

**CITY OF FARGO SPECIFICATIONS  
EXCAVATION, FILLING, AND SUBGRADE PREPARATION**

**PART 1  
DESCRIPTION OF WORK**

The work to be done under this section of the Specifications and the accompanying plans consists of all labor, material, accessories, and equipment necessary to perform excavations, fills, embankments, subgrade preparation, topsoiling, and such other work and incidentals as may be necessary to properly complete the work.

**PART 2**  
**MATERIAL**

2.1. TOPSOIL

*2.1.1. TOPSOIL - IMPORT*

Imported topsoil shall be fertile loamy material having a pH between 5.5 and 6.5 that is free from roots, vegetation or other debris of such size and quantity that prevents proper placement of the topsoil, free of stones and clods over 1/2-inch in greatest dimension, and free from noxious weeds, seeds and/or roots.

*2.1.2. TOPSOIL – IMPORT SPECIAL*

If specified, TOPSOIL – IMPORT SPECIAL shall be fertile loamy material having a pH between 5.5 and 6.5 that is screened so as to be completely free from rhizomes, roots, vegetation, stones, clods, noxious weeds, seeds, roots, and/or other debris.

*2.1.3. SALVAGED TOPSOIL*

Topsoil that is stripped and reused on the site shall be free from roots, vegetation or other debris of such size and quantity that prevents proper placement of the topsoil, free of stones and clods over 1/2-inch in greatest dimension.

2.2. IMPERVIOUS FILL

Clay for levees shall be cohesive and consist of material classified by ASTM D-2487 as CL or CH. Gradation shall not have less than 40% by weight passing the No. 200 sieve. The liquid limit (L.L.) shall be greater than 25% and plasticity index (P.I.) greater than 10 percent. The material shall be free of ice, snow, frozen earth, trash, debris, sod, roots, organic matter including silts which are unstable, inorganic materials too wet to be stable or stones larger than 3-inches in any dimension.

2.3. BORROW MATERIAL

The Contractor shall be responsible for securing borrow material for completing embankment construction unless a borrow site is supplied by the city of Fargo and identified in the

accompanying plans. Borrow material for embankment construction shall meet the requirements for Impervious Fill as described above.

**PART 3**  
**CONSTRUCTION**

**3.1. LOCATION AND PROTECTION OF EXISTING UTILITIES**

The location of the public or private utilities may be shown on the plans, as reported by the various utility companies and the City, but this does not relieve the Contractor of the responsibility of determining the accuracy or completeness of said locations. North Dakota law requires the Contractor to contact ND One-Call at 800-795-0555 prior to any underground interference. The Contractor shall protect all trees, shrubs, manholes, water shut-off, survey monuments, or any other existing utilities from damage. Any utilities that are damaged during the course of the work shall be repaired or replaced to the satisfaction of the Engineer at the Contractor's expense.

**3.2. CLEARING, GRUBBING, AND TREE REMOVAL**

Clearing, grubbing, and tree removal shall be in accordance with Section 1050 of these Specifications.

**3.3. TOPSOIL**

The Contractor shall remove and stockpile all topsoil in areas of excavation as delineated in the field by the Engineer in accordance with Section 1050 of these Specifications.

Immediately prior to placing the topsoil, the subgrade shall be loosened by disking or scarifying to a depth of two inches to provide for the bonding of the topsoil to the subgrade. Topsoil shall be placed on all areas to meet prescribed thicknesses and grades to provide soil capable of supporting grass growth in accordance with *BOULEVARD FILLING AND GRADING* below. Topsoil shall be graded to drain then moderately compacted by use of a soil-roller or other Engineer-approved method. Irregularities or low spots resulting from the topsoiling or other operations shall be corrected in order to prevent pockets where water may stand. Topsoil shall not be placed when the subgrade is frozen, excessively wet, extremely dry, or in a condition otherwise detrimental to the proposed plantings or the grading operation.

3.4. EXCAVATION

This item shall include all labor and appliances necessary to bring the subfoundation to the desired subgrade elevation. The subgrade shall be defined as the area inside one-foot (1') behind the back of curb, and to the alley paving limits in the case of excavation prior to the paving of streets.

This item shall include the grading of the roadway to meet alley returns.

Excavated material shall be removed to the approximate elevation of the subgrade and deposited at locations designated by the Engineer. The free haul under this item shall not exceed one mile one-way unless indicated otherwise.

Material excavated from any part of this contract, if used as fill on this contract, shall be paid for only under excavation and not as "fill".

3.4.1. SUBCUT

After the excavation work has been completed, the Engineer will be the sole judge as to whether a subcutting operation will be required to correct an unstable or extremely wet subgrade condition. The decision on whether to subcut will not be a Contractor's option. In no way should this subcut item be misconstrued to be used to correct situations resulting from rainfall during construction, which require drying operations at the Contractor's expense.

Unless otherwise approved by the Engineer, the subcutting operation shall be performed in the following manner:

- A. Soil shall be hauled out of the unstable area for the entire width of the excavation to the depth directed by the Engineer.
- B. The excavated or subcut area shall then be scarified to a depth of 6 inches, dried to a moisture content within 5% of optimum and compacted to a minimum of 90% of Standard Proctor density with equipment specifically designed to uniformly compact the soil.
- C. The Contractor will be required to allow sufficient time for the City to cross-section the subcut area before the backfilling process begins.

- D. The Contractor shall aerate the subcut/excavation area to achieve a uniform working platform on which to begin construction of a suitable subgrade. This work shall be done prior to the start of backfilling operations.
- E. Fill shall then be placed per the requirements specified for Fills and Embankments.

#### *3.4.2. DISPOSAL OF EXCESS MATERIAL*

All excess excavated material shall become the property of the Contractor and shall be disposed of away from the work site at such locations and in such a manner as the Engineer may direct. The Contractor shall furnish a dump person at no expense to the City. Broken concrete, asphalt, and other similar materials shall be separated from the earth fill and hauled to the City of Fargo landfill.

Stockpiling: On projects where the City retains ownership of the excess material at a site designated on the plans or special instructions, the Contractor shall stockpile the material. These costs to haul and shape the material to a drainable, mowable stockpile shall be included in the cost of other bid items.

#### *3.5. FILLS AND EMBANKMENTS*

Fills and embankments as required by the plans shall be constructed with earth obtained from the excavation to the maximum extent possible. Material used in fills or embankments shall be free of organic or other objectionable material. Unsuitable fill material shall be disposed of per the requirements specified above for Excess Material.

Before any fill is placed on the existing subgrade it shall be scarified and compacted per the requirements specified above for Subcut. Fill shall then be placed in successive horizontal layers not to exceed six (6) inches uncompacted thickness and spread and leveled prior to compaction. Each layer shall be properly compacted to 95% of Standard Proctor density at the optimum moisture content  $\pm$  3%. Compaction shall be accomplished by equipment specifically made to uniformly compact the soil. Areas of the fill inaccessible to rollers or compactors shall be compacted by hand tampers to the required density.

Motor graders or other equipment acceptable to the Engineer shall be used on each lift to spread the material and to obtain uniform thickness before compacting. As the compaction of each layer

progresses, continuous leveling, disking, and manipulating shall be provided to assure uniform soil distribution, moisture, and density control. Construction equipment shall be routed uniformly over the entire surface of each layer; and, if open to traffic, the embankment shall be maintained so that the public can safely traverse the work area.

Benching shall be required whenever embankment is placed against slopes 4:1 and steeper. The back of the bench shall be nearly vertical with the horizontal cuts being made as close together as slope permits, but with no step being less than 24 inches in width. Each horizontal cut shall begin at the intersection of the original ground and the vertical sides of the previous cuts. Excavated material shall be recompacted along with new embankment material. The cost for benching and recompacting shall be included in the price bid for other items.

### 3.6. PREPARATION OF SUBGRADE FOR PAVING

After the cross sections have been completed, the entire subgrade shall be scarified to a depth of not less than six (6) inches and compacted. The material shall be compacted to 95% of Standard Proctor density at the optimum moisture content  $\pm 3\%$ . In no case shall the moisture content of the soil being compacted exceed 30%. If the elevation of the subfoundation is below the desired level after rolling, suitable fill shall be added and compacted in accordance with this Specification. Areas of the fill inaccessible to rollers or compactors shall be compacted by hand tampers to the required density.

Fine grading shall be finished for a suitable distance ahead of the paving to allow adequate time for a final check for finished grade and compaction. No paving shall be started until the results of the compaction tests are known, the final grade has been checked, and the Contractor has been given the notice to proceed by the Engineer. Final grade shall be within  $1/2"$  (0.04').

After completing the subgrade preparation, the Contractor shall take appropriate action to eliminate all unnecessary traffic on the prepared subgrade prior to placing the aggregate base.

#### *3.6.1. SUBGRADE PREPARATION FOR ASPHALT PAVING*

The finished surface of the subgrade must be parallel to the planned finished surface of the asphalt wearing course, and at the necessary elevation to allow for the thickness of the specified aggregate base, the asphalt base course, and the asphalt wearing course.

*3.6.2. SUBGRADE PREPARATION FOR CONCRETE PAVING*

The finished surface of the subgrade must be parallel to the planned finished surface of the concrete pavement, and at the necessary elevation to allow for the thickness of the concrete pavement and the specified aggregate base.

*3.6.3. SUBGRADE PREPARATION FOR SEPARATE CONCRETE CURB AND GUTTER*

The finished surface of the subgrade must be parallel to the planned finished surface of the concrete curb and gutter, and at the necessary elevation to allow for the thickness of the concrete curb and gutter and the specified aggregate base.

*3.6.4. SUBGRADE PREP FOR SIDEWALKS, DRIVEWAYS, AND IMPRESSIONED CONCRETE*

The finished surface of the subgrade must be parallel to the planned finished surface of the concrete, and at the necessary elevation to allow for the thickness of the concrete section and a two (2) inch minimum aggregate base.

*3.7. BOULEVARD FILLING AND GRADING*

When the plans call for filling and/or grading of boulevards or when the construction activity occurs in built up areas, this item shall include all labor, material, and equipment to properly level backfill, compact to 90% of Standard Proctor within 5% of optimum moisture, and level the boulevards with topsoil between the curb and the property line or the present sidewalk line. When well-established boulevards already exist, the backfilling shall blend into the present boulevard.

The above work shall be done as follows:

- A. All debris shall be removed from behind the curb, such as wood, rock concrete and other debris that may hinder the work.
- B. Before the topsoil is placed behind the curb on new construction projects, boulevard dirt shall be brought to a straight grade from four inches below the sidewalk to four inches below the top of the curb. For reconstruction projects, boulevards shall be uniformly graded and have at least 4" of moderately compacted topsoil spread.



- C. All curb stop boxes shall be raised to finished grade.
- D. The top four inches shall be native topsoil only, free of sod, hard lumps, gravel, rocks, subsoil, or other undesirable material.
- E. No equipment weighing more than the average lawn-building equipment will be allowed on the boulevards during the placing and leveling of the topsoil.
- F. Backfilling shall be done as soon as possible after the adjacent concrete slabs, curbs, sidewalks or driveways achieve a strength of 3,000 psi.

The City Water Department will be checking all curb stop boxes for straightness at the end of the project. Deficiencies shall be corrected by the Contractor at his sole expense.

**PART 4**  
**GUARANTEE, MEASUREMENT & PAYMENT**

4.1. GUARANTEE

The guarantee shall be per the contract.

4.2. MEASUREMENT AND PAYMENT

*4.2.1. CLEARING, GRUBBING, AND TREE REMOVAL*

Payment for clearing, grubbing, and tree removal will be per Section 1050 of these Specifications.

*4.2.2. TOPSOIL*

Topsoil will be paid as follows:

- A. TOPSOIL STRIPPING: Topsoil stripping shall be in accordance with Section 1050 of these Specifications.
- B. TOPSOIL SPREADING: Topsoil spreading items shall be paid for at the contract unit price for the various items, and shall include placement and finish-grading. Cubic-yard quantities shall be computed by the Engineer by multiplying the thickness times the measured square-yardage.
- C. TOPSOIL IMPORT and IMPORT SPECIAL: Payment for topsoil import shall include the supply, transport, placement, and finish-grading of topsoil meeting the requirements of this section of the Specifications.

*4.2.3. EXCAVATION*

Excavation quantities will be calculated from one foot behind back of curb to one foot behind back of curb and will be paid for at the contract unit price bid per cubic yard. The cubic yard of excavation shall be determined by cross sections using the average end area method.

#### 4.2.4. *SUBCUT EXCAVATION*

Subcut excavation quantities will be calculated by the average end area method over the subgrade area as defined in section 3 above, and will be paid for at the contract unit price bid per cubic yard. The unit price shall include all costs necessary to satisfactorily complete the subcutting operation.

#### 4.2.5. *SUBGRADE PREPARATION*

Subgrade preparation will be paid for at the unit price bid per square yard for the area of the subgrade as defined in section 3 above.

#### 4.2.6. *FILLS AND EMBANKMENTS*

The cost of placing and compacting fills and embankments when using materials excavated under this contract shall be included in the contract unit bid price per cubic yard of excavation, unless fill is specifically provided for in the bid sheet as a bid item and addressed in the special instructions.

#### 4.2.7. *BOULEVARD FILLING AND GRADING*

All costs for boulevard filling will be paid in accordance with *FILLS AND EMBANKMENTS* above. All costs for grading and topsoiling shall be included in the price bid for other bid items unless a bid item is provided on the bid sheet.

#### 4.2.8. *CURB STOP TO GRADE*

All costs for adjusting each curb stop box to finished grade, including any/all necessary extensions, shall be included in the contract unit price for CURB STOP TO GRADE.

#### 4.2.9. *OTHER COSTS*

All other costs for work necessary to properly complete the work specified herein shall not be bid items; the costs shall be charged to other items unless a bid item is specifically included on the bid sheet.