

SECTION 500. STRUCTURES**BRIDGES****SECTION 501. REMOVAL OF EXISTING STRUCTURES**

501.01 Description: This work shall consist of the removal and satisfactory disposal of existing traffic and drainage structures or portions thereof, as specified.

CONSTRUCTION REQUIREMENTS

501.02 Complete Removal of Structures. Materials that are to be salvaged under the contract and which the Engineer deems fit for reuse shall be carefully removed in transportable sections and stockpiled near the site at a location designated by the Engineer. If the material for reuse is unfit, through no fault of the Contractor, the material shall be disposed of according to Article 202.03. When the Contractor damages or destroys such material, the Contractor shall repair or replace it at his/her own expense and in a manner satisfactory to the Engineer.

When specified that the superstructure is to be salvaged for reerection, all members and loose parts shall be properly matchmarked, all machined steel surfaces treated with an approved anti-rust compound, and all loose parts wired to adjacent members, or packed in marked boxes.

Materials that are not to be salvaged and stockpiled shall become the property of the Contractor and shall be removed and disposed of according to the requirements of Article 202.03.

Existing structures shall be removed to at least 300 mm (1 ft) below the proposed elevation of subgrade or ground surface, within the area of construction and within the limits of the right of way. All portions of existing structures below this elevation that interfere in any way with the new construction, shall be removed.

The location, size, and type of existing culverts to be removed shall be as shown on the plans or as directed by the Engineer. When existing culverts are designated to be salvaged, the removal operation shall be performed in a manner that will not cause damage to the existing culvert.

Existing concrete slope wall shall be removed at the locations shown on the plans and as directed by the Engineer so all loose material shall be removed and disposed of as specified. It shall be the responsibility of the Contractor to determine the thickness of the slope wall to be removed and the extent to which it is reinforced. No additional compensation will be allowed because of variations from the assumed thickness or from the thickness shown on the plans, or for variations in the amount of reinforcement. When only partial removal of existing concrete slope wall is to be performed, the removal shall be performed according to Article 501.03.

501.03 Partial Removal of Structures. Where portions of existing structures are to remain in service, portions to be removed shall be removed in such a manner as to leave the structure undamaged and in proper condition for the use contemplated. Any damage to the portions remaining in service shall be repaired by the Contractor at his/her own expense. Old concrete or masonry shall be carefully removed to the lines designated unless otherwise directed by the Engineer. Prior to concrete removal, a saw cut approximately 20 mm (3/4 in.) deep shall be made along all boundaries of full-depth removal areas adjacent to areas to remain in place. For slabs the boundaries of full-depth removal shall be saw cut on the top surfaces. The concrete shall then be removed with jackhammers not heavier than the nominal 20 kg (45 lb) class and suitable hand tools. Final removal at the designated lines of full-depth removal shall be accomplished by 7 kg (15 lb) chipping hammers or hand tools, with particular care being exercised at the bottom of the slab to avoid breakage beyond the designated removal line. The surfaces presented as a result of this removal shall be reasonably true and even, with sharp straight corners that will permit a neat and workmanlike joint with the new construction or be satisfactory for the purpose intended. Where existing bars are to extend from the remaining portions of existing structures into new construction, the concrete shall be removed so as to leave the projecting bars clean and undamaged. All newly exposed concrete and exposed reinforcement bars to be incorporated into new concrete shall be blast-cleaned. Where projecting bars are not to extend into the new construction, they shall be cut off flush with the surface to which the old concrete has been removed. Upon removal of the falsework, the bottom surfaces of new concrete, adjacent to remaining portions of existing concrete, shall be inspected with hammer sounding to detect loose and delaminated areas which may constitute a hazard to underlying roadways and railroads. Those areas shall be removed as directed by the Engineer. All removed areas 25 mm (1 in.) or deeper shall be repaired with an approved method. This removal and repair shall be completed to the satisfaction of the Engineer.

At the Contractor's option, hydrodemolition equipment meeting the requirements of Article 1101.11 will be permitted for partial removal of structures in lieu of the equipment specified above. Operation of the hydrodemolition equipment shall be performed and supervised by qualified personnel certified by the equipment manufacturer. Evidence of certification shall be presented to the Engineer. When partial-depth removal is required, the equipment shall be calibrated and set to remove sound concrete to the required depth. If sound concrete is being removed below the required depth, the Engineer will require the equipment to be recalibrated and reset. The Contractor shall be responsible for disposing of the runoff water generated by the hydrodemolition operation. Runoff water shall not be allowed to constitute a hazard on adjacent or underlying roadways or railroads, or to erode existing slopes.

When full deck removal is specified, tools used for breaking or removing the concrete deck which is attached to or supported by portions of the structure that are to remain in service shall be limited to jackhammers or hydraulic hammers having a maximum rated striking energy of 1600 J (1200 ft lb). Drop hammers or other free falling type equipment will not be permitted. The Contractor shall exercise care so as not to notch or gouge the top flanges with jackhammers or other tools. When transverse saw cutting of the deck is utilized for full deck removal, the Contractor shall mark on top of the concrete deck the locations of the top flanges of all the steel beams or girders, prior to any removal of the bridge deck. Saw cutting directly over the top of the beam or girder flanges will not be permitted. Any damage to the

Existing steel shall be repaired by the Contractor at his/her own expense. Repairs shall be made as directed by the Engineer.

Where existing box culverts are to be extended, the Contractor shall remove all portions of the existing headwalls, wingwalls and barrel at the ends to be extended as indicated on the plans. If no provision is made on the plans or elsewhere for removing the old headwalls and wingwalls at the ends to be extended, they shall be removed, either down to the top of the old barrel or to 300 mm (1 ft) below the proposed elevation of the subgrade or ground line above the old headwalls and wingwalls. When the old headwalls and wingwalls are to be removed below the top of the old barrel, the reinforcing steel from the old portion of the culvert shall be bent into the new construction.

When the headwall is to be removed, it shall be disposed of in a manner approved by the Engineer and according to Article 202.03. The removal shall be performed so the existing pipe culvert to remain in place is not damaged. Any damage to the existing culvert shall be repaired or replaced by the Contractor at his/her expense.

At locations designated by the Engineer, all earth and debris shall be removed from the invert of the portions of existing culverts which are to remain in place.

501.04 Method of Measurement. When paid for as a separate item, removal of existing structures, removal of existing superstructures, removal of existing concrete deck, and removal of existing concrete headwall for pipe culverts will be measured for payment in units of each at the location designated on the plans.

Slope wall removal will be measured for payment in place and the area computed in square meters (square yards) of concrete slope wall to be removed.

Removal of existing culverts will be measured in place in meters (feet) of existing culvert to be removed. The measurement shall be along the flowline of the culvert.

When specified on the plans, removal of existing bridge rail will be measured in place in meters (feet) out to out and along the top longitudinal rail element. Posts will not be measured for payment.

When paid for as a separate item, the removal of concrete or masonry for partial removal of structures will be measured for payment and the volume computed in cubic meters (cubic yards) of concrete or masonry to be removed.

Any excavation necessary to perform the removal of existing structures shall be considered included in that item of work and will not be measured for payment.

Removal and disposal of all rails, posts, and connecting hardware associated with the bridge rail will not be measured for payment.

501.05 Basis of Payment. When the contract contains a separate item for removal, it will be paid for at the unit price per each for REMOVAL OF EXISTING STRUCTURES, REMOVAL OF EXISTING SUPERSTRUCTURES, or REMOVAL OF EXISTING CONCRETE DECK at the location designated on the plans.

Art. 502.01

Excavation For Structures

When provided in the contract, the removal of portions of concrete or masonry structures in the manner specified under Article 501.03, and the disposal of the materials, will be paid for at the contract unit price per cubic meter (cubic yard) for CONCRETE REMOVAL or for MASONRY REMOVAL.

Disposal of materials specified for salvage but deemed unfit for further use through no fault of the Contractor will be paid for according to Article 109.04. If existing structures or existing concrete or masonry are specified to be removed and no separate items or unit prices for such removal are provided in the contract, payment for this work will be considered as included in the contract unit prices for other items of work involved, except as provided for Rock Excavation for Structures in Section 502.

Removal of existing pipe culvert concrete headwalls will be paid for at the contract unit price each for CONCRETE HEADWALL REMOVAL.

Removal of existing pipe culverts will be paid for at the contract unit price per meter (foot) for PIPE CULVERT REMOVAL.

Removal of existing slope wall will be paid for at the contract unit price per square meter (square yard) for SLOPE WALL REMOVAL, which price shall include any headwalls or aprons attached to the culvert.

Removal of existing bridge rail will be paid for at the contract unit price per meter (foot) for BRIDGE RAIL REMOVAL.

When the Engineer directs that earth and debris be removed from culvert inverts, such removal will be paid for according to Article 109.04.

The cost of the removal and disposal of all other existing structures which are visible above ground and the Contractor could be reasonably expected to have knowledge of them, shall be considered as included in the contract unit price for the major item of work in the contract, and no additional compensation will be allowed. In the event existing structures or portions of existing structures are encountered which cannot be removed by normal excavation procedures and are not shown on the plans or are not evident in the field and are required to be removed, the cost of such removal will be paid for according to Article 109.04.

SECTION 502. EXCAVATION FOR STRUCTURES

502.01 Description. This work shall consist of the excavation required for the construction of all structures including all bailing, draining, pumping, sheeting; the construction of cofferdams, or temporary cribs if found necessary, and their subsequent removal; the disposal of all material obtained from such excavation; and backfilling to the level of the ground surface as it existed before any excavation was made by the Contractor.