Today’s Presenters

• Moderator
  Bonnie Castillo, Iowa Department of Transportation

• NCHRP Synthesis 472
  Dr. Yuko Nakanishi & Pierre Auza, Nakanishi Research & Consulting
  Rene Garcia, Caltrans

• Vermont Agency of Transportation’s Perspective
  Richard Tetreault & Alec Portalupi, Vermont Agency of Transportation

• TDOT Damage Assessment for the FHWA ER Program and FEMA PA Program
  Derial Bivens, Tennessee Department of Transportation
NCHRP is...

A state-driven national program

- The state DOTs, through AASHTO’s Standing Committee on Research...
  - Are core sponsors of NCHRP
  - Suggest research topics and select final projects
  - Help select investigators and guide their work through oversight panels
NCHRP delivers...

Practical, ready-to-use results

- Applied research aimed at state DOT practitioners
- Often become AASHTO standards, specifications, guides, manuals
- Can be directly applied across the spectrum of highway concerns: planning, design, construction, operation, maintenance, safety
A range of approaches and products

- Traditional NCHRP reports
- Syntheses of highway practice
- IDEA Program
- Domestic Scan Program
- Quick-Response Research for AASHTO
- Other products to foster implementation:
  - Research Results Digests
  - Legal Research Digests
  - Web-Only Documents and CD-ROMs
NCHRP Webinar Series

- Part of TRB’s larger webinar program
- Opportunity to interact with investigators and apply research findings.
Today’s First Presenter

- NCHRP Synthesis 472
  Dr. Yuko Nakanishi & Pierre Auza, Nakanishi Research & Consulting
  Rene Garcia, Caltrans
NCHRP Synthesis 472
Presentation Agenda

• Introduction
• FEMA PA Program
• FHWA ER Program
• Findings
Motivation for Synthesis

FEMA and FHWA Emergency Relief Funds Reimbursements to State Departments of Transportation

A Synthesis of Highway Practice
Chapter 1
- Background

Chapter 2
- Program Elements

Chapter 3
- DOT Experience
  - Challenges, Findings
## Synthesis Structure

<table>
<thead>
<tr>
<th>Chapter 4</th>
<th>Case Examples - California, Florida, Iowa, Louisiana, Missouri, New York, Tennessee, Texas, Wisconsin, Vermont</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 5</td>
<td>Conclusions, Research Needs</td>
</tr>
<tr>
<td>Appendices</td>
<td>Web-only</td>
</tr>
</tbody>
</table>
Background

“The intention of both programs is to supplement state and local resources to address the significant expenses caused by natural disasters and other extraordinary conditions.”

Exec. Summary, NCHRP Synthesis 472

Legislative Authority

FEMA PA Program
- Robert T. Stafford Disaster Relief and Emergency Assistance Act

FHWA ER Program
- Section 125 of US Code Title 23
- MAP-21 and FAST Act
**FHWA ER Program**

<table>
<thead>
<tr>
<th>Facility</th>
<th>Roads &amp; bridges on federal-aid highways</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cause</td>
<td>Natural disaster, catastrophic failure due to external cause</td>
</tr>
<tr>
<td>Required</td>
<td>Presidential declaration or governor’s proclamation</td>
</tr>
<tr>
<td>Minimum Threshold</td>
<td>$700,000 statewide for federal share</td>
</tr>
<tr>
<td>Emergency Repair</td>
<td>100% federal share</td>
</tr>
<tr>
<td>Permanent Restoration</td>
<td>90% for Interstate, 80% for Other – federal share</td>
</tr>
</tbody>
</table>
# FEMA PA Program

* Distinction made between **Large** and **Small** projects

<table>
<thead>
<tr>
<th>Facility</th>
<th>Non federal-aid facilities with the exception of debris</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cause</td>
<td>Major disaster or emergency</td>
</tr>
<tr>
<td>Required</td>
<td>Presidential declaration</td>
</tr>
<tr>
<td>Minimum Threshold</td>
<td>Based on statewide per capita indicators.</td>
</tr>
<tr>
<td>Emergency Repair</td>
<td>75% federal share (minimum)</td>
</tr>
<tr>
<td>Permanent Restoration</td>
<td>75% federal share (minimum)</td>
</tr>
</tbody>
</table>
FIGURE 6 Public Assistance process flowchart (Source: “Public Assistance Grant Program Briefing” 2013).
PA Program Implementation Process, page ix,
Post-publication Changes
to FEMA PA Program:
The Public Assistance Program and Policy Guide (PAPPG)

• Combines FEMA PA policy into a single volume
• Provides clear overview of PA process
• Facilitates consistent/efficient eligibility determinations
• Includes updates based on Title 2, CFR Part 200
FHWA ER Process

Disaster

- Governor’s Proclamation or President’s Declaration
- Letter of Intent, Acknowledgement

Disaster Assessment

- Inspections
- Detailed Damage Inspection Report (DDIR)
- DOT request
- Damage Survey Summary Report (DSSR)

Fund Allocation

- FHWA DSSR Review, Approval
- Allocation of funds
- Program of Projects
Post-publication Changes to FHWA ER Program:

• FAST ACT (2016-2020)
  – Continues the FHWA ER Program
  – Funding authorizations remain @ $100 M per year

• New FHWA Order (Feb. 22, 2016)
  – Strengthens administration and oversight
  – Ensures the effective use of funds
  – Delineates responsibilities
## List of Tables

<table>
<thead>
<tr>
<th>Topic</th>
<th>Table, Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program Elements</td>
<td>Table 3, page 21</td>
</tr>
<tr>
<td>Comparison of Traditional &amp; Quick Release Methods</td>
<td>Table 4, page 23</td>
</tr>
<tr>
<td>Pay attention to staff placement and replacement.</td>
<td></td>
</tr>
<tr>
<td>Put programs in place to ensure that staff has training and experience to be able to think on their feet. Conduct interagency training and exercises with other state agencies, such as emergency management and state patrol.</td>
<td></td>
</tr>
<tr>
<td>Eligibility Criteria</td>
<td>Table 5, page 26</td>
</tr>
<tr>
<td>Minimum Site Thresholds</td>
<td>Table 6, page 29</td>
</tr>
<tr>
<td>Work Completion Deadlines</td>
<td>Table 8, page 31</td>
</tr>
<tr>
<td>Important Process Deadlines</td>
<td>Table 7, page 30</td>
</tr>
<tr>
<td>Small vs. Large Projects (FEMA)</td>
<td>Table 9, page 32</td>
</tr>
<tr>
<td>Disaster Assessment Methods</td>
<td>Table 10, page 34</td>
</tr>
</tbody>
</table>
Align **systems, processes, and technologies** with program requirements.

Good **business & management practices** contribute to successful reimbursements.

Establish effective **working relationships** with **federal, state, local** partners.

**Pre-assign** key roles.

Learn from **previous disasters**; resolve issues before the next one.
Understand NIMS & ICS record-keeping procedures & forms.

Deliver training on reimbursement programs & procedures to all affected personnel.

Meet emergency work deadlines by streamlining necessary activities (e.g., site inspection, contracting, environmental).

State-to-state variations in various areas exist (e.g., environmental laws, equipment rates, documentation policy).
Useful Policy/Practice

**After Action Reports**
Develop AARs after disasters or large incidents/events addressing improvements to reimbursement processes *(all case study agencies)*

**Predesignated Reimbursement Coordinators**
Assign specific agency staff the role of reimbursement coordinator prior to a disaster or emergency *(all case study agencies)*
Accounting/Financial Management

**Unique Project Codes for Disasters**
Assign unique project code for a disaster; using the code for all disaster-related expenses helps to monitor magnitude of expenses and submit them for reimbursement purposes (*all case study agencies*).

**FHWA FMIS Access**
Fiscal Management Information System (*most case study agencies*)

Source: pixabay.com
Documentation/Information Management

Central Location / Drive
(all case study agencies)

Electronic Storage
(all case study agencies)

Electronic Signature

Systematic Record-Keeping,
Use of ICS Forms

Optical Character Recognition
Software

"Effective information management practices, including storage of information in a central location... can save staff time.

Electronic formats can *facilitate* electronic transmittal of documentation, *conserve* storage space, and *accommodate* duplicate requests for documentation."

p.54, NCHRP Synthesis 472
Electronic Worksheet/DDIR/DAF
Use electronic forms to facilitate document storage and updates/additions to the forms.

Automated Distribution System
Use of combined DDIR/PW form

FIGURE D - 31: Detailed Assessment Form Photo with Site Location. Courtesy: T DOT.
Site Assessment

Bridge/Highway/Pavement Management System
(all case study agencies)

Preestablished Repair or Route Prioritization Method
(some case study agencies)

Geospatial Data/Lidar (some case study agencies)

Predesignated Assessment Teams

Weather Information Service/System

Automated Damage-Recording Van
to establish pre-disaster conditions

Aerial Imagery Services

Ability for Teams to be Self-Sustaining

Web-based Map (some case study agencies)

“In order to facilitate site assessments, information packets are distributed to assessment teams. Also, a weather information system and bridge, highway, and pavement management systems as well as a bridge monitoring system are employed to facilitate the assessment process. Historical data are mapped to show repetitive losses – this has been useful in justifying betterments and the inclusion of mitigation measures. Geospatial data using LiDAR are also useful in identifying damages and the cause of damaged infrastructure.”

Iowa DOT Case Study, App. D, NCHRP Synthesis 472
FHWA Emergency Relief Reimbursement process training
(all case study agencies)

FEMA Public Assistance Reimbursement process training
(all case study agencies)

Disaster Assessment training (all case study agencies)

Training for Local Public Agencies (all case study agencies)

Use of Scenarios from Prior Disasters

Training for State EMAs
Contracting

Emergency Waivers
(e.g., Permits)

Contractor Database

Standardized Payments to Contractors

One POC for Plans/Blueprints

Source: pixabay.com
Appeals

Discussion with FHWA Division Office

Citation of Relevant Laws

Citation of Prior Decisions (Precedents)

“When FEMA or FHWA denies applications or specific expenses, formal appeals require the state DOT to provide justification, additional information, and reasons the decision should be reversed. The state DOT may also need to review policy or regulations and cite specific sources of legislation.”

p.43, NCHRP Synthesis 472

Identified through case studies
Concluding Thoughts

• **Keep current** with FHWA and FEMA guidance

• **Communicate regularly** with FHWA and FEMA, LPAs, and State EMA

• Train all relevant personnel (*don’t forget* accounting, financial personnel)

• Leverage new technologies
FEMA and FHWA Emergency Relief Funds Reimbursements to State Departments of Transportation

Vermont Agency of Transportation’s Perspective

Richard M. Tetreault
Deputy Secretary of Transportation
Vermont Agency of Transportation

- Lessons Learned
- Disaster Preparedness
- Documentation
- Program Management
Lessons Learned

- Irene Innovation Task Force
  - Lessons learned from Tropical Storm Irene response and recovery
  - To gather, organize, and compile innovative practices/ideas

- Emergency Work
  - FHWA ER vs FEMA PA
  - Timeframes differ
  - Subtle differences in work types

- Construction Contracting
  - VAOT use of Maintenance Rental Agreements (FHWA vs FEMA)
  - VAOT as a “contractor” for municipalities under FEMA PA
  - VAOT contractors doing work on municipal roads under FEMA PA
Disaster Preparedness

- Development and maintenance of manuals
  - Incident Command Post (ICP) Administrative Manual
  - FHWA Emergency Relief Manual (VAOT)

- Damage Assessment Application (for handheld devices)
  - Used by VAOT field staff for both FEMA PA and FHWA ER-eligible sites
  - Allows for quick summary of total damages and determination of meeting disaster thresholds

- Retainer Contracts
  - Construction and materials contracts in place before disaster strikes
  - Consult with FHWA and FEMA on such contracts before implementing

- Training
  - Incident Command System
  - Rivers and Roads Training
  - Damage Assessment
  - Documentation/Programming
Documentation

- **Detailed Damage Inspection Report (DDIR)**
  - Customized by VAOT to include additional information from FEMA PA Program Project Worksheets (show new DDIR)
  - Created at HQs based on damage assessment data collected by District staff

- **FEMA Forms:** *Summary, Contracts, Materials, Equipment, Force Account* used for both FEMA PA and FHWA ER reimbursements
Programming

- **Creation of Expenditure Accounts**
  - As soon as DDIRs are complete, expenditure accounts created
  - Same applies for FEMA PA-eligible costs (primarily debris and State-owned rail damages)

- **Programming Requests to FHWA**
  - Submit as soon as FHWA approves declaration

- **Briefings**
  - FEMA Public Assistance Applicants Briefing
  - FHWA Emergency Relief Applicants Briefing
TDOT Damage Assessment for the FHWA ER Program and the FEMA PA Program

FEMA Public Assistance and FHWA Emergency Relief Programs Webinar
11 October, 2016

Derial W. Bivens, CEMP
Tennessee Department of Transportation
FEDERAL DISASTER PROGRAMS

ER Program - most cases
- Lower threshold to declare event
- Higher reimbursement rates

FEMA - debris cleanup
- Primarily vegetative/woody materials
## TIMELINE

<table>
<thead>
<tr>
<th>Time</th>
<th>Milestone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Begin</td>
<td>Disaster event occurs</td>
</tr>
<tr>
<td>Day 1</td>
<td>Preliminary assessment begins</td>
</tr>
<tr>
<td>Day 2</td>
<td>Detailed assessment begins</td>
</tr>
<tr>
<td>Day 14</td>
<td>Letter of Intent</td>
</tr>
<tr>
<td>6 Weeks</td>
<td>Damage Survey Summary Report</td>
</tr>
<tr>
<td>3 Months</td>
<td>Program of Projects</td>
</tr>
<tr>
<td>180 Days</td>
<td>Emergency repairs complete</td>
</tr>
<tr>
<td>2 Years</td>
<td>List of all sites and repair costs</td>
</tr>
</tbody>
</table>
INITIAL STEPS

1) Preliminary Damage Assessment
   • Windshield/aerial surveys
   • Photos of damage

2) Presidential Declaration or Governor’s Proclamation

3) TDOT - Letter of Intent

4) FHWA - Acknowledgement Letter
DAMAGE ASSESSMENT

1. Identify Damage Sites
2. Complete Damage Assessment Forms
3. Submit Damage Survey Summary Report to FHWA
DAMAGE ASSESSMENT TEAMS

- 5-6 HIGHLY TRAINED teams per Region
- Regional ER Coordinator
- Team core:
  - 1 construction (practices)
  - 1 maintenance (practices & MMS) member
- Regional ER Coordinator determines deployment and assignment areas
- Phase 2 Teams may include Technical Specialists from any functional area
DAMAGE ASSESSMENT (FHWA)

- Preliminary Assessment:
  - Initial review of damage, i.e. windshield surveys
  - A list of damage sites is developed

- Detailed Assessment (Phase 1):
  - Assessment Teams deployed
  - Potentially eligible sites should have a formal assessment

- Detailed Assessment (Phase 2):
  - Follow up for large/complex sites
  - May involve technical specialists

- Revisions
DAMAGE ASSESSMENT FORM

5 Components:

- Summary
- Notes and Sketches
- Cost Calculations
- Maps
- Photos
**Detailed Assessment Form**

<table>
<thead>
<tr>
<th>PHWA Disaster #</th>
<th>County Name</th>
<th>Route #</th>
<th>Page</th>
<th>Appendix Documents?</th>
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<tbody>
<tr>
<td>ER-TN14-4</td>
<td>Williamson</td>
<td>1005</td>
<td>1</td>
<td>[ ] YES [ ] NO</td>
</tr>
<tr>
<td>Road Name</td>
<td>I-65</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inspection Date (mm/dd/yyyy)</td>
<td>8/15/2014</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Applicant**

- [ ] TDOT
- [ ] Other:

**ID Number**

- [ ] Bridge:
- [ ] 94-006500311

**Travel Way Width (ft)**

- 22

**Lanes**

- [ ] Federal-Aid Route?
- [ ] YES [ ] NO

**GPS Coordinates (S, W)**

- 35.8906, -86.8217

**Description of Damage**

On August 15, 2014 a gasoline tanker truck carrying 9,000 gallons of gasoline veered off I-65 SBL and struck a bridge bent on the outside shoulder of I-65 at Peytonsville Road. The crash resulted in an explosion and large fire that damaged the existing concrete I-beam bridge and the partially completed replacement bridge (Phase 1 Bridge) that was under construction to such an extent that both bridges were considered unsafe. The asphalt pavement was also damaged by the fire.

**Cost Estimate**

**Emergency Repair**

<table>
<thead>
<tr>
<th>Scope of Work</th>
<th>Dollars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respond to the accident by performing traffic control for bridge inspection</td>
<td>$17,760</td>
</tr>
<tr>
<td>and damage of traffic, accident cleanup, removal of LOCSO signs for businesses which were not accessible due to the bridge no longer in service. TDOT bridge repair crew provided labor and equipment resources to assist with the inspection of the bridges at the interchange, which were damaged as a result of the accident.</td>
<td></td>
</tr>
<tr>
<td>Contract Scope of Work</td>
<td></td>
</tr>
<tr>
<td>Remove the damaged Phase 1 Bridge and debris. Replace damaged asphalt pavement, install new pavement markings and raised pavement markers on I-65. Remove existing pavement markings on ramps and install new pavement markings for detour. Install Traffic Control for detour. Remove and reset interconnected portable barrier rail. Remove and replace damaged electrical lines. Accelerate the rehabilitation and installation of Phase 1 bridge.</td>
<td>$1,240,769</td>
</tr>
<tr>
<td>Total Emergency Repair Estimate</td>
<td>$1,320,568</td>
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</tbody>
</table>

**Permanent Restoration**

<table>
<thead>
<tr>
<th>Scope of Work</th>
<th>Dollars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rebuild the damaged Phase 1 Bridge (with no acceleration costs included.)</td>
<td>$1,581,753</td>
</tr>
<tr>
<td>Contract Scope of Work</td>
<td></td>
</tr>
<tr>
<td>Site Work</td>
<td></td>
</tr>
<tr>
<td>Preliminary/Construction Engineering</td>
<td></td>
</tr>
<tr>
<td>Total Permanent Restoration Estimate</td>
<td>$1,759,929</td>
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</table>

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>PHWA Representative</th>
<th>Date</th>
</tr>
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<tbody>
<tr>
<td>Eligible</td>
<td>[ ] Yes [ ] No</td>
<td></td>
</tr>
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<table>
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<th>Date</th>
</tr>
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<tbody>
<tr>
<td>Eligible</td>
<td>[ ] Yes [ ] No</td>
<td></td>
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<tr>
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<th>Local Representative</th>
<th>Date</th>
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<tbody>
<tr>
<td>Eligible</td>
<td>[ ] Yes [ ] No</td>
<td>10/30/2014</td>
</tr>
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</table>

**Site Total**

- $3,060,497
On August 15, 2014 a gasoline tanker truck carrying 9,000 gallons of gasoline veered off I-65 SBL and struck a bridge bent on the outside shoulder of I-65 at Peytonsville Road. The crash resulted in an explosion and large fire that damaged the existing concrete I-beam bridge and the partially completed replacement bridge (Phase 1 Bridge) that was under construction to such an extent that both bridges were considered unsafe. The asphalt pavement was also damaged by the fire.
## COST ESTIMATE

### Emergency Repair

<table>
<thead>
<tr>
<th>Force Account Scope of Work</th>
<th>Description</th>
<th>Dollars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Work</td>
<td>Respond to the accident by performing traffic control for bridge inspection and detour of traffic, accident cleanup, removal of LOGO signs for businesses which were not accessible due to the bridge no longer in service. TDOT bridge repair crew provided labor and equipment resources to assist with the inspection of the bridges at the interchange, which were damaged as a result of the accident.</td>
<td>$17,760</td>
</tr>
<tr>
<td>Preliminary/Construction Engineering</td>
<td></td>
<td>$0</td>
</tr>
<tr>
<td>Contract Scope of Work</td>
<td>Remove the damaged Phase 1 bridge and debris. Replace damaged asphalt pavement. Install new pavement markings and raised pavement markers on I-65. Remove existing pavement markings on ramps and install new pavement markings for detour. Install Traffic Control for detour. Remove and reset interconnected portable barrier rail. Remove and replace damaged electrical lines. Accelerate the fabrication and installation of Phase 2 bridge.</td>
<td>$1,240,769</td>
</tr>
<tr>
<td>Preliminary/Construction Engineering</td>
<td></td>
<td>$62,038</td>
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</table>

**Total Emergency Repair Estimate**: $1,320,568

### Permanent Restoration

<table>
<thead>
<tr>
<th>Force Account Scope of Work</th>
<th>Description</th>
<th>Dollars</th>
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<tr>
<td>Site Work</td>
<td>Rebuild the damaged Phase 1 Bridge (with no acceleration costs included).</td>
<td>$0</td>
</tr>
<tr>
<td>Preliminary/Construction Engineering</td>
<td></td>
<td>$0</td>
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<table>
<thead>
<tr>
<th>Contract Scope of Work</th>
<th>Description</th>
<th>Dollars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Work</td>
<td>Rebuild the damaged Phase 1 Bridge (with no acceleration costs included).</td>
<td>$1,581,753</td>
</tr>
<tr>
<td>Preliminary/Construction Engineering</td>
<td></td>
<td>$158,175</td>
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</table>

**Total Permanent Restoration Estimate**: $1,739,929

**Site Total**: $3,060,497
### RECOMMENDATIONS

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>FHWA Representative</th>
<th>Date</th>
</tr>
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<tbody>
<tr>
<td>√ Eligible</td>
<td>Stephen M. Kearns</td>
<td>6/22/10</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>State Representative</th>
<th>Date</th>
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</thead>
<tbody>
<tr>
<td>√ Eligible</td>
<td>Karen Davis</td>
<td>6/22/10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Local Representative</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>√ Eligible</td>
<td>Patricia Jones</td>
<td>6/22/10</td>
</tr>
</tbody>
</table>
Notes about the damage at the site.

- Slope washed out onto roadway. About 75' long and 30' high.
- Slope was about a 3:1 prior to slide (based off adjacent area.
- Recommend removal of remain unstable soil.
- Stabilize with Class B riprap.
<table>
<thead>
<tr>
<th>Item Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Item Code</th>
<th>Unit Price</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 TON 411-03.10 ACS MIX (PG76-22) GRADING D</td>
<td>TON</td>
<td>209.79</td>
<td>411-03.10 ACS MIX (PG76-22)</td>
<td>$87.75</td>
<td>18,409.07</td>
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<tr>
<td>1 TON 415-01.01 COLD PLAINING BITUMINOUS PAVEMENT</td>
<td>TON</td>
<td>115.61</td>
<td>415-01.01 COLD PLAINING BITUMINOUS PAVEMENT</td>
<td>$10.00</td>
<td>1,156.10</td>
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<tr>
<td>54 EACH 712-04.01 FLEXIBLE DRUMS (CHANNELIZING)</td>
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<td>54</td>
<td>712-04.01 FLEXIBLE DRUMS (CHANNELIZING)</td>
<td>$35.00</td>
<td>1,890.00</td>
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<tr>
<td>18 EACH 712-05.01 WARNING LIGHTS (TYPE A)</td>
<td>EACH</td>
<td>18</td>
<td>712-05.01 WARNING LIGHTS (TYPE A)</td>
<td>$25.00</td>
<td>450.00</td>
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<tr>
<td>1 S.F. 712-06 SIGNS (CONSTRUCTION)</td>
<td>S.F.</td>
<td>159.04</td>
<td>712-06 SIGNS (CONSTRUCTION)</td>
<td>$9.75</td>
<td>1,550.64</td>
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<td>50 L.F. 712-07.03 TEMPORARY BARRIACADES (TYPE III)</td>
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<td>50</td>
<td>712-07.03 TEMPORARY BARRIACADES (TYPE III)</td>
<td>$24.50</td>
<td>1,225.00</td>
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<tr>
<td>135 EACH 716-01.12 RAISED PVMT MARKERS (MONO-DIRECT)</td>
<td>EACH</td>
<td>135</td>
<td>716-01.12 RAISED PVMT MARKERS (MONO-DIRECT)</td>
<td>$10.00</td>
<td>1,350.00</td>
</tr>
<tr>
<td>1.635 L.M. 716-05.49 PAINTED PAVEMENT MARKINGS (8&quot; LIN)</td>
<td>L.M.</td>
<td>1,635</td>
<td>716-05.49 PAINTED PAVEMENT MARKINGS (8&quot; LIN)</td>
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<td>DOLL</td>
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<td>712-08.01 UNIFORMED POLICE OFFICER</td>
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Total: $1,240,769

Justifications/Comments:
COST QUANTIFICATION

- Repair items select & quantified
- Estimates based on Regional Average Unit Cost (from construction)
- Quantified for:
  - Emergency Repair by In-House
  - Emergency Repair by Contract
  - Permanent Restoration by In-house
  - Permanent Restoration by Contract
Example – Local
<table>
<thead>
<tr>
<th>Photos with Description</th>
<th>DAF Number</th>
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<tbody>
<tr>
<td>I-65 looking north at Peytonville Road</td>
<td>94-I0065-A</td>
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<tr>
<td>I-65 looking south at Peytonville Road</td>
<td></td>
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## Appendix Documents

<table>
<thead>
<tr>
<th>Description</th>
<th>Page Count</th>
</tr>
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<tbody>
<tr>
<td>Appendix A</td>
<td>TDOT Daily Work Reports for ERTN14-4</td>
</tr>
<tr>
<td>Appendix B</td>
<td></td>
</tr>
<tr>
<td>Appendix C</td>
<td></td>
</tr>
<tr>
<td>Appendix D</td>
<td></td>
</tr>
<tr>
<td>Appendix E</td>
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</table>
## Tennessee Department of Transportation

**Maintenance Management System**

### Daily Work Report

**Organization Unit:**
3491 - REG 3 BRIDGE REPAIR - NASH

**District:**
30

**Date:**
Monday, August 18, 2014

**Report No.:**
2925443

**Activity:**
451 - MINOR STRUCTURE REPAIR

**Work Description:**
SUPERSTRUCTURE REPAIR

**County:**
WILLIAMSON

**Asset Group:**
BRIDGE

**Asset:**
SR 248 / 165

**Route:**
SR 248

**SC:**
0

**CS:**
1

**Begin LM:**
3.64

**End LM:**
3.64

**Length:**
0.00

**Direction:**
BOTH

**Position:**
ROADWAY

**Special Event:**

**Units of Accomplishment:**
1.000

**UOM:**
EACH

**Accident:**
N

**Labor:**
750

**Equipment:**
568

**Material:**
0

**Total:**
1,318

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<th>Number</th>
<th>Description</th>
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<th>Hours</th>
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<td>TRUCK, WITH SERVICE BODY</td>
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<td>10.01</td>
<td>95.10</td>
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<td>S7HG50</td>
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**DWR Comment:**
HELPED BRIDGE INSPECTION...
### PROGRAM OF PROJECTS (D+90 Days)

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<tr>
<th>ER Project Number</th>
<th>County(ies)</th>
<th>Description</th>
<th>PPRM PIN(s)</th>
<th>Federal Project Number</th>
<th>State Project Number(s)</th>
<th>Estimated Project Cost</th>
<th>Estimated PE/ROW/CEI</th>
<th>Total Estimated Cost</th>
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<td>Cocke</td>
<td>I-40 Slide Repair Contract #1</td>
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<td>STP-IE-75-3(160)</td>
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