Data Needs Analysis (DNA)

- Formerly known as First Look Studies and Pre-Design Scoping Studies
- Performed on projects that do not have a planning study prior to the design phase
- Currently done in-house by C.O. or District staff
Study Purpose

• Determine the need for the project
  – FHWA’s 9 points
• Define the project scope
• Identify potential environmental, right of way, and utility issues
• Provide possible alternates and planning level cost estimates
• Determine if the funds allocated for the project in the Highway Plan are adequate

DNAs are made available to consultants when the design project is advertised.
Study Purpose (cont.)

• Include information and documents that will help start the design phase
  – Existing roadway plans
  – Existing roadway data (HIS)
  – UNL Project Information Forms (PIFs)
  – Collision data
  – Flood maps
  – Structure Inventory and Appraisal Sheets
  – Traffic Forecast (if available)
  – Photos
DNA Example
Mountain Parkway (KY 9009)
Magoffin County
Item #10-140.00

DNA Pre-Design Scoping Study
Outline

• Project Purpose & Need Checklist
• Other Considerations
• Observations
• Possible Alternatives
• Potential Conflicts
• Draft Purpose & Need
9 Elements of a Purpose and Need Statement

- Legislation
- Project Status
- System Linkage
- Modal Interrelationships
- Social Demands or Economic Development
- Transportation Demand
- Capacity
- Safety
- Roadway Deficiencies
Legislation

- 2010 General Assembly’s Enacted Roadway Plan
  - Item #10-140.00, Magoffin County

<table>
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<tr>
<th>Phase</th>
<th>Fund</th>
<th>Year</th>
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<tr>
<td>D:</td>
<td>SP</td>
<td>2010</td>
<td>$600,000 (Authorized in 2006)</td>
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<tr>
<td>R:</td>
<td>SPB</td>
<td>2012</td>
<td>$560,000</td>
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<td>SPB</td>
<td>2012</td>
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<tr>
<td>C:</td>
<td>SB2</td>
<td>2013</td>
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MOUNTAIN PARKWAY WIDENING AND SAFETY IMPROVEMENTS FROM MP 74.5, LICKING RIVER BRIDGE, TO MP 75.6, KY-3048/US-460. (08CCR)
Project Status

• Design funds authorized
• Preliminary Design Plans completed in 1999 for a new route to connect the Mountain Parkway with KY 114 south of the existing US 460/KY 114 route which completely bypasses this section
• Preliminary Design Plans completed in 2004 for a new route which utilizes the existing KY 7 Ramps, but bypasses most of the rest of this section
• A 2010 Planning Study for the Mountain Parkway, confirmed that a through Salyersville 4-lane section is an option
Project Limits
Alternatives According to 2010 Study
System Linkage

• The Mountain Parkway connects I-64 to other corridors in Eastern Kentucky

• Provides a connection from Central Kentucky to the many communities and rural areas of Southeastern Kentucky

• Is a link to Virginia and West Virginia
Mountain Parkway Road Classifications

• Functional Classification – Rural Principal Arterial
• State System – State Primary
• On the National Truck Network
• Truck Weight Classification – AAA
• On the Appalachian Development Highway System
Modal Interrelationships

• There is no public transit on this route.

• CSX removed its railing a few years ago. The closest active rail line is a few miles southeast of the site.
Social Demands & Economic Development

Social Demands
• Used to access shopping centers, higher education facilities and hospitals in Central Kentucky and West Virginia.

Economic Development
• This is a Coal Haul Route. According to HIS, there were over 1.5 million tons of Coal hauled annually.
• There is development potential in communities located east of the project site, such as Paintsville and Pikeville, which may affect the route.
Transportation Demand

• The current ADT is 6,000 to 8,100.
• Although not within the project limits, it may be important to note that US 460 east of the end of this project currently has an ADT from 12,000 to 15,000. Preliminary forecasted traffic volumes indicate an ADT of 24,000 in 2032. US 460 is currently a two-lane road with a TWLTL.
## Transportation Demand (cont.)

### Table 1: Traffic Forecast

<table>
<thead>
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<th>MP 74.772 to MP 75.6</th>
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<td>2010 ADT</td>
<td>6,000</td>
<td>8,100</td>
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<tr>
<td>2032 ADT</td>
<td>8,800</td>
<td>11,900</td>
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<tr>
<td>2032 DHV</td>
<td>820</td>
<td>1,080</td>
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<tr>
<td>2010 Truck%</td>
<td>20.80%</td>
<td>20.8</td>
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<td>2032 Truck%</td>
<td>26.00%</td>
<td>26</td>
</tr>
<tr>
<td>20 YR ESALS</td>
<td>9,800,000</td>
<td>14,000,000</td>
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Note: A 1.74% growth rate was applied to determine 2032 traffic volumes.
Capacity

- VSF = 0.33
- Passing lanes are present on much of the study corridor.
- The current capacity of the existing roadway should be acceptable for the near future.
Safety

Collision Locations (June 1, 2007 to May 31, 2010)

- 0.10 Mile Spot CRF @ KY 9009/US 460 Intersection
- • 0.49 on KY 7
- • 0.69 on US 460
Roadway Deficiencies: Mainline Geometrics

- **Existing Roadway Data**
  - 12 Ft. Lanes
  - 10 Ft. Shoulder
  - Max Grade = 5.5%
  - Min Radius = 954.83 Ft.
  - 55 MPH posted speed limit
  - Climbing Lanes on each side of Ridge
  - Adequacy Rating Percentile = 56.19

- **Geometric Practices for Rural Arterials***
  - 12 Ft. Lanes
  - 8 Ft. Shoulders
  - Max Grade = 6%
  - Min Radius = 1065 Ft.

* Guidelines for 60 MPH Design Speed
Roadway Deficiencies: Existing Bridge Data

• 077B00040N – Bridge over Licking River
  – Max Span: 80.1 Ft.
  – Length: 417.0 Ft.
  – Width Out to Out: 33.1 Ft.
  – Curb to Curb: 29.9 Ft.
  – SR = 70.8
  – Substandard Bridge Rail

• 077B00041N – Bridge over KY 7
  – Max Span: 51.8 Ft.
  – Length: 161.1 Ft.
  – Width Out to Out: 45.3 Ft.
  – Curb to Curb: 42.0 Ft.
  – SR = 87.1
  – Substandard Bridge Rail
Roadway Deficiencies: Existing Bridge Data

• 077B00042N – Bridge over Burning Fork
  – Max Span: 49.9 Ft.
  – Length: 159.1 Ft.
  – Width Out to Out: 33.1 Ft.
  – Curb to Curb: 29.9 Ft.
  – SR = 80
  – Functionally Obsolete
**Roadway Deficiencies: Ramps**

- **Minimum** radius of curvature on the clover leaf ramps is recommended to be 230 ft. The radius of these ramps measured to be 75 ft and 125 ft.
- Acceleration and Deceleration lanes also need to be lengthened.
Roadway Deficiencies: Intersection

- Vertical Curve on US 460 prior to intersection meets 50 MPH criteria for stopping sight distance.
- Lack of storage capacity in turning lane observed.
- Storage capacity was adequate on Mountain Parkway leg.
Environmental Considerations
Utilities

- **Water**
  Magoffin County Water District

- **Electric**
  Kentucky Power Company (A.E.P.)

- **Telephone**
  Foothills Rural Telephone

- **Television**
  Rick Howard TV Cable

- **Gas**
  Sigma Gas Company
  B.T.U. Pipeline
Potential Conflicts

• Streams and other Environmental Concerns
• Utilities
• Floodplain
• Structure widths
• R/W issues
Observations

(Video & Pictures)
Mountain Parkway Overpass
Mountain Parkway/US 460 Intersection
Mountain Parkway/US 460 Intersection
Mountain Parkway
Mountain Parkway approaching KY 7 Off Ramp
Mountain Parkway (westbound) Off Ramp to KY 7
Project Team Meeting

- Held in June 2010
- Several Alternatives were presented
The Mountain Parkway provides a vital connection between Central Kentucky and many communities and rural areas of Southeastern Kentucky. The Mountain Parkway interchange with KY 7 provides access to the parkway for residents, coal trucks, school buses and other traffic in the Salyersville area. The geometry of the ramps at the KY 7 interchange does not meet recommendations. The intersection of Mountain Parkway and US 460 has a history of rear-end collisions. The purpose of this project is to improve the safety, the geometrics, and the connectivity between Central Kentucky and many communities and rural areas of Southeastern Kentucky, and to improve highway performance along this corridor to facilitate Economic Development.
Consideration of Future Plans
Alternate #2 – Modify Existing Cloverleaf
Alternate #3 – Construct Westbound Off-Ramp on North Side of KY 9009
Alternate #4 – Replace Ramps North of KY 9009 with a Tight Urban Diamond
Alternate #5 – Widen the overpass Bridge to Accommodate Westbound Exit Lane
Alternate #6 – Extend US 460 Left Turn(& Thru) Lane/Restripe TWLTL
Project Progress

- DNA completed in October 2010
- Advertised December 2010
- Pre-Design Conference held February 2011
What’s New in Planning?

• Data Management Branch
  – New HIS interface

• Transportation Systems Branch
  – Functional reclassification

• Strategic Planning Branch
  – West Virginia Peer to Peer Meeting

• Multimodal Branch
What’s New in Planning?

Highway Information Extract Interface

Instructions: Use the drop down menus to select the route and mile point range to query. Use the display buttons to expose particular assets.

District: 05
County: Franklin
Route: 037-1-0064-000

BeginMP: 50
Min: 46.3030
EndMP: 59.4310

Display Data  Display All Assets  Extract All  Display Route
What’s New in Planning?