Cofferdam

1. APPLICABILITY

Construction Specification 764 is applicable to the installation of a cofferdam within a waterway or body of water (referred to as “water” for this spec) with the purpose allowing work to be performed in while minimizing turbidity and sedimentation in adjacent and/or downstream areas.

2. MATERIAL SPECIFICATIONS

There are no corresponding material specifications for this standard. Materials to be used for the construction of each cofferdam type are specified in the associated practice standard.

3. ITEMS TO BE INCLUDED IN CONTRACT SPECIFICATIONS AND DRAWINGS

a. Type of cofferdam to be used (Steel Sheet, A-frame, Bladder, Stone and Impermeable Barrier, other) and either full or partial design type.

b. Complete plans identifying the location of the proposed activities, boundaries of the water, and location of cofferdam and associated materials, and associated standard drawing.

c. Pay limits where applicable.

d. Specification for inspections and repairs, as necessary, for duration of the installations.

e. List of permits required for activity.

4. DISCUSSION OF METHODS

a. Preparation and Installation: The type of cofferdam to be used must be determined and should be based upon the site conditions, type of work to be performed, and the duration of in-stream activity. Prior to the commencement of in-stream activities, all appropriate erosion and sediment control measures shall be properly installed.

   The installation of the cofferdam shall not occur until all necessary components of the system are on site. No construction equipment shall enter standing or flowing water. If equipment access is required to reach the work area, a causeway must be constructed. Installation of the cofferdam shall be timed to occur during low flow conditions.

   Where only a portion of the stream will be blocked, the cofferdam shall be installed in the desired location as specified in the plans.

Where the entire stream flow will be blocked, the upstream cofferdam shall be installed first. If bypass flow will be pumped, the discharge location for the bypass pump discharge must be in place prior to the installation of the upstream cofferdam. Bypass pumping will commence once the upstream cofferdam is in place, or sooner if necessary.

The downstream cofferdam shall then be installed. Once both cofferdams are in place, installation of the filtration area can be completed. At this point, dewatering of the coffered area can begin. As the water level is lowered, the sump pit can be installed to complete the dewatering process.

For the installation of a bladder or A-frame system, manufacturer specification shall be followed.

For the installation of a steel sheet cofferdam, the sheets should be driven in using a backhoe to pound the sheets in place or the use of a vibrating mechanism to slide the sheets in place. The use of interlocking sheets is preferred. Where interlocking sheets are not used, other methods, such as an impermeable fabric, shall be utilized to create a seal.

For the installation of a stone and impermeable barrier cofferdam, the fabric shall be applied in the water and held in place by workers or large stones. The fabric must be placed so that it can be wrapped over the stone from the outside of the coffered area, inward. A backhoe will then dump the stone on the fabric. The fabric can then be pulled over the stone towards the future work area and held in place with additional stone or sandbags. This will create an impermeable barrier.

b. Use and Maintenance: Following cofferdam installation, the work area shall be completely dewatered for each use in order to work under dry conditions. Pumping of water may be required throughout the construction activities in order to maintain dry conditions. Water may be permitted to fill in the work area during times of inactivity. Practice standards DEWATERING 813 and SUMP PIT 950 may be utilized in order to achieve dry conditions.

   Water pumped from the work area shall be filtered to ensure that the discharge results in no visible increase in sediments to the surrounding water unaffected by construction activities. The quality of discharge water shall meet any applicable local, state, or federal regulations, whichever is most restrictive. Methods for cleaning water discharged from the work area include: Practice Standards PORTABLE SEDIMENT TANK 895, TEMPORARY SEDMIMENT TRAP 960, or POLYACRYLAMIDE FOR SEDIMENT CONTROL 894, or other approved methods such as sediment dewatering bags.

   All water pumped from, or diverted around, the work area shall be discharged on an energy dissipating surface and must not contribute to, or cause,

erosion. Other maintenance requirements of practice standard IUM-803 (Cofferdam) shall be followed. The cofferdam shall be inspected daily for integrity and functionality with repairs made as necessary.

c. Removal and Stabilization: All temporary materials must be removed after the completion of construction activities. Prior to cofferdam removal, the work area up to the OHWM must be stabilized with appropriate seeding and erosion control blanket and/or structural practices in accordance with plan specifications and be stable enough to accept flows. Some areas may remain disturbed to allow equipment to access and remove the cofferdam. Stabilization of remaining areas shall occur immediately following the removal of the cofferdam.

   When using a full cofferdam, removal of the downstream structure shall occur first. The upstream cofferdam may then be removed, with special care to ensure that it does not result in scouring of the work area. When using a partial cofferdam, removal of the downstream portion should occur first to allow water to slowly back into the previously coffered area.

   For the removal of a bladder or A-frame system, manufacturer specification shall be followed.

   For the removal of a steel sheet cofferdam, the sheets should be pulled out using a backhoe. Care should be used during the removal of the steel sheeting to avoid unnecessary disturbance of the streambed. Attempts should be made to pull up for the removal of the sheets rather than pulling side to side.

   For the removal of a stone and impermeable barrier cofferdam, the fabric shall be removed from overtop the stone. The stone may then be removed or utilized for stabilization, if specified in the plans. The remaining portion of fabric below the stone may be left in place, if specified in the plans. If all stone is removed, the fabric may then be removed.

   Following the removal and stabilization of the in-stream work area, SESC measures shall be inspected to ensure that they have not been damaged, are still needed or are functioning properly. The stabilized work areas should be regularly monitored to ensure the establishment of vegetation, as appropriate. In-stream work procedures are considered complete once all stabilization, including vegetation establishment, are complete.