

SECTION IV. PIPELINE EXCAVATION AND BACKFILL

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A. DESCRIPTION OF WORK

1. Extent: Excavation of trenches for pipelines shall include the excavation of all materials, of whatever nature coming within the designated lines of the trenches, as hereinafter described. It shall include the excavation of all materials required for the construction of manholes, flush tanks, clean-out boxes, meters, pressure regulators and other appurtenances as shown on the drawings. It shall include all excavation required for the removal or lowering of existing pipelines or appurtenances and shall include all necessary clearing and grubbing, all necessary draining, pumping, timbering, sheeting and subsequent removal of these materials. It shall include the disposal of all material excavated and the backfilling of the trenches and appurtenant structures as hereinafter provided.

2. Standard Trench Details: Detailed drawings of the various types of trenches are contained in the Standard Construction Drawings of these Standards and Specifications.

3. Traffic Warning Signs: UDOT approved warning signs shall be provided and maintained by the developer 24 hours per day, 7 days a week during the excavation work.

4. Sub-grade: The sub-grade for all pipeline trenches is hereby defined to be the bottom of the trench at the elevation of the outside bottom of the pipe.

5. Undesirable Material: If any undesirable material is encountered in the bottom of the trench, the contractor shall make such additional excavation and shall replace it with Class C reject chip, -3/8; said chips shall be consolidated into place.

6. Disposal of Seepage and Storm Water: The developer shall remove all seepage and storm water that may be found or may accumulate in the excavation during the progress of the work. The developer shall furnish all labor, pumps and other equipment and appliances necessary and shall keep all excavations entirely free from water at all times during the construction of the work and until instructions are given to cease pumping. All spoil material from trenching shall be removed from City property and the site thoroughly washed and cleaned.

a. Discharge Permit: A discharge permit will be required if pumped waters will reach the waters of the State or of the United States.

7. Tunneling: Tunneling not permitted.

8. Protection of Pipes: All water, gas, sewer or other pipes encountered in excavating for the trench or appurtenances shall be supported and protected from damage, in a satisfactory manner.

B. SURFACE TYPES

1. Trenching in Asphalt: All trenching that cuts existing asphalt shall be done according to Type "A" or Type "F" trench drawings in the City Standard Construction Drawings.

a. Saw-cutting: Existing asphalt is to be uniformly and evenly saw cut with no broken or loose edges. Existing concrete shall be saw cut or an entire section removed to an existing joint.

b. Shoulder Cuts: Prior to trenching on asphalt streets without curb and gutter the contractor will verify with the Public Works Director the best location for the new utility main in order to preserve existing asphalt. The minimum patch width from the existing edge of asphalt shall be no less than three (3') feet.

2. Trenching in Unpaved Streets: Where the trench is in an unpaved street or along gravel shoulders, see the Type "G" trench detail in the City Standard Construction Drawings.

3. Trenching in Grass Sod: See the Type "S" trench detail in the City Standard Construction Drawings.

C. BACKFILL

1. Granular Fill: Granular fill may be used in asphalt streets where the cut runs generally parallel with the flow of traffic.

a. Compaction: All granular backfill shall be installed in eight inch (8") minimum lifts and compacted to a tolerance of plus or minus two percent (+/- 2%) of optimum density. All backfill shall be compacted to ninety-five percent (95%) density according to D698 Proctor testing procedures.

b. Testing & Acceptance: Compaction test reports shall be prepared by a qualified and licensed engineer and submitted to the City Engineer prior to acceptance of the

work. For all underground utilities, the first utility started must be completed with all accepted and approved compaction test results before another utility installation may begin. In the event that said utility is more than 1000' lineal feet long, compaction tests need to be accepted and approved on the first 1000 ft. before work on said utility may continue. Backfill that has not been inspected and tested or that fails the compaction test, shall be re-excavated, backfilled, compacted, and re-tested at no cost to the City.

One test will be performed within each 100 ft. length of the phase/utility. This test may be taken at any depth. This location will be specified by the City Engineer.

Failure to comply with Testing and Acceptance regulations may result in work/project stoppage.

2. Flowable Fill: Controlled density flowable fill shall be installed as backfill in existing asphalt where the trench cuts perpendicular to traffic flow. Temporary steel traffic plates shall be placed over the top of the flowable fill until cured. The plates shall bridge the trench and made secure. Flowable fill is also required at all crossings under large pipes, canals, streams, and ditches.

a. Type "F" Trench: Trenches to be backfilled with flowable fill are shown in the City standard details in the Standard Construction Drawings as a Type "F" trench.

b. Exception: Water service lateral trenches may be backfilled with compacted granular fill according to a Type "A" trench in lieu of flowable fill.

c. Density: Flowable fill shall have a density of +200 psi at pipeline crossings under 12" plus pipes, canals, ditches, streams, and all locations where pipe casings are required by the City. (See the Standard Construction Drawings for the standard casing details.)

d. Underground/Horizontal Boring: When it becomes necessary to cut/pothole in the City right-of-way, Controlled density flowable fill shall be used to fill the void created. Flowable fill shall not exceed 200 PSI maximum strength.

Unfilled voids shall be protected with approved traffic control devices until such time as the Controlled density flowable fill is placed and cured.

3. Bridging: With the approval of the City Engineer, the contractor may construct suitable bridging over the trench at all street intersections and at driveways to property abutting the line of the work and at such other points as may be required. The bridging shall be of sufficient strength to carry the loads required. For public vehicle crossings, it shall be capable of supporting a fifteen (15) ton truck. Bridging must be maintained to ensure safe conditions.

4. Material Under, over and Around Pipe: Backfill material under, around and to one foot (1') over the pipe shall be per pipe manufacturers recommendations.

5. Settling of Areas: All subsequent settling of backfill areas will become the sole responsibility of the contractor for a period of not less than two years following the final approval of the entire project. Asphalt surfaces may deviate no more than 1/2" when measured with a ten foot straight edge. Concrete sidewalks/walkways must meet current ADA standards.

6. Impervious Backfill: Impervious backfill shall be required at irrigation canal crossings or other waterway interferences. A detailed plan will be submitted to the City for approval.

7. Spoil & Waste Material: All broken asphalt and concrete and all spoil or waste material from excavations and trenching shall be removed from City property and rights-of-way and disposed of by the developer.

D. SURFACE RESTORATION

1. General Requirement: All areas disturbed by excavation and backfilling shall be restored to their original or better condition at the contractor's expense. The surface restoration shall meet the approval of the City before the work is accepted

2. New Asphalt: All new asphalt pavement surfaces must be flush with the existing asphalt surface with no bumps, dips, or ripples. Any new asphalt that bulges or settles more than one-half inch within one year of installation shall be re-excavated, backfilled and compacted to a depth specified by the City, and then re-paved, all at the developer's expense. If the asphalt plants have closed for the winter, then cold-mix asphalt shall be installed temporarily and replaced with hot-mix when the plants re-open.

3. Existing Driveways: Existing driveway approaches are to be restored with new asphalt, concrete, or gravel, depending on the existing driveway material. Asphalt and concrete driveways are to be saw cut or replaced to the nearest existing joint.

4. Sodded Areas & Lawns: Where the pipeline or structure is located on, along or across sodded parking strips, lawns or grass plots, these areas must be restored to existing or

better condition with new grass sod according to the standard trench detail in the Standard Construction Detail Drawings.

a. Inspection: Sodded areas will be accepted at final inspection only if they are properly established, free of bare or dead spots and weeds, and if no surface soil is visible after the grass has been cut to a height of 2 inches. Areas sodded after November 1st will be accepted the following spring (May 1st) approximately one month after the start of growing season. Sod that fails to establish due to faulty material or workmanship must be replaced at no additional cost to the city. Remove warning tape and lathe after the sod has been inspected and accepted by the city.