Construction Management - Engineering

NRCS Engineers
Where we left off… Time to Restore!

- Engineering Schedule
  - Application phase, fast and furious, ~ 2 months
  - ACEP Team executes supplement (offers), ~ 6 months
  - ACEP Team works their magic and easement is closed ~ 1 ½ yr
  - WRPO required to be obligated, 3 yrs after offer
    - Restoration completion, 3 yrs after Easement Closed
Types of Contracts

• Federal Contract
  ◦ Federal agency designs project, advertises, awards, and makes 100% payment on project.

• Landowner agreement contract
  ◦ Private landowner hires contractor to implement agency engineer’s design and receives payment from agency.
Roles common to all contracting

- Contractor
- Contracting Officer
  - Landowner in Landowner Agreement Contract.
- Owner
- Engineer
- Inspector
Contractor Role

- Estimates the work and proposes cost (Bid)
- Becomes familiar with design and designer’s intent
- Implements design diligently
  - Plans & Specs
- Informs Contracting Officer of errors or omissions in plans
- Performs Quality Control
- May propose changes (modifications)
**Contracting Officer’s Role**

- Awards Contract
- Approves changes (modifications)
- Makes Payment
- Settles Disputes (Claims)
- Makes equitable adjustments in cost and time
Owner’s Role

- Approves Plans and Specifications
- Secures Permits
- Secures funding for project
- Makes payments when due
- Accepts completed work

Note: NRCS assumes some of the roles of owner on permanent easements, federal contracts
Engineer Role

- Determines contract performance time
- Provides technical assistance to the CO & Owner
- Determines level of inspection required
Inspector’s Role

- Becomes intimately familiar with Plans & Specs
- Observes the work, performs tests, documents results, and records construction activities
  - Quality Assurance
- Informs contractor, engineer, and CO of adequacy of work and recommends acceptance or rejection
Inspector’s Role

• Staking a project / Machine Control
  ◦ Done so as a convenience, if there is a conflict the signed construction specs/plans shall govern.

• Measures
  ◦ Construction notes & Layout Tables:

6. Excavation tolerances on all borrow areas are to grade or –0.2 feet of elevation shown on the drawings.

7. Earthfill tolerances are to grade or +0.2 feet of elevation shown on the drawings.

  ◦ As-built drawings are developed based on every layout point meeting construction notes tolerances.
Suddenly, a heated exchange took place between the king and the moat contractor.
# Responsibilities

## Responsibilities of:

<table>
<thead>
<tr>
<th>Landowner</th>
<th>Contractor</th>
<th>Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>During Planning</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Identifies problems and management objectives.</td>
<td>- Checks utility locations.</td>
<td>- Inventory resources and identify resource problems.</td>
</tr>
<tr>
<td>- Assists with survey and site investigation as needed.</td>
<td>- Notifies state historical society, if needed.</td>
<td>- Analyzes resource data.</td>
</tr>
<tr>
<td>- Identifies needed permits.</td>
<td>- Identifies and applies for cost-share, if desired.</td>
<td>- Alerts landowner to apparent wetlands, threatened and endangered species, archaeological sites, and utilities.</td>
</tr>
<tr>
<td>- Notifies state historical society, if needed.</td>
<td>- Participates in pre-construction conference.</td>
<td>- Formulates alternatives to protect resources and meet objectives of landowner.</td>
</tr>
<tr>
<td>- Selects from alternatives.</td>
<td>- Observes and verifies located utilities.</td>
<td>- Evaluates alternatives.</td>
</tr>
<tr>
<td>- Identifies and applies for cost-share, if desired.</td>
<td>- Works safely in accordance with OSHA requirements.</td>
<td>- Develops plan for landowner's selected alternative.</td>
</tr>
</tbody>
</table>

**During Design**

<table>
<thead>
<tr>
<th>Landowner</th>
<th>Contractor</th>
<th>Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Is available for consultation.</td>
<td>- May provide assistance for survey and site investigation.</td>
<td>- Surveys site, if needed.</td>
</tr>
<tr>
<td>- Follows up with historical society, if required.</td>
<td>- Obtains needed permits and easements.</td>
<td>- Designs system based on plan.</td>
</tr>
<tr>
<td>- Obtains needed permits and easements.</td>
<td>- Identifies utilities and contacts utility company to locate buried utilities.</td>
<td>- Reviews design and specifications with landowner.</td>
</tr>
<tr>
<td>- Reviews design for agreement.</td>
<td>- Reviews design for agreement.</td>
<td>- Prepares cost estimates for construction.</td>
</tr>
<tr>
<td>- Concurs in Operation, Maintenance, and Replacement Plan.</td>
<td>- Reviews design for agreement.</td>
<td>- Develops operation and maintenance plan.</td>
</tr>
</tbody>
</table>

**During Construction**

<table>
<thead>
<tr>
<th>Landowner</th>
<th>Contractor</th>
<th>Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Is available for consultation and decision.</td>
<td>- Participates in pre-construction conference.</td>
<td>- Assists landowner with pre-construction conference.</td>
</tr>
<tr>
<td>- Follows all Federal/state/local laws, rules, and regulations.</td>
<td>- Observes and verifies located utilities.</td>
<td>- Implements agency part of Construction QAP.</td>
</tr>
<tr>
<td>- Hires contractors.</td>
<td>- Works safely in accordance with OSHA requirements.</td>
<td>- Inform landowner of presence of unexpected conditions or unexpected cultural and historical resources.</td>
</tr>
<tr>
<td>- Hosts pre-construction conference.</td>
<td>- Notifies agency before starting construction.</td>
<td>- Assesses need for design changes and provides alternatives as appropriate.</td>
</tr>
<tr>
<td>- Notifies utilities prior to construction activities.</td>
<td>- Authorizes contractor to begin work.</td>
<td>- Certifies proper completion of construction.</td>
</tr>
<tr>
<td>- Notifies contractor of utility location.</td>
<td>- Protects cultural and historical resources, as required.</td>
<td></td>
</tr>
<tr>
<td>- Notifies agency before starting construction.</td>
<td>- Implements landowner part of Construction Quality Assurance Plan (QAP).</td>
<td></td>
</tr>
<tr>
<td>- Authorizes contractor to begin work.</td>
<td>- Assures compliance with design.</td>
<td></td>
</tr>
<tr>
<td>- Protects cultural and historical resources, as required.</td>
<td>- Participates in pre-construction conference.</td>
<td></td>
</tr>
<tr>
<td>- Implements landowner part of Construction Quality Assurance Plan (QAP).</td>
<td>- Assures compliance with design.</td>
<td></td>
</tr>
</tbody>
</table>

**Maintenance**

<table>
<thead>
<tr>
<th>Landowner</th>
<th>Contractor</th>
<th>Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Follows Operation, Maintenance, and Replacement Plan and updates it as needed.</td>
<td>- Provides warranties to landowner as agreed.</td>
<td>- Follows up with operation and maintenance plan and periodically assists landowner to update plan.</td>
</tr>
<tr>
<td>- Contacts agency for additional assistance, if needed.</td>
<td>- The contractor is responsible for constructing the system according to design and specifications, for quality control and safety.</td>
<td>- The technical agency is responsible for inspecting and certifying that project plans and specifications are met. Agency staff cannot train or serve as foreman for contractors.</td>
</tr>
</tbody>
</table>
## Landowner Responsibilities

### During Construction

- Is available for consultation and decision.
- Follows all Federal/state/local laws, rules, and regulations.
- Hires contractors.
- Hosts pre-construction conference.
- Notifies utilities prior to construction activities.
- Notifies contractor of utility location.
- Notifies agency before starting construction.
- Authorizes contractor to begin work.
- Protects cultural and historical resources, as required.
- Implements landowner part of Construction Quality Assurance Plan (QAP).
- Assures compliance with design.
Changes and Modifications

- Changes affect the timing of the project, Communicate
- Notify appropriate individuals
- Determine if the change can be made
- Determine if the change affects other practices (domino)
- Get measurements so quantities can be calculated

At NRCS, modifications must be approved before the work is completed!
Don’t always Assume

There are no dumb questions…
The only dumb question is the one that should’ve been asked
Documentation

- Ensuring the Practice Standard and Construction Specifications are or are not met
- Ensuring proper installation, providing supporting information for as-builts
- Recording the units or amounts installed for contract cost share payments
- Remember, if it’s not documented it didn’t happen
Documentation

- Usually, written words in narrative form
- Photography
- Gather material certifications

512.41 Records

- Document in a job diary or conservation assistance notes
Landowner Contract – Certification of Completion

• Deliverables sent to Team Lead
  ◦ Certification statement with signature
  ◦ Contractor’s invoice to landowner
    • Provide comparison of invoice to approved bid schedule
  ◦ Photos
  ◦ As-built drawings

1. NATE GARRETT, HEREBY CONFIRM PROJECT COMPLETION INCLUDING CONSTRUCTION OF ENCLOSSED LINE ITEM QUANTITIES AND TOTAL COST TITLED ‘HARPOULD WETLAND RESTORATION’ AND THAT THE QUANTITIES ARE CORRECT:

PROJECT CONSTRUCTION DATES INCLUDED THE PERIOD FROM ___/10/2021__ TO ___/12/2021__

I FURTHER CERTIFY I HAVE APPROPRIATE CONSTRUCTION JOB APPROVAL AUTHORITY FOR THIS PROJECT:

NATHAN GARRETT

* THIS MAY INCLUDE VARIOUS CONTRACT METHODS INCLUDING PAYMENT BASED ON PLANNED QUANTITIES.

CONSTRUCTION CERTIFICATION

CERTIFICATION OF COMPLETION

HARPOULD WETLAND RESTORATION

Landowner Contract – Certification of Completion

DELIVERABLES

- Certification statement with signature
- Contractor’s invoice to landowner
  - Provide comparison of invoice to approved bid schedule
- Photos
- As-built drawings

CONSTRUCTION CERTIFICATION

NATHAN GARRETT

* THIS MAY INCLUDE VARIOUS CONTRACT METHODS INCLUDING PAYMENT BASED ON PLANNED QUANTITIES.

CONSTRUCTION CERTIFICATION

I, NATE GARRETT, HEREBY CONFIRM PROJECT COMPLETION INCLUDING CONSTRUCTION OF ENCLOSSED LINE ITEM QUANTITIES AND TOTAL COST TITLED ‘HARPOULD WETLAND RESTORATION’ AND THAT THE QUANTITIES ARE CORRECT:

PROJECT CONSTRUCTION DATES INCLUDED THE PERIOD FROM ___/10/2021__ TO ___/12/2021__

I FURTHER CERTIFY I HAVE APPROPRIATE CONSTRUCTION JOB APPROVAL AUTHORITY FOR THIS PROJECT:

NATHAN GARRETT

* THIS MAY INCLUDE VARIOUS CONTRACT METHODS INCLUDING PAYMENT BASED ON PLANNED QUANTITIES.

CONSTRUCTION CERTIFICATION

CERTIFICATION OF COMPLETION

HARPOULD WETLAND RESTORATION

DELIVERABLES

- Certification statement with signature
- Contractor’s invoice to landowner
  - Provide comparison of invoice to approved bid schedule
- Photos
- As-built drawings

CONSTRUCTION CERTIFICATION

NATHAN GARRETT

* THIS MAY INCLUDE VARIOUS CONTRACT METHODS INCLUDING PAYMENT BASED ON PLANNED QUANTITIES.

CONSTRUCTION CERTIFICATION

I, NATE GARRETT, HEREBY CONFIRM PROJECT COMPLETION INCLUDING CONSTRUCTION OF ENCLOSSED LINE ITEM QUANTITIES AND TOTAL COST TITLED ‘HARPOULD WETLAND RESTORATION’ AND THAT THE QUANTITIES ARE CORRECT:

PROJECT CONSTRUCTION DATES INCLUDED THE PERIOD FROM ___/10/2021__ TO ___/12/2021__

I FURTHER CERTIFY I HAVE APPROPRIATE CONSTRUCTION JOB APPROVAL AUTHORITY FOR THIS PROJECT:

NATHAN GARRETT

* THIS MAY INCLUDE VARIOUS CONTRACT METHODS INCLUDING PAYMENT BASED ON PLANNED QUANTITIES.

CONSTRUCTION CERTIFICATION

CERTIFICATION OF COMPLETION

HARPOULD WETLAND RESTORATION

DELIVERABLES

- Certification statement with signature
- Contractor’s invoice to landowner
  - Provide comparison of invoice to approved bid schedule
- Photos
- As-built drawings

CONSTRUCTION CERTIFICATION

NATHAN GARRETT

* THIS MAY INCLUDE VARIOUS CONTRACT METHODS INCLUDING PAYMENT BASED ON PLANNED QUANTITIES.

CONSTRUCTION CERTIFICATION

I, NATE GARRETT, HEREBY CONFIRM PROJECT COMPLETION INCLUDING CONSTRUCTION OF ENCLOSSED LINE ITEM QUANTITIES AND TOTAL COST TITLED ‘HARPOULD WETLAND RESTORATION’ AND THAT THE QUANTITIES ARE CORRECT:

PROJECT CONSTRUCTION DATES INCLUDED THE PERIOD FROM ___/10/2021__ TO ___/12/2021__

I FURTHER CERTIFY I HAVE APPROPRIATE CONSTRUCTION JOB APPROVAL AUTHORITY FOR THIS PROJECT:

NATHAN GARRETT

* THIS MAY INCLUDE VARIOUS CONTRACT METHODS INCLUDING PAYMENT BASED ON PLANNED QUANTITIES.

CONSTRUCTION CERTIFICATION

CERTIFICATION OF COMPLETION

HARPOULD WETLAND RESTORATION

DELIVERABLES

- Certification statement with signature
- Contractor’s invoice to landowner
  - Provide comparison of invoice to approved bid schedule
- Photos
- As-built drawings

CONSTRUCTION CERTIFICATION

NATHAN GARRETT

* THIS MAY INCLUDE VARIOUS CONTRACT METHODS INCLUDING PAYMENT BASED ON PLANNED QUANTITIES.

CONSTRUCTION CERTIFICATION

I, NATE GARRETT, HEREBY CONFIRM PROJECT COMPLETION INCLUDING CONSTRUCTION OF ENCLOSSED LINE ITEM QUANTITIES AND TOTAL COST TITLED ‘HARPOULD WETLAND RESTORATION’ AND THAT THE QUANTITIES ARE CORRECT:

PROJECT CONSTRUCTION DATES INCLUDED THE PERIOD FROM ___/10/2021__ TO ___/12/2021__

I FURTHER CERTIFY I HAVE APPROPRIATE CONSTRUCTION JOB APPROVAL AUTHORITY FOR THIS PROJECT:

NATHAN GARRETT

* THIS MAY INCLUDE VARIOUS CONTRACT METHODS INCLUDING PAYMENT BASED ON PLANNED QUANTITIES.

CONSTRUCTION CERTIFICATION

CERTIFICATION OF COMPLETION

HARPOULD WETLAND RESTORATION

DELIVERABLES

- Certification statement with signature
- Contractor’s invoice to landowner
  - Provide comparison of invoice to approved bid schedule
- Photos
- As-built drawings

CONSTRUCTION CERTIFICATION

NATHAN GARRETT

* THIS MAY INCLUDE VARIOUS CONTRACT METHODS INCLUDING PAYMENT BASED ON PLANNED QUANTITIES.

CONSTRUCTION CERTIFICATION

I, NATE GARRETT, HEREBY CONFIRM PROJECT COMPLETION INCLUDING CONSTRUCTION OF ENCLOSSED LINE ITEM QUANTITIES AND TOTAL COST TITLED ‘HARPOULD WETLAND RESTORATION’ AND THAT THE QUANTITIES ARE CORRECT:

PROJECT CONSTRUCTION DATES INCLUDED THE PERIOD FROM ___/10/2021__ TO ___/12/2021__

I FURTHER CERTIFY I HAVE APPROPRIATE CONSTRUCTION JOB APPROVAL AUTHORITY FOR THIS PROJECT:

NATHAN GARRETT

* THIS MAY INCLUDE VARIOUS CONTRACT METHODS INCLUDING PAYMENT BASED ON PLANNED QUANTITIES.

CONSTRUCTION CERTIFICATION

CERTIFICATION OF COMPLETION

HARPOULD WETLAND RESTORATION

DELIVERABLES

- Certification statement with signature
- Contractor’s invoice to landowner
  - Provide comparison of invoice to approved bid schedule
- Photos
- As-built drawings

CONSTRUCTION CERTIFICATION

NATHAN GARRETT

* THIS MAY INCLUDE VARIOUS CONTRACT METHODS INCLUDING PAYMENT BASED ON PLANNED QUANTITIES.

CONSTRUCTION CERTIFICATION

I, NATE GARRETT, HEREBY CONFIRM PROJECT COMPLETION INCLUDING CONSTRUCTION OF ENCLOSSED LINE ITEM QUANTITIES AND TOTAL COST TITLED ‘HARPOULD WETLAND RESTORATION’ AND THAT THE QUANTITIES ARE CORRECT:

PROJECT CONSTRUCTION DATES INCLUDED THE PERIOD FROM ___/10/2021__ TO ___/12/2021__

I FURTHER CERTIFY I HAVE APPROPRIATE CONSTRUCTION JOB APPROVAL AUTHORITY FOR THIS PROJECT:

NATHAN GARRETT

* THIS MAY INCLUDE VARIOUS CONTRACT METHODS INCLUDING PAYMENT BASED ON PLANNED QUANTITIES.

CONSTRUCTION CERTIFICATION

CERTIFICATION OF COMPLETION

HARPOULD WETLAND RESTORATION

DELIVERABLES

- Certification statement with signature
- Contractor’s invoice to landowner
  - Provide comparison of invoice to approved bid schedule
- Photos
- As-built drawings

CONSTRUCTION CERTIFICATION

NATHAN GARRETT

* THIS MAY INCLUDE VARIOUS CONTRACT METHODS INCLUDING PAYMENT BASED ON PLANNED QUANTITIES.
Application, Ranking, Offers, Restoration – One engineer’s opinion of timeline

- Engineering Schedule
  - Application phase, fast and furious, ~ 2 months
  - ACEP Team executes supplement (offers), ~ 6 months
  - ACEP Team works their magic and easement is closed ~ 1 ½ yr
  - WRPO required to be obligated, 3 yrs after offer
  - Restoration completion, 3 yrs after Easement Closed

* We’ve been able to cut a year or so off this date with all FY18 projects completed in 2021 & 2022