

Inspection Plan
GUT813130A Wetland
Iowa Department of Agriculture and Land Stewardship

Contact Information

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Purpose

This purpose of this construction observation plan is to provide a documented procedure for construction quality assurance for the above referenced wetland construction project. Procedures laid out in this plan are meant to be general procedures and should be modified as appropriate based on observations and discussions in the field as well as the skill and experience of the construction contractor and crew members.

Construction Submittals and Shop Drawings

A schedule of construction submittals and shop drawings for the project will be provided by the engineer to the contractor. The contractor is responsible for providing all submittals to the engineer for review. The Engineer will review and provide approval, reject, or provide other guidance (i.e., furnish as noted) for all shop drawings, materials, and submittals as soon as practical.

A typical schedule of submittals for wetland projects includes:

- Construction Schedule
- Pipes, Field Tile and appurtenances
- Rock and Rip Rap
- Sheet Pile
- Concrete and Concrete Grout Mix Designs
- Trash Racks
- Drawdown Structures and appurtenances
- Seeding and fertilizer

More detailed information on items requiring submittals and observation are located in the contract documents.

Construction Observation Procedures

The sequence of construction will be determined with the contractor after the contract is awarded, the start date planned and whether crops have been harvested. This will be discussed at the pre-construction meeting. The easement boundary stakes and at least 3 benchmarks to be used for construction will be placed by Shive-Hattery prior to construction comencing.

Quality Control (QC) is the responsibility of the contractor, but any work deemed to not be in accordance with the plans and specifications based on inspections completed shall be reworked.



Quality Assurance (QA) is the responsibility of the Design Engineer of Record. The Contractor is responsible to provide materials that meet or exceed the requirements provided on the plans and specification. The Design Engineer will review material certifications provided for all pipe/tile, geotextile, granular material, and riprap. Shop drawings shall also be submitted for approval for the sheet pile weir, drawdown structure, and outlet pipe. The grout mix and seed mix designs shall also be submitted and approved by the Design Engineer prior to placement.

Below is a list of anticipated tasks to be completed along with the amount of inspection required and the experience level of the inspector needed. Engineer refers to either the Design Engineer of Record or an Engineer designated by such. Qualified Technician refers to an individual with sufficient technical background and experience to properly assess the individual work items described below that will be completed by the Contractor.

- **Tile Exploration – Full time by Engineer or Qualified Technician**
The site has several tiles on site based on a map provided by the landowner. The Contractor shall complete the exploration to confirm the depth and location in the presence of the Engineer or Technician with survey equipment. This information will be used by design engineer to adjust the tile outlets as needed to provide suitable outlet based on this acquired information.
- **Soil Confirmation – Full time by Engineer or Qualified Technician**
The Contractor shall excavate test pits as needed to confirm suitable soils are available before beginning stripping operations.
- **Site stripping - No observation required**
Site stripping can occur without any site inspection being required. The contractor will need to implement storm water and sedimentation control measures.
- **Core Trench Excavation and Backfill – Full time by Engineer or Qualified Technician**
The core trench can occur after stripping of the dike area is completed. Any tile found shall be removed within the 15 feet beyond the outside footprint of the dike. Suitable cohesive borrow material shall be placed and compacted in the core trench using Method 2 as directed in IA-23 and shall be inspected to verify use of specified equipment and the maximum lift thickness are not exceeded. Dewatering shall be completed as needed to assure proper moisture content of backfill materials are not exceeded.
- **Embankment Construction – Intermittent to Full Time by Engineer or Qualified Technician**
The dike shall be constructed to the design height consisting of suitable cohesive material. This critical item of work shall be inspected to assure proper material, moisture, and placement method. Full time inspection shall be implemented if the problems arise, or the rate of placement necessitates this level. If work is progressing well and the rate of placement allows, this work shall be inspected intermittently, but at regular intervals. The location and elevations of the dike shall be checked by Engineer or Qualified Technician with survey equipment when Contractor is nearing final construction grade and before topsoil placement. As-built survey shall be completed after topsoil placement has been completed.
- **General Grading – Intermittent by Engineer or Qualified Technician**
The site includes grading of sediment forebays and submerged berms, along with deeper pockets within the pool. In addition, primary and secondary borrow areas are located on the plans. The Engineer or Qualified Technician will verify the location and dimensions of the sediment forebays, submerged berms and deeper graded areas within the pool using survey equipment. The borrow area shall also be checked to make sure final grading allows for drainage and has adequate topsoil placement.
- **Sheet Pile Installation – Full time by Engineer or Qualified Technician**

The sheet pile installation shall be inspected by a technician familiar with this type of work or the design engineer. The initial sheets shall be verified for straightness and location. The final dimensions, including length and elevation, shall be checked prior to installation of the c-channel and trimming the tops of the sheets.

- **Water Control Structure Installation – Full time and Intermittent by Engineer or Qualified Technician**
The location and elevation of the installation of the water control structure, inlet riser, and outlet pipes shall be verified by technician or surveyor prior to backfilling. The Engineer or Qualified Technician shall be on site full-time during the installation of the sand diaphragm.
- **Downstream Basin and Channeling – Intermittent by Engineer or Qualified Technician**
The downstream stilling basin and outlet channel shall be checked for location, dimensions, and elevations prior to placement of the geotextile fabric and riprap. Prior to grouting, the Engineer or Qualified Technician shall ensure that the geotextile fabric is in place beneath the riprap and the verify the thickness of the riprap.
- **Grouting – Full time by Engineer or Qualified Technician**
Grout is to be placed into the voids of the riprap. The thickness and cleanliness of the riprap shall be checked prior to grouting and adequate coverage shall be checked during grout placement.
- **Tile Intercepts and Outlets – Intermittent by Engineer or Qualified Technician**
The Engineer or Qualified Technician shall verify the tile intersection location and elevation. Once established, the tile shall be placed to the designated outlet location by Contractor. The Engineer or Qualified Technician shall observe all joint connections prior to backfilling and shall measure the intercepts and outlet with surveying equipment. The Engineer or Qualified Technician shall also verify that adequate soil cover has been obtained and any riprap or erosion stone is properly placed at the outlet.
- **Seeding – Intermittent by Engineer or Qualified Technician**
Seed bed preparation shall be checked prior to seeding, along with the thickness of the topsoil over fill and borrow areas. Seed tags shall be verified.

Knowledge, Skill, and Ability of Observer

A Shive-Hattery engineer familiar with the project and construction methods will be present at the project area during times detailed in this plan. The observer will either be the professional engineer of record for the project or an engineer in training (EIT) familiar with the project. The engineer of record will be available for discussions with the EIT via phone when not performing the construction observation.

Contract Changes

At times, changes to the construction scope and fee may be needed. The observer is responsible for coordinating with the engineer of record to document changes or modification to the contract documents. All changes will be recorded and included in the record documents. The construction observer shall document the need for such changes and coordinate contract amendments as required with the engineer of record and IDALS prior to implementation of said modifications.

As-Built Records and Surveying

Shive-Hattery is retained by IDALS to provide construction staking for the project as well as conduct an as-built survey. Site Benchmarks will be set prior to construction commencing for use by the contractor. The as-built survey, benchmark installation, and construction staking will be completed by a professional land surveyor or under the direct supervision of a PLS. Record documents will be prepared and provided to IDALS using the construction observations and as-built survey information and will be used to verify bid quantities.

The record as-built drawings shall include the following information:

- Location and elevation along top of sheet pile weir
- Location and elevation of stilling basing and outlet channel
- Location and elevation of tile intercepts and outlets, along with pipe sizes
- Location and elevation of sedimentation basin
- Location and elevation of top of drawdown structure and inlet structure
- Cross section(s) near the center of the wetland to verify elevations
- Location and elevation of top and toes of the embankment, including the wave bench and auxiliary spillway