

216.05 METHOD OF MEASUREMENT.

Water will be measured in units of “M” Gallons (1,000 gallons). Water may be measured in calibrated tanks, by weighing and converting to gallons at the rate of 8.34 pounds per gallon, or by an approved metering device placed in the supply line. The metering device shall be calibrated before use on the Project.

216.06 BASIS OF PAYMENT.

Payment will be made at the Contract Unit Price for the following:

| Pay Item | Pay Unit |
|-----------------|-----------------|
| Water | M. Gallons |

This payment will be full compensation for all labor, equipment, and materials necessary to complete the work.

SECTION 230**RESHAPING ROADWAY AND SUBGRADE PREPARATION****230.01 DESCRIPTION.**

This work consists of scarifying, shaping, compacting, and maintaining the subgrade, or reshaping an existing roadway before constructing a base, or surface course.

230.02 CONSTRUCTION REQUIREMENTS.**A. Reshaping Roadway, Shoulders, and Inslopes.**

1. **Reshaping Roadway.** All sod shall be removed from that portion of the existing roadbed and slopes between the shoulder lines of the completed roadbed. The roadway, ditches, and slopes shall be reshaped to an elevation and cross section that meets the typical section shown on the Plan.

All soft and spongy material, rocks larger than 4 inches, roots and other foreign matter brought to the surface shall be removed and disposed of under Section 203.02 D. All holes and depressions shall be filled and compacted with approved material.

The subgrade shall be smooth, moistened or dried as necessary, and compacted as specified. Any defects in the subgrade shall be corrected according to these Specifications.

2. **Shoulder Preparation.** When included as a separate bid item, “Shoulder Preparation” consists of preparing the existing shoulders to receive a base or

surface course. All weeds, grass, dirt, and other objectionable material shall be removed from the shoulders by blading, power brooms, or other means approved by the Engineer. Sod chunks or pieces of debris larger than 36 square inches on any face shall be disposed of under Section 203.02 D.

3. **Reshaping Inslopes.** When shown as a separate bid item, “Reshaping Inslopes” consists of reshaping existing inslopes to form a smooth transition between the finished shoulder and the existing inslope.
4. **Topsoil.** Topsoil shall be removed from inslopes and other seeded areas where reshaping will take place, and shall be stockpiled on the Right of Way or other locations acceptable to the Engineer. Topsoil shall be replaced according to Section 203.02 B.

On divided highways, topsoil removed from median inslopes shall be stockpiled at locations shown on the Plans or acceptable to the Engineer.

B. Subgrade Preparation.

1. **General Requirements.** The subgrade shall be scarified to a minimum depth of 6 inches, and compacted and shaped to the required section. Soft or spongy areas shall be aerated and recompactd or excavated and replaced with suitable backfill. Rocks which interfere with trimming the subgrade, roots, and foreign material brought to the surface, shall be disposed under Section 203.02 D.

If the specified density and stability cannot be obtained by manipulating and drying the top 6 inches of subgrade because of excessive moisture or frost action, work shall be suspended, without additional payment to the Contractor, to allow the subgrade to recover its strength. If the Engineer directs manipulation and drying below the top 6 inches of the subgrade, payment will be made according to Section 104.03 D.

The Contractor shall maintain the subgrade and repair any damage resulting from construction operations or from public traffic. Base or surface material shall not be placed until the subgrade has been checked and approved by the Engineer.

The subgrade shall have the required stability and compaction during placement, and no rutting or displacement of the roadbed shall occur when the material for the base or surfacing is placed on the subgrade.

Private drives, minor road approaches, and areas of irregular dimension or restricted access shall be shaped and compacted to the required stability, with no specified density.

The Department will set appropriate stakes for use in shaping the subgrade to the required section and to the established grade. The Contractor shall preserve the line and grade stakes as long as they are needed.

2. **Subgrade Preparation Type A.** This work shall meet Section 230.02 B.1.
3. **Subgrade Preparation Type B.** This work shall meet Section 230.02 B.1 and the following:

Special requirements for moisture and density control will be noted on the Plans.

Before placing any base or surfacing material on the roadbed, the subgrade shall be brought to the required grade and cross section using a roadbed planer conforming to Section 153.06. Grade control will be taken from the taut string line erected parallel to the established grade line, except the Engineer may permit a base or surface course to be used as a grade reference for trimming the shoulders. Taut string lines shall be erected and maintained for operating the automatic controls on the trimming equipment. The subgrade elevation shall not vary from any point by more than 0.04 foot from the prescribed elevation.

4. **Subgrade Preparation Type A (Shoulders).** When included as a separate bid item, "Subgrade Preparation Type A (Shoulders)" consists of removing some or all of the existing base and surfacing from the shoulders, reshaping and recompacting the shoulder subgrade; and replacing and recompacting some or all of the base or surface material removed. Specific requirements will be as shown on the Plans.
5. **Subgrade Preparation Type C.** The existing shoulder material and mainline surfacing shall be removed and hauled to the plant site, or disposed of as shown on the Plans. The newly exposed subgrade shall be scarified to the depth specified and recompacted. Soft or wet areas not identified as subcut areas shall be aerated and recompacted, or excavated and backfilled with suitable backfill. Rocks, roots, and any objects which may interfere with compaction and trimming the subgrade shall be removed and disposed of under Section 203.02 D. The subgrade shall be trimmed to the required grade and cross section under Section 230.02 B.3 before any salvaged base course is placed on the subgrade. The equipment shall provide for automatic control of the grade and cross slope of the cutting edges.

The moisture and density controls will be the same as those specified on the plans for embankment and cut areas. The subgrade shall be compacted in 6 inch layers to the depth of subgrade preparation specified. If the subgrade is unstable (as evidenced by sponginess or rutting) when compacted to the required density, the soils shall be dried to obtain adequate stability. This may require drying below optimum moisture. The cost of such drying will be incidental to the price bid for subgrade preparation.

Subgrade Preparation Type C (12") and Subgrade Preparation Type C (18") may both be required on this Project. If the specified density and stability cannot be obtained by manipulating and drying the required depth of subgrade because of excessive moisture or frost action, work shall be suspended without additional payment to the Contractor to allow the subgrade to recover its strength. If the Engineer directs manipulation and drying below a 18-inch depth, payment will be made according to Section 104.03 D.

The Contractor shall maintain the subgrade and repair any damage resulting from construction operations. Base or surface material shall not be placed until the subgrade has been checked and approved by the Engineer.

The Department will set appropriate stakes for use in shaping the subgrade to the required section and to the established grade. The Contractor shall preserve the line and grade stakes as long as they are needed.

- 6. **Aggregate for Subgrade Repair.** Aggregate to repair specific areas shown on the Plans shall meet the requirements of Class 3 aggregate under Section 816.03.

230.03 METHOD OF MEASUREMENT.

- A. **Reshaping Roadway.** Reshaping roadway will be measured by the Mile or Station of reshaped roadway.
- B. **Shoulder Preparation.** Shoulder preparation will be measured by the Miles or Stations of shoulder prepared as specified. Each shoulder will be measured separately.
- C. **Reshaping Inslopes.** Inslopes that have been reshaped as specified will be measured by the Miles or Stations. Inslopes on each side of the roadway will be measured separately.
- D. **Subgrade Preparation.** The quantity of Type A, Type B, Type C (12”), or Type C (18”) Subgrade Preparation will be the number of Miles or Square Yards prepared and accepted, measured along the centerline of the road. Areas outside the roadbed, such as private drives, road approaches, road tapers, and ramps will not be measured for payment but will be considered part of the mainline measurements.
- E. **Subgrade Preparation Type A (Shoulders).** Shoulder subgrade preparation will be measured by the Miles or Stations of subgrade preparation completed and accepted. Each shoulder will be measured separately.
- F. **Water.** The quantity of Water used will be measured under Section 216.05.
- G. **Excavation, Removal, and Backfill.** The quantity of excavation and removal of undesirable material will not be measured. Backfill material will be measured by the Cubic Yard and classified “Common Excavation, Subgrade Repair.”
- H. **Topsoil.** Topsoil will not be measured for payment.
- I. **Aggregate of Subgrade Repair (Class 3).** Aggregate will be measured by the Ton or Cubic Yard as specified. Unit price will include providing, hauling, placing, and compacting the material.

230.04 BASIS OF PAYMENT.

Payment will be made at the Contract Unit Price for the following:

| Pay Item | Pay Unit |
|-----------------------------------|-----------------|
| Reshaping Roadway | Mile or Station |
| Subgrade Preparation Type A | Mile or Station |
| Subgrade Preparation Type B | Mile or Station |
| Subgrade Preparation Type C (12”) | Mile or Station |
| Subgrade Preparation Type C (18”) | Mile or Station |
| Shoulder Preparation | Mile or Station |
| Reshaping Inslopes | Mile or Station |

| | |
|---|-------------------|
| Subgrade Preparation Type A (Shoulders) | Mile or Station |
| Aggregate for Subgrade Repair (Class 3) | Ton or Cubic Yard |
| Common Excavation, Subgrade Repair | Cubic Yard |
| Water | "M" Gallon |

Full compensation for excavation, removal, and disposal of undesirable subgrade material will be paid according to Section 104.03 D. If the Contractor is directed to use backfill material other than "Common Excavation, Subgrade Repair," the backfill material will be paid for at the Contract Unit Price bid for that material.

Excavation and hauling of material from one point to another on the roadbed to adjust the grade line will be paid according to Section 104.03 D.

The cost of removing, stockpiling, and replacing topsoil along the reshaped inslopes will be included in the prices bid for the reshaping and subgrade preparation items.

This payment will be full compensation for all labor, equipment, and materials necessary to complete the work.

SECTION 234 STABILIZED SUBGRADE

234.01 DESCRIPTION.

This work consists of treating the top layer of subgrade with lime or lime-fly ash.

234.02 MATERIALS.

Materials shall meet the following:

| Item | Section |
|-------------|----------------|
| Lime | 804.02 |
| Fly Ash | 820 |
| Water | 812 |

234.03 EQUIPMENT.

Equipment shall meet the following:

| Item | Section |
|--|----------------|
| General | 151.01 |
| Material Hauling Equipment | 151.03 B |
| Water-Hauling Equipment | 151.03 A |
| Tow-Type Pneumatic-Tired Rollers | 151.02 A |
| Self-Propelled Pneumatic-Tired Rollers | 151.02 B |