DIVISION 200

SITE PREPARATION AND EARTHWORK

SECTION 201
CLEARING AND GRUBBING

201.01 Description. This work shall consist of cutting, removing from the ground, and properly disposing of trees, stumps, hedge, brush, roots, logs, weeds, rubbish, sod refuse dumps, sawdust piles, lumbering slash, and other materials within the limits of the right-of-way or other designated areas that interfere with the work or are considered objectionable.

This work shall also include selective clearing, preserving existing vegetation, scalping, and the preservation of objects designated to remain.

201.02 General. Areas shall be classified as clearing and/or grubbing when trees are 4" (100 mm) or more in diameter measured 12" (0.3 m) above the ground. The area shall be classified as scalping if the trees or stumps are less than 4" (100 mm) in diameter measured 12" (0.3 m) above the ground.

(a) Clearing. The cutting and removal of all trees, brush, and other objectionable growth, and the removal and disposal of logs, rubbish piles, refuse dumps, sawdust piles, lumbering slash, and other objectionable matter from the surface of the ground in the areas shown on the plans or designated by the Engineer.

(b) Grubbing. The grubbing and removal of all stumps, roots, and other objectionable matter, lying wholly or in part below the surface of the ground.

(c) Selective Clearing. The trimming of selected trees and shrubs, the removal from the ground and disposal of logs, root pods, brush, refuse dumps, and other undesirable debris, and the cutting, removal, and disposal of all undergrowth, stumps, and standing trees, except those trees and shrubs designated to be preserved. The selective clearing areas will be shown on the plans.

(d) Preserved Vegetation. Areas of the right-of-way containing trees and brush and designated on the plans as Preserved Vegetation areas shall not be disturbed except as described below. This operation normally applies to areas of natural growth occurring in the medians, interchanges, and wide rights of way between a line 10'

(3 m) beyond the construction limits and the right-of-way lines, or as designated.

(e) Scalping. Areas not classified as clearing and grubbing and that are within construction limits shall be scalped, if appropriate. Scalping shall include the removal and disposal of material such as saplings less than 4" (100 mm) in diameter measured 12" (0.3 m) above the ground, logs, brush, roots, grass, residue of agricultural crops, refuse dumps, and decayed matter.

(f) Clearing and Grubbing Trees. The cutting, grubbing, and removal of individual, isolated trees and stumps greater than 4" (100 mm) diameter measured 12" (0.3 m) above the ground as shown on the plans or designated by the Engineer to be removed.

201.03 Construction Requirements. Work required under Section 110 and other applicable NPDES requirements shall be conducted in conjunction with clearing and grubbing. The construction limits for the project shall be cleared as defined above, except those objects designated to remain shall be carefully protected from abuse, marring, or damage during construction operations. Trees shall be felled and removed in such a manner as to avoid injury to other trees or other objects designated to remain. In case of injury to bark, limbs, or roots of vegetation designated to remain, the Contractor shall repair such damage by corrective pruning or other appropriate methods. Trees or other debris falling outside the right-of-way shall be removed and disposed of according to these specifications.

Holes remaining after removal of trees, stumps, etc., shall be backfilled with material approved by the Engineer and compacted as directed except in areas to be excavated. The Contractor shall complete the operation by blading, bulldozing, or other approved methods, so that the right-of-way shall be free of holes, ditches, or other abrupt changes in elevations that resulted from the clearing and grubbing operations.

201.04 Clearing and Grubbing. The construction limits shall be cleared of stumps, brush, logs, rubbish, trees, and shrubs, with the exception of such trees, shrubs, and areas designated on the plans or by the Engineer for preservation. Grubbing will not be required in areas that will have a fill height of 3' (1 m) or more above undisturbed stumps cut within 6" (150 mm) of the natural ground. Sound stumps may be left outside the construction

limits when they are severed flush with or below the natural ground, or the slope line in areas to be rounded at the top of the back slopes.

Low-hanging, unsound, or unsightly branches shall be removed from trees or shrubs designated to remain. Branches of trees extending over the roadbed shall be trimmed to give a clear height of 20' (6 m) above the roadbed surface. Trimming shall be done by skilled workers and according to good tree surgery practices.

Merchantable timber in the clearing area that has not been removed from the right-of-way before the date that the Contract is awarded by the Department shall become the property of the Contractor, unless otherwise provided.

When perishable material is burned, it shall be under the constant care of a competent watcher. Burning shall be accomplished at such times and in such manner that the surrounding vegetation, adjacent property, or anything designated to remain on the right-of-way will not be jeopardized. Upon notice from the Engineer that meteorological conditions render burning undesirable, the Contractor shall cease all burning until notified by the Engineer that meteorological conditions are suitable for a resumption of burning operations.

When specified, burning will not be permitted unless the material to be burned is placed in an incineration pit and an acceptable forced air combustion device is used that will minimize the emission of smoke, fly ash, and other pollutants. This device shall be constructed so that the forced air is directed over the fire by plenums or ducts. The use of open fans or mulch blowers will not be permitted. The Contractor shall comply with all Federal, State, County, and City laws, regulations, or ordinances applicable to the disposal of clearing and grubbing material. Materials and debris that cannot be burned shall be removed from the right-of-way and disposed of at locations off the project, outside the limits of view from any public road, street, park, or other public facility.

The Contractor shall make all necessary arrangements with the property owner for obtaining suitable disposal locations. Disposal operations and final cleanup of the sites, including seeding and stabilization, shall comply with the requirements of Section 110. The costs involved in obtaining disposal sites, hauling, cleanup and stabilization for erosion control will not be paid for separately, but full compensation therefor will be considered included in the

contract unit prices bid for other items of the Contract. When requested by the Engineer, the Contractor shall furnish copies of all agreements with property owners.

201.05 Selective Clearing. This work shall be performed in such a manner as to leave the designated areas in a park-like condition and susceptible to economical mowing. Disposal of all material shall comply with the methods set out in the Clearing and Grubbing requirements.

Stumps, trees, and shrubs, except those designated to be preserved, shall be severed flush with or below the ground.

Trimming of selected trees and shrubs shall be performed as described in Subsection 201.04.

Movement and operation of equipment shall be such that roots, branches, and trunks of trees and shrubs selected for retention will not be scarred, broken, or otherwise damaged to the extent that the life of the plant is endangered.

201.06 Preserved Vegetation. Trees, shrubs, brush, vines, and other natural perennial vegetation shall be protected in the areas designated as Preserved Vegetation.

Areas designated as Preserved Vegetation shall not be used for parking, storage, or other construction support activities that will damage vegetation or compact the soil. Care shall be taken to prevent spills of materials hazardous to vegetation such as oil, hydraulic fluid, salts, etc. Erosion and sedimentation control shall be such that sediment is not deposited in depths greater than 2" (50 mm) within any portion of the Preserved Vegetation area.

Clearing and grubbing may be required through preserved vegetation areas for drainage outlets, channels, or other required construction.

Where fence is to be installed along the right-of-way line in wooded areas, the Contractor may clear trees from a strip approximately 10' (3 m) wide adjacent to and within the right-of-way to accommodate fence erection equipment. The Contractor shall exercise care so that other trees, shrubs, grass and other vegetation designated to remain are not damaged. Such clearing in areas designated as Preserved Vegetation or where clearing would otherwise not be required will not be paid for separately, but full

compensation therefor will be considered included in the contract unit prices bid for other items of the Contract.

201.07 Scalping. The Contractor shall scalp areas where excavation or embankment is to be made, except that mowed sod need not be removed where the embankment to be constructed is more than 3' (1 m) in height.

All suitable material resulting from the scalping operations shall be placed on the finished slopes, adjacent to the area from which it is obtained, after the excavation or embankment operations are complete.

Unsuitable material shall be disposed of as specified for Clearing and Grubbing.

201.08 Method of Measurement. (a) General. Quantities for Clearing and Grubbing, Selective Clearing, and Clearing and Grubbing Trees as shown on the plans and in the Proposal shall be considered as final quantities and no further measurement will be required unless, upon evidence furnished by the Contractor, substantial variations exist between quantities shown on the plans and actual quantities. Measurements for revisions must be made before removing the part of the item in question.

(b) Clearing, Grubbing, and Selective Clearing. Clearing and/or Grubbing will be measured by the acre (hectare) or by the station (metric station), as shown on the plans or designated by the Engineer. Selective Clearing will be measured by the acre (hectare).

(1) Acre. Measurement will be to the nearest one hundredth of an acre (hectare) (0.01 acre) (0.01 ha) and will be determined by the horizontal measurement of each tract. The boundary of each tract will be a line extending along the outside of the trunks of the outermost trees or stumps.

(2)Station (Metric Station). Measurement will be by the centerline station (metric station), rounded upward to the next whole station (metric station), and shall include all the area within the right-of-way including easements. When station (metric station) measurement is specified, a station (metric station) will be measured for payment when any tree meeting the requirements for clearing and/or grubbing is removed within that station (metric station).

(c) Scalping. Scalping areas of existing vegetation and additional vegetation, resulting from work required by Section 110, will not be paid for separately, but full compensation therefor will be considered included in the contract unit prices bid for other items of the Contract.

(d) Preserved Vegetation. Preserved vegetation areas shown on the plans or designated by the Engineer will not be measured for payment.

(e) Clearing and Grubbing Trees. When specified, individual, isolated trees greater than 4" (100 mm) in diameter, measured 12" (0.3 m) above the ground, will be measured by each tree and/or stump removed.

201.09 Basis of Payment. Clearing and Grubbing for borrow sites and material sources outside the right-of-way limits will not be paid for separately, but full compensation therefor will be considered included in the contract unit prices bid for the items being excavated for use on the roadway.

Work for clearing, grubbing, and/or selective clearing, completed and accepted and measured as provided above, will be paid for at the contract unit price bid per acre (hectare) or per station (metric station) for Clearing and Grubbing, per acre (hectare) for Selective Clearing, and per each for Clearing and Grubbing Trees, as the case may be, which price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work, including the cost of repairing damaged trees that are designated to remain.

Payment will be made under:

Pay Item	**Pay Unit**
Clearing	Acre (Hectare) or Station (Metric Station)
Grubbing	Acre (Hectare) or Station (Metric Station)
Selective Clearing	Acre (Hectare)
Clearing and Grubbing Trees	Each

SECTION 202

REMOVAL AND DISPOSAL OF STRUCTURES

202.01 Description. This work shall consist of the removal and satisfactory disposal of curb and curb and gutter; portland cement or asphalt concrete driveways, parking areas, sidewalks, and steps; concrete pavement; existing fence; guardrail; retaining walls; manholes; catch basins; concrete or masonry basements, foundations, or slabs; tanks and lines; approach slabs and gutters; and old culverts, all of which are not designated or permitted to remain. The work may also include demolishing and/or removing from the site remaining buildings, or portions thereof, which are more particularly described on the plans and/or in the Special Provisions, together with all appurtenances, either attached or detached, including but not limited to canopies, porches, awnings, piping, poles, attached signs, auxiliary buildings, or sheds.

The provisions of Section 202 shall not apply to underground storage tanks.

202.02 General. The attention of the bidder is directed to the necessity for careful examination of the entire site to determine, at the time of bid preparation, the full extent of work to be accomplished. The entire site shall be cleared of all man-made obstructions and debris, of whatever nature, and prepared in all respects for the construction of the highway facilities.

The Contractor shall provide traffic control according to Section 603 and shall not unnecessarily interfere with the use of any adjacent sidewalks, streets, or roads.

Salvage materials in buildings to be demolished and materials in other man-made obstructions will become the property of the Contractor and shall be removed from the project site. The Contractor shall have no claim against the Department because of the absence of any pre-existing buildings, materials, equipment, or fixtures from the items to be removed.

Moveable buildings remaining for the Contractor's disposition may be removed from the right-of-way intact if the Contractor so elects, or they may be demolished in place with the removal of resulting material and debris.

202.03 Construction Requirements. The disposal of all materials and debris shall be according to Section 201.

All surface items such as curb, curb and gutter, driveways, parking areas, walks, steps, pavement, and walls shall be separated or broken away from the adjacent part of any structure designated to remain in place by a vertical saw cut along the line designated by the Engineer. The edge of the structure left in place shall be approximately vertical with no abrupt changes in alignment. Any damage to or removal of the structure designated to remain in place shall be repaired or replaced at no cost to the Department.

Holes, ditches, or other abrupt changes in elevation caused by the removal operations that could obstruct drainage or be considered hazardous or unsightly shall be backfilled, compacted, and left in a workmanlike condition.

Old culverts or parts thereof that interfere with the new construction shall be removed. Steel and timber superstructures and abutments, and the tops of all concrete and masonry box culverts that are to be abandoned shall be removed entirely. Concrete and masonry abutments and headwalls shall be removed entirely or broken down to an elevation at least 2' (0.6 m) below the subgrade elevation; this work will not be paid for separately, but full compensation therefor will be considered included in the contract unit prices bid for Removal and Disposal of Pipe Culverts.

Where old box culverts or pipe culverts are to be extended or otherwise incorporated into the new work, only such part of the old structure shall be removed as to provide a proper connection to the new work. The connecting edges or joints shall be cut, chipped, and trimmed to the required lines and grades without weakening or damaging the part of the structure to be retained.

Work required in cutting back an existing concrete box culvert that is to be extended shall be accomplished according to the applicable standard drawing(s). For a pipe culvert extension, the headwall and the attached end joint of concrete pipe or the flared end section on all types of pipe shall be removed to accommodate the extension. This work will not be paid for separately, but full compensation therefor will be considered included in the contract unit prices bid for the items involved in the culvert extension.

Pipe culverts, the tops of which are located within 3' (1 m) of the elevation of the finished roadway, shall be removed. Pipe culverts at lower elevations, if in suitable condition as determined by the Engineer, may be abandoned in place, in which case the headwalls

shall be removed and the ends of the culvert plugged by means of concrete or large dumped rock plugs, at no cost to the Department.

Material from old culverts determined by the Engineer to have salvage value shall become the property of the Department. Salvaged material shall be carefully removed to avoid damage and shall be placed in neat piles of like material outside the construction limits but within the right-of-way. Other salvaged material shall be disposed of by the Contractor as approved by the Engineer.

At the Contractor's option, and to the extent compatible with proper progress of the work, the removal of existing masonry may be coordinated with the grading operation. Broken concrete, stone, brick, and like material may be placed in embankments in parallel layers, with no material closer than 12" (0.3 m) to the subgrade surface. The voids shall be completely filled with suitable material and thoroughly compacted. The material may be used in the construction of riprap, tree wells, and similar structures. When used as riprap, broken concrete shall comply with Section 816.

Trenches resulting from the removal or demolition of old culverts shall be filled with approved material placed in layers according to Section 606.

The removal and disposal of water wells, including plugging, shall be accomplished using the current policies and procedures of the Arkansas Water Well Construction Commission for water well closures.

Existing basements, sumps, pits, or septic tanks that are outside the construction limits shall be backfilled as soon as feasible. Backfill shall be compacted to the extent practicable. Masonry and broken concrete, free of organic matter, may be used for such backfill to an elevation not less than 2' (0.6 m) below finished elevation. The area shall be dressed and left in a neat condition.

Masonry foundations shall be obliterated, or if in fill sections, may be left in place if covered by not less than 2' (0.6 m) of embankment. Floor slabs left in place shall be shattered and left in a permeable condition. Broken concrete, free of protruding reinforcing steel, may be placed in embankment according to Subsection 210.09 covering the use of rock in embankment.

The removal and disposal of approach slabs and gutters shall include the removal and disposal of the drop inlets, spillway pipe,

and spillway outlet that are a part of the approach gutter. The Contractor shall fill with earth and/or other suitable material all holes where drop inlets and spillway pipes have been removed. Earth in the holes shall be thoroughly compacted with a mechanical tamper until it is as firm and unyielding as the surrounding material.

When necessary, the Contractor may clear a strip approximately 10' (3 m) wide adjacent to and within the right-of-way to accommodate removal equipment. Clearing shall be performed according to Subsection 201.06. When such clearing is performed in an area where clearing would otherwise not be required, it will not be paid for separately, but full compensation therefor will be considered included in the contract unit prices bid for other items of the Contract.

202.04 Method of Measurement. The removal and disposal of the various items covered by this specification will be measured by the linear foot (meter), square yard (square meter), or each. The quantities shown on the plans will be considered as the final quantities and no further measurement will be made unless, in the opinion of the Engineer or upon evidence furnished by the Contractor, substantial variations exist between quantities shown on the plans and actual quantities due to changes in alignment or dimensions or to apparent errors.

Backfill material and compaction thereof will be measured and paid for under Section 210 for the applicable item(s). All materials for the removal and plugging of water wells shall be considered included in the unit price bid for the item “Removal and Disposal of Water Well.”

202.05 Basis of Payment. Work completed and accepted and measured as provided above will be paid for at the contract unit price bid for the specific items, which price shall be full compensation for removing, clearing, salvaging, storing, and disposing of all materials removed; and for furnishing all labor, equipment, tools, and incidentals necessary to complete the work.

Periodic payments will be made in proportion to the amount of structure removed.

Payment will be made under:

Pay Item	**Pay Unit**
Removal and Disposal of _____	Linear Foot (Meter),

Square Yard (Square Meter), or Each

SECTION 203
REMOVAL AND DISPOSAL OF UNDERGROUND STORAGE TANK SYSTEMS

203.01 Description. This work shall consist of the excavation, removal, and satisfactory disposal of underground storage tank systems and their contents at the locations specified. The work will also include the removal and disposal of portland cement or asphalt driveways, parking areas, sidewalks, curbs, islands, foundations, or slabs, when necessary for the removal of the tank.

The Contractor is responsible for insuring that all work is executed and inspected in compliance with all local, State, or Federal codes, laws, ordinances, rules, and regulations applicable to the particular class of work.

203.02 General Requirements. The attention of the bidder is directed to the necessity for careful examination of the entire site to determine, at the time of bid preparation, the full extent of work to be accomplished. The entire site shall be cleared of all man-made obstructions and debris, of whatever nature, and prepared in all respects for the construction of the highway facilities.

The Contractor shall not unnecessarily interfere with the use of any adjacent sidewalks, streets, or roads.

Salvage materials will become the property of the Contractor and shall be removed from the project site. The Contractor shall have no claim against the Department because of the absence of any preexisting materials, equipment, or fixtures from the items to be removed.

203.03 Construction Requirements. The methods employed in performing the work shall be in compliance with 40 CFR § 280, *Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (UST),* and *American Petroleum Institute Recommended Practice 1604, Second Edition, December 1987, Removal and Disposal of Used Underground Petroleum Storage Tanks.*

The Contractor shall perform measurements consisting of a visual inspection and a measurement using an EPA approved Organic Vapor Analyzer (OVA), and soil sample(s) where contamination is most likely to occur. The sample(s) shall be analyzed by a laboratory certified by the ADEQ for the presence of benzene, toluene, ethyl benzene, and xylene (BTEX), using EPA Method 8021 or 8260, and for total hydrocarbons using ADEQ's "Arkansas Total Petroleum Hydrocarbons (TPH) for Soils." The result of the soil analysis shall be provided to the ADEQ and the Engineer before any payment is made.

The Contractor shall excavate outside the limits of the tank perimeter at least to that point where the OVA reading is less than 100 ppm total hydrocarbons. If the limits of the original installation excavation can be determined, the excavation shall normally be made at least to the same limits. Excavation beyond the required limits made for the Contractor's convenience will not be measured or paid for.

The Contractor will test the excavated material with the OVA and if the hydrocarbon levels are above 100 ppm the material shall be handled in one of the following methods:

1) Deposited in a solid waste landfill provided that the material is accepted by the landfill operator, or

2) Spread on an impermeable material and aerated until the hydrocarbon level is below 100 ppm. When the OVA reading has been reduced to below 100 ppm, the Contractor may then use the material in the backfill operation or dispose of it at an approved off-site location.

If the visual inspection reveals only minor contamination and the OVA reading is less than 100 ppm total hydrocarbon, and the results of the soil sample analysis are within acceptable limits as determined by ADEQ, then the site shall be backfilled with suitable material and compacted as directed by the Engineer.

If the excavated material is not suitable or is not sufficient in quantity for use as backfill material, the Contractor shall provide acceptable material for use as backfill.

If tank systems not shown on the plans, free product, or extensive contamination is encountered, excavation and backfill activities will be suspended until a detailed site assessment and remediation plan

can be developed by the Department. The Department may, at its option, delete all or any portion of the remaining work under this Section at that site.

203.04 Method of Measurement. (a) Removal and Disposal of Underground Storage Tank Systems shall be measured by the unit, a unit being defined as one individual tank system which includes the tank and all lines connected to it.

(b) Backfilling Underground Storage Tank Systems will be measured by the cubic yard (cubic meter). The measurement shall be made of the hole from which the tank was removed. The measurement shall be to the nearest whole cubic yard (cubic meter). Backfilling of trenches required to remove pipe lines will not be paid for separately, but full compensation therefor will be considered included in the contract unit price bid for Removal and Disposal of Underground Storage Tank Systems.

(c) Excavation for Underground Storage Tank Systems will be measured by the cubic yard (cubic meter). The quantity shall be the same as the quantity for Backfilling Underground Storage Tank Systems, less the volume of the tank.

(d) Treatment or Disposal of Excavated Material will be measured by the cubic yard (cubic meter). The measurement will be that portion of the excavated material for which the hydrocarbon levels are above 100 ppm when tested with the OVA.

203.05 Basis of Payment. (a) Removal and Disposal of Underground Storage Tank Systems, completed and accepted and measured as provided above, will be paid for at the bid price for Removal and Disposal of Underground Storage Tank Systems of the size specified, which price shall be full compensation for inerting or purging; for removal and disposal of the tank system including its contents; for all required sampling and testing; and for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work. The size specified shall be interpreted as the nominal or rated capacity of the tank.

(b) Backfilling Underground Storage Tank Systems completed and accepted and measured as provided above, will be paid for at the unit price bid per cubic yard (cubic meter) for Backfilling Underground Storage Tank Systems, which said price shall be full compensation for furnishing, hauling, placing, and compacting the

material; and for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

(c) Excavation for Underground Storage Tank Systems completed and accepted and measured as provided above will be paid for at the contract unit price bid per cubic yard (cubic meter) for Excavation for Underground Storage Tank Systems, which said price shall be full compensation for excavating within the limits defined above; and for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

(d) Treatment or Disposal of Excavated Material completed and accepted and measured as provided above will be paid for at the contract price bid per cubic yard (cubic meter) for Treatment or Disposal of Excavated Material, which said price shall be full compensation for hauling and depositing in an approved solid waste landfill or for spreading and aerating; and for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Payment will be made under:

Pay Item	**Pay Unit**
Removal and Disposal of Underground Storage Tank Systems (_____) (110 Gal. to 750 Gal.) (400 L to 3000 L) (751 Gal. to 1500 Gal.) (3001 L to 6000 L) (1501 Gal. to 2500 Gal.) (6001 L to 10000 L) (2501 Gal. to 3500 Gal.) (10001 L to 15000 L)	Each
Backfilling Underground Storage Tank Systems	Cubic Yard (Cubic Meter)
Excavation for Underground Storage Tank Systems	Cubic Yard (Cubic Meter)
Treatment or Disposal of Excavated Material	Cubic Yard (Cubic Meter)

SECTION 204 VACANT

SECTION 205
REMOVAL OF EXISTING BRIDGE STRUCTURES

205.01 Description. This item shall consist of the removal of existing bridge structures according to the plans and specifications and as directed.

Removal of structures over which traffic will be maintained during the construction period shall be delayed until the new road has been completed and opened to traffic.

205.02 Construction Requirements. Except when the plans designate that material from the existing bridge shall become the property of the Contractor, all material of serviceable quality shall be placed in a suitable location near the site as approved by the Engineer, and shall remain the property of the Owner. Torches may be used for dismantling steel bridges as approved by the Engineer. Nails and spikes shall be withdrawn from timber before being stacked.

Bridge demolition shall be accomplished in such a manner that turbidity and sedimentation are minimized. The method of demolition and removal shall be approved by the Engineer. The Contractor shall comply with all applicable requirements of Section 110.

Debris from bridge removal shall not enter the waterway unless approved as temporary or permanent fill allowed by a C of E 404 permit and/or the U. S. Coast Guard. If material or debris resulting from the Contractor's operations does enter the waterway, the Engineer will make a determination based on the applicable permits whether or not the material may remain. If it is determined that the material is to be removed from the waterway, the Engineer must pre-approve the Contractor's method of removal.

When specified on the plans as "salvage for re-erection," all materials of serviceable quality shall remain the property of the Owner. The removal of the material from the project site shall be coordinated with Department Forces as directed by the Engineer. Pins, bolts, nuts, washers, and other metal parts shall be placed in well-sealed boxes. Structural members of truss spans shall be match marked and the distance center to center of shoes shall be accurately measured and marked on the lower chord before dismantling. Dismantling of steel bridges by using a torch will not be permitted when salvaged for re-erection. Care shall be exercised to avoid damaging or destroying any member or part of serviceable quality in dismantling the structure. Any member rendered unfit for further

use through the carelessness of the Contractor shall be replaced at no cost to the Department.

Unless otherwise designated on the plans or directed by the Engineer, substructure units shall be removed to a minimum depth of 2' (0.6 m) below subgrade or final ground surface, and to a greater extent if necessary to avoid interference with new construction work. Obstructions shall be removed from the established waterway.

Material that is not salvaged shall be disposed of as provided in Subsections 104.07 and 201.04.

205.03 Method of Measurement. Removal of Existing Bridge Structures will be measured on the lump sum basis for each bridge.

Except where specific pay items are shown on the plans and in the Contract, work involved in complying with the requirements of Section 110 will not be paid for separately, but full compensation therefor will be considered included in the contract unit price bid for Removal of Existing Bridge Structure.

205.04 Basis of Payment. Work completed and accepted and measured as provided above will be paid for at the contract lump sum price bid for Removal of Existing Bridge Structure (Site No.__), which price shall be full compensation for furnishing all labor, equipment, tools, and incidentals necessary to complete the work.

Periodic payment will be made under this item in proportion to the amount of work accomplished.

Payment will be made under:

Pay Item	**Pay Unit**
Removal of Existing Bridge Structure (Site No.____)	Lump Sum

SECTION 206
FLOWABLE SELECT MATERIAL

206.01 Description. This item shall consist of the furnishing, mixing, and placing a flowable mixture of portland cement, fly ash,

sand, and water for backfilling bridge abutments, pipe culverts, box culverts, structural plate pipe and arches, or other uses as approved by the Engineer. The material shall be placed in close conformity with the lines, grades, dimensions, and details shown on the plans or established by the Engineer.

206.02 Materials. The materials used in the flowable select material shall conform to the applicable requirements of Section 802. The Portland cement, fly ash, and chemical admixtures shall be listed on the QPL.

(a) Mix Design. The mix design will be prepared by the Contractor. The mixture will be proportioned to produce a flowable mixture without segregation. Material for one cubic yard (cubic meter), absolute volume, shall be as follows:

Cement	80 - 100 lbs. (45 - 60 kg)
Fly ash	220 - 300 lbs. (130 - 180 kg)
Sand	Variable to equal one cubic yard (cubic meter)
Water	Approximately 65 gallons (300 liters)

The minimum flow of the mixture shall be 8" (200 mm) as determined by the test method described herein. The unit weight shall be a minimum of 110 lbs./cubic foot (1750 kg/cu m).

The mix design shall be accompanied by the following documentation:

- A listing of the weights of all components of the proposed mix (water and admixtures may be measured by volume);
- Certified test results for flow and unit weight.

When unsatisfactory results or other conditions make it necessary, a new mix design will be established.

(b) Sampling and Testing. Sampling and testing will be performed by the Department.

The flow test shall consist of filling a 3" (75 mm) diameter x 6" (150 mm) high open-ended cylinder to the top with the flowable material mixture. If necessary, the top of the mixture will be struck off level. The cylinder will then be pulled straight up and the flow will be measured by the approximate diameter of the mixture. There shall be no evidence of segregation in the mixture.

The unit weight shall be determined according to AASHTO T 121, except that rodding and tapping shall not be done.

206.03 Construction Requirements. (a) Measurement of Materials. Materials for flowable select material shall be measured according to Section 802.

(b) Mixing Flowable Select Material. Mixing of flowable select material shall be according to Section 802.

(c) Handling and Placement. The Contractor shall provide sufficient supervision, labor, equipment, tools, and materials to assure proper production, delivery, and placement.

When deemed necessary by the Engineer, the flowable select material shall be contained within the designated area by metal or wood forms that are sufficiently tight as to keep the loss of material to a minimum, or by other means as approved by the Engineer.

The flowable select material shall be discharged from the mixer and conveyed into the space to be filled according to Section 802. The fill material shall be brought up uniformly to the fill line shown on the plans or as directed by the Engineer. Placing of other material over flowable select material may begin after the flowable select material has taken its initial set, is stable, and does not displace under equipment.

206.04 Method of Measurement. Flowable Select Material will be measured by the cubic yard (cubic meter). The quantities shown on the plans will be considered the final quantities and no further measurement will be made unless, in the opinion of the Engineer or upon evidence furnished by the Contractor, substantial variations exist between the quantities shown on the plans and actual quantities due to changes in alignment or dimensions or to apparent errors.

206.05 Basis of Payment. Work completed, accepted, and measured as provided above will be paid for at the contract unit price bid per cubic yard (cubic meter) for Flowable Select Material, which price shall be full compensation for designing the mix; for furnishing, mixing, and placing the material; and for all labor, equipment, tools, and incidentals necessary to complete the work.

Payment will be made under:

Pay Item	**Pay Unit**

Flowable Select Material Cubic Yard (Cubic Meter)

SECTION 207
STONE BACKFILL

207.01 Description. This item shall consist of the excavation and disposal of unsuitable material and furnishing, hauling, placing, spreading, and consolidating Stone Backfill at locations designated by the Engineer. At other locations where undercutting is required and Stone Backfill is not designated by the Engineer, the provisions of Section 210 shall apply.

207.02 Materials. Stone for Stone Backfill shall be hard, durable, crushed stone aggregate, as manufactured by local quarries, ranging in size from 1½" (40 mm) minimum to 6" (150 mm) maximum. It shall not contain more than 5% by weight of shale, slate, or other deleterious matter. The stone shall be uniformly graded and the amount passing the 1½" (37.5 mm) sieve shall be not more than 10% by weight. When backfilling with Stone Backfill to subgrade elevation, or to an elevation below subgrade when directed by the Engineer, the top 4" to 6" (100 mm to 150 mm) shall be material complying with Section 303 for Class 7 Aggregate Base Course. This material will be measured and paid for as Stone Backfill.

207.03 Construction Methods. The area shall be excavated and the Stone Backfill shall be placed within the limits shown on the plans or as designated by the Engineer. The excavated material shall be disposed of by the Contractor as approved by the Engineer. The stone may be dumped into the areas undercut without regard to depth of layer. The stone shall be spread, shaped, and consolidated to the line and grade determined in the field by the Engineer to provide a firm and unyielding foundation for the subgrade and/or base course.

207.04 Method of Measurement. Stone Backfill will be measured by the ton (metric ton).

207.05 Basis of Payment. Work completed and accepted and measured as provided above will be paid for at the contract unit price bid per ton (metric ton) for Stone Backfill, which price shall be full compensation for excavation and disposal of unsuitable

material; for furnishing, hauling, placing, shaping, and consolidating material; and for all labor, equipment, tools, and incidentals necessary to complete the work. Excavation and backfill authorized by the Engineer that is in excess of the volume occupied by the Stone Backfill will be measured and paid for under the appropriate Sections of the Standard Specifications for the appropriate classification of material.

Payment will be made under:

Pay Item	**Pay Unit**
Stone Backfill	Ton (Metric Ton)

SECTION 208
FENCE REMOVED AND RECONSTRUCTED

208.01 Description. This item shall consist of removing and reconstructing existing fences, including gates, where shown on the plans or designated by the Engineer, and shall be done in conformity with the plans and according to these specifications. This specification covers all types of fence removal and reconstruction, other than masonry or concrete fence.

208.02 Construction Requirements. The Contractor may clear a strip approximately 10' (3 m) wide within the right-of-way to accommodate fence removal and construction equipment. Clearing shall be performed according to Section 201.06. When such clearing is in a location where clearing would otherwise not be required, the clearing will not be paid for separately, but full compensation therefor will be considered included in the contract unit price bid for Fence Removed and Reconstructed.

The fence shall be reconstructed in a manner satisfactory to the Engineer, with posts thoroughly tamped into place and the fencing firmly attached to the posts. Where existing posts are set in concrete, the fence shall be reconstructed in the same manner except that the old concrete shall be removed from the posts and the posts set in new concrete meeting the requirements of Subsection 619.02.

Materials that are not in a condition to be moved shall be replaced by serviceable material of the same type and size. Replacement material shall be furnished by the Contractor and be

satisfactory to the Engineer. Excess and unserviceable material shall be disposed of according to Section 201.

208.03 Method of Measurement. Fence Removed and Reconstructed will be measured by the linear foot (meter) of fence in its reconstructed location. Such measurement will not include fences removed but not replaced. Gates removed and reconstructed as part of a fence will not be paid for separately, but full compensation therefor will be considered included in the contract unit price bid for Fence Removed and Reconstructed. Separate gates shown on the plans that are removed and reconstructed will be measured by the unit in place in the new location. Such measurement will not include separate gates removed but not reconstructed. Gates will be measured and paid for separately only when shown on the plans.

208.04 Basis of Payment. Work completed and accepted and measured as provided above, will be paid for at the contract unit price bid per linear foot) for Fence Removed and Reconstructed or per each for Gates Removed and Reconstructed, which price shall be full compensation for any clearing within the right-of-way necessary to establish a true line and/or work area; for dismantling, moving, and reconstructing; for furnishing necessary material; and for all labor, equipment, tools, and incidentals necessary to complete the work.

Payment will be made under:

Pay Item	**Pay Unit**
Fence Removed and Reconstructed	Linear Foot (Meter)
Gates Removed and Reconstructed	Each

SECTION 209
REMOVING AND REPLACING BASE COURSE AND ASPHALT SURFACING

209.01 Description. This item shall consist of the removal of the base course and asphalt surfacing, or the removal of base course

alone, from detours or existing roadways, at the locations shown on the plans or as designated by the Engineer; the stockpiling of the material if necessary; the thorough mixing of the materials; and the replacement of the mixed materials on the subgrade, selected material course, or base course, as shown on the plans or as directed by the Engineer. This work shall be completed according to these specifications and in proper sequence with other work in the Contract.

209.02 Construction Requirements. The Contractor shall scarify, break down, and mix all or any part of the ACHM material with the base course and handle according to the requirements of this Section. The volume of ACHM removed and replaced with the base course will be included in the measurement and payment under 209.03 and 209.04.

The Contractor shall have the option of removing and disposing the ACHM material. The ACHM material may be broken up and incorporated in an embankment provided that the material is mixed with the embankment material and kept at least 12" (0.3 m) below the finished grade. ACHM material shall not be placed in embankment areas where piling is to be placed or driven. If the contractor elects to use this option, removal and disposal of the ACHM material will be measured and paid for as unclassified excavation.

When the asphalt surface consists of one or more layers of Asphalt Surface Treatment, the asphalt material shall be scarified, broken down, and thoroughly mixed with the base course material.

The material may be removed and stockpiled pending construction of the subgrade, selected material course, or base course; or hauled directly and placed on the subgrade, selected material course, or base course that has been completed and accepted as to grade, width, and compaction. Care shall be exercised in removing the material so that soil from the subgrade is not included with the material. Replaced material shall be spread and compacted according to Section 303.

If the material is placed in stockpiles, the sites of the stockpiles shall be clean and uniform, and the placing and removal of the materials shall be conducted in such manner that there will be a minimum of waste. Excessive material wasted during the removal

and replacing operation shall be replaced at no cost to the Department.

209.03 Method of Measurement. Removing and Replacing Base Course and asphalt surfacing will be measured by the cubic yard (cubic meter) by either of the following methods:

Method No. 1. The material will be measured by the cross section method and volume computed by the average end area method. The material may be measured either in its original position or in a uniform windrow or stockpile, before being placed in its final position. When the material is measured in a windrow or stockpile, the computed volume will be reduced 30% for swell.

Method No. 2. The material will be measured in vehicles according to Section 109. When measurement is made in vehicles, allowances will not be made for wastage of materials during transportation from the loading to the unloading point and the volume measured at the point of entry on the road will be reduced 30% for swell. The Contractor shall level the loads adequately to ensure that each load contains the expected volume. The Engineer will inspect each load to check its volume.

209.04 Basis of Payment. Work completed and accepted and measured as provided above will be paid for at the contract unit price bid per cubic yard (cubic meter) for Removing and Replacing Base Course and Asphalt Surfacing, which price shall be full compensation for removing the base course and asphalt surfacing from detours or existing roadways; for mixing the materials and stockpiling if necessary; for loading, hauling, and delivering on the road; for spreading and shaping; for watering, manipulating, finishing, and compacting; for performing quality control and acceptance sampling and testing; and for all labor, equipment, tools, and incidentals necessary to complete the work.

Payment will be made under:

Pay Item	**Pay Unit**
Removing and Replacing Base Course and Asphalt Surfacing	Cubic Yard (Cubic Meter)

SECTION 210
EXCAVATION AND EMBANKMENT

210.01 Description. This item shall consist of excavation, construction of embankment, and disposal or compaction of all material that is encountered within the limits of the work not being removed under some other item. The work shall be accomplished in reasonably close conformity with the lines, grades, thicknesses, and typical cross sections shown on the plans or established by the Engineer. All excavation will be classified as common excavation, rock excavation, or unclassified excavation.

210.02 Quality Control and Acceptance. It is the intent of these specifications that all embankments, fills, and backfills and the top 6" (150 mm) of the roadbed in cut sections shall be compacted to the specified density at or near the optimum moisture content. To that end, certain tests for quality control and acceptance shall be performed as specified herein. If the result of any test shows that the required minimum density has not been obtained, corrective action shall be taken. Such corrective action may include, but is not limited to, additional compactive effort; scarifying, adjusting moisture content and recompacting; or removal of unsuitable material and replacement with suitable material. Except for removal and replacement of unsuitable material below finished subgrade elevation in cut sections or below natural ground in fill sections, all corrective actions shall be performed by the Contractor at no cost to the Department.

When the Engineer determines that the material is so rocky that it cannot be tested for density by the specified methods, acceptance will be as determined by the Engineer.

(a) Quality Control. The Contractor shall determine the maximum laboratory density and optimum moisture content for each soil type encountered on the project. The maximum laboratory density will be determined according to Subsection 210.10. The Contractor shall furnish the Department split samples of each soil used to determine laboratory densities. The Engineer may require additional laboratory densities when significant changes in the soils encountered on the project are evident.

The Contractor shall furnish all personnel, equipment, and facilities necessary to perform the required sampling and testing. The Contractor's facilities shall be separate from any Field Laboratory and/or Field Office furnished under the Contract. The Contractor shall provide the Engineer with the opportunity to observe all quality control sampling and testing. Quality control sampling and testing by the Contractor shall be performed in a qualified laboratory by a certified technician. Requirements for technician certification and laboratory qualification are contained in the Department's *Manual of Field Sampling and Testing Procedures*. Test reports shall be signed and copies made available to the Engineer if requested.

In-place densities shall be determined according to Subsection 210.10.

When the results of any test show that the minimum required density has not been obtained, corrective actions shall be taken, followed by a re-test in the same location. The original and re-test reports shall be cross-referenced.

Establishing the frequency of sampling and testing for quality control is the Contractor's responsibility, however the Contractor will be required to make certain tests as specified in Subsection 210.02(b).

(b) Acceptance Testing. The Contractor shall perform acceptance testing using the same methods specified for quality control testing. Acceptance sampling and testing by the Contractor shall be performed in a qualified laboratory by a certified technician. Requirements for technician certification and laboratory qualification are contained in the Department's *Manual of Field Sampling and Testing Procedures.* The item of work being tested shall not be considered complete or accepted until passing test reports are submitted to the Engineer.

The minimum frequency of acceptance testing by the Contractor shall be one test for density and moisture content per each 3000 cubic yards (2500 cu m) of embankment placed except that at least one test shall be performed on each layer of embankment. The location will be randomly selected by the Engineer using AHTD 465. The results of all tests shall be at or above the minimum required density and the moisture content should be near the optimum. If the result of any test does not meet these requirements,

corrective action shall be taken and a re-test will be taken at the same location.

In addition to the required acceptance tests, the Engineer may require the Contractor to test any location that, by visual observation, appears to be defective.

The Contractor's acceptance sampling and testing procedures, equipment, and results will be subject to independent assurance sampling and testing conducted by the Department. Independent assurance sampling and testing will be conducted at the frequencies indicated in the Department's *Manual of Field Sampling and Testing Procedures*. The Contractor shall be required to make changes to the equipment and/or procedures used if the results of the independent assurance tests do not correlate with the Contractor's test results.

All acceptance testing performed by the Contractor shall be subject to observation by Department personnel. All test reports shall be signed and submitted to the Engineer by the next business day after the tests are performed.

The Department will obtain and test a minimum of one sample, taken at the frequency established in the Department's *Manual of Field Sampling and Testing Procedures*, for verification testing in accordance with Subsection 106.11.

(c) Measurement and Payment. All work required under this subsection will not be paid for separately, but full compensation therefor will be considered included in the contract unit prices bid for the various earthwork items included in the Contract.

210.03 Vacant.

210.04 Vacant.

210.05 Classes of Excavation. (a) Common Excavation. Common excavation shall consist of all excavation not included as rock excavation or excavation that is otherwise classified.

(b) Rock Excavation. Rock excavation shall consist of igneous, metamorphic, and sedimentary rock that cannot be excavated without blasting or the use of rippers, and all boulders or other detached stones each having a volume of 0.5 cubic yard (0.5 cu m) or more.

(c) Unclassified Excavation. Unclassified excavation shall consist of the excavation and disposal of all materials of whatever character encountered in the work.

210.06 Borrow. Borrow material shall consist of a soil, or a mixture of soil and stone or gravel or other acceptable material, reasonably free from sod, stumps, logs, roots, or other perishable or deleterious matter, and shall be capable of forming a stable embankment when compacted. The stone or gravel shall be of such size as not to interfere with compaction requirements specified in Subsection 210.10. Unless otherwise designated in the Contract, the Contractor shall make all arrangements for obtaining borrow and shall pay all costs involved. Also see the requirements of Sections 106 and 107.

The Contractor shall notify the Engineer sufficiently in advance of opening any borrow areas so that cross section elevations and measurements of the ground surface after stripping may be taken.

When requested in writing by the Contractor and approved by the Engineer, material may be obtained from the right-of-way and used in lieu of off-site borrow material. When the material is obtained within the limits of the Contract, payment will be made for material obtained from the right-of-way at either: 1) the unit price bid for Borrow, less an agreed royalty, or 2) the applicable item of excavation, whichever results in the lower cost to the Department. If the site is located outside the limits of the Contract, the material will be paid for at the unit price bid for Borrow, less an agreed royalty. For the purposes of this paragraph, the phrase "limits of the Contract" is defined as the entire right-of-way, including easements, between the beginning and ending stations of the project outside the limits of excavation shown on the plans or as changed by the Engineer for any purpose other than obtaining additional material. On projects where there are designated exceptions, the beginning and ending stations shall be the beginning and ending stations of the exceptions. Included in the planned excavation will be any excavation made beyond the beginning and ending stations that is made for the purpose of blending the new construction to the existing roadway, whether shown on the plans or not.

210.07 Construction Requirements. The excavation and embankments for the roadway, intersections, and entrances shall be finished to reasonably smooth and uniform surfaces. No materials

shall be wasted unless they are surplus to the needs of the project or are deemed unsuitable by the Engineer, and only with the permission of the Engineer. Before beginning excavation, grading, and/or embankment operations in any area, all necessary work in that area shall have been performed according to Sections 201, 202, and 203, except that some removal items in Section 202 (e.g., curb, culverts, etc.) may be removed simultaneously and in coordination with excavation operations, provided such delay in removal of these items does not adversely affect the proper completion of excavation and construction of embankments.

Unless otherwise specified, rock shall be excavated to a minimum depth of 8" (200 mm) and not to exceed a maximum depth of 12" (300 mm) below subgrade within the limits of the roadbed, and the excavation backfilled with material designated on the plans or approved by the Engineer. Care shall be taken that undrained pockets shall not be left in the surface of the rock.

Borrow material should not be placed until after the roadway excavation has been placed in the fill. If the Contractor places more borrow than is required and thereby causes a waste of excavation, the amount of such waste will be deducted from the borrow volume as measured in the borrow area. All borrow areas shall comply with Section 106.

Obliteration of old roadways may include excavation and rough grading of the old roadway and/or the addition of borrow to restore approximately the original contour of the ground or to produce a pleasing appearance by forming natural, rounded slopes. Roadway obliteration will be paid for as excavation and/or borrow as appropriate.

Unless otherwise provided for on the plans or in the specifications, the removal of any existing base course or asphalt pavement necessary for constructing new pavement connections, or of asphalt paving in existing island locations or other areas not specifically addressed, will be measured and paid for as unclassified excavation.

When the Contractor's excavation operations encounter a restraining condition as defined in Subsection 107.10, operations shall be temporarily discontinued. Work in the area shall not resume until the disposition of the restraining condition has been

accomplished.

Where natural ground conditions or excavation to the finished grade section results in a subgrade or slopes of unsuitable soil, the Engineer may require the Contractor to undercut the unsuitable materials and backfill with approved material to the elevation designated by the Engineer. The Engineer may designate as unsuitable those soils that cannot be stabilized in place through normal drying and compactive efforts when satisfactory weather and ground conditions exist. Normal drying and compactive effort shall be considered to be the work required in processing and compacting the natural ground (including the bottom of a cut section) to a maximum depth of 12" (300 mm) after the soil is brought to near optimum moisture content. Undercut directed by the Engineer will be measured and paid for under the appropriate classification of excavation. The Contractor shall conduct construction operations so that the Engineer can take the necessary measurements before the backfill is placed.

In the construction of embankment, grading operations shall be conducted, as far as practicable, so that the most suitable soil is placed in the top layer of the embankment. To that end, the Engineer may order specific excavated materials, either from the regular roadway section or from borrow pits, placed in stockpiles for future use. Material thus stockpiled shall be measured in its original position and paid for at the contract unit price for Common Excavation, Unclassified Excavation, or Borrow, as the case may be. All material removed from the stockpile for placement in the embankment shall be measured in the stockpile by the conventional cross section method and payment for the second handling in removing from the stockpile and placing in the roadway embankment will be paid for at the contract unit price for Common Excavation or Unclassified Excavation, as the case may be. No adjustment will be made for shrinkage or swell.

It is intended that the right-of-way be left in a neat and presentable condition at the completion of the grading work, and especially that it be left in a condition that can be economically mowed where terrain will permit. To that end, stump holes, piles of loose material, and other scars on the surface shall be dressed by use of a motor patrol or other suitable equipment. No direct payment

will be made for this work but it shall be considered as a part of the several items of excavation.

Particular care and discretion shall be exercised in the location and use of haul lanes through tree screens in order to preserve existing growth. Haul lanes shall have prior approval by the Engineer.

210.08 Excavation Operations. All suitable material removed from the excavation shall be used, as far as practicable, in the formation of the embankment, in the subgrade, slopes, and shoulders, and at such other places as directed. Unsuitable material removed may be placed on the slopes or other locations on the project if designated by the Engineer. No payment will be made for any excavated material that is used for purposes other than those designated, except as provided under Subsection 104.06.

All excess or unsuitable excavated material that cannot be used in embankments may be placed on the side slopes of the nearest fill in a satisfactory manner and shall be placed so as to maintain a distinct shoulder line by generally keeping all such material at least 24" (0.6 m) below the subgrade elevation.

Excavated material that cannot be utilized as described above shall be hauled away and disposed of by the Contractor. Selection and procurement of sites for the disposal of material removed from the project shall be the responsibility of the Contractor. Sites used for the disposal of unused material shall be left in a neat and presentable condition. The Contractor shall have a written agreement with the property owner, and shall comply with the requirements of Subsection 107.10 and Section 110. Work involved in disposing of the material, including obtaining the sites, hauling, seeding and stabilization, and complying with Section 110, will not be paid for separately, but full compensation therefor will be considered included in the contract unit price(s) bid for the appropriate classification(s) of excavation.

Except in solid rock or other materials that in the judgment of the Engineer require a modified slope, all slopes shall be trimmed to the slopes shown in the cross section drawings, and care must be exercised so that no material shall be loosened below the required slopes. All roots, stumps, and other foreign matter in the sides and bottoms of the ditches or drainage outlets shall be removed or cut to conform to the slope, grade, and shape of the section shown.

Side ditches shall be excavated reasonably true to lines, grades, and cross sections as shown on the plans or as directed.

When excavating in rock, at locations shown on the plans or designated by the Engineer, a presplit or breakline shall be produced along the cut slope, except presplitting will not be required in cuts less than 6' (2 m) in depth. When blasting rock in cuts less than 6' (2 m) in depth, a reasonably uniform face shall be left, regardless of whether the excavation is carried beyond the specified slope. All breakage and slide materials shall be removed by the Contractor and disposed of as directed.

The presplitting or breakline involves a single row of holes drilled along the neat excavation line and the blasting charge fired before any adjoining main excavation area is blasted. To establish the breakline, holes for presplitting shall be so spaced and of such diameter that they can be properly loaded and tamped so as to produce a relatively smooth plane along the designated backslope before shooting the interior portion of the cut. The exact spacing and diameter shall be determined by the Contractor to accomplish the desired finished section and shall be changed if the pattern of drilling and blasting fails to do so. In the event the cut is too deep for the presplitting to be done in one operation, an 18" (0.5 m) offset or bench will be allowed for each succeeding line of drill holes. Presplitting operations shall be discontinued when the rock face is of such character that no apparent advantage is gained.

The presplit slope face shall not deviate more than 1' (0.3 m) from a plane passing through adjacent drill holes, except where the character of the rock is such that, as determined by the Engineer, irregularities are unavoidable. The 1' (0.3 m) tolerance shall be measured perpendicular to the plane of the slope. In no case shall any portion of the slope encroach on the roadbed.

The Contractor's attention is called to the fact that where traffic must be maintained, all necessary precautions shall be taken to protect the traveling public during blasting operations. The Contractor will be required to comply with all Federal, State, and local laws and regulations pertaining to the storage and use of explosives.

The Engineer shall, at all times, have the authority to prohibit or halt the Contractor's blasting operations if it is apparent that through the methods being employed, the required slopes are not being

obtained in a stable condition or the safety and convenience of the traveling public is being jeopardized.

Boulders and rock fragments not incorporated in embankments shall not be left scattered about over the right-of-way but shall be disposed of as directed. Payment will be made for the removal of such material from its original position only.

All rock on the cut face that is loose, hanging, or that creates a potentially dangerous situation shall be removed or stabilized, to the Engineer's satisfaction, during or upon completion of the excavation in each lift. Drilling of the next lift will not be allowed until this work has been completed.

210.09 Embankment Construction. Embankment construction shall consist of constructing roadway embankments, including preparation of the areas upon which they are to be placed; the construction of dikes within or outside the right-of-way; the placing and compacting of approved material within roadway areas where unsuitable material has been removed; and the placing and compacting of embankment material in holes, pits, and other depressions within the roadway area. Only approved materials shall be used in the construction of embankments and backfills.

Rocks, broken concrete, or other solid materials shall not be placed in embankment areas where piling is to be placed or driven.

When embankment is to be placed and compacted on hillsides, or when new embankment is to be compacted against existing embankments, or when embankment is built ½ width at a time, the slopes shall be continuously benched as the work is brought up in layers. Benching shall be of sufficient width to permit operations of placing and compacting equipment. Each horizontal cut shall begin at the intersection of the original ground and the vertical sides of the previous cuts. Unless otherwise specified, material thus cut out shall be recompacted along with the new embankment material at no cost to the Department. If the Engineer directs such material to be wasted or placed in another location, the excavated material will be measured and paid for under the appropriate item of excavation.

Unless otherwise shown on the plans, where an embankment less than 3' (1 m) in height is to be made, all sod and vegetable matter shall be removed from the surface upon which the embankment is to be constructed and later placed on the completed embankment

slopes. The cleared surface shall then be completely broken up by plowing, scarifying, or disking to a minimum depth of 6" (150 mm). The area shall then be recompacted and stabilized according to Subsection 210.10.

Whenever a compacted road surface containing asphalt or granular material lies within 3' (1 m) of the subgrade, such old road surface shall be scarified to a depth of at least 6" (150 mm). This scarified material shall then be recompacted to a stable condition.

If embankment material can be deposited on one side only of abutments, wing walls, piers, or culvert headwalls, care shall be taken that the area immediately adjacent to the structure is not compacted to the extent that it will cause overturning or excessive pressure against the structure. When noted on the plans, the fill adjacent to the end bent of a bridge shall not be placed higher than the bottom of the backwall of the bent until the superstructure is in place. When embankment is to be placed on both sides of a concrete wall or box type structure, operations shall be conducted so that the embankment is always at approximately the same elevation on both sides of the structure.

Roadway embankment shall be placed in parallel layers not exceeding 10" (250 mm), loose measurement, and shall be compacted as specified and stable before the next layer is placed. Effective spreading equipment shall be used on each lift to obtain uniform thickness before compacting. As the compaction of each layer progresses, continuous leveling and manipulating will be required to assure uniform density. Water shall be added or removed, as necessary, to obtain the required density. Construction equipment shall be routed uniformly over the entire surface of each layer. The Contractor shall be responsible for the stability of each layer. The material in each layer will be considered stable when it will not rut and/or pump under construction operations.

When the excavated material consists predominantly of rock fragments of such size that the material cannot be placed in layers of the thickness prescribed, such material may be placed in the embankment in layers not exceeding in thickness the approximate size of the larger rocks (30" [750 mm] maximum). Rock or boulders too large to permit placing in 30" (750 mm) layers shall be reduced in size as necessary to permit this placement. The 12" (300 mm) of the embankment immediately below finished subgrade may be

placed in one layer with no rock exceeding 10" (250 mm) in its greatest dimension. Each layer shall be constructed so that rock voids are substantially filled with rock fines and/or earth. The rock shall be placed and manipulated in uniform layers and rock fines and/or earth shall be distributed throughout each embankment layer and manipulated as herein indicated. Rock shall not be end dumped over the edges of the layer being constructed, but shall be deposited on the layer and moved ahead so as to advance the layer with a mixture of rock fines and/or earth.

The Contractor shall be responsible for the stability of all constructed embankments and shall restore, at no cost to the Department, any portions that have become displaced due to carelessness or negligent work. After the completion of a section of roadway, it shall be maintained at finished grade and cross section by blading when and to the extent directed by the Engineer.

In those portions of embankments that are immediately adjacent to structures or are for other reasons inaccessible to the compaction equipment in use, only suitable material shall be used and it shall be placed in successive parallel layers of not more than 6" (150 mm) thickness, loose measurement. Each layer shall be uniformly mixed and compacted to the requirement of the specific item using mechanical equipment. Hand tamping will not be permitted.

Embankments shall be constructed in sections of not less than 200' (60 m) in length, or the full length of the embankment if less than 200' (60 m).

210.10 Compaction Requirements. The natural ground surface on which an embankment less than 3' (1 m) in height is to be constructed, the roadbed through sections in excavation, and all embankments shall be compacted as described in this subsection. Compaction will not be required in cleared areas where grubbing is not required and it is impractical to work compaction equipment.

All equipment, tools, and machinery used on this work shall be suitable for the soil to be compacted, and shall be maintained in good operating condition. Unless otherwise provided, compaction of earthwork shall be accomplished by any satisfactory method or methods that will obtain the density hereinafter specified.

The material in each layer of embankment shall be compacted to a uniform density of not less than 95% of the maximum laboratory

density. Specified density will not be required immediately adjacent to wingwalls of box culverts.

Percent coarse particles retained on the #4 (4.75 mm) sieve shall be determined according to AASHTO T 27 and the maximum laboratory density determined as follows:

% Retained - #4 (4.75 mm) Sieve	Test Method
10 Max.	AASHTO T 99, Method A
11 - 30	AASHTO T 99, Method C
31 Min.	AASHTO T 180, Method D

Note: In lieu of AASHTO T 224, correction for coarse particles retained on the 3/4" (19.0 mm) sieve shall be determined by replacing with an equal mass of material passing the 3/4" (19.0 mm) sieve and retained on the #4 (4.75 mm) sieve.

The in-place density shall be determined by using AASHTO T 310, Direct Transmission. The moisture content shall be determined by AASHTO T 310 or AHTD Test Method 347 or 348.

The moisture content of the material being compacted through out each entire layer shall be substantially that of optimum moisture of the particular soil type. It shall be the responsibility of the Contractor to bring the moisture content throughout each layer of the embankment to be compacted to substantially that of optimum moisture by the addition of water or by aeration as may be necessary to increase or decrease moisture under the conditions encountered.

The density of the embankment shall be obtained and maintained or restored before placing a subsequent layer of embankment, base course, or surfacing.

The following procedures are to be followed in securing the required compaction:

The embankment shall be constructed to grade over the full width in uniform layers parallel to the finished surface and not more than 10" (250 mm) in thickness, loose measure. Each layer shall have the moisture content and be compacted to meet the requirements herein before provided. The maximum depth of layer as specified may be modified by the Engineer as particular conditions justify, such as the placing of the first layer over marshy area, or on slopes too steep for the operation of equipment. In such areas the embankment may be

constructed in one layer to the minimum elevation at which equipment can be operated and above such elevation the layers shall not exceed the specified maximum thickness of 10" (250 mm), loose measure.

Density requirements will not apply to portions of embankment constructed of material so rocky that it cannot be satisfactorily tested according to the above requirements. In such cases, the extent of compactive effort by rolling will be determined by the Engineer based upon the amount of breakage and consolidation that can be accomplished. When the nature of the material is such that consolidation by rolling is impractical, rolling will not be required.

After the roadbed has been excavated to line and grade, the surface shall be loosened to a minimum depth of 6" (150 mm) below the finished elevation, the entire area within the limits of the roadbed section processed, the material brought within the range of optimum moisture content, compacted, and stabilized to meet the requirements of these specifications. The section shall be reshaped to conform to the typical section during the compaction operation.

When the roadbed is excavated from solid rock and backfilled with material conforming to the definition for Common Excavation or Unclassified Excavation, or with Borrow, the backfill shall be compacted as provided above.

Work involved in compaction as required by this subsection will not be paid for separately, but full compensation therefor will be considered included in the contract unit prices bid for the various classes of excavation and/or borrow.

210.11 Compacted Embankment. When the item "Compacted Embankment" is included in the Contract, the following provisions shall apply.

All excavation and embankment shall be constructed to reasonably close conformity with the lines, grades, thicknesses, and typical cross sections shown on the plans or established by the Engineer.

All suitable excavated material may be used in part or in total to construct the embankments within the areas of Compacted Embankment or it may be removed from the project and the embankments constructed with new material meeting the

requirements of Borrow.

Embankment shall be constructed and compacted according to Subsections 210.09 and 210.10.

Where excavation to the finished grade section results in a subgrade or slopes of unsuitable material, the Engineer may require the Contractor to undercut the unsuitable material and backfill to the finished grade section with approved material. The excavation of unsuitable material will be measured and paid for under the appropriate classification of excavation and the backfill will be paid for as Compacted Embankment using the same measurements.

Material used to replace that removed by scalping areas of vegetation and/or mulch cover, resulting from work required by Section 110, will be paid for as Compacted Embankment. The Engineer may determine the volume by the average end area method or by measuring the average length, width, and depth of removal.

Borrow will not be paid for separately, but full compensation therefor will be considered included in the contract unit prices bid for Compacted Embankment and/or the appropriate classification of excavation. All work involved in excavation and construction of embankments will be measured and paid for as provided for in Subsections 210.12 and 210.13 under the appropriate items of excavation, presplitting, and compacted embankment. Excavation or embankment constructed outside the plan limits without the specific approval of the Engineer will not be included in the measurement of excavation or embankment and will not be paid for.

210.12 Method of Measurement. (a) All accepted excavation and borrow will be measured in its original position by the cross section method or survey break line method, field collected or by using photogrammetric procedures. Volumes shall be computed by the average end area method to determine the amount of material removed. Measurements will include overbreakage or slides not attributable to carelessness of the Contractor, authorized excavation of solid rock below grade, and unsuitable materials below grade (undercut). When measuring quantities of undercut below subgrade, the Engineer may determine the volume of the excavation by measuring the average length, width, and depth of the excavation.

On projects with small quantities of borrow, and when approved in writing by the Engineer, borrow may be measured in vehicles according to Subsection 209.03, Method 2.

All quantities will be determined to the nearest whole cubic yard (cubic meter).

(b) Presplitting will be measured by the square yard (square meter) of plane surface of the final presplit cut face. The measurement will be subject to reduction because of avoidable overbreakage resulting from excessive blasting.

(c) Compacted Embankment when included in the Proposal will include all approved fill within the right-of-way or construction easement limits and will be measured in its final position by the cross section method or survey break line method, either field collected or by using photogrammetric procedures, and computed by the average end area method to determine the amount of fill volume required to complete the work according to the plans or as directed by the Engineer.

(d) When any pay item under this Section is shown on the plans, contract, or otherwise specified as plan quantity, the quantities for such items shall be considered as final quantities and no further measurement will be made except for undercutting of unsuitable material and backfilling with appropriate material. These final quantities will be revised if, in the opinion of the Engineer or upon evidence furnished by the Contractor, substantial variations exist between the quantities shown on the plans and the actual quantities due to changes in alignment, grade, typical section, or apparent errors. If field measurement of quantities designated on the plans as plan quantity is deemed necessary, the change in the method of measurement will be documented by an approved change order and the Contractor shall allow the Engineer sufficient time to collect the necessary original field data, if required, before any earthwork is begun.

(e) Hauling of excavation material for placement in embankments or waste areas will not be paid for separately, but full compensation therefor will be considered included in the contract unit price(s) bid for the various classifications of excavation. Hauling of Borrow will not be paid for separately, but full compensation therefor will be considered included in the contract unit price bid for Borrow.

(f) For all earthwork to be measured, the Engineer shall have the

following options:

- to obtain original and/or final cross sections in the field or by photogrammetric methods,
- to use as original cross sections the preliminary cross sections used in the design of the project,
- to use templated final cross sections in lieu of cross sections taken in the field,
- to use an electronic computer program to compute quantities from terrain models developed from field and/or photogrammetric data.

210.13 Basis of Payment. (a) The quantities of the various classes of excavation and for Borrow completed and accepted and measured as provided above will be paid for at the Contract unit price bid per cubic yard (cubic meter) for Common Excavation, Rock Excavation, Unclassified Excavation, or Borrow, as the case may be, which price shall be full compensation for excavation; for drilling and blasting; for formation of embankment; for compaction of earthwork; for performing quality control and acceptance sampling and testing; for furnishing and applying water and aerating of soils; for trimming of slopes; for disposal of surplus material; for hauling; for preparation and completion of subgrades and shoulders or roadway; for final cleaning up of the right-of-way; and for all labor, equipment, tools, and incidentals necessary to complete the work. The Contract unit price bid for Borrow used in the planned embankment shall also be compensation for furnishing material, including royalties; for clearing and grubbing; for stripping and replacing topsoil; for excavating, sloping, trimming, loading and hauling; for performing quality control and acceptance sampling and testing; for confining live stock; for fence moved and replaced as required; for constructing, maintaining, and obliterating haul roads; for seeding and restoration as required; and for complying with Section 110 and Subsections 106.02 and 107.10.

(b) Presplitting completed and accepted and measured as provided above will be paid for at the contract unit price bid per square yard (square meter) for Presplitting, which price shall be full compensation for drilling and blasting; and for furnishing all labor, equipment, tools, and incidentals necessary to complete the work.

(c) Compacted Embankment completed and accepted and measured as provided above will be paid for at the contract unit

price bid per cubic yard (cubic meter) for Compacted Embankment, which price shall be full compensation for all costs involved in furnishing and placing borrow; for hauling and placing excavation; for constructing the embankment according to Subsection 210.11; for performing quality control and acceptance sampling and testing; and for all labor, equipment, tools, and incidentals necessary to complete the work.

Payment will be made under:

Pay Item	**Pay Unit**
Common Excavation	Cubic Yard(Cubic Meter)
Rock Excavation	Cubic Yard(Cubic Meter)
Unclassified Excavation	Cubic Yard(Cubic Meter)
Borrow	Cubic Yard(Cubic Meter)
Presplitting	Square Yard(Square Meter)
Compacted Embankment	Cubic Yard(Cubic Meter)

SECTION 211 - VACANT

SECTION 212
SUBGRADE

212.01 Description. This item shall consist of shaping, compacting, and otherwise preparing the completed roadbed for the placing of base and surface courses and pavements according to these specifications and in substantial conformity with the lines, grades, and cross sections shown on the plans.

212.02 Construction Requirements. (a) General. The subgrade shall be prepared in such a manner as to ensure that the base, surface course, or pavement will be placed on a firm foundation that is stable and reasonably free from dust pockets, wheel ruts, or other defects.

The subgrade area shall be scarified as necessary for shaping, and shaped and compacted to the required grade and section. A maximum deviation of ½" (13 mm), plus or minus, from the required grade will be permitted on the surface of the finished subgrade. Quality control and acceptance testing shall be

according to Section 210 except that the minimum frequency of acceptance testing for density and moisture shall be one test per each 12,000 square yards (10,000 sq m) of subgrade area. The minimum depth of testing shall be 8" (200 mm) with the gauge in the direct transmission mode.

The in-place density shall not be less than 95% of the maximum laboratory density. The maximum laboratory density will be determined according to Subsection 210.10. In-place densities shall be determined according to Subsection 210.10.

Compaction shall be accomplished by any satisfactory method or methods that will obtain the density. The Contractor shall bring the moisture content of the material to be compacted to substantially that of optimum moisture by the addition of water or by manipulation and aeration as necessary to increase or decrease the moisture content under the conditions encountered.

When the subgrade is to be stabilized with lime or portland cement, the top 8" (200 mm) shall be compacted before treatment to the extent necessary to prevent rutting under normal operation of construction equipment.

Compaction operations may be omitted when an old stone or gravel roadbed is used as a foundation or subgrade for a base course or pavement where scarifying for shaping is unnecessary and its stability is approved by the Engineer.

Existing asphalt surface course in place shall be scarified and the material broken down to a maximum size of 2" (50 mm) and shaped and compacted to a stable condition and to the required grade and section after being thoroughly mixed with any base course material that may be in place unless the Engineer considers the existing surface suitable for retention.

All soft and yielding material and other portions of the subgrade that will not compact readily when rolled or tamped shall be removed. Holes or depressions made by the removal of unsuitable material as directed above shall be filled with approved material and the entire subgrade brought to the lines, grade, and cross section shown on the plans and compacted to the required density.

If the succeeding course is not placed immediately after the subgrade has been prepared and the subgrade becomes cut up,

rough, or unstable, it shall again be shaped and recompacted according to the above requirements.

(b) Subgrade for Portland Cement Concrete Base or Pavement (Forms). Portions of the subgrade composed of unsuitable materials shall be removed as directed, backfilled with approved material, and the entire subgrade brought to line and grade and compacted as specified above.

The subgrade shall be prepared for the paving by shaping and compacting to the full width according to the typical section shown on the plans. The material obtained in excess of that required for shaping due to variations in elevation shall be used to complete the shoulders, widen the roadbed, flatten the slopes, or be disposed of as shown on the plans or directed by the Engineer. After shaping, the entire area within the form lines shall be compacted to the required density. Any portion of the subgrade that is not accessible to normal compaction equipment shall be thoroughly compacted with manually operated mechanical tampers.

After the subgrade has been prepared and consolidated and the forms set and accepted, the surface of the subgrade shall be tested for crown and elevation using an approved scratch template held in a vertical position and moved backward and forward on the side forms. The scratch template shall be so designed that the ends of the prongs will indicate the true position of the subgrade when the template is riding on the forms. Excess material indicated by the scratch template shall be removed. The use of a scratch template will not be required on subgrades or subbases constructed of materials other than earth or sand, but the required degree of accuracy on the subgrade or subbase surface shall be obtained by other approved methods.

To bring low areas up to the correct subgrade elevation, approved material shall be furnished and tamped or rolled until the filled material is as thoroughly compacted as the surrounding subgrade on which no additional material has been placed. The surface of low areas may require scarifying before adding and compacting the additional fill material, Ruts and depressions caused by hauling shall be filled and consolidated as they develop. As a final check of subgrade conditions, a template or planer shaped to the true cross section of the bottom of the pavement shall be drawn on the forms immediately ahead of concrete operations and any excess material

shall be removed before the concrete is placed. Low places in the subgrade, as indicated by the final check, shall be filled with concrete and no additional compensation will be allowed for the extra quantities of concrete involved, or shall be filled with approved material and compacted to required density.

If the succeeding course is not placed immediately after the subgrade has been prepared and the subgrade becomes cut up, rough, or unstable, it shall again be shaped and recompacted according to the above requirements.

212.03 Method of Measurement and Basis of Payment. On paving or surfacing projects that include the construction of the roadbed, the scarifying, blading, shaping, compacting, and other work necessary to bring the roadbed to the requirements of these specifications will not be paid for separately, but full compensation therefor will be considered included in the contract unit prices bid for the various classes of excavation or the placing of the base course, surface course, pavement, or shoulders as applicable. Replacement of material removed by scalping areas of vegetation and/or mulch cover, resulting from work required by Section 110, will be paid for under the appropriate item as provided in the plans or in the Contract.

On paving or surfacing projects that do not include the construction of the roadbed, the removal and disposal of unsatisfactory material and additional material hauled in as required to fill holes or depressions in the roadway or otherwise correct deficiencies in grade or typical section will be measured and paid for under the appropriate item as provided on the plans or in the Contract. When only small quantities of additional material are required, measurement thereof may be made in vehicles according to Subsection 209.03, Method 2.

SECTION 213
SHAPING ROADWAY SECTION

213.01 Description. This item shall consist of modifying the existing roadway to conform substantially to the typical section shown on the plans. This work shall include excavating and hauling

or drifting subgrade material necessary in widening the existing roadway, making minor cuts and fills, and/or shaping and dressing the surface, shoulders, ditches, foreslopes, and backslopes to provide a uniform and well-drained subgrade, all according to the plans and these specifications or as directed.

213.02 Construction Requirements. Before the work is started, all grass, weeds, or rubbish of any nature that may be considered deleterious, shall be removed from within the construction limits and disposed of as directed.

Material obtained from shaping the ditches and slopes shall be spread over the existing roadway to a uniform grade. The grade of the existing roadway shall not be changed except as made necessary by the material obtained from the ditches and slopes. Deviations may be permitted so long as the grade constructed is free from sharp breaks, dips, and ridges and will provide a uniform riding surface. Sight distances over hill crests shall not be impaired.

The crown width of the roadway shall not be less than the roadway width shown on the plans. Sections of roadway with a crown width greater than the typical section shall not be reduced in crown width unless necessary to secure satisfactory ditches and slopes.

Foreslopes and backslopes may be variable to the extent feasible to aid balancing the earthwork, but no slope shall be steeper than the maximum shown on the plans.

Should there develop any depressions or narrow embankments where the material obtained from shaping the ditches and slopes is insufficient to construct a satisfactory roadway, sufficient additional material shall be obtained and placed under the provisions of Subsection 210.06 to bring the roadway to a satisfactory section.

Compaction of the roadbed shall comply with the requirements of Subsection 210.10. Quality control and acceptance testing shall be according to Section 210.

All existing drainage structures to be retained shall be cleaned. Where noted on the plans, inlet and outlet ditches shall be cleaned. Inlet and outlet ditches for new drainage structures shall be cleaned as required for proper drainage at locations noted on the plans.

Existing driveways and approach roads shall be reshaped and

new driveways and approach roads constructed to the details and at the locations shown on the plans.

213.03 Method of Measurement. Shaping Roadway Section will be measured by the 100' (100 meter) survey station along the centerline of the roadway. This measurement will be made to the nearest foot (meter).

All additional material obtained for borrow will be measured and paid for according to Section 210. On projects with small quantities of borrow, and when approved by the Engineer, borrow may be measured in vehicles according to Subsection 209.03, Method 2.

213.04 Basis of Payment. Work completed and accepted and measured as provided above will be paid for at the contract unit price bid per station (metric station) for Shaping Roadway Section, which price shall be full compensation for removing and disposing of grass, weeds, and rubbish; for excavating and hauling all material except borrow; for formation and compaction of embankment; for performing quality control and acceptance sampling and testing; for trimming and shaping slopes, shoulders, and subgrade of roadway; for cleaning existing drainage structures and inlet and outlet ditches; for shaping all approaches; and for the furnishing of all labor, equipment, tools, and incidentals necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Shaping Roadway Section	Station (Metric Station)

SECTION 214
SUBGRADE PREPARATION

214.01 Description. This item shall consist of shaping, compacting, and otherwise preparing the existing roadbed constructed under a previous contract for the placement of base, subbase, and/or selected material to the tolerances shown on the plans and to the lines, grades, and cross sections shown on the plans or as directed by the Engineer.

214.02 Construction Requirements. This work shall be completed as required in Section 212 except that the subgrade shall be scarified to the depth necessary, not to exceed 12" (300 mm).

The operation shall extend across the areas of roadbed to be occupied by selected material, subbase, or base material or as directed by the Engineer.

Excess material removed from high areas shall be moved and placed in low areas as needed. The Contractor will not be required to move such material more than 3300' (1 km). Excess material that cannot be used to fill low areas may be used to flatten slopes or as otherwise directed by the Engineer. In lieu of wasting excess material and obtaining suitable material to fill low areas, the Contractor may move excess material removed from high areas more than 3300' (1 km) at no additional cost to the Department for the additional haul distance.

Quality control and acceptance testing shall be according to Section 212.02.

214.03 Method of Measurement. Subgrade Preparation will be measured by the 100' (100 meter) survey station measured along the centerline of each set of lanes and/or each ramp. This measurement will be made to the nearest foot (meter).

214.04 Basis of Payment. Work completed and accepted and measured as provided above will be paid for at the contract unit price bid per station (metric station) for Subgrade Preparation, which price shall be full compensation for scarifying, blading, shaping, and compacting the existing subgrade; for performing quality control and acceptance sampling and testing; and for all labor, equipment, tools, and incidentals necessary to complete the work. Replacement of material removed by scalping areas of vegetation and/or mulch cover, resulting from work required by Section 110, will be paid for under the appropriate item.

Payment will be made under:

Pay Item	**Pay Unit**
Subgrade Preparation	Station (Metric Station)

SECTION 215

TRENCHING AND SHOULDER PREPARATION

215.01 Description. This item shall consist of trenching, scarifying, blading, compacting, and otherwise preparing the existing shoulder for asphalt pavement widening within the limits shown on the plans and according to these specifications.

215.02 Construction Requirements. The existing shoulders shall be trenched and scarified to meet the lines, grades, and dimensions shown on the plans or as directed by the Engineer. The trenched material shall be spread over the existing slope and shall not obstruct drainage systems. Any trenched material unsuitable for placement on the slopes or excess material shall be disposed of according to the requirements for disposal of unsuitable material in Sections 110, 201, and 210.

The subgrade shall be compacted according to Subsection 210.10. Quality control and acceptance testing shall be according to Section 212.02.

215.03 Method of Measurement. Trenching and Shoulder Preparation will be measured by the 100' (100 meter) survey station along the centerline of each separate roadway. The measurement will be made to the nearest foot (meter) and includes both shoulders.

215.04 Basis of Payment. Work completed and accepted and measured as provided above will be paid for at the contract unit price bid per station (metric station) for Trenching and Shoulder Preparation, which price shall be full compensation for trenching, scarifying, and spreading material over the slopes; disposal of unsuitable or excess material; recompacting; for performing quality control and acceptance sampling and testing; and for all labor, equipment, tools, and incidentals necessary to complete the work.

Payment will be made under:

Pay Item	**Pay Unit**
Trenching and Shoulder Preparation	Station (Metric Station)

SECTION 216
SCARIFYING AND RECOMPACTING SHOULDERS

216.01 Description. This item shall consist of scarifying, blading, shaping, and recompacting the existing base material; preparing the existing shoulder for surfacing; and stockpiling the excess material at the designated locations.

216.02 Construction Requirements. When the existing asphalt surface consists of any type of ACHM, the layer(s) of ACHM shall be removed and disposed of as directed by the Engineer. When the existing surface consists of one or more layers of Asphalt Surface Treatment, the Contractor shall have the option, with the approval of the Engineer, of either removing and disposing of the surface material or scarifying, breaking down, and mixing the surface material with the underlying base course material. The existing base course shall be scarified to a depth of 4" (100 mm) to 6" (150 mm) and recompacted to a density, as determined by AASHTO T 310, Direct Transmission, of not less than 95% of the maximum laboratory density obtained by AASHTO T 180, Method D. Quality control and acceptance testing for density shall be according to the provisions of Section 306 except the minimum frequency of acceptance testing shall be based on a lot size of 6,000 square yards (5,000 sq m). The final elevation of the base course on the shoulders shall allow for the surface course as shown on the plans.

216.03 Method of Measurement. Scarifying and Recompacting Shoulders will be measured by the square yard (square meter). The length will be measured to the nearest foot (meter), horizontally and parallel to the centerline, and the width will be the width of the finished base course shoulder. Width in excess of that shown on the plans or authorized by the Engineer will be excluded from the measurement.

216.04 Basis of Payment. Work completed and accepted and measured as provided above will be paid for at the contract unit price bid per square yard (square meter) for Scarifying and Recompacting Shoulders, which price shall be full compensation for scarifying, blading, shaping, and recompacting base material; for performing quality control and acceptance sampling and testing; for loading, hauling, and stockpiling excess material; and for all labor,

equipment, tools, and incidentals necessary to complete the work.

Payment will be made under:

Pay Item	**Pay Unit**
Scarifying and Recompacting Shoulders	Square Yard (Square Meter)

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