

## SECTION 02316

# ROADWAY EXCAVATION

### PART 1 GENERAL

#### 1.1 SECTION INCLUDES

- A. Excavate all material within designated areas, including channels with a bottom width of 12.0 ft or greater. Widen cuts as directed.
- B. Rock excavation and removal.
- C. Dispose of excavated material in embankment and/or other areas.

#### 1.2 RELATED SECTIONS

- A. Section 00820: Legal Relations and Responsibility to Public
- B. Section 01355: Environmental Protection
- C. Section 01571: Temporary Environmental Controls
- D. Section 01721: Survey
- E. Section 02056: Common Fill
- F. Section 02061: Select Aggregate
- G. Section 02075: Geotextiles
- H. Section 02231: Site Clearing and Grubbing
- I. Section 02324: Compaction
- J. Section 02330: Embankment

- K. Section 02705: Pavement Cutting
- L. Section 02912: Topsoil

### **1.3 REFERENCES**

- A. National Fire Protection Association (NFPA) Standards
- B. UOSH Construction Standards

### **1.4 DEFINITIONS**

- A. Rock: Solid mineral material that cannot be removed with equipment reasonably expected to be used in the work without cutting, drilling or blasting.

### **1.5 SUBMITTALS**

- A. Submit proposed method of blasting, delay pattern, explosive types, and type of blasting mat cover.

### **1.6 ACCEPTANCE AND PAYMENT PROCEDURES**

- A. Grading Tolerance: Top surface of subgrade =  $\pm 0.1$  ft of line and grade.
- B. Payment is plan quantity by the cubic yard. If staked quantities differ by 5 percent or less make no adjustment to plan quantities.
- C. Notify the Engineer in writing before beginning excavation in any area or balances of excavation if the Contractor determines that the staked quantities differ from the plan quantities by more than 5 percent. The following procedures then apply:
  - 1. Provide calculations and plots in accordance with Section 01721.
  - 2. Evaluate the "plan quantities" to "staked quantities" by individual cuts or balances as determined by the Engineer to provide the necessary accuracy.
  - 3. Do not begin excavation of any cut sections that the Contractor determines to differ from plan quantities by more than 5 percent until the calculations and plots have been submitted, reviewed, and approved adjusted quantities are determined by the Engineer. No payments, partial or final will be made until submissions are provided and approved.
- D. When the Engineer determines the staked quantities differ from plan quantities by more than 5 percent, the approved quantities become the adjusted plan quantities and are paid at the original unit bid price.

- E. Payment under this item includes excavation, removal, transportation and disposal of concrete and/or asphalt pavements when measurement is included in Roadway Excavation.

## **1.7 STOCKPILING AND HANDLING**

- A. Stockpile excavated material at approved locations.
- B. Waste excess excavation as required.

## **PART 2 PRODUCTS**

### **2.1 MATERIALS FOR OVER-EXCAVATED AREAS**

- A. Common Fill: Refer to Section 02056
- B. Select Aggregate: Refer to Section 02061
- C. Geotextile Fabric: Refer to Section 02075

### **2.2 EXPLOSIVES**

- A. Use explosives, delay fuses, and all blasting materials as recommended by the explosives firm. Refer to NFPA 495: Code for the Manufacture, Transportation, Storage, and Use of Explosive Materials.

## **PART 3 EXECUTION**

### **3.1 PREPARATION AND PROTECTION**

- A. Refer to Sections 00820 and 01571.
- B. Pothole, expose, or otherwise locate buried utilities as necessary.
- C. Finish clearing and grubbing within the designated area before starting excavation. Refer to Section 02231.

### **3.2 BLASTING MATERIAL STORAGE**

- A. Store all explosives securely in compliance with Laws and Regulations. Refer to Section 00820. Refer to NFPA 495: Code for the Manufacture, Transportation, Storage, and Use of Explosive Materials.
- B. Mark all storage places clearly.

### **3.3 TOPSOIL**

- A. Remove topsoil in accordance with Section 02912.

### **3.4 DEWATERING**

- A. Keep excavation free from surface and ground water through all stages of construction.
  - 1. Maintain adequate drainage during all stages of construction through pumping, pipe culverts and drainage ditches.
  - 2. Provide temporary facilities when interrupting irrigation systems, sewer, underdrainage, etc.

### **3.5 EXCAVATION - STANDARD PROCEDURES**

- A. Finish excavation to reasonably smooth and uniform surface.
- B. Provide and maintain satisfactory access to roads, streets, and adjacent property during all phases of construction according to the Traffic Control Plan.
- C. Remove material in all cut sections to the depth shown. Scarify to an 8 inch depth and compact to at least 96 percent of maximum laboratory density when necessary to obtain compaction. Refer to Section 02324.
- D. Excavate and waste unsuitable material.
- E. Material for backfilling or finishing.
  - 1. Use suitable granular material encountered in excavation to construct the top layers of embankment, for finishing the roadbed, or for backfill when directed by the Engineer.
  - 2. Haul the granular material directly from excavation to the final position on the roadbed when practical.

- F. Use Contractor-furnished borrow and waste roadway excavation if there is no additional cost to the Department and borrow is equal to, or better quality than, the wasted roadway excavation.

### **3.6 ROCK REMOVAL - NONEXPLOSIVE METHOD**

- A. Excavate solid rock 6 inches to 1 ft below subgrade and backfill with acceptable material.
  - 1. Rock removed more than 1 ft below subgrade will not be measured or paid for.
  - 2. Backfilling of depth greater than 1 ft below subgrade will not be measured or paid for.

### **3.7 ROCK REMOVAL- EXPLOSIVE METHOD**

- A. Comply with UOSH Constructions Standards Chapter U rules and regulations.
- B. Comply with NFPA 495: Code for the Manufacture, Transportation, Storage, and Use of Explosive Materials.
- C. Provide a qualified explosives expert to act as an advisor and consultant during drilling and blasting operations.
- D. Do not blast beyond designated areas.

### **3.8 ROCK FACES**

- A. Scale rock cuts of all loose rocks and fragments and leave in a neat and safe condition.

### **3.9 PAVEMENT**

- A. Cut existing pavement on the designated lines with straight vertical edges free from irregularities when joining new construction to existing pavement. Refer to Section 02705.
- B. Excavate all pavement according to plans.
- C. Dispose of pavement using methods acceptable to the Engineer, in accordance with all applicable rules and regulations, and as follows:
  - 1. Inside the right-of-way for use as embankment, subject to the approval of the Engineer. Refer to Section 02330.

2. Outside the right-of-way: Refer to Section 01355.
  - a. Acceptable when in accordance with all applicable laws, ordinances, regulations, and rules.
  - b. Furnish the Engineer with copies of the disposal permits and/or agreements.

END OF SECTION