

## O. Applications\*

\*NOTE: Systems shown are primary/secondary piping systems. These recommended systems have a primary (boiler) loop, and secondary circuits for heating. The primary loop and secondary circuits have separate circulators. The use of other near boiler piping configurations could result in improper flow rates, leading to inadvertent boiler high limit shutdowns and poor system performance.

NOTE: In piping applications utilizing a single zone, it is recommended that the installer use flow / check valves with weighted seats at or near the appliance to prevent gravity circulation.

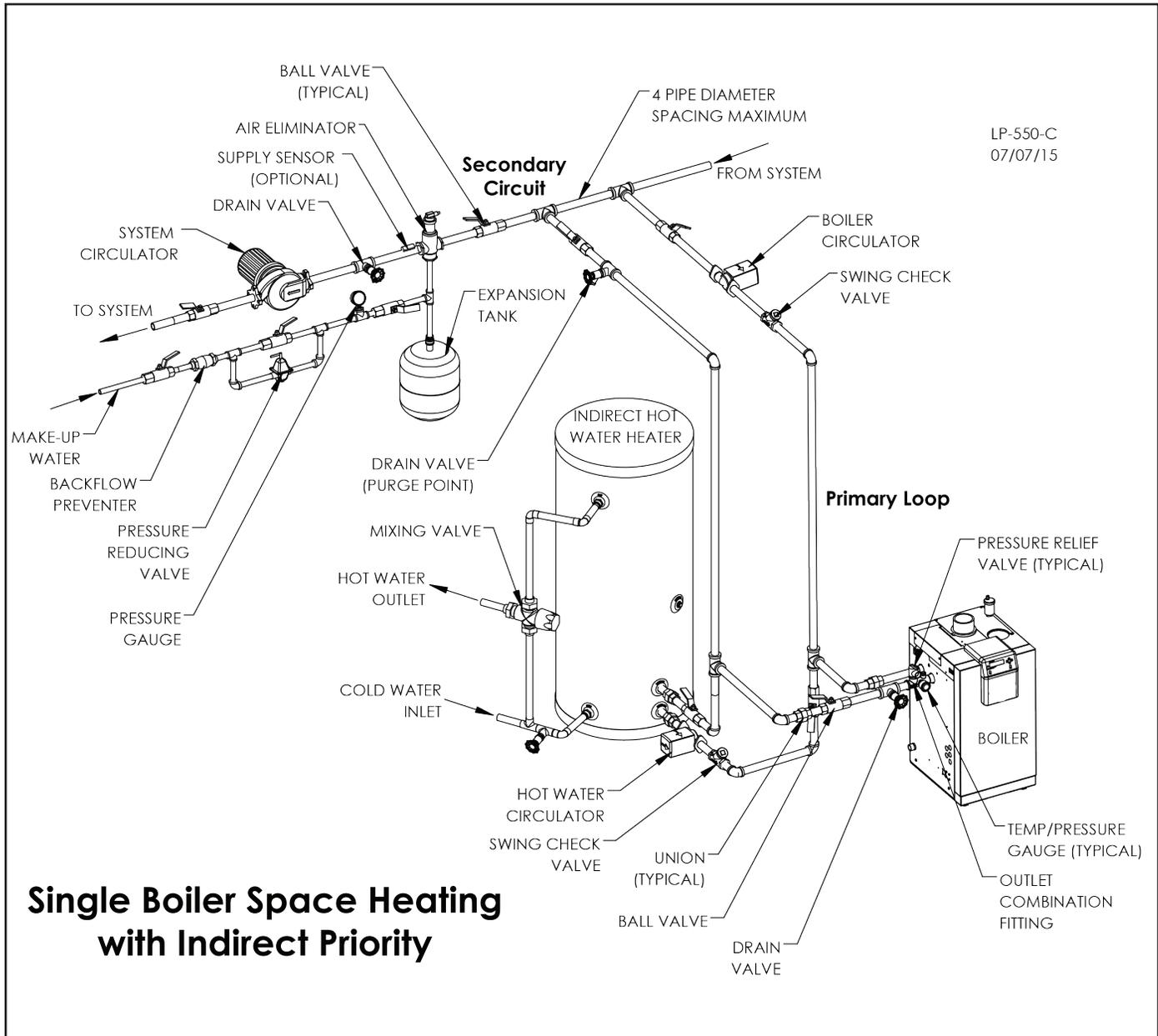


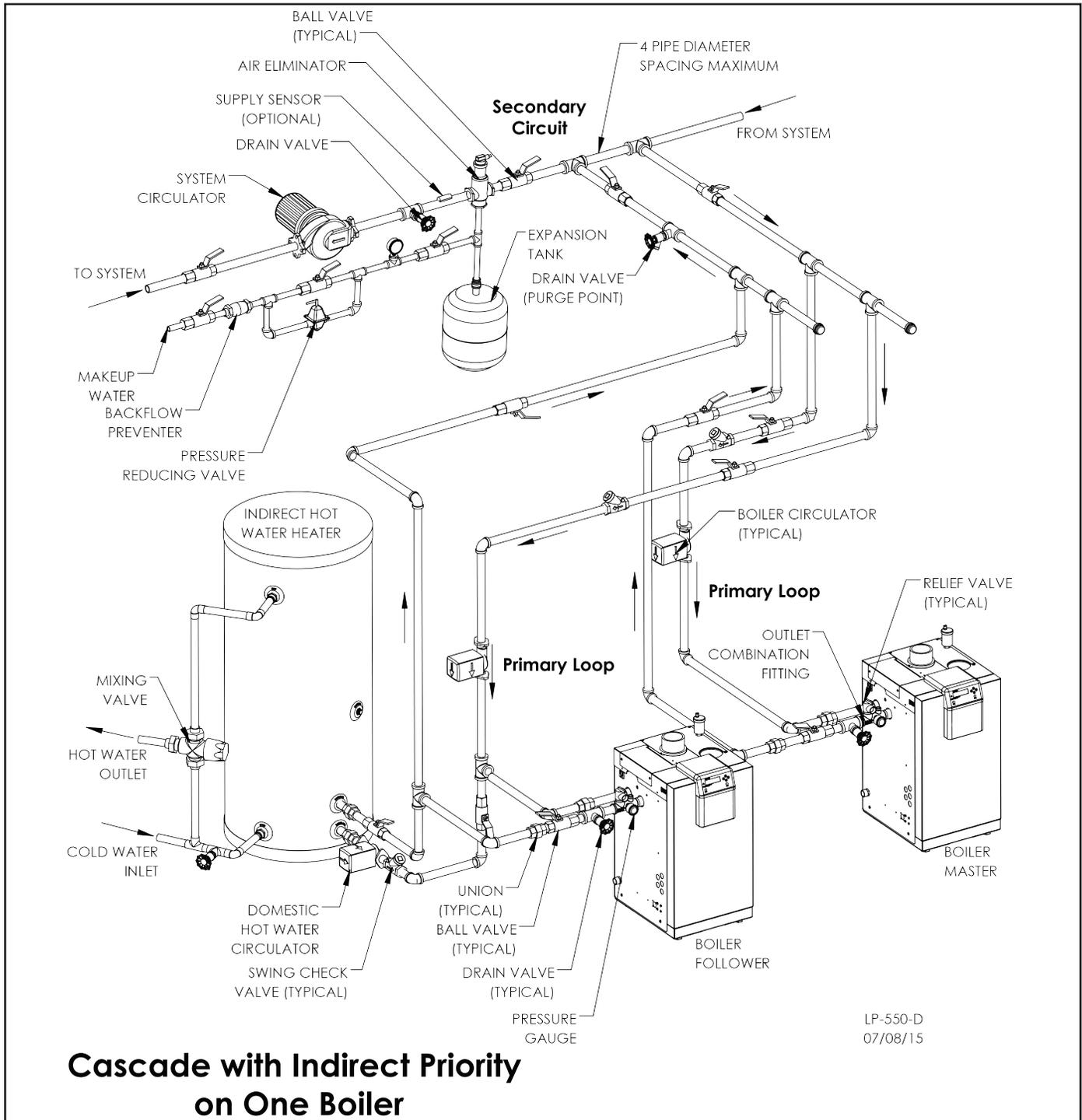
Figure 7 - Boiler with Indirect Priority

### NOTES:

1. This drawing is meant to show system piping concept only.
2. A mixing valve is recommended if the DHW temperature is set above 119°F.
3. Install a minimum of 12 diameters of straight pipe upstream of all circulators.
4. Piping shown is Primary/Secondary.
5. System flow (secondary loop) should be greater than the boiler primary loop flow. In all cases, the boiler primary loop flow rate must be maintained above the minimum flow rates published in this manual.
6. Installations must comply with all local codes.
7. In Massachusetts, a vacuum relief valve must be installed in the cold water line per 248 CMR.

## WARNING

The piping will not support the weight of the circulators. Refer to the circulator manufacturer's instructions to properly support the circulator. Failure to comply with these instructions could result in property damage, severe personal injury, or death.



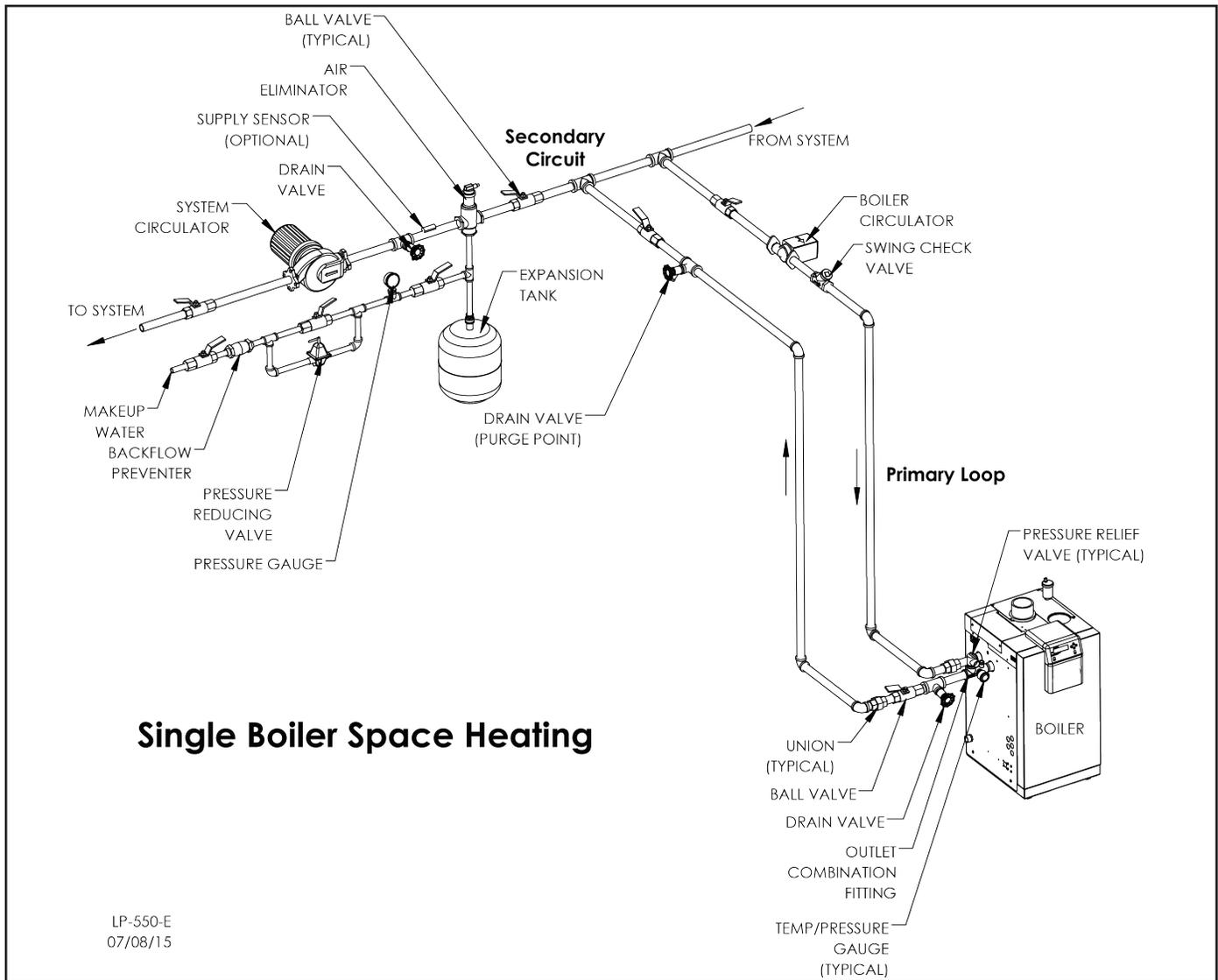
**Figure 8 - Cascaded Boilers with Indirect Priority on a Single Boiler**

**NOTES:**

1. This drawing is meant to show system piping concept only.
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3. Install a minimum of 12 diameters of straight pipe upstream of all circulators.
4. Piping shown is Primary/Secondary.
5. System flow (secondary loop) should be greater than the boiler primary loop flow. In all cases, the boiler primary loop flow rate must be maintained above the minimum flow rates published in this manual.
6. Installations must comply with all local codes.
7. In Massachusetts, a vacuum relief valve must be installed in the cold water line per 248 CMR.
8. Reference Figure 6 to determine manifold pipe sizing.

**WARNING**

The piping will not support the weight of the circulators. Refer to the circulator manufacturer's instructions to properly support the circulator. Failure to comply with these instructions could result in property damage, severe personal injury, or death.



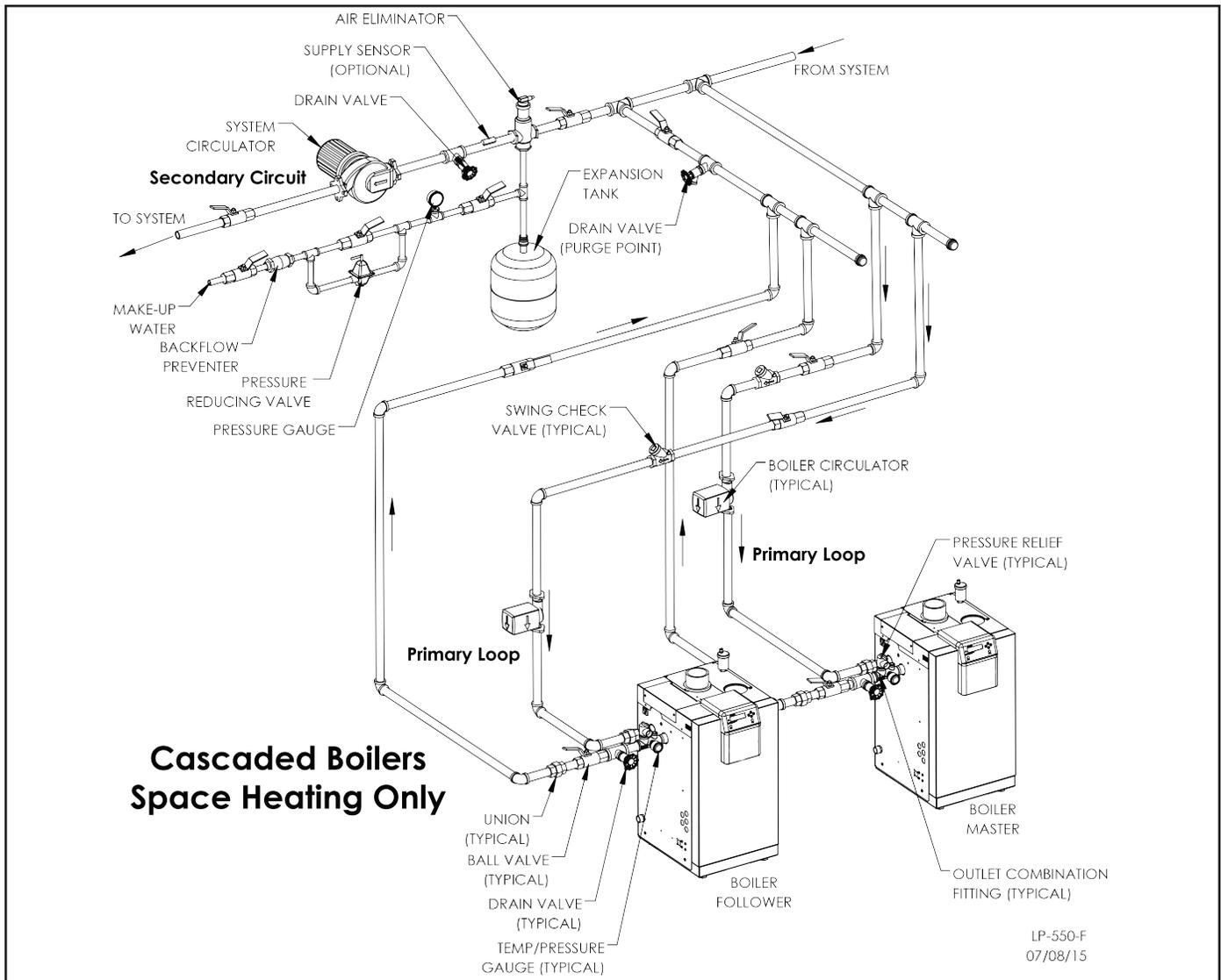
**Figure 9 - Space Heating**

**NOTES:**

1. This drawing is meant to show system piping concept only.
2. Install a minimum of 12 diameters of straight pipe upstream of all circulators.
3. Piping shown is Primary/Secondary.
4. System flow (secondary loop) should be greater than the boiler primary loop flow. In all cases, the boiler primary loop flow rate must be maintained above the minimum flow rates published in this manual.
5. Installations must comply with all local codes.
6. In Massachusetts, a vacuum relief valve must be installed in the cold water line per 248 CMR.

**WARNING**

The piping will not support the weight of the circulators. Refer to the circulator manufacturer's instructions to properly support the circulator. Failure to comply with these instructions could result in property damage, severe personal injury, or death.



**Figure 10 - Cascaded Space Heating**

**NOTES:**

1. This drawing is meant to show system piping concept only.
2. Install a minimum of 12 diameters of straight pipe upstream of all circulators.
3. Piping shown is Primary/Secondary.
4. System flow (secondary loop) should be greater than the boiler primary loop flow. In all cases, the boiler primary loop flow rate must be maintained above the minimum flow rates published in this manual.
5. Installations must comply with all local codes.
6. In Massachusetts, a vacuum relief valve must be installed in the cold water line per 248 CMR.

**WARNING**

The piping will not support the weight of the circulators. Refer to the circulator manufacturer's instructions to properly support the circulator. Failure to comply with these instructions could result in property damage, severe personal injury, or death.