

**ITEM 16553.01nnnn M - COFFERDAMS (TYPE 1)**

**ITEM 16553.02nnnn M - COFFERDAMS (TYPE 2)**

**ITEM 16553.03nnnn M - TEMPORARY WATERWAY DIVERSION STRUCTURE**

**DESCRIPTION**

**General.** All work done under this Section shall conform to all Federal, State, County and Local Regulations and permit conditions.

**Cofferdam.** Under this work, the Contractor shall design, furnish, place, maintain, and remove cofferdams together with all necessary waling and bracing, and dewatering equipment within the limits shown on the plans. The Contractor shall also construct, maintain, stabilize, backfill and restore adequate sediment removal area(s) for water discharge control at location(s) shown on the plans or where allowed by the Engineer in accordance with all applicable permits.

If a waterway diversion structure is proposed as a substitution, approval of the Engineer must be obtained. A review by the appropriate permitting agency(ies) will be required. Any delay due to this review and approval process will not be a basis for an extension of time.

**Temporary Waterway Diversion Structure.** Under this work, the Contractor shall design, furnish, install, maintain, and remove a temporary water diversion structure at the location(s) shown on the plans or as ordered by the Engineer.

**Submittals**

**A. Cofferdams.**

1. **General.** Cofferdams shall be designed by a Professional Engineer, licenced and registered to practice in New York State. All systems submitted shall be designed for the static water pressure plus stream pressure and ice pressures as appropriate. Stresses shall not exceed the allowable given in AASHTO Standard Specifications for Highway Bridges. The Contractor shall indicate the water elevation above which the system should be flooded to avoid overloading. The Contractor's Engineer shall design the cofferdam to conform to all Federal, State, County and Local Regulations and Permits.
2. **Cofferdams (Type 1).** The Contractor shall submit the design, including computations and method of installation, to the Engineer for review by the Deputy Chief Engineer Structures (D.C.E.S.). The D.C.E.S. shall be allowed 20 working days for review. Permission to proceed must be received, prior to beginning construction of any cofferdam. The furnishing of such information and receipt of permission to proceed shall not serve to relieve the Contractor of its responsibility for the safety of the workers, the need to meet permit conditions, and the successful completion of the work.
3. **Cofferdams (Type 2).** Prior to beginning construction of any cofferdam, the Contractor shall submit the methods to be employed to the Engineer for review and approval. Ten working days shall be allowed for review. Construction shall not be started prior to receipt of approval.

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**ITEM 16553.02nnnn M - COFFERDAMS (TYPE 2)**

**ITEM 16553.03nnnn M - TEMPORARY WATERWAY DIVERSION STRUCTURE**

- B. **Temporary Waterway Diversion Structure.** Prior to beginning construction/installation of any temporary waterway diversion structure, the Contractor shall submit the methods to be employed to the Engineer for review and approval. Ten working days shall be allowed for review. Construction shall not be started prior to receipt of approval.

**MATERIALS**

The materials shall be timber or steel sheeting of a quality equivalent to that specified in Subsection 552-2.02 Temporary Sheet Piling, tightly sealed impermeable earth filled bags, precast concrete, a commercially designed system manufactured specifically for the control of water or as indicated in the cofferdam design submitted for review.

**CONSTRUCTION DETAILS**

**Cofferdams.** Cofferdams shall be constructed so as to keep the excavations free from earth, water, ice, or snow, and to permit excavations to be carried to the depths indicated on the plans. Cofferdams, when used in conjunction with a tremie pour, shall be designed and constructed to automatically flood by non-mechanical means such as over topping or flooding ports. The automatic flooding elevation shall be as indicated by note in the plans.

In the event that permanent or temporary sheeting is required by the plans at the location of the cofferdam, the Contractor may elect to incorporate this material into the cofferdam system. Additional bracing may be required to satisfactorily perform excavation, dewatering, and other required construction operations. The permanent sheeting system shall be returned to its intended condition after all cofferdam equipment and material, including any additional bracing, has been removed. All damage done to the temporary system, if still required, or permanent sheeting, shall be repaired at the Contractor's expense, to the satisfaction of the Engineer.

Unless otherwise indicated on the plans, cofferdams shall be maintained in a dewatered condition during foundation construction. The placement of foundation concrete shall not be impeded by water standing or flowing within the cofferdam.

If a waterway diversion structure is approved as a substitution, all of the Construction Detail requirements for Temporary Waterway Diversion Structure shall apply.

Dewatering equipment and any additional bracing shall be of adequate quality and capacity and shall be so arranged as to permit their proper functioning in connection with the cofferdam. Dewatering equipment and bracing shall be so located to permit construction of the structure in accordance with the plans.

All damage caused by the failure of a cofferdam to perform its proper functions shall be the responsibility of the Contractor. It shall also be the Contractor's responsibility to protect all stream banks from erosion by reason of restriction of the channel caused by the erection of the cofferdam to limits greater than that shown on the plans for the Contractor's own convenience. In that situation, all material which erodes from the banks during that time the cofferdam is in

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**ITEM 16553.02nnnn M - COFFERDAMS (TYPE 2)**

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place shall be replaced by the Contractor at the Contractor's own expense. The Engineer, in consultation with the regulatory permit agency(ies) representative(s), will be the sole determiner of the nature and extent of all damages and mitigation requirements. The Engineer shall approve all repair methods proposed by the Contractor prior to the Contractor beginning any remedial activities for which they are liable.

It shall be the Contractor's responsibility to place the cofferdam so that it will not interfere with any batter piles.

The Contractor shall establish and maintain a sediment removal area(s) to retain the discharge for a sufficient period of time using equivalent best management practices as approved by the Engineer, in order that the discharge entering the stream will be as clear as the flowing stream.

**Temporary Waterway Diversion Structure.** Waterway diversion structures shall be constructed at the location(s) as shown on the plans so as to divert the flow of water. The structure shall be continuous and constructed in accordance with any regulatory agency permit conditions.

If a system commercially designed and manufactured specifically for the control of water is used, it shall be installed and maintained in accordance with the manufacturer's recommendations.

All damage caused by the failure of the temporary water diversion structure to perform its proper function shall be repaired by the Contractor at no cost to the State.

**Removal.** The Contractor shall remove the temporary portion of the cofferdam installation or the waterway diversion structure, including anchor spuds if used, after such time that it is determined by the Engineer to be no longer necessary. The removal shall be sequenced to minimize turbidity and the discharge of materials into the waterway. Additional temporary erosion control measures, as determined by the Engineer, may need to be employed to facilitate removal.

**METHOD OF MEASUREMENT**

**Cofferdams.** Measurement will be for each cofferdam actually established where indicated on the plans.

In those cases where approval is given to construct a waterway diversion structure in lieu of a cofferdam, the cost of the diversion will be paid at the unit price bid for the cofferdam work.

**Temporary Waterway Diversion Structure.** Measurement will be for each temporary waterway diversion structure actually constructed in accordance with the requirements of the contract documents and to the satisfaction of the Engineer.

**BASIS OF PAYMENT**

**ITEM 16553.01nnnn M - COFFERDAMS (TYPE 1)**

**ITEM 16553.02nnnn M - COFFERDAMS (TYPE 2)**

**ITEM 16553.03nnnn M - TEMPORARY WATERWAY DIVERSION STRUCTURE**

**Cofferdams.** The unit price bid for each cofferdam shall include the cost of furnishing all labor, materials, and equipment necessary to complete the work, including pile driving equipment, waling, and bracing, anchor spudding, maintaining in a dewatered condition, and final removal. No separate payment will be made for any additional temporary erosion control measures required to facilitate removal. In addition, all costs associated with the removal of any sediment deposited in the waterway due to the Contractor's operations shall be included. When a cofferdam is installed incorporating permanent or temporary sheeting required by the plans, payment will be made for each cofferdam established, including any miscellaneous sheeting, additional bracing, anchor spudding, or other material necessary to complete the work. The permanent or temporary sheeting, if used as part of the cofferdam, will be paid for under a separate item. The cost of establishing, maintaining, stabilizing, backfilling and restoring the sediment removal area(s) shall also be included in the price bid. No separate payment will be made for any repairs of damage required due to the failure of a cofferdam to perform its proper function.

Progress payments will be made. Seventy-five percent of the bid price will be paid after cofferdam installation, construction of the sediment removal area(s) and initial dewatering. The remaining percentage will be paid upon satisfactory removal of the cofferdam and restoration of the sediment removal area(s).

**Temporary Waterway Diversion Structures.** The unit price bid for each diversion structure shall include the cost of furnishing all labor, equipment, and materials necessary to satisfactorily install, maintain, and remove the diversion structure and any additional temporary erosion control measures required to facilitate removal.

No separate payment will be made for any repairs of damage required due to the failure of a waterway diversion structure to perform its proper function.

In the event that the Contractor is required to extend the temporary waterway diversion structure beyond the limits shown on the plans, changes to the respective diversion structure will be classified as extra work and will be paid for in accordance with Subsection 104-03, Contingencies, Extra Work, Deductions.

When the waterway diversion structure is satisfactorily installed, seventy-five percent of the bid price will be paid. The remaining percentage will be paid when all temporary equipment and material have been removed and the waterway satisfactorily restored to its permanent location.