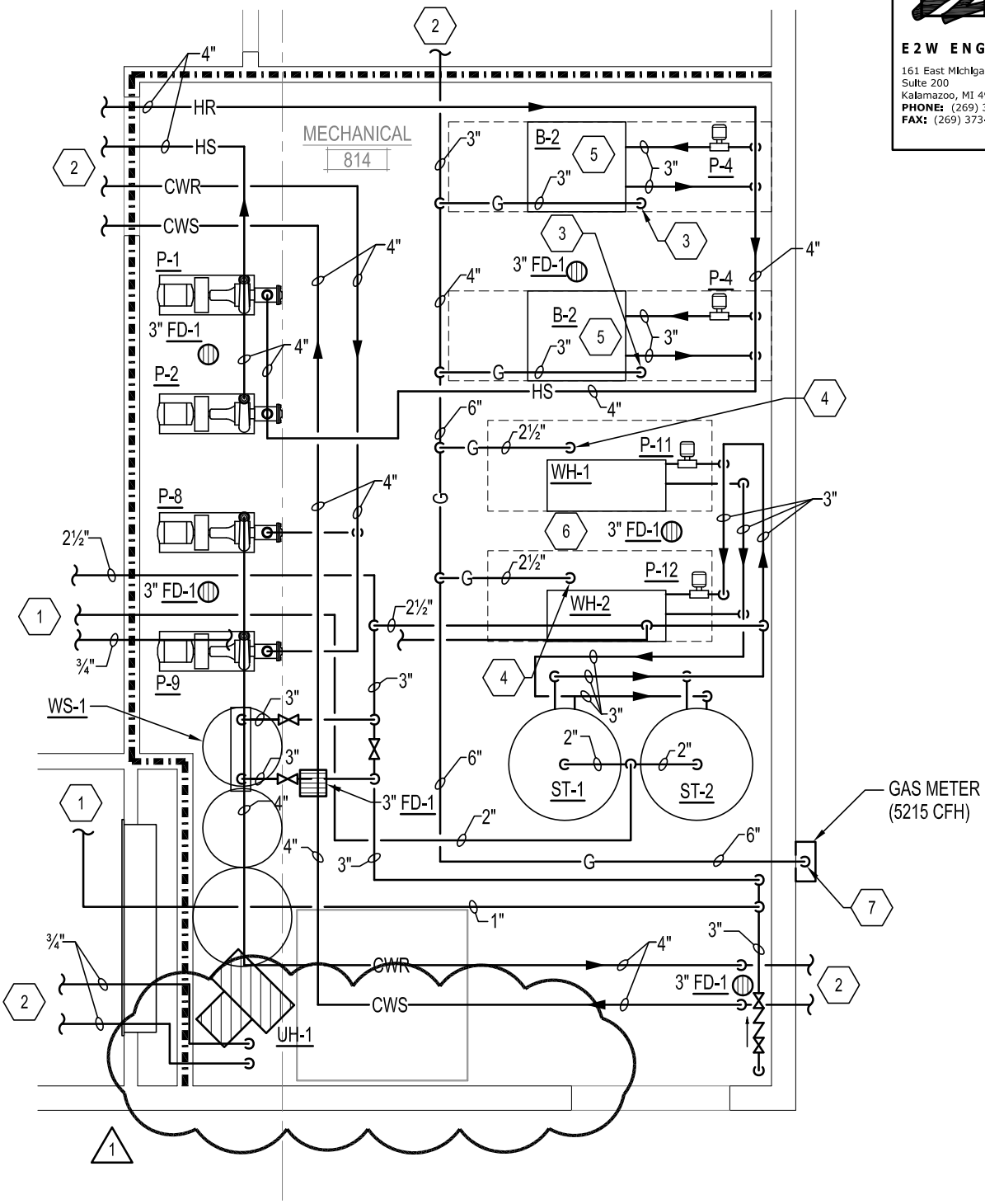

ENLARGED MECHANICAL ROOM PLAN

1

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

REFERENCE SHEET M300	SCALE: 1/8" = 1'-0"	ADDENDUM No. 3

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EQUIPMENT LIST

AIR HANDLING UNIT AHU-1 (1)
BASED ON McQUAY MODEL CAH025GDDC, 11600 CFM, 4975 CFM O/A.
RETURN FAN SECTION (42"): 6,475 CFM, 3.0 HP FAN. 1.9 BHP, 1.0" ESP, VFD.
ECONOMIZER (68"): 11,600 CFM, TOP OPENING LOCATIONS, MERV 8 FILTERS, 290 FPM FACE VELOCITY.
HOT WATER COIL(12"): (2) 1-ROW COILS, 630,644 BTUH CAPACITY, 180.0°F EWT, 139.4°F LWT, 31.0 GPM, 0.70 ftHD WATER PRESSURE DROP.
ACCESS SECTION (16"): 12" DOOR WIDTH.
CHILLED WATER COIL (36"): (2) 8-ROW COILS, 540,083 BTUH CAPACITY, 83.6°F DB / 68.3°F WB EAT, 53.3°F DB / 53.1°F WB LAT, 44.0°F EWT, 56.0°F LWT, 93.9 GPM, 473 FPM, 30% PROPYLENE GLYCOL, FACE VELOCITY, 14.0' HD WATER PRESSURE DROP.
ACCESS SECTION (16"): 12" DOOR WIDTH.
SUPPLY FAN SECTION (44"): 11550 CFM, 15.0 HP FAN. 13.0 BHP, 2.25" ESP, VFD.
ACCESS SECTION (18"): 14" DOOR WIDTH.
(1) FILTER SECTION (22"): MERV 7 2" DEEP PREFILTERS, MERV 14 12" DEEP FINAL FILTERS (VARICEL SH CARTRIDGE).
PLENUM SECTION (54"): OPENING ON BOTTOM OF UNIT WITH STAINLESS STEEL DRAIN PAN.
OVERALL UNIT LENGTH = 28'-8"
PROVIDE WITH FACTORY MOUNTED VFD'S.
ELECTRICAL DATA: 208/3/60, SUPPLY FAN MCA = 58A, SUPPLY FAN MOP = 100A, RETURN FAN MCA = 17A, RETURN FAN MOP = 30A.

AIR HANDLING UNIT AHU-2
BASED ON McQUAY MODEL CAH025GDDC, 10,450 CFM, 3025 CFM O/A.
RETURN FAN SECTION (42"): 7,775CFM, 3.0 HP FAN. 1.9 BHP, 1.0" ESP, VFD.
ECONOMIZER (68"): 10,450 CFM, TOP OPENING LOCATIONS, MERV 8 FILTERS, 277 FPM FACE VELOCITY.
HOT WATER COIL(12"): (2) 1-ROW COILS, 558,111 BTUH CAPACITY, 180.0°F EWT, 140.9°F LWT, 28.6 GPM, 0.60 ftHD WATER PRESSURE DROP.
ACCESS SECTION (16"): 12" DOOR WIDTH.
CHILLED WATER COIL (36"): (2) 8-ROW COILS, 328,585 BTUH CAPACITY, 80.7°F DB / 66.4°F WB EAT, 53.4°F DB / 53.2°F WB LAT, 44.0°F EWT, 55.9°F LWT, 77.4 GPM, 452 FPM, 30% PROPYLENE GLYCOL, FACE VELOCITY, 14.2 ftHD WATER PRESSURE DROP.
ACCESS SECTION (16"): 12" DOOR WIDTH.
SUPPLY FAN SECTION (44"): 11550 CFM, 15.0 HP FAN. 13.0 BHP, 2.25" ESP, VFD.
ACCESS SECTION (18"): 14" DOOR WIDTH.
(1) FILTER SECTION (22"): MERV 7 2" DEEP PREFILTERS, MERV 14 12" DEEP FINAL FILTERS (VARICEL SH CARTRIDGE).
PLENUM SECTION (54"): OPENING ON BOTTOM OF UNIT WITH STAINLESS STEEL DRAIN.
OVERALL UNIT LENGTH = 28'-8"
PROVIDE WITH FACTORY MOUNTED VFD'S.
ELECTRICAL DATA: 208/3/60, SUPPLY FAN MCA = 58A, SUPPLY FAN MOP = 100A, RETURN FAN MCA = 17A, RETURN FAN MOP = 30A.

REFERENCE SHEET M500 | **SCALE: NONE** | **ADDENDUM No. 3**

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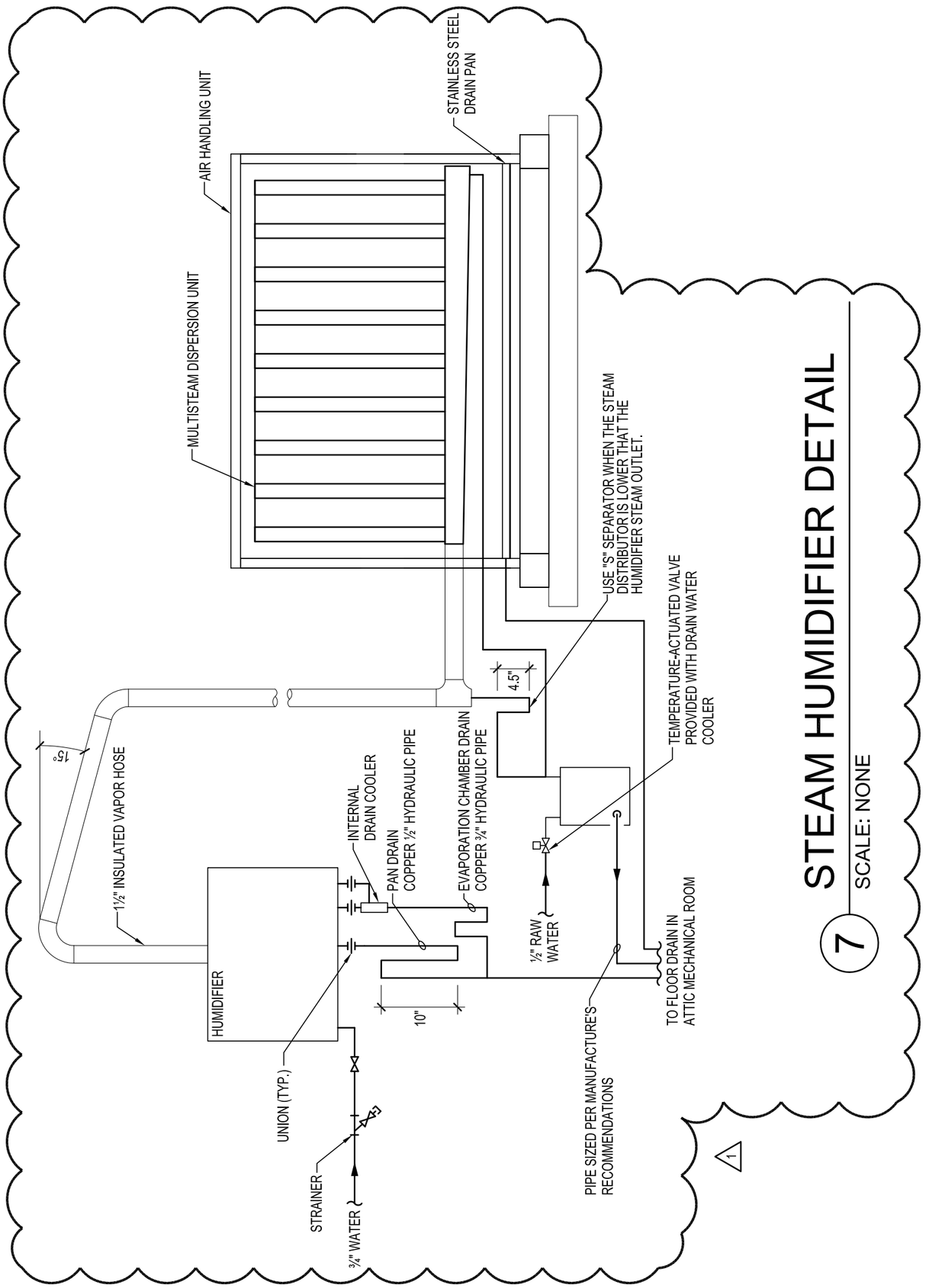

STEAM HUMIDIFIER DETAIL

7 SCALE: NONE

REFERENCE SHEET M400 | **SCALE: NONE** | **ADDENDUM NO. 3**

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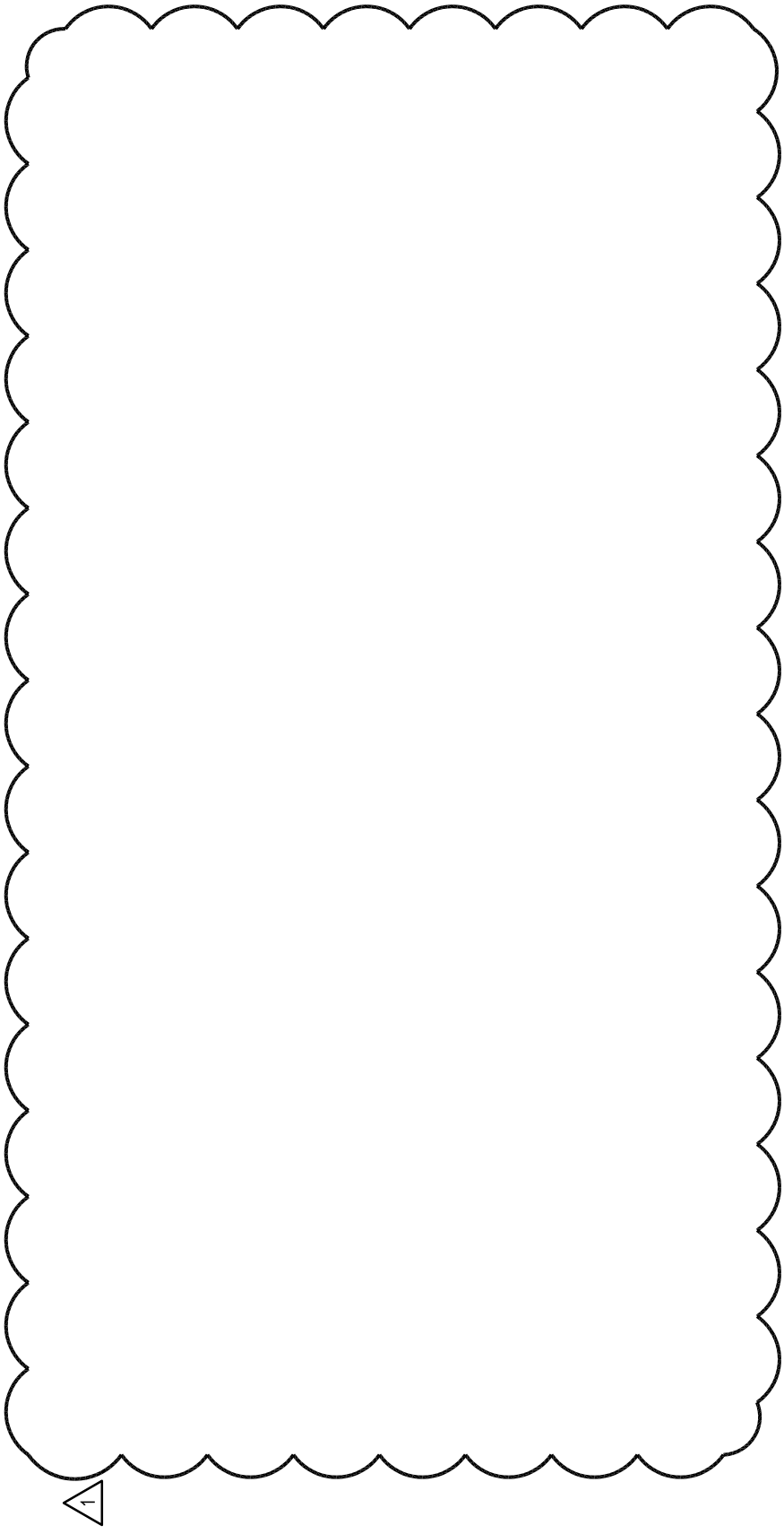

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REFERENCE SHEET M501	SCALE: NONE	ADDENDUM No. 3

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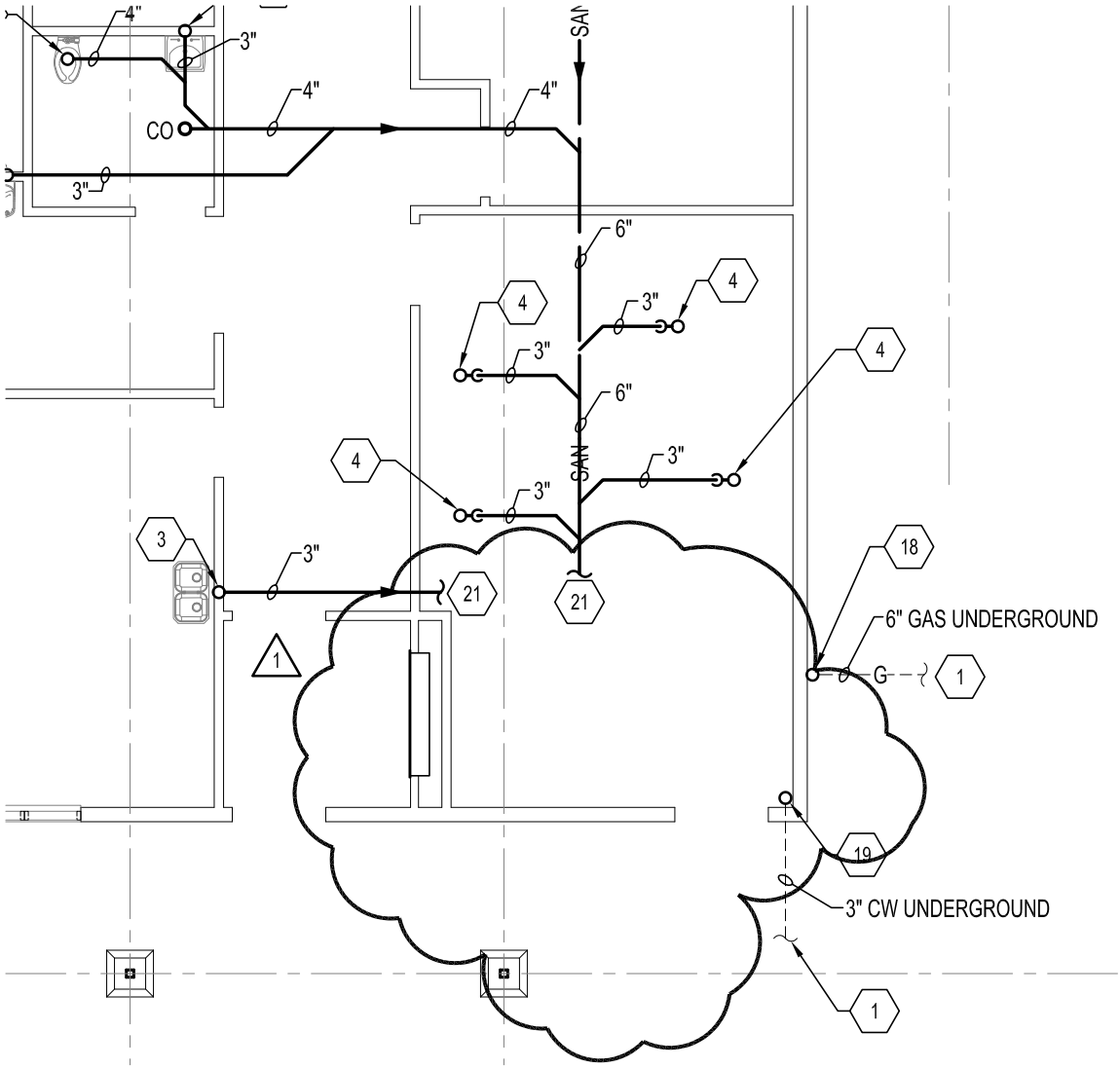

PARTIAL UNDERGROUND PLUMBING PLAN

1

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

REFERENCE SHEET P100 | **SCALE: 1/8" = 1'-0"** | **ADDENDUM No. 3**

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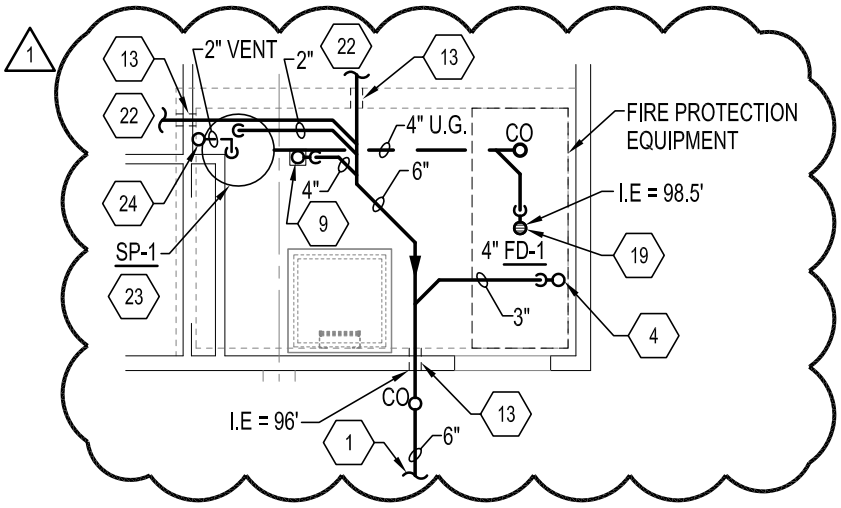

1 BASEMENT PLUMBING PLAN

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

1

21. REFER TO BASEMENT PLUMBING PLAN ON THIS SHEET FOR CONTINUATION.
22. REFER TO UNDERGROUND PLUMBING PLAN ON THIS SHEET FOR CONTINUATION.
23. 2" VENT UP. REFER TO SHEET P101 FOR CONTINUATION.
24. REFER TO SUMP PUMP DETAIL ON THIS SHEET.

REFERENCE SHEET P100 | **SCALE: 1/8" = 1'-0"** | **ADDENDUM No. 3**

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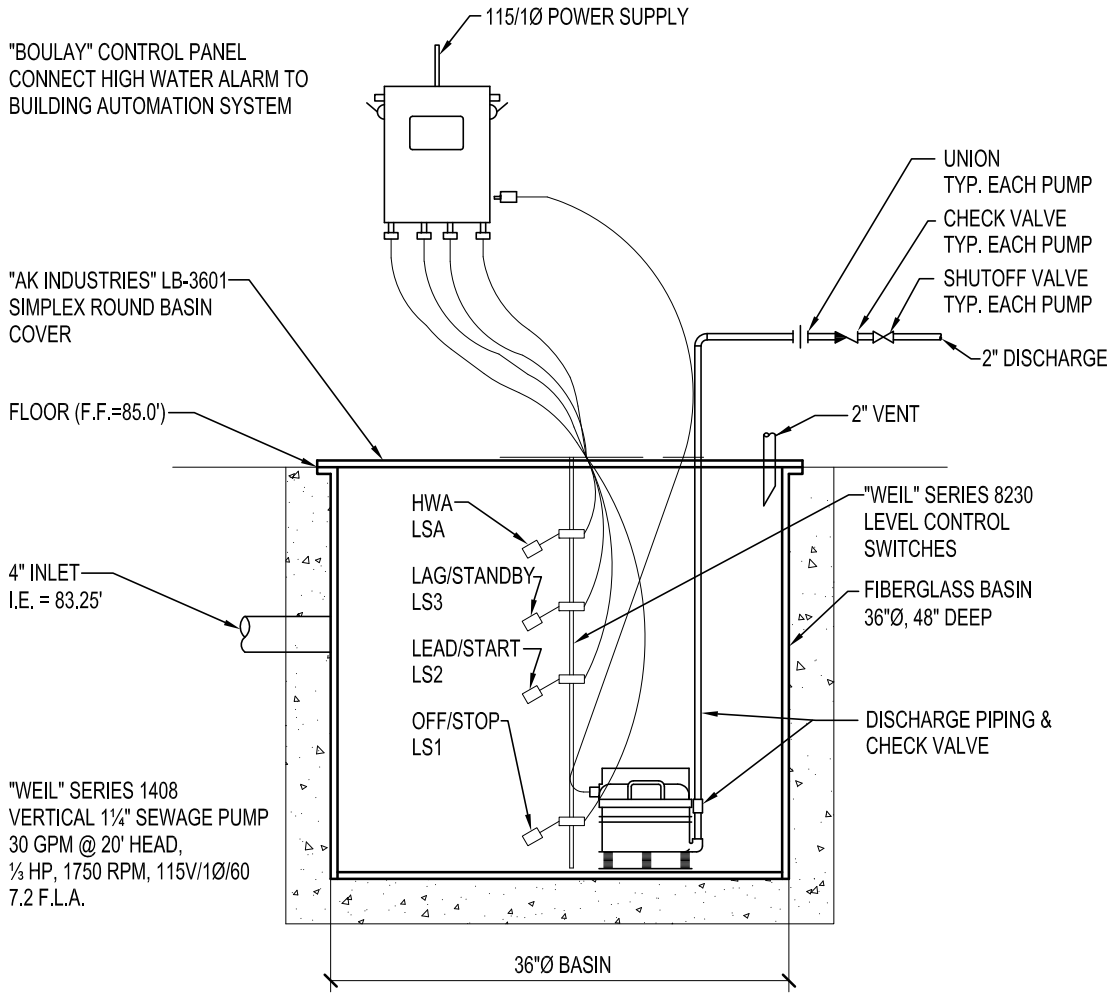

SUBMERSIBLE SIMPLEX SUMP PUMP SP-1 DETAIL

SCALE: NONE

REFERENCE SHEET P100	SCALE: 1/8" = 1'-0"	ADDENDUM No. 3

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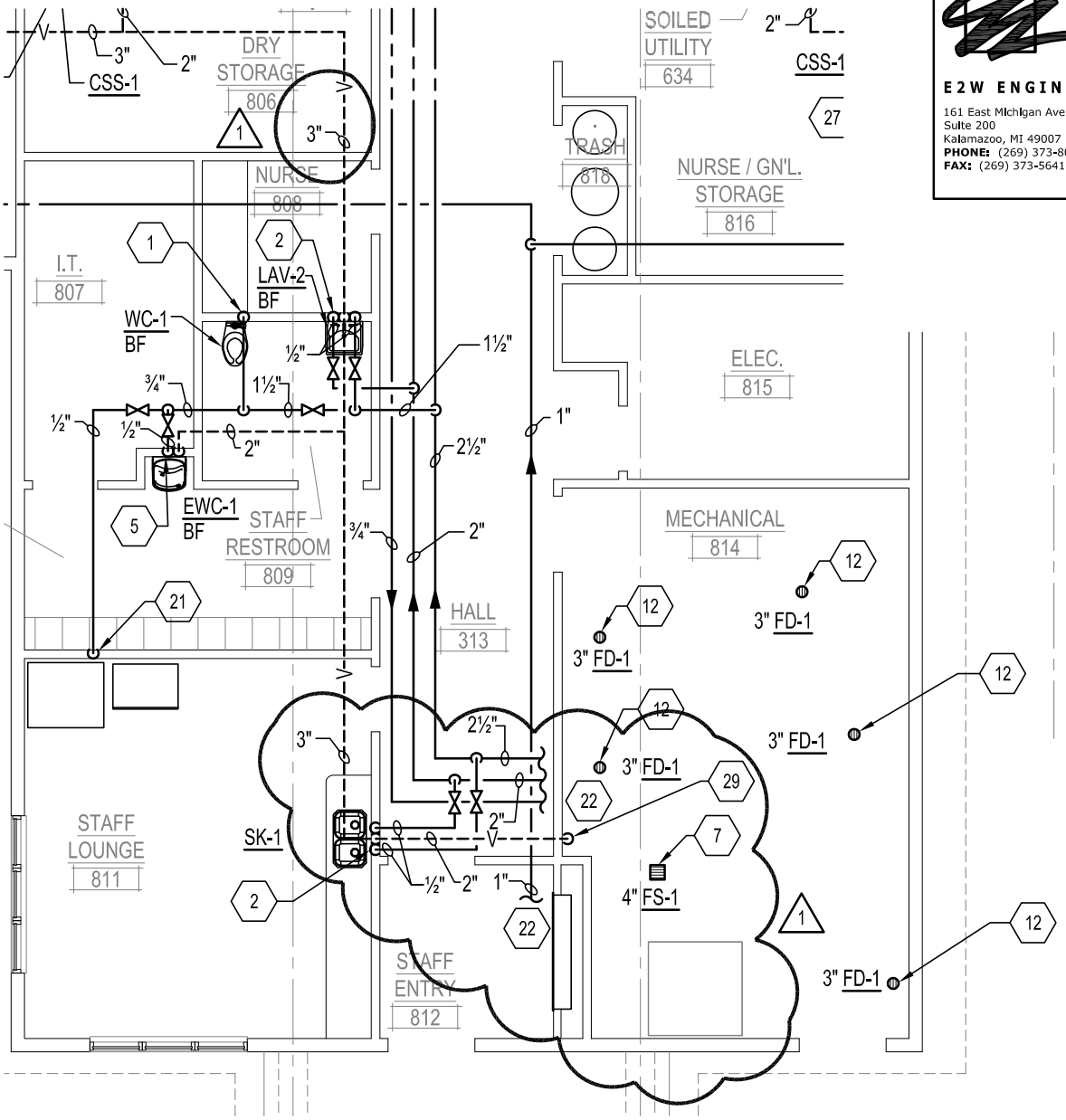

1 PARTIAL PLUMBING PLAN

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

1

29. 2" VENT UP FROM BELOW. REFER TO SHEET P100 FOR CONTINUATION.

REFERENCE SHEET P100	SCALE: 1/8" = 1'-0"	ADDENDUM No. 3

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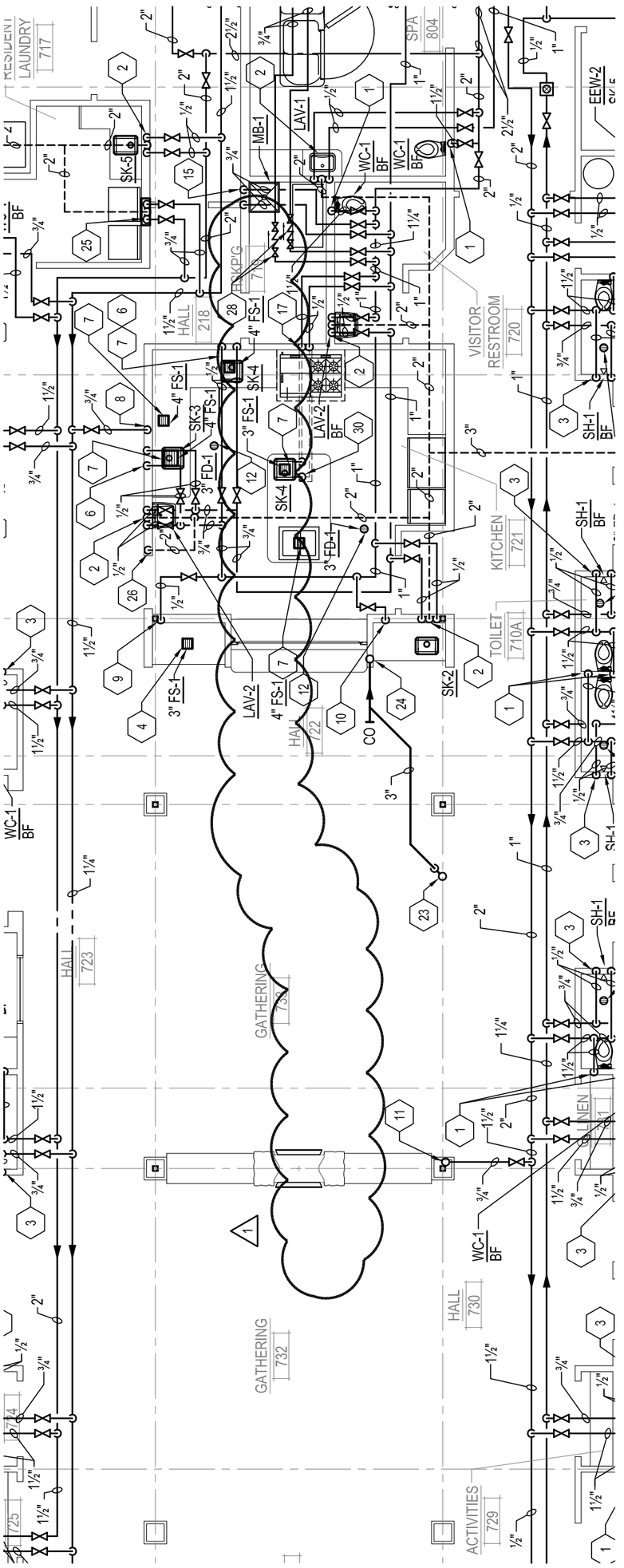

PARTIAL PLUMBING PLAN

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

REFERENCE SHEET P110 | **SCALE: NONE** | **ADDENDUM NO. 3**

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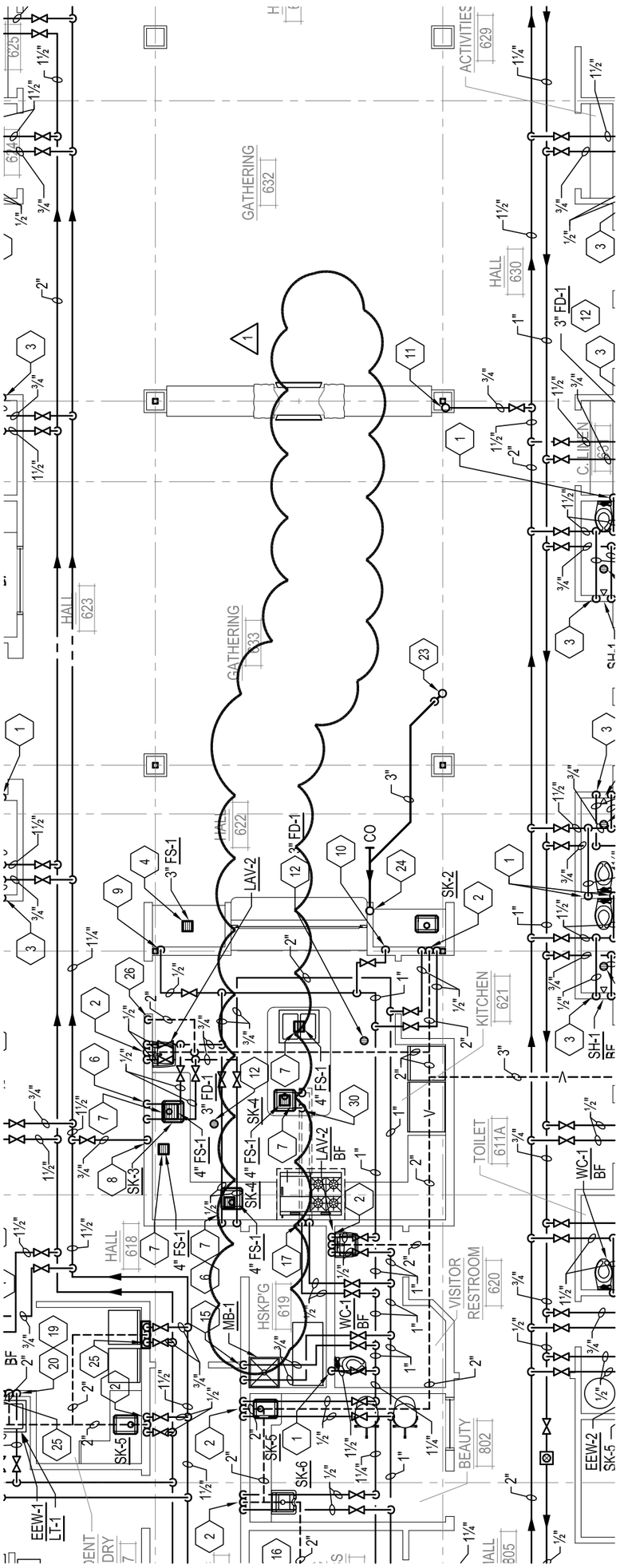

PARTIAL PLUMBING PLAN

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

REFERENCE SHEET P110 | **SCALE: NONE** | **ADDENDUM NO. 3**

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