Iowa Department of Transportation

SPECIAL PROVISIONS
FOR
EXCAVATION FOR STRUCTURES IN LEVEE CRITICAL AREA

Pottawattamie County
IM-NHS-080-1(364)3--03-78

Effective Date
July 16, 2013

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.

120068.01 DESCRIPTION.
The work under this contract is located adjacent to federally constructed levees along the Indian Creek and 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 construction elements fall within these limits:

- New Sanitary Sewer
- Sanitary Sewer Abandonment

120068.02 WORK ZONE REQUIREMENTS.
Areas within these limits disturbed by excavation, other intrusions or disturbances of the soil shall be restored as described in this special provision. Any excavations within the levee critical area limits that is not directly related to the construction of the sanitary sewer noted above shall not commence without prior approval of the Engineer and the USACE.

120068.03 CONSTRUCTION.

A. New Sanitary Sewer.
Sanitary sewers shall be constructed within the levee critical area as per the contract documents. Excavations for construction of the sanitary sewer shall be by open excavation to the limits as per the contract documents. As such, no excavation or penetration of the existing ground beyond the limits as per the contract documents will be permitted. Backfill above the pipe bedding shall be placed in the excavation as it was encountered in the initial excavation. Separate stockpiles shall be made for each soil type encountered in the excavation.

1. Open excavation shall consist of 2 Horizontal:1 Vertical side slope.

2. The sand backfill shall be placed in the excavation as it was encountered in the initial excavation.

3. The clay backfill shall be placed in the excavation as it was encountered in the initial excavation.

B. Sanitary Sewer Abandonment.

Existing sanitary sewers are located within the levee critical area. Excavations for removal of the sanitary sewer shall be by open excavation to the limits of removal as per the contract documents. As such, no excavation or penetration of the existing ground will be permitted beyond the limits as per the contract documents. Backfill shall be placed in the excavation as it was encountered in the initial excavation. Separate stockpiles shall be made for each soil type encountered in the excavation.

1. Open excavation shall consist of 2 Horizontal:1 Vertical side slope.

2. The sand backfill shall be placed in the excavation as it was encountered in the initial excavation.

3. The clay backfill shall be placed in the excavation as it was encountered in the initial excavation.

C. Materials.

If borrow is needed to complete the backfill, it shall be comprised of lean or fat clay (CL,CH). It is possible additional clay fill will be needed to restore the existing thickness of the clay encountered in the initial excavation due to shrinkage. The use of fat clay (CH) is not permitted in the upper 3 feet below pavement.

Lean or fat clay shall consist of cohesive materials having at least 50% passing the U.S. Standard 200 mesh sieve size. Cohesive materials include materials classifying as fat (or lean) clay (CL,CH), having a Plasticity Index of 10 or greater, 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. Lean clay (CL) shall have a Liquid Limit less than 50.

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 borrow shall be in accordance with Materials I.M. 204 for roadway and borrow excavation and embankments.

D. Quality Control Program.

Contractor shall provide and maintain a Quality Control Program, defined as all activities of sampling, testing, process control inspection, and necessary adjustments for construction of backfill to meet the requirements of this Special Provision.

Ensure the Quality Control Technician is present on the project when backfill is being placed with moisture and density control.

Provide a laboratory facility and all the necessary calibrated equipment to perform the required tests.

Perform test for proctor optimum moisture content and maximum density for each soil type. Samples will be randomly selected. Perform test for backfill moisture content and density beginning at a depth of 2 feet above the bottom of the old trench or above the top of pipe. For each 2 vertical feet of consolidated fill, provide tests at a maximum horizontal spacing of 200 feet. Additional testing may be required by the Engineer in the event of non-compliance or if conditions change.

Document all observations, records and inspection, changes in soil type, soil moisture, fill placement procedures, and test results on a weekly basis. Note the results of the observations and records of inspection in a permanent field record as they occur. Submit copies of field moisture and density tests to the Engineer on a weekly basis. Submit the original testing records (raw field and lab data sheets) and control charts to the Engineer in a neat and orderly manner within five calendar days after completion of the project.

E. Quality Assurance.

1. Required Testing.

The Contractor's Quality Control Technician shall perform all field testing and data analysis. The Quality Control Technician shall retain split samples of Materials I.M. 309 testing when requested by the Engineer. The Engineer may select any or all of the Contractor-retained split samples for independent assurance and verification testing.

The Engineer will determine the random location of verification tests and will test at the minimum frequencies in Materials I.M. 204 for roadway and borrow excavation and embankments. The Contractor Quality Control Technician shall obtain a sample at the same location as directed by the Engineer and provide the results to the Engineer. Verification test results will be provided to the Contractor within one working day after the Contractor's quality control test results have been reported.

The Engineer will periodically witness field testing being performed by the Contractor. If the Engineer observes the quality control field tests are not being performed according to the applicable test procedures, the Engineer may stop production until corrective action is taken. The Engineer will notify the Contractor of observed deficiencies, promptly, both verbally and in writing. The Engineer will document all witnessed testing.

2. Verification and Independent Assurance Testing.

The Contractor’s quality control test results will be validated by the Engineer’s verification test results using the criteria in Materials I.M. 216. If the Engineer’s verification test results validate the Contractor’s test results, the Contractor’s results will be used for material acceptance.

In the event that the Contractor’s results can’t be validated, the Engineer will investigate the reason immediately. The Engineer's investigation may include:

- Testing of other locations,
- Observations of the Contractor's testing procedures and equipment, and
- Comparison of test results of the Contractor with those of the Engineer.

Personnel and laboratories performing tests used in the acceptance of material shall participate in the independent assurance program covered in Materials I.M. 205.

3. Referee Testing.

If a difference in procedures for sampling and testing and/or test results exists between the Contractor and the Engineer which they cannot resolve, the Iowa DOT’s Central Materials Laboratory will provide referee testing. The Engineer and the Contractor will abide by the results of the referee testing.

F. Acceptance.
The Engineer will base final acceptance of tests and materials on the results of the Contractor's quality control testing as verified by the Engineer's quality assurance.

120068.04 METHOD OF MEASUREMENT.
Measurements will be as specified in the pay items “Sanitary Sewer Gravity Main, Trenched, PVC 15 IN” and “Replacement of Unsuitable Backfill Material.”

120068.05 BASIS OF PAYMENT.

A. All costs associated with the excavation and backfilling with moisture and density control shall be included in the price bid for “Sanitary Sewer Gravity Main, Trenched, PVC 15 IN.” All costs associated with borrow material shall be included in the price bid for “Replacement of Unsuitable Backfill Material.”

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.