

## 8. Horizontal Alignment.

### a. General.

- 1) The Designer has the responsibility to point out where various factors of good planning and design are in conflict with these guidelines and the requirements of other agencies. The alignment must be the best overall design. Failure to point out conflicts at an early stage in the design may result in delays and possibly costly changes.
- 2) If the design follows the guidelines in this manual, the design will most likely result in a plan that can be carried through to completion without delay.

### b. Considerations.

- 1) Identify and locate all existing/ proposed facilities before selecting the location of the pipeline.
- 2) Consider the guidance in Part Three, Section 19 (Geotechnical Considerations for Pipeline Alignments), when selecting the horizontal alignment.

### c. Location.

- 1) The horizontal alignment shall take into account the following general alignment guidelines, if practical. Pipelines larger than 12-inch in diameter may have other limitations and requirements that alter these general alignment guidelines.
  - a) Where practical, design the water pipeline as follows:
    - (1) Seven (7) feet from the centerline of a curb and gutter section street.
    - (2) Five (5) feet from the centerline of proposed rural type paving or centered in the proposed shoulder.
    - (3) On the side with the higher ground at the houses.
  - b) Locate the water pipeline on the higher elevation side of the street. Typically the sewer pipeline is located on the lower elevation side, see Part Two, Section 5 (General Horizontal Alignment) for locating sewer pipelines.
  - c) Locate the pipeline in the road or street right of way whenever possible.
  - d) Locate pipeline within the pavement of proposed streets or outside the pavement and within the road or street right of way of existing streets.
  - e) The pipeline alignment within existing areas (streets or roads) should avoid construction in high traffic volume roads as well as road closings.
  - f) In existing areas (streets or roads) the alignment of the pipeline should try to avoid the removal of trees or landscaped areas.
  - g) The pipeline alignment should be extended past the limits of the proposed road improvements so that future pipeline extensions maybe constructed without the need to cut the pavement.



- h) When the pipeline alignment is located outside the road right of way, minimize disruption to environmental features and where possible avoid steep slopes, wetland areas, trees and other sensitive areas. Locate the alignment so that it follows the property lines as much as possible.
- i) Provide acceptable horizontal clearances for the proposed alignments where the existing mains are to remain in service. See Part Three, Section 3 (Pipeline Crossings and Clearances).
  - (1) Horizontal clearances between the existing and proposed pipelines may have to be increased when the pipeline is within the zone of influence of existing concrete blocking. To determine if there is adequate passive soil resistance, see Passive Soil Pressure for Concrete Thrust Blocks in Part Three, Section 27 (Thrust Restraint Design for Buried Piping).

**d. Labeling Pipeline in Plan.**

- 1) Label all pipe sizes, fittings and appurtenances for pipelines smaller than 16-inch in diameter.
- 2) Label all pipe sizes, fittings and appurtenances and provide stations for all fittings and appurtenances on pipelines 16-inch and larger in diameter.
- 3) Show hundred-foot stations along the pipeline alignment in plan view.
- 4) Compare pipe sizes, fittings and appurtenances on the plan views with the profiles to avoid mislabeling.
- 5) Indicate the pipe class designation and pipe material in General Notes, see Part One, Section 4 (Selection of Pipe Material).

