

# State Project No. 131-194/195

## Rehabilitation of Bridge Nos. 01235 and 01236 I-84 over Marion Ave Southington, Connecticut

Connecticut Department of Transportation



# CTDOT TEAM

## Design

Ajit Gokhale, CJM

Andrew Lessard, Stantec Consulting

Louis Bacho, CTDOT

Mary Baker, CTDOT

## Construction, CTDOT

Mohammed Bishtawi

Joe Calafiore

Shawn Mangan

Terri Thompson

Kiah Patten



## CONTRACTOR

**Northern Construction Service, LLC  
Weymouth, MA**

**Project awarded on June 7, 2013**

**Contract Amount: \$6,031,429.40**

**Contact: Shawn Clark, Project Manager**





**Bridge 01235 EB**

**Bridge 01236 WB**

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# Project Goals

- Repair a deficient structure, servicing 81,800 vehicles/day
- Replace existing superstructures utilizing SPMTs
- 56 hour maximum closure of I-84





## Bridge 01235 (EB) East Elevation

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## Bridge 01236 (WB) West Elevation

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## Existing Bridge Description

- **Built in 1963**
- **Located on I-84, at Exit 30**
- **Each bridge carries three lanes of traffic**
- **I-84 Average Daily Traffic (ADT): 81,800 (2012)**





# Reasons for Replacement

## Superstructure Rating 4

- Diagonal cracks , spalls in beam ends
- Exposed reinforcement & tendons
- Longitudinal cracks in beam bottom





## Bridge 01235 cracking

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**Bridge 01236 G7 spall beam end**

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# What is Accelerated Bridge Construction?

ABC uses innovative planning, design, and construction methods, in a safe and cost-effective manner, to reduce project delivery time and onsite construction time



# Why Consider Accelerated Bridge Construction?

- Improves Work zone safety - closures
- Reduces congestion – short duration
- Economic impact – business and families
- Reduces on site construction time with prefabrication off site.
- Durability



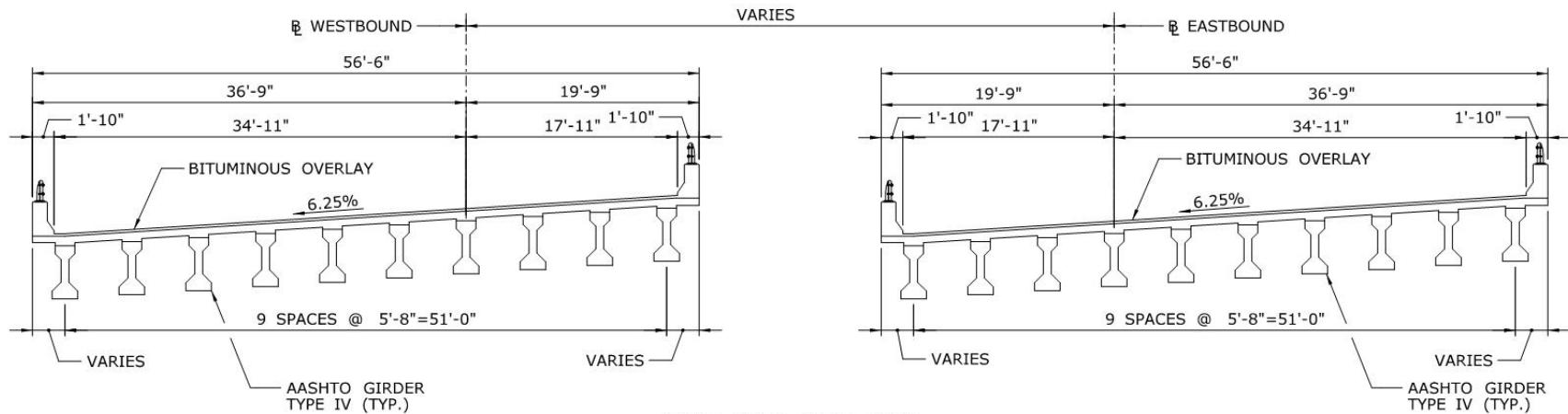
## FHWA and ABC

**"We need to change the way we build highways. We need to build them faster, have them last longer, have them be safer and at a lesser cost."**

**"Get In, Get Out, and Stay Out"**



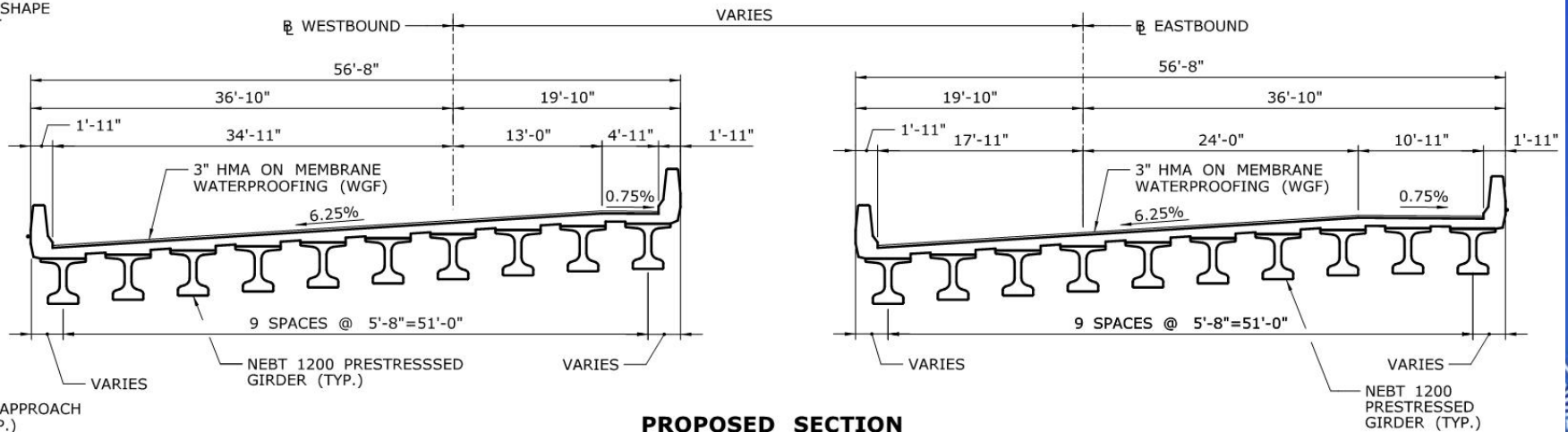
# Existing and Proposed Bridge Sections



**EXISTING SECTION**

SCALE:  $\frac{1}{8}'' = 1'-0''$

350 BRIDGE  
ATTACHMENT  
TYPICAL SHAPE  
APET



**PROPOSED SECTION**

SCALE:  $\frac{1}{8}'' = 1'-0''$

AST APPROACH  
(TYP.)  
08+62.98



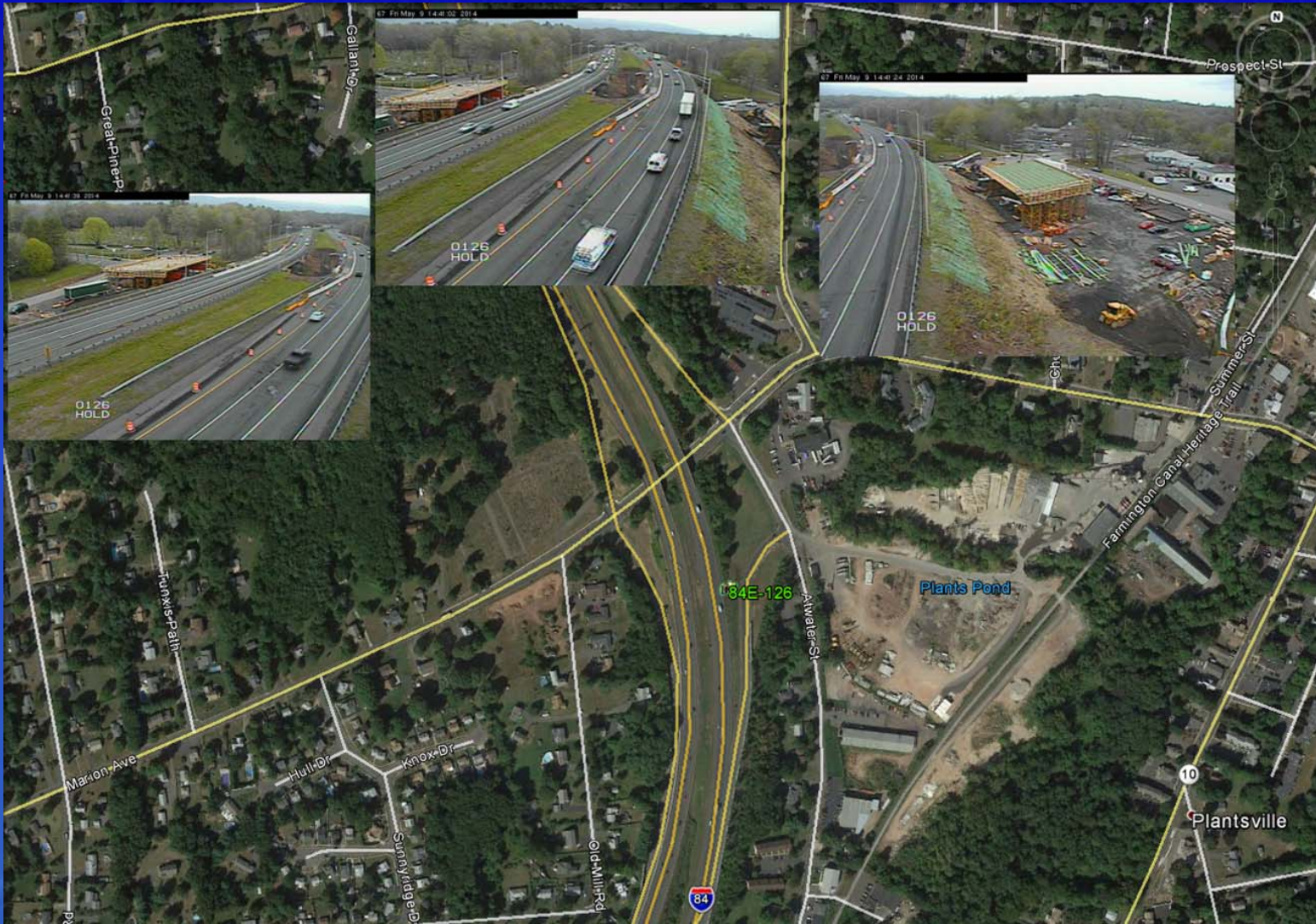
# Construction Staging

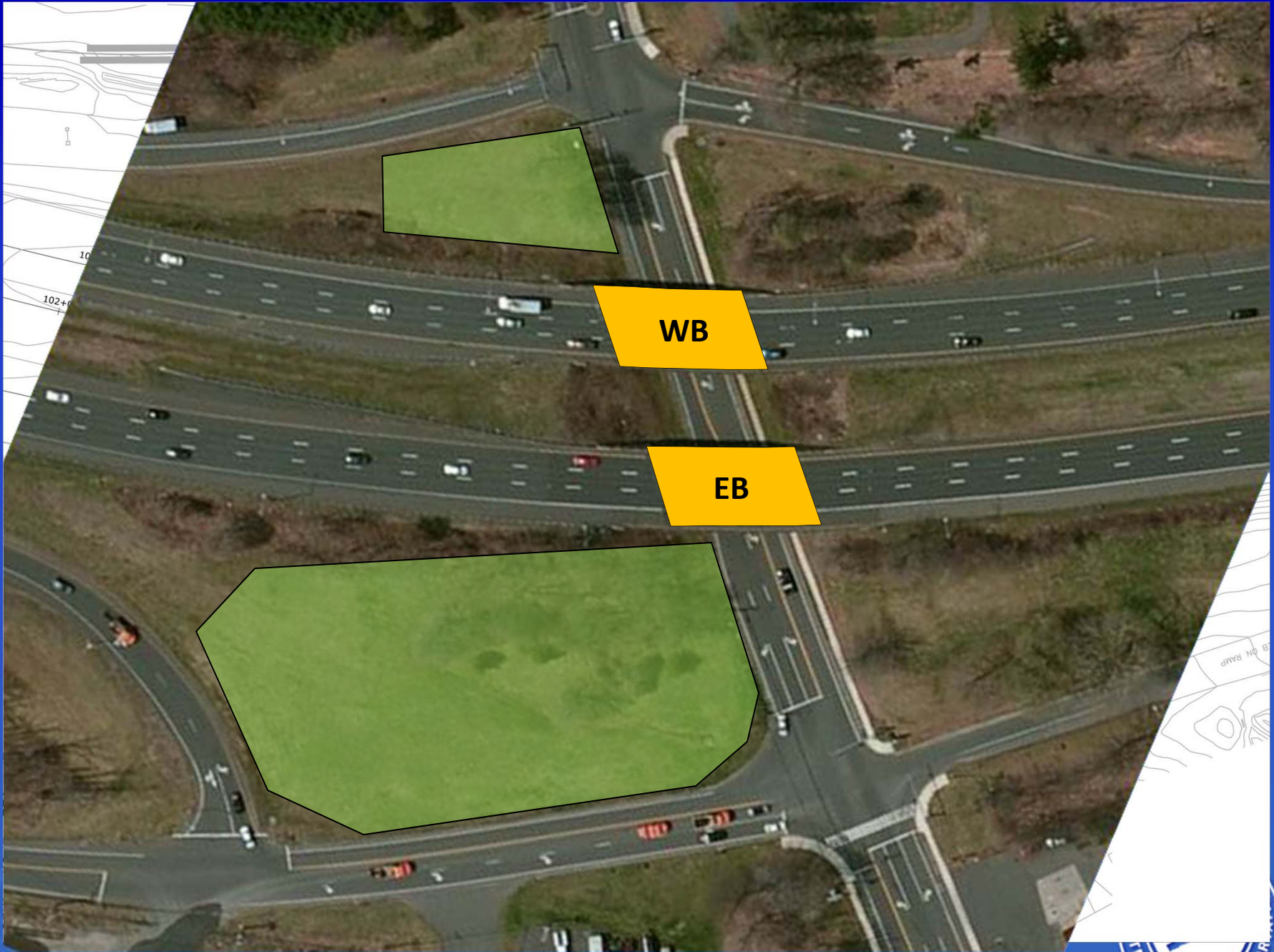
- Stage 1 – Median Wingwall Parapets
- Stage 2 – Outside Wingwall Parapets
- Stage 3 – Rapid Replacement of Superstructures
- Maintain 3 lanes of traffic in I-84 during Stages 1 & 2
- Construct New Superstructures off-line during Stages 1 & 2





# Stages 1 and 2





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# Westbound Staging Area



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# Eastbound Staging Area



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# Setting Concrete Beams



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# Making Progress



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## Closure Information

- **I-84 Closure 9 PM Friday through 5 AM Monday (56 hours)**
- **Marion Avenue Closure 5:00 PM Friday through 5:00 AM Monday (60 hours)**
- **Southington Rest Area Closure 9 AM Friday through 5 AM Monday**
- **Atwater Street from Marion Avenue to the I-84 Exit 30 off ramp**

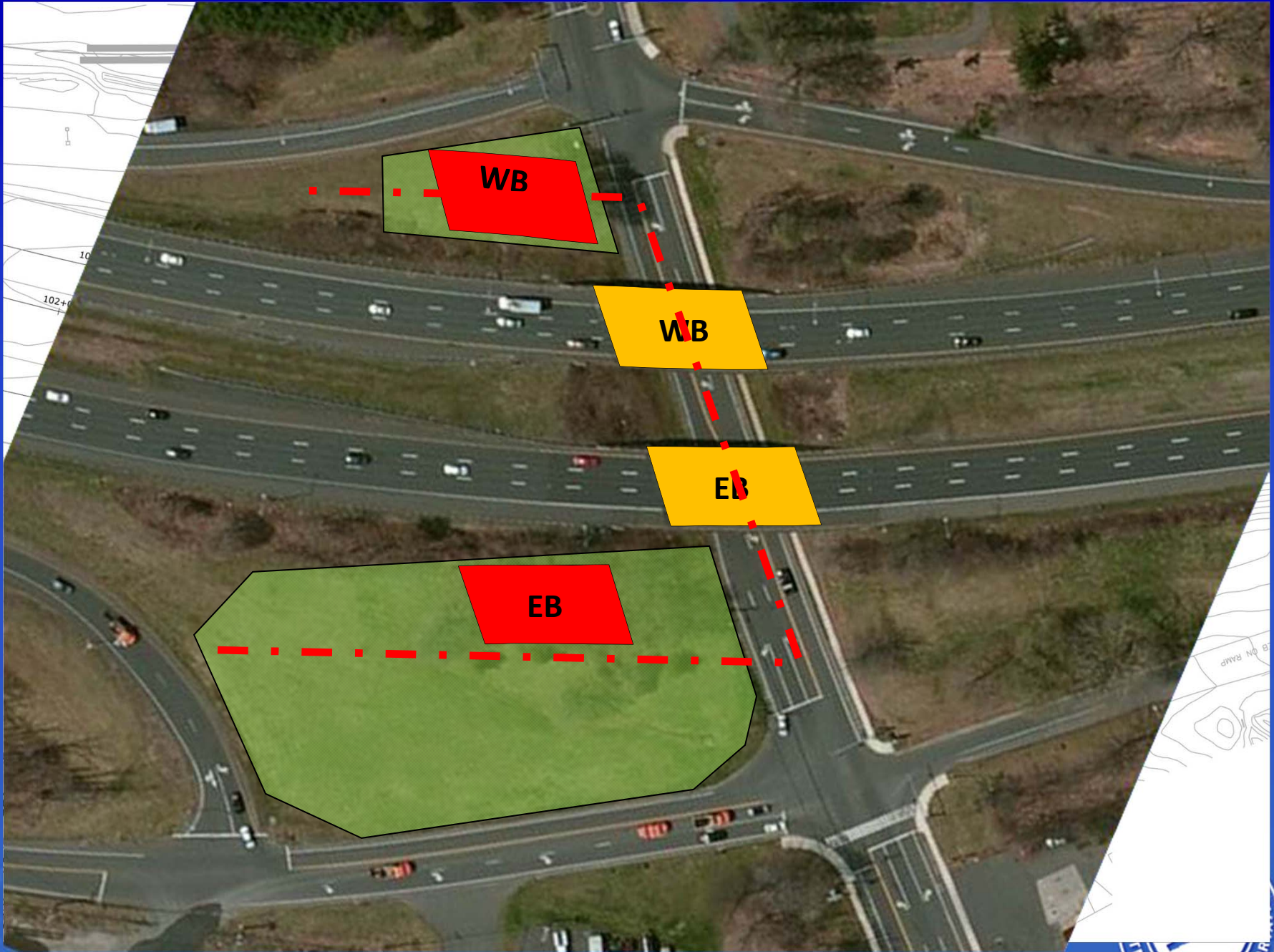


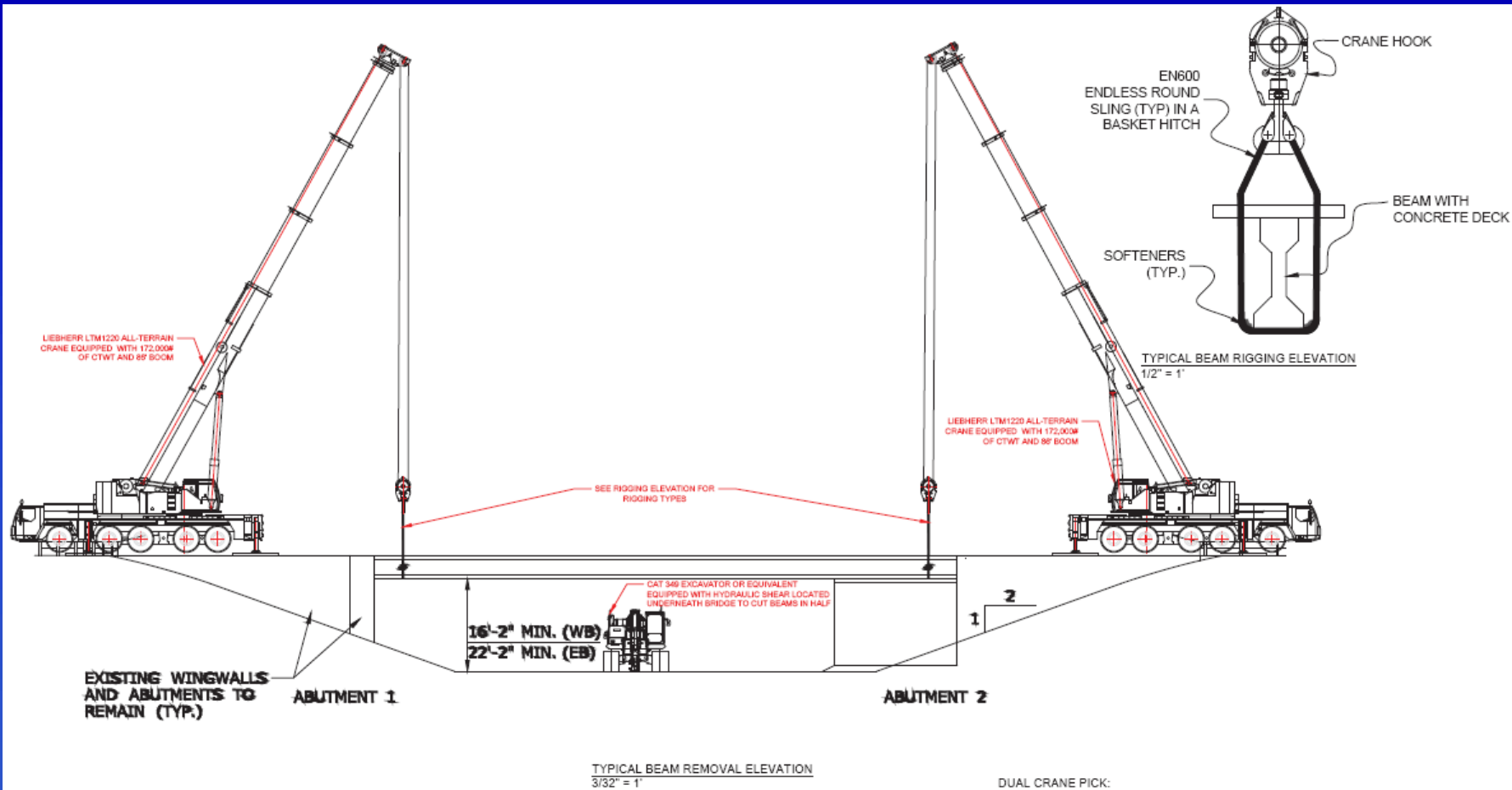


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EXISTING WINGWALLS AND ABUTMENTS TO REMAIN (TYP.)

ABUTMENT 1

ABUTMENT 2

16'-2" MIN. (WB)  
22'-2" MIN. (EB)

CAT 340 EXCAVATOR OR EQUIVALENT EQUIPPED WITH HYDRAULIC SHEAR LOCATED UNDERNEATH BRIDGE TO CUT BEAMS IN HALF

TYPICAL BEAM REMOVAL ELEVATION  
3/32" = 1"

- DUAL CRANE PICK:
1. BOTH CRANES SHALL BE RIGGED TO THE BEAM UTILIZING RIGGING SHOWN
  2. LIFT BEAM OFF OF BEAM SEATS
  3. BEAM SHALL BE LIFTED AND MOVED TO MARION AVENUE BELOW
  4. RIGGING SHALL BE REMOVED FROM BOTH CRANES
  5. BEAM SHALL BE MOVED AND PLACED INTO LAYDOWN AREA UTILIZING HYDRAULIC EXCAVATOR
  6. REFER ABOVE FOR TYPICAL BEAM RIGGING ELEVATION

- GENERAL NOTES:
1. GC SHALL IMPLEMENT TMP AND FULLY CLOSE BRIDGE TO TRAFFIC
  2. CATCH BASINS ON MARION AVENUE TO BE PROTECTED FROM CONCRETE SLURRY UTILIZING HAYBALES & SILTSACKS

LIMITS OF REMOVAL

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON THE DATA AND INDICATIONS BY THE CLIENT AND IN NO WAY WARRANTS TO INDICATE THE CONDITIONS OF FIELD CONDITIONS OF WORK WHICH WILL BE REQUIRED.		DESIGN/GRAPHIC: C. O'HEARIN PROJECT BY: L. O'DONNELL SCALE - AS NOTED		DESIGNER/ FIRM: <b>TDC</b> THE DEMOLITION CORPORATION, LLC 43 MAY STREET EAST GASTON, MA 02128	PROJECT TITLE: <b>REHABILITATION OF BRIDGES 01235 &amp; 01236 I-84 EB &amp; WB OVER MARION AVE</b>	TOWN: <b>SOUTHINGTON</b> SHEET NO. TITLE: <b>DEMOLITION PLAN</b>	PROJECT NO.: 131-194 & 131-195 SHEET NO.: D-03 SHEET NO.: 3
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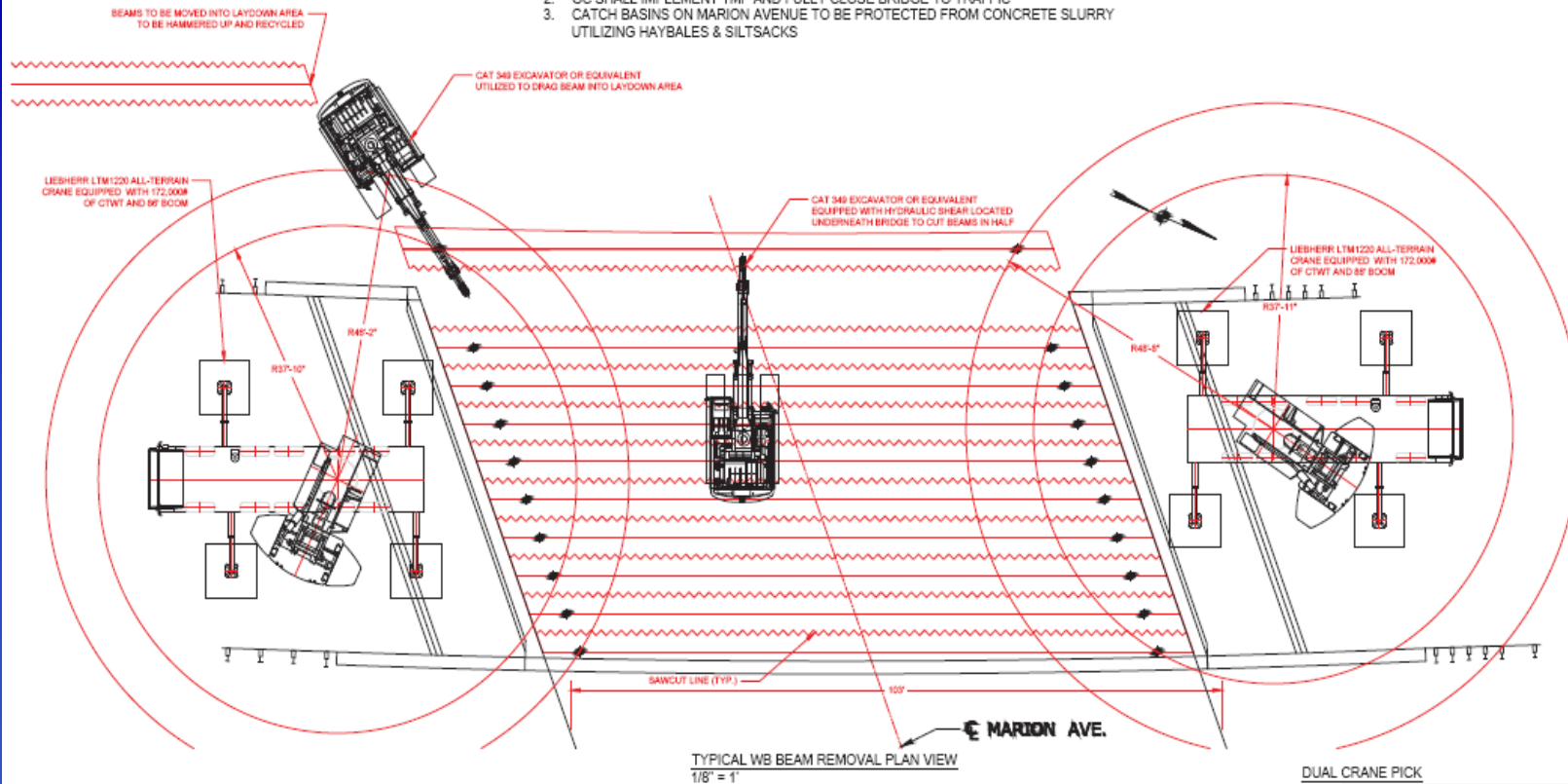
# Demo Plan W.B

Connecticut Department of Transportation



**GENERAL NOTES:**

1. EASTBOUND BRIDGE TO BE REMOVED UTILIZING SPMT
2. GC SHALL IMPLEMENT TMP AND FULLY CLOSE BRIDGE TO TRAFFIC
3. CATCH BASINS ON MARION AVENUE TO BE PROTECTED FROM CONCRETE SLURRY UTILIZING HAYBALES & SILTSACKS



TYPICAL WB BEAM REMOVAL PLAN VIEW  
1/8" = 1'

**DUAL CRANE PICK**

Section		Pick Weight		Safe Lift		Total Crane Capacity		Equipment	
Length (Feet)	Weight (Pounds)	(Pounds)	(Pounds)	(Pounds)	(Pounds)	Capacity (Pounds)	Maximum Lift Radius (Feet)	Notes on Equip.	
333.00	147915	147915	147915	20000	45	E9000 Endless Round Slings Connected to Crane Hooks E9000 200,000 lb Capacity in a Basket Hitch Two (2) Liebherr LTM1220 All Terrain Cranes - Both Equipped with 172,000lb of Counterweight & 90' of Boom			

Section	No.	#/SP	Area (SF)	Thickness (L/T)	Width (L/T)	Length (L/T)	#
ADDITIO TYPICAL BEAMS	2	A32				161	86655.00
Concrete Deck Section	3	406-A3	3.3554	8.1433	5.6847	183	130723.81
Reinforcing	4	508-A3	2.110	11.667	3.397	1.992	7277.79
						10741	147914.62
						457	2388

**DUAL CRANE PICK:**

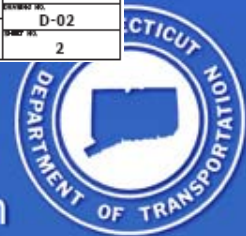
1. BOTH CRANES SHALL BE RIGGED TO THE BEAM UTILIZING RIGGING SHOWN
2. LIFT BEAM OFF OF BEAM SEATS
3. BEAM SHALL BE LIFTED AND MOVED TO MARION AVENUE BELOW
4. RIGGING SHALL BE REMOVED FROM BOTH CRANES
5. BEAM SHALL BE MOVED AND PLACED INTO LAYDOWN AREA UTILIZING HYDRAULIC EXCAVATOR
6. REFER TO SHEET 3 FOR TYPICAL BEAM RIGGING ELEVATION

LIMITS OF REMOVAL

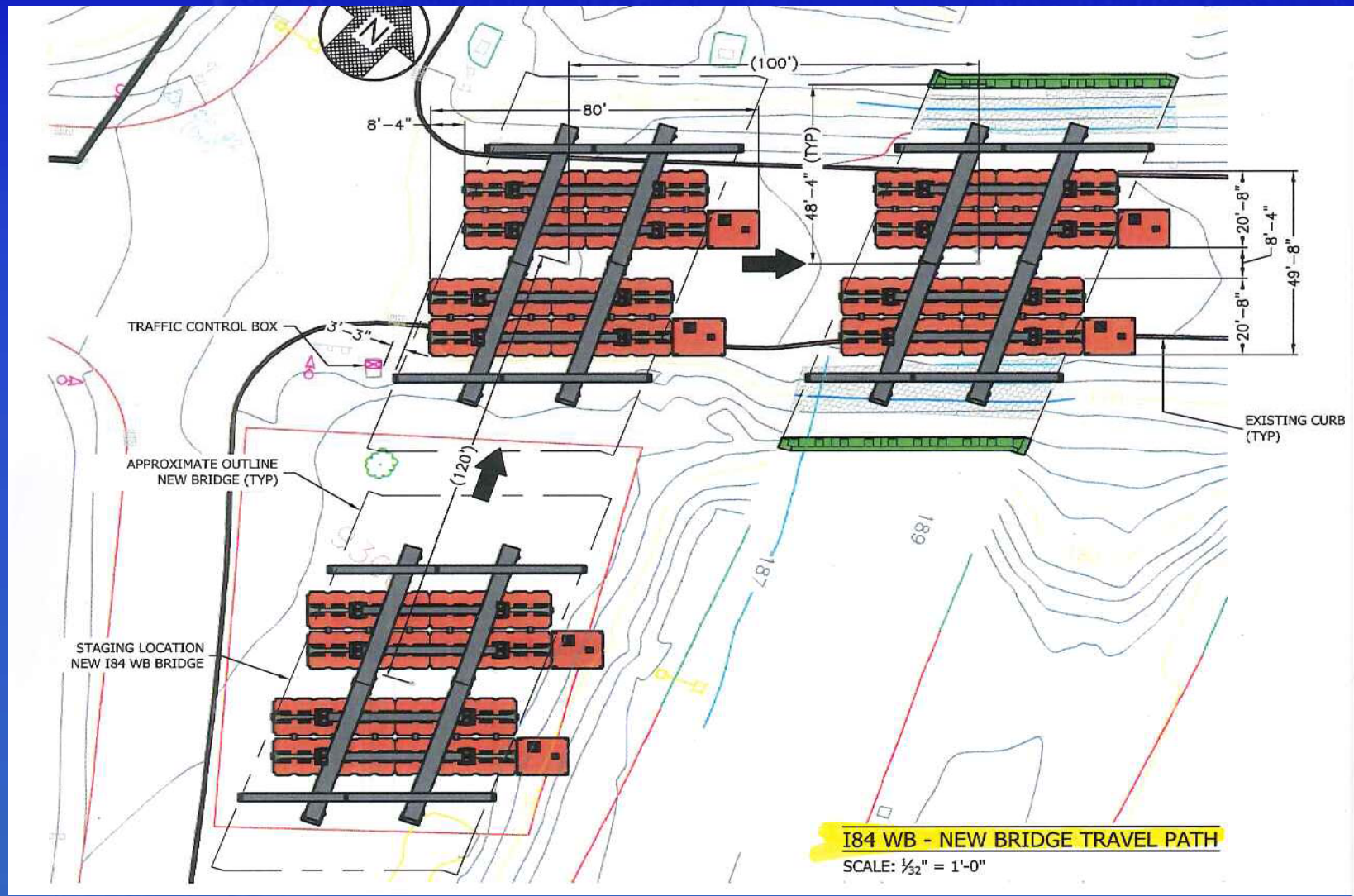
<p>THE INFORMATION CONTAINED HEREIN IS THE PROPERTY OF THE STATE OF CONNECTICUT. IT IS TO BE KEPT CONFIDENTIAL AND NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM.</p>	<p>DESIGNED BY: C. O'HEARN CHECKED BY: L. O'DONNELL SCALE: AS NOTED</p>	<p>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</p>	<p>DESIGNED BY: TDC THE DEMOLITION CORPORATION, LLC 42 HART STREET EAST BRIDGEFIELD, CT 06422</p>	<p>PROJECT TITLE: REHABILITATION OF BRIDGES 01235 &amp; 01236 I-84 EB &amp; WB OVER MARION AVE</p>	<p>PROJECT NO: 131-194 &amp; 131-195 DRAWING NO: D-02 SHEET NO: 2</p>
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# Demo procedure W.B

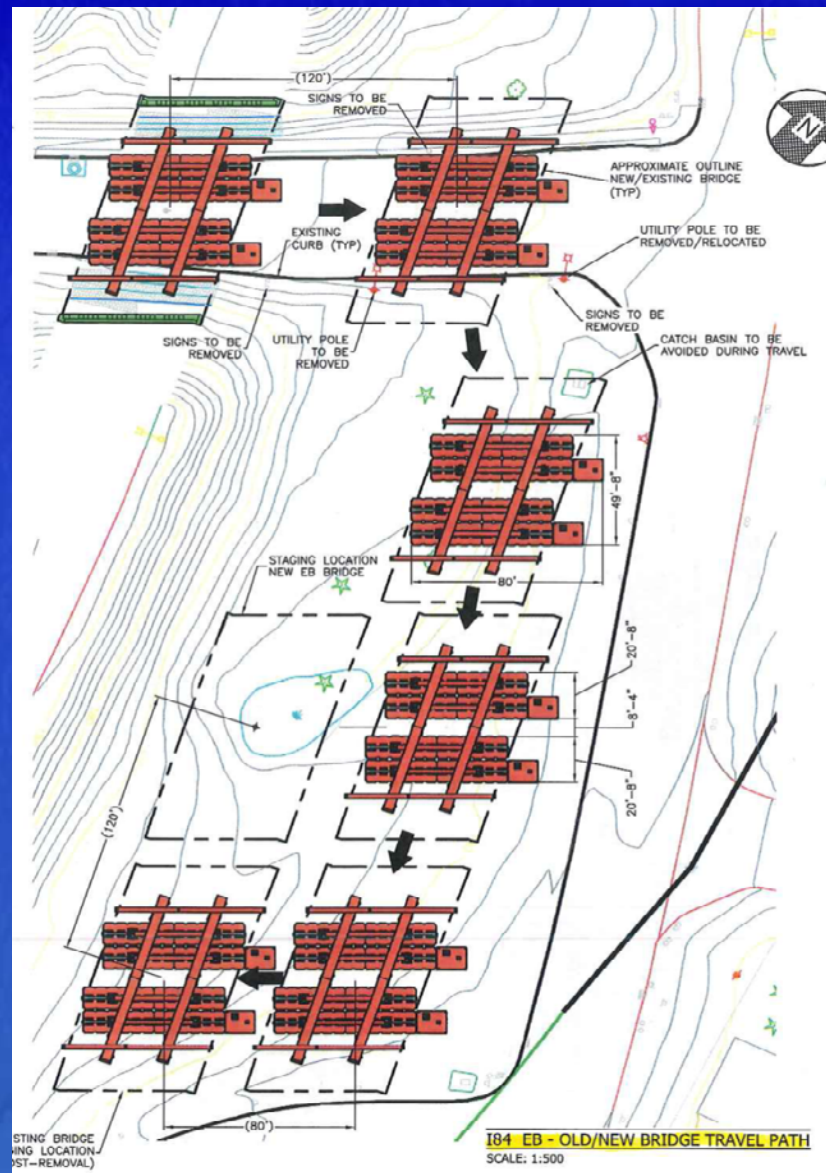
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# WB Erection Move

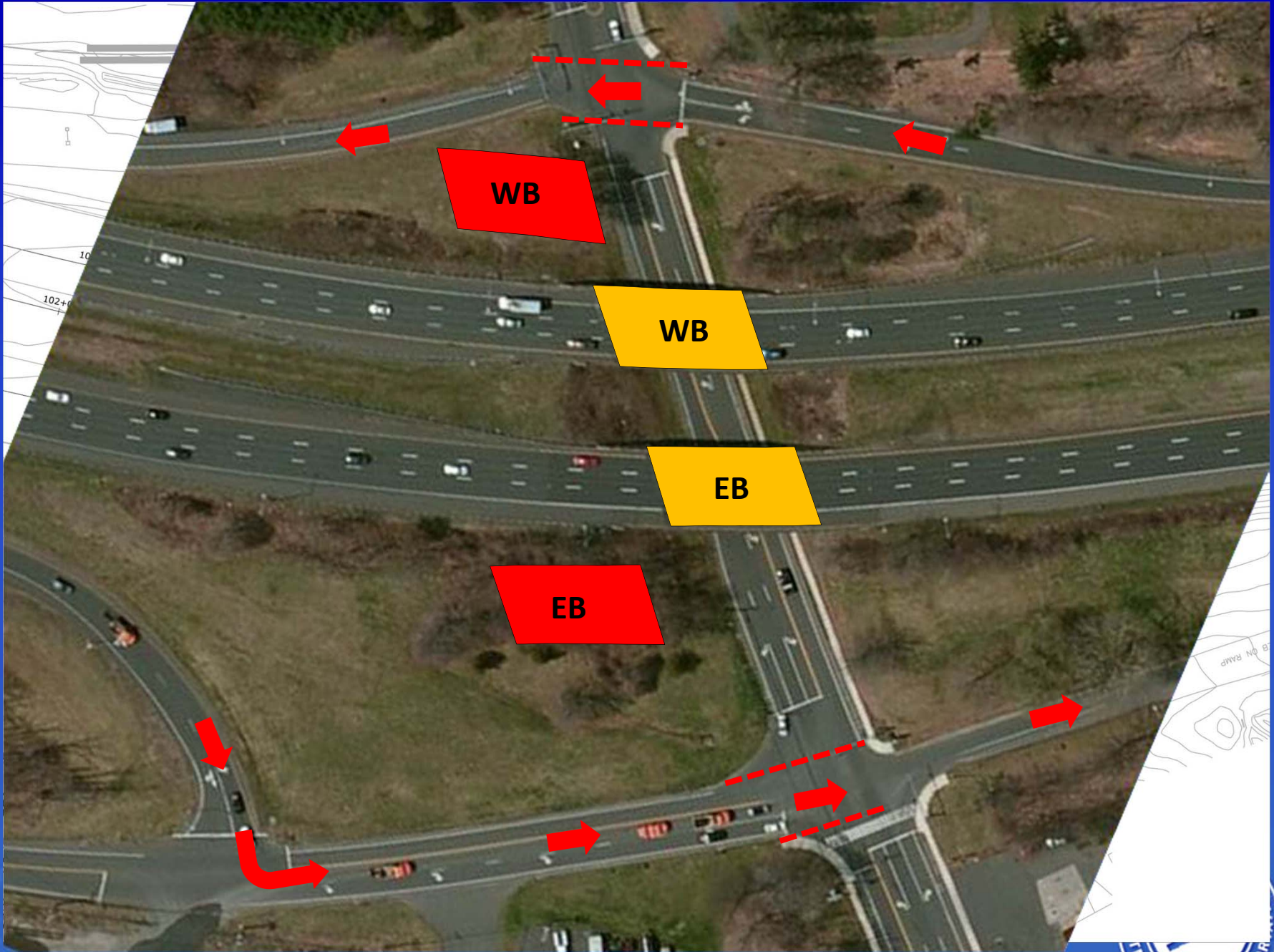


# EB Demo Move



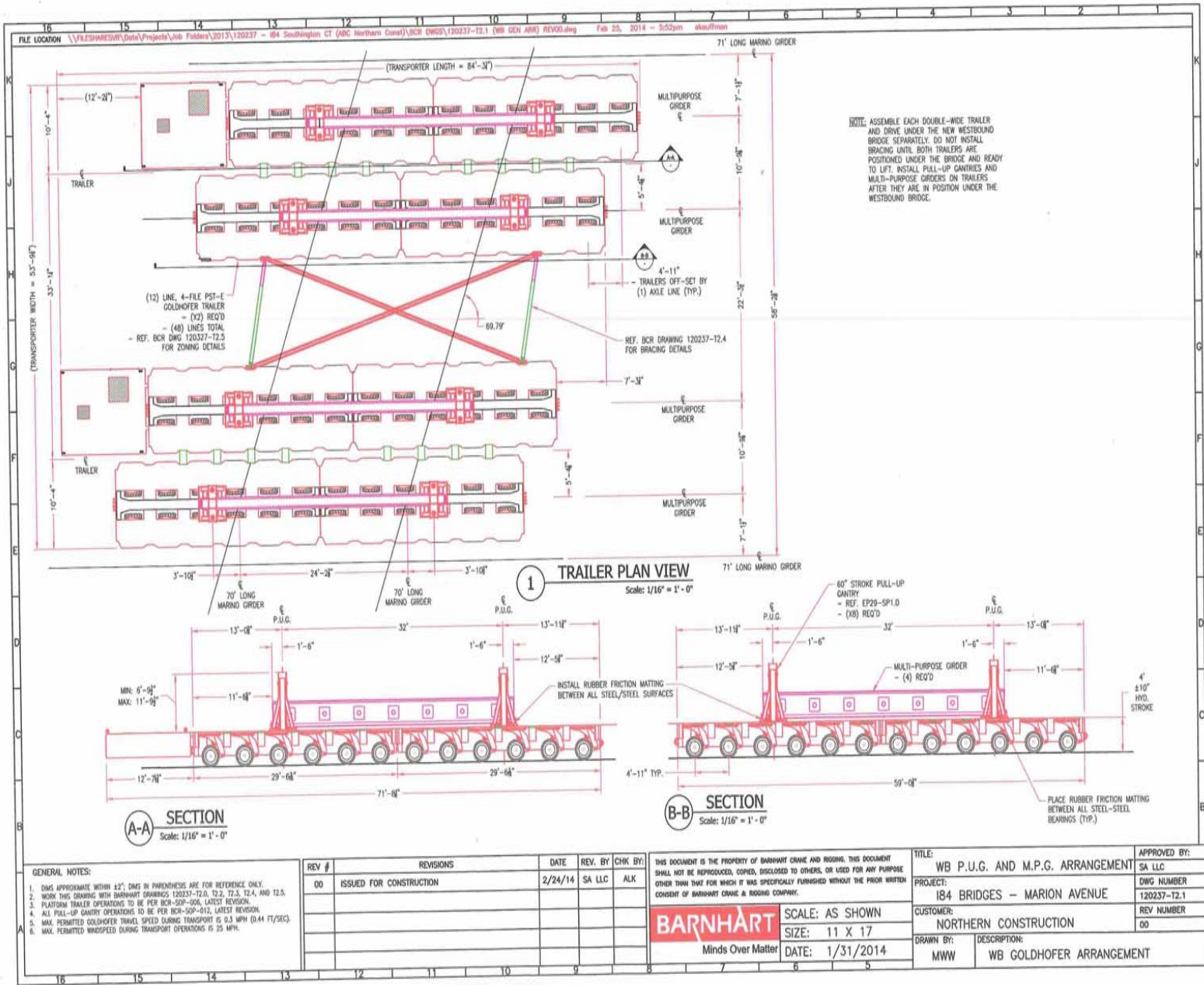
Connecticut Department of Transportation





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FILE LOCATION	\\F:\EHS\RES\DATA\PROJECTS\JOB FILES\1203\120237 - 184 BRIDGES\CT LABC NORTHERN CONSTRUCTION\DWG\120237-T2.0 PREL.DWG
DATE	FEB 25, 2014 - 5:45PM
PROJECT	184 BRIDGES - MARION AVE
DESCRIPTION	184 WB BRIDGE TRANSPORT

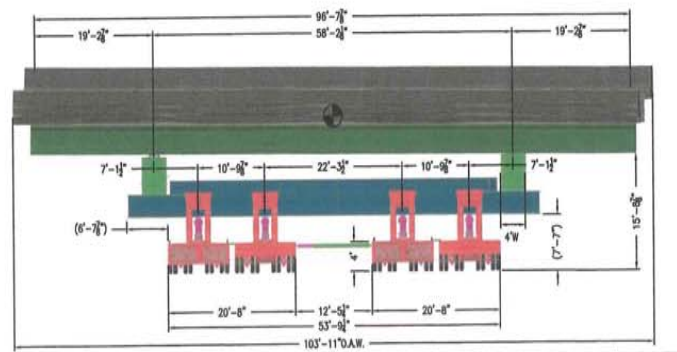
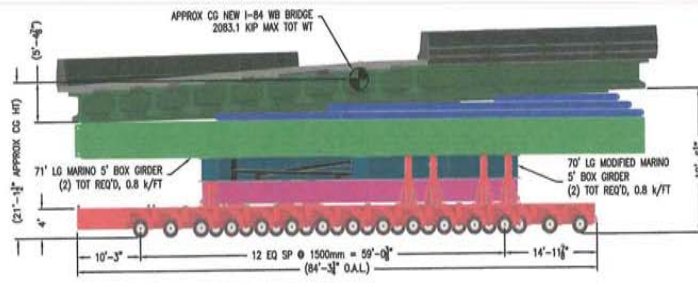
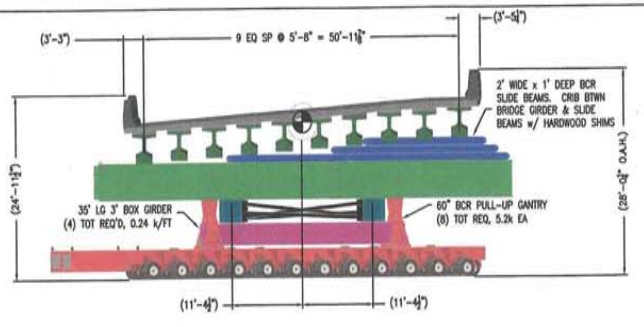
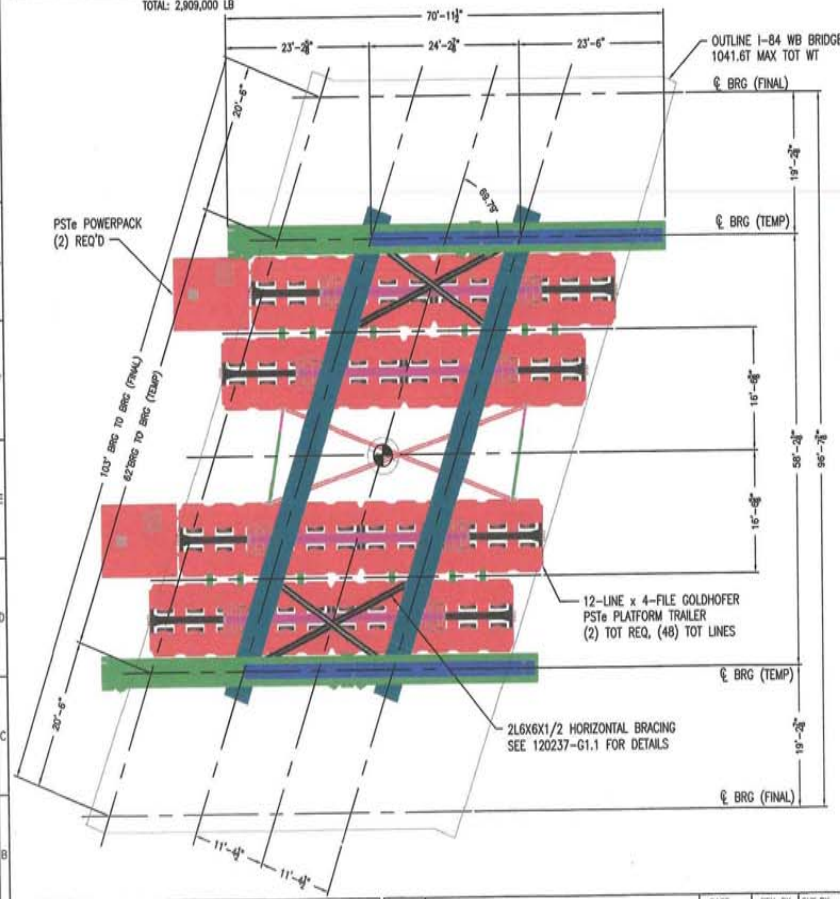
PSTe GOLDHOFER TRAILER	427,200 LB
PSTe POWERPACK, 2 TOT	27,400 LB
71' LG 5' BOX GIRDER, 2 TOT	114,000 LB
70' LG 5' BOX GIRDER, 2 TOT	112,000 LB
35' LG 3' BOX GIRDER, 4 TOT	33,600 LB
8' BCR 60" PULL-UP GANTRY, 8 TOT	41,600 LB
2" WIDE X 1" SLIDE BEAMS, 170 TOT	45,100 LB
MISC (SECUREMENTS, WPP, SHIMS ETC)	25,000 LB
NEW 184 WB BRIDGE	2,083,100 LB
<b>TOTAL:</b>	<b>2,909,000 LB</b>

GOLDHOFER LOADING SUMMARY	
MODEL:	(2) 4 FILE 12 LINE PST-E W/ POWERPACK
MAXIMUM STROKE FOR GOLDHOFER PST-E	= 59.8"
MID-STROKE FOR GOLDHOFER PST-E	= 48"
MINIMUM TRAVEL STROKE FOR GOLDHOFER PST-E	= 39"
TIRE PRESSURE:	135 PSI
TIRE SIZE:	215/75 R17.5

TRANSPORTER INFORMATION:	
NAME:	GOLDHOFER
MAXIMUM STROKE FOR GOLDHOFER PST-E	= 59.8"
MID-STROKE FOR GOLDHOFER PST-E	= 48"
MINIMUM TRAVEL STROKE FOR GOLDHOFER PST-E	= 39"
TIRE PRESSURE:	135 PSI
TIRE SIZE:	215/75 R17.5



- GENERAL NOTES:
1. DIMS APPROXIMATE WITHIN ±2"; DIMS IN PARENTHESIS ARE FOR REFERENCE ONLY; HEIGHTS SHOWN AT MID-STROKE OF GOLDHOFER TRAILER, ACTUAL HEIGHTS MAY VARY ±10" PENDING GRADE.
  2. GOLDHOFER TRAVEL LIMITED TO ±2% GRADE IN ONE DIRECTION AT ANY GIVEN TIME.
  3. MAX. PERMITTED GOLDHOFER TRAVEL SPEED DURING TRANSPORT IS 0.3 MPH (0.44 FT/SEC).
  4. MAX. PERMITTED WINDSPEED DURING TRANSPORT OPERATIONS IS 25 MPH.

REV #	REVISIONS	DATE	REV. BY	CHK. BY
00	FOR CONSTRUCTION	02/24/2014	ALC	SA LLC

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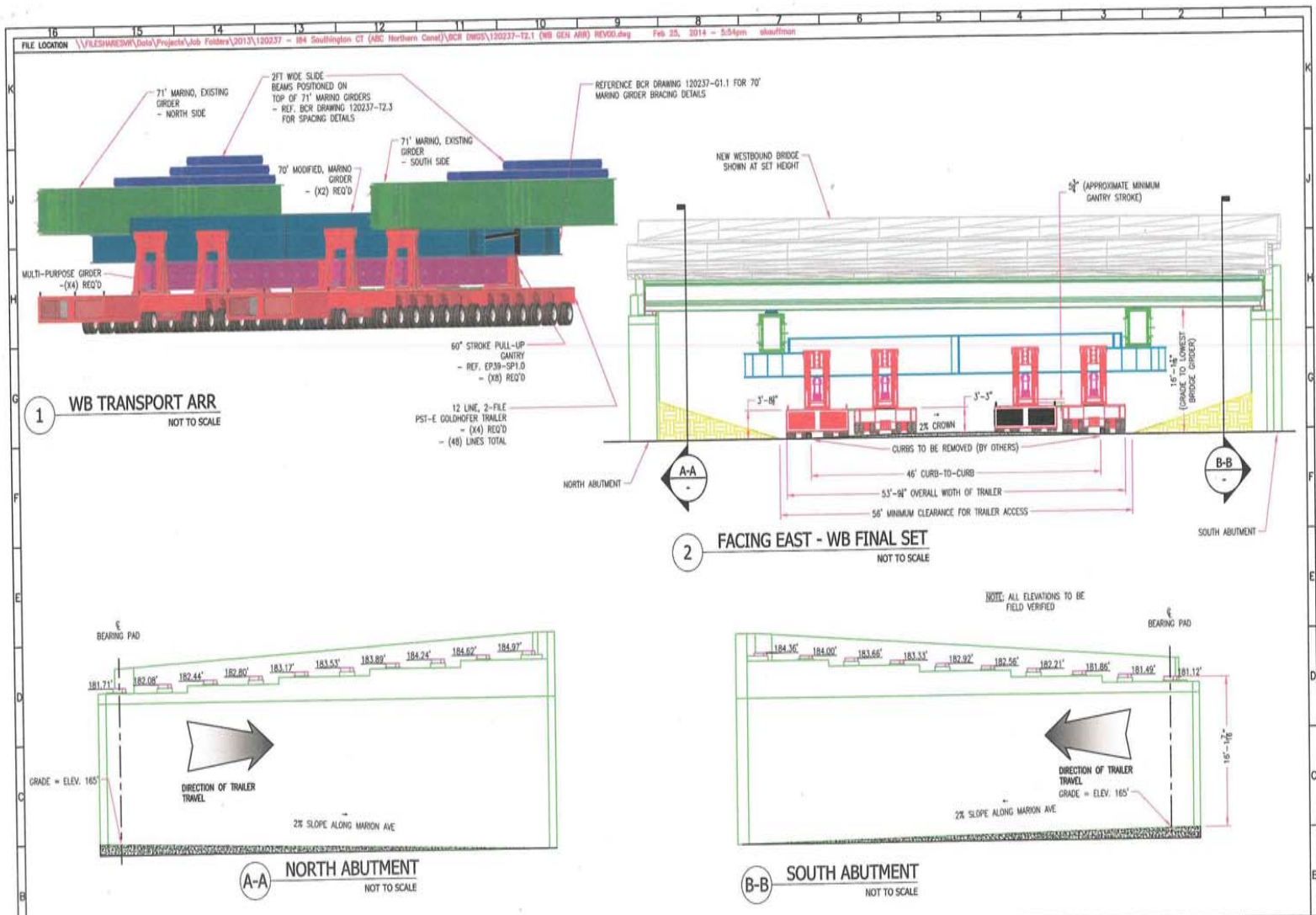
**BARNHART**  
Minds Over Matter

SCALE: 1/16" = 1'-0"  
SIZE: 11 X 17  
DATE: 08/15/2013

TITLE:	TRANSPORT DRAWING	APPROVED BY:	SA LLC
PROJECT:	184 BRIDGES - MARION AVE	DWG NUMBER:	120237-T2.0
CUSTOMER:	NORTHERN CONSTRUCTION	REV NUMBER:	00
DRAWN BY:	CJN	DESCRIPTION:	184 WB BRIDGE TRANSPORT







**GENERAL NOTES:**

- DIMS APPROXIMATE WITHIN ±2'; DIMS IN PARENTHESES ARE FOR REFERENCE ONLY.
- WORK THIS DRAWING WITH BARNHART DRAWINGS 120237-T2.0, T2.1, T2.2, T2.3, T2.4, AND T2.5.
- PLATFORM TRAILER OPERATIONS TO BE PER BCR-SOP-004, LATEST REVISION.
- ALL PULL-UP GANTRY OPERATIONS TO BE PER BCR-SOP-012, LATEST REVISION.
- MAX. PERMITTED GOLDFEYER TRAVEL SPEED DURING TRANSPORT IS 0.3 MPH (0.44 FT/SEC).
- MAX. PERMITTED WINDSPEED DURING TRANSPORT OPERATIONS IS 25 MPH.

REV #	REVISIONS	DATE	REV. BY	CHK BY:
00	ISSUED FOR CONSTRUCTION	2/24/14	MWW	SA LLC

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**BARNHART**  
Minds Over Matter

SCALE: AS SHOWN  
SIZE: 11 X 17  
DATE: 1/31/2014

TITLE: WB FINAL SET  
PROJECT: 184 BRIDGES MARION AVE  
CUSTOMER: NORTHERN CONSTRUCTION  
DRAWN BY: MWW  
DESCRIPTION: WB BRIDGE AT FINAL SET

APPROVED BY:	SA LLC
DWG NUMBER	120237-T2.2
REV NUMBER	00



# Self Propelled Mobile Transporter (SPMT)



Connecticut Department of Transportation



# Self Propelled Mobile Transporter (SPMT)



## Making It On Time

- **Traffic Management Unified Command Center on site to continuously monitor and control traffic**
- **DOT CHAMP vehicles (CT Highway Assistant Motorist Patrol)**
- **Incident Management response**
- **Traffic Management Plan - regional and local detours, cameras, and message boards for advising traveling public and coordination with adjacent states for interstate travel.**



# Making It On Time

- Contractor contingency plan - mechanics, extra equipment parts and services on site for repairs if needed
- Public website, press notices, alerts, cameras, message boards, detour signing, live camera feeds on work
- Traffic Coordination Working Group- law enforcement, Regional emergency management and communications, DOT, Contractor, Towns, EMS
- Outreach to area, venues, local and regional businesses



# Closure Schedule

## Friday, 6/27/14

**9 am** – Southington Rest Area, I-84 East Closed

**5 pm to 9 pm** - I-84 Exit 30 Off and On Ramps Closed

Marion Avenue closed at ramps- no through traffic

**6 pm** - One lane taken on I-84 East at Exit 27 (I-691)

**7 pm** - One lane taken on I-84 West at Exit 31 (Rt 229)

**8 pm** - Two lanes taken on I-84 East at Exit 27 and I-84 West at Exit 31 with one travel lane open

**9 pm** - I-84 and Exit 29 On and Off Ramps at Route 10 Closed. One lane of I-84 traffic off at Exit 30

## Monday, 6/30/14 5 am

I-84 OPEN ALL LANES IN BOTH DIRECTIONS and I-84 East Southington Rest Area reopens



# Maintenance & Protection of Traffic during Weekend Work

## Regional Detour

- I-84 suggested alternate routes along I-691, I-91, Route 9 and Route 72
- Exit 30 ramps will be used to move one lane of I-84 EB and WB traffic through the closure area
- No access to Marion Avenue from Exit 30



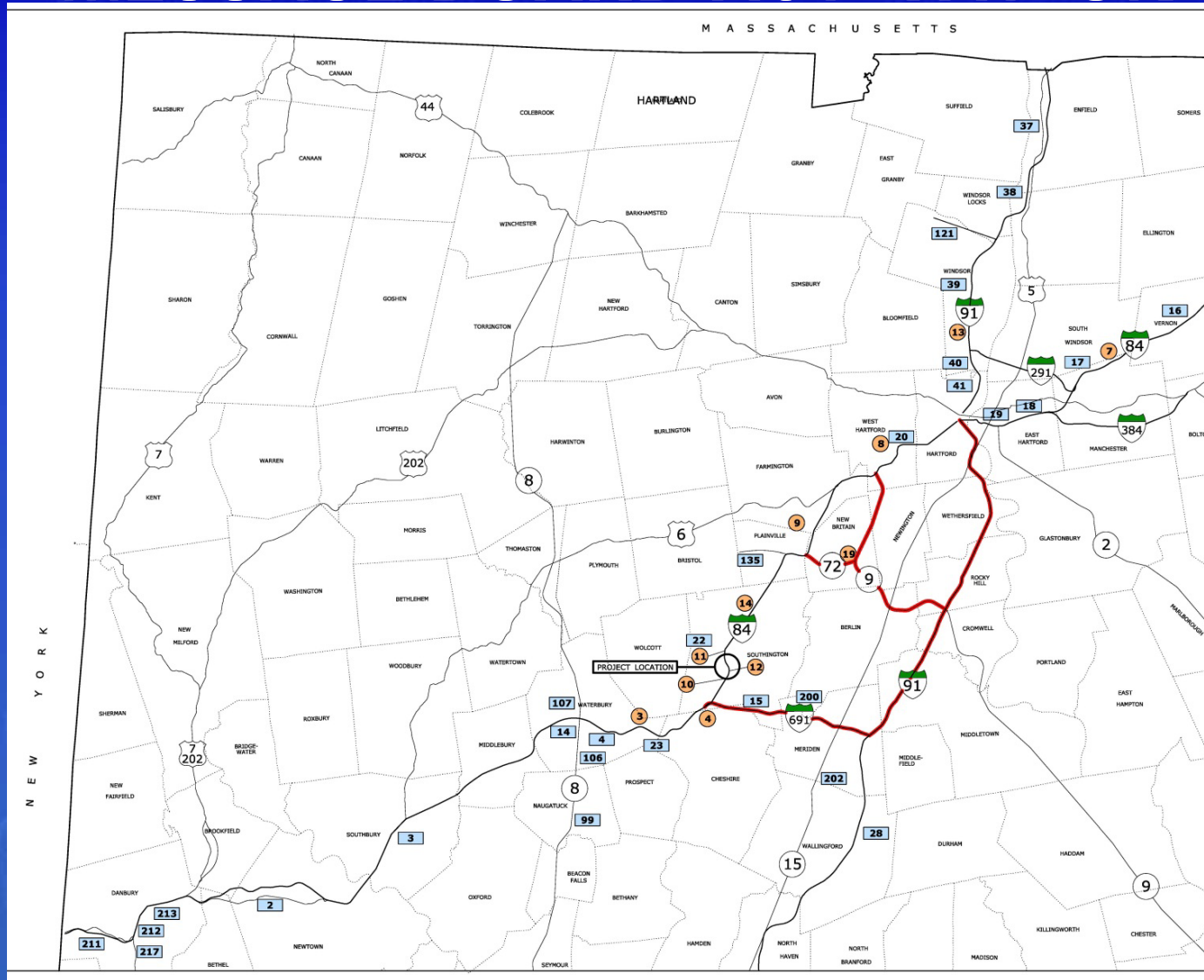
# Regional Detour Strategies

- Use Intelligent Transportation System (ITS) technology to aid motorists through detours and keep them informed
  - Cameras
  - Message Boards
  - Advisory Radio
  - Massachusetts, Rhode Island, New York, and New Jersey travel alert systems
- Project Website



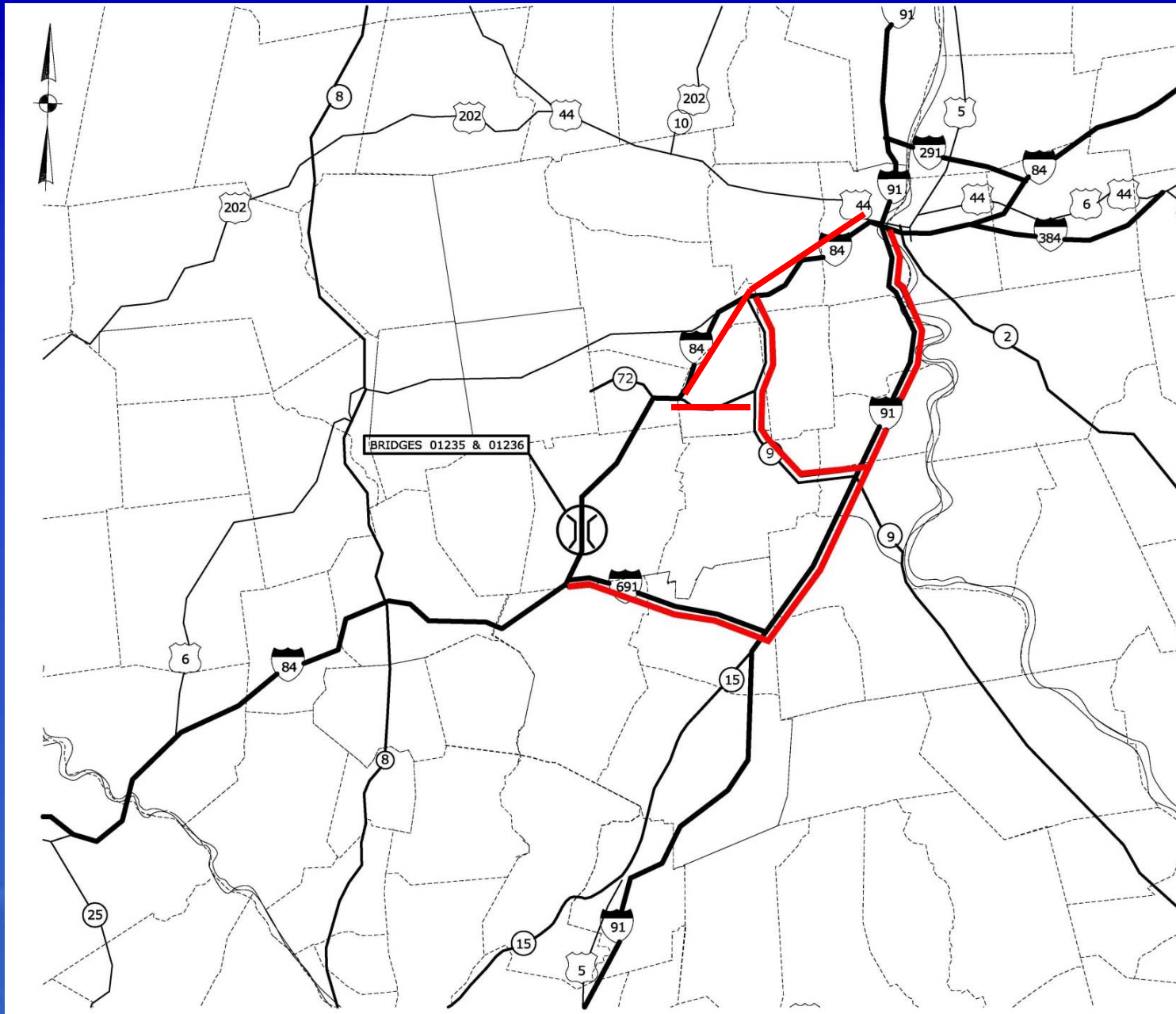


# REGIONAL and LOCAL VARIABLE MESSAGE BOARD ACTIVATION



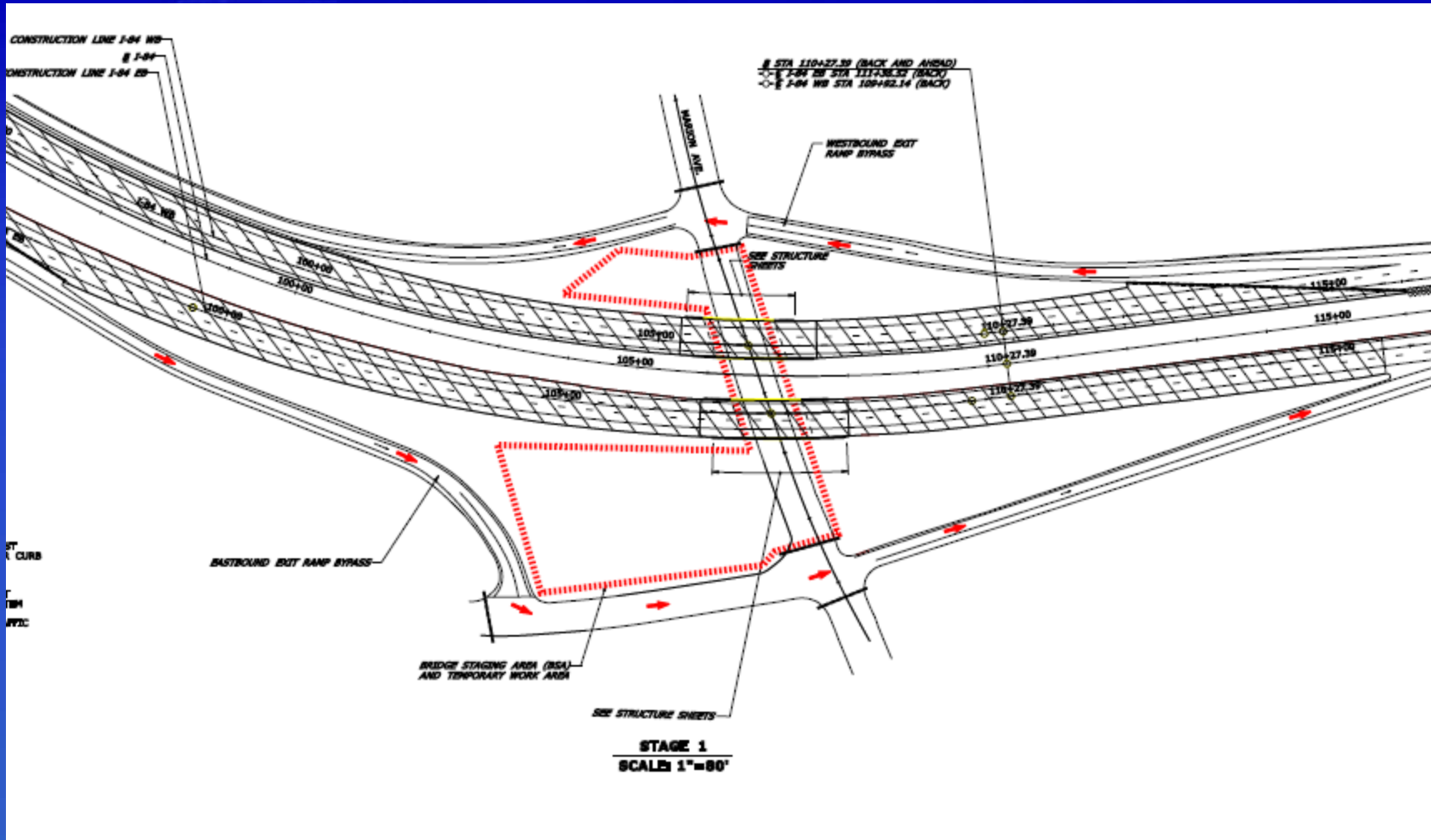
Connecticut Department of Transportation





Connecticut Department of Transportation



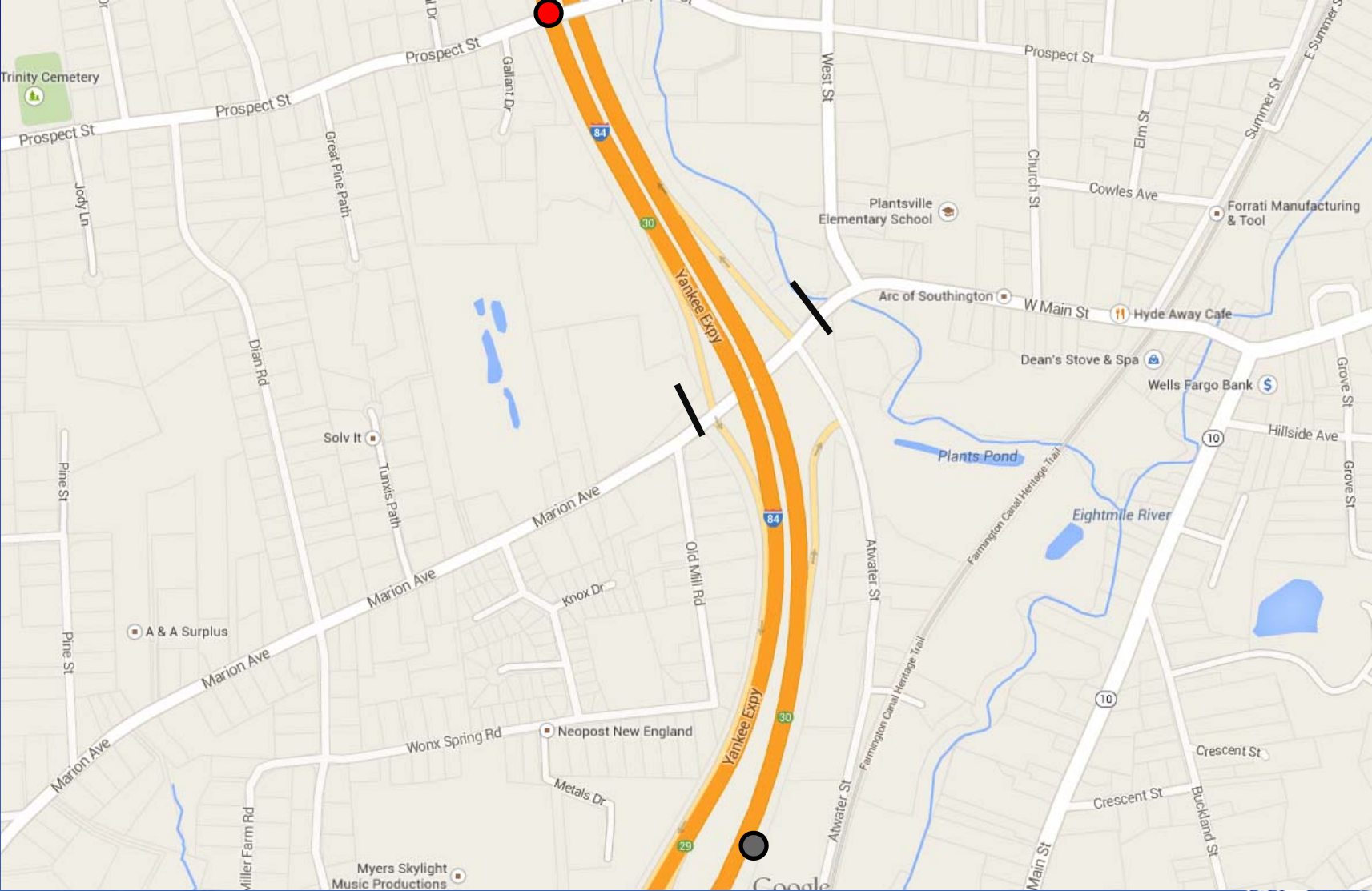


# I-84 bypass at Exit 30 during weekend work

Connecticut Department of Transportation



# I-84 Detour Plan



## Local Detours

- Marion Avenue under the bridges will be closed at 5 pm on Friday June 27.
- The I-84 east and west Exit 30 on and off ramps will also be closed from 5 pm to 9 pm to allow for staging of detour.
- There will be no access from Atwater Street to Marion Avenue .
- Traffic traveling from points west of interchange will be diverted to Mount Vernon Road or Diana Road.
- Traffic traveling from all other directions will be detoured onto Route 229, West Street, Route 10, West Main Street.



# Local Community Coordination

- Officers to be located at project site and along detour routes. The additional services for Fire and Police Depts. are being paid through the DOT project.
- Coordination with Southington I.T. Department to notify residents of the closures, detours, and parking bans, via the Everbridge System.
- Residents will have no disruption of utility services. The utilities have been relocated and will be protected from the weight of the bridge moving equipment.
- Residents will have full Fire and Police protection during the closure.
- Emergency Services notification being coordinated for local and adjacent towns including alternate routing for emergencies

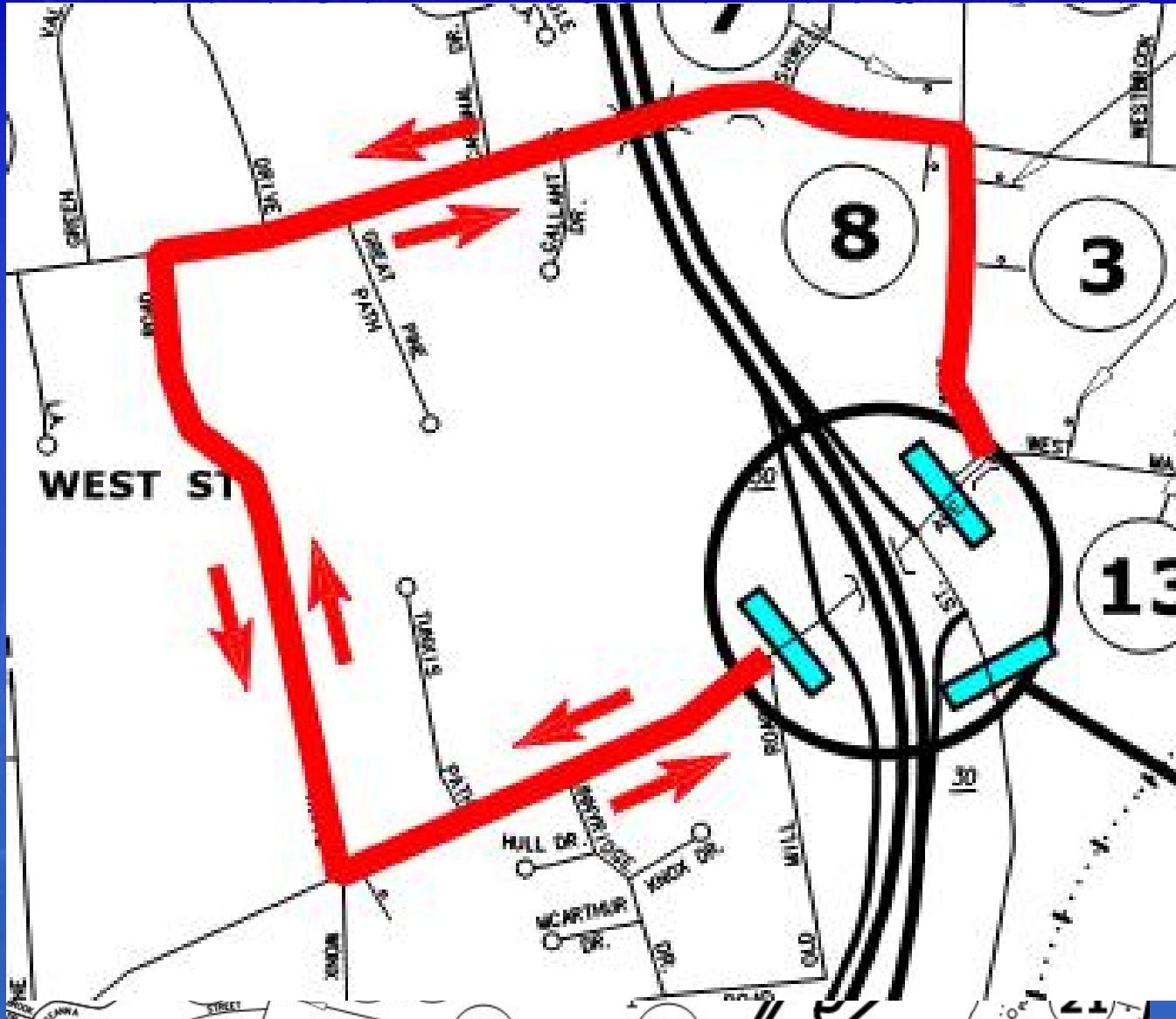


# Local Strategies

- Residents within the local detour will be notified via mailer by the Southington Police. An emergency parking ban will be in place in their neighborhoods to support the detour (keep roadways clear of any vehicles).
- Local Businesses in and around the detour will be notified of the closure and no parking areas.
- Southington Police will close the Linear Trail crossing on West Main Street.
- Notification being made to Camp Sloper, The YMCA, and other organizations that may be affected by closure and detours
- Local Towing Services notified



# DETOUR WEST OF PROJECT

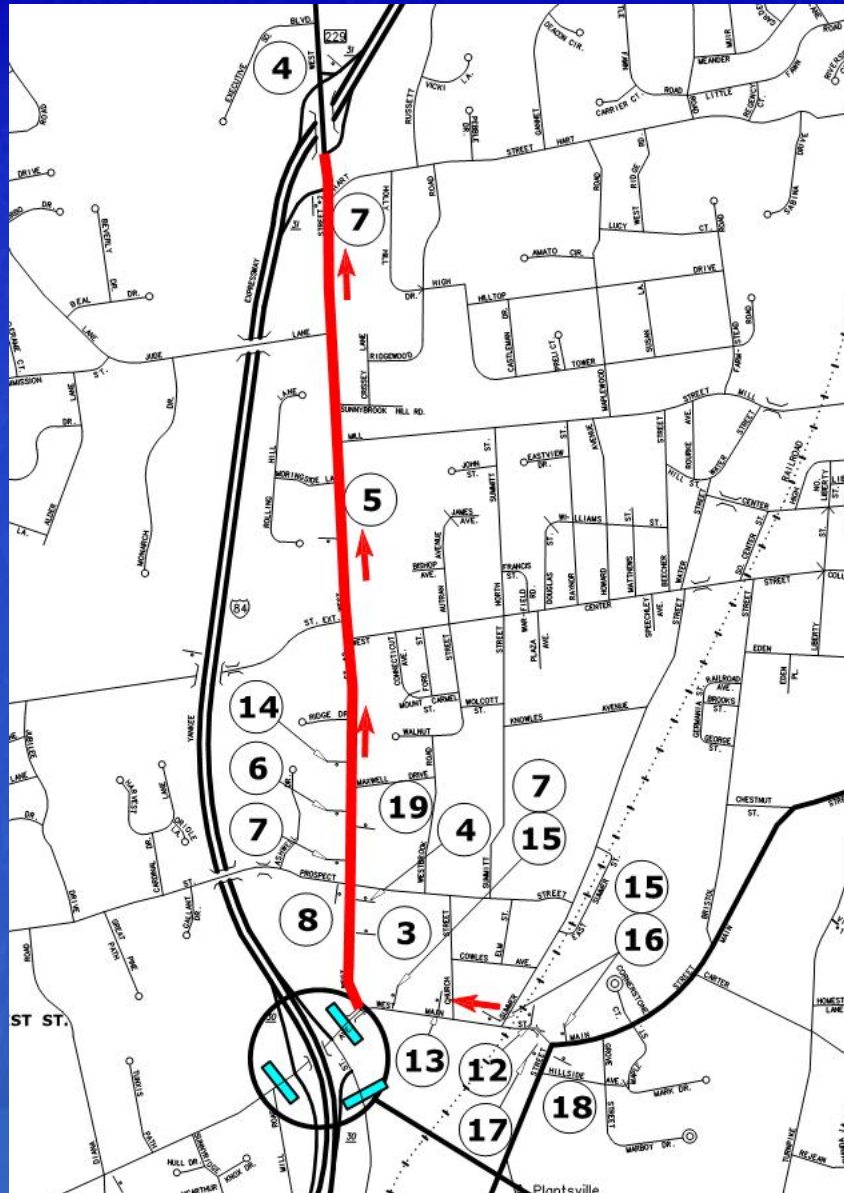


Connecticut Department of Transportation





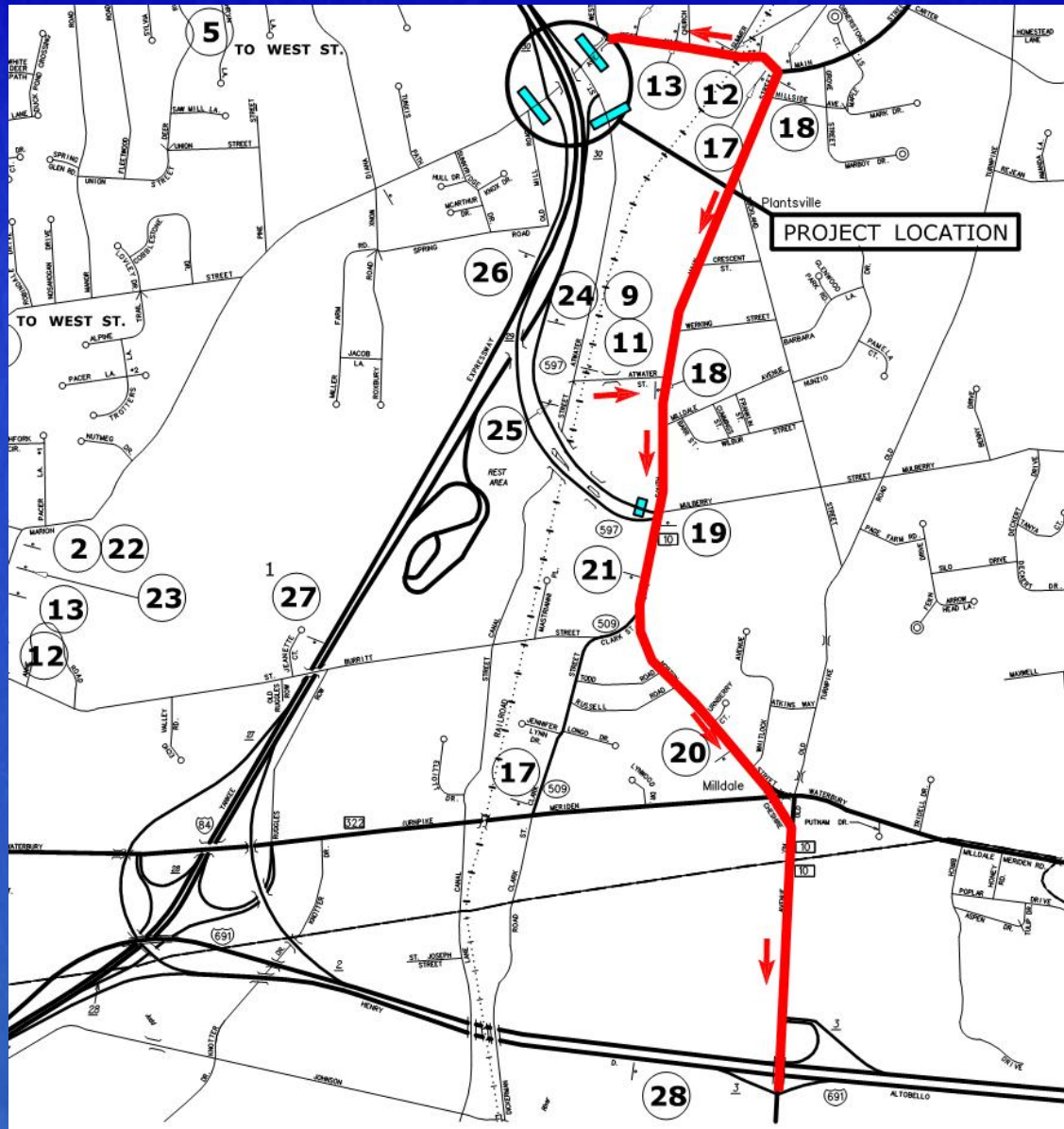
# I-84 EAST AND NORTH LOCAL DETOUR



Connecticut Department of Transportation



# I-84 WEST AND SOUTH LOCAL DETOUR



Connecticut Department of Transportation



# Site Accessibility

- The Department is limiting visitors to the project site to insure the safety of the project and of the public
- Only authorized personnel will be allowed onto site and will have ID's that must be worn at all times
- Persons interested in viewing the work, may access the CTDOT website



# CTDOT Website

[www.ct.gov/dot](http://www.ct.gov/dot) ---> I-84 Southington ABC Project



## **Rehabilitation of Bridge Numbers 01235 and 01236, Interstate 84 over Marion Avenue in Southington DOT Project No. 0131-0194/195**

### **TRAVEL ALERT - REVISED SCHEDULE!**

**FULL CLOSURE OF INTERSTATE 84 AT EXIT 30 SCHEDULED FOR WEEKEND OF JUNE 27-30, 2014**

Interstate 84 in both directions is scheduled to be closed at Exit 30, Marion Avenue, June 27-30. Interstate 84 will be reduced to a single lane entering the area and traffic will be directed off the ramps at Exit 30 in both directions and back onto the highway from the on ramps.

The hours of full closure are scheduled to occur starting at 9 p.m. on Friday, June 27 through 5 a.m. Monday, June 30, 2014. The rain date will be 9 p.m. on Friday, July 11, through 5 a.m. on Monday July 14, 2014.

Currently, shoulder closures are in place in both directions and lane closures are allowed on Monday through Thursday from 9 a.m. to 3 p.m. and 6 p.m. to 6 a.m. and on Friday from 6 p.m. to 6 a.m. on Monday.

Marion Avenue closures will occur between the hours of 9 a.m. and 3 p.m. Monday - Friday and on Saturday and Sunday before 10 a.m. and after 6 p.m.

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# Public Outreach

- **Trucking companies, hospitals, major venues have been notified of this upcoming work**
- **Federal Law Enforcement Agencies**
- **Local businesses through the Chambers of Commerce for Southington, Meriden, Cheshire, Wolcott, Waterbury, Bristol**
- **Neighboring states: New York, Massachusetts, Rhode Island**
- **Emergency Management Coordinators with the Department of Public Health and Homeland Security**



# THANK YOU...

## WATCH us in June

**Connecticut Department of Transportation**

**Close, Jensen and Miller, P.C.**

**Stantec Consulting Services, Inc.**

**Northern Construction Service, LLC**

Connecticut Department of Transportation

