

MECHANICAL OUTLINE SPECIFICATIONS

I. Section 15010 - Basic Mechanical Requirements

- The work of each of the mechanical sections includes furnishing and installing the material, equipment, and systems complete as specified in the outline and detailed on the drawings. The mechanical installations, when finished, shall be complete and coordinated, ready for satisfactory service of the building.
- All work under this contract shall be done in strict accordance with all applicable municipal, state, NFPA, BOCA codes and Baltimore County Public Work, that govern each particular trade.
- The contractor shall make applications and pay all charges for all necessary permits, licenses and inspections as required under the above codes. Upon completion of the work, the customary certifications of approval shall be furnished.
- No materials or equipment shall be used in the work until approved. Before submission of the shop drawings, and not more than fifteen (15) days after award of the contract, the contractor shall submit for approval a complete list of materials and equipment which he intends to furnish, giving manufacturer and catalog numbers.
- The contractor shall examine all drawings and specifications and shall. Failure to comply with this requirement will not relieve the contractor of his responsibility for complying with the intent of the contract documents.
- The drawings indicate the general arrangement of the mechanical installations. Details of proposed departures due to actual field conditions or other causes shall be submitted for approval prior to installation. Resubmission of completed items due to improper field coordination shall be at the contractor's expense.
- Provide sufficient access and clearance for all items of equipment requiring servicing and maintenance, such as valves, drains, vents, etc.
- The contractor shall prepare three (3) copies of a record and information booklet. The booklet shall be bound in a three-ring loose-leaf binder. Provide the following data in the booklet:
 - Catalog data on each piece of equipment furnished.
 - Approved shop drawings on each piece of equipment furnished.
 - Maintenance, operation and lubrication instruction on each piece of equipment furnished.
 - Simplified temperature control diagram.
 - Manufacturer's and contractor's guarantees.
 - Air balancing reports.
 - Commissioning reports.
 - Schedule/description of all service work/maintenance inspections required by paragraphs F, G and R of this section.
- The entire new plumbing system shall be tested hydrostatically before insulation is applied and proved tight under the following gauge pressures:

Sanitary piping	As specified below
Domestic water	100 psig
Natural gas	100 psig
Medical gas piping	150 psig
Fire protection	Per NFPA
- All sanitary and vent piping shall be tested by the contractor. The entire new drainage system and venting system shall have all necessary openings plugged and filled with water to the level of ten (10) feet above the main or branch being tested. The system shall hold this water for thirty (30) minutes without showing a drop greater than four (4) inches.
Note: If any code or public utility requires testing which is different than the test listed above, the more stringent test shall be performed.
- All parts of the heating, ventilating, air conditioning and exhaust systems shall be adjusted, checked, balanced and tested by an independent A.B.C. certified testing & balancing contractor approved by the owner. The contractor shall put all systems and equipment into full operation, and shall test and balance all devices to within ten (10) percent of capacities indicated on the drawings. Submit copies of the balancing reports as required by the contract. Permanently mark the position of each balancing damper and valve.
- Upon completion of the mechanical installations, the contractor shall provide a complete set of prints of the mechanical contract drawings which shall be legibly marked in red pencil to show all changes and departures of the installation as compared with the original design. They shall be suitable for use in preparation of record drawings.
- All piping systems shall be identified with labels. Materials shall be as manufactured by seton name plate corporation.
- All mechanical installations, including all materials and labor shall be guaranteed for a period of one (1) year from date of owner acceptance. The above shall not in any way void or abrogate equipment manufacturer's guarantee or warranty. Certificates of guarantee shall be delivered to the owner.
- After roughing in the entire water main with future stubs the entire potable water systems shall be disinfected prior to use. The method to be followed shall be that prescribed by the local health authority/code requirements.
- Contractor shall also provide one (1) year free service to keep the equipment in operating condition. This service shall be provided per the following schedule and rendered upon request when notified of any equipment malfunction.

- In addition to the first year warranty period, the contractor shall provide, at no additional cost to the owner, a minimum of four (4) service calls and maintenance inspections. A complete outline of the required maintenance and the proposed schedule shall be included in the "record and information booklet" detailed in section 15010-Basic mechanical requirements, paragraph I, for review and acceptance by the owner/representative and engineer. The inspections are to be performed at three (3) month intervals for a total of four (4) service calls and inspections during the first year warranty period (three (3) times during the year plus the original system start-up commissioning).
- The service work and inspections shall include, but not be limited to the following:
- Replace all disposable air filters;
 - Lubricate all motor and fan bearings as required;
 - Clean condensate drain lines;
 - Check and tighten all electrical connections;
 - Inspect all belts for adjustment and condition and replace as required;
 - Inspect and clean all water strainers;
 - Check operating pressures and refrigerant charge;
 - Inspect all controls for correct operation and calibrate as required;
 - Perform all maintenance as outlined in the equipment manufacturers operation and maintenance manuals.
- Upon completion of each scheduled inspection, the contractor shall deliver to the building owner/owner's representative within forty-eight (48) hours of completion, two (2) copies of the completed inspection report for record purposes.
- The mechanical or service contractor shall, at the ninth month, advise the owner of the termination date of the above service. This contractor shall also provide the owner with a detailed proposal, reflecting annual escalation, for the continuation of the service and inspections described above.

2. Section 15050 - Basic Mechanical Piping Material & Methods

- Provide all labor and materials necessary to furnish and install all piping systems on this project, including sanitary, sanitary vent, domestic water, refrigerant piping, condensate drain and natural gas systems.
- Piping and valves shall be as follows:
 - Sanitary drains below grade.**

Pipe	Standard weight cast iron uncoated bell and spigot soil pipe.
Fittings	Standard weight cast iron bell and spigot uncoated soil pipe fittings.
Joints	Neoprene push-lock fittings.
 - Sanitary wastes & vents piping above floor inside building.**

Pipe	Cast iron no-hub soil pipe
Fittings	Cast iron no-hub soil pipe fittings
Joints	No-hub stainless steel gasketed fittings
 - Domestic hot and cold water and hot water drain piping.**

Pipe	All water lines - hard copper type L
Fittings	Solder type wrought copper - lead free solder.
Ball valves	Two piece body, 150 lb. chrome plated full port bronze body and stem, reinforced the seat rings, Nibco S-585-10.
Unions	125 lb. wrought copper, ground joint solder ends.
 - Atmospheric condensate drains.**

Pipe	Type DWV seamless copper tubing
Fittings	Wrought copper solder drainage fittings
 - Medical gas piping.**

Pipe	Seamless copper water tube, astm b68-78, type I, hard, labeled "prepared for oxygen service" and sealed when delivered to the job site.
Fittings	Wrought copper solder joint fittings, 150 lb., and b16-22-13
Joints	Brazed: Silver alloy brazing equal to silfos and easy-flow by hand and hammer. The use of flux is prohibited.
- Fire protection piping and fittings as required by NFPA regulations and as hereinafter specified.
- Copper pipe shall be reverse, anaconda, or chase types "I" hard drawn, with approved solder fittings.
- Cast iron piping shall be service weight drainage piping and shall conform to the requirements of the C.I.S.F.I. Each length of pipe and each fitting shall be clearly marked with the manufacturer's initials and pipe classifications.
- Steel piping shall be similar and equal to national tube company, republic, or Bethlehem black or zinc-coated (galvanized) steel as hereinafter specified. Pipe shall be free from all defects which may affect the durability of the intended use. Each length of pipe shall be stamped with the manufacturer's name.

- All hangers for copper piping shall be copper clad, split ring hanger type, having rods with machine threads and threaded copper clad ceiling flange. Cast iron and steel piping supports shall be similar without copper clad and prime point finish.
 - Provide dielectric couplings where non-ferrous metal piping is joined to ferrous metal piping. The gasket material shall be capable of withstanding the temperatures and pressures within the piping system in which installed. Submit dielectric coupling and gasket material for approval.
- ### 3. Section 15250 - Mechanical Insulation
- All supply/return (existing/new) ductwork and domestic water piping systems shall be insulated with fiberglass insulation. Insulate refrigerant piping with 1/2" Armaflex as needed.
 - Pipe insulation shall be 1" premoled fiberglass insulation with an all service jacket, Owens Corning Fiberglas 551-II. Fittings shall be insulated and covered with pvc covers.
 - Ductwork shall be insulated with 1-1/2" flexible duct wrap, Owens Corning Fiberglas type T5 with foil faced vapor barrier. Insulation shall be neatly installed. Any insulation damaged during construction shall be properly fixed.
 - Interior duct lining shall be as specified under section 15880.

4. Section 15300 - Fire Protection

- All work, materials, equipment, and accessories shall comply with the standards of the national fire protection association and all state and local regulations.
- Modify the existing wet pipe sprinkler system to properly cover/protect the new architectural design. System shall generally be light hazard, except ordinary hazard in all storage rooms, electrical rooms, etc.
- The modifications shall include, but are not limited to valves, flow switches, sprinkler heads and escutcheons, piping fittings, hangers and signs and other identification markings, as required.
- The sprinkler contractor shall carefully examine all documents during the bidding period. He shall familiarize himself with project conditions such as building construction and pipe and ductwork locations and elevations.
- Existing sprinkler heads shall be removed and reused as required to meet the new layout. Any new sprinkler heads must match the existing heads. Except Omega sprinkler heads. Omega sprinkler heads to be removed and replaced.
- The contractor shall arrange for approval of the revised sprinkler systems, and conduct tests in accordance with nfpA 13.

4. SECTION 15400 - PLUMBING

- The work covered by this section of the specifications consists of furnishing all labor, equipment and materials in connection with the rough-in, final setting and connections to all plumbing fixtures. The contractor shall carefully review the conditions at the site and all of the contract drawings to determine the extent of the plumbing work required.
- All plumbing fixtures shall be complete in every detail with all trimmings and connections. All fixtures shall be designed to prevent the backflow of polluted water or waste into the water supply system. Fixtures shall be American Standard or approved equal as follows:
 - P-1 Water closet (handicapped):** #2108-408 Cadet, 11-1/2" high elongated toilet, water saver 1.6 gallon flush with vitreous china construction, siphon jet flush action, close-coupled tank, bolt caps, Church open front white seat with cover, rigid supply with angle stop valve.
 - P-1A Clinical Service Sink:** # 9504-010 flushing rim, vitreous china, siphon jet, caps, elongated, 2-1/2" passageway, 1-1/2" top spout, 4" floor outlet, Sloan Royal #17 HYVO flush valve with 1" offset, stainless steel rim guard #1832-017, bedpan cleaner #1880-024 assembly and stainless steel bolt covers.
 - P-2 Wall Hung Sink (handicapped):** #0355-012 Lucerne, vitreous china construction, front overflow, faucet ledge. Lavatory to be fitted with Elkay #LK-4417-L, single lever centerset faucet, complete with grid drain, tailpiece, cast brass "p" trap, tubing to wall escutcheon, key operated supply valves with rigid supplies and chair carrier. All exposed waste piping and hot and cold water supply shall be insulated with treuboro handi low-guard model 102 insulation kit with white finish.
 - P-2A Floorcare Sink:** #LR-1722 by Elkay, 18 gauge-type 302-self rim bowl with Sloan Optima ETI-T10 electronic gooseneck hand faucet with infrared sensor with trim plate for 4" center-set sink. Sink to be complete with grid drain, tailpiece, cast brass "p" trap, tubing to wall escutcheon, key operated supply valves with rigid supplies.
 - P-2B Nurse/Exam Sink:** #LR-1722 by Elkay, 18 gauge-type 302-self rim bowl. Faucet shall be #3579 by Delta, 11" high gooseneck spout with 4" wrist blade handles. Sink to be complete with grid drain, tailpiece, cast brass "p" trap, wall escutcheon and supply valves with chrome supplies.
 - P-2C Lounge Sink:** #CR-3322 by Elkay, 20 gauge-type 302-self rim bowl double bowl sink @ 13-1/2"x16"x1-1/2" each, overall 33"x22", 4-hole, faucet #LK-232-S-BH-5 by Elkay with 5" handles and swinging hi-spout. Sink to be complete with grid drain, tailpiece, cast brass "p" trap, tubing to wall escutcheon, key operated supply valves with rigid supplies.
 - P-2D Slnb Sink:** #EKMA-4820-C by Elkay, 14 gauge, type 304 stainless steel multiple station wash sink with 1/4" radius covered corners, full height 10" high backsplash, exposed surfaces are hand-blended to a uniform brushed satin finish. Furnished with wall hangers and stainless steel support brackets. Provide pair (2) of back mounted 4" tubular gooseneck spouts #LK-345 Elkay, each controlled by a knee action mixing valve, #LK-347-C by Elkay.
 - P-2E Eye Wash:** #01040127 by Encon, swing-away counter top eyewash, 12-1/2" arm, polished chrome plating, vandal resistant pin, 2.4 gpm, acetal heads, resistant to solvents, left hand mounting location and push/pull activation.

- P-3 Map sink:** #MSB-2424 by Flat, 24" X 24" X 10" deep molded-stone mop service basin color white. The factory installed drain body shall be stainless steel and designed to provide for a lead caulk or gdc-3 joint to a 3" drain pipe. Service faucet #B344-III with top brace, stops, 10-1/2" spout, 3/4" water line to unit with integral vacuum breaker, adjustable union couplings, stop shanks and 30" flexible hose.
- P-4 Refrigeration Ice Maker:** Contractor shall provide wall mounted recessed box with shut off valve for connection to refrigerator ice maker by others. Extend 3/4" water line to unit with in-line cartridge filter. Verify exact line size. Box shall be IPS corporation model 4000.
- P-5 Countertop Coffee Machine:** Contractor shall provide wall mounted recessed box with shut off valve for connection to by others. Extend 3/4" water line to unit. Verify exact line size. Box shall be IPS corporation model 4000.
- Sanitary vents thru roof shall be flashed with seamless lead flashing assemblies. Flashing shall have a conical steel reinforced boot and shall be complete with a top cast iron counterflashing.
- The water heater shall be state, or an approved equal. Heater shall be rated at volts and phase as indicated on drawings and be listed by underwriters' laboratories. Tank shall be factory fired with glass lining with ISO psi working pressure and equipped with extruded high density magnesium anode at 4 p relief valve. Electric heating element shall be series L- medium watt density with zinc plated copper sheath. The controls shall include a thermostat with each element and a high temperature cutoff. The jacket shall provide full size control compartments for performance of service and maintenance thru front panel openings and enclose the tank with insulation. The drain valve shall be located in the front for ease of servicing. Outer jacket shall be baked enamel finish. Heater shall have a three (3) year limited warranty for commercial installation, as outlined in the written warranty. Fully illustrated instruction manual shall be included. Insulation must meet asme standard 100-1180 for energy efficiencies. Refer to drawings for size, capacity and voltage.
- The toilet room floor drain shall be oncon or approved equal. Drain shall be model FD-100, cast iron unit with grate. Drain to be primed from nearest flush valve.
- The carriers for wall hung plumbing fixtures shall be Josam or approved equal.
- Potable water systems shall be disinfected prior to use. The method to be followed shall be that prescribed by the health authority and code requirements.

6. Section 15500 - Heating, Ventilating & Air Conditioning (HVAC)

- The work to be performed shall include all labor, materials and equipment necessary to furnish and install complete, all HVAC mechanical equipment as shown on drawings and/or hereinafter specified. It is the intent that the systems be installed complete with all items necessary to provide satisfactory service.
- The contractor shall inspect and perform the following service work. If the any equipment needs replacement than the contractor is to provide an odd alternate for equipment replacement.
- The service work and inspections shall include, but not be limited to the following:
 - Replace all disposable air filters;
 - Clean all permanent air filters;
 - Lubricate all motor and fan bearings as required;
 - Clean drain pans and drain lines;
 - Check and tighten all electrical connections;
 - Inspect all belts for adjustment and condition and replace as required;
 - Inspect and clean all water strainers;
 - Check operating pressures and refrigerant charge;
 - Inspect all controls for correct operation and calibrate as required;
 - Perform all maintenance as outlined in the equipment manufacturers operation and maintenance manuals.
- Wall mounted electric heater.
 - Furnish and install Amark, Berko or approved equal.
 - Equipment shall be constructed with the following:
 - Tamper resistant construction
 - Integral thermostat
 - Heavy duty 16 gauge bar grille

6. SECTION 15880 - Air distribution

- Furnish all labor and materials necessary to complete the sheet metal work associated with the heating, ventilating, air conditioning and exhaust systems, and other miscellaneous items shown and required.
- All ductwork shall be constructed and installed in accordance with the sheet metal and air conditioning contractors national association (smacna) standards, asme standards and boca standards.
- Flexible ductwork shall be Hart & Cooley type F214 or approved equal. Flexible duct shall comply with nfpA bulletin 90a and shall be UL listed as class I air duct and connector, standard 181.
- Support horizontal ducts with hangers spaced not more than six (6) feet apart. Use strap hangers for ducts up to thirty (30) inches wide, angle hangers or rods for ducts over thirty (30) inches wide. Strap hangers to be one (1) inch wide, 20 gauge minimum; fasten to sides and bottom of duct with sheet metal screws.
- Ducts shall be straight and smooth on the inside, with joints neatly finished. Ducts shall be suspended from the construction and shall be free from vibration. Curved elbows shall have a center radius equal to one and one-half (1-1/2) times the width of the duct. All square turns shall be vanned. Vanes consisting of curved metal blades shall permit the air to make abrupt turns without turbulence.
- All joints in the heating, ventilating, air conditioning and exhaust system ductwork shall be sealed.

Sealant shall be as manufactured by united inc. or approved equal, sealant shall be smacna and ul approved, with a flame spread of 10 and a smoke developed of 0, non-toxic and non-flammable. Sealant shall be approved for operating temperatures from 0 degrees f. to 200 degrees f.

Sealant system shall be installed in strict accordance with the manufacturer's recommendations and when applied shall provide a permanent seal without any deterioration.

- All plenum return air ductwork, except #E-4 shall be lined on the interior for sound attenuation. Lining shall have a one (1) inch thickness and shall be gilded with one hundred (100) percent coverage and additionally secured with pins. Increase duct sizes indicated two (2) inches direction to accommodate the interior lining.
- Supply air diffusers shall have all steel construction, Titus model TMS with vanned face and finished with #26 off-white enamel.
- Supply air diffusers shall have all steel construction, Titus model PAS perforated face and finished with #26 off-white enamel. Perforated ceiling diffusers per IR PROCEDURE ROOMS and OBSERVATION only.
- Return air register shall have all steel construction, Titus model 25R with louvered face and finished with #26 off-white enamel.
- Supply air registers shall be double deflection type with opposed blade dampers with all steel construction. Registers shall be Titus model 300RS with #26 off-white enamel finish.
- Ceiling/in-line fans shall be genini models as manufactured by cook. Fans shall have acoustically insulated housings and shall have a maximum sound level rating of 6.0 sones. Air deliveries shall be as indicated on the drawings and all fans shall bear the amca certified ratings seal and the u.l. label. Integral backdraft damper shall be totally chatterproof with no metal contact. Fan shall have true centrifugal wheels with inlet perpendicular to, or remote from, inlet grille. Grille shall be of aerodynamic design of white molded plastic eggcrate shape and provide eighty-five (85) percent free open area. Terminal box shall be provided on the housing with cord plug, and receptacle inside the housing. Entire fan, motor and wheel assembly shall be easily removable without disturbing the housing. Motor speeds shall not exceed 1600 rpm and all fan motors shall be suitably grounded and mounted on rubber-in-shear vibration isolators. Fans shall be controlled by a wall mounted light switch. Switch and connection shall be by electrician.
- Electronic control air dampers shall be of like kind supplied by Carrier or approved equal. All systems shall be complete with damper, controller, thermostat, sensors, etc.

7. SECTION 15900 - Controls

- The contractor under this heading shall furnish and install all wiring necessary for a complete electric system of automatic temperature control. The system shall include all necessary thermostats, relays, switches, etc. required for successful operation. electrical work in connection with the temperature control system shall be performed by the control contractor.
 - Heat pump hvac unit shall be controlled by a wall mounted heating/cooling thermostat honeywell T-7300. Thermostat shall be a seven (7) day twenty-four (24) hour program clock. Unit 3 and 4, VVT system shall be controlled by zone/slave damper.
 - The automatic temperature control contractor shall be responsible for the commissioning of the project to assure a fully functional, fine-tuned hvac system upon occupancy.
- The commissioning of the project shall be performed in accordance with American society of heating, refrigerating and air conditioning engineers, inc. (ASHRAE) pamphlet 1-1994 guideline for commissioning of hvac systems.
- Commissioning is defined as verification of the proper operation of all equipment, alarms, safeties and control and energy management systems serving mechanical systems installed or modified on this project as defined within the specifications and indicated on the contract drawings.
- Proper operation is defined as the activation of all controls, field or factory installed, to assure the correct sequencing of equipment and systems, including activation of all operating and safety controls, as hereinafter described.
- The automatic temperature control contractor shall report all system deficiencies to the mechanical contractor. The mechanical contractor shall instruct the proper trade to correct any deficiencies reported by the automatic temperature control contractor so that the project commissioning can be completed.
- Prior to the commencement of any commissioning work, the automatic temperature control contractor shall provide the engineer with a commissioning report format for review and approval. The report format shall be delivered to the engineer not more than thirty (30) days after award of the atc contract or not less than sixty (60) days prior to start of atc work, whichever is earlier.
- Commissioning report format shall include a list of all items to be verified, with the initials of the mechanic who verified the particular item/control and the date on which each item/control operation was verified.
- Three (3) commissioning reports are required. The first report shall be completed during the initial commissioning of the project prior to occupancy. The second and third reports shall be completed no more than two (2) months (1 report/month) after occupancy of the building. All controls/safeties shall be verified in the presence of the owner/owner's representative. The final report shall also contain the signature of the owner or owner's representative for each item verified.

REVISIONS		
REV#	DATE	DESCRIPTION

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TENANT RENOVATIONS FOR
RMS LIFE LINE
2405 YORK ROAD
TIMONIUM, MARYLAND 21083

DATE 10/10/00	PROJECT NO. NO SCALE	PROJECT NO. M6
DESIGNED BY GWR/DLI	CHECKED BY GWR/DLI	DATE 10/10/00
DRAWN BY	SCALE	2001216.00