



**SPECIAL PROVISIONS
FOR
IN-RIVER EARTHWORK**

**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.

151156.01 GENERAL.

- A.** The Contractor shall perform all earthwork indicated and required for construction of the in-river work, complete and in place, in accordance with the contract documents to include, but not limited to, excavation, compacted fill construction, over excavation and replacement of unsuitable material, prepared and compacted subgrade, disposal of extra or unsuitable materials. In-river is defined as all improvements riverward of the recreational and viewing path on the south bank and riverward of the levee trail on the north bank.
- B.** All work shall be executed in accordance with the recommendations contained in the Geotechnical Report prepared for this project and included as part of the contract documents.
- C. Submittals:** Contractor shall submit the following:
 - 1.** Certified laboratory test results demonstrating that on-site or imported materials meet the requirements of this Special Provision, including gradation, optimum moisture content, and maximum density. Particle size analysis of soils and aggregates shall be determined in accordance with ASTM D422. Test results shall be dated within 12 months of the date of the submittal.
 - 2.** Mix design for Controlled Low Strength Material (CLSM).
- D. Definitions:**

Fill: Fill or compacted fill is defined as earthen material excavated from the site or imported and used in the construction of embankments, fill below structures, grouted boulders and core rock, revetment, fill behind walls, and under and around structures. All fill is labeled "compacted fill" in the plans.

E. Job Conditions:

1. Unless noted otherwise, finished grade of earthwork shall be within 0.10 feet of elevations shown on the plans.
2. If unauthorized over excavation occurs, the Contractor shall be responsible for the repair of the area by backfilling with approved bedding material, and compaction to:
 - a. 100% maximum density (ASTM D698), in non-granular materials.
 - b. 75% relative density (ASTM D4253 and D4254) in granular material.
3. Bidders are expected to examine the project to determine the character of materials to be encountered, trees and vegetation to be removed or protected, and nature of the work in general.

F. Quality Assurance: The Geotechnical Reports prepared for the project and listed in the plans.

G. Compaction Testing: The Contracting Authority shall provide and pay for a qualified soil engineer to inspect excavations and fills and test soil compaction. The testing of prepared subgrade and compacted fill will be at the discretion of the Engineer. The Contractor shall give the Engineer 48 hours' notice before beginning filling or subgrade preparation to provide adequate notification to the testing personnel. Costs for all such testing and observations will be paid by the Contracting Authority, and the Contractor shall bear the cost of retesting and reinspection of faulty work that does not pass requirements of the Specifications. When the tests indicate that the density of any layer of fill or portion thereof is below the specified density, and/or not in compliance with moisture requirements, the particular layer or portion shall be reworked until the specified density and moisture content is obtained.

151156.02 MATERIALS.

A. Suitability Requirements:

1. General: Fill materials shall be selected or processed clean, fine earth, rock, or sand, free from rubbish, large stones, clods, debris, frozen lumps of earth, grass, roots, brush, other vegetation, or other objectionable material. All fill material shall be approved before use.
2. Suitable Materials: Material defined as suitable may be used for fill (compacted fill). In addition, when acceptable to the Engineer, some of the material listed as unsuitable may be used when thoroughly mixed with suitable material to form a stable composite.
3. Undefined Materials: Materials not defined as suitable or unsuitable below are classified as undefined and they shall be accepted by the Engineer prior to use as fill or other materials on the project.
4. Suitable materials may be obtained from on-site excavations, may be processed on-site materials, or may be imported if required.
5. Material for use as fill shall consist of sandy and/or gravelly on-site material or similar import materials as reviewed and acceptable to the Engineer. These materials shall also meet the requirements of the Geotechnical Report, except no rocks shall be larger than 6 inches. Unless approved by the Engineer, fill in the upper 2 feet shall contain no rocks larger than 3 inches in greatest dimension.
6. Rock, cobble, and sands screened or otherwise segregated from all excavated materials shall be further sorted to meet material requirements and used for other appropriate portions of the project, including but not limited to: void permeate for void permeated revetment, fish passage loose stone material, and revetment.

7. Granular subbase described in this special provision shall follow Sections 2111 and 4121 of the Standard Specifications.

B. Unsuitable Material:

1. Unsuitable materials include the materials listed below.
 - a. Soils which, when classified under ASTM D 2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System), fall in the classifications of Pt, OH, CH, MH, or OL.
 - b. Soils which cannot be compacted sufficiently to achieve the density specified for the intended use.
 - c. Materials that contain hazardous or designated waste materials including petroleum hydrocarbons, pesticides, heavy metals, and any material which may be classified as hazardous or toxic according to applicable regulations.
2. Silt or clay pockets observed at subgrade level shall be excavated to a depth of at least 2 feet and replaced with suitable material to provide a uniform, stable subgrade.

- C. Use of Fill Material Types:** The Contractor shall use the types of materials designated herein for all required structural fill and embankment construction hereunder.

151156.03 CONSTRUCTION.

A. Excavation – General.

1. **General.** Except when specifically provided to the contrary, excavation shall include the removal of all materials of whatever nature encountered, including all obstructions of any nature that would interfere with the proper execution and completion of the Work. The removal of said materials shall conform to the lines and grades indicated or ordered.

Existing power lines, telephone lines, trees, shrubbery, fences, water mains, gas mains, sewers, cables, conduits, ditches, embankments and other structures in the vicinity of the work not authorized to be removed, shall be supported and protected from injury by the Contractor during the construction and until completion of the work affecting them. The Contractor shall be liable for all damages done to such existing facilities and structures, as herein provided and shall save the Contracting Authority from any liability or expense for injuries, damages, or repairs to such facilities.

Underground Facilities: The type, size, location and number of all known underground facilities have been shown on the plans; however, no guarantee is made as to the true type, size, location, or number of such facilities. It shall be the responsibility of the Contractor to field-verify the existence and location of all underground utilities along the route of the work. The omission from, or the inclusion of, utility locations on the plans is not to be considered as the nonexistence of, or a definite location of, existing underground utilities.

Contact all utilities at the beginning of the project and coordinate work, including utility location. Provide a Utilities construction and permit plan for approval. When approved by the Utility and the Engineer, pothole utility connection and crossing points. Plan for any operations, such as valve isolation, temporary service, and power shut-off with the Utilities and the local entity.

The Contractor shall notify the owner or owners of the existing utilities, whether above ground or underground, 48 hours (or as required) prior to proceeding with excavation whenever such operations are within ten feet of the possible location of any existing utility. The notification

shall also include a request for field staking any such underground facility that may be in the area of influence by the construction.

Should any such utility be damaged in the excavation operations, the Contractor shall immediately notify the owner of such utility and, unless authorized in writing by the owner of utility, the Contractor shall not attempt to make repairs except to prevent further damage to property. Duplicate copies of any written authorization given to the Contractor to make repairs shall be filed with the Contracting Authority and shall be so worded as to save the Contracting Authority from any responsibility whatsoever relative to the sufficiency of the repairs.

If a conflict that is not shown on the plans develops between an existing utility and the work required by this Contract, the Contractor shall notify the owner of the utility and the Engineer immediately in writing.

If during construction any underground utility conduit, including sewers, water mains, gas mains and drainage structures, or any above ground utility facilities are required to be relocated, the Contractor shall notify the utility owner well in advance of his approach to such utility so that arrangements with the owner or owners of the affected utility can be completed without delay to the work.

2. **Site preparation.** Prior to excavation or fill activities, complete requirements specified in Section 2101 of the Standard Specifications. In areas where fill will be placed on existing grade, the top 6 inches or more (if determined necessary by the Engineer) of surface material shall be removed, replaced and compacted with fill material as meeting requirements for fill/compacted fill.
3. **Subgrade Preparation.** In general, subgrade areas shall be graded to a smooth, uniform surface at proper grade and compacted to 95% maximum density (ASTM D698) in non-granular materials, 70% relative density (ASTM D4253 and D4254) in granular material. Subgrade materials shall be proof-rolled with a smooth drum roller or tamped with a hydraulic compactor and meet all other requirements of the Geotechnical Report. Remove all soft yielding material or excessively deflecting areas (more than about 1 inch) or unsuitable materials determined by the Engineer and replace with macadam stone bedding below a 6 inch layer of granular subbase to the limits directed by the Engineer. Payment for authorized over-excavated and replacement materials shall be at measured and paid using the Excavation, Class 13, Channel/Waste, Macadam Stone Base, and Granular Subbase at the contract unit price.

Contractor may, at their own discretion, add up to 6 inches of granular subbase under concrete structures to provide a workable surface. Contractor will not be paid for 6 inches of granular subbase where installed for constructability.

Subgrade preparation is not required where submerged construction is specifically permitted. Where indicated on the plans, submerged rock construction shall be placed on a firm surface.

4. **Excavation stability.** The Contractor shall be solely responsible for the stability and safety of all temporary slopes, including, but not limited to furnishing, placing, and maintaining all supports and shoring that may be required for the sides of the excavations. Excavation shall be sloped or otherwise supported in a safe manner in accordance with all applicable Federal, State, and local safety requirements, the requirements of OSHA Safety and Health Standards for Construction, and the Reclamation Safety and Health Standards (RSHS) by the US Bureau of Reclamation.
5. **Removal and Exclusion of Water.** The Contractor shall remove and exclude water, including stormwater, groundwater, irrigation water, and wastewater from all excavations, regardless of quantity and rate of flow. Dewatering wells, wellpoints, sump pumps, or other

means shall be used to remove water and continuously maintain groundwater per the Special Provisions for Water Control and Dewatering before the excavation work begins at each location. Water shall be removed and excluded until filling is complete and all field soils testing have been completed. Unless the water table is kept well below the base of the excavation, the soils may become “quick” and unsuitable for foundation material. Any sumps, drain trenches, or other over-excavation for dewatering facilities shall be removed and backfilled as required. The Contractor is responsible for proper disposal and silt removal and meeting quality requirements of the pumped water prior to discharge as required.

- 6. Excavation Around Structures.** Except where prohibited by existing structures or specifically by design of the foundation or structure, provide 18 inches of minimum clear working space between exterior lines of structure foundations or walls and the face of the excavation shoring. In all cases, extend structural excavations to solid bearing and below frost line. Excavated materials approved for reuse as fill/ compacted fill shall be stockpiled by the Contractor. The bottom of the excavation shall be the bottom of the foundation or slab, or bottom of the crushed rock base layer, as shown on the plans. When excavation and water control operations have been completed for a structure, the Contractor shall notify the Engineer, who will contact the Engineer to inspect the excavation to verify the condition and bearing capacity of undisturbed soil or bedrock. No fill, concrete, or forms shall be placed until the excavation is approved.

B. Over-Excavation Not Ordered or Indicated.

Any excavation carried below the grade ordered or indicated, shall be backfilled, and compacted by the Contractor, at the Contractor’s expense, to the required grade with material approved by the Engineer. The fill shall be placed and compacted in accordance with this Special Provision.

C. Rock Excavation.

1. It is anticipated that excavation in this project can be accomplished using conventional equipment.
 - a. For general excavation, a D-9N Caterpillar tractor with a single shank ripper, or equivalent equipment, is considered conventional equipment.
 - b. For trench excavation a 235C Caterpillar excavator with a medium stick and a rock ripping bucket, or equivalent equipment, is considered conventional equipment.
2. If material is encountered which the Contractor believes cannot be excavated by conventional equipment defined above, the Engineer shall be immediately notified. The Contractor shall provide performance tests of the specified conventional or equivalent equipment. If the Engineer confirms in writing that the specified conventional equipment cannot perform at the production rates typical of the specified conventional equipment, the excavation shall be considered Rock Excavation.
3. Rock excavation shall include removal, stockpiling and/or placing of all rock material from ledges, bedding deposits, and un-stratified masses which cannot be removed without systematic drilling and blasting; concrete or masonry structures which have been abandoned; and conglomerate deposits which are so firmly cemented that they possess the characteristics of solid rock and which cannot be removed without systematic drilling and blasting. Unless otherwise specifically stated in these contract documents, Rock material obtained from the blasting process that is not used for construction as outlined in these contract documents, shall be segregated and disposed of at the Contractor’s expense.
4. Payment for Rock Excavation (if needed) will be paid by negotiating change orders based upon existing contract unit prices or time and material pricing in accordance with Article 1109.03, B, 1 of the Standard Specifications.

C. Fill – General.

1. Fill (compacted fill) shall be placed after all water is removed and maintained per the Special Provisions for Water Control and Dewatering, and the trench sidewalls and bottom have been prepared for compaction per these specifications and approved by the Engineer. Sloping sides of the excavated space shall be stepped to prevent wedging action of the fill against the structure.
2. No fill shall be placed around or upon any structure until it is proven that the concrete has attained satisfactory strength and that the structure as a whole is adequate to receive fill.

D. Placing and Spreading of Fill Materials.

1. Fill materials shall be placed and spread evenly in horizontal layers. When compaction is achieved using mechanical equipment, the layers shall be evenly spread so that each compacted layer does not exceed 6 inches in thickness.
2. During spreading, each layer shall be thoroughly mixed as necessary to promote uniformity of material in each layer.
3. Where the fill material moisture content is below the optimum moisture content, water shall be added before or during spreading until the uniform moisture content is within 2% of optimum.
4. Where the fill material moisture content is greater than 2% above optimum the material shall be dried until the moisture content is within 2% of optimum.

E. Compaction of Fill.

Each layer of fill material shall be mechanically compacted. Equipment that is consistently capable of achieving the required degree of compaction shall be used and each layer shall be compacted over its entire area while the material is at the required moisture content. Contractor's equipment or means and methods for compaction shall not damage adjacent ground, existing improvements, or improvements installed under the Contract. Flooding, jetting, or ponding will not be allowed for the compaction of any fill.

F. Compaction Requirements.

The following compaction test requirements shall be in accordance with ASTM D698 and in accordance with ASTM D 4253. Where agency requirements govern, the highest compaction standards shall apply.

<u>Location or Use of Fill</u>	<u>Percentage of Maximum Density</u>
Under Structures	100
Elsewhere	98

In granular material, compaction requirements shall be 70% relative density (ASTM D4253 and D4254). Rocky soils with greater than 30% by weight retained on the ¾ inch sieve shall be compacted by a "methods specification" that results in a "generally unyielding compacted soil condition". The contractor shall perform, in the presence of the Engineer, systematic compaction on a sample fill area using equipment capable of achieving this condition. The moisture treatment, compaction equipment used, number of passes per lift, and other pertinent process details shall be documented by the Contractor and Engineer. More than one compaction process is likely depending on structural fill, subgrade preparation, embankment fill, and other earthwork

required to complete the project. Once approved by the Engineer, the compaction process(es) shall remain unchanged unless approved in writing by the Engineer.

G. Construction on slopes.

1. When an embankment is to be made and compacted against hillsides or fill slopes steeper than 4:1, the face of the slopes should be benched. Benches should extend a minimum of 2 feet into the side of the slope for every 2 feet (measured vertically) of fill placed. This does not apply to hillsides composed of hard rock. Material removed to construct the benches shall be incorporated into the fill as the embankment is brought up in layers. To achieve adequate compaction on the face of fill slopes, they should be over-built and then cut back to the design grade. Track-walking is not an adequate method to compact the face of slopes.
2. All fill slopes shall be terraced as directed by the Engineer to promote vegetation growth and minimize surface erosion. Supplemental water, if required, shall be added by uniform sprinkling on the embankment and will be mixed uniformly throughout the layers. Compaction shall be accomplished by sheepsfoot rollers, vibratory rollers, multiple-wheel pneumatic-tired rollers or other types of acceptable compacting equipment. Compaction shall be continuous over the entire area and the equipment shall make sufficient passes over the material to ensure that the desired density has been obtained. Contractor shall maintain embankments and slopes until the project is complete.

I. Fill around structures.

Filling around structures can commence when acceptable to the Engineer and appropriate to the structure. Bring each layer up uniformly on all sides of the structure and thoroughly compact using methods specified or acceptable to the Engineer. Moisten structural fill prior to placing to ensure maximum compaction. Puddling or flooding of trench for consolidation of structural fill or use of wheel rolling by construction equipment will not be permitted.

J. Grades.

1. Rough graded earthen surfaces ready to receive structures, grouted boulders, or rock shall be graded to ± 0.1 feet of the plan elevation (minus the thickness of top material shown in the contract documents). However, the acceptance of any irregularities shall not be constructed to reduce the thickness of top material. Tolerances for top material are specified in elsewhere in the Contract Documents.
2. In areas not covered with structures, grouted boulders, or rock, the finished grade shall be graded to a tolerance of +4 inches or -1 foot of the plan elevation.

151156.04 MEATHOD OF MEASUREMENT

Measurement for In-River Earthwork will be as follows:

A. Excavation.

Cubic yards, as determined by the Engineer, for the quantity of Class 13 material, channel, or waste according to Section 2104 of the Standard Specifications except the surveyed cross sections shall be taken every 10 feet or as determined by the Engineer.

B. Excavated Clean River Sands.

No measurement will be made as it is considered incidental to excavation.

C. Compacted Fill.

No measurement will be made as it is considered incidental to excavation.

D. Prepared and Compacted Subgrade.

No measurement will be made as it is considered incidental to excavation.

151156.05 BASIS OF PAYMENT

Payment for In-River Earthwork will be as follows:

A. Excavation, Class 13, Channel

1. Per cubic yard of material excavated from the river to be reused on site according to Section 2104 of the Standard Specifications.
2. This bid item includes but is not limited to:
 - a. Excavation from the river,
 - b. Over excavation of unsuitable material,
 - c. Clean river sands excavation, stockpiling, and placement on top of south bank revetment,
 - d. Site and subgrade preparation,
 - e. Compaction, and
 - f. Onsite material reused as compacted fill.
3. This bid item does not include macadam stone used for replacing unsuitable subgrade material.

B. Excavation, Class 13, Waste

1. Per cubic yard of material excavated from the river to be wasted according to Section 2104 of the Standard Specifications.
2. This bid item includes but is not limited to:
 - a. Excavation from the river,
 - b. Over excavation of unsuitable material,
 - c. Site and subgrade preparation,
 - d. Compaction, and
 - e. Delivery to and disposal at the waste site identified by the Contractor.
3. This bid item does not include macadam stone used for replacing unsuitable subgrade material.