



Materials Model Update

Western Beltway
SR 429

Materials Testing

Western Beltway materials totals

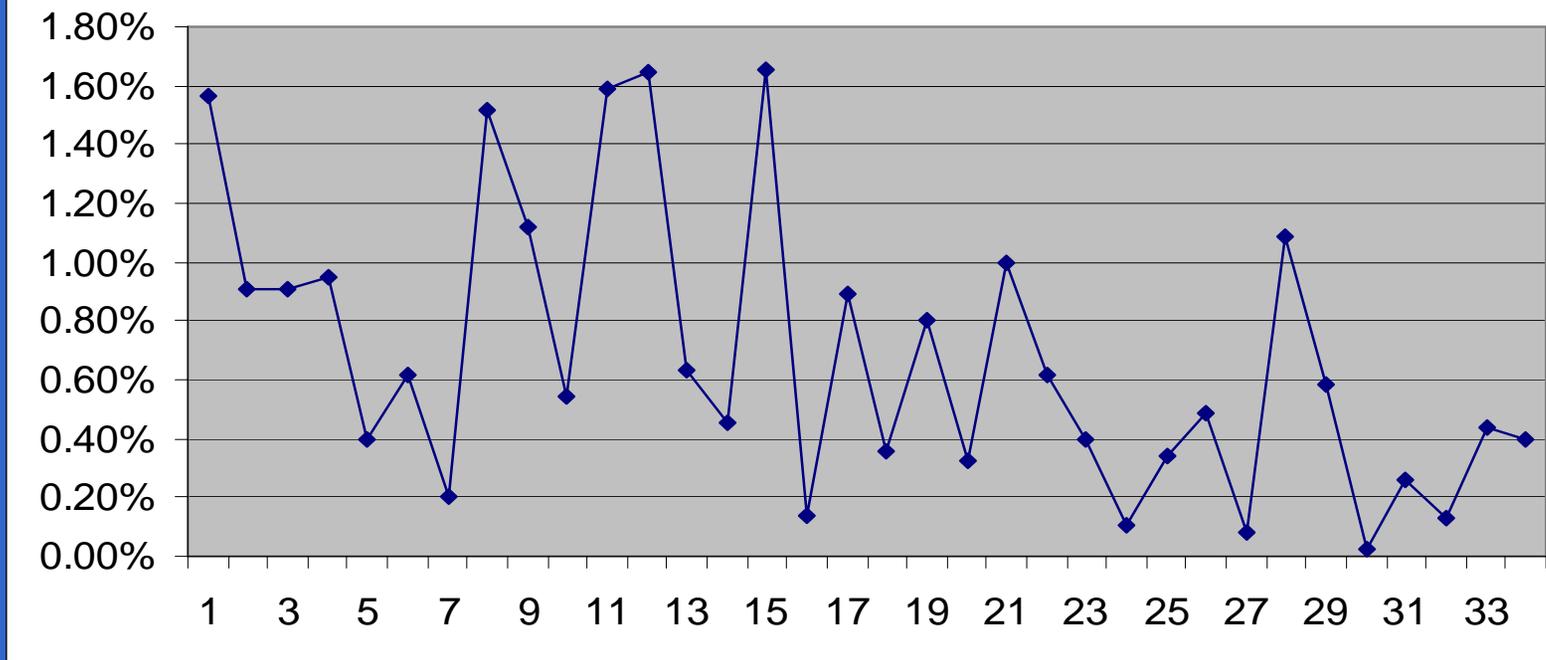
➤ Embankment	<u>4,909,575 cy</u>
➤ Subgrade	<u>1,034,951 cy</u>
➤ Base	<u>744,099 sy</u>
➤ Concrete	<u>12,976 cy</u>
➤ Bridges	<u>13 total</u>



Historical Costs



Testing Costs vs. Total Project Costs



CQC

Non-Materials Model

(CEI Verifies Contractor)

- ◆ **Inspections (CEI)**
- ◆ **On-Site Materials Testing (CEI)**
 - ◆ Sampling
 - ◆ Concrete
 - ◆ Embankment
 - ◆ Base
 - ◆ Pipe Backfill
 - ◆ Wall Backfill
 - ◆ Topsoil
 - ◆ Asphalt Paving
 - ◆ Log Books
 - ◆ Data Entry – LIMS/CQR
 - ◆ Coordinate Asphalt Plant
- ◆ **(Materials Consultant)**
 - ◆ Asphalt Plant Testing
 - ◆ Lab Testing/Materials

Materials Model

(Materials Consultant Verifies Contractor)

- ◆ **Inspections (CEI)**
- ◆ **On-Site Materials Testing (Materials Consultants)**
 - ◆ Sampling
 - ◆ Concrete
 - ◆ Embankment
 - ◆ Base
 - ◆ Pipe Backfill
 - ◆ Wall Backfill
 - ◆ Topsoil
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 - ◆ Data Entry – LIMS/CQR
 - ◆ Asphalt Plant Testing
 - ◆ Lab Testing/Materials
 - ◆ Coordinate Asphalt Plant

TURNPIKE MATERIALS TEAM ORGANIZATION CHART

Project Manager

- Point of Contact
- Scheduling
- Tracking & Data Entry
- Team Communication
- Manage Personnel/Costs

Senior Project Manager
Kiko Villarreal

Project Manager
Andy White

Geotechnical/PDA Services
Williams Earth Sciences

Lab Verification Testing
Nodarse & Associates

Field Verification Testing
**Nodarse & Associates,
MACTEC and Williams**

Senior Project Manager

- Oversee Entire Team
- Second Point of Contact

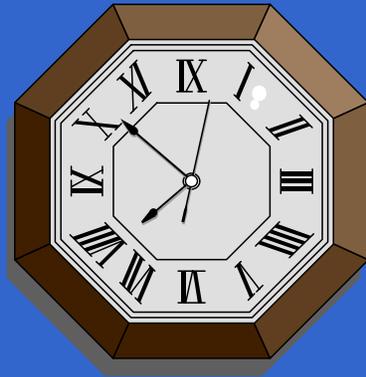
Lab/Personnel Resources

- Nodarse Primary Lab
- Mactec Alternate Lab
- Nodarse (Ormond) Overflow
- Nodarse, Mactec & Williams Personnel



APPROACH TO MITIGATION OF RISK AREAS

❑ Short notification of need at project



- *ONSITE – flexible staffing*
- *COMMUNICATION*
- *WEEKLY PROGRESS MEETING*
- *WEEKLY VERIFICATION STAFF MEETING*
- *PROJECT STATUS MEETING*

❑ Detection of work fluctuations



IN THE BEGINNING CHALLENGES

Pre-Construction

- Confidence from CEI
- Confidence from Contractor
- Change in Responsibilities

Construction Begins

- Plotting Log Books
- Roles and Responsibilities
- What is Testing, What is Inspection
- Time Management



Proposed Costs

Projected 2% of construction costs Western Beltway-Materials Team

- ✓ Materials Lab Testing
- ✓ Asphalt Plant Inspections
- ✓ Asphalt Paving Inspections *
- ✓ Field Testing *
- ✓ Materials Sampling and Recording *
- ✓ PDA
- ✓ Vibratory Monitoring
- ✓ Misc. GEO Services

* Indicates services typically done by CEI



Actual Costs

- CEI Percent of Construction 7.3%
- Materials Team Percent of Const. 1.8%
- Total Percent of Construction 9.1%

Comparison

Description	% CEI	% Materials	% Total
HEFT (S)	7.3	0.4	7.7
Seminole 1	10.3	1.5	11.8
TB Manuel	8.6	0.8	9.4
Sawgrass	7.1	0.3	7.4
Boca/Dlray	12.1	0.9	13.0
CR 470	13.1	0.4	13.5

Materials Model Benefits

Enhanced Quality

- CEI Focuses on Inspection & Admin.
- Materials Team Focuses on Testing
 - Everyone is in the Loop and Working Together
 - Quicker Response Times
 - Quicker Lab Turn Around
 - Added Level Inspection
 - Experienced Cross Trained Personnel





Lessons Learned



- Use best available personnel resources
- PBCS Maintains Technical Oversight
- Watch for over staffing
- Large Projects
- BE FLEXIBLE !



**100
YEARS** ®



Turnpike



Materials Team