



## STANDARD OPERATING PROCEDURE FOR PERMANENT SEALING OF ROAD/RAILROAD CLOSURES THROUGH LEVEE EMBANKMENTS



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This Standard Operating Procedure (SOP) provides guidance for permanent sealing of road/railroad closures when the closure is no longer needed. This allows the Local Sponsor to cease Operations and Maintenance activities for the closure. A sponsor must submit in writing a request for a Letter of No Objection (LNO) from USACE for approval prior to initiation of any field activity.

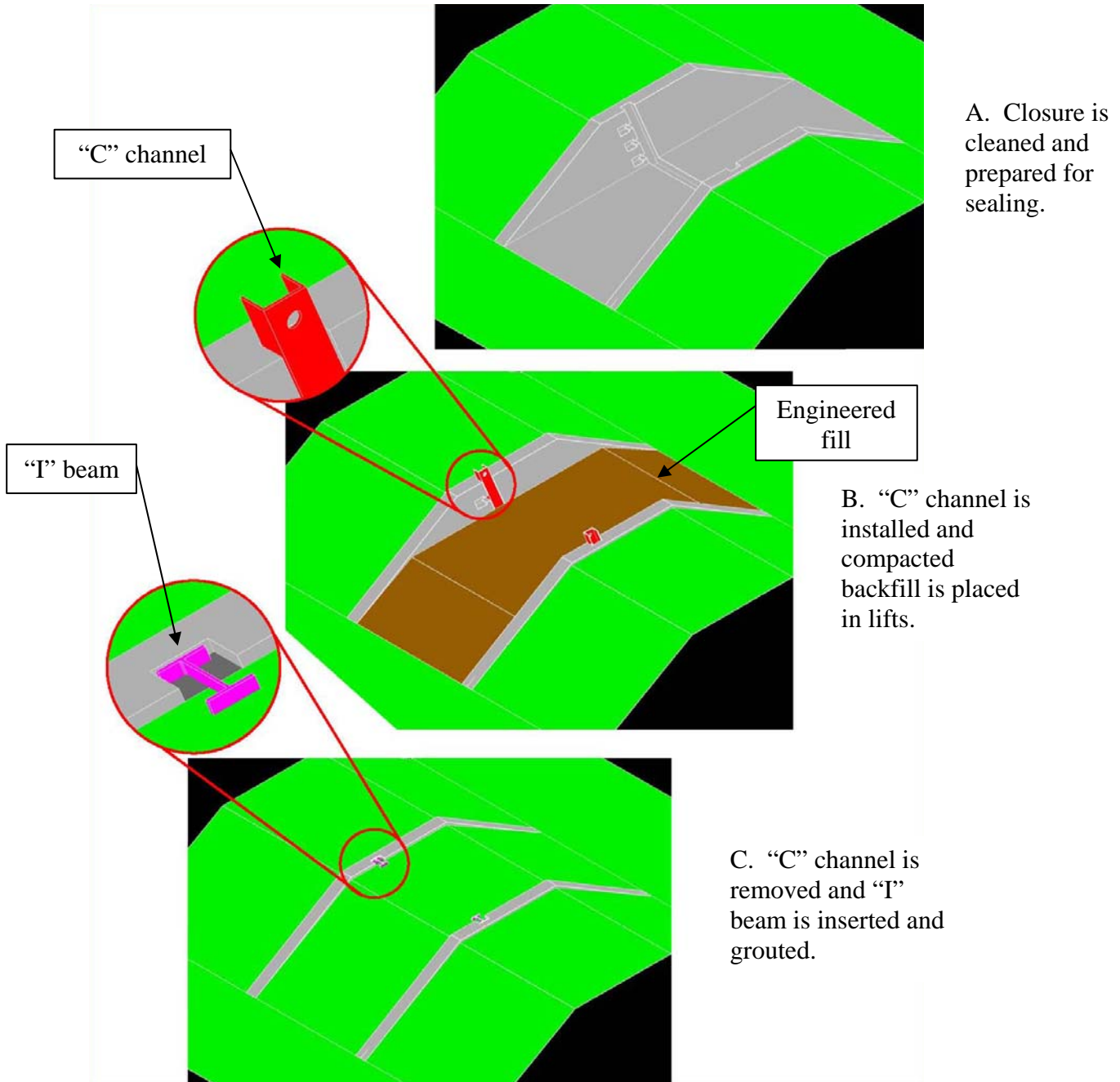
Permanent sealing of a closure in an earthen levee section may be performed by filling the closure opening with compacted fill in accordance with the *Standard Operating Procedure for Benching and Compaction Requirements for Levees and Floodwalls*. When the closure walls are left in place, benching is not required. Other methods may be used when approved by the Louisville District Levee Safety Officer (LSO).

If a closure storage vault is located within the earthen levee, it is first sealed by permanently attaching the door, such as by welding, and then filling the vault from the top with sand, sand and gravel, flowable fill, concrete, or other material that may be approved by the LSO. Placement of this material must be performed so that a compacted fill is constructed.

The recommended construction sequence for this effort is:

1. Prior to placement of fill materials, the closure sill must be opened and cleaned and all foreign material removed from the closure footprint (Figure 1A).
2. A “C” channel section is fabricated to loosely fit the closure slots in the concrete closure walls so that the channel is flush with the concrete face when installed.
3. The “C” channel extends above the concrete wall and is constructed with a hole or other attachment point in the section extending above the wall (Figure 1B).
4. Engineered fill is placed in lifts until the closure grades match the surrounding grades. One compaction test is required per lift.
5. The “C” channel is removed, and an “I” beam is inserted into the closure slot so that one flange extends into the fill materials. This beam is cut to fit flush with the top of the concrete wall (Figure 1C).
6. Void spaces around the “I” beam are then filled with flowable fill (per State DOT specification requirements) or cement-bentonite grout.
7. The “I” beam must be installed to form a barrier to prevent seepage along the concrete wall-soil fill interface.

The Local Sponsor supervises the permanent sealing of the closure and submits documentation of the process to the Louisville Engineer District Levee Safety Program Manager.



**Figure 1. Permanent Sealing of an Existing Closure - Process.**