Boot Camp - Construction
Breakout Session #4

September 20, 2018
Pam Liston – Moderator
Program Manager
Local Assistance Division - VDOT
Successful Delivery

Marty R. Halloway, PE, CCM
VDOT Bristol District Construction Division
&
Brandon Steele, PE
Whitman Requardt and Associates
What must be done to make your project SUCCESSFUL?
Successful Delivery

First things first…

COMMUNICATION
AND
THE DOCUMENTATION OF IT!!
Successful Delivery

Pre-Construction Phase Activities

• Ensure all permits are obtained, ROW cleared, and Civil Rights satisfied. (Project Killers)

• Develop Plan for Project Delivery

• Identify Roles and Responsibilities to Accomplish the Plan

• Take the Baton from the Preliminary Engineering Phase and begin to RUN!
Successful Delivery

Developing a Plan For Success

The Construction Management Plan (CMP)

A Construction Management Plan is a plan for delivering the project to meet all of the Owner’s goals in accordance with the plans and specifications and all applicable LAP requirements.
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The Construction Management Plan

It is:

• A Living Document
• Tailored to suite project size, complexity, and funding
• A Plan to help everyone know who will do what, when and how
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The Construction Management Plan

Basics of a CMP

• General Project Overview
• Communication Plan
• Resource Plan
• Risk Management Plan
• Project Controls Plan – Cost and Schedule Control
• Quality Assurance Plan
• Document Management Plan
• Safety Plan
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The Construction Management Plan

General Project Overview

- Project description
- Owner’s Goals & Objectives
- Strategy for Contracting and Procurement
- Key Dates and Milestones
- Budget & Schedule
- Roles and Responsibilities
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The Construction Management Plan

Roles and Responsibilities

Must be defined

*Key Roles:*

**LOCAL PROGRAM ADMINISTRATOR (LPA)**

**PROJECT MANAGER (PM) – Locality** - responsible for leading the project through the process and accomplishing tasks

**PROJECT COORDINATOR (PC) – VDOT** - guides the locality through the process to ensure successful project delivery and authorization/obligation of funds
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Communication Plan

• Communication Flow Chart – ID lines of Communication
• Contact List
• Identifies Key Project Stakeholders
• Sets Frequencies for Project Meetings
• Sets Frequencies for Communications
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Resource Plan

Develop a Staffing Plan for the Project
Key Component of Compliance and Quality

Questions to Ask:

Coverage Needed to Ensure Quality Construction
Coverage Requirements for Compliance
Consultants: To Procure or Not to Procure.....

• Number of Internal Resources,
• Availability of those Resources, and
• Level of Training/Certification of those Resources

Notes on Procurement
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Risk Management Plan

Identify Project Risks Prior to Construction

Probability of Occurring
Impact to Cost and Time if Occurs

Develop Strategies for Handling Risk

Acceptance of Risk
Mitigation of Risk
Transfer of Risk

Kick-off the Partnering Process
Formalizing Risk Management – the Risk Matrix
## SUCCESSFUL DELIVERY
### The Construction Management Plan

#### Risk Management Plan

<table>
<thead>
<tr>
<th>Probability</th>
<th>Schedule Impact</th>
<th>Cost Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - Very Unlikely</td>
<td>1 = Minimal or no impact</td>
<td>1 = Minimal or no impact</td>
</tr>
<tr>
<td>2 - Unlikely</td>
<td>2 = Additional Resources required; able to meet</td>
<td>2 = &lt;5%</td>
</tr>
<tr>
<td>3 - Possible</td>
<td>3 = Slip in key milestones; not able to meet</td>
<td>3 = 5-7%</td>
</tr>
<tr>
<td>4 - Likely</td>
<td>4 = Major slip in key milestone or critical path impacted</td>
<td>4 = 7-10%</td>
</tr>
<tr>
<td>5 - Near Certainty</td>
<td>5 = Can't achieve key team or major program milestone</td>
<td>5 = &gt;10%</td>
</tr>
</tbody>
</table>
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The Construction Management Plan

Risk Management Plan – Managing Risk

Risk Mitigation

Constructability Review
Bidability / Contract Document Review
Contract Time Determination – CPM Schedule

Risk Transfer (Take Care! Don’t transfer too quickly!)

3rd Party
Insurance
Shift to Contractor

Risk Sharing

Partnering
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Project Controls Plan – Cost Controls

Cost Controls (Without it, projects can be a nasty nightmare!!)

• Budget Monitoring and Tracking
• Earned Value / C-13 (or C-13CPM)
• Change Orders – Independent Evaluation (must have the funds to cover it, the LAP is on the hook)
• Schedule of Values – Pay Items vs. Lump Sum
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Project Controls Plan – Schedule Controls

Pre-Advertisement Schedule

• Not Required by LAP Manual, but…
• Use to set accurate contract durations
• Critical to setting funding – don’t get caught short!
• Evaluation Tool – Can Locality handle construction phase internally?
• Optimum Ad Date = Minimum Project Duration = Minimum Cost
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Project Controls Plan – Schedule Controls

Construction Phase Scheduling – why do it?
• Forces Contractor to Plan (this is a good thing!)
• Identifies Required Action from the Locality and VDOT
• VDOT & FHWA Requirement
• Protects Self and Funding,
  AND . . .
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The Construction Management Plan

Project Controls Plan – Schedule Controls

LAP Manual References:

Section 13.1.4.2.1.1 – Schedule must be in within 30 days of NTP
Section 13.1.4.4 – Earnings Schedule to ACE within 15 days of Pre-Con
Section 13.1.5.6 – Schedule Required for Reimbursement
Section 13.1.5.7 – Schedule on the ‘Key Submittal’ list
Section 13.1 – App C-2 – A required Preconstruction Meeting Topic
Section 13.2.3 – Must allow for VDOT Evaluation Time in Schedule
Section 13.4.6 – Pre-requisite for performing a Time Impact Analysis and granting a time extension
Section 19.3 – Schedule update required for processing invoices
Section 19.7 – Required to be retained with records
Appendix 9-C – Schedule used to set VDOT Oversight level
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The Construction Management Plan

Quality Management Plan

Quality Assurance Plan (QAP) now required by LAP Manual on Federal Aid Project (Section 13.1.5.3)

- Plan to set testing and inspection frequencies and requirements for the project
- Defines Acceptance testing and inspections
- Addresses deviations from these frequencies and requirements, and defines comparison testing
- Addresses actions taken for Non-Compliant tests and inspections
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The Construction Management Plan

Quality Management Plan

QAP Document

I. Mission Statement: All materials shall be approved, sampled, and/or tested in accordance with contract specifications and the Locally Administered Projects Manual (LAP MANUAL). Submittal of this QAP designates a commitment to adhere to its contents as well as the LAP MANUAL. Any deviation from this QAP shall not occur without a revision submittal of this QAP to the District Project Coordinator (DISTRICT PC) for approval.

II. Copies of Personnel Certifications and Licenses as required by the Contract Documents are kept on file readily available to the DISTRICT PC for review. All personnel performing materials testing shall have the necessary certifications and experience/expertise required by the contract documents and the LAP MANUAL. No work shall be performed otherwise.

III. All materials testing laboratories shall meet the requirements as outlined in the LAP MANUAL, Chapter 13.2 for "Qualified Laboratories". No work shall be authorized otherwise. Independent Assurance sampling & testing must be defined within the QAP and shall be attached to this document. The Materials Notebook shall be the mechanism to track Independent Assurance Samples. All Independent Assurance (IA) Tolerances shall be in accordance with the LAP MANUAL Appendix 13.2 E, Independent Assurance Tolerances. If IA testing is outside the specified tolerance, the testing equipment for both the QC and IA testing shall be evaluated and if applicable, the calibrations checked. If either equipment is found to be out of calibration, then the equipment shall be recalibrated and the test repeated for the equipment out of calibration. On the other hand, if both pieces of testing equipment meet calibration standards and the equipment tolerances specified in the applicable test method, third party testing shall be used to verify the test data and resolve the discrepancy.

IV. Communication channels shall be established to provide direction and solve problems and are as follows:

V. In the event of unclear contract specifications or published guidelines, the resolution procedure will be accomplished by:

VI. Progress reports shall be provided to the DISTRICT PC. A sample "Progress Report" is attached to this document.

VII. Materials Acceptance records and test data shall be kept and readily available for inspection at all times by the DISTRICT PC. These records shall be kept for a minimum of 5 years after project completion.

VIII. All materials testing, testing methods and frequencies shall follow the LAP Manual Appendix 13.2-G, Materials Testing Methods and Frequencies Table. All deviations are as follows:

IX. The "right to inspect" by the DISTRICT PC is agreed upon for any and all project items and recognized by submittal of this QAP. The following items shall be considered during an inspection (such as events witnessed by the DISTRICT PC and hold points):

X. Non-compliance to this QAP shall be promptly reported through the established communications process in this QAP. A sample "Non-Compliance Report" and "Recovery Plan" are attached to this document.

Attachments:
- Independent Assurance Plan
- Progress Report template
- Non-Compliance Report (NCR) template
- Audit and NCR Recovery Plan template

Submitted By:

Locality Project Manager

Date

Printed Name

Approved By:

VDOT Construction Project Monitor

Date

Printed Name
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The Construction Management Plan

Document Management Plan

Plan to Meet Documentation Requirements

• Daily Diary and Inspection Documentation
• Pay Item Tracking and Payment
• Materials Tracking & Materials Certification (Locality Tracking #)
• Test Reports
• Civil Rights documentation
• Change Management Documentation
• Contract Administration Requirements (C-5, C-21, C-25, C-48, etc!)
• Submittals, Shop Drawings, RFI’s, Engineering Reviews
• Correspondence

Define system to sort, store and allow for easy retrieval for audit.
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The Construction Management Plan

Safety Plan

• No Project is a Success without Safety!
• Plan Safety in during Design and SOC/MOT Development
• Define how to monitor safety during construction
• Capture Lessons Learned to make the next project safer
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RISK-BASED APPROACH TO
PROJECT OVERSIGHT

Federal Funds

VDOT has an oversight (and stewardship) requirement when federal funds are being utilized (23 CFR 635.105 (a))

Localities are required to provide sufficient construction inspection to ensure project is constructed in accordance with contract specifications & plans

Localities must provide a government employee to be “responsible charge” on project (23 CFR 635.105(c)(4))

Federal Aid Essentials
Not every project needs the same level of review and oversight

<table>
<thead>
<tr>
<th>NFO</th>
<th>FHWA</th>
<th>FO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-NHS</td>
<td>Facility</td>
<td>NHS</td>
</tr>
<tr>
<td>State</td>
<td>Funding</td>
<td>Federal</td>
</tr>
<tr>
<td>Locality</td>
<td>Owner</td>
<td>VDOT</td>
</tr>
<tr>
<td>Type I</td>
<td>Project Category</td>
<td>Type V</td>
</tr>
<tr>
<td>Extensive</td>
<td>Experience</td>
<td>Minimal</td>
</tr>
</tbody>
</table>

LOW → HIGH
## Risk-Based Oversight

<table>
<thead>
<tr>
<th>Element</th>
<th>Value factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal Oversight</td>
<td>20</td>
</tr>
<tr>
<td>National Highway System</td>
<td>20</td>
</tr>
<tr>
<td>Design-Build/PPTA</td>
<td>20</td>
</tr>
<tr>
<td>Funding</td>
<td></td>
</tr>
<tr>
<td>Federal Funded (non-Enhancement)</td>
<td>15</td>
</tr>
<tr>
<td>State Funded</td>
<td>10</td>
</tr>
<tr>
<td>Federal Transportation Alternatives (Impacts R/W)</td>
<td>7</td>
</tr>
<tr>
<td>Federal Transportation Alternatives (Off R/W)</td>
<td>1</td>
</tr>
<tr>
<td>Completed Project Maintenance</td>
<td></td>
</tr>
<tr>
<td>State Maintained Project</td>
<td>10</td>
</tr>
<tr>
<td>LPA Maintained Project</td>
<td>2</td>
</tr>
<tr>
<td>Project Category *</td>
<td></td>
</tr>
<tr>
<td>Category I</td>
<td>2</td>
</tr>
<tr>
<td>Category II</td>
<td>5</td>
</tr>
<tr>
<td>Category III, IV, V</td>
<td>10</td>
</tr>
<tr>
<td>LPA Experience Administering Project</td>
<td></td>
</tr>
<tr>
<td>Low Level</td>
<td>15</td>
</tr>
<tr>
<td>Intermediate Level</td>
<td>10</td>
</tr>
<tr>
<td>High Level</td>
<td>5</td>
</tr>
<tr>
<td>Total Factor per Element</td>
<td></td>
</tr>
</tbody>
</table>

### Oversight Level

<table>
<thead>
<tr>
<th>Oversight Level</th>
<th>Minimum Oversight Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Kickoff (scoping) meeting attendance</td>
</tr>
<tr>
<td></td>
<td>Plan development coordination meeting</td>
</tr>
<tr>
<td></td>
<td>Final plan review</td>
</tr>
<tr>
<td></td>
<td>Pre-construction meeting attendance</td>
</tr>
<tr>
<td></td>
<td>Random site visits during construction</td>
</tr>
<tr>
<td></td>
<td>Final acceptance inspection</td>
</tr>
<tr>
<td>Moderate</td>
<td>Kickoff (scoping) meeting attendance</td>
</tr>
<tr>
<td></td>
<td>Plan development coordination meeting</td>
</tr>
<tr>
<td></td>
<td>30 percent plan review</td>
</tr>
<tr>
<td></td>
<td>Public hearing attendance</td>
</tr>
<tr>
<td></td>
<td>Final plan review</td>
</tr>
<tr>
<td></td>
<td>Pre-advertisement contract review</td>
</tr>
<tr>
<td></td>
<td>Pre-award bid review</td>
</tr>
<tr>
<td></td>
<td>Monthly to quarterly site visits during construction</td>
</tr>
<tr>
<td></td>
<td>Final acceptance inspection</td>
</tr>
<tr>
<td>High</td>
<td>Kickoff (scoping) meeting attendance</td>
</tr>
<tr>
<td></td>
<td>Monitor consultant procurement process</td>
</tr>
<tr>
<td></td>
<td>Environmental coordination meeting</td>
</tr>
<tr>
<td></td>
<td>Plan development coordination meeting</td>
</tr>
<tr>
<td></td>
<td>Right-of-Way coordination meeting</td>
</tr>
<tr>
<td></td>
<td>30 percent plan review</td>
</tr>
<tr>
<td></td>
<td>Public hearing attendance</td>
</tr>
<tr>
<td></td>
<td>60 percent plan review</td>
</tr>
<tr>
<td></td>
<td>90 percent plan review</td>
</tr>
<tr>
<td></td>
<td>Bid document review</td>
</tr>
<tr>
<td></td>
<td>Pre-award bid review</td>
</tr>
<tr>
<td></td>
<td>Pre-construction meeting attendance</td>
</tr>
<tr>
<td></td>
<td>Weekly to monthly monthly visits during construction</td>
</tr>
<tr>
<td></td>
<td>Final acceptance inspection</td>
</tr>
</tbody>
</table>

### Table 2 - Oversight Assessment

<table>
<thead>
<tr>
<th>Level of Oversight</th>
<th>Range of Factor Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>High (Hf)</td>
<td>&gt; 45</td>
</tr>
<tr>
<td>Moderate (M)</td>
<td>25-55</td>
</tr>
<tr>
<td>Low (L)</td>
<td>&lt; 35</td>
</tr>
</tbody>
</table>
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STATE-AID CERTIFICATION

- Streamlined processes for projects that are funded only with state or local funds
- Locality certifies proper administration of key processes (Design, Procurement, Public Involvement, RW, Environmental)
- Poses no or minimal risk to VDOT
- Not applicable to projects developed as federal
### State-Aid Project Certification

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State-aid Certification form located in LAP Manual Appendix 5-A

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**Appendix 5-A**

**Certification Form for State Funded Projects**

<table>
<thead>
<tr>
<th>Project Number:</th>
<th>UPC:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This certification form is to be used to certify adherence to all applicable laws and regulations pertaining to locally administered state funded projects. This certification form will not be used for projects utilizing any federal funds. The signature at the bottom will certify that **<INSERT LOCAL GOVERNMENT NAME>** has met the following requirements for state funded projects. VDOT may perform project audits to verify compliance with this certification. False or inaccurate statements identified by VDOT or other state regulatory agencies may result in the requirement to return state aid and/or other penalties as allowed by State law.

<table>
<thead>
<tr>
<th>Initials</th>
<th>Certification Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Check applicable statement:</td>
</tr>
<tr>
<td></td>
<td>☐ For highways maintained by the LPA, project plans have been designed in accordance with AASHTO standards and signed and sealed by a Virginia registered P.E. in accordance with DPOR, OR</td>
</tr>
<tr>
<td></td>
<td>☐ For highways which will be operated and maintained by VDOT, project plans have been designed in accordance with VDOT Standards and that VDOT has reviewed the plans in accordance with the agreed upon schedule and all necessary design variances/waivers have been attained and the plans have been signed and sealed by a Virginia registered P.E. in accordance with DPOR.</td>
</tr>
<tr>
<td></td>
<td>All required regulatory agency coordination has been made and applicable permits or approvals have been acquired.</td>
</tr>
<tr>
<td></td>
<td>Where VDOT will operate and maintain the highway, that the LPA has performed appropriate due diligence to identify environmental hazards on new right of way and to the best of our knowledge, any existing environmental hazards have been identified and mitigated or a plan for mitigation during construction has been made.</td>
</tr>
<tr>
<td></td>
<td>Project was developed in accordance with state laws and regulations governing public involvement so that adequate and appropriate public notice and opportunity for public comment was provided.</td>
</tr>
<tr>
<td></td>
<td>All right of way has been obtained and that the LPA has legal right of entry onto each and every parcel for the advertisement and construction of the referenced Project.</td>
</tr>
<tr>
<td></td>
<td>The LPA has complied with the Code of Virginia requirements pertaining to relocations and the acquisition of real property.</td>
</tr>
<tr>
<td></td>
<td>All affected utilities have been relocated or companies authorized to relocate their facilities. If not, they are included in the plan to be performed by the road contractor.</td>
</tr>
<tr>
<td></td>
<td>The project was advertised in accordance with the Virginia Public Procurement Act and that the advertisement package included all appropriate EEO provisions.</td>
</tr>
<tr>
<td></td>
<td>All environmental regulations as are applicable to local government capital improvement projects and as required by State or federal laws applicable to non-federal aid projects have been met or provisions to meet continuing requirements during construction have been made.</td>
</tr>
</tbody>
</table>

**<INSERT LOCAL GOVERNMENT NAME>** acknowledges that failure to fulfill its legal obligations associated with those requirements identified in this certification may result in project delays and/or delays or forfeiture of State reimbursements. **<INSERT LOCAL GOVERNMENT NAME>** further acknowledges that obligations associated with those requirements identified in this certification may be subject to audit by VDOT or State oversight agencies.

Local Government Manager (City Manager, County Administrator, City Engineer or County Director of Public Works or designated authority to sign)

Date: __________________________

cc: Project file  VDOT Project Coordinator  VDOT Local Assistance Director

[Click here for the WORD version of this form](#)
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LAP CN ADMINISTRATION

Issues of Significant Concern

DBE
Payroll
Materials Quality Assurance
Work Orders
Buy America

SAFETY!!
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LAP CN Administration

Civil Rights Reviews

Disadvantaged Business Enterprises:
• Must make a documented good faith effort!
• Rules for Substitutions and Commercially Useful Function

Payroll/Labor Compliance:
• Employees paid in accordance with Davis-Bacon Rates
• Employees must be assigned correct Job Positions
• Localities perform Labor Compliance Reviews

Reference: Chapter 17 of the LAP Manual
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Materials Quality Assurance

Assuring that:

- The Right materials
- Are put in the Right way
- At the Right time
- In the Right place
- In the Right quantities
- With the Right Documentation
- And paid for the Right way

Reference: Chapter 13 of the LAP Manual
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LAP CN Administration

Materials: A Few Things to Remember…

• Materials Acceptance Testing Procedures
• Materials Certifications for pre-fabricated materials
• Certifications for Materials Inspectors
• Materials Notebook – TL-142 (VDOT)
• Materials Certification – TL-131LAP (VDOT)

Identify who is doing what before the project starts!

Develop a Quality Assurance Plan
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Questions?

Marty R. Halloway, PE, CCM
VDOT Bristol District Construction Division
&
Brandon Steele, PE
Whitman Requardt and Associates