



**SPECIAL PROVISIONS  
FOR  
EXCAVATION FOR STRUCTURES IN LEVEE CRITICAL AREA**

**Pottawattamie County  
IM-029-3(83)52--13-78**

**Effective Date  
November 16, 2016**

**THE STANDARD SPECIFICATIONS, SERIES 2012, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.**

**150140.01 DESCRIPTION.**

The work under this contract is located adjacent to federally constructed levees along the Missouri River. As such, no improvement shall be passed over, under, or through the levees, improved channels or floodways, nor shall any excavation or construction be permitted within the limits of the levees other than the construction under this contract and these special provisions without prior approval of the U.S. Army Corps of Engineers (USACE). The limits of the levee critical area are 300 feet riverward and 500 feet landward of the levee. The following foundation elements fall within these limits:

- North Abutment
- Pier Nos. 1 and 2

**150140.02 WORK ZONE REQUIREMENTS.**

Areas within these limits disturbed by excavation, sheet piles, other intrusions or disturbances of the soil shall be restored as described in this special provision. Any construction within the levee critical area limits that is not directly related to the construction of the abutments and piers noted above shall not commence without prior approval of the Engineer and the USACE.

**150140.03 CONSTRUCTION.**

**A. Abutment Construction.**

Abutments shall be constructed upon embankments placed within the levee critical area limits as per the contract documents. As such, no excavation or penetration of the existing ground will be permitted with the exception of the abutment piling.

**B. Pier Foundation Construction.**

No pier excavation shall be performed until a method of excavation and excavation support, dewatering, identification and classification of the soils has been submitted and approved by the Engineer. Allow 9 weeks each for review of the submittal and any resubmittals.

During the excavation of pier foundations, the various soil types shall be sorted. The clay blanket

soils shall be placed in a separate stockpile from the alluvial sands.

Pier foundation construction within the levee critical area limits may be constructed by means of a shored excavation for select piers utilizing sheet piles or by un-shored excavation to the bottom of footing.

**1. Un-shored Excavation.**

- a. Un-shored excavation shall consist of 2:1 side slopes (see Figure 1).
- b. Excavated soils shall be sorted, classified and stockpiled.
- c. During the backfilling of the excavation, the alluvial sands shall be placed in the excavation as they were encountered in the initial excavation.
- d. The clay backfill shall be placed in the excavation as they were encountered in the excavation.

**2. Shored Excavation.**

- a. Shored excavation shall consist of sheet pile excavation support (see Figure 1).
- b. Soils shall be sorted, classified and stockpiled.
- c. Excavation within the sheet pile limits shall extend to a minimum depth of the bottom of footing elevation. If the top of clay blanket is below the bottom of footing elevation, the excavation shall extend to the top of the clay blanket and then backfilled with clay backfill to the bottom of footing elevation prior to commencing footing construction.
- d. The sheet piles shall be completely removed following the construction of the foundation. Following the removal of the sheet piles, all material outside the sheet piles shall be excavated using 2:1 side slopes to the top of ground surface and as shown in Figure 1.
- e. The clay backfill shall then be placed in the excavation as shown in Figure 1.

**C. Materials.**

1. If borrow is needed to complete the backfill, it shall be comprised of lean or fat clay (CL or CH). Lean or fat clay shall consist of cohesive materials having at least 50% passing the U.S. Standard 200 mesh sieve size, a Plasticity Index of 10 or greater, and falling between the "U" line and the "A" line on Figure 4 in ASTM D 2487 – Standard Tests for Classifications of Soils for Engineering Purposes.
2. Moisture and density control of the backfill shall be based on the standard Proctor compaction test (Materials I.M. 309). Cohesive materials shall be compacted to a density of at least 95% of the maximum dry density and be within -1% to +4% of the optimum moisture content at the time compactive effort is applied, which may require the addition of water or aeration of materials. Non-cohesive materials shall be placed in a moist condition and compacted with approved equipment to a density of at least 95% of the maximum dry density. Sampling and testing of backfill shall be in accordance with Materials I.M. 204 for roadway and borrow excavation and embankments and Materials I.M. 312.

**D. Quality Control Program.**

1. Provide and maintain a Quality Control Program for construction of backfill. This is defined as process control sampling, testing, and inspection as described in Materials I.M. 540 for construction of embankments with moisture and density control.
2. Provide a Quality Control Technician who is responsible for all process control sampling, testing, and inspection. The Quality Control Technician shall obtain Soils Technician certification through the Iowa DOT Technical Training and Certification Program (TTCP).
3. Provide a laboratory facility and necessary calibrated equipment to perform required tests.

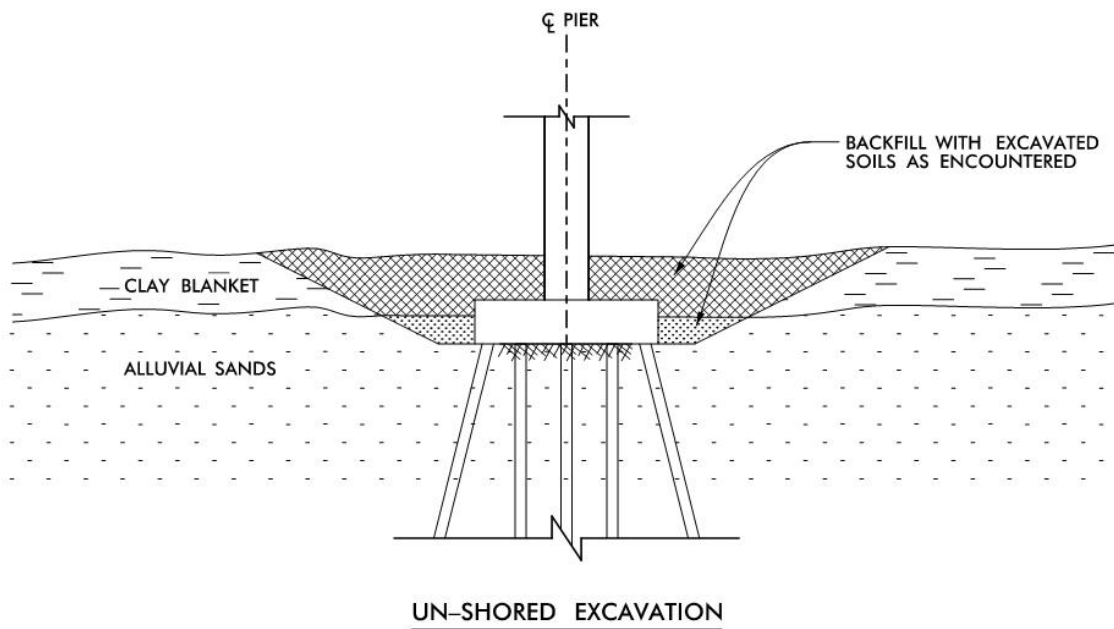
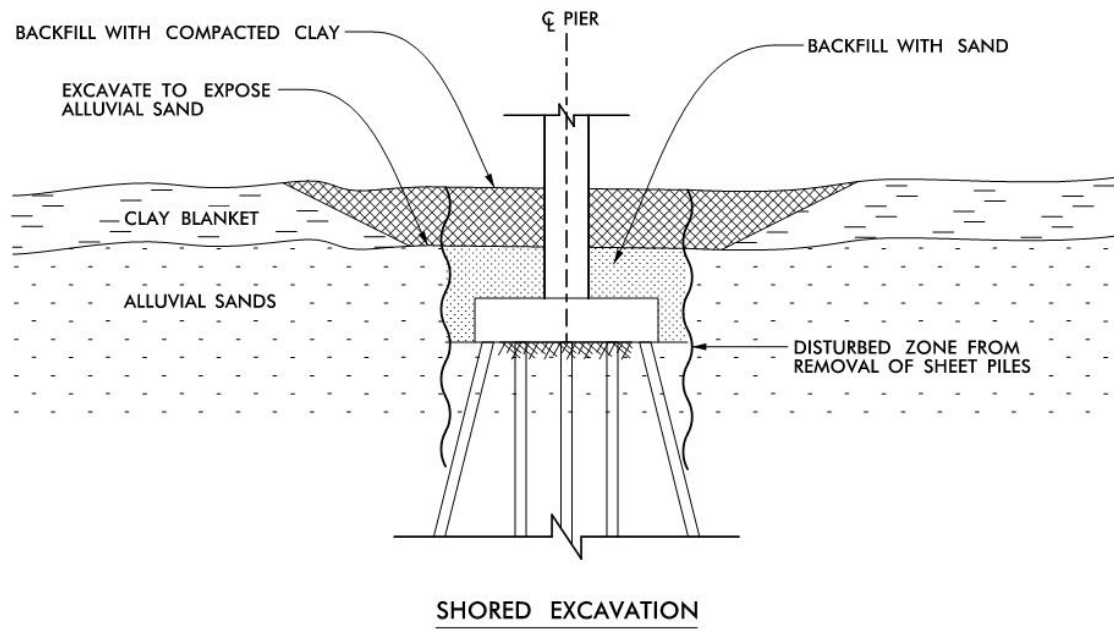
4. Notify the Engineer when a moisture content falls outside specified control limits or density falls below required minimum. If a moisture content falls outside control limits, fill material in this area will be considered unacceptable for compaction. Perform corrective action(s) to bring uncompacted fill material within control limits. If material has been compacted, disk it, bring to within control limits, and re-compact. When project has a density requirement, if an in-place density does not meet the requirements, compacted fill material in this area will be considered unacceptable. Perform corrective action(s) to material to meet density requirements. Compensation will not be allowed for delays resulting from moistening, disking, or re-compacting.

**150140.04 METHOD OF MEASUREMENT.**

Compliance with this special provision will not be measured for payment, but will be considered incidental to the bid item associated with the work.

**150140.05 BASIS OF PAYMENT.**

- A. All costs associated with the excavation and backfilling with moisture and density control in levee critical area, will be considered incidental to the bid item associated with the work.
- B. Payment is full compensation for furnishing a Quality Control Technician, sampling and testing, process control inspection, drying material, furnishing and applying water, controlling moisture content of the materials, and compacting the materials, as specified.



**Figure 1: Pier Nos. 1 and 2 Excavation and Backfill Detail**