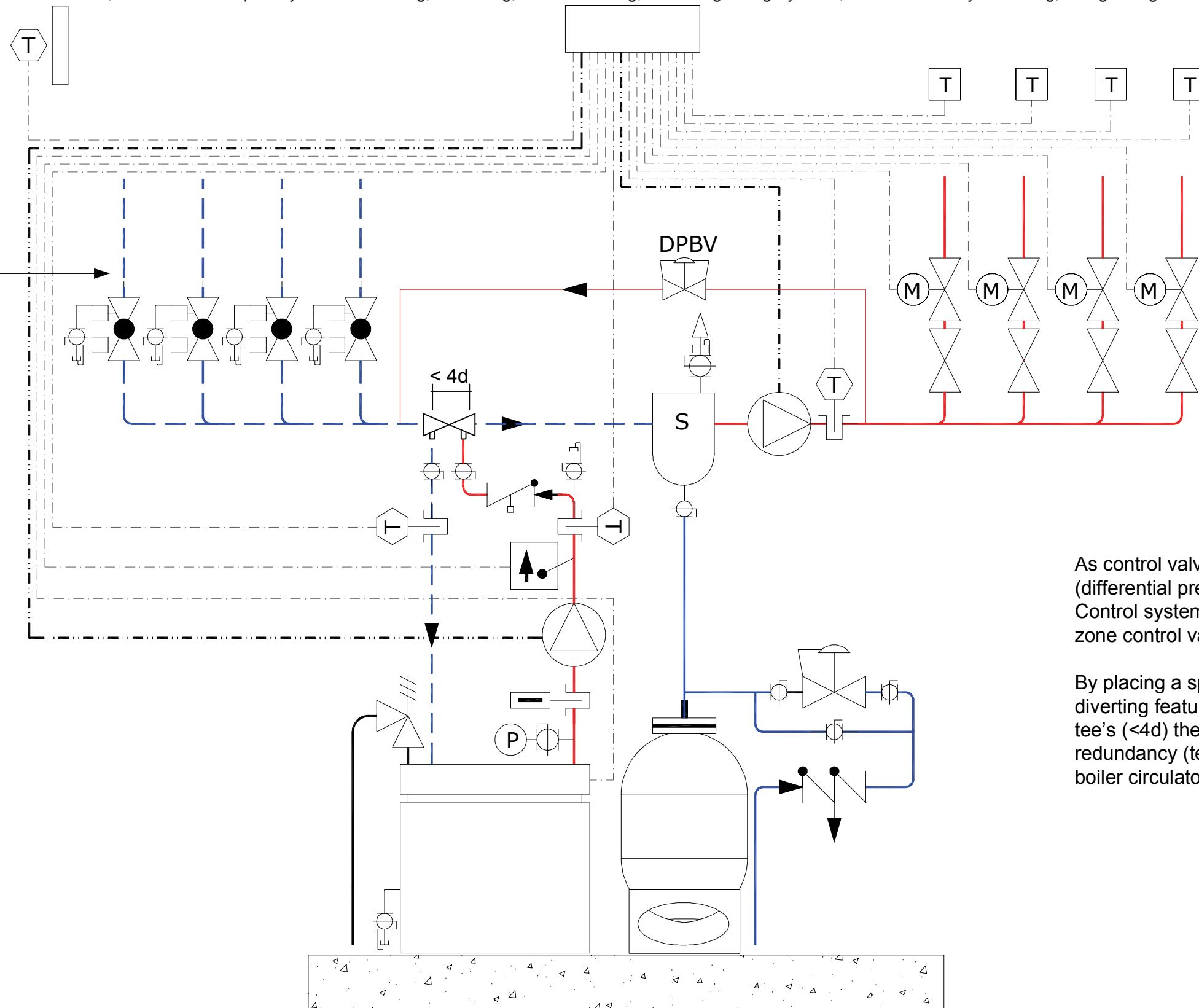


When systems are piped in this manner it is possible for convective flow to occur in the return pipe even though the zone valve on the supply side is closed...this flow is called ghost flow or thermo siphoning and is based on the change in buoyancy of water as a function of temperature. Hot water will rise up through the pipe and cold water will drop ...the distance it will travel is a function of the flow resistance and the heat exchange process. To prevent this from happening repipe as shown in other graphics on this web site or install spring loaded check valves on the return just ahead of the balancing valves.



As control valves close (M), DPBV (differential pressure bypass valve) opens. Control system shuts down system when last zone control valve closes.

By placing a specialized service valve with diverting features and low  $\Delta p$  at the close tee's (<math><4d</math>) the system can have built in redundancy (temporary) for a failed system or boiler circulator.

In exchange for a donation you can have this schematic in a .pdf, .vsd or .dwg format. How do you contribute? Simply click here ([http://www.healthyheating.com/ebooks\\_purchase.htm](http://www.healthyheating.com/ebooks_purchase.htm)) to download any ebook of your choice. Email us ([Store@healthyheating.com](mailto:Store@healthyheating.com)) this code ZonedValves1 and let us know what format you would like.



## Radiant Based HVAC Systems

### Zoning with Control Valves

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