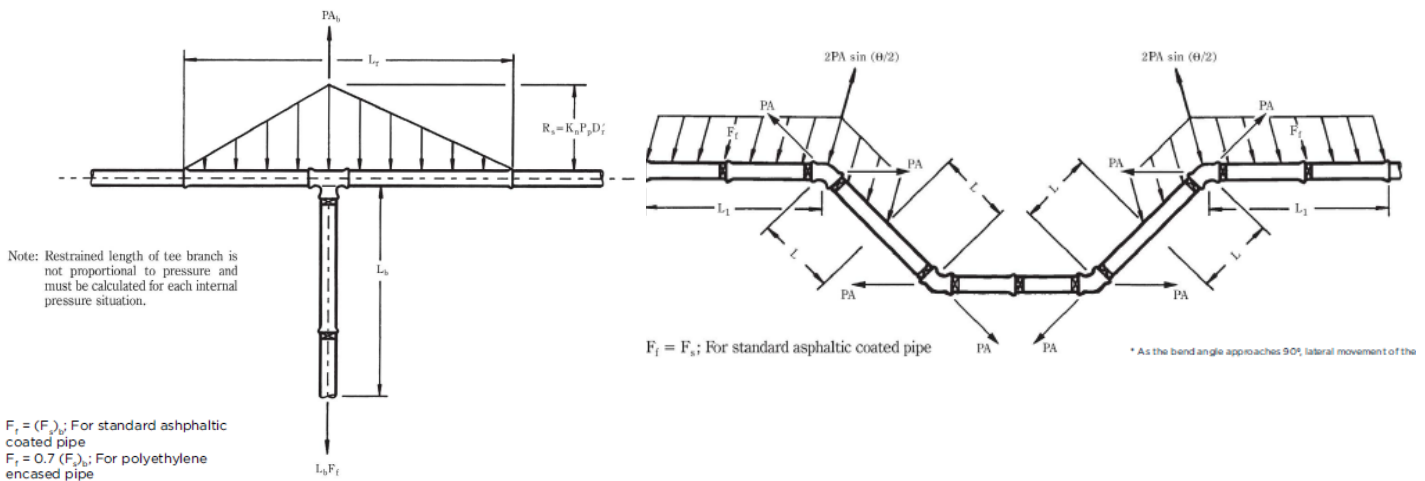




Title	Thrust Restraint on Vertical Offsets
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Restraint calculations are an important part of the piping layout design and need to be considered when installing underground piping systems. Vertical change of directions (offsets) need to be calculated differently than horizontal thrusts. Typical applications would include going under or over other utilities in a vertical manner or a vertical line with a Tee. The vertical forces applied use a different factor to calculate restraint thrusts. For these types of calculation, we recommend using the DIPRA (Ductile Iron Pipe Research Association) design manual titled “Thrust Restraint Design for Ductile Iron Pipe, Seventh Edition”.



For further information regarding SIP joint restraints on vertical applications please contact the Technical Service department at our Corporate Office in Houston, TX.

Reference:

- AWWA C600 - Installation of Ductile-Iron Mains and Their Appurtenances
- DIPRA (Ductile Iron Pipe Research Association) - Design manual titled “Thrust Restraint Design for Ductile Iron Pipe, Seventh Edition”.

