DESIGN INVESTIGATION AND CONSTRUCTABILITY

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OVERVIEW

- Introduction
- Mill Creek Drainage Analysis
- VMS Sign Structure Retrofit
- Staged Widening of Structure
- Summary
MILL CREEK DRAINAGE ANALYSIS
General Plan and Elevation

- Complicated horizontal and vertical geometry
- Sag curve and rollover on bridge
- Direction of drainage flow difficult to understand

MILL CREEK DRAINAGE ANALYSIS

I-95 S.B. Over Mill Creek (I-95/I-276)

LEGEND
- Proposed 2500 Luminaires, 45 MwL
- Proposed 3000 Luminaires, 45 MwL
- Junction Box (J.B. 286)
- Core Guard Locations
Cross Slope Transitions

I-95 S.B. Over Mill Creek (I-95/I-276 Interchange Project – PTC)

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Sag curve and rollover on bridge

Direction of drainage flow difficult to understand
Deck Contours

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Scuppers Added

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VMS SIGN RETROFIT
VMS sign structures, District 6-0

Cracking found in several structures in transition boxes during inspections

Forensic investigation ensued to determine cause

Retrofit details designed
VMS Signs - Transition Box

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VMS sign structures, District 6-0.
VMS Signs – Close-up of Crack

District 6-0

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**VMS sign structures,**

District 6 - 0

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VMS RETROFIT DETAILS

VMS Signs – 2D Retrofit Drawings
Cracking found in several structures in transition boxes during inspections. Forensic investigation ensued to determine cause. Retrofit details designed.
STAGED WIDENING MODEL
Staged Construction Plan

Widening and Replacement of Garden State Parkway Structure

Existing two girder, through-girder system

Severely skewed alignment (20 deg. PennDOT skew)

Existing stepped wingwall on piles
Existing Structure

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GSP WIDENING DETAILS

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Summary

- 3D models can be beneficial in situations in which 2D plans/analysis are difficult to understand and visualize
  - Drainage analysis of deck rollover
  - Complex steel retrofits on multiple planes
- Complex construction activities
  - Staged construction
  - Tight construction sites
QUESTIONS?