

HVAC Hydronic Systems - Metallic Pipe Installation

Detail: Pipe Installation - Insertion Electromagnetic BAS Energy Meter

No Scale

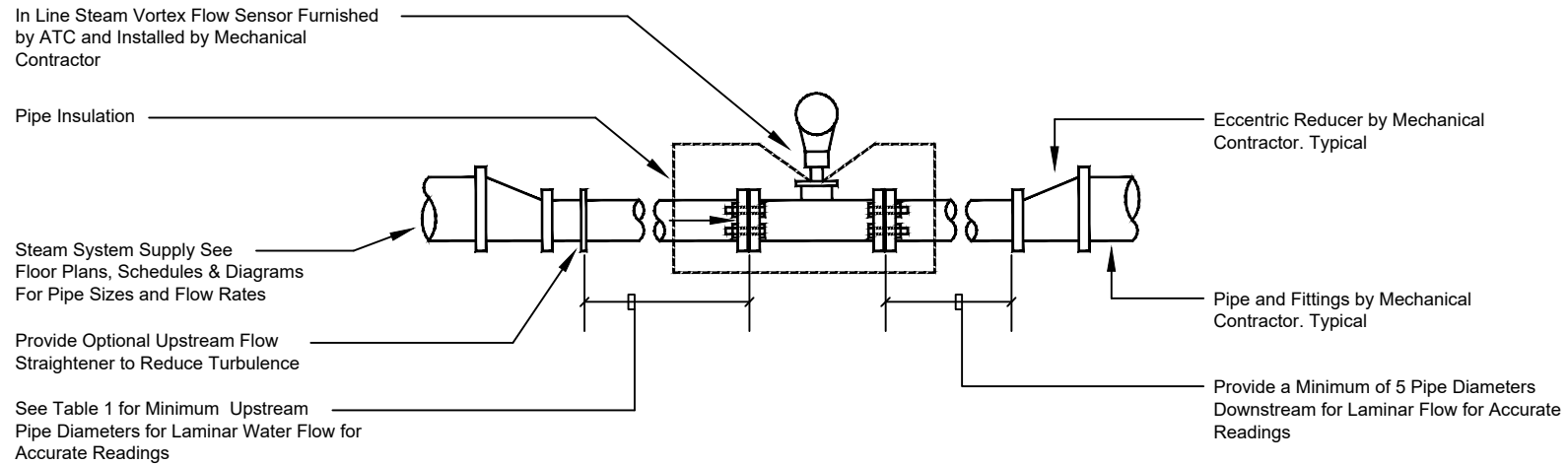
Note:

HVAC Hydronic Systems using Metallic Pipe and Fittings include Chilled Water, Heating Water, Condenser Water, and Energy Recovery Systems Unless Otherwise Noted.

See Separate Detail for BAS Requirements.

Where BAS Meters are used as Flow Only Meters Omit Thermowells. See Floor Plans, Details and Diagrams for the locations of all BAS Meters.

TABLE 1	
OBSTRUCTION	MINIMUM UPSTREAM STRAIGHT RUN REQUIRED
Single Bend Preceeded by >/- 9 Diameters of Straight Pipe Run	10 DIA.
Pipe Size Reduction/Expansion in a Straight Pipe Run	10 DIA.
Single Bend Preceeded by >/- 9 Diameters of Straight Pipe Run	15 DIA.
Outflowing Tee/Pump Outflow	20 DIA.
Multiple Bends Out of Plane	30 DIA.
Inflowing Tee	30 DIA.
Control/Modulating Valve	30 DIA.



HVAC Steam Systems - Metallic Pipe Installation

Detail: Pipe Installation - In Line Steam Vortex BAS Energy Meter

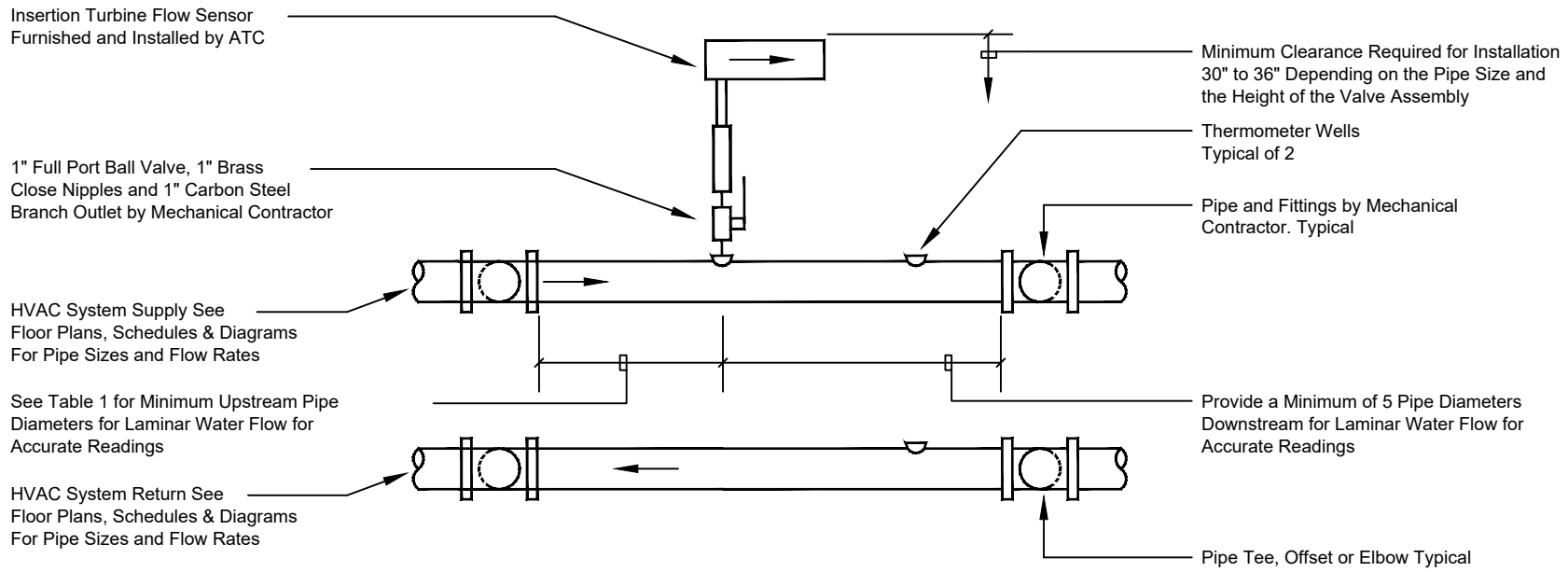
No Scale

Note:

HVAC Steam Systems using Metallic Pipe and Fittings include Medium Pressure Systems and Low Pressure Systems Unless Otherwise Noted.

See Separate Detail for BAS Requirements.

TABLE 1		
UPSTREAM OBSTRUCTION	MINIMUM UPSTREAM PIPE RUN REQUIRED	
	WITHOUT FLOW STRAIGHTER	WITH FLOW STRAIGHTER
Single 90	20 DIA.	12 DIA.
Tee	20 DIA.	12 DIA.
RDCR/EXPNDR	20 DIA.	12 DIA.
Two 90's Same Plane	30 DIA.	17 DIA.
Ball Valve Fully Open	30 DIA.	17 DIA.
Two 90's Out of Plane	40 DIA.	22 DIA.
Control Valve	50 DIA.	27 DIA.
Pressure Reducing Valve	50 DIA.	27 DIA.



HVAC Hydronic Systems - Metallic Pipe Installation

Detail: Pipe Installation - Insertion Turbine BAS Energy Meter

No Scale

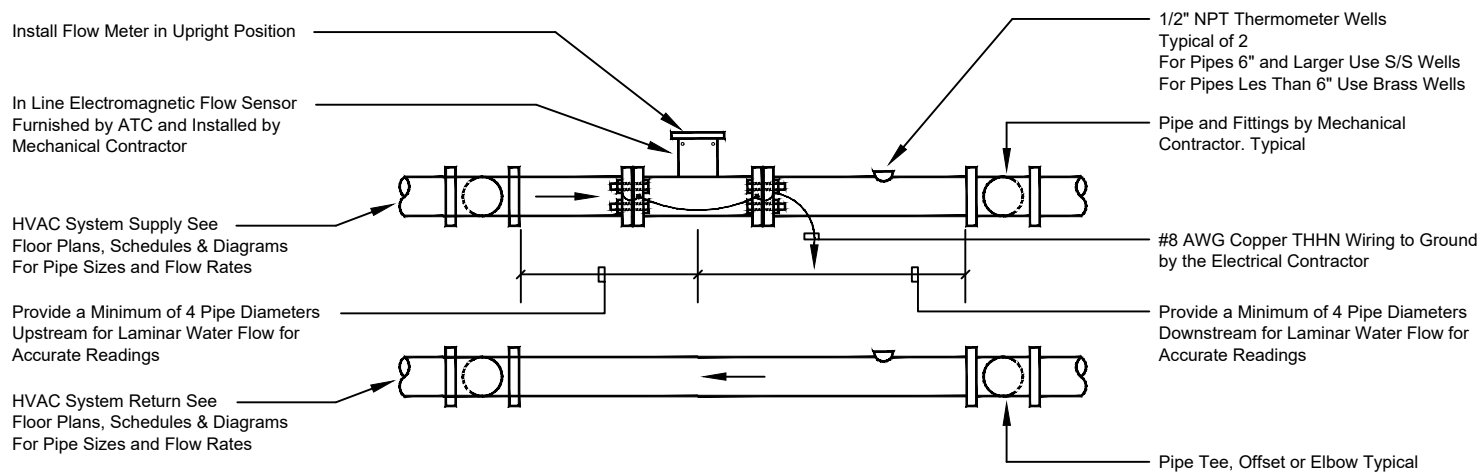
Note:

HVAC Hydronic Systems using Metallic Pipe and Fittings include Chilled Water, Heating Water, Condenser Water, and Energy Recovery Systems Unless Otherwise Noted.

See Separate Detail for BAS Requirements.

Where BAS Meters are used as Flow Only Meters Omit Thermowells. See Floor Plans, Details and Diagrams for the locations of all BAS Meters.

TABLE 1	
FLOW METER MODEL	MINIMUM UPSTREAM STRAIGHT RUN REQUIRED
F-1100 Series Single Turbine Flow Meter	20 DIA.
F-1200 Series Dual Turbine Flow Meter	10 DIA.



HVAC Hydronic Systems - Metallic Pipe Installation

Detail: Pipe Installation - In Line Electromagnetic BAS Energy Meter

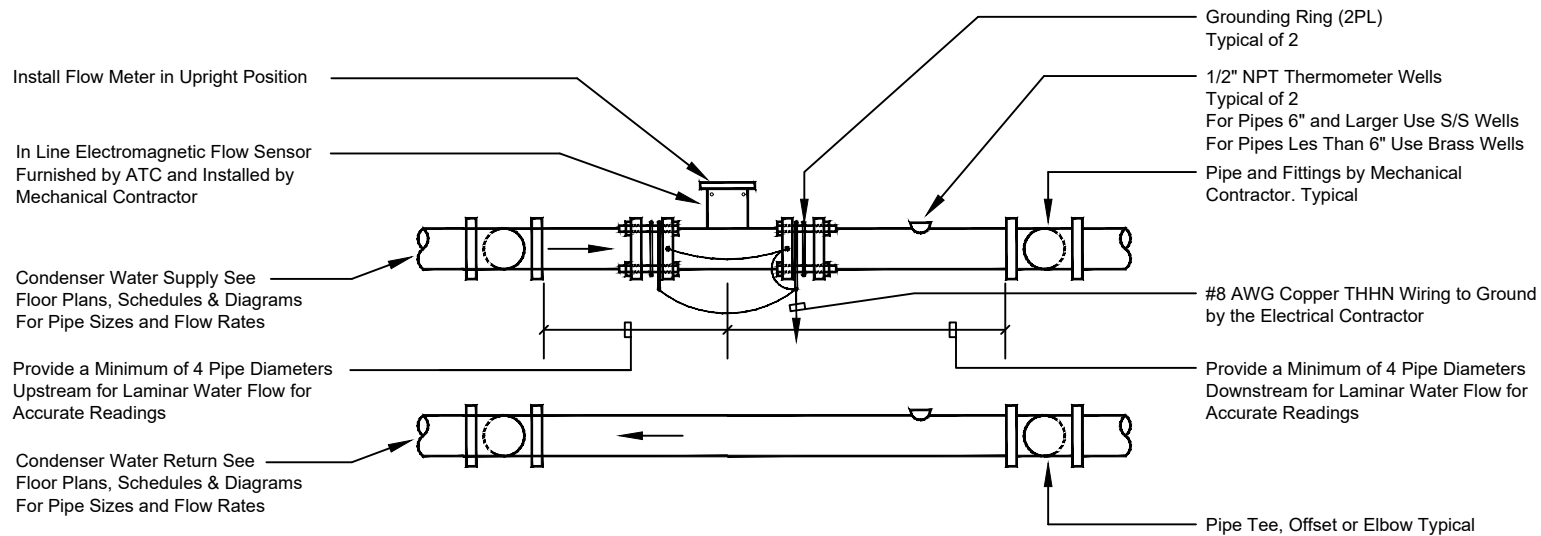
No Scale

Note:

HVAC Hydronic Systems using Metallic Pipe and Fittings include Chilled Water, Heating Water, Condenser Water, and Energy Recovery Systems Unless Otherwise Noted.

See Separate Detail for BAS Requirements.

Where BAS Meters are used as Flow Only Meters Omit Thermowells. See Floor Plans, Details and Diagrams for the locations of all BAS Meters.



Condenser Water - Non Metallic Pipe Installation

Detail: Pipe Installation - In Line Electromagnetic BAS Energy Meter

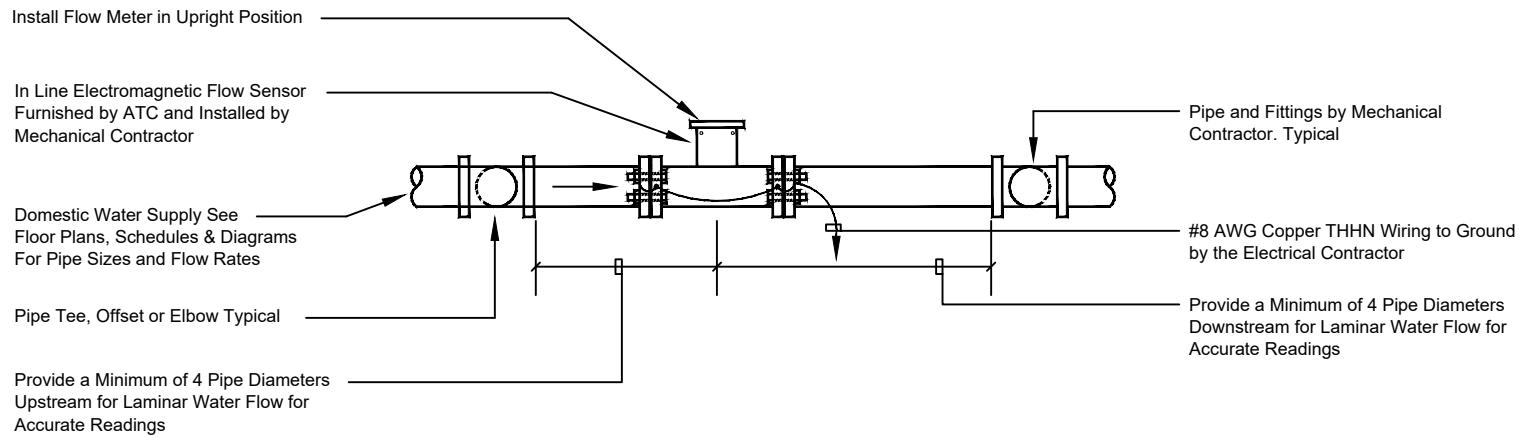
No Scale

Note:

HVAC Hydronic Systems using Non Metallic Pipe and Fittings are Limited to Condenser Water Systems Installed above the Roof Level Unless Otherwise Noted.

See Separate Detail for BAS Requirements.

Where BAS Meters are used as Flow Only Meters Omit Thermowells. See Floor Plans, Details and Diagrams for the locations of all BAS Meters.



Domestic Water Systems - Metallic Pipe Installation

Detail: Pipe Installation - In Line Electromagnetic BAS Energy Meter

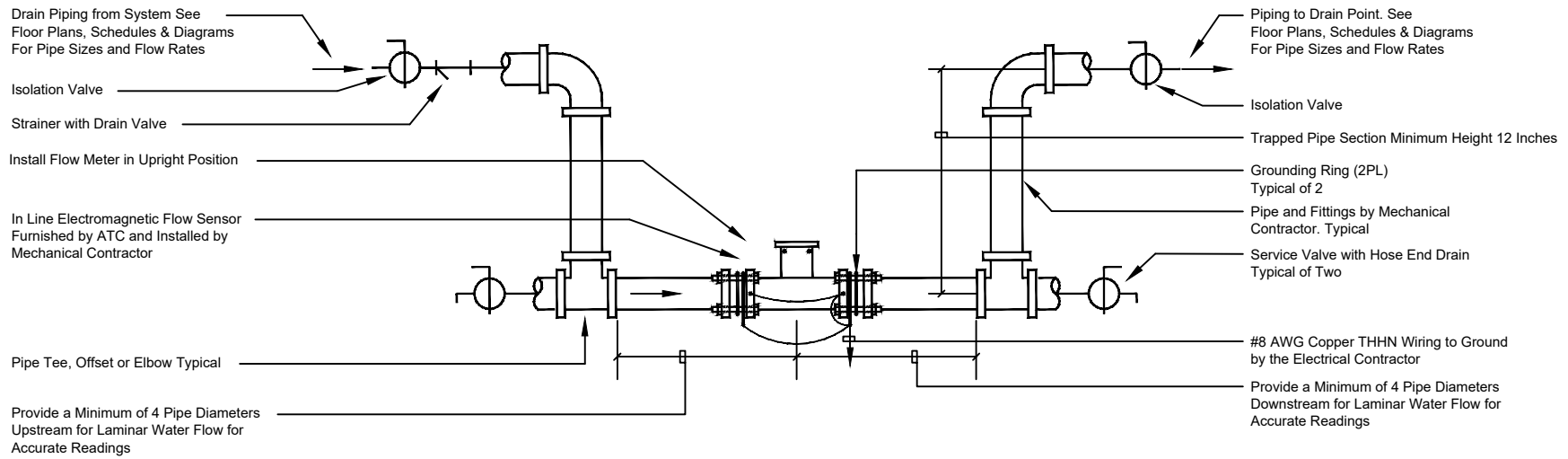
No Scale

Note:

Domestic Water Systems using Metallic Pipe and Fittings include Water Service and Make Up Water Services for HVAC Hydronic Systems Unless Otherwise Noted

See Separate Detail for BAS Requirements.

Where BAS Meters are used as Flow Only Meters Omit Thermowells. See Floor Plans, Details and Diagrams for the locations of all BAS Meters.



HVAC System Drain Meters - Non Metallic Pipe Installation

Detail: BAS In Line Electromagnetic Flow Meter Pipe Installation

No Scale

Note:

HVAC Drain Meters are limited to Condenser/Tower Water Drains, Chemical Drain/Bleed Drains and Tower Filtration Drains. Systems using Non Metallic Pipe and Fittings Unless Otherwise Noted

See Separate Detail for BAS Requirements.

Where BAS Meters are used as Flow Only Meters Omit Thermowells. See Floor Plans, Details and Diagrams for the locations of all BAS Meters.