

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

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

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

10 Clearing and grubbing work that is directed to be performed on areas outside the limits
 11 originally staked or beyond the limits of the right of way or easements shown on the original
 12 plans will be measured and paid at the contract unit price per acre for *Supplementary Clearing
 13 and Grubbing*. All measurements will be made horizontally. Where the contract does not
 14 include this item, a unit price per acre will be established by supplemental agreement.

15 *Undercut Excavation* will be measured and paid at the contract unit price per cubic yard. No
 16 separate payment will be made for materials used in backfilling the undercut areas, shoulders
 17 and slope areas as payment at the contract unit price per cubic yard for *Undercut Excavation*
 18 will be full compensation for furnishing such material. Where the contract does not include
 19 a pay item for *Undercut Excavation*, payment for such excavation will be made in accordance
 20 with Article 104-7.

21 Payment will be made under:

Pay Item	Pay Unit
Grading	Lump Sum
Supplementary Clearing and Grubbing	Acre
Undercut Excavation	Cubic Yard

22 **SECTION 230**
 23 **BORROW EXCAVATION**

24 **230-1 DESCRIPTION**

25 Excavate approved material from borrow sources. Haul and use such material as required in
 26 the plans or as directed. Do not use borrow excavation until all available suitable unclassified
 27 excavation has been incorporated into the embankments, subgrades and shoulders except by
 28 execution of a supplemental agreement documenting the conditions prescribed below.

29 **(A)** All suitable unclassified excavation wasted as a result of the early use of borrow material
 30 will be deducted from the total volume of borrow excavation paid under the contract.

31 **(B)** Reimburse the Department for all additional costs, including additional engineering cost,
 32 associated with the wasting of suitable unclassified excavation.

33 **(C)** Any claim for contract time extensions related to the early use of borrow is waived
 34 should the Contractor use borrow material before all suitable unclassified excavation
 35 being incorporated into the project pursuant to a supplemental agreement.

36 **(D)** The Contractor specifically waives rights to request additional compensation with regard
 37 to the early use of borrow under the compensation requirements of Section 104 except
 38 when unclassified excavation is a major contract item, as defined in Section 101, and that
 39 unclassified excavation overruns by more than 25%.

40 Where the work required to complete the project is so phased by the plans to preclude using
 41 suitable unclassified excavation, the Contractor will be permitted to construct the required
 42 embankments, subgrades or shoulders so controlled by the phasing from approved borrow
 43 materials without having to execute the above required supplemental agreement.

Section 230

1 **230-2 COORDINATION WITH SEEDING OPERATIONS**

2 Coordinate the work in this section with the construction of embankments in accordance with
3 Article 225-2.

4 **230-3 MATERIALS**

5 Refer to Division 10.

Item	Section
Borrow Material	1018
Shoulder and Slope Material	1019

6 **230-4 CONSTRUCTION METHODS**

7 **(A) General**

8 Thoroughly clear and grub and clean the surface of the borrow area of all unsuitable
9 material before beginning the excavation and, where applicable, before cross sections are
10 taken. Dispose of material resulting from clearing and grubbing in accordance with
11 Article 200-6. Remove and dispose of overburden in accordance with Section 802.

12 Do not accumulate exposed, erodible slope area in each borrow operation in excess of
13 1 acre at any one time without beginning permanent seeding and mulching of the borrow
14 source or installing other erosion control measures as may be approved.

15 Remove and stockpile topsoil at locations that will not interfere with the borrow
16 operations and that meet the approval of the Engineer. Install temporary erosion control
17 measures as needed to prevent the erosion of the stockpile material. Once all borrow has
18 been removed from the source or portion thereof, uniformly spread the stockpiled topsoil
19 over the area and permanently seed and mulch the area.

20 Where payment is made by cross section, notify the Engineer sufficiently before
21 beginning excavation of the borrow material so that the area may be staked and
22 cross sectioned. Excavate the material to the lines and slopes as staked in an orderly
23 manner to facilitate measurement at any time.

24 Where payment is to be made by truck measurement, furnish trucks with bodies suitable
25 for accurate measurement. Load trucks uniformly and to prevent spillage.

26 When necessary to haul borrow material over existing roads or streets, comply with
27 Article 105-15. Use all necessary precautions to prevent damage to the existing
28 structures or pavement. Conduct hauling operations so as to not interfere with the normal
29 flow of traffic and keep the traffic lanes free from spillage at all times.

30 Furnish borrow sources except where otherwise indicated in the contract.

31 **(B) Contractor Furnished Sources**

32 Before the approval of any borrow sources developed for use on any project, obtain
33 certification from the State Historic Preservation Officer of the State Department of
34 Cultural Resources certifying that the removal of the borrow material from the borrow
35 sources will have no effect on any known district, site building, structure or object,
36 architectural and/or archaeological that is included or eligible for inclusion in the
37 National Register of Historic Places. Furnish a copy of this certification to the Engineer
38 before performing any work on the proposed borrow source.

39 Borrow sources will not be allowed in any area under the Corps of Engineers regulatory
40 jurisdiction until the Contractor has obtained a permit for such borrow sources from the
41 Corps District Engineer having jurisdiction and has furnished a copy of this permit to the
42 Engineer. Requests for additional contract time, additional compensation or for work
43 stoppage due to permit violations will not be considered.

1 The approval of borrow sources furnished by the Contractor is subject to the following
2 conditions:

3 (1) Proof of Rights

4 Provide written proof of the right to take the material and any rights of access that
5 may be necessary, for locating and developing the source and any clearing and
6 grubbing and drainage ditches necessary. The proof shall include an agreement with
7 the owner that the borrow source be dressed, shaped, seeded, mulched and drained as
8 required by these Specifications after all borrow has been removed.

9 (2) Sampling and Testing

10 Sampling and testing of contractor furnished borrow material will be in accordance
11 with procedures set forth in the *Borrow Pit Sampling Manual* in effect on the date of
12 advertisement for the project. Copies of this document are available from the
13 Materials and Tests Unit. The criteria for acceptance of the proposed contractor
14 furnished borrow material is shown in Section 1018.

15 (3) Reclamation Plan

16 Except where borrow is to be obtained from a commercial source, jointly submit
17 with the property owner a borrow source development, use and reclamation plan to
18 the Engineer for his approval before engaging in any land disturbing activity on the
19 proposed source other than material sampling that may be necessary. The
20 Department's borrow and waste site reclamation procedures for contracted projects
21 is available on the website and shall be used for all borrow and waste sites on this
22 project. Address the following in the plan:

23 (a) Topography

24 Detail the existing topography and locations of the proposed access and egress
25 haul roads. Detail the proposed final topography of the waste or disposal area
26 showing any proposed drainage systems. Excavate the source according to the
27 plan and dress and shape it in a continuous manner to contours that are
28 comparable to and blend in with the adjacent topography. Grade the source to
29 drain such that no water will collect or stand. Provide a functioning drainage
30 system for the source. If drainage is not practical and the source is to serve as
31 a pond, the minimum depth shall be a least 4 ft as determined from the water
32 table at the time the reclamation plan is executed. The slope of the soil below
33 the water shall be between 5:1 and 2:1. The slope of the sides above the water
34 line shall be 2:1 or flatter.

35 (b) Erosion Control

36 Detail the temporary and permanent erosion control measures, along with design
37 calculations, that are intended during use of the site and as part of the
38 reclamation. Unless considered impractical due to special circumstances,
39 provide in the plan for the use of staged permanent seeding and mulching and
40 appropriate fertilizer topdressing continually during site use and the immediate
41 total reclamation of the site when the site is no longer needed. Define the seed
42 mixture proposed for establishing temporary and permanent vegetation.
43 Establish permanent stand of vegetation before acceptance of the project.

Section 230

1 (4) Buffer Zones

2 Allocate sufficient area between the nearest property line and the tie-in of the slope
3 to natural ground to allow for the operation of excavation, hauling and seeding
4 equipment and for the installation of any and all erosion control devices required.
5 Leave additional undisturbed area between the source and any water course or body
6 to prevent siltation of the water course or body and the movement of the shore line
7 either into the water course or body or into the waste areas. Determine if the
8 adjoining property owners or other government agencies require any additional
9 buffer zones and comply with those requirements. Suggested minimum distances are
10 10 ft from property lines and 50 ft from water bodies or water courses. Where it is
11 necessary to drain the borrow source, perform work in accordance with Section 240.

12 (5) Evaluation for Potential Wetlands and Endangered Species

13 Hire an experienced environmental consultant from the approved list to perform
14 an assessment of the borrow site for potential conflicts with wetlands, Areas of
15 Environmental Concern designated by the Coastal Area Management Act and
16 federally protected species. This evaluation will not be required for permitted
17 commercial sites.

18 Delineate the boundaries of any wetlands, jurisdictional surface waters and streams
19 encountered. Follow the standard practice for documenting the wetland delineation
20 including completion of the Army Corps of Engineers' Approved Jurisdictional
21 Determination Form. Document information including data regarding soil,
22 vegetation and hydrology. Maintain a minimum 25 ft buffer adjacent to all sides of
23 the wetland boundary and a minimum 50 ft buffer adjacent to any stream. Depict the
24 limits of the delineated wetland and surrounding buffer on the Reclamation Plan. Do
25 not remove borrow material in any area under the Corps of Engineers' or any other
26 environmental agencies' regulatory jurisdiction unless and until the Department
27 permit has been modified to allow such disposal activity in the jurisdictional area.

28 Perform a site assessment for federally listed threatened or endangered species to
29 include habitats that may support these species. Provide a detailed technical report
30 on the assessment findings. If federally listed threatened or endangered species or
31 habitat that may support such species exist on the proposed borrow site, notify the
32 Engineer before continued pursuit of such site.

33 (6) Approval

34 Obtain written approval from the Engineer before excavating any material within the
35 proposed borrow source area.

36 Submit a revised or additional reclamation plan if the non-permitted waste or
37 disposal area is expanded by more than one acre or is significantly changed from the
38 previously approved submittal.

39 If the Contractor proposes a borrow source, the environmental assessment shall
40 include wetland and stream delineation extending 400 ft beyond the proposed borrow
41 source limits.

42 (a) If wetlands or streams are present within 400 ft of the borrow source, submit
43 a hydrologic analysis (Skaggs Method) or equivalent to determine if lateral
44 effects will permanently impact or cause degradation to wetlands or streams.
45 Perform analysis with an environmental or hydraulics engineer with expertise in
46 this discipline and include:

- 47 (i) Hydric soil type,
- 48 (ii) Average profile depth to restrictive soil layer,
- 49 (iii) Effective hydraulic conductivity or permeability,
- 50 (iv) Average drainable porosity or available water capacity and
- 51 (v) Required buffer width, including safety factor.

1 (b) If wetlands or streams are present within 400 ft and the Contractor does not
 2 propose to excavate below the seasonal high water table or the water level in the
 3 adjacent stream, no documentation will be required.

4 (c) If wetlands or streams are not present within 400 ft, no additional documentation
 5 will be required.

6 During Department review of the proposed borrow area, the hydrologic analysis will
 7 be submitted to the U.S. Army Corps of Engineers for evaluation. Obtain copy of
 8 *Skaggs Method for Determining Lateral Effects of a Borrow Pit on Adjacent*
 9 *Wetlands* from the Department's website.

10 (C) Maintenance

11 During construction and until final acceptance, use any methods approved by the
 12 Engineer that are necessary to maintain the work covered by this section so that the work
 13 will not contribute to excessive soil erosion.

14 230-5 MEASUREMENT AND PAYMENT

15 *Borrow Excavation* will be measured and paid in cubic yards. Borrow excavation will be
 16 measured in place in its original position except that truck measurement will be made where
 17 called for in the contract.

18 If the quantity of borrow excavation used is excessive as evidenced by the presence of surplus
 19 suitable material from the roadway excavation, the measured quantity of borrow excavation
 20 will be reduced by the quantity of such surplus suitable material.

21 (A) In-Place Measurement

22 *Borrow Excavation* to be paid will be the actual number of cubic yards of approved
 23 material, measured in its original position by cross sectioning and computed by the
 24 average end area method, that has been excavated from the borrow source and
 25 incorporated into the completed and accepted work. No measurement will be made of
 26 any overburden, unsuitable material removed from the source or any material excavated
 27 before cross sections are taken.

28 (B) Truck Measurement

29 *Borrow Excavation* to be paid will be the actual number of cubic yards of approved
 30 material, measured in trucks excavated from the borrow source and incorporated into the
 31 completed and accepted work. Each truck will be measured and shall have a legible
 32 identification mark indicating its capacity. Load each truck to at least its measured
 33 capacity at the time it arrives at the point of delivery. The recorded capacity will be
 34 adjusted by making a 25% deduction to allow for shrinkage and the adjusted capacity will
 35 be the quantity to be paid.

36 Topsoil that is stockpiled and placed back on the source as part of the reclamation effort will
 37 be measured in the stockpile by cross sectioning and computed by the average end area
 38 method and paid per cubic yard for *Borrow Excavation*. No in-place measurement will be
 39 made of the topsoil.

40 Seeding, mulching and establishment of temporary erosion control for all borrow sources will
 41 be paid at the contract unit prices for the items established in the contract as payment for
 42 *Seeding And Mulching* in Section 1660.

Section 235

1 Payment includes, but is not limited to, furnishing the source of the borrow; providing and
2 implementing a development, use and reclamation plan, evaluation of potential wetlands and
3 endangered species, building, maintaining and obliterating haul roads, clearing and grubbing
4 or draining the borrow source; removing, stockpiling and replacing topsoil, removing and
5 disposing of overburden and other unsuitable material, excavation, hauling, formation of
6 roadway embankments, subgrades and shoulders, restoration of the source and haul roads to
7 an acceptable condition, obtaining permits and certifications and maintaining the work.

8 Payment will be made under:

Pay Item	Pay Unit
Borrow Excavation	Cubic Yard

9 **SECTION 235**
10 **EMBANKMENTS**

11 **235-1 DESCRIPTION**

12 Place suitable material excavated under Sections 225, 226, 230 and 240 in embankments,
13 backfills and earth berms, to conform with the lines, grades and typical cross sections shown
14 in the plans. Fill and compact holes, pits and other depressions when unsuitable material has
15 been removed. Work includes preparation, formation, compaction and maintenance of the
16 embankment area as well as the formation of benches in the existing ground with rises less
17 than 60".

18 **235-2 MATERIALS**

19 Refer to Division 10.

20 Use soil consisting of loose, friable, sandy material free of subsoil admixtures, refuse, stumps,
21 rocks, roots, root mats or other unsatisfactory material. Do not use material that meets
22 AASHTO M 145 for soil classification A-2-5 and A-5 with a PI of less than 8 within 12" of
23 the subgrade.

24 Wet, dry or frozen material may be suitable when dried, wetted or thawed, respectively.
25 Aerate and dry material containing moisture content in excess of what is required to achieve
26 embankment stability and specified density. Waste suitable material only with written
27 authorization.

28 **235-3 CONSTRUCTION METHODS**

29 Coordinate work with excavation operations in accordance with Articles 107-12 and 225-2.

30 **(A) Preparation for Embankment**

31 Finish clearing and grubbing within an area before starting embankment in accordance
32 with Section 200. Remove and waste organic or other unsuitable material unless
33 otherwise directed.

34 Plow mowed sod and leave in place where the height of embankment to be constructed is
35 greater than 6 ft measured under the roadbed. Plow or scarify and break up cleavage
36 planes of all underlying road surfaces. Remove or break up existing pavement in
37 accordance with Section 250.

38 Bench existing slopes steeper than 4:1 measured at right angles to the roadway. Provide
39 rises of at least 12" and no more than 60" as embankment is brought up in layers.
40 Provide sufficient width for the operation of placing and compaction equipment. Begin
41 bench cut at the intersection of the original ground and the vertical side of the previous
42 cut. Construct benches greater than 60" in height only when shown in the plans. Such
43 benches will be paid in accordance with the contract.