2009 Winter Workshop – New Pavement Technologies

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Polytech, Woodside

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Materials & Research

Warm Mix Asphalt

- Through modification, mixes can be produced and placed at lower temperatures (190°F - 250°F).
- Results have shown nationally that performance is not adversely affected by the lower production and placement temperatures.

WMA (cont)

- Some potential benefits of WMA:
  - Lower production temperatures.
  - Lower energy costs for supplier.
  - Lower prices Department pays.
  - Less fumes.
  - Less emissions.
  - Less temperature loss.
  - Extended paving season.
  - Use over crack sealant material.

WMA (cont)

- Only concerned raised to date has been possible moisture damage within the pavement.
- Caused by the possible lack of completely dry aggregates due to the lower production temperatures.
- State tests have varied on this issue.

WMA (cont)

- Even with lower mix temperatures, performance of materials is the same as conventional HMA.
- Additives at plant modify viscosity of the asphalt binder.
  - Additives can be waxed based materials or foaming operations using water.
- May be able to modify roller activities?

WMA (cont)

- For DelDOT, one WMA location to date.
- Marrows Road in Newark.
- Diamond Materials produced and placed the material.
- Mix temperature was 245ºF; less than 5ºF temperature loss from plant to location.

WMA (cont)

- Future of WMA in Delaware:
  - Several possible locations have been scoped.
  - DRAFT specification is being written.
    - Modification method will be up to supplier.
    - New item numbers will be used.
  - Contracts out in 2009.
- National thinking is that in the coming years, 100% of production could be WMA.

Precast-Prestressed Concrete Pavement

- Roadway slabs that are cast off-site.
- Varying widths, depths, and lengths can be cast.
- Dimensions are mostly controlled by transportation.
- Varying reinforcement can be used.
- Various methods available – some are proprietary.

PPCP - Location (cont)

- Looked for an application for the last few years.
- Several locations have been reviewed by industry, FHWA, and consultants.
- Most posed some logistical issue.
- Finally, a location was reviewed and seemed to be a good candidate.

PPCP - Location (cont)

- Location has adequate work space.
- Multi-lanes so traffic can be maintained during construction.
- High traffic count location to test the reliability of the PPCP.
- Large enough quantity to make the project attractive to bidders.

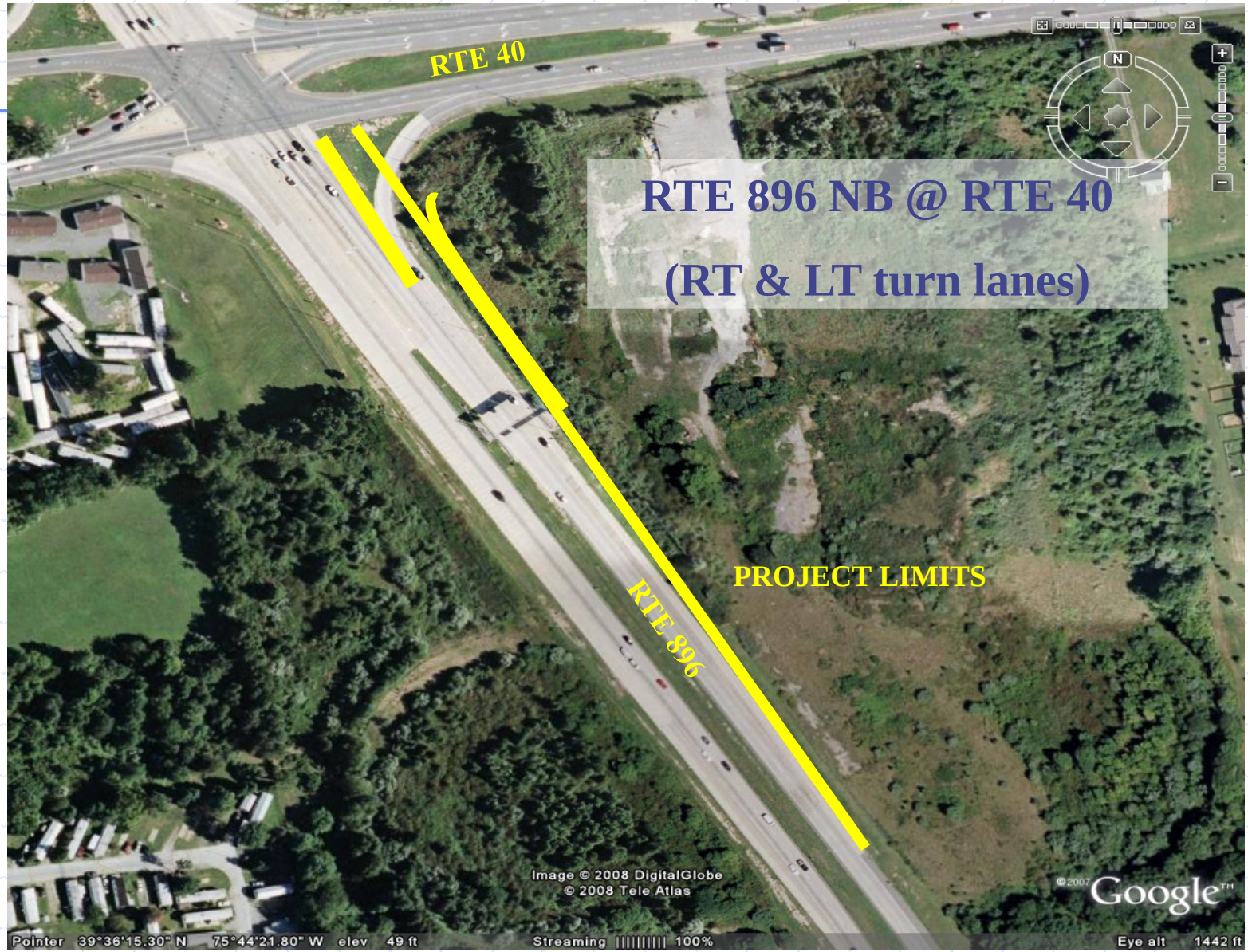
PPCP - Location (cont)

- SR 896 NBR & SR 40 EBR
- Severe deterioration of the existing PCC joints due to ASR.
- Has been on the Pavement Management list for rehabilitation.
- Rehab needed both at intersection and other joints in the area.

PPCP - Location (cont)

- Construction Contract is a combination of PPCP and conventional high-early strength PCC patches.
- Plan is to have contractor pour conventional PCC patches while PPCP are being prepared.

PROJECT OVERVIEW: Location

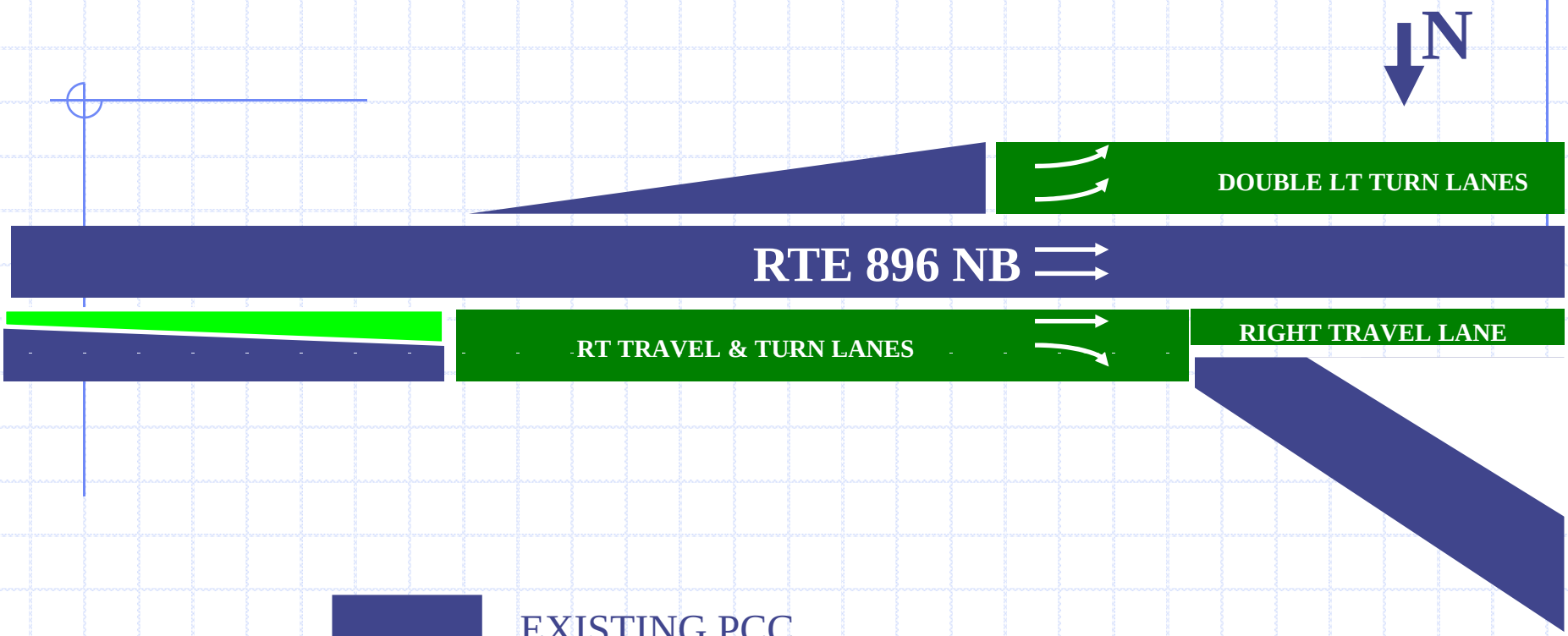


PROJECT OVERVIEW – Fact Sheet

Fact Sheet:

- Functional Class – Principal Arterial.
- AADT – 37,679; % Trucks – 9%.
- Existing Pavement Section – 12” PCC over 8” stone.
- Replace failing jointed plain concrete pavement within the right and left turn lanes with Precast-Prestressed Concrete Pavement (PPCP). 8” PPCP over 4” pervious concrete

PROJECT OVERVIEW – PPCP Replacement Area



EXISTING PCC

CAST-IN-PLACE

PPCP REPLACEMENT AREA

PPCP – Project Development (cont)

- Construction
  - Proposed Schedule: Sunday evening through Friday morning.
  - Restricted Working Hours: 7:30 PM – 5:30 AM
  - All lanes restored to unrestricted use at the end of each workday.

PPCP – Project Development (cont)

- Additional Project Points ….
  - ✓ 10 precast suppliers had expressed an interest in this project.
  - ✓ Contract was advertised to supply and install PPCP panels. Design alternates will not be considered.
  - ✓ Optimum size for panel fabrication - 8’ L X 24’ W & 8’ L X 12’ W
  - ✓ Contract timing will permit 6-8 weeks for fabrication.
  - ✓ Stored Material Payments in accordance w/ Standard Specifications.
  - ✓ An on-site area will be made available for material storage.

DelDOT Expectations

- Success of a new product/process.
- New option for PCC patching.
- Gain further experience.
- Department is always open to new ideas and technologies.

Thanks to the following for their work on this project….

North District Construction

Pavement Management

Thank you for your time and attention….

Any questions or comments?