SECTION 11

UTILITY EXCAVATION AND BACKFILL

11.1 DESCRIPTION

A. General:

This work consists of excavation, backfill and compaction of trenches for installation of underground utilities, which includes Private Utility Installations, Water Piping Systems, Sanitary Sewers, and Storm Sewers and Pipe Culverts. This includes, but is not limited to, dewatering, rock and/or muck excavation and disposal, bedding, and shoring and bracing.

B. Related Work:

Section 7	General Conditions
Section 8	Water Piping Systems
Section 9	Sanitary Sewer
Section 10	Clearing and Grubbing
Section 13	Removal Items
Section 14	Embankment
Section 15	Disposal of Surplus Excavation and Waste
Section 17	Salvaging, Stockpiling, and Placing Topsoil
Section 18	Erosion and Water Pollution Control
Section 19	Incidental Work
Section 41	Utility Trench Resurfacing
Section 54	Pipe Culverts
Section 90	Traffic Control
Section 112	Select Granular Backfill
Section 120	Reinforced Concrete Pipe
Section 121	Corrugated Metal Pipe
Section 117	Aggregates for Granular Bases and Surfacing
Section 200	Controlled Low Strength Material

C. License and Permit Requirements

1. Any person or Contractor engaging in the business of excavating in the public right-of-way (ROW) shall comply with the provisions of the Rapid City Municipal Code, Chapter 13.10, “Trenching Contractor’s Licenses”. The Contractor shall refer to Chapter 13.10 for the actual definition of work covered under the code.

2. Any person or Contractor engaging in the business of excavating in the public ROW for such purposes of constructing, altering, repairing or improving water and sewer mains; appurtenances and/or service lines and storm sewers shall comply with the provisions of the Rapid City Municipal Code, Chapter 13.10,

"Trenching Contractor's Licenses". The Contractor shall refer to Chapter 13.10 for the actual definition of work covered under the code.

3. Dirt/dust control shall be as specified in Section 7.28.

4. City of Rapid City, South Dakota Department of Transportation (SDDOT) and Railroad Right-to-Work Permits are required from the same when working within their ROW.

5. A Right to Work permit, if applicable, is required from the City of Rapid City Utility Maintenance Group (Utility Maintenance).

6. Tapping fees for the taps themselves shall be paid for at the time the Right to Work permit is obtained from Utility Maintenance.

7. New Account Set-up inspection permits (tapping permits), if applicable, are required from Utility Maintenance.

8. Blasting and the use of explosives

   a. The Contractor shall comply with all Federal Regulations and OSHA provisions.
   b. The Contractor shall comply with Section 7.43 – General Conditions, "Use of Explosives".
   c. A permit for use of explosives shall be obtained from the Rapid City Fire Department.

D. Submittals/Test Samples

1. Soil tests

The Contractor shall provide the Engineer with the results of a modified proctor soil compaction test, as determined by the AASHTO T180 test, for those locations and depths determined by the Engineer. When requested, the Contractor shall provide the Engineer with no less than 25 pounds of each sample appropriately labeled with the project title, the location from which the sample was obtained and the date of sample collection. A City Construction Observer shall be present during sample collection. Soil samples shall be submitted to a certified soils testing lab within 24 hours of the Engineer's request. Failure to do so will cause the City to submit the samples and charge the Contractor at one and a half (1½) times the cost incurred. Results shall be delivered to the City directly from the testing Laboratory.

2. The Contractor shall submit to the Engineer a Traffic Control Plan for the proposed construction activity unless waived by the Engineer. The Traffic Control Plan shall conform to Standard Specifications.

Should the Contractor cause the trench to be excavated to a greater depth or width than that designated of the drawings, herein, or as directed by the Engineer, the Contractor shall refill to grade, at his own expense, with an approved material, not-with-standing that it may be necessary to bring such material from other localities or to purchase suitable material with which to form a solid bed for the pipe.

Frozen material shall not be permitted as trench backfill.

Prior to backfilling, the Contractor shall not sell, remove, or permit to be removed, suitable backfill material required to complete the project, provided a designated stockpile location is provided. If suitable backfill material is removed, the Contractor shall document the quantity of material removed and provide this information to the Engineer within 24 hours of its removal.

E. Embankment

Where embankment is necessary to support pipe or to cover or protect it in any way, it shall be placed to the dimensions shown on the plans or as directed by the Engineer. The surface of the ground receiving the embankment shall be cleared of all unsuitable material and scarified, or loosened with a disc or multi-toothed hydraulic ripper; moisture adjusted and re-compacted as directed by the Engineer. Embankment shall then be formed of an approved material and compacted to the densities specified herein unless otherwise specified. Embankment shall be placed prior to laying pipe. Unless otherwise approved, pipe laid in embankment shall be trenched in.

F. Compaction

The Contractor shall compact all backfill to the following densities, unless modified by the Detailed Specifications or by the direction of the Engineer:

SOIL TYPE	BACKFILL MOISTURE CONTENT	% OF MAXIMUM DRY DENSITY
Cohesive	3% Below to 8% Above Optimum	92% Minimum
Non-cohesive	Workable	95% Minimum

Maximum dry density and optimum moisture content shall be determined by the AASHTO T-180, Modified Proctor Test.

Backfill moisture and density shall be determined at least every 200 feet horizontally and every three (3) feet vertically in pipe line trenches. However, the Engineer may take moisture and density tests at any location and depth he desires. The Contractor shall, at his own expense, excavate the backfill at those locations and to those depths required by the Engineer to conduct moisture/density tests.

When specified moisture contents are not met, the Contractor has the options of drying wet soil, furnishing approved materials meeting specifications, or adding water as necessary, to soils that are too dry to meet specifications. If water is added to dry soil, it must be thoroughly mixed with the soil to provide uniform moisture content prior to backfilling.

Backfill material not meeting specified densities shall receive additional compaction or shall be removed and replaced at the Contractor's expense as necessary to meet specified densities. Wet soils that otherwise meet the requirements for backfill do not necessarily constitute unsuitable material. It is the contractor's responsibility to either dry the material or furnish other approved material at his expense, unless otherwise specified herein. When the Contractor furnishes backfill material, he shall also furnish the results of the AASHTO T-180 test for the furnished material.

Controlled Low Strength Material installed in accordance with Section 200 or as directed by the Engineer will not require compaction testing.

The Contractor shall not place the finished surface (asphalt, curb and gutter, grass, etc.) until the specified densities are met at each test location and the Engineer gives his approval for placement.

Trench flooding, with water, as a method of compaction is prohibited.

G. Frost

When frost in the ground becomes deep enough to inhibit excavation, the Contractor may request a stop work order. However, it shall be the Contractor's responsibility to prove to the Engineer that the cost of excavation due to the frost is excessive and a stop work order is justified. The request for the stop work order shall be made in writing. Regardless of when the request is made, contract time will not stop until the stop work order is issued, i.e. the order will not be retroactive. Stop work orders shall be made in accordance with Section 7 unless otherwise modified herein.

As a prerequisite to issuance of the stop work order, the Contractor shall backfill and compact all open excavations and clean up the project to the satisfaction of the Engineer.

The Engineer may issue a Notice to Proceed when conditions improve to the point where frost does not inhibit excavation and a resumption of work is possible. The resumption of work and Notice to Proceed shall be made in accordance with Section 7 unless otherwise modified herein.

H. Cleanup

Trenches located in public right-of-way shall be backfilled, compacted, and restored to original condition as soon as practicable. In cases where the permanent surfacing will not be placed within 24 hours of backfill, the Engineer may require temporary surfacing. Temporary surfacing shall be considered as incidental to the bid item for