

CONNECTICUT DEPARTMENT OF TRANSPORTATION



## REHABILITATION STUDY REPORT

*Submitted by Close, Jensen & Miller, P.C.*

### BRIDGE NO. 01349

*Route 136 over Saugatuck River*

*Town of Westport*



*Issued June 2016*

*State Project No. 158-212*

Connecticut Department of Transportation



# **Public Information & Public Scoping Meeting**

***William F. Cribari Memorial Bridge  
Route 136 over the Saugatuck River***

- **Review of Rehabilitation Study Report**
- **Public Scoping for the gathering and analysis of information to establish the breadth, or scope, of environmental review of a proposed project**



## CT Department of Transportation

Theodore H. Nezames, P.E.  
Manager of Bridges

Timothy D. Fields, P.E.  
Transportation Principal Engineer

Priti S. Bhardwaj, P.E.  
Project Manager

Francisco T. Fadul, P.E.  
Project Engineer

Mark W. Alexander  
Transportation Assistant Planning Director

Mark J. McMillan  
National Register Specialist

Robert W. Ike  
Rights of Way Supervising Property Agent

Michelle A. Miller  
Rights of Way Project Coordinator

## Close, Jensen and Miller, P.C. Consultant Liaison Engineers

Tom M. Ryan, P.E.  
Director of Engineering

Mark F. Levesque, P.E.  
State Bridge Program Manager

Jeffrey J. Fontaine  
Project Engineer



# Project Purpose

The purpose of this project is to address the structural and functional deficiencies of the William F. Cribari bridge, Route 136 over the Saugatuck River in the Town of Westport.





Treadwell Ave

33

Riverside Ave

Saugatuck River

Bridge St

136

136

Saxon Ln

Bridge Location

Ketchum St

Charlotte P

95

Governor John Davis Lodge Tpke

95

Elaine Rd

33

Charles St

136

Park St

Railroad Pl

MEIRO North-Westport

Jackie Ln

N

Ferry Ln

Ferry Ln

# Current Bridge Deficiencies

- **Critical condition rating of truss system**
- **Substandard load capacity**
- **Critical Pier 2 support system**
- **Functionally obsolete roadway geometry**
- **Accident history**
- **Substandard bridge rail system**
- **Mechanical/Electrical equipment susceptible to 10-year storm damage**
  - **Approx. \$3.5 million to repair Hurricane Sandy flood damage**
- **East Coast Greenway – least suitable rating for bicycling along bridge**



# Project Goals

- **Address structural deficiencies**
- **Consider impacts to historic elements**
- **Address functional deficiencies**
- **Improve safety for vehicles, cyclists, pedestrians, and marine traffic**
- **Intersection improvements to improve traffic flow**



# Historic Significance

- **Early example of a wrought iron, pin connected truss system**
- **Listed on the National Register of Historic Places on February 12, 1987**
- **Listed on Connecticut Historic Bridge Inventory**
- **Documented in Historic American Engineering Record (HAER)**





# Existing Bridge Description

- **4-span steel multi-girder swing bridge with ornamental truss**
- **Supported by piers, stone masonry abutments and wingwalls**
- **Structure Dimensions**
  - **Total Length = 287'**
  - **Roadway Width = 19'-6"**
- **Carries one lane of traffic in each direction**
  - **Estimated Average Daily Traffic 13,100 vehicles (2014)**
  - **4-foot timber sidewalk along the north side**
  - **East Coast Greenway Bicycle Route**





Spans 3 and 4 (Fixed)

Spans 1 and 2 (Moveable)

Pier 1

Pier 2

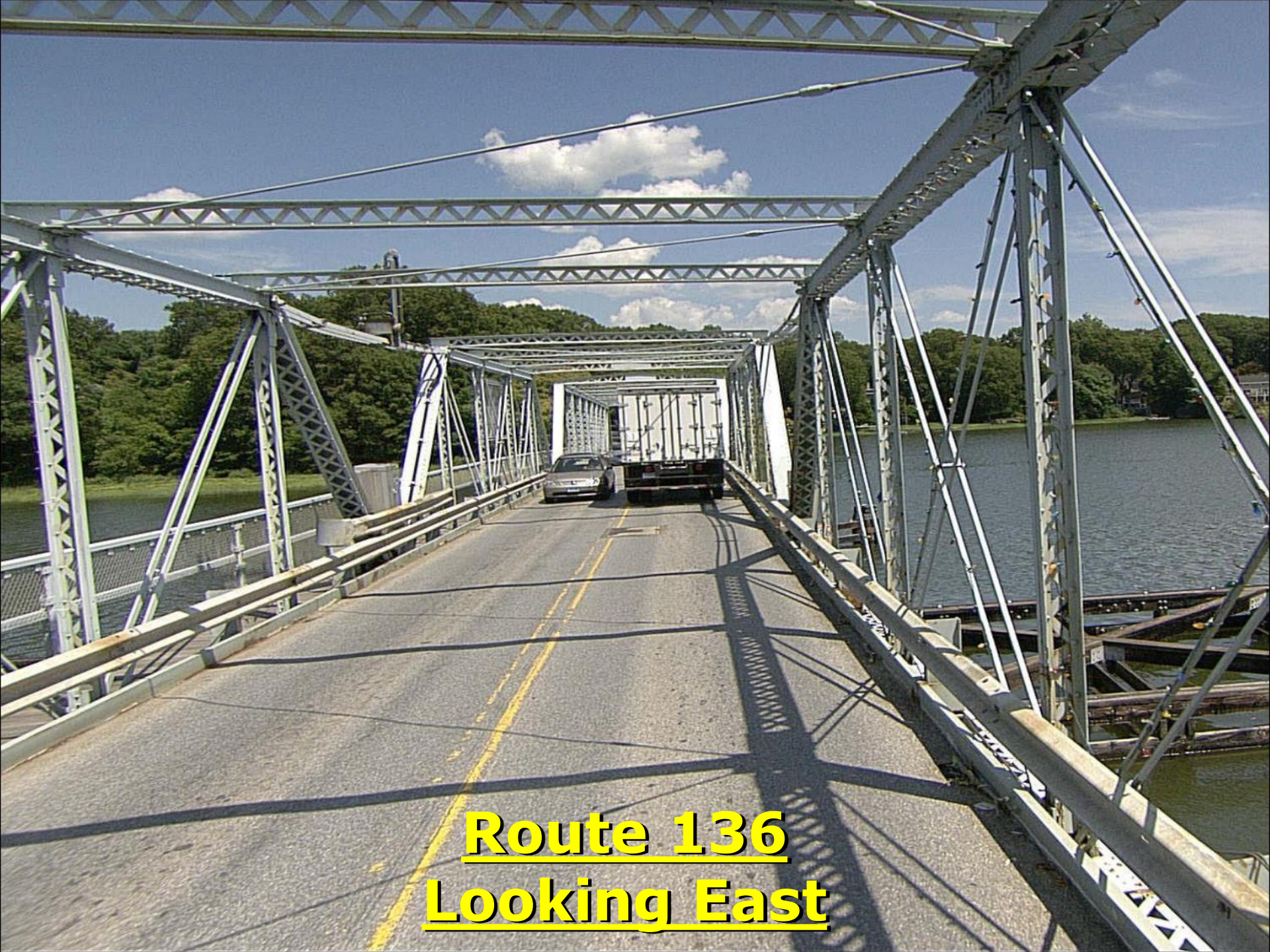
Pier 3

East Abutment

**Elevation View**  
**Looking Downstream (South)**



**Route 136**  
**Looking West**



**Route 136**  
**Looking East**

# Existing Bridge Condition

- **Current Condition Rating**
  - **Deck = 6 (Satisfactory)**
  - **Superstructure = 5 (Fair)**
    - **Truss = 2 (Critical)**
  - **Substructure = 5 (Fair)**
    - **Pier 2 cross bracing = 2 (Critical)**





**East Abutment**



**West Abutment**



**Rusted Areas**





**Pier 2**

# Pier 2 Support System





# Ornamental Truss



## Impact Damage

# Ornamental Truss



# Existing Bridge Condition

- **Functionally Obsolete:**
  - **Substandard roadway width of 19'-6"**  
(Functional width = 28'-0")
  - **Substandard vertical clearance - posted for 13'-0"**  
(Functional clearance = 14'-0")
  - **Deck geometry rated 2**
    - "2" = "basically intolerable requiring high priority of replacement"
    - Rating is based upon the comparison of Average Daily Traffic across the bridge versus the curb-to-curb width of the roadway



# Vertical Clearance

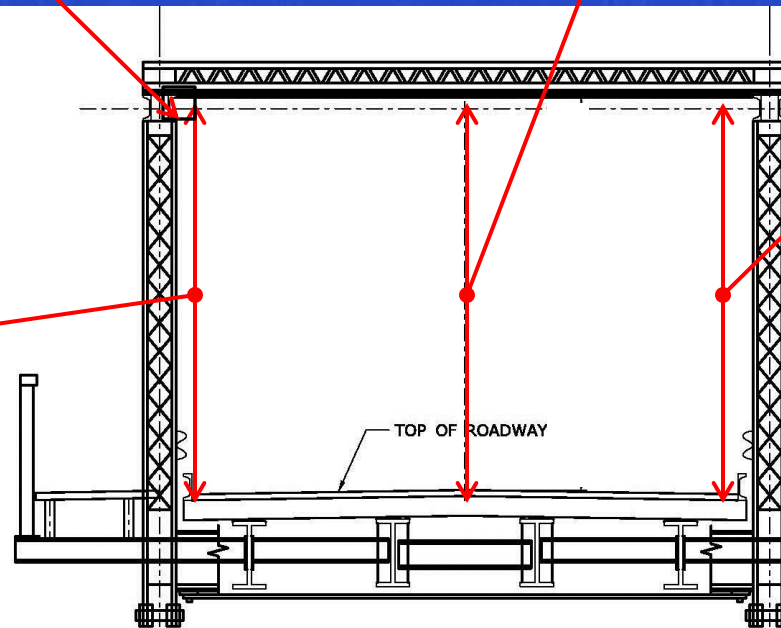


12'-9" only occurs  
at electrical box

Vertical clearance along  
center of bridge varies:  
13'-7" to 14'-5"

North side  
(Westbound) vertical  
clearance varies:  
12'-9" to 14'-3"

South side  
(Eastbound) vertical  
clearance varies:  
13'-9" to 14'-4"



# Existing Bridge Condition

- **Flooding:**
  - Existing low chord elevation of approximately 8.4
  - Mechanical/Electrical system positioned between 6.0 and 8.4
  - 10-year flood elevation = 8.1
- **Timber fender system at Pier 1 and 2**
  - Substandard with current design requirements
- **Additional deficiencies/concerns**
  - Lack of a solid roadway barrier system during bridge openings
  - High frequency of reported accidents
  - Deficient bridge railing system



# Alternates Investigated

- **No Action**
- **Minor Repairs**
- **One-way Travel**
- **Major Rehabilitation**
- **Replacement**



# Alternates Dismissed

- **No Action**

- The ability for the truss to support itself may be compromised
- Pier 2 conditions would continue to deteriorate

- **Minor Repairs**

- Repair of damaged/deteriorated elements: repairs to truss system and Pier 2 with additional minor repairs to the superstructure and abutments
- Does not address causes of damage to the truss members nor structure strength deficiencies

- **Convert to One-way Travel**

- Repair damaged and deteriorated elements; install railing system to protect the trusses with standard lane width
- Would overload adjacent streets & intersections
- Would impede bicycle travel



# Viabile Alternates

- **Alternate A - Major Rehabilitation**
- **Alternate B - Replacement of Existing Bridge**

Developed to determine a baseline cost comparison with the Rehabilitation Alternate with the noted parameters as presented. Not intended to be a complete structure type study.





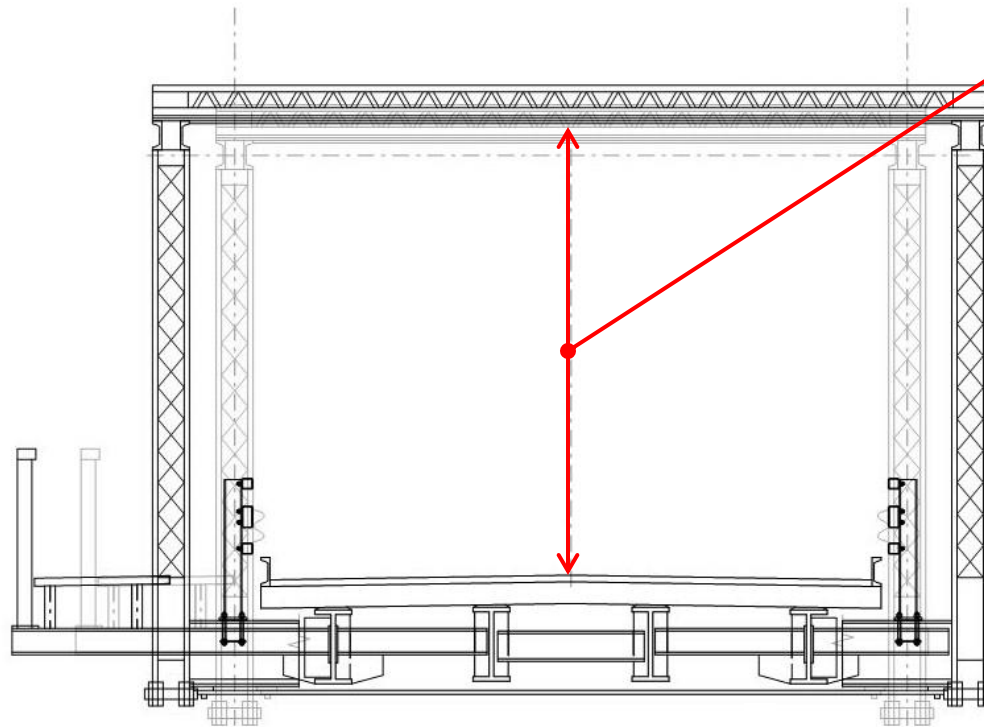
# **Alternate A:**

## **Major Rehabilitation**

- **Repair ornamental truss**
- **Shift trusses outward to provide clearance**
- **Install new crash-tested barrier system**
- **Increase vertical clearance from average of 13'-9" to 14'-3" (remove 12'-9" electrical box obstruction)**
- **Strengthen truss connections for wind load**
- **Reconstruct Pier 2 support system**
- **Improve approach roadway and deck**
- **Paint superstructure and ornamental truss**
- **Repair substructure and superstructure**
- **Replace existing fender system at Piers 1 and 2**



# Alternate A: Major Rehabilitation

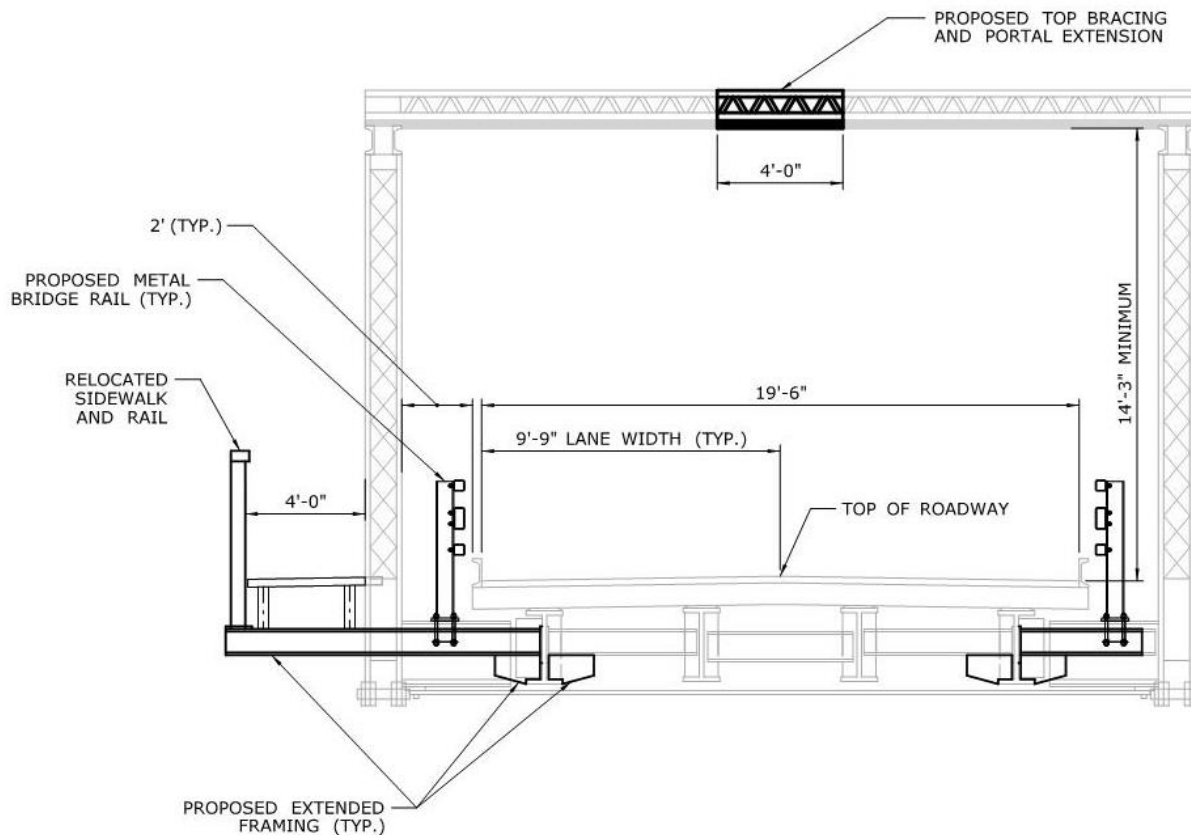


Vertical clearance to be raised to 14'-3"

**CROSS SECTIONS**



# Alternate A: Major Rehabilitation



**PROPOSED FRAMING AND BRIDGE RAIL**

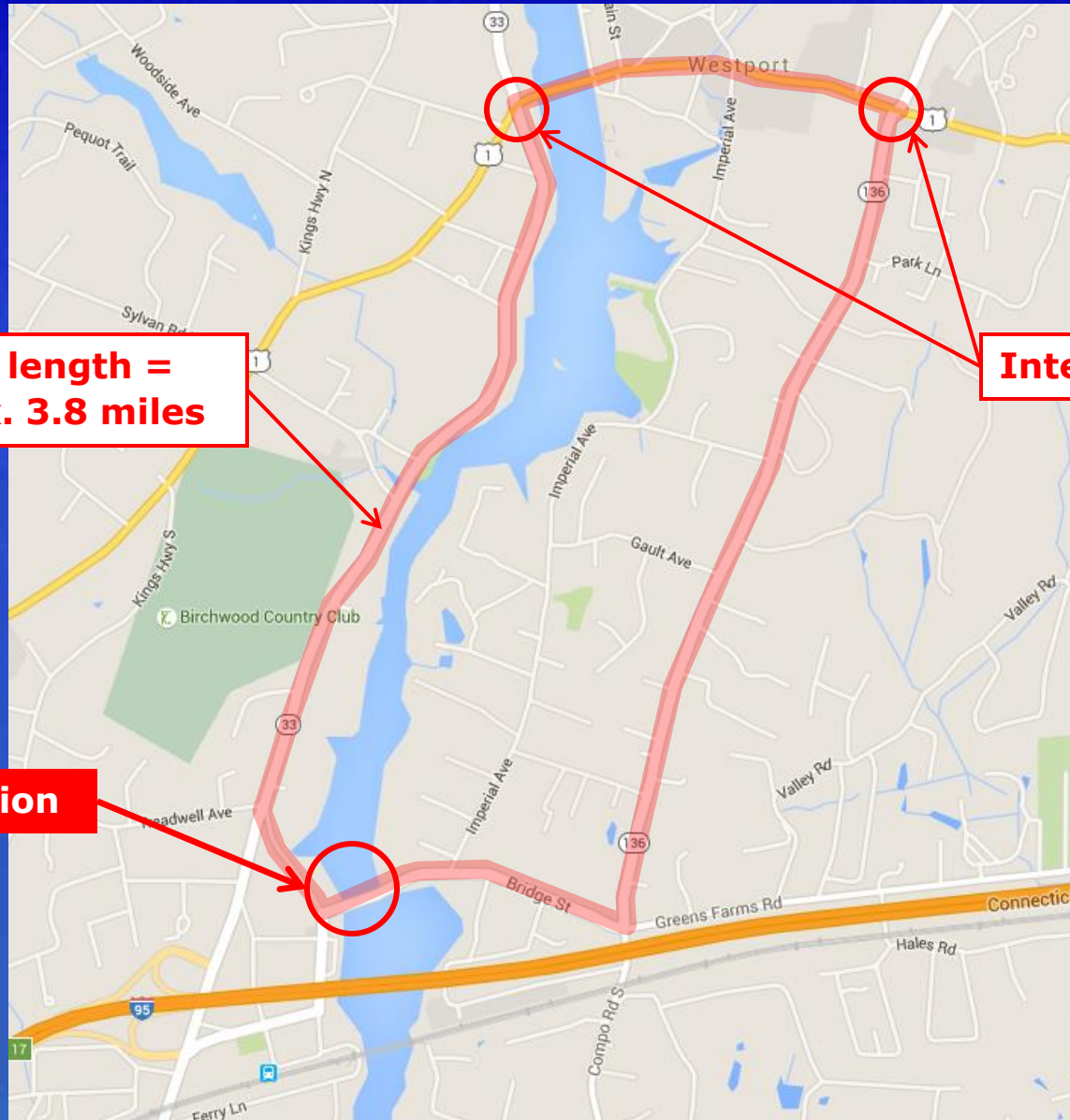
# **Alternate A:**

## **Major Rehabilitation**

- **Closure of bridge required during construction**
- **Temporary bridge**
  - **Maintain existing traffic throughout construction**
  - **Similar layout as 1993 superstructure replacement project**
  - **Traffic analysis determined detour route is inadequate**
- **Anticipated construction duration = 2.5 to 3 years**



# Detour Studied (not viable)



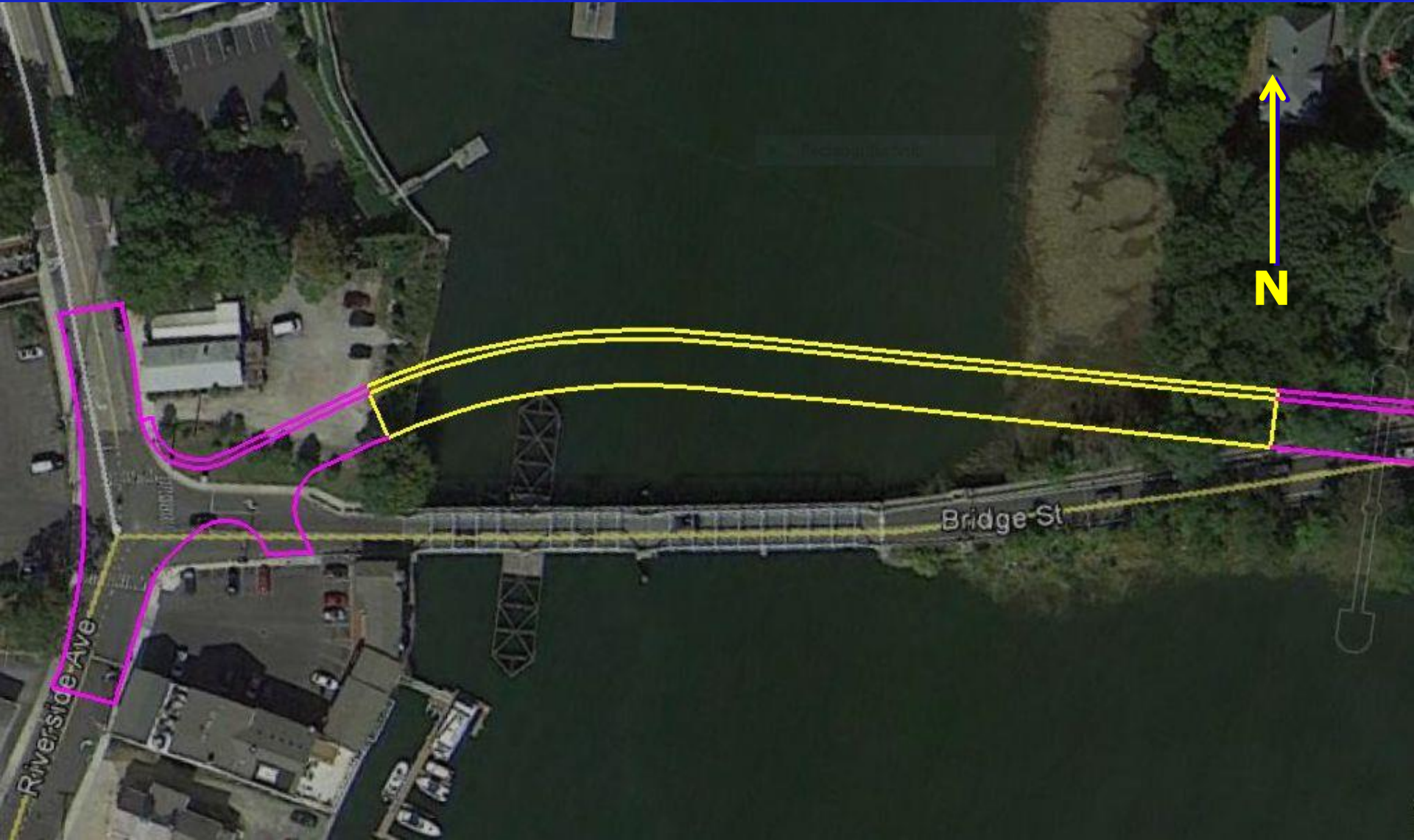
**Detour length =  
Approx. 3.8 miles**

**Intersections Fail**

**Bridge Location**



# Temporary Bridge Concept



# Alternate A:

## Major Rehabilitation

- **Advantages**

- Addresses structural deficiencies
- Maintains historic elements
- Lower initial cost than full replacement alternate

- **Disadvantages**

- Bridge remains functionally obsolete
- Machinery remains susceptible to flood damage for 10+ year storm frequency
- Substandard pedestrian and bikeway facilities remain
- Results in an adverse effect to historic properties
- Higher maintenance
- Hydraulically inadequate

- **Initial Cost = \$19.8 million**

- **Lifecycle Cost (75 years) = \$41.3 million**



# **Alternate B:**

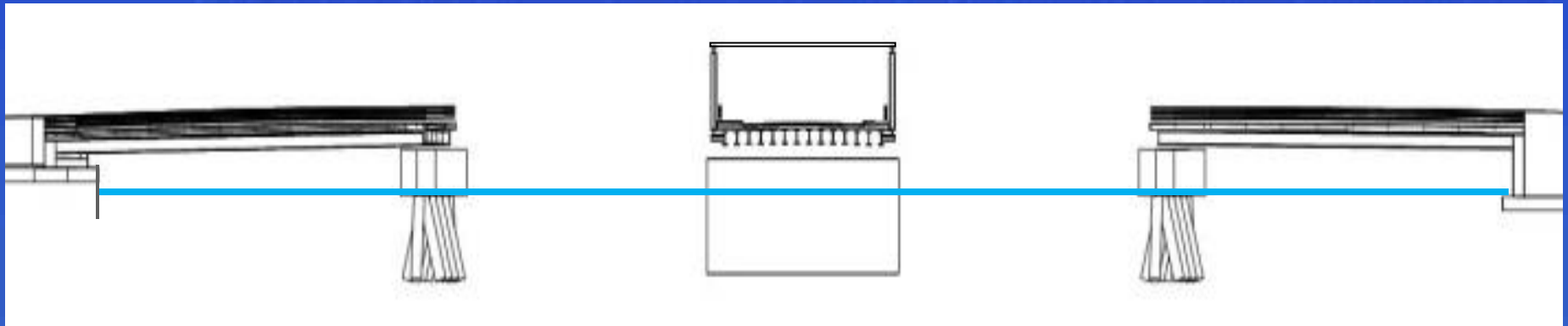
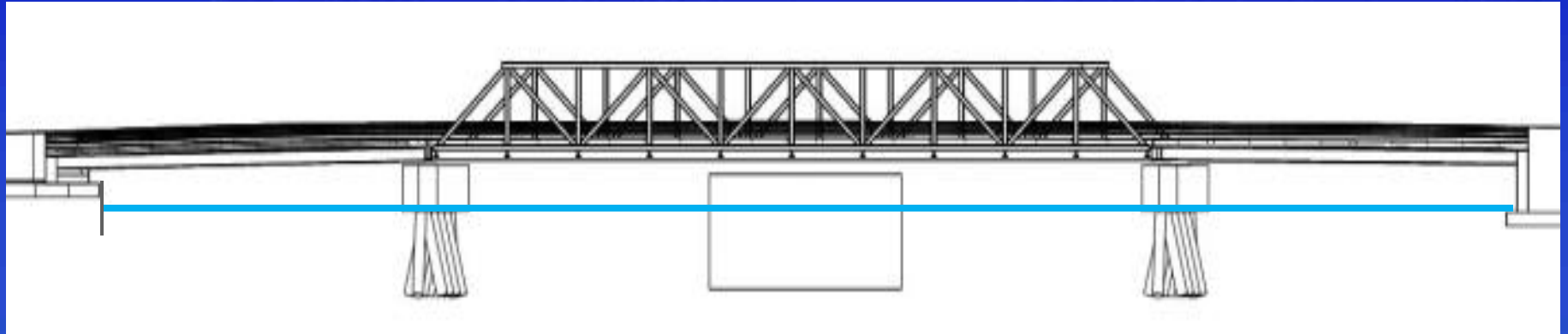
## **Bridge Replacement Concept**

- **Located upstream of the existing bridge**
- **4-span structure including a two-span Pratt Truss swing span**
- **Two 11-foot lanes, two 5-foot shoulders/bikeways, and two 6-foot sidewalks**
- **Increases clearance under the bridge for 500-year storm**
- **Improvements to Route 136 and Riverside Ave. intersection**
- **Maintains traffic on existing bridge during construction**





# Alternate B: Bridge Replacement Concept



# **Alternate B:**

## **Bridge Replacement Concept**

- **Advantages**

- Lower maintenance
- Addresses all functional, structural and public safety issues
- Hydraulically adequate
- Mechanical/electrical equipment located above storm events
- Adds adequate and safer bicycle and pedestrian access

- **Disadvantages**

- Results in adverse effect to historic properties
- Higher initial cost

- **Anticipated construction duration = 2.5 to 3 years**

- **Initial Cost = \$35.8 million**

- **Lifecycle Cost (75 years) = \$41.4 million**



# Example Bridge Replacement

(Route 1 in Westbrook)



Connecticut Department of Transportation



# **What is Public Scoping?**

- **The gathering and analysis of information to establish the breadth, or scope, of environmental review of a proposed project**
- **Required under CEPA for projects that will result in the demolition or major alteration of any structure listed on or eligible for listing on the National Register of Historic Places**
- **The public can submit scoping comments in writing, via email, or offer oral comments at this Public Information/Public Scoping Meeting**
- **Comment period for public scoping ends on July 1, 2016**

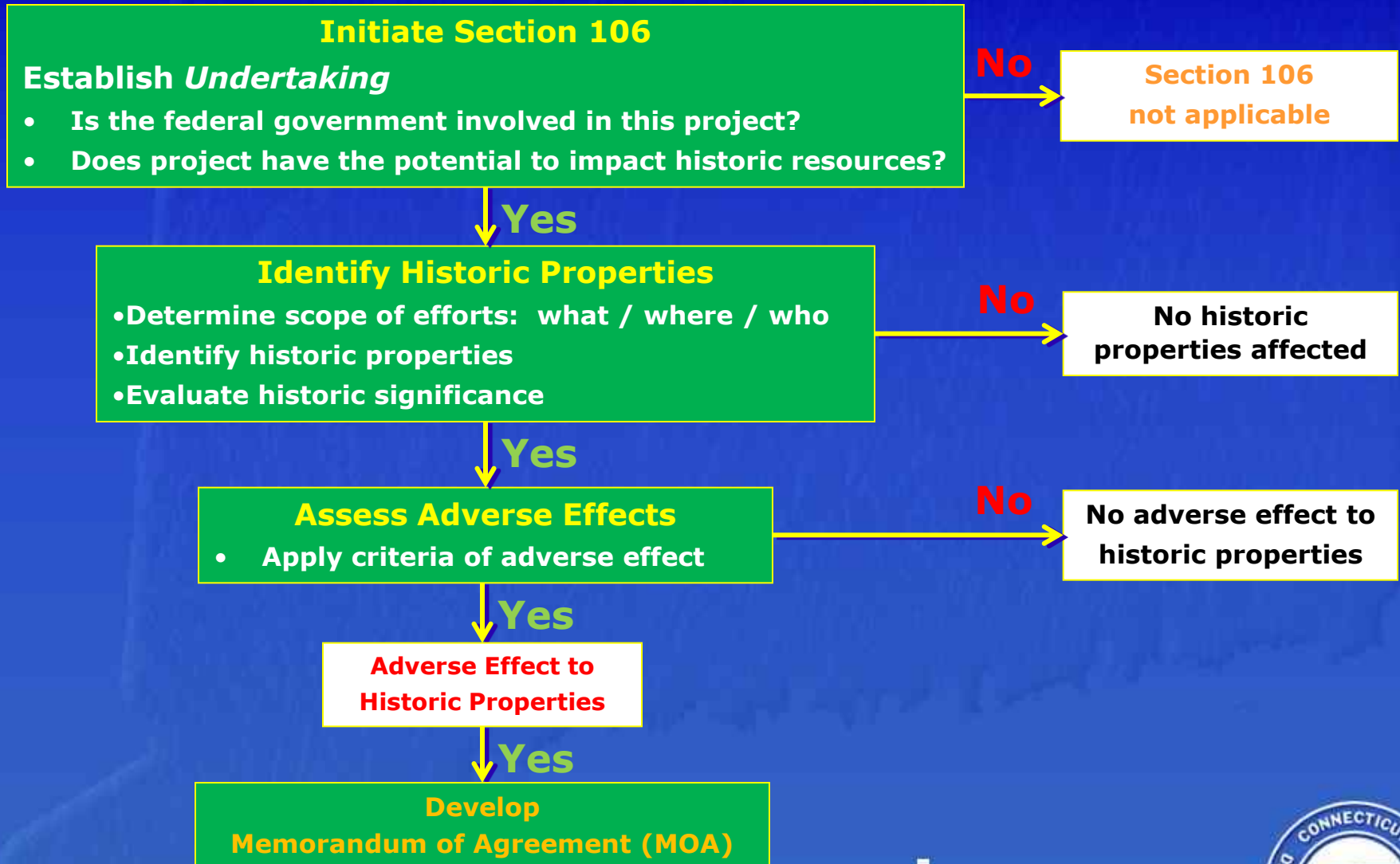


# **National Environmental Policy Act (NEPA)** **CT Environmental Policy Act (CEPA)**

- **Air Quality**
- **Noise**
- **Wetlands , Endangered Species**
- **Hazardous Materials**
- **Socioeconomics**
- **Water Quality/ Groundwater**
- **Flooding/Erosion**
- **Cultural Resources**
- **Aesthetics/ Visual Effects**
- **Soils**
- **Secondary & Cumulative Impacts**
- **Utilities**
- **Land Use & Zoning**
- **Safety**
- **Traffic**
- **Bicycle and Pedestrian Accommodations**



# Section 106 Process



## **Public Scoping**

**Questions and Comments may be addressed  
to:**

**Mr. Mark W. Alexander  
Transportation Assistant Planning Director  
CTDOT, Bureau of Policy & Planning  
2800 Berlin Turnpike, Newington, CT 06131**

**Email: [dot.environmentalplanning@ct.gov](mailto:dot.environmentalplanning@ct.gov)**

**Deadline for public scoping comments:  
Friday July 1, 2016**



**Department of Transportation**  
**Division of Rights of Way**  
**(ROW)**

**Michelle Miller**  
**Project Coordinator**  
**2800 Berlin Turnpike**  
**P.O. Box 317546**  
**Newington, CT 06131-7546**





# Function

**Acquire all property/property rights necessary for transportation projects.**



# **Statutory References**

- **State of Connecticut**

**C.G.S. Sections 13a-73 & 13a-98e**

- **Federal**

**Uniform Relocation Assistance and Real Properties Acquisition Act of 1970, as amended.**



# Property Impacts

- Total Acquisitions
- Partial Acquisitions
- Easements
- Construction Easements
- Rights



**\* Note: Specific impacts are subject to change as the design progresses.**



# **ROW Acquisition Process**

- **Letter of Intent to Acquire**
- **Valuation**
- **Offer of Just Compensation**
- **Negotiation**
- **Acquisition**
  - **Agreement**
  - **Eminent Domain/Condemnation**
    - » **6 month appeal period**



# **Timing for Acquisitions**

- **All property rights must be acquired by the project advertising date.**
- **Current Advertising Date: TBD**



# Moving Forward

- Engage the public and meet with stakeholders
- Further study with stakeholder input of both alternates including other types of replacement structures
- NEPA & CEPA analysis and documentation



# THANK YOU...

## FOR YOUR TIME AND ATTENTION

