Exploring Partnership Models to Promote Sustainable Rural Texas Highway Infrastructure and Energy Development

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Dallas, Texas

Thursday, April 10, 2014

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Oil Boom is Evident Everywhere!
Assessing Impacts

✓ Introduction
  – U.S. Shale Plays and Hydraulic Fracturing (Fracking)
  – Economic Impact
  – Development Impacts

✓ General Overview
  – Partnership Approaches to Assessments
    • Proactive: Performance Based
    • Reactive: Performance Based
    • Reactive: Status Quo

✓ Pavement Assessment Methodology

✓ Texas Case Studies: Fayette County, Karnes County

✓ Conclusions and Recommendations
Introduction

Shale Plays in the U.S.

Source: U.S. Energy Information Administration based on data from various published studies. Canada and Mexico plays from ARI. Updated: May 9, 2011
Eagle Ford Shale Play will provide $90 billion in total economic output by 2021.

(1) Economic Impact of the Eagle Ford Shale, UTSA, May 2012.
Economic Impacts

• **$545 Billion**: Amount directly contributed by O&G to U.S. economy in 2011. (1)

• In 2011 Eagle Ford Shale generated nearly **$25 billion** in total economic output. (2)

• Production exceeded **600,000 bpd** July 2013. (3)

(1) PriceWaterhouseCoopers Report, 2011
(2) Economic Impact of the Eagle Ford Shale, UTSA, May 2012
(3) Eaglefordforum.com
Pavement Deterioration Curve

Proactive Approach vs. Reactive Approach
Overview of Partnership Approaches

**Proactive**: Strengthen pavement prior to energy developments

- Armor-up approach
- Road Use Maintenance Agreement (RUMA) (Marcellus/Utica Plays)
  - Pavement analysis and design
  - Baseline and post-activity assessments paid by developer
- 7:1 benefit-cost ratio prior to exposure. (1)

(1) TxDOT Testimony to the House Energy Committee, June 26, 2012.
Overview of Partnership Approaches

**Reactive**: Performance-based, assess an impact fee or apply for funding after the damage.

- Impact fee associated with actual damage.
- Legislative funding in Texas
- Perform non-destructive testing, condition surveys.
- Often lacks a baseline for comparison.
- Not always a planned approach.
Overview of Partnership Approaches

**Reactive:** Non performance-based approach.
- Donations of materials by developer after damage.
- Fees not tied directly to roadway damage.
- Status quo scenario.
Pavement Assessment Methodology

- Determine pavement condition and strength.
- Estimate pavement life consumed by projected heavy vehicle traffic.
- Determine pavement replacement cost.
- Cost can be used as the basis for impact fees.
Method: Automated Condition Survey
Method: Structural Evaluation

- Falling Weight Deflectometer (FWD)
  - Non-destructive test method
  - Calculate roadway and subgrade structural characteristics
Fayette & Karnes Counties

Eagle Ford Shale Permits = 5426 (December 13, 2013)
Night View of Eagle Ford From Space

The Eagle Ford Shale as seen from space at night, Dec, 2012.
Green dots indicate existing oil wells. Red dots indicate gas wells. Blue dots are permitted locations.

©EagleFordShaleBlog.com
## Fayette County, TX

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Length (mi)</th>
<th>Surface Thickness (in)</th>
<th>Base Thickness (in)</th>
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<tr>
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<tr>
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<td>Maeker Rd</td>
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*Assume improved subgrade for roads without base layer*
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<th>IRI</th>
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Karnes County Road 388

County: Karnes
COG: Alamo Area Council of Governments
Project Name: Karnes County Road 388
Address/Limits: FM 781 to Wilson County Line

Schedule & Cost

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<tr>
<th>Category</th>
<th>Schedule Duration</th>
<th>Projected Cost</th>
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<td>Engineering 1</td>
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<td>ROW/Easement</td>
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<td>Construction 1</td>
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<td>Total Estimated Project Cost</td>
<td>$4,346,410</td>
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Project Description
County Road 388 is primarily an asphalt roadway that serves as access to farm and residential homes. As a result of constant industrial traffic from the oil and gas industry, the road has severely deteriorated and become a legitimate safety issue. Visible damage is apparent in surface layer loss and base failure which has led to alligator cracking and potholes. Scope includes 1.56 miles of full reconstruction and installation of 24-foot wide asphalt pavement. Scope also includes regrading side slopes and ditches on both sides with culverts at driveways and cross-streets. No additional ROW is anticipated to be needed at this time.

Facility Type: Transportation
Project Type: Road
Project Status: Not Started
NEPA: Categorical Exclusion (CE) – Level 1

1 Projected costs shown reflect inflation costs.
2 The total project cost does not include environmental and project delivery (local administration) costs.
3 Recommended scope, cost estimate and schedule are for planning purposes only. Refined plans will be required during subsequent planning and design phases.
Current Initiatives in Texas

- **Texas Senate Bill (S.B.) 1747** would create *County Energy Transportation Reinvestment Zones*.

- Qualify for M&R funds based on number of completed wells, weight tolerance permits, and collected taxes.
Path Forward in Texas

- Counties would need to document road deterioration and contribute up to 10% for road projects.

- Considers planning, construction, reconstruction, and maintenance of roads, bridges, and culverts to alleviate degradation caused by exploration, development, or production of oil and gas.
Thank You!

Any Questions?