

HEATING

The General Conditions are a part of this specification and form a part of the contract.

GENERAL

The work to be estimated on and done under the contract consists generally in complete steam fitting for the steam heating including the furnishing and erecting of one sectional cast iron heating boiler together with necessary smoke flue and all radiators, piping and fittings to make a complete and operative system.

This specification is intended to describe generally to those familiar with the best modern steam heating practise, the scope and general arrangement of the work contemplated. The submission of proposal by the contractor will be construed as acceptance of this specification as sufficient to enable him to estimate upon a complete heating system in every detail, as no extras will be allowed after contract has been executed, due to any misunderstanding or omission of any item. All work shall be installed subject to the approval of the Architect.

VERIFY MEASUREMENTS

This contractor is to verify measurements and is to be responsible for the proper installation of the work in the available space as specified or shown on plans. Any changes he may find necessary are first to be submitted to the architect and approval obtained. All labor and material necessary for the complete steam fitting and steam heating of the premises herein described, is to be done by this contractor in the best and most workmanlike manner, under the direction of and to the entire approval of the Architect, who is to interpret the meaning of the specifications and pass judgment on the work with power to reject all material and work which does not conform to the true intent and meaning of same.

INSPECTION

The manufacturers of any special devices, used in the work, or their authorized representatives, must have access at all times to all parts of the work for the purpose of inspection. The contractor must render every assistance possible for this purpose.

FIRE PROTECTION

Fire hazard shall be guarded against in accordance with all local and fire insurance rules, this contractor furnishing and erecting all necessary nickel plated brass floor and partition plates and galvanized sleeves and covering on piping near wood work.

PROTECTIVE COVERING

This contractor shall cover all nickel plated ~~bonnets~~ bonnets and caps of radiator valves and traps with cloth as a protection against plaster, paint, etc. until all other contractors complete their work.

TESTING

When complete the entire system shall be tested in presence of the Architect and made tight without caulking. Piping shall be tested under 10# per sq. inch steam pressure.

SCOPE OF WORK

This specification is intended to cover a two pipe low pressure heating system known as The Improved Webster Modulation System of Steam Heating.

It is intended to supply radiation for heating the bathrooms to 80°, the vehicle room to 50° and all other rooms of the building in which radiators are placed to a temperature of 70° when the outside temperature is zero, or a corresponding equivalent difference in temperature.

BOILER

Furnish and erect in Boiler Room, one sectional cast iron boiler as manufactured by the H.B.Smith Co. No.240-S-8 special Mills Boiler, rated at 1575 sq. ft. equivalent direct cast iron radiation, heating surface of 120.5 sq. ft. and a boiler water line of 47".

Each section of the boiler, except front section, shall be tapped for indirect ~~xxx~~ water heater and connected through a 2" header to a No. M-60 Taco water heater. The return from Taco shall be connected into steam return header. The hot water storage tank and water piping from heater to tank will be done under another contract.

The boiler and Taco heater shall be insulated with 1" magnesia blocks firmly wired in place and 1/2" thickness of asbestos cement applied in two coats, the last coat to be a hard smooth finish.

Furnish with the boiler a complete set of cleaning tools and rack upon which to hang same.

The boiler shall be fitted for burning fuel oil, equipped with the usual trimmings furnished by the boiler company with the exception of the gauge. The gauge shall be a Webster 5½" modulation.

The oil burner shall be furnished complete under another contract, with all necessary controls, including a low water cutout, a Chronotherm, and an aquastat for summer hot water.

At the completion of the installation of the piping system and after steam has been turned on for a few days, the contractor shall thoroughly clean the inside of the boiler, repeating the operation when necessary, until a steady water line is maintained under all operating pressure.

BLOWOFF AND WATER CONNECTIONS

The boiler shall be provided with a blowoff connection at lowest point. The blowoff connection shall be open to the atmosphere and so arrange that any breakage which might occur at any time may readily be observed.

Provide a 3/4" water connection from house main to boiler with suitable globe valve set close to front of the boiler.

SMOKE PIPE

Erect a complete and separate smoke connection from the boiler to the chimney. The connection shall be made of #18 gauge black iron, and shall be of size recommended by the boiler manufacturer. The smoke pipe shall be fitted with round elbows, riveted gas tight with necessary cleanout doors. Properly brace pipe and make tight connection to thimble in upright flue.

RADIATORS

All radiators shall be of the H.B. Smith Co.'s manufacture or approved equal.

The radiator in basement play room shall be the wall type, suspended from ceiling.

The tube type radiators shall be legless or with legs as required. The legless radiators shall be substantially hung on approved hangers.

The convector radiators shall be furnished with complete free standing enclosures one size larger than the convectors, and with access doors in outlet grilles. Outlet grilles are to be slotted type, bottom inlet arch only. The enclosures are to be set completely recessed, partially recessed or completely free standing as required by the Architect.

The tube and wall radiators shall have supply tapping at top and return tapping eccentric at bottom at diagonally opposite corners. The convector radiators shall be furnished with tappings as required by the Architect.

All radiators and enclosures shall be furnished with factory prime coat of paint.

RADIATOR SUPPLY VALVES

Each radiator shall have a Webster type B supply valve connected to the supply tapping. Each valve shall be fitted with a metering orifice sleeve furnished by the manufacturer. These valves shall have rough nickel plated bodies with polished trimmings and black wood handles.

All horizontal branches from risers to radiators shall be at least one pipe size larger than valves.

THERMOSTATIC TRAPS

On the return of each radiator on the vents of drip of steam mains, connect a 1/2" No. 702 Webster Thermostatic Trap. These traps shall have rough satin plated bodies and finished satin plated caps and trimmings.

The branches from traps to return risers or mains shall be not less than 3/4".

CHECK VALVES

All check valves shall be Webster horizontal swing check pattern with 45° metal seat, double tested.

PIPE

All pipe and nipples shall be of standard weight mild steel of National or equal manufacture.

Straighten all pipe, ream all burrs and remove all dirt before erecting pipe or fittings and keep all dirt out of job until complete. Have all runs plumb and parallel with building. Make ample provision for expansion and contraction.

Provide proper anchorage to prevent vibration and creeping. Support all pipes securely and in such manner as to permit of unobstructed movement between anchorage or expansion and contraction. As far as possible all horizontal runs are to be graded in the direction of the flow of steam.

All connections from mains shall be taken from the top.

FITTINGS

Fittings shall be of the best grey cast iron, straight and true and free from blow holes or other defects.

UNIONS

All unions 2" and under to be "Dart" or "Kewanee" malleable iron with brass seats. All unions above 2" to be flanged.

STEAM PIPING

From the steam outlets on boiler rise full size and connect to a steam header over boiler. Drip this header into the return header of boiler. From the top of the header take steam distributing mains. The steam lines are to be run as close to ceiling of basement with a grade of one inch in 20 feet toward the drip points. All branches are to be taken from the top of mains. Steam mains in the basement shall be dripped at the end of their run into a wet return and vented to the overhead return through a 1/2" trap.

The pressure wet return into which are connected the drips of the overhead steam mains in the basement, shall be run along the wall near the floor. Connect this line to the return header.

RISERS

A system of supply and return risers shall be run to second floor and third floor radiators. Risers shall be run concealed. Branches to radiators on the second and third floor shall be run in floor between beams and branches to first floor radiators shall be run overhead in basement as close to ceiling as possible. All radiator branches shall grade back to risers with a grade of not less than 1/2" in 10'0".

RISERS Cont'd

All connections shall be made with ample provisions for expansion and contraction, and particular care is to be taken that branches are run without traps.

RETURN PIPING

The return risers, returns from first floor and ceiling radiators are to connect to return mains. The return mains shall be run in basement and unexcavated portion as close to ceiling or first floor joist as possible.

VENT & BOILER RETURN TRAP CONNECTIONS

All overhead returns are to be connected to and by-passed 1-1/4" around a Webster 0023 vent trap vented to atmosphere through a 1/2" Webster ball check vent valve. Set the vent trap so that the return line at the inlet is 19-1/4" above the waterline of the boiler.

From the discharge of the vent trap drop 1-1/4" to floor and connect to a 1-1/4" cross through a 1-1/4" check valve.

Furnish one Webster 0023 boiler return trap and set bottom of trap 5" above the waterline of boiler, maintaining 14-1/4" between the inlet of the vent trap and the bottom of the boiler return trap. Make a connection from the bottom of the trap through a gate valve to the 1-1/4" cross above specified. In bottom outlet of cross connect a solid nipple and screw on floor flange, for support of the trap. From the remaining outlet of the cross make a 1-1/4" connection to the return header thru a 1-1/4" check valve.

From the steam header make a 1" connection through gate valve and Webster dirt strainer to steam inlet of boiler return trap.

From the vent of the boiler return trap make a 3/4" connection through gate valve to overhead return main.

COVERING

After all piping and apparatus have been tested and made tight to the approval of the Owner, or his representative, covering is to be applied.

All steam mains and exposed branches including steam piping in garage, shall be covered with asbestos air cell sectional covering 1" thick. The canvas jacket on this covering shall be pasted on and fastened with standard japanned bands.

All concealed risers and radiators branches shall be covered with a 1/2" air cell covering. The covering is to be neatly applied and finished with standard bands.

All fittings throughout on covered lines to be covered with plastic asbestos cement same thickness as covering. Fittings on exposed piping shall be finished with a 6 oz. canvas jacket neatly pasted.

PAINTING

All radiators, grilles and enclosures back of grilles will be painted by the painting contractor. The enclosures back of grilles are to be painted a flat black.

The smoke pipe, all uncovered piping, hangers, and any unfinished exposed parts of heating system in basement and unexcavated portions shall be painted two coats of black asphaltum paint by the heating contractor.

GUARANTEE

The contractor hereby agrees at his own expense to make good any defects in labor or material furnished by him for this work which may develop within one year from the completion of this contract.

<u>SCHEDULE OF RADIATION</u>					
<u>Rooms</u>	<u>No. Rads.</u>	<u>Type or Unit No.</u>	<u>Height</u>	<u>sq.ft. each</u>	<u>sq.ft. total</u>
<u>BASEMENT</u>					
Play Room	1	9B Wall	on ceil.	54.00	54.00
<u>FIRST FLOOR</u>					
Living Room	5	No.350	24"	18.10	90.50
Hall - 1st	1	No.328	29"	18.10)	
2nd	1	No.538	29"	36.80)	54.90
Library	1	No.530	18"	21.30	21.30
Dining Room	2	No.333	35"	22.60	45.20
Powder Room	1	No.323	24"	13.50	13.50
Toilet	1	3S.3T	26"	7.00	7.00
Entry	1	8S.4T	26"	22.00	22.00
Pantry	1	5S.3T	26"	11.66	11.66
Servants Room	1	5S.3T	26"	11.66	11.66
Kitchen	2	7S.4T	26"	19.25	38.50
Garage legless	1	30S.3T	32"	90.00	90.00
Laundry	1	6S.4T	26"	16.50	16.50
Work Room	1	10S.4T	26"	27.50	27.50
<u>SECOND FLOOR</u>					
Bedroom #1	2	No.523	29"	21.90	43.80
Bathroom	1	7S.3T	26"	16.33	16.33
Toilet	1	4S.3T	26"	9.33	9.33
Dressing Room	1	No.320	29"	13.10	13.10
Bedroom #2	1	No.328	29"	18.10	18.10
Bathroom	1	7S.3T	26"	16.33	16.33
Bedroom #4	1	No.323	29"	14.80)	
	1	No.323	26"	14.20)	29.00
Bedroom #3	2	No.323	29"	14.80	29.60
Bathroom	1	6S.3T	23"	12.00	12.00
Bedroom #5	1	7S.5T	23"	21.00	21.00
Sleeping Room	1	15S.3T	26"	35.00	35.00
Servants Rm.#1	1	11S.4T	23"	27.50	27.50
Maids' Bath	1	7S.3T	26"	16.33	16.33
Servants Rm.#2	1	12S.4T	23"	30.00	30.00
Hall to 3rd floor	1	11S.3T	26"	25.66	25.66
<u>THIRD FLOOR</u>					
Attic Space	1	30S.4T	32"	105.00	105.00
	40		Totals		952.30