DIVISION 15400 – PLUMBING

SECTION 15401 – SUMMARY OF WORK

A. This Contractor shall furnish, install and test all necessary material for a complete operating plumbing system. It is the responsibility of the Contractor to determine the location of the existing water, vent and drain lines to make connections in order to complete the work as shown on the plans. All material shall be new and shall be installed for proper access for servings. Any access panels necessary for serving equipment shall be furnished and installed by this Contractor.

SECTION 15402 – MATERIALS

A. The plumbing fixture schedule is shown on plans. All equipment shall be installed according to the manufacturer's installation instructions.

B. Sanitary Piping:
   1. All waste, vent and drain piping shall be service weight cast iron. No hub connections shall be used above ground. Hub and spigot connections shall be used below grade. Galvanized steel vent piping may be used above grade on 2-inch or smaller pipe. No PVC piping will be allowed.
   2. All waste piping located in the ceiling of tenant spaces below shall be insulated with 1-inch insulation wrap and ASJ covering for sound insulation.
   3. Condensate piping shall be type "L" hard drawn copper tube. Insulate condensate piping with 1-inch insulation wrap and ASJ covering.

C. Potable Water Piping:
   1. All below grade piping shall be a single section "K" soft copper with no joists below grade. All piping connections with dissimilar metals shall have dielectric connections.
   2. All above grade piping shall be type "L" hard drawn copper tube with sweat joints. All piping connections with dissimilar metals shall have dielectric connections.

D. Insulate all hot water, cold water, and interior condensate piping with 1-inch thick (K=0.23 @ 75 deg F) pipe insulation with an all service jacket to meet local codes and UL flame spread and smoke developed ratings. Owens Corning or equal.

E. Truebro model 102 white insulation kit shall be installed on all traps and supply lines below lavatories to meet ADA.

F. Sioux Chief 650 series all stainless steel, or Jay R. Smith Hydrotrols shock absorbers shall be installed in both hot and cold lines of piping system to prevent noise and damage due to water hammer. Shock absorbers shall be installed according to the manufacturer's installation instructions.

G. The Contractor shall provide ball valves in the supply piping to every fixture for servicing. Contractor shall furnish and install access panels where necessary for proper servicing.

H. Maximum pipe support spacing of 5-feet. Contractor shall provide necessary seismic bracing where required by Landlord criteria, code and local authorities.

I. The Contractor shall sterilize new and existing water system as required by local codes. Contractor shall install any additional service valves needed in order to isolate system for sterilizing the water system.

J. Contractor shall provide chrome plated escutcheons at all exposed pipe penetrations in finished spaces.

K. Floor drains with deep seal traps required. Install trap primers in all floor drains. Locate cleanouts in walls and floors as required to meet local codes.

L. Contractor shall perform all piping pressure/leak tests as required by local codes.

M. All roof flashing shall be sealed watertight and performed in accordance to the Landlord's criteria. Any roof work must be done by the Landlord's approved roofing contractor in order to maintain the roof warrantee. All costs for roof work must be included in the bid.

N. Contractor shall furnish and install water meter and remote reader per Landlord's criteria, or as required by local utilities requirements if applicable.

O. Gas Piping:
   1. Furnish and install a functional gas piping system with necessary valves, fittings, unions, dirt legs, regulators, meters, etc. Refer to plans for exact requirements.
   2. Gas pipe shall be schedule 40 black steel with malleable threaded fittings for 2-inches and smaller, and with welded joints for 2-1/2-inches and larger.
   3. Provide a shutoff valve, 6-inch dirt leg, and union at each equipment connection.
   4. Provide Landlord approved piping supports every 5-feet, or as required by Landlord or local authority having jurisdiction, whichever is more stringent.
   5. Paint and prime all exposed gas piping on roof and exterior of building with rust inhibiting paint. Coordinate color requirements with Landlord.
   6. Testing and purging of gas piping shall be done per the requirements of the local gas company, local codes, and applicable NFPA 54 codes.
   7. Contact and coordinate gas service and meter requirements with the local gas company and the mall's operations manager prior to bid. Include installation of valves, fittings, unions, dirt legs, regulators, meters, etc. costs in bid.

DIVISION 15500 – HEATING, VENTILATING, AIR CONDITIONING

SECTION 15501 – SUMMARY OF WORK

A. This Contractor shall furnish, install, test and balance all necessary equipment for a complete working system. See plan for ductwork and schedules.

B. Controls:
   1. Honeywell commercial Visionpro 8000, model TB8220 series, 7-day programmable thermostat with control for up to two stages of heating and two stages of cooling. Verify compatibility with Landlord's requirements prior to installation. Connect to Landlord energy management system as required. Utilize Landlord's certified controls Contractor.
   2. Verify complete operation of all modes: heat, cool, economizer, occupied, unoccupied, etc. Contractor shall provide fully functional system as approved by tenant. Assist in any necessary training and/or programming per tenant's requirements.
   3. Coordinate control requirements and settings with Landlord's requirements prior to bid. If required, provide all equipment to tie into Landlord's systems.
   4. Refer to plan details and notes for additional requirements.

SECTION 15502 – MATERIALS

A. See plans for schedules of equipment. All equipment shall be installed according to the manufacturer's installation instructions.
   1. This Contractor shall provide all necessary parts and labor, including but not limited to, fans, belts, pulleys, bearings, dampers, coils and motors as required to obtain a fully operational unit that meets or exceeds the design quantities set forth in these documents. This includes, but is not limited to, capacity CFM and external static pressure.
   2. Tenant requires all rooftop equipment to be labeled. Contractor shall use 2-inch to 3-inch black stick-on letters (unless Landlord criteria requires otherwise.)
      a. New Equipment: Label rooftop equipment with equipment designation, store name and space number (RTU-1; Torrid; Space #XXX) as required by Landlord.
      b. Existing Equipment: Label rooftop equipment with equipment designation. Replace existing store name and space number as necessary (RTU-1; Torrid; Space #XXX) as required by Landlord.

B. Ductwork – Fiberglass Duct Board is Not Approved:
   1. All supply, return, exhaust and relief ductwork shall be galvanized steel, shall be manufactured (gauges, reinforcement and connections), and installed in accordance with the latest edition of SMACNA "HVAC Duct Construction Standards."
   2. All elbows shall have a minimum throat radius of 1/2 the duct width, or shall be provided with turning vanes.
   3. Hang ductwork from structure according to SMACNA standards. Contractor shall be required to install Seismic bracing as required by Landlord's criteria and/or local codes.
   4. All duct joints and longitudinal seams shall be sealed with a water based duct sealer, Duro Dyne "DuroSeal" or approved equal.
   5. Provide flexible duct connections constructed of neoprene coated flameproof fabric at equipment inlet and outlet to isolate vibration.
   6. The final 4-feet of ductwork to the air devise may be flexible class 1 duct with R-5 insulation and foil vapor barrier. Ductwork must meet local requirements and Landlord's criteria.
   7. The first 15-feet of ductwork from the rooftop unit shall be internally lined with 1-inch fibrous glass duct liner with antimicrobial coating for condensate and noise.
   8. All supply takeoffs shall have air scoop and manual volume damper with quadrant locking handle for balancing. Where ductwork is located above a gypsum board ceiling, a cable controlled damper operator shall be furnished, Young Regulator Company or equal.

C. Hydronic Piping:
   1. This Contractor shall furnish, install and test all necessary material for a complete operating hydronic system. It is the responsibility of the Contractor to determine the location of the existing chilled and heating water supply, and return lines and valves, to make connections in order to complete the work as shown on the plans. All material shall be new and shall be installed for proper access for servings. Any access panels necessary for serving equipment shall be furnished and installed by this Contractor.
   2. Piping:
      a. Hydronic piping for chilled water, condenser water or heating water shall be ASTM A 53/A 53M, black steel with plain ends. Above ground hydronic piping NPS 2 and smaller shall be type "L" drawn-temper copper tubing with wrought copper fittings, and soldered joints. Above ground hydronic piping NPS 2-1/2 and larger shall be schedule 40 steel pipe with wrought steel fittings and wrought cast or forged steel flanges and flange fittings, and welded and flanged joints. Install unions in piping NPS 2, smaller adjacent to valves, at final connections of equipment, and as indicated. Install flanges in piping NPS 2-1/2 and larger at final connections of equipment, and as indicated. All piping connections with dissimilar metals shall be dielectric connections. All hydronic piping shall be in strict conformance with ASTM, and/or Landlord criteria whichever is more stringent.
      b. Prepare hydronic piping for testing according to ASME B31.9. Flush hydronic piping systems with clean water; then remove and clean or replace strainer screens. While filling system, use vents installed at high points of system to release air. Use drains installed at low points for complete draining of test liquid. Isolate equipment from piping. If a valve is used to isolate equipment, its closure shall be capable of sealing against test pressure without damage to valve. Install blinds in flanged joints to isolate equipment. Isolate expansion tanks and determine that hydronic system is full of water.
      c. Perform the following tests on hydronic piping:
         1) Subject piping system to hydrostatic test pressure that is not less than 1.5 times the system's working pressure.
         2) Test pressure shall not exceed maximum pressure for any vessel, pump, valve, or other component in system under test.
         3) Verify that stress due to pressure at bottom of vertical runs does not exceed 90 percent of specified minimum yield strength, or 1.7 times "SE" valve in Appendix A in ASME B31.9, "Building Services Piping."
         4) After hydrostatic test pressure has been applied for at least 10 minutes, examine piping, joints, and connections for leakage.
         5) Eliminate leaks by tightening, repairing, or replacing components and repeat hydrostatic test until there are no leaks.
         6) Prepare written report of testing.
      d. Perform the following before operating the system:
         1) Open manual valves fully. Inspect air vents at high points of system and determine if all are installed and operating freely (automatic type), or bleed air completely (manual type).
         2) Set temperature controls so all coils are calling for full flow.
         3) Inspect and set operating temperatures of hydronic equipment, such as boilers, chillers, and cooling towers to specified values.
   3. Valves:
      a. Copper Alloy Ball Valve 2-inches and Smaller:
         1) MSS SP-110, two piece brass or bronze body with chrome plated bronze or stainless steel ball, PTFE or TFE seats, and 400 PSIG minimum CWP Rating. Apollo, NIBCO, Crane or equal.
      b. Ferrous Alloy Butterfly Valve 2-1/2-inches and Larger:
         1) MSS SP-67, Type I. Lug or wafer style with bubble tight shutoff, 200 PSI CWP, EPDM lining and aluminum bronze disc. Hammond, NIBCO, Crane or equal.
      c. Bronze Check Valve 2-inches and Smaller:
         1) MSS SP-80, bronze body with bronze disc and seat, and CWP rating of 200 PSI.
      d. Iron Swing Check Valve 2-1/2-inches and Larger:
         1) MSS SP-71, Type I. Gray iron body, ASTM A 126, with bolted bonnet, bronze trip and CWP rating of 200 PSI.
      e. Control Valves:
         1) Factory fabricated, of type, body material and pressure class based on maximum pressure and temperature rating of piping system.
      f. Hydronic System Globe Valves:
         1) NPS 2 and Smaller: Class 125 bronze body, bronze trim, rising stem, renewable composition disc, and screwed ends with back seating capacity repackable under pressure.
         2) NPS 2-1/2 and Larger: Class 125 iron body, bronze trim, rising stem, plug-type disc, flanged ends, and renewable seat and disc.
         3) Hydronic system globe valves constructed with replaceable plugs and stainless steel or brass seats. Double-seated valves with balanced plug cage trim provides seating and guiding surfaces for plugs on top and bottom.
         4) Hydronic system globe valves shall be sized with a 3-PSIG maximum pressure drop at design flow rate or two position: Line size.
         5) Two-way modulating: Either the valve specified above or twice the load pressure drop, whichever is more.
      g. Three-way Modulating:
         1) Twice the load pressure drop, but not more than value specified above. Hydronic system globe valves shall have the following flow characteristics:
            a) Two-way valves shall have equal percentage characteristics.
            b) Three-way valves shall have linear characteristics.
         2) Close-off (differential) pressure rating shall be a combination of actuator and trim shall provide minimum close-off pressure rating of 150 percent of total system (pump) head for tw0-way valves, and 100 percent of pressure differential across valve or 100 percent of total system (pump) head.
   4. Piping Specialties:
      a. Y-Pattern Strainers:
         1) Cast Iron Body: ASTM A 126, class B, with bolted cover and bottom drain connection, threaded ends for NPS 2 and smaller; flanged ends for NSP 2-1/2 and larger.
         2) 20-mesh strainer screen with 50 percent open area, 125 PSIG
      b. Stainless steel bellow, flexible connectors:
         1) Stainless steel bellows body with woven, flexible, bronze, wire reinforcing protective jacket.
         2) Threaded or flanged to match equipment connected with ¾-inch misalignment, 150 PSIG CWP rating, and 250 deg F maximum operating temperature.
   5. Insulation:
      a. Insulate all hydronic piping for chilled water and heating water with 1-inch thick (K=0.23 @ 75 deg F) pipe insulation. Comply with ASTM C 547, Type I, Grade A, with factory applied all service jacket to meet local codes and UL flame spread and smoke developed ratings. Owens Corning or equal.
   6. Installation:
      a. Install piping to permit valve servicing.
      b. Install piping to allow application of insulation
      c. All pipes shall have prefabricated insulated metal saddles sized for the insulation thickness and continuous insulation through the hanger.
      d. All dissimilar metals must be separated with dielectric material.
      e. Select system components with pressure rating equal to or greater than system operating pressure.
      f. Install piping at a uniform grade of 0.2 percent upward in direction of flow.
      g. Reduce pipe sizes using eccentric reducer fitting installed with level side up.
      h. Install branch connections to mains using tee fittings in main pipe, with the branch connected to the

D. Testing, Adjusting & Balancing
   1. The adjusting and balancing of the airflow through

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DANIA POINTE
1763 POINTE BLVD
DANIA BEACH, FL
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