

## **Kenosha Water Utility Standard Construction Specifications**

### **General Construction Specifications**

---

## Table of Contents

1) Municipal, State and National Standards .....	3
2) Definitions.....	3
3) Special Provisions, Specifications, and Code .....	3
4) Pre-Project Requirements .....	4
5) Utility Facility Management.....	5
6) Excavation and Site Management .....	6
7) Erosion Control .....	9
8) Safety .....	10

## Section 0000 –General Specifications

### 1) *Municipal, State and National Standards*

#### 1.1. Standards

- a) All work shall be done in accordance with relevant sections of the following documents:
  - i) State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction, Current Edition
  - ii) Wisconsin Administrative Code
  - iii) AWWA Standards
  - iv) Standard Specifications for Sewer & Water in Wisconsin, latest Edition
  - v) DNR Chapter 110, Sewerage Systems
  - vi) DNR Chapter 811, Requirements for the Operation and Design of Community Water System
  - vii) NSF/ANSI 61, Drinking Water System Components—Health Effects
  - viii) Wisconsin Construction Site Best Management Practice Handbook, DNR
  - ix) Wisconsin Manual on Uniform Traffic Control Devices (MUTCD)

### 2) *Definitions*

#### 2.1. Definitions

- a) Engineer: Shall mean the “Design Engineer” from Kenosha Water Utility or an authorized representative that stamped the final Construction Plans.
- b) Owner: The “Owner” refers to the Kenosha Water Utility.
- c) Developer: The “Developer” refers to the company, person, or organization developing the project. The “Developer” shall be the same identification in the Developer’s Agreement with the Kenosha Water Utility.
- d) Contractor: The “Contractor” is the company hired by the Developer, City, or Water Utility to construct the improvements as identified in the construction engineering plans and the Developer’s Agreement.
- e) Inspector: The “Inspector” refers to the Construction Resident Engineer that is from the Kenosha Water Utility or a Consultant authorized to oversee the project on KWU’s behalf.

### 3) *Special Provisions, Specifications, and Code*

#### 3.1. Definitions

- a) When one or more documents conflict between City and KWU Specifications, the Contractor shall comply with KWU Special Provisions, then KWU Specifications, and finally City of Kenosha Standards and Specifications.
- b) The Contractor shall comply with The City Code of General Ordinances, latest version and these standard construction specifications. Should there be a discrepancy between plans and these construction standards, the construction standards shall govern.
- c) The warranty provisions listed under the City’s “Standards for Public Right-of-Way Restoration” shall be addressed by Kenosha Water Utility with the exception of the first year warranty period which shall be the responsibility of the Contractor.

#### 4) *Pre-Project Requirements*

##### 4.1. *Construction Methods*

- a) Plans and material submittals must be approved by KWU prior to start of construction.
- b) All required easement(s), licenses, and local, county, State, and federal permits must be obtained prior to the start of construction.
- c) All prime Contractors shall be pre-qualified in the current year by Kenosha Water Utility 5-days prior to the opening of bid documents. Subcontractors are not required to be pre-qualified unless required by the Director of Engineering.
- d) Prior to the start of construction, a pre-construction conference must be held. The pre-construction conference shall be scheduled and moderated by then Engineer.
- e) The Contractor shall have a complete set of the approved project plans and specifications at the project site at all times.
- f) The Contractor shall obtain and/or provide a copy of all permits that are associated with the project.
- g) The locations of utilities shown on the Plans are from existing record(s) and/or field locations and may not be complete or accurate. The Contractor shall contact Digger's Hotline at (800) 242-8511, as well as other utilities not served by Digger's Hotline but having facilities in the work area, at least three (3) full business days prior to construction to notify the utilities to locate their underground facilities.
- h) The Contractor shall visually record the entire construction area including the right-of-way, prior to construction. The recording should include all streets, driveways, sidewalks, curb and gutter, and areas adjoining the project location. The purpose of this video record is to verify any damage complaints or claims. The video record shall be presented to the Engineer in USB/Flash Drive format no less than seven (7) days prior to the start of construction. The video record shall be considered incidental to the cost of the Contract.
- i) It shall be the responsibility of the Contractor to protect all utilities that are encountered in his work operations. The Contractor shall contact utilities to determine their procedure and schedule for supporting and/or relocating utilities and shall notify any above ground utility such as electric and telephone companies to relocate or reinforce any poles, ties or anchors which may be on or near the line of the proposed utility or weakened by excavation for the proposed utility or within road construction grading limits. Damage to existing facilities, publicly or privately owned, shall be repaired by the Contractor at no cost to Kenosha Water Utility.
- j) Contractor shall inform property owners that private facilities (i.e sprinkler systems, invisible fence, etc) should be marked prior to the start of construction. The Contractor shall be responsible for any damage to marked systems. In the event that a system is not marked, the property owner shall be responsible for any damage until the time that The Contractor becomes aware of the system. The costs associated with sprinkler system repairs shall be considered incidental to the project.

## 5) *Utility Facility Management*

### 5.1. *Construction Methods*

- a) Operation of existing water main valves will be performed by the Kenosha Water Utility (KWU) or by contractor under supervision of KWU, with proper notice.
- b) Opening of manhole lids or entry of any kind into the sewer system (i.e televising) will be performed by the Kenosha Water Utility (KWU) or by contractor under supervision of KWU, with proper notice.
- c) KWU personnel shall shut down existing water mains when needed. The Contractor shall provide 72 hours notice to the Engineer prior to the shutdown. All existing valves shall be operated by KWU personnel or by the Contractor under the direct supervision of KWU. The Contractor shall be responsible for notifying all homeowners and businesses that will be without water, 24-hours prior to and immediately before the shutdown.
- d) The Contractor shall notify property owners 48 hours prior to and immediately before blocking driveways. Contractor shall, at the end of each workday, have all driveways safely passable for residents. The maximum allowable time a driveway may be blocked is three days, for paving of aprons and the street in front of the driveway only. High Early Strength concrete (7-bag mix) shall be used for driveway aprons, sidewalks across driveway, and street in front of driveways.
- e) Prior to beginning work in any street, the Contractor shall become aware of, by personal inspection, test borings or careful trial excavation of the existence or location of any underground electric, telephone, fiber optics, cable TV, traffic signal wires or conduits, water, sewer or gas mains and service pipes, so that the Contractor may protect such installations from damage during the course of the work. It is the responsibility of the Contractor to become acquainted with the location of all underground structures which may be encountered or which may be affected by work under the contract. The location of any underground structures, shown on the plans, or given on the site, are based upon the available records but are not guaranteed to be complete or correct, and are given only to assist the Contractor in making a determination of the location of all underground structures. Because of the nature of the work, minor adjustments may be required in new construction to meet existing conditions. Such adjustments shall be made by the Contractor without additional cost to the Owner.
- f) Free access must always be maintained to fire hydrants, water and gas gate valves, inlets, manholes, and bus stops. Whenever free access to any such structure shall have been obstructed or interfered with during the progress of the work, the Contractor must immediately remove such obstruction or interference, at no expense to the Owner . When other utilities are damaged by the Contractor in the course of construction, they shall be replaced or repaired to the satisfaction of the utility, at the expense of the Contractor.

## 6) Excavation and Site Management

### 6.1. Soil Boring Data

- a) Soil boring information, if provided, is given for the convenience of the Contractor. It represents conditions as found by the Owner at the time the borings were made. The Owner does not assume responsibility for variations of soil and ground water at locations between borings noted on the contract drawings. Contractors are required to make their own borings, explorations, and observations to determine soil and ground water conditions. The Contractor shall plan the work based upon the Contractor's boring information.

### 6.2. Bedding, Cover and Backfill Material

- b) Bedding and Cover Material – Acceptable bedding and cover material shall be installed from a minimum of 4 inches (4”) below the water service invert to twelve inches (12”) above the top of pipe. The use of concrete regrinds for bedding and cover material is not acceptable.

**Table 6.1 Bedding and Cover Material (3/8” Chips)**

Sieve Size	Percent Passing by Weight
1/2” (12.7mm)	100
3/8” (9.5mm)	85-100
No. 4 (4.75mm)	10-30
No. 8 (2.36mm)	0-10
No. 16 (1.19mm)	0-5

- c) Granular Backfill Material – Granular backfill shall consist of durable stone particles ranging in size from fine to course in a substantially uniform combination. In areas where the excavated material can be reused it shall be necessary to place compacted granular backfill around the pipe and 12 inches over the top of the pipe. The granular backfill gradation shall be as follows:

**Table 6.2 Granular Backfill Material**

Sieve Size	Percent Passing by Weight
1-1/4” (31.5 mm)	95-100
1” (25mm)	-
3/4” (19mm)	70-93
3/8” (9.5mm)	45-80
No. 4 (4.75mm)	30-63
No. 10 (2 mm)	20-48
No. 40 (425µm)	8-28
No. 200 (75µm)	2-12

- d) Unscreened material is not acceptable. All granular backfill must be approved by the Owner prior to starting work on sewer or water facilities. Any change in backfill material shall require a new sample and must be approved before its use.
- e) Material used for bedding as specified above may be substituted for granular backfill material, at no cost to the Owner. All excavations in the street right-of-way shall be backfilled with granular material unless specifically noted on the plan. The granular backfill material shall not

contain more than ten percent clay by weight and the clay shall not be in the form of lumps. The cost of the granular backfill material used shall be included in the unit prices bid.

- f) Where granular backfill is required and material excavated from the trench is suitable for such backfilling, the Engineer reserves the right to order, in writing, the use of the excavated material in place of the granular backfill. The Owner shall then take a credit of \$5.00 for each cubic yard (\$6.50 per cubic meter) of excavated material. The volume shall be determined by using the outside diameter of the pipe plus 24 inches (600 mm) times length of and depth of trench.
- g) The use of concrete regrinds for trench backfill is also acceptable. The backfill material may be required to be tested by the City Public Works Department for acceptability if it deviates from the gradation requirements specified.
- h) Unless otherwise noted, Consolidation of trench backfill shall be by means of mechanical compaction. All required compaction testing shall be performed by the Owner and the cost back charged to the Contractor through deductive billing. The Contractor shall cooperate and provide whatever assistance, time and safe access is necessary for the performance of the tests. The trench shall be kept free of visible water during the backfill compaction work. Care shall be taken not to exert undue stress on the pipe during the compaction operation. The initial compacted lift shall be 2 feet (600 mm). Each subsequent compacted lift of material shall be no more than 18 inches (450 mm). The contractor shall use smaller lifts if the required compaction cannot be obtained. Granular backfill shall be so compacted as to result in a minimum of 95% Standard Proctor Density. Where the use of excavated material is allowed for backfill it shall be compacted with approved mechanical compactors to result in a density equal to 100% of the density of the existing adjacent material in the trench wall. No trench flooding shall be allowed under any circumstances.

### 6.3. Construction Methods

- a) The Contractor shall be responsible for transporting, disposal and leveling of all excess excavated material from this project at a site chosen by the Contractor. All disposal costs associated with the transporting, hauling, leveling, and erosion control shall be considered incidental to the cost of the Contract.
- b) Contractor shall provide all necessary signs, flagmen and lights required according to the "Manual on Uniform Traffic Control Devices". Access to all private drives and public street intersections shall be maintained and all disturbed areas completely restored.
- c) Precautions shall be taken to prevent damage to road pavements. Sheathing and bracing or the use of a portable trench box should be used to prevent undermining of material below the existing pavement.
- d) Backfill of utility trenches and other excavations located within five feet (5') of the edge of pavement shall be granular backfill compacted to 95% density in eighteen inch (18") maximum lifts. Compaction methods and testing shall conform to the requirements in the Specifications.
- e) Backfill around all manholes, valves, hydrants, valve boxes and under driveways shall be granular backfill compacted to 95% density in eight inch (8") maximum lifts.

- f) The Contractor shall be responsible for replacing or making repairs to paved roadways damaged by steel tracked equipment at no cost to Kenosha Water Utility.
- g) Storage space will not be provided by the owner. The Contractor shall be responsible for storing all material and equipment properly and safely. Prior to storing any item on private property, the Contractor shall provide the Kenosha Water Utility with copies of the agreement with the property owner. Materials and equipment delivered for the Contractor are to be neatly and compactly placed in such a manner as to cause the least inconvenience to the property owners and insure the safety of the general public.
- h) Materials and equipment shall not be placed within twenty feet (20') of any hydrant, pedestrian crossing, or intersection. Damage to the storage area shall be completely restored incidental to the cost of the Contract.
- i) Take appropriate measures to control dust. During periods of dry weather dust control will consist of applying water to the roadways and cleaning the streets as needed with a power broom to remove dust from the pavement.

## 7) *Erosion Control*

### 7.1. *Construction Methods*

- a) Erosion and sediment control shall, at a minimum, be placed in locations shown on the plans or as needed to control sediment and erosion on the site as follows below.
- b) All curb inlets within the project limits shall be protected with Type-C Inlet Protection in accordance with WDNR Technical Standard 1060 or Section 628 of the State Standard Specifications for Highway and Structures Construction (State Specifications), latest edition. All storm manholes with slotted grates located within the project limits shall have filter fabric installed below the cover to prevent construction debris from entering the storm sewer system. Inlet protection shall be installed prior to any pavement sawcutting operations. Additionally, any slurry generated by sawcutting shall be removed from the project immediately after sawcutting and not allowed to dry on the pavement for later removal.
- c) Erosion control shall include all material and labor to construct and maintain erosion sediment control measures following the Wisconsin Department of Natural Resources Technical Standards. When erosion control facilities are erected, contact the Engineer for an inspection.
- d) Check facilities weekly and within 24 hours following rainfall events over ½ an inch. Make needed repairs within 24 hours. Owner may suspend or limit the Contractor's operations pending adequate performance of any temporary or permanent erosion control measures requested by the Engineer. Install all erosion control devices before construction activities begin.
- e) Contractor shall comply with laws prohibiting pollution of any lake, stream, river, or wetland by dumping refuse, rubbish, dredge material, or debris therein. Silt fences and erosion bales shall be used and installed in accordance with the State Specifications. Follow State Specifications 628.2 and 628.3.

## 8) Safety

### 8.1. Construction Methods

- a) The Contractor shall comply with all Federal and State Laws, ordinances, codes and regulations which in any manner affect the conduct of the work.
- b) Contractor shall notify the Fire Department at 653-4100, Kenosha Police Department 656-1234, Public Works at 653-4050 and the Transit Department at 653-4287 (5:00 A.M. to 8:00 P.M.) prior to closing any street to traffic.
- c) The Contractor shall be responsible for compliance with all Federal, State, and local laws, including OSHA Standards, and with any other applicable laws, ordinances, rules, regulations and orders of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss. The Contractor shall provide all safeguards, safety devices and protective equipment and shall be responsible for initiating, maintaining and supervising all safety precautions and programs utilized by the Contractor and his subcontractors in the performance of their work and shall take any other actions necessary to protect the life and health of employees on the job and safety of the public and to protect property in connection with the performance of work on this project.
- d) The contractor shall be responsible for the construction means, methods, techniques or procedures, and equipment unless means and equipment are specified in the KWU Specifications or Special Provisions.
- e) Unattended trenches shall be secured in a safe manner and suitable for protection of the public. Providing the method of protection, equipment, personal, and materials needed to secure trenches is the sole responsibility of the Contractor. If the Contractor does not have adequate means to protect the trench then the trench shall be backfilled prior to leaving the trench unattended. Any area that Kenosha Water Utility believes is not properly protected shall be immediately corrected by the contractor in the interest of public safety. Minimum protection requirements are listed below:
  - i. All trenches shall be either completely covered by a steel plate no less than 3/4" thick or protected by orange plastic snow fencing. Snow fence shall be in good condition with no voids greater than 4-inches, minimum height of 4-feet, no greater than 4-inches off the ground, securely fastened and upright.
  - ii. Trenches within right of ways or easements open to any public traffic shall be delineated with reflective signs and/or flashing yellow lights and protected by barriers suitable to prevent vehicles from entering the trench. Depending on the location and traffic speed suitable barriers may include construction barrels, barricades, barrier wall, Contractor's equipment, etc.