

DelDOT  
Winter Workshop  
March 14, 2014



US Route 40 Railroad Crossing Replacement



# The Project

## **Owners:**

- **DelDOT**
- **Norfolk Southern**

## **Contractors:**

- **Mumford & Miller - Drainage**
- **Greggo & Ferrara – Roadway**
- **Norfolk Southern - Railroad**

## **Inspection Team:**

- **DelDOT**
- **Century Engineering, Inc.**
- **KCI Technologies**

# **The Project Team**

## Replace Tracks Across Roadway

- Improve approach grades / profile (RR and roadway)
- Allow for trains to maintain constant speed across roadway
- Raised crossing grade 6"



Project Scope

## Replace Drainage System

- Original system constructed in 1950's
- Complete Drainage System Failure
- Replaced 1,112' of RCP Pipe along and under tracks
- Placed Underdrain



Project Scope

# **Construct ADA Compliant Pedestrian Facilities**

- **Sidewalks**
- **Curb Ramps**
- **Track Crossing**



**Project Scope**

## **Remove Median Barrier and Pavement**

- **Not MUTCD  
Compliant**
- **Re-configure Turn  
Lanes**
- **Provide better  
guidance for  
motorists**
- **Reduce Impervious  
Surface Area**



**Project Scope**

- **Meetings**
  - **Business Owners**
  - **Local Legislators**
  - **School Districts**
  - **Emergency Services (TMT Meetings)**
  - **NS Logistics and Customers**
- **Additional Design Concerns**
  - **Alert Motorists**
  - **Maintain Business Access (24/7)**
- **Detailed TMP**
  - **Monitor Traffic - AADT over 31,000 vpd**
  - **Determine Schedule**
  - **Maintain Railroad Operations**
- **Detour Plans**

# Planning Route 40 Closure



Planning Route 40 Closure

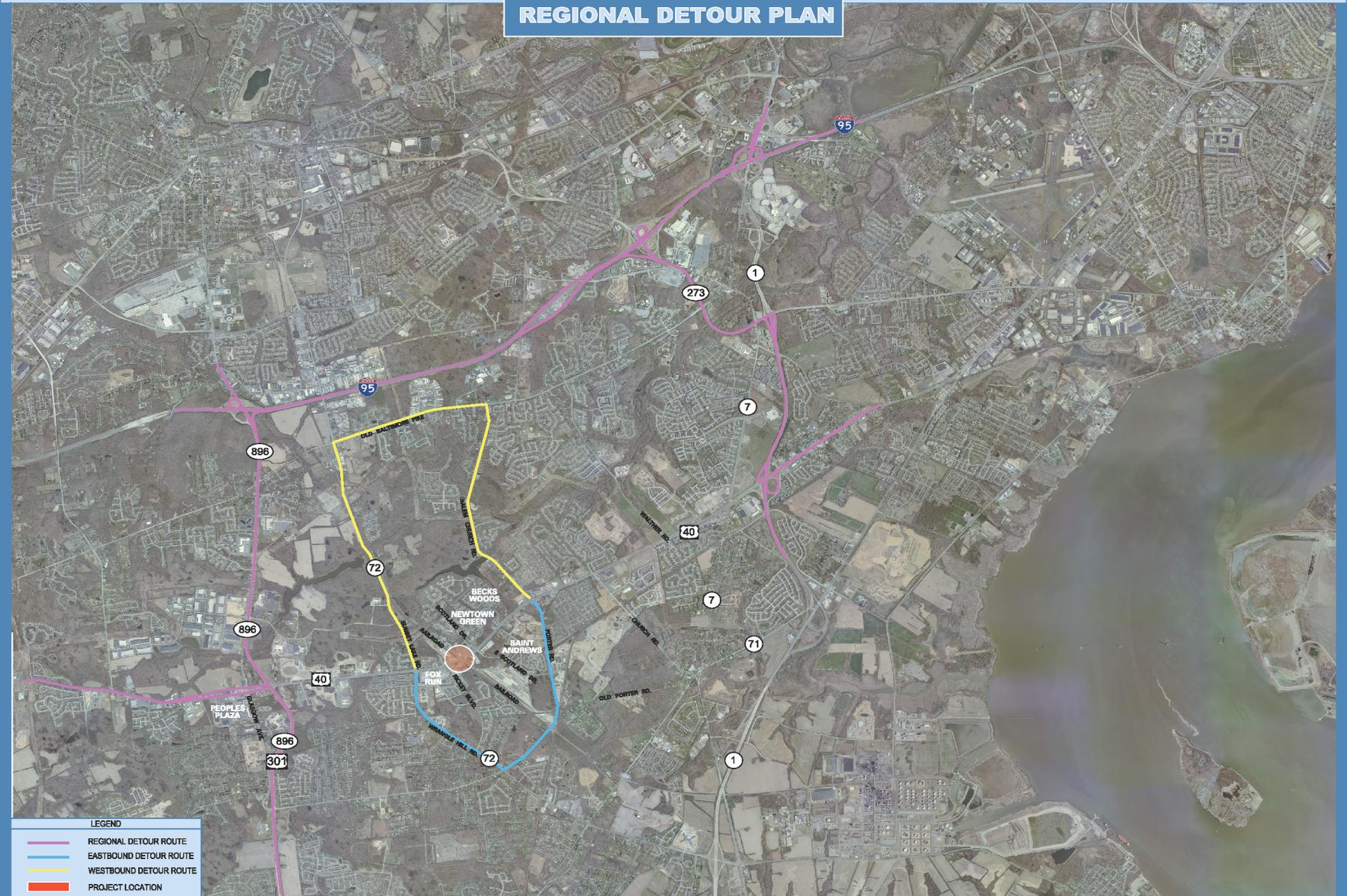
- **Full Road Closure**
  - August 9<sup>th</sup> – August 26<sup>th</sup>
  - Open before the first day of School
- **Detour Plans**
  - Alert Motorists
    - Regional
    - Local
    - Pedestrian
      - DART

**Planning Route 40 Closure**

- **Detour Plans**
  - **Regional**
  - **Local**

**Construction Information**

REGIONAL DETOUR PLAN



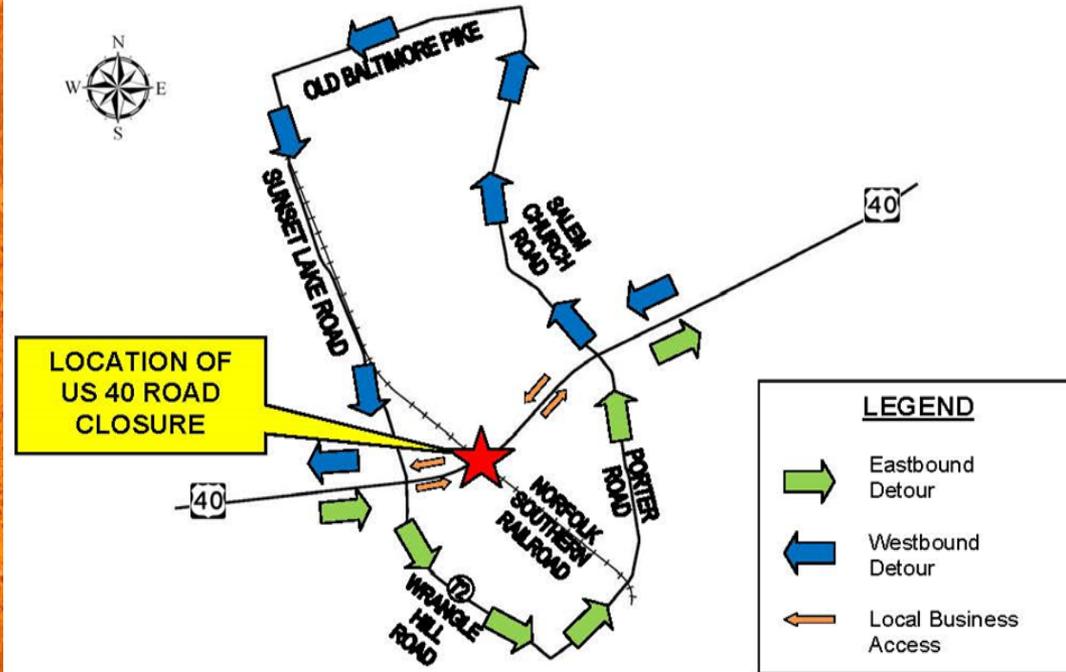
- LEGEND
- REGIONAL DETOUR ROUTE
  - EASTBOUND DETOUR ROUTE
  - WESTBOUND DETOUR ROUTE
  - PROJECT LOCATION

Scale: 1" = 1800'  
July 2013



- **Detour Plans**
  - **Local Routes**

## US 40 ROAD CLOSURE AUGUST 9<sup>TH</sup> TO AUGUST 26<sup>TH</sup>



### US 40 Railroad Crossing Replacement

Construction Information

- **Original Cost Estimate - \$1,000,000.00**
- **Timing – 17 Day Closure of US 40**

**Construction Information**



# Construction Issues



# Drainage System Installation



# Drainage System Installation



# Drainage System Installation



# Drainage System Installation

## **Final Drainage Costs:**

- **Engineers Estimate - \$212,997.30**
- **Contractors Estimate - \$236,218.00**
- **Final Cost - \$245,967.67**

**The Project Team**

- **Approximately 3" of Rain in a One Hour Period**



**Track Construction**



# Track Construction



# Track Construction



# Track Construction



# Track Construction

## **Final Railroad Costs:**

- **N S Estimate - \$200,000.00**
- **Final Cost - \$211,373.00**

**The Project Team**

**Approach areas next to the tracks:**

- **Excavated and placed GABC during the day / night**



**Roadway Construction**

**Approach areas next  
to the tracks:**

- **Paved at Night**



**Roadway Construction**

## Profile Milling

- Top surface was milled prior to opening



Roadway Construction

## **Final Roadway Costs:**

- **Engineers Estimate - \$519,199.84**
- **Contractors Estimate - \$651,894.29**
- **Final Cost - \$500,000.00**

**The “Project” Team**

## **Construction Road Closure Duration:**

- **Planned 17 Calendar Days**
- **Completed 10 Calendar Days**

**The Project Team**

- **Raised Track Grade Which**
  - **Corrected Roadway Profile (Alleviated Dip) on Route 40 at the Railroad Tracks.**
  - **Raised Railroad Profile 6” to Allow Train Traffic to Maintain Constant Speed.**



**Construction Success**

- **Re-Configure Turn Lanes**
- **Provide Better Guidance for Motorists**



**Traffic Flow Update**



Pre-Construction Conditions



Ped MOT

# Pedestrian Facilities Updated



Pre-Construction Conditions



Post-Construction Conditions

# Pedestrian Facilities Updated



Pre-Construction Conditions



Post-Construction Conditions

# Pedestrian Facilities Updated



Completed Project

# ACEC

AMERICAN COUNCIL OF ENGINEERING COMPANIES  
OF DELAWARE

## All Aboard The US40 Improvements Express

Bear, Delaware

ure Sol

start



Norfolk Southern's railroad crossing on US 40 in Bear, Delaware needed immediate safety and drainage improvements to correct a poor draining, rough riding crossing. The improvements necessitated the full closure of one of the busiest sections of US 40 and the interruption of train service to multiple companies. A significant public outreach

program alerted the public of the road closing, circulated detour information and maintained access to all businesses during the detour. Through extensive coordination between DelDOT, multiple construction companies and Norfolk Southern's workforce and customers, the needed drainage, road and track improvements were completed simultaneously and the project finished ahead of schedule and under budget.

 CENTURY  
ENGINEERING

 DelDOT

 NS  
NORFOLK SOUTHERN

# Completed Project