1584 Hadley Avenue N | Oakdale, MN 55128
651-739-5086 | www.ci.oakdale.mn.us

EXCAVATION AND EMBANKMENT
(OAKDALE 2105)

PART 1 GENERAL

1.01 SUMMARY

A. Construction of roadway excavations and embankments within designated construction limits.

B. Related Sections:
   1. Section 2573 – Temporary Erosion Control
   2. Section 2211 – Aggregate Base

C. Method of Measurement:
   1. Excavation Material:
      a. Measure by volume of material in its original position.
      b. Compute volumes in cubic yards by average end area method determined from original and final cross sections.
      c. Basis of measure shall be plan quantity when noted (P).
   2. Borrow Material:
      a. Measure by volume in cubic yards.
      b. Basis of measure will be Compacted Volume (CV) or Loose Volume (LV) as indicated on the Bid Form.
      c. Measure only materials that are accepted for use.
      d. Basis of measure shall be plan quantity when noted (P).
      e. Includes excavation and disposal of topsoil stripping areas.
   3. Salvage Material:
      a. Measure by compacted volume (CV) in cubic yards for material used on-site.
      b. Measure by stockpile volume (SV) in cubic yards for material hauled to City stockpile area.
      c. Salvaging, processing, stockpiling and placing shall be considered as a single operation.
      d. Basis of measure shall be plan quantity when noted (P).
   4. Geotextile Fabric:
      a. Measure by area in square yards of material acceptably placed with NO measurement for joint overlap.
      b. Measure each type separately.
   5. Sediment Removal:
      a. Measure by excavated material by loose volume (LV) in cubic yards removed from existing ponds, storm sewer apron and ditch areas.

D. Basis of Payment:

1. Payment for acceptable quantities of excavation and embankment shall be at the Contract Unit Price as listed on the Bid Form. All associated Work items shall be considered incidental.

1.02 REFERENCES

A. MnDOT 2105

1.03 DEFINITIONS

A. Common excavation consists of excavating all underground pipe repair and installation areas one-foot deep and backfilling with aggregate base.

B. Subgrade excavation consists of all excavation below the planned subgrade for the purposes of correcting existing subgrade material as directed by the Engineer.

C. Channel & Pond excavation consists of all excavation not classified as common excavation or subgrade excavation, typically consists of ditch or channel excavation.

PART 2 PRODUCTS

2.01 MATERIALS

A. Select granular borrow (MOD) – shall be in accordance with MnDOT 3149.2B except that no more that 40 percent shall pass the No. 40 sieve and no more than 5 percent shall pass the No. 200 sieve.

B. Topsoil borrow – shall be pulverized and in accordance with MnDOT 3877.2H-Oragnic Topsoil Borrow except that topsoil borrow shall be substituted for salvaged topsoil, and in accordance with MnDOT 3877.2G, Filter Topsoil Borrow (for stormwater basins).

C. Geotextile fabric – shall be accordance with MnDOT 3733, Type III, Type V, and Type VI. Type VI shall meet the following:
   1. Grab tensile strength minimum, each principal direction, or 315 pounds.
   2. Elongation maximum, each principal direction, 15 percent.
   3. Apparent opening size (ADS) maximum number 40 sieve.

PART 3 EXECUTION

3.01 PREPARATION

A. Provide gradation and other test results from borrow source to demonstrate specification compliance prior to importing borrow material to project site.

B. Remove ice and snow prior to grading operations.

C. Grading shall conform to planned grades, cross-sections, and stakes.

D. Confine operations to established limits.

E. Maintain Site in a well-drained condition at all times.
   1. Provide drainage facilities concurrent with embankment operations.
   2. Provide temporary drainage facilities to maintain existing drainage courses until permanent facilities are operative.

F. Remove topsoil, organic and unstable material from roadbed prior to placing embankment.

3.02 EXCAVATING OPERATIONS

A. Conform to lines, grades and slopes staked by Engineer.]

B. Provide seepage trenches for granular backfill replacement of unstable areas.

C. Use suitable excavated materials for embankment construction.

D. Excavated materials will be classified in accordance with MnDOT 2105.2, approved by Engineer.

E. Construct embankment layers from uniform materials.

F. Place granular materials in upper most portion of embankment.

G. Mechanically mix non-uniform soils to produce uniform moisture content and density.

H. Excavate suitable topsoil material separately and stockpile.

I. Do not place snow, ice, or frozen lumps exceeding 6 inches in roadbed embankment.

J. Do not place stone, concrete or bituminous fragments exceeding 3 inches in upper 6 inches of roadbed embankment or within 18 inches of structure.

K. Grade emergency overflows from street low points to adjacent areas as directed by Engineer.

L. Remove and dispose of sediment deposited in storm water ponds as directed by the Engineer. Use hydraulic vacuum or other engineer-approved equipment. Equipment shall be small and equipped with rubber tracks to minimize disturbance and compaction.

3.03 PLACING EMBANKMENTS

A. Construct embankment layers from uniform materials.

B. Place granular materials in upper most portion of embankment,

C. Mechanically mix non-uniform soils to produce uniform moisture content and density.

D. Do not place snow, ice, or frozen lumps exceeding 6 inches in roadbed embankment.

E. Do not place stone, concrete or bituminous fragments exceeding 3 inches in upper 6 inches of roadbed embankment or within 18 inches of structure.

F. Do not place material on soil which is frozen to a depth greater than 4 inches.

G. Backfill excavations below subgrade and seepage trenches in accordance with this Section.

H. Deposit and spread material in uniform layers, parallel to profile grade extending the full width of embankment.

I. Place upper 3 feet of roadbed in maximum 8-inch layers.

J. Place remainder of roadbed in maximum 12-inch layers.

3.04 GEOTEXTILE FABRIC

A. Place on shaped subgrade in areas as directed by Engineer.

B. Splice together with mechanical stitching on a minimum 18 inches overlap of fabric.

C. Anchor fabric to prevent movement during backfilling.

D. Protect fabric during backfilling.

3.05 COMPACTING EMBANKMENTS

A. Compact upper 3 feet of embankment to not less than 100 percent of Standard Proctor Density.

B. Compact remainder of embankment to not less than 95 percent of Standard Proctor Density.

C. Maintain proper moisture content during placement and compaction.

D. Compact each layer of material with approved compaction equipment until no further evidence of consolidation.

3.06 FINISHING OPERATIONS

A. Finish earthwork to within 0.1 feet of staked grade.

B. Conduct finishing and topsoiling concurrent with grading operations to provide for erosion control.

3.07 DISPOSING OF EXCAVATED MATERIAL

A. Surplus excavated material not used on the project shall become property of Contractor for disposal.

B. Submit a Disposal Plan to Engineer prior to starting disposal operations.

C. Deposit peat, muskeg, and other unstable materials in Site approved by Engineer.

D. Dispose of combustible debris materials and noncombustible materials other than soils in accordance with MnDOT 2104.3C.

3.08 STORMWATER BASIN

A. Use low-impact earth-moving equipment to prevent compaction of underlying soils, preferably small tracked dozers and bobcats with rubber tracks.

B. Keep equipment off biofiltration basin as much as possible.\

C. Remove sediment introduced into BMP during or immediately following excavation to prevent reduction of infiltration capacity of soil.

D. Remove undesirable weeds and invasive plant species.

E. Excavate and shape bioretention basin to the size, shape, and depth indicated in the Drawings.

F. Scarify in-situ soils to a minimum depth of 24” below engineered soil prior to placement of engineered soil (incidental).

G. Remove additional soil to allow for the placement of bedding material.

H. Aggregates: Place in bottom of biofiltration basin and around draintile as shown in the Drawings.

I. Place Geotextile fabric over the aggregate bedding to serve as a sediment barrier.

J. Engineered soil: Place in bottom of biofiltration basin as shown in the Drawings.

K. Engineered soil materials shall be mixed outside the biofiltration basin area.

L. Compaction of engineered soil is not allowed. Contractor shall be required to till or spade Engineered soil in 8-inch to 12-inch lifts to ensure minimal compaction.

END OF SECTION