

Chapter 4 - Utility Locations Design and Construction Standards

4.1 Plans Required

Any utility or other facility constructed in a City-owned right-of-way shall have Construction Plans submitted and approved in accordance with requirements of these Roadway Standards. No construction Permit shall be issued for construction of new utilities or extension of existing utilities without prior review and approval of the Construction Plans by the City. Permits are required with the following exceptions:

- 1) Minor maintenance projects may be exempt from submitting formal Construction Plans. In such cases, however, sketch plans must accompany the Permit Application. Utility companies may be exempt from requiring a Professional Engineer's (PE) (licensed in the State of Colorado) signature and stamp on the Construction Plans if the project is of a nature that would not warrant design by a registered PE.
- 2) To avoid delays and redesigns on large projects and in areas where future road improvements are expected, plan and profile sheets may be requested. A predesign meeting must be held with the City or authorized representative to discuss the requirements of the plan submittal. The City will assist the utility company in determining which future roadway profiles and improvements are expected to minimize future utility relocations. Requirements for submitting plan and profile sheets may be waived upon written request of the utility company. This exception does not apply to water and sewer line projects. Water and sewer plans must be approved by the applicable District.

4.1.1 Formal Plans

If formal plans are required, the City will notify the Applicant of such within 48 hours after the predesign meeting.

4.1.2 Deviations

The Applicant's completed facility shall conform with the drawings or sketches referred to previously unless a deviation has been requested and approved by the City.

4.1.3 Pipelines

When the proposed facility involves pressure pipelines, the following additional data are required:

- 1) Design pressure of pipe
- 2) Normal operating pressure
- 3) Maximum operating pressure
- 4) Nominal composition of material in pipeline

This information is for reference only.

4.2 Design Standards

4.2.1 General

All work in connection with the facility authorized by the Permit shall be done in a neat and efficient manner to the City's satisfaction. Construction details of the same shall conform to the requirements in effect at the time of Permit issuance.

4.2.2 Utilities

All utilities, including water, sanitary sewer, and storm sewer shall be stubbed out to the right-of-way at all locations that are planned for future tie-ins. Other reasonable stub-outs may be requested by the City based on sound engineering judgment and knowledge of adjacent development.

4.2.3 Gravity Utilities Precedence

Precedence shall be given to gravity utilities (for example, sanitary and storm sewer) over other utilities in design and construction.

4.2.4 Access Covers

All manhole lids, utility access covers, and range box access covers shall be depressed one-quarter an inch to half an inch below the adjacent finished street surface.

4.2.5 Sleeves

During initial construction, utility companies shall install relevant utilities within sleeves across all public streets to accommodate future repairs without street cuts. Sleeves shall be of a size and material appropriate for the specific utility and shall be designed to withstand road loading. Sleeves shall be installed at a minimum depth of 42 inches to the top of the pipe from the top of the curb, and ends shall be sealed except for necessary vents or drains.

A minimum of six additional sleeves on Arterials, and a minimum of four additional sleeves on Collectors are to be installed by the Developer at all street intersections along both sides of all Collectors and Arterials and at intersections of Local streets where there is a utility corridor. Any intersection along a Collector or Arterial that may warrant signalization shall have additional sleeves (as described previously) installed across the streets at the intersection.

Sleeve quantity, location, size, and material shall be approved by the City.

4.3 Location

During design or prior to construction of the following, potholing or similar subsurface utility investigation shall be performed to identify the location(s) of other utilities. Refer to Figures 4-1, 4-2, and 4-3.

4.3.1 Water

Waterline and service locations require acceptance from the applicable District. Where possible, water mains shall be located on the northern and eastern sides of streets. Water mains shall be placed at a minimum depth of 4.5 feet measured from top of main perpendicularly to the finished ground surface. Water service lines shall be placed at a minimum depth of 4.5 feet to the right-of-way line. Water mains shall be separated from sanitary sewer mains by a minimum of 10 feet measured horizontally. Fire hydrant locations are subject to Fire District requirements. Where no such requirements exist, fire hydrants shall be located 3 feet minimum from the back of the curb, 1 foot minimum from the back of an attached sidewalk, or 10 feet minimum from the edge of pavement if no curb is present.

4.3.2 Sanitary Sewer

Sanitary sewer and service locations require acceptance from the applicable District. Where possible, sanitary sewer mains shall be located on the southern and western sides of streets. Sanitary sewer mains

shall be placed at a minimum depth of 5 feet measured from the top of main perpendicularly to the finished ground surface. Sanitary sewer service lines shall be placed at a minimum depth of 5 feet to the right-of-way line.

4.3.3 Storm Sewer

Storm sewers shall be located as needed for adequate utility separation. Storm sewer depths are subject to minimum and maximum cover requirements associated with the storm sewer manufacturer, but at no time shall storm sewers be placed at a depth less than 2 feet from the top of pipe measured perpendicularly to the road surface.

4.3.4 Natural Gas

Where possible, gas mains shall be located either within the right-of-way or in an adjacent easement on the southern and western sides of the street.

4.3.5 Electric Power, Cable Television, and Communications

Where possible, electric power, cable television, and communications lines shall be located in the northern and eastern sides of the street, either within the right-of-way or in an adjacent easement. Location is also subject to requirements in the National Electrical Safety Code (NESC).

4.3.6 Additional Structures

Poles, signs, and any other aboveground streetscape (except regulatory signs) shall be generally located within 5 feet of the right-of-way line or 10 feet from the travel lane (flowline), whichever is more restrictive. Where existing roadways are constructed to something other than present City standards, variances will be considered on a case-by-case basis. Light poles may be placed a minimum of 2 feet behind a vertical curb line, or 2 feet behind the sidewalk for attached sidewalk conditions with prior written approval by the City. Poles placed within City rights-of-way having a posted speed limit of 40 mph, or higher, may be required to be breakaway, per the Colorado Department of Transportation Roadway Design Manual. All poles within City rights-of-way must be accepted by the City prior to the Permit Application for installation.

4.3.7 Location Deviations

Utility locations other than those stipulated in this chapter may be considered if given written approval by the City.

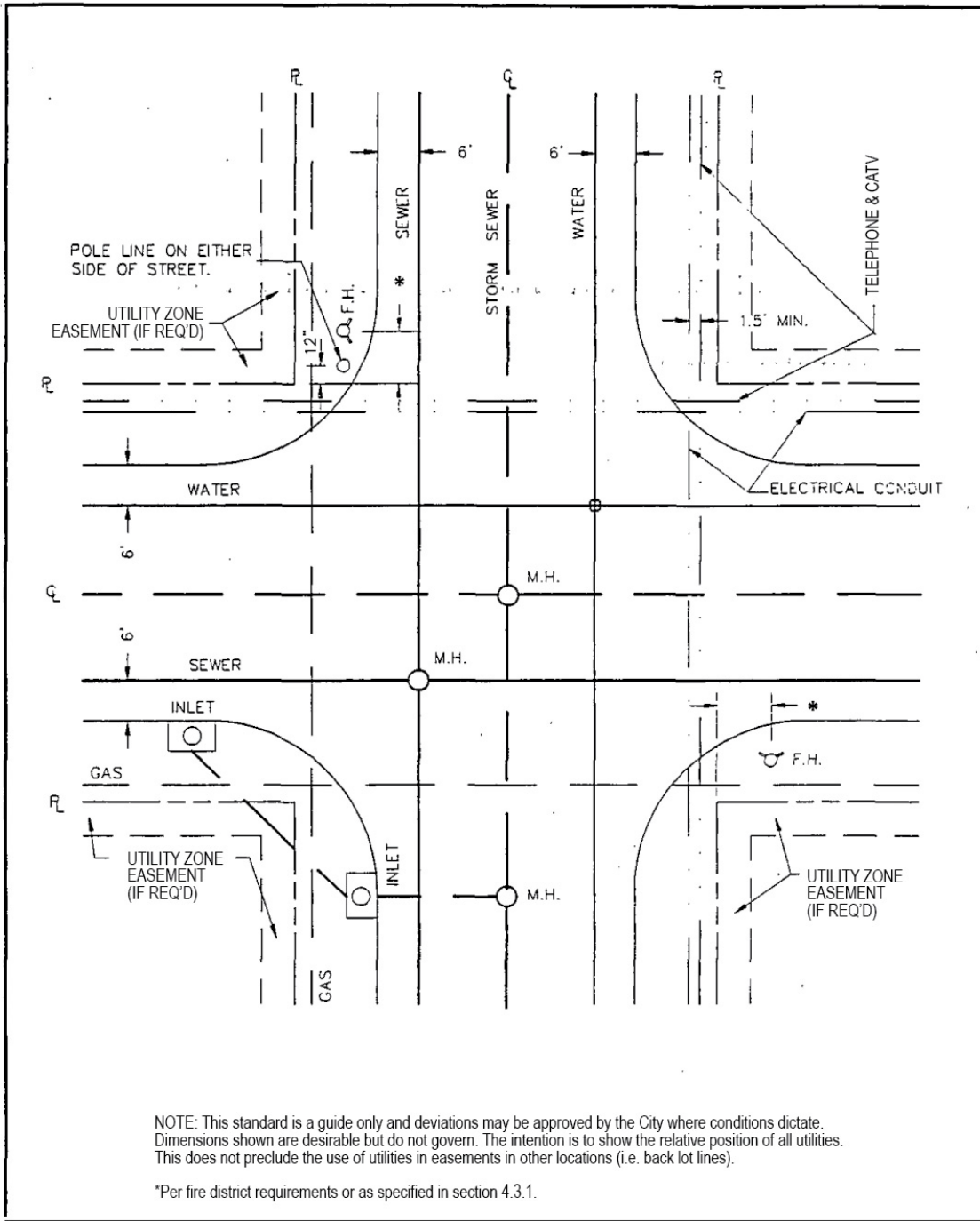
4.3.8 Boring or Directional Drilling

For pipelines or conduits to cross roads, boring or directional drilling may be required instead of trenching, as directed by the City. If sufficient rights-of-way exist, the length of the bore shall extend a minimum of 4 feet from the edge of the pavement when possible. Unused holes or abandoned casings shall be backfilled. Water boring under roadways shall not be permitted. Existing carriers and conduit installed under a roadway shall be physically located prior to boring.

4.3.9 Subsurface Utility Locating

Location markers, tracer wires, as-built drawings, and other methods of establishing locations of underground utilities after burial shall be provided as required by the utility owner and are subject to City approval.

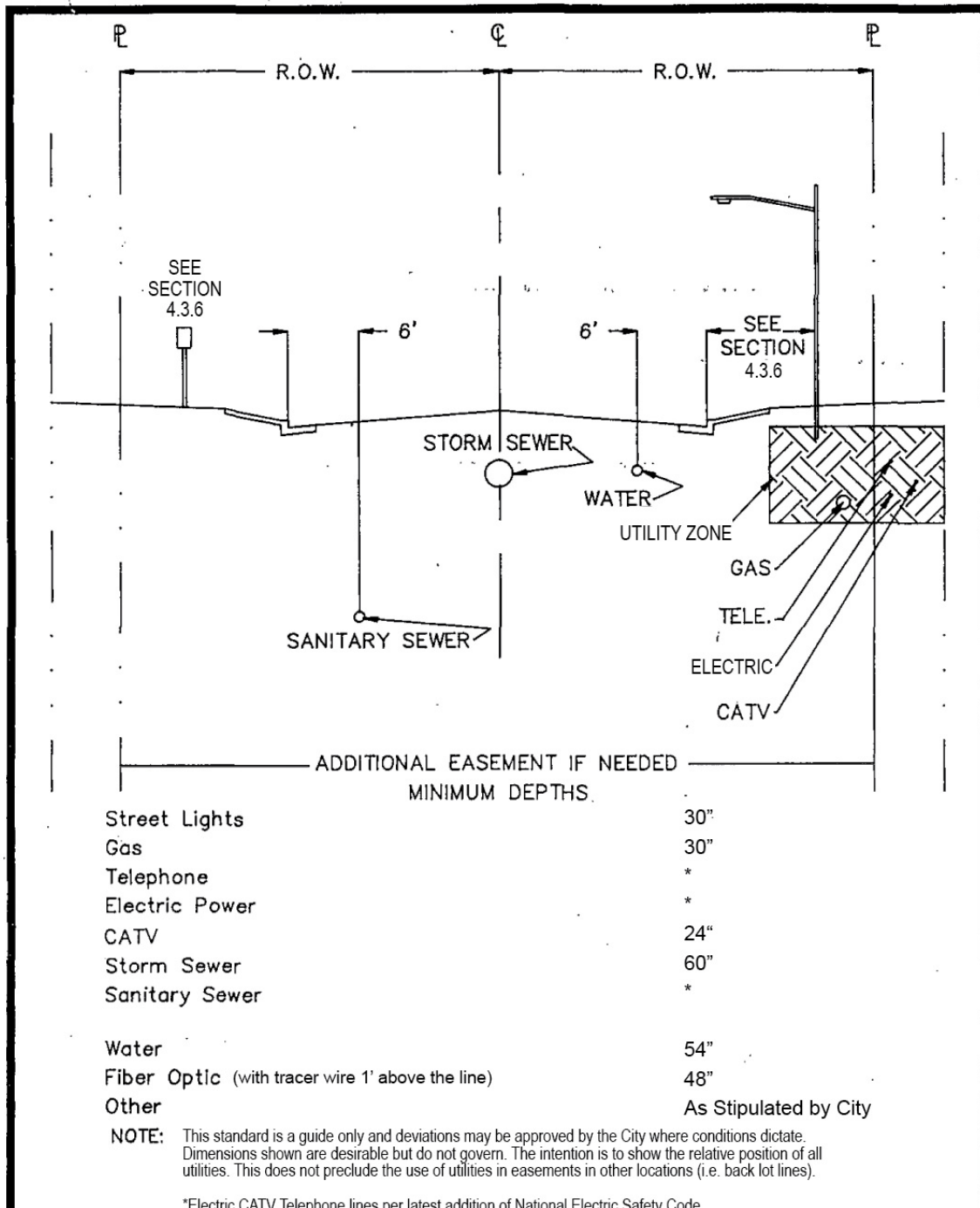
Figure 4-1. Utility Line Location: Typical Plan



UTILITY LINE LOCATION
TYPICAL PLAN

Figure 4.1

Figure 4-2. Utility Line Location: Typical Section



UTILITY LINE LOCATION
TYPICAL SECTION

Figure 4.2

Figure 4-3. Utility Line Relocation Example

