

Network for Success

Local Programs Workshop



**Construction Documentation
Track B – LAP Advanced
Thursday, September 25, 2013
3:00 PM- 4:30 PM**

Network for Success

Local Programs Workshop



Construction Management Plan/Materials Notebook

September 25, 2013

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VDOT Area Construction Engineer, Bristol District

LAP Construction Documentation

- **Construction Management Plan**
- **Construction Resource Guidebook**
- **Materials**
- **Buy America**

Construction Management Plan

Construction Management Plan

- **Basics of a Construction Management Plan (CMP)**
- **Benefits of a CMP**
- **Sample CMP**

Basics of CMP

- **Project description**
- **Owners goals & objectives**
- **Milestone schedule or time determination schedule. This can be anticipated if you do not have the actual**
- **Construction Staffing Plan**
- **Budget – along with breakdown of funding if more than one exists**
- **Team members – to include roles and responsibilities**
- **Strategy for contracting and procurement**
- **Any management information systems to be utilized – SharePoint or any document tracking systems**

Basics of CMP

Construction Staffing Plan

Item Number	Item Description	Required Resources	Start Date	End Date	Inspection Level	2013																
						January				February				March				April				
						1	10	20	31	1	10	20	30	1	10	20	31	1	10	20	28	
	RW-3	2	3/2/2013	4/1/2013	Intermittent*									2		2	2					
10128	Aggregate Base 21-B	1	3/26/2013	4/1/2013	Intermittent										0.5	0.5						
10643	BM-25	2	4/1/2013	4/9/2013	Continous												2	2				
10636	SM-9.5D	2	4/10/2013	4/20/2013	Continous														2	2		
13320	Guardrail GR-2	1	4/5/2013	4/15/2013	End Product																	
54032	Line Marking	1	4/21/2013	4/25/2013	Intermittent														0.5	0.5		
	Pipe Install	1	1/5/2013	2/10/2013	Intermittent	0.5	0.5	0.5	0.5	0.5	0.5											
Total:						0.5	0.5	0.5	0.5	0.5	0.5	0	0	0	2	0.5	2.5	4	2	2.5	2.5	

Note: The * indicates only needed when material is placed.

1. The * indicates only needed when material is placed.

2. Intermittent will be described as 0.5 of a persons work day.

Basics of CMP Inspection Manual

http://www.virginiadot.org/business/resources/const/Inspection_Manual.pdf

STABILIZED OPEN-GRADED MATERIAL

SPEC.	INSPECTION LEVEL	INSPECTION OBJECTIVE	INSPECTOR ACTIVITY
SPEC PROV	Continuous 2 inspectors required (Minimum)	<p>Ensure grade, density and surface of underlying layer meets specifications.</p> <p>Ensure that a quality, durable, and free draining material is achieved according to contract requirements.</p> <p>Ensure course is not damaged which may affect the free draining characteristics of course so that the layer retains its strength and free draining characteristics.</p>	<p>BEFORE placement of open-graded course: Ensure that contractor has one certified asphalt paving technician present continuously at each paving site. Check and document grade, density and surface of underlying layer meets specifications. Develop a safe traffic control operation that will be followed; especially deal with the operation of trucks through the work zone.</p> <p>Confirm and document that traffic control measures are providing a safe work zone to the traveling public throughout the duration of the placement operation.</p> <p>Inspect and document contractor's equipment, material, temperature, depth and consolidation or compaction.</p> <p>Initial delivery tickets confirming quantity of material placed, verify against weigh sheet.</p> <p>BEFORE subsequent layer placed: Check and document that open-graded course is not damaged.</p>

Benefits of a CMP

- **Defines/documents the project requirements**
- **Establishes scope, budget, schedule, and quality management approach**
- **Identifies team members and their roles and responsibilities**
- **Identifies organizational structure**
- **Establishes communications protocol**
- **Basis for evaluating team's performance**

Benefits of a CMP (con't)

- **Provides clear expectations for the funding agencies**
- **Clearly defines roles and responsibilities**
- **Establishes metrics for progress and reporting**

Sample Construction Management Plan

Sample CMP

Special THANKS

Brian Newman and Dave Wilson

Mattern & Craig

The CMP follows CMAA format and principles

See the resource table to view a sample copy

Construction Resource Guidebook



VDOT's 7 R's for Construction Documentation

Seven Rights (7R's) of Quality Control

The Right Material

Put in the Right Way

At the Right Time

In the Right Place

In the Right Quantities

Having the Right Documentation

Then, making the Right Payment to the Contractor

This is the Inspector's purpose

Construction Resource Guidebook

Construction Resource Guidebook (How to get there)

- <http://www.virginiadot.org/>
- Click on “Business”
- Click on “Construction Division”
- Look for “Manuals and Books”
- Click on “Construction Resource Guidebook”
- <http://www.virginiadot.org/business/resources/const/ConstructionResourceGuidebook.pdf>

Construction Resource Guidebook

- **Built Around the Road and Bridge Specifications**
- **Introduction**
- **Specification Section**
- **Four Step Inspection Procedure**
- **Review Questions**
- **Critical Inspection Points**

Construction Resource Guidebook

SECTION 302- DRAINAGE STRUCTURES

I. Introduction	141
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III. Four Step Inspection Procedure	161
IV. Review Questions	162
V. Critical Inspection Points	164

CRGB – Spec Section

2007 ROAD & BRIDGE SPECIFICATION and the 7R's

302.01—Description

This work shall consist of installing pipe culverts, endwalls, box culverts, precast concrete and metal arches, storm drains, drop inlets, manholes, spring boxes, junction boxes, and intake boxes and removing and replacing existing structures in accordance with these specifications and in conformity with the lines and grades shown on the plans or as established by the Engineer.

302.03—Procedures

Excavation and backfill operations shall be performed in accordance with the requirements of Section 303. Foundation exploration shall be performed in accordance with the requirements of Section 401 unless otherwise provided herein. Concrete construction shall conform to the requirements of Section 404. Reinforcing steel placement shall conform to the requirements of Section 406.

CRGB – Four Step Process

Pre-start planning meeting:

Review specification requirements, planes, standards, survey data, and source of material, utility coordination, construction procedures, measurement and payment, hold and witness points.

Start:

Locate existing utilities, Verify foundation by probing, Verify placement temperature for masonry, material storage, access, verify traffic control plan, temporary diversion, Verify pipes and structures are certified, clean & free of damage, verify survey locations, compaction equipment.

CRGB – Four Step Process (con't)

Continuous Inspection:

Visual monitoring of material, bedding & backfill placement, compaction, density, lift thickness, pipe and structure alignment, joints, connections, verify inlet throat grade, take measurements.

Documentation Required:

- Contractor's approved material C-25.
- Measurements for payment and or weigh tickets.
- Contractor Furnished Sources, 106.03
- Payment computations
- Engineers Approval/Authorization

CRGB – Review Questions

Spec Reference

302.02

Is the pipe the required gage and strength, to include the special design pipe, and do other materials meet the requirements of this section?

302.03

Has the contractor furnished and installed lift hole plugs as specified?

302.03(a)

Have all pipe culverts been checked to determine if damaged materials have been repaired or replaced?

CRGB – Review Questions (con't)

302.03(a1)

Has the Contractor submitted to the Engineer a complete plan and schedule for jacked and bored pipe installation prior to the beginning of work?

302.03(a2a)2

Have the pipe culvert foundations been explored by the contractor below the bottom of the excavation?

302.03(a2a)3

Is the foundation firm, but not unyielding for its full length and width and excavated according to the standard drawings?

302.03(a2b)1

Has bedding material been furnished in accordance with this section?

CRGB – Critical Inspection Points

- **Foundation Exploration**
- **Placement temperature for masonry construction**
- **Grade and alignment**
- **Source of material**
- **Locate existing Utilities**



Materials

Materials Notebook

Excel Format

- **Helps record the important information needed for a specific material**
- **Any material within VDOT right of way or paid for with VDOT funds should be from an approved source and documented in this workbook or similar workbook**
- **Exemptions for approved source of materials – See LAP Manual Chapter 13**

Materials Notebook

Materials Notebook

Book Number : _____

Route: _____

Project: _____

FHWA Project: _____

County: _____

District: _____

From: _____

To: _____

Length _____ **Type:** _____

Prime Contractor: _____

Date Work Started: _____

Date Work Completed: _____

Inspectors: _____

From: _____

To: _____

Materials Notebook

INSTRUCTIONS FOR KEEPING MATERIALS NOTEBOOKS

SECTION II: SUMMARY OF ESTIMATED AND PAY QUANTITIES

The summary of estimated and pay quantities will be shown in the front of the book. At project completion, the columns headed "Tested Quantity" and "Pay Quantity" must be completed, so that a record of materials available for transfer might be known and in order to assure that at least as much material was tested as used. It is **VERY IMPORTANT** that the tested quantity is **EQUAL TO** or **GREATER THAN** the amount used and paid for. It is important that all work orders involving additional materials be added to this section.

SECTION III: AGGREGATES

A. Fine Aggregates - The aggregates in this section will have been used in protective cover, mortars, etc.

B. Select Material and Borrow - These aggregates will be the various size CBR's. In the **ACCEPTANCE METHOD** column please show the test report number if it was tested or show **QA** if it was on a QA Program.

C. Dense Graded Materials - These aggregates shall include 21A's, 21B's, and Cement Treated 21A's. Any aggregate used in place of the previously mentioned aggregate shall be recorded in this section with a note in the **COMMENTS** column stating "paid as 21A's, 21B's, etc.

Materials Notebook

Certification by Inspector

This is to certify that Rt. _____, Project _____
has been inspected by me prior to final acceptance, and I further certify that I found it to comply with the requirements
of the Specifications, Plans and Contract. All R/W agreements have been carried out or satisfactory explanation is given
herewith.

(Date)

(Signature)

Verification by Project Engineer

Date

Signature

This is to certify that I have inspected this book and to the best of my belief and knowledge it is complete and accurate.

(Date)

(Signature)

Verification by Resident Engineer

This is to certify that I have inspected this book and to the best of my belief and knowledge it is complete and accurate.

(Date)

(Signature)

Materials Testing

- **Must be performed by a certified technician**
- **Materials labs and other firms must be certified and listed on VDOT's approved list**
- **All materials testing reports must be kept with the project records**

Buy America

Buy America

- **Applies to Federally funded projects**
- **Applies to predominately steel and iron**
- **Does not apply to manufactured products**
- **Applies to guardrail, cable rail, steel or iron pipe, conduit, grates, mast arms poles, reinforcing steel**
- **Does not apply to traffic controllers**

Questions?

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Daily Diary Documentation

September 25, 2013

Michael Saunders, P.E.

**Director of CM Services, NXL Construction
Services**

LAP Manual 13.1.5.1

Project Documentation / Inspection

- **A daily diary of project activities must be kept for all federal-aid projects or projects to be maintained by VDOT.**
- **A locality may use any project file documentation system it deems appropriate, including the use of construction management software, as long as an appropriate level of documentation is maintained.**

LAP Manual 13.1.5.1

Project Documentation / Inspection

- **For non federal-aid projects which will be maintained by the LPA, project documentation supporting all payments for materials, prices adjustments impacting reimbursements, and claims documentation must be kept on file and available for inspection for a minimum of three years after financial closure of the project.**

Why is detailed project documentation important?

- **Helps to ensure the intent of the contract is enforced**
- **Determines pay items and quantity of work**
- **Provides a permanent record of the project**
- **Aids in resolving claims and disputes**
- **Provides transparency to the public**
- **Loss of Funding or Reimbursement**
- **Audits**

What should be included in the Daily Project Records / Diaries?

- **Date**
- **Weather**
- **Contractor's Equipment**
- **Contractor's Staff**
- **Work Items & Location**
- **Materials Delivered**
- **Pay Items / Quantity of Work**
- **Photos ("Pictures are worth 1000 words")**
- **All Communications (phone, e-mails, etc)**
- **Notes on Safety**
- **Unexpected Damage**
- **Visitors to the Job Site**
- **Delays (make sure to note cause)**
- **Changed Conditions**
- **Pay Items / Quantity of Work**

Documentation of Project Schedule

- **Each submission should be compared to the current approved schedule and changes shall be noted**
- **Note any changes in critical path**
- **Pay particular attention changes in milestone dates and completion date**
- **Maintaining a schedule changes log will be helpful to defend potential time impact claims from the contractor**

Goals for Project Documentation

Seven Rights (7R's) of Quality Control

- 1. The Right Material**
- 2. Put in the Right Way**
- 3. At the Right Time**
- 4. In the Right Place**
- 5. In the Right Quantities**
- 6. Having the Right Documentation**
- 7. Then, making the Right Payment to the Contractor**

Effective Documentation = Successful Project

- **Events must be documented when they occur, not afterwards**
- **Documentation must provide as much information as possible**
- **With such records available, reasonable request can be approved without delay and unreasonable requests can be successfully denied**

Documentation should be factual not based on opinions

Do not include opinionated entries such as:

- **It seems to me that....**
- **My personal view is that....**
- **I think/believe/suppose**

Instead use factual statements:

- **The results of the tests were....**
- **The contractor stated....**
- **The Specifications state....**

Project Diary Entry Example

Fact / *OPINION*

I received a call from the contractor that they would not be working today. I believe they thought it was too wet to show up. It seems to me that they did not have the personnel and will be looking for a time extension.

Suggested Improvement

FACT / Opinion

Project received 0.15 inches of precipitation overnight based on the NWS. Mr. Smith, Project Superintendent, stated that due to excessive precipitation that no work would be taking place and they were concerned about finishing the project on time. I advised him that this was a fixed date contract and normal weather could not be given consideration for a time extension as per section 108.04 of the Road and Bridge Specifications.

Good Documentation = Timely Response

Good documentation provides for:

- **Rapid response to requests from stakeholders**
- **Pay request from contractors can easily be verified prior to authorizing payment**
- **During project closeout, the auditing process will be expedited**

Project Diary Entry

Example No. 1

Inspector told contractor that the sidewalk joints were incorrect and that the sidewalk was rejected and payment would not be made.

Suggested Improvement

Example No. 1

Mr. Smith, Project Superintendent, was notified that sidewalk installed from Station 200+00 to Station 200+75 (right) was rejected due to incorrect slab lengths. As per Specification 504.03 the slab between expansion joints shall be divided into sections approximately 5 feet in length but no smaller than 3 feet. Advised contractor that a corrective action plan was needed by 7-28-13 and that payment would not be made for this section.

Project Diary Entry Example No. 2

Subcontractor was on the project placing permanent striping on Main Street. I informed the foreman that I thought it was too wet to continue and told him I was not paying for the work performed.

Suggested Improvement

Example No. 2

Subcontractor ABC was onsite placing Type B, Class VI thermoplastic striping on the edge lines both right and left of centerline of Main Street. Due to the recent rainfall, I requested that a moisture test be performed per the manufactures recommendation. I contacted Mr. Smith, Project Superintendent, and informed him of the testing requirements and stated that failure to perform such testing will result in non-payment for this work.

Construction Documentation Security

- **Always back-up electronically stored information in multiple locations**
- **Hardcopy information should be stored in a safe location, preferably fireproof, ie. invoices, material certs, etc.**

Reproducing project information can be time consuming and often impossible.

Example Software Programs

- **Share point**
- **Site Manager**
- **APPIA by Info Tech** (Exhibitor)
- **Others**

Resources Available

- LAP Manual, Chapter 13
- VDOT Construction Resource Guidebook
- VDOT Inspection Manual
- <http://www.virginiadot.org/business/const/default.asp>

Summary

If It's Not Documented,

It Didn't Happen!!!

Questions?

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Project Costs Records

September 25, 2013

Jason Buys

**Financial Manager, FHWA Virginia
Division Office**

Audit Trail Review Handout

- **FHWA RASPS Program Code Detail Listing**
- **VDOT's Cardinal Transaction Relationship Report**
- **VDOT Accounts Payable Document Transmittal**
- **Invoice from locality which includes:**
 - **Requisition Summary**
 - **Contractor's request for payment**
 - **Project Diaries – Daily General Sheets**
 - **Sketches**
 - **Materials Summaries**

Questions?