

420.1 DESCRIPTION

This work consists of the necessary foundation excavation for box culverts and bridges.

420.2 MATERIALS (Not Specified)

420.3 CONSTRUCTION REQUIREMENTS

- A. Depth of Excavation:** The elevation of the bottoms of footings shown on the plans are approximate and the Engineer may order in writing such changes in elevations of footings as necessary.
- B. Treatment of Foundation:** Rock or other hard foundation material shall be free of loose material, cleaned, and cut to a firm surface. The surface may be level, stepped, or serrated as approved by the Engineer.

Where concrete is placed on an excavated surface other than rock, special care shall be taken not to disturb the bottom of the excavation. Concrete shall not be placed until the depth of excavation has been checked and the suitability of the foundation material approved.

Foundation excavation may be trimmed to the exact size of the footing and the footing forms omitted, when approved by the Engineer.

Removal of unstable material below the bedding grade of box culverts shall be performed as set forth in Section 421.

Where foundation piles are used, the excavation of each foundation bed shall be completed before the piles are driven. After the pile driving is completed, loose and displaced material shall be removed or compacted to a smooth solid bed at or below plan elevation.

- C. Disposal of Excavation Material:** The excavated material shall be used for backfill and embankment or disposed of as directed. Excavated material shall not be placed and left in stream beds, except for the filling of holes and construction of stream control features.
- D. Preservation of Channels:** Excavation shall not be made outside of caissons, cribs, cofferdams, steel piling, or sheeting and the natural stream bed adjacent to the structure shall not be disturbed. If any excavation or dredging is done at the site of the structure before caissons, cribs, or cofferdams are in place, the Contractor shall backfill all excavation to the original ground surface or stream bed with satisfactory material after the foundation is in place.
- E. Cofferdams and Cribs:** Cofferdams and Cribs shall conform to the requirements of Section 423.
- F. Inspection:** The Engineer shall be notified as soon as each excavation is completed. Concrete or piling shall not be placed until the Engineer determines that the depth and size of the excavation and the foundation material are acceptable.

G. Backfill Above Bedding Grade: Material used for backfill shall be of an acceptable quality and shall be free from large or frozen lumps, wood, and other extraneous material.

Spaces not occupied by abutments, piers, or other permanent work shall be backfilled to match the surface of the surrounding ground, with a sufficient allowance for settlement.

Backfill shall be satisfactorily compacted in horizontal layers not to exceed six inches (150 mm) loose depth.

The slope bounding the excavation for abutments and wingwalls shall be stepped or roughened to prevent wedge action of the backfill against the concrete.

Backfill placed around box culverts, walls, and piers shall be deposited equally on both sides of the structure. Backfill shall be compacted in accordance with Section 120.

420.4 METHOD OF MEASUREMENT

Excavation for wood structures and drilled-in foundations will be measured as set forth on the plans.

The removal of water will not be considered a measurable item nor will allowance be made for duplication, sloughed material, or material removed due to mud flows.

The plan shown quantity will be the quantity accepted for payment. Field measurements for structure excavation quantities will not be made, unless the Department determines that conditions warrant such measurement.

Structure excavation will be measured to the nearest cubic yard (cubic meter).

A. Structure Excavation, Bridge: The volume of an old structure or the volume of excavation performed as part of the removal of an old structure will be included in the pay quantity of excavation for the new bridge. The excavation allowed above the plan shown bedding grade for piers and abutments will be that volume bounded by vertical planes 18 inches (450 mm) outside of and parallel to the neat lines of the footings regardless of the volume of material actually excavated. Authorized excavation below the plan shown bedding grade will be that volume actually removed within the limits bounded by vertical planes 18 inches (450 mm) outside of and parallel to the neat lines of the footings. When foundation piles are used, no measurement will be made for excavation below the plan shown bedding grade unless the Engineer orders the foundation lowered.

Measurement will not be made for excavation necessary for foundation seals.

The plan shown line denoting the lower limit of unclassified excavation, or the as constructed line in the event it is lower, will be considered the upper limit for structure excavation with the following exceptions: The existing ground line will be considered the upper limit for structure excavation if, at the time of foundation excavation, the existing ground line is lower than the plan shown line denoting the lower limit of unclassified excavation or a line denoting the lower limit of unclassified excavation is not shown on the plans.

B. Structure Excavation, Box Culvert: When a box culvert is constructed at or above the specified flow line, the plan shown quantity of structure excavation will be the pay quantity. This quantity of excavation is equal to the theoretical volume of concrete below flow line.

When the Engineer orders the flow line lowered on construction, the material excavated between the plan shown flow line and the as constructed flow line will be measured for payment as unclassified excavation unless it is unstable material and must be removed by a dragline, backhoe, or similar equipment in which case it will be measured as structure excavation.

C. Structure Excavation, Retaining Wall: Measurement will not be made for structure excavation, retaining wall. Plans quantity shall be used for payment.

D. Structure Excavation, Miscellaneous: Measurement will not be made for structure excavation, miscellaneous. Plans quantity shall be used for payment.

420.5 BASIS OF PAYMENT

Payment for work under this item will be made at the contract unit price per cubic yard (cubic meter) for structure excavation, bridge; structure excavation, box culvert; structure excavation, retaining wall; or structure excavation, miscellaneous.

In the case of piers and abutments for bridges, excavation ordered by the Engineer below the plan shown bedding grade will be paid for in accordance with Section 9.5.

In the case of box culverts, payment for excavation of unstable material which must be removed by means of a dragline, backhoe, or similar equipment will be as per Section 421.5.

Work that is classed as unclassified excavation will be paid for at the contract unit price for unclassified excavation, or as extra work when an item of unclassified excavation is not provided in the contract.

Payment will be considered full compensation for furnishing materials, labor, equipment, tools, and incidentals, including furnishing, installing, and removing any cofferdams, cribs, sheeting, or other temporary works necessary to complete the work.

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