Construction Sustainability

What can we do to make our projects last?

Dan Ireland P.E.
Overview

Make sure our projects are built with the materials and methods we intended
Example Scenario

You give your child $5 to go buy a box of pencils for the school year
Example Scenario

You give your child $5 to go buy a box of pencils for the school year

Kiddo comes back with 1 pencil and 4 candy bars...
Example Scenario

- Kid has a pencil for first day of school
- Kid has a pencil for first day of school
Example Scenario

• Kid has a pencil for first day of school
• **Kid has enough pencils to last a school year**

• Kid has a pencil for first day of school
• Kid loses pencil day 2.
• Parents have to **pay for more pencils**
Example Scenario

- Kid has a pencil for first day of school
- Kid has enough pencils to last a school year
- Kid is always prepared for school
- Graduates from school
- Supports parents as they become wealthy professionals.

- Kid has a pencil for first day of school
- Kid loses pencil day 2.
- Parents have to pay for more pencils
- Kid eats all the candy bars
- Parents go crazy because they have a sugar high kid…
Overview

Make sure our projects are built with the materials and methods we intended

How do we do that?

Prepare our projects for Construction
Overview

• What you should be doing while your project is out to bid?

• Things to consider that may make the process easier.

• AUDITS…Why are projects audited and inspected?

• Sharing Experiences/Questions.
Preparation

**DESIGN is complete and we are out to bid!!!**

Congratulate the milestone!

**BUT**

This is important time to be planning and preparing for the Construction Phase.
Preparation

Who is going to administer your Construction project?

Internal Tribal Department

Consultant

Both
Preparation

Who is going to administer your Construction project?

Consultant

• Make sure you have selected for these specific services per agency requirements. Don’t assume that the designer can automatically do the construction administration. Check the original scope of work.

• Does NOT have to be the Design Consultant. Different consultant for construction can end up acting as a Third Party reviewer.

• Create a clear Scope of Work
  • Who is doing what?
  • How long will this effort last?
  • How many meetings, site visits, tests, etc…? (Estimate a number so at least you have a common base line)
  • Conclusion: Would you be able to tell when something is out of scope?
Preparation

Who is going to administer your Construction project?

**BOTH**: Internal Tribal Department and Consultant

- Example:
  - Tribal Inspector
  - Consultant Construction Administrator

- Opportunity to train Tribal Staff

- Create consistency with construction processes internally

- Make sure scope of work and fee reflect training time. Great long term investment.
Preparation

What type of Construction Services should be considered?

- **Design Representative** (support for additional design information if not Construction Administrator)

- **Construction Inspection**
  - Onsite review with Contractor
  - Erosion Control
  - Field measurements for payment
  - Material verification
  - 1:1 communication with Contractor for direction

- **Construction Administrator**
  - Initial material approval and material documentation
  - Contractor or Owner Request For Information (RFI) coordination
  - Change Order coordinator
  - Schedule and Working Day
  - Pay request reviewer
Preparation
What type of Construction Services should be considered?

• Material Testing/ Geotech
  • Compaction testing
  • Material Testing (asphalt, concrete, gradations, etc…)
  • Mechanical testing
  • Foundation subgrade approval

• Cultural / Environmental Monitoring
  • Review permits
Preparation

Construction Document Preparation

Determine how are you going to communicate documents?

• Where does one find the most current and approved version?
• How will everyone get the information?
• How will individuals know when to review?
Preparation

Construction Document Preparation

How are you going to communicate the documents?

- Software programs
Preparation

Construction Document Preparation

How are you going to communicate the documents?

- FTP sites
How are you going to communicate the documents?

Develop a simple communication diagram

**Material Submittals**
- Contractor Submittal (on RAM)
  - Janice (Contractor)
  - Zach (Contractor)
- RAM Logged into tracking spreadsheet
  - Kara (City) Lead
  - Cc: Dan (SCJ)
  - Cc: Sam (City)
- RAM Review
  - Dan (SCJ) Lead
  - Sam (City) Backup
- Processed RAM Distribution
  - Kara (City)
  - Brandon (City)
  - Wes (Krazan)
  - Cc: Sam (City)
- Completed AM
  - Janice (Contractor)
  - Zach (Contractor)
  - SCJ Files

**Daily Inspector Submittals** — IDR, Photos, Traffic Control Reports, ESC Lead Reports, Field Acceptance Reports
- Daily Items
  - File Naming: IDR = 2016-0816 IDR, FAR = 2016-0816 FAR BI#06, Paynote = 2016-0816 PN BI#06, Traffic Control Report = 2016-0816 Traffic Control
  - Upload to SCJ Files
  - Brandon
  - Process / Review
  - Kara (City)
  - Cc: Dan (SCJ)
  - SCJ Files

**Paynote Process**
- Paynotes (Weekly Review)
  - Brandon
  - Contractor Foreman
  - Process / Review
  - Kara (City)
  - QA/QC: Sam (City)
  - Entered into Ledger
  - Kara
  - SCJ Files
  - City Payment Process

**RFI Submittals**
- Contractor initiated RFI
  - Zach (Contractor)
  - Janice (Contractor)
  - Request Logged
  - Kara (City)
  - Sam (City)
  - Cc: Dan (SCJ)
  - Review
  - Sam (City) – Lead
  - Dan (SCJ) – Backup
  - Response to Contractor
  - Response with No Further Action
  - Change Order Process
Record of Materials (ROM)

- Generated by either the State Materials Laboratory, Local Agency, or Consultant
- Identifies the types and quantities of materials, the standard acceptance methods and the number of acceptance and verification samples required for all material that will be used on the project.
- Living document and always maintained.
- References the standard specification or contract provision where the material requirement are defined.
- Lists the acceptance requirements for materials requiring other actions, such as fabrication inspection, manufacturer’s certificate of compliance, shop drawing or catalog cuts.
## Preparation

### Construction Document Preparation

**Record of Materials (ROM)**

A communication tool between the Inspector, Contractor, Material Tester, Payment Verifier, Owner

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<th>Qty.</th>
<th>Submittal Requirements</th>
<th>Submittal 1</th>
<th>Conditional Approval Reqmts.</th>
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**STORM SEWER**

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</table>

Communicate to them what you want and what is needed. This assists with expectations.
Tips/Tricks/Recommendations

Things that can assist with making sure your project is being constructed with the materials and by the method it was intended to be...
Understand the resources that are already available!
What materials are approved or perform well?

The State Materials Laboratory, which includes the Bituminous, Chemical, Physical Testing and Soil Laboratories, serves as the central testing laboratory for WSDOT. These AASHTO Accredited laboratories perform various tests to ensure the materials used meet the appropriate American Society for Testing Materials, American Association of State Transportation Officials, or Department specifications.

We are a part of the State Construction Office, which is part of the State Construction Division.
What materials are approved or perform well?

Qualified Products List

Search by Manufacturer OR Standard Specs

The Search page allows you to enter criteria and view selected Qualified Products information. After entering the desired criteria and clicking the [Search] button, Qualified Products are presented.

Entering a letter or number in the boxes below will take you to that position in either list.

Manufacturer

Standard Specs

Search Clear List

HMA Paving Contractor

View Introduction
View Reference Guide
View Instructions

View Appendix A - Acceptance codes
View Appendix B - General Notes, Lumber Grading & Epoxy Information
View Appendix C - Wire & Cable Identification Guide

View Appendix D - Geosynthetic Retaining Walls

To view this document you need Adobe Acrobat Reader. If you do not have Adobe Acrobat Reader, please click here to download.
Preconstruction Meeting

• Make your meeting meaningful

• Establish the communication process

• Establish the expectations
  • Materials shall be verified prior to use
  • Payment will not be granted until material and documentation are approved.

• Make sure there are prime and backup contacts for all the stakeholders

• Template Agendas are available (WSDOT Local Agency Manual), but make sure it is specific to your project.
Preconstruction Meeting

Appendix 52.101

Conference Agenda – Example

1. Order of work (Progress Schedule)
2. Utilities and Railroads
   a. Project Engineer prepare list of affected services and representative to be contacted.
   b. Underground services should be located.
   c. Notification time required by organizations.
   d. Insurance required, if any.
3. Subcontractors and Agents
   a. Request for approval must be submitted along with a Statement of Intent to Pay Prevailing Wage and Subcontractor or Agent Certification.
   b. Nature of work to be performed by each.
   c. Subcontractor’s route correspondence via prime contractor.
   d. Prime contractor must have a representative with authority on the job at all times (designated by letter).
   e. DBE subcontract work – indepth discussion including conditions of award if any.
4. Records and Reports
   a. Description of required forms and initial supply should be handed out or mailed to prime contractor.
   b. All reports must be handled through prime contractor’s office.
   c. Record of Materials should be provided and Requests for Approval of Materials Sources (RAM) should be submitted as soon as possible.
   d. Falsework plans, if required.
   e. Certified payrolls must be submitted on time and wage rate interviews will be conducted. Per the FHWA 1273, employee full social security numbers and home addresses shall not be included on weekly payrolls.
   f. EEO and trainee requirements – indepth discussion.
   g. DBE requirements when the contract contains DBE goals – indepth discussion.
   h. Required job site posters (provided to Prime Contractor).
   i. Davis-Bacon statement regarding the USDOL, WSDOT and local agency’s role in investigations for labor compliance.
   j. ADA requirements.
Project Directory

- Create a **Construction Project Directory Template**
- Set your project directory up so that it can be used as a checklist
- Make it clear to others so they know where things go and where they can be found later
- Make it consistent with other projects or file management tools.
- Start with this initially, then revise to be project specific
- Use similar verbiage/titles as your auditors. Make it easy on them (It will be easier on you)
Project Directory

Make your systems mirror each other. That way everything is easily trackable.
Project Directory

Additional Resources

- OneNote
  - File System Usage (Acrobat, 3.86 MB)
  - Readable Scans and Copies (Acrobat, 141 KB)
  - FAQ (Acrobat, 97 KB)
Project Directory
Project Forms

Forms are greatly valuable for consistency and reviewing purposes.

Don’t recreate the wheel, utilize forms that already exist:
# WFL Forms

## WFL Internal Forms

- Design Package Quality Control Feedback Form (Acrobat, 21 KB)
- Web Request Form (Acrobat, 190 KB)
- WFLHD 100 - Project Website Information Form (Acrobat, 152 KB)
- SF 1164 - Claim for Reimbursement for Expenditures on Official Business (Acrobat, 629 KB)
- Cardholders Transaction Log (Template) (Excel, 406 KB)
- FAX Cover Sheet (Acrobat, 229 KB)
- Purchase Card ePR Request Form (Acrobat, 45 KB)
- Project Staff Log (Acrobat, 301 KB)

## Inspection Forms

- FH 10 262 - Identification (Acrobat, 194 KB)
- FHWA 1413 - Inspectors Daily Record of Construction Operations (Acrobat, 363 KB)
- FHWA 1446A - Construction Inspection Report (Acrobat, 81 KB)
- Checklist for Critical Path Method (Acrobat, 51 KB)
- SF 1445 - Labor Standards Interview (Acrobat, 0.98 MB)
- WFLHD 107-1 - Payroll Checklist Form (Acrobat, 578 KB)
- Inspection Checklists

## Contract Modification Forms

- **For Contracts awarded after FY14**
  - SF 30 Request Form (Acrobat, 178 KB)
  - WFLHD 10 - Continuation Sheet (Acrobat, 100 KB)
  - SF 30A - Contract Modification SF 30 (Word, 46 KB)
  - SF 30A - Contract Modification SF 30 Continuation Sheet (Word) (Word, 45 KB)
- **For Contracts awarded prior to FY14**
  - SF 30 - Bilateral Request Form (Acrobat, 44 KB)
  - SF 30 - Unilateral Request Form (Acrobat, 37 KB)
  - WFLHD 10 - Continuation Sheet (Acrobat, 80 KB)
  - SF 30A - Contract Modification SF 30 (PRISM/Word) (Word, 45 KB)
  - SF 30A - Contract Modification SF 30 Continuation Sheet (Word) (Word, 45 KB)
- **For All Contracts**
Equipment – Camera/Cell Phone

Take pictures every day! Minimum quantity per day.

Pictures are most valuable long after the project
  What was used?

  Where were they at the time?

  What had been worked on?

VIDEO can be performed just as easy.
Equipment – Tablet

Studies have shown that tablets in the construction field can reduce the time of inspectors typical duties and to research information for solutions.

Consistent and organized directories are important to this success.
Why are projects audited and inspected?

**AUDIT**

Ensure that projects **last** and **perform** the way they were intended to be.
Why are projects audited and inspected?

CONTRACTORS ARE SLIME!!
Why are projects audited and inspected?

Projects are confusing and not all the same

- Different funding
  - Federal Money
  - State Money
  - Private Money
  - Trust land
  - Right of way
  - State Highway
  - Local Agency road
  - Tribal road

- Different conditions
Make your checklist what your auditing authority uses as a checklist.
Make your check list what your auditing authority uses as a checklist.
Quality construction administration and inspection services are the foundation of making sure that your investments are built to sustain a long future.
What are your thoughts/question/experiences?