
General Information

A. General

Proper regulation of the location design and methods for installation, maintenance, and adjustment of private and public utilities in the roadway right-of-way is necessary for safety, public service, and orderly development. Utility lines should be located to minimize need for later adjustment, to accommodate future roadway improvements, and to allow servicing such lines with minimum interference to traffic and interruption of other utility services.

Longitudinal installations should be located on uniform alignment to provide a safe environment for traffic operation and preserve space for future roadway improvements or other utility installations. Whenever feasible and practical, utility line crossings of the roadway should intersect on a line perpendicular to the roadway alignment. Consideration should be given to encasing or installing utility line crossings in tunnels or conduits to allow servicing without disrupting the traffic flow.

When street grades, alignments, or widths are changed, utilities are usually required to relocate. Often, standard locations are inapplicable and unobtainable in street areas where existing utilities are seriously crowded and where it would not be feasible to expect significant reorientation. The location criteria must be practical and applicable in new developments, in urban relocation work, and in cases where overhead facilities are being converted into underground structures and plans. Utilities are not expected to change existing facilities as to location or depth simply for the purpose of creating uniformity. However, when new or relocation work is undertaken, uniformity should be sought wherever possible.

The horizontal and vertical location of utility lines within the roadway right-of-way limits should conform to the clear zone policies applicable for the system, type of roadway, and specific conditions for the particular section involved.

B. Definitions

Right-of-way: The land area of which the right to possession is secured or reserved by the Jurisdiction for the project, including permanent roadway easements.

Roadway: The portion of the right-of-way designated or ordinarily used for vehicular travel.

Sidewalk: That portion of the street primarily constructed for the use of pedestrians.

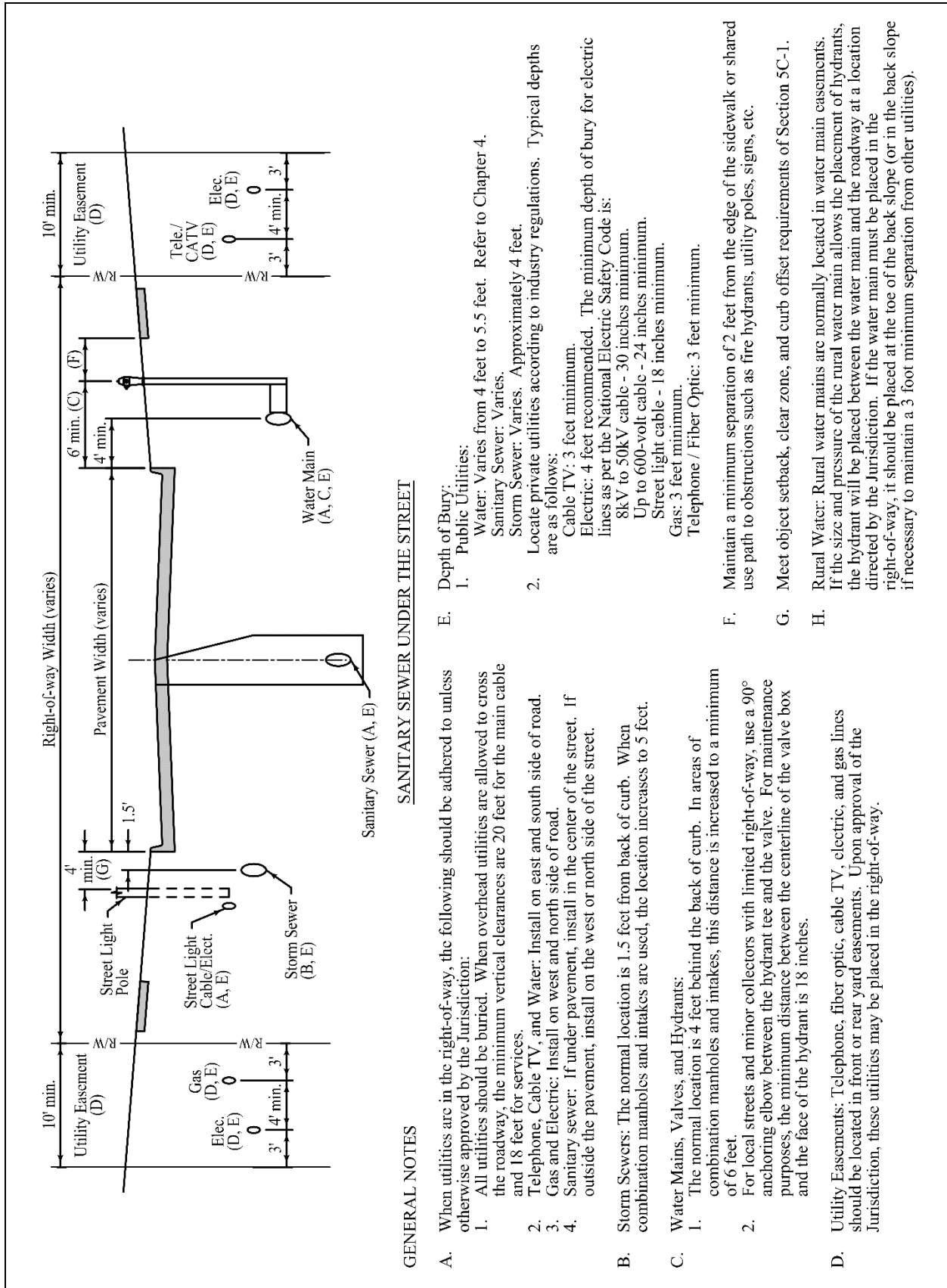
Street (Road): A general term denoting public way for vehicular travel, including the entire area within the right-of-way.

Utility: Includes all privately, publicly, municipally, or co-operatively owned structures and systems for supplying water, sewer, electric lights, street lights and traffic lights, gas, power, telegraph, telephone, communications, transit, pipelines, and the like.

C. Design

1. Limited right-of-way widths:
 - a. Because of lack of space for utilities in most metropolitan areas, special consideration should be given in the initial roadway design to the potential for joint usage of the right-of-way that would be consistent with the primary function of the roadway.
 - b. When the sanitary sewer is located outside of the paved surface, the gas, electric, telephone, and/or cable TV may need to be located in special utility easements in the front and/or rear yard.
 - c. Existing development and limited right-of-way widths may preclude location of the sanitary sewer outside the paved surface of the roadway. Some cities may allow sanitary sewer within the roadway. Location under the paved surface requires special consideration and treatment. Accommodation of these facilities under the paved surface should be accomplished in a manner that will ensure a minimum adverse effect on traffic as a result of future utility service and maintenance activities.
2. Utility poles, vent standpipes, and other above-ground utility appurtenances that would constitute hazards to errant vehicles should not be allowed within the roadway clear zone. The only exceptions allowed would be where the appurtenance is breakaway or could be installed behind a traffic barrier erected to protect errant vehicles from some other hazard. The clear zone dimension to be maintained for a specific roadway use will be found in [Chapter 5, Roadway Design](#).
3. Attachments of utility lines to bridge structures should be avoided where possible. Where there are no feasible alternate locations, such installations on bridge structures should be concealed from view. When attachments to bridges or structures are approved, the Engineer should refer to specific Jurisdiction standards for price of attachment, method of attachment, and other requirements.
4. On new installations or adjustment to existing utility lines, provision should be made for known or planned expansion of the utility facilities, particularly those located underground or attached to bridges. It is important that the placement of the utility considers the future widening of the roadway.
5. All utilities located within the public right-of-way for new roadway construction should comply with the drawing based on the width of right-of-way and pavement width.
6. The order of elevation priority for underground installation should be as follows:
 - a. Sanitary sewer
 - b. Storm sewer
 - c. Water main
 - d. Other utilities

Figure 9A-1.01: Typical Urban Utility Locations



SANITARY SEWER UNDER THE STREET

- GENERAL NOTES**
- When utilities are in the right-of-way, the following should be adhered to unless otherwise approved by the Jurisdiction:
 - All utilities should be buried. When overhead utilities are allowed to cross the roadway, the minimum vertical clearances are 20 feet for the main cable and 18 feet for services.
 - Telephone, Cable TV, and Water: Install on east and south side of road.
 - Gas and Electric: Install on west and north side of road.
 - Sanitary sewer: If under pavement, install in the center of the street. If outside the pavement, install on the west or north side of the street.
 - Storm Sewers:** The normal location is 1.5 feet from back of curb. When combination manholes and intakes are used, the location increases to 5 feet.
 - Water Mains, Valves, and Hydrants:**
 - The normal location is 4 feet behind the back of curb. In areas of combination manholes and intakes, this distance is increased to a minimum of 6 feet.
 - For local streets and minor collectors with limited right-of-way, use a 90° anchoring elbow between the hydrant tee and the valve. For maintenance purposes, the minimum distance between the centerline of the valve box and the face of the hydrant is 18 inches.
 - Utility Easements:** Telephone, fiber optic, cable TV, electric, and gas lines should be located in front or rear yard easements. Upon approval of the Jurisdiction, these utilities may be placed in the right-of-way.
- Depth of Bury:**
- Public Utilities:**
 - Water: Varies from 4 feet to 5.5 feet. Refer to Chapter 4.
 - Sanitary Sewer: Varies.
 - Storm Sewer: Varies. Approximately 4 feet.
 - Locate private utilities according to industry regulations. Typical depths are as follows:
 - Cable TV: 3 feet minimum.
 - Electric: 4 feet recommended. The minimum depth of bury for electric lines as per the National Electric Safety Code is:
 - 8kV to 50kV cable - 30 inches minimum.
 - Up to 600-volt cable - 24 inches minimum.
 - Street light cable - 18 inches minimum.
 - Gas: 3 feet minimum.
 - Telephone / Fiber Optic: 3 feet minimum.
- F.** Maintain a minimum separation of 2 feet from the edge of the sidewalk or shared use path to obstructions such as fire hydrants, utility poles, signs, etc.
- G.** Meet object setback, clear zone, and curb offset requirements of Section 5C-1.
- H.** Rural Water: Rural water mains are normally located in water main easements. If the size and pressure of the rural water main allows the placement of hydrants, the hydrant will be placed between the water main and the roadway at a location directed by the Jurisdiction. If the water main must be placed in the right-of-way, it should be placed at the toe of the back slope (or in the back slope if necessary to maintain a 3 foot minimum separation from other utilities).

Figure 9A-1.01 (Continued): Typical Urban Utility Locations

