



**SPECIAL PROVISIONS
FOR
LEEVE CONSTRUCTION**

**Polk County
EDP-PA26(001)--7Y-77**

**Effective Date
November 1, 2022**

THE STANDARD SPECIFICATIONS, SERIES 2015, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

151157.01 DESCRIPTION.

The work covered by these Special Provisions consists of furnishing all labor and materials and performing all operations in connection with the construction of Scott Avenue Dam Modifications and Harriet Street Access Improvements, as shown in the contract documents. The operations at the Scott Avenue Dam Modifications are located within the critical areas and prisms of the Des Moines, IA Left Descending Bank (DM-I) and Des Moines, IA Right Descending Bank and Raccoon River (DM-III) Levees. The operations at the Harriet Street Access Improvements are located within the critical area and prism of the Southeast Des Moines, IA and Southwest Pleasant Hill, IA Red Rocks Remedial Levee (SE-DM). The work covered under this special provision will only be required in the following circumstances:

- Levee restoration requires additional embankment material exceeding any material excavated
- Levee excavation material meets the definition of unsuitable material for use in the levee critical area, thereby requiring additional material for the backfill of excavations

151157.02 MATERIALS.

A. General.

1. Replacement of levee embankment material required as a result of proposed operations shall be constructed of Cohesive Fill Material which shall be obtained from approved borrow areas.
2. Earth used in construction of embankment material shall be free of unsuitable materials.

B. Cohesive Fill Material.

Cohesive Fill Material shall consist of cohesive materials having at least 50% passing the U.S. Standard 200 mesh sieve size. Cohesive materials consist of materials classifying as lean (CL), having a Plasticity Index greater than 7 but less than 40, and falling between the "U" line and the "A" line on Figure 3 in ASTM D 2487 – Standard Tests for Classifications of Soils for Engineering Purposes and a Liquid Limit less than 50. The material shall be classified by ASTM D 2487 as

CL, shall have 0% organic content, and shall have a minimum dry unit weight of 110 pounds per cubic foot.

C. Sand Fill Material.

Sand Fill material shall consist of pervious material having less than 12% passing the U.S. Standard No. 200 mesh sieve size. Pervious materials consist of materials classifying as poorly graded sand (SP), poorly graded sand with silt (SP-SM), well graded sand (SW), and well graded sand with silt (SW-SM). The maximum particle size shall be 2 inches. The material shall have 0% organic content and a minimum dry unit weight of 100 pounds per cubic foot.

D. Unsuitable Materials.

Unsuitable materials are materials containing debris, brush, roots, sod, organic matter or stones with dimensions greater than one-half the loose layer thickness and shall not be used in the levees. Frozen earth, snow, or ice shall not be used in the levees.

E. Suitable Materials.

Suitable materials for construction of the levee embankment will include materials described in this Article. A material will not be classified as unsuitable based on its moisture content. See Article 151157.02, D.

F. Pre-Construction Testing of Proposed Borrow Materials.

1. Submit to the Engineer for approval the results of grain size testing (ASTM D 6913 and D 7928) and plasticity testing (ASTM D 4318) on all Cohesive Fill Materials proposed for use in the levee embankment.
2. Submit to the Engineer for approval the results of grain size testing (ASTM D 6913 and D 7928) on all Sand Fill Materials and Porous Backfill Materials proposed for use in the seepage relief trench.
3. The source of materials proposed for use in the levee embankment and seepage relief trench shall also be submitted. These submittals must be approved by the Engineer prior to the placement of materials within the levee section.

151157.03 CONSTRUCTION.

A. Excavations Within the Levee Critical Area.

1. Open Excavation.

- a. Open excavation shall consist of 2 Horizontal:1 Vertical side slope or flatter.
- b. Excavated soils shall be sorted by soil type, classified and stockpiled, separately.
- c. The sand backfill shall be placed in the excavation as it was encountered in the initial excavation.
- d. The clay backfill shall be placed in the excavation as it was encountered in the initial excavation.

2. Shored Excavation.

- a. Shored excavation shall consist of sheet pile, soldier pile, or other excavation support systems approved by the Engineer.
- b. Soils shall be sorted, classified and stockpiled, separately.
- c. The sand backfill shall be placed in the excavation as it was encountered in the initial excavation.
- d. The clay backfill shall be placed in the excavation as it was encountered in the initial excavation.
- e. Any observable distress from removal of the shoring system shall be overexcavated and recompacted to a maximum depth of 3 feet below final grade.

B. Embankment Construction and Testing.**1. General.**

- a. Apply Section 2107 of the Standard Specifications, except when amended by requirements of this specification. Verify embankment placed with moisture and density control meets the requirements of Article 2107.03, I of the Standard Specifications.
- b. Place Cohesive Fill Material in successive horizontal layers not more than 8 inches in depth prior to compaction. Each layer shall be spread uniformly on the previously compacted surface; plowed, disked, or otherwise broke up; moistened or aerated as necessary; thoroughly mixed and compacted to produce embankments having the following moisture and density requirements. If in the opinion of the Engineer, the surface of any compacted layer is too smooth to bond properly with the succeeding layer, it shall be scarified to the satisfaction of the Engineer before the succeeding layer is placed thereon. The Contractor shall use equipment which achieves the compaction specified below and which will not create seams between embankment lifts.

2. Quality Control Program.

- a. Provide and maintain a Quality Control Program (Embankment Construction). 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.
- b. 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).
- c. Provide a laboratory facility and necessary calibrated equipment to perform required tests.
- d. 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, diskings, or re-compacting.

3. Test Procedures.

- a. Use test procedures complying with Materials I.M. 204, Appendix A.
- b. Atterberg Limits (ASTM D 4318) and grain size analysis (ASTM D 6913 and D 7928) shall also be determined for each of the representative materials. Copies of all test results made for and used as a basis for moisture and density control shall be furnished to the Engineer in advance of the time that materials are to be placed in the embankments.

4. Moisture and Density Control (Levee Embankment Only).

Cohesive Fill Materials placed in embankments shall be compacted to a density of at least 95% of the maximum dry density and be within -1% to +3% of the optimum moisture content at the time the compacting effort is applied which may require the addition of water or aeration of materials.

5. Levee Ramp Embankment.

Thoroughly and uniformly compact the ramp embankment fill after it has been spread and levelled. Continue compacting until the ramp embankment fill is well seated and no appreciable displacement occurs when rolling.

C. As-Built Survey.

Upon completion of placement of Cohesive Fill Material and Sand Fill Material and prior to placement of topsoil or surfacing, complete an as-built survey of the levee limits. The as-built survey shall be completed by a Registered Land Surveyor (RLS) licensed in the State of Iowa. The results of the as-built survey shall be provided to the Engineer. Areas determined to be deficient by the Engineer shall be immediately restored and confirmed by survey and will be paid for as Extra Work in accordance with Article 1109.03, B of the Standard Specifications. Survey information shall be reported in a table format with levee stations and elevations presented along the levee centerline at 25 foot intervals and in graphical format in plan and profile view and cross-sections at 25 foot intervals. The plan view shall show the levee centerline, levee station, and 1 foot elevation contours. The profile view shall show the elevation at the levee centerline.

151157.04 METHOD OF MEASUREMENT.

The quantity of Cohesive Levee Embankment Material required for levee restoration for Contractor-furnished Cohesive Fill Material will be measured in cubic yards placed. The Engineer will determine the quantity of materials placed using cross section and end area methods. The quantity for which payment is made will not exceed that necessary to restore the embankment to the pre-construction cross section or the cross section shown in the contract documents, adjusted for settlement. Shrinkage will not be included in the quantity. Repair of any damage to the levee caused by construction of the project will be considered Extra Work in accordance with Article 1109.03, B of the Standard Specifications.

151157.05 BASIS OF PAYMENT.

The basis of payment for this work will be at the contract negotiated unit price per cubic yards of Cohesive Fill Material placed for Levee Restoration Activities (Levee Construction) as approved by the Engineer. The Contractor be paid for levee embankment material required when the available onsite material is considered unsuitable for placement within the levee critical area. Provide documentation of the embankment material compliance with the requirements herein.