

CONSTRUCTION SPECIFICATIONS – CONSTRUCTION DOCUMENTS – PERMIT LEVEL

University of Oregon – Earl Hall – Bathroom Improvements (201330/3.3)

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DIVISION 01 – GENERAL REQUIREMENTS

1. Contractor shall conform to all applicable codes and regulations.
2. Owner shall file for, secure and pay for Plan Review, Structural Building Permit and City Systems Development Charges (SDCs), and other such charges.
3. Contractor shall file for, secure and pay for all other required permits and fees.
4. Contractor shall arrange and pay for all required connections to utilities.
5. Contractor shall arrange and pay for temporary construction facilities, security barriers, telephone, e-mail and sanitary facilities on site as approved by owner.
6. Should Contractor discover, encounter or suspect the presence of any hazardous materials, he shall immediately cease work and advise Owner and Architect of the circumstances and await investigation and remedial work by Owner before resuming work in the project area impacted.
7. Refer to drawings, schedules and supplemental information for additional requirements and scope of work.
8. Submit shop drawings, product data and samples to architect for review AFTER contractor's thorough review and approval. Submit under cover of individual submittal transmittals for each product category.
9. Required submittals include, but are not limited to ceramic tile and grout samples, countertops, casework, standard steel frames, doors, owner-furnished hardware (for preparation and reinforcing), resilient sheet flooring, rubber base, paint draw-downs, toilet accessories, plumbing and light fixtures, electrical panels and service equipment, heating and ventilating equipment, and other products that require architect's and Owner's approval and Agency approvals.
10. Submittals shall not include product substitutions that have not received prior written approval.
11. Prepare and organize all submittals (and other required close-out documentations) in a manner that easily facilitates preparation and assembly of Operation & Maintenance Manuals.
12. Communication requiring recorded modification of construction documents between contractor, architect and owner shall be by standard industry Request for Information (RFI), Architectural Supplemental Information (ASI), Proposal Request (PR), Construction change Directive (CCD), Change Order (CO).
13. Contractor shall prepare and maintain logs of all communications and shall update and distribute logs at minimum 2-week intervals, or as mutually agreed by contractor, architect and owner.
14. Contractor shall schedule, convene, conduct and manage bi-weekly construction meetings, and shall prepare and distribute meeting minutes and associated updates to logs, schedules and communications.
15. Substantial Completion: When contractor achieves substantial completion of the work, he shall submit to architect a punch list of remaining minor items of work and request architect's review and independent punch list of incomplete or non-compliant work. If architect finds work to be suitable for the intended use by the tenant, and a certificate of occupancy has been issued by the Agency Having Jurisdiction, architect will issue a Certificate of Substantial Completion (CSC) that includes the architect's punch list and other supportive data to the contractor and owner for signature. By signing that CSC, contractor acknowledges that remaining work will be completed within 30 days.
16. Final Completion: Within 30 days after execution of the CSC, contractor shall request Final Completion. Architect and owner will review the work for completeness and advise contractor of outstanding issues.
17. Contract Closeout: At the time of final completion, contractor shall submit Operation & Maintenance Manuals, warranties, training programs, and accessory tools and parts for primary building systems.
18. Final Payment: Contractor shall prepare a final Change Order reconciling any and all outstanding contract amounts, and a final Application for Payment, including Release of Liens and other documents required between the contractor and owner, and shall deliver copies of fully executed documents to owner.
19. Warranty Review: Contractor shall schedule and conduct a pre-expiration warranty review with the owner of materials and systems with minimum 1-year warranty.

DIVISION 02 – EXISTING CONDITIONS – MINOR DEMOLITION FOR REMODELING

1. Demolish and remove designated construction and equipment as required to perform the work.
2. Protect and restore existing construction to remain in condition prior to construction.
3. Identify utilities. Cap and record location of abandoned utilities.
4. Saw-cut/core-drill and remove existing concrete slabs for utilities.
5. Remove existing floor tile and topping slab down to structural slab surface.

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DIVISION 3 – CONCRETE

1. Cementitious Fill Material for Interior Topping Slab Replacement and New Shower Stall Mortar Beds: Dura-crete (L&M Construction Materials), Seal-Tight Meadow Patch T1, or approved, min. 6,000 psi, float and steel trowel with light brush-broom finish texture, sloped to drains where shown, and flush with existing elsewhere to accept scheduled floor finishes.

DIVISION 4 – MASONRY – NOT USED

DIVISION 5 – METALS – NOT USED

DIVISION 6 – WOOD, PLASTICS & COMPOSITES

1. Countertops and Window Sills: Solid Surface “ECO” by Cosentino, or approved, 3mm thick, eased radius edges. Specific material and color per Material Finish & Color Schedule.
2. Casework (Countertop support base): Plastic laminate (GP32) faced ¾” thick Medex Medite substrate, flush overlay design, AWI Custom Grade, colors per Material Finish & Color Schedule. Provide ¾” thick Medex Medite ledgers and countertop substrate, cantilevered wall brackets at open corner conditions, corrosion-resistant fasteners, and all required accessories.
3. Edge Bands: 3 mm PVC, self-edge where exposed to view or touch, color as selected by Architect.
4. Hardware: “Speed-Brace,” or approved, diagonal wall bracket countertop supports, beige powder-coat finish.
5. Backing for Wall-Mounted Door Stops: Softwood lumber (Hem/Fir/Larch), maximum 19% moisture, Fire-Retardant Treated, 2 x 6 unless otherwise noted. Kerf face to engage metal stud flanges flush with face

DIVISION 7 – THERMAL & MOISTURE PROTECTION

1. Vapor Barrier: Repair existing vapor barrier to match existing material at interior face of exterior walls as required to provide the building envelope vapor barrier within the limits of the project space.
2. Thermal Batt Insulation: Glass fiber, minimum density 2.5lb/cf, unfaced batts. Flame spread ≤ 25 , smoke developed ≤ 50 in accordance with ASTM E84.
3. Acoustic Batt Insulation: Glass or mineral fiber, minimum density 3.5lb/cf, semi-rigid, unfaced batts. Flame spread ≤ 25 , smoke developed ≤ 50 in accordance with ASTM E84.
4. Joint Sealers: Type I (at plumbing fixtures, ceramic tile termination joints, plastic laminate joints, window sills and countertops) – Silicone Rubber by G.E., Dow-Corning or approved, color to match adjoining plumbing fixtures, countertops/sills and ceramic tile grout joints as approved by Architect. Type II (Interior Sealant at door and window frames, and general construction joints) – Acrylic Sealant, Sonneborn “Sonolac” or approved, color to match adjoining major surface.

DIVISION 8 – OPENINGS

1. Standard Steel Frames: 16-gauge fully welded rolled steel frames, rated and labeled as indicated in the drawings, with floor anchors, 2” face width, standard profile, depth to match wall assembly, grout filled, resilient rubber silencers. Factory preparation and reinforcing for hardware. Frame depth as required to accommodate wall thickness of studs and gypsum board sheathing and/or backer-board. (Tile abuts frame edge)
2. Standard Steel Doors: 16-gauge, fully welded, ANSI A250.8 Level 2, physical performance level B, Model 1, full flush, rated and labeled as indicated on the drawings. Factory preparation and reinforcing for hardware.
3. Plastic Laminate Faced Wood Doors: Solid core, rated and labeled as indicated in the drawings, formaldehyde-free Agri-fiber or solid lumber core, AWI Section 1300, Premium Grade, optional species hardwood face veneer both faces. GP32 High-Pressure Plastic Laminate Face veneer. Factory finished clear satin-gloss catalyzed lacquer finish on optional species hardwood edge bands. Door Facing Manufacturer, Color and Texture: Wilsonart “Manitoba Maple.”

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4. Door Hardware: See Door Schedule on drawings for doors, frames and designated hardware group for individual doors. All hardware is Owner Furnished – Contractor Installed (OFCI).

HARDWARE SCHEDULE (Verify with UO Locksmith)

Group 1 (Bathroom/Shower)

1-1/2	pr	butts, Ives 5BBI 4-1/2 x 4-1/2 - 626
1	ea	closer, LCN 4041 REG Duty Arm, standard paint
1	ea	privacy lockset, Schlage ND40S – 626
1	ea	wall stop, Ives 407-1/2
1	set	smoke seals, Pemko S88D - BL

Group 2 (Janitorial Closet and Storage/Chase)

1-1/2	pr	butts, Ives 5BBI 4-1/2 x 4-1/2 - 626
1	ea	closer, LCN 4041 REG Duty Arm, standard paint
1	ea	storeroom lockset, Schlage ND80JD – 626
1	ea	wall stop, Ives 407-1/2
1	set	smoke seals, Pemko S88D - BL

DIVISION 9 – FINISHES

1. Metal Stud Framing:
 - a. Studs: Minimum 20-gauge galvanized rolled steel, channel shaped, size as shown, punched for utility access; 16-gauge studs or double 20 gauge studs at plumbing fixture carriers, door jambs and where shown. Stud splicing not permissible.
 - b. Runners: Same material, finish and gauge as studs.
 - c. Fasteners: Screws per ASTM C754.
 - d. Backing within Wall Cavity: 16 gauge x 6" wide galvanized sheet steel for all wall-mounted accessories, casework and items requiring support. Install FRT wood backing at Wall Stops only rather than sheet steel.
2. Moisture- and Impact-Resistant Gypsum Board (for paint finish) and Gypsum Tile Backer Board (for tile finish at least 6" outside shower stalls): Fiberock Brand Aqua-Tough Interior Panels by USG, or approved; Fire-rated, Type X, 5/8" thick, tapered edges, square ends. Gypsum Board Metal Accessories – GA 216, USG or approved.
3. Reinforcing Mesh, Joint Compound, Adhesive and Fasteners: Per GA 216. Acoustic sealant as recommended by gypsum board manufacturer. Provide joint tape and joint compound with Level 4 Finish with light fog-spray "orange peel" texture over pretexture primer for surfaces to receive paint finish, and reinforced mesh joint tape and moisture-resistant joint compound for surfaces to be tiled, as recommended by Board manufacturer. Coordinate preparation and sequencing with painting and tiling.
4. Cement Backer Board (for shower stalls and shower opening side wall returns at least 6" outside shower stalls):
 - a. Minimum 1/2" thick Hardi-Backer, National Gypsum PermaBase, or approved.
 - b. Install with corrosion-resistant screws as recommended by manufacturer.
 - c. Install joints centered over fully framed stud backing.
5. Tiling:
 - a. Shower Pan Tile Setting Bed:
 1. Cementitious Fill Material for Interior Topping Slab and Mortar Bed Replacement (specified in Division 3): Dura-crete (L&M Construction Materials), Seal-Tight Meadow Patch T1, or approved, min. 6,000 psi.
 2. Clean and prepare existing concrete structural slab.
 3. Install and screed cementitious setting bed to slope to shower drain collar as required to provide minimum 2" shower pan depth from top of stone threshold to drain inlet after tiling.
 - b. Non-Shower-Pan Floor Tile Setting Bed:
 1. Cementitious Fill Material for Interior Topping Slab Replacement (specified in Division 3): Dura-crete (L&M Construction Materials), Seal-Tight Meadow Patch T1, or approved, min. 6,000 psi.
 2. Clean and prepare existing concrete structural slab
 3. Install and screed fill material (setting bed) to be flush with adjoining top of slab elevation and screed-slope a 24" diameter basin 1/2" deep to floor drain collar as required to provide minimum 1/2" basin depth below nominal flush finish floor elevation to floor drain inlet after tiling.

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- c. Waterproof Membrane (shower stall walls and drain pans, side wall returns, non-shower-pan tile floors, and lower 36" of all tiled walls):
 - 1. Merkrete Hydro Guard 2000 with reinforcing fabric, or approved membrane.
 - 2. Install over fully cured sloped setting bed, adhere to shower and floor drain inlet collars and run up cement backer board shower walls and side wall returns, shingling and overlapping joints as recommended by manufacturer and TCNA.
 - 3. Turn membrane out onto flanking wall return corners at shower stall and threshold minimum 6 inches and adhere.
 - 4. Turn membrane up all tiled walls to minimum 36" above finish floor perimeter.
- d. Shower Stall Floor Stone Threshold:
 - 1. Carrera Marble.
 - 2. Factory fabricated to shape and profile shown on drawings.
 - 3. Install with thinset mortar system over waterproof membrane full width of shower stall openings to provide maximum ½ inch beveled rise above top of adjoining floor tiles per TCNA.
- e. Floor Tile:
 - 1. Mesh-mounted glazed ceramic mosaic tile – Emser "Bristol" Summer Ceramic – V3 Mosaic, or approved (nominal 2" x 2" square tiles).
 - 2. Install over waterproof membrane using Thinset Method per TCNA.
 - 3. Neatly cut to flush-out with shower and floor drain inlets with no sharp edges, rises or gaps.
- f. Wall Tile over Backer Board:
 - 1. 13" x 13" glazed ceramic tile: Emser "Baja" Rosarito Ceramic - V2 Décor/Trim (3" x 13" Bullnose)
 - 2. Install over waterproof membrane on gypsum tile backer board and cement backing board, and over taped and sanded gypsum tile backer board (above waterproof membrane).
 - 3. Install bullnose trim full-height at all outside corners of intersecting tile walls
- g. Wall Tile over Existing Glazed Block:
 - 1. 13" x 13" glazed ceramic tile: Emser "Baja" Rosarito Ceramic - V2 Décor/Trim (3" x 13" Bullnose)
 - 2. Thoroughly clean and scarify existing glazed block surface to receive new tile
 - 3. Prime cleaned surface with Merkrete #626 primer, TEC Primer TA560, or approved
 - 4. Install tile using TEC Superflex Mortar, or approved High-Performance Bonding Mortar in a Thinset Method per TCNA and as recommended by the mortar manufacturer
 - 5. Install bullnose trim full-height at all outside corners of intersecting tile walls
- h. Grouting and Sealing: Grout all tile joints with TEC Power Grout, or approved. Color as selected by Architect. After grout has cured, clean tile and grout surfaces and seal all surfaces with clear sealer recommended by tile and grout manufacturers.
- 6. Rubber base and accessories: Johnsonite, 4" coved, per Material Finish & Color Schedule. Adhesive and corner accessories as recommended by base manufacturer.
- 7. Fiber-Reinforced Plastic (FRP): Standard FRP by Marlite, or approved, white color, including all trim, accessories, adhesives and sealants for a complete watertight installation.
- 8. Painting: (See Material Finish & Color Schedule) – Benjamin Moore ECO Line, or approved.
 - a. Existing Ceilings/Soffits and Exposed Pipes, Conduit, Ducts, Equipment and Supports (Painted):
 - 1. Patch cracks, holes and damaged surfaces with material recommended by paint manufacturer
 - 2. One coat primer
 - 3. Two coats satin/eggshell enamel finish
 - b. Janitor Room Walls (Painted):
 - 1. Patch cracks, holes and damaged surfaces with material recommended by paint manufacturer
 - 2. One coat primer
 - 3. Two coats Exterior semigloss enamel finish
- c. Standard Steel Doors and Frames (Painted)
 - 1. One coat primer
 - 2. Two coats semigloss enamel finish

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DIVISION 10 – SPECIALTIES

1. Toilet and Bath Accessories: As indicated on the drawings. Products and accessories to conform to ANSI A117.1 and 2010 Oregon Structural Specialty Code, Chapter 11, and UO Facilities Standards with UO Housing Addendum, including the following:
 - a. Toilet Paper Dispenser (TPD): Coastwide Labs CW649 (OFCI)
 - b. Waste Receptacle (WR): Floor Can (OFOI)
 - c. Automated Foam Soap Dispenser (SD): To be determined (OFCI)
 - d. Seat Cover Dispenser (SCD): Bobrick B-221 (CFCI)
 - e. Sanitary Napkin Receptacle (SNR): McMaster-Carr 3027K12 (OFCI)
 - f. Grab Bar 1 (GB1): Bobrick – B-5806 Series (CFCI) Configuration as shown on drawings.
 - g. Grab Bar 2 (GB2): Bobrick – B-5806 Series (CFCI) Configuration as shown on drawings.
 - h. Grab Bar 3 (GB3): Bobrick – B-5806 Series (CFCI) Configuration as shown on drawings.
 - i. Paper Towel Dispenser (PTD): To be determined (OFCI).
 - j. Robe Hook (RH): Bobrick B-211 (CFCI).
 - k. Shower Curtain Rod (SCR): B-6047 (CFCI).
 - l. Folding Shower Seat (FSS): Bobrick B-5181 (CFCI).
 - m. Mirror (MIR): Bobrick B-290 Series (CFCI) Sizes as shown on drawings.
 - n. Full Height Mirror (MIR): Bobrick B-290-2472 (CFCI).
 - o. Coordinate and install Contractor- and Owner-furnished items.
 - p. Coordinate work of this section with placement and verification of internal wall reinforcement.
2. Fire Extinguishers: Existing to remain.

DIVISION 11 – EQUIPMENT – NOT USED

DIVISION 12 – FURNISHINGS – NOT USED

DIVISION 13 – SPECIAL CONSTRUCTION – NOT USED

DIVISION 14 – CONVEYING SYSTEMS – NOT USED

DIVISION 21 – FIRE SUPPRESSION

1. Design/Build, deferred submittal by subcontractor through Owner.

DIVISION 22 – PLUMBING

1. Plumbing Fixtures
 - a. Water Closets:
 1. Fixture:
 - a. Description: Floor-mount, rear outlet, elongated bowl, top spud, 1.6 gallon siphon jet flush.
 - b. Overall Dimensions: 31-½” inches x 15 inches.
 - c. Material: Vitreous china.
 - d. Color: White.
 - e. Manufacturer: American Standard, Kohler or approved. Kohler Model K-4352.
 2. Carrier:
 - a. Face plate: Cast iron, adjustable, with neoprene gasket.
 - b. Waste fitting: Cast iron. Vertical or horizontal, as required. Vent and/or side inlets, as required.
 - c. Fixture outlet gasket: Neoprene.
 - d. Manufacturer: Jay R. Smith, Mifab, Wade, Zurn, Watts or approved. Similar to Zurn Z 1213 Series.
 3. Seat:
 - a. Material: Solid white reinforced plastic.
 - b. Bumper: Nonmetallic.
 - c. Concealed check.
 - d. Hinge with insert molded integrally in seat.
 - e. Manufacturer: Church, Bemis, American Standard, Olsonite, Beneke or approved. Similar to Church 9500C seat.

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4. Sensor Flush Valve:
 - a. Description: Chrome plated body, multi-filtered bypass, chloramine resistant diaphragm, vandal resistant stop cap with set screw, sweat solder adapter with cover tube, and cast wall flange with set screw.
 - b. Stops: Screwdriver type. Vacuum breaker.
 - c. Inlet Adapter: Thread-to-solder, with escutcheon and casing tube.
 - d. Sensor: Battery powered, chrome metal housing, replaceable tempered glass lens, manual activation button, low battery indicator, range adjustment.
 - e. Warranty: Three years.
 - f. Gallons per Flush: 1.6.
 - g. Manufacturer: Sloan, Zurn or approved. Similar to Sloan Royal 8111-1.6 or Zurn Model ZER6000AV-HET.
- b. Lavatories:
 1. L-1:
 - a. Usage: Counter mounted lavatory.
 - b. Accessibility: ADA Compliant.
 2. Fixture:
 - a. Description: Self-rimming, front overflow, faucet holes on 4 inch centers.
 - b. Dimensions: 20 inches x 17 inches overall x 6 inches deep.
 - c. Material: Cast Iron Enameled.
 - d. Color: White.
 - e. Manufacturer: American Standard, Kohler, Zurn or approved. Similar to Zurn Z5810.
 3. Fittings:
 - a. Faucet: Single lever temperature adjustment, 4 inch base plate, 4-3/4 inch spout, 2.2 gpm aerator, adjustable limit stop, adjustable integral flow device, less pop-up, chrome finish. Chicago, Zurn, Delta, Symmons, Powers, Moen or approved. Similar to Chicago Model 2200-E280CP.
 - b. Mixing Valve: Provide MV-1 per Section 22 41 00 and detail on Drawings.
- c. Sinks:
 1. S-1:
 - a. Usage: Janitor's Room and Service Area service sink.
 - b. Accessibility: Not handicap accessible.
 2. Fixture:
 - a. Description: Corner style, floor mounted service sink, black vinyl rim guard.
 - b. Dimensions: 28 inch x 28 inch x 13 inch.
 - c. Material: Enameled Cast Iron.
 - d. Color: White.
 - e. Manufacturer: American Standard, Kohler, Commercial Enameling or approved. Similar to American Standard Florwell Model 7741.000 with 7745.811.
 3. Fittings:
 - a. Faucet: Wall-mounted service type, vacuum breaker, wall brace, pail hook, 3/4 inch threaded hose outlet, 8 inch centers, integral supply stops, chrome plated. Chicago, Zurn or approved. Similar to Chicago Model 897.
 - b. Drain: Grid strainer, 3 inch outlet. Similar to American Standard 7721.038.
 - c. Accessories: Mop hanger with three clamps, 30 inch hose with 3/4inch brass coupling and stainless steel hose bracket. Similar to Fiat 889-CC and 832-AA.
- d. Showers:
 1. SH-1:
 - a. Usage: Surface mount shower Valve.
 - b. Accessibility: ADA Compliant.

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2. Valve and Fittings:
 - a. Description: Surface mount shower system, 18 gauge 304 stainless steel, ASSE 1016 compliant thermostatic mixing valve, compensates for fluctuations in supply temperature and pressure, 3-port, full port on HW, temperature limit stop, angle checkstops with strainers, shutdown with cold water failure, 24 inch slide bar mount, 1.5 gpm hand held shower, in-line vacuum breaker.
 - b. Manufacturer: Moen Commercial Model # T8342NH Single Handle Posi-Temp Shower System with 3 Function Transfer Valve.
 - c. Diverter Valve: PlumbMaster 89163, No Equal.
 - d. Vacuum Breaker: Woodford Model 34H.
 3. Drain: 2 inch.
 - e. Floor Drains/Shower Drains:
 1. FD-1:
 - a. Body: Coated cast iron, flashing collar with seepage openings, trap primer connection.
 - b. Outlet Size: See Drawings.
 2. Strainer: Round, nickel bronze, adjustable height.
 3. Manufacturer: Jay R. Smith, Josam, Jonespec, Mifab, Wade, Watts, Zurn or approved. Similar to Jay R. Smith 2005-A.
2. Plumbing Piping
- a. Domestic Water (CW, HW, HWR):
 1. Pipe: Type L copper, hard drawn, ASTM B-88, PEX ASTM F876, ASTM F877, CSA B137.5
 2. Fittings: Wrought copper, ANSI B-16.22.
 3. Joints:
 - a. 2-1/2 inch diameter and smaller: Lead-free 95-5 tin-antimony solder or silver/copper-alloy brazed. PEX joints, ASTM F877, ASTM F1807, ASTM F1960, ASTM F1961, ASTM F2080, ASTM F2159.
 - b. 3 inch diameter and larger: Silver/copper-alloy brazed.
 - b. Domestic Water (CW, HW, TP, TW) only as shown on Drawings:
 1. Pipe: Cross-Linked Polyethylene (PEX), ASTM F877, ANSI/NSF Standard 61, IAPMO.
 2. Fittings: Brass or Engineered Plastic by same manufacturer.
 3. Joints: Mechanical.
 4. Manufacturer: Wirsbo or approved. Similar to Wirsbo Aquapex with ProPEX or Axial Press (APR) fittings.
 - c. Sanitary Waste and Vent (W, V), above ground:
 1. Pipe: Cast iron, no-hub, CISPI 301.
 2. Fittings: Cast iron, no-hub, CISPI 301.
 3. Joints (All areas, unless noted otherwise): Neoprene gaskets and stainless steel clamp-shield assemblies, CISPI 310 or listed by IAPMO.
3. Plumbing Insulation
- a. Domestic Cold Water (CW):
 1. Above Ground:
 - a. Type: FG (fiberglass).
 - b. Thickness: One inch. At Contractor's option, 1/2 inch thickness for branch lines up to 12 feet long for concealed piping serving individual fixtures.
 2. Above Ground, in PEX tubing:
 - a. Type: PF (polymer foam).
 - b. Thickness: One inch.
 3. Subject to Damage:
 - a. Type: CS (calcium silicate).
 - b. Thickness: One and one half inches or same as insulation on adjacent piping, whichever is thicker.
 - b. Domestic Hot Water (HW, HWR):
 1. Above Ground (except specific locations noted herein):
 - a. Type: FG.
 - b. Thickness:
 - 1) For pipe sizes 3/4" through 2": One inch. At Contractor's option, 1/2 inch thickness for branch lines up to 12 feet long for concealed piping serving individual fixtures.
 - 2) For pipe sizes 2-1/2" and larger: One and one half inches.

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2. Above Ground, in PEX tubing:
 - a. Type: PF.
 - b. Thickness:
 - 1) For pipe sizes 3/4" through 2": One inch.
 - 2) For pipe sizes 2-1/2" and larger: One and one half inches.
3. Subject to Damage:
 - a. Type: CS.
 - b. Thickness:
 - 1) For pipe sizes 3/4" through 2": One and one half inches.
 - 2) For pipe sizes 2-1/2" and larger: Two inches.
4. Plumbing Specialties
 - a. Fixture Traps:
 1. P-Traps, Exposed Locations:
 2. Trap Body: Cast brass, polished chrome finish, zinc cleanout plug.
 3. Wall Bend: 17 gauge brass, polished chrome finish.
 4. Flange: Chrome-plated steel.
 5. Manufacturer: American Standard, Kohler, Dearborn Brass, McGuire, Zurn, EBC, or approved. Similar to McGuire C8912.
 - b. P-Traps, Concealed within chases, walls, or underfloor:
 1. Materials: One piece cast iron.
 2. Joints: No-hub.
 - c. Stops and Supplies:
 1. Valve: Chrome-plated brass, angle pattern, loose key, brass stem.
 2. Keys: Provide 2 keys for first valve and 1 additional key for each additional 10 valves.
 3. Inlet: 1/2 inch threaded, female.
 4. Inlet Nipple: Brass.
 5. Flange: Chrome-plated steel.
 6. Outlet: 3/8 inch copper, compression fitting.
 7. Supply Riser: 3/8 inch flexible copper, non-corrugated, chrome-plated, with nose piece and length to suit fixture served.
 8. Manufacturer: Chicago, McGuire, EBC, Zurn, or approved. Similar to McGuire "Heavy" H2165LK or H2166LK.
 - d. Trap and Supply Insulation Kits
 1. Complies with ADA requirements for insulating pipes and fittings under handicapped accessible fixtures.
 2. Material: Molded closed cell vinyl.
 3. Components: Pre-molded to fit trap, tail piece, wall bend, supplies, and stops.
 4. Burning Characteristics: Self-extinguishing when tested in accordance with ASTM D635.
 5. Color: White.
 6. Manufacturer: McGuire, Truebro, EBC, or approved. Similar to McGuire "ProWrap."
 7. Products shall comply with the requirements of Oregon Revised Statute (ORS) 453.005 (7) (e), effective January 1, 2011. The referenced statute limits the use of three types of brominated fire retardant chemicals, which are defined as hazardous substances.
 - e. Wall Cleanouts, Interior Finished Areas:
 1. Plug: Cast iron spigot ferrule with bronze, taper thread.
 2. Cover: Round nickel bronze frame with cover, perimeter vandal proof screws, anchoring lugs.
 3. Manufacturer: Jay R. Smith, Josam, Jonespec, Mifab, Wade, Watts, Zurn, or approved. Similar to Jay R. Smith 4436-U-NB.
 - f. Wall Cleanouts, Interior Unfinished Areas and Concealed:
 1. Plug: Bronze, taper thread.
 2. Cover: Shallow stainless steel or deep chrome plated bronze, secured to plug with countersunk, vandal proof screw.
 3. Manufacturer: Jay R. Smith, Josam, Jonespec, Mifab, Wade, Watts, Zurn, or approved. Similar to Jay R. Smith 4472-U (shallow) or 4715-U (deep).

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- g. Floor Cleanouts, Finished Areas:
 - 1. Body: Coated cast iron two piece, adjustable.
 - 2. Plug: Bronze, taper thread.
 - 3. Cover: Nickel bronze, secured to body with vandal proof screws.
 - 4. Adjustable Carpet Clamp Frame: Required when cleanout is located in carpeted area.
 - 5. Manufacturer: Jay R. Smith, Josam, Jonespec, Mifab, Wade, Watts, Zurn, or approved. Similar to Jay R. Smith 4023 (4023-x in carpeted areas).
 - h. Water Hammer Arrestors:
 - 1. Type: Factory pressurized and sealed, with stainless steel bellows or brass piston.
 - 2. Testing and Fixture Unit Ratings: In accordance with Plumbing and Drainage Institute (PDI) Standard WH-201.
 - 3. Size: Refer to Part 3, Execution.
 - 4. Manufacturer: Jay R. Smith, Josam, Mifab, Precision Plumbing Products (PPP), Sioux Chief, Wade, Watts, Zurn, or approved. Similar to Jay R. Smith "Hydrotrol" or PPP "SC" series.
 - i. Mixing Valve:
 - 1. Features: Adjustable temperature control, straight checkstops, 1/2 inch IPS connections, compensates for fluctuations in supply temperature and pressure.
 - 2. Certification: ASSE 1070.
 - 3. Capacity: 0.5 gpm to 3.0 gpm flow range, maximum 20 psi pressure differential at 2.2 gpm flow.
 - 4. Manufacturer: Powers, Leonard, Symmons, Lawler or approved. Similar to Powers Hydroguard Series e480.
 - j. Balancing Valves
 - 1. Type: Calibrated balance valve with connections for attaching differential pressure meter.
 - 2. Materials: Bronze.
 - 3. Valve Style: Y pattern globe.
 - 4. Meter Connections: With built-in check valves.
 - 5. Operator: Minimum four full 360 degree handwheel turns.
 - 6. Connections: Threaded.
 - 7. Maximum Operating Pressure: 250 psig minimum.
 - 8. Maximum Operating Temperature: 250 deg. F. minimum.
 - 9. Manufacturer: Armstrong CBV-T Series or Grinnell GBV Series.
5. Plumbing Valves
- a. Ball Valves
 - 1. Type: Full port, 2-piece body with stainless steel trim.
 - 2. Body: Bronze.
 - 3. Rated Working Pressure: Minimum of 150 psig steam; 600 psig WOG.
 - 4. Handle:
 - a. Uninsulated Pipe: Standard lever handle.
 - b. Insulated Pipe: Extended lever handle.
 - 5. Ends: Threaded or soldered.
 - 6. Stem and Ball: 316 stainless steel.
 - 7. Seat and Seals: PTFE, TFE, or Buna-N.
 - 8. Standard: MSS SP-110.
 - 9. Manufacturer: Crane, Worcester, Apollo, Watts, Hammond, Grinnell, Milwaukee, WKM, Jomar, or approved. Similar to Apollo 70-140 (threaded) or Apollo70-240 (soldered).
 - b. Globe Valves
 - 1. Body: Bronze.
 - 2. Class: 125.
 - 3. Rated Working Pressure: Minimum of 125 psig steam; 200 psig WOG.
 - 4. Handle: Wheel.
 - 5. Ends: Threaded or soldered to match pipe.
 - 6. Trim: Bronze.
 - 7. Disc: Replaceable, swivel composition.
 - 8. MSS SP-80.
 - 9. Manufacturer: Crane Powell, Milwaukee, Kennedy, Grinnell, Walworth, Fairbanks, Jenkins, Lunkenheimer, Stockham, Hammond, or approved. Similar to Hammond IB440.

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- c. Check Valve, Size 2-½ Inch and Smaller:
 - 1. Type: Y-pattern, swing, renewable seat and disc.
 - 2. Body: Bronze.
 - 3. Disc: Bronze.
 - 4. Class: 125 or 150.
 - 5. Rated Working Pressure: Minimum of 125 psig steam; 200 psig WOG.
 - 6. Ends: Threaded or soldered to match piping.
 - 7. Comply with: MSS SP-80.
 - 8. Manufacturer: Crane, Powell, Milwaukie, Kennedy, Grinnell, Walworth, Fairbanks, Jenkins, Lunkenheimer, Stockham, Hammond, or approved. Similar to Hammond IB 940 (threaded) or Hammond IB 945 (solder).
- d. Non-Slam Check Valve, Size 2-1/2" and Smaller:
 - 1. Type: Spring loaded disc.
 - 2. Class: 125 or 150.
 - 3. Body: Bronze.
 - 4. Disc: Bronze, renewable.
 - 5. Seat: Bronze, renewable.
 - 6. Rated Working Pressure: Minimum of 125 psig steam; 200 psig WOG.
 - 7. Spring: Stainless steel.
 - 8. Ends: Threaded or soldered to match piping.
 - 9. Comply with MSS SP-80.
 - 10. Model: Watts, Mueller, or approved. Similar to Watts Series 600.

DIVISION 23 – HEATING, VENTILATING & AIR-CONDITIONING (HVAC)

- 1. Ductwork: Provide aluminum (alloy 3003-H-14) for all exhaust ducts. Slope towards grilles or toward accessible drainage points. All ductwork joints are to be adequately sealed with an approved duct sealant.
- 2. Exhaust fans: Refer to the schedule on the Drawings. New fans are to be completely exposed (no ceiling). Refer to Division 26 for fan control sequence.
- 3. Electric heaters: Refer to the schedule on the Drawings. Heaters are to be fully recessed with integral thermostat.
- 4. Grilles/registers/diffusers: Refer to the schedule on the Drawings.
- 5. Steam piping:
 - a. Pipe: Schedule 40 black steel, ASTM A-53, Grade B.
 - b. Fittings: Malleable iron, class 150, ANSI B-16.3.
 - c. Joints: Screwed.
- 6. Condensate piping:
 - a. Pipe: Schedule 80 black steel, ASTM A-53, Grade B.
 - b. Fittings: Malleable iron, class 150, ANSI B-16.3.
 - c. Joints: Screwed.
- 7. Steam/condensate pipe insulation:
 - a. Remove all existing pipe insulation on existing steam and condensate piping exposed during construction of this project.
 - b. Insulate all existing steam and condensate piping exposed during construction of this project with 1-1/2" thick fiberglass insulation.
- 8. Testing and balancing:
 - a. Firm qualifications: Work of this Section shall be performed by a firm currently certified by the National Environmental Balancing Bureau (NEBB) in the following categories:
 - 1. Certification for Performance of both Air and Hydronic TAB.
 - b. Preliminary testing: Prior to construction, measure and record the airflow and static of existing exhaust fans F-1 through F-5. Report results to Engineer prior to final testing and balancing.
 - c. Final testing and balancing: Adjust the existing exhaust fans F-1 through F-5 to obtain the revised performance as scheduled. Adjust fan speeds by providing belt and sheave changes as needed to meet air inlet tolerances at minimum amperage draw. Include in bid (1) belt and sheave set per existing fan.
 - d. Domestic hot water balancing:
 - 1. Balance domestic hot water return flows to equalize return temperatures at balancing stations, using the scheduled flows as a starting point. Continue balancing until a return temperature of 115 -120 deg F is achieved.

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2. Record motor nameplate data for the existing recirculating pumps in the basement including manufacturer, flow (gpm), head (feet), HP, volts, phase, FLA. List actual test data for each data item.
3. Record water temperature and flow (gpm) at each balancing valve at zero hot water demand and with demand simulated by opening approximately 10% of hot water outlets.

DIVISION 25 – INTEGRATED AUTOMATION – NOT USED

DIVISION 26 – ELECTRICAL

1. Light Fixtures: Refer to the Luminaire Schedule on the Drawings.
2. Ballasts:
 - a. Osram Sylvania: Programmed Rapid Start with ballast factor as indicated in the Luminaire Schedule.
 - b. Sound Rating: Class A.
 - c. Total Harmonic Distortion Rating: 10% or less.
 - d. Operating Frequency: 20 kHz or higher.
 - e. Ballasts shall be of the same manufacturer as the lamps.
3. Lamps:
 - a. Refer to the Luminaire Schedule on the drawings.
 - b. Color Rendering Index (CRI) of 80 or greater.
 - c. Average rated life of 20,000 hours or greater.
 - d. 3500K correlated color temperature.
4. Lighting Controls:
 - a. Wall Sensors: Watt Stopper PW-100-24, passive infrared, low voltage wall switch with normally open/closed contacts.
 - b. Wall switch sensors shall integrate with the exhaust fans so that ventilation air is provided every time a restroom is occupied.
 - c. Adjust sensors to turn off area lighting and exhaust fan if restrooms are unoccupied for a period of 15 minutes.
 - d. Universal voltage power pack: Watt Stopper BZ-50.
 - e. All occupancy sensors shall be programmed to allow an automatic off – manual on (vacancy).
 - f. Time Switches: Watt Stopper RT-100, countdown wall switch programmable from 5 minutes to 12 hours.
5. Receptacles:
 - a. GFCI Receptacles: Leviton 7899; Heavy Duty, 120 Volt, 20 Amp.
 - b. Device color: match existing.
 - c. Wall plates: stainless steel.
6. Raceway
 - a. All raceway shall be 3/4" EMT conduit minimum.
 - b. Surface mounted, exposed raceway on ceilings:
 1. 3/4" EMT conduit.
 - c. Surface mounted, exposed raceway on walls:
 1. Wiremold 2000 series
 - d. All raceway shall be concealed within finished wall or ceiling spaces where possible.

DIVISION 27 – COMMUNICATIONS – NOT USED

DIVISION 28 – ELECTRONIC SAFETY & SECURITY – FIRE ALARM SYSTEMS

1. Design/build, deferred submittal by subcontractor through Owner.

END OF SPECIFICATIONS