



CITY OF IOWA CITY
UNESCO CITY OF LITERATURE

DESIGN SUPPLEMENT

January 2026

Notice to Users of the City of Iowa City Design Supplement

This document adds, deletes, or replaces information contained in the Statewide Urban Design and Specifications (SUDAS) Design Manual. The supplements within this document must be used in conjunction with the SUDAS Design Manual for the content within this document to make sense. Questions about the contents of this document should be directed to the City of Iowa City Engineering Division by calling (319) 356-5140 during normal business hours.

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CHAPTER 1 -

General Provisions

1A-1 – General Information

B. Definitions

Project Engineer: (ADD) If the Jurisdiction hired a design consulting firm, the Project Engineer will be considered the licensed professional engineer of record at that firm.

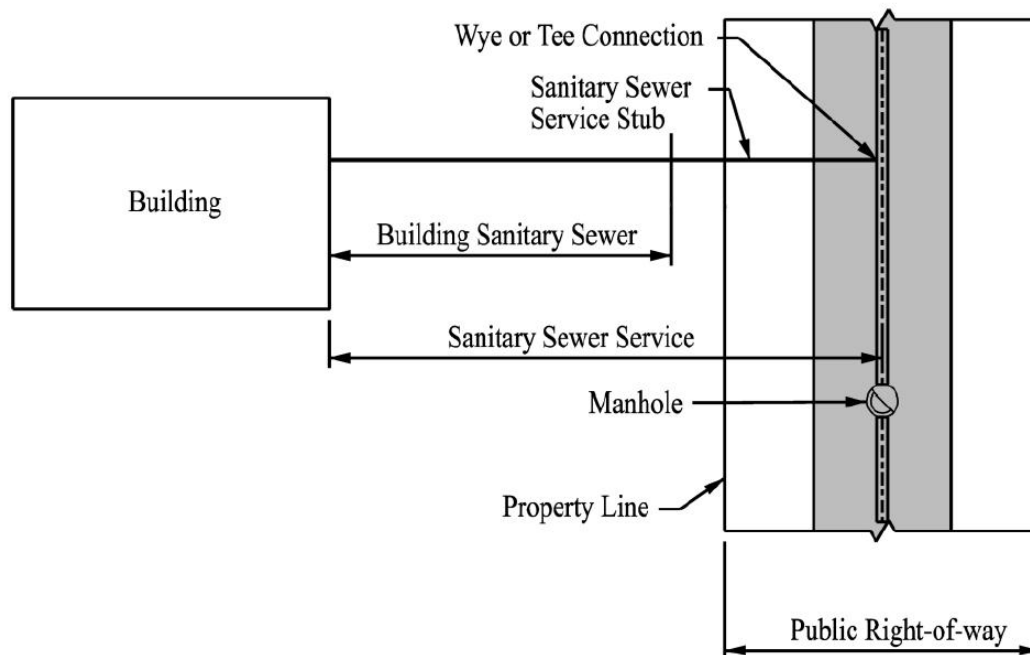
1B-1 – Classifications of Improvements and Definitions

A. Sanitary Sewer

2. Sanitary Sewer Service Stub: (REPLACE) The portion of the sanitary sewer service that is within the public right-of-way to a point 10 feet beyond the right-of-way line or the outer utility easement line, whichever is greater. The sanitary sewer stub will be constructed in conjunction with the sanitary sewer construction and capped until the building sanitary sewer is constructed. The sanitary sewer service stub is part of the building sewer and connections to be maintained by the owner of the property in accordance with Title 16, Chapter 3, Article D ([16-3D-6](#)) of the City Code of Iowa City, Iowa. For location of the sanitary sewer service stub, see [Figure 1B-1.01](#). See Section [3C-1](#) for more information.

Construction Standard: Jurisdiction plumbing code; Jurisdiction plumbing permit required where applicable; SUDAS Standard Specifications, General Supplemental Specifications, and Supplemental Specifications.

Figure 1B-1.01: Example of Sanitary Sewer Service (REPLACE)

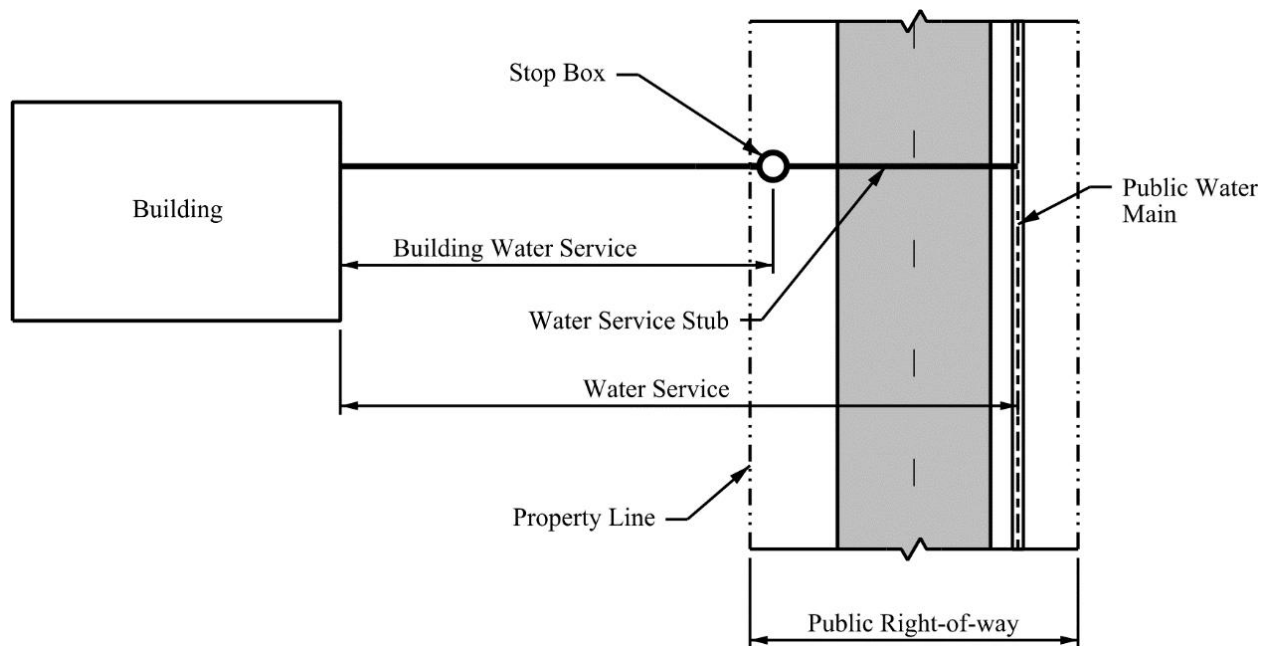


B. Water Mains

2. Water Service Stub: (REPLACE) The water service stub is comprised of the piping and related appurtenances including the corporation, installed from the public water main to the stop box. Water service stubs shall be in accordance with Title 16, Chapter 3, Article C ([16-3C-3](#)) of the City Code of Iowa City, Iowa. For a schematic drawing of the water service stub, see [Figure 1B-1.03](#). See Section [4C-1](#) for more information.

Construction Standard: SUDAS Standard Specifications, General Supplemental Specifications, and Supplemental Specifications, and Jurisdiction plumbing permit required where applicable.

Figure 1B-1.03: Example of Water Service (REPLACE)

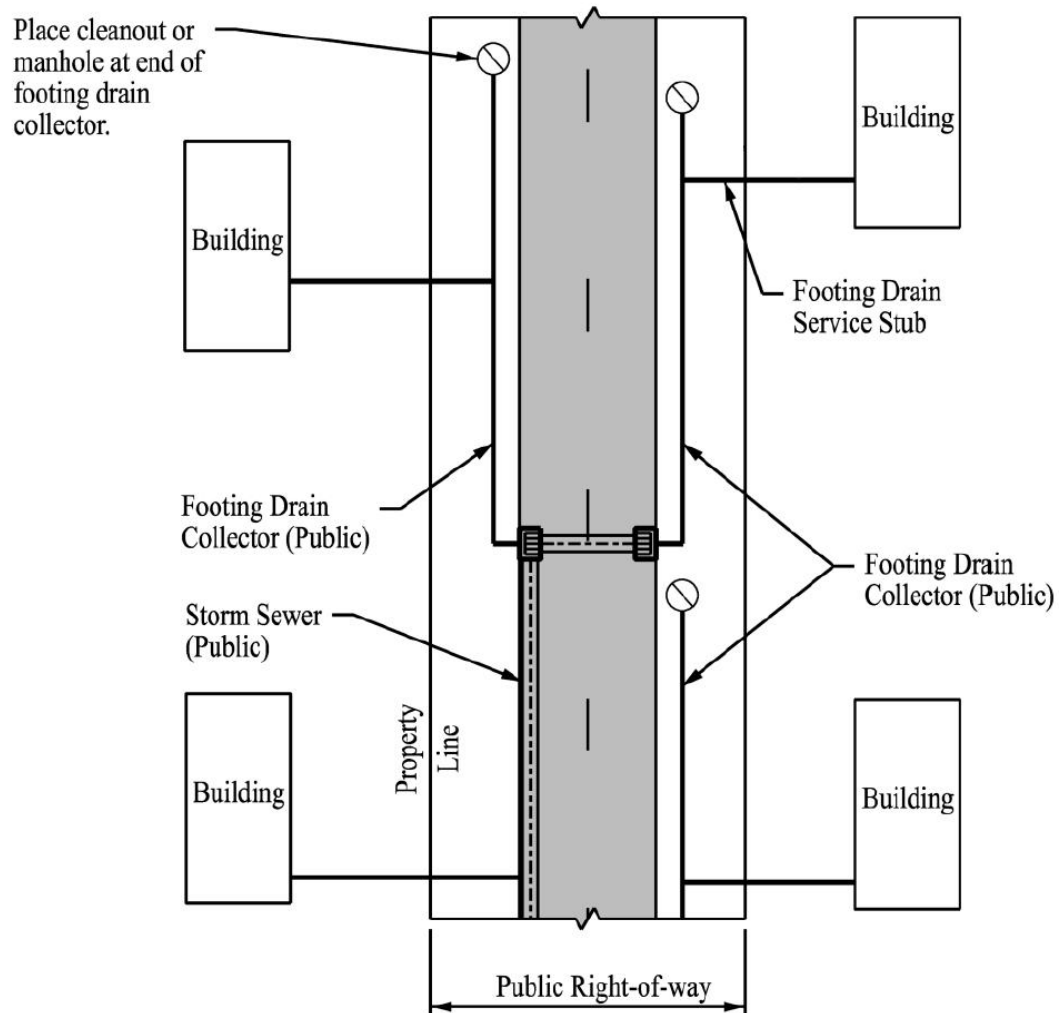


C. Drainage Facilities

3. Footing Drains: (ADD) Roof drains, downspouts, and area drains cannot be connected to a footing drain collector (including those for sump pumps).

4. Footing Drain Service Stub: (REPLACE) A footing drain service stub extends from the storm sewer or footing drain collector way to a point 10 feet beyond the right-of-way line or the outer utility easement line, whichever is greater. The footing drain service stub may be constructed in conjunction with the storm sewer and capped until the building footing drain is constructed. Roof drains, downspouts, and area drains cannot be connected to a footing drain service (including those for sump pumps). Check with the local jurisdiction to determine if the footing drain service stub is public or private and the exact permit and construction requirements. For location of footing drain service stubs, see [Figure 1B-1.05](#).

Construction Standard: SUDAS Standard Specifications, General Supplemental Specifications, and Supplemental Specifications; Jurisdiction plumbing code; Jurisdiction plumbing permit may be required where applicable.

Figure 1B-1.05: Example of Footing Drain (REPLACE)

1C-1 – Submittal Procedures

(ADD) Particular requirements for concept plan and plat submissions to the City of Iowa City can be found in [Title 15, Chapter 2](#) and [Title 18, Chapter 2](#) of the City Code of Iowa City, Iowa. Below is a discussion of submittal procedures. Where there are discrepancies between the [City of Iowa City Code](#), the SUDAS Design Manual, and the Design Supplement, the [City of Iowa City Code](#) shall prevail.

1D-1 – Detailed Plans for Construction of Public Improvements

A. Public Improvement Plan Sheet Requirements

(ADD) 3D files must be requested from the Engineer.

2. **Plan Sheet Material:** hard copies will be distributed according to the Project Manual. Electronical copies of the Project Manual will be provided in pdf format and at the direction of the Engineer.
3. **Plan Sheet Size:** 11 x 17 is preferred; 22 x 34 is acceptable if approved by the Engineer.
4. **Title Sheet:** (ADD) Jurisdiction Authority is the City Engineer unless otherwise directed by the Engineer.

1D-2 – Items to be Specified on Plans or in Contract Documents

Section 2010 – Earthwork, Subgrade, and Subbase

- (ADD) 2010, 1.08, F, 3 Specify when foundation materials for not Macadam Stone Base (Iowa DOT Gradation #13).
- (ADD) 2010, 3.03, B, 5 Specify when pavement removal differs from the standard.

Section 3010 – Trench Excavation and Backfill

- (ADD) 3010, 2.06, E Specify if cellular concrete is to be used.
- (ADD) Figure 3010.201 Specify when over-excavation and foundation stone will be required.

Section 4010 – Sanitary Sewers

- 4010, 1.08, E (REPLACE) Specify the distance beyond the right-of-way line or the outer utility easement line, whichever is greater, that the sanitary sewer service stub is to extend, if other than 10 feet.
- ~~(DELETE) 4010, 2.01, A, 1 For solid wall PVC pipe, 8 inch to 15 inch, specify if SDR 35 may be used.~~
- ~~(DELETE) 4010, 2.01, C, 2, a For corrugated PVC, 8 inch to 10 inch, specify if a minimum pipe stiffness of 46psi may be used.~~
- 4010, 3.06, C (REPLACE) Specify the distance beyond the right-of-way line or the outer utility easement line, whichever is greater, that the sanitary sewer service stub is to extend, if other than 10 feet.
- 4010, 3.08, B, 2 (REPLACE) Specify when to fill an abandoned sanitary sewer with flowable mortar, foamed cellular concrete, cellular concrete, or CLSM.

Section 4020 – Storm Sewers

- ~~(DELETE) 4020, 2.01, A, 3 Specify when to use a rubber O-ring or profile gasket in lieu of a tongue and groove joint wrapped with engineering fabric.~~
- (ADD) 4020, 2.01, A, 4 Specify when and where tongue and groove joints may be used in lieu of bell and spigot joints.

- 4020, 2.01, B, 3 (REPLACE) Specify when either tongue and groove joints with butyl rope and joint wrapped with engineering fabric or a rubber O-ring or profile gasket.
- ~~(DELETE) 4020, 2.01, C, 3 Specify when to use a rubber O-ring or profile gasket in lieu of a tongue and groove joint wrapped with engineering fabric.~~
- (ADD) 4020, 2.01, C, 4 Specify when and where tongue and groove joints may be used.
- (ADD) 4020, 2.01, D, 4 Specify when either bell and spigot joints or tongue and groove joints with butyl rope and joint wrapped with engineering fabric.
- (ADD) 4020, 2.01, M Specify when and where the use of bituminous joint primer material is approved.
- (ADD) 4020, 3.05, A, 3 Specify the use of pipe joint wrapping if authorized for use.

Section 4040 – Subdrains and Footing Drain Collectors

- 4040, 1.08, E (REPLACE) Specify the distance beyond the right-of-way line or the outer utility easement line, whichever is greater, that the storm sewer service stub is to extend, if other than 10 feet.
- (ADD) 4040, 2.01 Specify when an alternate material, other than HDPE pipe, is used.
- (ADD) 4040, 2.02 Specify when an alternate material, other than HDPE pipe, is used.
- (ADD) 4040, 2.03 Specify when an alternate material, other than HDPE pipe, is used.
- 4040, 3.03, C (REPLACE) Specify the distance beyond the right-of-way line or the outer utility easement line, whichever is greater, that the footing drain service stub is to extend, if other than 10 feet.

Section 4050 – Pipe Rehabilitation

- ~~(DELETE) 4050, 1.07, B Specify if water will not be provided for cleaning and installation of cured-in-place pipe by the Jurisdiction at no cost.~~
- (ADD) 4050, 1.08.H.1.c Specify if a pipe lining is to be used.
- (ADD) 4050, 1.08.H.2.c Specify if a pipe lining is to be used.

Section 4060 – Cleaning, Inspection, and Testing of Sewers

- ~~(DELETE) 4060, 3.02, A, 1 Specify whenever video inspection of storm sewers is not desired.~~

Section 5010 – Pipe and Fittings

- (ADD) 5010, 1.07, B Specify when reuse of materials is allowed and what specific materials can be reused.

(DELETE) 5010, 2.04, C	Specify when thrust blocks will be used for pipe sizes greater than 16 inches in diameter.
5010, 3.01, A, 8	(REPLACE) Specify the installation of concrete thrust blocks and restrained joints as designed.
5010, 3.05, E	(REPLACE) Specify the locations to install ground rods if other than adjacent to connections to existing pipe in native, undisturbed soil.
(ADD) 5010, 3.05, J	Specify the locations where exposed wire is to be mended.
(ADD) 5010, 3.09, B, 12	Specify if a backside or top of water main tap if authorized for use.
(ADD) 5010, 3.09, B, 13	Specify tee fittings in lieu of a tap if authorized for critical importance to the community customers.
(ADD) 5010, 3.09, C, 4, a	Specify Type K Cooper for the entire service line if within 500 feet of a leaking underground storage tank (LUST).
(ADD) 5010, 3.09, C, 4, b	Specify tracer wire if nonconductive material is used.
(ADD) 5010, 3.09, D, 3	Specify curb stop location when the curb stop cannot be placed between the back of sidewalk and the right-of-way line.
(ADD) 5010, 3.09, D, 6	Specify self-draining curb stops if authorized for use.
(ADD) 5010, 3.09, E, 11	Specify is a strainer is to be used.

Section 5011 – Fusible PVC and HDPE Pipe

5011, 2.01, A, 1, b	(REPLACE) Specify the minimum wall thickness for fusible PVC pipe sizes over 12 inches.
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Section 5020 – Valves, Fire Hydrants, and Appurtenances

(ADD) 5020, 1.07, B	Specify if samples of water main and its appurtenances are to be retained by the Jurisdiction.
(ADD) 5020, 1.07, C	Specify when reuse of materials is allowed and what specific materials can be reused.
(ADD) 5020, 1.07, D	Specify when and where the temporary use of flushing devices is approved.
(DELETE) 5020, 1.08, J, 3	Specify if the fire hydrant assembly is to be delivered to the Contracting Authority.
(DELETE) 5020, 1.08, L, 3	Specify if the valve box is to be delivered to the Contracting Authority.
(DELETE) 5020, 2.02, B	Specify allowable manufacturer(s) of fire hydrant assemblies.

- 5020, 2.02, C, 5 (REPLACE) Specify whenever the opening direction for fire hydrant assemblies is counterclockwise.
- ~~(DELETE) 5020, 2.02, C, 6 For fire hydrant assemblies, specify the operating nut, pumper nozzle, nozzle threads, and main valve nominal opening sizes.~~
- ~~(DELETE) 5020, 2.03, B, 2 Specify the allowable manufacturer(s) for valve boxes.~~
- 5020, 3.03, A (REPLACE) Specify where to place anchor tee, hydrant, and hydrant auxiliary valves. Specify if an auxiliary valve is approved for installation in the sidewalk or roadway.

Section 6010 – Structures for Sanitary and Storm Sewers

- (ADD) 6010, 1.08, B, 3 Specify precast units when used.
- (ADD) 6010, 1.08, H, 1, c Specify if the manhole does not need to be removed completely.
- (ADD) 6010, 1.08, H, 2, c Specify if the intake does not need to be removed completely.
- ~~(DELETE) 6010, 2.05, B, 2, b Specify the use of engineering fabric.~~
- 6010, 2.11, B, 1 (REPLACE) Specify if sanitary sewer manhole exterior is approved and coating is to be included.
- (ADD) 6010, 2.11, C, 1 Specify when and where sanitary sewer manhole lining is approved.
- ~~(DELETE) 6010, 3.05, C, 3 Specify whenever a knockout opening is allowed in lieu of a cored opening.~~
- (ADD) 6010, 3.06, B Specify exterior drop connections only if approved by the Engineer.
- 6010, 3.07, B, 3 (REPLACE) Specify when to fill abandoned pipe line with flowable mortar, controlled low strength material, or cellular concrete.

Section 6020 – Rehabilitation of Existing Manholes

- (ADD) 6020, 1.08, E, 3 Specify if riser sections and casting is to be salvaged to the Jurisdiction.
- ~~(DELETE) 6020, 3.01, C Specify when the use of a urethane chimney seal is allowed.~~

Section 7010 – Portland Cement Concrete Pavement

- (ADD) 7010, 1.07, B Specify when pavement removal differs from the standard.
- (ADD) 7010, 1.08, N, 3 Specify when cold weather protection is included as a separate item or approval of the Engineer is given for a different method to be used.
- (ADD) 7010, 3.01, C, 1, b Specify locations for hand placement of full width street paving if hand placement is approved.
- (ADD) 7010, 3.02, C, 3 Specify locations of boxouts if they are approved.

(ADD) 7010, 3.04, A, 1 Specify when cold weather protection is included as a separate item or approval of the Engineer is given for a different method to be used.

Section 7020 – Asphalt Pavement

(ADD) 7020, 1.08, M, 3 Specify when cold weather protection is included as a separate item or approval of the Engineer is given for a different method to be used.

Section 7021 – Hot Mix Asphalt Overlays

(ADD) 7021, 2.01 Specify when overlay mix and thickness differs from the standard mix.

Section 7030 – Sidewalks, Shared Use Paths, and Driveways

(ADD) 7030, 1.07, B Specify when pavement removal differs from the standard.

(ADD) 7030, 3.01, G Specify when pavement removal differs from the standard.

(ADD) 7030, 3.04, F, 6 Specify the approved locations where epoxy coated rebar is not to be used.

~~(DELETE) Figure 7030.102 Specify the radius for commercial and industrial driveways. Specify the driveway width. Specify when a 5 foot sidewalk is to be constructed through the driveway.~~

Section 7040 – Pavement Rehabilitation

(ADD) 7040, 1.07, A Specify approved locations where composite pavement will not be replaced.

~~(DELETE) 7040, 1.08, K, 3 Specify the use of waterproof bonding material with pavement core replacement.~~

(ADD) 7040, 3.01, H Specify when pavement removal differs from the standard.

(ADD) 7040, 3.02, A, 3 Specify approved locations where wet sawing will not be used.

(ADD) 7040, 3.01, H Specify when pavement removal differs from standard.

(ADD) 7040, 3.02, A, 3 Specify when an alternate method, other than wet sawing, is approved for use.

Section 8010 – Traffic Signals

~~(DELETE) 8010, 2.01, A, 1, a Specify if cable hooks are NOT required.~~

(ADD) 8010, 2.01, C, 4 Specify approved locations where outdoor rated cable will not be used.

(ADD) 8010, 2.02, F, 2 Specify approved locations where radar detection will be used instead of video detection.

~~(DELETE) 8010, 2.05, A, 1, a Specify the color of vehicle traffic signal head assembly housing.~~

- ~~(DELETE) 8010, 2.05, A, 6, c — Specify the use of high visibility reflective tape on the backplate.~~
- ~~(DELETE) 8010, 2.05, B, 1, a — Specify the color of pedestrian traffic signal head assembly housing.~~
- (ADD) 8010, 2.05, D, 1 Specify any approved variance from the standard pedestrian push button post.
- ~~(DELETE) 8010, 2.05, D, 1, a — Specify the vertical pole height of the traffic signal pedestal pole.~~
- ~~(DELETE) 8010, 3.01, D, 1 — Specify the foundation excavation size, shape, and depth.~~
- (ADD) 8010, 3.01, D, 4 Show on the plans removal of existing mast arm footings, anchor bolts, and conduits.
- (ADD) 8010, 3.02, E Specify radar detection system installation requirements beyond the manufacturer's recommendations.

Section 8020 – Pavement Markings

- (ADD) 8020, 1.07, B Specify when width of pavement markings differs from standard.
- (ADD) 8020, 2.01, B, 2 Specify when the type of paint differs from the standard.
- (ADD) 8020, 3.01, C, 4 Specify locations where grinding is approved.
- (ADD) 8020, 3.02, H, 2 Specify approved locations where water blasting will not be used.

Section 8030 – Temporary Traffic Control

- (ADD) 8020, 2.06, E Specify locations or circumstances where flaggers are required beyond the standard requirements.

Section 9030 – Plant Material and Planting

- (ADD) 9030, 2.06 Specify when tree protection differs from the standard.
- ~~(DELETE) 9030, 3.09.A — Specify when tree wrapping is required.~~
- ~~(DELETE) Figure 9030.102 — Specify when tree wrapping is required.~~

Section 9072 – Combined Concrete Sidewalk and Retaining Wall

- (ADD) Figure 9072.301 Specify sidewalk width, cross slope, parking grading slope, and property slope.

1D-3 – Incidental or Included Items

2010, 1.08, F, 3	<u>Below Grade Excavation (Core Out)</u> (REPLACE) Equipment, tools, labor, disposal of unsuitable materials, dewatering, drying, furnishing, and placement of foundation materials (Macadam Stone Base, Iowa DOT Gradation #13) unless otherwise approved by the Engineer, compaction and finishing of the excavated area, and all incidental work as may be required.
2010, 1.08, K, 1, c	<u>Removal of Structures</u> (REPLACE) Trench excavation, dewatering, removal and disposal of existing structure, furnishing, backfilling, and compacting backfill material in the resulting void, and proper disposal of existing structures. Backfill shall be Class II Material (see Section 3010, 2.03.A – Class II Material in Supplemental Specifications). Backfill material will not be measured separately but shall be considered incidental.
3010, 1.08, A	<u>General</u> (REPLACE) <ol style="list-style-type: none">1. Standard trench excavation.2. Removal and disposal of unsuitable backfill material encountered during standard trench excavation.3. Removal and disposal of abandoned private utilities encountered during trench excavation.4. Furnishing, placing, and compacting granular bedding material.5. Furnishing, placing and compacting backfill material.6. Dewatering including, but not limited to, all equipment such as generators, pumps, rock for sump pits, discharge piping, and any extra excavation needed to facilitate dewatering according to stormwater regulations, as applicable.7. Sheet piling, shoring, and bracing.8. Adjusting the moisture content of excavated backfill material to the range specified for placement and compaction.9. Temporary support for existing water, sewer, gas, telephone, electric, and other utilities or services that cross the trench.
4010, 1.08, H, 3	<u>Removal of Sanitary Sewer</u> (REPLACE) Trench excavation, removal, disposal, and capping of pipe (if specified); and furnishing, placing, and compacting backfill material.
4020, 1.08, D, 3	<u>Removal of Storm Sewer</u> (REPLACE) Trench excavation, removal, disposal, and capping of pipe (if specified); and furnishing, placing, and compacting backfill material.
4020, 1.08, F, 3	<u>Storm Sewer Abandonment, Plug</u> (REPLACE) Trench excavation (if necessary), cutting pipe (if required), furnishing and placing plug materials, and furnishing, placing, and compacting backfill material.
4020, 1.08, G, 3	<u>Storm Sewer Abandonment, Fill and Plug</u>

	(REPLACE) Trench excavation (if necessary); cutting pipe (if required); furnishing and placing pipe fill materials; furnishing and placing plug materials; and furnishing, placing, and compacting bedding and backfill material.
4040, 1.08, E, 3	<p><u>Storm Sewer Service Stub</u></p> <p>(REPLACE) Trench excavation, furnishing, placing, and compacting bedding and backfill material, tap, fittings, and plugs.</p>
4050, A, 2, c	<p><u>Pre-Rehabilitation Cleaning and Inspection</u></p> <p>(REPLACE) Pre-cleaning CCTV inspection, sewer cleaning, debris removal and transport, post cleaning CCTV inspection for Engineer review, identification of all pipe damages, identification and logging of active and inactive service taps, and identification of all protruding service taps. The unit price also includes disposal and associated costs for all debris removed from sewer.</p>
4050, 1.08, H, 1, c	<p><u>Spot Repairs by Pipe Replacement (by count)</u></p> <p>(REPLACE) Trench excavation, dewatering, bypass pumping, uncovering and removing existing pipe, furnishing and installing the replacement pipe, pipe lining (if specified), furnishing, placing, and compacting bedding and backfill material for replacement pipe, wyes and other fittings, pipe joints, pipe connections, testing, and inspection.</p>
4050, 1.08, H, 2, c	<p><u>Spot Repairs by Pipe Replacement (by linear foot)</u></p> <p>(REPLACE) Trench excavation, dewatering, bypass pumping, uncovering and removing existing pipe, furnishing and installing the replacement pipe, pipe lining (if specified), furnishing, placing, and compacting bedding and backfill material for replacement pipe, wyes and other fittings, pipe joints, pipe connections, testing, and inspection.</p>
(ADD) 5010, 1.08, D, 1, c	<p><u>Water Service Stub, from Water Main to Stop Box, by Each</u></p> <p>water service corporation; service pipe; curb stop; stop box; trench excavation; dewatering; furnishing and installing pipe; furnishing, placing, and compacting bedding and backfill material; and installation of tracer wire system for non-metallic service pipe.</p>
(ADD) 5010, 1.08, D, 2, c	<p><u>Water Service, from Water Main into Building, by Address</u></p> <p>water service corporation; service pipe; curb stop; stop box; building meter(s); piping inside the building associated with the meter; trench excavation; dewatering; furnishing and installing pipe; furnishing, placing, and compacting bedding and backfill material; installation of tracer wire system for non-metallic service pipe; and extra tracer wire as required in the figures in this section.</p>
(DELETE) 5010, 1.08, D, 3	<p><u>Water Service Stub (by each)</u></p> <p>Water service corporation; service pipe; curb stop; stop box; trench excavation; dewatering; furnishing and installing pipe; furnishing, placing, and compacting bedding and backfill material; and installation of tracer wire system for nonmetallic service pipe.</p>

5020, 1.08, C, 3	<p><u>Fire Hydrant Assembly</u></p> <p>(REPLACE) The fire hydrant, barrel extensions sufficient to achieve proper bury depth of anchoring pipe and height of fire hydrant above finished grade, and components to connect the fire hydrant to the water main, including anchoring pipe, fittings (including tees on the main), thrust blocks, solid concrete block, porous backfill material, and fire hydrant gate valve and appurtenances, except tapping valve assembly if used.</p>
(DELETE) 5020, 1.08, D, 3	<p><u>Alternate Fire Hydrant Assembly</u></p> <p>The fire hydrant, barrel extensions sufficient to achieve proper bury depth of anchoring pipe and height of fire hydrant above finished grade, and components to connect the fire hydrant to the water main, including anchoring pipes, 90 degree bend; fittings, thrust blocks, pea gravel or porous backfill material, and fire hydrant gate valve and appurtenances, except tapping valve assembly if used.</p>
5020, 1.08, E, 3	<p>(ADD) This item is used for phased water main installation and not for testing and disinfection, which is incidental to the installation of the water main pipe, fittings, and other appurtenances.</p>
5020, 1.08, F	<p>(REPLACE) <u>Valve Box Adjustment, Minor</u></p> <p>Measurement and payment for minor adjustment of an existing valve box by centering, raising, or lowering the adjustable valve box is incidental.</p>
5020, 1.08, J, 3	<p><u>Fire Hydrant Assembly Removal</u></p> <p>(REPLACE) Excavation, removal of the fire hydrant; hydrant valve, thrust block; delivery of the fire hydrant assembly to the Jurisdiction, removal of the tee; restoration of the pipe, backfill; compaction; and surface restoration to match the surrounding grade.</p>
5020, 1.08, L, 3	<p><u>Valve Box Removal</u></p> <p>(REPLACE) Excavation, removal of each valve box and lid, delivery of the valve box and lid to the Jurisdiction, backfill, compaction, and surface restoration to match the surrounding area.</p>
5030, 1.08	<p>(ADD) Incidental cost includes, but is not limited to, furnishing all material, labor, and equipment to disinfect the water main, hydrants and appurtenances; to re-disinfect if required; trace and adjust valve boxes and hydrants to grade, plumb, and centered; and to perform the hydrostatic testing of the completed water main. Equipment includes, but is not limited to, temporary flushing devices, corporation stops, copper tubing, hoses, pumps and gauges required for hydrostatic testing and all equipment and material necessary to direct the chlorinated water to a proper disposal location.</p>
6010, 1.08, A, 3	<p><u>Manhole</u></p> <p>(REPLACE) Excavation, furnishing and installing pipe, lining (if specified), furnishing, placing, and compacting bedding and backfill material, base, structural concrete, reinforcing steel, precast units (if used), concrete fillets, pipe connections, infiltration barriers (required for both sanitary and storm sewer manholes), castings, and adjustment rings.</p>

6010, 1.08, B, 3	<p><u>Intake</u></p> <p>(REPLACE) Excavation, furnishing and installing pipe, furnishing, placing, and compacting bedding and backfill material, base, structural concrete, reinforcing steel, precast units (if used), concrete fillets, pipe connections, infiltration barriers, castings, and adjustment rings; insert (throat); and boxout.</p>
6010, 1.08, E, 1, c	<p><u>Manhole Adjustment, Minor</u></p> <p>(REPLACE) Removing existing casting and existing adjustment rings, furnishing and installing adjustment rings, furnishing and installing new casting, and installing new infiltration barrier (sanitary and storm sewer manholes).</p>
6010, 1.08, E, 2, c	<p><u>Intake Adjustment, Minor</u></p> <p>(REPLACE) Removing existing casting and existing adjustment rings, furnishing and installing adjustment rings, furnishing and installing new casting, and installing new infiltration barrier.</p>
6010, 1.08, F, 1, c	<p><u>Manhole Adjustment, Major</u></p> <p>(REPLACE) Removal of existing casting, adjustment rings, top sections, and risers; excavation; concrete and reinforcing steel or precast sections; furnishing and installing new casting; installing new infiltration barrier (required for both sanitary and storm sewer manholes); furnishing, placing, and compacting bedding and backfill material, and compaction.</p>
6010, 1.08, F, 2, c	<p><u>Intake Adjustment, Major</u></p> <p>(REPLACE) Removal of existing casting, adjustment rings, top sections, and risers; excavation; concrete and reinforcing steel or precast sections; adjustment or replacement of intake insert (throat) and boxout; furnishing and installing new casting; installing new infiltration barrier; installing new watertight seal; furnishing, placing, and compacting bedding and backfill material; and compaction.</p>
6010, 1.08, G, 1, c	<p><u>Connection to Existing Manhole</u></p> <p>(REPLACE) Coring or cutting into the existing manhole, removal of existing fillet, pipe connections, replacement of fillet, grout, and waterstop.</p>
6010, 1.08, G, 2, c	<p><u>Connection to Existing Intake</u></p> <p>(REPLACE) Coring or cutting into the existing intake, removal of existing fillet, pipe connections, replacement of fillet, grout, and waterstop.</p>
6010, 1.08, H, 1, c	<p><u>Remove Manhole</u></p> <p>(REPLACE) Excavation; removal of casting, concrete, and reinforcement; disposal; capping or plugging pipes; filling remaining structure with flowable mortar; and furnishing, placing, and compacting backfill over structure to finished grade. The structure needs to be removed completely unless otherwise approved by the Engineer.</p>

- 6010, 1.08, H, 2, c Remove Intake
 (REPLACE) Excavation; removal of casting, concrete, intake insert (throat), and reinforcement; disposal; capping or plugging pipes; filling remaining structure with flowable mortar; and furnishing, placing, and compacting backfill over structure to finished grade. The structure needs to be removed completely unless otherwise approved by the Engineer.
- ~~(DELETE) 6020, 1.08, A, 2, c Molded Shield Sealant.~~
- ~~(DELETE) 6020, 1.08, A, 3, c Urethane Chimney Seal
~~Preparing the surface of the manhole and furnishing and applying primer and urethane chimney seal according to the manufacturer's requirements.~~~~
- 6020, 1.08, B, 3 In-situ Manhole Replacement, Cast-in-place Concrete
 (REPLACE) Handling of sewer flows as required to properly complete the installation, invert overlay as recommended by the manufacturer, replacement of existing casting with a new casting, installing new infiltration barrier (required for both sanitary and storm sewer manholes), and testing the manhole upon completion.
- 6020, 1.08, C, 3 In-situ Manhole Replacement, Cast-in-place Concrete with Plastic Liner
 (REPLACE) Handling of sewer flows as required to properly complete the installation, invert overlay as recommended by the manufacturer, replacement of existing casting with a new casting, installing new infiltration barrier (required for both sanitary and storm sewer manholes), sealing at the frame and cover, sealing pipe penetrations as recommended by the manufacturer, and testing the manhole upon completion.
- 6020, 1.08, D, 3 Manhole Lining with Centrifugally Cast Cementitious Mortar Liner with Epoxy Seal
 (REPLACE) Handling of sewer flows during lining operations as required to properly complete the installation, replacement of existing casting with a new casting, and installing new infiltration barrier (required for both sanitary and storm sewer manholes).
- (ADD) 6020, 1.08, E, 3 Abandonment of Manhole for Future Abandonment of Sewer Pipes
 Handling of sewer flows during installation as required to properly complete the installation; excavation; removal and disposal of riser sections and casting (unless salvaged to the Jurisdiction); furnishing and installing plug materials; furnishing and installing riser pipes into adjacent sewer pipes; concrete for filling the base riser section(s) of the manhole; and furnishing, placing, and compacting bedding and backfill material.
- 7010, 1.08, A, 3 Pavement, PCC
 (REPLACE) Final trimming of subgrade or subbase, integral curb, bars and reinforcement, joints and sealing, surface curing and pavement protection (cold weather protection according to Section 7010, 1.08, N),

	safety fencing, concrete for rigid headers, boxouts for fixtures, pavement smoothness testing, and quality control for stringless paving.
7010, 1.08, E, 3	<p><u>Curb and Gutter</u></p> <p>(REPLACE) Final subgrade/subbase preparation, bars and reinforcement, joints and sealing, surface curing and pavement protection (cold weather protection according to Section 7010, 1.08, N), and boxouts for fixtures.</p>
7010, 1.08, F, 3	<p><u>Beam Curb</u></p> <p>(REPLACE) Final subgrade/subbase preparation, bars and reinforcement, joints and sealing, surface curing and pavement protection (cold weather protection according to Section 7010, 1.08, N), and boxouts for fixtures.</p>
7010, 1.08, G, 3	<p><u>Concrete Median</u></p> <p>(REPLACE) Final subgrade/subbase preparation, bars and reinforcement, joints and sealing, surface curing and pavement protection (cold weather protection according to Section 7010, 1.08, N), and boxouts for fixtures.</p>
7010, 1.08, K, 3	<p><u>PCC Pavement Widening</u></p> <p>(REPLACE) Final subgrade/subbase preparation, integral curb, bars and reinforcement, joints and sealing, surface curing and pavement protection (cold weather protection according to Section 7010, 1.08, N), safety fencing, concrete for rigid headers, boxouts for fixtures, and pavement smoothness.</p>
7010, 1.08, N, 2	<p>PCC Cold Weather Protection</p> <p>(ADD) Hot water and heated materials are incidental. Cold weather protection is incidental to pavement item unless otherwise included in the contract documents as a separate item or approved by the Engineer.</p>
(ADD) 7010, 1.08, O, 3	<p>Reinforcement for Storm Sewer Crossing</p> <p>Bars and reinforcement, ties, and supports.</p>
7020, 1.08, M, 3	<p><u>Asphalt Cold Weather Paving</u></p> <p>(REPLACE) All additional labor, materials, and equipment to supply and place the flexible pavement under the approved cold weather paving plan. Hot water and heated materials are incidental. Cold weather protection is incidental to pavement item unless otherwise included in the contract documents as a separate item or approved by the Engineer.</p>
7030, 1.08, C, 3	<p><u>Shared Use Path</u></p> <p>(REPLACE) Subgrade preparation, bars and reinforcement, jointing, sampling, slope and smoothness testing and correction, and testing.</p>
7030, 1.08, E, 3	<p><u>Sidewalk, PCC</u></p> <p>(REPLACE) Minor grade adjustments at driveways and other intersections, subgrade preparation, formwork, additional thickness at thickened edges, bars and reinforcement, jointing, sampling, slope and smoothness testing and correction, and testing.</p>

7030, 1.08, H, 1, c	<u>Driveway, Paved</u> (REPLACE) Excavation, subgrade preparation, bars and reinforcement, jointing, sampling, and testing.
(DELETE) 7040, 1.08, K	<u>Core Hole Cutting and Replacement</u> Cutting the core hole, vacuum excavation, furnishing and placing backfill material and pavement, or replacing the pavement core using waterproof bonding material, if specified.
(ADD) 9040, 1.08, Y, 3	<u>Erosion Control Mobilization</u> Movement of personnel, equipment, and supplies to and from the project site; adjustment of erosion controls, sedimentation controls, stabilization practices, and best management practices in the contract documents or the storm water pollution prevention plan; removal of accumulated sediment from erosion controls, sedimentation controls, stabilization practices, and best management practices in the contract documents or the storm water pollution prevention plan; maintenance of seeding or sodding.
(ADD) 9072, 1.08, D, 3	<u>Combined Concrete Curb and Sidewalk</u> Excavation; foundation preparation; furnishing and placing concrete and reinforcing steel; joint material; subdrain; porous backfill material; suitable backfill material; finishing disturbed areas; and shoring as necessary.

1D-4 – Bid Items

A. Standard Bid Items

(ADD) The following items should be added to or removed (strikethrough text) from the list of items already in the table within this section of the Design Manual:

Item No.	Item Description	Unit
2010-F	Below Grade Excavation (Core Out)	CY
5040-D	Water Service Stub, _____ (Type), _____ (Size)	EA
5010-D-1	Water Service Stub, from Water Main to Stop Box, by Each, _____ (Type), _____ (Size)	EA
5010-D-2	Water Service, from Water Main into Building, by Address	LS
5020-D	Alternate Fire Hydrant Assembly	EA
6020-A-2	Molded Shield	EA
6020-A-3	Urethane Chimney Seal	EA
6020-E	Abandonment of Manhole for Future Abandonment of Sewer Pipes	EA
7010-O	Reinforcement for Storm Sewer Crossing	SY
7040-K	Core Hole Cutting and Replacement	EA
9040-Y	Additional Erosion Control Mobilization	EA
9072-D	Combined Concrete Curb and Sidewalk	SY

1E-1 – Public Improvement Contracts

B. Contract Documents

(REPLACE) The Project Engineer should use the current version of the contract documents to prepare the Project Manual. The Project Manual is the bound documentary information prepared for bidding and constructing the Work. The list of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents within the Project Manual. The Project Manual is the basis for developing the Contract and Contract Documents.

The following sections are typically included in the contract documents:

0100 – Notice to Bidders and 0110 – Notice of Public Hearing

0200 – Instructions to Bidders

0400 – Proposal and 0405 – Bidder Status Form

0410 – Bid Bond Form

0500 – Contract

0510 – Performance, Payment, and Maintenance Bond

0520 – Contract Compliance

0530 – Wage Theft Policy

Certain sections are not included in the contract documents based on the estimated costs of construction as outlined in the City of Iowa City Purchasing Policy Manual. A template copy of the Project Manual must be obtained, at the beginning of each project, from the City of Iowa City Engineering Division.

1F-1 – Plans of Record

A. General

(ADD) Dates and as-built information should be recorded on the physical copies during construction, on the pdf set delivered to the jurisdiction after construction, on the Computer-Aided Design and Drafting (CADD) files, and in the metadata of the Geographic Information System (GIS) files. Show as-built elevations adjacent to the design elevation, if different.

All submitted spatial data shall meet the State of Iowa Minimum Standards for Land Surveying using the Iowa State Plane South coordinate system – NAD83 and units in US Foot.

The Engineer may waive or adjust these requirements to better facilitate the long-term maintenance and retainage of plans of record and the City GIS System.

B. Information to be Shown on Plans of Record**10. (ADD) CADD Files:**

- a. CADD Files should be in DWG or DXF format. The City's preference is a fully operational AutoCAD Civil 3D file in the latest file format.
- b. Submitted files will include all unique blocks; Civil 3D styles; databases used to build roadways, surfaces, or utilities; line types; plot styles; and associated files to allow the City to fully use and print the CADD files.
- c. Model space and paper space linework is to be included.
- d. Page setups will be included.
- e. The layering system in Section 1F-1, B.12 can be utilized as desired.
- f. Do not explode blocks or Civil 3D elements. Leave the file fully operational. For example, Civil 3D elements should operate normally as alignments, corridors, pipe networks, surfaces, etc.

11. (ADD) GIS Files:

- a. 5 to 10 random control points evenly distributed across the project area.
 - i. Less than 5 control points will be allowed if the control points are the surveyed locations of the property parcel corners for the project site.
 - ii. Control points shall be included in the GIS Control Point layer (CONTROL)
- b. All applicable features (i.e. valves, manholes, hydrants, pipes) and feature attributes shall be submitted in separate layers, and a metadata file submitted as a TXT or DOCX file per Section [1F-1, B.12](#). At minimum, attribute data for each feature should include unique identification, description, and accuracy fields. Sanitary and storm pipe attribute data should include upstream and downstream invert elevations and slope.
- c. Digital line work shall be geometrically continuous, and boundaries must be geometrically closed at intersections.
- d. Line work shall not include overlapping polygons or gaps.
- e. If data is submitted in phases, the data shall match between phases.
- f. Submit the GIS Plan as an ESRI Geodatabase or shapefile and a layer package along with associated files to the Jurisdictional Engineer for review and approval
 - i. GIS Plans will be reviewed for accuracy and completeness by the City within 30 days.
 - ii. If file size exceeds 10MB, consult with the Engineer for alternative methods for submission.
 - iii. The file shall be named for the subdivision or project with date (YYYYMMDD) and version (i.e. AmericanLegionRd_20210223_V1).
 - iv. If the submitted plan is non-conforming, the submitting party will be notified of the needed corrections and given 30 days to correct and resubmit.

12. (ADD) GIS Layers and Metadata

a. Layers:

Layer Name	Geometry Type	Feature Type	Layer Description	Survey
CURB_RAMPS	Point	Point	Curb ramps on sidewalks	Yes
CITY_FIBER_LINE_OH	Line	Line/ Polyline	Overhead cable communication lines	No
CITY_FIBER_LINE_UG	Line	Line/ Polyline	Underground cable communication lines	No
CONTROL	Point	Point	GIS site plan georeferencing control points (existing, surveyed, or GPS)	Yes
CONTROL_POINT_TEXT		Text	Control points	No
CITY_FIBER_HANDHOLE	Line	Line/ Polyline	Fiber communication lines	Yes
MONUMENT_CONTROL	Point	Point	Ground Control Points (existing, surveyed, or GPS), such as section corners, survey monuments, and geodetic control	Yes
SEWER_CLEANOUT	Point	Point	Sanitary sewer cleanout	Yes
SEWER_FORCE_MAIN	Line	Line/ Polyline	Sanitary sewer force main	No
SEWER_GREASE_TRAP	Point	Point	Grease traps	Yes
SEWER_LATERAL_LINE	Line	Line/ Polyline	Sanitary sewer lateral line	No
SEWER_LINE	Line	Line/ Polyline	Sanitary sewer gravity main	No
SEWER_MANHOLE	Point	Point	Sanitary sewer manholes	Yes
SEWER_PUMP_STATION	Point	Point	Sewer system pump stations	Yes
SEWER_TEXT		Text	Asset ID (Unique ID) text for sanitary sewer gravity mains, manholes and other sewer features	No
SEWER_VALVE	Point	Point	Sewer system and control valves	Yes
STORM_BMP	Point	Point	Hydrodynamic separator, forebay, underground detention, green roof, permeable pavement, water quality swale, etc.	No
STORM_INLETSOUTFALLS	Point	Point	Storm drain structure (catch basin, drop inlet, pedestal	Yes

Layer Name	Geometry Type	Feature Type	Layer Description	Survey
			inlet, weir inlet, yard inlet, junction box, outlets, etc.)	
STORM_CULVERT	Line	Line/ Polyline	Storm culvert	No
STORM_LINE	Line	Line/ Polyline	Storm water pipe, ditch, etc.	No
STORM_OCS	Point	Point	Weir wall, weir box, stand pipe	Yes
STORM_POND	Polygon	Line/ Polyline	Storm water detention/retention pond	No
STORM_TEXT		Text	Asset ID (Unique ID) text for STORM_CATCHBASIN, STORM_OCS, STORM_HEADWALL, and STORM_LINE	No
STREET_LIGHTS_POLE	Point	Point	Street lights	Yes
TRAFFIC_SIGN	Point	Point	Traffic signs	Yes
TRAFFIC_SIGN_TEXT	Point	Point	Text describing the traffic sign	No
WATER_CATHODIC_PROTECTION	Point	Point	Locations of cathodic protection testing stations	Yes
WATER_HYDRANT	Point	Point	Fire hydrant	Yes
WATER_LATERAL	Line	Line/ Polyline	General way a fire hydrant or other outlet (drinking fountain, yard hydrant, etc.) is attached to water main or service pipe.	No
WATER_FITTING	Point	Point	Water fittings – bend, cap, cross, offset, plug, reducer, sleeve tee, wye	No
WATER_LINE	Line	Line/ Polyline	Water lines	No
WATER_SERVICE	Line	Line/ Polyline	Water service lines	No
WATER_SERVICE_VALVE	Point	Point	Locations of stop boxes	Yes
WATER_SERVICE_CONNECTION	Point	Point	Locations of water corps (taps) onto the drinking water distribution system – tapping sleeve, saddle, tee.	No
WATER_TRACER_WIRE_BOX	Point	Point	Tracer wire terminal boxes and daylights	Yes
WATER_VALVE	Point	Point	Water system valves– includes auxiliary, gate, butterfly, and ball. Water control valves – altitude, air gap, air release, double check, pressure reducing RPZ, single check, blow-off, inflow	Yes

CITY_CABLE_LINE_OH		STORM_LINE	
CITY_CABLE_LINE_UG		STORM_OCS	
CITY_FIBER_HANDHOLE		STORM_POND	
CURB_RAMPS		STORM_TEXT	
SEWER_FORCE_MAIN		STREET_LIGHTS	
SEWER_GREASE_TRAP		TRAFFIC_SIGN	
SEWER_LATERAL_LINE		TRAFFIC_SIGN_TEXT	
SEWER_LINE		WATER_CATHODIC_PROTECTION	
SEWER_MANHOLE		WATER_HYDRANT	
SEWER_PUMP_STATION		WATER_LATERAL	
SEWER_TEXT		WATER_FITTING	
SEWER_VALVE		WATER_LINE	
SEWER_CLEANOUT		WATER_SERVICE	
		WATER_SERVICE_VALVE	
		WATER_SERVICE_CONNECITON	
		WATER_TRACER_WIRE_BOX	
		WATER_VALVE	

CHAPTER 2 -

Stormwater

2A-1 – General Information

C. Conditions

3. (ADD) As much as possible, locate all stormwater conveyance features and/or facilities on a single parcel to simplify the identification of ownership and maintenance responsibility of the feature or facility. These also may be located on a platted outparcel or common/association property such that the responsibilities may be distributed to all benefited property owners.

A detailed maintenance plan is required, which identifies inspection and maintenance procedures to make sure the long-term function of the facilities. The plan shall identify the components of the stormwater conveyance system requiring maintenance, equipment, and skills necessary for maintenance and the frequency of inspection and maintenance. The City will determine the necessity for a recorded agreement with the property owner or association at the time of approval of the site plan or final plat submittal. Maintenance requirements shall comply with [Section 2G-1 – General Information for Detention Practices](#), F, 4.

D. Unified Sizing Criteria

(ADD) This section applies to all land disturbing activities greater than one acre or part of a larger common plan of development and all applicants for major site plans, as defined in Title 18, Chapter 1, Article 2.C ([18-1-2.C](#)) of the City Code of Iowa City. Sites with less than 5,000 square feet of additional impervious area are exempt. The recommended criteria in Table 2A-1.01 will be followed. Any deviations from these criteria must be approved by the Engineer.

2A-4 – Project Drainage Report

C. Contents

8. Appendix:

a. Drawings:

- 1) (REPLACE) A preliminary plat (pre-and post-topography) may be used to show the proposed development. Title 15, Chapter 2, Article 2.B.1 ([15-2-2.B.1](#)) of the City Code of Iowa City, Iowa requires, “*The preliminary plat shall be drawn to the scale of one inch to fifty feet (1" = 50'); however, if the resultant drawing would be larger than twenty four inches by thirty six inches (24" x 36"), the plat shall be submitted at a scale of one inch to one hundred feet (1" = 100').*” Drawings no larger than 24 inches by 36 inches should be inserted in 8 1/2 inch by 11 inch sleeves in the back of the bound report. The plat is to show street layout and/or building location on a contour interval not to exceed 2 feet. The map must show onsite and offsite conditions. Label flow patterns used to determine times of concentration. Additional requirements for a preliminary plat are included in [15-2-2](#) of the City Code of Iowa City, Iowa.

9. Recommendations, Deviations, and Mitigation

The report will include a summary of recommendations for how the unified sizing criteria are met for the proposed storm water management. Reasonable effort to meet the criteria in this section must be made. Where the unified sizing criteria is not met by the proposed design, the

report will explain the recommendations of the project engineer, deviations from the required criteria, and mitigation steps to be taken based on the deviations.

2C-3 – Intake Design and Spacing

C. Intake Types

(ADD) All intakes shall be curb opening types unless approved by the Jurisdiction. Large box intakes shall be used unless otherwise approved by the Jurisdiction. The preferred intake is the SW-510, Double Open-throat Curb Intake, Large Box [see [Figure 6010.510 \(SW-510\)](#) in the SUDAS Standard Specifications].

G. Storm Sewer Structure Requirements

1. Manholes or Intakes:

- e. (ADD) Epoxy coated steel should be used in storm sewer structures.
- f. (ADD) When a new storm sewer is connecting to an existing sewer, this should be done at a structure only. No blind connections are allowed. The new connection to an existing structure should not compromise the integrity of the existing structure. The Project Engineer is expected to evaluate this. The new hole into the existing structure should be core drilled.

2. Openings:

- b. **Special:** (REPLACE) For square or rectangular manholes, the manhole openings should be over the centerline of the pipes on the outlet end of the structure. The distance from the centerline of the manhole opening to the face of the inside manhole wall should not exceed 30 inches to better facilitate video inspection and maintenance equipment. This may require more than one manhole opening.

- 6. **Invert Drop:** (ADD) For same sized pipes with a change in alignment of greater than 45 degrees, or the junction of two pipes, the drop should be 0.2 feet. For the same sized pipe with a junction of three or more pipes, the drop should be 0.3 feet.

2D-1 – General Information for Storm Sewer Design

B. Location of Storm Sewers

1. Storm Sewers in street Right-of-way:

- c. (REPLACE) Storm sewers in the street right-of-way should be concrete pipe to prevent utility cuts through the pipe. This includes storm sewer service stubs equal to or greater than 12 inches in diameter, extended 10 feet beyond the right-of-way line or the outer utility easement line, whichever is greater.
- d. (DELETE) ~~If a type of flexible pipe is approved for use by the Engineer, it is important to take steps to protect the integrity of the trench backfill since the pipe depends on the backfill envelope for its strength. The pipe can be damaged if the backfill is disturbed.~~

2. **Public Storm Sewers Outside of Street Right-of-way but within Public Easement:** (REPLACE) Storm sewers outside of the street right-of-way will be placed in a public storm sewer easement. Public storm sewer easements should have a minimum width of 15 feet or two times the depth of the sewer, rounded to the nearest 5 feet, whichever is greater. Additional width may be required by the Engineer to make sure proper access is available for maintenance purposes. When determining the width of the easement, consideration needs to be given to placement of excavated materials for the repair of the pipe.
 - a. Storm sewer outlets should be reinforced concrete pipe (RCP) unless otherwise approved by the Jurisdiction.
 - b. Flexible pipe and CMP may not be used for public storm sewers unless otherwise approved by the Jurisdiction.
 - c. Storm sewer along a side property line should run the length of the property line and outlet past the rear property line to a receiving drainageway.

C. Pipe Materials

1. **Storm Sewer Pipes:** (REPLACE) All public storm sewer pipes shall be RCP unless otherwise approved by the Jurisdiction.

2E-1 – General Information for Culvert Design

E. Design Considerations

16. (ADD) **Safety Grates:** Project Engineer shall consider safety grates on culverts.

2G-1 – General Information for Detention Practices

A. Introduction

5. (ADD) Compensating storage is covered in Title 16, Chapter 3, Article G ([16-3G-6.D](#)) of the City Code of Iowa City, Iowa.

F. Detention Facilities Requirements

1. Earthen Detention:

- f. (ADD) Provide subdrains in accordance with Specifications [Section 4040](#).

CHAPTER 3 -

Sanitary Sewers

3C-1 – Facility Design

L. Manholes

5. Minimum Manhole Drop:

- a. (REPLACE) For same sized pipe with a change in alignment – 0 to 45 degrees – 0.10 feet
- b. (REPLACE) For same sized pipe with a change in alignment across manhole – greater than 45 degrees – 0.2 feet
- c. (ADD) For a junction of two same sized inflow pipes – 0.2 feet
- d. (ADD) For a junction of three or more same sized inflow pipes – 0.3 feet

8. **Manhole Frames and Covers:** (ADD) Covers shall be gasketed in all paved areas.

9. **Manhole Coatings:** (ADD) Coatings shall be used in areas with high groundwater.

3D-1 – Pipe and Manhole Materials

Table 3D-1.01: Sanitary Sewer Pipe Materials (ADD):

Typical Application	Pipe Material	Size Range	Standard	Thickness Class (minimum)	Pipe Stiffness (minimum)	Joints
Trenchless Construction on Gravity Flow or Force Main	Solid Wall PVC	8" to 15"	ASTM D 3034 ASTM F 477 ASTM D 3139	SDR 21	200 psi	Restrained Joint

(REPLACE) Table 3D-1.03: Manhole Casting Types

	Figure Number ¹	Casting Type	Number of Pieces	Ring/Cover	Bolted Frame	Bolted Cover (Floodable)	Gasket
Sanitary Sewer	6010.601	SW-601 A	2	Fixed ^{3,4}	Yes	No	Yes ²
Sanitary Sewer	6010.601	SW-601 C	2	Fixed ^{3,4}	Yes	Yes	Yes ²
Storm Sewer	6010.602	SW-602 E	2	Fixed ^{3,4}	Yes	No	Yes ²
Storm Sewer	6010.602	SW-602 G	2	Fixed ^{3,4}	No	No	Yes ²

- 1 The figure numbers listed in this table refer to figures from the [Supplemental Specifications](#).
- 2 Machined bearing surfaces required.
- 3 Ring and Cover may be bolted as specified in the contract documents or as otherwise approved by the Jurisdiction.
- 4 Cover shall have the Iowa City standard logo and a minimum of one-concealed pick hole. Storm cover will include environmental message, "Storm Sewer Drains to Stream". Refer to Figure 6010.601 for details.

CHAPTER 4 -

Water Mains

4A-1 – General Information

B. Conditions

1. **General:** (ADD) The Project Engineer will make sure that infrastructure connected to the City of Iowa City Water Distribution System is designed in accordance with the Division 5 of the [Supplemental Specifications](#) and the Title 16, Chapter 3, Article C ([16-3C](#)) of the City Code of Iowa City, Iowa.
3. **Iowa DNR Project Submittals:**
 - a. **General:** (ADD) In accordance with [Section 1C-1 – Submittal Procedures](#) and [Section 1F-1 – Plans of Record](#), as amended by this document, the Project Engineer will submit plans of record (as-built) information to the Jurisdiction.
 - b. **Plans:**
 - 2) **Detailed Plans, Including:**
 - i) (ADD) Design flow calculations and design flows listed by specific water use type to include, but not limited to, domestic, fire, and irrigation.
 - j) (ADD) Water meter plan for all facilities other than single family residential.
 - c. **Specifications:**
 - 4) (ADD) As supplemented in [Section 1E-1 – Public Improvement Contracts, B – Contract Documents](#), a Performance, Payment, and Maintenance Bond will be included in the Project Manual. This bond will cover defective materials and workmanship for a period of five years.

4B-1 – Size Determination

B. Network Analysis

(ADD) The Jurisdiction may require the use of hydraulic modeling and headloss analysis for the water network impacted by the proposed design.

C. Velocity Requirements

(ADD) If velocities greater than 5 fps are anticipated in the design, a note will be included in the detailed plans.

D. Minimum Criteria

2. Minimum Size Requirements:

- a. **Water Service Stub:** (ADD) The water service line shall be at least 1-inch diameter from the water main to the stop box.

4C-1 – Facility Design

B. Water Mains

2. (ADD) Water mains will be located such that each property has access for a service connection.
4. (REPLACE) Dead-ends should be minimized by looping mains whenever possible and as required by the Jurisdiction based on usage and water age. Dead-ends should terminate with an approved flushing device.
5. (REPLACE) Water mains and extensions should be designed with a minimum 5.5-foot depth of cover. Greater depths of cover, surface loading conditions, or unusual trench conditions may require a stronger class of pipe according to the AWWA Standard regarding the type of pipe being installed. Where a dip must be placed in a main in order to pass under another utility, the length of the deeper main should be kept to a minimum, and bends should be considered to affect the desired offset.
7. (ADD) Water main that cannot be located within public right-of-way will be placed in an easement. Easement width will be 1.5 times the pipe bury depth rounded up to the nearest 5-foot increment. The minimum easement width is 15 feet. Easements will be centered on the water main with a minimum 5-foot horizontal separation from the edge of easement to the nearest edge of the pipe.
8. (ADD) PVC pipe will not be used around cul-de-sacs, small radius curves 45 feet or less in length, or for pipe 12-inches in diameter or greater. PVC water main materials shall not be bent. PVC deflection shall be limited to the manufacturer's recommendation.
9. (ADD) Water main on cul-de-sacs, roundabouts, and traffic calming circles will be extended such that no services need to be installed beneath the paving of the circular turnaround.
10. (ADD) Ductile iron pipe used for trenchless installation or suspended from a structure will be Class 53 and restrained joint. PVC pipe used for trenchless installation or suspended from a structure will be restrained joint.

(DELETE) Figure 4C-1.01: Minimum Depth of Cover for Water Main Installation

C. (DELETE) Blowoffs

~~A blowoff or approved flushing device, in lieu of a hydrant assembly, may be requested on a dead-end main. The minimum riser assembly size should be no less than 2 diameter sizes smaller than the diameter of the water main. The flushing device should be sized to provide flows that will give a velocity of at least 2.5 feet per second in the main being flushed. When the water main is extended, the blowoff should be removed. A new valve should be placed between the existing and extended main.~~

D. Valves

1. (REPLACE) As a minimum, valves should be located at intersections, such that no unvalved pipe exists at the intersection. Valves should be equally spaced, if possible, with spacing no more than 800 feet in residential areas and no more than 400 feet in high density residential, commercial, and industrial areas. Additional valves may be required for testing and connection purposes.

3. (REPLACE) All valves should be installed with slide type valve boxes with lids marked "WATER". An existing screw type valve box that is located in an area to be paved should be changed to a slide type valve box as a part of the paving program.
7. (ADD) All valves will be restrained.
8. (ADD) Resilient-seated gate valves will conform to AWWA C509. Butterfly valves will conform to AWWA C504, for buried applications. Butterfly valves are required for valves that are 16-inch diameter or greater.
9. (ADD) Valves will be placed in order to maintain a minimum of three (3) feet of radial clearance to any aboveground structure to allow for valve operation.

E. Fire Hydrants

5. (ADD) Private hydrants are defined as a hydrant located on privately owned property, or on streets not dedicated to public use unless the water main is within a public utility easement. Private hydrants will meet all requirements of a public hydrant. A private hydrant is the responsibility of the property owner and will be used for fire protection only. The City retains the right to use private hydrants for flushing purposes.

I. Air Relief Facilities

1. (REPLACE) **Air Relief:** At high points in water mains where air can accumulate, provisions should be made to remove the air by means of a hydrant assembly. A request to the Jurisdiction may be made to use an air relief valve in lieu of a hydrant assembly. Automatic air relief valves should not be used in situations where flooding of the manhole or chamber may occur.

J. Valve, Meter, and Blowoff Chambers

(REPLACE) Chambers, pits, or manholes containing valves, blowoffs, meters, or other such appurtenances to a distribution system are not allowed unless otherwise approved by the Jurisdiction.

K. Thrust Blocks, Anchor Blocks, and Restrained Joints

Install fire hydrant assemblies utilizing precast solid concrete block in accordance with the [Supplemental Specifications](#).

1. **Thrust Blocks:** (REPLACE) Concrete thrust blocks are to be used for all pipe 12 inches in diameter or larger, and on horizontal and upward bending fittings, or changes in pipe diameter unless otherwise approved by the Jurisdiction. Thrust blocks may be used on other pipes independently or in combination with restrained joints. The minimum bearing surface table shown on [SUDAS Specifications Figure 5010.101](#) assumes a bearing area of thrust blocks based on 1,000 psf soil pressure and 150 psi water pressure. Where water pressures are higher and/or soil conditions are poor, the designer should design the correct block size using the equation below. No bolts should come into contact with the concrete thrust blocks. If necessary, polyethylene wrap should be wrapped around the pipe, including the bolt circle, before the concrete is placed. Concrete should have a minimum compressive strength of 4,000 psi at 28 days. Thrust blocks shall be formed. Preformed concrete blocks may be allowed at

the jurisdiction's discretion. All thrust blocks shall bear against well compacted undisturbed soil.

$$\text{Required Area, ft}^2 = (2) (\text{water pressure, psi})(\text{cross-sectional area of pipe outside diameter, in}^2) / (\sin(\text{angle of bend} / 2)) / (\text{allowable soil pressure, psf})$$

Note - AWWA Recommends a 1.5 factor of safety (Sf), which is not part of the table on [SUDAS Specifications Figure 5010.101](#) or the formula above.

- 2. Anchor Blocks:** (REPLACE) Anchor blocks are to be used on pipes 12 inches in diameter or larger and on vertical downward bend fittings unless otherwise approved by the Jurisdiction. Anchor blocks may be used on pipes independently or in combination with restrained joints. Table 4C-1.01 size of the anchor block based on a 150 psi water pressure. Where water pressures are higher, the designer should design the correct block size using the equation below Table 4C-1.01. Where an anchor block is the sole means of restraint on a vertical downward bend, the plans should detail the size and shape of the anchor block. The engineer should also verify the face of the anchor block can resist the horizontal thrust component (Tx) created by the fitting. No bolts should come into contact with the concrete thrust blocks. If necessary, polyethylene wrap should be wrapped around the pipe, including the bolt circle, before the concrete is placed. Concrete should have a minimum compressive strength of 4,000 psi at 28 days. Anchor blocks shall be formed. All anchor blocks shall bear against well compacted undisturbed soil.

This document does not change to Table 4C-1.01: Anchor Block Sizing (see [Section 4C-1](#) for this table).

3. Restrained Joints:

- a. (REPLACE) **For Pipe Diameters Greater than 4 inches:** Calculate restrained length upstream and downstream from any changes in horizontal or vertical alignment, or pipe diameter. Defined parameters for calculating restrained lengths will be a minimum safety factor of 1.5 and a minimum test or design pressure of 150 psi. Accepted equation and design information may be found in "Thrust Restraint Design Equations and Soil Parameters for Ductile Iron and PVC Pipe" by EBAA Iron Sales, Inc. and "Thrust Restraint Design for Ductile Iron Pipe," by DIPRA. Calculations for restrained lengths will be submitted to the Jurisdiction.
- b. (DELETE) ~~**For Pipe Diameters Greater than 12 inch:** Restrained joints are typically used on pipes larger than 12 inches in diameter. They may be used on other pipe sizes independently or in combination with concrete thrust blocks. See pipe manufacturer's recommendations for determining restrained lengths of pipe required.~~

4. (ADD) Restrained Fittings:

- a. All fittings will be restrained.

M. Flushing, Disinfection, and Pressure Tests

1. **Disinfection:** (ADD) All mains will pass bacteriological testing prior to pressure testing. Testing segments will be no longer than 1,200 feet. All legs and laterals will be tested as separate segments. Adjoining segments will not be tested together or at the same time. No taps are allowed until water main passes all testing requirements.
2. **Flushing:** (ADD) Jurisdiction approval is required to flush highly chlorinated water into the sanitary service.
3. **Hydrostatic Pressure Testing:** (REPLACE) Pressure test according to AWWA C600. All air must be expelled from the new main. The test pressure should be 1.5 times the working pressure of the system or 150 psi, whichever is greater. The test should continue for a minimum of 2 hours. Pressure must remain within 5 psi of beginning recorded pressure and at or above 150 psi without the addition of make-up water.
4. **(ADD) Water Distribution System and Service Locating and Operation:** Locating system (tracer wire) will be tested to verify operation. All valves will be located and operated to verify operation. Valve boxes will be centered over the operating nut. Fire hydrants will be opened and closed to verify operation.

Figure 4C-1.02: Standard Water Main Location at Cul-de-sac (REPLACE)

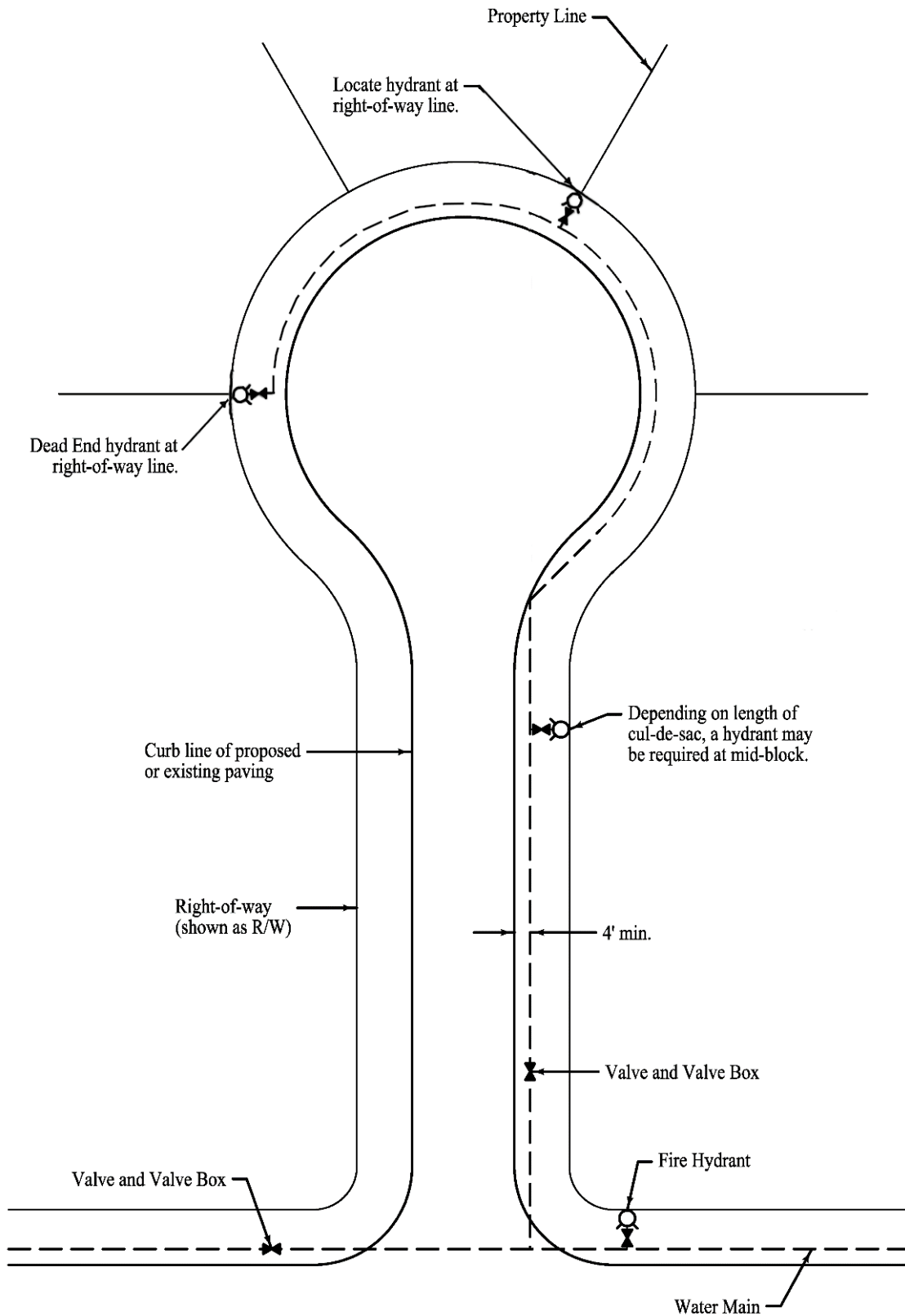
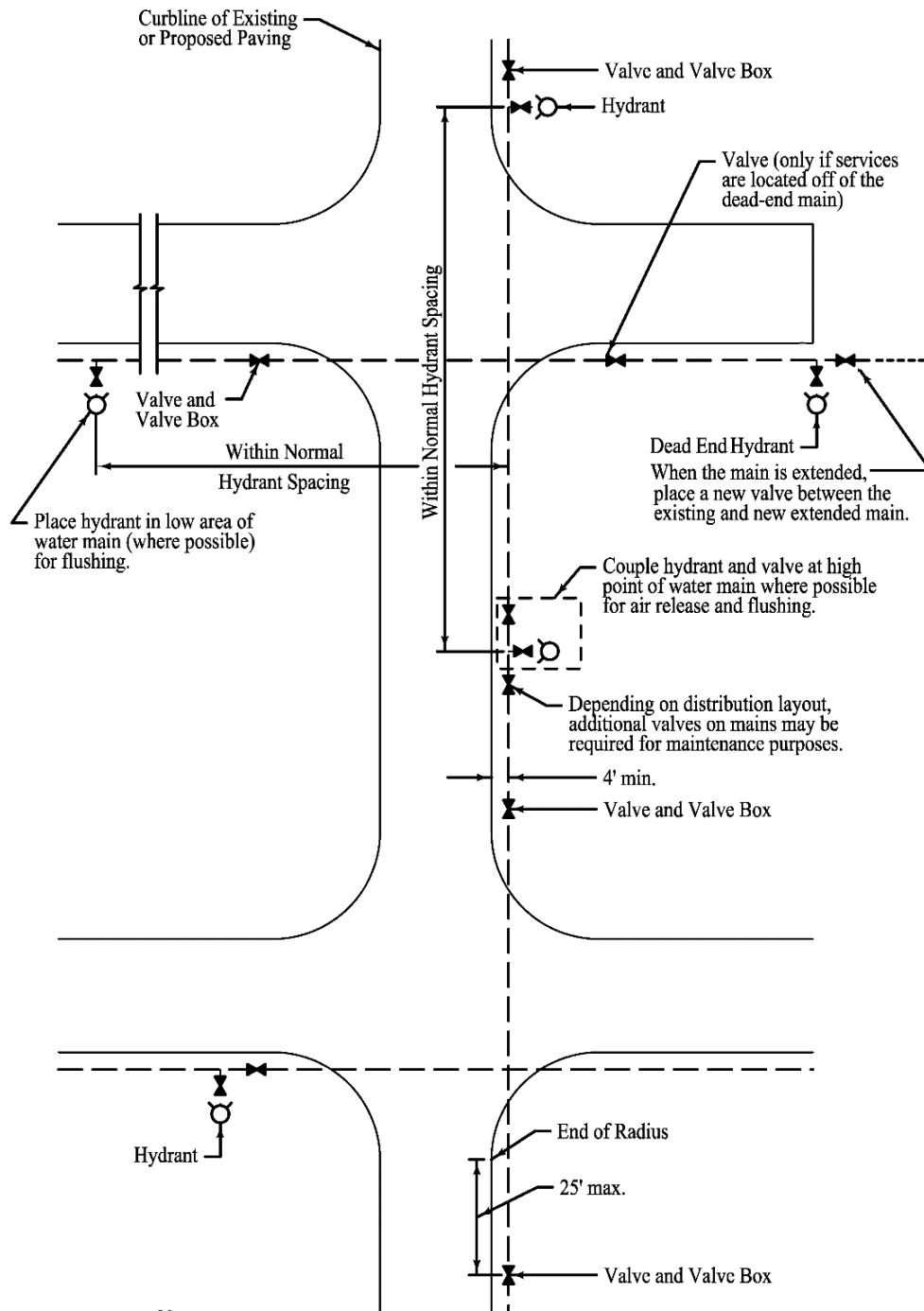


Figure 4C-1.03: Standard Water Main Location (REPLACE)



Notes:

1. Install three valves and one fire hydrant at each intersection, except at T-intersections, which will have two valves.
2. Where possible, locate fire hydrant near high point.
3. Locate fire hydrants within 25 feet of intersection return radius, but outside of radius to avoid conflicts with storm sewers and intakes.
4. Where possible, locate fire hydrants on the downhill side of an in-line valve for air release and flushing purposes.

CHAPTER 5 -

Roadway Design

5A-1 – General Information

A. Concept

(ADD) When pavement is removed, the removal shall be full panels and extend into the nearest full panel at least 3 feet beyond the trench limits. Composite pavements shall be replaced as composite pavement (e.g. 7" PCC and 3" HMA).

5C-1 – Geometric Design Tables

A. General

(ADD) The SUDAS Design Manual, General Supplemental Design Standards, and City of Iowa City Design Supplement (this document) serve as the City's design standards for use in all public improvement projects and construction within the right-of-way, as well as any extraterritorial areas required to be built to City standards pursuant to any fringe area agreement, except for situations regulated by Title 14, Chapter 2, Article H ([14-2H](#)) of the City Code of Iowa City, Iowa (Form-Based Zones and Standards). Should any conflict in design standards exist between the terms of the SUDAS Design Manual, General Supplemental Design Standards, and this Design Supplement, on the one hand, and Article [14-2H](#), on the other, pertaining to a Form-Based Zone, Article [14-2H](#) will govern.

B. Design Controls and Criteria

3. Design Speed: (REPLACE) Design speed is the selected speed used to determine various geometric features of the roadway, including horizontal and vertical alignment. The design speed should be selected considering functional classification, context classifications, and surrounding land uses to attain the desired degree of safety, mobility, and efficiency. It is preferred to select a design speed that is equal to the posted speed limit of the roadway. A past practice was to select a design speed that is at least 5 mph greater than the anticipated posted speed limit of the roadway. However, in urban, suburban, and rural town areas, the design of the street should limit the maximum speed that drivers can operate comfortably in order to balance the needs of all users. For roadways with posted speed limits of 35 mph or less, the design speed should match the posted speed. For roadways with posted speeds of 40 to 45 mph, selecting a design speed equal to the posted speed limit may also be appropriate and should be evaluated on a project by project basis. Any selected design speed that is not equal to the posted speed limit is subject to approval of the Engineer. Once a design speed is selected, all pertinent roadway features should be related to that speed to obtain a balanced design. Additional discussion of design speed can be found in [Section 5M-1](#).

In some situations, it may be impractical to conform with the desired design speed for all elements of the roadway (e.g. horizontal radius or clear zone). In these situations, warning signs or additional safety treatments may be required (e.g. warning signs or guard rail).

C. Roadway Design Tables

(ADD) All roadway/street widths shall be measured from back of curb to back of curb.

Table 5C-1.01: Preferred Roadway Elements
 Elements Related to Functional Classification
 (REPLACE)

General

Design Element	Local	Local	Collector	Collector	Arterial	Arterial
	Res.	C/I	Res.	C/I	Res.	C/I
Design level of service ¹	D	D	C/D	C/D	C/D	C/D
Lane width (single lane) (ft) ²	N/A	N/A	10	10	10	10
Lane width for transit/truck routes (ft) ²	N/A	N/A	11	11	11	11
Two-way left-turn lanes (TWLTL) (ft)	N/A	N/A	11	11	11	11
Right-of-Way Width (ft)	60	60	66	66	100	100
Alley/Rear Lane Right-of-Way Width (ft)	20	20	---	---	---	---
Loop Street Right-of-Way Width (ft)	100	100	---	---	---	---
Cul-de-sac Right-of-Way Width (ft)	60	60	---	---	---	---
Low-Volume Cul-de-sac Right-of-Way Width (ft)	50	---	---	---	---	---
Width of new bridges (ft) ³ – See Footnote 3	---	---	---	---	---	---
Width of bridges to remain in place (ft) ⁴	---	---	---	---	---	---
Vertical clearance (ft) ⁵	14.5	14.5	14.5	14.5	16.5	16.5
Object setback (ft) ⁶	3	3	3	3	3	3
Clear zone (ft) – Refer to Tables 5C-1.03, 5C-1.04, and 5C-1.05	---	---	---	---	---	---

Res. = Residential, C/I = Commercial/Industrial

Urban

Design Element	Local	Local	Collector	Collector	Arterial	Arterial
	Res.	C/I	Res.	C/I	Res.	C/I
Curb offset (ft) ⁷	1.5 ⁸	1.5 ⁸	1.5 ⁸	1.5 ⁸	1.5 ⁸	1.5 ⁸
Parking lane width (ft) ⁹	N/A	N/A	8	8	N/A	N/A
Roadway width with parking on one side	26 ¹⁰	28	30 ¹⁰	30	N/A	N/A
Roadway width with parking on two sides	28	N/A	37 ¹⁰	37	N/A	N/A

Design Element	Local	Local	Collector	Collector	Arterial	Arterial
	Res.	C/I	Res.	C/I	Res.	C/I
Roadway width without parking ¹¹	N/A	N/A	23	23	23/35 ¹²	23/35 ¹²
Roadway width with bike lane(s) ¹³	N/A	N/A	28/33	28/33	28/33 ¹² 40/45 ¹²	28/33 ¹² 40/45 ¹²
Raised median with left-turn lane (ft) ¹⁴	N/A	N/A	19.5	20.5	20.5	20.5
Alley/Rear Lane Width (ft)	16	20	N/A	N/A	N/A	N/A
Loop Street (ft)	22	22	N/A	N/A	N/A	N/A
Cul-de-sac radius (ft)	39	39	N/A	N/A	N/A	N/A

Res. = Residential, C/I = Commercial/Industrial

Rural Sections in Urban Areas

Shoulder width (feet)	Local	Local	Collector	Collector	Arterial	Arterial
	Res.	C/I	Res.	C/I	Res.	C/I
ADT: under 400	4	4	6	6	10	10
ADT: 400 to 1,500	6	6	6	6	10	10
ADT: 1,500 to 2,000	8	8	8	8	10	10
ADT: above 2,000	8	8	8	8	10	10
Foreslope (H:V)	4:1	4:1	4:1	4:1	6:1	6:1
Backslope (H:V)	4:1	4:1	4:1	4:1	4:1	4:1

Res. = Residential, C/I = Commercial/Industrial

Elements Related to Design Speed

Design Speed, mph ¹⁵	25	30	35	40	45	50	55	60
Design Element								
Stopping sight distance (feet)	155	200	250	305	360	425	495	570
Passing sight distance (feet)	900	1,090	1,280	1,470	1,625	1,835	1,985	2,135
Min. horizontal curve radius (feet) ¹⁶	198	333	510	762	1,039	833	1,060	1,330
Min. vertical curve length (feet)	50	75	105	120	135	150	165	180
Min. rate of vertical curvature, Crest (K) ¹⁷	12	19	29	44	61	84	114	151
Min. rate of vertical curvature, Sag (K)	26	37	49	64	79	96	115	136
Minimum gradient (percent)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Maximum gradient (percent)	5	5	5	5	5	5	5	5

Res./R = Residential, C/I = Commercial/Industrial

Note: For federal-aid projects, documentation must be provided to explain why the preferred values are not being met. For non-federal aid projects, the designer must contact the Jurisdiction to determine what level of documentation, if any, is required prior to utilizing design values between the “Preferred” and “Acceptable” tables.

Table 5C-1.01 Footnotes:

1. Number of traffic lanes, turn lanes, intersection configuration, etc. should be designed to provide the overall specified LOS at the design year ADT. Two LOS values are shown for collectors and arterials. The first indicates the minimum overall LOS for the roadway as a whole; the second is the minimum LOS for individual movements at intersections.
2. Width shown is for through lanes and turn lanes. For transit and truck routes, increase by each lane one foot (e.g. two feet increase in roadway width for two lanes and three feet increase in roadway width for three lanes).
3. Bridge width is measured as the clear width between curbs or railings. Minimum bridge width is based upon the width of the traveled way (lane widths) plus 4 feet clearance on each side; but no less than the curb-face to curb-face width of the approaching roadway. Minimum bridge widths do not include medians, turn lanes, parking, or sidewalks. Sidewalks on each side should be extended across the bridge.
4. See [Table 5C-1.02](#), for acceptable values for width of bridges to remain in place.
5. Vertical clearance includes a half-foot allowance for future resurfacing.
6. Object setback does not apply to mailboxes constructed and installed according to US Postal Service regulations, including breakaway supports.
7. Values shown are measured from the edge of the traveled way to the back of curb. Curb offset is not required for turn lanes. On roadways with an anticipated posted speed of 45 mph or greater, mountable curbs are required. For pavements with gutterline jointing, the curb offset should be equal to or greater than the distance between the back of curb and longitudinal gutterline joint. No curb offset is allowed when bike lane, parking, or other buffer area are provided.
8. If a grated intake is approved by the Jurisdiction and a 1.5-foot curb offset is used, an alternative intake boxout, with the intake set back a minimum of 6 inches from the curb line, must be used to prevent intake grates from encroaching into the traveled way.
9. Local street width is fixed, see Roadway width with parking on one/two side(s) and Footnote 10. Parking on arterials is only allowed with approval of the Jurisdiction. Actual parking width would be determined by the Jurisdiction based on the configuration and needs.
10. For local, residential streets, two free flowing lanes are not required and a 26-foot (back of curb to back of curb) roadway may be used where parking is allowed only on one side. For collector or arterial, residential streets, which require two continuously free flowing traffic lanes, a 30-foot or 37-foot roadway should be used for one-sided or two-sided parking respectively.
11. Roadway widths are set to match the standards for lane width. Unless approved by the Jurisdiction, all two lane roadways must comply with the standard widths set in this table.

- 12 Lane widths listed are: two-lane/three-lane. Outside lane widths will be 11 feet. For three lane arterials, the center lane will be 12 feet. For more than three lanes, the lane widths will vary by the configuration and needs to be approved by Jurisdiction.
- 13 Lane widths listed are: one/two bike lanes for two-lane/three-lane. If buffered, add 1.5 feet on each side (3 feet total). For three lane arterials, the center lane will be 12 feet. For more than three lanes, the lane widths will vary by the configuration and needs to be approved by Jurisdiction.
- 14 Median width is measured between the edges of the traveled way of the inside lanes and includes the curb offset on each side of the median. Values include a left turn lane with a 6-foot raised median as required to accommodate a pedestrian access route (refer to [Chapter 12](#)) through the median (crosswalk cut through). At locations where a crosswalk does not cut through the median, the widths shown can be reduced by 2 feet to provide a 4-foot raised median.
- 15 It is preferred to select a design speed equal to the posted speed limit. Selecting a design speed different than the posted speed may also be acceptable and should be evaluated on a project by project basis, subject to approval of the Jurisdiction.
- 16 Values for low design speed (<50 mph) assume no removal of crown (i.e. negative 2% superelevation on outside of curve). Radii for design speeds of 50 mph or greater are based upon a superelevation rate of 4%. For radii corresponding to other superelevation rates, refer to the AASHTO's Green Book.
- 17 Assumes stopping sight distance with 6-inch object.

Table 5C-1.02: Acceptable Roadway Elements
Elements Related to Functional Classification
(REPLACE)

General

Design Element	Local	Local	Collector	Collector	Arterial	Arterial
	Res.	C/I	Res.	C/I	Res.	C/I
Design level of service ¹	D/E	D/E	D/E	D/E	D/E	D/E
Lane width (single lane) (ft) ²	N/A	N/A	11	11	11	11
Lane width for transit/truck routes (ft) ²	N/A	N/A	11	11	11	11
Two-way left-turn lanes (TWLTL) (ft)	N/A	N/A	12	12	12	12
Width of new bridges (ft) ³ – See Footnote 3						
Width of bridges to remain in place (ft) ⁴	20	22	24	24	26	26
Vertical clearance (ft) ⁵	14.5	14.5	14.5	14.5	14.5	14.5
Object setback (ft) ⁶	1.5	1.5	1.5	1.5	1.5	1.5
Clear zone (ft) – Refer to Tables 5C-1.03, 5C-1.04, and 5C-1.05						

Res. = Residential, C/I = Commercial/Industrial

Urban

Design Element	Local	Local	Collector	Collector	Arterial	Arterial
	Res.	C/I	Res.	C/I	Res.	C/I
Curb offset (ft) ⁷	1.5 ⁸	1.5 ⁸	1.5 ⁸	1.5 ⁸	1.5 ⁸	1.5 ⁸
Parking lane width (ft)	N/A	N/A	7	7	8 ⁹	8 ⁹
Roadway width with parking on one side	26 ⁹	28	31 ⁹	31	N/A	N/A
Roadway width with parking on both sides	28	N/A	37 ⁹	37	N/A	N/A
Roadway width without parking ¹⁰	N/A	N/A	25	25	25/37 ¹⁰	25/37 ¹⁰
Roadway width with bike lane(s) ¹¹	N/A	N/A	30/35	30/35	30/35 ¹⁰ 42/47 ¹⁰	30/35 ¹⁰ 42/47 ¹⁰
Raised median with left-turn lane (ft) ¹²	N/A	N/A	18	18	18.5	18.5
Cul-de-sac radius (ft)	45	45	N/A	N/A	N/A	N/A

Res. = Residential, C/I = Commercial/Industrial

Rural Sections in Urban Areas

Shoulder width (feet)	Local	Local	Collector	Collector	Arterial	Arterial
	Res.	C/I	Res.	C/I	Res.	C/I
ADT: under 400	2	2	2	2	8	8
ADT: 400 to 1,500	5	5	5	5	8	8
ADT: 1,500 to 2,000	6	6	6	6	8	8
ADT: above 2,000	8	8	8	8	8	8
Foreslope (H:V) ¹³	3.5:1	3.5:1	3.5:1	3.5:1	4:1	4:1
Backslope (H:V)	3.5:1	3.5:1	3.5:1	3.5:1	3.5:1	3.5:1

Res. = Residential, C/I = Commercial/Industrial

Elements Related to Design Speed

Design Speed, mph ¹⁴	25	30	35	40	45	50	55	60
Design Element								
Stopping sight distance (feet)	155	200	250	305	360	425	495	570
Passing sight distance (feet)	900	1,090	1,280	1,470	1,625	1,835	1,985	2,135
Min. horizontal curve radius (feet) ¹⁵	198	333	510	762	1,039	833	1,060	1,330
Min. vertical curve length (feet)	50	75	105	120	135	150	165	180
Min. rate of vertical curvature, Crest (K) ¹⁶	12	19	29	44	61	84	114	151
Min. rate of vertical curvature, Sag (K)	26	37	49	64	79	96	115	136

Design Speed, mph ¹⁴	25	30	35	40	45	50	55	60
Design Element								
Min. rate of vert. curve, Sag (K) based on driver comfort/ overhead lighting ¹⁷	14	20	27	35	44	54	66	78
Minimum gradient (percent) ¹⁸	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5

Design Speed, mph ¹⁴	25	25	30	30	35	35	40	40	45	45	50	50	55	55	60	60
Design Element																
Maximum gradient (percent) ¹⁹	R	C/I	R	C/I	R	C/I	R	C/I	R	C/I	R	C/I	R	C/I	R	C/I
Local	12	8	12	8	11	8	11	8	10	8	9	8	N/A	N/A	N/A	N/A
Alley/Rear Lane	12	10	12	9	11	9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Loop Street/Cul-de-sac	10	10	10	10	10	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Collector	10	8	10	8	10	9	10	9	9	8	8	7	N/A	N/A	N/A	N/A
Collector with Bike Lanes	8	8	8	8	8	8	8	8	8	8	8	7	N/A	N/A	N/A	N/A
Arterial	8	8	8	8	8	8	8	8	N/A	7	N/A	7	N/A	6	N/A	6

Res./R = Residential, C/I = Commercial/Industrial

Note: For federal-aid projects, proposed design values that do not meet the “Acceptable” table may require design exceptions. Design exceptions will be considered on a project-by-project basis and must have concurrence of the Iowa DOT when applicable. For non-federal aid projects, the designer should contact the Jurisdiction to determine what level of documentation, if any, is required prior to utilizing design values that do not meet the “Acceptable” table.

Table 5C-1.02 Footnotes:

- 1 Number of traffic lanes, turn lanes, intersection configuration, etc. should be designed to provide the specified LOS at the design year ADT.
- 2 Width shown is for through lanes and turn lanes. For transit and truck routes, increase by each lane one foot (e.g. two feet increase in roadway width for two lanes and three feet increase in roadway width for three lanes). Up to 12-foot lane width will be considered if approved by the Jurisdiction.
- 3 Bridge width is measured as the clear width between curbs or railings. Minimum bridge width is based upon the width of the traveled way (lane widths) plus 3 feet clearance on each side; but no less than the curb-face to curb-face width of the approaching roadway. Minimum bridge widths do not include medians, turn lanes, parking, or sidewalks. At least one sidewalk should be extended across the bridge with the approval of the Jurisdiction.
- 4 The values shown are the clear width across the bridge between curbs or railings. Values are based upon the width of the traveled way (lane width) and include a 1-foot and 2-foot offset on each side for collectors and arterials, respectively. Values do not include medians, turn lanes, parking, or sidewalks. In no case should the minimum clear width across the bridge be less than the width of the traveled way of the approach road.

- 5 Vertical clearance includes a half-foot allowance for future resurfacing. Vertical clearance of 14.5 feet on arterials is allowed only if an alternate route with 16 feet of clearance is available.
- 6 Object setback does not apply to mailboxes constructed and installed according to US Postal Service regulations, including breakaway supports.
- 7 Values shown are measured from the edge of the traveled way to the back of curb. Curb offset is not required for turn lanes. On roadways with an anticipated posted speed of 45 mph or greater, mountable curbs are required. For pavements with gutterline jointing, the curb offset should be equal to or greater than the distance between the back of curb and longitudinal gutterline joint. No curb offset is allowed when bike lane, parking, or other buffer area are provided.
- 8 If a grated intake is approved by the Jurisdiction and a 1.5-foot curb offset is used, an alternative intake boxout, with the intake set back a minimum of 6 inches from the curb line, must be used to prevent intake grates from encroaching into the traveled way.
- 9 For local, residential streets, two free flowing lanes are not required and a 26-foot (back of curb to back of curb) roadway may be used where parking is allowed only on one side. For collector or arterial, residential streets, which require two continuously free flowing traffic lanes, a 31-foot or 37-foot roadway should be used for one-sided or two-sided parking respectively.
- 10 Lane widths listed are: two-lane/three-lane. Outside lane widths will be 11 feet. For three lane arterials, the center lane will be 12 feet. For more than three lanes, the lane widths will vary by the configuration and needs to be approved by Jurisdiction.
- 11 Lane widths listed are: one/two bike lanes for two-lane/three-lane. If buffered, add 1.5 feet on each side (3 feet total). For three lane arterials, the center lane will be 12 feet. For more than three lanes, the lane widths will vary by the configuration and needs to be approved by Jurisdiction.
- 12 Median width is measured between the edges of the traveled way of the inside lanes and includes the curb offset on each side of the median. Values include a left turn lane with a 6-foot raised median as required to accommodate a pedestrian access route (refer to [Chapter 12](#)) through the median (crosswalk cut through). At locations where a crosswalk does not cut through the median, the widths shown can be reduced by 2 feet to provide a 4-foot raised median.
- 13 The use of 3:1 foreslopes is allowed, as shown, but may require a wider clear zone as slopes steeper than 4:1 is not considered recoverable by errant vehicles.
- 14 It is preferred to select a design speed equal to the posted speed limit. Selecting a design speed higher than the posted speed may also be acceptable and should be evaluated on a project by project basis, subject to approval of the Jurisdiction.
- 15 Values for low design speed (<50 mph) assume no removal of crown (i.e. negative 2% superelevation on outside of curve). According to the AASHTO Green Book (Table 3-1 and 3-13b) for low volume roadways with 10 or less units beyond the curve and projected traffic volumes of less than 100 vehicles per day beyond the curve, the horizontal curve radius may be a minimum of 107 feet if at least 115 feet of stopping sight distance is provided or the radius may be a minimum of 50 feet if at least 80 feet of stopping sight distance is available. Radii for design speeds of 50 mph or greater are based upon a superelevation rate of 6%. For radii corresponding to other superelevation rates, refer to the AASHTO's "Green Book."
- 16 Assumes stopping sight distance with 2-foot-high object.

- 17 Use only if roadway has continuous overhead lighting.
- 18 A typical minimum grade is 0.5%, but a grade of 0.4% may be used in isolated areas where the pavement is accurately crowned, supported on firm subgrade, and approved by the Jurisdiction.
- 19 Maximum gradient may be steepened by 2% for short distances, for one way downgrades, and approved by the Jurisdiction.

5C-2 – Geometric Design Elements

P. Cul-de-sacs

(ADD) Loop streets provide access for twelve or fewer dwellings. Low volume cul-de-sacs provide access to ten or fewer single family dwellings.

The preferred minimum outside radius of the pavement of cul-de-sac bulbs and loop streets is thirty-nine feet (39') as listed in [Table 5C-1.01](#). An acceptable minimum radius of the pavement of cul-de-sac bulbs is forty-five feet (45') as listed in [Table 5C-1.02](#). A center median is required at the center of the cul-de-sac bulb with a minimum radius of eleven feet (11'). Cul-de-sacs may not exceed nine hundred feet (900') in length. The length of a cul-de-sac is measured from the centerline of the street from which it commences to the center of the bulb. For loop streets a median is also required with a minimum width of thirty feet (30'). Loop streets will use one shared lane with parking only on one side.

U. (ADD) Additional Requirements for Intersections

Following apply to intersection design:

1. A maximum of four (4) legs is allowed at any one intersection.
2. The distance between street intersections must be at least one hundred twenty five feet (125') centerline to centerline. The designer should review [Section 5L-3](#) when considering this spacing. The recommended minimum access spacings to avoid right turn overlap are shown in [Table 5L-3.04](#). The minimum distance between driveways or from intersection streets is shown in [Table 5L-3.05](#).
3. Intersections of street centerlines shall be between eighty degrees (80°) and one hundred degrees (100°).
4. Corner lots abutting on an arterial or collector street shall have a minimum radius of fifteen feet (15') at the intersection. The designer should review [Table 5C-2.03](#) in [Section 5C-2](#) when considering appropriate radii.
5. Dead end streets and alleys are not permitted except at subdivision boundaries abutting undeveloped areas. In such cases a temporary fire apparatus accommodating turnaround may be required and, if required, must be constructed to city standards and specifications.

V. (ADD) Parkway Requirements

The area between the back of curb and the sidewalk is the parkway. It has been referred to as the “parking” area within the SUDAS Design Manual as well as the SUDAS Standard Specifications. In this case, “parking” should be synonymous with parkway. The requirements for parkways are listed in [12C-1](#).

5F-1 Pavement Thickness Design

A. General

(ADD) Minimum pavement thickness is listed in [5F-1, D](#). Subbase shall be utilized on all new or reconstructed streets.

D. Determining Pavement Thickness

(ADD) The minimum thickness for PCC pavement should be the following unless approved by the Engineer:

1. Local – seven (7) inches
2. Collector – eight (8) inches
3. Arterial – nine (9) inches

New or reconstructed pavement shall utilize a minimum of 6 inches of subbase. Modified subbase shall be used unless approved by the Engineer. Natural subgrade will not be allowed.

5L-3 Access Location, Spacing, Turn Lanes, and Medians

(ADD) The Access Management Standards (e.g. driveway spacing, location and dimensional standards for driveways) are listed in Title 14, Chapter 5, Article C ([14-5C](#)) of the City Code of Iowa City, Iowa. Where there are discrepancies between the [City of Iowa City Code](#), the SUDAS Design Manual, and the Design Supplement, the [City of Iowa City Code](#) shall prevail.

5L-4 Driveway Design Criteria

A. General

(ADD) The Access Management Standards (e.g. driveway spacing, location and dimensional standards for driveways) are listed in Title 14, Chapter 5, Article C ([14-5C](#)) of the City Code of Iowa City, Iowa. Where there are discrepancies between the [City of Iowa City Code](#), the SUDAS Design Manual, and the Design Supplement, the [City of Iowa City Code](#) shall prevail.

CHAPTER 6 -

Geotechnical

6A-1 General Information**A. Introduction**

(ADD) With submitted designs, the Project Engineer shall recommend and provide to the City a design for the subbase, subsurface drainage, and subgrade stabilization based on a geotechnical investigation and report.

6F-1 Pavement Subbase Design and Construction**A. General Information**

(ADD) New or reconstructed pavement shall utilize subbase. Natural subgrade will not be allowed.

B. Granular Subbases

2. **Materials:** (ADD) Modified subbase shall be used unless approved by the Engineer.
5. **Thickness Requirement:** (REPLACE) The minimum thickness of subbase is 6 inches. Additional thickness beyond 6 inches could allow consolidation of the subbase over time as traffic loads accumulate. Pavement problems may result from this consolidation.

6G-1 Subsurface Drainage Systems**A. General Information**

(ADD) Subdrain shall be incorporated into all street designs and tie into existing or proposed storm sewer intakes or manholes. The minimum diameter of the subdrains shall be six inches.

CHAPTER 7 -

Erosion and Sediment Control

Currently, there are no supplemental design standards for [Chapter 7](#) – Erosion and Sediment Control.

CHAPTER 8 -

Parking Lots

8A-1 – General Information

A. General

(ADD) Off street parking lots will be designed to meet the requirements of the [City of Iowa City Code](#), Title 14, Chapter 5, Article A. Where there are discrepancies between the [City of Iowa City Code](#), the SUDAS Design Manual, and the Design Supplement, the [City of Iowa City Code](#) shall prevail.

8B-1 – Layout and Design

A. Parking Lot Access

(ADD) Driveway width shall be in accordance with the [City of Iowa City Code, Title 14, Chapter 5, Article A](#).

B. Parking Lot Circulation

(REPLACE) Off street parking lots should be designed to accommodate traffic volumes and pedestrian circulation based on the land use served. The use of islands, medians, curbing, and landscaping is required to separate parking spaces from traffic and pedestrian circulation areas.

Parking spaces at entrance and exit points should be terminated (except at one and two family dwelling units) to prevent conflict between vehicles attempting to enter or exit the parking space, and vehicles attempting to enter or exit the parking lot. Drives must be separated from parking aisles by landscaped medians at least four feet (4') in width.

Access between adjacent commercial parking lots should be considered. This allows patrons to travel from one business to the adjacent business without entering the public street and then turning immediately into the next parking area. These types of movements can cause operational problems on the public street.

C. Parking Lot Dimensions

(ADD) Parking Lot Dimensions shall be in accordance with the [City of Iowa City Code, Title 14, Chapter 5, Article A](#). Where there are discrepancies between the [City of Iowa City Code](#), the SUDAS Design Manual, and the Design Supplement, the [City of Iowa City Code](#) shall prevail.

3. (DELETE) Compact Parking: ~~It is no longer recommended that compact car only spaces be provided. At the time when compact car parking spaces were introduced, the mix of automobiles consisted of clearly defined very large and very small vehicles. As a result, the use of compact parking only was largely self enforcing; however, the current mix of automobile sizes is much more diverse. There is no longer a clear definition among the public of what constitutes a compact vehicle. In addition, if a compact car space is available in a convenient location, many drivers of intermediate and large vehicles will attempt to utilize the space, encroaching into the adjacent space. This creates a domino effect down the row and eventually renders a parking space unusable. For these reasons, compact car only spaces are not recommended.~~

F. Pavement Design

(ADD) The portion of the parking facility that will serve as a fire lane are required to be at least 7-inches (7") thick for PCC pavements. HMA thickness for portions of the parking facility that will serve as a fire lane are required to be equivalent to at least 7-inches of PCC.

8C-1 – Site Provisions**A. General**

(ADD) Number of parking spaces, parking lot setback requirements, landscaping and screening, lighting, and pavement markings for parking lots shall be in accordance with the [City of Iowa City Code](#), Title 14, Chapter 5, Article A, Part 5 ([14-5A-5](#)). Where there are discrepancies between the [City of Iowa City Code](#) and the SUDAS Design Manual, the [City of Iowa City Code](#) shall prevail.

B. Number of Parking Spaces Required

1. **General Parking Ratios:** Adequate off-street parking should be provided for all residential, commercial, industrial, and public use properties. The Engineer will refer to the minimum requirements as set forth in the [City of Iowa City Code](#), Title 14, Chapter 5, Article A, Part 4 ([14-5A-4](#)). For large traffic generators, a specific parking study will be completed.

(DELETE) **Table 8C-1.01:** Parking Ratios

C. Parking Lot Setback Requirements

(ADD) Off street parking spaces, stacking spaces, aisles, and drives are subject to the location and setback requirements specified in the Base Zone Requirements, the [City of Iowa City Code](#), Title 14, Chapter 2, ([14-2](#)) as well as other location requirements of the [City of Iowa City Code](#), Title 14, Zoning Code, which specifically supersede or augment the general location standards set forth in the SUDAS Design Manual.

CHAPTER 9 -

Utilities

9A-1 – General Information**C. Design****1. Limited right-of-way widths:**

- c. (ADD) New sanitary sewers will be placed outside the paved surface of roadways.

9B-1 – General Information for Trench Design**C. Backfill Materials**

(ADD) 4. Class II Material is Class A Roadstone (Iowa DOT Gradation #11). This material shall be used for granular trench backfill unless otherwise approved by the Engineer. This material is used in many situations for primary, secondary, and final backfill (see City of Iowa City Supplemental Specifications, Figure 3010.201 – Specific Trench Bedding and Backfill Zones). Under and within five feet of paved surfaces, including streets, sidewalks and driveways, Class II backfill material is to be compacted to at least 95% Standard Proctor Density up to the final one foot. The final one foot should be compacted to at least 98% Standard Proctor Density.

9D-1 – Utility Cut Restoration**A. General**

(ADD) When pavement is removed, the removal shall be full panels and extend into the nearest full panel at least 3 feet beyond the trench limits. Composite pavements shall be replaced as composite pavement (e.g. 7" PCC and 3" HMA).

CHAPTER 10 -

Street Tree Criteria

10B-1 – Street Tree Design

C. Location within Public Right-of-way

1. (REPLACE) The preferred distance from water service stop boxes is ten feet (10'). The minimum distance from water service stop boxes is eight feet (8') unless otherwise approved by the Jurisdiction.
7. (ADD) Distances from the back of curb to the edge of sidewalk should be at least six feet (6') for planting of trees along street right-of-way, unless otherwise approved by the Jurisdiction.

E. Selection of Trees

(ADD) Maple trees should be planted sparingly.

Table 10B-1.01: Selection of Trees

(DELETE) Freeman Maple

(ADD) State Street Maple

CHAPTER 11 -

Street Lighting

Currently, there are no supplemental design standards for [Chapter 11](#) – Street Lighting.

CHAPTER 12 -

Sidewalks and Bicycle Facilities

12A-1 – General Sidewalk Requirements

C. Sidewalk Classes

(REPLACE) SUDAS identifies three classes of sidewalks, which are described below. Class B and C sidewalks provide a grass strip between the back of curb and the sidewalk, often referred to as the “parking” or “parkway”. Requirements for the parkway are included in [12C-1](#). Class B sidewalks should be used unless approved by the Engineer.

1. **Class A:** Class A sidewalks begin at the back of curb and generally extend to the right-of-way line. These types of sidewalks are typical in downtown areas. Consideration must be given to the location of street signs, street lighting, utilities, mailboxes, snow storage, and other obstacles when utilizing Class A sidewalk.
2. **Class B:** Class B sidewalks are constructed with the back edge of the sidewalk 1 foot or more off of the right-of-way line.
3. **Class C:** Class C sidewalks have the back edge of the sidewalk on the right-of-way line.

E. Construction Requirements

1. **Sidewalk Thickness:** (REPLACE) Sidewalks should be constructed of PCC with a minimum thickness of 4 inches. Where sidewalks cross driveways, the minimum thickness is 6 inches, or the thickness of the driveway, whichever is greater. Where sidewalks have a width greater than 6 feet, the minimum thickness is 6 inches.

12A-2 – Accessible Sidewalk Requirements

E. Standards for Accessibility

2. Standard Sidewalk:

c. Width: (REPLACE)

- 1) Five foot (5') wide concrete sidewalks must be constructed along both sides of all cul-de-sacs, local streets, and collector streets, except for connections to existing sidewalks as provided in 12A-2, E.2.c.3 below. For low volume and loop streets, as described in [5C-2. O](#), the required sidewalk width may be reduced to four feet (4') if approved by the Engineer.
- 2) Along arterial streets, a five foot (5') sidewalk is required on one side of the street and a ten foot (10') sidewalk on the other side, as provided in [12A-2, E.2.c.3](#) below. The Engineer will determine on which side of the street the ten foot (10') sidewalk will be placed.
- 3) In cases where the proposed sidewalk provides a connection between existing sidewalks that are less than the required width, the proposed sidewalk may be constructed to match the width of the adjacent sidewalks. However, this modification is not allowed in cases where one end of the proposed sidewalk will provide a connection to future sidewalks for new development. In such a case, the sidewalk should be tapered to provide a transition between differing sidewalk widths. The Engineer will determine where along the street the transition should occur. Accessible

sidewalk curb ramps shall be 5' width and transition to a narrower width after the common panel.

- e. (ADD) All sidewalks and trails must connect to other adjacent sidewalks and trails and to the property line to provide for their extension to adjacent properties. The sidewalk width will be equal in width to the sidewalk or trail to which it connects.
- f. (ADD) If a midblock sidewalk connects to sidewalks of two different widths, the midblock sidewalk must be equal in width to the wider sidewalk.
- g. (ADD) On Iowa DOT based projects, the design will include five foot (5') sidewalks unless otherwise requested. (R302.3)

3. Pedestrian Street Crossings:

a. Cross Slope

- 4) Design should consider drainage throughout intersections and street crossings and make sure that water does not pond on the street.

4. Curb Ramps:

b. Technical Requirements:

7) Turning Space:

- c) **Size: (REPLACE)** The turning space shall be a minimum of 5 feet by 5 feet unless otherwise approved by the Jurisdiction.

6. Detectable Warnings:

- f. (ADD) **Materials:** Detectable warning shall be cast iron panels with brick red color.

12A-4 – Pedestrian Facilities During Construction

E. Temporary Pedestrian Facilities

(ADD) Pedestrian volumes should be considered when designing temporary pedestrian facilities. Temporary pedestrian facilities utilizing granular surfacing material should not be considered for durations greater than five (5) days unless approved by the Jurisdiction.

12B-2 – Shared Use Path Design

C. Shared Use Path Design Elements

- 2. **Minimum Surface Thickness: (REPLACE)** For Iowa DOT projects, contact the Pavement Design Section in the Office of Design for a pavement determination. For local agency projects administered through Iowa DOT, Iowa DOT will accept the thickness design as determined by the engineer.

The minimum thickness for shared use paths should be six (6) inches with a 4-inch granular subbase.

(ADD) 12C-1 – Parkway Requirements

The area between the back of curb and the sidewalk is the parkway. It has been referred to as the “parking” area within the SUDAS Design Manual as well as the SUDAS Standard Specifications. In this case, “parking” should be synonymous with parkway. The parkway shall slope to the street at a rate of $\frac{1}{2}$ of an inch vertical per horizontal foot. The following applies to the parkway:

1. In residential areas, this area shall be grassed except in such areas that the width is too narrow so that grass does not grow well. In narrow areas, the alternate materials described in c (below) may be used upon approval of the Engineer.
2. In commercial areas, alternate materials may be used in the parking or parkway upon approval of the Engineer. The alternate materials are listed in c (below).
3. Alternate materials include exposed aggregate concrete, asphalt, and brick or concrete pavers, which are placed on an asphalt or concrete base.

CHAPTER 13 -

Traffic Control

Currently, there are no supplemental design standards for [Chapter 13](#) – Traffic Control.

CHAPTER 14 - Trenchless Construction

14B-1 – Planning a Bore

D. Acceptable Tolerances

(ADD) The minimum design slope should be 2.0% for gravity flow sewers.

END OF THE DESIGN SUPPLEMENT