

aggregate.

Grading, furnishing and placing loam, seed and mulch in required waste areas will be considered incidental to the contract and no separate payment will be made.

Payment will be made under:

Pay Item

Pay Unit

205.41	Reconstruction of Existing Shoulder, [Square Yard]	square meter
	Plan Quantity	
205.51	Widening of Existing Shoulder, [Square Yard]	square meter
	Plan Quantity	

SECTION 206 - STRUCTURAL EXCAVATION

206.01 Description This work shall consist of excavating, hauling and backfilling or disposing of all material encountered for the installation and construction of drainage and minor structures and for major structures in accordance with these specifications and in reasonably close conformity with the lines, grade and typical cross sections shown on the plans or established. Excavating for structures below designated excavation limits as specified or shown on the plans will be included under this Section. Material, which is required to be excavated under another item, shall not be included under this item.

Ditches at inlets and outlets of culverts, special ditches and outlet ditches, all as shown on the plans, shall be constructed and paid for under Section 203 - Excavation and Embankment.

a. Drainage and Minor Structures shall include pipe culverts, pipe arches, underdrains, catch basins, manholes, structural plate units, box culverts, culvert end walls, concrete steps and other minor structures.

b. Major Structures shall include abutments and piers for bridges, rigid frame structures, and masonry retaining walls.

c. Special backfill shall consist of obtaining, hauling, and placing selected material suitable for the location where it is to be used. Structural backfill as a contract item will be called for on the plans or in the proposal.

206.02 Construction Methods The Contractor shall notify the Resident a sufficient length of time in advance of the beginning of structural excavation so that necessary elevations and measurements may be taken of the undisturbed ground. When solid rock is encountered which is to be removed, the Contractor shall uncover the rock and provide ample opportunity for the Resident to take the necessary measurements of the undisturbed rock. Soil erosion control devices shall be in place at this time.

When the foundation material is soft or otherwise unsatisfactory the excavation shall be carried to a depth designated and the material removed below the elevation shown on the plan and shall be replaced with approved granular material, thoroughly compacted, or a lower elevation for the bottom of the structure shall be established.

Suitable material removed from the excavation area including that material removed from beyond the specified excavation pay limits shall be used for backfilling or for the formation of embankments and no additional allowances for payment will be made. Unsuitable or surplus material shall be disposed of as directed.

When the foundation is to be placed on solid rock, the rock shall be excavated to a firm surface, either level stepped or serrated. When solid or disintegrated rock or boulders are encountered, the rock shall be excavated to a designated depth

below the bottom of the proposed structures. Except for installations of underdrain, the material so removed shall be replaced with selected fine compressible material such as sand and uniformly compacted and shaped in accordance with Section 603.04 - Bedding.

When the structure is to rest on an excavated surface other than rock, special care shall be taken not to disturb the bottom of the excavation. If the surface upon which the structure is to rest is disturbed, it shall be regraded and recompacted to the extent directed by the Resident.

After each excavation is completed, the Contractor shall notify the Resident and no culverts or masonry shall be placed, foundation piles driven or other installations made, until the depth of the excavation and the character of the foundation material has been approved.

Before drainage or underdrain pipe is installed in cut areas where common excavation, unclassified excavation or muck excavation is removed below the subgrade elevation shown on the plans, the undercut roadbed shall be filled with approved granular material to a depth sufficient to support construction equipment. All fill material shall be compacted as required.

206.03 Backfilling Backfilling shall consist of placing suitable material in all spaces excavated and not occupied by drainage structures, bridge structures and other permanent structures up to the elevation of the existing ground or other elevations shown on the plans or designated. Except for underdrain backfill and for structural plate pipe units, backfill material for drainage and minor structures shall be fine readily compressible soil or granular material, at or near optimum moisture content, and shall not contain stones larger than 75 mm [3 in], frozen lumps, chunks of clay, mineral matter or any other objectionable material. Backfill material for major structures shall be granular borrow or other material designated on the plans and shall be at or near optimum moisture content and shall not contain stones larger than 75 mm [3 in], frozen lumps, chunks of clay, mineral matter or any other objectionable matter.

Backfill shall not be placed against gravity sections of masonry abutments, wing walls, box culverts or other structures requiring forms, until the masonry has been in place at least 7 days or until concrete cylinders cured with the structure establish that design strength has been reached. For reinforced sections, no backfill shall be placed until the masonry has been in place at least 14 days or until concrete cylinders cured with the structure establish that design strength has been reached. Backfilling around pipes, catch basins and manholes, the joints of which are made with portland cement mortar, shall not be done until the mortar has been in place at least 12 hours unless methods approved by the Resident are used to protect the mortar from being disturbed.

Except for structural plate units, backfill material shall be uniformly distributed in layers of not more than 200 mm [8 in] in depth, loose measure, and each layer thoroughly compacted by use of approved compactors before successive layers are placed. When backfill is being placed around a pipe or structure, operations shall be so conducted that the fill is always at approximately the same elevation on both sides. Water shall be added when necessary to increase the moisture content of the backfill material to obtain compaction. Puddling or jetting of backfill will not be allowed unless specifically provided in the contract. Structural plate units shall be backfilled in accordance with Section 509 - Structural Plate Pipes, Pipe Arches, Arches, and Metal Box Culverts.

Unless otherwise indicated on the plans or directed, all sheeting and bracing used during structural excavation shall be removed by the Contractor following the completion of the work, and all voids resulting from use of the sheeting and bracing backfilled where necessary.

206.04 Method of Measurement Structural excavation will be measured by the number of cubic meters [cubic yards] of material removed, measured in its original position acceptably excavated in conformity with the plans or as directed.

When structures are to be installed where roadway excavation is to be removed, only the excavation beyond and below the roadway excavation limits will be classified as structural excavation.

a. Drainage and Minor Structures For these structures there will be no measurement for structural earth excavation except excavation required below a plane parallel with and 300 mm [12 in] below the bottom of the aforementioned structures, as shown on the plans, hereafter called Structural Earth Excavation, Below Grade. When measured for payment, the quantity of Structural Earth Excavation, Below Grade, will be the amount actually excavated, provided the maximum allowable horizontal dimensions do not exceed those bounded by vertical surfaces 375 mm [15 in] from the structure, except 450 mm [18 in] outside the lines of the base of catch basins, manholes, structural plate units, and box culverts, and to the vertical neat lines of underdrain trenches, as shown on the plans.

When rock is required to be excavated for installation of these structures, the depth for measurement will be the actual depth required in accordance with the construction specifications or as otherwise designated for a maximum vertical dimension of 300 mm [1 ft] below the bottom of the invert of the pipe for culvert pipe and for underdrain and 300 mm [1 ft] below the bottom of the base for catch basins and manholes. The quantity of rock will be the number of cubic meters [cubic yards] actually removed provided the maximum allowable horizontal dimensions do not exceed those bounded by vertical surfaces specified in the preceding paragraph. Any removal of solid rock for leveling, stepping or serrating, as shown on the plans, Standard Details, or determined, shall be measured within the aforementioned limits.

b. Major Structures For major structures, the quantity measured for payment will be the number of cubic meters [cubic yards] shown on the Schedule of Items in the contract.

This quantity is considered final, and no adjustments will be made except under the following conditions:

1. When the structure is founded on ledge, the quantity measured will be what is actually excavated to the top of the ledge and to maximum

allowable horizontal dimensions bounded by vertical surfaces 450 mm [18 in] outside the neat lines of the base as shown on the plans.

2. When changes to the plans are made by the Resident.

When the outermost limit of french drains exceeds the vertical planes stated above, the limit to be measured for payment will be extended upward from the bottom of the french drain on a vertical plane bounded by the outermost limit of the french drains.

When rock is required to be excavated for the construction of major structures to definite elevations as shown on the plans, or elevations designated by the Resident after the rock has been exposed, the maximum depth of measurement for payment will be to a horizontal plane or planes located 300 mm [12 in] below the elevation shown or designated.

Removal of solid rock, for leveling, stepping or serrating, as shown on the plans or determined, shall be measured within the aforementioned limits and paid for as structural rock excavation. When earth is required to be removed to uncover existing rock, it will mean to excavate to undisturbed solid rock and will be so measured for payment.

c. Special Backfill The quantity of Special Backfill to be measured for payment as a contract item will be the number of cubic meters [cubic yards] of material acceptably placed and measured in place, but will not include replacement of material excavated beyond the specified pay limits for structural excavation.

206.05 Basis of Payment The accepted quantities of structural excavation, when specified to be paid for separately, will be paid for at the contract unit price per cubic meter [cubic yard]. The work, whether paid for separately or incidental to the structure, shall include the placing and compacting of backfill, the formation of any embankments made with material from structural excavation and the disposal of all surplus or unsuitable material, unless otherwise specified.

Earth excavation for installation of drainage and minor structures, except that which is defined as "Below Grade" will not be paid for and all costs for such excavation and disposal of materials will be considered incidental to the contract unit price per item for the structure being installed or constructed. Rock excavation for the installation of these structures will be paid for at the contract unit price for Pay Item 206.07 - Structural Rock Excavation - Drainage and Minor Structures.

The accepted quantity of Structural Earth Excavation - Drainage and Minor Structures, Below Grade and of Structural Rock Excavation - Drainage and Minor Structures, will be paid for at the contract unit price per cubic meter [cubic yard].

When rock is encountered and no Structural Rock Excavation - Drainage and Minor Structures item is included in the contract, the excavation of the rock will be paid for at 16 times the contract unit price per cubic meter [cubic yard] for Common Excavation.

When rock is encountered and no Structural Rock Excavation - Major Structures or Structural Rock Excavation - Piers is included in the contract, the excavation of the rock will be paid for at 6 times the contract unit price for structural earth excavation of the corresponding classification.

When it is necessary to excavate below the elevation shown on the plans for abutments, masonry retaining walls, piers or rigid frame structures, payment for such excavation will be made at 1½ times the contract unit price for the item classification applying where the extra depth is required.

Protective systems and/or additional excavation for backsloping required for structural excavation will not be measured for payment, but will be considered included in the payment for the related contract item(s).

When no bid item appears in the contract for clearing drainage ways, maintenance of traffic, special detours or cofferdams, any necessary work of this

type will not be paid for directly but will be considered incidental to the work. Unless otherwise specified, payment under the pertinent contract items shall include costs of all pumping, bailing, drainage, sheeting, bracing and incidentals required for proper execution of the work.

Backfill or bedding materials, except for material used to backfill underdrain, whose source is other than structural excavation, will be paid for under the class of material used. Material used to backfill underdrain will not be paid for but shall be considered incidental to the cost of the underdrain.

Excavation for channels, berm ditches and cut slope downspouts will be paid for under Section 203 - Excavation and Embankment.

Special backfill will be paid for at the contract unit price per cubic meter [cubic yard].

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
206.061 Structural Earth Excavation - Drainage [Cubic Yard]	cubic meter
Minor Structures Below Grade	
206.07 Structural Rock Excavation - Drainage & [Cubic Yard]	cubic meter
Minor Structures	
206.082 Structural Earth Excavation - Major Structures, [Cubic Yard]	cubic meter
Plan Quantity	
206.092 Structural Rock Excavation - Major Structures [Cubic Yard]	cubic meter
206.10 Structural Earth Excavation - Piers [Cubic Yard]	cubic meter
206.11 Structural Rock Excavation - Piers	cubic meter

[Cubic Yard]

206.14 Special Backfill

cubic meter

[Cubic Yard]

SECTION 207 - BRUSH MATTING

Reserved

SECTION 208 - SAND DRAINS

Reserved

SECTION 209 - WICK DRAINS

Reserved

SECTION 210 - CRUSHED STONE WINDROWS

Reserved

SECTION 211 - DITCH AND INSLOPE EXCAVATION

211.01 Description This work shall consist of removing winter sand build-up and other earth material from existing inslopes and ditches. New ditch areas consist of removing all material encountered including backslopes as needed.

211.02 Inslope Excavation From the edge of shoulder to the subgrade break, the inslope will be graded to the original template, or as directed by the typicals or construction notes. From the subgrade break to a location on the slope that does not create a hinge point, the inslope shall be machine graded and finished to a smooth condition so that the flow of water is unimpeded.