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(6) Results and effectiveness of the blast and any proposed changes to subsequent
blasting;

(7) If applicable, blast monitoring results; and

(8) Blast damage report when necessary.

(F) Blast Damage Report

If damage occurs from blasting, notify the Engineer immediately and submit a blast
damage report with the post-blast report that includes the following:

(1) Property owner’s and injured person’s, if any, names, addresses and telephone
numbers;

(2) Details and description of property damage and injury, if any, with photographs or
video; and

(3) Any associated tort claims, complaint letters and other applicable information.

220-4 MEASUREMENT AND PAYMENT

Pre-splitting of Rock will be measured and paid in square yards. Pre-splitting will be
measured along the slope faces of pre-split rock cuts as the square yards of exposed pre-split
rock. No payment will be made for unsatisfactory pre-splitting as determined by the
Engineer.

No direct payment will be made for all other blasting including blasting plans, blast
monitoring, post-blast reports, scaling and stabilizing rock cuts.

No direct payment will be made for blasting for roadway excavation. Blasting for roadway
excavation will be incidental to the contract unit price for Unclassified Excavation in
accordance with Article 225-7 or the lump sum price for Grading in accordance with
Article 226-3.

No direct payment will be made for blasting for any pipe, utility or foundation excavation.
Blasting for these items will be incidental to the compensation for the excavation. Where no
direct payment is made for excavation, blasting will be incidental to the work and no separate
payment for will be made for blasting.

Payment will be made under:

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Pay Unit</th>
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<tbody>
<tr>
<td>Pre-splitting of Rock</td>
<td>Square Yard</td>
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</tbody>
</table>

SECTION 225

ROADWAY EXCAVATION

225-1 DESCRIPTION

Excavate, place and compact or satisfactorily dispose of all materials encountered within the
limits of the work necessary for the construction of the roadway that are not to be removed
under another contract item.

Perform all excavation in conformity with the lines, grades and cross sections shown in the
plans or established by the Engineer.

Use care not to cause instability or displacement of the underlying or adjacent materials
during construction. The Engineer reserves the right to effect the removal from the grading
operation of any equipment that is causing instability or displacement of underlying or
adjacent materials to the detriment of the section being constructed.

Construct false sumps in accordance with the details in the plans and at the locations shown in
the plans or at other locations as directed.
Define “Unclassified Excavation” as all material excavated under this section, regardless of its nature or composition, except for undercut excavation and material directed to be removed beyond the limits of the original slope stakes.

Define “Undercut Excavation” as the excavation, placement and compaction and/or satisfactory disposal of materials removed from a location below the finished graded roadway cross section, except for the following:

(A) Rock in the bottom of roadway cuts that has been excavated one foot or less below the roadbed and ditches, or

(B) In cut areas, excavation removed below the outside slopes of roadway ditches.

225-2 EROSION CONTROL REQUIREMENTS

Install erosion control measures as required by the plans before any kind of land-disturbing activity.

Unless otherwise required by the plans, conduct operations so that final slopes are completely graded in a continuous operation and permanently seeded and mulched in accordance with Article 107-12.

Should the Contractor fail to comply with the requirements specified above within the time frames established by the Sedimentation and Pollution Control Act, the Contractor shall perform temporary seeding and mulching on any exposed areas at his own expense.

When the Contractor fails or neglects to coordinate grading with the permanent seeding and mulching operation, the Engineer may suspend the Contractor’s grading operation in accordance with Article 108-7 until the work is coordinated in a manner acceptable to the Engineer. Failure to perform the directed work may result in the Engineer having the work performed in accordance with Article 105-16.

225-3 UNCLASSIFIED EXCAVATION

Use all suitable material removed from the excavation as far as practicable in the formation of embankments, subgrades, shoulders and places indicated in the plans or directed.

The wasting of suitable material removed as part of unclassified excavation before the completion of embankments is permitted where the Contractor executes a supplemental agreement documenting that he agrees to the following:

(A) Provide and incorporate into the project any material required to complete the project up to the volume wasted. Bear all additional costs for providing and incorporating this material into the work, including engineering costs, and

(B) Provide suitable replacement material either wasted from the project or approved borrow material, at the Contractor's option, and

(C) Present no claim for any time arising from the wasting of excess unclassified excavation or for having to replace material wasted from the project that the Department may require to complete the work, and

(D) Waive rights to request additional compensation with regard to wasting unclassified excavation under the compensation requirements of Section 104 as a result of wasting suitable unclassified excavation and providing replacement material required to complete the work except when unclassified excavation is a major contract item, as defined in Section 101, and when unclassified excavation underruns by more than 25%.

Where the work required to complete the project is so phased by the plans to preclude using suitable unclassified excavation, the Contractor will be permitted to waste suitable unclassified excavation without having to execute the above required supplemental agreement.
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Furnish disposal areas for the unsuitable material except where the Engineer permits or directs the use of such material in the widening or flattening of fill slopes. The Engineer will designate materials that are unsuitable.

Where suitable materials containing excessive moisture are encountered above grade in cuts, construct above grade ditch drains before the excavation of the cut material when such measures are necessary to provide proper drainage.

Upon execution of a supplemental agreement containing conditions listed below, the Contractor may waste suitable unclassified excavation and replace it with approved borrow material.

(A) Replace with approved borrow material all suitable unclassified excavation that was wasted.

(B) Bear all additional costs associated with the wasting of the unsuitable unclassified excavation and the replacing of it with borrow material, including any additional engineering costs to the Department.

(C) The execution of a supplemental agreement allowing the Contractor to waste suitable unclassified excavation and replace it with approved borrow material bars the Contractor from any claim for any time extensions related to the wasting and replacement operation described in the agreement.

(D) The Contractor specifically waives his rights to request additional compensation with regard to wasting unclassified excavation under the compensation requirements of Section 104 as result of substituting suitable borrow material and wasting suitable unclassified excavation.

Where the contract includes earth shoulder construction, stockpile suitable surplus material for use in the shoulders. To the extent possible, salvage topsoil from within the limits of the slope stake lines and store in stockpiles. Before the topsoil is removed, clear the areas of all weeds, brush, stumps, stones and other debris. Remove the topsoil from only such areas and to only such depths as required by the contract or as directed. Exercise care to avoid mixing subsoil or other unsuitable material with the topsoil. Stockpile an adequate quantity of material to construct the proposed shoulder before wasting any suitable surplus material. Locate the stockpiles along the project at approved locations. Neatly dress each stockpile, when completed. Perform temporary or permanent seeding on the stockpiles where directed or when necessary to prevent erosion. Remove and dispose of any surplus material remaining in the stockpile after the shoulders are completed as provided below for waste matter.

Dispose of waste material in accordance with Section 802.

Uniformly round the intersection of slopes with natural ground surfaces, including the beginning and ending of cut slopes, as shown in the plans. Concurrent with the excavation of cuts, construct intercepting berm ditches or earth berms along and on top of the cut slopes at locations shown in the plans or as designated. Finish all slopes to reasonably uniform surfaces acceptable for seeding and mulching operations. Leave no rock or boulders in place that protrude more than one foot within the typical section cut slope lines. Clean all rock cuts of loose and overhanging material. Remove all protruding roots and other objectionable vegetation from the slopes.

Where a cut has been finished and the slopes dressed in accordance with the plans and slope stakes, the Contractor will not be required to flatten or widen the slopes of a completed cut unless otherwise directed before beginning the work. When rock is unexpectedly encountered, transition any widening or flattening already begun to leave the cut with a pleasing appearance.

If required, investigate the top 12 inches of the subgrade in cut sections to determine the necessity for rock undercut.
Unless otherwise directed, excavate rock in the bottom of roadway cuts to a depth of 1 foot below the roadbed and ditches. Lower ditches if necessary so that water will drain from the rock surface to the ditches. Upon completion of the rock excavation below the level of the roadbed and ditches, backfill the areas where such rock has been removed with suitable material, compact, and shape to the required grade and cross section.

Before any work beginning on the structure, excavate all rock under and adjacent to structure sites as directed.

Bring all cuts to the grade and cross section shown in the plans before final inspection and acceptance.

Remove and dispose of slides and overbreaks that occur before final acceptance of the project. Where slides and overbreaks occur due to negligence or carelessness on the part of the Contractor, the removal and disposal of said slides and overbreaks will be at no cost to the Department.

Shape old roadways to produce an acceptable appearance in accordance with Section 808.

Conduct earthwork operations in a manner that will not disturb staking, utility poles or guy wires required to remain in their original location.

Cut off and plug all private utility lines, remove existing shoulder drain and subdrain pipe and remove all underground tanks intercepted within the typical section or in conflict with construction.

Where it is necessary to remove existing sidewalks or driveways, furnish a neat edge along the pavement retained by sawing a neat line approximately 2 inches deep with a concrete saw before breaking the adjacent pavement away.

When excavation operations encounter graves, temporarily discontinue operations in the vicinity of the graves and do not resume until directed.

When excavation operations encounter contaminated soils, temporarily discontinue operations in the vicinity of the contamination and do not resume until directed.

When excavation operations encounter artifacts of historical or archeological significance, temporarily discontinue operations in the vicinity of the artifacts and do not resume until directed. Disposition of the artifacts shall be in accordance with the requirements of the Division of Archives and History.

225-4 UNDERCUT EXCAVATION

When the Engineer determines that the natural soil materials in areas where fills are to be placed are undesirable in their location or condition, the Engineer may require the Contractor to remove the undesirable material and backfill with approved, properly compacted material.

When the Engineer determines that the finished graded roadway cross section contains materials that are undesirable in their location or condition, the Engineer may require the Contractor to remove the materials and backfill with approved, properly compacted material to the finished graded section.

Where undercutting is required adjacent to or beneath the location of the proposed drainage structure, perform undercut and backfill a sufficient distance adjacent to the installation to prevent future operations from disturbing the completed drainage structure.

Use equipment in undercutting and backfilling operations of such weight, size and capability to efficiently remove and replace the material within the limits established. Use equipment of a size and weight that will not displace the underlying or adjacent material.

All material removed in the work of undercut excavation will be classified by the Engineer as either suitable for other use without excessive manipulation and used elsewhere in the work, or unsuitable for further use and disposed of by the Contractor.
Conduct undercut operations so that the Engineer can take the necessary measurements before any backfill is placed. Place backfill in undercut areas in a continuous operation concurrent with the undercutting operation. Do not place backfill material in water unless otherwise permitted by the Engineer.

225-5 TOLERANCES

A tolerance of ± 0.10 foot from the established grade will be permitted in the roadbed after it has been graded to a uniform surface.

225-6 MAINTENANCE

Maintain all work covered by this section during construction until final acceptance. Provide the drainage of surface runoff along and throughout the length of the cut, construct temporary ditches and use any other methods necessary to control excessive soil erosion during construction and until final acceptance of the project.

225-7 MEASUREMENT AND PAYMENT

Excavation will be measured and paid in cubic yards of materials, measured in their original position and computed by the average end area method, acceptably excavated in accordance with the contract. The Engineer may elect to use Digital Terrain Modeling (DTM) for determining the earthwork quantities or other technology that has been proven accurate. Original cross sections for the determination of excavation quantities will be taken before any grading begins. Final cross sections will be taken after the excavation has been completed. Final plan cross sections can be used for the final cross sections where, in the opinion of the Engineer, the work has been constructed in reasonably close conformity to the plan typical section.

Original and final cross sections will be taken by either ground or aerial survey methods, as determined by the Engineer.

All materials excavated from a location below the graded roadway cross section are classified as Undercut Excavation and will be measured separately except for the following:

(A) Rock in the bottom of roadway cuts excavated 1 foot or less below the roadbed and ditches;

(B) In cut areas, undercut excavation is limited to excavation removed below the roadbed sub-grade, removed below the inside slopes of roadway ditches and removed below the bottom of flat bottom roadway ditches; or

(C) Root mat other than grass, removed as a part of clearing and grubbing.

When the contract does not include Drainage Ditch Excavation, measurement will be made in accordance with Article 240-4 and payment for this class of excavation will be made at the contract unit price per cubic yard for Unclassified Excavation.

Measurement of materials excavated from overbreaks or slides will be made except where the overbreaks or slides were due to the negligence or carelessness of the Contractor.

No measurement will be made of any materials excavated outside of authorized excavation limits established by the Engineer or any materials excavated before slope stakes were set.

Article 104-5 will not apply for any underruns in the quantity of Unclassified Excavation resulting from the permitted use of such material as select granular material.

Berm Ditch Construction will be measured and paid in accordance with Article 240-4.

Materials excavated from stockpiles and used to construct earth shoulders will be paid as Shoulder Borrow in accordance with Article 560-4. No payment will be made for the removal and disposal of any surplus material remaining in the stockpile after the shoulders have been completed.
Payment for material that the Engineer directs to be removed beyond the limits of the original slope stakes will be made in accordance with Article 104-3.

If needed, investigative work within the top 12 inches of the subgrade to determine the necessity for rock undercut will be paid in accordance with Article 104-7.

Payment includes, but is not limited to, excavation, blasting, hauling anywhere along the project both within and across balance points shown in the plans, removal of undesirable material, removal of sidewalk, driveways, curb and gutter, endwalls, traffic islands and drainage structures, disposal of materials, formation and compaction of embankments, subgrades and shoulders, the cutting off, plugging and removal of private utility lines and underground tanks, any backfilling required, removing any existing shoulder drain or subdrain pipe and maintaining the work.

Payment for false sumps will be classified as Unclassified Excavation, Borrow Excavation or included in Grading-Lump Sum. Payment as Unclassified Excavation or Borrow Excavation will be at the contract unit price per cubic yard.

Excavation done in the shaping of old roadways in accordance with Section 808 is paid as Unclassified Excavation.

Where slides and overbreaks occur due to negligence or carelessness on the part of the Contractor, the removal and disposal of said slides and overbreaks will be incidental to the work of this section.

Payment will be made under:

<table>
<thead>
<tr>
<th>Pay Item</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Unclassified Excavation</td>
<td>Cubic Yard</td>
</tr>
<tr>
<td>Undercut Excavation</td>
<td>Cubic Yard</td>
</tr>
</tbody>
</table>

SECTION 226
COMPREHENSIVE GRADING

226-1 DESCRIPTION

The work covered by this section consists of all elements of work covered by Sections 200, 225, 230, 235, 250, 500 and 560, except that the requirements of the above-referenced sections pertaining to measurement and payment will not apply unless specific reference is made to such.

226-2 CONSTRUCTION METHODS

Perform the work in accordance with Sections 200, 225, 230, 235, 250, 500 and 560.

226-3 MEASUREMENT AND PAYMENT

Seeding and mulching of all borrow sources will be measured and paid at the contract unit prices for such items established in the contract.

Payment for material that the Engineer directs the Contractor to obtain from borrow sources to backfill box culverts, drainage structures or structure bents will be made in accordance with Article 104-7.

Payment for material that the Engineer directs to be removed beyond the limits of the original slope stakes will be made in accordance with Article 104-3.

Grading will be paid at the contract lump sum price. Partial payments will be equal to the percentage of such item that is complete as estimated by the Engineer. No separate payment will be made for clearing and grubbing, shoulder and fill slope material or draining borrow sources as such work will be incidental to the work covered by this section.