

Exhibit B**Scope of Work – Fabrication and Installation**

This Scope of Work contains a full list of buildings and rooms required to complete the Structures and Interior room, supply, and installation. We invite Bidders to offer information on any or all sections that your company provides. Should your company have strong relationships with others that cover areas you do not, you are invited to suggest Weyerhaeuser reach out to them directly or offer their solution as part of your response. Please provide all details to ensure that your company has subcontracted out any part of this scope provided by others.

1.0 GENERAL**1.1 Scope of Work**

Furnish all labor, materials, tools, and equipment and perform all operations necessary for the construction of the following list of structures/interior rooms:

EQ #	Building Description	Type of Build	Fire Rating	Sprinkled	HVAC
1015	Central Supplies and Maintenance Shop	Complete	1-hour (Offices Only)	Yes	Yes Except for Mechanical Maintenance
1016	Central Supplies and Maintenance Shop Lavatories	Complete	1-hour	Yes	Yes
1029	Vehicle Maintenance Lube Storage	Complete		Yes	No
1035	Vehicle Maintenance Shop	Lean-to	1-hour	Yes	No
1036	Vehicle Maintenance Lavatory	Complete	1-hour	Yes	Yes
1037	Vehicle Maintenance Offices	Complete	1-hour	Yes	Yes
1065	Lube Receiving and Handling	Lean-to		Yes	No
3645	Block Processing Hydraulic Room	Shell	1-hour	Yes	No
3900	Merchandiser Electrical Room	Shell	2-hour	No	Yes
3905	Debarker Electrical Room	Shell	2-hour	No	Yes

4515	Strander Hydraulic Room	Complete	1-hour	Yes	No
4900	Strander Electrical Room	Lean	2-hour	No	Yes
4905	Fuel Hog Electrical Room	Complete	2-hour	No	Yes
5900	Dryer Electrical Room	Lean-to	2-hour	No	Yes
5905	Dryer Pumps Electrical Room	Lean-to	2-hour	No	Yes
5925	Thermal Medium Pump Room	Lean-to		Yes	No
6400	Thermal Oil Room	Lean-To	1-hour	Yes	No
6405	Hydraulic Room	Lean-to	1-hour	Yes	No
6410	Steam and Condensate Room	Lean-to		Yes	No
6417	Hydraulic Oil Conditioning Room	Other	1-hour	Yes	No
6495	Chemical Unloading Room	Lean-To		Yes	No
6900	Press Electrical Room	Lean-To	2-hour	No	Yes
8665	Hog Enclosure	Complete	1-hour	Yes	No
8715	QA Lab	Complete	1-hour	Yes	Yes
8900	Finishing Electrical Room	Complete	2-hour	No	Yes
8910	Pneumatics Electrical Room	Shell	2-hour	No	Yes
9950	Heat Energy Control Room	Lean-to	1-hour	Yes	Yes
9900	Generator and Turbine Electrical Room	Shell	2-hour	No	Yes
9905	Compressor Room	Complete		Yes	No
9910	Boiler Area Electrical Room	Lean-to	2-hour	No	Yes
9915	Generator Controls and Switchgear Room	Complete	2-hour	No	Yes

1.1.1 All sprinkler systems will be provided and installed by others, however, bidder is expected to work with the sprinkler provider in design phase to ensure space is allowed.

- 1.1.2 All buildings/rooms will be made from metal stud and metal sheathing. **Wood construction will not be used.**
- 1.1.3 Each building/ room will require varying levels of effort so for this bid they will be split into the following categories:
- 1.1.4 **Complete Build**-there is no current existing structure related to the building/room on site. This will require a complete stick build including all lighting, receptacles, HVAC systems, fire rating (if required), plumbing/plumbing fixtures, floors, doors, ceiling, roofing, and windows-
 - 1.1.4.1 #1015 Central Supplies and Maintenance Shop
 - 1.1.4.1.1 The Central Supplies and Maintenance shop is located north of the dry screens within the process building. This building includes the #1016 Lavatories. There will be structural steel as a part of this building that will be installed by others. Bidder will have to coordinate with the bridge crane as roof structure will support.
 - 1.1.4.2 #1029 Vehicle Maintenance Lube Storage
 - 1.1.4.2.1 The Vehicle Maintenance Lube Storage is located inside the Vehicle maintenance shop.
 - 1.1.4.3 #1036 Vehicle Maintenance Lavatory
 - 1.1.4.3.1 The Vehicle Maintenance Lavatory is located inside the Vehicle maintenance shop.
 - 1.1.4.4 #1037 Vehicle Maintenance Offices
 - 1.1.4.4.1 The Vehicle Maintenance Lavatory is located inside the Vehicle maintenance shop.
 - 1.1.4.5 #4515 Strander Hydraulic Room
 - 1.1.4.5.1 The Strander Hydraulic Room is located east of the stranders in the Process Building (provided by others).
 - 1.1.4.6 #8665 Hog Enclosure
 - 1.1.4.6.1 The Hog enclosure is located north of the finishing line and will require additional sound proofing.
 - 1.1.4.7 #8715 QA Lab
 - 1.1.4.7.1 The QA Lab is located in the process building east of the finishing line.
 - 1.1.4.8 #8900 Finishing Electrical Room
 - 1.1.4.8.1 The Finishing Electrical room is located in the process building central to the finishing area.
 - 1.1.4.9 #9905 Compressor Room
 - 1.1.4.9.1 The compressor room will be located outside south of the process building and just west of the Heat Energy structure.
- 1.1.5 **Shell Build**- there is existing structural steel built on site. This will require a shell construction meaning walls and sheathing, all lighting, receptacles, HVAC systems, fire rating (if required), plumbing/plumbing fixtures, floors, doors, ceiling, roofing, and windows
 - 1.1.5.1 #3645 Block Processing Hydraulic Room
 - 1.1.5.1.1 The Block Processing Hydraulic Room is located the Merchandiser building on the ground floor under the control room.
 - 1.1.5.2 #3900 Merchandiser Electrical Room

- 1.1.5.2.1 The Merchandiser Electrical Room is elevated on an upper level within the merchandiser building.
- 1.1.5.3 #3905 Debarker Electrical Room
 - 1.1.5.3.1 The Debarker Electrical Room is elevated on an upper level within the merchandiser building.
- 1.1.5.4 #4905 Fuel Hog Electrical Room
 - 1.1.5.4.1 The Fuel Hog Electrical Room is located in the process building north of the stranders
- 1.1.5.5 #9915 Generator Controls and Switch Gear Room
 - 1.1.5.5.1 The Switch Gear Room is located inside the Heat Energy structure on the southwest side.
- 1.1.6 **Lean-to Build**-The PEMB manufacturer will be providing several lean-to buildings that will require fit out. The bidder will be responsible all lighting, receptacles, HVAC systems, fire rating(if required), and plumbing/plumbing fixtures
 - 1.1.6.1 #1035 Vehicle Maintenance Shop
 - 1.1.6.1.1 The vehicle maintenance shop is located south of the finishing line on the outside of the process building. Bidder will need to provide the Fire Free88 Coating to the walls and roof and latex or epoxy topcoat.
 - 1.1.6.2 #1065 Lube Receiving and Handling
 - 1.1.6.2.1 The Lube Receiving and Handling will be attached to the pre-engineered metal building north of the central supplies building and next to the chemical unloading room. Bidder will only need to provide the Fire Free88 Coating to the walls and roof and latex or epoxy topcoat.
 - 1.1.6.3 #4900 Strander Electrical Room
 - 1.1.6.3.1 The Strander Electrical Room is located east of the stranders on the outside of the process building. Bidder will need to provide the Fire Free88 Coating to the walls and roof and latex or epoxy topcoat.
 - 1.1.6.4 #5900 Dryer Electrical Room
 - 1.1.6.4.1 The Dryer Electrical Room is located northwest of the dryers on the outside of the process building. Bidder will need to provide the Fire Free88 Coating to the walls and roof and latex or epoxy topcoat.
 - 1.1.6.5 #5905 Dryer Pumps Electrical Room
 - 1.1.6.5.1 The Dryer Pumps Electrical Room is located south of the dryers on the outside of the process building and attached to the Thermal Medium Pump Room. Bidder will need to provide the Fire Free88 Coating to the walls and roof and latex or epoxy topcoat.
 - 1.1.6.6 #5925 Thermal Medium Pump Room
 - 1.1.6.6.1 The Thermal Medium Pumps Room is located south of the dryers on the outside of the process building. Bidder will need to provide the Fire Free88 Coating to the walls and roof and latex or epoxy topcoat.
 - 1.1.6.7 #6495 Chemical Unloading Room

1.1.6.7.1 The Chemical Unloading Room is located north of the Central Supplies building and next to the Lube Receiving room. Bidder will need to provide the Fire Free88 Coating to the walls and roof and latex or epoxy topcoat.

1.1.6.8 #6900 Press Electrical Room

1.1.6.8.1 The Press Electrical Room is located north of the press on the outside of the process building attached to the Press Steam Room.

1.1.6.9 #8910 Pneumatics Electrical Room

1.1.6.9.1 The Pneumatics Electrical Room located south of the finishing line attached to the vehicle maintenance shop. Bidder will need to provide the Fire Free88 Coating to the walls and roof and latex or epoxy topcoat.

1.1.6.10 #9950 Heat Energy Control Room/#9910 Boiler Area Electrical Room

1.1.6.10.1 The Control Room and electrical room are part of a 2-story building that is attached to the Boiler building. The first floor is the electrical room and the second floor is the control room. Bidder will need to provide the Fire Free88 Coating to the walls and roof and latex or epoxy topcoat.

1.1.7 **Other**

1.1.7.1 #6417 Hydraulic Oil Conditioning Room

1.1.7.1.1 The Hydraulic Oil Conditioning Room is elevated on an upper level within a Pre-Engineered metal building provided by others. This scope will include the installation of a wall and doors to separate this space.

2.0 Codes

2.1 The buildings shall conform to all applicable National, State, and Local building codes:

- 2.1.1 International Building Code
- 2.1.2 International Fire Code
- 2.1.3 International Plumbing Code
- 2.1.4 International Mechanical Code
- 2.1.5 International Fuel & Gas Code
- 2.1.6 National Electrical Code
- 2.1.7 International Energy Conservation Code
- 2.1.8 ADA Accessibility Guidelines (ADAAG)
- 2.1.9 NFPA 101 Life Safety Code

3.0 Delivery of Materials

3.1 All materials shall be delivered, stored, and handled so as to prevent any damage by water or breakage.

4.0 Equal Materials

4.1 All materials of equal quality may be substituted with prior approval of Owner.

5.0 WORK BY OTHERS

5.1 Foundation and Concrete Work - All concrete slab, decks, grade beams, pads, sidewalks, stoops, etc. with formwork, anchor rods, embedded steel, and reinforcing as shown on foundation drawings, shall be furnished, and installed by others. that any plumbing tie-ins must be coordinated with associated contractors.

5.2 Fire Protection Design, supply and install – All fire suppression, detection, portable fire extinguishers, alarm systems and controls shall be by Owner's Fire Protection Contractor.

5.3 Electrical - Owner's Electrical Contractor shall supply required power to panel for Upfit contractor to connect to. Upfit contract to coordinate with area electrical on required power/communication needs.

5.4 Structural Steel– Shall be supplied and installed by Owner's contractor.

6.0 Materials of Construction

6.1 The buildings shall be designed, fabricated, and erected to be weathertight.

6.2 Base structural grid shall be constructed of ASTM A572 (when available) or ASTM A36 wide flange, channel, angle, and rectangular tube rolled shapes forming a self-supporting grid. All base member-to-member seams shall be continuously welded or bolted framed connections.

6.2.1 All seams in floor plates shall be continuously welded of filled and ground smooth. Floor plate seam welding shall be sequenced to prevent excessive heat buckling, and seams shall be aligned over base member flanges to provide backing of welds and heat sinking.

6.3 The exterior walls shall be constructed of 18-gauge minimum G90 paint grip (to assure maximum coating adherence) galvanized steel interlocking panels.

6.4 Exterior wall panel seams shall be sealed with a weather resistant clear caulk bead.

6.5 The roof shall be constructed of 18-gauge minimum G90 paint grip (to assure maximum coating adherence) galvanized steel interlocking panels in a vertical "standing rib" configuration.

6.6 The interior walls shall be constructed of flat 18-gauge minimum G90 paint grip (to assure maximum coating adherence) galvanized steel attached to the exterior wall panel interlocking ribs. The edges of flat interior wall panels shall be jogged to provide a smooth seam.

6.7 The ceiling shall be constructed of 18-gauge minimum G90 paint grip (to assure maximum coating adherence) galvanized steel interlocking panels in a vertical "standing rib" configuration.

6.8 The wall insulation shall be placed in the cavities between the exterior wall panels and the interior wall liner. Fiberglass Batt type insulation shall be secured to the exterior wall panels to prevent sagging.

6.9 The ceiling insulation shall be placed in the cavities of the interlocking "standing rib" ceiling panels.

6.10 The floor insulation shall be a closed cell polyurethane spray foam insulation applied to the underside of the floor, between base members, at a specified thickness to achieve the R-value specified.

6.11 Insulation levels shall be per local codes.

6.12 A fascia panel shall be constructed around the roof perimeter concealing the roof "standing rib" edges.

6.13 Personnel single doors and equipment double doors shall be placed to allow entrance and egress per applicable OSHA requirements, as well as passage of furniture and appliances as required, and shall include applicable panic devices with keyed locking provisions, closer, crash chain, mortise hinges and appropriate weather stripping and threshold. Personnel Doors shall meet all criteria listed below:

6.13.1 Type 304SS door hinges.

6.13.2 Exterior drip strip to extend 3" past both sides of door frame.

6.13.3 Insulation with a 6.54 R-value.

6.13.4 Shall be certified for a 90-min fire rating unless another is specified.

7.0 Steel Design

7.1 All live loads, wind, and seismic loads shall meet the regulations of the International Building Code (current edition).

- 7.2 Additional loads are as specified herein and on the drawings. Load combinations shall be as specified in the International Building Code.
- 7.3 Loads not accounted for in the codes that shall be included in the design of the building are as follows:
 - 7.3.1 Snow load design shall consider Fully Exposed Condition.
 - 7.3.2 Wind load design shall consider Exposure Category C.
 - 7.3.3 Building shall be considered Risk Category II.
- 7.4 Building shall be considered unheated for snow load calculations. Refer to drawings for specific information.
- 7.5 All columns shall be designed as pinned base.
- 7.6 The collateral load is not to be used to resist uplift.
- 7.7 The roof support structure shall be designed for a live load of no less than 20 psf.
- 7.8 Snow drift shall be accounted for between different roof heights and against roof mounted equipment.
- 7.9 Reaction drawings shall clearly indicate whether vertical component of the longitudinal brace forces is included or not included in the basic column reactions for longitudinal load cases. When tabulating reactions, frames with longitudinal braces shall not be grouped together with frames that do not have longitudinal braces.

8.0 FRAMING

8.1 Scope of Work

- 8.1.1 Furnish labor and materials to perform all the rough and finish carpentry/upfit as shown on the drawings.

8.2 Stud Walls and Partitions

- 8.2.1 Studs shall all be single length, unspliced, and platform frames. Stud size and spacing as indicated on drawings.
- 8.2.2 Corners and Intersections-Unless otherwise indicated on the drawings, frame all corners and intersections with three (3) or more studs and all required bearing for wall finish.

8.3 Alignment

- 8.3.1 On all framing members to receive a finished wall or ceiling, align the finish subsurface to vary not more than 1/8" from the plane of surfaces or adjacent framing and furring members.

8.4 Installation of Structural Panel Sheathing

8.4.1 Placement

- 8.4.1.1 Center joints accurately over supports; unless otherwise specifically shown on the drawings, stagger the end joints of structural panels to achieve a minimum of continuity of joints.

8.4.2 Protection of Structural Panel Sheathing

- 8.4.2.1 Protect all panels from moisture by use of all required waterproof coverings until the panels have in turn been covered with the next succeeding component or finish.

8.5 Hollow Metal Doors and Frames

- 8.5.1 Where called for on the drawings and schedules, furnish and install full flush commercial doors and arc-welded or knock-down frames as follows:
 - 8.5.1.1 Exterior doors shall be 1-3/4" thick, 20 gauge insulated steel with steel frames of the sizes indicated on the drawings.
 - 8.5.1.2 Interior doors shall be 1-3/4" or 1-3/8" thick, 20-gauge hollow steel with steel frames of the sizes indicated on the drawings.

- 8.5.1.3 Vision lights shall be of sizes shown on the drawings and shall be double, insulated glazing on exterior doors.
- 8.5.1.4 Metal thresholds shall be aluminum at all "locked" entrance doors as shown on the drawings.
- 8.5.1.5 Install weather-stripping at all exterior doors.
- 8.5.1.6 All doors and frames shall be pre-finished with a baked-on prime paint, final paint color of frames to be dark bronze. Paint color of doors to be determined.
- 8.5.1.7 Refer to drawings for location of any fire rated doors and frames. All rated doors and frames to have attached label. Fire doors must be self-latching, self-closing, no hook-backs or chains to keep open, use only listed fire door hardware. Fire doors with fusible link louvers must be U.L. listed and cannot be installed with fire exit hardware.
- 8.5.1.8 Frames shall be mortised and adequately reinforced for all hardware, including closers where specified on drawings.

8.6 Door Hardware

- 8.6.1 Furnish all supervision, material, labor and equipment to supply and install the following, but not limited:
 - 8.6.1.1 Locksets, Deadbolts, and Strike Plates (1" drive bolt)
 - 8.6.1.2 Keys
 - 8.6.1.3 Hinges
 - 8.6.1.4 Knobs/Levers
 - 8.6.1.5 Bumpers, (2) each door, if hinge bumper.
- 8.6.2 Style, color and finish shall be approved by the Owner.
- 8.6.3 All hardware to be bronze anodized finish.
- 8.6.4 All exterior hardware to have a ten (10) year minimum warranty for finish.
- 8.6.5 Key all locksets and deadbolts alike.
- 8.6.6 A "key-pad" type lock will be used at the computer room #8955 entry door. Contractor shall coordinate with door supplier and Owner for exact system and specifications.

8.7 Caulk and Seal

- 8.7.1 General
 - 8.7.1.1 Larger holes: (pipe openings, etc.) stuff steel wool inside, and then fill with mixed cement, or quality butyl caulk.
 - 8.7.1.2 Smaller openings: should be caulked and or sealed using elastomeric silicone sealant.
 - 8.7.1.2.1 Throughout building: Along/around baseboards, floor and wall joints, window and door moldings, edges of electrical outlet covers and radiator covers.
 - 8.7.1.2.2 Pipes/wiring: Around all water, electrical pipes, cable and/or other wires coming into a unit.
 - 8.7.1.2.3 Kitchen/bathroom: Around sink edges, where cabinets and countertops meet walls (particularly under the sink), between cabinets and countertops.
- 8.7.2 Firestop Sealants
 - 8.7.2.1 Intumescent, for vertical or overhead surfaces, caulked, knifed or troweled.

- 8.7.2.2 Elastomeric Sealant, a non-halogenated latex-based, highly elastomeric caulk shall be installed to provide passive smoke and fire protection in construction joints.

8.8 Shelving

- 8.8.1 All Shelving in closets to be constructed of a paintable or stainable wood with 2x2 cleats or wood bracing for support, painted to match surrounding wall. All exposed shelving to be paintable or stainable wood with white metal brackets for support.

8.9 Cabinets

- 8.9.1 Materials include, but are not limited to the following:

- 8.9.1.1 Breakroom Cabinets
- 8.9.1.2 Toilet Room Vanities
- 8.9.1.3 Back Panels
- 8.9.1.4 Wall, Base and Corner Fillers
- 8.9.1.5 Toeboard and Toeboard Overlay
- 8.9.1.6 Countertops
- 8.9.1.7 Hardware

- 8.9.2 Description

- 8.9.2.1 Each delivery to include all toe kicks, back panel molding, soffit molding (for top edge of all wall cabinets), shoe molding, fillers, valences hardware, cabinet screws, and ceiling spacers for full overlay door with soffit above.
- 8.9.2.2 All wall cabinets shall be 36" in height.
- 8.9.2.3 All cabinets with exposed ends shall be finished in the same color as the cabinet fronts.
- 8.9.2.4 All door and drawer pull hardware and shelf clips shall be included in bid.
- 8.9.2.5 All cabinet doors shall be attached to the cabinet frame with door hinges. Base cabinet drawers shall be constructed of wood and shall operate on drawer guides.
- 8.9.2.6 The Contractor shall also supply the Owner's representative with matching touch-up filler kit which will match the color finish of the cabinets.
- 8.9.2.7 All cabinets to have 4" backsplash finished to match countertop.
- 8.9.2.8 Toe kick shall be included as standard.
- 8.9.2.9 Contractor shall adjust and align all cabinets to operate properly.
- 8.9.2.10 Any defects noticed within a month of completion shall be repaired, adjusted or replaced by the Contractor no later than (3) working days from notification from the Owner or Owners' representative.

- 8.9.3 Cabinets shall be stock pre-manufactured solid wood with factory finish as selected by Owner.

9.0 INSULATION

9.1 Insulation Location and Description

- 9.1.1 All rooms with HVAC systems will be insulated in a manner to allow for efficient operation of the HVAC system.

9.2 Sound Attenuation

- 9.2.1 Grinder Enclosure- The grinder enclosure will need to reduce noise levels to 76 dB outside of the enclosure. The grinder is being provided by West Salem and is model # 3240GRI-HP.
- 9.2.2 All control rooms, offices, lab, and electrical rooms shall have noise to reduction to acceptable levels which will allow for the removal of hearing protection. Bidder to use standard heavy industrial noise levels.

10.0 RUBBER BASE

10.1 Materials

Rubber base: Roppe, 191 Camel. Use Henry 440 for adhesive or appropriate adhesive for specific substrate. Verify color with owner.

11.0 TWO PART EPOXY FLOOR COATING

(Office, Computer Room, Toilet Rooms, Break Room, Utility Room)

11.1 Preparation for New or Uncoated Concrete

- 11.1.1 New concrete must cure for a minimum of 28 days.
- 11.1.2 The surface must be clean, dry, and free of dust, dirt, grease, oil, curing agents, and all other contaminants.
- 11.1.3 All surfaces to be coated shall be cleaned per SSPC-SP13/NACE 6 / CSP 3, Light Shot Blast.

11.2 Product

- 11.2.1 Part A Armorseal 8100 Water Base D Epoxy Floor Coating with Part B: B70V8100 hardener.
- 11.2.2 Refer to Product Data Sheet for specific Product, Application, Mixing/Thinning, Safety, Environmental, Necessary Equipment, and Temperature requirement Information.
- 11.2.3 Color and Finish (gloss or satin) shall be determined by Owner.

11.3 Application

- 11.3.1 Apply two coats of Armorseal 8100 Water Base D Epoxy Floor Coating per manufacturer specifications.
- 11.3.2 Use product when air and surface temperatures are between 50-100°F (10-38°C), at least 5°F (2.8°C) above dew point, relative humidity 85% maximum.

11.4 Dry Time

- 11.4.1 Refer to Data Sheet for drying time schedule.

11.5 Clean-Up

- 11.5.1 Clean spills and splatters immediately with soap and warm water. Properly dispose of all soiled rags, empty containers, and unused paint.

12.0 ACOUSTIC CEILING TILE

12.1 Toilet Rooms

- 12.1.1 CertainTeed Vinylrock, Safetone Class A, trim edge, 24x48x1/2

12.2 Computer Room, Office, Break Room

- 12.2.1 CertainTeed Sand Micro, mineral fiber, Safetone Class A, reveal edge, 24x48x5/8, NRC .50.

12.3 Ceiling Tile Suspension System

12.3.1 CertainTeed 15/16" Classic Stab

13.0 PAINTING

13.1 For painting see included paint specification

14.0 MISCELLANEOUS

14.1 Toilet Room Accessories

14.1.1 May include:

- 14.1.1.1 Paper and waste dispensers (paper towels, toilet paper)
- 14.1.1.2 Soap dispensers
- 14.1.1.3 Grab bars
- 14.1.1.4 Mirrors

14.2 Janitor Room Accessories

- 14.2.1 Mop sink floor mounted (24"x24"x10") with service faucet and hose
- 14.2.2 Side splash wall guards
- 14.2.3 Bumper guards (vinyl or aluminum)
- 14.2.4 Mop Hook

14.3 Private Office Accessories

14.3.1 Coat hook (behind door)

14.4 Office Furniture

14.4.1 Office furniture is not included in this contract (by Owner). Furniture plans are shown for building and systems design. Desk top in the computer room is by this Contractor.

14.5 Computers and Servers

14.5.1 All computers, servers and racks shall be supplied and installed by Owner. All wiring, cable, conduits, jacks, cover plates, etc. and network drops within the building envelope shall be supplied and installed by this Contractor. See electrical drawings and specifications. The Cable or Telephone Company shall install all cable and wiring underground to the building IT panel. Site Contractor shall excavate the required site trenches, prep trenches for conduit or piping, and backfill. Coordinate trench locations and schedule with Owner and Utility Companies. See Earthwork specifications.

15.0 HEATING, VENTILATION AND AIR CONDITIONING

15.1 The Contractor is to furnish labor, materials, tools and equipment, and perform all operations necessary for a complete and operational system as shown on drawings and specified herein. The system shall comply with all applicable building codes under the project location jurisdiction, ASHRAE Standards, SMACNA duct construction standards, NFPA 72 National Fire Alarm Code, and NFPA 90A Standard for the installation of Air Conditioning and Ventilation systems. Install per manufacturer's instructions.

15.2 Equipment

15.2.1 Electrical and Break Room/Toilet Rooms

15.2.1.1 The contractor will provide a central heating and air conditioning system. Units shall be AC units or heat pumps and forced air blower units with auxiliary heat strips. The system shall be designed to provide a minimum winter temperature of 70° F., and a summer temperature differential of 30° F. All equipment, layout, and register location are subject to approval of the Engineer and Owner. The layout and locations shown on drawings are for bidding and general design purposes. It is the

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Contractors responsibility to finalize the design as required for code compliance and sound construction practice.

15.2.2 Computer Room, Offices

15.2.2.1 Ductless mini-split heating and air conditioning equipment shall be as indicated on the drawings with individual thermostat control.

15.2.3 Restrooms

15.2.3.1 Each room shall be equipped with exhaust fans wired to light switch. Refer to drawings for quantities, locations and sizes.

15.3 The HVAC system for the computer server areas of the building shall be designed and installed to maintain the interior of the rooms to 70 degrees F maximum temperature and 60% maximum relative humidity.

15.4 Ductwork

15.4.1 All supply air shall be ducted. All return air shall be ducted unless unit is installed in an Electric Room. Toilet Rooms shall have supply only. Ductwork shall be fabricated from cold-rolled steel sheet, shall be sealed and lined with one (1) inch duct liner. All supply diffusers and return grills shall be drop-in ceiling mounted unless noted otherwise.

15.5 Thermostats are to be provided by the equipment manufacturer and shall be of 24-volt operation with system control for heat/off/cool, fan control for automatic/on and with locking covers.

15.6 Refrigerant piping is to be Type "L" ACR copper tubing and of sufficient lengths to connect the interior coil and the exterior condenser without splicing.

15.7 Sound attenuation sleeves shall be installed in the supply and return main ducts.

15.8 Dampers

15.8.1 All dampers, with the exception of external bypass and multi-zones (if scheduled), shall be internally mounted. Dampers shall be premium ultra-low leak and located as scheduled. Fire dampers shall be installed per all applicable codes.

15.8.2 All linkages, crank arms, jack shafts and mounting hardware shall be provided.

15.9 Filters

15.9.1 Provide factory fabricated filter section of the same construction and finish as unit casings. Filter section shall have filter guides and access door(s) extending the full height of the casing to facilitate filter removal.

15.9.2 Filter type, efficiency and arrangement shall be provided as defined in project plans and Manufacturer shall provide one (1) set of start-up filters.

15.10 Related Work

15.10.1 Electrical

15.10.2 Plumbing

16.0 PLUMBING

16.1 The Contractor is to furnish labor, materials, tools, equipment, fixtures, etc., necessary for a complete and operational system as shown on drawings and specified herein. The system shall comply with all applicable building codes under the project location jurisdiction.

16.2 The plumbing system required for this work includes, but is not necessarily limited to:

16.2.1 All cold-water distribution.

16.2.2 Domestic water heating and distribution.

16.2.3 All plumbing vents and wastes.

16.2.4 Plumbing fixtures, including water heaters, hose bibs, and drinking fountains, trim, restroom, and accessories.

- 16.2.5 Roof drainage (other than gutters and downspouts) and floor drainage (trapped and vented).
- 16.2.6 Underground sewer and water lines from roadway to stub-ups shall be by others. Verify location of all rough-ins and stub-ups prior to beginning construction.
- 16.3 Installation
 - 16.3.1 All fixtures, as shown on the drawings shall be American Standard, or approved equal.
 - 16.3.2 All toilets shall be wall mounted.
 - 16.3.3 All water piping to be copper tubing type “L” above ground and type “K” below ground.
 - 16.3.4 All branch water lines to fixtures and equipment shall be individually valved.
 - 16.3.5 Pipe fittings shall meet and/or exceed all of the requirements of ASTM D3034-73.
 - 16.3.6 All sanitary pipes shall be suitable for use as gravity sewer conduit. Provisions must be made for contraction and expansion at each joint with a rubber ring. The bell shall consist of an integral wall section with a solid cross section rubber ring factory assembled, securely locked in place to prevent displacement. Sizes shall be as shown on the drawings.
 - 16.3.7 All vents shall penetrate the roof at the back side of the ridge. Roof penetrations to be gasketed, flashed, sealed as required.
- 16.4 Water Pipe Insulation
 - 16.4.1 Cold water piping, throughout the entire project, above suspended ceilings, in furred spaces and in unheated areas, shall be insulated with Owens-Corning Fiberglass, 7-pound or greater density, low pressure molded, sectional pipe insulation with factory applied, white universal vapor barrier jacket, or approved equal.
 - 16.4.2 Hot water piping, throughout the entire project, shall be insulated with Owens-Corning Fiberglass, 7-pound or greater density, low pressure, molded, sectional pipe insulation with 8-ounce, factory applied canvas.
- 16.5 Heat Trace
 - 16.5.1 Heat trace shall be installed on all water piping routed through areas where there are no heating units installed.
- 17.0 ELECTRICAL
 - 17.1 All electrical wiring, internal to all the buildings, enclosures, and rooms included in this package shall be supplied and installed by this contractor. Coordinate this work as required with other disciplines.
- 18.0 FIRE PROTECTION
 - 18.1 Fire alarm system, automatic sprinkler system, clean agent systems, smoke detectors, fire extinguishers (wall mounted and cabinet mounted) shall be designed by licensed fire protection engineer specialists, and shall be supplied and installed by others, not included in this package. Coordinate this work as required with other disciplines.
- 19.0 ANCHORAGE
 - 19.1 All anchorage required for the upfit package is expected to be post installed anchors if required.
- 20.0 CLEANING UP
 - 20.1 During and especially after the construction work is completed, all refuse and debris resulting from the work shall be cleaned up and disposed of to the satisfaction of the company. Structures shall be washed or swept out and left neat and clean. Dirt and spots shall be removed from equipment and all painted surfaces. All excess excavation, waste

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concrete, wiring, piping, lumber or other refuse shall be removed from the site of the work and the site leveled, graded and dressed up until it is neat, smooth and workmanlike.