MECHANICAL SPECIFICATIONS – DIVISION 15

SECTION 15050 – BASIC MATERIALS AND METHODS

PART 1 – GENERAL

1.01 MECHANICAL GENERAL REQUIREMENTS

A. This section applies to all mechanical work. The contractors involved shall check all sections of the specifications in addition to the particular section covering their specific trade. Each distinct section of the specifications aimed for one trade may have detailed information with regards to other trades, therefore, it is imperative that all sections be reviewed to get a complete picture of all other trades' functions and work required.

B. The drawings, which constitute an integral part of this contract, shall serve as the working plans. They indicate the general layout of the complete mechanical systems.

1. Field verification, of scaled dimensions on plans, is directed since actual locations, distances, and elevations will be governed by actual field conditions. All measurements shall be verified at the site.

2. The mechanical contractor shall check architectural, structural, plumbing, heating, ventilation, air conditioning, and electrical plans to avoid possible installation conflicts. Should drastic changes from original plans be necessary to resolve such conflict, the contractor shall notify the Architect and the Owner's Construction Representative to secure approval and agreement on necessary adjustments before the installation is started.

3. Discrepancies shown between plans, or between plans and actual field conditions, or between plans and specifications shall promptly be brought to the Owner's Architect for a decision.

4. Drawings and specifications are intended to cover the completed installation of systems to function as described. The omission of the expressed reference to any item of labor and material necessary to comply to practice codes, ordinances, etc. shall not relieve the contractor from providing such additional labor and material.

5. The contract drawings serve as working drawings for the general layout of the various services. However, layout of equipment, accessories, duct work, specialties, piping systems, and conduit runs are diagrammatic unless specifically dimensioned and do not necessarily indicate every required valve, fitting, transition, turning vane, junction box, pull box, conduit size, etc. It will be the contractor's responsibility to provide all systems complete and operable. The contractor to make field verification of all services, systems, etc. as part of the total work required and the cost to be included in this base bid.

C. Accessibility: Do not locate traps, controls, unions, pull boxes, etc. in any system at a location that will be inaccessible after construction is completed. Maintain accessibility for all components in mechanical, electrical, and plumbing systems.

D. Cutting and Patching: All cutting and patching, including xray of floor slab and core drilling, shall be provided by the General Contractor. Coordinate cutting, patching and core drilling with the General Contractor.

E. Vibration Eliminators: Rotating or reciprocating equipment, ducts, piping, etc. shall be isolated from the structure by means of approved vibration absorbing units as provided or recommended by the equipment manufacturer or engineer and as indicated on drawings.

F. Sleeves: Each contractor shall furnish required sleeves. Sleeves shall be extended 2 inches above the floor, wall, etc. unless noted otherwise, and shall be Schedule 40 galvanized steel pipe and of the required size and location. The contractor responsible for running pipes in the sleeve shall caulk the space between the pipe and sleeve with oakum and seal with mastic cement or other approved material.

G. Rough–in for Connection to Equipment: It shall be the responsibility of each contractor to study the architectural, structural, electrical and mechanical drawings, conferring with the various trades involved and checking with the supplier of equipment or owner in order to properly rough–in for all equipment.

H. Material and Equipment: All material and equipment not being re–used shall be new and of the best quality used for the purpose in good commercial practice, and shall be the standard product of reputable manufacturers. The material and equipment must meet approval of state and local codes in the area it is being used.

I. Performance of Work: All work outlined in the various mechanical and electrical sections shall be done by the contractor under whose jurisdiction the work may fall. See drawings and specifications.

J. Electrical Wiring: See electrical specifications, Division 16.

K. Testing: All testing results shall be in the form of written reports.

1.02 SUPPLEMENTARY CONDITIONS

A. Refer to other requirements of mechanical work in Division 1 without exception.

B. Permits, Inspections and Tests: All work is to be executed in compliance with, and each contractor is to observe and abide by, all applicable laws, regulations, ordinances, and rules of the national, state, county, and local governing agencies, or any other duly constituted public authority. Each contractor will, at all times, maintain proper facilities and provide safe access for inspection to all parts of the work and to the shops wherein the work is in preparation. No work will be enclosed or covered until approved by the architect/engineer, and should any work be enclosed or covered before all necessary inspections are completed, same will be opened for examination at the contractor's expense. All fees, licenses, tests costs, etc. are the responsibility of the Division 15 Contractor.

C. Rules, Regulations and Codes:

1. All material and equipment shall conform to the standards, where applicable, of the National Electrical Manufacturers Association (N.E.M.A.), National Fire Protection Association(N.F.P.A.), National Electrical Code (N.E.C.), Underwriters Laboratories (U.L.), American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE), Sheet Metal and Air Conditioning Contractor's National Association (SMACNA), and American Water Works Association (AWWA).

2. All work shall conform to all applicable federal, state, and local codes and utility companies' regulations.

D. Cooperation: There shall be complete cooperation will all trades in the matter of planning and execution of the work. Every reasonable effort shall be made to prevent conflict as to space requirements, dimensions, locations, leaving of opening, or other matters to obstruct or delay the work.

END OF SECTION

SECTION 15250 – MECHANICAL INSULATION

PART 1 – GENERAL

1.01 DESCRIPTION

A. Division 1, General Requirements, and Section 15050, Basic Mechanical Materials and Methods, shall be considered a part of these specifications.

B. Section includes piping & ductwork insulation, jackets and accessories.

PART II – PRODUCTS

2.01 PIPING INSULATION

A. Domestic Water:

1. All exposed and concealed cold water piping shall be covered with ½ inch thick glass fiber insulation with all–purpose jacket.

2. All exposed and concealed hot water piping shall be covered with glass fiber insulation with all–purpose jacket:

a. ½" thickness for up thru 1¼ " pipe size.
b. 1" thickness for 1½" and 2" pipe size.
c. 1½" thickness for over 2" pipe size.

B. Hanger Inserts and Shields:

1. Hardwood block pipe insulation inserts, thinkness equal to adjoining insulation. Inserts not required on 1¼" and smaller pipe. Length of insert shall be equal to length of shield.

2. Shields shall be galvanized sheet metal.

a. 6" long 26 ga. for 2½" and smaller pipe.
b. 8" long 20 ga. for 3" thru 6" pipe.
c. 12" long 16 ga. for 8" thru 10" pipe.

2.03 INSULATION RATINGS

A. Flame spread shall be 25 or less.
B. Smoke developed shall be 50 or less.

SECTION 15300 – FIRE PROTECTION

PART I – GENERAL

1.01 DESCRIPTION

A. Division 1, General Requirements, and Section 15050 shall be considered a part of these specifications.

B. The fire protection systems work includes, but is not limited to the following:

1. Furnish and install complete with all related items, fire protection systems, designed and fabricated by a firm regularly engaged in this type of work and employing workmen skilled in the trades involved.

2. Systems shall be in accordance with the latest guidelines of owner's Insurance Company, the National Fire Protection Association (N.F.P.A.), the state inspection bureau, and all local agencies having jurisdiction. It will be this contractor's responsibility to provide all systems complete and operable.

1.02 SUBMITTALS

A. Contractor shall submit product data with manufacturer's descriptive literature for sprinkler heads, valves and other products incorporated in system design.

B. Contractor shall submit complete shop drawings, Certified/Sealed by Extinguishing Systems Engineer, prepared copy of Architect's reflected ceiling included in product data submittal.

PART II – PRODUCTS

2.01 PIPING

A. Piping shall be steel of the weight schedule as permitted by code.

B. Fittings shall be screwed, flanged, welded or mechanical coupling as permitted by code.

2.02 SPRINKLER HEADS

A. Provide semi–recessed standard sprinkler heads and corridors recessed white.

2.03 ACCESSORIES

A. Provide all required items for a complete system.

PART III – EXECUTION

3.01 INSTALLATION

A. Where piping passes through walls, floors, ceilings, or other building member, sleeves must be used. Where exposed piping passes through finish work, chrome–plated or other finish acceptable to the architect, split wall plates or escutcheons shall be installed to fit snugly around piping. Where finish is not a problem, suitable plates shall be provided at each hole to assure effectiveness of construction as a fire stop.

B. All openings for piping should be anticipated and indicated on the approved and accepted shop drawings. Any additional cutting or openings must have the written approval of the Architect. The cost of cutting additional openings shall be borne by the Contractor.

C. All drain valves shall be accessible and drains carried to the nearest floor drain capable of handling a full flow test.

D. Piping in areas having ceilings shall be concealed. Piping may be exposed elsewhere, but kept high as possible.

E. Installation of piping and location of sprinkler heads shall be coordinated with all other items in the construction and shall not obstruct lights, air outlets, access doors, and other items requiring access. Check with complete set of drawings for this location.

F. Where sprinkler heads are to be installed in lay–in ceiling, heads shall be centered within 24"x24"ceiling tile grids.

G. All piping shall be free of rust and be clean inside and out.

H. Designs requiring cutting of structural members for passage of sprinkler pipes or hangers shall be avoided. When design, due to economy, appearance and similar aspects, denote the necessity of cutting, it shall be held to an absolute minimum, and done only with the Architect's written approval.

I. Furnish and install in the piping system all electrical devices as required under this section.

3.02 ACCEPTANCE

A. After completion of the installation, the entire system shall be tested to meet the approval of the local or state inspection bureau. A Contractor's material and test certificate shall be completed in accordance with NFPA 13.

END OF SECTION

SECTION 15400 – PLUMBING

PART I–GENERAL

1.01 DESCRIPTION

A. Division 1, General Requirements, and Section 15050, Basic Mechanical Materials and Methods, shall be considered a part of these specifications.

B. Codes, Ordinances, and Permits: All permits, connection fees, tap fees, licenses, approvals, and other arrangements including plumbing and riser diagrams, if required, shall be obtained by the Contractor at his expense. Should any changes be necessary in the drawings, or specifications, to secure such approval, this Contractor shall include in his bid all costs for such changes to comply with these departments, without extra costs to the Owner. It will be this Contractor's responsibility to provide all systems complete and operable.

C. Scope of Work: Contractor shall finish all materials, tools, equipment, labor, and services and pay all costs of whatever nature, as may be necessarily expended, for a proper workmanlike and fully operable installation, and completion of all plumbing and related work. The Contractor shall provide the following:

1. Provide a complete waste and vent system connected to adequately sized existing piping within the building. Field verify existing waste pipe sizes, locations and elevations.

2. Provide a complete system of cold water supply and distributing piping of hot and cold water. Cold water piping shall be connected to adequately sized existing piping within the building. Field verify cold water piping sizes, locations and elevations.

1.02 SUBMITTALS

A. This Contractor shall submit product data for all plumbing fixtures, valves, drains, cleanouts, trim, and accessories.

PART 11 – PRODUCTS

2.01 PIPING & VALVES

A. All rough–in for plumbing fixtures, including all waste lines and all branch soil pipe below floor from plumbing fixtures, shall be standard weight cast iron pipe or schedule 40 pvc.

B. All waste and vent piping above floor 2 inches and smaller to be Schedule 40 no hub or schedule 40 solid wall pvc pipe with solvent joints.

C. All hot and cold water lines within the building above floor shall be Pex tubing by Veiga or equal, with color coded piping, Or type L copper piping with soldered fittings and couplings.

D. Shut–off valves shall be Nibco T–585–70–66 ball type (or equal).

2.02 CLEANOUTS

A. Provide round stainless steel wall access cover plate for cleanouts within finished walls. Install all cleanouts in accessible locations.

PART III – EXECUTION

3.01 INSTALLATION

A. All pipes shall be run with proper grades to provide for easy draining. They must be thoroughly reamed and cleaned before installation. This Contractor shall consult and cooperate with other piping contractors as to obtain the proper grouping of pipes and to avoid interference. Pipe locations shall be corrdinated with existing and new ductwork and piping. The Contractor shall consult with the General Contractor before installation of any pipe lines which may be in conflict with work by other Trades. Piping shall be run as indicated on the drawings, but the General Contractor reserves the right to make slight changes (without extra charge) to avoid conflict with other work.

3.02 TESTING

A. Domestic Hot and Cold Water Systems: 150 PSI hydrostatic for two hours without leakage.

B. Drain, Waste and Vent Systems: 5 PSI air pressure for 15 minutes without leakage.

END OF SECTION

PART 1– GENERAL

1.01 SUMMARY

A. Section 15440 Includes
1. Plumbing fixtures.
2. Faucets.
3. Trim.

B. Products Installed but not Furnished under this Section
1. Owner Furnished Fixtures and Equipment

2. Fixtures and Equipment Furnished Under this Division
Bathroom Lavs, toilets, urinals, sinks, drinking fountains.

C. Related Sections
1. 15050: Basic Materials and Methods.
2. 15400: Plumbing.

1.02 SUBMITTALS

A. Product Data and Shop Drawings
1. Submittal Procedures: In accordance with Section 15050.
2. Organization In brochures, with each brochure containing one copy of submittal for each fixture or equipment item furnished under this Section.
3. Contents
a. Fixture Cuts Copies of manufacturer's preprinted literature with photographs of fixtures and trim. Identified by manufacturer's name and model number. Marked with project fixture number corresponding to Plumbing Fixture Schedule.
b. Dimensioned Drawings: Of fixtures and trim showing key and overall dimensions plus rough–in dimensions.
c. Manufacturer's Specifications: Materials, methods, weights, thickness, finish, color, and other relevant features.

PART 2– PRODUCTS

2.01 MANUFACTURERS

A. General See Section 15050.

B. Substitutions In conformance with Section 15050.

C. Equivalent Manufacturers
1. Carriers Josam, Wade, Smith, Zurn.

1. Plumbing Brass: Chicago, Bradley, Speakman, American Standard, Kohler, Zurn, Moen Sloan, T&S Brass, Symmons, Delta Commercial.
2. Sinks: Elkay, Just.
3. Shower Valves: Delta Commercial, Symmons, Powers, Leonard, Lawler, Haws, Moen
4. Plumbing Fixtures: American Standard, Crane, Kohler, Eljer.
5. Toilet Seats: Olsonite, Church, Bemis, Beneke, Centoco.

2.02 FIXTURES AND TRIM

A. General Provide fixtures with backs ground square and true of class "A" vitreous china or porcelain enameled cast iron as specified, unmarred, clear, smooth and bright and guaranteed not to crack, discolor or scale. Fixtures and accessories to conform to the following unless specified otherwise in the Fixture Schedule on the drawings.
See plumbing fixture schedule for fixture requirements.

PART 3– EXECUTION

2.01 SCHEDULES

A. See PLUMBING FIXTURE SCHEDULE on Drawings.

2.02 FIXTURE INSTALLATION

A. Mounting HeightsMount fixtures to the following heights above the finished floor: (unless architectural room elevations show otherwise)
1. Water Closets
a. Standard 15 inches to top of bowl rim.
b. ADA: 18 inches to top of seat per latest ADA requirements.
2. Urinal
a. Standard 24 inches to top of bowl rim.
b. ADA: 17 inches to top of bowl rim per latest ADA requirements.
3. Lavatory:
a. Standard 32 inches to top of basin rim.
b. ADA: 34 inches to top of basin rim per latest ADA requirements.

1.01 ESCUTCHEONS

A. Location Provide chrome plated brass wall or floor plates with setscrew where piping passes through walls or floors in exposed areas outside of equipment rooms.

1.02 CONNECTIONS TO EQUIPMENT NOT FURNISHED UNDER DIVISION 15

A. Equipment InstallationIn general, such equipment will be installed by contractors outside of Division 15 unless specifically stated otherwise in Division 15 drawings or specifications. This contractor must make all required plumbing connections.

B. Alternate Manufacturers: Make connections to such equipment that may require some re arranging of material to accommodate different manufacturers without additional cost to the Owner.

C. Sinks Furnished with Casework
1. Waste: Will be supplied complete with waste strainer and tailpiece. Provide traps with cleanouts.
2. Supplies: Provide complete set of supply trim.

D. Shutoff Valves Provide for all plumbing connections to equipment installed within this category as specified in Section 15400 for the type of service involved.

END OF SECTION

SECTION 15880 –AIR DISTRIBUTION

PART I – GENERAL

1.01 DESCRIPTION

A. Section 15050, Basic Mechanical Materials and Methods, shall be considered a part of these specifications.

B. All licenses, stamping, approvals, and arrangements for work shall be obtained by the Contractor, at his expense, before any work has been started. Should any changes be necessary in the drawings or specifications to insure such approval, the Contractor shall include in his base bid all costs for such changes before any work has been started.

PART II – PRODUCTS

2.01 DUCTWORK

A. All ductwork shall be constructed of galvanized sheet metal and erected in a first class workmanlike manner in accordance with SMACNA HVAC Duct Construction Standards. Use of fiber ductwork or internally lined ductwork shall not be acceptable Offsets not shown and necessary for the installation of the work are to be installed without additional cost to the Owner. Where offsets are required, the angle of the offsets shall be as small as possible. Duct sizes, indicated on the drawings, are net inside dimensions. Round spiral duct is the preferred system and shall be used unless equivalent rectangular duct is required for limited installation area or to avoid structural interference. All rectangular ducts shall be marked with horizontal dimensions first.

B. Weight of Metal Duct: United States standard gauge as follows:

Rectangular Duct Width	Gauge
Up to 12 inches	26
13 inches to 30 inches	24
31 inches to 60 inches	22
61 inches to 90 inches	20
91 inches & over	18

Round and Spiral Duct Dia.	Gauge	Fitting Gauge
3 to 14 inches	26	24
15 to 26 inches	24	22
27 to 36 inches	22	20
37 to 50 inches	20	20

C. Flexible ductwork shall be equal to Wiremold type WK 1 1/2" thick pre–insulated type. Maximum allowable length is 6 feet. Acceptable Alternate Manufacturers – ATCO, Thermaflex and United McGill.

2.02 DIFFUSERS, GRILLES AND REGISTERS

A. Diffusers, grilles and registers shall be steel, aluminum or stainless steel of the type and size indicated in the schedule on the drawings. Provide manufacturer's standard gasket. Exposed fasteners shall be the same material as the respective inlet or oulet. Fasteners for aluminum may be stainless steel.

PART III – EXECUTION

3.01 INSTALLATION

A. Galvanized sheet metal ductwork shall be installed in sizes and in location as indicated on plans. The cross seams shall have slip cleats for top and bottom and drive cleats for the sides with the ends turned down. Where square corners are used, they shall be provided with Barber–Coleman, Titus or equivalent factory–built turning vanes. Spiral ductwork joints shall have sheet metal screws in addition to the rubber gaskets.

B. Stiffening and Bracing: The entire ductwork system shall be rigidly supported and constructed to eliminate vibration or any objectionable noise when the ventilation machinery is in operation.

C. Supports for Air Outlets: Wherever ducts pass through walls or floor openings, they shall be kept free of direct contact with building construction by supports on each side of the opening. The space between duct and opening sahll be closed by means of felt gaskets, caulked in place, to comply with local fire codes, ordinances, etc.

3.01 DUCTWORK CLEANING

A. All new and existing ductwork shall be thoroughly cleaned.
B. The above work shall be done before any painting or ceiling is installed.

END OF SECTION

SECTION 15990 – SYSTEM BALANCING

PART I – GENERAL

1.01 DESCRIPTION

A. Section 15050, Basic Mechanical Materials and Methods, shall be considered a part of these specifications.

B. This Section includes balancing of heating, ventilating and air conditioning systems. This work is to be performed by the Testing and Balancing Contractor.

1.02 QUALITY ASSURANCE

A. The Testing and Balancing Contractor shall be under the supervision of a Licensed Professional Engineer, registered in the State of Maine and retained or employed by the Testing and Balancing Contractor.

B. Testing and Balancing Contractor shall have membership in and be fully certified by the AABC or NEBB and shall balance in accordance with AABC or NEBB standards and to tolerances stated in Part 3 of this Section.

C. Mechanical subcontractor and all of his subcontractors must have completed their Work and have system in working order before balancing begins.

PART II – PRODUCTS

2.01 GENERAL

A. Provide all instruments and equipment as required for proper testing and balancing.

PART III – EXECUTION

3.01 BALANCING REQUIREMENTS

A. Air Systems:

1. Prior to balancing renovated systems, measure air flow rates to unaffected spaces. Assure that existing air flow rates to those spaces are maintained after the renovated systems are balanced.

2. Adjust fans to deliver design air quantities with –5% to +10% tolerance range.

3. For room with multiple inlets and outlets, adjust total room air flow rates within a 0 to +5% tolerance and maintain design pressure relationships to adjacent spaces.

4. Balance flow among individual inlets and outlets within a –5% and +5% tolerance range.

5. Achieve design conditions with clean filters.

3.02 COMPLETION

A. Leave system components in proper working order including: plug test holes with plugs, replace access and electrical box doors, replace belt guards, replace ceiling tiles and restore control settings to appropriate positions.

3.03 TESTING AND BALANCING REPORT

A. Submit report indicating all measurements, indexed by system, and provide a typed executive summary indicating all deviations from the specifications and estimated affect on the system.

B. Tabulate in the report to the Engineer:

1. Motor data, amperage voltage and input to each motor.
2. Nameplate data and overload heater capacity installed for each motor.
3. Entrance and exit air pressure at each fan, filter and coil.
4. CFM capacity of each fan and each grille, register and diffuser.
5. Note dicrepancies between tabulated and specified conrditions and notify Engineer of discrepancies. List adjustments made to the systems.

3.03 WARRANTY PERIOD

A. Return to facility when directed by Engineer to take measurements to confirm system performance and to make minor adjustments required to accommodate resolution of system performance and comfort issues.

END OF SECTION

AIA

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PROJECT :

VISTA Auto Group

EXECUTIVE OFFICE LAYOUT
191 RIVERSIDE
PORTLAND, MAINE

DATE:	ISSUED FOR:
11.12.07	90% REVIEW
11.16.07	PERMIT

SHEET TITLE :

MECHANICAL SPECIFICATIONS

SHEET NO. :

M100