

**SECTION 31 23 00**  
**EXCAVATION AND FILL**

**PART 1 GENERAL**

1.01 SUMMARY

A. Section Includes:

1. Excavation and fill for roadways, foundations, channels, ponds, and other areas.

B. Related Sections:

1. Section 02 41 13 - Selective Site Demolition.
2. Section 31 23 13 - Subgrade Preparation.
3. Section 33 05 05 - Trenching and Backfilling.

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and Payment

1. Common Excavation shall be based upon the CUBIC YARD – PLAN QUANTITY - CY(P). Common excavation is computed to the face of any retaining walls. Excavation required for construction of the wall shall be incidental to the unit price bid for retaining wall. Common excavation includes any existing aggregate base removal.
2. Subgrade Excavation and Stabilizing Aggregate shall be by the CUBIC YARD - EXCAVATED VOLUME - CY (EV). Subgrade Excavation and Stabilizing Aggregate are strictly estimates and may be increased or decreased by any amount according to the conditions revealed. No direct compensation will be made for backfilling subcut areas with suitable material from the excavation.
3. Select Granular Material shall be based upon the CUBIC YARD – PLANNED QUANTITY – CY(P). If the contractor intends to reuse millings in the select granular section, this shall be considered when determining the unit price bid.
4. Geotextile Fabric – Type V shall be paid by the SQUARE YARD – SY installed.

B. The furnishing and installing of specific items and/or the performance of work under certain circumstances shall not be individually paid. The costs shall be included in the unit price bid for the associated excavation items. Such items of work include but are not limited to:

1. Salvaging and separately stockpiling topsoil material, as determined by the Engineer.
2. Salvaging and separately stockpiling suitable aggregate base material, as determined by the Engineer.
3. Separating, salvaging, stockpiling and re-spreading topsoil to a minimum of 4 inches in turf areas.
4. Separating, salvaging, stockpiling and replacing clay borrow in roadway, structure, and embankment areas.
5. Earthwork balancing including adjustments for shrinkage loss, and excess materials resulting from the additional volume created from pipe bedding, utility pipe, and/or underground structures shall be included in the unit price bid for common excavation.
6. Protecting existing improvements and previously accepted in-process improvements from damage.
7. The avoidance of wetlands.
8. Subcutting the existing topsoil prior to placing embankment in all roadway, patio and trail locations.

9. Subgrade excavation, furnishing stabilizing aggregate, geotextile fabric installation, compaction, regrading and/or other efforts necessary to repair the subgrade for failing to protect the integrity of the subgrade after it has been accepted (test rolled).
10. Shaping, stockpiling, & seeding of all disposal sites shall be included in the price bid for common excavation.
11. Gradation and compaction testing and geotechnical inspection services to meet requirements of source and field quality control, if required.

#### 1.03 REFERENCES

- A. Minnesota Department of Transportation "Standard Specifications for Construction" 2020 Edition (MnDOT Spec.):
  1. 2105 - Excavation and Embankment.
  2. 3149 - Granular Material.

#### 1.04 SUBMITTALS

- A. Submit the following items consistent with Section 01 33 00:
  1. Gradation tests for borrow materials.

### **PART 2 PRODUCTS**

#### 2.01 EXCAVATED MATERIAL

- A. Unsuitable material for embankment and backfill construction shall become the property of the Contractor and shall be removed from the site and disposed of at a site secured by the Contractor.

#### 2.02 STABILIZING AGGREGATES

- A. Stabilizing aggregates for use in backfilling subgrade excavations shall be material generally produced and referred to as "3-inch minus dust free aggregate" or other coarse aggregate found to be in general compliance by the Engineer.
- B. Aggregate base, Class 5 may also be used at the direction of the Engineer.

### **PART 3 EXECUTION**

#### 3.01 GENERAL

- A. At the end of each day the Contractor shall eliminate surface indentations, including those caused by sheeps foot rollers and tractor cletes, and roll the surface with a steel wheel or rubber tired roller.
- B. Subgrade excavation shall be performed, as directed by the Engineer, for the removal of any unstable soils that may be encountered.
  1. Excavation shall be backfilled with suitable excess common excavation material or stabilizing aggregate as directed by the Engineer.
  2. If the Contractor proceeds without approval from the Engineer or Owner, all work and material to restore the roadbed to the proper grade shall be at the Contractor's expense.
- C. Once the subgrade has been test rolled and accepted by the Engineer, no traffic or construction equipment shall be permitted to operate directly on the subgrade without the prior approval of the Engineer.

1. All equipment shall be restricted to operating only in areas where the aggregate base has been installed to its full design depth.
- D. The subgrade shall be relatively smooth prior to the placement of aggregate base.
- E. All equipment shall be restricted to operating only in areas where the aggregate base has been installed to its full design depth.
- F. Material suitable for curb backfill shall be segregated and stockpiled at a site selected by the Contractor.
- G. Following curb construction, the material shall be placed behind the curb to the subgrade level of the topsoil.
- H. The Contractor shall salvage and stockpile all topsoil removed during the course of the construction. This topsoil shall be used where required for turf establishment as directed by the Engineer.
- I. Sufficient excavated material shall be utilized by the Contractor to replace loss volume due to soil shrinkage from trench excavation that may occur through the course of construction. The Contractor shall make his own determination of the amount of shrinkage that will occur.

### 3.02 OPEN DITCH CONSTRUCTION

- A. The work covered by this specification may be performed with any means and equipment capable of doing a proper job.
- B. EXCAVATION
  1. The Contractor shall excavate whatever substances are encountered to the size and dimensions shown by the drawings, plans, profiles, and cross-sections, or as instructed by the Engineer.
  2. Wherever seeding or sodding has been specified, the black topsoil shall be selectively stripped and stockpiled to both sides of the right-of-way for use as topsoil for the seeding and sodding portion of the project.
  3. The side slopes and bottom of the ditch are to be dressed as smooth and even as can be done by the skillful operation of the machinery employed to do the work. All waste material shall be removed therefrom to the satisfaction of the Engineer.
  4. During the course of construction, the Contractor shall conduct their operation in such a way that the completed work shall be in reasonable facsimile to that shown on the plans for any particular section. Extra excavation and cost incurred for this purpose shall be at the expense of the Contractor.
- C. WASTE BANKS
  1. Unless otherwise directed, the Contractor shall place the waste banks on both sides of the ditch and level them to correspond with the slope of the ground surface as closely as possible.
  2. The material shall be finished smooth by a bulldozer, grader or dragline to the satisfaction of the Engineer.
  3. Openings shall be left in the waste banks for the drainage of adjacent land, crossings or waterways. Proper erosion control methods will be required.
- D. SILT REMOVAL
  1. The ditch will be checked for grade and widths as the work progresses. Any work not to grade or of proper width shall be corrected.

2. All work shall be maintained to the proper depth and width in which that part of the ditch is constructed until the end of the working season and until turf and other erosion control measures have been installed.
3. In case silt washes into the ditch or the banks cave into it later, the silt or cave in shall be removed if necessary, for which the Contractor shall be paid on a time and material basis, or some other method of compensation, if the same is agreed upon by the Contractor, Engineer and representative of the Owner.

E. OBSTRUCTIONS

1. The Contractor shall remove all bridges, trees, stumps, rocks, brush, culverts, and other obstruction to their work within the right-of-way. Bridge or culvert material which may be usable again shall be piled outside of the right-of-way.

3.03 QUALITY CONTROL

A. All embankment shall be compacted using the Specified Density Method:

1. Under areas with proposed paved or structural improvements:
  - a. 100% Standard Proctor from the proposed pavement subgrade elevation down 3 feet.
  - b. 95% Standard Proctor from the bottom of excavation up to 3 feet below the subgrade elevation.
2. Under areas with no proposed paved or structural improvements:
  - a. 95% Standard Proctor.

**END OF SECTION**

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