

**(E) Post-Blast Report**

Submit 2 copies and a PDF copy of a post-blast report within 3 days of each blast or before the next blast, whichever is sooner. Provide post-blast reports signed by the Blaster-in-Charge that include the following:

- (1) Material data information about explosive products and devices including explosives, primers and detonators;
- (2) Scaled blast drawings with cross sections showing blasting limits, blast hole diameters, depths, inclinations and spacing, burden, subdrill depth, free face location and any joints, bedding planes, weathered zones, voids or other significant rock structure information;
- (3) Loading pattern diagram with location and amount of each type of explosive including primers and detonators;
- (4) Locations and depths of stemming, column heights and maximum charge per delay for each type of loading;
- (5) Delay and initiation diagram showing delay pattern, sequence and times;
- (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**

No direct payment will be made for 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 will be made for blasting.

## 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.

## Section 225

- 1 Perform all excavation in conformity with the lines, grades and cross sections shown in the  
2 plans or established by the Engineer.
- 3 Use care not to cause instability or displacement of the underlying or adjacent materials  
4 during construction. The Engineer reserves the right to effect the removal from the grading  
5 operation of any equipment that is causing instability or displacement of underlying or  
6 adjacent materials to the detriment of the section being constructed.
- 7 Construct false sumps in accordance with the details in the plans and at the locations shown in  
8 the plans or at other locations as directed.
- 9 Define “Unclassified Excavation” as all material excavated under this section, regardless of  
10 its nature or composition, except for undercut excavation and material directed to be removed  
11 beyond the limits of the original slope stakes.
- 12 Define “Undercut Excavation” as the excavation, placement and compaction and/or  
13 satisfactory disposal of materials removed from a location below the finished graded roadway  
14 cross section, except for the following:
- 15 (A) Rock in the bottom of roadway cuts that has been excavated one foot or less below the  
16 roadbed and ditches, or
- 17 (B) In cut areas, excavation removed below the outside slopes of roadway ditches.
- 18 **225-2 EROSION CONTROL REQUIREMENTS**
- 19 Install erosion control measures as required by the plans before any kind of land-disturbing  
20 activity.
- 21 Unless otherwise required by the plans, conduct operations so that final slopes are completely  
22 graded in a continuous operation and permanently seeded and mulched in accordance with  
23 Article 107-12.
- 24 Should the Contractor fail to comply with the requirements specified above within the time  
25 frames established by the Sedimentation and Pollution Control Act, the Contractor shall  
26 perform temporary seeding and mulching on any exposed areas at his own expense.
- 27 When the Contractor fails or neglects to coordinate grading with the permanent seeding and  
28 mulching operation, the Engineer may suspend the Contractor’s grading operation in  
29 accordance with Article 108-7 until the work is coordinated in a manner acceptable to the  
30 Engineer. Failure to perform the directed work may result in the Engineer having the work  
31 performed in accordance with Article 105-16.
- 32 **225-3 UNCLASSIFIED EXCAVATION**
- 33 Use all suitable material removed from the excavation as far as practicable in the formation of  
34 embankments, subgrades, shoulders and places indicated in the plans or directed.
- 35 The wasting of suitable material removed as part of unclassified excavation before the  
36 completion of embankments is permitted where the Contractor executes a supplemental  
37 agreement documenting that he agrees to the following:
- 38 (A) Provide and incorporate into the project any material required to complete the project up  
39 to the volume wasted. Bear all additional costs for providing and incorporating this  
40 material into the work, including engineering costs, and
- 41 (B) Provide suitable replacement material either wasted from the project or approved borrow  
42 material, at the Contractor's option, and
- 43 (C) Present no claim for any time arising from the wasting of excess unclassified excavation  
44 or for having to replace material wasted from the project that the Department may require  
45 to complete the work, and

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

6 Where the work required to complete the project is so phased by the plans to preclude using  
7 suitable unclassified excavation, the Contractor will be permitted to waste suitable  
8 unclassified excavation without having to execute the above required supplemental  
9 agreement.

10 Furnish disposal areas for the unsuitable material except where the Engineer permits or directs  
11 the use of such material in the widening or flattening of fill slopes. The Engineer will  
12 designate materials that are unsuitable.

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

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

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

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

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

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

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

43 Dispose of waste material in accordance with Section 802.

44 Uniformly round the intersection of slopes with natural ground surfaces, including the  
45 beginning and ending of cut slopes, as shown in the plans. Concurrent with the excavation of  
46 cuts, construct intercepting berm ditches or earth berms along and on top of the cut slopes at  
47 locations shown in the plans or as designated. Finish all slopes to reasonably uniform  
48 surfaces acceptable for seeding and mulching operations. Leave no rock or boulders in  
49 place that protrude more than one foot within the typical section cut slope lines.

## Section 225

- 1 Clean all rock cuts of loose and overhanging material. Remove all protruding roots and other  
2 objectionable vegetation from the slopes.
- 3 Where a cut has been finished and the slopes dressed in accordance with the plans and slope  
4 stakes, the Contractor will not be required to flatten or widen the slopes of a completed cut  
5 unless otherwise directed before beginning the work. When rock is unexpectedly  
6 encountered, transition any widening or flattening already begun to leave the cut with  
7 a pleasing appearance.
- 8 If required, investigate the top 12" of the subgrade in cut sections to determine the necessity  
9 for rock undercut.
- 10 Unless otherwise directed, excavate rock in the bottom of roadway cuts to a depth of one foot  
11 below the roadbed and ditches. Lower ditches if necessary so that water will drain from the  
12 rock surface to the ditches. Upon completion of the rock excavation below the level of the  
13 roadbed and ditches, backfill the areas where such rock has been removed with suitable  
14 material, compact, and shape to the required grade and cross section.
- 15 Before any work beginning on the structure, excavate all rock under and adjacent to structure  
16 sites as directed.
- 17 Bring all cuts to the grade and cross section shown in the plans before final inspection and  
18 acceptance.
- 19 Remove and dispose of slides and overbreaks that occur before final acceptance of the project.  
20 Where slides and overbreaks occur due to negligence or carelessness on the part of the  
21 Contractor, the removal and disposal of said slides and overbreaks will be at no cost to the  
22 Department.
- 23 Shape old roadways to produce an acceptable appearance in accordance with Section 808.
- 24 Conduct earthwork operations in a manner that will not disturb staking, utility poles or guy  
25 wires required to remain in their original location.
- 26 Cut off and plug all private utility lines, remove existing shoulder drain and subdrain pipe and  
27 remove all underground tanks intercepted within the typical section or in conflict with  
28 construction.
- 29 Where it is necessary to remove existing sidewalks or driveways, furnish a neat edge along  
30 the pavement retained by sawing a neat line approximately 2" deep with a concrete saw  
31 before breaking the adjacent pavement away.
- 32 When excavation operations encounter graves, temporarily discontinue operations in the  
33 vicinity of the graves and do not resume until directed.
- 34 When excavation operations encounter contaminated soils, temporarily discontinue operations  
35 in the vicinity of the contamination and do not resume until directed.
- 36 When excavation operations encounter artifacts of historical or archeological significance,  
37 temporarily discontinue operations in the vicinity of the artifacts and do not resume until  
38 directed. Disposition of the artifacts shall be in accordance with the requirements of the  
39 Division of Archives and History.
- 40 **225-4 UNDERCUT EXCAVATION**
- 41 When the Engineer determines that the natural soil materials in areas where fills are to be  
42 placed are undesirable in their location or condition, the Engineer may require the Contractor  
43 to remove the undesirable material and backfill with approved, properly compacted material.
- 44 When the Engineer determines that the finished graded roadway cross section contains  
45 materials that are undesirable in their location or condition, the Engineer may require the  
46 Contractor to remove the materials and backfill with approved, properly compacted material  
47 to the finished graded section.

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

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

7 All material removed in the work of undercut excavation will be classified by the Engineer as  
 8 either suitable for other use without excessive manipulation and used elsewhere in the work or  
 9 unsuitable for further use and disposed of by the Contractor.

10 Conduct undercut operations so that the Engineer can take the necessary measurements before  
 11 any backfill is placed. Place backfill in undercut areas in a continuous operation concurrent  
 12 with the undercutting operation. Do not place backfill material in water unless otherwise  
 13 permitted by the Engineer.

#### 14 **225-5 TOLERANCES**

15 A tolerance of  $\pm 0.10$  ft from the established grade will be permitted in the roadbed after it has  
 16 been graded to a uniform surface.

#### 17 **225-6 MAINTENANCE**

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

#### 22 **225-7 MEASUREMENT AND PAYMENT**

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

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

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

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

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

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

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

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

## Section 226

- 1 No measurement will be made of any materials excavated outside of authorized excavation  
2 limits established by the Engineer or any materials excavated before slope stakes were set.
- 3 Article 104-5 will not apply for any underruns in the quantity of *Unclassified Excavation*  
4 resulting from the permitted use of such material as select granular material.
- 5 *Berm Ditch Construction* will be measured and paid in accordance with Article 240-4.
- 6 Materials excavated from stockpiles and used to construct earth shoulders will be paid as  
7 *Shoulder Borrow* in accordance with Article 560-4. No payment will be made for the  
8 removal and disposal of any surplus material remaining in the stockpile after the shoulders  
9 have been completed.
- 10 Payment for material that the Engineer directs to be removed beyond the limits of the original  
11 slope stakes will be made in accordance with Article 104-3.
- 12 If needed, investigative work within the top 12" of the subgrade to determine the necessity for  
13 rock undercut will be paid in accordance with Article 104-7.
- 14 Payment includes, but is not limited to, excavation, blasting, hauling anywhere along the  
15 project both within and across balance points shown in the plans, removal of undesirable  
16 material, removal of sidewalk, driveways, curb and gutter, endwalls, traffic islands and  
17 drainage structures, disposal of materials, formation and compaction of embankments,  
18 subgrades and shoulders, the cutting off, plugging and removal of private utility lines and  
19 underground tanks, any backfilling required, removing any existing shoulder drain or subdrain  
20 pipe and maintaining the work.
- 21 Payment for false sumps will be classified as *Unclassified Excavation*, *Borrow Excavation* or  
22 included in *Grading-Lump Sum*. Payment as *Unclassified Excavation* or *Borrow Excavation*  
23 will be at the contract unit price per cubic yard.
- 24 Excavation done in the shaping of old roadways in accordance with Section 808 is paid as  
25 *Unclassified Excavation*.
- 26 Where slides and overbreaks occur due to negligence or carelessness on the part of the  
27 Contractor, the removal and disposal of said slides and overbreaks will be incidental to the  
28 work of this section.
- 29 Payment will be made under:

<b>Pay Item</b>	<b>Pay Unit</b>
Unclassified Excavation	Cubic Yard
Undercut Excavation	Cubic Yard

## 30 SECTION 226 31 COMPREHENSIVE GRADING

### 32 226-1 DESCRIPTION

33 The work covered by this section consists of all elements of work covered by Sections 200,  
34 225, 230, 235, 250, 500 and 560, except that the requirements of the above-referenced  
35 sections pertaining to measurement and payment will not apply unless specific reference is  
36 made to such.

### 37 226-2 CONSTRUCTION METHODS

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

### 39 226-3 MEASUREMENT AND PAYMENT

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