GMP ADDENDUM NO. 2

Project: CSC Eagle Ridge Housing **Project No.:** L12007

Location: Chadron Nebraska **Date:** May 3, 2013

This Addendum is issued by the Architect to all bidders of record prior to receipt of proposals. Bidders shall acknowledge receipt of this addendum by so indicating on the Proposal Form. Failure to do so may subject Bidder to disqualification.

All information and instructions given herein shall become a part of the Contract Documents.

GENERAL

1. This project should begin construction June 2013 and expected to finish June 2014.
2. Sampson Construction is the Construction Manager and subcontracts will be issued through them. Please disregard Section 004100, Bid Form, as it does not apply. Subcontractors may submit a bid using their own standard bid form. The unit prices and alternates still apply and need to be listed out on the sub-bids. Subcontractors are to submit their bid to Sampson Construction Lincoln office. The Bids may be faxed to (402) 434-5466 or emailed to estimating@sampson-construction.com no later than May 9th, 3pm MST.
3. There will be no pre-bid meeting. Written questions can be sent to estimating@sampson-construction.com.

PROJECT MANUAL

4. Section 022000. Paragraph 2.7.A.1 Vaporblock VB10 is an acceptable vapor retarder.
5. Section 042616. Paragraph 2.01. Add corner brick units at outside corner locations.
6. Section 71300. Paragraph 2.03 Mirafi G100N G-series drainage panel is an approved drainage panel.
7. Section 072100. Paragraph 2.01. A.1`0. Owens Corning Foamular 250 is an acceptable product.
8. Section 072510 Fluid Applied Membrane
   A. Paragraph 2.01. Approved manufacturers. Vapor Shield SA Self Adhered Water Resistive Vapor Permeable Air Barrier Sheet is an acceptable substitute for the fluid applied membrane. Approval is contingent upon approved seaming information.
   B. Section 074646 Fiber Cement Siding. Paragraph 2.02 B. Trim manufacturer is to be Miratec.

BAHR VERMEER HAECKER ARCHITECTS

440 NORTH 8TH STREET STE 100 LINCOLN NE 68508 402 475 4551
1425 JONES STREET OMAHA NE 68102 402 345 3060

bvh.com

9. Section 087100. Door hardware sets 7 and 8. Change 93K Best series locks to 73k Best series lock.
10. Section 09606 has been revised. Replace the section with the revised attached section.
11. Section 089000 Louvers and Vents
    A. Paragraph 2.3 change item A. from a Horizontal to a Vertical Blade Louver.
12. Section 211313 Wet-Pipe Sprinkler Systems
    A. Paragraph 2.7 A. change item 8. Escutcheon Plate: Round, rough brass, wall type.
13. Section 233713 Diffusers, Registers, and Grilles
    A. Paragraph 2.1 A. Manufacturers. Add Price Industries.
14. Section 232113 Hydronic Piping
    A. Paragraph 2.5 A. Valves, Manufacturers. Add Pro Hydronic Specialties.
    B. Paragraph 2.6 D. Bladder-Type Expansion Tanks, Manufacturers. Add Patterson and American Wheatley.
    C. Paragraph 2.6 E. In-Line Air and Dirt Separators, Manufacturers. Add Thrush.
15. Section 230700 HVAC Insulation
    A. Replace with the attached new section.
16. Section 237200 Air-Air Energy Recovery Equipment
    A. Paragraph 2.1 A. Manufacturers. Add Venmar

DRAWINGS

1. Sheet C1.1 Utility Plan - See revised Utility Plan. This sheet replaces the previously issued sheet in its entirety.
2. Sheet A1.1. Door 015 shall have a transom similar to door 014 (window type W12)
3. Sheet A3, detail M1. Windows W7 and W8 are to be set in individual openings and not mulled together.
4. Sheet A7.1
    A. Door schedule. The door schedule has been revised and replaces the previously issued door schedule.
    B. Detail D16. Add a horizontal mullion to frame HM-3.
5. Sheet S1.1
    A. Slab on Grade Note. Revise the 4" slab on grade note to read: "4" CONCRETE SLAB ON GRADE W/ #4's @ 24" O.C. EACH WAY ON CLASS A VAPOR RETARDER ON 24" OF COMPACTED WELL GRADED GRANULAR FILL PER THE GEOTECHNICAL ENGINEERING REPORT, FINISH FLOOR EL = -10'-7 1/8""

B. Slab on Grade Note. Revise the 5" slab on grade note to read: "5" CONCRETE SLAB ON GRADE W/ #4's @ 18" O.C. EACH WAY ON CLASS A VAPOR RETARDER ON 24" OF COMPACTED WELL GRADED GRANULAR FILL PER THE GEOTECHNICAL ENGINEERING REPORT, W/ ACID ETCH FINISH, FINISH FLOOR EL = -10'-7 1/8""

6. Sheet S2.1. Replace this sheet in its entirety with the attached sheet.

   A. Revised spacing of floor trusses between Grids 3 and 4 near to either side of Grid B from 19.2" on center to 12" on center as noted.

   B. Added First Floor Loading Plan at top of sheet.

7. Sheet S2.2

   A. Porch Framing. Reference clouded portion of roof framing near at lower left hand corner of framing plan. Revise porch framing in its entirety. See attached Supplemental Drawing SDS-1R. HSS12x4 beams shall be sandwiched between 2-2x16 (actual dimension) S4S, Western Red Cedar, typical 5 locations (1-2x16 each side of tube). 2x16's shall be attached to 12x4 tubes with 2 – rows 1/2" diameter through bolts at 4'-0" on center; bolt heads and nuts shall be countersunk. HSS 12x4 beams shall be connected to HSS 12x4 columns (at Grid 5) with full penetration groove welds all around to create a mitered condition. HSS 12x4 beams are supported by HSS4x4x1/2 columns at Grid Line 3 with a field bolted connection.

8. Mechanical Sheets – Replace all previously issued sheets in their entirety

9. Sheet E1.1. See revised Lower Level Lighting Plan. This sheet replaces the previously issued sheet in its entirety.

10. Sheet E1.2. See revised First Floor Lighting Plan. This sheet replaces the previously issued sheet in its entirety.

11. Sheet E1.3. See revised Attic Lighting Plan. This sheet replaces the previously issued sheet in its entirety.

12. Sheet E3.1

    A. Provide 2 – 2" conduit to Communications Vault for cable TV from Mech/Elec 002.

13. Sheet E4.1. See revised Electrical Details Sheet. This sheet replaces the previously issued sheet in its entirety.

14. Sheet E6.1 Electrical Schedules – Lighting Fixture Schedule

    A. Fixture type C1 shall be provided with Universal Voltage part number "U" in lieu of dedicated 120V part number "1".
    B. Add fixture type C3, 6" slope ceiling LED, 900 lumens, IC rated, Universal 0-10V dimming, Juno Cat. No. IC926LED9G3-41K-U-614W-WH, 4/12 pitch.
    C. Type K2 shall be 24' in length in lieu of 16', iLight Cat. No. T-24-W35-S-CL24-SC-00.
    D. Delete fixture type K3.
    E. Fixture type T1 shall have a glass lens and type V distribution. Arm shall be 2" curved sched 40 Steel Pipe with fixture adapter #TFHAMA. Manufacturer shall be Hadco, Cat. No. TF8-N-A-GL5ND-70H-3 with 22D Finial.

F. Lithonia is an approved manufacturer for fixtures types X1 and X2.
G. Elite is an approved manufacturer for fixture types C1 and C2.
H. Tersen is an approved manufacturer for fixture type S1.
I. Holophane is an approved manufacturer for fixture types T1 and T2.

Attachments: Section 096006 , Section 230700, C1.1, ADD2-1, S21, SDS1R, E0.1, E1.1, E1.2, E1.3, E4.1, M0.1, M1.1, M1.2, M2.1, M2.2, M3.1, M3.2, M4.1, M5.1, M5.5, M6.1, M7.1

END OF ADDENDUM

SECTION 096006

WATER VAPOR EMISSION CONTROL SYSTEM FOR CONCRETE FLOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Epoxy-based moisture control system to be applied over concrete floor slabs.

1.02 RELATED REQUIREMENTS

A. Section 012200 - Unit Prices: Descriptions of unit price items, administrative requirements.

B. Section 013000 - Administrative Requirements: Submittal procedures, project meetings, progress schedules and documentation, reports, coordination.

C. Section 090561 - Common Work Results for Flooring Preparation.

D. Individual Division 9 flooring sections.

E. Section 017800 - Closeout Submittals: Project record documents, operation and maintenance (O&M) data, warranties and bonds.

1.03 UNIT PRICES:

A. See Section 012200 - Unit Prices, for additional unit price requirements.
   1. Provide the work under the unit price method.
   2. Measure moisture control system installation by the square foot.

1.04 REFERENCE STANDARDS

A. ASTM D 1653 - Standard Test Methods for Water Vapor Transmission of Organic Coating Films.

B. ASTM F 1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.

C. ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials.

D. ASTM D1308 - Chemical Resistance of Finishes.

E. ASTM F 2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.

F. ASTM C1583 - Standard Test Method for Tensile Strength of Concrete Surfaces and the Bond Strength or Tensile Strength of Concrete Repair and Overlay Materials by Direct Tension

1.05 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on all materials specified.

C. Test Reports: Coordinate with Section 090561 and supply reports as indicated.

D. Evaluation Service Reports: Show compliance with specified requirements.

E. Warranty: Submit per Section 017800.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years of documented experience.

B. Applicator Qualifications: Company specializing in performing the work of this section with minimum three (3) years of experience and factory-trained and certified by manufacturer.

C. Applicator must file a pre-installation checklist with manufacturer and receive written confirmation of the approval for warranty.

D. The moisture control system shall be installed over concrete surfaces that have been properly mechanically prepared to a minimum surface profile of ICRI CSP #3 and have a moisture emission level of 20 lbs. or less at the time of testing when measured in accordance with ASTM F 1869, or an RH value of 95% or less when measured in accordance with ASTM F 2170.

E. All material must be installed in accordance with manufacturer's recommended specifications for use and installation.

F. The moisture control system shall reduce the vapor emissions of the concrete to less than 3 lb. and the underlayment or topping surface shall be suitable to receive all types of floor coverings or sealers when allowed to dry in accordance with manufacturer's recommendations.

G. Manufacturer's certification that the system has been tested in accordance with ASTM D 1653 and has a perm rating of less than 0.05.

1.07 PROJECT CONDITIONS

A. Do not install material below 50° F (10° C) surface and air temperatures. These temperatures must also be maintained during and for 48 hours after the installation of products included in this section. Install quickly if substrate is warm and follow warm weather instructions from manufacturer.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to project site in unopened packages.

B. Store under cover and elevated above grade and protect from extreme temperatures and moisture between 50 and 85 degrees F. Protect liquids from freezing and direct sunlight.

1.09 WARRANTY

A. See Section 017800 - Closeout Submittals, for additional warranty requirements.

B. Provide ten year manufacturer warranty for moisture control system from Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design-Ardex Engineered Cements; Product: ARDEX MC RAPID Moisture Control System. www.ardex.com.

B. Additional manufacturers:
   1. Koster American Corporation - Product: VAP I 2000 FS.
   2. Creteseal - Product: Creteseal CS 2000 2-Day System.
   3. Substitutions: See Section 016000 - Product Requirements.

2.02 MATERIALS

A. Water Vapor Emission Control System: ARDEX MC RAPID-Epoxy-based Moisture Control System consisting of Water Vapor Coating, Primer and Underlayment.

B. Primer: ARDEX P-82 ULTRA PRIME.

C. Underlayment: ARDEX K-55 MICROTEC. Hydraulic Cement-based self-leveling underlayment. 1/8" thickness installed over P-82 ULTRA PRIME.

D. Crack Filler: ARDEX ARDIFIX.

E. Water: Water for mixing cementitious materials shall be clean, potable and sufficiently cool (not warmer than 70 degrees F).

2.03 MIXING COMPONENTS

A. Each individual 22lb. unit contains separate, pre-measured quantities of hardener (Part B) and the resin (Part A). After opening each container, stir the individual components thoroughly before blending. The hardening agent (Part B) is added to the resin (Part A).

B. Pour all of the hardener into the resin portion and stir thoroughly for a minimum of 3 minutes using a low speed drill and an epoxy mixing paddle. Once mixed, pour some of the epoxy back into the hardener container, stir for 10 seconds, and then pour all of the contents back into the resin container. Mix for an additional 30 seconds before applying.

C. For instructions on the filling of dormant cracks and joints, follow the written instructions of the selected manufacturer.

PART 3 EXECUTION

3.01 PREPARATION

A. Concrete Subfloors: Prepare substrate in accordance with manufacturer's instructions.

B. All concrete substrates must be structurally sound, solid, free of all oil, grease, dirt, curing compounds and any substance that might act as a bond breaker before application and mechanically prepared to a minimum surface profile of ICRI CSP #3 (light sandblast).
   1. Prior to proceeding, refer to ASTM F710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.
   2. The concrete must have a minimum tensile strength of at least 150 psi for areas to receive normal foot traffic, and 200 psi for area of heavy commercial traffic when tested in accordance with ASTM C1583. The concrete surface can be damp, but must be free of standing water.
   3. Prior to beginning the installation, measure the relative humidity within the concrete (ASTM F2170). Alternatively, you can also measure the surface relative humidity in accordance with ASTM F2420. For these relative humidity methods, the RH shall not exceed 100%.
   4. If the concrete substrate is too uneven to provide a uniform film thickness of the ARDEX MC™ RAPID (typically CSP 6 or higher), the substrate can be pre-smoothed using ARDEX K 301™ Self-Leveling Exterior Concrete Topping or ARDEX MRP™ Moisture Resistant Patch.
   5. All cracks in the subfloor shall be repaired to minimize telegraphing through the underlayment.

C. JOINT AND CRACK PREPARATION
   1. Moving joints - honor all expansion and isolation joints up through the ARDEX Moisture Control System, and underlayment or topping. A flexible sealing compound such as ARDEX ARDISEAL™ Rapid Plus may be installed.
   2. Saw Cuts, Control Joints and Dormant Cracks - fill all non-moving joints and cracks greater than 1/32" with ARDEX ARDIFIX™ Joint Filler, as recommended by the manufacturer.

3.02 INSTALLATION

A. EXAMINATION:
   1. Examine substrates and conditions under which materials will be installed. Do not proceed with installation until unsatisfactory conditions are corrected.
   2. Coordinate installation with adjacent work to ensure proper sequence of construction. Protect adjacent areas from contact due to mixing and handling of materials.
   3. Mixing: Comply with manufacturer's printed instructions and the following.

B. APPLICATION:
   1. Apply the first coat of freshly mixed ARDEX MC RAPID to the prepared concrete surface in a uniform direction at an application rate of 270 sq. ft. per unit to achieve a coating thickness of 10 mils. Use a short-nap paint roller or notched squeegee for smoother surfaces and a longer nap roller for more uneven substrates.. To minimize the potential for pinhole formation, work the ARDEX MC™ RAPID into the surface with the roller to ensure maximum penetration. ARDEX MC™ RAPID can also be worked into the surface with a paintbrush for hard to reach areas and corners. Once the area is completely coated, allow to dry for a minimum of 4 hours (max. 24 hours). It is not necessary to re-test the substrate for moisture emissions prior to installing the floor covering.
   2. For ARDEX Underlayment applications of ¼" or less, prime the surface of the ARDEX MC™ RAPID with ARDEX P 82™ ULTRA PRIME. Allow the AREX P 82™ ULTRA PRIME to dry thoroughly (min. 3 hours; max. 24 hours) before installing the underlayment.

3.03 FIELD QUALITY CONTROL

A. Field sampling of the Ardex products is to be done by taking an entire unopened unit or bag of the product being installed to an independent testing facility for testing. There are no in situ test procedures for the evaluation of the specified materials.

3.04 PROTECTION

A. Prior to the installation of the underlayment or topping, or finish flooring or sealer, the surface of the system shall be protected from abuse by other trades by the use of plywood, Masonite or other suitable protection course.

END OF SECTION

SECTION 230700

HVAC INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Insulation Materials:

    a. Flexible elastomeric.
    b. Mineral fiber.

2. Insulating cements.
3. Adhesives.
4. Mastics.
5. Lagging adhesives.
6. Sealants.
7. Factory-applied jackets.
8. Field-applied jackets.
9. Tapes.
10. Securements.
11. Corner angles.

B. Related Sections:

1. Division 23 Section "Metal Ducts" for duct liners.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Include thermal conductivity, thickness, and jackets (both factory and field applied, if any).

B. Shop Drawings:

1. Detail application of protective shields, saddles, and inserts at hangers for each type of insulation and hanger.
2. Detail insulation application at elbows, fittings, flanges, valves, and specialties for each type of insulation.
3. Detail removable insulation at piping specialties, equipment connections, and access panels.
4. Detail application of field-applied jackets.
5. Detail application at linkages of control devices.
6. Detail field application for each equipment type.

C. Qualification Data: For qualified Installer.

D. Material Test Reports: From a qualified testing agency acceptable to authorities having jurisdiction indicating, interpreting, and certifying test results for compliance of insulation materials, sealers, attachments, cements, and jackets, with requirements indicated. Include dates of tests and test methods employed.

E. Field quality-control reports.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Skilled mechanics who have successfully completed an apprenticeship program or another craft training program certified by the Department of Labor, Bureau of Apprenticeship and Training.

B. Fire-Test-Response Characteristics: Insulation and related materials shall have fire-test-response characteristics indicated, as determined by testing identical products per ASTM E 84, by a testing and inspecting agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing and inspecting agency.

1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.
2. Insulation Installed Outdoors: Flame-spread index of 75 or less, and smoke-developed index of 150 or less.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Packaging: Insulation material containers shall be marked by manufacturer with appropriate ASTM standard designation, type and grade, and maximum use temperature.

1.6 COORDINATION

A. Coordinate size and location of supports, hangers, and insulation shields specified in Division 23 Section "Hangers and Supports for HVAC Piping and Equipment."

B. Coordinate clearance requirements with piping Installer for piping insulation application, duct Installer for duct insulation application, and equipment Installer for equipment insulation application. Before preparing piping and ductwork Shop Drawings, establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.

1.7 SCHEDULING

A. Schedule insulation application after pressure testing. Insulation application may begin on segments that have satisfactory test results.

B. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

PART 2 - PRODUCTS

2.1 INSULATION MATERIALS

A. Comply with requirements in Part 3 schedule articles for where insulating materials shall be applied.

B. Products shall not contain asbestos, lead, mercury, or mercury compounds.

C. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.

D. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable according to ASTM C 795.

E. Flexible Elastomeric: Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C 534, Type I for tubular materials and Type II for sheet materials.

1. Products: Subject to compliance with requirements, provide one of the following:

    a. Aeroflex USA Inc.; Aerocel.
    b. Armacell LLC; AP Armaflex.
    c. RBX Corporation; Insul-Sheet 1800 and Insul-Tube 180.

F. Mineral-Fiber Blanket Insulation: Mineral or glass fibers bonded with a thermosetting resin. 'K' value of at least 0.26 at 75-deg F. Comply with ASTM C 553, Type II and ASTM C 1290, Type III with factory-applied FSK jacket. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

1. Products: Subject to compliance with requirements, provide one of the following:

    a. CertainTeed Corp.; Duct Wrap.
    b. Johns Manville; Microlite.
    c. Knauf Insulation; Duct Wrap.
    d. Manson Insulation Inc.; Alley Wrap.
    e. Owens Corning; All-Service Duct Wrap.

G. Mineral-Fiber Board Insulation: Mineral or glass fibers bonded with a thermosetting resin. 'K' value of at least 0.26 at 75-deg F. Comply with ASTM C 612, Type IA or Type IB. For duct and plenum applications, provide insulation with factory-applied ASJ. For equipment applications, provide insulation with factory-applied ASJ. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

1. Products: Subject to compliance with requirements, provide one of the following:

    a. CertainTeed Corp.; Commercial Board.
    b. Fibrex Insulations Inc.; FBX.
    c. Johns Manville; 800 Series Spin-Glas.
    d. Knauf Insulation; Insulation Board.
    e. Manson Insulation Inc.; AK Board.
    f. Owens Corning; Fiberglas 700 Series.

H. Mineral-Fiber, Preformed Pipe Insulation:

1. Products: Subject to compliance with requirements, provide one of the following:

a. Fibrex Insulations Inc.; Coreplus 1200.
b. Johns Manville; Micro-Lok.
c. Knauf Insulation; 1000 Pipe Insulation.
d. Manson Insulation Inc.; Alley-K.
e. Owens Corning; Fiberglas Pipe Insulation.

2. Type I, 850 deg F (454 deg C) Materials: Mineral or glass fibers bonded with a thermosetting resin. 'K' value of at least 0.26 at 75-deg F. Comply with ASTM C 547, Type I, Grade A, with factory-applied ASJ-SSL. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

I. Mineral-Fiber, Pipe and Tank Insulation: Mineral or glass fibers bonded with a thermosetting resin. 'K' value of at least 0.26 at 75-deg F. Semirigid board material with factory-applied ASJ complying with ASTM C 1393, Type II or Type IIIA Category 2, or with properties similar to ASTM C 612, Type IB. Nominal density is 2.5 lb/cu. ft. (40 kg/cu. m) or more. Thermal conductivity (k-value) at 100 deg F (55 deg C) is 0.29 Btu x in./h x sq. ft. x deg F (0.042 W/m x K) or less. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

1. Products: Subject to compliance with requirements, provide one of the following:

a. CertainTeed Corp.; CrimpWrap.
b. Johns Manville; MicroFlex.
c. Knauf Insulation; Pipe and Tank Insulation.
d. Manson Insulation Inc.; AK Flex.
e. Owens Corning; Fiberglas Pipe and Tank Insulation.

2.2 INSULATING CEMENTS

A. Mineral-Fiber Insulating Cement: Comply with ASTM C 195.

B. Mineral-Fiber, Hydraulic-Setting Insulating and Finishing Cement: Comply with ASTM C 449/C 449M.

2.3 ADHESIVES

A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated, unless otherwise indicated.

B. Flexible Elastomeric Adhesive: Comply with MIL-A-24179A, Type II, Class I.

C. Mineral-Fiber Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.

D. ASJ Adhesive, and FSK and PVDC Jacket Adhesive: Comply with MIL-A-3316C, Class 2, Grade A for bonding insulation jacket lap seams and joints.

2.4 MASTICS

A. Materials shall be compatible with insulation materials, jackets, and substrates; comply with MIL-C-19565C, Type II.

B. Vapor-Barrier Mastic: Water based; suitable for indoor and outdoor use on below ambient services.

1. Water-Vapor Permeance: ASTM E 96, Procedure B, 0.013 perm (0.009 metric perm) at 43-mil (1.09-mm) dry film thickness.
2. Service Temperature Range: Minus 20 to plus 180 deg F (Minus 29 to plus 82 deg C).
3. Solids Content: ASTM D 1644, 59 percent by volume and 71 percent by weight.
4. Color: White.

2.5 LAGGING ADHESIVES

A. Description: Comply with MIL-A-3316C Class I, Grade A and shall be compatible with insulation materials, jackets, and substrates.

1. For indoor applications, use lagging adhesives that have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
2. Fire-resistant, water-based lagging adhesive and coating for use indoors to adhere fire-resistant lagging cloths over duct, equipment, and pipe insulation.
3. Service Temperature Range: Minus 50 to plus 180 deg F (Minus 46 to plus 82 deg C).
4. Color: White.

2.6 SEALANTS

A. FSK and Metal Jacket Flashing Sealants:

1. Materials shall be compatible with insulation materials, jackets, and substrates.
2. Fire- and water-resistant, flexible, elastomeric sealant.
3. Service Temperature Range: Minus 40 to plus 250 deg F (Minus 40 to plus 121 deg C).
4. Color: Aluminum.

B. ASJ Flashing Sealants, and Vinyl, PVDC, and PVC Jacket Flashing Sealants:

1. Materials shall be compatible with insulation materials, jackets, and substrates.
2. Fire- and water-resistant, flexible, elastomeric sealant.
3. Service Temperature Range: Minus 40 to plus 250 deg F (Minus 40 to plus 121 deg C).
4. Color: White.

2.7 FACTORY-APPLIED JACKETS

A. Insulation system schedules indicate factory-applied jackets on various applications. When factory-applied jackets are indicated, comply with the following:

1. ASJ: White, kraft-paper, fiberglass-reinforced scrim with aluminum-foil backing; complying with ASTM C 1136, Type I.
2. ASJ-SSL: ASJ with self-sealing, pressure-sensitive, acrylic-based adhesive covered by a removable protective strip; complying with ASTM C 1136, Type I.
3. FSK Jacket: Aluminum-foil, fiberglass-reinforced scrim with kraft-paper backing; complying with ASTM C 1136, Type II.

2.8 FIELD-APPLIED JACKETS

A. Self-Adhesive Outdoor Jacket: 60-mil-thick, laminated vapor barrier and waterproofing membrane for installation over insulation located aboveground outdoors; consisting of a rubberized bituminous resin on a cross-laminated polyethylene film covered with stucco-embossed aluminum-foil facing.

1. Products: Subject to compliance with requirements, provide the following:

    a. Polyguard; Alumaguard 60.

2.9 TAPES

A. ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, complying with ASTM C 1136.

1. Width: 3 inches (75 mm).
2. Thickness: 11.5 mils (0.29 mm).
3. Adhesion: 90 ounces force/inch (1.0 N/mm) in width.
4. Elongation: 2 percent.
5. Tensile Strength: 40 lbf/inch (7.2 N/mm) in width.
6. ASJ Tape Disks and Squares: Precut disks or squares of ASJ tape.

B. FSK Tape: Foil-face, vapor-retarder tape matching factory-applied jacket with acrylic adhesive; complying with ASTM C 1136.

1. Width: 3 inches (75 mm).
2. Thickness: 6.5 mils (0.16 mm).
3. Adhesion: 90 ounces force/inch (1.0 N/mm) in width.
4. Elongation: 2 percent.
5. Tensile Strength: 40 lbf/inch (7.2 N/mm) in width.
6. FSK Tape Disks and Squares: Precut disks or squares of FSK tape.

C. PVC Tape: White vapor-retarder tape matching field-applied PVC jacket with acrylic adhesive. Suitable for indoor and outdoor applications.

1. Width: 2 inches (50 mm).
2. Thickness: 6 mils (0.15 mm).
3. Adhesion: 64 ounces force/inch (0.7 N/mm) in width.
4. Elongation: 500 percent.
5. Tensile Strength: 18 lbf/inch (3.3 N/mm) in width.

D. Aluminum-Foil Tape: Vapor-retarder tape with acrylic adhesive.

1. Width: 2 inches (50 mm).
2. Thickness: 3.7 mils (0.093 mm).
3. Adhesion: 100 ounces force/inch (1.1 N/mm) in width.
4. Elongation: 5 percent.
5. Tensile Strength: 34 lbf/inch (6.2 N/mm) in width.

2.10 SECUREMENTS

A. Bands:

1. Stainless Steel: ASTM A 167 or ASTM A 240/A 240M, Type 304 or Type 316; 0.015 inch (0.38 mm) thick, 3/4 inch (19 mm) wide with wing seal.
2. Aluminum: ASTM B 209 (ASTM B 209M), Alloy 3003, 3005, 3105, or 5005; Temper H-14, 0.020 inch (0.51 mm) thick, 3/4 inch (19 mm) wide with wing seal.
3. Springs: Twin spring set constructed of stainless steel with ends flat and slotted to accept metal bands. Spring size determined by manufacturer for application.

B. Insulation Pins and Hangers:

1. Capacitor-Discharge-Weld Pins: Copper- or zinc-coated steel pin, fully annealed for capacitor-discharge welding, 0.135-inch- (3.5-mm-) diameter shank, length to suit depth of insulation indicated.

2. Cupped-Head, Capacitor-Discharge-Weld Pins: Copper- or zinc-coated steel pin, fully annealed for capacitor-discharge welding, 0.135-inch- (3.5-mm-) diameter shank, length to suit depth of insulation indicated with integral 1-1/2-inch (38-mm) galvanized carbon-steel washer.

3. Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch- (0.41-mm-) thick, stainless-steel sheet, with beveled edge sized as required to hold insulation securely in place but not less than 1-1/2 inches (38 mm) in diameter.

a. Protect ends with capped self-locking washers incorporating a spring steel insert to ensure permanent retention of cap in exposed locations.

C. Staples: Outward-clinching insulation staples, nominal 3/4-inch- (19-mm-) wide, stainless steel or Monel.

D. Wire: 0.062-inch (1.6-mm) soft-annealed, stainless steel.

2.11 CORNER ANGLES

A. PVC Corner Angles: 30 mils (0.8 mm) thick, minimum 1 by 1 inch (25 by 25 mm), PVC according to ASTM D 1784, Class 16354-C. White or color-coded to match adjacent surface.

B. Aluminum Corner Angles: 0.040 inch (1.0 mm) thick, minimum 1 by 1 inch (25 by 25 mm), aluminum according to ASTM B 209 (ASTM B 209M), Alloy 3003, 3005, 3105 or 5005; Temper H-14.

C. Stainless-Steel Corner Angles: 0.024 inch (0.61 mm) thick, minimum 1 by 1 inch (25 by 25 mm), stainless steel according to ASTM A 167 or ASTM A 240/A 240M, Type 304 or 316.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions for compliance with requirements for installation and other conditions affecting performance of insulation application.

1. Verify that systems and equipment to be insulated have been tested and are free of defects.
2. Verify that surfaces to be insulated are clean and dry.
3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.

B. Surface Preparation: Clean and prepare surfaces to be insulated. Before insulating, apply a corrosion coating to insulated surfaces as follows:

1. Stainless Steel: Coat 300 series stainless steel with an epoxy primer 5 mils (0.127 mm) thick and an epoxy finish 5 mils (0.127 mm) thick if operating in a temperature range between 140 and 300 deg F (60 and 149 deg C). Consult coating manufacturer for appropriate coating materials and application methods for operating temperature range.
2. Carbon Steel: Coat carbon steel operating at a service temperature between 32 and 300 deg F (0 and 149 deg C) with an epoxy coating. Consult coating manufacturer for appropriate coating materials and application methods for operating temperature range.

C. Coordinate insulation installation with the trade installing heat tracing. Comply with requirements for heat tracing that apply to insulation.

D. Mix insulating cements with clean potable water; if insulating cements are to be in contact with stainless-steel surfaces, use demineralized water.

3.3 GENERAL INSTALLATION REQUIREMENTS

A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of equipment, ducts and fittings, and piping including fittings, valves, and specialties.

B. Install insulation materials, forms, vapor barriers or retarders, jackets, and thicknesses required for each item of equipment, duct system, and pipe system as specified in insulation system schedules.

C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.

D. Install insulation with longitudinal seams at top and bottom of horizontal runs.

E. Install multiple layers of insulation with longitudinal and end seams staggered.

F. Do not weld brackets, clips, or other attachment devices to piping, fittings, and specialties.

G. Keep insulation materials dry during application and finishing.

H. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.

I. Install insulation with least number of joints practical.

J. Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic.

1. Install insulation continuously through hangers and around anchor attachments.
2. For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends at attachment to structure with vapor-barrier mastic.
3. Install insert materials and install insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.
4. Cover inserts with jacket material matching adjacent pipe insulation. Install shields over jacket, arranged to protect jacket from tear or puncture by hanger, support, and shield.

K. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.

L. Install insulation with factory-applied jackets as follows:

1. Draw jacket tight and smooth.
2. Cover circumferential joints with 3-inch- (75-mm-) wide strips, of same material as insulation jacket. Secure strips with adhesive and outward clinching staples along both edges of strip, spaced 4 inches (100 mm) o.c.
3. Overlap jacket longitudinal seams at least 1-1/2 inches (38 mm). Install insulation with longitudinal seams at bottom of pipe. Clean and dry surface to receive self-sealing lap. Staple laps with outward clinching staples along edge at 2 inches (50 mm) o.c.

    a. For below ambient services, apply vapor-barrier mastic over staples.

4. Cover joints and seams with tape as recommended by insulation material manufacturer to maintain vapor seal.
5. Where vapor barriers are indicated, apply vapor-barrier mastic on seams and joints and at ends adjacent to duct and pipe flanges and fittings.

M. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.

N. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.

O. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches (100 mm) beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.

P. For above ambient services, do not install insulation to the following:

1. Vibration-control devices.
2. Testing agency labels and stamps.
3. Nameplates and data plates.
4. Manholes.
5. Handholes.
6. Cleanouts.

3.4 PENETRATIONS

A. Insulation Installation at Roof Penetrations: Install insulation continuously through roof penetrations.

1. Seal penetrations with flashing sealant.
2. For applications requiring only indoor insulation, terminate insulation above roof surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
3. Extend jacket of outdoor insulation outside roof flashing at least 2 inches (50 mm) below top of roof flashing.
4. Seal jacket to roof flashing with flashing sealant.

B. Insulation Installation at Underground Exterior Wall Penetrations: Terminate insulation flush with sleeve seal. Seal terminations with flashing sealant.

C. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.

D. Insulation Installation at Fire-Rated Wall and Partition Penetrations: Install insulation continuously through penetrations of fire-rated walls and partitions. Terminate insulation at fire damper sleeves for fire-rated wall and partition penetrations. Externally insulate damper sleeves to match adjacent insulation and overlap duct insulation at least 2 inches (50 mm).

1. Comply with requirements in Division 07 Section "Penetration Firestopping"irestopping and fire-resistive joint sealers.

E. Insulation Installation at Floor Penetrations:

1. Duct: Install insulation continuously through floor penetrations that are not fire rated. For penetrations through fire-rated assemblies, terminate insulation at fire damper sleeves and externally insulate damper sleeve beyond floor to match adjacent duct insulation. Overlap damper sleeve and duct insulation at least 2 inches (50 mm).
2. Pipe: Install insulation continuously through floor penetrations.
3. Seal penetrations through fire-rated assemblies. Comply with requirements in Division 07 Section "Penetration Firestopping."

3.5 EQUIPMENT, TANK, AND VESSEL INSULATION INSTALLATION

A. Mineral Fiber, Pipe and Tank Insulation Installation for Tanks and Vessels: Secure insulation with adhesive and anchor pins and speed washers.

1. Apply adhesives according to manufacturer's recommended coverage rates per unit area, for 50 percent coverage of tank and vessel surfaces.
2. Groove and score insulation materials to fit as closely as possible to equipment, including contours. Bevel insulation edges for cylindrical surfaces for tight joints. Stagger end joints.
3. Protect exposed corners with secured corner angles.
4. Install adhesively attached or self-sticking insulation hangers and speed washers on sides of tanks and vessels as follows:

    a. Do not weld anchor pins to ASME-labeled pressure vessels.
    b. Select insulation hangers and adhesive that are compatible with service temperature and with substrate.
    c. On tanks and vessels, maximum anchor-pin spacing is 3 inches (75 mm) from insulation end joints, and 16 inches (400 mm) o.c. in both directions.
    d. Do not overcompress insulation during installation.
    e. Cut and miter insulation segments to fit curved sides and domed heads of tanks and vessels.
    f. Impale insulation over anchor pins and attach speed washers.
    g. Cut excess portion of pins extending beyond speed washers or bend parallel with insulation surface. Cover exposed pins and washers with tape matching insulation facing.

5. Secure each layer of insulation with stainless-steel or aluminum bands. Select band material compatible with insulation materials.
6. Where insulation hangers on equipment and vessels are not permitted or practical and where insulation support rings are not provided, install a girdle network for securing insulation. Stretch prestressed aircraft cable around the diameter of vessel and make taut with clamps, turnbuckles, or breather springs. Place one circumferential girdle around equipment approximately 6 inches (150 mm) from each end. Install wire or cable between two circumferential girdles 12 inches (300 mm) o.c. Install a wire ring around

each end and around outer periphery of center openings, and stretch prestressed aircraft cable radially from the wire ring to nearest circumferential girdle. Install additional circumferential girdles along the body of equipment or tank at a minimum spacing of 48 inches (1200 mm) o.c. Use this network for securing insulation with tie wire or bands.

7. Stagger joints between insulation layers at least 3 inches (75 mm).
8. Install insulation in removable segments on equipment access doors, manholes, handholes, and other elements that require frequent removal for service and inspection.
9. Bevel and seal insulation ends around manholes, handholes, ASME stamps, and nameplates.
10. For equipment with surface temperatures below ambient, apply mastic to open ends, joints, seams, breaks, and punctures in insulation.

B. Flexible Elastomeric Thermal Insulation Installation for Tanks and Vessels: Install insulation over entire surface of tanks and vessels.

1. Apply 100 percent coverage of adhesive to surface with manufacturer's recommended adhesive.
2. Seal longitudinal seams and end joints.

3.6 GENERAL PIPE INSULATION INSTALLATION

A. Requirements in this article generally apply to all insulation materials except where more specific requirements are specified in various pipe insulation material installation articles.

B. Insulation Installation on Fittings, Valves, Strainers, Flanges, and Unions:

1. Install insulation over fittings, valves, strainers, flanges, unions, and other specialties with continuous thermal and vapor-retarder integrity, unless otherwise indicated.
2. Insulate pipe elbows using preformed fitting insulation or mitered fittings made from same material and density as adjacent pipe insulation. Each piece shall be butted tightly against adjoining piece and bonded with adhesive. Fill joints, seams, voids, and irregular surfaces with insulating cement finished to a smooth, hard, and uniform contour that is uniform with adjoining pipe insulation.
3. Insulate tee fittings with preformed fitting insulation or sectional pipe insulation of same material and thickness as used for adjacent pipe. Cut sectional pipe insulation to fit. Butt each section closely to the next and hold in place with tie wire. Bond pieces with adhesive.
4. Insulate valves using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. For valves, insulate up to and including the bonnets, valve stuffing-box studs, bolts, and nuts. Fill joints, seams, and irregular surfaces with insulating cement.
5. Insulate strainers using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. Fill joints, seams, and irregular surfaces with insulating cement. Insulate strainers so strainer basket flange or plug can be easily removed and replaced without damaging the insulation and jacket. Provide a removable reusable insulation cover. For below ambient services, provide a design that maintains vapor barrier.
6. Insulate flanges and unions using a section of oversized preformed pipe insulation. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker.
7. Cover segmented insulated surfaces with a layer of finishing cement and coat with a mastic. Install vapor-barrier mastic for below ambient services and a breather mastic for

above ambient services. Reinforce the mastic with fabric-reinforcing mesh. Trowel the mastic to a smooth and well-shaped contour.

8. For services not specified to receive a field-applied jacket except for flexible elastomeric and polyolefin, install fitted PVC cover over elbows, tees, strainers, valves, flanges, and unions. Terminate ends with PVC end caps. Tape PVC covers to adjoining insulation facing using PVC tape.
9. Stencil or label the outside insulation jacket of each union with the word "UNION." Match size and color of pipe labels.

C. Insulate instrument connections for thermometers, pressure gages, pressure temperature taps, test connections, flow meters, sensors, switches, and transmitters on insulated pipes, vessels, and equipment. Shape insulation at these connections by tapering it to and around the connection with insulating cement and finish with finishing cement, mastic, and flashing sealant.

D. Install removable insulation covers at locations indicated. Installation shall conform to the following:

1. Make removable flange and union insulation from sectional pipe insulation of same thickness as that on adjoining pipe. Install same insulation jacket as adjoining pipe insulation.
2. When flange and union covers are made from sectional pipe insulation, extend insulation from flanges or union long at least two times the insulation thickness over adjacent pipe insulation on each side of flange or union. Secure flange cover in place with stainless-steel or aluminum bands. Select band material compatible with insulation and jacket.
3. Construct removable valve insulation covers in same manner as for flanges except divide the two-part section on the vertical center line of valve body.
4. When covers are made from block insulation, make two halves, each consisting of mitered blocks wired to stainless-steel fabric. Secure this wire frame, with its attached insulation, to flanges with tie wire. Extend insulation at least 2 inches (50 mm) over adjacent pipe insulation on each side of valve. Fill space between flange or union cover and pipe insulation with insulating cement. Finish cover assembly with insulating cement applied in two coats. After first coat is dry, apply and trowel second coat to a smooth finish.

3.7 FLEXIBLE ELASTOMERIC INSULATION INSTALLATION

A. Seal longitudinal seams and end joints with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

B. Insulation Installation on Pipe Flanges:

1. Install pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of sheet insulation of same thickness as pipe insulation.
4. Secure insulation to flanges and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install mitered sections of pipe insulation.
2. Secure insulation materials and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed valve covers manufactured of same material as pipe insulation when available.
2. When preformed valve covers are not available, install cut sections of pipe and sheet insulation to valve body. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
3. Install insulation to flanges as specified for flange insulation application.
4. Secure insulation to valves and specialties and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

3.8 MINERAL-FIBER INSULATION INSTALLATION

A. Insulation Installation on Straight Pipes and Tubes:

1. Secure each layer of preformed pipe insulation to pipe with wire or bands and tighten bands without deforming insulation materials.
2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.
3. For insulation with factory-applied jackets on above ambient surfaces, secure laps with outward clinched staples at 6 inches (150 mm) o.c.
4. For insulation with factory-applied jackets on below ambient surfaces, do not staple longitudinal tabs but secure tabs with additional adhesive as recommended by insulation material manufacturer and seal with vapor-barrier mastic and flashing sealant.

B. Insulation Installation on Pipe Flanges:

1. Install preformed pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with mineral-fiber blanket insulation.
4. Install jacket material with manufacturer's recommended adhesive, overlap seams at least 1 inch (25 mm), and seal joints with flashing sealant.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install preformed sections of same material as straight segments of pipe insulation when available.
2. When preformed insulation elbows and fittings are not available, install mitered sections of pipe insulation, to a thickness equal to adjoining pipe insulation. Secure insulation materials with wire or bands.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed sections of same material as straight segments of pipe insulation when available.
2. When preformed sections are not available, install mitered sections of pipe insulation to valve body.
3. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
4. Install insulation to flanges as specified for flange insulation application.

E. Blanket Insulation Installation on Ducts and Plenums: Secure with adhesive and insulation pins.

1. Apply adhesives according to manufacturer's recommended coverage rates per unit area, for 50 percent coverage of duct and plenum surfaces.
2. Apply adhesive to entire circumference of ducts and to all surfaces of fittings and transitions.
3. Install either capacitor-discharge-weld pins and speed washers or cupped-head, capacitor-discharge-weld pins on sides and bottom of horizontal ducts and sides of vertical ducts as follows:

    a. On duct sides with dimensions 18 inches (450 mm) and smaller, place pins along longitudinal centerline of duct. Space 3 inches (75 mm) maximum from insulation end joints, and 16 inches (400 mm) o.c.
    b. On duct sides with dimensions larger than 18 inches (450 mm), place pins 16 inches (400 mm) o.c. each way, and 3 inches (75 mm) maximum from insulation joints. Install additional pins to hold insulation tightly against surface at cross bracing.
    c. Pins may be omitted from top surface of horizontal, rectangular ducts and plenums.
    d. Do not overcompress insulation during installation.
    e. Impale insulation over pins and attach speed washers.
    f. Cut excess portion of pins extending beyond speed washers or bend parallel with insulation surface. Cover exposed pins and washers with tape matching insulation facing.

4. For ducts and plenums with surface temperatures below ambient, install a continuous unbroken vapor barrier. Create a facing lap for longitudinal seams and end joints with insulation by removing 2 inches (50 mm) from 1 edge and 1 end of insulation segment. Secure laps to adjacent insulation section with 1/2-inch (13-mm) outward-clinching staples, 1 inch (25 mm) o.c. Install vapor barrier consisting of factory- or field-applied jacket, adhesive, vapor-barrier mastic, and sealant at joints, seams, and protrusions.

    a. Repair punctures, tears, and penetrations with tape or mastic to maintain vapor-barrier seal.
    b. Install vapor stops for ductwork and plenums operating below 50 deg F (10 deg C) at 18-foot (5.5-m) intervals. Vapor stops shall consist of vapor-barrier mastic applied in a Z-shaped pattern over insulation face, along butt end of insulation, and over the surface. Cover insulation face and surface to be insulated a width equal to 2 times the insulation thickness but not less than 3 inches (75 mm).

5. Overlap unfaced blankets a minimum of 2 inches (50 mm) on longitudinal seams and end joints. At end joints, secure with steel bands spaced a maximum of 18 inches (450 mm) o.c.
6. Install insulation on rectangular duct elbows and transitions with a full insulation section for each surface. Install insulation on round and flat-oval duct elbows with individually mitered gores cut to fit the elbow.
7. Insulate duct stiffeners, hangers, and flanges that protrude beyond insulation surface with 6-inch- (150-mm-) wide strips of same material used to insulate duct. Secure on alternating sides of stiffener, hanger, and flange with pins spaced 6 inches (150 mm) o.c.

F. Board Insulation Installation on Ducts and Plenums: Secure with adhesive and insulation pins.

1. Apply adhesives according to manufacturer's recommended coverage rates per unit area, for 50 percent coverage of duct and plenum surfaces.
2. Apply adhesive to entire circumference of ducts and to all surfaces of fittings and transitions.
3. Install either capacitor-discharge-weld pins and speed washers or cupped-head, capacitor-discharge-weld pins on sides and bottom of horizontal ducts and sides of vertical ducts as follows:

a. On duct sides with dimensions 18 inches (450 mm) and smaller, place pins along longitudinal centerline of duct. Space 3 inches (75 mm) maximum from insulation end joints, and 16 inches (400 mm) o.c.
b. On duct sides with dimensions larger than 18 inches (450 mm), space pins 16 inches (400 mm) o.c. each way, and 3 inches (75 mm) maximum from insulation joints. Install additional pins to hold insulation tightly against surface at cross bracing.
c. Pins may be omitted from top surface of horizontal, rectangular ducts and plenums.
d. Do not overcompress insulation during installation.
e. Cut excess portion of pins extending beyond speed washers or bend parallel with insulation surface. Cover exposed pins and washers with tape matching insulation facing.

4. For ducts and plenums with surface temperatures below ambient, install a continuous unbroken vapor barrier. Create a facing lap for longitudinal seams and end joints with insulation by removing 2 inches (50 mm) from 1 edge and 1 end of insulation segment. Secure laps to adjacent insulation section with 1/2-inch (13-mm) outward-clinching staples, 1 inch (25 mm) o.c. Install vapor barrier consisting of factory- or field-applied jacket, adhesive, vapor-barrier mastic, and sealant at joints, seams, and protrusions.

   a. Repair punctures, tears, and penetrations with tape or mastic to maintain vapor-barrier seal.
   b. Install vapor stops for ductwork and plenums operating below 50 deg F (10 deg C) at 18-foot (5.5-m) intervals. Vapor stops shall consist of vapor-barrier mastic applied in a Z-shaped pattern over insulation face, along butt end of insulation, and over the surface. Cover insulation face and surface to be insulated a width equal to 2 times the insulation thickness but not less than 3 inches (75 mm).

5. Install insulation on rectangular duct elbows and transitions with a full insulation section for each surface. Groove and score insulation to fit as closely as possible to outside and inside radius of elbows. Install insulation on round and flat-oval duct elbows with individually mitered gores cut to fit the elbow.
6. Insulate duct stiffeners, hangers, and flanges that protrude beyond insulation surface with 6-inch- (150-mm-) wide strips of same material used to insulate duct. Secure on alternating sides of stiffener, hanger, and flange with pins spaced 6 inches (150 mm) o.c.

3.9 FIELD-APPLIED JACKET INSTALLATION

A. Where metal jackets are indicated, install with 2-inch (50-mm) overlap at longitudinal seams and end joints. Overlap longitudinal seams arranged to shed water. Seal end joints with weatherproof sealant recommended by insulation manufacturer. Secure jacket with stainless-steel bands 12 inches (300 mm) o.c. and at end joints.

3.10 FIELD QUALITY CONTROL

A. Perform tests and inspections.

1. Inspect ductwork, randomly selected by Engineer, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection shall be limited to one location(s) for each duct system defined in the "Duct Insulation Schedule, General" Article.
2. Inspect pipe, fittings, strainers, and valves, randomly selected by Engineer, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection shall be limited to three locations of straight pipe, three locations of threaded

fittings, three locations of welded fittings, two locations of threaded strainers, two locations of welded strainers, three locations of threaded valves, and three locations of flanged valves for each pipe service defined in the "Piping Insulation Schedule, General" Article.

B. All insulation applications will be considered defective Work if sample inspection reveals noncompliance with requirements.

3.11 DUCT INSULATION SCHEDULE, GENERAL

A. New Plenums and Ducts Requiring Insulation:

1. Indoor, supply, return, exhaust, and outdoor air.

   a. Clarification – Ductwork in between the ERV and heat pumps shall be considered “supply air” ducts. Ductwork in between the ERV and exhaust sources shall be considered “exhaust air” ducts.

2. Outdoor, ERV ductwork.

B. Items Not Insulated:

1. Fibrous-glass ducts.
2. Metal ducts with duct liner of sufficient thickness to comply with energy code and ASHRAE/IESNA 90.1.
3. Factory-insulated flexible ducts.
4. Factory-insulated plenums and casings.
5. Flexible connectors.
6. Vibration-control devices.
7. Factory-insulated access panels and doors.

3.12 INDOOR DUCT INSULATION SCHEDULE

A. Concealed or exposed outdoor-air and exhaust-air duct insulation between the ERV and the intake/exhaust louver shall be the following:

1. Mineral-Fiber Board: Two layers of 2 inches thick and 3-lb/cu. ft. nominal density.

B. All, exhaust air duct insulation shall be the following:

1. Mineral-Fiber Blanket: One layer of 1 inch thick and 1.5-lb/cu. Ft nominal density. Attic applications shall have Two layers.

C. All, round, supply air duct insulation shall be the following:

1. Mineral-Fiber Blanket: One layer of 1-1/2 inches thick and 1.5-lb/cu. ft. nominal density.

D. All, rectangular, supply-air duct insulation shall be the following:

1. Duct Liner: 1-1/2 inches thick. Attic applications shall also have an additional layer of mineral-fiber blanket that is 1-1/2 inches thick and 1.5-lb/cu. ft. nominal density.

E. All, round, return air duct insulation shall be the following:

1. Mineral-Fiber Blanket: 1 inches thick and 1.5-lb/cu. ft. nominal density.

F. All, rectangular, return, and transfer-air, duct insulation shall be the following:

1. Duct Liner: 1 inch thick.

3.13 EQUIPMENT INSULATION SCHEDULE

A. Insulation materials and thicknesses are identified below. If more than one material is listed for a type of equipment, selection from materials listed is Contractor's option.

B. Insulate indoor and outdoor equipment in paragraphs below that is not factory insulated.

C. Heat pump loop water expansion/compression tank insulation shall be one of the following:

1. Flexible Elastomeric: 1 inch (25 mm) thick.
2. Mineral-Fiber Pipe and Tank: 1 inch (25 mm) thick.

D. Heat pump loop water air-separator insulation shall be one of the following:

1. Flexible Elastomeric: 1 inch (25 mm) thick.
2. Mineral-Fiber Pipe and Tank: 1 inch (25 mm) thick.

3.14 PIPING INSULATION SCHEDULE, GENERAL

A. Acceptable preformed pipe and tubular insulation materials and thicknesses are identified for each piping system and pipe size range. If more than one material is listed for a piping system, selection from materials listed is Contractor's option.

B. Items Not Insulated: Unless otherwise indicated, do not install insulation on the following:

1. Underground piping.

3.15 INDOOR PIPING INSULATION SCHEDULE

A. Condensate and Equipment Drain Water:

1. All Pipe Sizes: Insulation shall be one of the following:

a. Flexible Elastomeric: 3/4 inch (19 mm) thick.
b. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1/2 inch (13 mm) thick.

B. Heat Pump Loop, Supply and Return, 40 Deg F (5 Deg C) to 100 Deg F (38 Deg C):

1. All Sizes: Insulation shall be the following:

a. Mineral-Fiber, Preformed Pipe, Type I: 1 inch (25 mm) thick.

3.16 OUTDOOR, FIELD-APPLIED JACKET SCHEDULE

A. Install jacket over insulation material. For insulation with factory-applied jacket, install the field-applied jacket over the factory-applied jacket.

B. Ducts and Plenums, Exposed: Self-Adhesive Outdoor Jacket.

END OF SECTION

GENERAL NOTES

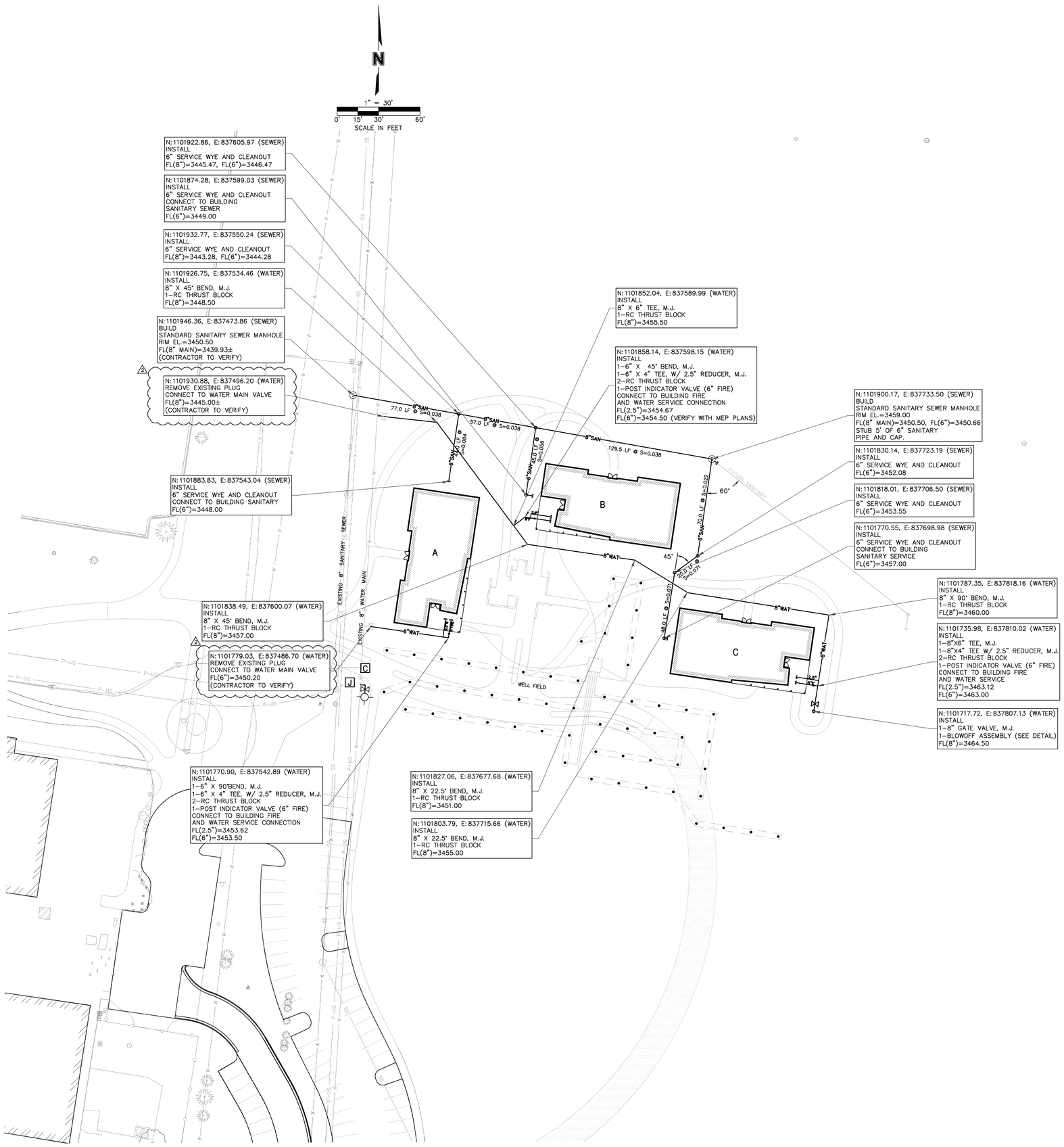
1. CONTRACTOR TO PRESERVE ALL SURVEY CONTROL.
2. PRIOR TO MOVING OFF THE JOB THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND REQUEST A FINAL WALK–THROUGH OF THE CONSTRUCTION SITE.
3. LOCATION AND ELEVATIONS OF IMPROVEMENTS TO BE MET (OR AVOIDED) BY WORK TO BE DONE SHALL BE CONFIRMED BY THE CONTRACTOR THROUGH FIELD EXPLORATIONS PRIOR TO CONSTRUCTION. CONTRACTOR SHALL REPORT TO THE DEVELOPER'S ENGINEER, CITY INSPECTOR, OR DEVELOPER'S ENGINEER FIELD REPRESENTATIVE ANY DISCREPANCIES BETWEEN HIS MEASUREMENTS AND THESE PLANS.
4. THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITY PIPES AND STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF AVAILABLE RECORDS TO THE BEST OF OUR KNOWLEDGE CONSTITUTES ALL KNOWN FACILITIES. HOWEVER, THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT ANY EXISTING UTILITIES OR STRUCTURES LOCATED AT THE WORK SITE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT UNDERGROUND SERVICE ALERT @ 1–800–331–5666 IN ADVANCE OF ANY EXCAVATION FOR THE MARK–OUT OF THE LOCATION OF UTILITIES AND NOTIFICATION OF COMMENCEMENT OF WORK.
5. BEFORE EXCAVATING FOR THIS CONTRACT, THE CONTRACTOR SHALL FIELD VERIFY LOCATION OF UNDERGROUND UTILITIES. CONTRACTOR SHALL MAKE EXPLORATION EXCAVATIONS AND LOCATE EXISTING UNDERGROUND UTILITIES SUFFICIENTLY AHEAD OF CONSTRUCTION TO PERMIT REVISIONS TO PLAN IF REVISIONS ARE NECESSARY BECAUSE OF ACTUAL LOCATION OF EXISTING FACILITIES.
6. CONTRACTOR IS REQUIRED TO TAKE PRECAUTIONARY MEASURES TO PROTECT THE UTILITY LINES SHOWN AND ANY OTHER EXISTING LINES NOT OF RECORD OR NOT SHOWN ON THESE PLANS.
7. THE CONTRACTOR SHALL USE CAUTION AROUND ANY EXISTING UTILITIES OR IMPROVEMENTS LOCATED ON SITE. HE SHALL BE RESPONSIBLE FOR THE REPAIRS OF SUCH STRUCTURES WHEN BROKEN OR OTHERWISE DAMAGED BY THE NEW CONSTRUCTION.
8. ALL SPOIL MATERIAL SHALL BE REMOVED FROM THE STREET ROW, UTILITY EASEMENT, OR ACCESS EASEMENT BY THE CONTRACTOR. SPOIL MATERIAL SHALL BE DEPOSITED WITHIN THE SITE DEVELOPMENT BOUNDARY IN AREAS DESIGNATED BY THE DEVELOPER'S ENGINEER. THE MATERIAL SHALL BE STOCKPILED OR SPREAD AS DIRECTED BY THE ENGINEER. NO SEPARATE PAYMENT SHALL BE MADE FOR DISPOSAL OF SPOIL MATERIAL; IT SHALL BE CONSIDERED SUBSIDIARY TO THE PRICE BID.
9. A PORTABLE RESTROOM FACILITY WILL BE REQUIRED ON–SITE DURING CONSTRUCTION ACTIVITIES.
10. ANY ON–SITE FUELING WILL COMPLY WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS.
11. THE CONTRACTOR SHALL REPAIR OR REPLACE ALL EROSION CONTROL MEASURES DAMAGED BY CONSTRUCTION ACTIVITIES.
12. EXISTING UTILITY LINES, EITHER OVERHEAD OR UNDERGROUND, AND PERMANENT STRUCTURE WITHIN THE PROPERTY LINES SHALL BE KEPT FREE OF DAMAGE BY CONTRACTOR'S OPERATIONS. IF SUCH UTILITY OR STRUCTURE IS DAMAGED, IT SHALL BE RESTORED AT THE CONTRACTOR'S EXPENSE. IF ANY UTILITY LINES OR STRUCTURES ARE DAMAGED DURING OPERATIONS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY FOR FURTHER INSTRUCTIONS.
13. HANDICAP PARKING INDICATOR SIGNS CAN BE WALL–MOUNTED IN FRONT OF ACCESSIBLE STALLS.
14. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS PRIOR TO COMMENCING CONSTRUCTION.
15. ALL DIMENSIONS ARE TO THE EDGE OF PAVEMENT, FACE OF BUILDING, OR BACK OF CURB. FOLLOW WRITTEN DIMENSIONS ALWAYS. DO NOT SCALE. DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED.
16. CONTRACTOR IS RESPONSIBLE FOR ALL TRAFFIC CONTROL & SAFETY MEASURES.
17. CONTRACTOR SHALL NOTIFY THE APPROPRIATE UTILITY COMPANIES TO COORDINATE CONNECTIONS.
18. CONTRACTOR SHALL BE RESPONSIBLE FOR EROSION AND DUST CONTROL, ANY DAMAGE FROM BLOWING DUST OR EROSION AND RUNOFF FROM THE SITE SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
19. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF ALL PROPERTY CORNERS.

PRIVATE WATER MAIN NOTES

1. ALL ANCHORING COUPLINGS TO BE 18" IN LENGTH UNLESS OTHERWISE NOTED.
2. PRIOR TO FINAL ACCEPTANCE ALL WATER MAIN PIPE SHALL BE PRESSURE TESTED BY THE CONTRACTOR.
3. PRIOR TO FINAL ACCEPTANCE ALL WATER MAIN PIPE SHALL BE DISINFECTED BY THE CONTRACTOR.
4. FOR PVC WATER MAIN CONSTRUCTION, ALL FITTINGS SHALL BE DUCTILE IRON WRAPPED WITH POLYWRAP. POLYWRAP SHALL BE LINEAR LOW DENSITY POLYETHYLENE FILM MANUFACTURED OF VIRGIN POLYETHYLENE MATERIAL. MINIMUM THICKNESS SHALL BE 8 MIL. POLYWRAP SHALL BE IN ACCORDANCE WITH DRAFT OF AWWA C105 REVISION, DOUBLE WRAPPED (2 LAYERS) AND TAPED.
5. WHERE THE WATER MAIN IS TO BE CONSTRUCTED BELOW OR WITHIN 18 INCHES (0.5 M) OF ANY SEWER PIPE, THE CONTRACTOR SHALL LAY A FULL LENGTH OF WATER MAIN PIPE CENTERED ON THE SEWER OR SUCH LENGTH AS WILL PROVIDE THE MAXIMUM POSSIBLE SEPARATION OF THE JOINTS IN THE WATER MAIN FROM THE SEWER LINE. IF NOT ALREADY SO, THE CONTRACTOR SHALL CONSTRUCT SANITARY SEWER WITH ONE 20 FOOT (6 M) NOMINAL LENGTH OF PRESSURE PIPE MATERIAL CENTERED ON THE WATER MAIN AS PROVIDED IN SECTION 22.02(B), SUCH THAT THE MAXIMUM POSSIBLE SEPARATION BETWEEN THE WATER MAIN AND THE SEWER PIPE JOINTS WILL RESULT. THE BACKFILL MATERIAL SHALL BE SELECT, LOW PERMEABILITY SOIL.
6. AT ALL WATER MAIN CROSSINGS, SANITARY SEWERS SHALL BE LAID AT SUCH AN ELEVATION THAT THE TOP OF THE SANITARY SEWER IS AT LEAST 18 IN (357 MM) BELOW THE BOTTOM OF THE WATER MAIN.
7. ALL WATER MAIN CONSTRUCTION TO BE DONE UNDER A PLUMBERS PERMIT AND SHALL COMPLY WITH ALL APPLICABLE BUILDING CODES.
8. ALL WATER METERS, PUMPS, AND BACKFLOW PREVENTERS ARE LOCATED INSIDE BUILDING. REFER TO ARCHITECTURAL PLANS FOR DESIGN AND LOCATIONS.
9. WATER SERVICE PIPE SHALL HAVE A 5.0' MINIMUM BURY DEPTH AS MEASURED FROM FINISHED GROUND TO TOP OF PIPE.
10. SITE SHALL BE TO FINISHED GRADE PRIOR TO INSTALLATION OF WATER SERVICE.
11. MATERIAL OF PIPE FROM TAP OF PUBLIC WATER MAIN TO METER IN BUILDING SHALL BE TYPE "K" SEAMLESS COPPER (3/4" TO 3"), DUCTILE IRON PIPE (3" AND LARGER), OR AWWA C900 PVC (4" AND LARGER) PER LOCAL CODES AND REGULATIONS.
12. REFER TO ARCHITECTURAL PLANS FOR WATER SERVICE TIE–INS WITH BUILDING.
13. FOR CLARITY ALL FITTINGS ARE NOT SHOWN ON THESE PLANS. CONTRACTOR IS REQUIRED TO PROVIDE ALL BENDS, REDUCERS, TEES, ETC. AS NECESSARY TO CONNECT WATER SUPPLY SYSTEM TO BUILDING CONNECTION POINT.
14. POST INDICATOR VALVES SHALL HAVE TAMPER SWITCH. REFERENCE BUILDING MEP PLANS FOR WIRING FROM TAMPER SWITCH TO BUILDING.

PRIVATE SANITARY SEWER NOTES

1. SANITARY SEWERS SHALL BE SEPARATED BY AT LEAST 10 FT. (3.48 M) HORIZONTALLY FROM ANY EXISTING OR PROPOSED PARALLEL WATER MAINS, MEASURED EDGE TO EDGE.
2. AT ALL WATER MAIN CROSSINGS, SANITARY SEWERS SHALL BE LAID AT SUCH AN ELEVATION THAT THE TOP OF THE SANITARY SEWER IS AT LEAST 18 IN (457 MM) BELOW THE BOTTOM OF THE WATER MAIN. IN THOSE INSTANCES WHERE THE BOTTOM OF THE WATER MAIN IS LESS THAN 18 IN (457 MM), ABOVE THE TOP OF THE SANITARY SEWER OR THE SANITARY SEWER IS LOCATED ABOVE THE WATER MAIN, THE SANITARY SEWER SHALL BE CONSTRUCTED USING A 20 FT. (6.10 M) LENGTH OF PVC PRESSURE PIPE, MEETING THE REQUIREMENTS OF AWWA C900 FOR DR18, PRESSURE RATING 150 PSI (1034 KPA), CENTERED ON THE WATER MAIN.
3. ALL SANITARY SEWER WILL BE DONE UNDER A PLUMBERS PERMIT, AND SHALL COMPLY WITH ALL APPLICABLE BUILDING CODES.
4. PRIOR TO FINAL ACCEPTANCE ALL SEWER MAIN SHALL BE AIR TESTED BY THE CONTRACTOR @ 5 LBS FOR 15 MINUTES, IN ACCORDANCE WITH THE LOCAL PLUMBING CODE.
5. PRIOR TO FINAL ACCEPTANCE, THE CONTRACTOR SHALL HAVE THE SEWER MAIN TV INSPECTED AND THE COST OF SUCH WORK SHALL BE SUBSIDIARY TO THE PRICE BID FOR SEWER WITH INSTALLATION.
6. PRIOR TO FINAL ACCEPTANCE, VACUUM TESTING SHALL BE PERFORMED ON ALL MANHOLES TO CONFORM TO THE REQUIREMENTS OF STANDARD TEST METHOD FOR CONCRETE MANHOLES BY THE "NEGATIVE AIR PRESSURE (VACUUM) TEST" ASTM DESIGNATION C–1244.
7. REFER TO ARCHITECTURAL PLANS FOR SANITARY SEWER TIE–INS WITH BUILDING(S).
8. BUILD 1 ½" P.V.C. RISER PIPE WITH 1 ½" SOLVENT WELDED CAP, AT THE END OF SANITARY SEWER SERVICE.
9. CLEAN–OUTS TO BE BUILT AS PER PLUMBING CODE. (2)
10. ALL PIPE, SERVICE PIPE, AND FITTINGS SHALL MEET THE REQUIREMENTS OF THE PROJECT SPECIFICATIONS AND CITY OF CHADRON PLUMBING CODE.



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REVISIONS SCHEDULE		
MARK	DATE	DESCRIPTION
2	5.01.13	Final GMP Addendum #2

Eagle Ridge Housing
Final GMP Set

PROJECT: #L12007 DATE: 04.15.13

GMP SET
NOT FOR CONSTRUCTION

UTILITY PLAN

NORTH

C1.1

DWG: F:\Projects\012–2625_LDVP\Final_Plans\122625_UTLP.dwg USER: ebright
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DOOR SCHEDULE

NUMBER	DOOR				FRAME		FIRE RATING	HDWE SET	GLASS TYPE	COMMENTS
	LEAFS	WIDTH	HEIGHT	TYPE	JAMB DEPTH	TYPE				
001	1	3'-0"	7'-0"	WD-1	5 3/4"	HM-1	45M	1.0	FIRE RATED CERAMIC	
002	1	3'-0"	7'-0"	M-1	5 3/4"	HM-1	45M	2.0		
003	1	3'-0"	7'-0"	M-1	5 3/4"	HM-1	45M	3.0		
004	1	3'-0"	7'-0"	M-1	5 3/4"	HM-1	45M	4.0		
005	1	3'-0"	7'-0"	W-1	7 3/4"	HM-1	45M	5.0		
014	2	3'-0"	7'-0"	WC-1	4 9/16"	ALUMN CLAD		10.0		ADA OPENER
015	2	3'-0"	7'-0"	WC-1	4 9/16"	ALUMN CLAD		11.0		ADA OPENER
015A	2	3'-0"	8'-0"	M-1	6 1/2"	HM-1	45M	6.0		HOLD OPEN. FRAME FLUSH WITH WALL - SEE DTL. CUSTOM STAIN
015B	2	3'-0"	8'-0"	M-1	6 1/2"	HM-1	45M	6.0		HOLD OPEN. FRAME FLUSH WITH WALL - SEE DTL. CUSTOM STAIN
016	1	3'-0"	7'-0"	W-1	5 3/4"	HM-1	45M	5.0		
024	1	3'-0"	7'-0"	M-1	5 3/4"	HM-1	45M	4.0		
026	1	3'-0"	7'-0"	W-1	5 3/4"	HM-1	45M	5.0		
100	1	3'-0"	8'-0"	WD-1	7 3/4"	HM-1	45M	9.0	FIRE RATED CERAMIC	
102	2	3'-0"	7'-11 1/2"	WC-1	4 9/16"	ALUMN CLAD		12.0		
103	2	3'-0"	7'-11 1/2"	WC-1	4 9/16"	ALUMN CLAD		13.0		
104	1	3'-0"	7'-0"	W-1	5 3/4"	HM-1	45M	5.0		
113A	2	3'-0"	8'-0"	M-1	6 1/2"	HM-1	45M	6.0		HOLD OPEN. FRAME FLUSH WITH WALL - SEE DTL. CUSTOM STAIN
114	1	3'-0"	7'-0"	W-1	5 3/4"	HM-1	45M	5.0		
123	1	3'-0"	7'-0"	M-1	5 3/4"	HM-1	45M	4.0		
124	1	3'-0"	7'-0"	W-1	5 3/4"	HM-1	45M	5.0		
126	2	3'-0"	7'-11 1/2"	WC-1	4 9/16"	ALUMN CLAD		12.0		
A	1	3'-0"	6'-8"	PH-1	4 9/16"	PREHUNG	-	7.0		SEE PLAN FOR QUANTITY. THESE OCCUR IN MUTIPLE UNITS
B	1	3'-0"	6'-8"	PH-1	4 9/16"	PREHUNG	-	7.0		SEE PLAN FOR QUANTITY. THESE OCCUR IN MUTIPLE UNITS
C	1	3'-0"	6'-8"	PH-1	4 9/16"	PREHUNG	-	7.0		SEE PLAN FOR QUANTITY. THESE OCCUR IN MUTIPLE UNITS
D	1	3'-0"	6'-8"	PH-1	4 9/16"	PREHUNG	-	7.0		SEE PLAN FOR QUANTITY. THESE OCCUR IN MUTIPLE UNITS
E	1	3'-0"	6'-8"	PH-1	4 9/16"	PREHUNG	-	8.0		SEE PLAN FOR QUANTITY. THESE OCCUR IN MUTIPLE UNITS
F	1	3'-0"	6'-8"	PH-1	4 9/16"	PREHUNG	-	8.0		SEE PLAN FOR QUANTITY. THESE OCCUR IN MUTIPLE UNITS
G	1	3'-0"	6'-8"	PH-1	4 9/16"	PREHUNG	-	8.0		SEE PLAN FOR QUANTITY. THESE OCCUR IN MUTIPLE UNITS

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EAGLE RIDGE HOUSING FINAL GMP SET

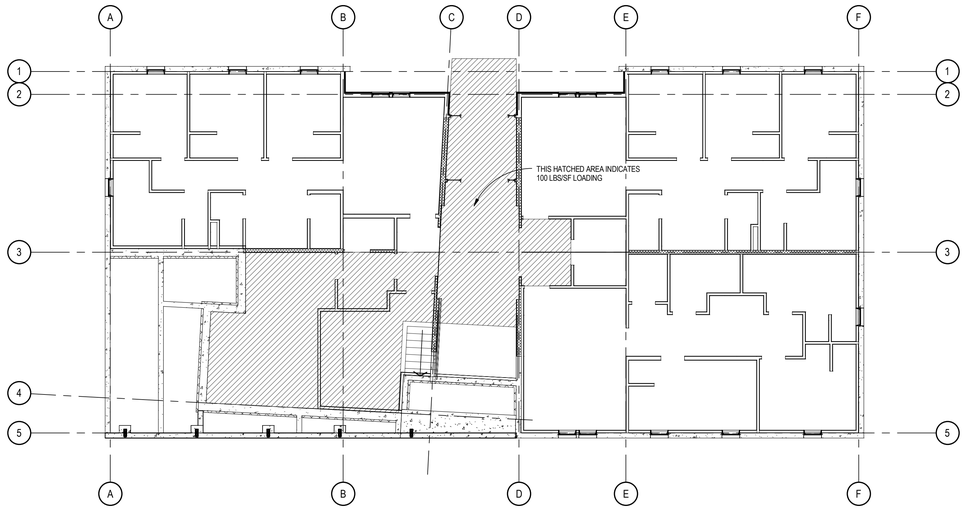
PROJECT: #L12007

DATE: 04.29.2013

GMP Addendum 2

ADD 2-1

Project North



2 FIRST FLOOR LOADING PLAN

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

GENERAL FRAMING NOTES:

1. TYPICAL STUD SPACING: 16 INCHES ON CENTER. PROVIDE AND INSTALL DOUBLE STUDS AT CORNERS, INTERSECTIONS, JAMBS OF OPENINGS, AND AS OTHERWISE SHOWN.

2. ⟷ INDICATES DIRECTION OF STRUCTURAL SLAB SPAN.

3. PROVIDE FLOOR TRUSS BLOCKING AS REQUIRED BY TRUSS SUPPLIER

4. ALL PRE-MANUFACTURED CLIPS & HOLDOWNS SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS. ALL NAIL AND BOLT HOLES SHALL BE FILLED WITH NAILS AND BOLTS AS SPECIFIED.

5. SHEAR PANELS ARE INDICATED ON THE PLAN BY SOLID LINES WITHIN WALLS. LENGTHS OF PANELS ARE NOTED ADJACENT TO PANEL LOCATION. SEE TYPICAL DETAIL ON SHEET S5.1 FOR SHEAR PANEL CONSTRUCTION REQUIREMENTS.

6. COORDINATE FLOOR TRUSS LOCATIONS WITH ALL MECHANICAL PLUMBING CHASES, SHOWER DRAINS, FLOOR DRAINS, TOILET WASTE LINES, ETC.

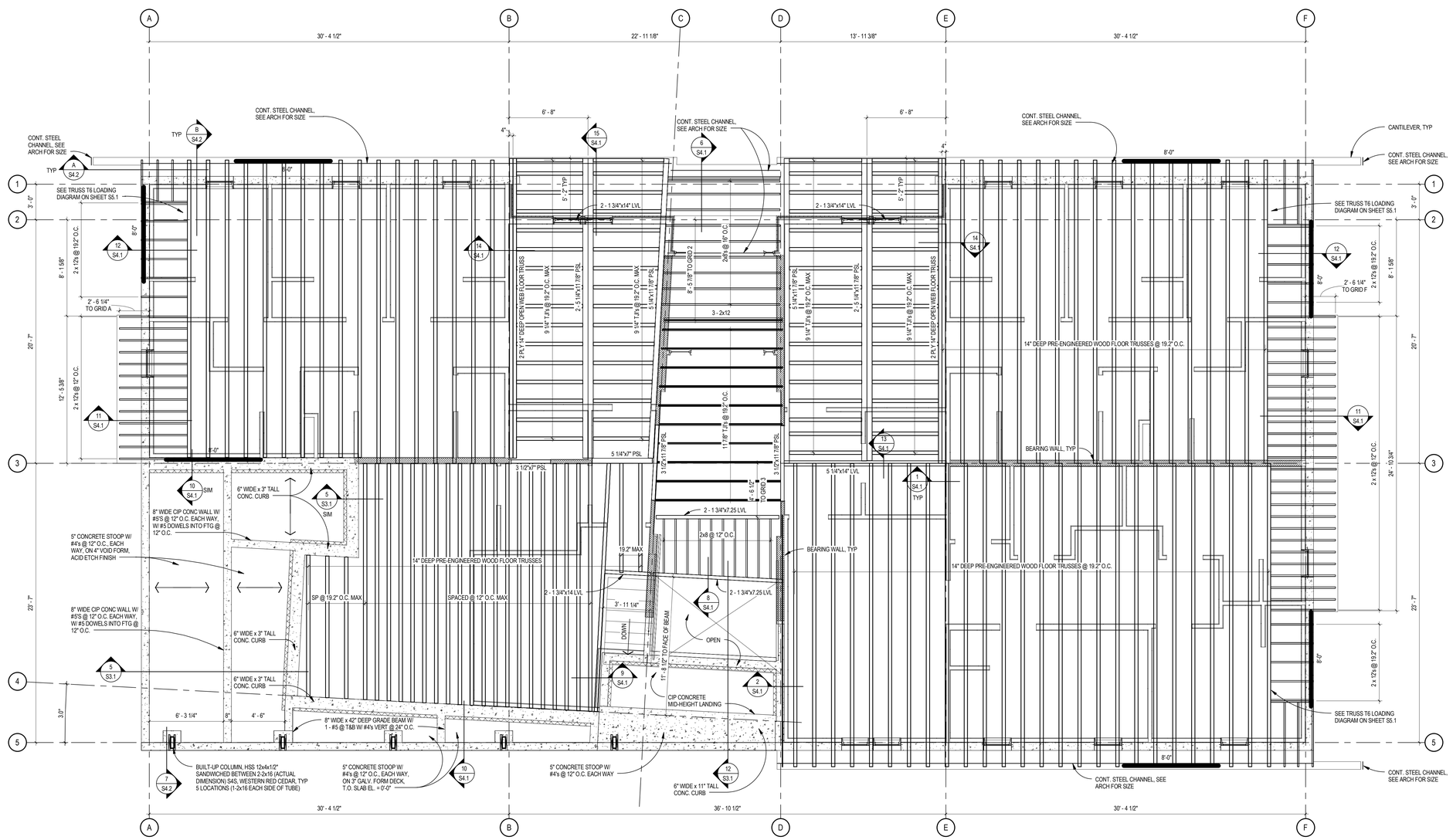
7. MULTIPLE LVLS: ATTACH MULTIPLE LVLS TO EACH OTHER USING 2 ROWS OF 1/2" DIAMETER A307 THROUGH BOLTS (WITH 2" EDGE DISTANCE) AT 12" ON CENTER.

8. FLOOR TRUSS/JOIST ELEVATION. TOP OF FLOOR TRUSS/JOIST ELEVATION = -0'-2".

FLOOR SHEATHING

1. 3/4" TONGUE & GROOVE APA-RATED SHEATHING, SPAN RATING 48/24, EXPOSURE 1

2. ATTACH SHEATHING TO SUPPORTING STRUCTURE USING ADHEISIVE CONFORMING TO APA SPECIFICATION AFG-01 OR ASTM D3498. APPLIED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS ALONG WITH 6d RING OR SCREW SHANK NAILS SPACED AT 12" ON CENTER ALONG PANEL EDGES AND INTERMEDIATE SUPPORTS. FASTEN PANELS 3/8" FROM PANEL EDGES



1 FIRST FLOOR FRAMING PLAN

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

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REVISIONS SCHEDULE		
MARK	DATE	DESCRIPTION
1	5.2.13	Revision 1

EAGLE RIDGE HOUSING
FINAL GMP
ADDENDUM #1

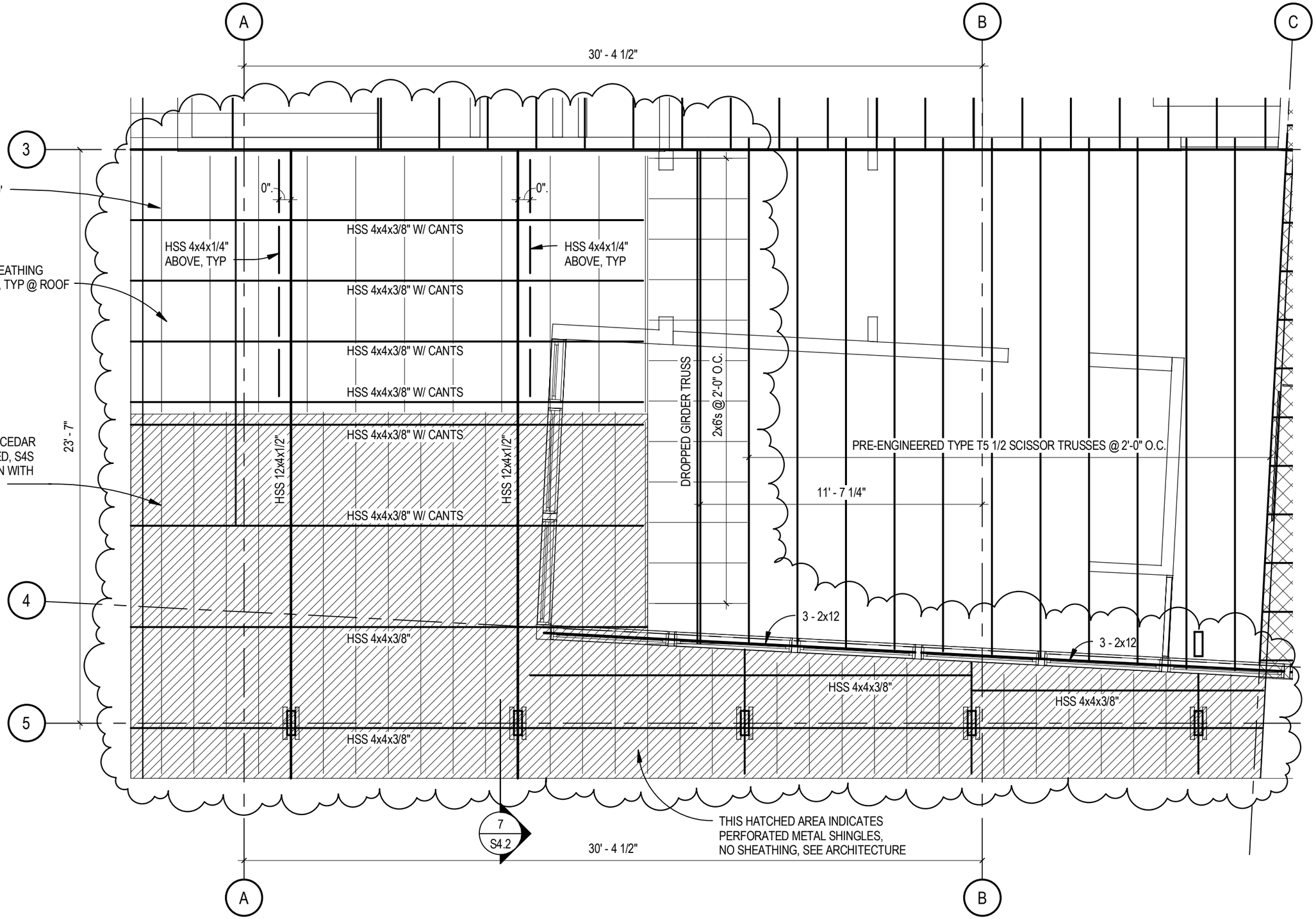
PROJECT: #L12007 DATE: 5.2.13

GMP SET
NOT FOR CONSTRUCTION

FIRST FLOOR FRAMING PLAN

NORTH

S2.1



1 PARTIAL ROOF FRAMING PLAN

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

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EAGLE RIDGE
HOUSING
FINAL GMP
ADDENDUM #2

PROJECT: #L12007

DATE: 5.2.13

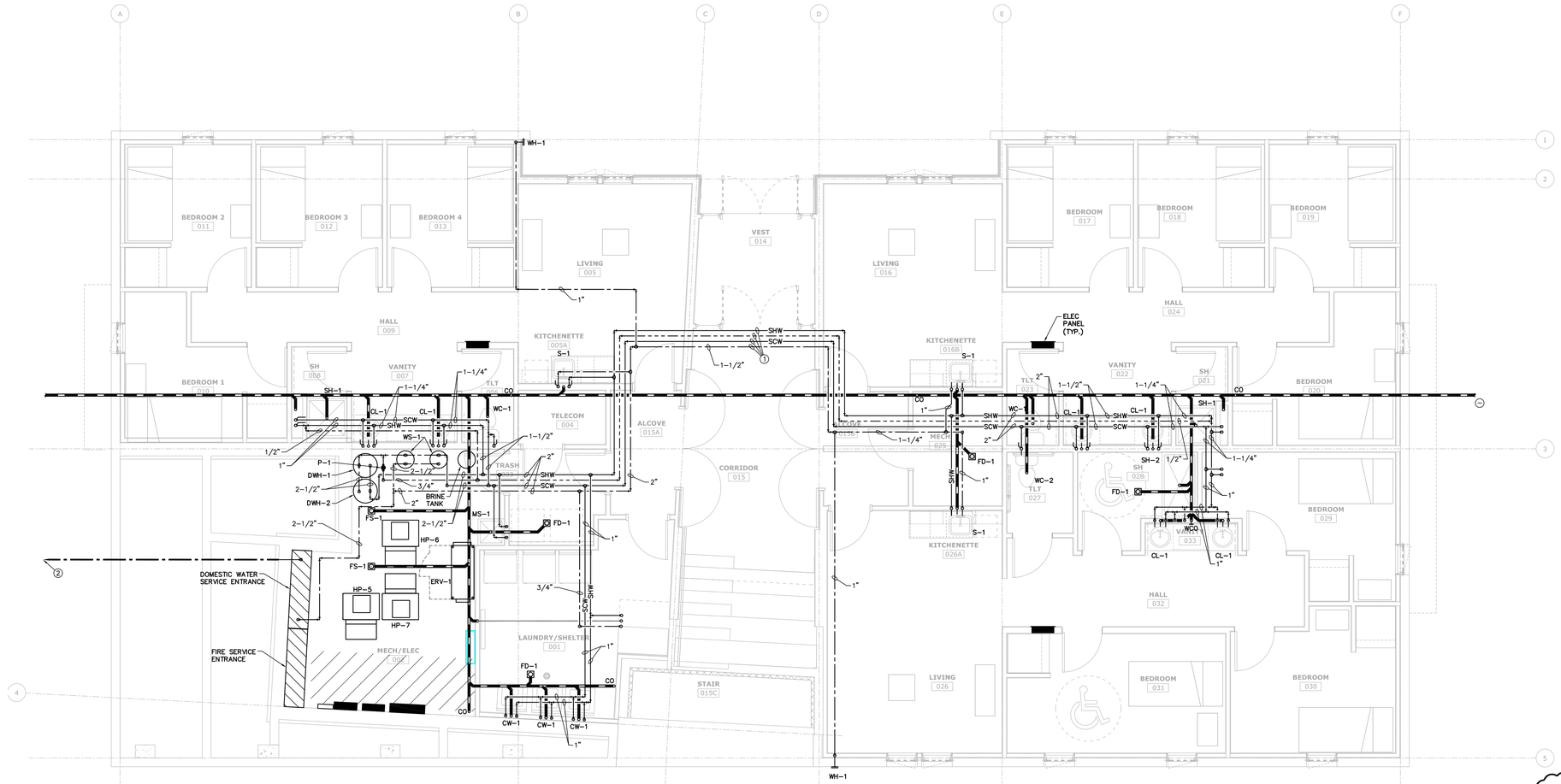
PROGRESS SET NOT
FOR CONSTRUCTION

SDS-1R

Project
North

SHEET NOTES: (SYMBOLS ①, ②, ETC.)

1. ROUTE PIPING BELOW BEAM AND ABOVE FINISHED CEILING.
2. EXTEND PIPING A MINIMUM OF 5'-0" FROM BUILDING AND MAKE FINAL CONNECTON TO UTILITY MAIN. SEE CIVIL PLANS FOR SITE PIPING.



A3 LOWER LEVEL PLUMBING PLAN
1/4" = 1'-0"

A2 ENTIRE SHEET HAS BEEN REVISED PER ADDENDUM #2

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REVISIONS SCHEDULE		
MARK	DATE	DESCRIPTION
2	05.03.13	FINAL GMP ADDENDUM #2

Eagle Ridge Housing
Final GMP Set

PROJECT: #L12007 DATE: 04.15.13

GMP SET
NOT FOR CONSTRUCTION

LOWER LEVEL
PLUMBING PLAN

NORTH

M3.1

DWG: F:\Projects\012-2825\MEP-CSC West Court Replacement\Construct\Mech\MPN0A.dwg USER: ikost
DATE: May 03, 2013 10:41am XREFS: xref - TB Xref - Lower Level EPN1A Xref - Lower Level HVAC EPM MPN1A

A3 FIRST FLOOR PLUMBING PLAN

1/4" = 1'-0"

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DATE: May 03, 2013 10:40am XREFS: xref - TB Xref - First Level MPNOA EPNIA

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Eagle Ridge Housing
Final GMP Set

PROJECT: #L12007 DATE: 04.15.13

GMP SET
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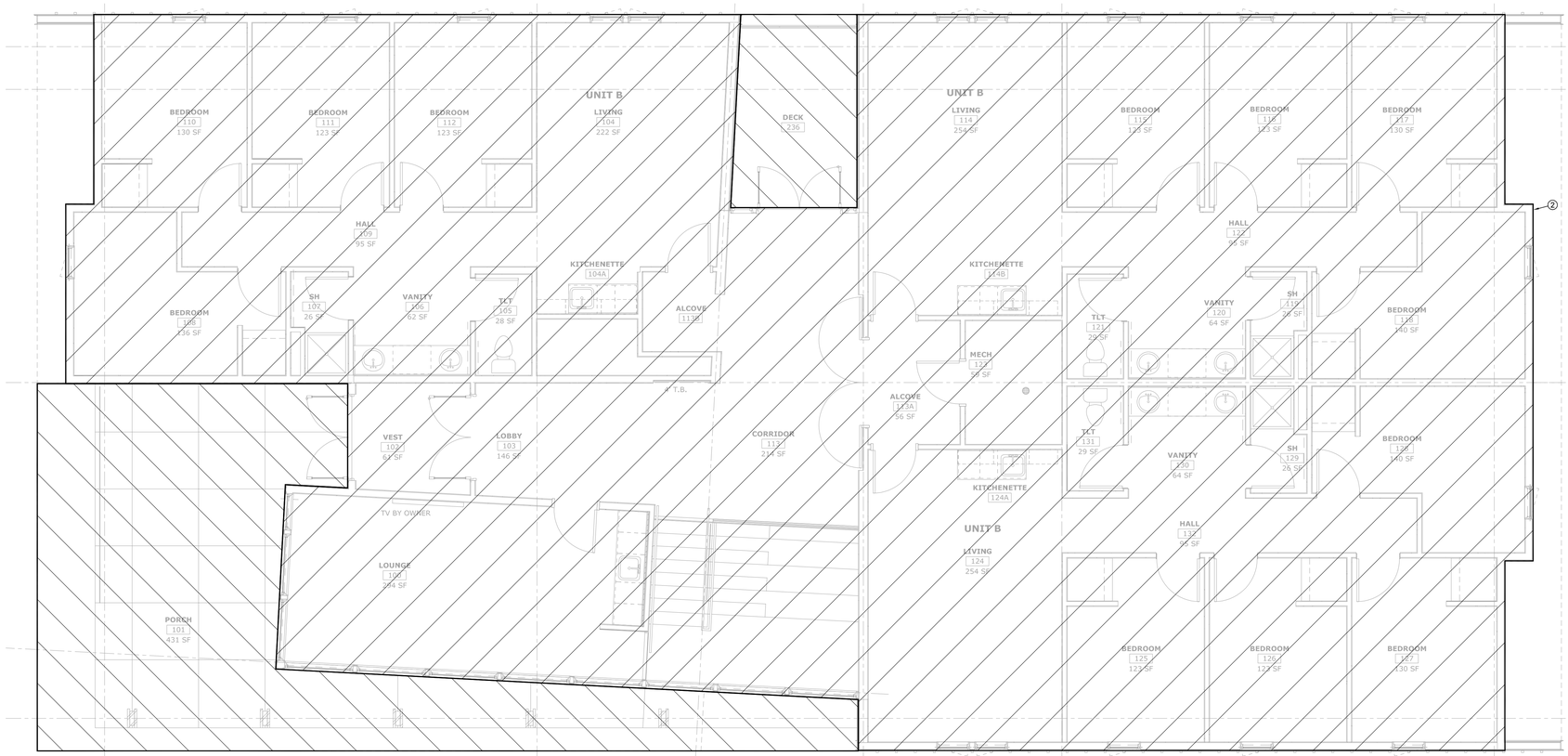
UPPER LEVEL
PLUMBING PLAN

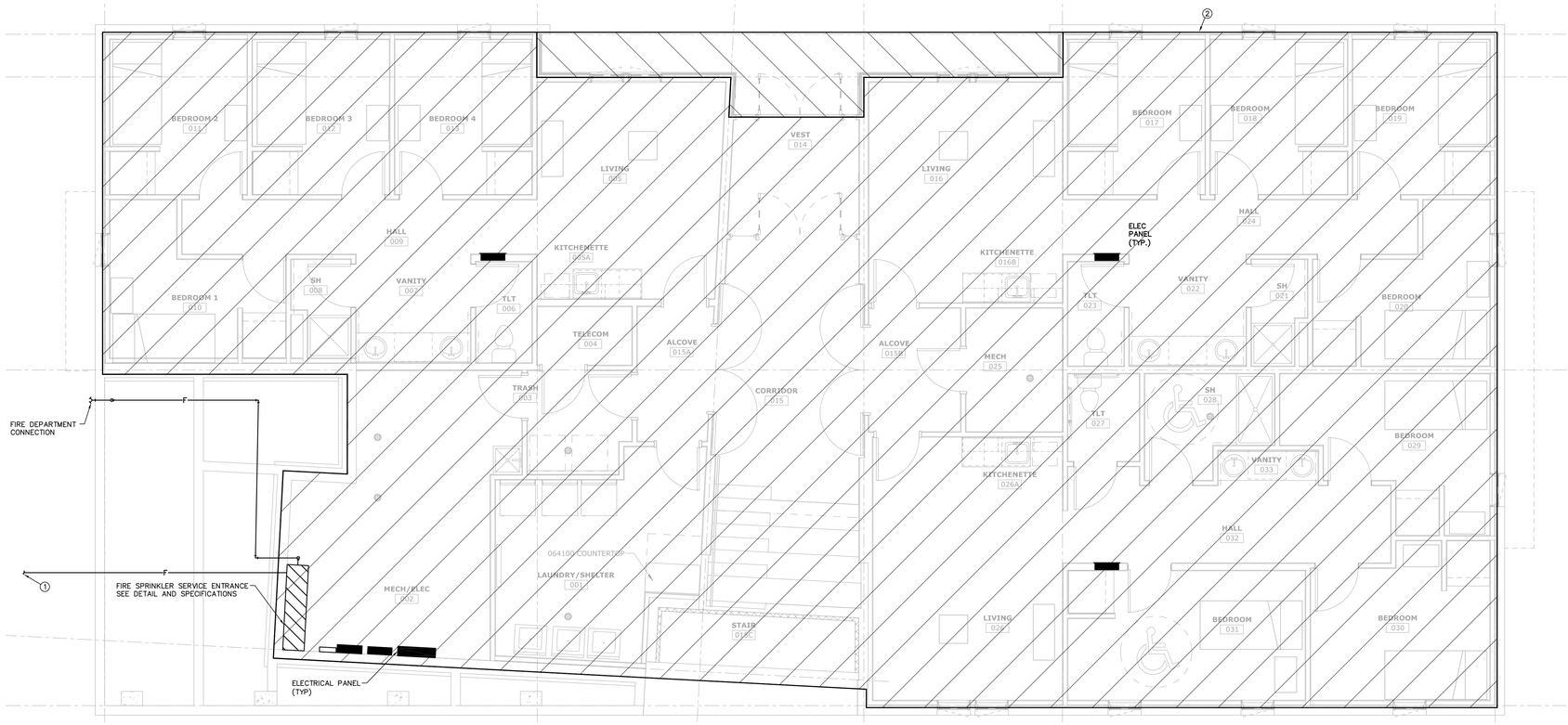
NORTH

M3.2



K2 FIRST LEVEL FIRE SPRINKLER PLAN

1/4" = 1'-0"



A2 LOWER LEVEL FIRE SPRINKLER PLAN

1/4" = 1'-0"

GENERAL NOTES:

A. COORDINATE INSTALLATION OF PIPING WITH ALL TRADES.

B. LOCATE EQUIPMENT AND ALLOW ACCESS FOR ADJUSTMENT AND SERVICING. REFER TO INSTALLATION MANUALS UNLESS OTHERWISE SPECIFICALLY SHOWN ON THESE DRAWINGS. AREA AROUND AND ACCESS AREA BELOW SHALL BE FREE OF OBSTRUCTIONS INCLUDING PIPING, DUCTWORK, CONDUIT OR OTHER BUILDING ELEMENTS.

C. PROVIDE 3'-0" CLEARANCE IN FRONT OF ELECTRICAL PANELS AND DEVICES FROM FLOOR TO STRUCTURAL CEILING AS CODE REQUIREMENTS.

D. SPRINKLER HEADS SHALL BE LOCATED IN CENTER OF LAY-IN CEILING GRIDS, ASSUMING 2X2 GRID FORMAT. SPRINKLER HEADS IN EXPOSED OR HARD CEILINGS SHALL BE LAID OUT IN A UNIFORM AND SYMMETRICAL PATTERN ACCEPTABLE WITH ARCHITECT AND/OR ENGINEER. SEE ARCHITECTURAL PLANS FOR TYPE OF CEILING INSTALLED.

E. PROVIDE PROTECTIVE CAGE OVER SPRINKLER HEADS LOCATED WITHIN 84" A.F.F. & ALL CUSTODIAL, MECHANICAL, & STORAGE ROOMS.

F. SPRINKLER LINE DRAIN LINES &/OR TEST LINES SHALL BE ROUTED OUTSIDE UNLESS OTHERWISE NOTED. EXTERIOR TEST DRAIN OUTLETS SHALL BE CHROME WITH MATCHING ESCUTCHEON.

G. CONTRACTOR SHALL COORDINATE WITH ELECTRICAL, FIRE SPRINKLER, PLUMBING, AND HVAC CONTRACTORS PRIOR TO INSTALLATION. HVAC CONTRACTORS DUCT AND EQUIPMENT LOCATIONS SHALL TAKE PRIORITY OVER PIPING.

H. DO NOT ROUTE FIRE SPRINKLER PIPING IN ATTIC

SHEET NOTES: (SYMBOLS ① ② ETC.)

1. EXTEND PIPING A MINIMUM OF 5'-0" FROM BUILDING AND MAKE FINAL CONNECTION TO UTILITY MAIN. SEE CIVIL PLANS FOR SITE PIPING.

2. ROUTE ALL FIRE SPRINKLER PIPING IN UPPER LEVEL WALLS AND USE SIDE WALL SPRINKLER HEADS.

FIRE PROTECTION LEGEND

PROVIDE WET PIPE FIRE SPRINKLER SYSTEM IN THIS AREA

PROVIDE FREEZELESS WET PIPE SIDEWALL SPRINKLER SYSTEM COVERAGE IN THIS AREA

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REVISIONS SCHEDULE		
MARK	DATE	DESCRIPTION

Eagle Ridge Housing
Final GMP Set

PROJECT: #L12007 DATE: 04.15.13

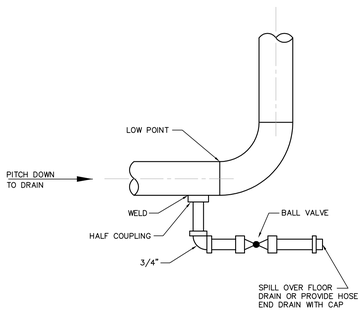
GMP SET
NOT FOR CONSTRUCTION

FIRE SPRINKLER PLANS

NORTH

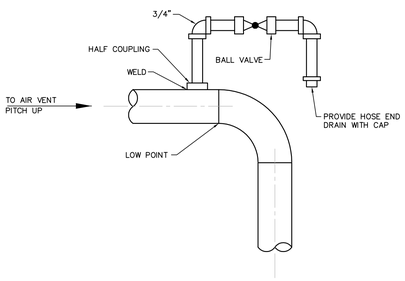
M4.1

DWG: F:\Projects\072-2625\ME\1-CSC West Court Replacement\Constructs\Mech\MFNDA.dwg USER: Root
DATE: May 03, 2013 10:44am XREFS: xref - TB xref - Lower Level EFNIA xref - First Level MFNIA



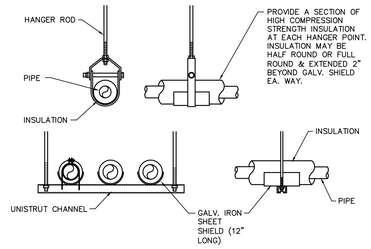
NOTES:
1. LOW POINTS IN ALL HPS/R PIPING SHALL HAVE DRAINS.

R3 DRAIN DETAIL
NOT TO SCALE



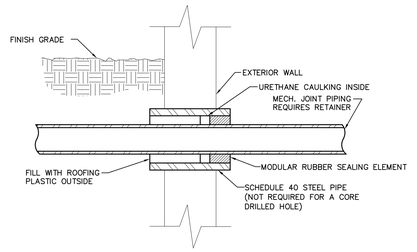
NOTES:
1. HIGH POINTS IN ALL HPS/R PIPING SHALL HAVE MANUAL AIR VENTS.
2. ALL AIR VENTS SHALL BE INSTALLED IN ACCESSIBLE LOCATIONS.

R8 MANUAL AIR VENT DETAIL
NOT TO SCALE



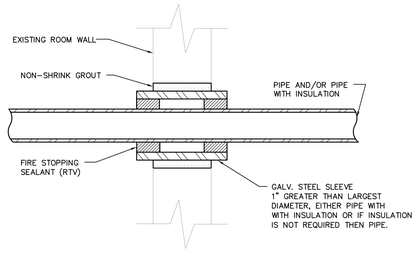
NOTES:
1. ATTACH SUPPORTS FOR ALL PIPING SUSPENDED FROM THE STEEL STRUCTURE TO THE TOP CORD OF JOISTS OR BEAMS.
2. PROVIDE COPPER OR PLASTIC COATED HANGERS FOR NON-INSULATED COPPER PIPE.

R14 PIPE INSULATION DETAIL
NOT TO SCALE

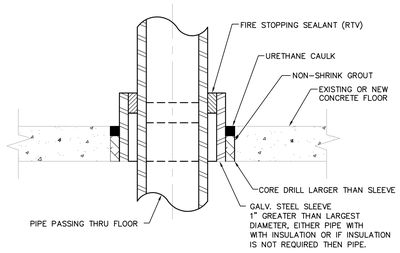


NOTES:
1. IF PIPING PASSES THROUGH WALL ABOVE GRADE, SLEEVE SHALL BE FLUSH WITH EXTERIOR SIDE OF WALL

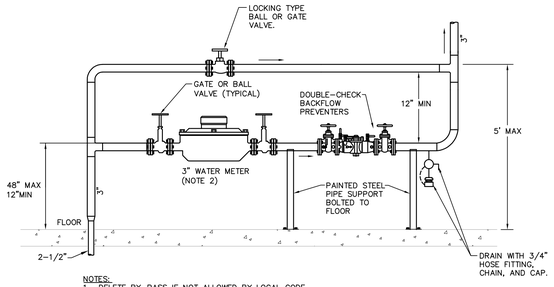
R20 PIPE SLEEVE THRU EXTERIOR WALL
NOT TO SCALE



J2 PIPE SLEEVE THRU INTERIOR WALL
NOT TO SCALE

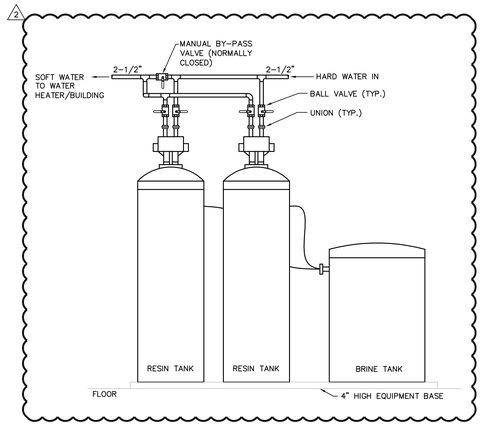


J7 PIPE SLEEVE THRU FLOOR
NOT TO SCALE

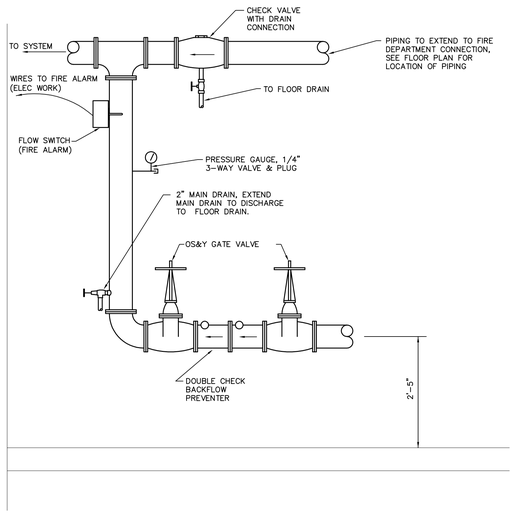


NOTES:
1. DELETE BY-PASS IF NOT ALLOWED BY LOCAL CODE.
2. METER SHALL BE PROVIDED WITH REMOTE EXTERIOR WALL MOUNTED READOUT. VERIFY METER TYPE AND UNIT OF MEASURE WITH UTILITY.

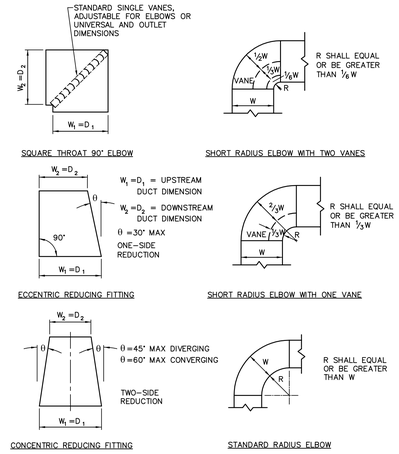
J14 WATER METER BACKFLOW PREVENTER
NOT TO SCALE



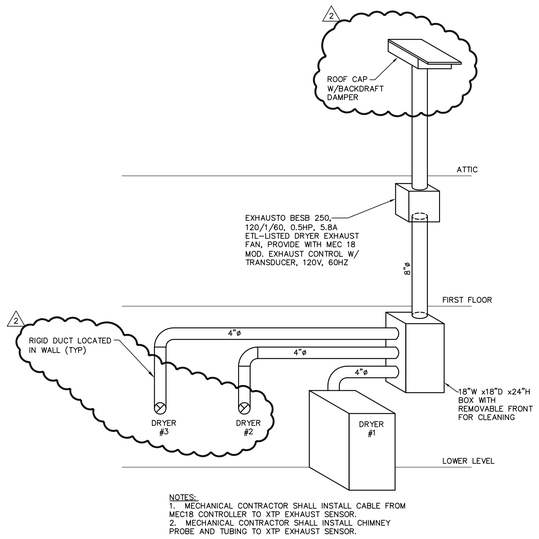
J21 WATER SOFTENER CONNECTIONS
NOT TO SCALE



A3 FIRE SPRINKLER ENTRANCE
NOT TO SCALE

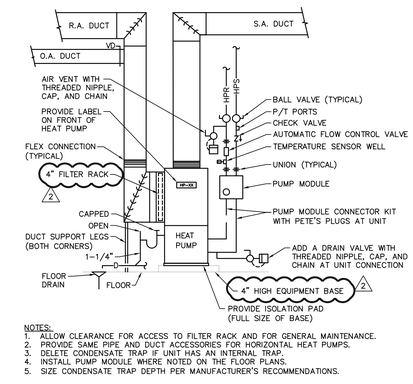


A9 SHEET METAL FITTINGS
NOT TO SCALE



NOTES:
1. MECHANICAL CONTRACTOR SHALL INSTALL CABLE FROM MEC18 CONTROLLER TO XTP EXHAUST SENSOR.
2. MECHANICAL CONTRACTOR SHALL INSTALL CHIMNEY PROBE AND TUBING TO XTP EXHAUST SENSOR.

A15 DRYER EXHAUST DETAIL
NOT TO SCALE



NOTES:
1. ALLOW CLEARANCE FOR ACCESS TO FILTER RACK AND FOR GENERAL MAINTENANCE.
2. PROVIDE SAME PIPE AND DUCT ACCESSORIES FOR HORIZONTAL HEAT PUMPS.
3. DELETE CONDENSATE TRAP IF UNIT HAS AN INTERNAL TRAP.
4. INSTALL PUMP MODULE WHERE NOTED ON THE FLOOR PLANS.
5. SIZE CONDENSATE TRAP DEPTH PER MANUFACTURER'S RECOMMENDATIONS.

A20 HEAT PUMP: VERTICAL (SHOWN) & HORIZONTAL
NOT TO SCALE

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REVISIONS SCHEDULE		
MARK	DATE	DESCRIPTION
2	05.03.13	FINAL GMP ADDENDUM #2

Eagle Ridge Housing
Final GMP Set

PROJECT: #L12007 DATE: 04.15.13

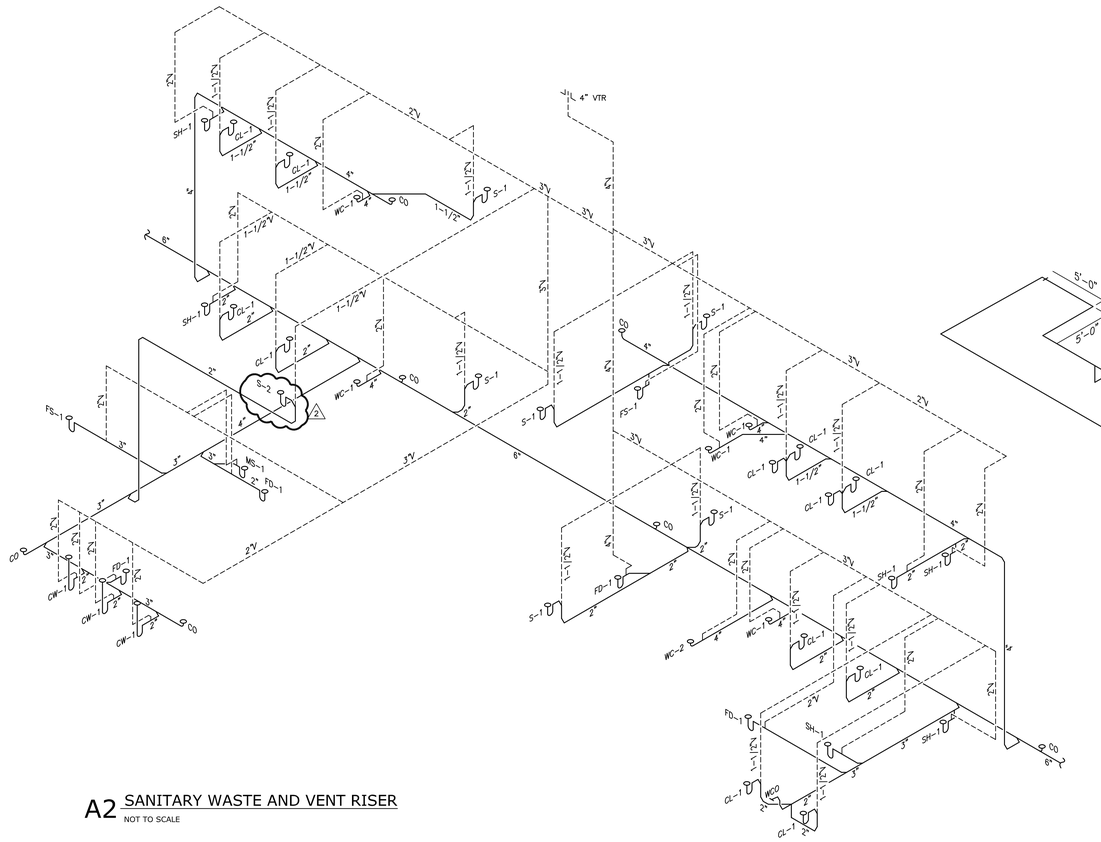
GMP SET
NOT FOR CONSTRUCTION

MECHANICAL DETAILS

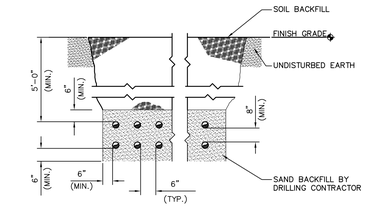
NORTH

M5.1

DWG: F:\Projects\012-2625\MEL\-CSC West Court Replacement\Construct\Mech\MDN1A.dwg
DATE: May 03, 2013 10:45am
USER: lkost
XREFS: xref - TB

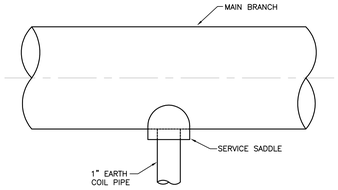


A2 SANITARY WASTE AND VENT RISER
NOT TO SCALE

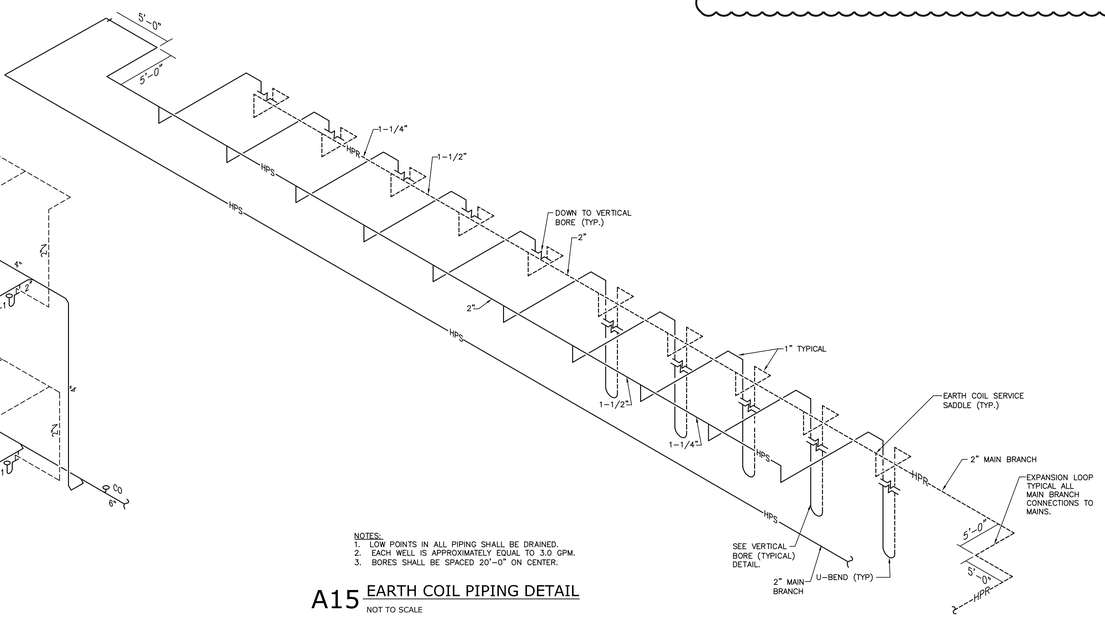


NOTES:
1. THE BOTTOM OF THE TRENCH EXCAVATION SHALL BE LEVEL, SOLID, FREE OF ROCK/DEBRIS.

M15 WELL FIELD PIPE TRENCH SECTION
NOT TO SCALE

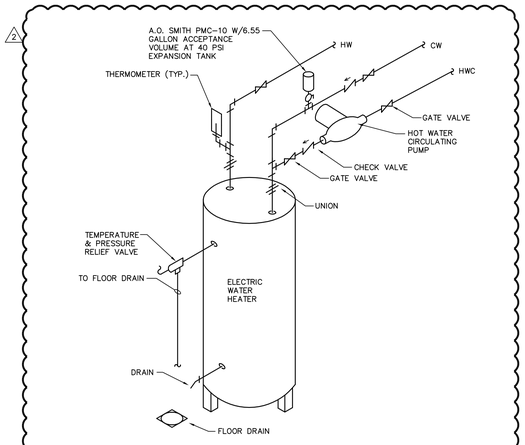


H15 EARTH COIL SERVICE SADDLE
NOT TO SCALE

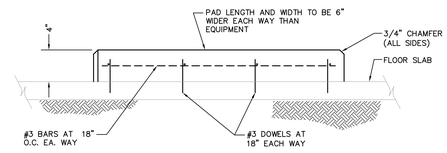


NOTES:
1. LOW POINTS IN ALL PIPING SHALL BE DRAINED.
2. EACH WELL IS APPROXIMATELY EQUAL TO 3.0 GPM.
3. BORES SHALL BE SPACED 20'-0" ON CENTER.

A15 EARTH COIL PIPING DETAIL
NOT TO SCALE



M20 ELECTRICAL WASTER HEATER CONNECTIONS
NOT TO SCALE



H20 EQUIPMENT BASE
NOT TO SCALE

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REVISIONS SCHEDULE		
MARK	DATE	DESCRIPTION
2	05.03.13	FINAL GMP ADDENDUM #2

Eagle Ridge Housing
Final GMP Set

PROJECT: #L12007 DATE: 04.15.13

GMP SET
NOT FOR CONSTRUCTION

MECHANICAL DETAILS

NORTH

M5.2

DWG: F:\Projects\012-2023\ME\1-CGC West Court Replacement\Construct\Mech\MDN2A.dwg USER: ikost
DATE: May 03, 2013 10:45am XREFS: xref - TB

PLUMBING FIXTURE SCHEDULE

TAG	TYPE	MANUFACTURER[3]	MODEL[3]	DESCRIPTION	ACCESSORIES	CONNECTIONS[1,2] WASTE	VENT	CW	HW
WC-1	WATER CLOSET FLOOR MOUNTED FLUSH TANK	ST. THOMAS CREATIONS ECLIPSE	MARATHON II 6206.020	ELONGATED, VITREOUS CHINA BOWL WITH PERFORMANCE PLUS GRAVITY FLUSHING SYSTEM, 1.6 GPF.	INCLUDE BOLT CAPS MATCHING FIXTURE, CHROME PLATED SUPPLY WITH STOP VALVE AND ESCUTCHEON. BEMIS 1500EC RESIDENTIAL WHITE TOILET SEAT, CLOSED FRONT WITH COVER, ELONGATED, MOLDED WOOD, MULTI-COAT ENAMEL FINISH.	3"	2"	1/2"	–
WC-2	WATER CLOSET FLOOR MOUNTED FLUSH TANK ADA	ST. THOMAS CREATIONS ECLIPSE	MARATHON II 6206.030	ELONGATED, VITREOUS CHINA BOWL WITH WITH PERFORMANCE PLUS GRAVITY FLUSHING SYSTEM, 1.6 GPF. FLUSH LEVER SHALL BE ON OPEN SIDE OF FIXTURE, REFER TO FLOOR PLANS BEFORE ORDERING.	INCLUDE BOLT CAPS MATCHING FIXTURE, CHROME PLATED SUPPLY WITH STOP VALVE AND ESCUTCHEON. BEMIS 1500EC RESIDENTIAL WHITE TOILET SEAT, CLOSED FRONT WITH COVER, ELONGATED, MOLDED WOOD, MULTI-COAT ENAMEL FINISH.	3"	2"	1/2"	–
CL-1	COUNTER-TOP LAVATORY ADA	MANSFIELD	EASTON I MS1290	WHITE, VITREOUS CHINA, SELF-RIMMING OVAL-SHAPED BOWL, CONCEALED FRONT OVERFLOW. FAUCET HOLES SHALL BE 4" ON CENTER. NOMINAL DIMENSION OF 20-1/4"x17-1/8".	PROVIDE WITH CHROME-PLATED COPPER SUPPLIES WITH AND STOP VALVES. PROVIDE CHROME-PLATED CAST-BRASS TRAP WITH CLEANOUT; 0.045" THICK TUBULAR BRASS WASTE TO WALL AND WALL ESCUTCHEONS. KOHLER CORALAIS K-15598 FAUCET, ADA-COMPLIANT, CHROME-PLATED METAL CONSTRUCTION, ONE-PIECE LEVER HANDLE FAUCET, 1.5 GPM VANDAL RESISTANT AERATOR, HIGH-TEMP LIMIT STOP, AND CHROME PLATED BRASS GRID STRAINER. COVER EXPOSED HOT AND COLD SUPPLIES AND WASTE PIPING WITH PROTECTIVE SHIELDING GUARD, TRUEBRO INSULATED VINYL PIPE COVERS WITH ANTI-MICROBIAL, REUSABLE FASTENERS, STOP VALVE LOCKING ACCESS COVER.	1-1/2"	1-1/4"	1/2"	1/2"
S-1	SINK COUNTER MOUNTED SINGLE-COMPARTMENT	DAYTON	D11721	COUNTER MOUNTED; 22-GAUGE, NICKEL-BEARING TYPE 301 STAINLESS STEEL, 6-1/2" DEEP, SINGLE COMPARTMENT SINK, 17"x21-1/4" OVERALL DIMENSION, SELF RIMMING SINK WITH 3-1/2" DRAIN OPENING.	PROVIDE 1-1/2" CHROME-PLATED CAST-BRASS TRAP WITH CLEANOUT AND WALL ESCUTCHEON. 1/2" CHROME-PLATED SUPPLIES WITH STOPS AND WALL ESCUTCHEONS. MOEN 7100CSL SINGLE HANDLE, ADA COMPLIANT, CHROME-PLATED, FAUCET WITH 14" HI-ARC SWINGING SPOUT AND REMOVABLE CARTRIDGE. PROVIDE DEARBORN BRASS CRUMB CUP FOR SINK DRAIN OPENING AND DRAIN TAILPIECE.	1-1/2"	1-1/2"	1/2"	1/2"
S-2	SINK UNDER COUNTER MOUNTED SINGLE-COMPARTMENT	ELKAY	ELU1418	UNDERMOUNT; 18-GAUGE, NICKEL-BEARING TYPE 304 STAINLESS STEEL, 7-7/8" DEEP, SINGLE COMPARTMENT SINK, 15-1/2"x19-1/2" OVERALL DIMENSION, 3-1/2" DRAIN OPENING.	PROVIDE 1-1/2" CHROME-PLATED CAST-BRASS TRAP WITH CLEANOUT AND WALL ESCUTCHEON. 1/2" CHROME-PLATED SUPPLIES WITH STOPS AND WALL ESCUTCHEONS. MOEN 7100CSL SINGLE HANDLE, ADA COMPLIANT, STAINLESS STEEL, FAUCET WITH 14" HI-ARC SWINGING SPOUT AND REMOVABLE CARTRIDGE. PROVIDE DEARBORN BRASS CRUMB CUP FOR SINK DRAIN OPENING AND DRAIN TAILPIECE.	1-1/2"	1-1/2"	1/2"	1/2"
MS-1	SERVICE BASIN	FIAT	MSB-2424	24"x24"x10" MOLDED STONE BASIN WITH 3" DRAIN OUTLET WITH WASTE STRAINER.	PROVIDE WITH 30" FLEXIBLE RUBBER HOSE AND WALL BRACKET. FIAT MODEL 830-AA CHROME-PLATED FAUCET WITH VACUUM BREAKER, INTEGRAL STOPS, ADJUSTABLE WALL BRACE, PAIL HOOK AND 3/4" HOSE THREAD ON SPOUT.	3"	1-1/2" (2" BELOW SLAB)	1/2"	1/2"
SH-1	CORNER SHOWER ENCLOSURE	MAAX AKER	ACSH-36	36"x33-1/4"X75-1/2" SHOWER KIT, WHITE, CENTER DRAIN, ONE-PIECE VACUUM FORMED ACRYLIC, TWO TWIN ELEVATED CORNER SHELVES.	PROVIDE DRAIN WITH CHROME-PLATED STRAINER FOR SHOWER ENCLOSURE. PROVIDE WITH MAXX PIVOLOK 1-PANEL PIVOT DOOR WITH CHROME TRIP AND RAINDROP TEMPERED GLASS.	2"	2"	1/2"	1/2"
	SHOWERING STATION COMPONENTS	SYMMONS	"SAFETYMIX" 1-100	SAFETYMIX PRESSURE-BALANCING MIXING VALVE WITH LEVER HANDLE AND ADJUSTABLE STOP SCREW TO LIMIT HANDLE TURN. FREE-FLOW SHOWER HEAD WITH ADJUSTABLE SPRAY.					
SH-2	SHOWERING STATION ENCLOSURE ADA	MAAX AKER	BFS-6036F	63"Wx40"Dx79"H SHOWER KIT. UNIT SHALL HAVE RECESSED SOAP DISH, PRESSURE BALANCING MIXING VALVE, SHOWER CURTAIN, SOLID BRASS DRAIN WITH STAINLESS STEEL GRID, STRAIGHT TEXTURED GRAB BAR, AND RIBBED BOTTOM FOR LIP RESISTANCE.	PROVIDE OPT 20037-R/L-381 L-SHAPED FOLD UP SEAT (SPECIFY LEFT OR RIGHT), NAUGAHYDE FINISH.	2"	2"	1/2"	1/2"
	SHOWERING STATION COMPONENTS	SYMMONS	"SAFETYMIX" 1-100	SAFETYMIX PRESSURE-BALANCING MIXING VALVE WITH LEVER HANDLE AND ADJUSTABLE STOP SCREW TO LIMIT HANDLE TURN. FREE-FLOW SHOWER HEAD WITH ADJUSTABLE SPRAY.					
CW-1	CLOTHES WASHER RECESSED OUTLET BOX	OATEY	–	RECESSED, CENTER DRAIN WASHING MACHINE OUTLET BOX. 2" DRAIN OPENING, 1/4 TURN SUPPLY BALL VALVES, HIGH-IMPACT POLYSTYRENE CONSTRUCTION. INCLUDE FOUR SUPPORT BRACKETS AND SNAP-ON FACE PLATE.	–	2"	2"	1/2"	1/2"
FS-1	SQUARE FLOOR SINK	ZURN	Z-1910	8"Wx8"Dx6"H DEEP CAST IRON BODY AND SQUARE 7/16" SLOTTED MEDIUM DUTY GRATE, WITH WHITE ACID RESISTING PORCELAIN ENAMEL INTERIOR AND TOP, COMPLETE WITH WHITE ABS ANTI-SPLASH INTERIOR BOTTOM DOME STRAINER.	PROVIDE WITH 3/4 TOP GRATE.	3"	2"	–	–
FD-1	ROUND FLOOR DRAIN	ZURN	Z-415	CAST IRON TWO PIECE BODY WITH DOUBLE DRAINAGE FLANGE, WEEP HOLES, REVERSIBLE CLAMPING COLLAR, NICKEL BRONZE ADJUSTABLE STRAINER.	DIMENSIONS OF TOP STRAINER: 2" OUTLET WITH A 5" STRAINER, 3" OR 4" OUTLET WITH 8" STRAINER, 6" OUTLET WITH A 10" STRAINER. PROVIDE TY SEALS FOR FLOOR DRAINS MOUNTED IN FLOORS ABOVE GRADE. VERIFY PIPE SIZES ON PLANS.	2"	1-1/2" (2" BELOW SLAB)	–	–
WH-1	EXPOSED FREEZE-PROOF WALL HYDRANT	WOODFORD	67	NON-FREEZE, CONCEALED, AUTOMATIC DRAINING TYPE WITH CHROME FINISH, HOSE THREAD SPOUT, INTEGRAL VACUUM BREAKER, ONE-PIECE VALVE PLUNGER WITH REMOVABLE KEY.	PROVIDE WITH SPARE KEY FOR EACH HYDRANT PROVIDED.	–	–	3/4"	–
HB-1	EXPOSED HOSE BIBB	WOODFORD	24	EXPOSED WALL HOSE BIBB WITH CHROME FINISH, HOSE THREADED SPOUT, ANTI-SIPHON, VACUUM BREAKER, AND POLYCARBONATE WHEEL HANDLE.	–	–	–	3/4"	–
FCO	FLOOR CLEANOUT	ZURN	Z-1400	CAST IRON BODY, WITH GAS AND WATER-TIGHT ABS TAPERED THREAD PLUG AND ROUND POLISHED BRONZE SCORIATED SECURED TOP, ADJUSTABLE TO FINISH FLOOR.	CLEANOUT SHALL BE THE SAME SIZE AS PIPING UP TO 4". 4" AND LARGER PIPING SHALL BE A 4" CLEANOUT.	–	–	–	–
WCO	WALL CLEANOUT	ZURN	Z-1446	CLEANOUT TEE, DURA-COATED CAST IRON BODY, GAS AND WATERTIGHT ABS TAPERED THREAD PLUG, WITH ROUND SMOOTH STAINLESS STEEL WALL ACCESS COVER WITH SECURING SCREW.	CLEANOUT SHALL BE THE SAME SIZE AS PIPING UP TO 4". 4" AND LARGER PIPING SHALL BE A 4" CLEANOUT.	–	–	–	–
ECO	EXTERIOR CLEANOUT	ZURN	Z-1400-HD	ADJUSTABLE FLOOR CLEANOUT, DURA-COATED CAST IRON BODY, WITH GAS AND WATERTIGHT ABS TAPERED THREAD PLUG, AND SQUARE TOP WITH ROUND SCORIATED SECURED HEAVY DUTY TOP, ADJUSTABLE TO FINISH FLOOR.	CLEANOUT SHALL BE THE SAME SIZE AS PIPING UP TO 4". 4" AND LARGER PIPING SHALL BE A 4" CLEANOUT.	–	–	–	–

NOTES:
1. VERIFY ALL CONNECTIONS & MOUNTING HEIGHTS WITH CODES, MANUFACTURERS, AND PLANS.
2. SIZES LISTED INDICATE MIN. SIZE ONLY, SEE PLUMBING RISERS AND FLOOR PLANS FOR LARGER SIZES.
3. ALTERNATE MANUFACTURERS – AMERICAN STANDARD, CRANE, JUST, CHICAGO FAUCETS, DELTA, MOEN, WADE, JR SMITH, WATTS.
4. ALTERNATE MANUFACTURERS MAY BE USED IF EQUAL TO TYPE SPECIFIED.
5. SEE SPECIFICATIONS FOR LISTS OF ALTERNATE MANUFACTURES.

HEAT PUMPS

MARK	CFM	OA	EXT. SP IN. W.G.	MAX KW	VOLTAGE	MCA	GPM	EQUIPMENT CONNECTION PIPE SIZE	WPD (FT)	ACTUAL COOLING CAPACITY TOTAL MBH	SENSIBLE MBH	MAX LWT (F)	EER	ACTUAL HEATING TOTAL MBH	COP	ARI INPUTS CFM	GPM	ARI COOLING TOTAL MBH	EER	ARI HEATING TOTAL MBH	COP	NOMINAL TONNAGE	FLORIDA H.P. MODEL #	REMARKS
HP-1,2,3,4,5,6,7	1200	90	0.75	2.63	208/1ø	27	9	1"	6.2	34.5	29.9	94.6	13.1	36.4	4.1	1200	9.0	38.2	18.4	28.2	4.1	3	AP035	1,2,3,4,5,6,7,8,9

REMARKS:
1. 80°/67° DB/WB COOLING ENTERING AIR TEMP., 68° DB HEATING ENTERING AIR TEMP.
2. 85°F ENTERING WATER TEMPERATURE FOR COOLING AND 44°F EWT FOR HEATING.
3. PROVIDE WITH COMPRESSOR BLANKET TO REDUCE NOISE.
4. PROVIDE WITH 4" FILTER RACK WITH 4" DISPOSABLE FILTERS.
5. PROVIDE WITH CONDENSATE DRAIN OVERFLOW ALARM CONTACTS FOR BMS.
6. PROVIDE VIBRATION ISOLATION AT UNIT SUPPORT.
7. PROVIDE WITH GROUND LOOP PUMPING PACKAGE (GL002-1XCA) AND MOUNT WHERE SHOWN ON THE PLANS. PROVIDE WITH HEAT PUMP CONNECTOR KIT. PUMP CAPACITY (PER PUMP): 7.5 GPM @ 32 FT HEAD.
8. COORDINATE LOCATION OF UNITS PRIOR TO SHOP DRAWING SUBMITTAL.
9. INSTALL ON 4" CONCRETE HOUSEKEEPING PAD.

ENERGY RECOVERY VENTILATORS (STATIC CORE)

MARK	LOCATION	SERVES	OUTSIDE AIR CFM	ESP (INCH. WG)	HP	EXHAUST AIR CFM	ESP (INCH. WG)	HP	ELECTRICAL V / Hz / Ph	MINIMUM SUMMER SENSIBLE EFFECTIVENESS	MINIMUM WINTER SENSIBLE EFFECTIVENESS	RENEWAIRE MODEL	REMARKS
ERV-1	MECHANICAL	RESIDENCE BUILDING	630	1.25	0.75	590	1.4	0.75	208/60/1	69%	69%	HE1XINH	1, 2, 3, 4, 5, 6, 7

REMARKS:
1. FIXED CORE, TOTAL ENERGY RECOVERY MODULE.
2. PROVIDE 4 INCH PLEATED DISPOSABLE FILTERS.
3. INSTALL ON A 4" CONCRETE EQUIPMENT BASE.
4. DESIGN CONDITIONS: WINTER: ROOM AIR = 70/52.6 DB/WB, OUTSIDE AIR = -8.1 DB, SUMMER: ROOM AIR = 74/63 DB/WB, OUTSIDE AIR = 97.4/65.7 DB/WB.
5. PROVIDE WITH FRESH AIR AND EXHAUST AIR FANS AND MOTORS.
6. PROVIDE AND INSTALL WITH VIBRATION ISOLATION PADS UNDER UNIT.
7. ALTERNATE MANUFACTURERS – VENMAR.

DOMESTIC WATER HEATER

MARK	STORAGE (GAL.)	RECOVERY (GPH)	TEMP. RISE (°F)	TEMP. SETTING (°F)	ELECTRICAL VOLTAGE	TOTAL INPUT (KW)	NUMBER OF ELEMENTS	MANUFACTURER MODEL	REMARKS
DWH-1,2	50	192	65°F	120°F	208/3	30	6	BRADFORD WHITE M-II-50-30-3SF	1,2,3,4,5,6

REMARKS:
1. PROVIDED WITH DRAIN VALVE AND T&P RELIEF VALVE.
2. INSULATED TANK WITH 150 PSI MAX WORKING PRESSURE.
3. TWO MAGNESIUM ANODE RODS.
4. INSTALL ON 4" CONCRETE HOUSEKEEPING PAD.
5. PROVIDE AMTROL ST-5 EXPANSION TANK.
6. ALTERNATE MANUFACTURERS – STATE, RUUD, A.O. SMITH.

PUMPS

MARK	LOCATION	SERVES	TYPE	GPM	HEAD (FT)	EFF. %	MOTOR DATA HP	VOLT	PH	Hz	RPM	MANUFACTURER AND MODEL	REMARKS
P-1	MECH	110° HW RECIRC	IN-LINE	5	15	–	1/8	115	1	60	–	TACO 009	1, 2

REMARKS:
1. BRONZE BODY.
2. PROVIDE TACO "OO" TIMER. ELECTRICAL CONTRACTOR TO MOUNT TIMER ON WALL NEAR PUMP.
3. PROVIDE TACO "AQUASTAT" AND CLIP ONTO PIPE IN LOCATION INDICATED ON PLANS.
4. ALTERNATE MANUFACTURERS – WILO.

AIR DISTRIBUTION DEVICES

MARK	SERVES	COLOR	DAMPER	PATTERN	MAX NC	MAX PD IN WC	MANUFACTURER AND MODEL	REMARKS
CD-1	SUPPLY	WHITE	OBD	390°	25	0.1	TITUS OMNI	1,2,3,8,9,10
R-1	SUPPLY	WHITE	OBD	DOUBLE DEFL.	25	0.1	TITUS JFA-S	1,2,3,5,7,8,9,11
R-2	SUPPLY	ALUMINUM	OBD	0° FIXED DEFL.	25	0.1	NAILOR 4900	1,2,8,9,12,13
G-1	RETURN	WHITE	--	35° FIXED DEFL.	25	0.1	TITUS 350RL	1,2,3,4,7,8,9
G-2	RETURN	ALUMINUM	--	0° FIXED DEFL.	25	0.1	NAILOR 4900	1,2,4,8,9,12,13
X-1	EXHAUST	WHITE	OBD	35° FIXED DEFL.	25	0.1	TITUS 350RL	1,2,3,4,7,8,9

REMARKS:
1. VERIFY BORDER TYPE REQUIRED.
2. NECK SIZE INDICATED ON PLANS.
3. STEEL CONSTRUCTION.
4. FRONT BLADES PARALLEL WITH LONG DIMENSION.
5. FRONT BLADES PARALLEL WITH SHORT DIMENSION.
6. PERFORATED FACE TO BE FLUSH WITH CEILING. PROVIDE WITH RAPID MOUNT FRAME.
7. 3/4" BLADE SPACING.
8. FLAT BLACK PAINT SHALL BE PROVIDED BEHIND DEVICES THAT SHOW DUCTWORK, ELEC. CONDUITS, STRUCTURAL, PIPING, ETC.
9. ALTERNATE MANUFACTURERS – KRUEGER, TUTTLE AND BAILEY.
10. 12x12 MODULE SIZE.
11. POLE OPERATED.
12. PROVIDE WITH HEAVY DUTY ALUMINUM BAR DIFFUSER.
13. ALUMINUM CONSTRUCTION.

LOUVERS

MARK	TYPE	MATERIAL	CFM	MAX. S.P. IN W.G.	SCREEN BIRD	INSECT	SIZE L	H	D	FINISH	MANUFACTURER & MODEL	REMARKS
L-1	INTAKE	ALUMINUM	630	0.03	X	–	36"	18"	4"	ANODIZED	GREENHECK EUH-401	1, 2, 3, 4
L-2	EXHAUST	ALUMINUM	590	0.03	X	–	36"	18"	4"	ANODIZED	GREENHECK EUH-401	1, 2, 3, 4

REMARKS:
1. PROVIDE WITH ALUMINUM BIRD SCREEN.
2. STANDARD FINISH SELECTED BY ARCHITECT.
3. AUTOMATIC DAMPER SUPPLIED BY CONTROLS CONTRACTOR AND CONTROLLED BY THE BUILDING MANAGEMENT SYSTEM.
4. VERTICAL BLADE.

UNIT HEATER

MARK	SERVES	CFM	AMPS	VOLTAGE	HEATING DATA TYPE	KW INPUT	MBH OUTPUT	TEMP RISE (°F)	MANUFACTURER AND MODEL	REMARKS
UH-1,2	VEST	425	14.4	208/1ø	ELEC	3.0	10.2	32	TRANE UHCA SERIES 80	1, 2, 3, 4

REMARKS:
1. FULL RECESS MOUNTED, SERIES 80.
2. UNIT MOUNTED THERMOSTAT.
3. UNIT MOUNTED DISCONNECT SWITCH.
4. PROVIDE WITH PLASTER TRIM ACCESSORY.

WATER SOFTENERS

MARK	EXCH. CAP (KGR) MAX.	MIN.	RESIN CU. FT.	FLOW CONT.	PEAK	BKWSH. GPM	SALT CAP. LBS	SALT LBS/ REGEN	MANUFACTURER & MODEL	REMARKS
WS-1	120 @ 60LBS	80 @ 24LBS	4.0	45.0	60.0	8.0	800	40	CULLIGAN HCE-120-2	1, 2, 3

REMARKS:
1. BRINE TANK IS 24"ø x 50" H.
2. ROUTE DRAIN LINES ON WALL TO NEAREST FLOOR SINK. PROVIDE AT LEAST FOUR PIPE DIAMETERS OF AIR GAP.
3. PROVIDE UNIONS ON INLET AND OUTLET CONNECTIONS TO CONTROL VALVE.

MECHANICAL SCHEDULE:

A. EXPANSION TANK TYPE 1 (EXP-1): TACO MODEL CBX-84 ASME TANK, 22 GALLONS TOTAL VOLUME, 12 GALLONS ACCEPTANCE VOLUME, 38"H x 16"ø, 3/4" SYSTEM CONNECTION. PRECHARGE TANK TO 12 PSI. HANG FROM STRUCTURE NEAR CEILING.

B. AIR AND DIRT SEPERATOR TYPE 1 (AS-1): SEE SPECIFICATION SECTION 232113. SIZE SHALL BE 3".

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2	05.03.13	FINAL GMP ADDENDUM #2

Eagle Ridge Housing
Final GMP Set

PROJECT: #L12007 DATE: 04.15.13

GMP SET
NOT FOR CONSTRUCTION

MECHANICAL SCHEDULES

NORTH

M6.1

MECHANICAL P&ID SYMBOL LEGEND

- SUPPLY OR EXHAUST FAN
- PUMP
- (M) MOTOR
- (C) COMPRESSOR
- 30% PRE-FILTER
- MANUAL BALANCE VALVE
- COIL / HEAT EXCHANGER
- [T] TEMPERATURE SENSOR
- [H] HUMIDITY SENSOR
- [E] ENTHALPY SENSOR
- [P] PRESSURE SENSOR
- [PS] PRESSURE SWITCH
- [ΔP] PRESSURE DIFFERENTIAL SENSOR
- [FS] FREEZE STATUS
- [CT] CURRENT SENSOR
- [HL] HIGH LEVEL

P&ID GENERAL NOTES:

A. ALL CONTROLS SHOWN IN DIAGRAMS AND DESCRIBED IN SEQUENCES ARE TO BE CONTROLLED BY THE BUILDING MANAGEMENT SYSTEM UNLESS OTHERWISE NOTED.

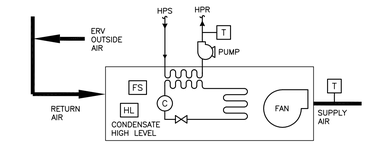
B. PROVIDE ALL SENSOR AND DEVICES INDICATED ON THIS PLAN. LOCATIONS MAY NOT BE SHOWN ON OTHER CONSTRUCTION PLANS.

C. ALL CONTROLS TO BE ON EMERGENCY POWER.

D. ROOM SENSORS SHALL BE ADA ACCESSIBLE, MOUNTED BETWEEN 48" AND 54" A.F.F.

E. AUTOMATIC DAMPERS SHALL BE 24V, MODULATING-TYPE, UNLESS OTHERWISE NOTED.

F. INSTALL WELL FIELD TEMPERATURE SENSORS IN THE SUPPLY AND RETURN (HPS/R) PIPING HEADERS IN MECH ROOM 002.



HEAT PUMP - (HP):

THE OCCUPANCY SCHEDULES SHALL BE SET THROUGH THE BUILDING MANAGEMENT SYSTEM. ZONE TEMPERATURE SENSORS SHALL HAVE +/- 3 DEGREE ADJUSTMENT FROM THE BMS SETPOINT AND HAVE A TIMED OCCUPANCY OVER-RIDE.

OPERATION SEQUENCE:

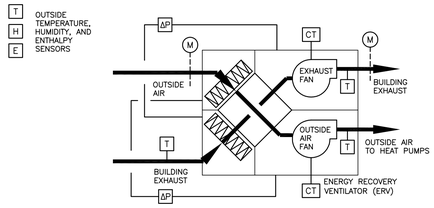
HEAT PUMPS DELIVER CONDITIONED AIR TO THE ZONE. EACH HEAT PUMP SHALL CONTROL THEIR OWN LOOP PUMP AND DESUPERHEATER OPERATION (WHERE SCHEDULED).

A. THE COMPRESSOR, REVERSING VALVE, AND CIRCULATION PUMP SHALL CYCLE TO MAINTAIN ROOM TEMP. SETPOINT.

B. THE SUPPLY AND RETURN FANS SHALL OPERATE CONTINUOUSLY IN OCCUPIED MODE AND INTERMITTENTLY IN UNOCCUPIED MODE.

C. SEND A GENERAL ALARM TO THE BMS FOR THE FOLLOWING CONDITIONS: HIGH/LOW PRESSURE SWITCH, FREEZESTAT ALARM, OR CONDENSATE OVERFLOW ALARM. HEAT PUMP PROVIDED WITH AUTOMATIC RESET ON FIRST FAULT, MANUAL RESET ON SECOND FAULT WITHIN ONE HOUR. PROVIDE MANUAL RESET WITH FIRST CONDENSATE OVERFLOW ALARM.

D. THE BMS SHALL MONITOR AND ALARM THE RETURN WATER TEMPERATURE AND PUMP RUNNING STATUS. THE PUMP SHALL START WHEN THE RETURN WATER TEMPERATURE IS BELOW 95 DEGREES F AND STOP WHEN IT IS ABOVE 105 DEGREES F.



ENERGY RECOVERY VENTILATOR - (ERV):

THE ENERGY RECOVERY VENTILATOR (ERV) DELIVERS CONDITIONED OUTSIDE AIR TO THE BUILDING HEAT PUMPS IN OCCUPIED AND UNOCCUPIED MODE. THE UNIT CONSISTS OF THE ENERGY RECOVERY CUBE, EXHAUST FAN, SUPPLY FAN, AND DAMPERS.

A DUCT TEMPERATURE SENSOR SHALL MONITOR THE TEMPERATURES AS IT ENTERS AND DISCHARGES FROM THE UNIT. ANALOG DIFFERENTIAL PRESSURE TRANSMITTERS SHALL MONITOR THE ERV MEDIA AND PROVIDE "DIRTY" OR "PLUGGED MEDIA" ALARM WHEN DIFFERENTIAL PRESSURE THRESHOLD IS EXCEEDED. DIFFERENTIAL PRESSURE TO BE MONITORED ON BOTH THE BUILDING EXHAUST AND THE OUTSIDE AIR. OUTSIDE AIR TEMPERATURE TO BE MONITORED. THE OUTSIDE AIR INTAKE AND EXHAUST DAMPER SHALL BE EQUIPPED WITH SPRING RETURN (FAIL CLOSED) DAMPER MOTOR WITH END SWITCHES.

A. OPEN THE ERV OUTSIDE AIR AND EXHAUST DAMPERS AND CONFIRM VIA DAMPER POSITION SWITCHES. START THE OUTSIDE AIR AND EXHAUST FANS.

B. IF THE ERV DISCHARGE AIR TEMPERATURE IS LESS THAN 35 DEGREES, TURN OFF THE OUTSIDE AIR SYSTEM AND SEND AN ALARM TO THE BUILDING MANAGEMENT SYSTEM.

C. IF THE ERV EXHAUST OR SUPPLY FAN FAIL, SHUT DOWN THE ERV AND OPERATE THE HEAT PUMPS NORMALLY.

D. IF THE OUTSIDE AIR TEMPERATURE FALLS BELOW -10°F (USER ADJUSTABLE), SHUT DOWN ALL ERV'S AND OPERATE THE HEAT PUMPS NORMALLY.

HEAT PUMP BMS POINTS (TYPICAL)

POINT(S)	DISCRETE INPUT	DISCRETE OUTPUT	ANALOG INPUT	ANALOG OUTPUT	ALARM	REMARKS
UNIT/ZONE TEMP. SENSORS & OCC. OVER-RIDE	X	---	X	---	X	1,2
HEAT PUMP ENABLE/DISABLE	---	X	---	---	---	
COMPRESSOR START/STOP	---	X	---	---	---	
REVERSING VALVE (HEATING/COOLING MODE)	---	X	---	---	---	
SUPPLY FAN START/STOP	---	X	---	---	---	
RETURN FAN START/STOP	---	X	---	---	---	
HEAT PUMP GENERAL ALARM INDICATOR	X	---	---	---	X	
SUPPLY AIR TEMPERATURE	---	---	X	---	X	1
HEAT PUMP RETURN WATER TEMPERATURE	---	---	X	---	X	1

REMARKS:
1. ALARM IS FOR READING OUTSIDE OF NORMAL SETPOINTS (OWNER ADJUSTABLE.)
2. SEE FLOOR PLANS FOR THERMOSTAT AND DAMPER QUANTITIES.

2 / M7.1 HEAT PUMP P&ID (TYPICAL)
NOT TO SCALE

ERV BMS POINTS

POINT(S)	DISCRETE INPUT	DISCRETE OUTPUT	ANALOG INPUT	ANALOG OUTPUT	ALARM	REMARKS
OA TEMPERATURE	---	---	X	---	---	
OA HUMIDITY	---	---	X	---	---	
OA ENTHALPY	---	---	X	---	---	
OA FAN	X	X	---	---	X	1,2
OA DAMPER OPEN & END SWITCH	OPEN	X	---	---	X	2
OA DISCH. TEMPERATURE	---	---	X	---	X	3
OA DIFF. HIGH PRESS.	---	---	X	---	X	3
EXH. DIFF. HIGH PRESS.	---	---	X	---	X	3
EXH. ERV INTAKE TEMPERATURE	---	---	X	---	---	---
EXH. ERV DISCHARGE TEMPERATURE	---	---	X	---	X	3
EXH. FAN	X	X	---	---	X	1,2
EXH. DAMPER OPEN & END SWITCH	OPEN	X	---	---	X	2

REMARKS:
1. PROVIDE START, STATUS.
2. ALARM IS FOR DEVICE/EQUIPMENT FAILURE.
3. ALARM IS FOR READING OUTSIDE OF NORMAL SETPOINTS (OWNER ADJUSTABLE.)

2 ENTIRE SHEET HAS BEEN REVISED PER ADDENDUM #2

1 / M7.1 ENERGY RECOVERY VENTILATOR P&ID
NOT TO SCALE

MISCELLANEOUS BMS POINTS

POINT(S)	DISCRETE INPUT	DISCRETE OUTPUT	ANALOG INPUT	ANALOG OUTPUT	ALARM	REMARKS
DOMESTIC WATER USAGE	---	---	X	---	---	1
GAS CONSUMPTION	X	---	---	---	---	1
ELECTRICAL CONSUMPTION	X	---	---	---	---	1
WELL FIELD ENERGY USAGE	---	---	X	---	---	3
WELL FIELD OUTLET PRESSURE	---	---	X	---	X	2
WELL FIELD INLET TEMP.	---	---	X	---	---	
WELL FIELD OUTLET TEMP.	---	---	X	---	---	

REMARKS:
1. PULSING RELAY TO BE SUPPLIED BY CONTROLS CONTRACTOR.
2. PROVIDE A LOW PRESSURE ALARM WHEN PRESSURE DROPS BELOW 12 PSI.
3. WELL FIELD ENERGY USAGE CALCULATED FROM SUPPLY AND RETURN WATER TEMPERATURES AND A TURBINE FLOW METER.

3 / M7.1 MISCELLANEOUS EQUIPMENT P&ID
NOT TO SCALE

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Eagle Ridge Housing
Final GMP Set

PROJECT: #L12007 DATE: 04.15.13

GMP SET
NOT FOR CONSTRUCTION

MECHANICAL
P&ID'S

NORTH

M7.1

DWG: F:\Projects\2012-2025\#L1-CSC West Court Replacement\Construct\Mech\MM1A.dwg USER: ikost
DATE: May 03, 2013 10:43am XREFS: xref - TB

A2 MECHANICAL SITE PLAN
1" = 30'-0"

GENERAL NOTES:

A. CONTRACTOR TO PRESERVE ALL SURVEY CONTROL.

B. THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITY PIPES AND STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF AVAILABLE RECORDS AND TO THE BEST OF OUR KNOWLEDGE CONSTITUTES ALL KNOWN FACILITIES. HOWEVER, THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT ANY EXISTING UTILITIES OR STRUCTURES LOCATED AT THE WORK SITE.

C. BEFORE EXCAVATING FOR THIS CONTRACT, THE CONTRACTOR SHALL FIELD VERIFY LOCATION OF UNDERGROUND UTILITIES AND LOCATION AND ELEVATIONS OF IMPROVEMENTS TO BE MET (OR AVOIDED) BY WORK TO BE DONE. CONTRACTOR SHALL MAKE EXPLORATION EXCAVATIONS AND LOCATE EXISTING UNDERGROUND UTILITIES SUFFICIENTLY AHEAD OF CONSTRUCTION TO PERMIT REVISIONS TO PLANS IF REVISIONS ARE NECESSARY BECAUSE OF ACTUAL LOCATION OF EXISTING FACILITIES.

D. UTILITY CONSTRUCTION PROCEDURES AND MATERIALS SHALL BE IN CONFORMANCE WITH CITY OF LINCOLN STANDARD SPECIFICATIONS WHERE APPLICABLE.

E. THE BOTTOM OF THE TRENCH EXCAVATION SHALL BE LEVEL, SOLID, FREE OF ROCK/DEBRIS. SEE WELL FIELD PIPE TRENCH SECTION, SHEET M5.1, FOR OTHER REQUIREMENTS.

F. ALL EXTERIOR UTILITY PIPING SHALL BE MARKED WITH 14-GAUGE COPPER TRACER WIRE, SECURED TO THE HORIZONTAL PIPING WITH WIRE TIES. SPLICES SHALL BE COVERED WITH SHRINK TUBE. CONTRACTOR SHALL TEST PIPE IDENTIFICATION SYSTEM AFTER BACKFILLING AROUND PIPING. OWNER TO VERIFY TESTING, PROVIDE NOTIFICATION 48 HOURS PRIOR TO TEST.

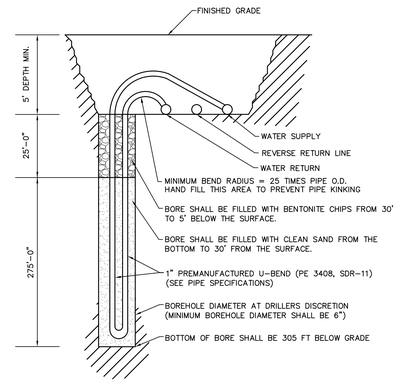
G. INSTALL CAUTION TAPE IN TRENCHES ABOVE PIPING WITHIN 18" OF GRADE.

H. PRIOR TO MOVING OFF THE JOB THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO DO A FINAL WALK-THROUGH OF THE CONSTRUCTION SITE.

SHEET NOTES: (SYMBOLS ①, ②, ETC.)

1. SEE VERTICAL BORE DETAIL.
2. GEOTHERMAL HEAT EXCHANGER TEST WELL WITH 1" TUBING 370 VERTICAL FEET BELOW GRADE.
3. NEW UTILITIES BEING INSTALLED UNDER A SEPARATE CONTRACT. LOCATION OF THE GEOTHERMAL HEAT EXCHANGER SHALL BE A MINIMUM 10'-0" FROM THE WATER MAIN.

△2 4. HDPE VALVE VAULT BY ISCO. WEHOENERGY GEOTHERMAL OR GHP. PROVIDE WITH 2" PURGE PORTS, SPARE SET OF TAPS AND LIGHT WITCH SWITCH. INCLUDE TEST PORTS AND ISOLATION VALVES FOR ALL CONNECTIONS TO THE HEADER.



NOTES:
1. ADD 5'-0" OF BENTONITE CHIPS AT TOP AND BOTTOM OF EACH CLAY LAYER TO PREVENT THE COMMINGLING OF GROUND WATER BETWEEN AQUIFERS.
2. WELLFIELD CONTRACTOR TO SUBMIT DECLARATORY LETTER ALONG WITH ASSOCIATED FEE(S) FOR THE USE OF SAND AS A BACKFILL MATERIAL AS ILLUSTRATED ABOVE.

A19 VERTICAL BORE
NOT TO SCALE

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REVISIONS SCHEDULE		
MARK	DATE	DESCRIPTION
2	05.03.13	FINAL GMP ADDENDUM #2

EAGLE RIDGE HOUSING
FINAL GMP SET

PROJECT: #L12007 DATE: 04.15.13

GMP SET
NOT FOR CONSTRUCTION

MECHANICAL
SITE PLAN

NORTH

M0.1

SHEET NOTES: (SYMBOLS ①, ②, ETC.)

1. 8" DRYER EXHAUST UP TO EXHAUST FAN IN ATTIC AND ROOF CAP WITH BACKDRAFT DAMPER ON ROOF.

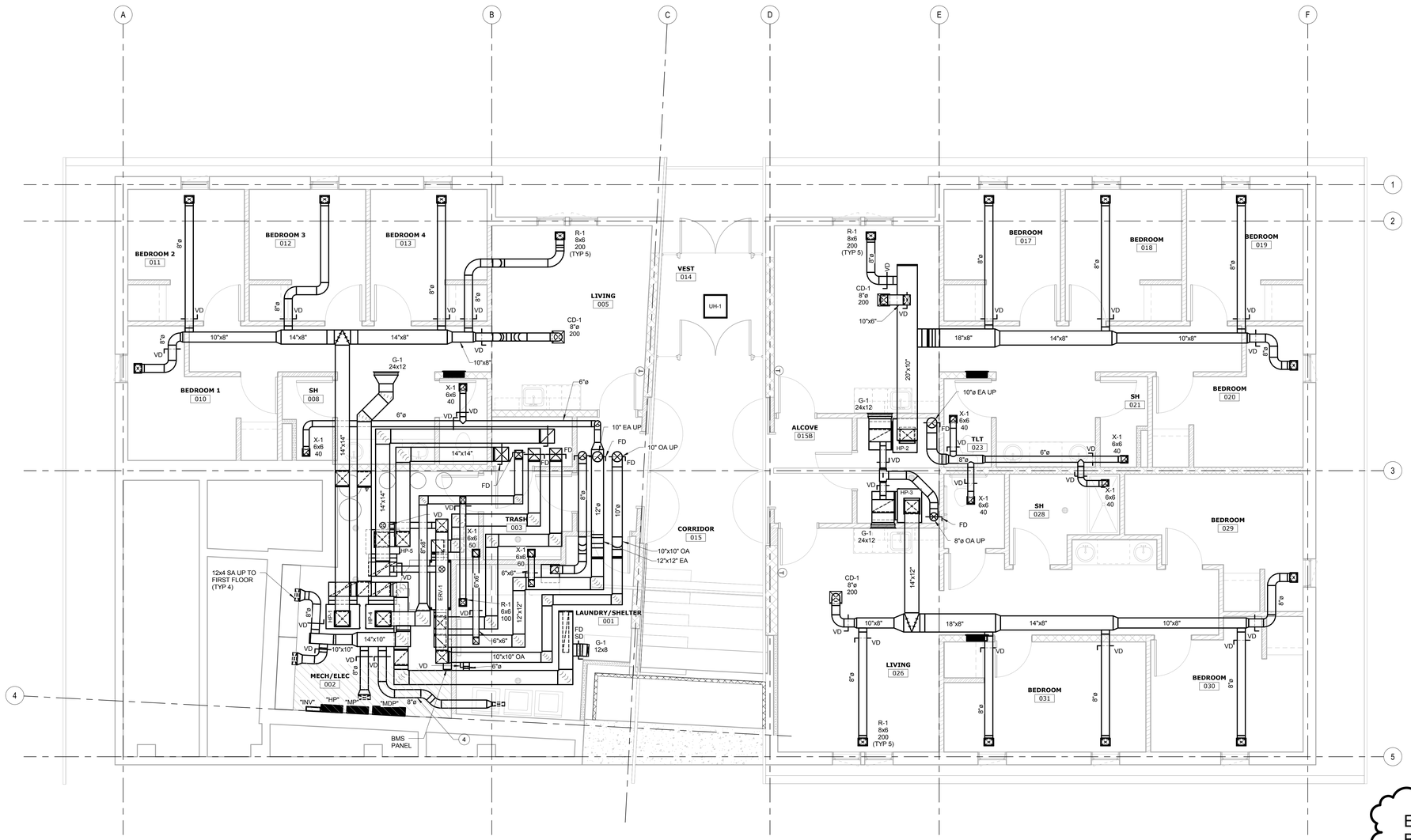
2. CENTER CEILING DIFFUSER ON HALL.

3. LOCATE IN LIGHT SOFFIT, SEE ARCHITECTURAL.

4. LOCATE DUCT IN THIS AREA ABOVE CLEARANCES REQUIRED FOR ELECTRICAL PANELS.

5. STUB DUCT INTO BASE OF CASEWORK.

GENERAL NOTES:
A. CENTER REGISTERS ON WINDOWS.
B. ALL DUCT FITTING SHALL BE PROVIDED WITH TURNING VANES, ALL SUPPLY AND EXHAUST AIR DEVICES SHALL BE INSTALLED WITH BALANCING DAMPERS, AND ALL DUCT SEAMS SHALL BE SEALED.
C. ALL SUPPLY DUCT TAKES OFFS SHALL BE HIGH EFFICACY TYPE TAKE OFFS.



A3 LOWER LEVEL HVAC PLAN
1/4" = 1'-0"

ENTIRE SHEET HAS BEEN REVISED PER ADDENDUM #2

BVH ARCHITECTS

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REVISIONS SCHEDULE		
MARK	DATE	DESCRIPTION
2	05.03.2013	Final GMP Addendum #2

Eagle Ridge Housing
Final GMP Set

PROJECT: #L12007 DATE: 04.15.13

GMP SET
NOT FOR CONSTRUCTION

LOWER LEVEL HVAC PLAN

NORTH

M1.1

SHEET NOTES: (SYMBOLS ①, ②, ETC.)

1. 8" DRYER EXHAUST UP TO EXHAUST FAN IN ATTIC AND ROOF CAP WITH BACKDRAFT DAMPER ON ROOF.

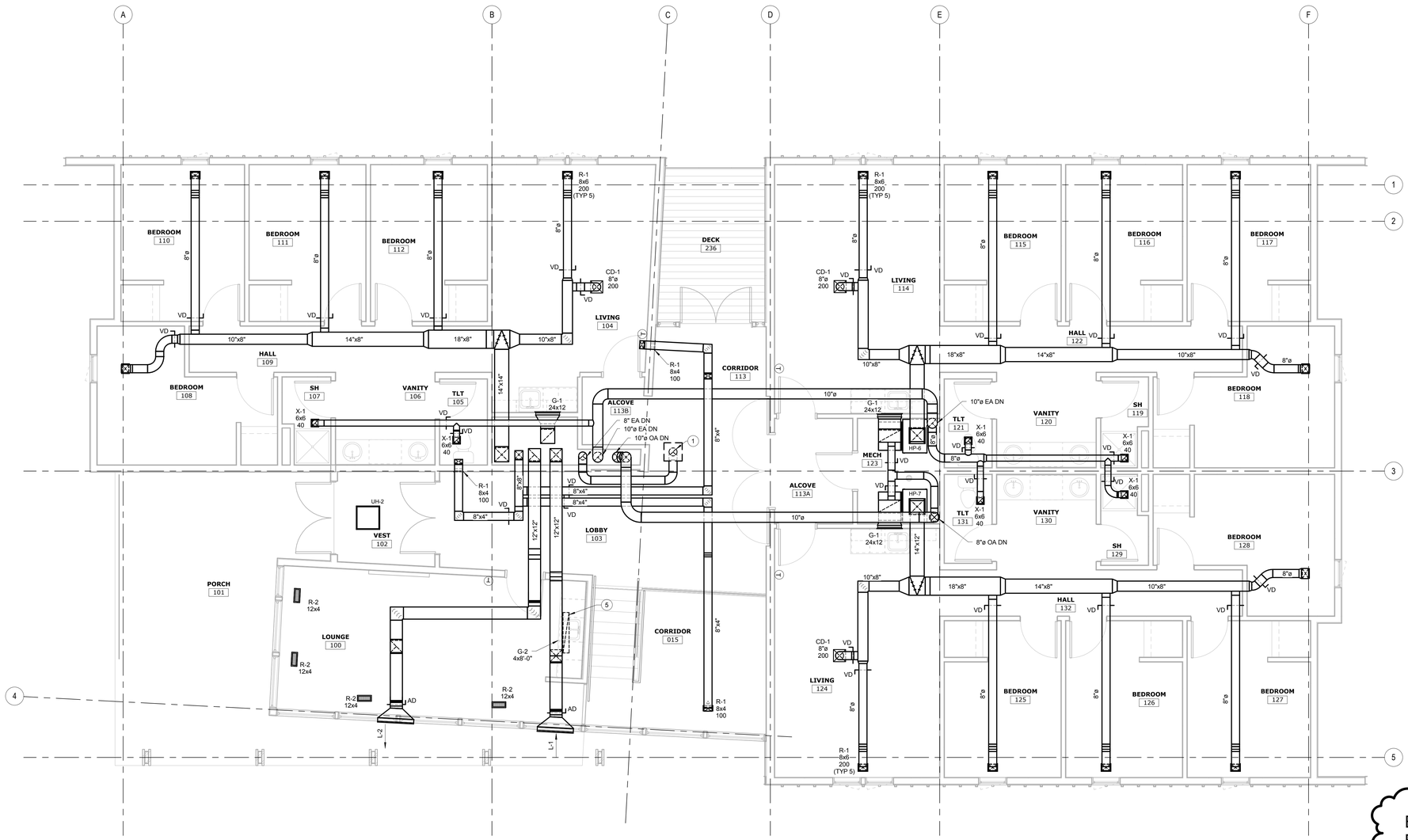
2. CENTER CEILING DIFFUSER ON HALL.

3. LOCATE IN LIGHT SOFFIT, SEE ARCHITECTURAL.

4. LOCATE DUCT IN THIS AREA ABOVE CLEARANCES REQUIRED FOR ELECTRICAL PANELS.

5. STUB DUCT INTO BASE OF CASEWORK.

GENERAL NOTES:
A. CENTER REGISTERS ON WINDOWS.
B. ALL DUCT FITTING SHALL BE PROVIDED WITH TURNING VANES, ALL SUPPLY AND EXHAUST AIR DEVICES SHALL BE INSTALLED WITH BALANCING DAMPERS, AND ALL DUCT SEAMS SHALL BE SEALED.
C. ALL SUPPLY DUCT TAKES OFFS SHALL BE HIGH EFFICACY TYPE TAKE OFFS.
D. ALL DUCTWORK EXCEPT FOR RETURN DUCT SHOWN ON THIS SHEET IS LOCATED IN THE ATTIC.



ENTIRE SHEET HAS BEEN REVISED PER ADDENDUM #2

A3 FIRST FLOOR HVAC PLAN
1/4" = 1'-0"

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PROJECT: #L12007 DATE: 04.15.13

GMP SET
NOT FOR CONSTRUCTION

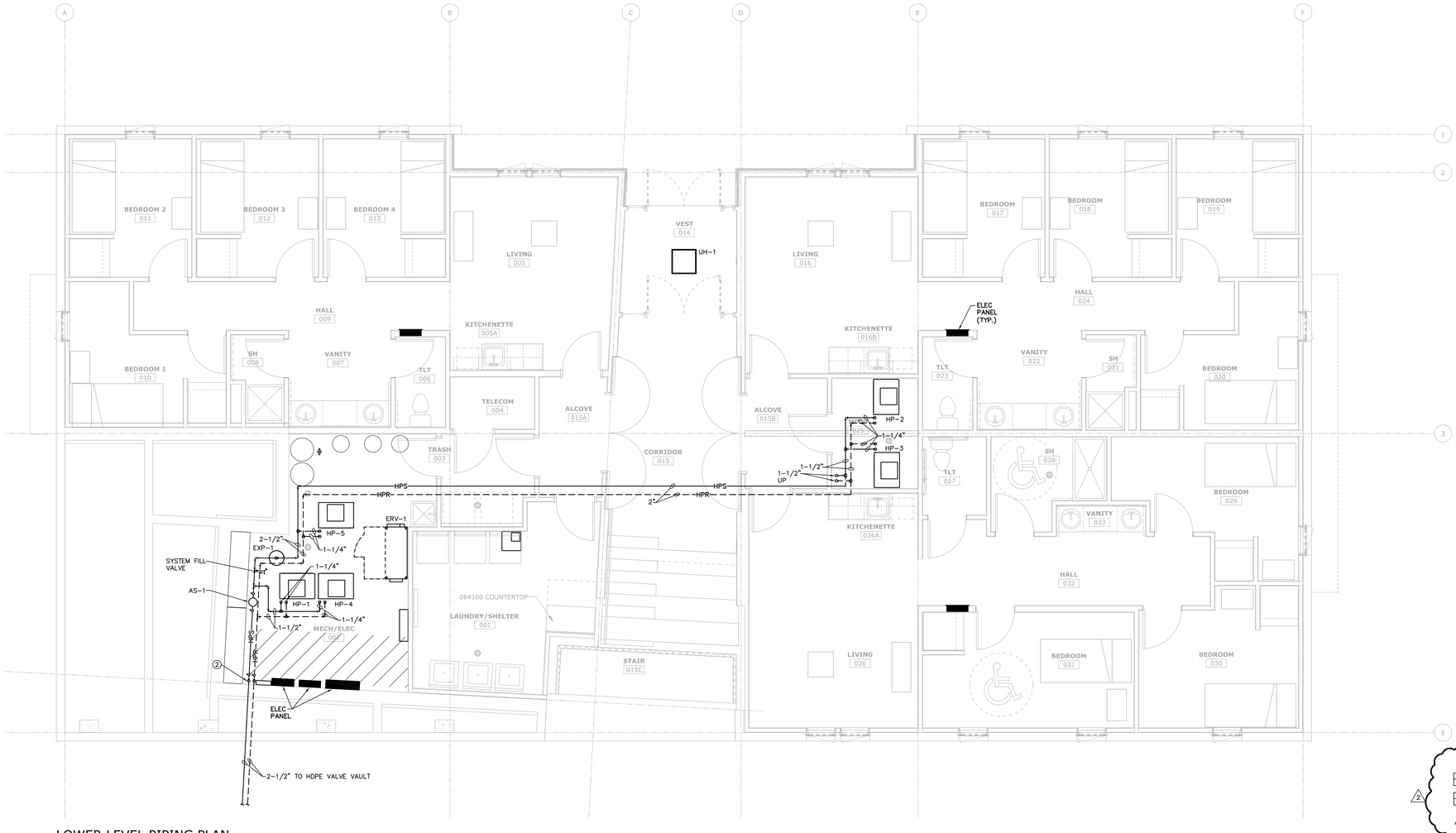
UPPER LEVEL HVAC PLAN

NORTH

M1.2

SHEET NOTES: (SYMBOLS ①, ②, ETC.)

1. ROUTE PIPING BELOW BEAM AND BETWEEN STUDS.
2. IN THE VERTICAL PIPING, INSTALL THERMOMETERS AND TEMPERATURE SENSORS ON THE SUPPLY AND RETURN PIPING. INSTALL A PRESSURE GAUGE AND PRESSURE SENSOR ON THE RETURN ONLY.



A3 LOWER LEVEL PIPING PLAN
1/4" = 1'-0"

2 ENTIRE SHEET HAS BEEN REVISED PER ADDENDUM #2

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Eagle Ridge Housing
Final GMP Set

PROJECT: #L12007 DATE: 04.15.13

GMP SET
NOT FOR CONSTRUCTION

LOWER LEVEL
PIPING PLAN

NORTH

M2.1

DWG: F:\Projects\072-2623\ME\1-CSC West Court Replacement\Constructs\Mech\MMN0A.dwg USER: Rcost
DATE: May 03, 2013 10:43am XREFS: xref - TB xref - Lower Level EPN1A xref - Lower Level HVAC EGPM MPN0A

A3 FIRST FLOOR PIPING PLAN

1/4" = 1'-0"

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Eagle Ridge Housing
Final GMP Set

PROJECT: #L12007 DATE: 04.15.13

GMP SET
NOT FOR CONSTRUCTION

UPPER LEVEL
PIPING PLAN

NORTH

M2.2

SHEET NOTES: (SYMBOLS ①, ②, ETC.)

1. PROVIDE LOW VOLTAGE EXTENDED RANGE DUAL TECHNOLOGY CEILING MOUNTED OCCUPANCY SENSOR, SENSOR SWITCH CM-PDT-10 OR APPROVED EQUAL.

2. PROVIDE LINE VOLTAGE, DUAL TECHNOLOGY WALL SWITCH SENSOR, WHITE FINISH, WITH WHITE DECORA COVER PLATE, SENSOR SWITCH CAT# WSD-PDT-WH OR APPROVED EQUAL.

3. SEE LIGHTING CONTRACTOR DETAIL SHEET E4.1.

4. PROVIDE FIXED POSITION PHOTOCELL WITH WEATHERPROOF WALL PLATE, 1000VA BALLAST RATING, INTERMATIC CAT# K14321C OR APPROVED EQUAL. MOUNT IN WEATHERPROOF BOX.

5. SET LIGHT LEVEL SENSOR TO 40 FOOTCANDLES.

6. PADDLE ON/OFF WITH SLIDE DIMMER SWITCH, 0-10V, WHITE FINISH, LUTRON CAT# DVTV-WH OR APPROVED EQUAL.

7. PROVIDE AUTOMATIC DIMMING CONTROL PHOTOCELL SENSOR, CEILING MOUNT, LOW VOLTAGE, SENSOR SWITCH #CM-ADC OR APPROVED EQUAL.

8. POWER PACK, 120/277 VOLT TO POWER INTERIOR PHOTOCELL SENSORS OR LOW VOLTAGE OCCUPANCY SENSORS, SENSOR SWITCH #MP-20 OR APPROVED EQUAL.

9. TO LIGHT FIXTURE IN ATTIC, SEE SHEET E1.3

10. 0-10V DIMMER SWITCH TO CONTROL LIGHTS BEHIND TRANSLUCENT PANEL.

11. ROUTE CIRCUIT VIA LIGHTING CONTRACTOR CONTROLLED BY PHOTOCELL.

12. ADVANCE 100W POWER SUPPLY PROVIDED WITH ILIGHT FIXTURES, TYPES K1 AND K2. ONE POWER SUPPLY PER INDIVIDUAL FIXTURE LENGTH SHOWN. POWER SUPPLIES CAN BE STACKED. COORDINATE LOCATION WITH MECHANICAL EQUIPMENT. LABEL LOCATION TO BE SERVED.

13. SET WALL MOUNTED SENSOR SWITCH TO AUTOMATIC ON.

14. PROVIDE 125W INVERTER, EVEN LITE PUREWAVE #PW-12-LC-VI OR APPROVED EQUAL. TO TURN ON BUILDING ENTRY LIGHTING CKT HP-24 IN POWER LOSS SITUATION. LIGHTING CIRCUIT IS SWITCHED.

15. TO INVERTER LOCATED IN MECH/ELEC 002 FOR BATTERY BACKUP.

16. PROVIDE #12AWG LOW VOLTAGE CABLE TO TYPE K SERIES LIGHTING FIXTURES.

17. ALL THE POWER SUPPLIES IN THIS ROOM ARE ON ONE CIRCUIT, HP-26.

18. PROVIDE DUAL ZONE AUTOMATIC DIMMING CONTROL PHOTO SENSOR, CEILING MOUNT, LOW VOLTAGE, SENSOR SWITCH #CM-ADC-DZ OR APPROVED EQUAL.

19. POWER PACK, 120 VOLT TO OPERATE LUTRON DIMMER SWITCH, LUTRON #PP-120 OR APPROVED EQUAL. LOCATE AT SWITCH JUNCTION BOX OR LIGHT FIXTURE JUNCTION BOX.

20. SENSORS ON THE LOWER LEVEL CONTROLLED BY POWER PACK LOCATED IN MECH 025. SENSORS ON THE FIRST FLOOR CONTROLLED BY POWER PACK LOCATED IN MECH 123.

GENERAL NOTES:
A. COORDINATE LIGHT FIXTURE LAYOUT WITH HVAC/DUCTWORK/DIFFUSERS AND REFLECTED CEILING PLAN.

B. TIME DELAY ON ALL SENSORS SHALL BE SET TO 20 MIN. UNLESS NOTED OTHERWISE.

C. LOCATE OCCUPANCY SENSORS A MINIMUM OF 4'-6" FROM MECHANICAL DIFFUSER. COORDINATE LOCATION WITH OCCUPANCY SENSOR MANUFACTURER TO PROVIDE ADEQUATE COVERAGE.

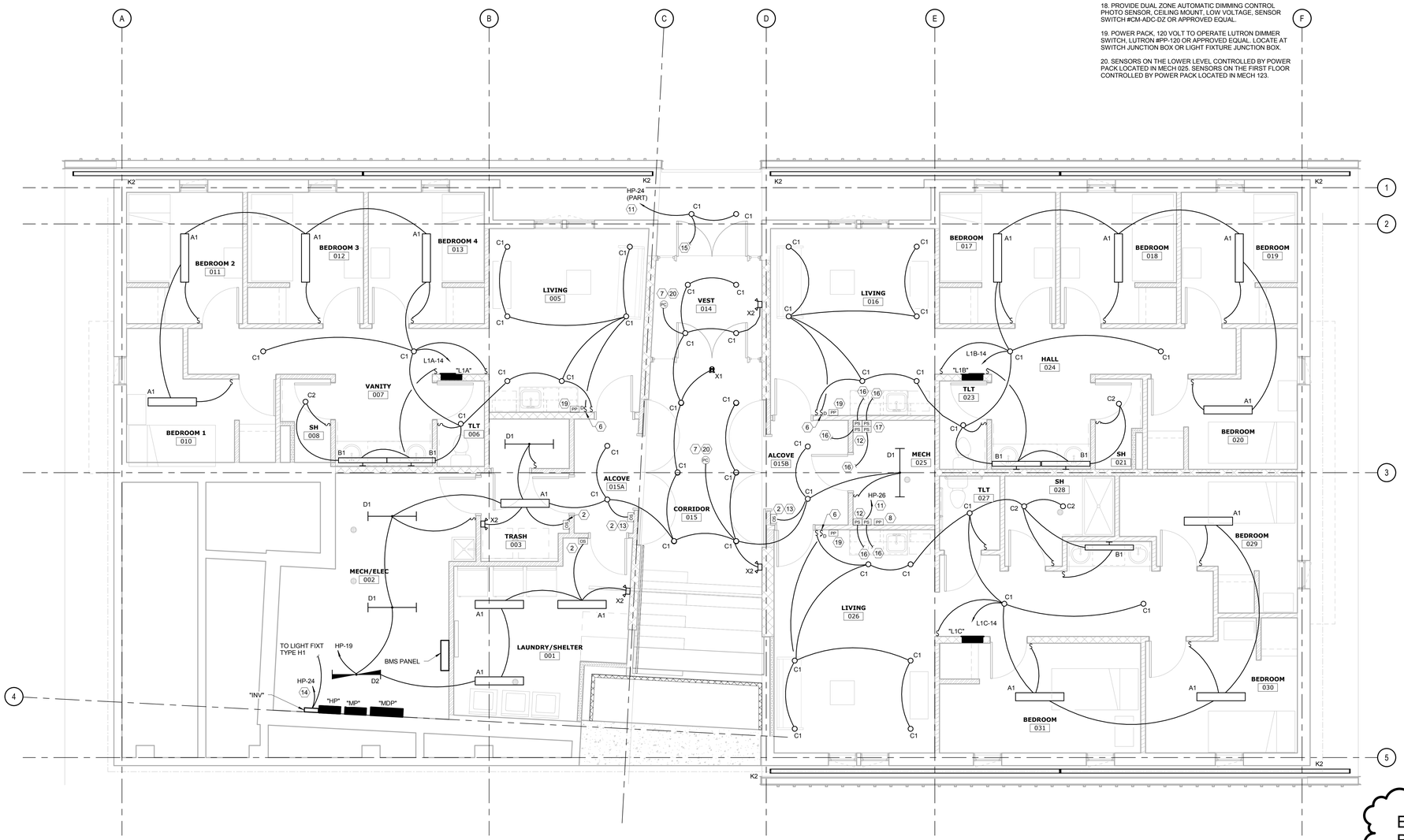
D. SEE SHEET E4.1 FOR OCCUPANCY SENSOR LIGHTING CONTROL SCHEMATICS.

E. PROVIDE FIRESTOP FOR ALL PENETRATIONS IN FIRE RATED WALLS AND CEILINGS.

F. INSTALL A DEDICATED GREEN INSULATED GROUNDING CONDUCTOR WITH ALL CIRCUITS. SIZE IN ACCORDANCE WITH THE NEC, NO. 12 Cu MINIMUM.

G. CONCEAL ALL CONDUITS AND CONDUCTORS IN WALLS AND ABOVE CEILINGS. THIS INCLUDES CONCRETE BLOCK WALLS.

H. WALL MOUNTED SENSOR SWITCHES SHALL BE SET TO MANUAL ON UNLESS OTHERWISE NOTED.



A3 LOWER LEVEL LIGHTING PLAN
1/4" = 1'-0"

2
ENTIRE SHEET HAS BEEN REVISED PER ADDENDUM #2

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REVISIONS SCHEDULE		
MARK	DATE	DESCRIPTION
2	05.03.2013	Final GMP Addendum #2

Eagle Ridge Housing
Final GMP Set

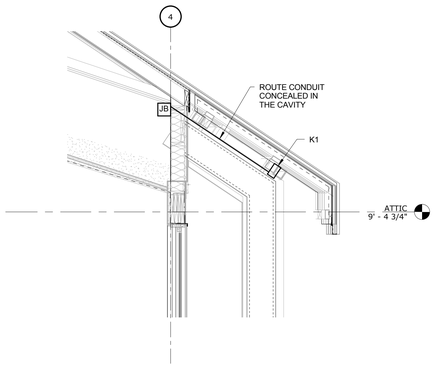
PROJECT: #L12007 DATE: 04.15.13

GMP SET
NOT FOR CONSTRUCTION

LOWER LEVEL LIGHTING PLAN

NORTH

E1.1



P3 SECTION AT PORCH

1/2" = 1'-0"

SHEET NOTES: (SYMBOLS ①, ②, ETC.)

1. PROVIDE LOW VOLTAGE EXTENDED RANGE DUAL TECHNOLOGY CEILING MOUNTED OCCUPANCY SENSOR, SENSOR SWITCH CM-PDT-10 OR APPROVED EQUAL.

2. PROVIDE LINE VOLTAGE, DUAL TECHNOLOGY WALL SWITCH SENSOR, WHITE FINISH, WITH WHITE DECORA COVER PLATE, SENSOR SWITCH CAT# WSD-PDT-WH OR APPROVED EQUAL.

3. SEE LIGHTING CONTRACTOR DETAIL SHEET E4.1.

4. PROVIDE FIXED POSITION PHOTOCELL WITH WEATHERPROOF WALL PLATE, 1000VA BALLAST RATING, INTERMATIC CAT# K14321C OR APPROVED EQUAL. MOUNT IN WEATHERPROOF BOX.

5. SET LIGHT LEVEL SENSOR TO 40 FOOTCANDLES.

6. PADDLE ON/OFF WITH SLIDE DIMMER SWITCH, 0-10V, WHITE FINISH, LUTRON CAT# DVTV-WH OR APPROVED EQUAL.

7. PROVIDE AUTOMATIC DIMMING CONTROL PHOTOCELL SENSOR, CEILING MOUNT, LOW VOLTAGE, SENSOR SWITCH #CM-ADC OR APPROVED EQUAL.

8. POWER PACK, 120/277 VOLT TO POWER INTERIOR PHOTOCELL SENSORS OR LOW VOLTAGE OCCUPANCY SENSORS, SENSOR SWITCH #MP-20 OR APPROVED EQUAL.

9. TO LIGHT FIXTURE IN ATTIC, SEE SHEET E1.3

10. 0-10V DIMMER SWITCH TO CONTROL LIGHTS BEHIND TRANSLUCENT PANEL.

11. ROUTE CIRCUIT VIA LIGHTING CONTRACTOR CONTROLLED BY PHOTOCELL.

12. ADVANCE 100W POWER SUPPLY PROVIDED WITH ILIGHT FIXTURES, TYPES K1 AND K2. ONE POWER SUPPLY PER INDIVIDUAL FIXTURE LENGTH SHOWN. POWER SUPPLIES CAN BE STACKED. COORDINATE LOCATION WITH MECHANICAL EQUIPMENT. LABEL LOCATION TO BE SERVED.

13. SET WALL MOUNTED SENSOR SWITCH TO AUTOMATIC ON.

14. PROVIDE 125W INVERTER, EVEN LITE PUREWAVE #PW-12-LC-VI OR APPROVED EQUAL, TO TURN ON BUILDING ENTRY LIGHTING CKT HP-24 IN POWER LOSS SITUATION. LIGHTING CIRCUIT IS SWITCHED.

15. TO INVERTER LOCATED IN MECH/ELEC 002 FOR BATTERY BACKUP.

16. PROVIDE #12AWG LOW VOLTAGE CABLE TO TYPE K SERIES LIGHTING FIXTURES.

17. ALL THE POWER SUPPLIES IN THIS ROOM ARE ON ONE CIRCUIT, HP-26.

18. PROVIDE DUAL ZONE AUTOMATIC DIMMING CONTROL PHOTO SENSOR, CEILING MOUNT, LOW VOLTAGE, SENSOR SWITCH #CM-ADC-DZ OR APPROVED EQUAL.

19. POWER PACK, 120 VOLT TO OPERATE LUTRON DIMMER SWITCH, LUTRON #PP-120 OR APPROVED EQUAL. LOCATE AT SWITCH JUNCTION BOX OR LIGHT FIXTURE JUNCTION BOX.

20. SENSORS ON THE LOWER LEVEL CONTROLLED BY POWER PACK LOCATED IN MECH 025. SENSORS ON THE FIRST FLOOR CONTROLLED BY POWER PACK LOCATED IN MECH 123.

GENERAL NOTES:

A. COORDINATE LIGHT FIXTURE LAYOUT WITH HVAC/DUCTWORK/DIFFUSERS AND REFLECTED CEILING PLAN.

B. TIME DELAY ON ALL SENSORS SHALL BE SET TO 20 MIN. UNLESS NOTED OTHERWISE.

C. LOCATE OCCUPANCY SENSORS A MINIMUM OF 4'-6" FROM MECHANICAL DIFFUSER. COORDINATE LOCATION WITH OCCUPANCY SENSOR MANUFACTURER TO PROVIDE ADEQUATE COVERAGE.

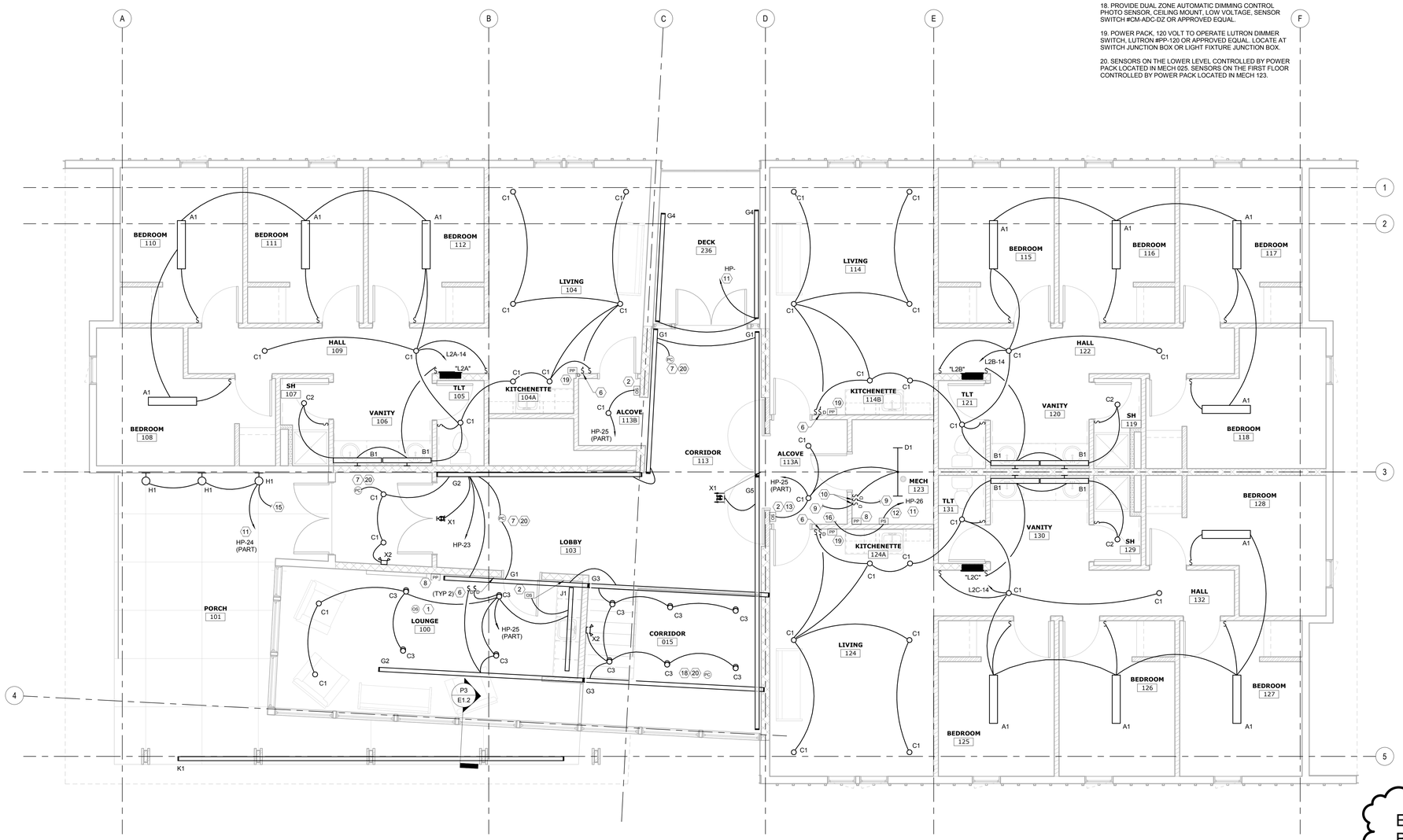
D. SEE SHEET E4.1 FOR OCCUPANCY SENSOR LIGHTING CONTROL SCHEMATICS.

E. PROVIDE FIRESTOP FOR ALL PENETRATIONS IN FIRE RATED WALLS AND CEILINGS.

F. INSTALL A DEDICATED GREEN INSULATED GROUNDING CONDUCTOR WITH ALL CIRCUITS. SIZE IN ACCORDANCE WITH THE NEC, NO. 12 Cu MINIMUM.

G. CONCEAL ALL CONDUITS AND CONDUCTORS IN WALLS AND ABOVE CEILINGS. THIS INCLUDES CONCRETE BLOCK WALLS.

H. WALL MOUNTED SENSOR SWITCHES SHALL BE SET TO MANUAL ON UNLESS OTHERWISE NOTED.



A3 FIRST FLOOR LIGHTING PLAN

1/4" = 1'-0"

2

ENTIRE SHEET HAS BEEN REVISED PER ADDENDUM #2

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2	05.03.2013	Final GMP Addendum #2

Eagle Ridge Housing
Final GMP Set

PROJECT: #L12007 DATE: 04.15.13

GMP SET
NOT FOR CONSTRUCTION

UPPER LEVEL LIGHTING PLAN

NORTH

E1.2

SHEET NOTES: (SYMBOLS ①, ②, ETC.)

1. PROVIDE LOW VOLTAGE EXTENDED RANGE DUAL TECHNOLOGY CEILING MOUNTED OCCUPANCY SENSOR, SENSOR SWITCH CM-PDT-10 OR APPROVED EQUAL.

2. PROVIDE LINE VOLTAGE, DUAL TECHNOLOGY WALL SWITCH SENSOR, WHITE FINISH, WITH WHITE DECORA COVER PLATE, SENSOR SWITCH CAT# WSD-PDT-WH OR APPROVED EQUAL.

3. SEE LIGHTING CONTRACTOR DETAIL SHEET E4.1.

4. PROVIDE FIXED POSITION PHOTOCELL WITH WEATHERPROOF WALL PLATE, 1000VA BALLAST RATING, INTERMATIC CAT# K14321C OR APPROVED EQUAL. MOUNT IN WEATHERPROOF BOX.

5. SET LIGHT LEVEL SENSOR TO 40 FOOTCANDLES.

6. PADDLE ON/OFF WITH SLIDE DIMMER SWITCH, 0-10V, WHITE FINISH, LUTRON CAT# DVTV-WH OR APPROVED EQUAL.

7. PROVIDE AUTOMATIC DIMMING CONTROL PHOTOCELL SENSOR, CEILING MOUNT, LOW VOLTAGE, SENSOR SWITCH #CM-ADC OR APPROVED EQUAL.

8. POWER PACK, 120/277 VOLT TO POWER INTERIOR PHOTOCELL SENSORS OR LOW VOLTAGE OCCUPANCY SENSORS, SENSOR SWITCH #MP-20 OR APPROVED EQUAL.

9. TO LIGHT FIXTURE IN ATTIC, SEE SHEET E1.3

10. 0-10V DIMMER SWITCH TO CONTROL LIGHTS BEHIND TRANSLUCENT PANEL.

11. ROUTE CIRCUIT VIA LIGHTING CONTRACTOR CONTROLLED BY PHOTOCELL.

12. ADVANCE 100W POWER SUPPLY PROVIDED WITH ILIGHT FIXTURES, TYPES K1 AND K2. ONE POWER SUPPLY PER INDIVIDUAL FIXTURE LENGTH SHOWN. POWER SUPPLIES CAN BE STACKED. COORDINATE LOCATION WITH MECHANICAL EQUIPMENT. LABEL LOCATION TO BE SERVED.

13. SET WALL MOUNTED SENSOR SWITCH TO AUTOMATIC ON.

14. PROVIDE 125W INVERTER, EVEN LITE PUREWAVE #PW-12-LC-VI OR APPROVED EQUAL, TO TURN ON BUILDING ENTRY LIGHTING CKT HP-24 IN POWER LOSS SITUATION. LIGHTING CIRCUIT IS SWITCHED.

15. TO INVERTER LOCATED IN MECH/ELEC 002 FOR BATTERY BACKUP.

16. PROVIDE #12AWG LOW VOLTAGE CABLE TO TYPE K SERIES LIGHTING FIXTURES.

17. ALL THE POWER SUPPLIES IN THIS ROOM ARE ON ONE CIRCUIT, HP-26.

18. PROVIDE DUAL ZONE AUTOMATIC DIMMING CONTROL PHOTO SENSOR, CEILING MOUNT, LOW VOLTAGE, SENSOR SWITCH #CM-ADC-DZ OR APPROVED EQUAL.

19. POWER PACK, 120 VOLT TO OPERATE LUTRON DIMMER SWITCH, LUTRON #PP-120 OR APPROVED EQUAL. LOCATE AT SWITCH JUNCTION BOX OR LIGHT FIXTURE JUNCTION BOX.

20. SENSORS ON THE LOWER LEVEL CONTROLLED BY POWER PACK LOCATED IN MECH 025. SENSORS ON THE FIRST FLOOR CONTROLLED BY POWER PACK LOCATED IN MECH 123.

GENERAL NOTES:
A. COORDINATE LIGHT FIXTURE LAYOUT WITH HVAC/DUCTWORK/DIFFUSERS AND REFLECTED CEILING PLAN.

B. TIME DELAY ON ALL SENSORS SHALL BE SET TO 20 MIN. UNLESS NOTED OTHERWISE.

C. LOCATE OCCUPANCY SENSORS A MINIMUM OF 4'-6" FROM MECHANICAL DIFFUSER. COORDINATE LOCATION WITH OCCUPANCY SENSOR MANUFACTURER TO PROVIDE ADEQUATE COVERAGE.

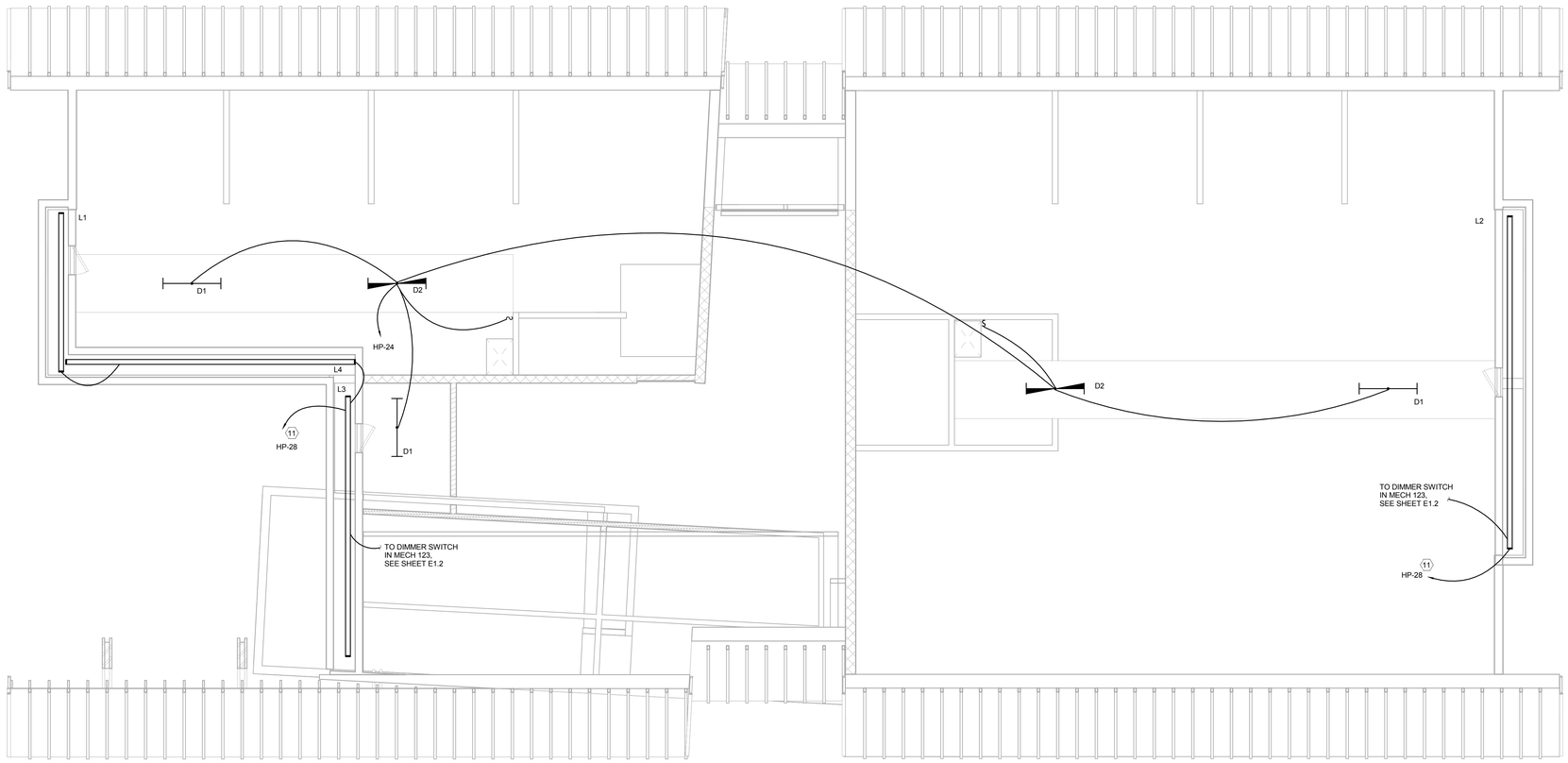
D. SEE SHEET E4.1 FOR OCCUPANCY SENSOR LIGHTING CONTROL SCHEMATICS.

E. PROVIDE FIRESTOP FOR ALL PENETRATIONS IN FIRE RATED WALLS AND CEILINGS.

F. INSTALL A DEDICATED GREEN INSULATED GROUNDING CONDUCTOR WITH ALL CIRCUITS. SIZE IN ACCORDANCE WITH THE NEC, NO. 12 Cu MINIMUM.

G. CONCEAL ALL CONDUITS AND CONDUCTORS IN WALLS AND ABOVE CEILINGS. THIS INCLUDES CONCRETE BLOCK WALLS.

H. WALL MOUNTED SENSOR SWITCHES SHALL BE SET TO MANUAL ON UNLESS OTHERWISE NOTED.



A3 ATTIC LIGHTING PLAN
1/4" = 1'-0"

2
ENTIRE SHEET HAS BEEN REVISED PER ADDENDUM #2

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REVISIONS SCHEDULE		
MARK	DATE	DESCRIPTION
2	05.03.2013	Final GMP Addendum #2

Eagle Ridge Housing
Final GMP Set

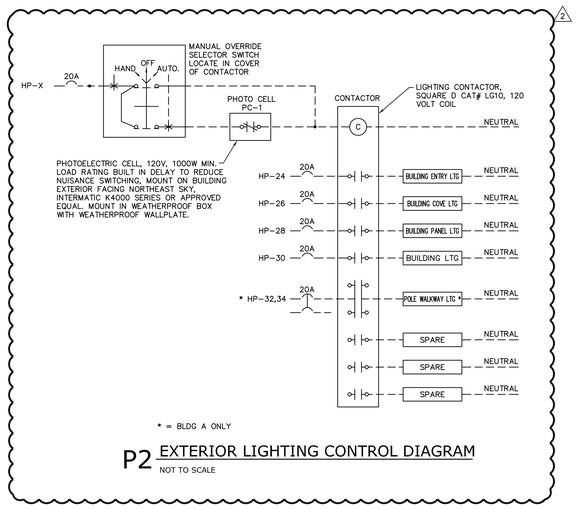
PROJECT: #L12007 DATE: 04.15.13

GMP SET
NOT FOR CONSTRUCTION

ATTIC LIGHTING PLAN

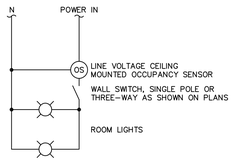
NORTH

E1.3



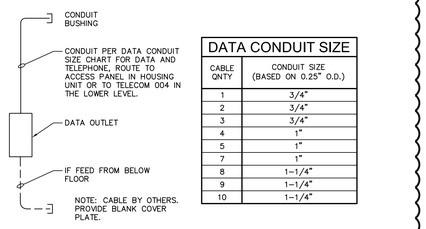
P2 EXTERIOR LIGHTING CONTROL DIAGRAM

NOT TO SCALE



P7 LINE VOLTAGE OCCUPANCY SENSOR SWITCHING DETAIL

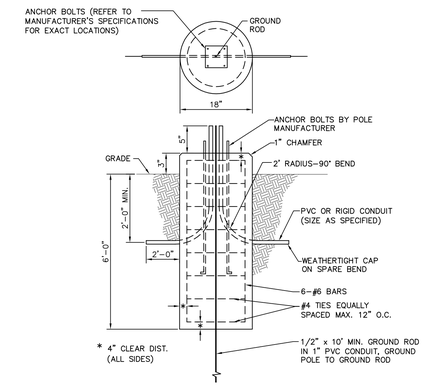
NOT TO SCALE



DATA CONDUIT SIZE	
CABLE QNTY	CONDUIT SIZE (BASED ON 0.25" O.D.)
1	3/4"
2	3/4"
3	3/4"
4	1"
5	1"
7	1"
8	1-1/4"
9	1-1/4"
10	1-1/4"

P15 TYPICAL DATA OUTLET

NOT TO SCALE

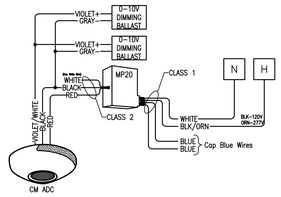


NOTES:

1. PROPER BOLT CIRCLE ALIGNMENT SHALL BE INSURED BY TYING OR CAGING METHODS BEFORE POURING FOOTING.

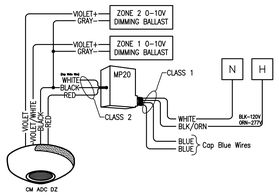
P20 TYPICAL POLE FOUNDATION DETAIL

NOT TO SCALE



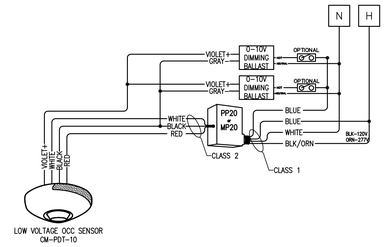
K2 LOW VOLTAGE DIMMING PHOTOCELL WITH 2+ BALLASTS

NOT TO SCALE



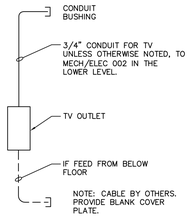
K9 LOW VOLTAGE DUAL ZONE DIMMING PHOTOCELL

NOT TO SCALE



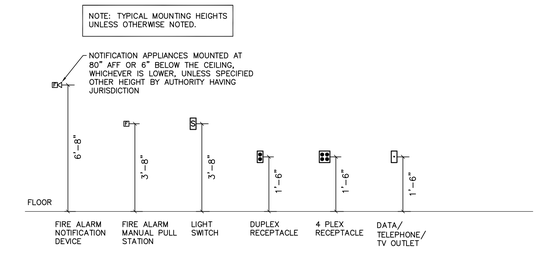
K15 LOW VOLTAGE SENSOR WITH DIMMING BALLASTS

NOT TO SCALE



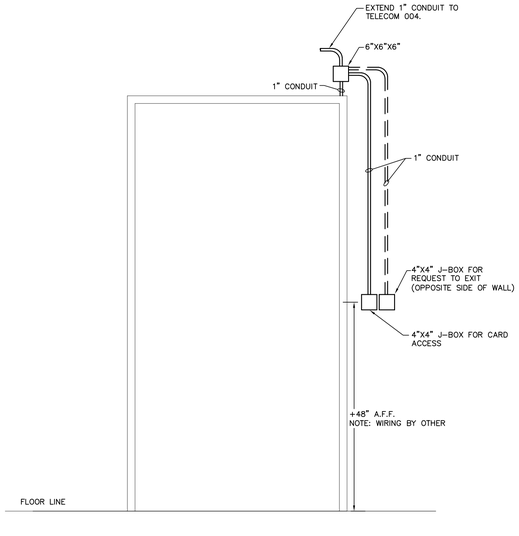
K20 TYPICAL TV OUTLET

NOT TO SCALE



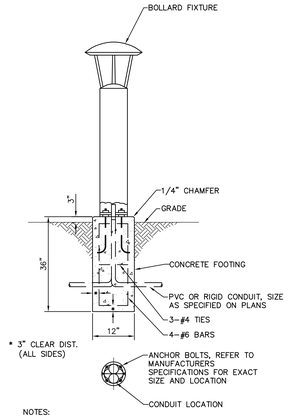
A2 TYPICAL ELEVATION DETAILS

NOT TO SCALE



A7 TYPICAL SECURITY ACCESS ROUGH-IN DETAIL

NOT TO SCALE



NOTES:

1. STUB SPARE 3/4" CONDUIT FROM LAST FIXTURE OF CIRCUIT.
2. PROPER BOLT CIRCLE ALIGNMENT SHALL BE INSURED BY TYING OR CAGING METHODS BEFORE POURING FOOTING.

A15 BOLLARD MOUNTING DETAIL

NOT TO SCALE

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REVISIONS SCHEDULE		
MARK	DATE	DESCRIPTION
1	04.29.13	FINAL GMP ADDENDUM #1
2	05.03.13	FINAL GMP ADDENDUM #2

Eagle Ridge Housing
Final GMP Set

PROJECT: #L12007 DATE: 04.15.13

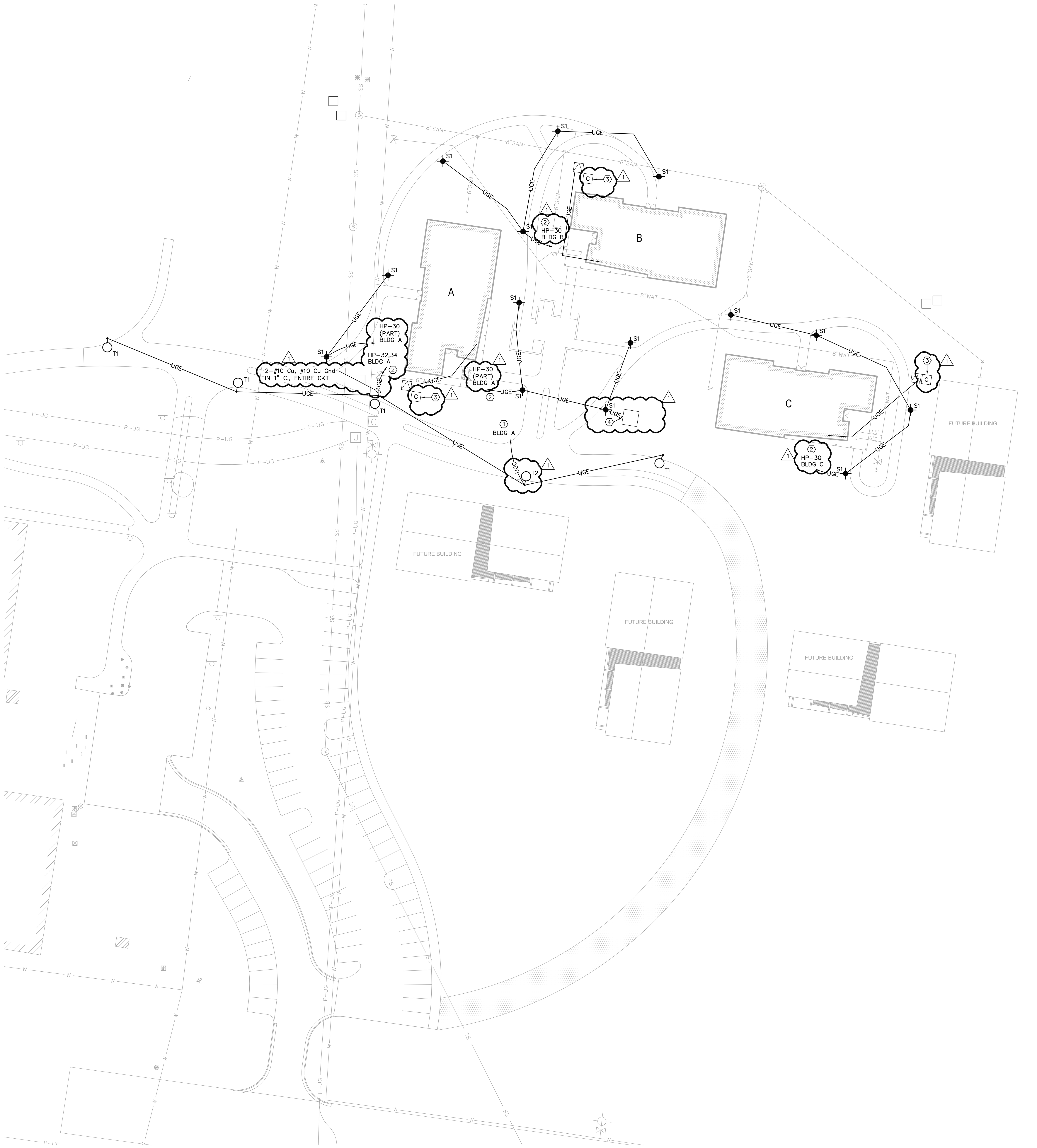
GMP SET
NOT FOR CONSTRUCTION

ELECTRICAL DETAILS

NORTH

E4.1

DWG: F:\Projects\072-2623\WK1\-CSC West Court Replacement\Constructs\Elec\EDA1A.dwg
DATE: May 02, 2013 10:52am
USER: dapodsenbush
XREFS: xref - TB



A2 ELECTRICAL SITE PLAN
1" = 30'-0"

GENERAL NOTES:

A. INSTALL UNDERGROUND CONDUITS 24" DEEP (MIN.) UNLESS NOTED OTHERWISE.

B. USE #10 AWG Cu FROM POLE BASE TO LUMINAIRE. CONDUCTORS BETWEEN POLES SHALL BE AS SHOWN.

C. COORDINATE SITE LIGHTING WITH LANDSCAPE PLAN.

1 D. PROVIDE 1–#10 Cu, 1–#10 Cu NEUTRAL, #10 Cu Gnd TO SERVE BOLLARD LIGHTING UNLESS NOTED OTHERWISE.

SHEET NOTES: (SYMBOLS ⟨1⟩, ⟨2⟩, ETC.)

1. PROVIDE 1" C. TO TELECOM RM IN BUILDING "A" FOR FTURE SECURITY CABLE PROVIDED BY OWNER.

2. ROUTE VIA LIGHTING CONTACTOR CONTROLLED BY PHOTOCELL.

1 3. COMMUNICATIONS MANHOLE/VAULT. REFER TO SHEET SE2.1 FOR COMMUNICATIONS CONDUIT PROVIDED BETWEEN BUILDINGS.

4. PROVIDE POWER TO VALVE VAULT LIGHT. MAKE FINAL CONNECTIONS. THIS PORTION OF THE CIRCUIT SHALL NOT BE CONTROLLED BY PHOTOCELL.

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REVISIONS SCHEDULE		
MARK	DATE	DESCRIPTION
1	05.03.13	FINAL GMP ADDENDUM #2

Eagle Ridge Housing
Final GMP Set

PROJECT: #L12007 DATE: 04.15.13

GMP SET
NOT FOR CONSTRUCTION

ELECTRICAL
SITE PLAN

NORTH

E0.1

DWG: F:\Projects\012-2625\ME\1-CSC West Court Replacement\Constructs\Elec\EEN1A.dwg USER: dquackenbush 122625_XBASE 122625_PBASE 22625_contours MEN1A
DATE: May 02, 2013 1:42pm XREFS: 122625_PBASE 122625_XBASE xref - TB 22625_03-SitePln